



Catalog 1107-6

Daikin Water to Water Source Heat Pumps

Models WRA, WHA, WCA

Unit Sizes 036 – 420 R-410A Refrigerant



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Model WRA

Category	Code Item	Code Option	Code Designation & Description
Product Category	1	1	W = Water Source Heat Pump
Product Identifier	2	2-4	WCA = Base Cooling Only Unit with Copper Coaxial Water Coils WHA = Base Heating Only Unit with Copper Coaxial Water Coils WRA = Base Cooling and Heating Only Unit with Copper Coaxial Water Coils
Design Series	3	5	1 = 1st Design 2 = 2nd Design 3 = 3rd Design 4 = 4th Design
Nominal Capacity	4	6-8	036 = 36,000 Btuh Nominal Cooling 048 = 48,000 Btuh Nominal Cooling 060 = 60,000 Btuh Nominal Cooling 072 = 72,000 Btuh Nominal Cooling 120 = 120,000 Btuh Nominal Cooling 150 = 150,000 Btuh Nominal Cooling 180 = 180,000 Btuh Nominal Cooling 240 = 240,000 Btuh Nominal Cooling 300 = 300,000 Btuh Nominal Cooling 360 = 360,000 Btuh Nominal Cooling 420 = 420,000 Btuh Nominal Cooling
Unit Control	5	9	A = ALC control for standard Sequence of Operations (See Note) L = ALC control w/ Lonworks card D = Terminal strips for field-mounted DDC controls T = Terminal strips for aquastat control
Note: ALC controls include built-in communication card for BACnet®, Modbus and N2 protocols. For use with Lonworks® protocol, the accessory Lonworks Card must also be selected. It is required that at least one BACview6 handheld be purchased per jobsite unless other means of communicating with the controller is being used. If an ALC control with a non-standard sequence of operations is required, contact factory for pricing.			
Voltage	6	10	E = 208-230/60/1 F = 208-230/60/3 K = 460/60/3 L = 575/60/3
Head Pressure Control	7	11	Y = None
A selection must be made from this section for units only if unit will operate as described below: Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves. Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves. Includes valves, bypass refrigeration circuit and check valve.			
Water Piping Location	8	12	F = Front T = Top L = Left Hand Side R = Right Hand Side
Control Box Location	9	13	F = Front L = Left Side Control Box R = Right Side Control Box
Status Lights	10	14-15	YY = None SL = Three Lights-Compressor-1, Compressor-2, Compressor fault
Freezestat	11	16-17	YY = None FS = Adjustable for Geothermal and Boiler/Tower Application
Construction Type	12	18	A = Standard
Source Water to Refrigerant Heat Exchanger Construction	13	19	C = Copper Coax L = Load Side Cupro Nickel Coax S = Source Side Cupro Nickel Coax B = Load & Source Side Cupro Nickel Coax
Desuperheater	14	20	Y = None D = Waste Heat Recovery Water Heater
Refrigerant	15	21	A = R-410A
Cabinet Electrical	22		YYY= Reserved for future use

Model WRA – Heating & Cooling Units

Rated in accordance with AHRI/ASHRAE/ISO Standard 13256-2.

Unit Size	GPM		Cooling			Heating		
			EWT °F	Total Cap. (Btuh)	EER (Btuh/Watt)	EWT °F	Total Cap. (Btuh)	COP
Water Loop								
036	Load	9.0	53.6	33,200	12.1	104	47,500	4.5
	Source		86			68		
048	Load	12.0	53.6	41,000	14.3	104	57,000	4.6
	Source		86			68		
060	Load	13.5	53.6	45,000	12.9	104	66,000	4.5
	Source		86			68		
072	Load	17.0	53.6	60,000	12.6	104	84,000	4.3
	Source		86			68		
120	Load	24.0	53.6	91,500	13.4	104	126,500	4.4
	Source		86			68		
150	Load	30.0	53.6	118,500	12.9	104	167,500	4.7
	Source		86			68		
Ground Water								
036	Load	9.0	53.6	39,000	18.7	104	39,500	3.7
	Source		59			50		
048	Load	12.0	53.6	47,500	21.8	104	47,500	3.8
	Source		59			50		
060	Load	13.5	53.6	52,500	19.7	104	55,000	3.7
	Source		59			50		
072	Load	17.0	53.6	70,000	18.9	104	70,500	3.6
	Source		59			50		
120	Load	24.0	53.6	107,000	20.6	104	105,500	3.6
	Source		59			50		
150	Load	30.0	53.6	Outside the scope of AHRI/ASHRAE Standard 13256-2		104	Outside the scope of AHRI/ASHRAE Standard 13256-2	
	Source		59			50		
Ground Loop								
036	Load	9.0	53.6	32,500	13.0	104	31,200	2.9
	Source		77			32		
048	Load	12.0	53.6	40,000	15.3	104	37,500	3.0
	Source		77			32		
060	Load	13.5	53.6	44,000	13.8	104	43,500	2.9
	Source		77			32		
072	Load	17.0	53.6	58,500	13.3	104	56,000	2.9
	Source		77			32		
120	Load	24.0	53.6	89,500	14.4	104	83,500	2.9
	Source		77			32		
150	Load	30.0	53.6	116,500	13.8	104	110,500	3.1
	Source		77			32		

Note: Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves.
 Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves.
 Includes valves, bypass refrigeration circuit and check valve.

Legend:

Btuh = British Thermal Units per Hour
 COP = Coefficient of Performance
 GPM = Gallons per Minute

CFM = Airflow Rate, Cubic Feet per Minute
 EER = Energy Efficiency Ratio

Model WCA – Cooling Only Units & Model WHA – Heating Only Units

Rated in accordance with AHRI/ASHRAE/ISO Standard 13256-2.

Unit Size	GPM		Model WCA – Cooling Only Units			Model WHA – Heating Only Units		
			EWT °F	Total Cap. (Btuh)	EER (Btuh/Watt)	EWT °F	Total Cap. (Btuh)	COP
Water Loop								
036	Load	9.0	53.6	33,200	12.1	104	47,500	4.5
	Source		86			68		
048	Load	12.0	53.6	41,000	14.3	104	57,000	4.6
	Source		86			68		
060	Load	13.5	53.6	45,000	12.9	104	66,000	4.5
	Source		86			68		
072	Load	17.0	53.6	60,000	12.6	104	84,000	4.3
	Source		86			68		
120	Load	24.0	53.6	91,500	13.4	104	126,500	4.4
	Source		86			68		
150	Load	30.0	53.6	118,500	12.9	104	167,500	4.7
	Source		86			68		
Ground Water								
036	Load	9.0	53.6	39,000	18.7	104	39,500	3.7
	Source		59			50		
048	Load	12.0	53.6	47,500	21.8	104	47,500	3.8
	Source		59			50		
060	Load	13.5	53.6	52,500	19.7	104	55,000	3.7
	Source		59			50		
072	Load	17.0	53.6	70,000	18.9	104	70,500	3.6
	Source		59			50		
120	Load	24.0	53.6	107,000	20.6	104	105,500	3.6
	Source		59			50		
150	Load	30.0	53.6	Outside the scope of AHRI/ASHRAE Standard 13256-2		104	139,500	3.9
	Source		59			50		
Ground Loop								
036	Load	9.0	53.6	32,500	13.0	104	31,200	2.9
	Source		77			32		
048	Load	12.0	53.6	40,000	15.3	104	37,500	3.0
	Source		77			32		
060	Load	13.5	53.6	44,000	13.8	104	43,500	2.9
	Source		77			32		
072	Load	17.0	53.6	58,500	13.3	104	56,000	2.9
	Source		77			32		
120	Load	24.0	53.6	89,500	14.4	104	83,500	2.9
	Source		77			32		
150	Load	30.0	53.6	116,500	13.8	104	110,500	3.1
	Source		77			32		

Legend:

Btuh = British Thermal Units per Hour

CFM = Airflow Rate, Cubic Feet per Minute

COP = Coefficient of Performance

EER = Energy Efficiency Ratio

GPM = Gallons per Minute

Model WRA - Heating and Cooling Unit – 60Hz:

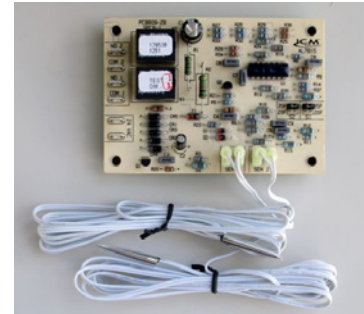
- Paint Finish meets or exceeds 1,000 hour Salt Spray Test per ASTM B117 97.
- 1/2" high-density fiberglass insulation for thermal and sound insulation.
- Service connections factory installed in compressor suction and discharge lines for ease of servicing.
- Bi-flow Thermal Expansion Valve (TXV) for precise metering of refrigerant flow under all expected operating conditions.
- High efficiency coaxial water-to-refrigerant coils, fully insulated with polyurethane foam to maximize performance while helping to prevent condensate build-up in unit base pan.
- High pressure and low pressure equipment protection built into the source side refrigeration circuit to guard against abnormal unit operation.
- Fully insulated refrigerant and water lines to help prevent condensation from collecting in the unit base.
- High efficiency scroll compressors
- 24-volt electromechanical control system.
- Phase/Voltage Monitor (3 phase only) – Monitors main power for low voltage, high voltage or phase loss.



- Threaded copper fittings outside the cabinet allow for load and source piping connection.
- Water flow switches (source and load sides) - suspends compressor operation until water flow is proven.

Accessories & Options:

- Temperature Control System (sizes 036 through 420) – Controls return water temperature and has a separate setpoint for heating and cooling (1–2 stages). Requires a field supplied signal for heat/cool changeover.
- Adjustable Freezestat for geothermal and boiler tower applications. Senses leaving water on the source side and will shut down the unit if below setpoint.



- Three Light Status Panel (sizes 120 through 420) – Compressor 1 “ON”, compressor 2 “ON” and “compressor fault” lights located outside unit.



- Source Side Coaxial Water Coil – Single wall cupro-nickel inner tube coaxial heat exchanger.
- Load Side Coaxial Water Coil – Single wall cupro-nickel inner tube coaxial heat exchanger.
- R-410A Refrigerant – No Ozone Depletion Potential with no phase out date.
- Heat Recovery Coil For Domestic Water Heating (models 036-072) – Special heat recovery (desuperheater) coil is piped into the compressor discharge line. Domestic water connections are 1/2" female pipe threads.



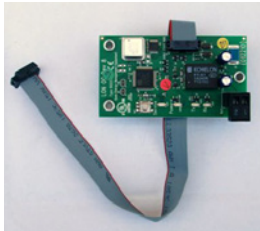
Optional Direct Digital or Electromechanical Controls

- Direct Digital Controller operates as a stand-alone controller or in conjunction with a Building Management System (BMS) via the BACnet®, Modbus, LONWORKS® and N2 protocols).

Figure 1: Direct Digital Controller



Figure 2: LONWORKS Card



- BACview6 Handheld can locally access controllers and operational properties or manage small facility with easy-to-use keypad/display.

Figure 3: BACview6 Handheld Keypad/Display



Note: When a LONWORKS card is used, it is required that at least one BACview6 Handheld be purchased, unless other means of communicating with the controller is used.

- Aquastat Temperature Control System
A microprocessor-based temperature control designed to provide on/off control for commercial heating, cooling, air conditioning and refrigeration applications. Its wide temperature range, one and two stage capability, selectable heating/cooling modes and multi-voltage input, makes it one of the most versatile temperature controls available.

Figure 4: Aquastat Temperature Control



Models WRA, WHA, WCA 036 – 420

Table 1: Electrical data

Unit Size	Voltage/Hz/Ph	Compressor			Total Unit FLA	Voltage Min./Max.	Minimum Circuit Ampacity	Maximum Fuse or HACR Breaker
		Quantity	RLA	LRA				
036	208-230/60/1	1	16.7	79.0	16.7	197/253	20.9	35
	208-230/60/3		10.4	73.0	10.4	187/253	13.0	20
	460/60/3		5.8	38.0	5.8	414/506	7.3	15
	575/60/3		3.8	36.5	3.8	517/632	4.8	15
048	208-230/60/1	1	19.9	109.0	19.9	197/253	24.9	40
	208-230/60/3		13.6	83.1	13.6	187/253	17.0	30
	460/60/3		6.1	41.0	6.1	414/506	7.6	15
	575/60/3		4.2	33.0	4.2	517/632	5.3	15
060	208-230/60/1	1	21.4	135.0	21.4	197/253	26.8	45
	208-230/60/3		14.5	98.0	14.5	187/253	18.1	30
	460/60/3		6.3	55.0	6.3	414/506	7.9	15
	575/60/3		6.0	41.0	6.0	517/632	7.5	15
072	208-230/60/3	1	19.2	136.0	19.2	187/253	24.0	40
	460/60/3		8.7	66.0	8.7	414/506	10.8	15
	575/60/3		6.8	55.3	6.8	517/632	8.5	15
120	208-230/60/3	2	14.5	98.0	29.0	187/253	32.6	45
	460/60/3		6.3	55.0	12.6	414/506	14.2	20
	575/60/3		6.0	41.0	12.0	517/632	13.5	15
150	208-230/60/3	2	19.2	136.0	38.4	187/253	43.2	60
	460/60/3		8.7	66.0	17.4	414/506	19.5	25
	575/60/3		6.9	55.0	13.8	517/632	15.5	20
180	208-230/60/3	2	25.0	164.0	50.0	187/253	56.3	80
	460/60/3		12.1	100.0	24.2	414/506	27.2	35
	575/60/3		8.9	78.0	17.8	517/632	20.0	25
240	208-230/60/3	2	30.1	225.0	60.2	187/253	67.7	90
	460/60/3		16.6	114.0	33.2	414/506	37.4	50
	575/60/3		12.1	80.0	24.2	517/632	27.2	35
300	208-230/60/3	2	33.3	239.0	66.6	187/253	74.9	100
	460/60/3		17.9	125.0	35.8	414/506	40.3	50
	575/60/3		12.8	80.0	25.6	517/632	28.8	40
360	208-230/60/3	2	51.2	300.0	102.4	187/253	115.2	150
	460/60/3		23.0	150.0	46.0	414/506	51.8	70
	575/60/3		19.8	109.0	39.6	517/632	44.6	60
420	208-230/60/3	2	55.7	340.0	111.4	187/253	125.3	175
	460/60/3		26.9	173.0	53.8	414/506	60.5	80
	575/60/3		23.7	132.0	47.4	517/632	53.3	70

Legend:
FLA = Full Load Amps

HACR = Heating, Air Conditioning and Refrigeration Breaker

LRA = Lock Rotor Amps

RLA = Rated Load Amps

WRA, WCA 036 – Cooling

Source			ELT °F	Load Flow 4.5 GPM							Load Flow 6.75 GPM							Load Flow 9.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	4.5	1.3	50	36.8	29.8	1.30	34.3	22.9	1.3	55.2	40.5	32.0	1.34	36.6	24.0	2.7	56.2	42.7	33.0	1.36	37.6	24.2	4.5	56.7
		1.3	60	44.8	34.2	1.35	38.8	25.3	1.3	57.3	49.1	36.8	1.38	41.5	26.8	2.6	58.4	51.4	38.5	1.40	43.3	27.5	4.3	59.2
		1.3	70	52.7	39.0	1.38	43.7	28.3	1.2	59.4	57.6	42.0	1.41	46.8	29.8	2.5	60.8	60.2	44.0	1.44	48.9	30.6	4.2	61.7
		1.3	80	60.4	44.0	1.42	48.8	31.1	1.2	61.7	65.9	47.5	1.46	52.5	32.6	2.5	63.3	68.9	50.0	1.49	55.1	33.5	4.1	64.5
	6.75	1.3	90	68.2	49.0	1.46	54.0	33.5	1.2	64.0	74.1	53.5	1.52	58.7	35.3	2.4	66.1	77.6	56.0	1.56	61.3	35.9	4.0	67.3
		2.7	50	36.5	30.4	1.22	34.6	24.9	1.3	50.2	40.3	32.8	1.25	37.0	26.3	2.7	51.0	42.4	34.0	1.27	38.3	26.8	4.5	51.4
		2.7	60	44.4	35.0	1.25	39.3	27.9	1.3	51.6	48.8	37.8	1.27	42.1	29.9	2.6	52.5	51.2	39.5	1.28	43.9	30.8	4.3	53.0
		2.7	70	52.2	40.0	1.27	44.3	31.6	1.2	53.1	57.1	43.5	1.28	47.9	33.9	2.5	54.2	59.9	45.5	1.30	49.9	34.9	4.2	54.8
	9.0	2.7	80	60.0	45.0	1.28	49.4	35.1	1.2	54.6	65.5	49.0	1.31	53.5	37.5	2.5	55.8	68.7	51.0	1.33	55.6	38.2	4.1	56.5
		2.7	90	67.6	50.5	1.31	55.0	38.6	1.2	56.3	73.7	55.0	1.35	59.6	40.9	2.4	57.7	77.2	57.5	1.38	62.2	41.8	4.0	58.4
		4.5	50	36.3	30.8	1.18	34.8	26.0	1.3	47.7	40.2	33.2	1.21	37.3	27.5	2.7	48.3	42.4	34.4	1.23	38.6	28.0	4.5	48.6
		4.5	60	44.3	35.4	1.21	39.5	29.2	1.3	48.8	48.6	38.5	1.22	42.7	31.6	2.6	49.5	51.1	40.0	1.23	44.2	32.5	4.3	49.8
50	4.5	4.5	70	52.0	40.5	1.21	44.6	33.4	1.2	49.9	57.0	44.0	1.22	48.2	36.0	2.5	50.7	59.8	46.0	1.24	50.2	37.1	4.2	51.2
		4.5	80	59.8	45.5	1.22	49.7	37.3	1.2	51.0	65.2	50.0	1.24	54.2	40.4	2.5	52.1	68.4	52.0	1.26	56.3	41.3	4.1	52.5
		4.5	90	67.3	51.0	1.24	55.2	41.3	1.2	52.3	73.4	56.0	1.26	60.3	44.4	2.4	53.4	77.0	58.5	1.29	62.9	45.4	4.0	54.0
		1.3	50	37.2	28.8	1.48	33.8	19.5	1.3	65.0	40.9	30.8	1.51	35.9	20.4	2.7	66.0	43.0	31.6	1.53	36.8	20.6	4.5	66.4
	6.75	1.3	60	45.3	33.0	1.53	38.2	21.6	1.3	67.0	49.6	35.2	1.55	40.5	22.7	2.6	68.0	51.9	36.6	1.57	42.0	23.3	4.3	68.7
		1.2	70	53.3	37.6	1.56	42.9	24.2	1.2	69.1	58.0	40.5	1.59	45.9	25.5	2.5	70.4	60.6	42.5	1.62	48.0	26.3	4.2	71.3
		1.2	80	61.1	42.5	1.60	47.9	26.6	1.2	71.3	66.4	46.0	1.64	51.6	28.1	2.5	72.9	69.3	48.0	1.67	53.7	28.7	4.1	73.9
		1.2	90	68.9	47.5	1.65	53.1	28.9	1.2	73.6	74.7	51.5	1.70	57.3	30.3	2.4	75.5	78.0	54.0	1.74	60.0	31.0	4.0	76.6
	9.0	2.6	50	36.9	29.4	1.40	34.2	21.1	1.3	60.1	40.7	31.4	1.42	36.2	22.1	2.7	60.7	42.8	32.4	1.44	37.3	22.4	4.5	61.1
		2.6	60	45.1	33.6	1.43	38.5	23.5	1.3	61.4	49.3	36.2	1.45	41.1	25.0	2.6	62.2	51.6	38.0	1.46	43.0	26.0	4.3	62.7
		2.6	70	52.9	38.5	1.45	43.4	26.6	1.2	62.9	57.6	42.0	1.47	47.0	28.7	2.5	63.9	60.3	43.5	1.49	48.6	29.3	4.2	64.4
		2.6	80	60.7	43.5	1.47	48.5	29.7	1.2	64.4	65.9	47.5	1.49	52.6	31.8	2.5	65.6	69.0	49.5	1.52	54.7	32.5	4.1	66.2
70	4.5	2.6	90	68.2	49.0	1.50	54.1	32.7	1.2	66.0	74.1	53.5	1.54	58.7	34.8	2.4	67.4	77.6	56.0	1.57	61.4	35.7	4.0	68.2
		4.4	50	38.8	29.6	1.36	34.3	21.7	1.3	57.6	40.6	31.8	1.39	36.5	22.9	2.7	58.1	42.7	32.8	1.41	37.6	23.3	4.5	58.4
		4.3	60	44.9	34.0	1.39	38.8	24.4	1.3	58.6	49.1	36.8	1.40	41.6	26.3	2.6	59.2	51.4	38.5	1.42	43.3	27.2	4.3	59.6
		4.3	70	52.7	39.0	1.40	43.8	27.9	1.2	59.7	57.4	42.5	1.41	47.3	30.1	2.5	60.5	60.1	44.5	1.43	49.4	31.1	4.2	61.0
	6.75	4.3	80	60.4	44.0	1.41	48.8	31.2	1.2	60.8	65.8	48.0	1.43	52.9	33.6	2.5	61.8	68.9	50.0	1.45	55.0	34.4	4.1	62.2
		4.3	90	68.0	49.5	1.43	54.4	34.7	1.2	62.1	74.0	54.0	1.46	59.0	37.0	2.4	63.1	77.3	57.0	1.49	62.1	38.3	4.0	63.8
		1.2	50	38.4	26.2	1.86	32.5	14.1	1.3	84.5	41.8	27.6	1.89	34.0	14.6	2.7	85.1	43.6	28.6	1.91	35.1	15.0	4.5	85.6
		1.2	60	46.6	30.2	1.91	36.7	15.8	1.3	86.3	50.4	32.4	1.94	39.0	16.7	2.6	87.3	52.5	33.6	1.96	40.3	17.2	4.3	87.9
	9.0	1.2	70	54.6	34.6	1.94	41.2	17.8	1.2	88.3	58.9	37.4	1.97	44.1	18.9	2.5	89.6	61.3	39.0	2.00	45.8	19.5	4.2	90.4
		1.2	80	62.4	39.5	1.99	46.3	19.9	1.2	90.6	67.4	42.5	2.03	49.4	21.0	2.5	92.0	70.1	44.5	2.06	51.5	21.6	4.1	92.9
		1.2	90	70.2	44.5	2.04	51.5	21.8	1.2	92.9	75.8	48.0	2.10	55.2	22.9	2.4	94.5	78.9	50.0	2.14	57.3	23.3	4.0	95.5
		2.4	50	38.1	26.8	1.78	32.9	15.1	1.3	79.7	41.5	28.6	1.80	34.8	15.9	2.7	80.3	43.4	29.6	1.83	35.8	16.2	4.5	80.6
80	4.5	2.4	60	46.3	30.8	1.82	37.0	16.9	1.3	81.0	50.2	33.2	1.83	39.5	18.1	2.6	81.7	52.3	34.6	1.85	40.9	18.7	4.3	82.1
		2.4	70	54.2	35.6	1.83	41.9	19.4	1.2	82.4	58.6	38.5	1.85	44.8	20.8	2.5	83.3	61.1	40.0	1.88	46.4	21.3	4.2	83.7
		2.4	80	62.0	40.5	1.86	46.8	21.8	1.2	83.9	67.0	44.0	1.89	50.4	23.3	2.5	84.9	69.8	46.0	1.92	52.5	24.0	4.1	85.6
		2.4	90	69.8	45.5	1.89	52.0	24.0	1.2	85.4	75.3	49.5	1.94	56.1	25.6	2.4	86.6	78.4	52.0	1.97	58.7	26.4	4.0	87.4
	6.75	4.1	50	38.0	27.0	1.75	33.0	15.5	1.3	77.3	41.4	29.0	1.77	35.0	16.4	2.7	77.8	43.3	30.0	1.79	36.1	16.8	4.5	78.0
		4.1	60	46.1	31.2	1.78	37.3	17.5	1.3	78.3	50.0	33.8	1.79	39.9	18.9	2.6	78.9	52.2	35.2	1.80	41.4	19.5	4.3	79.2
		4.1	70	54.0	36.0	1.79	42.1	20.2	1.2	79.4	58.4	39.0	1.80	45.1	21.7	2.5	80.0	61.0	40.5	1.82	46.7	22.3	4.2	80.4
		4.1	80	61.8	41.0	1.80	47.1	22.8	1.2	80.5	66.8	44.5	1.83	50.7	24.4	2.5	81.3	69.7	46.5	1.85	52.8	25.1	4.1	81.7
	9.0	4.0	90	69.6	46.0	1.83	52.2	25.2	1.2	81.6	75.0	50.5	1.86	56.9	27.1	2.4	82.6	78.3	52.5	1.90	59.0	27.7	4.0	83.1
		1.1	50	39.0	24.8	2.08	31.9	11.9	1.3	94.2	42.2	26.4	2.11	33.6	12.5	2.7	94.9	44.0	27.0	2.13	34.3	12.7	4.5	95.2
		1.1	60	47.2	28.8	2.14	36.1	13.5	1.3	96.0	50.9	30.8	2.16	38.2	14.3	2.6	97.0	52.9	32.0	2.18	39.4	14.7	4.3	97.5
		1.1	70	55.2	33.2	2.17	40.6	15.3	1.2	98.0	59.5	35.6	2.20	43.1	16.2	2.5	99.2	61.7	37.2	2.22	44.8	16.7	4.2	99.9
90	4.5	1.1	80	63.2	37.8	2.21	45.3	17.1	1.2	100.2	67.9	41.0	2.25	48.7	18.2	2.4	101.6	70.6	42.5	2.29	50.3	18.6	4.1	102.4
		1.1	90	71.1	42.5	2.27	50.2	18.7	1.2	102.3	76.4	46.0	2.32	53.9	19.8	2.4	104.0	79.3	48.0	2.37	56.1	20.3	3.9	104.9
		2.4	50	38.7	25.4	2.00	32.2	12.7	1.3	89.5	42.0	27.0	2.02	33.9	13.4	2.7	90.0	43.8	28.0	2.05	35.0	13.7	4.5	90.4
		2.4	60	46.9	29.4	2.04	36.3	14.4	1.3	90.8	50.6	31.6	2.05	38.6	15.4	2.6	91.4	52.8	32.6	2.07	39.7	15.8	4.3	91.8
	6.75	2.4	70	54.9	34.0	2.05	41.0	16.6	1.2	92.1	59.1	36.8	2.07	43.9	17.8	2.5	93.0	61.4	38.5	2.09	45.6	18.4	4.2	93.5
		2.4	80	62.7	39.0	2.08	46.1	18.8	1.2	93.7	67.6	42.0	2.11	49.2	19.9	2.5	94.6	70.2	44.0	2.13	51.3	20.6	4.1	95.2
		2.3	90	70.4	44.0	2.11	51.2	20.8	1.2	95.2	75.9	47.5	2.16	54.9	22.0	2.4	96.3	79.0	49.5	2.19	57.0	22.6	4.0	96.9
		4.0	50	38.6	25.6	1.96	32.3	13.0	1.3	87.2	41.9	27.2	1.98	34.0	13.7	2.7	87.5	43.7	28.4	2.01				

WRA, WCA 036 – Cooling (continued)

Source			ELT °F	Load Flow 4.5 GPM							Load Flow 6.75 GPM							Load Flow 9.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	4.5	1.1	50	40.8	20.6	2.97	30.7	6.9	1.3	123.7	43.5	21.8	2.98	32.0	7.3	2.7	124.2	44.9	22.8	3.00	33.0	7.6	4.5	124.7
		1.1	60	49.2	24.4	2.99	34.6	8.2	1.3	125.4	52.3	26.0	3.01	36.3	8.6	2.6	126.1	54.0	26.8	3.03	37.1	8.8	4.3	126.5
		1.1	70	57.4	28.4	3.02	38.7	9.4	1.2	127.2	61.0	30.4	3.05	40.8	10.0	2.5	128.1	63.0	31.6	3.08	42.1	10.2	4.2	128.7
		1.1	80	65.5	32.6	3.07	43.1	10.6	1.2	129.2	69.6	35.2	3.11	45.8	11.3	2.4	130.4	72.0	36.2	3.14	46.9	11.5	4.1	130.9
	1.1	90	73.6	37.0	3.13	47.7	11.8	1.2	131.2	78.3	39.5	3.18	50.4	12.4	2.4	132.4	80.9	41.0	3.22	52.0	12.7	3.9	133.1	
	6.75	2.2	50	40.7	21.0	2.87	30.8	7.3	1.3	119.1	43.4	22.4	2.88	32.2	7.8	2.7	119.5	44.9	23.0	2.89	32.9	8.0	4.5	119.7
		2.2	60	48.9	25.0	2.87	34.8	8.7	1.3	120.3	52.1	26.6	2.89	36.5	9.2	2.6	120.8	53.9	27.6	2.91	37.5	9.5	4.3	121.1
		2.2	70	57.1	29.0	2.89	38.9	10.0	1.2	121.5	60.8	31.2	2.91	41.1	10.7	2.5	122.2	62.8	32.4	2.93	42.4	11.1	4.2	122.6
		2.2	80	65.1	33.6	2.91	43.5	11.5	1.2	122.9	69.3	36.2	2.94	46.2	12.3	2.4	123.7	71.7	37.4	2.96	47.5	12.6	4.1	124.1
	2.2	90	73.1	38.0	2.95	48.1	12.9	1.2	124.2	77.9	41.0	2.98	51.2	13.7	2.4	125.2	80.4	43.0	3.02	53.3	14.2	3.9	125.8	
	9.0	3.7	50	40.6	21.2	2.83	30.9	7.5	1.3	116.9	43.3	22.6	2.84	32.3	8.0	2.7	117.2	44.8	23.4	2.85	33.1	8.2	4.5	117.4
		3.7	60	48.8	25.2	2.83	34.8	8.9	1.3	117.7	52.0	27.0	2.83	36.7	9.5	2.6	118.1	53.8	28.0	2.85	37.7	9.8	4.3	118.4
		3.6	70	56.9	29.4	2.83	39.1	10.4	1.2	118.7	60.6	31.6	2.84	41.3	11.1	2.5	119.2	62.7	32.8	2.86	42.6	11.5	4.2	119.5
		3.6	80	64.9	34.0	2.84	43.7	12.0	1.2	119.7	69.1	36.8	2.86	46.6	12.9	2.4	120.3	71.6	38.0	2.88	47.8	13.2	4.1	120.6
	3.6	90	72.9	38.5	2.86	48.3	13.4	1.2	120.7	77.6	42.0	2.90	51.9	14.5	2.4	121.5	80.3	43.5	2.93	53.5	14.9	3.9	121.9	
	120	4.5	1.0	50	41.3	19.5	3.32	30.8	5.9	1.3	133.7	43.9	20.6	3.35	32.0	6.2	2.7	134.2	45.4	20.8	3.36	32.3	6.2	4.5
1.0			60	49.8	23.0	3.35	34.4	6.9	1.3	135.3	52.7	24.6	3.36	36.1	7.3	2.6	136.0	54.4	25.4	3.39	37.0	7.5	4.3	136.4
1.0			70	58.1	26.8	3.38	38.3	7.9	1.2	137.0	61.4	29.0	3.41	40.6	8.5	2.5	138.1	63.4	29.6	3.43	41.3	8.6	4.2	138.4
1.0			80	66.3	30.8	3.42	42.5	9.0	1.2	138.9	70.2	33.0	3.46	44.8	9.5	2.4	139.9	72.4	34.2	3.49	46.1	9.8	4.0	140.5
1.0		90	74.4	35.2	3.49	47.1	10.1	1.2	140.9	78.9	37.6	3.54	49.7	10.6	2.4	142.1	81.3	39.0	3.58	51.2	10.9	3.9	142.8	
6.75		2.1	50	42.0	18.0	3.25	29.1	5.5	1.3	128.6	44.1	20.0	3.25	31.1	6.2	2.7	129.2	45.2	21.6	3.25	32.7	6.6	4.5	129.7
		2.1	60	49.6	23.4	3.23	34.4	7.2	1.3	130.2	52.6	25.0	3.24	36.1	7.7	2.6	130.7	54.3	25.8	3.26	36.9	7.9	4.3	130.9
		2.1	70	57.8	27.4	3.24	38.5	8.5	1.2	131.4	61.3	29.4	3.26	40.5	9.0	2.5	132.0	63.2	30.6	3.28	41.8	9.3	4.2	132.4
		2.1	80	66.0	31.6	3.27	42.7	9.7	1.2	132.7	69.9	34.0	3.29	45.2	10.3	2.4	133.4	72.2	35.2	3.32	46.5	10.6	4.1	133.8
2.1		90	74.0	36.0	3.30	47.3	10.9	1.2	134.0	78.4	39.0	3.34	50.4	11.7	2.4	134.9	81.0	40.5	3.37	52.0	12.0	3.9	135.4	
9.0		3.6	50	42.1	17.8	3.21	28.8	5.5	1.3	126.4	43.8	21.0	3.19	31.9	6.6	2.7	127.1	45.1	22.0	3.21	32.9	6.9	4.5	127.3
		3.6	60	49.5	23.6	3.18	34.4	7.4	1.3	127.7	52.5	25.4	3.19	36.3	8.0	2.6	128.1	54.2	26.2	3.20	37.1	8.2	4.3	128.2
		3.6	70	57.6	27.8	3.18	38.7	8.7	1.2	128.6	61.2	29.8	3.19	40.7	9.3	2.5	129.0	63.1	31.0	3.21	42.0	9.6	4.2	129.3
		3.6	80	65.8	32.0	3.20	42.9	10.0	1.2	129.5	69.8	34.4	3.22	45.4	10.7	2.4	130.1	72.0	35.8	3.24	46.8	11.1	4.1	130.4
3.6		90	73.7	36.6	3.22	47.6	11.4	1.2	130.6	78.3	39.5	3.25	50.6	12.2	2.4	131.2	80.9	41.0	3.28	52.2	12.5	3.9	131.6	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio

ELT - Entering Load Temperature LLT - Leaving Load Temperature

TC - Total Cooling kW - Kilowatts

HR - Heat Rejected WPD - Water Pressure Drop

LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 036 – Heating

Source			ELT °F	Load Flow 4.5 GPM								Load Flow 6.75 GPM								Load Flow 9.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F			
30	4.5	1.4	60	70.4	23.4	1.55	18.1	4.4	1.2	21.9	67.0	23.6	1.50	18.5	4.6	2.5	21.8	65.3	23.8	1.48	18.7	4.7	4.2	21.7			
		1.4	80	90.0	22.4	1.96	15.7	3.3	1.2	23.0	86.6	22.4	1.91	15.9	3.4	2.4	22.9	85.1	22.8	1.89	16.3	3.5	4.0	22.7			
		1.4	100	109.6	21.6	2.52	13.0	2.5	1.1	24.2	106.3	21.4	2.46	13.0	2.5	2.3	24.2	104.8	21.8	2.43	13.5	2.6	3.8	24.0			
		1.4	120	129.3	21.0	3.25	9.9	1.9	1	25.6	126.2	20.9	3.21	10.0	1.9	2.2	25.6	124.6	20.6	3.13	9.9	1.9	3.6	25.6			
	6.75	2.9	60	70.9	24.6	1.57	19.2	4.6	1.2	24.3	67.3	24.8	1.52	19.6	4.8	2.5	24.2	66.6	25.0	1.50	19.9	4.9	4.2	24.1			
		2.9	80	90.4	23.4	1.98	16.6	3.5	1.2	25.1	87.0	23.6	1.92	17.0	3.6	2.4	25.0	85.2	23.6	1.91	17.1	3.6	4.0	24.9			
		2.9	100	109.9	22.2	2.53	13.6	2.6	1.1	26.0	106.6	22.4	2.46	14.0	2.7	2.3	25.9	105.0	22.4	2.45	14.0	2.7	3.8	25.8			
		2.9	120	129.7	21.8	3.28	10.6	1.9	1	26.9	126.5	21.8	3.21	10.9	2.0	2.1	26.8	124.8	21.4	3.14	10.7	2.0	3.6	26.8			
	9.0	4.8	60	71.2	25.2	1.59	19.8	4.6	1.2	25.6	67.6	25.6	1.54	20.4	4.9	2.5	25.5	65.7	25.8	1.52	20.6	5.0	4.2	25.4			
		4.8	80	90.6	23.8	2.00	17.0	3.5	1.2	26.2	87.1	24.0	1.94	17.4	3.6	2.4	26.1	85.4	24.2	1.92	17.6	3.7	4.0	26.1			
		4.8	100	110.0	22.6	2.56	13.9	2.6	1.1	26.9	106.8	23.0	2.49	14.5	2.7	2.3	26.8	105.1	22.8	2.46	14.4	2.7	3.8	26.8			
		4.8	120	129.9	22.2	3.29	11.0	2.0	1	27.6	126.6	22.2	3.22	11.2	2.0	2.1	27.5	125.0	22.3	3.21	11.4	2.0	3.6	27.5			
40	4.5	1.4	60	72.0	27.0	1.59	21.6	5.0	1.2	30.4	68.1	27.2	1.53	22.0	5.2	2.5	30.2	66.1	27.4	1.50	22.3	5.3	4.2	30.1			
		1.4	80	91.4	25.6	2.00	18.8	3.8	1.2	31.7	87.6	25.8	1.93	19.2	3.9	2.4	31.5	85.8	26.0	1.91	19.5	4.0	4.0	31.3			
		1.4	100	110.9	24.6	2.55	15.9	2.8	1.1	32.9	107.3	24.8	2.47	16.4	2.9	2.3	32.7	105.6	25.0	2.44	16.7	3.0	3.8	32.6			
		1.4	120	130.8	24.2	3.29	13.0	2.2	1	34.2	126.9	23.4	3.22	12.4	2.1	2.1	34.5	125.3	23.8	3.18	12.9	2.2	3.6	34.2			
	6.75	2.8	60	72.6	28.4	1.61	22.9	5.2	1.2	33.2	68.5	28.8	1.55	23.5	5.5	2.5	33.0	66.4	28.6	1.52	23.4	5.5	4.2	33.1			
		2.8	80	92.0	27.0	2.02	20.1	3.9	1.2	34.0	88.1	27.2	1.95	20.5	4.1	2.4	33.9	86.1	27.4	1.93	20.8	4.2	4.0	33.8			
		2.8	100	111.4	25.6	2.59	16.8	2.9	1.1	35.0	107.6	25.8	2.49	17.3	3.0	2.3	34.9	105.8	26.0	2.46	17.6	3.1	3.8	34.8			
		2.8	120	131.2	25.2	3.29	14.0	2.2	1	35.9	127.3	24.8	3.23	13.8	2.2	2.1	35.9	125.6	25.0	3.18	14.1	2.3	3.6	35.8			
	9.0	4.6	60	73.0	29.2	1.63	23.6	5.2	1.2	34.8	68.8	29.6	1.57	24.3	5.5	2.5	34.6	66.6	29.8	1.54	24.5	5.7	4.2	34.5			
		4.6	80	92.3	27.6	2.05	20.6	4.0	1.2	35.4	88.3	28.0	1.97	21.3	4.2	2.4	35.3	86.3	28.2	1.95	21.6	4.2	4.0	35.2			
		4.6	100	111.7	26.4	2.59	17.6	3.0	1.1	36.1	107.8	26.4	2.51	17.8	3.1	2.3	36.0	106.0	26.8	2.47	18.4	3.2	3.8	35.9			
		4.6	120	131.4	25.6	3.31	14.3	2.3	1	36.8	127.6	25.6	3.24	14.5	2.3	2.1	36.8	125.7	25.6	3.19	14.7	2.3	3.6	36.7			
50	4.5	1.3	60	73.7	30.8	1.63	25.2	5.5	1.2	38.8	69.2	31.2	1.56	25.9	5.9	2.5	38.5	67.0	31.4	1.53	26.2	6.0	4.2	38.4			
		1.3	80	93.1	29.4	2.04	22.4	4.2	1.2	40.0	88.8	29.6	1.96	22.9	4.4	2.4	39.8	86.6	29.8	1.93	23.2	4.5	4.0	39.7			
		1.3	100	112.5	28.2	2.59	19.4	3.2	1.1	41.4	108.4	28.4	2.50	19.9	3.3	2.3	41.2	106.4	28.6	2.46	20.2	3.4	3.8	41.0			
		1.3	120	132.4	27.8	3.29	16.6	2.5	1	42.6	127.8	26.2	3.23	15.2	2.4	2.1	43.3	126.2	28.0	3.16	17.2	2.6	3.6	42.3			
	6.75	2.7	60	74.5	32.6	1.66	26.9	5.8	1.2	42.0	69.8	33.0	1.58	27.6	6.1	2.5	41.8	67.4	33.2	1.55	27.9	6.3	4.2	41.7			
		2.7	80	93.9	31.2	2.08	24.1	4.4	1.1	42.9	89.3	31.4	1.99	24.6	4.6	2.4	42.7	87.0	31.6	1.95	24.9	4.7	4.0	42.6			
		2.7	100	113.3	30.0	2.62	21.1	3.4	1.1	43.8	108.9	30.2	2.52	21.6	3.5	2.2	43.6	106.7	30.0	2.48	21.5	3.5	3.8	43.6			
		2.7	120	132.7	28.6	3.31	17.3	2.5	1	44.9	128.6	29.0	3.21	18.0	2.6	2.1	44.7	126.4	29.0	3.17	18.2	2.7	3.6	44.6			
	9.0	4.5	60	74.9	33.6	1.68	27.9	5.8	1.2	43.8	70.1	34.2	1.60	28.7	6.3	2.5	43.6	67.6	34.4	1.57	29.0	6.4	4.2	43.5			
		4.5	80	94.2	32.0	2.10	24.8	4.5	1.1	44.5	89.5	32.2	2.01	25.3	4.7	2.4	44.4	87.2	32.6	1.98	25.9	4.8	4.0	44.3			
		4.5	100	113.5	30.4	2.64	21.4	3.4	1.1	45.2	109.1	30.6	2.54	21.9	3.5	2.2	45.1	106.9	31.0	2.50	22.5	3.6	3.8	45.0			
		4.5	120	133.0	29.2	3.34	17.8	2.6	1	46.0	128.7	29.4	3.22	18.4	2.7	2.1	45.9	126.5	29.2	3.18	18.3	2.7	3.6	45.9			

WRA, WHA 036 – Heating (continued)

Source			Load Flow 4.5 GPM								Load Flow 6.75 GPM						Load Flow 9.0 GPM								
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	
60	4.5	1.3	60	75.6	35.0	1.68	29.3	6.1	1.2	47.0	70.5	35.4	1.59	30.0	6.5	2.5	46.7	67.9	35.6	1.56	30.3	6.7	4.2	46.5	
		1.3	80	94.8	33.4	2.10	26.2	4.7	1.1	48.3	90.0	33.8	2.00	27.0	4.9	2.4	48.0	87.6	34.0	1.97	27.3	5.1	4.0	47.9	
		1.3	100	114.3	32.2	2.63	23.2	3.6	1.1	49.7	109.6	32.4	2.53	23.8	3.7	2.2	49.4	107.2	32.4	2.49	23.9	3.8	3.8	49.4	
		1.3	120	133.9	31.2	3.26	20.1	2.8	1	51.1	129.2	31.0	3.15	20.3	2.9	2.1	51.0	127.0	31.6	3.14	20.9	3.0	3.6	50.7	
	6.75	2.6	60	76.5	37.2	1.71	31.4	6.4	1.2	50.7	71.2	37.8	1.62	32.3	6.8	2.5	50.4	68.4	38.0	1.58	32.6	7.0	4.2	42	50.3
		2.6	80	95.6	35.2	2.13	27.9	4.8	1.1	51.7	90.6	35.8	2.03	28.9	5.2	2.4	51.4	88.0	36.0	1.99	29.2	5.3	4.0	40	51.3
		2.6	100	115.0	33.8	2.65	24.8	3.7	1.1	52.7	110.2	34.4	2.55	25.7	4.0	2.2	52.4	107.6	34.4	2.50	25.9	4.0	3.7	37	52.3
		2.6	120	134.5	32.6	3.33	21.2	2.9	1	53.7	129.8	33.0	3.21	22.1	3.0	2.1	53.5	127.3	32.8	3.16	22.0	3.0	3.6	36	53.5
	9.0	4.3	60	77.1	38.5	1.73	32.6	6.5	1.2	52.8	71.6	39.0	1.63	33.4	7.0	2.5	52.6	68.8	39.5	1.59	34.1	7.3	4.2	42	52.4
		4.3	80	96.3	36.6	2.15	29.3	5.0	1.1	53.5	91.0	37.0	2.05	30.0	5.3	2.4	53.3	88.3	37.4	2.00	30.6	5.5	4.0	40	53.2
		4.3	100	115.5	34.8	2.67	25.7	3.8	1.1	54.3	110.4	35.2	2.56	26.5	4.0	2.2	54.1	107.9	35.4	2.52	26.8	4.1	3.7	37	54.0
		4.3	120	134.4	32.4	3.35	21.0	2.8	1	55.3	129.7	32.8	3.22	21.8	3.0	2.1	55.2	127.3	33.0	3.17	22.2	3.0	3.6	36	55.1
70	4.5	1.2	60	77.6	39.5	1.72	33.6	6.7	1.2	55.0	71.9	40.0	1.62	34.5	7.3	2.5	54.7	68.9	40.0	1.58	34.6	7.4	4.2	42	54.6
		1.2	80	96.8	37.8	2.14	30.5	5.2	1.1	56.4	91.3	38.0	2.03	31.1	5.5	2.4	56.2	88.6	38.5	1.98	31.7	5.7	4.0	40	55.9
		1.2	100	116.3	36.2	2.66	27.1	4.0	1.1	58.0	110.8	36.6	2.55	27.9	4.2	2.2	57.6	108.2	36.8	2.50	28.3	4.3	3.7	37	57.4
		1.2	120	135.6	35.2	3.34	23.8	3.1	1	59.4	130.5	35.4	3.20	24.5	3.2	2.1	59.1	127.9	35.4	3.15	24.7	3.3	3.6	36	59.0
	6.75	2.5	60	78.9	42.5	1.74	36.6	7.1	1.2	59.2	72.7	43.0	1.63	37.4	7.7	2.5	58.9	69.7	43.5	1.59	38.1	8.0	4.2	42	58.7
		2.5	80	97.8	40.0	2.16	32.6	5.4	1.1	60.3	92.1	41.0	2.05	34.0	5.9	2.4	59.9	89.1	41.0	2.00	34.2	6.0	4.0	40	59.9
		2.5	100	116.9	38.0	2.69	28.8	4.1	1.1	61.5	111.4	38.5	2.56	29.8	4.4	2.2	61.2	108.7	39.0	2.51	30.4	4.6	3.7	37	61.0
		2.5	120	136.4	37.0	3.35	25.6	3.2	1	62.4	130.8	36.6	3.22	25.6	3.3	2.1	62.4	128.3	37.2	3.16	26.4	3.4	3.6	36	62.2
	9.0	4.2	60	79.6	44.0	1.77	38.0	7.3	1.2	61.6	73.2	44.5	1.65	38.9	7.9	2.5	61.4	70.0	45.0	1.60	39.5	8.2	4.2	42	61.2
		4.2	80	98.4	41.5	2.19	34.0	5.6	1.1	62.4	92.6	42.5	2.07	35.4	6.0	2.4	62.1	89.4	42.5	2.01	35.6	6.2	4.0	40	62.1
		4.2	100	117.6	39.5	2.71	30.2	4.3	1.1	63.3	111.7	39.5	2.58	30.7	4.5	2.2	63.2	109.0	40.5	2.52	31.9	4.7	3.7	37	62.9
		4.2	120	136.9	38.0	3.38	26.5	3.3	1	64.1	131.3	38.0	3.23	27.0	3.4	2.1	64.0	128.6	38.5	3.18	27.7	3.6	3.6	36	63.9
80	4.5	1.2	60	79.8	44.5	1.75	38.5	7.4	1.2	62.9	73.3	45.0	1.64	39.4	8.1	2.5	62.5	70.1	45.5	1.58	40.1	8.4	4.2	42	62.2
		1.2	80	98.9	42.5	2.17	35.1	5.7	1.1	64.4	92.7	43.0	2.05	36.0	6.1	2.4	64.0	89.7	43.5	2.00	36.7	6.4	3.9	39	63.7
		1.2	100	118.0	40.5	2.71	31.3	4.4	1.1	66.1	112.1	41.0	2.57	32.2	4.7	2.2	65.7	109.2	41.5	2.51	33.0	4.9	3.7	37	65.4
		1.2	120	137.8	40.0	3.38	28.5	3.5	1	67.3	131.9	40.0	3.23	29.0	3.6	2.1	67.1	128.8	39.5	3.16	28.7	3.7	3.6	36	67.2
	6.75	2.5	60	81.1	47.5	1.79	41.4	7.8	1.2	67.7	74.4	48.5	1.66	42.8	8.6	2.5	67.3	70.9	49.0	1.60	43.5	9.0	4.2	42	67.1
		2.4	80	100.2	45.5	2.21	38.0	6.0	1.1	68.8	93.6	46.0	2.08	38.9	6.5	2.4	68.5	90.3	46.5	2.02	39.6	6.8	3.9	39	68.3
		2.4	100	119.1	43.0	2.74	33.7	4.6	1.1	70.0	112.9	43.5	2.59	34.7	4.9	2.2	69.7	109.8	44.0	2.52	35.4	5.1	3.7	37	69.5
		2.4	120	138.3	41.1	3.36	29.6	3.6	1	71.2	132.4	41.8	3.26	30.7	3.8	2.1	70.9	129.9	44.5	3.19	33.6	4.1	3.6	36	70.0
	9.0	4.1	60	82.0	49.5	1.82	43.3	8.0	1.2	70.4	75.0	50.5	1.69	44.7	8.8	2.5	70.1	71.3	51.0	1.63	45.5	9.2	4.2	42	69.9
		4.1	80	102.2	50.0	2.28	42.2	6.4	1.1	70.6	94.7	49.5	2.12	42.3	6.9	2.4	70.6	90.9	49.0	2.05	42.0	7.0	3.9	39	70.7
		4.1	100	119.8	44.6	2.77	35.2	4.7	1.1	72.2	113.4	45.3	2.62	36.4	5.1	2.2	71.9	110.2	45.7	2.55	37.0	5.3	3.7	37	71.8
		4.0	120	139.0	42.7	3.44	31.0	3.6	1	73.1	130.9	36.6	3.24	25.6	3.3	2.1	74.3	129.1	41.0	3.10	30.4	3.9	3.6	36	73.2

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 048 – Cooling

Source			ELT °F	Load Flow 6.0 GPM								Load Flow 9.0 GPM								Load Flow 12.0 GPM							
EST °F	Flow GPM	WPD (F)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F			
40	6.0	2.2	50	37.9	36.4	1.67	42.1	21.8	2.2	54.0	41.3	39.0	1.69	44.8	23.1	4.5	54.9	43.3	40.5	1.72	46.4	23.6	7.5	55.5			
		2.2	60	46.0	42.0	1.67	47.7	25.1	2.1	55.9	50.0	45.0	1.69	50.8	26.7	4.3	56.9	52.2	47.0	1.71	52.8	27.5	7.2	57.6			
		2.2	70	54.0	48.0	1.66	53.7	28.8	2.1	57.9	58.4	52.0	1.67	57.7	31.1	4.2	59.2	61.0	54.0	1.69	59.8	32.0	7.0	59.9			
		2.1	80	61.8	54.5	1.65	60.1	33.1	2.0	60.0	66.9	59.0	1.64	64.6	36.0	4.1	61.5	69.8	61.5	1.65	67.1	37.3	6.8	62.4			
	2.1	90	69.7	61.0	1.61	66.5	37.9	2.0	62.2	75.3	66.0	1.58	71.4	41.7	4.0	63.8	78.5	69.0	1.58	74.4	43.7	6.6	64.8				
	4.5	50	37.6	37.2	1.61	42.7	23.1	2.2	49.5	41.2	39.5	1.62	45.0	24.3	4.5	50.0	43.1	41.5	1.65	47.1	25.2	7.5	50.5				
	4.5	60	45.7	43.0	1.60	48.5	26.9	2.1	50.8	49.7	46.5	1.60	52.0	29.1	4.3	51.5	52.0	48.0	1.62	53.5	29.6	7.2	51.9				
	4.5	70	53.7	49.0	1.57	54.4	31.2	2.1	52.1	58.2	53.0	1.56	58.3	34.0	4.2	53.0	60.8	55.5	1.57	60.9	35.3	7.0	53.5				
	4.5	80	61.5	55.5	1.53	60.7	36.3	2.0	53.5	66.6	60.5	1.50	65.6	40.3	4.1	54.6	69.4	63.5	1.50	68.6	42.4	6.8	55.2				
	4.4	90	69.2	62.5	1.47	67.5	42.7	2.0	55.0	74.9	68.0	1.42	72.8	48.0	4.0	56.2	78.2	71.0	1.40	75.8	50.9	6.6	56.8				
	7.5	50	37.5	37.4	1.61	42.9	23.3	2.2	47.1	41.0	40.5	1.62	46.0	25.1	4.5	47.7	43.0	42.0	1.64	47.6	25.6	7.5	47.9				
	7.5	60	45.5	43.5	1.59	48.9	27.4	2.1	48.2	49.6	47.0	1.58	52.4	29.7	4.3	48.7	51.8	49.0	1.60	54.5	30.7	7.2	49.1				
7.5	70	53.5	49.5	1.55	54.8	32.0	2.1	49.1	58.0	54.0	1.53	59.2	35.3	4.2	49.9	60.6	56.5	1.54	61.7	36.8	7.0	50.3					
7.5	80	61.2	56.5	1.49	61.6	37.8	2.0	50.3	66.3	61.5	1.46	66.5	42.2	4.1	51.1	69.3	64.5	1.45	69.4	44.5	6.8	51.6					
7.5	90	68.8	63.5	1.42	68.3	44.8	2.0	51.4	74.7	69.0	1.35	73.6	51.0	4.0	52.3	77.8	73.0	1.33	77.5	55.0	6.6	52.9					
50	6.0	2.1	50	38.3	35.0	1.84	41.3	19.0	2.2	63.8	41.7	37.4	1.86	43.8	20.1	4.5	64.6	43.5	39.0	1.90	45.5	20.6	7.5	65.2			
		2.1	60	46.5	40.5	1.85	46.8	21.9	2.1	65.6	50.3	43.5	1.87	49.9	23.3	4.3	66.6	52.5	45.0	1.90	51.5	23.7	7.2	67.2			
		2.1	70	54.5	46.5	1.85	52.8	25.1	2.1	67.6	58.9	50.0	1.87	56.4	26.8	4.2	68.8	61.3	52.0	1.89	58.5	27.5	7.0	69.5			
		2.1	80	62.5	52.5	1.85	58.8	28.4	2.0	69.6	67.4	56.5	1.85	62.8	30.6	4.1	70.9	70.2	59.0	1.86	65.4	31.7	6.8	71.8			
	2.1	90	70.3	59.0	1.82	65.2	32.4	1.9	71.7	75.8	64.0	1.81	70.2	35.4	4.0	73.4	78.8	67.0	1.81	73.2	37.1	6.6	74.4				
	4.3	50	38.1	35.6	1.77	41.6	20.1	2.2	59.3	41.6	38.0	1.79	44.1	21.3	4.5	59.8	43.4	39.5	1.81	45.7	21.8	7.5	60.2				
	4.3	60	46.2	41.5	1.76	47.5	23.5	2.1	60.6	50.1	44.5	1.77	50.6	25.1	4.3	61.2	52.3	46.5	1.80	52.6	25.9	7.2	61.7				
	4.3	70	54.2	47.5	1.75	53.5	27.2	2.1	61.9	58.6	51.5	1.75	57.5	29.5	4.2	62.8	61.1	53.5	1.76	59.5	30.4	7.0	63.2				
	4.3	80	62.0	54.0	1.72	59.9	31.5	2.0	63.3	67.0	58.5	1.70	64.3	34.4	4.1	64.3	69.8	61.0	1.70	66.8	35.8	6.8	64.8				
	4.3	90	69.8	60.5	1.66	66.2	36.4	2.0	64.7	75.3	66.0	1.63	71.5	40.6	4.0	65.9	78.5	69.0	1.61	74.5	42.8	6.6	66.6				
	7.3	50	38.0	36.0	1.76	42.0	20.5	2.2	57.0	41.4	38.5	1.77	44.5	21.8	4.5	57.4	43.3	40.0	1.80	46.1	22.3	7.5	57.7				
	7.3	60	46.0	42.0	1.74	48.0	24.1	2.1	58.0	50.0	45.0	1.75	51.0	25.8	4.3	58.5	52.2	47.0	1.77	53.0	26.6	7.2	58.8				
7.2	70	54.0	48.0	1.72	53.9	28.0	2.1	59.0	58.4	52.0	1.71	57.8	30.4	4.2	59.6	61.0	54.0	1.72	59.9	31.4	7.0	60.0					
7.2	80	61.8	54.5	1.67	60.2	32.6	2.0	60.0	66.8	59.5	1.64	65.1	36.2	4.1	60.9	69.7	62.0	1.64	67.6	37.7	6.8	61.3					
7.2	90	69.5	61.5	1.61	67.0	38.2	2.0	61.2	75.1	67.0	1.56	72.3	43.0	4.0	62.1	78.3	70.0	1.54	75.2	45.6	6.6	62.5					
60	6.0	2.0	50	39.3	32.0	2.29	39.8	14.0	2.2	83.3	42.4	34.0	2.32	41.9	14.7	4.5	84.0	44.1	35.2	2.36	43.2	14.9	7.4	84.4			
		2.0	60	47.6	37.2	2.32	45.1	16.0	2.1	85.0	51.2	39.5	2.34	47.5	16.9	4.3	85.8	53.1	41.5	2.38	49.6	17.4	7.2	86.5			
		2.0	70	55.7	43.0	2.34	51.0	18.4	2.1	87.0	59.8	46.0	2.36	54.1	19.5	4.2	88.0	62.1	47.5	2.39	55.7	19.9	7.0	88.6			
		1.9	80	63.7	49.0	2.35	57.0	20.9	2.0	89.0	68.3	52.5	2.36	60.6	22.2	4.1	90.2	70.9	54.5	2.38	62.6	22.9	6.8	90.9			
	1.9	90	71.7	55.0	2.34	63.0	23.5	1.9	91.0	76.9	59.0	2.34	67.0	25.3	4.0	92.3	79.8	61.5	2.35	69.5	26.2	6.6	93.2				
	4.1	50	39.1	32.6	2.20	40.1	14.8	2.2	78.9	42.3	34.8	2.22	42.4	15.6	4.5	79.4	44.0	36.0	2.26	43.7	16.0	7.4	79.7				
	4.1	60	47.3	38.0	2.21	45.5	17.2	2.1	80.1	51.0	40.5	2.23	48.1	18.2	4.3	80.7	52.9	42.5	2.26	50.2	18.8	7.2	81.2				
	4.1	70	55.3	44.0	2.21	51.5	19.9	2.1	81.5	59.6	47.0	2.22	54.6	21.2	4.2	82.1	61.8	49.0	2.24	56.6	21.9	7.0	82.6				
	4.0	80	63.3	50.0	2.19	57.5	22.8	2.0	82.8	68.0	54.0	2.19	61.5	24.6	4.1	83.7	70.7	56.0	2.20	63.5	25.4	6.8	84.1				
	4.0	90	71.2	56.5	2.16	63.9	26.2	1.9	84.2	76.4	61.0	2.14	68.3	28.5	4.0	85.2	79.4	63.5	2.13	70.8	29.8	6.6	85.7				
	6.8	50	39.0	33.0	2.18	40.4	15.1	2.2	76.7	42.2	35.0	2.20	42.5	15.9	4.5	77.1	43.9	36.6	2.23	44.2	16.4	7.4	77.4				
	6.8	60	47.2	38.5	2.18	45.9	17.7	2.1	77.7	50.9	41.0	2.19	48.5	18.7	4.3	78.1	52.8	43.0	2.22	50.6	19.4	7.2	78.4				
6.8	70	55.2	44.5	2.16	51.9	20.6	2.1	78.6	59.3	48.0	2.17	55.4	22.2	4.2	79.2	61.7	50.0	2.19	57.5	22.9	7.0	79.6					
6.8	80	63.2	50.5	2.14	57.8	23.6	2.0	79.6	67.9	54.5	2.13	61.8	25.6	4.1	80.3	70.5	57.0	2.13	64.3	26.7	6.8	80.7					
6.7	90	71.0	57.0	2.09	64.1	27.3	1.9	80.7	76.2	62.0	2.06	69.0	30.1	4.0	81.5	79.2	65.0	2.05	72.0	31.8	6.6	82.0					
70	6.0	1.9	50	39.9	30.4	2.58	39.2	11.8	2.2	93.1	42.8	32.2	2.60	41.1	12.4	4.5	93.7	44.4	33.4	2.64	42.4	12.6	7.4	94.1			
		1.9	60	48.1	35.6	2.61	44.5	13.7	2.1	94.8	51.6	38.0	2.63	47.0	14.4	4.3	95.7	53.4	39.5	2.67	48.6	14.8	7.2	96.2			
		1.9	70	56.3	41.0	2.63	50.0	15.6	2.1	96.7	60.3	43.5	2.65	52.6	16.4	4.2	97.5	62.4	45.5	2.69	54.7	16.9	7.0	98.2			
		1.9	80	64.3	47.0	2.64	56.0	17.8	2.0	98.7	68.9	50.0	2.66	59.1	18.8	4.1	99.7	71.3	52.0	2.69	61.2	19.4	6.8	100.4			
	1.9	90	72.5	52.5	2.64	61.5	19.9	1.9	100.5	77.4	56.5	2.64	65.5	21.4	4.0	101.8	80.2	59.0	2.66	68.1	22.2	6.6	102.7				
	4.0	50	39.7	31.0	2.48	39.5	12.5	2.2	88.8	42.7	33.0	2.50	41.5	13.2	4.5	89.2	44.3	34.2	2.54	42.9	13.5	7.4	89.5				
	3.9	60	47.9	36.4	2.49	44.9	14.6	2.1	90.0	51.4	38.5	2.51	47.1	15.3	4.3	90.5	53.3	40.5	2.54	49.2	15.9	7.2	90.9				
	3.9	70	56.0	42.0	2.49	50.5	16.8	2.1	91.2	60.0	45.0	2.51	53.5	18.0	4.2	91.9	62.2	47.0	2.53	55.6	18.6	7.0	92.4				
	3.9	80	64.0	48.0	2.48	56.5	19.3	2.0	92.5	68.6	51.5	2.49	60.0	20.7	4.1	93.3	71.1	53.5	2.50	62.0	21.4	6.8	93.8				
	3.9	90	72.0	54.0	2.45	62.4	22.0	1.9	93.9	77.0	58.5	2.44	66.8	24.0	4.0	94.8	79.8	61.0	2.44	69.3	25.0	6.6	95.4				
	6.6	50	39.5	31.4	2.45	39.8	12.8	2.2	86.6	42.6	33.2	2.47	41.6	13.4	4.5	86.9	44.2	34.6	2.50	43.1	13.8	7.4	87.2				
	6.6	60	47.7	36.8	2.45	45.2	15.0	2.1	87.5	51.3	39.0	2.47	47.4	15.8	4.3	87.9	53.2	41.0	2.49	49.5	16.4	7.2	88.3				
6.6	70	55.8	42.5	2.44	50.8	17.4	2.1</																				

WRA, WCA 048 – Cooling (continued)

Source			ELT °F	Load Flow 6.0 GPM							Load Flow 9.0 GPM							Load Flow 12.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	
110	6.0	1.8	50	41.5	25.6	3.63	38.0	7.0	2.2	122.7	44.0	27.2	3.67	39.7	7.4	4.5	123.2	45.4	27.8	3.71	40.5	7.5	7.4	123.5	
		1.8	60	49.9	30.2	3.69	42.8	8.2	2.1	124.3	52.9	32.0	3.72	44.7	8.6	4.3	124.9	54.6	32.6	3.76	45.4	8.7	7.2	125.1	
		1.8	70	58.3	35.0	3.73	47.7	9.4	2.1	125.9	61.7	37.2	3.75	50.0	9.9	4.2	126.7	63.6	38.5	3.79	51.4	10.2	6.9	127.1	
		1.8	80	66.7	40.0	3.75	52.8	10.7	2.0	127.6	70.4	43.0	3.77	55.9	11.4	4.1	128.6	72.7	44.0	3.79	56.9	11.6	6.7	129.0	
		1.8	90	74.8	45.5	3.75	58.3	12.1	1.9	129.4	79.2	48.5	3.75	61.3	12.9	3.9	130.4	81.8	49.5	3.77	62.4	13.1	6.5	130.8	
	9.0	3.7	50	41.3	26.2	3.54	38.3	7.4	2.2	118.5	43.9	27.6	3.57	39.8	7.7	4.5	118.8	45.3	28.4	3.60	40.7	7.9	7.4	119.0	
		3.6	60	49.7	30.8	3.57	43.0	8.6	2.1	119.6	52.7	32.8	3.59	45.1	9.1	4.3	120.0	54.4	33.8	3.62	46.1	9.3	7.2	120.3	
		3.6	70	58.0	36.0	3.57	48.2	10.1	2.1	120.7	61.4	38.5	3.59	50.7	10.7	4.2	121.3	63.4	39.5	3.61	51.8	10.9	6.9	121.5	
		3.6	80	66.2	41.5	3.57	53.7	11.6	2.0	121.9	70.2	44.0	3.57	56.2	12.3	4.1	122.5	72.4	45.5	3.59	57.8	12.7	6.7	122.8	
		3.6	90	74.3	47.0	3.54	59.1	13.3	1.9	123.1	78.9	50.0	3.53	62.1	14.2	4.0	123.8	81.3	52.0	3.54	64.1	14.7	6.6	124.2	
	12.0	6.1	50	41.2	26.4	3.50	38.4	7.5	2.2	116.4	43.8	28.0	3.53	40.1	7.9	4.5	116.7	45.2	28.8	3.57	41.0	8.1	7.4	116.8	
		6.1	60	49.6	31.2	3.52	43.2	8.9	2.1	117.2	52.6	33.2	3.54	45.3	9.4	4.3	117.5	54.3	34.2	3.56	46.4	9.6	7.2	117.7	
		6.1	70	57.9	36.4	3.51	48.4	10.4	2.1	118.1	61.3	39.0	3.52	51.0	11.1	4.2	118.5	63.3	40.0	3.55	52.1	11.3	6.9	118.7	
		6.1	80	66.0	42.0	3.50	53.9	12.0	2.0	119.0	70.1	44.5	3.49	56.4	12.7	4.1	119.4	72.3	46.5	3.51	58.5	13.2	6.7	119.7	
		6.1	90	74.2	47.5	3.46	59.3	13.7	1.9	119.9	78.7	51.0	3.44	62.7	14.8	4.0	120.5	81.2	53.0	3.45	64.8	15.4	6.6	120.8	
	120	6.0	1.7	50	42.0	24.0	4.04	37.8	5.9	2.2	132.6	44.4	25.4	4.08	39.3	6.2	4.5	133.1	45.7	25.8	4.12	39.9	6.3	7.4	133.3
			1.7	60	50.5	28.4	4.10	42.4	6.9	2.1	134.1	53.3	30.0	4.13	44.1	7.3	4.3	134.7	54.9	30.8	4.17	45.0	7.4	7.2	135.0
			1.7	70	59.0	33.0	4.14	47.1	8.0	2.0	135.7	62.2	35.0	4.17	49.2	8.4	4.2	136.4	64.1	35.4	4.21	49.8	8.4	6.9	136.6
			1.7	80	67.3	38.0	4.17	52.2	9.1	2.0	137.4	71.1	40.0	4.19	54.3	9.6	4.1	138.1	73.1	41.5	4.21	55.9	9.8	6.7	138.6
			1.7	90	75.7	43.0	4.17	57.2	10.3	1.9	139.1	79.9	45.5	4.18	59.8	10.9	3.9	139.9	82.2	47.0	4.20	61.3	11.2	6.5	140.4
9.0		3.6	50	41.8	24.6	3.95	38.1	6.2	2.2	128.5	44.3	25.8	3.97	39.4	6.5	4.5	128.7	45.6	26.6	4.01	40.3	6.6	7.4	129.0	
		3.6	60	50.3	29.0	3.98	42.6	7.3	2.1	129.5	53.2	30.6	4.01	44.3	7.6	4.3	129.8	54.7	31.6	4.04	45.4	7.8	7.2	130.1	
		3.6	70	58.7	33.8	4.00	47.5	8.4	2.0	130.5	62.0	35.8	4.02	49.5	8.9	4.2	131.0	63.9	36.4	4.05	50.2	9.0	6.9	131.2	
		3.6	80	67.0	39.0	4.00	52.6	9.8	2.0	131.7	70.8	41.5	4.01	55.2	10.4	4.1	132.3	72.9	42.5	4.03	56.2	10.6	6.7	132.5	
		3.5	90	75.3	44.0	3.98	57.6	11.1	1.9	132.8	79.6	47.0	3.97	60.6	11.8	3.9	133.5	81.9	48.5	3.98	62.1	12.2	6.5	133.8	
12.0		6.0	50	41.7	24.8	3.92	38.2	6.3	2.2	126.4	44.2	26.0	3.94	39.4	6.6	4.5	126.6	45.5	26.8	3.98	40.4	6.7	7.4	126.7	
		5.9	60	50.3	29.2	3.94	42.6	7.4	2.1	127.1	53.1	31.0	3.96	44.5	7.8	4.3	127.4	54.7	31.8	4.00	45.4	8.0	7.2	127.6	
		5.9	70	58.6	34.2	3.95	47.7	8.7	2.0	127.9	61.9	36.4	3.96	49.9	9.2	4.2	128.3	63.8	37.4	3.98	51.0	9.4	6.9	128.5	
		5.9	80	66.8	39.5	3.93	52.9	10.0	2.0	128.8	70.7	42.0	3.93	55.4	10.7	4.1	129.2	72.8	43.5	3.95	57.0	11.0	6.7	129.5	
		5.9	90	75.0	45.0	3.90	58.3	11.5	1.9	129.7	79.3	48.0	3.88	61.3	12.4	3.9	130.2	81.8	49.5	3.89	62.8	12.7	6.5	130.5	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature GPM -Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio

ELT - Entering Load Temperature LLT - Leaving Load Temperature

TC - Total Cooling kW - Kilowatts

HR - Heat Rejected WPD - Water Pressure Drop

LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 048 – Heating

Source			ELT °F	Load Flow 6.0 GPM								Load Flow 9.0 GPM								Load Flow 12.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F			
30	6.0	2.4	60	69.9	29.8	1.93	23.2	4.5	2	22.3	66.7	30.0	1.89	23.6	4.7	4.2	22.1	65.0	30.2	1.89	23.8	4.7	7.1	22.1			
		2.4	80	89.5	28.4	2.41	20.2	3.4	1.9	23.3	86.4	28.6	2.36	20.6	3.6	4	23.1	84.8	28.8	2.35	20.8	3.6	6.6	23.1			
		2.4	100	109.1	27.4	3.09	16.9	2.6	1.8	24.4	106.1	27.4	3.01	17.1	2.7	3.8	24.3	104.6	27.6	3.00	17.4	2.7	6.3	24.2			
	2.4	120	129.0	27.0	3.90	13.7	2.0	1.7	25.4	126.0	26.8	3.84	13.7	2.0	3.6	25.4	124.5	27.0	3.83	13.9	2.1	6.0	25.4				
	9.0	4.8	60	70.4	31.2	1.97	24.5	4.6	2	24.6	67.0	31.4	1.92	24.8	4.8	4.2	24.5	65.3	31.8	1.92	25.3	4.9	7.0	24.4			
		4.8	80	89.9	29.6	2.45	21.2	3.5	1.9	25.3	86.6	29.8	2.39	21.6	3.7	4	25.2	85.0	30.0	2.38	21.9	3.7	6.6	25.1			
		4.8	100	109.5	28.4	3.12	17.7	2.7	1.8	26.1	106.4	28.6	3.05	18.2	2.7	3.8	26.0	104.8	28.6	3.03	18.3	2.8	6.3	25.9			
	4.8	120	129.2	27.6	3.94	14.1	2.1	1.7	26.9	126.1	27.6	3.88	14.4	2.1	3.6	26.8	124.6	27.8	3.86	14.6	2.1	6.0	26.7				
	12.0	8.0	60	70.7	32.0	2.01	25.1	4.7	2	25.8	67.2	32.4	1.96	25.7	4.8	4.2	25.7	65.4	32.6	1.96	25.9	4.9	7.0	25.7			
		8.0	80	89.9	30.2	2.50	21.7	3.5	1.9	26.3	86.8	30.6	2.43	22.3	3.7	4	26.3	85.1	30.8	2.42	22.5	3.7	6.6	26.2			
		8.0	100	109.7	29.0	3.16	18.2	2.7	1.8	27.0	106.5	29.2	3.09	18.7	2.8	3.8	26.9	104.9	29.4	3.07	18.9	2.8	6.3	26.8			
	8.0	120	129.4	28.2	3.98	14.6	2.1	1.7	27.6	126.3	28.2	3.92	14.8	2.1	3.6	27.5	124.7	28.4	3.90	15.1	2.1	6.0	27.5				
40	6.0	2.3	60	71.4	34.2	1.99	27.4	5.0	2	30.9	67.6	34.4	1.93	27.8	5.2	4.2	30.7	65.8	34.6	1.92	28.1	5.3	7.0	30.6			
		2.3	80	89.9	32.6	2.49	24.1	3.8	1.9	32.0	87.3	33.0	2.41	24.8	4.0	4	31.7	85.5	33.2	2.40	25.0	4.1	6.6	31.7			
		2.3	100	110.5	31.4	3.17	20.6	2.9	1.8	33.1	107.0	31.6	3.08	21.1	3.0	3.8	33.0	105.3	31.8	3.06	21.4	3.0	6.3	32.9			
	2.3	120	130.3	30.8	3.96	17.3	2.3	1.7	34.2	126.9	31.0	3.89	17.7	2.3	3.6	34.1	125.1	30.8	3.87	17.6	2.3	6.0	34.1				
	9.0	4.7	60	72.0	36.0	2.03	29.1	5.2	2	33.5	68.0	36.2	1.96	29.5	5.4	4.2	33.4	66.1	36.4	1.95	29.7	5.5	7.0	33.4			
		4.7	80	91.3	34.0	2.54	25.3	3.9	1.9	34.4	87.7	34.6	2.45	26.2	4.1	4	34.2	85.8	34.8	2.43	26.5	4.2	6.6	34.1			
		4.6	100	110.9	32.6	3.22	21.6	3.0	1.8	35.2	107.3	32.8	3.12	22.1	3.1	3.7	35.1	105.5	33.2	3.09	22.6	3.1	6.3	35.0			
	4.6	120	130.7	32.0	3.99	18.4	2.3	1.7	35.9	127.1	32.0	3.92	18.6	2.4	3.6	35.9	125.3	31.8	3.89	18.5	2.4	6.0	35.9				
	12.0	7.7	60	72.3	37.0	2.07	29.9	5.2	2	35.0	68.3	37.4	2.00	30.6	5.5	4.2	34.9	66.3	37.8	1.99	31.0	5.6	7.0	34.8			
		7.7	80	91.7	35.2	2.58	26.4	4.0	1.9	35.6	87.9	35.4	2.50	26.9	4.2	4	35.5	85.9	35.6	2.48	27.1	4.2	6.6	35.5			
		7.7	100	111.2	33.6	3.25	22.5	3.0	1.8	36.2	107.5	33.8	3.17	23.0	3.1	3.8	36.2	105.7	34.0	3.14	23.3	3.2	6.3	36.1			
	7.7	120	130.9	32.6	4.03	18.8	2.4	1.7	36.9	127.3	32.8	3.95	19.3	2.4	3.6	36.8	125.5	32.8	3.93	19.4	2.4	6.0	36.8				
50	6.0	2.2	60	73.0	39.0	2.04	32.1	5.6	2	39.3	68.8	39.5	1.96	32.8	5.9	4.2	39.1	66.6	39.5	1.94	32.9	6.0	7.0	39.0			
		2.2	80	92.5	37.4	2.56	28.7	4.3	1.9	40.4	88.4	37.8	2.47	29.4	4.5	4	40.2	86.3	38.0	2.44	29.7	4.6	6.6	40.1			
		2.2	100	112.0	36.0	3.23	25.0	3.3	1.8	41.7	108.1	36.4	3.13	25.7	3.4	3.7	41.4	106.1	36.4	3.10	25.8	3.4	6.3	41.4			
	2.2	120	131.7	35.2	4.02	21.5	2.6	1.7	42.8	127.9	35.4	3.92	22.0	2.6	3.6	42.7	125.9	35.4	3.89	22.1	2.7	6.0	42.6				
	9.0	4.5	60	73.7	41.0	2.06	34.0	5.8	2	42.5	69.2	41.5	1.98	34.8	6.2	4.2	42.3	67.0	42.0	1.96	35.3	6.3	7.0	42.2			
		4.5	80	93.2	39.5	2.59	30.7	4.5	1.9	43.2	88.8	39.5	2.49	31.0	4.7	4	43.1	86.7	40.0	2.46	31.6	4.8	6.6	43.0			
		4.5	100	112.6	37.8	3.27	26.6	3.4	1.8	44.1	108.4	38.0	3.16	27.2	3.5	3.7	44.0	106.4	38.5	3.13	27.8	3.6	6.3	43.8			
	4.5	120	132.2	36.6	4.06	22.8	2.6	1.7	44.9	128.2	36.8	3.95	23.3	2.7	3.6	44.8	126.1	36.8	3.92	23.4	2.8	6.0	44.8				
	12.0	7.5	60	74.2	42.5	2.10	35.3	5.9	2	44.1	69.7	43.5	2.01	36.6	6.3	4.2	43.9	67.3	43.5	1.99	36.7	6.4	7.0	43.9			
		7.4	80	93.5	40.5	2.63	31.5	4.5	1.9	44.7	89.1	41.0	2.52	32.4	4.8	4	44.6	86.9	41.5	2.49	33.0	4.9	6.6	44.5			
		7.4	100	112.8	38.5	3.31	27.2	3.4	1.8	45.5	108.6	38.5	3.20	27.6	3.5	3.7	45.4	106.5	39.0	3.16	28.2	3.6	6.2	45.3			
	7.4	120	132.3	36.8	4.09	22.8	2.6	1.7	46.2	128.4	37.6	3.99	24.0	2.8	3.6	46.0	126.3	37.8	3.96	24.3	2.8	6.0	45.9				

WRA, WHA 048 – Heating (continued)

Source			ELT °F	Load Flow 6.0 GPM							Load Flow 9.0 GPM							Load Flow 12.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	6.0	2.1	60	74.8	44.5	2.06	37.5	6.3	2	47.5	70.0	45.0	1.96	38.3	6.7	4.2	47.2	67.6	45.5	1.94	38.9	6.9	7.0	47.0
		2.1	80	94.2	42.5	2.59	33.7	4.8	1.9	48.8	89.6	43.0	2.48	34.5	5.1	3.9	48.5	87.3	43.5	2.44	35.2	5.2	6.6	48.3
		2.1	100	113.7	41.0	3.27	29.8	3.7	1.8	50.1	109.2	41.5	3.15	30.8	3.9	3.7	49.7	106.9	41.5	3.11	30.9	3.9	6.2	49.7
		2.1	120	133.3	40.0	4.08	26.1	2.9	1.7	51.3	128.9	40.0	3.96	26.5	3.0	3.6	51.2	126.7	40.0	3.92	26.6	3.0	6.0	51.1
	9.0	4.3	60	75.7	47.0	2.08	39.9	6.6	2	51.1	70.7	48.0	1.98	41.3	7.1	4.2	50.8	68.1	48.5	1.94	41.9	7.3	7.0	50.7
		4.3	80	95.0	45.0	2.62	36.1	5.0	1.9	52.0	90.1	45.5	2.50	37.0	5.3	3.9	51.8	87.7	46.0	2.46	37.6	5.5	6.6	51.6
		4.3	100	114.3	43.0	3.30	31.7	3.8	1.8	52.9	109.7	43.5	3.17	32.7	4.0	3.7	52.7	107.3	44.0	3.12	33.3	4.1	6.2	52.6
		4.3	120	133.8	41.5	4.11	27.5	3.0	1.7	53.9	129.2	41.5	3.99	27.9	3.0	3.6	53.8	127.0	42.0	3.94	28.5	3.1	5.9	53.7
	12.0	7.2	60	76.3	49.0	2.11	41.8	6.8	2	53.0	71.0	49.5	2.00	42.7	7.3	4.2	52.9	68.3	50.0	1.97	43.3	7.5	7.0	52.8
		7.2	80	95.5	46.5	2.66	37.4	5.1	1.9	53.8	90.4	47.0	2.53	38.4	5.5	3.9	53.6	87.9	47.5	2.48	39.0	5.6	6.6	53.5
		7.2	100	114.7	44.0	3.33	32.6	3.9	1.8	54.6	109.9	44.5	3.20	33.6	4.1	3.7	54.4	107.5	45.0	3.15	34.2	4.2	6.2	54.3
		7.2	120	134.2	42.5	4.15	28.3	3.0	1.7	55.3	129.4	42.5	4.02	28.8	3.1	3.6	55.2	127.2	43.0	3.98	29.4	3.2	5.9	55.1
70	6.0	2.1	60	76.8	50.5	2.07	43.4	7.2	2	55.5	71.3	51.0	1.95	44.3	7.7	4.2	55.2	68.6	51.5	1.92	45.0	7.9	7.0	55.0
		2.1	80	96.0	48.0	2.62	39.1	5.4	1.9	57.0	90.8	48.5	2.48	40.0	5.7	3.9	56.7	88.2	49.0	2.43	40.7	5.9	6.6	56.4
		2.1	100	115.5	46.5	3.30	35.2	4.1	1.8	58.3	110.3	46.5	3.16	35.7	4.3	3.7	58.1	107.8	47.0	3.10	36.4	4.4	6.2	57.9
		2.0	120	134.8	44.5	4.12	30.4	3.2	1.7	59.9	130.0	45.0	3.99	31.4	3.3	3.6	59.5	127.5	45.0	3.93	31.6	3.4	5.9	59.5
	9.0	4.2	60	77.8	53.5	2.09	46.4	7.5	2	59.7	72.1	54.5	1.96	47.8	8.2	4.2	59.4	69.2	55.0	1.91	48.5	8.4	7.0	59.2
		4.2	80	97.0	51.0	2.64	42.0	5.7	1.9	60.7	91.6	52.0	2.49	43.5	6.1	3.9	60.3	88.7	52.0	2.44	43.7	6.2	6.6	60.3
		4.2	100	116.2	48.5	3.33	37.1	4.3	1.8	61.7	111.0	49.5	3.17	38.7	4.6	3.7	61.4	108.3	49.5	3.11	38.9	4.7	6.2	61.4
		4.2	120	135.3	46.0	4.14	31.9	3.3	1.7	62.9	130.3	46.5	4.00	32.9	3.4	3.6	62.7	127.9	47.5	3.94	34.0	3.5	5.9	62.4
	12.0	7.0	60	78.5	55.5	2.12	48.3	7.7	2	62.0	72.6	56.5	1.98	49.8	8.4	4.2	61.7	69.5	57.0	1.93	50.4	8.7	7.0	61.6
		7.0	80	97.5	52.5	2.67	43.4	5.8	1.9	62.8	91.9	53.5	2.52	44.9	6.2	3.9	62.5	89.0	54.0	2.46	45.6	6.4	6.6	62.4
		6.9	100	116.5	49.5	3.37	38.0	4.3	1.8	63.7	111.2	50.5	3.20	39.6	4.6	3.7	63.4	108.5	51.0	3.14	40.3	4.8	6.2	63.3
		6.9	120	135.8	47.5	4.19	33.2	3.3	1.7	64.5	130.7	48.0	4.03	34.2	3.5	3.6	64.3	128.1	48.5	3.97	35.0	3.6	5.9	64.2
80	6.0	2.0	60	78.8	56.5	2.07	49.4	8.0	2	63.5	72.7	57.0	1.93	50.4	8.6	4.2	63.2	69.6	57.5	1.89	51.1	8.9	7.0	63.0
		2.0	80	98.0	54.0	2.63	45.0	6.0	1.9	65.0	92.1	54.5	2.47	46.1	6.5	3.9	64.6	89.2	55.0	2.41	46.8	6.7	6.6	64.4
		2.0	100	117.2	51.5	3.32	40.2	4.5	1.8	66.6	111.6	52.0	3.15	41.2	4.8	3.7	66.3	108.8	52.5	3.09	42.0	5.0	6.2	66.0
		2.0	120	136.5	49.5	4.15	35.4	3.5	1.7	68.2	131.1	50.0	3.98	36.4	3.7	3.6	67.9	128.4	50.5	3.92	37.1	3.8	5.9	67.6
	9.0	4.1	60	80.0	60.0	2.08	52.9	8.5	2	68.2	73.7	61.5	1.92	54.9	9.4	4.2	67.8	70.3	62.0	1.86	55.6	9.7	7.0	67.6
		4.1	80	99.2	57.5	2.65	48.5	6.4	1.9	69.2	93.0	58.5	2.47	50.1	6.9	3.9	68.9	89.8	59.0	2.40	50.8	7.2	6.6	68.7
		4.1	100	118.2	54.5	3.34	43.1	4.8	1.8	70.4	112.3	55.5	3.16	44.7	5.1	3.7	70.1	109.3	56.0	3.09	45.5	5.3	6.2	69.9
		4.1	120	135.7	47.0	4.62	31.3	3.0	1.2	73.1	132.0	54.0	3.98	40.4	4.0	3.6	71.0	129.0	54.0	3.91	40.6	4.0	5.9	71.0
	12.0	6.8	60	80.8	62.5	2.10	55.3	8.7	2	70.8	74.1	63.5	1.93	56.9	9.6	4.2	70.5	70.8	64.5	1.87	58.1	10.1	7.0	70.3
		6.8	80	99.8	59.5	2.67	50.4	6.5	1.9	71.6	93.4	60.5	2.49	52.0	7.1	3.9	71.3	90.2	61.0	2.42	52.8	7.4	6.6	71.2
		6.8	100	118.7	56.2	3.38	44.7	4.9	1.8	72.5	112.7	57.1	3.19	46.3	5.3	3.7	72.3	110.1	60.5	3.08	50.0	5.8	6.2	71.7
		6.7	120	137.8	53.4	4.20	39.0	3.7	1.7	73.5	132.0	54.0	4.02	40.3	3.9	3.6	73.3	129.1	54.4	3.94	41.0	4.0	5.9	73.2

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 060 – Cooling

Source				Load Flow 7.5 GPM								Load Flow 11.25 GPM								Load Flow 15.0 GPM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
EST °F	Flow GPM	WPD (F)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				Data rows for WRA, WCA 060 - Cooling Group 40 <tr> <td rowspan="12">40</td> <td rowspan="4">7.5</td> <td>1.6</td><td>50</td><td>38.4</td><td>43.5</td><td>1.94</td><td>50.1</td><td>22.5</td><td>1.6</td><td>53.4</td><td>41.7</td><td>46.5</td><td>1.95</td><td>53.1</td><td>23.9</td><td>3.3</td><td>54.2</td><td>43.6</td><td>48.0</td><td>1.97</td><td>54.7</td><td>24.3</td><td>5.5</td><td>54.6</td> <td>1.6</td><td>60</td><td>46.7</td><td>50.0</td><td>1.92</td><td>56.6</td><td>26.0</td><td>1.6</td><td>55.1</td><td>51.5</td><td>51.7</td><td>53.5</td><td>1.93</td><td>60.1</td><td>27.7</td><td>3.2</td><td>56.0</td><td>52.5</td><td>56.0</td><td>1.96</td><td>62.7</td><td>28.6</td><td>5.3</td><td>56.7</td> <td>1.6</td><td>70</td><td>54.8</td><td>57.0</td><td>1.91</td><td>63.5</td><td>29.8</td><td>1.5</td><td>56.9</td><td>59.1</td><td>61.5</td><td>1.92</td><td>68.1</td><td>32.0</td><td>3.1</td><td>58.1</td><td>61.5</td><td>64.0</td><td>1.94</td><td>70.6</td><td>32.9</td><td>5.2</td><td>58.8</td> <td>1.6</td><td>80</td><td>62.8</td><td>64.5</td><td>1.90</td><td>71.0</td><td>33.9</td><td>1.5</td><td>58.9</td><td>67.6</td><td>70.0</td><td>1.91</td><td>76.5</td><td>36.6</td><td>3.0</td><td>60.4</td><td>70.3</td><td>73.0</td><td>1.93</td><td>79.6</td><td>37.8</td><td>5.0</td><td>61.2</td> <td>1.6</td><td>90</td><td>70.5</td><td>73.0</td><td>1.89</td><td>79.5</td><td>38.5</td><td>1.4</td><td>61.2</td><td>76.1</td><td>78.0</td><td>1.90</td><td>84.5</td><td>41.0</td><td>2.9</td><td>62.5</td><td>79.1</td><td>82.0</td><td>1.92</td><td>88.6</td><td>42.6</td><td>4.9</td><td>63.6</td> </tr> <tr> <td rowspan="4">11.25</td> <td>3.3</td><td>50</td><td>38.1</td><td>44.5</td><td>1.84</td><td>50.8</td><td>24.3</td><td>1.6</td><td>49.0</td><td>41.6</td><td>47.5</td><td>1.83</td><td>53.8</td><td>25.9</td><td>3.3</td><td>49.6</td><td>43.5</td><td>49.0</td><td>1.85</td><td>55.3</td><td>26.5</td><td>5.5</td><td>49.8</td> <td>3.3</td><td>60</td><td>46.4</td><td>51.0</td><td>1.80</td><td>57.1</td><td>28.4</td><td>1.6</td><td>50.2</td><td>50.2</td><td>55.0</td><td>1.79</td><td>61.1</td><td>30.7</td><td>3.2</td><td>50.9</td><td>52.4</td><td>57.0</td><td>1.80</td><td>63.1</td><td>31.6</td><td>5.3</td><td>51.2</td> <td>3.3</td><td>70</td><td>54.4</td><td>58.5</td><td>1.76</td><td>64.5</td><td>33.3</td><td>1.5</td><td>51.5</td><td>58.8</td><td>63.0</td><td>1.74</td><td>68.9</td><td>36.2</td><td>3.1</td><td>52.3</td><td>61.2</td><td>66.0</td><td>1.75</td><td>72.0</td><td>37.7</td><td>5.2</td><td>52.8</td> <td>3.3</td><td>80</td><td>62.4</td><td>66.0</td><td>1.71</td><td>71.8</td><td>38.6</td><td>1.5</td><td>52.8</td><td>67.2</td><td>72.0</td><td>1.69</td><td>77.8</td><td>42.6</td><td>3.0</td><td>53.8</td><td>70.0</td><td>75.0</td><td>1.70</td><td>80.8</td><td>44.2</td><td>5.0</td><td>54.4</td> <td>3.3</td><td>90</td><td>70.0</td><td>75.0</td><td>1.66</td><td>80.7</td><td>45.2</td><td>1.4</td><td>54.3</td><td>75.6</td><td>81.0</td><td>1.64</td><td>86.6</td><td>49.5</td><td>2.9</td><td>55.4</td><td>78.7</td><td>85.0</td><td>1.64</td><td>90.6</td><td>51.8</td><td>4.9</td><td>56.1</td> </tr> <tr> <td rowspan="4">15.0</td> <td>5.6</td><td>50</td><td>38.1</td><td>44.5</td><td>1.80</td><td>50.7</td><td>24.7</td><td>1.6</td><td>46.8</td><td>41.5</td><td>48.0</td><td>1.79</td><td>54.1</td><td>26.8</td><td>3.3</td><td>47.2</td><td>43.3</td><td>50.0</td><td>1.81</td><td>56.2</td><td>27.7</td><td>5.5</td><td>47.5</td> <td>5.6</td><td>60</td><td>46.3</td><td>51.5</td><td>1.75</td><td>57.5</td><td>29.5</td><td>1.6</td><td>47.7</td><td>50.1</td><td>55.5</td><td>1.73</td><td>61.4</td><td>32.0</td><td>3.2</td><td>48.2</td><td>52.3</td><td>58.0</td><td>1.74</td><td>63.9</td><td>33.4</td><td>5.3</td><td>48.5</td> <td>5.6</td><td>70</td><td>54.3</td><td>59.0</td><td>1.69</td><td>64.8</td><td>35.0</td><td>1.5</td><td>48.6</td><td>58.6</td><td>64.0</td><td>1.66</td><td>69.7</td><td>38.5</td><td>3.1</td><td>49.3</td><td>61.1</td><td>67.0</td><td>1.67</td><td>72.7</td><td>40.2</td><td>5.2</td><td>49.7</td> <td>5.6</td><td>80</td><td>62.1</td><td>67.0</td><td>1.62</td><td>72.5</td><td>41.3</td><td>1.5</td><td>49.7</td><td>67.0</td><td>73.0</td><td>1.59</td><td>78.4</td><td>45.9</td><td>3.0</td><td>50.5</td><td>69.9</td><td>76.0</td><td>1.59</td><td>81.4</td><td>47.8</td><td>5.0</td><td>50.9</td> <td>5.5</td><td>90</td><td>69.7</td><td>76.0</td><td>1.55</td><td>81.3</td><td>48.9</td><td>1.4</td><td>50.8</td><td>75.4</td><td>82.0</td><td>1.51</td><td>87.2</td><td>54.2</td><td>2.9</td><td>51.6</td><td>78.5</td><td>86.0</td><td>1.51</td><td>91.1</td><td>57.1</td><td>4.9</td><td>52.2</td> </tr> Group 50 <tr> <td rowspan="12">50</td> <td rowspan="4">7.5</td> <td>1.6</td><td>50</td><td>38.9</td><td>41.5</td><td>2.17</td><td>48.9</td><td>19.1</td><td>1.6</td><td>63.0</td><td>42.1</td><td>44.5</td><td>2.19</td><td>52.0</td><td>20.3</td><td>3.3</td><td>63.9</td><td>43.9</td><td>46.0</td><td>2.22</td><td>53.6</td><td>20.8</td><td>5.5</td><td>64.3</td> <td>1.6</td><td>60</td><td>47.2</td><td>48.0</td><td>2.17</td><td>55.4</td><td>22.1</td><td>1.6</td><td>64.8</td><td>50.8</td><td>51.5</td><td>2.19</td><td>59.0</td><td>23.5</td><td>3.2</td><td>65.7</td><td>52.9</td><td>53.5</td><td>2.22</td><td>61.1</td><td>24.1</td><td>5.3</td><td>66.3</td> <td>1.5</td><td>70</td><td>55.3</td><td>55.0</td><td>2.18</td><td>62.4</td><td>25.3</td><td>1.5</td><td>66.6</td><td>59.4</td><td>59.5</td><td>2.19</td><td>67.0</td><td>27.2</td><td>3.1</td><td>67.9</td><td>61.8</td><td>61.5</td><td>2.22</td><td>69.1</td><td>27.7</td><td>5.2</td><td>68.4</td> <td>1.5</td><td>80</td><td>63.3</td><td>62.5</td><td>2.18</td><td>69.9</td><td>28.7</td><td>1.5</td><td>68.6</td><td>68.1</td><td>67.0</td><td>2.20</td><td>74.5</td><td>30.5</td><td>3.0</td><td>69.9</td><td>70.7</td><td>70.0</td><td>2.22</td><td>77.6</td><td>31.5</td><td>5.0</td><td>70.7</td> <td>1.5</td><td>90</td><td>71.3</td><td>70.0</td><td>2.18</td><td>77.4</td><td>32.1</td><td>1.4</td><td>70.7</td><td>76.5</td><td>76.0</td><td>2.20</td><td>83.5</td><td>34.5</td><td>2.9</td><td>72.3</td><td>79.5</td><td>79.0</td><td>2.23</td><td>86.6</td><td>35.5</td><td>4.9</td><td>73.1</td> </tr> <tr> <td rowspan="4">11.25</td> <td>3.2</td><td>50</td><td>38.7</td><td>42.5</td><td>2.08</td><td>49.6</td><td>20.5</td><td>1.6</td><td>58.8</td><td>41.9</td><td>45.5</td><td>2.08</td><td>52.6</td><td>21.9</td><td>3.3</td><td>59.4</td><td>43.7</td><td>47.0</td><td>2.10</td><td>54.2</td><td>22.3</td><td>5.5</td><td>59.6</td> <td>3.2</td><td>60</td><td>46.9</td><td>49.0</td><td>2.05</td><td>56.0</td><td>23.9</td><td>1.6</td><td>60.0</td><td>50.6</td><td>53.0</td><td>2.05</td><td>60.0</td><td>25.8</td><td>3.2</td><td>60.7</td><td>52.7</td><td>55.0</td><td>2.07</td><td>62.1</td><td>26.5</td><td>5.3</td><td>61.0</td> <td>3.2</td><td>70</td><td>54.9</td><td>56.5</td><td>2.03</td><td>63.4</td><td>27.9</td><td>1.5</td><td>61.3</td><td>59.2</td><td>61.0</td><td>2.02</td><td>67.9</td><td>30.1</td><td>3.1</td><td>62.1</td><td>61.5</td><td>63.5</td><td>2.04</td><td>70.5</td><td>31.1</td><td>5.2</td><td>62.5</td> <td>3.2</td><td>80</td><td>62.9</td><td>64.0</td><td>2.00</td><td>70.8</td><td>32.0</td><td>1.5</td><td>62.6</td><td>67.7</td><td>69.0</td><td>1.99</td><td>75.8</td><td>34.7</td><td>3.0</td><td>63.5</td><td>70.4</td><td>72.0</td><td>2.00</td><td>78.8</td><td>35.9</td><td>5.0</td><td>64.0</td> <td>3.2</td><td>90</td><td>70.8</td><td>72.0</td><td>1.97</td><td>78.7</td><td>36.6</td><td>1.4</td><td>64.0</td><td>76.1</td><td>78.0</td><td>1.95</td><td>84.7</td><td>39.9</td><td>2.9</td><td>65.1</td><td>79.1</td><td>82.0</td><td>1.96</td><td>88.7</td><td>41.8</td><td>4.9</td><td>65.8</td> </tr> <tr> <td rowspan="4">15.0</td> <td>5.4</td><td>50</td><td>38.5</td><td>43.0</td><td>2.05</td><td>50.0</td><td>21.0</td><td>1.6</td><td>56.7</td><td>41.8</td><td>46.0</td><td>2.05</td><td>53.0</td><td>22.5</td><td>3.3</td><td>57.1</td><td>43.7</td><td>47.5</td><td>2.06</td><td>54.5</td><td>23.0</td><td>5.5</td><td>57.3</td> <td>5.4</td><td>60</td><td>46.8</td><td>49.5</td><td>2.01</td><td>56.4</td><td>24.6</td><td>1.6</td><td>57.5</td><td>50.5</td><td>53.5</td><td>2.00</td><td>60.3</td><td>26.7</td><td>3.2</td><td>58.0</td><td>52.6</td><td>55.5</td><td>2.02</td><td>62.4</td><td>27.5</td><td>5.3</td><td>58.3</td> <td>5.4</td><td>70</td><td>54.8</td><td>57.0</td><td>1.97</td><td>63.7</td><td>29.0</td><td>1.5</td><td>58.5</td><td>59.1</td><td>61.5</td><td>1.95</td><td>68.2</td><td>31.5</td><td>3.1</td><td>59.1</td><td>61.4</td><td>64.5</td><td>1.96</td><td>71.2</td><td>32.9</td><td>5.2</td><td>59.5</td> <td>5.4</td><td>80</td><td>62.7</td><td>65.0</td><td>1.92</td><td>71.5</td><td>33.9</td><td>1.5</td><td>59.5</td><td>67.6</td><td>70.0</td><td>1.90</td><td>76.5</td><td>36.9</td><td>3.0</td><td>60.2</td><td>70.3</td><td>73.0</td><td>1.91</td><td>79.5</td><td>38.3</td><td>5.0</td><td>60.6</td> <td>5.3</td><td>90</td><td>70.5</td><td>73.0</td><td>1.87</td><td>79.4</td><td>39.1</td><td>1.4</td><td>60.6</td><td>76.0</td><td>79.0</td><td>1.84</td><td>85.3</td><td>42.9</td><td>2.9</td><td>61.4</td><td>78.9</td><td>83.0</td><td>1.84</td><td>89.3</td><td>45.1</td><td>4.9</td><td>61.9</td> </tr> Group 70 <tr> <td rowspan="12">70</td> <td rowspan="4">7.5</td> <td>1.5</td><td>50</td><td>39.9</td><td>38.0</td><td>2.70</td><td>47.2</td><td>14.1</td><td>1.6</td><td>82.6</td><td>42.8</td><td>40.5</td><td>2.72</td><td>49.8</td><td>14.9</td><td>3.3</td><td>83.3</td><td>44.4</td><td>42.0</td><td>2.76</td><td>51.4</td><td>15.2</td><td>5.5</td><td>83.7</td> <td>1.5</td><td>60</td><td>48.1</td><td>44.5</td><td>2.72</td><td>53.8</td><td>16.4</td><td>1.6</td><td>84.3</td><td>51.6</td><td>47.5</td><td>2.74</td><td>56.9</td><td>17.3</td><td>3.2</td><td>85.2</td><td>53.5</td><td>49.0</td><td>2.78</td><td>58.5</td><td>17.6</td><td>5.3</td><td>85.6</td> <td>1.5</td><td>70</td><td>56.4</td><td>51.0</td><td>2.74</td><td>60.4</td><td>18.6</td><td>1.5</td><td>86.1</td><td>60.3</td><td>54.5</td><td>2.77</td><td>64.0</td><td>19.7</td><td>3.1</td><td>87.1</td><td>62.5</td><td>56.5</td><td>2.80</td><td>66.1</td><td>20.2</td><td>5.2</td><td>87.6</td> <td>1.4</td><td>80</td><td>64.5</td><td>58.0</td><td>2.77</td><td>67.4</td><td>21.0</td><td>1.5</td><td>88.0</td><td>69.0</td><td>62.0</td><td>2.80</td><td>71.5</td><td>22.2</td><td>3.0</td><td>89.1</td><td>71.4</td><td>64.5</td><td>2.83</td><td>74.2</td><td>22.8</td><td>5.0</td><td>89.8</td> <td>1.4</td><td>90</td><td>72.7</td><td>65.0</td><td>2.79</td><td>74.5</td><td>23.3</td><td>1.4</td><td>89.9</td><td>77.6</td><td>70.0</td><td>2.83</td><td>79.6</td><td>24.8</td><td>2.9</td><td>91.2</td><td>80.3</td><td>73.0</td><td>2.86</td><td>82.8</td><td>25.5</td><td>4.9</td><td>92.1</td> </tr> <tr> <td rowspan="4">11.25</td> <td>3.0</td><td>50</td><td>39.6</td><td>39.0</td><td>2.60</td><td>47.9</td><td>15.0</td><td>1.6</td><td>78.5</td><td>42.6</td><td>41.5</td><td>2.62</td><td>50.4</td><td>15.9</td><td>3.3</td><td>79.0</td><td>44.3</td><td>43.0</td><td>2.64</td><td>52.0</td><td>16.3</td><td>5.5</td><td>79.2</td> <td>3.0</td><td>60</td><td>48.0</td><td>45.0</td><td>2.60</td><td>53.9</td><td>17.3</td><td>1.6</td><td>79.6</td><td>51.4</td><td>48.5</td><td>2.61</td><td>57.4</td><td>18.6</td><td>3.2</td><td>80.2</td><td>53.3</td><td>50.0</td><td>2.64</td><td>59.0</td><td>18.9</td><td>5.3</td><td>80.5</td> <td>3.0</td><td>70</td><td>56.1</td><td>52.0</td><td>2.60</td><td>60.9</td><td>20.0</td><td>1.5</td><td>80.8</td><td>60.0</td><td>56.0</td><td>2.61</td><td>64.9</td><td>21.5</td><td>3.1</td><td>81.5</td><td>62.3</td><td>58.0</td><td>2.64</td><td>67.0</td><td>22.0</td><td>5.2</td><td>81.9</td> <td>3.0</td><td>80</td><td>64.1</td><td>59.5</td><td>2.59</td><td>68.3</td><td>22.9</td><td>1.5</td><td>82.2</td><td>68.6</td><td>64.0</td><td>2.61</td><td>72.9</td><td>24.6</td><td>3.0</td><td>83.0</td><td>71.1</td><td>67.0</td><td>2.63</td><td>76.0</td><td>25.5</td><td>5.0</td><td>83.5</td> <td>3.0</td><td>90</td><td>72.1</td><td>67.0</td><td>2.59</td><td>75.8</td><td>25.9</td><td>1.4</td><td>83.5</td><td>77.2</td><td>72.0</td><td>2.60</td><td>80.9</td><td>27.7</td><td>2.9</td><td>84.4</td><td>80.0</td><td>75.0</td><td>2.62</td><td>83.9</td><td>28.6</td><td>4.9</td><td>84.9</td> </tr> <tr> <td rowspan="4">15.0</td> <td>5.0</td><td>50</td><td>39.6</td><td>39.0</td><td>2.57</td><td>47.8</td><td>15.2</td><td>1.6</td><td>76.4</td><td>42.5</td><td>42.0</td><td>2.58</td><td>50.8</td><td>16.3</td><td>3.3</td><td>76.8</td><td>44.2</td><td>43.5</td><td>2.60</td><td>52.4</td><td>16.7</td><td>5.5</td><td>77.0</td> <td>5.0</td><td>60</td><td>47.9</td><td>45.5</td><td>2.56</td><td>54.2</td><td>17.8</td><td>1.6</td><td>77.2</td><td>51.3</td><td>49.0</td><td>2.56</td><td>57.7</td><td>19.1</td><td>3.2</td><td>77.7</td><td>53.2</td><td>51.0</td><td>2.59</td><td>59.8</td><td>19.7</td><td>5.3</td><td>78.0</td> <td>5.0</td><td>70</td><td>56.0</td><td>52.5</td><td>2.54</td><td>61.2</td><td>20.7</td><td>1.5</td><td>78.2</td><td>60.0</td><td>56.5</td><td>2.55</td><td>65.2</td><td>22.2</td><td>3.1</td><td>78.7</td><td>62.1</td><td>59.0</td><td>2.57</td><td>67.8</td><td>23.0</td><td>5.2</td><td>79.0</td> <td>5.0</td><td>80</td><td>64.0</td><td>60.0</td><td>2.52</td><td>68.6</td><td>23.8</td><td>1.5</td><td>79.1</td><td>68.4</td><td>65.0</td><td>2.52</td><td>73.6</td><td>25.8</td><td>3.0</td><td>79.8</td><td>70.9</td><td>68.0</td><td>2.54</td><td>76.7</td><td>26.7</td><td>5.0</td><td>80.2</td> <td>5.0</td><td>90</td><td>71.9</td><td>68.0</td><td>2.50</td><td>76.5</td><td>27.2</td><td>1.4</td><td>80.2</td><td>76.8</td><td>74.0</td><td>2.50</td><td>82.5</td><td>29.6</td><td>2.9</td><td>81.0</td><td>79.7</td><td>77.0</td><td>2.51</td><td>85.6</td><td>30.7</td><td>4.9</td><td>81.4</td> </tr> Group 80 <tr> <td rowspan="12">80</td> <td rowspan="4">7.5</td> <td>1.4</td><td>50</td><td>40.4</td><td>36.0</td><td>3.01</td><td>46.3</td><td>12.0</td><td>1.6</td><td>92.3</td><td>43.2</td><td>38.5</td><td>3.04</td><td>48.9</td><td>12.7</td><td>3.3</td><td>93.0</td><td>44.7</td><td>39.5</td><td>3.07</td><td>50.0</td><td>12.9</td><td>5.5</td><td>93.3</td> <td>1.4</td><td>60</td><td>48.7</td><td>42.5</td><td>3.03</td><td>52.9</td><td>14.0</td><td>1.6</td><td>94.1</td><td>52.0</td><td>45.0</td><td>3.06</td><td>55.4</td><td>14.7</td><td>3.2</td><td>94.8</td><td>53.8</td><td>46.5</td><td>3.10</td><td>57.1</td><td>15.0</td><td>5.3</td><td>95.2</td> <td>1.4</td><td>70</td><td>57.1</td><td>48.5</td><td>3.06</td><td>58.9</td><td>15.8</td><td>1.5</td><td>95.7</td><td>60.8</td><td>52.0</td><td>3.09</td><td>62.5</td><td>16.8</td><td>3.1</td><td>96.7</td><td>62.8</td><td>54.0</td><td>3.13</td><td>64.7</td><td>17.3</td><td>5.2</td><td>97.2</td> <td>1.4</td><td>80</td><td>65.2</td><td>55.5</td><td>3.09</td><td>66.1</td><td>17.9</td><td>1.5</td><td>97.6</td><td>69.4</td><td>59.5</td><td>3.13</td><td>70.2</td><td>19.0</td><td>3.0</td><td>98.7</td><td>71.8</td><td>61.5</td><td>3.17</td><td>72.3</td><td>19.4</td><td>5.0</td><td>99.3</td> <td>1.4</td><td>90</td><td>73.3</td><td>62.5</td><td>3.13</td><td>73.2</td><td>20.0</td><td>1.4</td><td>99.5</td><td>78.1</td><td>67.0</td><td>3.17</td><td>77.8</td><td>21.2</td><td>2.9</td><td>100.7</td><td>80.7</td><td>70.0</td><td>3.21</td><td>80.9</td><td>21.8</td><td>4.9</td><td>101.6</td> </tr> <tr> <td rowspan="4">11.25</td> <td>2.9</td><td>50</td><td>40.1</td><td>37.0</td><td>2.91</td><td>46.9</td><td>12.7</td><td>1.6</td><td>88.3</td><td>43.0</td><td>39.5</td><td>2.92</td><td>49.5</td><td>13.5</td><td>3.3</td><td>88.8</td><td>44.6</td><td>40.5</td><td>2.95</td><td>50.6</td><td>13.7</td><td>5.5</td><td>89.0</td> <td>2.9</td><td>60</td><td>48.5</td><td>43.0</td><td>2.91</td><td>52.9</td><td>14.8</td><td>1.6</td><td>89.4</td><td>51.8</td><td>46.0</td><td>2.92</td><td>56.0</td><td>15.7</td><td>3.2</td><td>90.0</td><td>53.6</td><td>48.0</td><td>2.95</td><td>58.1</td><td>16.3</td><td>5.3</td><td>90.3</td> <td>2.9</td><td>70</td><td>56.7</td><td>50.0</td><td>2.91</td><td>59.9</td><td>17.2</td><td>1.5</td><td>90.7</td><td>60.5</td><td>53.5</td><td>2.93</td><td>63.5</td><td>18.3</td><td>3.1</td><td>91.3</td><td>62.6</td><td>55.5</td><td>2.96</td><td>65.6</td><td>18.8</td><td>5.2</td><td>91.7</td> <td>2.9</td><td>80</td><td>64.8</td><td>57.0</td><td>2.92</td><td>67.0</td><td>19.5</td><td>1.5</td><td>91.9</td><td>69.2</td><td>61.0</td><td>2.94</td><td>71.0</td><td>20.8</td><td>3.0</td><td>92.6</td><td>71.5</td><td>63.5</td><td>2.96</td><td>73.6</td><td>21.4</td><td>5.0</td><td>93.1</td> <td>2.9</td><td>90</td><td>72.8</td><td>64.5</td><td>2.92</td><td>74.5</td><td>22.1</td><td>1.4</td><td>93.2</td><td>77.7</td><td>69.0</td><td>2.94</td><td>79.0</td><td>23.5</td><td>2.9</td><td>94.1</td><td>80.4</td><td>72.0</td><td>2.97</td><td>82.1</td><td>24.3</td><td>4.9</td><td>94.6</td> </tr> <tr> <td rowspan="4">15.0</td> <td>4.9</td><td>50</td><td>40.1</td><td>37.2</td><td>2.87</td><td>47.0</td><td>13.0</td><td>1.6</td><td>86.3</td><td>43.0</td><td>39.5</td><td>2.88</td><td>49.3</td><td>13.7</td><td>3.3</td><td>86.6</td><td>44.5</td><td>41.0</td><td>2.91</td><td>50.9</td><td>14.1</td><td>5.5</td><td>86.8</td> <td>4.9</td><td>60</td><td>48.4</td><td>43.5</td><td>2.86</td><td>53.3</td><td>15.2</td><td>1.6</td><td>87.1</td><td>51.7</td><td>46.5</td><td>2.87</td><td>56.3</td><td>16.2</td><td>3.2</td><td>87.5</td><td>53.5</td><td>48.5</td><td>2.90</td><td>58.4</td><td>16.7</td><td>5.3</td><td>87.8</td> <td>4.9</td><td>70</td><td></td></tr>																												40	7.5	1.6	50	38.4	43.5	1.94	50.1	22.5	1.6	53.4	41.7	46.5	1.95	53.1	23.9	3.3	54.2	43.6	48.0	1.97	54.7	24.3	5.5	54.6	1.6	60	46.7	50.0	1.92	56.6	26.0	1.6	55.1	51.5	51.7	53.5	1.93	60.1	27.7	3.2	56.0	52.5	56.0	1.96	62.7	28.6	5.3	56.7	1.6	70	54.8	57.0	1.91	63.5	29.8	1.5	56.9	59.1	61.5	1.92	68.1	32.0	3.1	58.1	61.5	64.0	1.94	70.6	32.9	5.2	58.8	1.6	80	62.8	64.5	1.90	71.0	33.9	1.5	58.9	67.6	70.0	1.91	76.5	36.6	3.0	60.4	70.3	73.0	1.93	79.6	37.8	5.0	61.2	1.6	90	70.5	73.0	1.89	79.5	38.5	1.4	61.2	76.1	78.0	1.90	84.5	41.0	2.9	62.5	79.1	82.0	1.92	88.6	42.6	4.9	63.6	11.25	3.3	50	38.1	44.5	1.84	50.8	24.3	1.6	49.0	41.6	47.5	1.83	53.8	25.9	3.3	49.6	43.5	49.0	1.85	55.3	26.5	5.5	49.8	3.3	60	46.4	51.0	1.80	57.1	28.4	1.6	50.2	50.2	55.0	1.79	61.1	30.7	3.2	50.9	52.4	57.0	1.80	63.1	31.6	5.3	51.2	3.3	70	54.4	58.5	1.76	64.5	33.3	1.5	51.5	58.8	63.0	1.74	68.9	36.2	3.1	52.3	61.2	66.0	1.75	72.0	37.7	5.2	52.8	3.3	80	62.4	66.0	1.71	71.8	38.6	1.5	52.8	67.2	72.0	1.69	77.8	42.6	3.0	53.8	70.0	75.0	1.70	80.8	44.2	5.0	54.4	3.3	90	70.0	75.0	1.66	80.7	45.2	1.4	54.3	75.6	81.0	1.64	86.6	49.5	2.9	55.4	78.7	85.0	1.64	90.6	51.8	4.9	56.1	15.0	5.6	50	38.1	44.5	1.80	50.7	24.7	1.6	46.8	41.5	48.0	1.79	54.1	26.8	3.3	47.2	43.3	50.0	1.81	56.2	27.7	5.5	47.5	5.6	60	46.3	51.5	1.75	57.5	29.5	1.6	47.7	50.1	55.5	1.73	61.4	32.0	3.2	48.2	52.3	58.0	1.74	63.9	33.4	5.3	48.5	5.6	70	54.3	59.0	1.69	64.8	35.0	1.5	48.6	58.6	64.0	1.66	69.7	38.5	3.1	49.3	61.1	67.0	1.67	72.7	40.2	5.2	49.7	5.6	80	62.1	67.0	1.62	72.5	41.3	1.5	49.7	67.0	73.0	1.59	78.4	45.9	3.0	50.5	69.9	76.0	1.59	81.4	47.8	5.0	50.9	5.5	90	69.7	76.0	1.55	81.3	48.9	1.4	50.8	75.4	82.0	1.51	87.2	54.2	2.9	51.6	78.5	86.0	1.51	91.1	57.1	4.9	52.2	50	7.5	1.6	50	38.9	41.5	2.17	48.9	19.1	1.6	63.0	42.1	44.5	2.19	52.0	20.3	3.3	63.9	43.9	46.0	2.22	53.6	20.8	5.5	64.3	1.6	60	47.2	48.0	2.17	55.4	22.1	1.6	64.8	50.8	51.5	2.19	59.0	23.5	3.2	65.7	52.9	53.5	2.22	61.1	24.1	5.3	66.3	1.5	70	55.3	55.0	2.18	62.4	25.3	1.5	66.6	59.4	59.5	2.19	67.0	27.2	3.1	67.9	61.8	61.5	2.22	69.1	27.7	5.2	68.4	1.5	80	63.3	62.5	2.18	69.9	28.7	1.5	68.6	68.1	67.0	2.20	74.5	30.5	3.0	69.9	70.7	70.0	2.22	77.6	31.5	5.0	70.7	1.5	90	71.3	70.0	2.18	77.4	32.1	1.4	70.7	76.5	76.0	2.20	83.5	34.5	2.9	72.3	79.5	79.0	2.23	86.6	35.5	4.9	73.1	11.25	3.2	50	38.7	42.5	2.08	49.6	20.5	1.6	58.8	41.9	45.5	2.08	52.6	21.9	3.3	59.4	43.7	47.0	2.10	54.2	22.3	5.5	59.6	3.2	60	46.9	49.0	2.05	56.0	23.9	1.6	60.0	50.6	53.0	2.05	60.0	25.8	3.2	60.7	52.7	55.0	2.07	62.1	26.5	5.3	61.0	3.2	70	54.9	56.5	2.03	63.4	27.9	1.5	61.3	59.2	61.0	2.02	67.9	30.1	3.1	62.1	61.5	63.5	2.04	70.5	31.1	5.2	62.5	3.2	80	62.9	64.0	2.00	70.8	32.0	1.5	62.6	67.7	69.0	1.99	75.8	34.7	3.0	63.5	70.4	72.0	2.00	78.8	35.9	5.0	64.0	3.2	90	70.8	72.0	1.97	78.7	36.6	1.4	64.0	76.1	78.0	1.95	84.7	39.9	2.9	65.1	79.1	82.0	1.96	88.7	41.8	4.9	65.8	15.0	5.4	50	38.5	43.0	2.05	50.0	21.0	1.6	56.7	41.8	46.0	2.05	53.0	22.5	3.3	57.1	43.7	47.5	2.06	54.5	23.0	5.5	57.3	5.4	60	46.8	49.5	2.01	56.4	24.6	1.6	57.5	50.5	53.5	2.00	60.3	26.7	3.2	58.0	52.6	55.5	2.02	62.4	27.5	5.3	58.3	5.4	70	54.8	57.0	1.97	63.7	29.0	1.5	58.5	59.1	61.5	1.95	68.2	31.5	3.1	59.1	61.4	64.5	1.96	71.2	32.9	5.2	59.5	5.4	80	62.7	65.0	1.92	71.5	33.9	1.5	59.5	67.6	70.0	1.90	76.5	36.9	3.0	60.2	70.3	73.0	1.91	79.5	38.3	5.0	60.6	5.3	90	70.5	73.0	1.87	79.4	39.1	1.4	60.6	76.0	79.0	1.84	85.3	42.9	2.9	61.4	78.9	83.0	1.84	89.3	45.1	4.9	61.9	70	7.5	1.5	50	39.9	38.0	2.70	47.2	14.1	1.6	82.6	42.8	40.5	2.72	49.8	14.9	3.3	83.3	44.4	42.0	2.76	51.4	15.2	5.5	83.7	1.5	60	48.1	44.5	2.72	53.8	16.4	1.6	84.3	51.6	47.5	2.74	56.9	17.3	3.2	85.2	53.5	49.0	2.78	58.5	17.6	5.3	85.6	1.5	70	56.4	51.0	2.74	60.4	18.6	1.5	86.1	60.3	54.5	2.77	64.0	19.7	3.1	87.1	62.5	56.5	2.80	66.1	20.2	5.2	87.6	1.4	80	64.5	58.0	2.77	67.4	21.0	1.5	88.0	69.0	62.0	2.80	71.5	22.2	3.0	89.1	71.4	64.5	2.83	74.2	22.8	5.0	89.8	1.4	90	72.7	65.0	2.79	74.5	23.3	1.4	89.9	77.6	70.0	2.83	79.6	24.8	2.9	91.2	80.3	73.0	2.86	82.8	25.5	4.9	92.1	11.25	3.0	50	39.6	39.0	2.60	47.9	15.0	1.6	78.5	42.6	41.5	2.62	50.4	15.9	3.3	79.0	44.3	43.0	2.64	52.0	16.3	5.5	79.2	3.0	60	48.0	45.0	2.60	53.9	17.3	1.6	79.6	51.4	48.5	2.61	57.4	18.6	3.2	80.2	53.3	50.0	2.64	59.0	18.9	5.3	80.5	3.0	70	56.1	52.0	2.60	60.9	20.0	1.5	80.8	60.0	56.0	2.61	64.9	21.5	3.1	81.5	62.3	58.0	2.64	67.0	22.0	5.2	81.9	3.0	80	64.1	59.5	2.59	68.3	22.9	1.5	82.2	68.6	64.0	2.61	72.9	24.6	3.0	83.0	71.1	67.0	2.63	76.0	25.5	5.0	83.5	3.0	90	72.1	67.0	2.59	75.8	25.9	1.4	83.5	77.2	72.0	2.60	80.9	27.7	2.9	84.4	80.0	75.0	2.62	83.9	28.6	4.9	84.9	15.0	5.0	50	39.6	39.0	2.57	47.8	15.2	1.6	76.4	42.5	42.0	2.58	50.8	16.3	3.3	76.8	44.2	43.5	2.60	52.4	16.7	5.5	77.0	5.0	60	47.9	45.5	2.56	54.2	17.8	1.6	77.2	51.3	49.0	2.56	57.7	19.1	3.2	77.7	53.2	51.0	2.59	59.8	19.7	5.3	78.0	5.0	70	56.0	52.5	2.54	61.2	20.7	1.5	78.2	60.0	56.5	2.55	65.2	22.2	3.1	78.7	62.1	59.0	2.57	67.8	23.0	5.2	79.0	5.0	80	64.0	60.0	2.52	68.6	23.8	1.5	79.1	68.4	65.0	2.52	73.6	25.8	3.0	79.8	70.9	68.0	2.54	76.7	26.7	5.0	80.2	5.0	90	71.9	68.0	2.50	76.5	27.2	1.4	80.2	76.8	74.0	2.50	82.5	29.6	2.9	81.0	79.7	77.0	2.51	85.6	30.7	4.9	81.4	80	7.5	1.4	50	40.4	36.0	3.01	46.3	12.0	1.6	92.3	43.2	38.5	3.04	48.9	12.7	3.3	93.0	44.7	39.5	3.07	50.0	12.9	5.5	93.3	1.4	60	48.7	42.5	3.03	52.9	14.0	1.6	94.1	52.0	45.0	3.06	55.4	14.7	3.2	94.8	53.8	46.5	3.10	57.1	15.0	5.3	95.2	1.4	70	57.1	48.5	3.06	58.9	15.8	1.5	95.7	60.8	52.0	3.09	62.5	16.8	3.1	96.7	62.8	54.0	3.13	64.7	17.3	5.2	97.2	1.4	80	65.2	55.5	3.09	66.1	17.9	1.5	97.6	69.4	59.5	3.13	70.2	19.0	3.0	98.7	71.8	61.5	3.17	72.3	19.4	5.0	99.3	1.4	90	73.3	62.5	3.13	73.2	20.0	1.4	99.5	78.1	67.0	3.17	77.8	21.2	2.9	100.7	80.7	70.0	3.21	80.9	21.8	4.9	101.6	11.25	2.9	50	40.1	37.0	2.91	46.9	12.7	1.6	88.3	43.0	39.5	2.92	49.5	13.5	3.3	88.8	44.6	40.5	2.95	50.6	13.7	5.5	89.0	2.9	60	48.5	43.0	2.91	52.9	14.8	1.6	89.4	51.8	46.0	2.92	56.0	15.7	3.2	90.0	53.6	48.0	2.95	58.1	16.3	5.3	90.3	2.9	70	56.7	50.0	2.91	59.9	17.2	1.5	90.7	60.5	53.5	2.93	63.5	18.3	3.1	91.3	62.6	55.5	2.96	65.6	18.8	5.2	91.7	2.9	80	64.8	57.0	2.92	67.0	19.5	1.5	91.9	69.2	61.0	2.94	71.0	20.8	3.0	92.6	71.5	63.5	2.96	73.6	21.4	5.0	93.1	2.9	90	72.8	64.5	2.92	74.5	22.1	1.4	93.2	77.7	69.0	2.94	79.0	23.5	2.9	94.1	80.4	72.0	2.97	82.1	24.3	4.9	94.6	15.0	4.9	50	40.1	37.2	2.87	47.0	13.0	1.6	86.3	43.0	39.5	2.88	49.3	13.7	3.3	86.6	44.5	41.0	2.91	50.9	14.1	5.5	86.8	4.9	60	48.4	43.5	2.86	53.3	15.2	1.6	87.1	51.7	46.5	2.87	56.3	16.2	3.2	87.5	53.5	48.5	2.90	58.4	16.7	5.3
40	7.5	1.6	50	38.4	43.5	1.94	50.1	22.5	1.6	53.4	41.7	46.5	1.95	53.1	23.9	3.3	54.2	43.6	48.0	1.97	54.7	24.3	5.5	54.6	1.6	60	46.7	50.0	1.92	56.6	26.0			1.6	55.1	51.5	51.7	53.5	1.93	60.1	27.7	3.2	56.0	52.5	56.0	1.96	62.7	28.6	5.3	56.7	1.6	70	54.8	57.0	1.91	63.5	29.8	1.5	56.9	59.1	61.5	1.92	68.1	32.0	3.1	58.1	61.5	64.0	1.94	70.6	32.9	5.2	58.8	1.6	80	62.8	64.5	1.90	71.0	33.9	1.5	58.9	67.6	70.0	1.91	76.5	36.6	3.0	60.4	70.3	73.0	1.93	79.6	37.8	5.0	61.2	1.6	90	70.5	73.0	1.89	79.5	38.5	1.4	61.2	76.1	78.0	1.90	84.5	41.0	2.9	62.5	79.1	82.0	1.92	88.6	42.6	4.9	63.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		11.25	3.3	50	38.1	44.5	1.84	50.8	24.3	1.6	49.0	41.6	47.5	1.83	53.8	25.9	3.3	49.6	43.5	49.0	1.85	55.3	26.5	5.5	49.8	3.3	60	46.4	51.0	1.80	57.1			28.4	1.6	50.2	50.2	55.0	1.79	61.1	30.7	3.2	50.9	52.4	57.0	1.80	63.1	31.6	5.3	51.2	3.3	70	54.4	58.5	1.76	64.5	33.3	1.5	51.5	58.8	63.0	1.74	68.9	36.2	3.1	52.3	61.2	66.0	1.75	72.0	37.7	5.2	52.8	3.3	80	62.4	66.0	1.71	71.8	38.6	1.5	52.8	67.2	72.0	1.69	77.8	42.6	3.0	53.8	70.0	75.0	1.70	80.8	44.2	5.0	54.4	3.3	90	70.0	75.0	1.66	80.7	45.2	1.4	54.3	75.6	81.0	1.64	86.6	49.5	2.9	55.4	78.7	85.0	1.64	90.6	51.8	4.9	56.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			15.0	5.6	50	38.1	44.5	1.80	50.7	24.7	1.6	46.8	41.5	48.0	1.79	54.1	26.8	3.3	47.2	43.3	50.0	1.81	56.2	27.7	5.5	47.5	5.6	60	46.3	51.5	1.75			57.5	29.5	1.6	47.7	50.1	55.5	1.73	61.4	32.0	3.2	48.2	52.3	58.0	1.74	63.9	33.4	5.3	48.5	5.6	70	54.3	59.0	1.69	64.8	35.0	1.5	48.6	58.6	64.0	1.66	69.7	38.5	3.1	49.3	61.1	67.0	1.67	72.7	40.2	5.2	49.7	5.6	80	62.1	67.0	1.62	72.5	41.3	1.5	49.7	67.0	73.0	1.59	78.4	45.9	3.0	50.5	69.9	76.0	1.59	81.4	47.8	5.0	50.9	5.5	90	69.7	76.0	1.55	81.3	48.9	1.4	50.8	75.4	82.0	1.51	87.2	54.2	2.9	51.6	78.5	86.0	1.51	91.1	57.1	4.9	52.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				50	7.5	1.6	50	38.9	41.5	2.17	48.9	19.1	1.6	63.0	42.1	44.5	2.19	52.0	20.3	3.3	63.9	43.9	46.0	2.22	53.6	20.8	5.5	64.3	1.6	60	47.2		48.0	2.17	55.4	22.1	1.6	64.8	50.8	51.5	2.19	59.0	23.5	3.2	65.7	52.9	53.5	2.22	61.1	24.1	5.3	66.3	1.5	70	55.3	55.0	2.18	62.4	25.3	1.5	66.6	59.4	59.5	2.19	67.0	27.2	3.1	67.9	61.8	61.5	2.22	69.1	27.7	5.2	68.4	1.5	80	63.3	62.5	2.18	69.9	28.7	1.5	68.6	68.1	67.0	2.20	74.5	30.5	3.0	69.9	70.7	70.0	2.22	77.6	31.5	5.0	70.7	1.5	90	71.3	70.0	2.18	77.4	32.1	1.4	70.7	76.5	76.0	2.20	83.5	34.5	2.9	72.3	79.5	79.0	2.23	86.6	35.5	4.9	73.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	11.25					3.2	50	38.7	42.5	2.08	49.6	20.5	1.6	58.8	41.9	45.5	2.08	52.6	21.9	3.3	59.4	43.7	47.0	2.10	54.2	22.3	5.5	59.6	3.2	60	46.9		49.0	2.05	56.0	23.9	1.6	60.0	50.6	53.0	2.05	60.0	25.8	3.2	60.7	52.7	55.0	2.07	62.1	26.5	5.3	61.0	3.2	70	54.9	56.5	2.03	63.4	27.9	1.5	61.3	59.2	61.0	2.02	67.9	30.1	3.1	62.1	61.5	63.5	2.04	70.5	31.1	5.2	62.5	3.2	80	62.9	64.0	2.00	70.8	32.0	1.5	62.6	67.7	69.0	1.99	75.8	34.7	3.0	63.5	70.4	72.0	2.00	78.8	35.9	5.0	64.0	3.2	90	70.8	72.0	1.97	78.7	36.6	1.4	64.0	76.1	78.0	1.95	84.7	39.9	2.9	65.1	79.1	82.0	1.96	88.7	41.8	4.9	65.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		15.0				5.4	50	38.5	43.0	2.05	50.0	21.0	1.6	56.7	41.8	46.0	2.05	53.0	22.5	3.3	57.1	43.7	47.5	2.06	54.5	23.0	5.5	57.3	5.4	60	46.8		49.5	2.01	56.4	24.6	1.6	57.5	50.5	53.5	2.00	60.3	26.7	3.2	58.0	52.6	55.5	2.02	62.4	27.5	5.3	58.3	5.4	70	54.8	57.0	1.97	63.7	29.0	1.5	58.5	59.1	61.5	1.95	68.2	31.5	3.1	59.1	61.4	64.5	1.96	71.2	32.9	5.2	59.5	5.4	80	62.7	65.0	1.92	71.5	33.9	1.5	59.5	67.6	70.0	1.90	76.5	36.9	3.0	60.2	70.3	73.0	1.91	79.5	38.3	5.0	60.6	5.3	90	70.5	73.0	1.87	79.4	39.1	1.4	60.6	76.0	79.0	1.84	85.3	42.9	2.9	61.4	78.9	83.0	1.84	89.3	45.1	4.9	61.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			70			7.5	1.5	50	39.9	38.0	2.70	47.2	14.1	1.6	82.6	42.8	40.5	2.72	49.8	14.9	3.3	83.3	44.4	42.0	2.76	51.4	15.2	5.5	83.7	1.5	60		48.1	44.5	2.72	53.8	16.4	1.6	84.3	51.6	47.5	2.74	56.9	17.3	3.2	85.2	53.5	49.0	2.78	58.5	17.6	5.3	85.6	1.5	70	56.4	51.0	2.74	60.4	18.6	1.5	86.1	60.3	54.5	2.77	64.0	19.7	3.1	87.1	62.5	56.5	2.80	66.1	20.2	5.2	87.6	1.4	80	64.5	58.0	2.77	67.4	21.0	1.5	88.0	69.0	62.0	2.80	71.5	22.2	3.0	89.1	71.4	64.5	2.83	74.2	22.8	5.0	89.8	1.4	90	72.7	65.0	2.79	74.5	23.3	1.4	89.9	77.6	70.0	2.83	79.6	24.8	2.9	91.2	80.3	73.0	2.86	82.8	25.5	4.9	92.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
					11.25		3.0	50	39.6	39.0	2.60	47.9	15.0	1.6	78.5	42.6	41.5	2.62	50.4	15.9	3.3	79.0	44.3	43.0	2.64	52.0	16.3	5.5	79.2	3.0	60		48.0	45.0	2.60	53.9	17.3	1.6	79.6	51.4	48.5	2.61	57.4	18.6	3.2	80.2	53.3	50.0	2.64	59.0	18.9	5.3	80.5	3.0	70	56.1	52.0	2.60	60.9	20.0	1.5	80.8	60.0	56.0	2.61	64.9	21.5	3.1	81.5	62.3	58.0	2.64	67.0	22.0	5.2	81.9	3.0	80	64.1	59.5	2.59	68.3	22.9	1.5	82.2	68.6	64.0	2.61	72.9	24.6	3.0	83.0	71.1	67.0	2.63	76.0	25.5	5.0	83.5	3.0	90	72.1	67.0	2.59	75.8	25.9	1.4	83.5	77.2	72.0	2.60	80.9	27.7	2.9	84.4	80.0	75.0	2.62	83.9	28.6	4.9	84.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	15.0						5.0	50	39.6	39.0	2.57	47.8	15.2	1.6	76.4	42.5	42.0	2.58	50.8	16.3	3.3	76.8	44.2	43.5	2.60	52.4	16.7	5.5	77.0	5.0	60		47.9	45.5	2.56	54.2	17.8	1.6	77.2	51.3	49.0	2.56	57.7	19.1	3.2	77.7	53.2	51.0	2.59	59.8	19.7	5.3	78.0	5.0	70	56.0	52.5	2.54	61.2	20.7	1.5	78.2	60.0	56.5	2.55	65.2	22.2	3.1	78.7	62.1	59.0	2.57	67.8	23.0	5.2	79.0	5.0	80	64.0	60.0	2.52	68.6	23.8	1.5	79.1	68.4	65.0	2.52	73.6	25.8	3.0	79.8	70.9	68.0	2.54	76.7	26.7	5.0	80.2	5.0	90	71.9	68.0	2.50	76.5	27.2	1.4	80.2	76.8	74.0	2.50	82.5	29.6	2.9	81.0	79.7	77.0	2.51	85.6	30.7	4.9	81.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		80					7.5	1.4	50	40.4	36.0	3.01	46.3	12.0	1.6	92.3	43.2	38.5	3.04	48.9	12.7	3.3	93.0	44.7	39.5	3.07	50.0	12.9	5.5	93.3	1.4		60	48.7	42.5	3.03	52.9	14.0	1.6	94.1	52.0	45.0	3.06	55.4	14.7	3.2	94.8	53.8	46.5	3.10	57.1	15.0	5.3	95.2	1.4	70	57.1	48.5	3.06	58.9	15.8	1.5	95.7	60.8	52.0	3.09	62.5	16.8	3.1	96.7	62.8	54.0	3.13	64.7	17.3	5.2	97.2	1.4	80	65.2	55.5	3.09	66.1	17.9	1.5	97.6	69.4	59.5	3.13	70.2	19.0	3.0	98.7	71.8	61.5	3.17	72.3	19.4	5.0	99.3	1.4	90	73.3	62.5	3.13	73.2	20.0	1.4	99.5	78.1	67.0	3.17	77.8	21.2	2.9	100.7	80.7	70.0	3.21	80.9	21.8	4.9	101.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
						11.25		2.9	50	40.1	37.0	2.91	46.9	12.7	1.6	88.3	43.0	39.5	2.92	49.5	13.5	3.3	88.8	44.6	40.5	2.95	50.6	13.7	5.5	89.0	2.9		60	48.5	43.0	2.91	52.9	14.8	1.6	89.4	51.8	46.0	2.92	56.0	15.7	3.2	90.0	53.6	48.0	2.95	58.1	16.3	5.3	90.3	2.9	70	56.7	50.0	2.91	59.9	17.2	1.5	90.7	60.5	53.5	2.93	63.5	18.3	3.1	91.3	62.6	55.5	2.96	65.6	18.8	5.2	91.7	2.9	80	64.8	57.0	2.92	67.0	19.5	1.5	91.9	69.2	61.0	2.94	71.0	20.8	3.0	92.6	71.5	63.5	2.96	73.6	21.4	5.0	93.1	2.9	90	72.8	64.5	2.92	74.5	22.1	1.4	93.2	77.7	69.0	2.94	79.0	23.5	2.9	94.1	80.4	72.0	2.97	82.1	24.3	4.9	94.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
					15.0			4.9	50	40.1	37.2	2.87	47.0	13.0	1.6	86.3	43.0	39.5	2.88	49.3	13.7	3.3	86.6	44.5	41.0	2.91	50.9	14.1	5.5	86.8	4.9	60	48.4	43.5	2.86	53.3	15.2	1.6	87.1	51.7	46.5	2.87	56.3	16.2	3.2	87.5	53.5	48.5	2.90	58.4	16.7	5.3	87.8	4.9	70																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

WRA, WCA 060 – Cooling (continued)

Source			ELT °F	Load Flow 7.5 GPM							Load Flow 11.25 GPM							Load Flow 15.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	
110	7.5	1.3	50	41.8	30.6	4.22	45.0	7.3	1.6	122.0	44.3	32.2	4.25	46.7	7.6	3.3	122.5	45.6	33.0	4.29	47.6	7.7	5.5	122.7	
		1.3	60	50.5	35.8	4.26	50.4	8.4	1.6	123.4	53.2	38.0	4.30	52.7	8.8	3.2	124.0	54.9	38.5	4.33	53.3	8.9	5.3	124.2	
		1.3	70	58.9	41.5	4.31	56.2	9.6	1.5	125.0	62.2	44.0	4.34	58.8	10.1	3.1	125.7	63.9	45.5	4.37	60.4	10.4	5.1	126.1	
		1.3	80	67.3	47.5	4.35	62.3	10.9	1.5	126.6	71.0	50.5	4.38	65.4	11.5	3.0	127.5	73.1	52.0	4.42	67.1	11.8	5.0	127.9	
		1.3	90	75.6	54.0	4.39	69.0	12.3	1.4	128.4	79.8	57.5	4.43	72.6	13.0	2.9	129.4	82.1	59.0	4.47	74.2	13.2	4.9	129.8	
	11.25	2.7	50	41.7	31.0	4.10	45.0	7.6	1.6	118.0	44.2	32.4	4.12	46.5	7.9	3.3	118.3	45.5	33.8	4.15	48.0	8.1	5.5	118.5	
		2.7	60	50.2	36.6	4.12	50.7	8.9	1.6	119.0	53.2	38.5	4.14	52.6	9.3	3.2	119.4	54.7	39.5	4.18	53.8	9.5	5.3	119.6	
		2.7	70	58.7	42.5	4.13	56.6	10.3	1.5	120.1	61.9	45.5	4.14	59.6	11.0	3.1	120.6	63.8	46.5	4.17	60.7	11.1	5.2	120.8	
		2.7	80	66.9	49.0	4.13	63.1	11.9	1.5	121.2	70.8	52.0	4.15	66.2	12.5	3.0	121.8	72.8	54.0	4.18	68.3	12.9	5.0	122.1	
		2.7	90	75.2	55.5	4.15	69.6	13.4	1.4	122.4	79.5	59.0	4.17	73.2	14.1	2.9	123.0	81.9	61.0	4.20	75.3	14.5	4.9	123.4	
	15.0	4.5	50	41.6	31.4	4.05	45.2	7.7	1.6	116.0	44.2	32.8	4.07	46.7	8.1	3.3	116.2	45.5	34.0	4.10	48.0	8.3	5.5	116.4	
		4.5	60	50.1	37.0	4.06	50.9	9.1	1.6	116.8	53.1	39.0	4.08	52.9	9.6	3.2	117.1	54.6	40.5	4.10	54.5	9.9	5.3	117.3	
		4.5	70	58.5	43.0	4.05	56.8	10.6	1.5	117.6	61.9	45.5	4.07	59.4	11.2	3.1	117.9	63.7	47.5	4.09	61.5	11.6	5.2	118.2	
		4.5	80	66.8	49.5	4.05	63.3	12.2	1.5	118.4	70.6	53.0	4.06	66.9	13.1	3.0	118.9	72.7	54.5	4.09	68.4	13.3	5.0	119.1	
		4.5	90	74.9	56.5	4.05	70.3	14.0	1.4	119.4	79.3	60.0	4.06	73.9	14.8	2.9	119.8	81.7	62.5	4.09	76.5	15.3	4.9	120.2	
	120	7.5	1.3	50	42.4	28.6	4.74	44.8	6.0	1.6	131.9	44.7	30.0	4.76	46.3	6.3	3.3	132.3	45.9	30.8	4.80	47.2	6.4	5.5	132.6
			1.3	60	51.0	33.8	4.77	50.1	7.1	1.6	133.4	53.7	35.6	4.81	52.0	7.4	3.2	133.9	55.1	36.6	4.84	53.1	7.6	5.3	134.2
			1.3	70	59.6	39.0	4.82	55.4	8.1	1.5	134.8	62.6	41.5	4.85	58.1	8.6	3.1	135.5	64.4	42.0	4.89	58.7	8.6	5.1	135.6
			1.3	80	68.0	45.0	4.86	61.6	9.3	1.5	136.4	71.6	47.5	4.90	64.2	9.7	3.0	137.1	73.5	49.0	4.93	65.8	9.9	5.0	137.6
			1.3	90	76.4	51.0	4.90	67.7	10.4	1.4	138.1	80.4	54.0	4.94	70.9	10.9	2.9	138.9	82.6	55.5	4.98	72.5	11.2	4.9	139.3
11.25		2.6	50	42.3	29.0	4.61	44.7	6.3	1.6	128.0	44.6	30.6	4.63	46.4	6.6	3.3	128.2	45.8	31.4	4.66	47.3	6.7	5.5	128.4	
		2.6	60	50.8	34.4	4.63	50.2	7.4	1.6	128.9	53.5	36.4	4.65	52.3	7.8	3.2	129.3	55.0	37.4	4.68	53.4	8.0	5.3	129.5	
		2.6	70	59.3	40.0	4.65	55.9	8.6	1.5	129.9	62.4	42.5	4.67	58.4	9.1	3.1	130.4	64.3	43.0	4.69	59.0	9.2	5.1	130.5	
		2.6	80	67.7	46.0	4.66	61.9	9.9	1.5	131.0	71.3	49.0	4.67	64.9	10.5	3.0	131.5	73.3	50.5	4.70	66.5	10.7	5.0	131.8	
		2.6	90	76.0	52.5	4.66	68.4	11.3	1.4	132.2	80.1	55.5	4.69	71.5	11.8	2.9	132.7	82.3	57.5	4.72	73.6	12.2	4.9	133.1	
15.0		4.4	50	42.2	29.4	4.56	45.0	6.4	1.6	126.0	44.5	31.0	4.58	46.6	6.8	3.3	126.2	45.8	31.6	4.61	47.3	6.9	5.5	126.3	
		4.4	60	50.7	34.8	4.57	50.4	7.6	1.6	126.7	53.5	36.8	4.59	52.4	8.0	3.2	127.0	55.0	37.8	4.61	53.5	8.2	5.3	127.1	
		4.4	70	59.2	40.5	4.58	56.1	8.9	1.5	127.5	62.4	43.0	4.59	58.7	9.4	3.1	127.8	64.1	44.0	4.61	59.7	9.5	5.1	128.0	
		4.4	80	67.6	46.5	4.57	62.1	10.2	1.5	128.3	71.2	49.5	4.58	65.1	10.8	3.0	128.7	73.2	51.0	4.61	66.7	11.1	5.0	128.9	
		4.4	90	75.9	53.0	4.56	68.6	11.6	1.4	129.1	80.0	56.5	4.58	72.1	12.3	2.9	129.6	82.2	58.5	4.61	74.2	12.7	4.9	129.9	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 060 – Heating

Source			ELT °F	Load Flow 7.5 GPM								Load Flow 11.25 GPM								Load Flow 15.0 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F			
30	7.5	1.8	60	69.5	35.6	2.30	27.7	4.5	1.5	22.6	66.4	35.8	2.25	28.1	4.7	3.1	22.5	64.8	36.2	2.24	28.5	4.7	5.2	22.4			
		1.8	80	89.0	33.6	2.84	23.9	3.5	1.5	23.6	86.0	34.0	2.77	24.5	3.6	2.9	23.5	84.6	34.2	2.76	24.8	3.6	4.9	23.4			
		1.8	100	108.7	32.6	3.61	20.3	2.6	1.5	24.6	105.8	32.8	3.53	20.8	2.7	2.8	24.5	104.4	32.8	3.50	20.9	2.7	4.6	24.4			
		1.7	120	128.6	32.2	4.64	16.4	2.0	1.5	25.6	125.7	32.0	4.56	16.5	2.1	2.7	25.6	124.3	32.2	4.53	16.7	2.1	4.4	25.5			
	11.25	3.6	60	69.9	37.2	2.34	29.2	4.7	1.5	24.8	66.7	37.6	2.28	29.8	4.8	3.1	24.7	65.1	38.0	2.27	30.3	4.9	5.2	24.6			
		3.6	80	89.4	35.2	2.88	25.4	3.6	1.5	25.5	86.3	35.6	2.81	26.0	3.7	2.9	25.4	84.8	35.8	2.79	26.3	3.8	4.9	25.3			
		3.6	100	108.9	33.4	3.65	21.0	2.7	1.5	26.3	106.0	34.0	3.56	21.9	2.8	2.8	26.1	104.5	33.8	3.53	21.8	2.8	4.6	26.1			
		3.6	120	128.9	33.4	4.67	17.5	2.1	1.5	26.9	125.9	33.2	4.58	17.6	2.1	2.7	26.9	124.4	33.2	4.55	17.7	2.1	4.4	26.9			
	15.0	6.0	60	70.1	38.0	2.38	29.9	4.7	1.5	26.0	66.8	38.5	2.32	30.6	4.9	3.1	25.9	65.2	39.0	2.31	31.1	5.0	5.2	25.8			
		6.0	80	89.6	36.0	2.92	26.0	3.6	1.5	26.5	86.5	36.4	2.85	26.7	3.7	2.9	26.4	84.9	36.6	2.83	26.9	3.8	4.9	26.4			
		6.0	100	109.2	34.4	3.68	21.8	2.7	1.5	27.1	106.2	34.6	3.59	22.4	2.8	2.8	27.0	104.6	34.8	3.56	22.6	2.9	4.6	27.0			
		5.9	120	129.0	33.6	4.71	17.5	2.1	1.5	27.7	126.0	33.6	4.62	17.8	2.1	2.7	27.6	124.5	33.8	4.60	18.1	2.2	4.4	27.6			
40	7.5	1.7	60	70.8	40.5	2.35	32.5	5.0	1.5	31.3	67.3	41.0	2.28	33.2	5.3	3.1	31.1	65.5	41.0	2.27	33.3	5.3	5.2	31.1			
		1.7	80	90.3	38.5	2.91	28.6	3.9	1.5	32.4	86.9	39.0	2.83	29.3	4.0	2.9	32.2	85.2	39.0	2.81	29.4	4.1	4.9	32.2			
		1.7	100	110.0	37.4	3.69	24.8	3.0	1.5	33.4	106.7	37.6	3.58	25.4	3.1	2.8	33.2	105.0	37.8	3.55	25.7	3.1	4.6	33.2			
		1.7	120	129.8	36.8	4.68	20.8	2.3	1.5	34.4	126.5	36.8	4.57	21.2	2.4	2.7	34.3	124.9	36.8	4.54	21.3	2.4	4.4	34.3			
	11.25	3.4	60	71.3	42.5	2.39	34.3	5.2	1.5	33.9	67.6	43.0	2.31	35.1	5.4	3.1	33.8	65.8	43.5	2.30	35.7	5.6	5.2	33.7			
		3.4	80	90.8	40.5	2.96	30.4	4.0	1.5	34.6	87.3	41.0	2.87	31.2	4.2	2.9	34.5	85.5	41.0	2.84	31.3	4.2	4.9	34.4			
		3.4	100	110.4	39.0	3.72	26.3	3.1	1.5	35.3	106.9	39.0	3.63	26.6	3.2	2.8	35.3	105.2	39.0	3.59	26.8	3.2	4.6	35.2			
		3.4	120	130.1	38.0	4.71	21.9	2.4	1.5	36.1	126.8	38.0	4.60	22.3	2.4	2.7	36.0	125.1	38.0	4.56	22.4	2.4	4.4	36.0			
	15.0	5.7	60	71.7	44.0	2.44	35.7	5.3	1.5	35.2	67.9	44.5	2.35	36.5	5.5	3.1	35.1	66.0	45.0	2.33	37.0	5.7	5.2	35.1			
		5.7	80	91.1	41.5	3.00	31.3	4.1	1.5	35.8	87.5	42.0	2.91	32.1	4.2	2.9	35.7	85.7	42.5	2.88	32.7	4.3	4.9	35.6			
		5.7	100	110.5	39.5	3.75	26.7	3.1	1.5	36.4	107.1	40.0	3.65	27.5	3.2	2.8	36.3	105.3	40.0	3.62	27.6	3.2	4.6	36.3			
		5.7	120	130.3	38.5	4.75	22.3	2.4	1.5	37.0	126.9	39.0	4.62	23.2	2.5	2.7	36.9	125.2	39.0	4.59	23.4	2.5	4.4	36.9			
50	7.5	1.6	60	72.4	46.5	2.41	38.3	5.6	1.5	39.8	68.4	47.0	2.32	39.1	5.9	3.1	39.6	66.3	47.0	2.29	39.2	6.0	5.2	39.6			
		1.6	80	91.7	44.0	2.99	33.8	4.3	1.5	41.0	87.9	44.5	2.89	34.6	4.5	2.9	40.8	86.0	45.0	2.86	35.2	4.6	4.9	40.6			
		1.6	100	111.3	42.5	3.74	29.8	3.3	1.5	42.1	107.6	43.0	3.62	30.6	3.5	2.8	41.8	105.7	43.0	3.58	30.8	3.5	4.6	41.8			
		1.6	120	131.1	41.5	4.71	25.4	2.6	1.5	43.2	127.5	42.0	4.58	26.4	2.7	2.6	43.0	125.6	42.0	4.54	26.5	2.7	4.4	42.9			
	11.25	3.3	60	73.1	49.0	2.43	40.7	5.9	1.5	42.8	68.8	49.5	2.33	41.6	6.2	3.1	42.6	66.7	50.0	2.30	42.2	6.4	5.2	42.5			
		3.3	80	92.4	46.5	3.01	36.2	4.5	1.5	43.6	88.4	47.0	2.91	37.1	4.7	2.9	43.4	86.3	47.5	2.87	37.7	4.9	4.9	43.3			
		3.3	100	111.9	44.5	3.77	31.6	3.5	1.5	44.4	108.0	45.0	3.65	32.6	3.6	2.8	44.2	106.0	45.0	3.60	32.7	3.7	4.6	44.2			
		3.3	120	131.6	43.5	4.74	27.3	2.7	1.5	45.1	127.7	43.5	4.60	27.8	2.8	2.6	45.1	125.8	43.5	4.55	28.0	2.8	4.4	45.0			
	15.0	5.5	60	73.5	50.5	2.46	42.1	6.0	1.5	44.4	69.1	51.0	2.35	43.0	6.3	3.1	44.3	66.9	51.5	2.32	43.6	6.5	5.2	44.2			
		5.5	80	92.8	48.0	3.05	37.6	4.6	1.5	45.0	88.6	48.5	2.93	38.5	4.8	2.9	44.9	86.5	49.0	2.90	39.1	5.0	4.9	44.8			
		5.5	100	112.1	45.5	3.80	32.5	3.5	1.5	45.7	108.1	45.5	3.68	32.9	3.6	2.8	45.6	106.1	46.0	3.64	33.6	3.7	4.6	45.5			
		5.5	120	131.7	44.0	4.77	27.7	2.7	1.5	46.3	127.9	44.5	4.63	28.7	2.8	2.6	46.2	125.9	44.5	4.58	28.9	2.8	4.4	46.2			

WRA, WHA 060 – Heating (continued)

Source			Load Flow 7.5 GPM								Load Flow 11.25 GPM						Load Flow 15.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	7.5	1.6	60	74.0	52.5	2.42	44.2	6.4	1.5	48.2	69.4	53.0	2.31	45.1	6.7	3.1	48.0	67.1	53.5	2.27	45.8	6.9	5.2	47.8
		1.6	80	93.5	50.5	3.01	40.2	4.9	1.5	49.3	89.1	51.0	2.89	41.1	5.2	2.9	49.0	86.9	51.5	2.85	41.8	5.3	4.9	48.9
		1.6	100	112.9	48.5	3.78	35.6	3.8	1.5	50.5	108.7	49.0	3.64	36.6	3.9	2.8	50.2	106.5	49.0	3.59	36.8	4.0	4.6	50.2
		1.6	120	132.5	47.0	4.75	30.8	2.9	1.5	51.8	128.4	47.0	4.60	31.3	3.0	2.6	51.6	126.3	47.5	4.54	32.0	3.1	4.4	51.5
	11.25	3.2	60	74.9	56.0	2.44	47.7	6.7	1.5	51.5	70.0	56.5	2.31	48.6	7.2	3.1	51.4	67.6	57.0	2.27	49.3	7.4	5.2	51.2
		3.2	80	94.1	53.0	3.04	42.6	5.1	1.5	52.4	89.6	54.0	2.91	44.1	5.4	2.9	52.2	87.3	54.5	2.86	44.7	5.6	4.9	52.0
		3.2	100	113.6	51.0	3.81	38.0	3.9	1.5	53.2	109.0	50.5	3.65	38.0	4.0	2.8	53.2	106.9	51.5	3.60	39.2	4.2	4.6	53.0
		3.2	120	133.1	49.0	4.77	32.7	3.0	1.5	54.2	128.7	49.0	4.62	33.2	3.1	2.6	54.1	126.6	49.5	4.56	33.9	3.2	4.4	54.0
	15.0	5.3	60	75.5	58.0	2.47	49.6	6.9	1.5	53.4	70.4	58.5	2.34	50.5	7.3	3.1	53.3	67.9	59.0	2.29	51.2	7.6	5.2	53.2
		5.3	80	94.7	55.0	3.08	44.5	5.2	1.5	54.1	89.9	55.5	2.94	45.5	5.5	2.9	53.9	87.5	56.0	2.88	46.2	5.7	4.9	53.8
		5.3	100	113.9	52.0	3.84	38.9	4.0	1.5	54.8	109.3	52.5	3.69	39.9	4.2	2.8	54.7	107.1	53.0	3.63	40.6	4.3	4.6	54.6
		5.3	120	133.3	50.0	4.81	33.6	3.0	1.5	55.5	129.0	50.5	4.65	34.6	3.2	2.6	55.4	126.7	50.5	4.59	34.8	3.2	4.4	55.4
70	7.5	1.5	60	75.9	59.5	2.43	51.2	7.2	1.5	56.3	70.7	60.0	2.29	52.2	7.7	3.1	56.1	68.1	60.5	2.24	52.8	7.9	5.2	55.9
		1.5	80	95.2	57.0	3.04	46.6	5.5	1.5	57.6	90.2	57.5	2.90	47.6	5.8	2.9	57.3	87.7	58.0	2.84	48.3	6.0	4.9	57.1
		1.5	100	115.2	54.5	3.81	41.5	4.2	1.5	58.9	109.8	55.0	3.65	42.6	4.4	2.8	58.7	107.4	55.5	3.58	43.3	4.5	4.6	58.5
		1.5	120	134.0	52.5	4.79	36.2	3.2	1.5	60.4	129.4	53.0	4.62	37.2	3.4	2.6	60.1	127.1	53.0	4.55	37.5	3.4	4.4	60.0
	11.25	3.1	60	76.9	63.5	2.45	55.1	7.6	1.5	60.2	71.5	64.5	2.30	56.7	8.2	3.1	59.9	68.7	65.0	2.24	57.4	8.5	5.2	59.8
		3.1	80	96.1	60.5	3.07	50.0	5.8	1.5	61.1	90.8	61.0	2.91	51.1	6.1	2.9	60.9	88.2	61.5	2.85	51.8	6.3	4.9	60.8
		3.1	100	115.2	57.0	3.83	43.9	4.4	1.5	62.2	110.3	58.0	3.66	45.5	4.6	2.8	61.9	107.8	58.5	3.59	46.2	4.8	4.6	61.8
		3.1	120	134.7	55.0	4.82	38.5	3.3	1.5	63.1	129.9	55.5	4.64	39.7	3.5	2.6	62.9	127.3	55.0	4.57	39.4	3.5	4.4	63.0
	15.0	5.2	60	77.6	66.0	2.49	57.5	7.8	1.5	62.3	71.9	67.0	2.32	59.1	8.5	3.1	62.1	68.9	67.0	2.25	59.3	8.7	5.2	62.1
		5.2	80	96.5	62.0	3.11	51.4	5.8	1.5	63.1	91.2	63.0	2.94	53.0	6.3	2.9	62.9	88.5	64.0	2.87	54.2	6.5	4.9	62.8
		5.2	100	115.7	59.0	3.88	45.8	4.5	1.5	63.9	110.6	59.5	3.69	46.9	4.7	2.8	63.7	108.0	60.0	3.62	47.6	4.9	4.6	63.6
		5.1	120	134.9	56.0	4.86	39.4	3.4	1.5	64.7	130.0	56.5	4.67	40.6	3.5	2.6	64.6	127.6	57.0	4.59	41.3	3.6	4.4	64.5
80	7.5	1.5	60	77.9	67.0	2.45	58.7	8.0	1.5	64.4	72.1	68.0	2.28	60.2	8.7	3.1	63.9	69.1	68.0	2.21	60.5	9.0	5.2	63.9
		1.5	80	97.1	64.0	3.07	53.5	6.1	1.5	65.7	91.5	64.5	2.90	54.6	6.5	2.9	65.4	88.7	65.0	2.83	55.3	6.7	4.9	65.2
		1.5	100	116.3	61.0	3.85	47.9	4.6	1.5	67.2	110.9	61.5	3.66	49.0	4.9	2.8	66.9	108.3	62.0	3.58	49.8	5.1	4.6	66.7
		1.5	120	135.6	58.5	4.83	42.0	3.5	1.5	68.8	130.5	59.0	4.63	43.2	3.7	2.6	68.5	127.9	59.5	4.55	44.0	3.8	4.4	68.3
	11.25	3.0	60	78.9	71.0	2.47	62.6	8.4	1.5	68.9	72.8	72.0	2.28	64.2	9.3	3.1	68.6	69.7	73.0	2.20	65.5	9.7	5.2	68.4
		3.0	80	98.1	68.0	3.11	57.4	6.4	1.5	69.8	92.3	69.0	2.92	59.0	6.9	2.9	69.5	89.3	70.0	2.84	60.3	7.2	4.9	69.3
		3.0	100	117.2	64.5	3.88	51.3	4.9	1.5	70.9	111.6	65.0	3.68	52.5	5.2	2.8	70.7	108.8	66.0	3.59	53.7	5.4	4.6	70.4
		3.0	120	136.4	61.4	4.87	44.7	3.7	1.5	72.0	131.0	62.0	4.66	46.1	3.9	2.6	71.8	128.3	62.4	4.57	46.8	4.0	4.4	71.7
	15.0	5.0	60	79.7	74.0	2.50	65.5	8.7	1.5	71.3	73.3	75.0	2.30	67.2	9.6	3.1	71.0	70.1	76.0	2.21	68.4	10.1	5.2	70.9
		5.0	80	99.2	72.0	3.15	61.2	6.7	1.5	71.8	92.6	71.0	2.95	60.9	7.1	2.9	71.9	89.6	72.0	2.86	62.2	7.4	4.9	71.7
		5.0	100	117.7	66.3	3.93	52.9	4.9	1.5	72.9	112.0	67.3	3.71	54.6	5.3	2.8	72.7	109.1	67.9	3.63	55.5	5.5	4.6	72.6
		5.0	120	136.7	62.8	4.90	46.1	3.8	1.5	73.9	131.1	62.6	4.68	46.6	3.9	2.6	73.8	128.4	63.1	4.59	47.4	4.0	4.4	73.7

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 072 – Cooling

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.5 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (F)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F
40	9.0	6.1	50	37.2	57.5	2.44	65.8	23.6	6.2	54.6	40.9	61.5	2.52	70.1	24.4	12.7	55.6	43.0	63.0	2.66	72.1	23.7	21.0	56.0
		6.1	60	45.1	67.0	2.47	75.4	27.2	6.0	56.8	49.5	71.0	2.56	79.7	27.8	12.2	57.7	51.8	74.0	2.70	83.2	27.4	20.3	58.5
		6.0	70	53.1	76.0	2.51	84.6	30.2	5.8	58.8	57.9	82.0	2.62	90.9	31.3	11.9	60.2	60.6	85.0	2.76	94.4	30.8	19.7	61.0
		6.0	80	60.7	87.0	2.58	95.8	33.7	5.7	61.3	66.2	93.0	2.71	102.2	34.3	11.5	62.7	69.2	97.0	2.86	106.8	33.9	19.1	63.7
	13.50	6.0	90	68.4	97.0	2.68	106.1	36.2	5.5	63.6	74.4	105.0	2.83	114.6	37.1	11.2	65.5	77.9	109.0	3.00	119.2	36.4	18.6	66.5
		12.7	50	37.0	58.5	2.39	66.7	24.5	6.2	49.9	40.7	62.5	2.46	70.9	25.4	12.7	50.5	42.8	64.5	2.60	73.4	24.9	21.0	50.9
		12.6	60	44.9	68.0	2.40	76.2	28.4	6.0	51.3	49.2	73.0	2.47	81.4	29.5	12.3	52.1	51.7	75.0	2.61	83.9	28.8	20.3	52.4
		12.6	70	52.7	78.0	2.42	86.2	32.3	5.8	52.8	57.6	84.0	2.51	92.5	33.5	11.9	53.7	60.3	87.0	2.64	96.0	32.9	19.7	54.2
	18.0	12.5	80	60.4	88.0	2.46	96.4	35.8	5.7	54.3	65.9	95.0	2.57	103.8	37.0	11.5	55.4	69.0	99.0	2.71	108.3	36.5	19.1	56.0
		12.5	90	68.0	99.0	2.52	107.6	39.2	5.5	55.9	74.0	108.0	2.66	117.1	40.7	11.2	57.3	77.6	112.0	2.82	121.6	39.8	18.6	58.0
		21.2	50	36.9	59.0	2.46	67.4	24.0	6.2	47.5	40.7	63.0	2.53	71.6	24.9	12.7	48.0	42.8	65.0	2.66	74.1	24.5	21.0	48.2
		21.2	60	44.7	69.0	2.45	77.4	28.1	6.0	48.6	49.2	73.0	2.52	81.6	28.9	12.3	49.1	51.6	76.0	2.67	85.1	28.5	20.3	49.5
50	9.0	21.1	70	52.4	79.0	2.46	87.4	32.1	5.8	49.7	57.4	85.0	2.54	93.7	33.4	11.9	50.4	60.2	88.0	2.68	97.1	32.9	19.7	50.8
		21.0	80	60.2	89.0	2.49	97.5	35.8	5.7	50.8	65.6	97.0	2.59	105.8	37.5	11.5	51.8	68.9	100.0	2.73	109.3	36.6	19.1	52.1
		21.0	90	67.8	100.0	2.54	108.7	39.3	5.5	52.1	73.9	109.0	2.66	118.1	41.0	11.2	53.1	77.3	114.0	2.82	123.6	40.5	18.6	53.7
		5.9	50	37.7	55.5	2.75	64.9	20.2	6.2	67.3	41.3	59.0	2.84	68.7	20.8	12.7	68.3	43.3	60.5	2.97	70.6	20.3	21.0	68.8
	13.50	5.9	60	45.8	64.0	2.78	73.5	23.0	6.0	69.6	49.8	69.0	2.87	78.8	24.0	12.2	71.0	52.1	71.0	3.01	81.3	23.6	20.3	71.7
		5.8	70	53.6	74.0	2.83	83.7	26.1	5.8	72.3	58.3	79.0	2.94	89.0	26.9	11.9	73.7	61.0	81.0	3.08	91.5	26.3	19.6	74.4
		5.8	80	61.6	83.0	2.90	92.9	28.6	5.7	74.8	66.7	90.0	3.03	100.3	29.7	11.5	76.8	69.7	93.0	3.18	103.9	29.2	19.1	77.7
		5.8	90	69.1	94.0	3.00	104.2	31.3	5.5	77.8	75.0	101.0	3.15	111.7	32.1	11.2	79.8	78.3	105.0	3.32	116.3	31.6	18.5	81.0
	18.0	12.2	50	37.4	56.5	2.70	65.7	20.9	6.2	61.7	41.1	60.0	2.78	69.5	21.6	12.7	62.4	43.2	61.5	2.91	71.4	21.1	21.0	62.7
		12.2	60	45.6	65.0	2.71	74.2	24.0	6.0	63.2	49.6	70.0	2.79	79.5	25.1	12.2	64.1	52.0	72.0	2.92	82.0	24.6	20.3	64.6
		12.1	70	53.3	75.0	2.73	84.3	27.4	5.8	65.0	58.0	81.0	2.83	90.6	28.7	11.9	66.1	60.7	84.0	2.97	94.1	28.3	19.7	66.7
		12.1	80	61.1	85.0	2.78	94.5	30.6	5.7	66.8	66.4	92.0	2.89	101.9	31.9	11.5	68.1	69.3	96.0	3.03	106.4	31.6	19.1	68.9
70	9.0	12.1	90	68.7	96.0	2.85	105.7	33.7	5.5	68.8	74.6	104.0	2.98	114.2	34.9	11.2	70.3	78.0	108.0	3.14	118.7	34.4	18.6	71.1
		20.5	50	37.4	56.5	2.77	66.0	20.4	6.2	58.8	41.0	60.5	2.84	70.2	21.3	12.7	59.4	43.1	62.0	2.97	72.1	20.9	21.0	59.6
		20.4	60	45.3	66.0	2.77	75.4	23.9	6.0	60.1	49.5	71.0	2.84	80.7	25.0	12.2	60.8	51.9	73.0	2.97	83.1	24.6	20.3	61.1
		20.3	70	53.1	76.0	2.78	85.5	27.4	5.8	61.4	57.9	82.0	2.86	91.8	28.6	11.9	62.2	60.7	84.0	3.00	94.2	28.0	19.7	62.6
80	9.0	20.3	80	60.9	86.0	2.81	95.6	30.6	5.7	62.7	66.2	93.0	2.91	102.9	32.0	11.5	63.7	69.2	97.0	3.05	107.4	31.8	19.1	64.3
		20.2	90	68.4	97.0	2.86	106.8	33.9	5.5	64.2	74.4	105.0	2.99	115.2	35.2	11.2	65.4	77.8	110.0	3.14	120.7	35.0	18.6	66.1
		5.5	50	38.8	50.5	3.45	62.3	14.6	6.2	86.6	42.1	53.0	3.53	65.1	15.0	12.6	87.3	43.9	54.5	3.67	67.0	14.9	21.0	87.9
		5.5	60	46.9	59.0	3.48	70.9	16.9	6.0	88.9	50.7	63.0	3.57	75.2	17.6	12.2	90.1	52.8	64.5	3.71	77.2	17.4	20.3	90.6
	13.50	5.5	70	54.9	68.0	3.53	80.1	19.2	5.8	91.3	59.3	72.0	3.64	84.4	19.8	11.8	92.5	61.7	75.0	3.78	87.9	19.8	19.6	93.4
		5.5	80	62.9	77.0	3.61	89.3	21.3	5.6	93.8	67.9	82.0	3.73	94.7	22.0	11.5	95.3	70.6	85.0	3.89	98.3	21.9	19.0	96.2
		5.4	90	70.7	87.0	3.71	99.7	23.4	5.5	96.6	76.2	93.0	3.86	106.2	24.1	11.2	98.3	79.2	97.0	4.02	110.7	24.1	18.5	99.5
		11.5	50	38.7	51.0	3.39	62.6	15.0	6.2	81.1	41.9	54.5	3.47	66.3	15.7	12.6	81.8	43.8	56.0	3.60	68.3	15.6	21.0	82.1
	18.0	11.4	60	46.7	60.0	3.40	71.6	17.6	6.0	82.7	50.5	64.0	3.48	75.9	18.4	12.2	83.5	52.7	66.0	3.62	78.3	18.3	20.3	83.9
		11.4	70	54.7	69.0	3.43	80.7	20.1	5.8	84.3	59.0	74.0	3.52	86.0	21.0	11.8	85.3	61.6	76.0	3.66	88.5	20.8	19.6	85.7
		11.4	80	62.4	79.0	3.48	90.9	22.7	5.6	86.2	67.4	85.0	3.59	97.2	23.7	11.5	87.3	70.2	88.0	3.73	100.7	23.6	19.1	87.9
		11.3	90	70.2	89.0	3.55	101.1	25.1	5.5	88.0	75.8	96.0	3.68	108.6	26.1	11.2	89.3	79.0	99.0	3.84	112.1	25.8	18.5	89.9
90	9.0	19.1	50	38.6	51.5	3.45	63.3	14.9	6.2	78.4	41.9	55.0	3.52	67.0	15.6	12.6	78.9	43.7	56.5	3.65	69.0	15.5	21.0	79.2
		19.1	60	46.6	60.5	3.45	72.3	17.5	6.0	79.6	50.4	64.5	3.52	76.5	18.3	12.2	80.2	52.7	66.0	3.65	78.5	18.1	20.3	80.5
		19.1	70	54.4	70.0	3.46	81.8	20.2	5.8	80.9	58.9	75.0	3.55	87.1	21.1	11.8	81.6	61.4	77.0	3.68	89.6	20.9	19.6	81.9
		19.0	80	62.2	80.0	3.50	91.9	22.9	5.6	82.3	67.3	86.0	3.59	98.3	23.9	11.5	83.1	70.1	89.0	3.74	101.8	23.8	19.1	83.6
	13.50	19.0	90	70.0	90.0	3.56	102.1	25.3	5.5	83.6	75.6	97.0	3.68	109.6	26.4	11.2	84.6	78.8	101.0	3.83	114.1	26.4	18.5	85.2
		5.4	50	39.3	48.0	3.83	61.1	12.5	6.2	96.3	42.4	51.0	3.93	64.4	13.0	12.6	97.2	44.2	52.0	4.07	65.9	12.8	21.0	97.6
		5.4	60	47.6	56.0	3.89	69.3	14.4	6.0	98.5	51.2	59.5	3.98	73.1	15.0	12.2	99.5	53.2	61.0	4.12	75.0	14.8	20.3	100.0
		5.3	70	55.7	64.5	3.94	77.9	16.4	5.8	100.8	59.8	69.0	4.04	82.8	17.1	11.8	102.1	62.1	71.0	4.19	85.3	17.0	19.6	102.7
	18.0	5.3	80	63.6	74.0	4.02	87.7	18.4	5.6	103.4	68.3	79.0	4.14	93.1	19.1	11.5	104.8	71.0	81.0	4.29	95.6	18.9	19.0	105.5
		5.3	90	71.6	83.0	4.12	97.1	20.2	5.5	105.9	76.8	89.0	4.26	103.5	20.9	11.2	107.6	79.8	92.0	4.42	107.1	20.8	18.5	108.6
		11.1	50	39.2	48.5	3.78	61.4	12.8	6.2	90.9	42.4	51.5	3.86	64.7	13.3	12.6	91.5	44.2	52.5	4.00	66.1	13.1	21.0	91.8
		11.1	60	47.3	57.0	3.80	70.0	15.0	6.0	92.4	51.0	61.0	3.88	74.2	15.7	12.2	93.2	53.1	62.5	4.01	76.2	15.6	20.3	93.5
70	9.0	11.1	70	55.3	66.0	3.83	79.1	17.3	5.8	94.1	59.6	70.0	3.92	83.4	17.9	11.8	94.8	61.9	73.0	4.05	86.8	18.0	19.6	95.4
		11.0	80	63.3	75.0	3.87	88.2	19.4	5.6	95.7	68.0	81.0	3.98	94.6	20.4	11.5	96.8	70.7	84.0	4.12	98.1	20.4	19.0	97.4
		11.0	90	71.1	85.0	3.94	98.5	21.6	5.5	97.5	76.5	91.0	4.07	104.9	22.4	11.2	98.6	79.4	95.0	4.23	109.4	22.5	18.5	99.5
		18.6	50	39.1	49.0	3.83	62.1	12.8	6.2	88.3	42.3	52.0	3.91	65.4	13.3	12								

WRA, WCA 072 – Cooling (continued)

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.5 GPM							Load Flow 18.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	9.0	5.0	50	41.0	40.5	5.35	58.8	7.6	6.2	125.7	43.7	42.5	5.44	61.1	7.8	12.6	126.3	45.2	43.0	5.58	62.1	7.7	20.9	126.5
		5.0	60	49.4	47.5	5.42	66.0	8.8	6.0	127.6	52.6	50.0	5.51	68.8	9.1	12.2	128.4	54.3	51.0	5.65	70.3	9.0	20.2	128.7
		5.0	70	58.2	53.0	5.47	71.7	9.7	5.8	129.1	61.4	58.0	5.59	77.1	10.4	11.8	130.6	63.4	59.5	5.74	79.1	10.4	19.6	131.1
		4.9	80	66.0	63.0	5.58	82.1	11.3	5.6	131.9	70.2	66.0	5.69	85.4	11.6	11.4	132.8	72.3	69.0	5.83	88.9	11.8	19.0	133.7
	4.9	90	90.0							110.0	78.9	75.0	5.81	94.8	12.9	11.1	135.3	81.3	78.0	5.96	98.4	13.1	18.5	136.2
	13.50	10.3	50	40.9	41.0	5.27	59.0	7.8	6.2	120.5	43.6	43.0	5.35	61.3	8.0	12.6	120.9	45.2	43.5	5.48	62.2	7.9	20.9	121.1
		10.3	60	49.2	48.5	5.30	66.6	9.1	6.0	121.8	52.5	50.5	5.38	68.8	9.4	12.2	122.2	54.3	51.5	5.51	70.3	9.4	20.2	122.5
		10.2	70	57.7	55.5	5.33	73.7	10.4	5.8	123.1	61.1	60.0	5.43	78.5	11.0	11.8	124.0	63.3	60.5	5.56	79.5	10.9	19.6	124.1
		10.2	80	65.8	64.0	5.40	82.4	11.9	5.6	124.7	69.9	68.0	5.49	86.7	12.4	11.4	125.4	72.4	68.0	5.61	87.1	12.1	19.0	125.5
	10.2	90	74.0	72.0	5.44	90.6	13.2	5.4	126.1	78.6	77.0	5.56	96.0	13.8	11.1	127.1	81.1	80.0	5.71	99.5	14.0	18.5	127.7	
	18.0	17.2	50	40.9	41.0	5.30	59.1	7.7	6.2	117.9	43.6	43.0	5.38	61.3	8.0	12.6	118.2	45.1	44.0	5.52	62.8	8.0	20.9	118.4
		17.1	60	49.2	48.5	5.32	66.7	9.1	6.0	118.9	52.4	51.5	5.40	69.9	9.5	12.2	119.3	54.2	52.5	5.53	71.4	9.5	20.2	119.5
17.1		70	57.4	56.5	5.34	74.7	10.6	5.8	120.0	61.2	59.5	5.43	78.0	11.0	11.8	120.4	63.2	61.5	5.56	80.5	11.1	19.6	120.7	
17.1		80	65.6	65.0	5.39	83.4	12.1	5.6	121.1	69.8	69.0	5.47	87.7	12.6	11.4	121.7	72.0	72.0	5.61	91.1	12.8	19.0	122.2	
17.1	90	73.8	73.0	5.42	91.5	13.5	5.4	122.2	78.3	79.0	5.53	97.9	14.3	11.1	123.1	80.9	82.0	5.68	101.4	14.4	18.5	123.5		
120	9.0	4.9	50	41.6	37.8	6.01	58.3	6.3	6.2	135.5	44.1	39.5	6.09	60.3	6.5	12.6	136.1	45.5	40.5	6.23	61.8	6.5	20.9	136.5
		4.9	60	50.1	44.5	6.06	65.2	7.3	6.0	137.4	53.0	47.0	6.15	68.0	7.6	12.2	138.1	54.7	47.5	6.29	69.0	7.6	20.2	138.4
		4.8	70	58.6	51.5	6.12	72.4	8.4	5.8	139.3	62.0	54.0	6.22	75.2	8.7	11.8	140.1	63.8	55.5	6.37	77.2	8.7	19.6	140.6
		4.8	80	66.7	60.0	6.22	81.2	9.7	5.6	141.7	70.7	63.0	6.33	84.6	10.0	11.5	142.6	72.9	64.0	6.47	86.1	9.9	19.0	143.0
	4.8	90	76.3	61.5	6.25	82.8	9.8	5.5	142.1	79.6	70.0	6.44	92.0	10.9	11.1	144.5	81.9	73.0	6.61	95.5	11.1	18.5	145.5	
	13.50	10.0	50	41.4	38.5	5.91	58.7	6.5	6.2	130.4	44.1	40.0	5.99	60.5	6.7	12.6	130.7	45.4	41.0	6.13	61.9	6.7	20.9	131.0
		10.0	60	50.0	45.0	5.94	65.3	7.6	6.0	131.6	53.0	47.5	6.02	68.0	7.9	12.2	132.1	54.6	48.5	6.15	69.5	7.9	20.2	132.4
		10.0	70	58.4	52.0	5.97	72.4	8.7	5.8	132.9	61.8	55.5	6.06	76.2	9.2	11.8	133.5	63.7	56.5	6.19	77.6	9.1	19.6	133.8
		10.0	80	67.0	58.5	6.01	79.0	9.7	5.6	134.0	70.6	63.5	6.13	84.4	10.4	11.5	135.0	72.7	66.0	6.27	87.4	10.5	19.0	135.5
	10.0	90	90.0						120.0	79.2	73.0	6.22	94.2	11.7	11.1	136.8	81.7	75.0	6.36	96.7	11.8	18.5	137.2	
	18.0	16.8	50	41.4	38.5	5.95	58.8	6.5	6.2	127.8	44.0	40.5	6.02	61.1	6.7	12.6	128.1	45.4	41.5	6.16	62.5	6.7	20.9	128.3
		16.7	60	49.9	45.5	5.96	65.8	7.6	6.0	128.8	52.9	48.0	6.03	68.6	8.0	12.2	129.1	54.6	49.0	6.17	70.0	7.9	20.2	129.3
16.7		70	58.2	53.0	5.98	73.4	8.9	5.8	129.8	61.7	56.0	6.07	76.7	9.2	11.8	130.2	63.6	57.5	6.20	78.6	9.3	19.6	130.5	
16.7		80	66.9	59.0	6.01	79.5	9.8	5.6	130.6	70.4	65.0	6.13	85.9	10.6	11.4	131.5	72.6	67.0	6.27	88.4	10.7	19.0	131.8	
16.7	90	76.1	62.5	6.01	83.0	10.4	5.5	131.1	79.0	74.0	6.17	95.1	12.0	11.1	132.7	81.4	77.0	6.31	98.5	12.2	18.5	133.1		

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio

ELT - Entering Load Temperature LLT - Leaving Load Temperature

TC - Total Cooling kW - Kilowatts

HR - Heat Rejected WPD - Water Pressure Drop

LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

☐ = Operation not recommended

- Notes:**
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 072 – Heating

Source			ELT °F	Load Flow 9.0 GPM							Load Flow 13.50 GPM							Load Flow 18.0 GPM							
EST °F	Flow GPM	WPD (F)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F	
30	9.0	6.7	60	67.9	35.6	2.95	25.5	3.5	5.8	24.3	66.9	46.5	2.95	36.4	4.6	11.9	21.9	65.2	47.0	3.03	36.7	4.5	19.9	21.9	
		6.7	80	87.5	33.6	3.69	21.0	2.7	5.4	25.3	86.4	43.5	3.67	31.0	3.5	11.2	23.1	84.9	44.5	3.74	31.7	3.5	18.7	23.0	
		6.6	120	127.2	32.2	5.88	12.1	1.6	4.9	27.3	126.2	42.0	5.84	22.1	2.1	10.1	25.1	124.7	42.5	5.90	22.4	2.1	16.8	25.0	
	13.50	13.6	60	68.3	37.2	3.05	26.8	3.6	5.8	26.0	67.1	48.0	3.04	37.6	4.6	11.9	24.4	65.4	48.5	3.12	37.8	4.5	19.9	24.4	
		13.6	80	88.8	35.2	3.79	22.3	2.7	5.4	27.7	86.7	45.0	3.77	32.1	3.5	11.2	25.2	85.1	46.0	3.84	32.9	3.5	18.6	25.1	
		13.6	100	107.4	33.4	4.73	17.2	2.1	5.1	27.4	106.5	44.0	4.70	28.0	2.7	10.6	25.9	104.9	44.5	4.76	28.3	2.7	17.6	25.8	
	18.0	22.7	60	68.4	38.0	3.21	27.1	3.5	5.8	27.0	67.3	49.5	3.19	38.6	4.5	11.9	25.7	65.6	50.0	3.28	38.8	4.5	19.8	25.7	
		22.6	80	88.0	36.0	3.94	22.5	2.7	5.4	27.5	87.0	47.0	3.93	33.6	3.5	11.2	26.3	85.2	47.0	3.99	33.4	3.4	18.6	26.3	
		22.6	100	107.6	34.4	4.88	17.7	2.1	5.1	28.0	106.7	45.0	4.84	28.5	2.7	10.6	26.8	105.1	45.5	4.90	28.8	2.7	17.6	26.8	
	40	9.0	6.4	60	69.0	40.5	3.05	30.1	3.9	5.7	33.3	67.9	53.0	3.01	42.7	5.2	11.9	30.5	66.0	54.0	3.09	43.5	5.1	19.8	30.3
			6.4	80	88.6	38.5	3.75	25.7	3.0	5.4	34.3	87.5	50.5	3.71	37.8	4.0	11.2	31.6	85.7	51.5	3.79	38.6	4.0	18.6	31.4
			6.4	100	108.3	37.4	4.68	21.4	2.3	5.1	35.2	107.3	49.0	4.63	33.2	3.1	10.6	32.6	105.5	49.5	4.68	33.5	3.1	17.6	32.6
13.50		13.1	60	69.4	42.5	3.13	31.8	4.0	5.7	35.3	68.2	55.5	3.10	44.9	5.2	11.9	33.3	66.3	56.5	3.17	45.7	5.2	19.8	33.2	
		13.1	80	89.0	40.5	3.83	27.4	3.1	5.4	35.9	87.9	53.0	3.80	40.0	4.1	11.2	34.1	85.9	53.5	3.86	40.3	4.1	18.6	34.0	
		13.1	100	108.7	39.0	4.77	22.7	2.4	5.1	36.6	107.6	51.0	4.71	34.9	3.2	10.6	34.8	105.7	51.5	4.76	35.2	3.2	17.6	34.8	
18.0		21.8	60	69.8	44.0	3.27	32.8	3.9	5.7	36.4	68.4	57.0	3.23	46.0	5.2	11.9	34.9	66.4	58.0	3.31	46.7	5.1	19.8	34.8	
		21.7	80	89.2	41.5	3.98	27.9	3.1	5.4	36.9	88.0	54.0	3.94	40.6	4.0	11.1	35.5	86.1	54.5	4.00	40.8	4.0	18.6	35.5	
		21.7	100	108.8	39.5	4.91	22.7	2.4	5.1	37.5	107.7	52.0	4.85	35.5	3.1	10.6	36.1	105.8	52.5	4.90	35.8	3.1	17.6	36.0	
50		9.0	6.2	60	70.3	46.5	3.07	36.0	4.4	5.7	42.0	69.0	61.0	3.02	50.7	5.9	11.8	38.7	66.9	62.0	3.09	51.5	5.9	19.8	38.6
			6.2	80	89.8	44.0	3.80	31.0	3.4	5.4	43.1	88.6	58.0	3.75	45.2	4.5	11.1	40.0	86.6	59.5	3.81	46.5	4.6	18.6	39.7
			6.2	100	109.4	42.5	4.72	26.4	2.6	5.1	44.1	108.2	55.5	4.65	39.6	3.5	10.6	41.2	106.3	56.5	4.70	40.5	3.5	17.6	41.0
	13.50	12.6	60	70.9	49.0	3.15	38.3	4.6	5.7	44.3	69.6	64.5	3.09	53.9	6.1	11.8	42.0	67.2	65.0	3.16	54.2	6.0	19.8	42.0	
		12.6	80	90.3	46.5	3.90	33.2	3.5	5.4	45.1	89.1	61.5	3.83	48.4	4.7	11.1	42.8	86.9	62.0	3.89	48.7	4.7	18.6	42.8	
		12.6	100	109.9	44.5	4.82	28.0	2.7	5.1	45.8	108.6	58.0	4.74	41.8	3.6	10.5	43.8	106.5	58.5	4.77	42.2	3.6	17.6	43.7	
	18.0	21.0	60	71.2	50.5	3.28	39.3	4.5	5.7	45.6	69.8	66.0	3.22	55.0	6.0	11.8	43.9	67.4	67.0	3.28	55.8	6.0	19.8	43.8	
		21.0	80	90.7	48.0	4.03	34.2	3.5	5.4	46.2	89.3	63.0	3.97	49.4	4.6	11.1	44.5	87.1	63.5	4.03	49.8	4.6	18.6	44.5	
		20.9	100	110.1	45.5	4.95	28.6	2.7	5.1	46.8	108.8	59.5	4.87	42.9	3.6	10.5	45.2	106.7	60.0	4.91	43.2	3.6	17.6	45.2	
			20.9	120	129.8	44.0	6.18	22.9	2.1	4.9	47.5	128.6	58.0	6.09	37.2	2.8	10.1	45.9	126.5	58.5	6.12	37.6	2.8	16.8	45.8

WRA, WHA 072 – Heating (continued)

Source			Load Flow 9.0 GPM								Load Flow 13.50 GPM						Load Flow 18.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	9.0	6.0	60	71.7	52.5	3.09	41.9	5.0	5.7	50.7	70.4	70.0	3.03	59.7	6.8	11.8	46.7	67.9	71.0	3.08	60.5	6.7	19.8	46.6
		6.0	80	91.2	50.5	3.86	37.3	3.8	5.4	51.7	89.9	67.0	3.78	54.1	5.2	11.1	48.0	87.4	67.0	3.82	54.0	5.1	18.6	48.0
		6.0	100	110.8	48.5	4.79	32.2	3.0	5.1	52.9	109.6	64.5	4.70	48.5	4.0	10.5	49.2	107.2	65.0	4.73	48.9	4.0	17.6	49.1
		6.0	120	130.4	47.0	6.01	26.5	2.3	4.9	54.1	129.1	61.5	5.90	41.4	3.1	10	50.8	126.9	62.0	5.92	41.8	3.1	16.8	50.7
	13.50	12.2	60	72.4	56.0	3.18	45.1	5.2	5.7	53.3	71.0	74.0	3.10	63.4	7.0	11.8	50.6	68.3	75.0	3.16	64.2	7.0	19.7	50.5
		12.2	80	91.8	53.0	3.95	39.5	3.9	5.4	54.1	90.4	70.0	3.85	56.9	5.3	11.1	51.6	87.9	71.0	3.89	57.7	5.3	18.5	51.4
		12.2	100	111.3	51.0	4.89	34.3	3.1	5.1	54.9	109.9	67.0	4.71	50.7	4.1	10.5	52.5	107.6	68.0	4.81	51.6	4.1	17.6	52.4
		12.2	120	130.9	49.0	6.10	28.2	2.4	4.9	55.8	129.5	64.0	5.98	43.6	3.1	10	53.5	127.2	64.5	6.00	44.0	3.2	16.8	53.5
	18.0	20.3	60	72.9	58.0	3.32	46.7	5.1	5.7	54.8	71.4	77.0	3.23	66.0	7.0	11.8	52.7	68.7	78.0	3.28	66.8	7.0	19.7	52.6
		20.3	80	92.2	55.0	4.08	41.1	3.9	5.4	55.4	90.7	72.0	3.99	58.4	5.3	11.1	53.5	88.1	73.0	4.02	59.3	5.3	18.5	53.4
		20.2	100	111.6	52.0	5.02	34.9	3.0	5.1	56.1	109.9	67.0	4.91	50.3	4.0	10.5	54.4	107.6	68.0	4.94	51.2	4.0	17.6	54.3
		20.2	120	131.1	50.0	6.24	28.7	2.3	4.9	56.8	129.8	66.0	6.11	45.1	3.2	10	55.0	127.3	66.0	6.13	45.1	3.2	16.8	55.0
70	9.0	5.8	60	73.2	59.5	3.14	48.8	5.6	5.7	59.2	71.7	79.0	3.05	68.6	7.6	11.8	54.8	68.9	80.0	3.09	69.5	7.6	19.7	54.6
		5.8	80	92.7	57.0	3.91	43.7	4.3	5.4	60.3	91.1	75.0	3.80	62.0	5.8	11.1	56.2	88.4	76.0	3.83	62.9	5.8	18.5	56.0
		5.8	100	112.1	54.5	4.86	37.9	3.3	5.1	61.6	110.7	72.0	4.74	55.8	4.4	10.5	57.6	108.0	72.0	4.77	55.7	4.4	17.6	57.6
		5.8	120	131.7	52.5	6.08	31.7	2.5	4.9	62.9	130.2	69.0	5.94	48.7	3.4	10	59.2	127.7	69.0	5.94	48.7	3.4	16.7	59.2
	13.50	11.8	60	74.1	63.5	3.24	52.4	5.7	5.7	62.2	72.6	85.0	3.13	74.3	7.9	11.8	59.0	69.6	86.0	3.17	75.2	7.9	19.7	58.9
		11.8	80	93.4	60.5	4.00	46.8	4.4	5.4	63.1	91.9	80.0	3.89	66.7	6.0	11.1	60.1	89.0	81.0	3.91	67.7	6.1	18.5	60.0
		11.8	100	112.7	57.0	4.98	40.0	3.4	5.1	64.1	111.3	76.0	4.84	59.5	4.6	10.5	61.2	108.6	77.0	4.84	60.5	4.7	17.6	61.0
		11.8	120	132.2	55.0	6.17	34.0	2.6	4.9	65.0	130.5	71.0	6.02	50.5	3.5	10	62.5	128.1	73.0	6.03	52.4	3.5	16.7	62.2
	18.0	19.6	60	74.7	66.0	3.38	54.5	5.7	5.7	63.9	73.0	88.0	3.27	76.8	7.9	11.8	61.5	69.9	89.0	3.31	77.7	7.9	19.7	61.4
		19.6	80	93.8	62.0	4.15	47.9	4.4	5.4	64.7	92.3	83.0	4.02	69.3	6.1	11.1	62.3	89.2	83.0	4.04	69.2	6.0	18.5	62.3
		19.6	100	113.1	59.0	5.11	41.6	3.4	5.1	65.4	111.6	78.0	4.96	61.1	4.6	10.5	63.2	108.8	79.0	4.97	62.0	4.7	17.6	63.1
		19.5	120	132.4	56.0	6.32	34.4	2.6	4.9	66.2	130.8	73.0	6.15	52.0	3.5	10	64.2	128.2	74.0	6.14	53.0	3.5	16.7	64.1
80	9.0	5.6	60	74.9	67.0	3.21	56.0	6.1	5.7	67.5	73.2	89.0	3.09	78.5	8.4	11.8	62.6	70.0	90.0	3.12	79.3	8.4	19.7	62.4
		5.6	80	94.2	64.0	3.98	50.4	4.7	5.3	68.8	92.6	85.0	3.85	71.9	6.5	11.1	64.0	89.6	86.0	3.86	72.8	6.5	18.5	63.8
		5.6	100	113.6	61.0	4.93	44.2	3.6	5.1	70.2	112.0	81.0	4.79	64.7	5.0	10.5	65.6	108.9	80.0	4.78	63.7	4.9	17.5	65.8
		5.6	120	133.0	58.5	6.14	37.5	2.8	4.8	71.7	131.4	77.0	6.00	56.5	3.8	10	67.4	128.4	76.0	5.97	55.6	3.7	16.7	67.6
	13.50	11.5	60	75.8	71.0	3.33	59.6	6.2	5.7	71.2	74.2	96.0	3.20	85.1	8.8	11.7	67.4	70.8	97.0	3.22	86.0	8.8	19.7	67.3
		11.5	80	95.1	68.0	4.09	54.0	4.9	5.3	72.0	93.3	90.0	3.95	76.5	6.7	11.1	68.7	90.1	91.0	3.96	77.5	6.7	18.5	68.5
		11.5	100	114.3	64.5	5.05	47.3	3.7	5.1	73.0	112.6	85.0	4.87	68.4	5.1	10.5	69.9	109.6	86.0	4.87	69.4	5.2	17.5	69.7
		11.4	120	133.6	61.4	6.26	40.0	2.9	4.8	74.1	132.0	81.1	6.10	60.3	3.9	10	71.1	129.0	80.9	6.08	60.1	3.9	16.7	71.1
	18.0	19.1	60	76.4	74.0	3.52	62.0	6.2	5.6	73.1	75.0	101.0	3.35	89.6	8.8	11.7	70.0	71.2	101.0	3.36	89.5	8.8	19.6	70.1
		19.0	80	96.0	72.0	4.25	57.5	5.0	5.3	73.6	93.9	93.9	4.10	79.9	6.7	11	71.1	90.5	94.7	4.10	80.7	6.8	18.5	71.0
		19.0	100	114.7	66.3	5.21	48.5	3.7	5.1	74.6	112.4	83.9	4.99	66.9	4.9	10.5	72.6	110.0	89.8	5.02	72.6	5.2	17.5	71.9
		19.0	120	134.0	62.8	6.41	40.9	2.9	4.8	75.5	132.0	81.2	6.21	60.0	3.8	10	73.3	129.3	84.1	6.22	62.9	4.0	16.7	73.0

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 120 – Cooling

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (F)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F
40	15.0	1.6	50	38.5	86.0	3.90	99.3	22.1	1.6	53.2	41.8	92.0	3.92	105.4	23.5	3.3	54.1	43.7	95.0	3.97	108.6	23.9	5.5	54.5
		1.6	60	46.8	99.0	3.88	112.2	25.5	1.6	55.0	50.6	106.0	3.90	119.3	27.2	3.2	55.9	52.6	111.0	3.95	124.5	28.1	5.3	56.6
		1.6	70	54.9	113.0	3.87	126.2	29.2	1.5	56.8	59.2	122.0	3.88	135.3	31.4	3.1	58.0	61.5	127.0	3.93	140.4	32.3	5.2	58.7
		1.6	80	62.9	128.0	3.85	141.2	33.2	1.5	58.8	67.7	138.0	3.88	151.2	35.6	3.0	60.2	70.4	144.0	3.92	157.4	36.7	5.0	61.0
	22.5	3.3	50	38.3	88.0	3.70	100.6	23.8	1.6	48.9	41.6	94.0	3.70	106.6	25.4	3.3	49.5	43.5	97.0	3.73	109.7	26.0	5.9	49.8
		3.3	60	46.5	101.0	3.63	113.4	27.8	1.6	50.1	50.3	109.0	3.62	121.3	30.1	3.2	50.8	52.5	113.0	3.65	125.5	31.0	5.3	51.2
		3.3	70	54.5	116.0	3.56	128.2	32.6	1.5	51.4	58.9	125.0	3.54	137.1	35.4	3.1	52.2	61.3	130.0	3.56	142.2	36.5	5.2	52.6
		3.3	80	62.4	132.0	3.48	143.9	37.9	1.5	52.8	67.4	142.0	3.45	153.8	41.2	3.0	53.7	70.1	148.0	3.47	159.8	42.7	5.0	54.2
	30.0	5.6	50	38.1	89.0	3.63	101.4	24.5	1.6	46.8	41.6	95.0	3.62	107.3	26.3	3.3	47.2	43.4	99.0	3.65	111.5	27.1	5.5	47.4
		5.6	60	46.4	102.0	3.53	114.1	28.9	1.6	47.6	50.2	110.0	3.51	122.0	31.4	3.2	48.1	52.3	115.0	3.53	127.0	32.6	5.3	48.5
		5.6	70	54.4	117.0	3.44	128.7	34.1	1.5	48.6	58.7	127.0	3.39	138.6	37.5	3.1	49.2	61.2	132.0	3.40	143.6	38.8	5.2	49.6
		5.6	80	62.1	134.0	3.31	145.3	40.5	1.5	49.7	67.2	144.0	3.26	155.1	44.2	3.0	50.3	70.0	150.0	3.26	161.1	46.0	5.0	50.7
50	15.0	1.6	50	38.9	83.0	4.36	97.9	19.0	1.6	63.1	42.2	88.0	4.40	103.0	20.0	3.3	63.7	43.9	91.0	4.46	106.2	20.4	5.5	64.2
		1.6	60	47.3	95.0	4.37	109.9	21.7	1.6	64.7	50.9	102.0	4.41	117.0	23.2	3.2	65.6	52.9	106.0	4.46	121.2	23.7	5.3	66.2
		1.5	70	55.5	109.0	4.38	124.0	24.9	1.5	66.5	59.5	118.0	4.42	133.1	26.7	3.1	67.7	61.9	122.0	4.48	137.3	27.3	5.2	68.3
		1.5	80	63.5	124.0	4.40	139.0	28.2	1.5	68.5	68.1	134.0	4.44	149.1	30.2	3.0	69.9	70.7	140.0	4.49	155.3	31.2	5.0	70.7
	22.5	3.2	50	38.8	84.0	4.17	98.2	20.1	1.6	58.7	42.0	90.0	4.19	104.3	21.5	3.3	59.3	43.8	93.0	4.24	107.5	22.0	5.5	59.6
		3.2	60	47.1	97.0	4.14	111.1	23.4	1.6	59.9	50.7	105.0	4.14	119.1	25.4	3.2	60.6	52.7	109.0	4.18	123.3	26.1	5.3	61.0
		3.2	70	55.1	112.0	4.09	126.0	27.4	1.5	61.2	59.2	121.0	4.09	135.0	29.6	3.1	62.0	61.6	126.0	4.13	140.1	30.5	5.2	62.5
		3.2	80	63.1	127.0	4.04	140.8	31.4	1.5	62.5	67.7	138.0	4.03	151.8	34.2	3.0	63.5	70.4	144.0	4.07	157.9	35.4	5.0	64.0
	30.0	5.4	50	38.7	85.0	4.11	99.0	20.7	1.6	56.6	41.9	91.0	4.12	105.1	22.1	3.3	57.0	43.7	94.0	4.16	108.2	22.6	5.5	57.2
		5.4	60	46.9	98.0	4.06	111.8	24.2	1.6	57.5	50.6	106.0	4.04	119.8	26.2	3.2	58.0	52.7	110.0	4.07	123.9	27.0	5.3	58.3
		5.4	70	54.9	113.0	3.98	126.6	28.4	1.5	58.4	59.2	122.0	3.95	135.5	30.9	3.1	59.0	61.5	127.0	3.98	140.6	31.9	5.2	59.4
		5.4	80	62.8	129.0	3.89	142.3	33.2	1.5	59.5	67.6	140.0	3.86	153.2	36.3	3.0	60.2	70.3	146.0	3.88	159.2	37.6	5.0	60.6
70	15.0	1.5	50	40.0	75.0	5.42	93.5	13.8	1.6	82.5	42.9	80.0	5.46	98.6	14.6	3.3	83.2	44.5	83.0	5.53	101.9	15.0	5.5	83.6
		1.5	60	48.3	88.0	5.46	106.6	16.1	1.6	84.2	51.6	94.0	5.51	112.8	17.1	3.2	85.0	53.5	97.0	5.58	116.0	17.4	5.3	85.5
		1.5	70	56.5	101.0	5.51	119.8	18.3	1.5	86.0	60.4	108.0	5.56	127.0	19.4	3.1	86.9	62.5	112.0	5.63	131.2	19.9	5.2	87.5
		1.4	80	64.7	115.0	5.56	134.0	20.7	1.5	87.9	69.1	123.0	5.62	142.2	21.9	3.0	89.0	71.5	128.0	5.70	147.4	22.5	5.0	89.7
	22.5	3.0	50	39.7	77.0	5.22	94.8	14.8	1.6	78.4	42.7	82.0	5.25	99.9	15.6	3.3	78.9	44.3	85.0	5.31	103.1	16.0	5.5	79.2
		3.0	60	48.1	89.0	5.22	106.8	17.0	1.6	79.5	51.5	96.0	5.25	113.9	18.3	3.2	80.1	53.3	100.0	5.30	118.1	18.9	5.3	80.5
		3.0	70	56.3	103.0	5.22	120.8	19.7	1.5	80.7	60.1	111.0	5.25	128.9	21.1	3.1	81.5	62.3	115.0	5.30	133.1	21.7	5.2	81.8
		3.0	80	64.3	118.0	5.22	135.8	22.6	1.5	82.1	68.7	127.0	5.25	144.9	24.2	3.0	82.9	71.2	132.0	5.30	150.1	24.9	5.0	83.3
	30.0	5.0	50	39.6	78.0	5.16	95.6	15.1	1.6	76.4	42.6	83.0	5.18	100.7	16.0	3.3	76.7	44.3	86.0	5.23	103.9	16.4	5.5	76.9
		5.0	60	48.0	90.0	5.14	107.5	17.5	1.6	77.2	51.4	97.0	5.15	114.6	18.8	3.2	77.6	53.3	101.0	5.20	118.8	19.4	5.3	77.9
		5.0	70	56.1	104.0	5.11	121.5	20.3	1.5	78.1	60.0	113.0	5.12	130.5	22.1	3.1	78.7	62.2	117.0	5.17	134.6	22.6	5.2	79.0
		5.0	80	64.1	119.0	5.09	136.4	23.4	1.5	79.1	68.5	129.0	5.09	146.4	25.4	3.0	79.8	71.1	134.0	5.13	151.5	26.1	5.0	80.1
80	15.0	1.4	50	40.5	71.0	6.04	91.6	11.8	1.6	92.2	43.2	76.0	6.08	96.8	12.5	3.3	92.9	44.7	79.0	6.15	100.0	12.8	5.5	93.3
		1.4	60	48.8	84.0	6.08	104.8	13.8	1.6	94.0	52.1	89.0	6.14	110.0	14.5	3.2	94.7	53.9	92.0	6.21	113.2	14.8	5.3	95.1
		1.4	70	57.1	97.0	6.14	118.0	15.8	1.5	95.7	60.8	103.0	6.20	124.2	16.6	3.1	96.6	62.9	107.0	6.28	128.4	17.0	5.2	97.1
		1.4	80	65.3	110.0	6.21	131.2	17.7	1.5	97.5	69.5	118.0	6.28	139.4	18.8	3.0	98.6	71.9	122.0	6.36	143.7	19.2	5.0	99.2
	22.5	2.9	50	40.3	73.0	5.83	92.9	12.5	1.6	88.3	43.1	78.0	5.86	98.0	13.3	3.3	88.7	44.7	80.0	5.92	100.2	13.5	5.5	88.9
		2.9	60	48.5	86.0	5.83	105.9	14.7	1.6	89.4	51.9	91.0	5.87	111.0	15.5	3.2	89.9	53.7	95.0	5.93	115.2	16.0	5.3	90.2
		2.9	70	56.8	99.0	5.85	119.0	16.9	1.5	90.6	60.6	106.0	5.89	126.1	18.0	3.1	91.2	62.7	110.0	5.94	130.3	18.5	5.2	91.6
		2.9	80	64.9	113.0	5.87	133.0	19.3	1.5	91.8	69.2	121.0	5.90	141.2	20.5	3.0	92.5	71.6	126.0	5.96	146.3	21.1	5.0	93.0
	30.0	4.9	50	40.1	74.0	5.76	93.7	12.8	1.6	86.2	43.0	79.0	5.79	98.8	13.6	3.3	86.6	44.6	81.0	5.84	100.9	13.9	5.5	86.7
		4.9	60	48.5	86.0	5.75	105.6	15.0	1.6	87.0	51.8	92.0	5.77	111.7	15.9	3.2	87.4	53.6	96.0	5.83	115.9	16.5	5.3	87.7
		4.9	70	56.7	100.0	5.74	119.6	17.4	1.5	88.0	60.5	107.0	5.76	126.7	18.6	3.1	88.4	62.6	111.0	5.81	130.8	19.1	5.2	88.7
		4.9	80	64.8	114.0	5.73	133.5	19.9	1.5	88.9	69.1	123.0	5.74	142.6	21.4	3.0	89.5	71.5	128.0	5.79	147.8	22.1	5.0	89.9
90	15.0	1.4	50	40.9	68.0	6.74	91.0	10.1	1.6	102.1	43.6	72.0	6.80	95.2	10.6	3.3	102.7	45.1	74.0	6.87	97.4	10.8	5.5	103.0
		1.4	60	49.3	80.0	6.80	103.2	11.8	1.6	103.8														

WRA, WCA 120 – Cooling (continued)

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	15.0	1.3	50	41.9	60.5	8.44	89.3	7.2	1.6	121.9	44.3	64.0	8.50	93.0	7.5	3.3	122.4	45.7	65.0	8.58	94.3	7.6	5.5	122.6
		1.3	60	50.5	71.0	8.54	100.1	8.3	1.6	123.4	53.3	75.0	8.61	104.4	8.7	3.2	123.9	54.9	76.0	8.68	105.6	8.8	5.3	124.1
		1.3	70	58.9	83.0	8.64	112.5	9.6	1.5	125.0	62.3	87.0	8.69	116.7	10.0	3.1	125.6	64.0	90.0	8.77	119.9	10.3	5.1	126.0
		1.3	80	67.3	95.0	8.71	124.7	10.9	1.5	126.6	71.1	100.0	8.78	130.0	11.4	3.0	127.3	73.1	104.0	8.86	134.2	11.7	5.0	127.9
	1.3	90	75.7	107.0	8.80	137.0	12.2	1.4	128.3	79.9	114.0	8.88	144.3	12.8	2.9	129.2	82.2	117.0	8.96	147.6	13.1	4.9	129.7	
	22.5	2.7	50	41.8	61.5	8.20	89.5	7.5	1.6	118.0	44.3	64.0	8.25	92.1	7.8	3.3	118.2	45.5	67.0	8.32	95.4	8.1	5.5	118.5
		2.7	60	50.3	73.0	8.25	101.2	8.8	1.6	119.0	53.2	76.0	8.30	104.3	9.2	3.2	119.3	54.8	78.0	8.37	106.6	9.3	5.3	119.5
		2.7	70	58.8	84.0	8.28	112.3	10.1	1.5	120.0	62.0	90.0	8.31	118.4	10.8	3.1	120.5	63.8	93.0	8.37	121.6	11.1	5.1	120.8
		2.7	80	67.1	97.0	8.29	125.3	11.7	1.5	121.1	70.8	104.0	8.33	132.4	12.5	3.0	121.8	72.9	107.0	8.39	135.6	12.7	5.0	122.1
	2.7	90	75.3	110.0	8.32	138.4	13.2	1.4	122.3	79.5	118.0	8.37	146.6	14.1	2.9	123.0	81.9	122.0	8.44	150.8	14.5	4.9	123.4	
	30.0	4.5	50	41.7	62.0	8.12	89.7	7.6	1.6	116.0	44.2	65.0	8.16	92.8	8.0	3.3	116.2	45.5	68.0	8.22	96.1	8.3	5.5	116.4
		4.5	60	50.3	73.0	8.15	100.8	9.0	1.6	116.7	53.2	77.0	8.18	104.9	9.4	3.2	117.0	54.7	79.0	8.24	107.1	9.6	5.3	117.1
		4.5	70	58.5	86.0	8.13	113.8	10.6	1.5	117.6	61.9	91.0	8.16	118.8	11.2	3.1	117.9	63.7	94.0	8.21	122.0	11.5	5.2	118.1
		4.5	80	66.9	98.0	8.12	125.7	12.1	1.5	118.4	70.7	105.0	8.15	132.8	12.9	3.0	118.9	72.8	108.0	8.20	136.0	13.2	5.0	119.1
	4.5	90	75.1	112.0	8.13	139.7	13.8	1.4	119.3	79.3	120.0	8.16	147.9	14.7	2.9	119.9	81.7	124.0	8.21	152.0	15.1	4.9	120.1	
	120	15.0	1.3	50	42.5	56.5	9.48	88.9	6.0	1.6	131.8	44.7	59.5	9.54	92.0	6.2	3.3	132.3	45.9	61.0	9.61	93.8	6.3	5.5
1.3			60	51.1	67.0	9.56	99.6	7.0	1.6	133.3	53.7	71.0	9.62	103.8	7.4	3.2	133.8	55.2	72.0	9.69	105.1	7.4	5.3	134.0
1.3			70	59.6	78.0	9.65	110.9	8.1	1.5	134.8	62.7	82.0	9.72	115.2	8.4	3.1	135.4	64.5	83.0	9.78	116.4	8.5	5.1	135.5
1.3			80	68.1	89.0	9.75	122.3	9.1	1.5	136.3	71.6	94.0	9.81	127.5	9.6	3.0	137.0	73.5	97.0	9.88	130.7	9.8	5.0	137.4
1.3		90	76.5	101.0	9.82	134.5	10.3	1.4	137.9	80.5	107.0	9.90	140.8	10.8	2.9	138.8	82.7	110.0	9.98	144.1	11.0	4.9	139.2	
22.5		2.6	50	42.3	57.5	9.23	89.0	6.2	1.6	127.9	44.6	60.5	9.27	92.1	6.5	3.3	128.2	45.8	62.5	9.33	94.4	6.7	5.5	128.4
		2.6	60	50.9	68.0	9.26	99.6	7.3	1.6	128.9	53.6	72.0	9.31	103.8	7.7	3.2	129.2	55.1	74.0	9.37	106.0	7.9	5.3	129.4
		2.6	70	59.5	79.0	9.31	110.8	8.5	1.5	129.8	62.5	84.0	9.36	115.9	9.0	3.1	130.3	64.3	85.0	9.41	117.1	9.0	5.1	130.4
		2.6	80	67.9	91.0	9.33	122.9	9.7	1.5	130.9	71.4	97.0	9.37	129.0	10.3	3.0	131.5	73.3	100.0	9.43	132.2	10.6	5.0	131.7
2.6		90	76.1	104.0	9.36	135.9	11.1	1.4	132.1	80.2	110.0	9.41	142.1	11.7	2.9	132.6	82.4	114.0	9.47	146.3	12.0	4.9	133.0	
30.0		4.4	50	42.3	58.0	9.14	89.2	6.3	1.6	125.9	44.5	61.5	9.17	92.8	6.7	3.3	126.2	45.8	63.0	9.23	94.5	6.8	5.5	126.3
		4.4	60	50.8	69.0	9.15	100.2	7.5	1.6	126.7	53.5	73.0	9.19	104.4	7.9	3.2	127.0	55.0	75.0	9.24	106.5	8.1	5.3	127.1
		4.4	70	59.3	80.0	9.17	111.3	8.7	1.5	127.4	62.4	85.0	9.20	116.4	9.2	3.1	127.8	64.2	87.0	9.24	118.5	9.4	5.1	127.9
		4.4	80	67.6	93.0	9.16	124.3	10.2	1.5	128.3	71.3	98.0	9.19	129.4	10.7	3.0	128.6	73.2	102.0	9.24	133.5	11.0	5.0	128.9
4.4		90	76.0	105.0	9.16	136.3	11.5	1.4	129.1	80.0	112.0	9.19	143.4	12.2	2.9	129.6	82.3	116.0	9.24	147.5	12.5	4.9	129.8	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 120 – Heating

Source			ELT °F	Load Flow 15.0 GPM							Load Flow 22.5 GPM							Load Flow 30.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	15.0	1.8	60	69.3	70.0	4.61	54.3	4.5	1.5	22.8	66.3	71.0	4.50	55.6	4.6	3.1	22.6	64.7	71.0	4.49	55.7	4.6	5.2	22.6
		1.8	80	88.8	66.0	5.67	46.7	3.4	1.4	23.8	86.0	67.0	5.54	48.1	3.5	2.9	23.6	84.5	67.0	5.52	48.2	3.6	4.9	23.6
		1.8	100	108.6	64.5	7.20	39.9	2.6	1.4	24.7	105.7	64.5	7.04	40.5	2.7	2.8	24.6	104.3	65.0	6.99	41.1	2.7	4.6	24.5
		1.7	120	128.3	62.5	9.31	30.7	2.0	1.3	25.9	125.6	63.5	9.11	32.4	2.0	2.7	25.7	124.2	63.5	9.06	32.6	2.1	4.4	25.7
	22.5	3.6	60	69.7	73.0	4.68	57.0	4.6	1.5	24.9	66.6	74.0	4.56	58.4	4.8	3.1	24.8	65.0	75.0	4.54	59.5	4.8	5.2	24.7
		3.6	80	89.3	70.0	5.75	50.4	3.6	1.4	25.5	86.2	70.0	5.62	50.8	3.7	2.9	25.5	84.7	71.0	5.59	51.9	3.7	4.9	25.4
		3.6	100	108.9	67.0	7.27	42.2	2.7	1.4	26.3	106.0	67.0	7.11	42.7	2.8	2.8	26.2	104.5	67.0	7.05	42.9	2.8	4.6	26.2
		3.6	120	128.7	65.0	9.34	33.1	2.0	1.3	27.1	125.9	66.0	9.16	34.7	2.1	2.7	26.9	124.3	65.0	9.11	33.9	2.1	4.4	27.0
	30.0	6.0	60	70.0	75.0	4.76	58.8	4.6	1.5	26.1	66.8	76.0	4.64	60.2	4.8	3.1	26.0	65.1	77.0	4.62	61.2	4.9	5.2	25.9
		6.0	80	89.5	71.0	5.84	51.1	3.6	1.4	26.6	86.4	72.0	5.70	52.6	3.7	2.9	26.5	84.8	72.0	5.66	52.7	3.7	4.9	26.5
		6.0	100	109.1	68.0	7.36	42.9	2.7	1.4	27.1	106.0	68.0	7.18	43.5	2.8	2.8	27.1	104.6	69.0	7.12	44.7	2.8	4.6	27.0
		5.9	120	128.8	66.0	9.42	33.9	2.1	1.3	27.7	125.9	66.0	9.25	34.4	2.1	2.7	27.7	124.5	67.0	9.18	35.7	2.1	4.4	27.6
40	15.0	1.7	60	70.7	80.0	4.71	63.9	5.0	1.5	31.5	67.2	81.0	4.57	65.4	5.2	3.1	31.3	65.4	81.0	4.54	65.5	5.2	5.2	31.3
		1.7	80	90.1	76.0	5.81	56.2	3.8	1.4	32.5	86.8	77.0	5.66	57.7	4.0	2.9	32.3	85.1	77.0	5.61	57.8	4.0	4.9	32.3
		1.7	100	109.9	74.0	7.37	48.9	2.9	1.4	33.5	106.6	74.0	7.16	49.6	3.0	2.8	33.4	105.0	75.0	7.09	50.8	3.1	4.6	33.2
		1.7	120	129.7	73.0	9.35	41.1	2.3	1.3	34.5	126.5	73.0	9.15	41.8	2.3	2.7	34.4	124.9	73.0	9.09	42.0	2.4	4.4	34.4
	22.5	3.4	60	71.2	84.0	4.78	67.7	5.1	1.5	34.0	67.6	85.0	4.63	69.2	5.4	3.1	33.9	65.7	85.0	4.60	69.3	5.4	5.2	33.8
		3.4	80	90.7	80.0	5.91	59.8	4.0	1.4	34.7	87.2	81.0	5.73	61.4	4.1	2.9	34.5	85.4	81.0	5.69	61.6	4.2	4.9	34.5
		3.4	100	110.3	77.0	7.44	51.6	3.0	1.4	35.4	106.8	77.0	7.25	52.3	3.1	2.8	35.4	105.1	77.0	7.17	52.5	3.1	4.6	35.3
		3.4	120	130.0	75.0	9.41	42.9	2.3	1.3	36.2	126.7	75.0	9.19	43.6	2.4	2.7	36.1	125.0	75.0	9.12	43.9	2.4	4.4	36.1
	30.0	5.7	60	71.6	87.0	4.87	70.4	5.2	1.5	35.3	67.8	88.0	4.71	71.9	5.5	3.1	35.2	65.9	88.0	4.67	72.1	5.5	5.2	35.2
		5.7	80	90.9	82.0	5.99	61.5	4.0	1.4	35.9	87.4	83.0	5.82	63.1	4.2	2.9	35.8	85.6	84.0	5.77	64.3	4.3	4.9	35.7
		5.7	100	110.4	78.0	7.51	52.4	3.0	1.4	36.5	107.0	79.0	7.31	54.0	3.2	2.8	36.4	105.3	80.0	7.24	55.3	3.2	4.6	36.3
		5.7	120	130.3	77.0	9.46	44.7	2.4	1.3	37.0	126.8	77.0	9.24	45.5	2.4	2.7	37.0	125.1	77.0	9.17	45.7	2.5	4.4	37.0
50	15.0	1.6	60	72.1	91.0	4.83	74.5	5.5	1.5	40.1	68.2	92.0	4.65	76.1	5.8	3.1	39.8	66.2	93.0	4.60	77.3	5.9	5.2	39.7
		1.6	80	91.7	88.0	5.98	67.6	4.3	1.4	41.0	87.8	88.0	5.78	68.3	4.5	2.9	40.9	85.9	88.0	5.72	68.5	4.5	4.9	40.9
		1.6	100	111.2	84.0	7.47	58.5	3.3	1.3	42.2	107.6	85.0	7.24	60.3	3.4	2.8	42.0	105.7	85.0	7.17	60.5	3.5	4.6	41.9
		1.6	120	131.1	83.0	9.42	50.9	2.6	1.3	43.2	127.4	83.0	9.17	51.7	2.7	2.7	43.1	125.5	83.0	9.08	52.0	2.7	4.4	43.1
	22.5	3.3	60	72.8	96.0	4.87	79.4	5.8	1.5	42.9	68.7	98.0	4.68	82.0	6.1	3.1	42.7	66.6	99.0	4.62	83.2	6.3	5.2	42.6
		3.3	80	92.1	91.0	6.04	70.4	4.4	1.4	43.7	88.2	92.0	5.82	72.1	4.6	2.9	43.6	86.3	94.0	5.75	74.4	4.8	4.9	43.4
		3.3	100	111.7	88.0	7.53	62.3	3.4	1.3	44.5	107.9	89.0	7.30	64.1	3.6	2.8	44.3	105.9	89.0	7.21	64.4	3.6	4.6	44.3
		3.3	120	131.5	86.0	9.46	53.7	2.7	1.3	45.2	127.6	86.0	9.21	54.6	2.7	2.6	45.1	125.7	86.0	9.11	54.9	2.8	4.4	45.1
	30.0	5.5	60	73.3	100.0	4.94	83.1	5.9	1.5	44.5	69.0	101.0	4.73	84.8	6.3	3.1	44.3	66.8	102.0	4.67	86.1	6.4	5.2	44.3
		5.5	80	92.5	94.0	6.11	73.1	4.5	1.4	45.1	88.4	95.0	5.88	74.9	4.7	2.9	45.0	86.4	96.0	5.81	76.2	4.8	4.9	44.9
		5.5	100	112.0	90.0	7.61	64.0	3.5	1.3	45.7	108.1	91.0	7.36	65.9	3.6	2.8	45.6	106.1	92.0	7.28	67.2	3.7	4.6	45.5
		5.5	120	131.6	87.0	9.53	54.5	2.7	1.3	46.4	127.8	88.0	9.27	56.4	2.8	2.6	46.2	125.9	88.0	9.17	56.7	2.8	4.4	46.2

WRA, WHA 120 – Heating (continued)

Source			Load Flow 15.0 GPM								Load Flow 22.5 GPM						Load Flow 30.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	15.0	1.6	60	73.9	104.0	4.86	87.4	6.3	1.5	48.3	69.3	105.0	4.64	89.2	6.6	3.1	48.1	67.1	106.0	4.57	90.4	6.8	5.2	47.9
		1.6	80	93.3	100.0	6.04	79.4	4.9	1.4	49.4	89.0	101.0	5.80	81.2	5.1	2.9	49.2	86.7	101.0	5.71	81.5	5.2	4.9	49.1
		1.6	100	112.8	96.0	7.57	70.2	3.7	1.3	50.6	108.6	97.0	7.30	72.1	3.9	2.8	50.4	106.5	97.0	7.19	72.5	4.0	4.6	50.3
		1.6	120	132.4	93.0	9.49	60.6	2.9	1.3	51.9	128.4	94.0	9.20	62.6	3.0	2.6	51.7	126.3	94.0	9.09	63.0	3.0	4.4	51.6
	22.5	3.2	60	74.8	111.0	4.90	94.3	6.6	1.5	51.6	70.0	112.0	4.66	96.1	7.0	3.1	51.5	67.5	113.0	4.57	97.4	7.2	5.2	51.3
		3.2	80	94.0	105.0	6.09	84.2	5.0	1.4	52.5	89.5	107.0	5.83	87.1	5.4	2.9	52.3	87.1	107.0	5.74	87.4	5.5	4.9	52.2
		3.2	100	113.3	100.0	7.63	74.0	3.8	1.3	53.4	108.9	100.0	7.32	75.0	4.0	2.8	53.3	106.8	102.0	7.22	77.4	4.1	4.6	53.1
		3.2	120	132.9	97.0	9.55	64.4	3.0	1.3	54.3	128.6	97.0	9.25	65.4	3.1	2.6	54.2	126.5	98.0	9.13	66.9	3.1	4.4	54.1
	30.0	5.3	60	75.2	114.0	4.97	97.1	6.7	1.5	53.5	70.3	116.0	4.71	99.9	7.2	3.1	53.3	67.8	117.0	4.61	101.3	7.4	5.2	53.2
		5.3	80	94.4	108.0	6.16	87.0	5.1	1.4	54.2	89.8	110.0	5.89	89.9	5.5	2.9	54.0	87.4	111.0	5.79	91.2	5.6	4.9	53.9
		5.3	100	113.7	103.0	7.69	76.7	3.9	1.3	54.9	109.2	104.0	7.39	78.8	4.1	2.8	54.7	107.0	105.0	7.27	80.2	4.2	4.6	54.7
		5.3	120	133.2	99.0	9.63	66.1	3.0	1.3	55.6	128.9	100.0	9.31	68.2	3.1	2.6	55.5	126.7	100.0	9.19	68.6	3.2	4.4	55.4
70	15.0	1.5	60	75.7	118.0	4.89	101.3	7.1	1.5	56.5	70.6	119.0	4.62	103.2	7.6	3.1	56.2	68.0	120.0	4.52	104.6	7.8	5.2	56.1
		1.5	80	95.1	113.0	6.10	92.2	5.4	1.4	57.7	90.1	114.0	5.81	94.2	5.7	2.9	57.4	87.7	115.0	5.71	95.5	5.9	4.9	57.3
		1.5	100	114.4	108.0	7.63	82.0	4.1	1.3	59.1	109.7	109.0	7.31	84.1	4.4	2.8	58.8	107.3	110.0	7.18	85.5	4.5	4.6	58.6
		1.5	120	133.9	104.0	9.57	71.3	3.2	1.3	60.5	129.3	105.0	9.24	73.5	3.3	2.6	60.2	127.1	106.0	9.11	74.9	3.4	4.4	60.0
	22.5	3.1	60	76.7	125.0	4.93	108.2	7.4	1.5	60.4	71.3	127.0	4.63	111.2	8.0	3.1	60.1	68.5	128.0	4.52	112.6	8.3	5.2	60.0
		3.1	80	95.9	119.0	6.16	98.0	5.7	1.4	61.3	90.8	121.0	5.85	101.0	6.1	2.9	61.0	88.1	122.0	5.73	102.5	6.2	4.9	60.9
		3.1	100	114.9	112.0	7.67	85.8	4.3	1.3	62.4	110.2	115.0	7.35	89.9	4.6	2.8	62.0	107.7	116.0	7.21	91.4	4.7	4.6	61.9
		3.1	120	134.5	109.0	9.65	76.1	3.3	1.3	63.2	129.6	108.0	9.28	76.3	3.4	2.6	63.2	127.3	110.0	9.15	78.8	3.5	4.4	63.0
	30.0	5.2	60	77.3	130.0	5.00	112.9	7.6	1.5	62.5	71.7	132.0	4.68	116.0	8.3	3.1	62.3	68.9	134.0	4.55	118.5	8.6	5.2	62.1
		5.2	80	96.4	123.0	6.23	101.7	5.8	1.4	63.2	91.1	125.0	5.91	104.8	6.2	2.9	63.0	88.4	126.0	5.78	106.3	6.4	4.9	62.9
		5.2	100	115.6	117.0	7.76	90.5	4.4	1.3	64.0	110.5	118.0	7.40	92.7	4.7	2.8	63.8	107.9	119.0	7.26	94.2	4.8	4.6	63.7
		5.1	120	134.8	111.0	9.71	77.8	3.3	1.3	64.8	130.0	112.0	9.36	80.1	3.5	2.6	64.7	127.5	113.0	9.20	81.6	3.6	4.4	64.6
80	15.0	1.5	60	77.6	132.0	4.92	115.2	7.9	1.5	64.6	71.9	134.0	4.59	118.3	8.5	3.1	64.2	69.1	136.0	4.46	120.8	8.9	5.2	63.9
		1.5	80	96.8	126.0	6.16	105.0	6.0	1.4	66.0	91.4	128.0	5.82	108.1	6.4	2.9	65.6	88.6	129.0	5.69	109.6	6.6	4.9	65.4
		1.5	100	116.1	121.0	7.70	94.7	4.6	1.3	67.4	110.8	122.0	7.33	97.0	4.9	2.8	67.1	108.2	123.0	7.18	98.5	5.0	4.6	66.9
		1.5	120	135.5	116.0	9.68	83.0	3.5	1.3	68.9	130.4	117.0	9.28	85.3	3.7	2.6	68.6	127.9	118.0	9.11	86.9	3.8	4.4	68.4
	22.5	3.0	60	78.7	140.0	4.97	123.0	8.3	1.5	69.1	72.8	144.0	4.60	128.3	9.2	3.1	68.6	69.6	144.0	4.45	128.8	9.5	5.2	68.6
		3.0	80	97.9	134.0	6.23	112.7	6.3	1.4	70.0	92.1	136.0	5.86	116.0	6.8	2.9	69.7	89.2	138.0	5.72	118.5	7.1	4.9	69.5
		3.0	100	116.9	127.0	7.77	100.5	4.8	1.3	71.1	111.5	129.0	7.37	103.8	5.1	2.8	70.8	108.7	130.0	7.21	105.4	5.3	4.6	70.6
		3.0	120	136.2	121.6	9.76	88.3	3.7	1.3	72.2	130.9	122.8	9.33	91.0	3.9	2.6	71.9	128.2	123.6	9.16	92.3	4.0	4.4	71.8
	30.0	5.0	60	79.5	146.0	5.03	128.8	8.5	1.4	71.4	73.2	148.0	4.65	132.1	9.3	3.1	71.2	70.0	150.0	4.48	134.7	9.8	5.2	71.0
		5.0	80	99.2	144.0	6.34	122.4	6.7	1.4	71.8	92.8	144.0	5.92	123.8	7.1	2.9	71.7	89.5	142.0	5.76	122.3	7.2	4.9	71.8
		5.0	100	117.5	131.3	7.87	104.4	4.9	1.3	73.0	111.8	133.3	7.45	107.9	5.2	2.8	72.8	109.0	134.5	7.28	109.6	5.4	4.6	72.7
		5.0	120	136.6	124.3	9.83	90.8	3.7	1.3	73.9	131.2	125.8	9.39	93.7	3.9	2.6	73.8	128.4	126.7	9.20	95.3	4.0	4.4	73.6

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 150 – Cooling

Source				Load Flow 18.75 GPM								Load Flow 28.13 GPM								Load Flow 37.5 GPM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
				Data rows for 40, 50, 70, and 80 capacity units, grouped by EST temperature and Load Flow 40 Capacity Unit <tr> <td rowspan="12">40</td> <td rowspan="4">18.75</td> <td>2.3</td><td>50</td><td>37.9</td><td>113.0</td><td>4.78</td><td>129.3</td><td>23.6</td><td>2.3</td><td>53.8</td><td>41.5</td><td>120.0</td><td>4.89</td><td>136.7</td><td>24.5</td><td>4.7</td><td>54.6</td><td>43.3</td><td>125.0</td><td>5.00</td><td>142.1</td><td>25.0</td><td>7.8</td><td>55.2</td> <td>2.3</td><td>60</td><td>46.1</td><td>130.0</td><td>4.89</td><td>146.7</td><td>26.6</td><td>2.2</td><td>55.6</td><td>51.0</td><td>140.0</td><td>5.01</td><td>157.1</td><td>27.9</td><td>4.5</td><td>56.8</td><td>52.2</td><td>146.0</td><td>5.15</td><td>163.6</td><td>28.3</td><td>7.5</td><td>57.4</td> <td>2.3</td><td>70</td><td>54.0</td><td>150.0</td><td>5.03</td><td>167.2</td><td>29.8</td><td>2.2</td><td>57.8</td><td>58.6</td><td>160.0</td><td>5.18</td><td>177.7</td><td>30.9</td><td>4.4</td><td>59.0</td><td>61.1</td><td>166.0</td><td>5.34</td><td>184.2</td><td>31.1</td><td>7.3</td><td>59.7</td> <td>2.2</td><td>80</td><td>62.1</td><td>168.0</td><td>5.21</td><td>185.8</td><td>32.2</td><td>2.1</td><td>59.8</td><td>67.1</td><td>182.0</td><td>5.41</td><td>200.5</td><td>33.6</td><td>4.3</td><td>61.4</td><td>70.0</td><td>188.0</td><td>5.59</td><td>207.1</td><td>33.7</td><td>7.1</td><td>62.1</td> <td>2.2</td><td>90</td><td>69.7</td><td>190.0</td><td>5.44</td><td>208.6</td><td>34.9</td><td>2.0</td><td>62.2</td><td>75.5</td><td>204.0</td><td>5.69</td><td>223.4</td><td>35.8</td><td>4.2</td><td>63.8</td><td>78.7</td><td>212.0</td><td>5.91</td><td>232.2</td><td>35.9</td><td>6.9</td><td>64.8</td> <tr> <td rowspan="4">28.13</td> <td>4.7</td><td>50</td><td>37.7</td><td>115.0</td><td>4.57</td><td>130.6</td><td>25.2</td><td>2.3</td><td>49.3</td><td>41.3</td><td>123.0</td><td>4.65</td><td>138.9</td><td>26.4</td><td>4.7</td><td>49.9</td><td>43.2</td><td>128.0</td><td>4.76</td><td>144.2</td><td>26.9</td><td>7.8</td><td>50.3</td> <td>4.7</td><td>60</td><td>45.7</td><td>134.0</td><td>4.62</td><td>149.8</td><td>29.0</td><td>2.2</td><td>50.6</td><td>49.9</td><td>142.0</td><td>4.72</td><td>158.1</td><td>30.1</td><td>4.5</td><td>51.2</td><td>52.1</td><td>148.0</td><td>4.85</td><td>164.5</td><td>30.5</td><td>7.5</td><td>51.7</td> <td>4.7</td><td>70</td><td>53.8</td><td>152.0</td><td>4.71</td><td>168.1</td><td>32.2</td><td>2.2</td><td>52.0</td><td>58.3</td><td>164.0</td><td>4.84</td><td>180.5</td><td>33.9</td><td>4.4</td><td>52.8</td><td>60.9</td><td>170.0</td><td>4.98</td><td>187.0</td><td>34.2</td><td>7.3</td><td>53.3</td> <td>4.7</td><td>80</td><td>61.7</td><td>172.0</td><td>4.84</td><td>188.5</td><td>35.5</td><td>2.1</td><td>53.4</td><td>66.8</td><td>186.0</td><td>5.01</td><td>203.1</td><td>37.1</td><td>4.3</td><td>54.4</td><td>69.7</td><td>194.0</td><td>5.17</td><td>211.7</td><td>37.5</td><td>7.1</td><td>55.0</td> <td>4.7</td><td>90</td><td>69.3</td><td>194.0</td><td>5.02</td><td>211.1</td><td>38.6</td><td>2.0</td><td>55.0</td><td>75.1</td><td>210.0</td><td>5.25</td><td>227.9</td><td>40.0</td><td>4.2</td><td>56.2</td><td>78.3</td><td>220.0</td><td>5.43</td><td>238.5</td><td>40.5</td><td>6.9</td><td>57.0</td> <tr> <td rowspan="4">37.5</td> <td>7.9</td><td>50</td><td>37.6</td><td>116.0</td><td>4.54</td><td>131.5</td><td>25.5</td><td>2.3</td><td>47.0</td><td>41.2</td><td>124.0</td><td>4.60</td><td>139.7</td><td>26.9</td><td>4.7</td><td>47.5</td><td>43.1</td><td>129.0</td><td>4.71</td><td>145.1</td><td>27.4</td><td>7.8</td><td>47.7</td> <td>7.9</td><td>60</td><td>45.7</td><td>134.0</td><td>4.56</td><td>149.6</td><td>29.4</td><td>2.2</td><td>48.0</td><td>49.8</td><td>144.0</td><td>4.64</td><td>159.8</td><td>31.0</td><td>4.5</td><td>48.5</td><td>52.0</td><td>150.0</td><td>4.76</td><td>166.3</td><td>31.5</td><td>7.5</td><td>48.9</td> <td>7.8</td><td>70</td><td>53.6</td><td>154.0</td><td>4.62</td><td>169.8</td><td>33.3</td><td>2.2</td><td>49.1</td><td>58.2</td><td>166.0</td><td>4.73</td><td>182.2</td><td>35.1</td><td>4.4</td><td>49.7</td><td>60.8</td><td>172.0</td><td>4.86</td><td>188.6</td><td>35.4</td><td>7.3</td><td>50.1</td> <td>7.8</td><td>80</td><td>61.4</td><td>174.0</td><td>4.72</td><td>190.1</td><td>36.8</td><td>2.1</td><td>50.1</td><td>66.5</td><td>190.0</td><td>4.87</td><td>206.6</td><td>39.0</td><td>4.3</td><td>51.0</td><td>69.4</td><td>198.0</td><td>5.06</td><td>215.3</td><td>39.1</td><td>7.1</td><td>51.5</td> <td>7.8</td><td>90</td><td>69.1</td><td>196.0</td><td>4.91</td><td>212.7</td><td>40.0</td><td>2.0</td><td>51.3</td><td>74.8</td><td>214.0</td><td>5.08</td><td>231.3</td><td>42.1</td><td>4.2</td><td>52.3</td><td>78.2</td><td>222.0</td><td>5.27</td><td>240.0</td><td>42.1</td><td>6.9</td><td>52.8</td> <!-- 50 Capacity Unit --> <tr> <td rowspan="12">50</td> <td rowspan="4">18.75</td> <td>2.2</td><td>50</td><td>38.4</td><td>109.0</td><td>5.38</td><td>127.3</td><td>20.3</td><td>2.3</td><td>63.6</td><td>41.8</td><td>116.0</td><td>5.48</td><td>134.7</td><td>21.2</td><td>4.7</td><td>64.4</td><td>43.7</td><td>119.0</td><td>5.60</td><td>138.1</td><td>21.3</td><td>7.8</td><td>64.7</td> <td>2.2</td><td>60</td><td>46.6</td><td>126.0</td><td>5.48</td><td>144.7</td><td>23.0</td><td>2.2</td><td>65.4</td><td>50.5</td><td>134.0</td><td>5.61</td><td>153.1</td><td>23.9</td><td>4.5</td><td>66.3</td><td>52.5</td><td>140.0</td><td>5.74</td><td>159.6</td><td>24.4</td><td>7.5</td><td>67.0</td> <td>2.2</td><td>70</td><td>54.6</td><td>144.0</td><td>5.63</td><td>163.2</td><td>25.6</td><td>2.2</td><td>67.4</td><td>59.1</td><td>154.0</td><td>5.78</td><td>173.7</td><td>26.6</td><td>4.4</td><td>68.5</td><td>61.5</td><td>160.0</td><td>5.94</td><td>180.3</td><td>26.9</td><td>7.3</td><td>69.2</td> <td>2.2</td><td>80</td><td>62.5</td><td>164.0</td><td>5.82</td><td>183.9</td><td>28.2</td><td>2.1</td><td>69.6</td><td>67.5</td><td>176.0</td><td>6.02</td><td>196.5</td><td>29.3</td><td>4.3</td><td>71.0</td><td>70.3</td><td>182.0</td><td>6.20</td><td>203.1</td><td>29.4</td><td>7.1</td><td>71.7</td> <td>2.2</td><td>90</td><td>70.4</td><td>184.0</td><td>6.06</td><td>204.7</td><td>30.4</td><td>2.0</td><td>71.8</td><td>75.9</td><td>198.0</td><td>6.31</td><td>219.5</td><td>31.4</td><td>4.1</td><td>73.4</td><td>79.1</td><td>204.0</td><td>6.51</td><td>226.2</td><td>31.3</td><td>6.9</td><td>74.1</td> <tr> <td rowspan="4">28.13</td> <td>4.5</td><td>50</td><td>38.2</td><td>111.0</td><td>5.16</td><td>128.6</td><td>21.5</td><td>2.3</td><td>59.1</td><td>41.6</td><td>118.0</td><td>5.25</td><td>135.9</td><td>22.5</td><td>4.7</td><td>59.7</td><td>43.5</td><td>122.0</td><td>5.35</td><td>140.3</td><td>22.8</td><td>7.8</td><td>60.0</td> <td>4.5</td><td>60</td><td>46.3</td><td>128.0</td><td>5.22</td><td>145.8</td><td>24.5</td><td>2.2</td><td>60.4</td><td>50.2</td><td>138.0</td><td>5.33</td><td>156.2</td><td>25.9</td><td>4.5</td><td>61.1</td><td>52.4</td><td>142.0</td><td>5.45</td><td>160.6</td><td>26.0</td><td>7.5</td><td>61.4</td> <td>4.5</td><td>70</td><td>54.4</td><td>146.0</td><td>5.32</td><td>164.2</td><td>27.4</td><td>2.2</td><td>61.7</td><td>58.8</td><td>158.0</td><td>5.45</td><td>176.6</td><td>29.0</td><td>4.4</td><td>62.6</td><td>61.3</td><td>164.0</td><td>5.59</td><td>183.1</td><td>29.3</td><td>7.3</td><td>63.0</td> <td>4.5</td><td>80</td><td>62.1</td><td>168.0</td><td>5.46</td><td>186.6</td><td>30.8</td><td>2.1</td><td>63.3</td><td>67.2</td><td>180.0</td><td>5.62</td><td>199.2</td><td>32.0</td><td>4.3</td><td>64.2</td><td>70.0</td><td>188.0</td><td>5.77</td><td>207.7</td><td>32.6</td><td>7.1</td><td>64.8</td> <td>4.5</td><td>90</td><td>69.9</td><td>188.0</td><td>5.64</td><td>207.2</td><td>33.3</td><td>2.0</td><td>64.7</td><td>75.5</td><td>204.0</td><td>5.85</td><td>224.0</td><td>34.9</td><td>4.2</td><td>65.9</td><td>78.7</td><td>212.0</td><td>6.04</td><td>232.6</td><td>35.1</td><td>6.9</td><td>66.5</td> <tr> <td rowspan="4">37.5</td> <td>7.6</td><td>50</td><td>38.1</td><td>112.0</td><td>5.13</td><td>129.5</td><td>21.8</td><td>2.3</td><td>56.9</td><td>41.5</td><td>119.0</td><td>5.21</td><td>136.8</td><td>22.8</td><td>4.7</td><td>57.3</td><td>43.4</td><td>124.0</td><td>5.31</td><td>142.1</td><td>23.4</td><td>7.8</td><td>57.6</td> <td>7.6</td><td>60</td><td>46.1</td><td>130.0</td><td>5.16</td><td>147.6</td><td>25.2</td><td>2.2</td><td>57.9</td><td>50.2</td><td>138.0</td><td>5.26</td><td>155.9</td><td>26.3</td><td>4.5</td><td>58.3</td><td>52.3</td><td>144.0</td><td>5.37</td><td>162.3</td><td>26.8</td><td>7.5</td><td>58.7</td> <td>7.6</td><td>70</td><td>54.2</td><td>148.0</td><td>5.24</td><td>165.9</td><td>28.3</td><td>2.2</td><td>58.8</td><td>58.6</td><td>160.0</td><td>5.35</td><td>178.2</td><td>29.9</td><td>4.4</td><td>59.5</td><td>61.1</td><td>166.0</td><td>5.48</td><td>184.7</td><td>30.3</td><td>7.3</td><td>59.9</td> <td>7.6</td><td>80</td><td>62.1</td><td>168.0</td><td>5.34</td><td>186.2</td><td>31.4</td><td>2.1</td><td>59.9</td><td>67.1</td><td>182.0</td><td>5.49</td><td>200.7</td><td>33.2</td><td>4.3</td><td>60.7</td><td>69.9</td><td>190.0</td><td>5.64</td><td>209.2</td><td>33.7</td><td>7.1</td><td>61.2</td> <td>7.5</td><td>90</td><td>69.7</td><td>190.0</td><td>5.49</td><td>208.7</td><td>34.6</td><td>2.0</td><td>61.1</td><td>75.4</td><td>206.0</td><td>5.68</td><td>225.4</td><td>36.2</td><td>4.2</td><td>62.0</td><td>78.5</td><td>216.0</td><td>5.86</td><td>236.0</td><td>36.8</td><td>6.9</td><td>62.6</td> <!-- 70 Capacity Unit --> <tr> <td rowspan="12">70</td> <td rowspan="4">18.75</td> <td>2.1</td><td>50</td><td>39.3</td><td>100.0</td><td>6.72</td><td>122.9</td><td>14.9</td><td>2.3</td><td>83.1</td><td>42.5</td><td>106.0</td><td>6.81</td><td>129.3</td><td>15.6</td><td>4.7</td><td>83.8</td><td>44.2</td><td>108.0</td><td>6.93</td><td>131.7</td><td>15.6</td><td>7.8</td><td>84.0</td> <td>2.1</td><td>60</td><td>47.6</td><td>116.0</td><td>6.83</td><td>139.3</td><td>17.0</td><td>2.2</td><td>84.9</td><td>51.2</td><td>124.0</td><td>6.95</td><td>147.7</td><td>17.8</td><td>4.5</td><td>85.8</td><td>53.2</td><td>127.0</td><td>7.08</td><td>151.2</td><td>17.9</td><td>7.5</td><td>86.1</td> <td>2.0</td><td>70</td><td>55.7</td><td>134.0</td><td>6.98</td><td>157.8</td><td>19.2</td><td>2.2</td><td>86.8</td><td>59.9</td><td>142.0</td><td>7.13</td><td>166.3</td><td>19.9</td><td>4.4</td><td>87.7</td><td>62.1</td><td>148.0</td><td>7.29</td><td>172.9</td><td>20.3</td><td>7.3</td><td>88.4</td> <td>2.0</td><td>80</td><td>63.8</td><td>152.0</td><td>7.18</td><td>176.5</td><td>21.2</td><td>2.1</td><td>88.8</td><td>68.5</td><td>162.0</td><td>7.37</td><td>187.2</td><td>22.0</td><td>4.3</td><td>90.0</td><td>71.0</td><td>168.0</td><td>7.55</td><td>193.8</td><td>22.3</td><td>7.1</td><td>90.7</td> <td>2.0</td><td>90</td><td>71.9</td><td>170.0</td><td>7.43</td><td>195.4</td><td>22.9</td><td>2.0</td><td>90.8</td><td>77.1</td><td>182.0</td><td>7.67</td><td>208.2</td><td>23.7</td><td>4.1</td><td>92.2</td><td>79.9</td><td>190.0</td><td>7.86</td><td>216.8</td><td>24.2</td><td>6.9</td><td>93.1</td> <tr> <td rowspan="4">28.13</td> <td>4.3</td><td>50</td><td>39.2</td><td>101.0</td><td>6.49</td><td>123.2</td><td>15.6</td><td>2.3</td><td>78.8</td><td>42.3</td><td>108.0</td><td>6.57</td><td>130.4</td><td>16.4</td><td>4.7</td><td>79.3</td><td>44.1</td><td>111.0</td><td>6.68</td><td>133.8</td><td>16.6</td><td>7.8</td><td>79.5</td> <td>4.2</td><td>60</td><td>47.4</td><td>118.0</td><td>6.56</td><td>140.4</td><td>18.0</td><td>2.2</td><td>80.0</td><td>51.0</td><td>126.0</td><td>6.65</td><td>148.7</td><td>18.9</td><td>4.5</td><td>80.6</td><td>53.1</td><td>130.0</td><td>6.77</td><td>153.1</td><td>19.2</td><td>7.5</td><td>80.9</td> <td>4.2</td><td>70</td><td>55.5</td><td>136.0</td><td>6.66</td><td>158.7</td><td>20.4</td><td>2.2</td><td>81.3</td><td>59.6</td><td>146.0</td><td>6.78</td><td>169.1</td><td>21.5</td><td>4.4</td><td>82.0</td><td>61.9</td><td>152.0</td><td>6.92</td><td>175.6</td><td>22.0</td><td>7.3</td><td>82.5</td> <td>4.2</td><td>80</td><td>63.4</td><td>156.0</td><td>6.80</td><td>179.2</td><td>22.9</td><td>2.1</td><td>82.7</td><td>68.2</td><td>166.0</td><td>6.96</td><td>189.8</td><td>23.8</td><td>4.3</td><td>83.5</td><td>70.7</td><td>174.0</td><td>7.12</td><td>198.3</td><td>24.4</td><td>7.1</td><td>84.1</td> <td>4.2</td><td>90</td><td>71.4</td><td>174.0</td><td>6.99</td><td>197.9</td><td>24.9</td><td>2.0</td><td>84.1</td><td>76.6</td><td>188.0</td><td>7.19</td><td>212.6</td><td>26.1</td><td>4.1</td><td>85.1</td><td>79.5</td><td>196.0</td><td>7.37</td><td>221.2</td><td>26.6</td><td>6.9</td><td>85.7</td> <tr> <td rowspan="4">37.5</td> <td>7.1</td><td>50</td><td>39.1</td><td>102.0</td><td>6.44</td><td>124.0</td><td>15.8</td><td>2.3</td><td>76.6</td><td>42.3</td><td>108.0</td><td>6.53</td><td>130.3</td><td>16.5</td><td>4.7</td><td>76.9</td><td>44.0</td><td>112.0</td><td>6.61</td><td>134.6</td><td>16.9</td><td>7.8</td><td>77.2</td> <td>7.1</td><td>60</td><td>47.3</td><td>119.0</td><td>6.49</td><td>141.1</td><td>18.3</td><td>2.2</td><td>77.5</td><td>51.0</td><td>127.0</td><td>6.58</td><td>149.5</td><td>19.3</td><td>4.5</td><td>78.0</td><td>53.0</td><td>132.0</td><td>6.69</td><td>154.8</td><td>19.7</td><td>7.5</td><td>78.3</td> <td>7.1</td><td>70</td><td>55.3</td><td>138.0</td><td>6.56</td><td>160.4</td><td>21.0</td><td>2.2</td><td>78.6</td><td>59.5</td><td>148.0</td><td>6.68</td><td>170.8</td><td>22.1</td><td>4.4</td><td>79.1</td><td>61.8</td><td>154.0</td><td>6.81</td><td>177.2</td><td>22.6</td><td>7.3</td><td>79.5</td> <td>7.1</td><td>80</td><td>63.4</td><td>156.0</td><td>6.68</td><td>178.8</td><td>23.4</td><td>2.1</td><td>79.5</td><td>68.1</td><td>168.0</td><td>6.83</td><td>191.3</td><td>24.6</td><td>4.3</td><td>80.2</td><td>70.6</td><td>176.0</td><td>6.97</td><td>199.8</td><td>25.2</td><td>7.1</td><td>80.7</td> <td>7.1</td><td>90</td><td>71.0</td><td>178.0</td><td>6.84</td><td>201.3</td><td>26.0</td><td>2.0</td><td>80.7</td><td>76.3</td><td>192.0</td><td>7.03</td><td>216.0</td><td>27.3</td><td>4.1</td><td>81.5</td><td>79.4</td><td>198.0</td><td>7.19</td><td>222.6</td><td>27.5</td><td>6.9</td><td>81.9</td> <!-- 80 Capacity Unit --> <tr> <td rowspan="12">80</td> <td rowspan="4">18.75</td> <td>2.0</td><td>50</td><td>39.9</td><td>95.0</td><td>7.50</td><td>120.6</td><td>12.7</td><td>2.3</td><td>92.9</td><td>42.9</td><td>100.0</td><td>7.60</td><td>125.9</td><td>13.2</td><td>4.7</td><td>93.4</td><td>44.5</td><td>103.0</td><td>7.72</td><td>129.3</td><td>13.3</td><td>7.8</td><td>93.8</td> <td>2.0</td><td>60</td><td>48.2</td><td>111.0</td><td>7.62</td><td>137.0</td><td>14.6</td><td>2.2</td><td>94.6</td><td>51.6</td><td>118.0</td><td>7.73</td><td>144.4</td><td>15.3</td><td>4.5</td><td>95.4</td><td>53.5</td><td>121.0</td><td>7.86</td><td>147.8</td><td>15.4</td><td>7.5</td><td>95.8</td> <td>2.0</td><td>70</td><td>56.5</td><td>127.0</td><td>7.77</td><td>153.5</td><td>16.3</td><td>2.2</td><td>96.4</td><td>60.3</td><td>136.0</td><td>7.92</td><td>163.0</td><td>17.2</td><td>4.4</td><td>97.4</td><td>62.5</td><td>140.0</td><td>8.06</td><td>167.5</td><td>17.4</td><td>7.3</td><td>97.9</td> <td>2.0</td><td>80</td><td>64.4</td><td>146.0</td><td>7.97</td><td>173.2</td><td>18.3</td><td>2.1</td><td>98.5</td><td>68.9</td><td>156.0</td><td>8.16</td><td>183.8</td><td>19.1</td><td>4.3</td><td>99.6</td><td>71.5</td><td>160.0</td><td>8.33</td><td>188.4</td><td>19.2</td><td>7.1</td><td>100.1</td> <td>2.0</td><td>90</td><td>72.5</td><td>164.0</td><td>8.22</td><td>192.0</td><td>20.0</td><td>2.0</td><td>100.5</td><td>77.5</td><td>176.0</td><td>8.45</td><td>204.8</td><td>20.8</td><td>4.1</td><td>101.9</td><td>80.3</td><td>182.0</td><td>8.65</td><td>211.5</td><td>21.0</td><td>6.9</td><td>102.6</td> <tr> <td rowspan="4">28.13</td> <td>4.1</td><td>50</td><td>39.8</td><td>96.0</td><td>7.27</td><td>120.8</td><td>13.2</td><td>2.3</td><td>88.6</td><td>42.7</td><td>103.0</td><td>7.34</td><td>128.1</td><td>14.0</td><td>4.7</td><td>89.1</td><td>44.3</td><td>106.0</td><td>7.45</td><td>131.4</td><td>14.2</td><td>7.8</td><td>89.3</td> <td>4.1</td><td>60</td><td>47.9</td><td>113.0</td><td>7.33</td><td>138.0</td><td>15.4</td><td>2.2</td><td>89.8</td><td>51.5</td><td>120.0</td><td>7.42</td><td>145.3</td><td>16.2</td><td>4.5</td><td>90.3</td><td>53.4</td><td>124.0</td><td>7.53</td><td>149.7</td><td>16.5</td><td>7.5</td><td>90.6</td> <td>4.1</td><td>70</td><td>56.1</td><td>130.0</td><td>7.43</td><td>155.4</td><td>17.5</td><td>2.2</td><td>91.0</td><td>60.0</td><td>140.0</td><td>7.55</td><td>165.8</td><td>18.6</td><td>4.4</td><td>91.8</td><td>62.3</td><td>144.0</td><td>7.67</td><td>170.2</td><td>18.8</td><td>7.3</td><td>92.1</td> <td>4.1</td><td>80</td><td>64.2</td><td>148.0</td><td>7.57</td><td>173.8</td><td>19.6</td><td>2.1</td><td>92.4</td><td>68.6</td><td>160.0</td><td>7.73</td><td>186.4</td><td>20.7</td><td>4.3</td><td>93.3</td><td>71.1</td><td>166.0</td><td>7.88</td><td>192.9</td><td>21.1</td><td>7.1</td><td>93.7</td> <td>4.1</td><td>90</td><td>72.1</td><td>168.0</td><td>7.76</td><td>194.5</td><td>21.6</td><td>2.0</td><td>93.8</td><td>77.2</td><td>180.0</td><td>7.96</td><td>207.2</td><td>22.6</td><td>4.1</td><td>94.7</td><td>80.1</td><td>186.0</td><td>8.13</td><td>213.8</td><td>22.9</td><td>6.9</td><td>95.2</td> <tr> <td rowspan="4">37.5</td> <td>6.9</td><td>50</td><td>39.7</td><td>97.0</td><td>7.21</td><td>121.6</td><td>13.4</td><td>2.3</td><td>86.5</td><td>42.6</td><td>104.0</td><td>7.28</td><td>128.8</td><td>14.3</</td></tr></tr></tr></tr></tr></tr></tr></tr></tr></tr></tr></tr>																												40	18.75	2.3	50	37.9	113.0	4.78	129.3	23.6	2.3	53.8	41.5	120.0	4.89	136.7	24.5	4.7	54.6	43.3	125.0	5.00	142.1	25.0	7.8	55.2	2.3	60	46.1	130.0	4.89	146.7	26.6	2.2	55.6	51.0	140.0	5.01	157.1	27.9	4.5	56.8	52.2	146.0	5.15	163.6	28.3	7.5	57.4	2.3	70	54.0	150.0	5.03	167.2	29.8	2.2	57.8	58.6	160.0	5.18	177.7	30.9	4.4	59.0	61.1	166.0	5.34	184.2	31.1	7.3	59.7	2.2	80	62.1	168.0	5.21	185.8	32.2	2.1	59.8	67.1	182.0	5.41	200.5	33.6	4.3	61.4	70.0	188.0	5.59	207.1	33.7	7.1	62.1	2.2	90	69.7	190.0	5.44	208.6	34.9	2.0	62.2	75.5	204.0	5.69	223.4	35.8	4.2	63.8	78.7	212.0	5.91	232.2	35.9	6.9	64.8	28.13	4.7	50	37.7	115.0	4.57	130.6	25.2	2.3	49.3	41.3	123.0	4.65	138.9	26.4	4.7	49.9	43.2	128.0	4.76	144.2	26.9	7.8	50.3	4.7	60	45.7	134.0	4.62	149.8	29.0	2.2	50.6	49.9	142.0	4.72	158.1	30.1	4.5	51.2	52.1	148.0	4.85	164.5	30.5	7.5	51.7	4.7	70	53.8	152.0	4.71	168.1	32.2	2.2	52.0	58.3	164.0	4.84	180.5	33.9	4.4	52.8	60.9	170.0	4.98	187.0	34.2	7.3	53.3	4.7	80	61.7	172.0	4.84	188.5	35.5	2.1	53.4	66.8	186.0	5.01	203.1	37.1	4.3	54.4	69.7	194.0	5.17	211.7	37.5	7.1	55.0	4.7	90	69.3	194.0	5.02	211.1	38.6	2.0	55.0	75.1	210.0	5.25	227.9	40.0	4.2	56.2	78.3	220.0	5.43	238.5	40.5	6.9	57.0	37.5	7.9	50	37.6	116.0	4.54	131.5	25.5	2.3	47.0	41.2	124.0	4.60	139.7	26.9	4.7	47.5	43.1	129.0	4.71	145.1	27.4	7.8	47.7	7.9	60	45.7	134.0	4.56	149.6	29.4	2.2	48.0	49.8	144.0	4.64	159.8	31.0	4.5	48.5	52.0	150.0	4.76	166.3	31.5	7.5	48.9	7.8	70	53.6	154.0	4.62	169.8	33.3	2.2	49.1	58.2	166.0	4.73	182.2	35.1	4.4	49.7	60.8	172.0	4.86	188.6	35.4	7.3	50.1	7.8	80	61.4	174.0	4.72	190.1	36.8	2.1	50.1	66.5	190.0	4.87	206.6	39.0	4.3	51.0	69.4	198.0	5.06	215.3	39.1	7.1	51.5	7.8	90	69.1	196.0	4.91	212.7	40.0	2.0	51.3	74.8	214.0	5.08	231.3	42.1	4.2	52.3	78.2	222.0	5.27	240.0	42.1	6.9	52.8	50	18.75	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7	2.2	60	46.6	126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0	2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2	2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7	2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0	6.51	226.2	31.3	6.9	74.1	28.13	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8	7.8	60.0	4.5	60	46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7	212.0	6.04	232.6	35.1	6.9	66.5	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5	216.0	5.86	236.0	36.8	6.9	62.6	70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1	92.2	79.9	190.0	7.86	216.8	24.2	6.9	93.1	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9	85.7	37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9	81.9	80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5	21.0	6.9	102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9	6.9	95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6
40	18.75	2.3	50	37.9	113.0	4.78	129.3	23.6	2.3	53.8	41.5	120.0	4.89	136.7	24.5	4.7	54.6	43.3	125.0	5.00	142.1	25.0	7.8	55.2	2.3	60	46.1	130.0	4.89	146.7	26.6			2.2	55.6	51.0	140.0	5.01	157.1	27.9	4.5	56.8	52.2	146.0	5.15	163.6	28.3	7.5	57.4	2.3	70	54.0	150.0	5.03	167.2	29.8	2.2	57.8	58.6	160.0	5.18	177.7	30.9	4.4	59.0	61.1	166.0	5.34	184.2	31.1	7.3	59.7	2.2	80	62.1	168.0	5.21	185.8	32.2	2.1	59.8	67.1	182.0	5.41	200.5	33.6	4.3	61.4	70.0	188.0	5.59	207.1	33.7	7.1	62.1	2.2	90	69.7	190.0	5.44	208.6	34.9	2.0	62.2	75.5	204.0	5.69	223.4	35.8	4.2	63.8	78.7	212.0	5.91	232.2	35.9	6.9	64.8	28.13	4.7	50	37.7	115.0	4.57	130.6	25.2	2.3	49.3	41.3	123.0	4.65	138.9	26.4	4.7	49.9	43.2	128.0	4.76	144.2	26.9	7.8	50.3	4.7	60	45.7	134.0	4.62	149.8		29.0	2.2	50.6	49.9	142.0	4.72	158.1	30.1	4.5	51.2	52.1	148.0	4.85	164.5	30.5	7.5	51.7	4.7	70	53.8	152.0	4.71	168.1	32.2	2.2	52.0	58.3	164.0	4.84	180.5	33.9	4.4	52.8	60.9	170.0	4.98	187.0	34.2	7.3	53.3	4.7	80	61.7	172.0	4.84	188.5	35.5	2.1	53.4	66.8	186.0	5.01	203.1	37.1	4.3	54.4	69.7	194.0	5.17	211.7	37.5	7.1	55.0	4.7	90	69.3	194.0	5.02	211.1	38.6	2.0	55.0	75.1	210.0	5.25	227.9	40.0	4.2	56.2	78.3	220.0	5.43	238.5	40.5	6.9	57.0	37.5	7.9	50	37.6	116.0	4.54	131.5	25.5	2.3	47.0	41.2	124.0	4.60	139.7	26.9	4.7	47.5	43.1	129.0	4.71	145.1	27.4	7.8	47.7	7.9	60	45.7	134.0	4.56		149.6	29.4	2.2	48.0	49.8	144.0	4.64	159.8	31.0	4.5	48.5	52.0	150.0	4.76	166.3	31.5	7.5	48.9	7.8	70	53.6	154.0	4.62	169.8	33.3	2.2	49.1	58.2	166.0	4.73	182.2	35.1	4.4	49.7	60.8	172.0	4.86	188.6	35.4	7.3	50.1	7.8	80	61.4	174.0	4.72	190.1	36.8	2.1	50.1	66.5	190.0	4.87	206.6	39.0	4.3	51.0	69.4	198.0	5.06	215.3	39.1	7.1	51.5	7.8	90	69.1	196.0	4.91	212.7	40.0	2.0	51.3	74.8	214.0	5.08	231.3	42.1	4.2	52.3	78.2	222.0	5.27	240.0	42.1	6.9	52.8	50	18.75	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7	2.2	60	46.6			126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0	2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2	2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7	2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0	6.51	226.2	31.3	6.9	74.1	28.13	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8	7.8	60.0	4.5	60		46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7	212.0	6.04	232.6	35.1	6.9	66.5	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6		60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5	216.0	5.86	236.0	36.8	6.9	62.6	70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8			84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1	92.2	79.9	190.0	7.86	216.8	24.2	6.9	93.1	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6		7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9	85.7	37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6		16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9	81.9	80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0			7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5	21.0	6.9	102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3		106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9	6.9	95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</													
		28.13	4.7	50	37.7	115.0	4.57	130.6	25.2	2.3	49.3	41.3	123.0	4.65	138.9	26.4	4.7	49.9	43.2	128.0	4.76	144.2	26.9	7.8	50.3	4.7	60	45.7	134.0	4.62	149.8			29.0	2.2	50.6	49.9	142.0	4.72	158.1	30.1	4.5	51.2	52.1	148.0	4.85	164.5	30.5	7.5	51.7	4.7	70	53.8	152.0	4.71	168.1	32.2	2.2	52.0	58.3	164.0	4.84	180.5	33.9	4.4	52.8	60.9	170.0	4.98	187.0	34.2	7.3	53.3	4.7	80	61.7	172.0	4.84	188.5	35.5	2.1	53.4	66.8	186.0	5.01	203.1	37.1	4.3	54.4	69.7	194.0	5.17	211.7	37.5	7.1	55.0	4.7	90	69.3	194.0	5.02	211.1	38.6	2.0	55.0	75.1	210.0	5.25	227.9	40.0	4.2	56.2	78.3	220.0	5.43	238.5	40.5	6.9		57.0	37.5	7.9	50	37.6	116.0	4.54	131.5	25.5	2.3	47.0	41.2	124.0	4.60	139.7	26.9	4.7	47.5	43.1	129.0	4.71	145.1	27.4	7.8	47.7	7.9	60	45.7	134.0		4.56	149.6	29.4	2.2	48.0	49.8	144.0	4.64	159.8	31.0	4.5	48.5	52.0	150.0	4.76	166.3	31.5	7.5	48.9	7.8	70	53.6	154.0	4.62	169.8	33.3	2.2	49.1	58.2	166.0	4.73	182.2	35.1	4.4	49.7	60.8	172.0	4.86	188.6	35.4	7.3	50.1	7.8	80	61.4	174.0	4.72	190.1	36.8	2.1	50.1	66.5	190.0	4.87	206.6	39.0	4.3	51.0	69.4	198.0	5.06	215.3	39.1	7.1	51.5	7.8	90	69.1	196.0	4.91	212.7	40.0	2.0	51.3	74.8	214.0	5.08	231.3	42.1	4.2	52.3	78.2	222.0	5.27	240.0	42.1		6.9	52.8	50	18.75	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7	2.2		60	46.6	126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0	2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2	2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7	2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0	6.51			226.2	31.3	6.9	74.1	28.13	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8			7.8	60.0	4.5	60	46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7	212.0		6.04	232.6	35.1	6.9	66.5	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31		142.1	23.4	7.8	57.6	7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5		216.0	5.86	236.0	36.8	6.9	62.6	70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8		44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1			92.2	79.9	190.0	7.86	216.8	24.2	6.9	93.1	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4			16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1		4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9	85.7	37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0		6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0		27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9	81.9	80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3		92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0			8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5	21.0	6.9	102.6	28.13	4.1	50	39.8	96.0	7.27			120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2		180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9	6.9	95.2	37.5	6.9	50	39.7		97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																			
			37.5	7.9	50	37.6	116.0	4.54	131.5	25.5	2.3	47.0	41.2	124.0	4.60	139.7	26.9	4.7	47.5	43.1	129.0	4.71	145.1	27.4	7.8	47.7	7.9	60	45.7	134.0	4.56			149.6	29.4	2.2	48.0	49.8	144.0	4.64	159.8	31.0	4.5	48.5	52.0	150.0	4.76	166.3	31.5	7.5	48.9	7.8	70	53.6	154.0	4.62	169.8	33.3	2.2	49.1	58.2	166.0	4.73	182.2	35.1	4.4	49.7	60.8	172.0	4.86	188.6	35.4	7.3	50.1	7.8	80	61.4	174.0	4.72	190.1	36.8	2.1	50.1	66.5	190.0	4.87	206.6	39.0	4.3	51.0	69.4	198.0	5.06	215.3	39.1	7.1	51.5	7.8	90	69.1	196.0	4.91	212.7	40.0	2.0	51.3	74.8	214.0	5.08	231.3	42.1	4.2	52.3	78.2	222.0	5.27	240.0	42.1		6.9		52.8	50	18.75	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7	2.2		60	46.6	126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0	2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2	2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7	2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0		6.51	226.2			31.3	6.9	74.1	28.13	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3		22.8	7.8	60.0	4.5	60	46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2			65.9	78.7	212.0	6.04		232.6	35.1	6.9	66.5	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3			43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4		36.2	4.2	62.0	78.5	216.0		5.86	236.0	36.8	6.9	62.6	70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81		129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1		182.0	7.67	208.2	23.7	4.1	92.2			79.9	190.0	7.86	216.8	24.2	6.9	93.1	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3		78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9			2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1		85.1	79.5	196.0	7.37	221.2	26.6	6.9	85.7	37.5	7.1	50	39.1	102.0			6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84		201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3		4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9	81.9	80	18.75		2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90		72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45			204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5		21.0	6.9	102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1			93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0		7.96	207.2	22.6	4.1	94.7			80.1	186.0	8.13	213.8	22.9	6.9	95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																												
				50	18.75	2.2	50	38.4	109.0	5.38	127.3	20.3	2.3	63.6	41.8	116.0	5.48	134.7	21.2	4.7	64.4	43.7	119.0	5.60	138.1	21.3	7.8	64.7	2.2	60	46.6		126.0	5.48	144.7	23.0	2.2	65.4	50.5	134.0	5.61	153.1	23.9	4.5	66.3	52.5	140.0	5.74	159.6	24.4	7.5	67.0	2.2	70	54.6	144.0	5.63	163.2	25.6	2.2	67.4	59.1	154.0	5.78	173.7	26.6	4.4	68.5	61.5	160.0	5.94	180.3	26.9	7.3	69.2	2.2	80	62.5	164.0	5.82	183.9	28.2	2.1	69.6	67.5	176.0	6.02	196.5	29.3	4.3	71.0	70.3	182.0	6.20	203.1	29.4	7.1	71.7	2.2	90	70.4	184.0	6.06	204.7	30.4	2.0	71.8	75.9	198.0	6.31	219.5	31.4	4.1	73.4	79.1	204.0	6.51	226.2		31.3		6.9			74.1	28.13	4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8	7.8	60.0	4.5	60	46.3	128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7		212.0	6.04			232.6	35.1	6.9		66.5	37.5	7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2			4.2	62.0	78.5	216.0		5.86	236.0	36.8	6.9		62.6	70	18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3		15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0		7.67	208.2	23.7	4.1	92.2		79.9	190.0	7.86	216.8	24.2			6.9	93.1	28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0		84.1	76.6	188.0	7.19	212.6	26.1			4.1	85.1	79.5	196.0	7.37	221.2	26.6		6.9	85.7	37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84			201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0		27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5		6.9	81.9	80	18.75		2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90		72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0		8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5			21.0	6.9	102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1		93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8			77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9		6.9	95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																		
	28.13					4.5	50	38.2	111.0	5.16	128.6	21.5	2.3	59.1	41.6	118.0	5.25	135.9	22.5	4.7	59.7	43.5	122.0	5.35	140.3	22.8	7.8	60.0	4.5	60	46.3		128.0	5.22	145.8	24.5	2.2	60.4	50.2	138.0	5.33	156.2	25.9	4.5	61.1	52.4	142.0	5.45	160.6	26.0	7.5	61.4	4.5	70	54.4	146.0	5.32	164.2	27.4	2.2	61.7	58.8	158.0	5.45	176.6	29.0	4.4	62.6	61.3	164.0	5.59	183.1	29.3	7.3	63.0	4.5	80	62.1	168.0	5.46	186.6	30.8	2.1	63.3	67.2	180.0	5.62	199.2	32.0	4.3	64.2	70.0	188.0	5.77	207.7	32.6	7.1	64.8	4.5	90	69.9	188.0	5.64	207.2	33.3	2.0	64.7	75.5	204.0	5.85	224.0	34.9	4.2	65.9	78.7	212.0	6.04	232.6	35.1	6.9		66.5			37.5		7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6	60	46.1	130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5	216.0	5.86	236.0			36.8	6.9	62.6		70		18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2		23.7	4.1	92.2	79.9	190.0		7.86	216.8	24.2	6.9		93.1			28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57		130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1		79.5	196.0	7.37	221.2	26.6			6.9	85.7		37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3			4.1	81.5	79.4	198.0	7.19	222.6	27.5		6.9	81.9		80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5		164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45		204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5		21.0	6.9				102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2		180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13			213.8	22.9	6.9		95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		37.5				7.6	50	38.1	112.0	5.13	129.5	21.8	2.3	56.9	41.5	119.0	5.21	136.8	22.8	4.7	57.3	43.4	124.0	5.31	142.1	23.4	7.8	57.6	7.6	60	46.1		130.0	5.16	147.6	25.2	2.2	57.9	50.2	138.0	5.26	155.9	26.3	4.5	58.3	52.3	144.0	5.37	162.3	26.8	7.5	58.7	7.6	70	54.2	148.0	5.24	165.9	28.3	2.2	58.8	58.6	160.0	5.35	178.2	29.9	4.4	59.5	61.1	166.0	5.48	184.7	30.3	7.3	59.9	7.6	80	62.1	168.0	5.34	186.2	31.4	2.1	59.9	67.1	182.0	5.49	200.7	33.2	4.3	60.7	69.9	190.0	5.64	209.2	33.7	7.1	61.2	7.5	90	69.7	190.0	5.49	208.7	34.6	2.0	61.1	75.4	206.0	5.68	225.4	36.2	4.2	62.0	78.5	216.0	5.86	236.0	36.8	6.9	62.6	70					18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60	47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1	92.2	79.9	190.0	7.86		216.8	24.2	6.9	93.1					28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19		212.6	26.1	4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9		85.7				37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0		6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5			6.9	81.9			80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45		204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5		21.0	6.9				102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1		90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13		213.8	22.9				6.9		95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			70			18.75	2.1	50	39.3	100.0	6.72	122.9	14.9	2.3	83.1	42.5	106.0	6.81	129.3	15.6	4.7	83.8	44.2	108.0	6.93	131.7	15.6	7.8	84.0	2.1	60		47.6	116.0	6.83	139.3	17.0	2.2	84.9	51.2	124.0	6.95	147.7	17.8	4.5	85.8	53.2	127.0	7.08	151.2	17.9	7.5	86.1	2.0	70	55.7	134.0	6.98	157.8	19.2	2.2	86.8	59.9	142.0	7.13	166.3	19.9	4.4	87.7	62.1	148.0	7.29	172.9	20.3	7.3	88.4	2.0	80	63.8	152.0	7.18	176.5	21.2	2.1	88.8	68.5	162.0	7.37	187.2	22.0	4.3	90.0	71.0	168.0	7.55	193.8	22.3	7.1	90.7	2.0	90	71.9	170.0	7.43	195.4	22.9	2.0	90.8	77.1	182.0	7.67	208.2	23.7	4.1	92.2	79.9	190.0	7.86	216.8	24.2	6.9			93.1				28.13	4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60	47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1	79.5	196.0		7.37	221.2	26.6	6.9	85.7					37.5	7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0		7.03	216.0	27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9	81.9					80	18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9		42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65		211.5	21.0	6.9					102.6	28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2		180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9				6.9		95.2	37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
					28.13		4.3	50	39.2	101.0	6.49	123.2	15.6	2.3	78.8	42.3	108.0	6.57	130.4	16.4	4.7	79.3	44.1	111.0	6.68	133.8	16.6	7.8	79.5	4.2	60		47.4	118.0	6.56	140.4	18.0	2.2	80.0	51.0	126.0	6.65	148.7	18.9	4.5	80.6	53.1	130.0	6.77	153.1	19.2	7.5	80.9	4.2	70	55.5	136.0	6.66	158.7	20.4	2.2	81.3	59.6	146.0	6.78	169.1	21.5	4.4	82.0	61.9	152.0	6.92	175.6	22.0	7.3	82.5	4.2	80	63.4	156.0	6.80	179.2	22.9	2.1	82.7	68.2	166.0	6.96	189.8	23.8	4.3	83.5	70.7	174.0	7.12	198.3	24.4	7.1	84.1	4.2	90	71.4	174.0	6.99	197.9	24.9	2.0	84.1	76.6	188.0	7.19	212.6	26.1	4.1	85.1	79.5	196.0	7.37	221.2	26.6	6.9			85.7		37.5			7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60	47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3	4.1	81.5	79.4	198.0		7.19	222.6	27.5	6.9	81.9		80				18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5		176.0	8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5	21.0	6.9		102.6					28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3		88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0		8.13	213.8	22.9	6.9				95.2		37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	37.5						7.1	50	39.1	102.0	6.44	124.0	15.8	2.3	76.6	42.3	108.0	6.53	130.3	16.5	4.7	76.9	44.0	112.0	6.61	134.6	16.9	7.8	77.2	7.1	60		47.3	119.0	6.49	141.1	18.3	2.2	77.5	51.0	127.0	6.58	149.5	19.3	4.5	78.0	53.0	132.0	6.69	154.8	19.7	7.5	78.3	7.1	70	55.3	138.0	6.56	160.4	21.0	2.2	78.6	59.5	148.0	6.68	170.8	22.1	4.4	79.1	61.8	154.0	6.81	177.2	22.6	7.3	79.5	7.1	80	63.4	156.0	6.68	178.8	23.4	2.1	79.5	68.1	168.0	6.83	191.3	24.6	4.3	80.2	70.6	176.0	6.97	199.8	25.2	7.1	80.7	7.1	90	71.0	178.0	6.84	201.3	26.0	2.0	80.7	76.3	192.0	7.03	216.0	27.3	4.1	81.5	79.4	198.0	7.19	222.6	27.5	6.9			81.9	80				18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0	60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45	204.8	20.8	4.1	101.9	80.3		182.0	8.65	211.5	21.0	6.9			102.6				28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8		77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9		6.9	95.2					37.5	6.9	50	39.7	97.0	7.21	121.6	13.4		2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		80					18.75	2.0	50	39.9	95.0	7.50	120.6	12.7	2.3	92.9	42.9	100.0	7.60	125.9	13.2	4.7	93.4	44.5	103.0	7.72	129.3	13.3	7.8	93.8	2.0		60	48.2	111.0	7.62	137.0	14.6	2.2	94.6	51.6	118.0	7.73	144.4	15.3	4.5	95.4	53.5	121.0	7.86	147.8	15.4	7.5	95.8	2.0	70	56.5	127.0	7.77	153.5	16.3	2.2	96.4	60.3	136.0	7.92	163.0	17.2	4.4	97.4	62.5	140.0	8.06	167.5	17.4	7.3	97.9	2.0	80	64.4	146.0	7.97	173.2	18.3	2.1	98.5	68.9	156.0	8.16	183.8	19.1	4.3	99.6	71.5	160.0	8.33	188.4	19.2	7.1	100.1	2.0	90	72.5	164.0	8.22	192.0	20.0	2.0	100.5	77.5	176.0	8.45	204.8	20.8	4.1	101.9	80.3	182.0	8.65	211.5	21.0			6.9			102.6			28.13	4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1	60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7		80.1	186.0	8.13	213.8	22.9			6.9	95.2				37.5	6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
						28.13		4.1	50	39.8	96.0	7.27	120.8	13.2	2.3	88.6	42.7	103.0	7.34	128.1	14.0	4.7	89.1	44.3	106.0	7.45	131.4	14.2	7.8	89.3	4.1		60	47.9	113.0	7.33	138.0	15.4	2.2	89.8	51.5	120.0	7.42	145.3	16.2	4.5	90.3	53.4	124.0	7.53	149.7	16.5	7.5	90.6	4.1	70	56.1	130.0	7.43	155.4	17.5	2.2	91.0	60.0	140.0	7.55	165.8	18.6	4.4	91.8	62.3	144.0	7.67	170.2	18.8	7.3	92.1	4.1	80	64.2	148.0	7.57	173.8	19.6	2.1	92.4	68.6	160.0	7.73	186.4	20.7	4.3	93.3	71.1	166.0	7.88	192.9	21.1	7.1	93.7	4.1	90	72.1	168.0	7.76	194.5	21.6	2.0	93.8	77.2	180.0	7.96	207.2	22.6	4.1	94.7	80.1	186.0	8.13	213.8	22.9			6.9			95.2	37.5			6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					37.5			6.9	50	39.7	97.0	7.21	121.6	13.4	2.3	86.5	42.6	104.0	7.28	128.8	14.3</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

WRA, WCA 150 – Cooling (continued)

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	
110	18.75	1.9	50	41.5	80.0	10.57	116.1	7.6	2.3	122.4	44.0	84.0	10.67	120.4	7.9	4.7	122.8	45.4	86.0	10.79	122.8	8.0	7.8	123.1	
		1.8	60	50.0	94.0	10.72	130.6	8.8	2.2	123.9	53.0	99.0	10.83	136.0	9.1	4.5	124.5	54.6	102.0	10.95	139.4	9.3	7.5	124.9	
		1.8	70	58.4	109.0	10.86	146.1	10.0	2.1	125.6	61.8	115.0	10.98	152.5	10.5	4.4	126.3	63.7	119.0	11.12	157.0	10.7	7.3	126.7	
		1.8	80	66.7	125.0	11.04	162.7	11.3	2.1	127.4	70.6	132.0	11.20	170.2	11.8	4.2	128.2	72.7	136.0	11.35	174.7	12.0	7.1	128.6	
	1.8	90	75.1	140.0	11.27	178.5	12.4	2.0	129.0	79.3	150.0	11.47	189.2	13.1	4.1	130.2	81.8	154.0	11.65	193.8	13.2	6.9	130.7		
	28.13	3.8	50	41.4	81.0	10.29	116.1	7.9	2.3	118.3	43.9	86.0	10.37	121.4	8.3	4.7	118.6	45.3	88.0	10.49	123.8	8.4	7.8	118.8	
		3.8	60	49.8	96.0	10.38	131.4	9.2	2.2	119.3	52.8	101.0	10.46	136.7	9.7	4.5	119.7	54.5	104.0	10.55	140.0	9.9	7.5	120.0	
		3.8	70	58.2	111.0	10.43	146.6	10.6	2.1	120.4	61.6	118.0	10.53	153.9	11.2	4.4	120.9	63.5	122.0	10.65	158.3	11.5	7.3	121.3	
		3.8	80	66.3	128.0	10.54	164.0	12.1	2.1	121.7	70.3	136.0	10.67	172.4	12.7	4.2	122.3	72.5	140.0	10.81	176.9	13.0	7.1	122.6	
	3.8	90	74.6	144.0	10.71	180.5	13.4	2.0	122.8	79.1	154.0	10.87	191.1	14.2	4.1	123.6	81.5	160.0	11.03	197.7	14.5	6.9	124.1		
	37.5	6.4	50	41.3	82.0	10.21	116.9	8.0	2.3	116.2	43.9	86.0	10.29	121.1	8.4	4.7	116.5	45.3	89.0	10.40	124.5	8.6	7.8	116.6	
		6.4	60	49.7	97.0	10.26	132.0	9.5	2.2	117.0	52.7	102.0	10.32	137.2	9.9	4.5	117.3	54.4	105.0	10.42	140.6	10.1	7.5	117.5	
		6.4	70	57.9	113.0	10.29	148.1	11.0	2.1	117.9	61.5	120.0	10.37	155.4	11.6	4.4	118.3	63.4	124.0	10.48	159.8	11.8	7.3	118.5	
		6.4	80	66.2	129.0	10.37	164.4	12.4	2.1	118.8	70.2	138.0	10.48	173.8	13.2	4.3	119.3	72.4	142.0	10.61	178.2	13.4	7.1	119.5	
	6.3	90	74.4	146.0	10.50	181.8	13.9	2.0	119.7	78.9	156.0	10.65	192.3	14.7	4.1	120.3	81.4	162.0	10.79	198.8	15.0	6.9	120.6		
	120	18.75	1.8	50	42.0	75.0	11.86	115.5	6.3	2.3	132.3	44.5	78.0	11.95	118.8	6.5	4.7	132.7	45.7	80.0	12.07	121.2	6.6	7.8	132.9
			1.8	60	50.6	88.0	11.99	128.9	7.3	2.2	133.8	53.4	93.0	12.10	134.3	7.7	4.5	134.3	54.9	95.0	12.23	136.7	7.8	7.5	134.6
			1.8	70	59.1	102.0	12.16	143.5	8.4	2.1	135.3	62.3	108.0	12.28	149.9	8.8	4.4	136.0	64.1	110.0	12.39	152.3	8.9	7.3	136.2
			1.8	80	67.5	117.0	12.33	159.1	9.5	2.1	137.0	71.2	124.0	12.47	166.6	9.9	4.2	137.8	73.2	127.0	12.61	170.1	10.1	7.0	138.1
		1.8	90	75.9	132.0	12.55	174.8	10.5	2.0	138.6	80.0	140.0	12.73	183.4	11.0	4.1	139.6	82.3	144.0	12.90	188.0	11.2	6.8	140.1	
		28.13	3.7	50	41.9	76.0	11.57	115.5	6.6	2.3	128.2	44.3	80.0	11.65	119.8	6.9	4.7	128.5	45.6	82.0	11.76	122.1	7.0	7.8	128.7
			3.7	60	50.4	90.0	11.65	129.8	7.7	2.2	129.2	53.2	95.0	11.74	135.1	8.1	4.5	129.6	54.8	97.0	11.85	137.4	8.2	7.5	129.8
			3.7	70	58.8	105.0	11.74	145.1	8.9	2.1	130.3	62.1	111.0	11.83	151.4	9.4	4.4	130.8	63.9	114.0	11.94	154.8	9.5	7.3	131.0
			3.7	80	67.2	120.0	11.84	160.4	10.1	2.1	131.4	70.9	128.0	11.95	168.8	10.7	4.2	132.0	73.0	132.0	12.08	173.2	10.9	7.0	132.3
3.7		90	75.5	136.0	11.99	176.9	11.3	2.0	132.6	79.8	144.0	12.14	185.4	11.9	4.1	133.2	82.0	150.0	12.29	191.9	12.2	6.9	133.6		
37.5		6.2	50	41.9	76.0	11.49	115.2	6.6	2.3	126.1	44.2	81.0	11.56	120.4	7.0	4.7	126.4	45.6	83.0	11.67	122.8	7.1	7.8	126.6	
		6.2	60	50.3	91.0	11.54	130.4	7.9	2.2	127.0	53.2	96.0	11.61	135.6	8.3	4.5	127.2	54.8	98.0	11.73	138.0	8.4	7.5	127.4	
		6.2	70	58.7	106.0	11.59	145.6	9.1	2.1	127.8	62.0	112.0	11.66	151.8	9.6	4.4	128.1	63.9	115.0	11.77	155.2	9.8	7.3	128.3	
		6.2	80	67.0	122.0	11.66	161.8	10.5	2.1	128.6	70.8	129.0	11.75	169.1	11.0	4.2	129.0	72.9	134.0	11.88	174.5	11.3	7.1	129.3	
6.2		90	75.3	138.0	11.77	178.2	11.7	2.0	129.5	79.5	148.0	11.91	188.6	12.4	4.1	130.1	81.9	152.0	12.05	193.1	12.6	6.9	130.3		

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 150 – Heating

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM							
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	
30	18.75	2.5	60	69.4	88.0	5.65	68.7	4.6	2.1	22.7	66.3	88.0	5.54	69.1	4.7	4.4	22.6	64.7	89.0	5.56	70.0	4.7	7.4	22.5	
		2.5	80	89.0	84.0	7.05	59.9	3.5	2	23.6	86.0	84.0	6.92	60.4	3.6	4.2	23.6	84.5	85.0	6.93	61.4	3.6	6.9	23.5	
		2.5	100	108.6	81.0	8.96	50.4	2.6	1.9	24.6	105.8	81.0	8.79	51.0	2.7	3.9	24.6	104.4	83.0	8.79	53.0	2.8	6.6	24.3	
	28.13	2.5	120	128.6	81.0	11.50	41.8	2.1	1.8	25.5	125.8	81.0	11.33	42.3	2.1	3.7	25.5	120.0						6.2	30.0
		5.1	60	69.7	91.0	5.75	71.4	4.6	2.1	24.9	66.5	92.0	5.63	72.8	4.8	4.4	24.8	65.0	93.0	5.64	73.7	4.8	7.4	24.8	
		5.1	80	89.2	87.0	7.16	62.6	3.6	2	25.6	86.3	88.0	7.02	64.0	3.7	4.2	25.4	84.7	88.0	7.02	64.1	3.7	6.9	25.4	
	37.5	5.1	100	109.0	84.0	9.06	53.1	2.7	1.9	26.2	106.0	84.0	8.89	53.6	2.8	3.9	26.2	104.5	85.0	8.88	54.7	2.8	6.6	26.1	
		5.0	120	128.9	83.0	11.59	43.4	2.1	1.8	26.9	125.9	83.0	11.41	44.1	2.1	3.7	26.9	120.0						6.2	30.0
		8.4	60	69.9	93.0	5.88	72.9	4.6	2.1	26.1	66.7	94.0	5.76	74.4	4.8	4.4	26.0	65.1	95.0	5.76	75.3	4.8	7.4	26.0	
	40	18.75	8.4	80	89.5	89.0	7.29	64.1	3.6	2	26.6	86.4	90.0	7.15	65.6	3.7	4.2	26.5	84.8	90.0	7.14	65.6	3.7	6.9	26.5
			8.4	100	109.2	86.0	9.19	54.6	2.7	1.9	27.1	106.1	86.0	9.02	55.2	2.8	3.9	27.1	104.6	87.0	8.99	56.3	2.8	6.6	27.0
			8.4	120	129.1	85.0	11.71	45.0	2.1	1.8	27.6	126.0	85.0	11.54	45.6	2.2	3.7	27.6	120.0						6.2
50	18.75	2.4	60	70.8	101.0	5.79	81.2	5.1	2.1	31.3	67.2	101.0	5.64	81.7	5.2	4.4	31.3	65.4	102.0	5.64	82.7	5.3	7.4	31.2	
		2.4	80	90.2	96.0	7.22	71.3	3.9	2	32.4	86.9	97.0	7.06	72.9	4.0	4.1	32.2	85.2	98.0	7.04	74.0	4.1	6.9	32.1	
		2.4	100	109.9	93.0	9.15	61.8	3.0	1.9	33.4	106.7	94.0	8.94	63.5	3.1	3.9	33.2	105.0	94.0	8.90	63.6	3.1	6.6	33.2	
	28.13	2.4	120	129.8	92.0	11.61	52.4	2.3	1.8	34.4	126.5	92.0	11.40	53.1	2.4	3.7	34.3	124.9	92.0	11.35	53.3	2.4	6.2	34.3	
		4.9	60	71.2	105.0	5.90	84.9	5.2	2.1	34.0	67.5	106.0	5.74	86.4	5.4	4.4	33.9	65.7	107.0	5.73	87.4	5.5	7.4	33.8	
		4.9	80	90.8	101.0	7.34	75.9	4.0	2	34.6	87.2	101.0	7.16	76.6	4.1	4.1	34.6	85.4	102.0	7.14	77.6	4.2	6.9	34.5	
	37.5	4.9	100	110.3	97.0	9.27	65.4	3.1	1.9	35.4	106.9	97.0	9.06	66.1	3.1	3.9	35.3	105.3	99.0	9.01	68.2	3.2	6.6	35.1	
		4.9	120	130.1	95.0	11.68	55.1	2.4	1.8	36.1	126.8	95.0	11.46	55.9	2.4	3.7	36.0	125.1	96.0	11.41	57.1	2.5	6.2	35.9	
		8.1	60	71.5	108.0	6.04	87.4	5.2	2.1	35.3	67.7	109.0	5.87	89.0	5.4	4.4	35.3	65.9	110.0	5.86	90.0	5.5	7.4	35.2	
	50	18.75	8.1	80	91.0	103.0	7.48	77.5	4.0	2	35.9	87.5	105.0	7.30	80.1	4.2	4.1	35.7	85.5	104.0	7.27	79.2	4.2	6.9	35.8
			8.1	100	110.7	100.0	9.39	68.0	3.1	1.9	36.4	107.1	100.0	9.17	68.7	3.2	3.9	36.3	105.3	100.0	9.13	68.8	3.2	6.6	36.3
			8.1	120	130.3	97.0	11.80	56.7	2.4	1.8	37.0	126.9	97.0	11.57	57.5	2.5	3.7	36.9	125.2	98.0	11.52	58.7	2.5	6.2	36.9
28.13		2.3	60	72.3	115.0	5.94	94.7	5.7	2.1	39.9	68.2	116.0	5.75	96.4	5.9	4.4	39.7	66.2	117.0	5.73	97.5	6.0	7.4	39.6	
		2.3	80	91.7	110.0	7.42	84.7	4.3	2	41.0	87.9	111.0	7.20	86.4	4.5	4.1	40.8	86.0	112.0	7.16	87.6	4.6	6.9	40.7	
		2.3	100	111.4	107.0	9.29	75.3	3.4	1.9	42.0	107.6	107.0	9.05	76.1	3.5	3.9	41.9	105.8	109.0	9.00	78.3	3.5	6.5	41.6	
37.5		2.3	120	131.3	106.0	11.72	66.0	2.7	1.8	43.0	127.5	105.0	11.45	65.9	2.7	3.7	43.0	125.7	106.0	11.38	67.2	2.7	6.2	42.8	
		4.7	60	73.0	122.0	6.03	101.4	5.9	2.1	42.8	68.7	123.0	5.83	103.1	6.2	4.4	42.7	66.6	124.0	5.79	104.2	6.3	7.4	42.6	
		4.7	80	92.4	116.0	7.49	90.4	4.5	2	43.6	88.3	117.0	7.27	92.2	4.7	4.1	43.4	86.3	118.0	7.22	93.4	4.8	6.9	43.4	
50		28.13	4.7	100	111.8	111.0	9.38	79.0	3.5	1.9	44.4	108.0	112.0	9.13	80.8	3.6	3.9	44.3	106.0	113.0	9.07	82.1	3.7	6.5	44.2
			4.7	120	131.5	108.0	11.81	67.7	2.7	1.8	45.2	127.8	110.0	11.52	70.7	2.8	3.7	45.0	125.8	109.0	11.44	69.9	2.8	6.2	45.0
			7.8	60	73.3	125.0	6.15	104.0	6.0	2.1	44.5	69.0	127.0	5.94	106.7	6.3	4.4	44.3	66.8	128.0	5.90	107.9	6.4	7.4	44.2
50	37.5	7.8	80	92.7	119.0	7.61	93.0	4.6	2	45.0	88.5	120.0	7.38	94.8	4.8	4.1	44.9	86.5	121.0	7.32	96.0	4.8	6.9	44.9	
		7.8	100	112.2	114.0	9.51	81.5	3.5	1.9	45.7	108.2	115.0	9.25	83.4	3.6	3.9	45.5	106.2	116.0	9.18	84.7	3.7	6.5	45.5	
		7.8	120	131.7	110.0	11.91	69.3	2.7	1.8	46.3	127.9	111.0	11.63	71.3	2.8	3.7	46.2	125.9	111.0	11.55	71.6	2.8	6.2	46.2	

WRA, WHA 150 – Heating (continued)

Source			ELT °F	Load Flow 18.75 GPM							Load Flow 28.13 GPM							Load Flow 37.5 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	18.75	2.2	60	74.1	132.0	6.03	111.4	6.4	2.1	48.1	69.5	134.0	5.80	114.2	6.8	4.4	47.8	67.1	134.0	5.76	114.4	6.8	7.4	47.8
		2.2	80	93.4	126.0	7.50	100.4	4.9	2	49.3	89.0	127.0	7.25	102.3	5.1	4.1	49.1	86.8	128.0	7.18	103.5	5.2	6.9	49.0
		2.2	100	112.9	121.0	9.41	88.9	3.8	1.9	50.5	108.7	122.0	9.11	90.9	3.9	3.9	50.3	106.6	123.0	9.03	92.2	4.0	6.5	50.2
		2.2	120	132.6	118.0	11.82	77.6	2.9	1.8	51.7	128.5	119.0	11.51	79.7	3.0	3.7	51.5	126.3	119.0	11.42	80.0	3.1	6.2	51.5
	28.13	4.5	60	74.9	140.0	6.14	119.0	6.7	2.1	51.5	70.1	142.0	5.89	121.9	7.1	4.4	51.3	67.6	142.0	5.83	122.1	7.1	7.3	51.3
		4.5	80	94.1	132.0	7.61	106.0	5.1	2	52.5	89.5	134.0	7.33	109.0	5.4	4.1	52.3	87.3	136.0	7.26	111.2	5.5	6.9	52.1
		4.5	100	113.5	127.0	9.51	94.6	3.9	1.9	53.3	109.1	128.0	9.19	96.6	4.1	3.9	53.1	106.9	129.0	9.09	98.0	4.2	6.5	53.0
		4.5	120	133.1	123.0	11.92	82.3	3.0	1.8	54.1	128.7	123.0	11.60	83.4	3.1	3.7	54.1	126.6	124.0	11.49	84.8	3.2	6.2	54.0
	37.5	7.5	60	75.4	144.0	6.27	122.6	6.7	2.1	53.5	70.4	146.0	6.01	125.5	7.1	4.4	53.3	67.9	148.0	5.95	127.7	7.3	7.3	53.2
		7.5	80	94.5	136.0	7.74	109.6	5.2	2	54.2	89.8	138.0	7.45	112.6	5.4	4.1	54.0	87.5	140.0	7.37	114.8	5.6	6.9	53.9
		7.5	100	113.9	130.0	9.63	97.1	4.0	1.9	54.8	109.4	132.0	9.30	100.3	4.2	3.9	54.7	107.0	130.0	9.20	100.6	4.2	6.5	54.6
		7.5	120	133.3	125.0	12.05	83.9	3.0	1.8	55.5	129.0	126.0	11.71	86.0	3.2	3.7	55.4	126.8	128.0	11.61	88.4	3.2	6.2	55.3
70	18.75	2.2	60	76.0	150.0	6.16	129.0	7.1	2.1	56.2	70.8	152.0	5.88	131.9	7.6	4.4	55.9	68.1	152.0	5.81	132.2	7.7	7.3	55.9
		2.2	80	95.1	142.0	7.64	115.9	5.4	2	57.6	90.2	144.0	7.33	119.0	5.8	4.1	57.3	87.8	146.0	7.25	121.3	5.9	6.9	57.1
		2.1	100	115.4	136.0	9.53	103.5	4.2	1.9	59.0	109.8	138.0	9.18	106.7	4.4	3.9	58.6	107.5	140.0	9.07	109.1	4.5	6.5	58.4
		2.1	120	134.1	132.0	11.97	91.1	3.2	1.8	60.3	129.5	134.0	11.61	94.4	3.4	3.7	59.9	127.1	134.0	11.49	94.8	3.4	6.2	59.9
	28.13	4.4	60	76.9	158.0	6.30	136.5	7.3	2.1	60.3	71.5	162.0	6.00	141.5	7.9	4.4	59.9	68.6	162.0	5.91	141.8	8.0	7.3	59.9
		4.4	80	96.2	152.0	7.77	125.5	5.7	2	61.1	90.9	154.0	7.44	128.6	6.1	4.1	60.9	88.2	154.0	7.34	128.9	6.1	6.9	60.8
		4.4	100	115.4	144.0	9.65	111.1	4.4	1.9	62.1	110.4	146.0	9.27	114.4	4.6	3.9	61.9	107.8	146.0	9.15	114.8	4.7	6.5	61.8
		4.4	120	134.7	138.0	12.09	96.7	3.3	1.8	63.1	129.8	138.0	11.70	98.1	3.5	3.7	63.0	127.5	140.0	11.56	100.6	3.5	6.2	62.9
	37.5	7.3	60	77.5	164.0	6.45	142.0	7.5	2.1	62.4	71.8	166.0	6.13	145.1	7.9	4.4	62.3	68.9	166.0	6.03	145.4	8.1	7.3	62.2
		7.3	80	96.6	156.0	7.91	129.0	5.8	2	63.1	91.2	158.0	7.57	132.2	6.1	4.1	63.0	88.5	160.0	7.47	134.5	6.3	6.9	62.8
		7.3	100	115.8	148.0	9.78	114.6	4.4	1.9	63.9	110.7	150.0	9.39	118.0	4.7	3.9	63.7	108.0	150.0	9.27	118.4	4.7	6.5	63.7
		7.3	120	135.1	142.0	12.23	100.3	3.4	1.8	64.7	130.2	144.0	11.82	103.7	3.6	3.7	64.5	127.7	144.0	11.66	104.2	3.6	6.2	64.4
80	18.75	2.1	60	77.9	168.0	6.34	146.4	7.8	2.1	64.4	72.1	170.0	6.01	149.5	8.3	4.4	64.1	69.2	172.0	5.91	151.8	8.5	7.3	63.8
		2.1	80	97.1	160.0	7.82	133.3	6.0	2	65.8	91.5	162.0	7.46	136.5	6.4	4.1	65.4	88.7	164.0	7.35	138.9	6.5	6.9	65.2
		2.1	100	116.4	154.0	9.70	120.9	4.7	1.9	67.1	111.1	156.0	9.29	124.3	4.9	3.9	66.7	108.3	156.0	9.15	124.8	5.0	6.5	66.7
		2.1	120	135.8	148.0	12.14	106.6	3.6	1.8	68.6	130.5	148.0	11.70	108.1	3.7	3.7	68.5	128.0	150.0	11.54	110.6	3.8	6.2	68.2
	28.13	4.3	60	79.2	180.0	6.51	157.8	8.1	2.1	68.8	72.9	182.0	6.15	161.0	8.7	4.4	68.6	69.8	184.0	6.03	163.4	8.9	7.3	68.4
		4.3	80	98.1	170.0	7.98	142.8	6.2	2	69.9	92.4	174.0	7.60	148.1	6.7	4.1	69.5	89.4	176.0	7.47	150.5	6.9	6.9	69.3
		4.3	100	118.1	170.0	9.97	136.0	5.0	1.9	70.3	112.1	170.0	9.46	137.7	5.3	3.9	70.2	109.0	168.0	9.29	136.3	5.3	6.5	70.3
		4.2	120	136.4	154.0	12.29	112.1	3.7	1.8	72.0	131.1	156.0	11.82	115.7	3.9	3.7	71.8	128.4	157.0	11.65	117.2	3.9	6.3	71.7
	37.5	7.1	60	80.5	192.0	6.74	169.0	8.3	2.1	71.0	73.5	190.0	6.31	168.5	8.8	4.4	71.0	70.2	192.0	6.18	170.9	9.1	7.3	70.9
		7.1	80	98.8	176.0	8.16	148.1	6.3	2	72.1	93.8	194.0	7.89	167.1	7.2	4.1	71.1	90.3	194.0	7.72	167.7	7.4	6.9	71.1
		7.1	100	117.8	167.0	10.01	132.8	4.9	1.9	72.9	112.0	169.0	9.57	136.3	5.2	3.9	72.7	109.1	171.0	9.41	138.9	5.3	6.5	72.6
		7.0	120	136.9	158.0	12.43	115.6	3.7	1.8	73.8	131.4	160.0	11.95	119.2	3.9	3.7	73.6	128.5	160.0	11.77	119.8	4.0	6.2	73.6

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer
- = Operation not recommended

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 180 – Cooling

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
40	22.50	3.7	50	36.5	152.0	7.61	178.0	20.0	3.8	55.8	40.4	162.0	7.89	188.9	20.5	8.0	56.8	42.5	168.0	8.19	196.0	20.5	13.5	57.4
		3.7	60	44.5	174.0	7.95	201.1	21.9	3.7	57.9	49.0	186.0	8.28	214.2	22.5	7.8	59.0	51.5	192.0	8.60	221.4	22.3	13.2	59.7
		3.7	70	52.6	196.0	8.33	224.4	23.5	3.6	59.9	57.6	210.0	8.72	239.8	24.1	7.6	61.3	60.2	220.0	9.10	251.0	24.2	13.0	62.3
		3.7	80	60.4	220.0	8.78	250.0	25.1	3.6	62.2	65.9	238.0	9.23	269.5	25.8	7.5	64.0	69.0	248.0	9.65	280.9	25.7	12.7	65.0
	33.75	3.7	90	68.1	246.0	9.28	277.7	26.5	3.5	64.7	74.2	266.0	9.82	299.5	27.1	7.4	66.6	77.7	276.0	10.28	311.1	26.8	12.5	67.7
		8.0	50	36.3	154.0	7.29	178.9	21.1	3.8	50.6	40.2	166.0	7.53	191.7	22.0	8.0	51.4	42.4	172.0	7.83	198.7	22.0	13.5	51.8
		7.9	60	44.4	176.0	7.57	201.8	23.2	3.7	52.0	48.7	190.0	7.88	216.9	24.1	7.8	52.9	51.2	198.0	8.20	226.0	24.1	13.2	53.4
		7.9	70	52.2	200.0	7.91	227.0	25.3	3.6	53.5	57.2	216.0	8.27	244.2	26.1	7.6	54.5	60.0	226.0	8.63	255.5	26.2	13.0	55.1
	45.0	7.9	80	59.9	226.0	8.30	254.3	27.2	3.6	55.1	65.5	244.0	8.73	273.8	28.0	7.5	56.2	68.7	254.0	9.13	285.1	27.8	12.7	56.9
		7.9	90	67.6	252.0	8.74	281.8	28.8	3.5	56.7	73.8	274.0	9.25	305.6	29.6	7.4	58.1	77.3	286.0	9.70	319.1	29.5	12.5	58.9
		13.6	50	36.1	156.0	7.28	180.9	21.4	3.8	48.0	40.0	168.0	7.51	193.6	22.4	8.0	48.6	42.3	174.0	7.80	200.6	22.3	13.5	48.9
		13.6	60	44.2	178.0	7.53	203.7	23.6	3.7	49.1	48.6	192.0	7.84	218.7	24.5	7.8	49.7	51.1	200.0	8.15	227.8	24.5	13.2	50.1
50	22.50	13.6	70	52.0	202.0	7.84	228.8	25.8	3.6	50.2	57.0	220.0	8.20	248.0	26.8	7.6	51.0	59.9	228.0	8.54	257.2	26.7	13.0	51.4
		13.5	80	59.7	228.0	8.21	256.0	27.8	3.6	51.4	65.3	248.0	8.62	277.4	28.8	7.5	52.3	68.5	258.0	9.01	288.8	28.6	12.7	52.8
		13.5	90	67.4	254.0	8.62	283.4	29.5	3.5	52.6	73.5	278.0	9.12	309.1	30.5	7.4	53.7	77.1	290.0	9.55	322.6	30.4	12.5	54.3
		3.6	50	37.0	146.0	8.41	174.7	17.4	3.8	65.5	40.8	156.0	8.68	185.6	18.0	8.0	66.5	42.9	160.0	8.97	190.6	17.8	13.5	66.9
	33.75	3.6	60	45.1	168.0	8.73	197.8	19.2	3.7	67.6	49.3	180.0	9.05	210.9	19.9	7.8	68.7	51.7	186.0	9.36	218.0	19.9	13.2	69.4
		3.6	70	53.1	190.0	9.11	221.1	20.9	3.6	69.7	57.9	204.0	9.48	236.4	21.5	7.6	71.0	60.6	212.0	9.84	245.6	21.5	13.0	71.8
		3.6	80	61.0	214.0	9.54	246.6	22.4	3.6	71.9	66.4	230.0	9.98	264.1	23.1	7.5	73.5	69.4	238.0	10.38	273.4	22.9	12.7	74.3
		3.6	90	68.8	238.0	10.04	272.3	23.7	3.5	74.2	74.8	256.0	10.56	292.0	24.3	7.3	76.0	78.1	268.0	11.00	305.5	24.4	12.5	77.2
	45.0	7.8	50	36.8	148.0	8.09	175.6	18.3	3.8	60.4	40.5	160.0	8.33	188.4	19.2	8.0	61.2	42.7	164.0	8.61	193.4	19.0	13.5	61.5
		7.8	60	44.9	170.0	8.35	198.5	20.4	3.7	61.8	49.1	184.0	8.65	213.5	21.3	7.8	62.7	51.6	190.0	8.94	220.5	21.2	13.2	63.1
		7.7	70	52.8	194.0	8.67	223.6	22.4	3.6	63.3	57.6	210.0	9.02	240.8	23.3	7.6	64.3	60.3	218.0	9.36	250.0	23.3	13.0	64.8
		7.7	80	60.6	218.0	9.05	248.9	24.1	3.6	64.7	66.0	236.0	9.46	268.3	25.0	7.5	65.9	69.1	246.0	9.84	279.6	25.0	12.7	66.6
70	22.50	7.7	90	68.3	244.0	9.48	276.3	25.7	3.5	66.4	74.4	264.0	9.96	298.0	26.5	7.4	67.7	77.7	276.0	10.39	311.5	26.6	12.5	68.5
		13.3	50	36.7	150.0	8.08	177.6	18.6	3.8	57.9	40.4	162.0	8.31	190.4	19.5	8.0	58.5	42.6	166.0	8.58	195.3	19.4	13.5	58.7
		13.3	60	44.7	172.0	8.31	200.4	20.7	3.7	58.9	49.0	186.0	8.60	215.3	21.6	7.8	59.6	51.5	192.0	8.88	222.3	21.6	13.2	59.9
		13.2	70	52.6	196.0	8.60	225.4	22.8	3.6	60.0	57.4	212.0	8.94	242.5	23.7	7.6	60.8	60.2	220.0	9.27	251.7	23.7	13.0	61.2
	33.75	13.2	80	60.3	222.0	8.95	252.6	24.8	3.6	61.2	65.8	240.0	9.34	271.9	25.7	7.5	62.1	68.9	250.0	9.72	283.2	25.7	12.7	62.6
		13.2	90	68.0	248.0	9.35	279.9	26.5	3.5	62.4	74.1	268.0	9.82	301.5	27.3	7.4	63.4	77.6	280.0	10.24	314.9	27.3	12.5	64.0
		3.5	50	38.1	134.0	10.25	169.0	13.1	3.8	85.0	41.5	144.0	10.50	179.8	13.7	8.0	86.0	43.4	148.0	10.79	184.8	13.7	13.5	86.4
		3.5	60	46.3	154.0	10.55	190.0	14.6	3.7	86.9	50.2	166.0	10.84	203.0	15.3	7.8	88.0	52.4	170.0	11.15	208.0	15.3	13.2	88.5
	45.0	3.5	70	54.4	176.0	10.91	213.2	16.1	3.6	89.0	58.7	190.0	11.26	228.4	16.9	7.6	90.3	61.3	196.0	11.59	235.5	16.9	13.0	90.9
		3.5	80	62.2	200.0	11.33	238.7	17.7	3.5	91.2	67.3	214.0	11.74	254.1	18.2	7.5	92.6	70.1	222.0	12.11	263.3	18.3	12.7	93.4
		3.5	90	70.3	222.0	11.81	262.3	18.8	3.5	93.3	75.8	240.0	12.29	282.0	19.5	7.3	95.1	79.0	248.0	12.70	291.4	19.5	12.5	95.9
		7.4	50	37.9	136.0	9.90	169.8	13.7	3.8	80.1	41.3	146.0	10.12	180.6	14.4	8.0	80.7	43.3	150.0	10.39	185.5	14.4	13.5	81.0
80	22.50	7.4	60	46.0	158.0	10.14	192.6	15.6	3.7	81.4	49.9	170.0	10.40	205.5	16.3	7.8	82.2	52.3	174.0	10.68	210.5	16.3	13.2	82.5
		7.4	70	54.0	180.0	10.43	215.6	17.3	3.6	82.8	58.5	194.0	10.74	230.7	18.1	7.6	83.7	61.1	200.0	11.05	237.7	18.1	13.0	84.1
		7.4	80	61.9	204.0	10.78	240.8	18.9	3.5	84.3	67.0	220.0	11.14	258.0	19.7	7.5	85.3	69.9	228.0	11.51	267.3	19.8	12.7	85.8
		7.4	90	69.7	228.0	11.18	266.2	20.4	3.5	85.8	75.4	246.0	11.62	285.7	21.2	7.3	86.9	78.5	258.0	12.03	299.1	21.4	12.5	87.7
	33.75	12.7	50	37.7	138.0	9.88	171.7	14.0	3.8	77.6	41.2	148.0	10.08	182.4	14.7	8.0	78.1	43.2	152.0	10.36	187.4	14.7	13.5	78.3
		12.7	60	45.8	160.0	10.08	194.4	15.9	3.7	78.6	49.8	172.0	10.33	207.2	16.7	7.8	79.2	52.1	178.0	10.60	214.2	16.8	13.2	79.5
		12.7	70	53.8	182.0	10.34	217.3	17.6	3.6	79.7	58.4	196.0	10.64	232.3	18.4	7.6	80.3	60.9	204.0	10.93	241.3	18.7	13.0	80.7
		12.7	80	61.7	206.0	10.65	242.4	19.3	3.6	80.8	66.8	222.0	11.01	259.6	20.2	7.5	81.5	69.7	232.0	11.35	270.7	20.4	12.7	82.0
	45.0	12.7	90	69.4	232.0	11.02	269.6	21.1	3.5	82.0	75.2	250.0	11.44	289.1	21.8	7.3	82.8	78.4	262.0	11.83	302.4	22.1	12.5	83.4
		3.4	50	38.6	128.0	11.33	166.7	11.3	3.8	94.8	41.9	136.0	11.57	175.5	11.8	8.0	95.6	43.8	140.0	11.85	180.4	11.8	13.5	96.0
		3.4	60	46.8	148.0	11.62	187.7	12.7	3.7	96.7	50.6	158.0	11.90	198.6	13.3	7.8	97.7	52.8	162.0	12.20	203.6	13.3	13.2	98.1
		3.4	70	54.9	170.0	11.98	210.9	14.2	3.6	98.7	59.2	182.0	12.31	224.0	14.8	7.6	99.9	61.7	186.0	12.63	229.1	14.7	13.0	100.4
90	22.50	3.4	80	62.9	192.0	12.39	234.3	15.5	3.5	100.8	67.8	206.0	12.78	249.6	16.1	7.5	102.2	70.6	212.0	13.14	256.8	16.1	12.7	102.8
		3.4	90	71.0	214.0	12.86	257.9	16.6	3.5	102.9	76.4	230.0	13.34	275.5	17.2	7.3	104.5	79.4	238.0	13.73	284.8	17.3	12.5	105.3
		7.3	50	38.4	130.0	10.96	167.4	11.9	3.8	89.9	41.7	140.0	11.17	178.1	12.5	8.0	90.6	43.6	144.0	11.43	183.0	12.6	13.5	90.8
		7.3	60	46.5	152.0	11.18	190.2	13.6	3.7	91.3	50.4	162.0	11.43	201.0	14.2	7.8	91.9	52.6	166.0	11.71	206.0	14.2	13.2	92.2
	33.75	7.3	70	54.5	174.0	11.46	213.1	15.2	3.6	92.6	59.0	186.0	11.76	226.1	15.8	7.6	93.4	61.5	192.0	12.06	233.1	15.9	13.0	93.8
		7.3	80	62.6	196.0	11.80	236.3																	

WRA, WCA 180 – Cooling (continued)

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	22.50	3.3	50	40.3	109.0	15.49	161.9	7.0	3.8	124.4	43.2	115.0	15.73	168.7	7.3	7.9	125.0	44.8	118.0	16.00	172.6	7.4	13.5	125.3
		3.3	60	48.7	127.0	15.79	180.9	8.0	3.7	126.1	52.1	134.0	16.05	188.8	8.3	7.8	126.8	53.9	138.0	16.34	193.8	8.4	13.2	127.2
		3.3	70	57.0	146.0	16.14	201.1	9.0	3.6	127.9	60.8	156.0	16.43	212.1	9.5	7.6	128.9	62.9	160.0	16.75	217.2	9.6	12.9	129.3
		3.2	80	65.2	166.0	16.54	222.5	10.0	3.5	129.8	69.5	178.0	16.89	235.7	10.5	7.5	130.9	71.8	184.0	17.24	242.8	10.7	12.9	131.6
	3.2	90	73.3	188.0	17.01	246.1	11.1	3.5	131.9	78.1	200.0	17.43	259.5	11.5	7.3	133.1	80.8	208.0	17.81	268.8	11.7	12.5	133.9	
	33.75	7.0	50	40.1	111.0	15.08	162.5	7.4	3.8	119.6	43.1	117.0	15.26	169.1	7.7	7.9	120.0	44.6	121.0	15.52	174.0	7.8	13.5	120.3
		7.0	60	48.4	130.0	15.27	182.1	8.5	3.7	120.8	51.8	138.0	15.49	190.9	8.9	7.8	121.3	53.7	142.0	15.76	195.8	9.0	13.2	121.6
		6.9	70	56.7	150.0	15.52	203.0	9.7	3.6	122.0	60.5	160.0	15.77	213.8	10.1	7.6	122.7	62.7	164.0	16.06	218.8	10.2	12.9	123.0
		6.9	80	64.7	172.0	15.83	226.0	10.9	3.5	123.4	69.2	182.0	16.13	237.0	11.3	7.5	124.0	71.6	188.0	16.45	244.1	11.4	12.7	124.5
	6.9	90	72.8	194.0	16.20	249.3	12.0	3.5	124.8	77.8	206.0	16.55	262.5	12.4	7.3	125.6	80.5	214.0	16.91	271.7	12.7	12.5	126.1	
	45.0	11.9	50	40.0	113.0	15.00	164.2	7.5	3.8	117.3	43.0	118.0	15.16	169.8	7.8	7.9	117.5	44.6	122.0	15.42	174.6	7.9	13.5	117.8
		11.9	60	48.3	132.0	15.15	183.7	8.7	3.7	118.2	51.7	140.0	15.34	192.3	9.1	7.8	118.5	53.6	144.0	15.60	197.3	9.2	13.2	118.8
11.9		70	56.5	152.0	15.36	204.4	9.9	3.6	119.1	60.4	162.0	15.56	215.1	10.4	7.6	119.6	62.5	168.0	15.84	222.0	10.6	12.9	119.9	
11.9		80	64.5	174.0	15.58	227.2	11.2	3.5	120.1	69.0	186.0	15.85	240.1	11.7	7.5	120.7	71.5	192.0	16.15	247.1	11.9	12.7	121.0	
11.9	90	72.6	196.0	15.89	250.2	12.3	3.5	121.1	77.6	210.0	16.22	265.4	12.9	7.3	121.8	80.3	218.0	16.55	274.5	13.2	12.5	122.2		
120	22.50	3.2	50	40.8	103.0	17.15	161.5	6.0	3.8	134.4	43.6	108.0	17.39	167.4	6.2	7.9	134.9	45.1	111.0	17.67	171.3	6.3	13.5	135.2
		3.2	60	49.3	120.0	17.51	179.8	6.9	3.7	136.0	52.5	127.0	17.77	187.6	7.1	7.8	136.7	54.2	130.0	18.05	191.6	7.2	13.2	137.0
		3.2	70	57.7	138.0	17.86	198.9	7.7	3.6	137.7	61.3	146.0	18.14	207.9	8.0	7.6	138.5	63.3	150.0	18.45	213.0	8.1	12.9	138.9
		3.2	80	66.0	158.0	18.26	220.3	8.7	3.5	139.6	70.0	168.0	18.61	231.5	9.0	7.5	140.6	72.4	172.0	18.95	236.7	9.1	12.7	141.0
	3.2	90	74.2	178.0	18.74	242.0	9.5	3.5	141.5	78.7	190.0	19.16	255.4	9.9	7.3	142.7	81.3	196.0	19.53	262.7	10.0	12.5	143.3	
	33.75	6.9	50	40.7	105.0	16.73	162.1	6.3	3.8	129.6	43.4	111.0	16.93	168.8	6.6	7.9	130.0	45.0	113.0	17.20	171.7	6.6	13.5	130.2
		6.9	60	49.1	123.0	16.98	181.0	7.2	3.7	130.7	52.3	130.0	17.19	188.7	7.6	7.8	131.2	54.0	134.0	17.45	193.6	7.7	13.2	131.5
		6.9	70	57.4	142.0	17.22	200.8	8.2	3.6	131.9	61.1	150.0	17.45	209.5	8.6	7.6	132.4	63.1	156.0	17.74	216.6	8.8	12.9	132.8
		6.8	80	65.6	162.0	17.52	221.8	9.2	3.5	133.1	69.8	172.0	17.80	232.8	9.7	7.5	133.8	72.1	178.0	18.11	239.8	9.8	12.7	134.2
	6.8	90	73.6	184.0	17.88	245.0	10.3	3.5	134.5	78.4	196.0	18.22	258.2	10.8	7.3	135.3	81.0	202.0	18.56	265.3	10.9	12.5	135.7	
	45.0	11.8	50	40.6	106.0	16.65	162.8	6.4	3.8	127.2	43.4	112.0	16.85	169.5	6.6	7.9	127.5	44.9	115.0	17.10	173.4	6.7	13.5	127.7
		11.7	60	49.0	124.0	16.85	181.5	7.4	3.7	128.1	52.2	132.0	17.04	190.2	7.7	7.8	128.5	54.0	136.0	17.29	195.0	7.9	13.2	128.7
11.7		70	57.2	144.0	17.04	202.2	8.4	3.6	129.0	61.0	152.0	17.24	210.8	8.8	7.6	129.4	63.0	158.0	17.52	217.8	9.0	12.9	129.7	
11.7		80	65.4	164.0	17.29	223.0	9.5	3.5	129.9	69.7	174.0	17.52	233.8	9.9	7.5	130.4	71.9	182.0	17.83	242.9	10.2	12.7	130.8	
11.7	90	73.5	186.0	17.59	246.0	10.6	3.5	130.9	78.1	200.0	17.89	261.1	11.2	7.3	131.6	80.8	206.0	18.22	268.2	11.3	12.5	131.9		

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 180 – Heating

Source			ELT °F	Load Flow 22.5 GPM							Load Flow 33.75 GPM							Load Flow 45.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	22.50	4.0	60	71.2	126.0	8.55	96.8	4.3	3.6	21.4	67.5	127.0	8.36	98.5	4.5	7.6	21.2	65.7	128.0	8.42	99.3	4.5	13.0	21.2
		4.0	80	90.9	123.0	10.55	87.0	3.4	3.5	22.3	87.3	124.0	10.33	88.7	3.5	7.3	22.1	85.6	125.0	10.37	89.6	3.5	12.5	22.0
		4.0	100	110.7	120.0	13.15	75.1	2.7	3.3	23.3	107.2	121.0	12.90	77.0	2.7	7.1	23.2	105.4	122.0	12.91	77.9	2.8	12.1	23.1
		4.0	120	130.7	120.0	16.33	64.3	2.2	3.2	24.3	127.1	120.0	16.08	65.1	2.2	6.9	24.2	125.4	121.0	16.09	66.1	2.2	11.8	24.1
	33.75	8.4	60	71.7	132.0	8.80	102.0	4.4	3.6	24.0	67.9	134.0	8.59	104.7	4.6	7.6	23.8	66.0	134.0	8.64	104.5	4.5	13.0	23.8
		8.4	80	91.4	128.0	10.80	91.2	3.5	3.4	24.6	87.6	129.0	10.56	93.0	3.6	7.3	24.5	85.8	130.0	10.59	93.9	3.6	12.5	24.4
		8.4	100	111.1	125.0	13.39	79.3	2.7	3.3	25.3	107.4	125.0	13.12	80.2	2.8	7.1	25.2	105.6	126.0	13.13	81.2	2.8	12.1	25.2
		8.4	120	130.9	123.0	16.53	66.6	2.2	3.2	26.1	127.3	124.0	16.26	68.5	2.2	6.9	25.9	125.5	124.0	16.26	68.5	2.2	11.8	25.9
	45.0	14.2	60	72.1	136.0	9.09	105.0	4.4	3.6	25.3	68.2	138.0	8.88	107.7	4.6	7.6	25.2	66.1	138.0	8.92	107.6	4.5	13.0	25.2
		14.2	80	91.7	132.0	11.09	94.1	3.5	3.4	25.8	87.8	132.0	10.84	95.0	3.6	7.3	25.8	86.0	134.0	10.87	96.9	3.6	12.5	25.7
		14.2	100	111.3	127.0	13.68	80.3	2.7	3.3	26.4	107.6	128.0	13.41	82.2	2.8	7.1	26.3	105.7	129.0	13.41	83.2	2.8	12.1	26.3
		14.2	120	131.1	125.0	16.83	67.6	2.2	3.2	27.0	127.5	126.0	16.51	69.6	2.2	6.9	26.9	125.6	126.0	16.51	69.6	2.2	11.8	26.9
40	22.50	3.9	60	72.8	144.0	8.91	113.6	4.7	3.6	29.9	68.7	146.0	8.67	116.4	4.9	7.6	29.7	66.5	146.0	8.89	116.3	4.9	13.0	29.7
		3.9	80	92.4	140.0	10.94	102.7	3.7	3.4	30.9	88.3	140.0	10.66	103.6	3.8	7.3	30.8	86.3	142.0	10.67	105.6	3.9	12.5	30.6
		3.9	100	112.1	136.0	13.54	89.8	2.9	3.3	32.0	108.1	136.0	13.24	90.8	3.0	7.1	31.9	106.1	138.0	13.23	92.8	3.1	12.1	31.7
		3.9	120	131.9	134.0	16.67	77.1	2.4	3.2	33.1	128.1	136.0	16.31	80.3	2.4	6.9	32.9	126.0	136.0	16.29	80.4	2.4	11.8	32.9
	33.75	8.2	60	73.5	152.0	9.14	120.8	4.9	3.6	32.8	69.1	154.0	8.87	123.7	5.1	7.6	32.7	66.8	154.0	8.89	123.7	5.1	13.0	32.7
		8.2	80	93.0	146.0	11.17	107.9	3.8	3.4	33.6	88.8	148.0	10.86	110.9	4.0	7.3	33.4	86.6	148.0	10.86	110.9	4.0	12.5	33.4
		8.1	100	112.6	142.0	13.76	95.0	3.0	3.3	34.4	108.4	142.0	13.42	96.2	3.1	7.1	34.3	106.4	144.0	13.39	98.3	3.2	12.1	34.2
		8.1	120	132.4	140.0	16.84	82.5	2.4	3.2	35.1	128.3	140.0	16.50	83.7	2.5	6.9	35.0	126.2	140.0	16.47	83.8	2.5	11.8	35.0
	45.0	13.9	60	73.9	156.0	9.42	123.9	4.9	3.6	34.5	69.4	158.0	9.14	126.8	5.1	7.6	34.4	67.1	160.0	9.15	128.8	5.1	13.0	34.3
		13.9	80	93.3	150.0	11.43	111.0	3.8	3.4	35.1	89.0	152.0	11.12	114.1	4.0	7.3	34.9	86.8	152.0	11.11	114.1	4.0	12.5	34.9
		13.8	100	112.8	144.0	14.03	96.1	3.0	3.3	35.7	108.7	146.0	13.68	99.3	3.1	7.1	35.6	106.5	146.0	13.63	99.5	3.1	12.1	35.6
		13.8	120	132.6	142.0	17.11	83.6	2.4	3.2	36.3	128.4	142.0	16.76	84.8	2.5	6.9	36.2	126.4	144.0	16.72	86.9	2.5	11.8	36.1
50	22.50	3.8	60	74.6	164.0	9.17	132.7	5.2	3.6	38.2	69.8	166.0	8.87	135.7	5.5	7.6	37.9	67.4	166.0	8.87	135.7	5.5	13.0	37.9
		3.8	80	94.0	158.0	11.20	119.8	4.1	3.4	39.4	89.5	160.0	10.86	122.9	4.3	7.3	39.1	87.1	160.0	10.83	123.0	4.3	12.5	39.1
		3.8	100	113.7	154.0	13.83	106.8	3.3	3.3	40.5	109.1	154.0	13.41	108.2	3.4	7.1	40.4	106.9	156.0	13.35	110.4	3.4	12.1	40.2
		3.8	120	133.5	152.0	16.95	94.1	2.6	3.2	41.6	129.0	152.0	16.56	95.5	2.7	6.9	41.5	126.8	152.0	16.50	95.7	2.7	11.8	41.5
	33.75	8.0	60	75.5	174.0	9.42	141.8	5.4	3.6	41.6	70.4	176.0	9.09	145.0	5.7	7.6	41.4	67.9	178.0	9.08	147.0	5.7	13.0	41.3
		8.0	80	94.8	166.0	11.43	127.0	4.3	3.4	42.5	90.0	168.0	11.06	130.2	4.4	7.3	42.3	87.6	170.0	11.02	132.4	4.5	12.5	42.2
		7.9	100	114.2	160.0	14.04	112.1	3.3	3.3	43.4	109.6	162.0	13.59	115.6	3.5	7.1	43.1	107.3	164.0	13.52	117.9	3.6	12.1	43.0
		7.9	120	134.0	158.0	17.18	99.4	2.7	3.2	44.1	129.4	158.0	16.77	100.8	2.8	6.9	44.0	127.0	158.0	16.69	101.0	2.8	11.8	44.0
	45.0	13.5	60	76.0	180.0	9.72	146.8	5.4	3.6	43.5	70.8	182.0	9.37	150.0	5.7	7.6	43.3	68.2	184.0	9.35	152.1	5.8	13.0	43.2
		13.5	80	95.3	172.0	11.71	132.0	4.3	3.4	44.1	90.3	174.0	11.33	135.3	4.5	7.3	44.0	87.8	176.0	11.28	137.5	4.6	12.5	43.9
		13.5	100	114.8	166.0	14.30	117.2	3.4	3.3	44.8	109.8	166.0	13.84	118.8	3.5	7.1	44.7	107.5	168.0	13.76	121.0	3.6	12.1	44.6
		13.5	120	134.2	160.0	17.46	100.4	2.7	3.2	45.5	129.6	162.0	17.03	103.9	2.8	6.9	45.4	127.2	162.0	16.95	104.1	2.8	11.8	45.4

WRA, WHA 180 – Heating (continued)

Source			Load Flow 22.5 GPM								Load Flow 33.75 GPM						Load Flow 45.0 GPM									
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F		
60	22.50	3.7	60	76.5	186.0	9.47	153.7	5.8	3.6	46.3	71.1	188.0	9.11	156.9	6.0	7.6	46.1	68.4	190.0	9.08	159.0	6.1	13.0	45.9		
		3.7	80	95.8	178.0	11.48	138.8	4.5	3.4	47.7	90.7	180.0	11.08	142.2	4.8	7.3	47.4	88.1	182.0	11.02	144.4	4.8	12.5	47.2		
		3.7	100	115.5	174.0	14.07	126.0	3.6	3.3	48.8	110.3	174.0	13.59	127.6	3.8	7.1	48.7	107.8	176.0	13.50	129.9	3.8	12.1	48.4		
	33.75	7.8	60	77.6	198.0	9.76	164.7	5.9	3.6	50.2	71.9	200.0	9.37	168.0	6.3	7.6	50.0	69.0	202.0	9.33	170.2	6.3	13.0	49.9		
		7.8	80	96.9	190.0	11.75	149.9	4.7	3.4	51.1	91.4	192.0	11.31	153.4	5.0	7.3	50.9	88.6	194.0	11.24	155.6	5.1	12.5	50.8		
		7.8	100	116.2	182.0	14.32	133.1	3.7	3.3	52.1	110.9	184.0	13.81	136.9	3.9	7.1	51.9	108.3	186.0	13.69	139.3	4.0	12.1	51.7		
	45.0	13.2	60	78.1	204.0	10.08	169.6	5.9	3.6	52.5	72.3	208.0	9.67	175.0	6.3	7.6	52.2	69.3	210.0	9.62	177.2	6.4	13.0	52.1		
		13.2	80	97.4	196.0	12.06	154.8	4.8	3.4	53.1	91.7	198.0	11.60	158.4	5.0	7.3	53.0	88.9	200.0	11.52	160.7	5.1	12.5	52.9		
		13.2	100	116.5	186.0	14.61	136.1	3.7	3.3	53.1	111.3	190.0	14.08	142.0	4.0	7.1	53.7	108.4	190.0	13.96	142.4	4.0	12.1	53.7		
	70	22.50	3.6	60	78.5	208.0	9.83	174.5	6.2	3.6	54.5	72.6	212.0	9.40	179.9	6.6	7.6	54.0	69.5	214.0	9.34	182.1	6.7	13.0	53.8	
			3.6	80	97.8	200.0	11.83	159.6	5.0	3.4	55.8	92.1	204.0	11.35	165.3	5.3	7.3	55.3	89.1	204.0	11.25	165.6	5.3	12.5	55.3	
			3.6	100	117.2	184.0	14.40	144.9	3.9	3.3	57.1	111.6	196.0	13.84	148.8	4.1	7.1	56.8	108.8	198.0	13.70	151.2	4.2	12.1	56.6	
33.75		7.6	60	79.7	222.0	10.17	187.3	6.4	3.6	58.9	73.4	226.0	9.72	192.8	6.8	7.6	58.6	70.1	228.0	9.64	195.1	6.9	13.0	58.4		
		7.6	80	99.0	214.0	12.15	172.5	5.2	3.4	59.8	92.8	216.0	11.63	176.3	5.4	7.3	59.6	89.7	218.0	11.52	178.7	5.5	12.5	59.4		
		7.6	100	118.1	204.0	14.69	153.9	4.1	3.3	60.9	112.2	206.0	14.09	157.9	4.3	7.1	60.6	109.2	208.0	13.94	160.4	4.4	12.1	60.5		
45.0		13.0	60	80.4	230.0	10.52	194.1	6.4	3.6	61.4	73.9	234.0	10.04	199.7	6.8	7.6	61.1	70.5	236.0	9.95	202.0	6.9	13.0	61.0		
		13.0	80	99.6	220.0	12.48	177.4	5.2	3.4	62.1	93.3	224.0	11.94	183.2	5.5	7.3	61.9	90.0	226.0	11.82	185.7	5.6	12.5	61.7		
		12.9	100	118.7	210.0	15.00	158.8	4.1	3.3	62.9	112.7	214.0	14.38	164.9	4.4	7.1	62.7	109.6	216.0	14.22	167.5	4.5	12.1	62.6		
80		22.50	3.6	60	80.6	232.0	10.24	197.1	6.6	3.6	62.5	74.0	236.0	9.75	202.7	7.1	7.6	62.0	70.6	238.0	9.65	205.1	7.2	13.0	61.8	
			3.5	80	99.9	224.0	12.23	182.3	5.4	3.4	63.8	93.4	226.0	11.67	186.2	5.7	7.3	63.5	90.2	230.0	11.54	190.6	5.8	12.5	63.1	
			3.5	100	119.2	216.0	14.78	165.5	4.3	3.3	65.3	112.9	218.0	14.14	169.8	4.5	7.1	64.9	109.8	220.0	13.96	172.4	4.6	12.1	64.7	
	33.75	7.5	60	82.2	250.0	10.65	213.7	6.9	3.5	67.3	75.1	254.0	10.12	219.4	7.4	7.6	67.0	71.4	256.0	10.01	221.8	7.5	13.0	66.9		
		7.5	80	101.2	238.0	12.61	195.0	5.5	3.4	68.4	94.3	242.0	12.01	201.0	5.9	7.3	68.1	90.8	244.0	11.86	203.5	6.0	12.5	67.9		
		7.5	100	120.3	228.0	15.13	176.3	4.4	3.3	69.5	113.7	232.0	14.44	182.7	4.7	7.1	69.2	110.4	234.0	14.24	185.4	4.8	12.1	69.0		
	45.0	12.7	60	82.9	258.0	11.03	220.3	6.9	3.5	70.2	75.6	264.0	10.49	228.2	7.4	7.6	69.9	71.9	268.0	10.37	232.6	7.6	13.0	69.7		
		12.7	80	101.9	246.0	12.97	201.7	5.6	3.4	71.0	94.9	252.0	12.36	209.8	6.0	7.3	70.7	91.3	254.0	12.19	212.4	6.1	12.5	70.6		
		12.7	100	121.2	238.0	15.54	185.0	4.5	3.3	71.8	114.2	240.0	14.76	189.6	4.8	7.1	71.6	110.8	242.0	14.55	192.3	4.9	12.1	71.5		
				12.7	120	140.1	226.0	18.72	162.1	3.5	3.2	72.8	134.3	242.0	18.15	180.0	3.9	6.8	72.0	130.8	242.0	17.84	181.1	4.0	11.7	72.0

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 240 – Cooling

Source				Load Flow 30.0 GPM								Load Flow 45.0 GPM								Load Flow 60.0 GPM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				Data rows for 40, 50, 70, and 80 series, grouped by EST temperature and Load Flow 40 Series <tr> <td rowspan="12">40</td> <td rowspan="4">30.0</td> <td>5.3</td><td>50</td><td>37.6</td><td>186.0</td><td>8.98</td><td>216.7</td><td>20.7</td><td>5.4</td><td>54.4</td><td>41.2</td><td>198.0</td><td>9.36</td><td>230.0</td><td>21.1</td><td>11.4</td><td>55.3</td><td>43.2</td><td>204.0</td><td>9.88</td><td>237.7</td><td>20.7</td><td>19.5</td><td>55.8</td> <td>5.3</td><td>60</td><td>45.7</td><td>214.0</td><td>9.33</td><td>245.8</td><td>22.9</td><td>5.3</td><td>56.4</td><td>49.9</td><td>228.0</td><td>9.78</td><td>261.4</td><td>23.3</td><td>11.2</td><td>57.4</td><td>52.1</td><td>238.0</td><td>10.33</td><td>273.3</td><td>23.0</td><td>19.1</td><td>58.2</td> <td>5.3</td><td>70</td><td>53.7</td><td>244.0</td><td>9.77</td><td>277.4</td><td>25.0</td><td>5.2</td><td>58.5</td><td>58.4</td><td>262.0</td><td>10.31</td><td>297.2</td><td>25.4</td><td>11.0</td><td>59.8</td><td>60.9</td><td>272.0</td><td>10.90</td><td>309.2</td><td>24.9</td><td>18.8</td><td>60.6</td> <td>5.3</td><td>80</td><td>61.6</td><td>276.0</td><td>10.32</td><td>311.2</td><td>26.7</td><td>5.1</td><td>60.7</td><td>66.8</td><td>296.0</td><td>10.97</td><td>333.4</td><td>27.0</td><td>10.8</td><td>62.2</td><td>69.7</td><td>308.0</td><td>11.63</td><td>347.7</td><td>26.5</td><td>18.5</td><td>63.2</td> <td>5.3</td><td>90</td><td>69.5</td><td>308.0</td><td>10.98</td><td>345.5</td><td>28.0</td><td>5.0</td><td>63.0</td><td>75.2</td><td>332.0</td><td>11.76</td><td>372.2</td><td>28.2</td><td>10.6</td><td>64.8</td><td>78.5</td><td>346.0</td><td>12.51</td><td>388.7</td><td>27.6</td><td>18.2</td><td>65.9</td> <td>11.4</td><td>50</td><td>37.3</td><td>190.0</td><td>8.65</td><td>219.5</td><td>22.0</td><td>5.4</td><td>49.8</td><td>41.0</td><td>202.0</td><td>9.00</td><td>232.7</td><td>22.4</td><td>11.4</td><td>50.3</td><td>43.0</td><td>210.0</td><td>9.49</td><td>242.4</td><td>22.1</td><td>19.5</td><td>50.8</td> <td>11.4</td><td>60</td><td>45.5</td><td>218.0</td><td>8.92</td><td>248.4</td><td>24.4</td><td>5.3</td><td>51.0</td><td>49.6</td><td>234.0</td><td>9.33</td><td>265.9</td><td>25.1</td><td>11.2</td><td>51.8</td><td>51.9</td><td>242.0</td><td>9.86</td><td>275.7</td><td>24.5</td><td>19.1</td><td>52.3</td> <td>11.4</td><td>70</td><td>53.5</td><td>248.0</td><td>9.29</td><td>279.7</td><td>26.7</td><td>5.2</td><td>52.4</td><td>58.1</td><td>268.0</td><td>9.78</td><td>301.4</td><td>27.4</td><td>11.0</td><td>53.4</td><td>60.7</td><td>278.0</td><td>10.36</td><td>313.3</td><td>26.8</td><td>18.8</td><td>53.9</td> <td>11.4</td><td>80</td><td>61.2</td><td>282.0</td><td>9.75</td><td>315.3</td><td>28.9</td><td>5.1</td><td>54.0</td><td>66.5</td><td>304.0</td><td>10.36</td><td>339.3</td><td>29.4</td><td>10.8</td><td>55.1</td><td>69.4</td><td>318.0</td><td>11.00</td><td>355.5</td><td>28.9</td><td>18.5</td><td>55.8</td> <td>11.3</td><td>90</td><td>68.9</td><td>316.0</td><td>10.33</td><td>351.3</td><td>30.6</td><td>5.0</td><td>56.6</td><td>74.8</td><td>342.0</td><td>11.08</td><td>379.8</td><td>30.9</td><td>10.6</td><td>56.9</td><td>78.1</td><td>358.0</td><td>11.80</td><td>398.3</td><td>30.3</td><td>18.2</td><td>57.7</td> <td>19.6</td><td>50</td><td>37.2</td><td>192.0</td><td>8.78</td><td>222.0</td><td>21.9</td><td>5.4</td><td>47.4</td><td>40.9</td><td>204.0</td><td>9.11</td><td>235.1</td><td>22.4</td><td>11.4</td><td>47.8</td><td>42.9</td><td>212.0</td><td>9.59</td><td>244.7</td><td>22.1</td><td>19.5</td><td>48.2</td> <td>19.6</td><td>60</td><td>45.3</td><td>220.0</td><td>9.01</td><td>250.8</td><td>24.4</td><td>5.3</td><td>48.4</td><td>49.5</td><td>236.0</td><td>9.40</td><td>268.1</td><td>25.1</td><td>11.2</td><td>48.9</td><td>51.8</td><td>246.0</td><td>9.91</td><td>279.8</td><td>24.8</td><td>19.1</td><td>49.3</td> <td>19.6</td><td>70</td><td>53.2</td><td>252.0</td><td>9.33</td><td>283.8</td><td>27.0</td><td>5.2</td><td>49.5</td><td>57.9</td><td>272.0</td><td>9.80</td><td>305.5</td><td>27.7</td><td>11.0</td><td>50.2</td><td>60.6</td><td>282.0</td><td>10.37</td><td>317.4</td><td>27.2</td><td>18.8</td><td>50.6</td> <td>19.5</td><td>80</td><td>61.1</td><td>284.0</td><td>9.76</td><td>317.3</td><td>29.1</td><td>5.1</td><td>50.6</td><td>66.3</td><td>308.0</td><td>10.34</td><td>343.3</td><td>29.8</td><td>10.8</td><td>51.4</td><td>69.3</td><td>322.0</td><td>10.97</td><td>359.4</td><td>29.4</td><td>18.5</td><td>52.0</td> <td>19.5</td><td>90</td><td>68.7</td><td>320.0</td><td>10.29</td><td>355.1</td><td>31.1</td><td>5.0</td><td>51.8</td><td>74.5</td><td>348.0</td><td>11.01</td><td>385.6</td><td>31.6</td><td>10.6</td><td>52.9</td><td>77.9</td><td>362.0</td><td>11.72</td><td>402.0</td><td>30.9</td><td>18.2</td><td>53.4</td> <!-- 50 Series --> <tr> <td rowspan="12">50</td> <td rowspan="4">30.0</td> <td>5.2</td><td>50</td><td>38.0</td><td>180.0</td><td>10.04</td><td>214.3</td><td>17.9</td><td>5.4</td><td>64.3</td><td>41.5</td><td>192.0</td><td>10.42</td><td>227.6</td><td>18.4</td><td>11.4</td><td>65.2</td><td>43.4</td><td>198.0</td><td>10.92</td><td>235.3</td><td>18.1</td><td>19.5</td><td>65.7</td> <td>5.2</td><td>60</td><td>46.3</td><td>206.0</td><td>10.39</td><td>241.5</td><td>19.8</td><td>5.3</td><td>66.1</td><td>50.2</td><td>220.0</td><td>10.82</td><td>256.9</td><td>20.3</td><td>11.2</td><td>67.1</td><td>52.4</td><td>228.0</td><td>11.36</td><td>266.8</td><td>20.1</td><td>19.1</td><td>67.8</td> <td>5.2</td><td>70</td><td>54.3</td><td>236.0</td><td>10.82</td><td>272.9</td><td>21.8</td><td>5.2</td><td>68.2</td><td>58.7</td><td>250.0</td><td>11.33</td><td>292.7</td><td>22.4</td><td>11.0</td><td>69.5</td><td>61.3</td><td>262.0</td><td>11.91</td><td>307.2</td><td>22.0</td><td>18.8</td><td>70.2</td> <td>5.2</td><td>80</td><td>62.3</td><td>266.0</td><td>11.35</td><td>304.8</td><td>23.4</td><td>5.1</td><td>70.3</td><td>67.3</td><td>286.0</td><td>11.97</td><td>326.8</td><td>23.9</td><td>10.8</td><td>71.8</td><td>70.1</td><td>298.0</td><td>12.62</td><td>341.1</td><td>23.6</td><td>18.5</td><td>72.7</td> <td>5.2</td><td>90</td><td>70.0</td><td>300.0</td><td>12.00</td><td>340.9</td><td>25.0</td><td>5.0</td><td>72.7</td><td>75.7</td><td>322.0</td><td>12.74</td><td>365.5</td><td>25.3</td><td>10.6</td><td>74.4</td><td>78.8</td><td>336.0</td><td>13.48</td><td>382.0</td><td>24.9</td><td>18.2</td><td>75.5</td> <td>11.2</td><td>50</td><td>37.9</td><td>182.0</td><td>9.72</td><td>215.2</td><td>18.7</td><td>5.4</td><td>59.6</td><td>41.3</td><td>196.0</td><td>10.06</td><td>230.3</td><td>19.5</td><td>11.4</td><td>60.2</td><td>43.3</td><td>202.0</td><td>10.54</td><td>238.0</td><td>19.2</td><td>19.5</td><td>60.6</td> <td>11.2</td><td>60</td><td>46.0</td><td>210.0</td><td>9.98</td><td>244.1</td><td>21.0</td><td>5.3</td><td>60.8</td><td>50.0</td><td>226.0</td><td>10.38</td><td>261.4</td><td>21.8</td><td>11.2</td><td>61.6</td><td>52.2</td><td>234.0</td><td>10.89</td><td>271.2</td><td>21.5</td><td>19.1</td><td>62.1</td> <td>11.2</td><td>70</td><td>54.0</td><td>240.0</td><td>10.33</td><td>275.3</td><td>23.2</td><td>5.2</td><td>62.2</td><td>58.4</td><td>260.0</td><td>10.80</td><td>296.9</td><td>24.1</td><td>11.0</td><td>63.2</td><td>61.0</td><td>270.0</td><td>11.37</td><td>308.8</td><td>23.8</td><td>18.8</td><td>63.7</td> <td>11.1</td><td>80</td><td>61.7</td><td>274.0</td><td>10.78</td><td>310.8</td><td>25.4</td><td>5.1</td><td>63.8</td><td>66.9</td><td>294.0</td><td>11.35</td><td>332.8</td><td>25.9</td><td>10.8</td><td>64.8</td><td>69.8</td><td>306.0</td><td>11.98</td><td>346.9</td><td>25.5</td><td>18.5</td><td>65.4</td> <td>11.1</td><td>90</td><td>69.6</td><td>306.0</td><td>11.34</td><td>344.7</td><td>27.0</td><td>5.0</td><td>65.3</td><td>75.2</td><td>332.0</td><td>12.05</td><td>373.1</td><td>27.6</td><td>10.6</td><td>66.6</td><td>78.5</td><td>346.0</td><td>12.75</td><td>389.5</td><td>27.1</td><td>18.2</td><td>67.3</td> <td>19.2</td><td>50</td><td>37.7</td><td>184.0</td><td>9.84</td><td>217.6</td><td>18.7</td><td>5.4</td><td>57.3</td><td>41.2</td><td>198.0</td><td>10.17</td><td>232.7</td><td>19.5</td><td>11.4</td><td>57.8</td><td>43.2</td><td>204.0</td><td>10.64</td><td>240.3</td><td>19.2</td><td>19.5</td><td>58.0</td> <td>19.2</td><td>60</td><td>45.7</td><td>214.0</td><td>10.07</td><td>248.4</td><td>21.3</td><td>5.3</td><td>58.3</td><td>49.9</td><td>228.0</td><td>10.45</td><td>263.7</td><td>21.8</td><td>11.2</td><td>58.8</td><td>52.1</td><td>238.0</td><td>10.95</td><td>275.4</td><td>21.7</td><td>19.1</td><td>59.2</td> <td>19.2</td><td>70</td><td>53.7</td><td>244.0</td><td>10.37</td><td>279.4</td><td>23.5</td><td>5.2</td><td>59.3</td><td>58.4</td><td>262.0</td><td>10.83</td><td>299.0</td><td>24.2</td><td>11.0</td><td>60.0</td><td>60.9</td><td>274.0</td><td>11.38</td><td>312.8</td><td>24.1</td><td>18.8</td><td>60.4</td> <td>19.1</td><td>80</td><td>61.6</td><td>276.0</td><td>10.78</td><td>312.8</td><td>25.6</td><td>5.1</td><td>60.4</td><td>66.8</td><td>298.0</td><td>11.33</td><td>336.7</td><td>26.3</td><td>10.8</td><td>61.2</td><td>69.6</td><td>312.0</td><td>11.94</td><td>352.8</td><td>26.1</td><td>18.5</td><td>61.8</td> <td>19.1</td><td>90</td><td>69.3</td><td>310.0</td><td>11.30</td><td>348.6</td><td>27.4</td><td>5.0</td><td>61.6</td><td>75.0</td><td>338.0</td><td>11.99</td><td>378.9</td><td>28.2</td><td>10.6</td><td>62.6</td><td>78.3</td><td>352.0</td><td>12.67</td><td>395.2</td><td>27.8</td><td>18.2</td><td>63.2</td> <!-- 70 Series --> <tr> <td rowspan="12">70</td> <td rowspan="4">30.0</td> <td>5.0</td><td>50</td><td>38.9</td><td>166.0</td><td>12.46</td><td>208.5</td><td>13.3</td><td>5.4</td><td>83.9</td><td>42.2</td><td>176.0</td><td>12.82</td><td>219.8</td><td>13.7</td><td>11.4</td><td>84.7</td><td>44.0</td><td>180.0</td><td>13.31</td><td>225.4</td><td>13.5</td><td>19.5</td><td>85.0</td> <td>5.0</td><td>60</td><td>47.2</td><td>192.0</td><td>12.79</td><td>235.7</td><td>15.0</td><td>5.3</td><td>85.7</td><td>50.9</td><td>204.0</td><td>13.20</td><td>249.1</td><td>15.4</td><td>11.2</td><td>86.6</td><td>53.0</td><td>210.0</td><td>13.73</td><td>256.8</td><td>15.3</td><td>19.1</td><td>87.1</td> <td>5.0</td><td>70</td><td>55.3</td><td>220.0</td><td>13.20</td><td>265.1</td><td>16.7</td><td>5.2</td><td>87.7</td><td>59.6</td><td>234.0</td><td>13.68</td><td>280.7</td><td>17.1</td><td>11.0</td><td>88.7</td><td>61.9</td><td>242.0</td><td>14.25</td><td>290.6</td><td>17.0</td><td>18.8</td><td>89.4</td> <td>5.0</td><td>80</td><td>63.3</td><td>250.0</td><td>13.72</td><td>296.8</td><td>18.2</td><td>5.1</td><td>89.8</td><td>68.2</td><td>266.0</td><td>14.27</td><td>314.7</td><td>18.6</td><td>10.8</td><td>91.0</td><td>70.8</td><td>276.0</td><td>14.90</td><td>326.9</td><td>18.5</td><td>18.5</td><td>91.8</td> <td>5.0</td><td>90</td><td>71.3</td><td>280.0</td><td>14.32</td><td>328.9</td><td>19.6</td><td>5.0</td><td>91.9</td><td>76.7</td><td>300.0</td><td>15.00</td><td>351.2</td><td>20.0</td><td>10.6</td><td>93.4</td><td>79.6</td><td>312.0</td><td>15.71</td><td>365.6</td><td>19.9</td><td>18.2</td><td>94.4</td> <td>10.8</td><td>50</td><td>38.8</td><td>168.0</td><td>12.10</td><td>209.3</td><td>13.9</td><td>5.4</td><td>79.3</td><td>42.0</td><td>180.0</td><td>12.43</td><td>222.4</td><td>14.5</td><td>11.4</td><td>79.9</td><td>43.9</td><td>184.0</td><td>12.90</td><td>228.0</td><td>14.3</td><td>19.5</td><td>80.1</td> <td>10.8</td><td>60</td><td>46.9</td><td>196.0</td><td>12.35</td><td>238.2</td><td>15.9</td><td>5.3</td><td>80.6</td><td>50.7</td><td>210.0</td><td>12.72</td><td>253.4</td><td>16.5</td><td>11.2</td><td>81.3</td><td>52.8</td><td>216.0</td><td>13.22</td><td>261.1</td><td>16.3</td><td>19.1</td><td>81.6</td> <td>10.8</td><td>70</td><td>55.1</td><td>224.0</td><td>12.68</td><td>267.3</td><td>17.7</td><td>5.2</td><td>81.9</td><td>59.3</td><td>240.0</td><td>13.11</td><td>284.7</td><td>18.3</td><td>11.0</td><td>82.7</td><td>61.7</td><td>250.0</td><td>13.65</td><td>296.6</td><td>18.3</td><td>18.8</td><td>83.2</td> <td>10.7</td><td>80</td><td>62.9</td><td>256.0</td><td>13.09</td><td>300.7</td><td>19.6</td><td>5.1</td><td>83.4</td><td>67.8</td><td>274.0</td><td>13.61</td><td>320.5</td><td>20.1</td><td>10.8</td><td>84.2</td><td>70.5</td><td>284.0</td><td>14.21</td><td>332.5</td><td>20.0</td><td>18.5</td><td>84.8</td> <td>10.7</td><td>90</td><td>70.9</td><td>286.0</td><td>13.61</td><td>332.5</td><td>21.0</td><td>5.0</td><td>84.8</td><td>76.2</td><td>310.0</td><td>14.25</td><td>358.6</td><td>21.8</td><td>10.6</td><td>85.9</td><td>79.3</td><td>322.0</td><td>14.92</td><td>372.9</td><td>21.6</td><td>18.2</td><td>86.6</td> <td>18.5</td><td>50</td><td>38.7</td><td>170.0</td><td>12.21</td><td>211.7</td><td>13.9</td><td>5.4</td><td>77.1</td><td>41.9</td><td>182.0</td><td>12.52</td><td>224.7</td><td>14.5</td><td>11.4</td><td>77.5</td><td>43.8</td><td>186.0</td><td>12.99</td><td>230.3</td><td>14.3</td><td>19.5</td><td>77.7</td> <td>18.5</td><td>60</td><td>46.8</td><td>198.0</td><td>12.42</td><td>240.4</td><td>15.9</td><td>5.3</td><td>78.0</td><td>50.6</td><td>212.0</td><td>12.77</td><td>255.6</td><td>16.6</td><td>11.2</td><td>78.5</td><td>52.7</td><td>218.0</td><td>13.26</td><td>263.2</td><td>16.4</td><td>19.1</td><td>78.8</td> <td>18.5</td><td>70</td><td>54.9</td><td>226.0</td><td>12.70</td><td>269.3</td><td>17.8</td><td>5.2</td><td>79.0</td><td>59.2</td><td>244.0</td><td>13.11</td><td>288.7</td><td>18.6</td><td>11.0</td><td>79.6</td><td>61.6</td><td>252.0</td><td>13.63</td><td>298.5</td><td>18.5</td><td>18.8</td><td>80.0</td> <td>18.5</td><td>80</td><td>62.8</td><td>258.0</td><td>13.07</td><td>302.6</td><td>19.7</td><td>5.1</td><td>80.1</td><td>67.6</td><td>278.0</td><td>13.57</td><td>324.3</td><td>20.5</td><td>10.8</td><td>80.8</td><td>70.4</td><td>288.0</td><td>14.14</td><td>336.3</td><td>20.4</td><td>18.5</td><td>81.2</td> <td>18.4</td><td>90</td><td>70.7</td><td>290.0</td><td>13.54</td><td>336.2</td><td>21.4</td><td>5.0</td><td>81.2</td><td>76.0</td><td>314.0</td><td>14.16</td><td>362.3</td><td>22.2</td><td>10.6</td><td>82.1</td><td>79.1</td><td>328.0</td><td>14.81</td><td>378.5</td><td>22.2</td><td>18.2</td><td>82.6</td> <!-- 80 Series --> <tr> <td rowspan="12">80</td> <td rowspan="4">30.0</td> <td>4.9</td><td>50</td><td>39.5</td><td>158.0</td><td>13.87</td><td>205.3</td><td>11.4</td><td>5.4</td><td>93.7</td><td>42.5</td><td>168.0</td><td>14.22</td><td>216.5</td><td>11.8</td><td>11.4</td><td>94.4</td><td>44.3</td><td>172.0</td><td>14.71</td><td>222.2</td><td>11.7</td><td>19.5</td><td>94.8</td> <td>4.9</td><td>60</td><td>47.7</td><td>184.0</td><td>14.20</td><td>232.5</td><td>13.0</td><td>5.3</td><td>95.5</td><td>51.3</td><td>196.0</td><td>14.59</td><td>245.8</td><td>13.4</td><td>11.2</td><td>96.4</td><td>53.3</td><td>202.0</td><td>15.11</td><td>253.6</td><td>13.4</td><td>19.1</td><td>96.9</td> <td>4.9</td><td>70</td><td>56.0</td><td>210.0</td><td>14.60</td><td>259.8</td><td>14.4</td><td>5.2</td><td>97.3</td><td>60.0</td><td>226.0</td><td>15.06</td><td>277.4</td><td>15.0</td><td>11.0</td><td>98.5</td><td>62.3</td><td>232.0</td><td>15.61</td><td>285.3</td><td>14.9</td><td>18.8</td><td>99.0</td> <td>4.9</td><td>80</td><td>64.0</td><td>240.0</td><td>15.10</td><td>291.5</td><td>15.9</td><td>5.1</td><td>99.4</td><td>68.6</td><td>256.0</td><td>15.62</td><td>309.3</td><td>16.4</td><td>10.8</td><td>100.6</td><td>71.2</td><td>264.0</td><td>16.25</td><td>319.4</td><td>16.3</td><td>18.5</td><td>101.3</td> <td>4.9</td><td>90</td><td>72.0</td><td>270.0</td><td>15.70</td><td>323.6</td><td>17.2</td><td>5.0</td><td>101.6</td><td>77.2</td><td>288.0</td><td>16.32</td><td>343.7</td><td>17.6</td><td>10.6</td><td>102.9</td><td>80.1</td><td>298.0</td><td>17.02</td><td>356.1</td><td>17.5</td><td>18.2</td><td>103.7</td> <td>10.6</td><td>50</td><td>39.3</td><td>160.0</td><td>13.49</td><td>206.0</td><td>11.9</td><td>5.4</td><td>89.2</td><td>42.4</td><td>172.0</td><td>13.81</td><td>219.1</td><td>12.5</td><td>11.4</td><td>89.7</td><td>44.1</td><td>176.0</td><td>14.27</td><td>224.7</td><td>12.3</td><td>19.5</td><td>90.0</td> <td>10.6</td><td>60</td><td>47.5</td><td>188.0</td><td>13.72</td><td>234.8</td><td>13.7</td><td>5.3</td><td>90.4</td><td>51.1</td><td>200.0</td><td>14.08</td><td>248.1</td><td>14.2</td><td>11.2</td><td>91.0</td><td>53.1</td><td>206.0</td><td>14.57</td><td>255.7</td><td>14.1</td><td>19.1</td><td>91.4</td> <td>10.6</td><td>70</td><td>55.6</td><td>216.0</td><td>14.02</td><td>263.9</td><td>15.4</td><td>5.2</td><td>91.7</td><td>59.8</td><td>230.0</td><td>14.44</td><td>279.3</td><td>15.9</td><td>11.0</td><td>92.4</td><td>62.1</td><td>238.0</td><td>14.97</td><td>289.1</td><td>15.9</td><td>18.8</td><td>92.8</td> <td>10.6</td><td>80</td><td>63.6</td><td>246.0</td><td>14.43</td><td>295.2</td><td>17.1</td><td>5.1</td><td>93.1</td><td>68.4</td><td>262.0</td><td>14.92</td><td>312.9</td><td>17.6</td><td>10.8</td><td>93.9</td><td>70.9</td><td>272.0</td><td>15.50</td><td>324.9</td><td>17.5</td><td>18.5</td><td>94.4</td> <td>10.6</td><td>90</td><td>71.6</td><td>276.0</td><td>14.93</td><td>327.0</td><td>18.5</td><td>5.0</td><td>94.5</td><td>76.8</td><td>296.0</td><td>15.52</td><td>349.0</td><td>19.1</td><td>10.6</td><td>95.5</td><td>79.7</td><td>308.0</td><td>16.18</td><td>363.2</td><td>19.0</td></tr></tr></tr></tr>																										40	30.0	5.3	50	37.6	186.0	8.98	216.7	20.7	5.4	54.4	41.2	198.0	9.36	230.0	21.1	11.4	55.3	43.2	204.0	9.88	237.7	20.7	19.5	55.8	5.3	60	45.7	214.0	9.33	245.8	22.9	5.3	56.4	49.9	228.0	9.78	261.4	23.3	11.2	57.4	52.1	238.0	10.33	273.3	23.0	19.1	58.2	5.3	70	53.7	244.0	9.77	277.4	25.0	5.2	58.5	58.4	262.0	10.31	297.2	25.4	11.0	59.8	60.9	272.0	10.90	309.2	24.9	18.8	60.6	5.3	80	61.6	276.0	10.32	311.2	26.7	5.1	60.7	66.8	296.0	10.97	333.4	27.0	10.8	62.2	69.7	308.0	11.63	347.7	26.5	18.5	63.2	5.3	90	69.5	308.0	10.98	345.5	28.0	5.0	63.0	75.2	332.0	11.76	372.2	28.2	10.6	64.8	78.5	346.0	12.51	388.7	27.6	18.2	65.9	11.4	50	37.3	190.0	8.65	219.5	22.0	5.4	49.8	41.0	202.0	9.00	232.7	22.4	11.4	50.3	43.0	210.0	9.49	242.4	22.1	19.5	50.8	11.4	60	45.5	218.0	8.92	248.4	24.4	5.3	51.0	49.6	234.0	9.33	265.9	25.1	11.2	51.8	51.9	242.0	9.86	275.7	24.5	19.1	52.3	11.4	70	53.5	248.0	9.29	279.7	26.7	5.2	52.4	58.1	268.0	9.78	301.4	27.4	11.0	53.4	60.7	278.0	10.36	313.3	26.8	18.8	53.9	11.4	80	61.2	282.0	9.75	315.3	28.9	5.1	54.0	66.5	304.0	10.36	339.3	29.4	10.8	55.1	69.4	318.0	11.00	355.5	28.9	18.5	55.8	11.3	90	68.9	316.0	10.33	351.3	30.6	5.0	56.6	74.8	342.0	11.08	379.8	30.9	10.6	56.9	78.1	358.0	11.80	398.3	30.3	18.2	57.7	19.6	50	37.2	192.0	8.78	222.0	21.9	5.4	47.4	40.9	204.0	9.11	235.1	22.4	11.4	47.8	42.9	212.0	9.59	244.7	22.1	19.5	48.2	19.6	60	45.3	220.0	9.01	250.8	24.4	5.3	48.4	49.5	236.0	9.40	268.1	25.1	11.2	48.9	51.8	246.0	9.91	279.8	24.8	19.1	49.3	19.6	70	53.2	252.0	9.33	283.8	27.0	5.2	49.5	57.9	272.0	9.80	305.5	27.7	11.0	50.2	60.6	282.0	10.37	317.4	27.2	18.8	50.6	19.5	80	61.1	284.0	9.76	317.3	29.1	5.1	50.6	66.3	308.0	10.34	343.3	29.8	10.8	51.4	69.3	322.0	10.97	359.4	29.4	18.5	52.0	19.5	90	68.7	320.0	10.29	355.1	31.1	5.0	51.8	74.5	348.0	11.01	385.6	31.6	10.6	52.9	77.9	362.0	11.72	402.0	30.9	18.2	53.4	50	30.0	5.2	50	38.0	180.0	10.04	214.3	17.9	5.4	64.3	41.5	192.0	10.42	227.6	18.4	11.4	65.2	43.4	198.0	10.92	235.3	18.1	19.5	65.7	5.2	60	46.3	206.0	10.39	241.5	19.8	5.3	66.1	50.2	220.0	10.82	256.9	20.3	11.2	67.1	52.4	228.0	11.36	266.8	20.1	19.1	67.8	5.2	70	54.3	236.0	10.82	272.9	21.8	5.2	68.2	58.7	250.0	11.33	292.7	22.4	11.0	69.5	61.3	262.0	11.91	307.2	22.0	18.8	70.2	5.2	80	62.3	266.0	11.35	304.8	23.4	5.1	70.3	67.3	286.0	11.97	326.8	23.9	10.8	71.8	70.1	298.0	12.62	341.1	23.6	18.5	72.7	5.2	90	70.0	300.0	12.00	340.9	25.0	5.0	72.7	75.7	322.0	12.74	365.5	25.3	10.6	74.4	78.8	336.0	13.48	382.0	24.9	18.2	75.5	11.2	50	37.9	182.0	9.72	215.2	18.7	5.4	59.6	41.3	196.0	10.06	230.3	19.5	11.4	60.2	43.3	202.0	10.54	238.0	19.2	19.5	60.6	11.2	60	46.0	210.0	9.98	244.1	21.0	5.3	60.8	50.0	226.0	10.38	261.4	21.8	11.2	61.6	52.2	234.0	10.89	271.2	21.5	19.1	62.1	11.2	70	54.0	240.0	10.33	275.3	23.2	5.2	62.2	58.4	260.0	10.80	296.9	24.1	11.0	63.2	61.0	270.0	11.37	308.8	23.8	18.8	63.7	11.1	80	61.7	274.0	10.78	310.8	25.4	5.1	63.8	66.9	294.0	11.35	332.8	25.9	10.8	64.8	69.8	306.0	11.98	346.9	25.5	18.5	65.4	11.1	90	69.6	306.0	11.34	344.7	27.0	5.0	65.3	75.2	332.0	12.05	373.1	27.6	10.6	66.6	78.5	346.0	12.75	389.5	27.1	18.2	67.3	19.2	50	37.7	184.0	9.84	217.6	18.7	5.4	57.3	41.2	198.0	10.17	232.7	19.5	11.4	57.8	43.2	204.0	10.64	240.3	19.2	19.5	58.0	19.2	60	45.7	214.0	10.07	248.4	21.3	5.3	58.3	49.9	228.0	10.45	263.7	21.8	11.2	58.8	52.1	238.0	10.95	275.4	21.7	19.1	59.2	19.2	70	53.7	244.0	10.37	279.4	23.5	5.2	59.3	58.4	262.0	10.83	299.0	24.2	11.0	60.0	60.9	274.0	11.38	312.8	24.1	18.8	60.4	19.1	80	61.6	276.0	10.78	312.8	25.6	5.1	60.4	66.8	298.0	11.33	336.7	26.3	10.8	61.2	69.6	312.0	11.94	352.8	26.1	18.5	61.8	19.1	90	69.3	310.0	11.30	348.6	27.4	5.0	61.6	75.0	338.0	11.99	378.9	28.2	10.6	62.6	78.3	352.0	12.67	395.2	27.8	18.2	63.2	70	30.0	5.0	50	38.9	166.0	12.46	208.5	13.3	5.4	83.9	42.2	176.0	12.82	219.8	13.7	11.4	84.7	44.0	180.0	13.31	225.4	13.5	19.5	85.0	5.0	60	47.2	192.0	12.79	235.7	15.0	5.3	85.7	50.9	204.0	13.20	249.1	15.4	11.2	86.6	53.0	210.0	13.73	256.8	15.3	19.1	87.1	5.0	70	55.3	220.0	13.20	265.1	16.7	5.2	87.7	59.6	234.0	13.68	280.7	17.1	11.0	88.7	61.9	242.0	14.25	290.6	17.0	18.8	89.4	5.0	80	63.3	250.0	13.72	296.8	18.2	5.1	89.8	68.2	266.0	14.27	314.7	18.6	10.8	91.0	70.8	276.0	14.90	326.9	18.5	18.5	91.8	5.0	90	71.3	280.0	14.32	328.9	19.6	5.0	91.9	76.7	300.0	15.00	351.2	20.0	10.6	93.4	79.6	312.0	15.71	365.6	19.9	18.2	94.4	10.8	50	38.8	168.0	12.10	209.3	13.9	5.4	79.3	42.0	180.0	12.43	222.4	14.5	11.4	79.9	43.9	184.0	12.90	228.0	14.3	19.5	80.1	10.8	60	46.9	196.0	12.35	238.2	15.9	5.3	80.6	50.7	210.0	12.72	253.4	16.5	11.2	81.3	52.8	216.0	13.22	261.1	16.3	19.1	81.6	10.8	70	55.1	224.0	12.68	267.3	17.7	5.2	81.9	59.3	240.0	13.11	284.7	18.3	11.0	82.7	61.7	250.0	13.65	296.6	18.3	18.8	83.2	10.7	80	62.9	256.0	13.09	300.7	19.6	5.1	83.4	67.8	274.0	13.61	320.5	20.1	10.8	84.2	70.5	284.0	14.21	332.5	20.0	18.5	84.8	10.7	90	70.9	286.0	13.61	332.5	21.0	5.0	84.8	76.2	310.0	14.25	358.6	21.8	10.6	85.9	79.3	322.0	14.92	372.9	21.6	18.2	86.6	18.5	50	38.7	170.0	12.21	211.7	13.9	5.4	77.1	41.9	182.0	12.52	224.7	14.5	11.4	77.5	43.8	186.0	12.99	230.3	14.3	19.5	77.7	18.5	60	46.8	198.0	12.42	240.4	15.9	5.3	78.0	50.6	212.0	12.77	255.6	16.6	11.2	78.5	52.7	218.0	13.26	263.2	16.4	19.1	78.8	18.5	70	54.9	226.0	12.70	269.3	17.8	5.2	79.0	59.2	244.0	13.11	288.7	18.6	11.0	79.6	61.6	252.0	13.63	298.5	18.5	18.8	80.0	18.5	80	62.8	258.0	13.07	302.6	19.7	5.1	80.1	67.6	278.0	13.57	324.3	20.5	10.8	80.8	70.4	288.0	14.14	336.3	20.4	18.5	81.2	18.4	90	70.7	290.0	13.54	336.2	21.4	5.0	81.2	76.0	314.0	14.16	362.3	22.2	10.6	82.1	79.1	328.0	14.81	378.5	22.2	18.2	82.6	80	30.0	4.9	50	39.5	158.0	13.87	205.3	11.4	5.4	93.7	42.5	168.0	14.22	216.5	11.8	11.4	94.4	44.3	172.0	14.71	222.2	11.7	19.5	94.8	4.9	60	47.7	184.0	14.20	232.5	13.0	5.3	95.5	51.3	196.0	14.59	245.8	13.4	11.2	96.4	53.3	202.0	15.11	253.6	13.4	19.1	96.9	4.9	70	56.0	210.0	14.60	259.8	14.4	5.2	97.3	60.0	226.0	15.06	277.4	15.0	11.0	98.5	62.3	232.0	15.61	285.3	14.9	18.8	99.0	4.9	80	64.0	240.0	15.10	291.5	15.9	5.1	99.4	68.6	256.0	15.62	309.3	16.4	10.8	100.6	71.2	264.0	16.25	319.4	16.3	18.5	101.3	4.9	90	72.0	270.0	15.70	323.6	17.2	5.0	101.6	77.2	288.0	16.32	343.7	17.6	10.6	102.9	80.1	298.0	17.02	356.1	17.5	18.2	103.7	10.6	50	39.3	160.0	13.49	206.0	11.9	5.4	89.2	42.4	172.0	13.81	219.1	12.5	11.4	89.7	44.1	176.0	14.27	224.7	12.3	19.5	90.0	10.6	60	47.5	188.0	13.72	234.8	13.7	5.3	90.4	51.1	200.0	14.08	248.1	14.2	11.2	91.0	53.1	206.0	14.57	255.7	14.1	19.1	91.4	10.6	70	55.6	216.0	14.02	263.9	15.4	5.2	91.7	59.8	230.0	14.44	279.3	15.9	11.0	92.4	62.1	238.0	14.97	289.1	15.9	18.8	92.8	10.6	80	63.6	246.0	14.43	295.2	17.1	5.1	93.1	68.4	262.0	14.92	312.9	17.6	10.8	93.9	70.9	272.0	15.50	324.9	17.5	18.5	94.4	10.6	90	71.6	276.0	14.93	327.0	18.5	5.0	94.5	76.8	296.0	15.52	349.0	19.1	10.6	95.5	79.7
40	30.0	5.3	50	37.6	186.0	8.98	216.7	20.7	5.4	54.4	41.2	198.0	9.36	230.0	21.1	11.4	55.3	43.2	204.0	9.88	237.7	20.7	19.5	55.8	5.3	60	45.7	214.0	9.33			245.8	22.9	5.3	56.4	49.9	228.0	9.78	261.4	23.3	11.2	57.4	52.1	238.0	10.33	273.3	23.0	19.1	58.2	5.3	70	53.7	244.0	9.77	277.4	25.0	5.2	58.5	58.4	262.0	10.31	297.2	25.4	11.0	59.8	60.9	272.0	10.90	309.2	24.9	18.8	60.6	5.3	80	61.6	276.0	10.32	311.2	26.7	5.1	60.7	66.8	296.0	10.97	333.4	27.0	10.8	62.2	69.7	308.0	11.63	347.7	26.5	18.5	63.2	5.3	90	69.5	308.0	10.98	345.5	28.0	5.0	63.0	75.2	332.0	11.76	372.2	28.2	10.6	64.8	78.5	346.0	12.51	388.7	27.6	18.2	65.9	11.4	50	37.3	190.0	8.65	219.5	22.0	5.4	49.8	41.0	202.0	9.00	232.7	22.4	11.4	50.3	43.0	210.0	9.49	242.4	22.1	19.5	50.8	11.4	60	45.5	218.0	8.92	248.4	24.4	5.3	51.0	49.6	234.0	9.33	265.9	25.1	11.2	51.8	51.9	242.0	9.86	275.7	24.5	19.1	52.3	11.4	70	53.5	248.0	9.29	279.7	26.7	5.2	52.4	58.1	268.0	9.78	301.4	27.4	11.0	53.4	60.7	278.0	10.36	313.3	26.8	18.8	53.9	11.4	80	61.2	282.0	9.75	315.3	28.9	5.1	54.0	66.5	304.0	10.36	339.3	29.4	10.8	55.1	69.4	318.0	11.00	355.5	28.9	18.5	55.8	11.3	90	68.9	316.0	10.33	351.3	30.6	5.0	56.6	74.8	342.0	11.08	379.8	30.9	10.6	56.9	78.1	358.0	11.80	398.3	30.3	18.2	57.7	19.6	50	37.2	192.0	8.78	222.0	21.9	5.4	47.4	40.9	204.0	9.11	235.1	22.4	11.4	47.8	42.9	212.0	9.59	244.7	22.1	19.5	48.2	19.6	60	45.3	220.0	9.01	250.8	24.4	5.3	48.4	49.5	236.0	9.40	268.1	25.1	11.2	48.9	51.8	246.0	9.91	279.8	24.8	19.1	49.3	19.6	70	53.2	252.0	9.33	283.8	27.0	5.2	49.5	57.9	272.0	9.80	305.5	27.7	11.0	50.2	60.6	282.0	10.37	317.4	27.2	18.8	50.6	19.5	80	61.1	284.0	9.76	317.3	29.1	5.1	50.6	66.3	308.0	10.34	343.3	29.8	10.8	51.4	69.3	322.0	10.97	359.4	29.4	18.5	52.0	19.5	90	68.7	320.0	10.29	355.1	31.1	5.0	51.8	74.5	348.0	11.01	385.6	31.6	10.6	52.9	77.9	362.0	11.72	402.0	30.9	18.2	53.4	50	30.0	5.2	50	38.0	180.0	10.04	214.3	17.9	5.4	64.3	41.5	192.0	10.42	227.6	18.4	11.4	65.2	43.4	198.0	10.92	235.3	18.1	19.5	65.7	5.2	60	46.3			206.0	10.39	241.5	19.8	5.3	66.1	50.2	220.0	10.82	256.9	20.3	11.2	67.1	52.4	228.0	11.36	266.8	20.1	19.1	67.8	5.2	70	54.3	236.0	10.82	272.9	21.8	5.2	68.2	58.7	250.0	11.33	292.7	22.4	11.0	69.5	61.3	262.0	11.91	307.2	22.0	18.8	70.2	5.2	80	62.3	266.0	11.35	304.8	23.4	5.1	70.3	67.3	286.0	11.97	326.8	23.9	10.8	71.8	70.1	298.0	12.62	341.1	23.6	18.5	72.7	5.2	90	70.0	300.0	12.00	340.9	25.0	5.0	72.7	75.7	322.0	12.74	365.5	25.3	10.6	74.4	78.8	336.0	13.48	382.0	24.9	18.2	75.5	11.2	50	37.9	182.0	9.72	215.2	18.7	5.4	59.6	41.3	196.0	10.06	230.3	19.5	11.4	60.2	43.3	202.0	10.54	238.0	19.2	19.5	60.6	11.2	60	46.0	210.0	9.98	244.1	21.0	5.3	60.8	50.0	226.0	10.38	261.4	21.8	11.2	61.6	52.2	234.0	10.89	271.2	21.5	19.1	62.1	11.2	70	54.0	240.0	10.33	275.3	23.2	5.2	62.2	58.4	260.0	10.80	296.9	24.1	11.0	63.2	61.0	270.0	11.37	308.8	23.8	18.8	63.7	11.1	80	61.7	274.0	10.78	310.8	25.4	5.1	63.8	66.9	294.0	11.35	332.8	25.9	10.8	64.8	69.8	306.0	11.98	346.9	25.5	18.5	65.4	11.1	90	69.6	306.0	11.34	344.7	27.0	5.0	65.3	75.2	332.0	12.05	373.1	27.6	10.6	66.6	78.5	346.0	12.75	389.5	27.1	18.2	67.3	19.2	50	37.7	184.0	9.84	217.6	18.7	5.4	57.3	41.2	198.0	10.17	232.7	19.5	11.4	57.8	43.2	204.0	10.64	240.3	19.2	19.5	58.0	19.2	60	45.7	214.0	10.07	248.4	21.3	5.3	58.3	49.9	228.0	10.45	263.7	21.8	11.2	58.8	52.1	238.0	10.95	275.4	21.7	19.1	59.2	19.2	70	53.7	244.0	10.37	279.4	23.5	5.2	59.3	58.4	262.0	10.83	299.0	24.2	11.0	60.0	60.9	274.0	11.38	312.8	24.1	18.8	60.4	19.1	80	61.6	276.0	10.78	312.8	25.6	5.1	60.4	66.8	298.0	11.33	336.7	26.3	10.8	61.2	69.6	312.0	11.94	352.8	26.1	18.5	61.8	19.1	90	69.3	310.0	11.30	348.6	27.4	5.0	61.6	75.0	338.0	11.99	378.9	28.2	10.6	62.6	78.3	352.0	12.67	395.2	27.8	18.2	63.2	70	30.0	5.0	50	38.9	166.0	12.46	208.5	13.3	5.4	83.9	42.2	176.0	12.82	219.8	13.7	11.4	84.7	44.0	180.0	13.31	225.4	13.5	19.5	85.0	5.0			60	47.2	192.0	12.79	235.7	15.0	5.3	85.7	50.9	204.0	13.20	249.1	15.4	11.2	86.6	53.0	210.0	13.73	256.8	15.3	19.1	87.1	5.0	70	55.3	220.0	13.20	265.1	16.7	5.2	87.7	59.6	234.0	13.68	280.7	17.1	11.0	88.7	61.9	242.0	14.25	290.6	17.0	18.8	89.4	5.0	80	63.3	250.0	13.72	296.8	18.2	5.1	89.8	68.2	266.0	14.27	314.7	18.6	10.8	91.0	70.8	276.0	14.90	326.9	18.5	18.5	91.8	5.0	90	71.3	280.0	14.32	328.9	19.6	5.0	91.9	76.7	300.0	15.00	351.2	20.0	10.6	93.4	79.6	312.0	15.71	365.6	19.9	18.2	94.4	10.8	50	38.8	168.0	12.10	209.3	13.9	5.4	79.3	42.0	180.0	12.43	222.4	14.5	11.4	79.9	43.9	184.0	12.90	228.0	14.3	19.5	80.1	10.8	60	46.9	196.0	12.35	238.2	15.9	5.3	80.6	50.7	210.0	12.72	253.4	16.5	11.2	81.3	52.8	216.0	13.22	261.1	16.3	19.1	81.6	10.8	70	55.1	224.0	12.68	267.3	17.7	5.2	81.9	59.3	240.0	13.11	284.7	18.3	11.0	82.7	61.7	250.0	13.65	296.6	18.3	18.8	83.2	10.7	80	62.9	256.0	13.09	300.7	19.6	5.1	83.4	67.8	274.0	13.61	320.5	20.1	10.8	84.2	70.5	284.0	14.21	332.5	20.0	18.5	84.8	10.7	90	70.9	286.0	13.61	332.5	21.0	5.0	84.8	76.2	310.0	14.25	358.6	21.8	10.6	85.9	79.3	322.0	14.92	372.9	21.6	18.2	86.6	18.5	50	38.7	170.0	12.21	211.7	13.9	5.4	77.1	41.9	182.0	12.52	224.7	14.5	11.4	77.5	43.8	186.0	12.99	230.3	14.3	19.5	77.7	18.5	60	46.8	198.0	12.42	240.4	15.9	5.3	78.0	50.6	212.0	12.77	255.6	16.6	11.2	78.5	52.7	218.0	13.26	263.2	16.4	19.1	78.8	18.5	70	54.9	226.0	12.70	269.3	17.8	5.2	79.0	59.2	244.0	13.11	288.7	18.6	11.0	79.6	61.6	252.0	13.63	298.5	18.5	18.8	80.0	18.5	80	62.8	258.0	13.07	302.6	19.7	5.1	80.1	67.6	278.0	13.57	324.3	20.5	10.8	80.8	70.4	288.0	14.14	336.3	20.4	18.5	81.2	18.4	90	70.7	290.0	13.54	336.2	21.4	5.0	81.2	76.0	314.0	14.16	362.3	22.2	10.6	82.1	79.1	328.0	14.81	378.5	22.2	18.2	82.6	80	30.0	4.9	50	39.5	158.0	13.87	205.3	11.4	5.4	93.7	42.5	168.0	14.22	216.5	11.8	11.4	94.4	44.3	172.0	14.71	222.2	11.7	19.5			94.8	4.9	60	47.7	184.0	14.20	232.5	13.0	5.3	95.5	51.3	196.0	14.59	245.8	13.4	11.2	96.4	53.3	202.0	15.11	253.6	13.4	19.1	96.9	4.9	70	56.0	210.0	14.60	259.8	14.4	5.2	97.3	60.0	226.0	15.06	277.4	15.0	11.0	98.5	62.3	232.0	15.61	285.3	14.9	18.8	99.0	4.9	80	64.0	240.0	15.10	291.5	15.9	5.1	99.4	68.6	256.0	15.62	309.3	16.4	10.8	100.6	71.2	264.0	16.25	319.4	16.3	18.5	101.3	4.9	90	72.0	270.0	15.70	323.6	17.2	5.0	101.6	77.2	288.0	16.32	343.7	17.6	10.6	102.9	80.1	298.0	17.02	356.1	17.5	18.2	103.7	10.6	50	39.3	160.0	13.49	206.0	11.9	5.4	89.2	42.4	172.0	13.81	219.1	12.5	11.4	89.7	44.1	176.0	14.27	224.7	12.3	19.5	90.0	10.6	60	47.5	188.0	13.72	234.8	13.7	5.3	90.4	51.1	200.0	14.08	248.1	14.2	11.2	91.0	53.1	206.0	14.57	255.7	14.1	19.1	91.4	10.6	70	55.6	216.0	14.02	263.9	15.4	5.2	91.7	59.8	230.0	14.44	279.3	15.9	11.0	92.4	62.1	238.0	14.97	289.1	15.9	18.8	92.8	10.6	80	63.6	246.0	14.43	295.2	17.1	5.1	93.1	68.4	262.0	14.92	312.9	17.6	10.8	93.9	70.9	272.0	15.50	324.9	17.5	18.5	94.4	10.6	90	71.6	276.0	14.93	327.0	18.5	5.0	94.5	76.8	296.0	15.52	349.0	19.1	10.6	95.5	79.7	308.0	16.18	363.2	19.0																		
		50	30.0	5.2	50	38.0	180.0	10.04	214.3	17.9	5.4	64.3	41.5	192.0	10.42	227.6	18.4	11.4	65.2	43.4	198.0	10.92	235.3	18.1	19.5	65.7	5.2	60	46.3			206.0	10.39	241.5	19.8	5.3	66.1	50.2	220.0	10.82	256.9	20.3	11.2	67.1	52.4	228.0	11.36	266.8	20.1	19.1	67.8	5.2	70	54.3	236.0	10.82	272.9	21.8	5.2	68.2	58.7	250.0	11.33	292.7	22.4	11.0	69.5	61.3	262.0	11.91	307.2	22.0	18.8	70.2	5.2	80	62.3	266.0	11.35	304.8	23.4	5.1	70.3	67.3	286.0	11.97	326.8	23.9	10.8	71.8	70.1	298.0	12.62	341.1	23.6	18.5	72.7	5.2	90	70.0	300.0	12.00	340.9	25.0	5.0	72.7	75.7	322.0	12.74	365.5	25.3	10.6	74.4	78.8	336.0	13.48	382.0	24.9	18.2	75.5	11.2	50	37.9	182.0	9.72	215.2	18.7	5.4	59.6	41.3	196.0	10.06	230.3	19.5	11.4	60.2	43.3	202.0	10.54	238.0	19.2	19.5	60.6	11.2	60	46.0	210.0	9.98	244.1	21.0	5.3	60.8	50.0	226.0	10.38	261.4	21.8	11.2	61.6	52.2	234.0	10.89	271.2	21.5	19.1	62.1	11.2	70	54.0	240.0	10.33	275.3	23.2	5.2	62.2	58.4	260.0	10.80	296.9	24.1	11.0	63.2	61.0	270.0	11.37	308.8	23.8	18.8	63.7	11.1	80	61.7	274.0	10.78	310.8	25.4	5.1	63.8	66.9	294.0	11.35	332.8	25.9	10.8	64.8	69.8	306.0	11.98	346.9	25.5	18.5	65.4	11.1	90	69.6	306.0	11.34	344.7	27.0	5.0	65.3	75.2	332.0	12.05	373.1	27.6	10.6	66.6	78.5	346.0	12.75	389.5	27.1	18.2	67.3	19.2	50	37.7	184.0	9.84	217.6	18.7	5.4	57.3	41.2	198.0	10.17	232.7	19.5	11.4	57.8	43.2	204.0	10.64	240.3	19.2	19.5	58.0	19.2	60	45.7	214.0	10.07	248.4	21.3	5.3	58.3	49.9	228.0	10.45	263.7	21.8	11.2	58.8	52.1	238.0	10.95	275.4	21.7	19.1	59.2	19.2	70	53.7	244.0	10.37	279.4	23.5	5.2	59.3	58.4	262.0	10.83	299.0	24.2	11.0	60.0	60.9	274.0	11.38	312.8	24.1	18.8	60.4	19.1	80	61.6	276.0	10.78	312.8	25.6	5.1	60.4	66.8	298.0	11.33	336.7	26.3	10.8	61.2	69.6	312.0	11.94	352.8	26.1	18.5	61.8	19.1	90	69.3	310.0	11.30	348.6	27.4	5.0	61.6	75.0	338.0	11.99	378.9	28.2	10.6	62.6	78.3	352.0	12.67	395.2	27.8			18.2	63.2	70	30.0	5.0	50	38.9	166.0	12.46	208.5	13.3	5.4	83.9	42.2	176.0	12.82	219.8	13.7	11.4	84.7	44.0	180.0	13.31	225.4	13.5	19.5			85.0	5.0	60	47.2	192.0	12.79	235.7	15.0	5.3	85.7	50.9	204.0	13.20	249.1	15.4	11.2	86.6	53.0	210.0	13.73	256.8	15.3	19.1	87.1	5.0	70	55.3	220.0	13.20	265.1	16.7	5.2	87.7	59.6	234.0	13.68	280.7	17.1	11.0	88.7	61.9	242.0	14.25	290.6	17.0	18.8	89.4	5.0	80	63.3	250.0	13.72	296.8	18.2	5.1	89.8	68.2	266.0	14.27	314.7	18.6	10.8	91.0	70.8	276.0	14.90	326.9	18.5	18.5	91.8	5.0	90	71.3	280.0	14.32	328.9	19.6	5.0	91.9	76.7	300.0	15.00	351.2	20.0	10.6	93.4	79.6	312.0	15.71	365.6	19.9	18.2	94.4	10.8	50	38.8	168.0	12.10	209.3	13.9	5.4	79.3	42.0	180.0	12.43	222.4	14.5	11.4	79.9	43.9	184.0	12.90	228.0	14.3	19.5	80.1	10.8	60	46.9	196.0	12.35	238.2	15.9	5.3	80.6	50.7	210.0	12.72	253.4	16.5	11.2	81.3	52.8	216.0	13.22	261.1	16.3	19.1	81.6	10.8	70	55.1	224.0	12.68	267.3	17.7	5.2	81.9	59.3	240.0	13.11	284.7	18.3	11.0	82.7	61.7	250.0	13.65	296.6	18.3	18.8	83.2	10.7	80	62.9	256.0	13.09	300.7	19.6	5.1	83.4	67.8	274.0	13.61	320.5	20.1	10.8	84.2	70.5	284.0	14.21	332.5	20.0	18.5	84.8	10.7	90	70.9	286.0	13.61	332.5	21.0	5.0	84.8	76.2	310.0	14.25	358.6	21.8	10.6	85.9	79.3	322.0	14.92	372.9	21.6	18.2	86.6	18.5	50	38.7	170.0	12.21	211.7	13.9	5.4	77.1	41.9	182.0	12.52	224.7	14.5	11.4	77.5	43.8	186.0	12.99	230.3	14.3	19.5	77.7	18.5	60	46.8	198.0	12.42	240.4	15.9	5.3	78.0	50.6	212.0	12.77	255.6	16.6	11.2	78.5	52.7	218.0	13.26	263.2	16.4	19.1	78.8	18.5	70	54.9	226.0	12.70	269.3	17.8	5.2	79.0	59.2	244.0	13.11	288.7	18.6	11.0	79.6	61.6	252.0	13.63	298.5	18.5	18.8	80.0	18.5	80	62.8	258.0	13.07	302.6	19.7	5.1	80.1	67.6	278.0	13.57	324.3	20.5	10.8	80.8	70.4	288.0	14.14	336.3	20.4	18.5	81.2	18.4	90	70.7	290.0	13.54	336.2	21.4	5.0	81.2	76.0	314.0	14.16	362.3	22.2	10.6	82.1	79.1	328.0	14.81			378.5	22.2	18.2	82.6	80	30.0	4.9	50	39.5	158.0	13.87	205.3	11.4	5.4	93.7	42.5	168.0	14.22	216.5	11.8	11.4	94.4	44.3	172.0			14.71	222.2	11.7	19.5	94.8	4.9	60	47.7	184.0	14.20	232.5	13.0	5.3	95.5	51.3	196.0	14.59	245.8	13.4	11.2	96.4	53.3	202.0	15.11	253.6	13.4	19.1	96.9	4.9	70	56.0	210.0	14.60	259.8	14.4	5.2	97.3	60.0	226.0	15.06	277.4	15.0	11.0	98.5	62.3	232.0	15.61	285.3	14.9	18.8	99.0	4.9	80	64.0	240.0	15.10	291.5	15.9	5.1	99.4	68.6	256.0	15.62	309.3	16.4	10.8	100.6	71.2	264.0	16.25	319.4	16.3	18.5	101.3	4.9	90	72.0	270.0	15.70	323.6	17.2	5.0	101.6	77.2	288.0	16.32	343.7	17.6	10.6	102.9	80.1	298.0	17.02	356.1	17.5	18.2	103.7	10.6	50	39.3	160.0	13.49	206.0	11.9	5.4	89.2	42.4	172.0	13.81	219.1	12.5	11.4	89.7	44.1	176.0	14.27	224.7	12.3	19.5	90.0	10.6	60	47.5	188.0	13.72	234.8	13.7	5.3	90.4	51.1	200.0	14.08	248.1	14.2	11.2	91.0	53.1	206.0	14.57	255.7	14.1	19.1	91.4	10.6	70	55.6	216.0	14.02	263.9	15.4	5.2	91.7	59.8	230.0	14.44	279.3	15.9	11.0	92.4	62.1	238.0	14.97	289.1	15.9	18.8	92.8	10.6	80	63.6	246.0	14.43	295.2	17.1	5.1	93.1	68.4	262.0	14.92	312.9	17.6	10.8	93.9	70.9	272.0	15.50	324.9	17.5	18.5	94.4	10.6	90	71.6	276.0	14.93	327.0	18.5	5.0	94.5	76.8	296.0	15.52	349.0	19.1	10.6	95.5	79.7	308.0	16.18	363.2	19.0																																																																																																																																																																																																																																																																																																																																																																									
				70	30.0	5.0	50	38.9	166.0	12.46	208.5	13.3	5.4	83.9	42.2	176.0	12.82	219.8	13.7	11.4	84.7	44.0	180.0	13.31	225.4	13.5	19.5	85.0	5.0			60	47.2	192.0	12.79	235.7	15.0	5.3	85.7	50.9	204.0	13.20	249.1	15.4	11.2	86.6	53.0	210.0	13.73	256.8	15.3	19.1	87.1	5.0	70	55.3	220.0	13.20	265.1	16.7	5.2	87.7	59.6	234.0	13.68	280.7	17.1	11.0	88.7	61.9	242.0	14.25	290.6	17.0	18.8	89.4	5.0	80	63.3	250.0	13.72	296.8	18.2	5.1	89.8	68.2	266.0	14.27	314.7	18.6	10.8	91.0	70.8	276.0	14.90	326.9	18.5	18.5	91.8	5.0	90	71.3	280.0	14.32	328.9	19.6	5.0	91.9	76.7	300.0	15.00	351.2	20.0	10.6	93.4	79.6	312.0	15.71	365.6	19.9	18.2	94.4	10.8	50	38.8	168.0	12.10	209.3	13.9	5.4	79.3	42.0	180.0	12.43	222.4	14.5	11.4	79.9	43.9	184.0	12.90	228.0	14.3	19.5	80.1	10.8	60	46.9	196.0	12.35	238.2	15.9	5.3	80.6	50.7	210.0	12.72	253.4	16.5	11.2	81.3	52.8	216.0	13.22	261.1	16.3	19.1	81.6	10.8	70	55.1	224.0	12.68	267.3	17.7	5.2	81.9	59.3	240.0	13.11	284.7	18.3	11.0	82.7	61.7	250.0	13.65	296.6	18.3	18.8	83.2	10.7	80	62.9	256.0	13.09	300.7	19.6	5.1	83.4	67.8	274.0	13.61	320.5	20.1	10.8	84.2	70.5	284.0	14.21	332.5	20.0	18.5	84.8	10.7	90	70.9	286.0	13.61	332.5	21.0	5.0	84.8	76.2	310.0	14.25	358.6	21.8	10.6	85.9	79.3	322.0	14.92	372.9	21.6	18.2	86.6	18.5	50	38.7	170.0	12.21	211.7	13.9	5.4	77.1	41.9	182.0	12.52	224.7	14.5	11.4	77.5	43.8	186.0	12.99	230.3	14.3	19.5	77.7	18.5	60	46.8	198.0	12.42	240.4	15.9	5.3	78.0	50.6	212.0	12.77	255.6	16.6	11.2	78.5	52.7	218.0	13.26	263.2	16.4	19.1	78.8	18.5	70	54.9	226.0	12.70	269.3	17.8	5.2	79.0	59.2	244.0	13.11	288.7	18.6	11.0	79.6	61.6	252.0	13.63	298.5	18.5	18.8	80.0	18.5	80	62.8	258.0	13.07	302.6	19.7	5.1	80.1	67.6	278.0	13.57	324.3	20.5	10.8	80.8	70.4	288.0	14.14	336.3	20.4	18.5	81.2	18.4	90	70.7	290.0	13.54	336.2	21.4	5.0	81.2	76.0	314.0	14.16	362.3	22.2	10.6	82.1	79.1	328.0	14.81			378.5	22.2			18.2	82.6	80	30.0	4.9	50	39.5	158.0	13.87	205.3	11.4	5.4	93.7	42.5	168.0	14.22	216.5	11.8	11.4	94.4	44.3	172.0			14.71	222.2	11.7	19.5	94.8	4.9	60	47.7	184.0	14.20	232.5	13.0	5.3	95.5	51.3	196.0	14.59	245.8	13.4	11.2	96.4	53.3	202.0	15.11	253.6	13.4	19.1	96.9	4.9	70	56.0	210.0	14.60	259.8	14.4	5.2	97.3	60.0	226.0	15.06	277.4	15.0	11.0	98.5	62.3	232.0	15.61	285.3	14.9	18.8	99.0	4.9	80	64.0	240.0	15.10	291.5	15.9	5.1	99.4	68.6	256.0	15.62	309.3	16.4	10.8	100.6	71.2	264.0	16.25	319.4	16.3	18.5	101.3	4.9	90	72.0	270.0	15.70	323.6	17.2	5.0	101.6	77.2	288.0	16.32	343.7	17.6	10.6	102.9	80.1	298.0	17.02	356.1	17.5	18.2	103.7	10.6	50	39.3	160.0	13.49	206.0	11.9	5.4	89.2	42.4	172.0	13.81	219.1	12.5	11.4	89.7	44.1	176.0	14.27	224.7	12.3	19.5	90.0	10.6	60	47.5	188.0	13.72	234.8	13.7	5.3	90.4	51.1	200.0	14.08	248.1	14.2	11.2	91.0	53.1	206.0	14.57	255.7	14.1	19.1	91.4	10.6	70	55.6	216.0	14.02	263.9	15.4	5.2	91.7	59.8	230.0	14.44	279.3	15.9	11.0	92.4	62.1	238.0	14.97	289.1	15.9	18.8	92.8	10.6	80	63.6	246.0	14.43	295.2	17.1	5.1	93.1	68.4	262.0	14.92	312.9	17.6	10.8	93.9	70.9	272.0	15.50	324.9	17.5	18.5	94.4	10.6	90	71.6	276.0	14.93	327.0	18.5	5.0	94.5	76.8	296.0	15.52	349.0	19.1	10.6	95.5	79.7	308.0	16.18	363.2	19.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
						80	30.0	4.9	50	39.5	158.0	13.87	205.3	11.4	5.4	93.7	42.5	168.0	14.22	216.5	11.8	11.4	94.4	44.3	172.0	14.71	222.2	11.7	19.5		94.8	4.9	60	47.7	184.0	14.20	232.5	13.0	5.3	95.5	51.3	196.0	14.59	245.8	13.4	11.2	96.4	53.3	202.0	15.11	253.6	13.4	19.1	96.9	4.9	70	56.0	210.0	14.60	259.8	14.4	5.2	97.3	60.0	226.0	15.06	277.4	15.0	11.0	98.5	62.3	232.0	15.61	285.3	14.9	18.8	99.0	4.9	80	64.0	240.0	15.10	291.5	15.9	5.1	99.4	68.6	256.0	15.62	309.3	16.4	10.8	100.6	71.2	264.0	16.25	319.4	16.3	18.5	101.3	4.9	90	72.0	270.0	15.70	323.6	17.2	5.0	101.6	77.2	288.0	16.32	343.7	17.6	10.6	102.9	80.1	298.0	17.02	356.1	17.5	18.2	103.7	10.6	50	39.3	160.0	13.49	206.0	11.9	5.4	89.2	42.4	172.0	13.81	219.1	12.5	11.4	89.7	44.1	176.0	14.27	224.7	12.3	19.5	90.0	10.6	60	47.5	188.0	13.72	234.8	13.7	5.3	90.4	51.1	200.0	14.08	248.1	14.2	11.2	91.0	53.1	206.0	14.57	255.7	14.1	19.1	91.4	10.6	70	55.6	216.0	14.02	263.9	15.4	5.2	91.7	59.8	230.0	14.44	279.3	15.9	11.0	92.4	62.1	238.0	14.97	289.1	15.9	18.8	92.8	10.6	80	63.6	246.0	14.43	295.2	17.1	5.1	93.1	68.4	262.0	14.92	312.9	17.6	10.8	93.9	70.9	272.0	15.50	324.9	17.5	18.5	94.4	10.6	90	71.6	276.0	14.93	327.0	18.5	5.0	94.5	76.8	296.0	15.52	349.0	19.1	10.6	95.5	79.7	308.0	16.18	363.2	19.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

WRA, WCA 240 – Cooling (continued)

Source			ELT °F	Load Flow 30.0 GPM							Load Flow 45.0 GPM							Load Flow 60.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	30.0	4.7	50	41.1	134.0	19.40	200.2	6.9	5.4	123.3	43.7	142.0	19.70	209.2	7.2	11.4	123.9	45.2	144.0	20.16	212.8	7.1	19.5	124.2
		4.7	60	49.5	158.0	19.67	225.1	8.0	5.3	125.0	52.6	166.0	20.02	234.3	8.3	11.2	125.6	54.3	170.0	20.50	240.0	8.3	19.1	126.0
		4.7	70	57.9	182.0	20.02	250.3	9.1	5.2	126.7	61.4	194.0	20.42	263.7	9.5	11.0	127.6	63.4	198.0	20.93	269.4	9.5	18.8	128.0
		4.7	80	66.1	208.0	20.46	277.8	10.2	5.1	128.5	70.2	220.0	20.88	291.3	10.5	10.8	129.4	72.5	226.0	21.48	299.3	10.5	18.5	130.0
	4.7	90	74.4	234.0	20.97	305.6	11.2	5.0	130.4	79.0	248.0	21.47	321.3	11.6	10.6	131.4	81.5	256.0	22.15	331.6	11.6	18.2	132.1	
	45.0	10.2	50	40.9	136.0	18.92	200.6	7.2	5.4	118.9	43.6	144.0	19.18	209.5	7.5	11.4	119.3	45.1	148.0	19.63	215.0	7.5	19.5	119.6
		10.2	60	49.2	162.0	19.08	227.1	8.5	5.3	120.1	52.4	170.0	19.39	236.2	8.8	11.2	120.5	54.1	176.0	19.85	243.8	8.9	19.1	120.8
		10.1	70	57.6	186.0	19.32	251.9	9.6	5.2	121.2	61.2	198.0	19.68	265.2	10.1	11.0	121.8	63.2	204.0	20.16	272.8	10.1	18.8	122.1
		10.1	80	65.7	214.0	19.64	281.0	10.9	5.1	122.5	70.0	226.0	20.00	294.3	11.3	10.8	123.1	72.2	234.0	20.54	304.1	11.4	18.5	123.5
	10.1	90	73.9	242.0	20.03	310.4	12.1	5.0	123.8	78.6	256.0	20.49	325.9	12.5	10.6	124.5	81.1	266.0	21.10	338.0	12.6	18.2	125.0	
	60.0	17.5	50	40.8	138.0	18.94	202.7	7.3	5.4	116.8	43.5	146.0	19.21	211.6	7.6	11.4	117.1	45.0	150.0	19.64	217.0	7.6	19.5	117.2
		17.5	60	49.2	162.0	19.06	227.1	8.5	5.3	117.6	52.4	172.0	19.36	238.1	8.9	11.2	117.9	54.1	176.0	19.77	245.5	9.0	19.1	118.2
17.5		70	57.5	188.0	19.22	253.6	9.8	5.2	118.5	61.0	202.0	19.54	268.7	10.3	11.0	119.0	63.1	206.0	20.00	274.3	10.3	18.8	119.1	
17.5		80	65.6	216.0	19.46	282.4	11.1	5.1	119.4	69.8	230.0	19.85	297.8	11.6	10.8	119.9	72.1	238.0	20.36	307.5	11.7	18.5	120.2	
17.4	90	73.7	244.0	19.82	311.6	12.3	5.0	120.4	78.4	260.0	20.27	329.2	12.8	10.6	121.0	81.0	270.0	20.85	341.2	12.9	18.2	121.4		
120	30.0	4.7	50	41.5	127.0	21.65	200.9	5.9	5.4	133.4	44.0	134.0	21.97	209.0	6.1	11.4	133.9	45.5	136.0	22.43	212.6	6.1	19.5	134.2
		4.7	60	50.1	148.0	21.95	222.9	6.7	5.3	134.9	53.1	156.0	22.27	232.0	7.0	11.2	135.5	54.7	160.0	22.75	237.6	7.0	19.1	135.8
		4.7	70	58.5	172.0	22.28	248.0	7.7	5.2	136.5	61.9	182.0	22.65	259.3	8.0	11.0	137.3	63.8	186.0	23.14	265.0	8.0	18.8	137.7
		4.7	80	66.9	196.0	22.69	273.4	8.6	5.1	138.2	70.8	208.0	23.12	286.9	9.0	10.8	139.1	72.9	214.0	23.65	294.7	9.0	18.4	139.6
	4.7	90	75.3	220.0	23.18	299.1	9.5	5.0	139.9	79.7	232.0	23.65	312.7	9.8	10.6	140.8	82.0	240.0	24.30	322.9	9.9	18.2	141.5	
	45.0	10.0	50	41.4	129.0	21.18	201.3	6.1	5.4	128.9	44.0	136.0	21.45	209.2	6.3	11.4	129.3	45.4	138.0	21.89	212.7	6.3	19.5	129.5
		10.0	60	49.9	152.0	21.33	224.8	7.1	5.3	130.0	52.9	160.0	21.62	233.8	7.4	11.2	130.4	54.5	164.0	22.07	239.3	7.4	19.1	130.6
		10.0	70	58.3	176.0	21.54	249.5	8.2	5.2	131.1	61.7	186.0	21.87	260.7	8.5	11.0	131.6	63.6	192.0	22.34	268.3	8.6	18.8	131.9
		10.0	80	66.5	202.0	21.83	276.5	9.3	5.1	132.3	70.5	214.0	22.22	289.8	9.6	10.8	132.9	72.7	220.0	22.72	297.5	9.7	18.4	133.2
	10.0	90	74.8	228.0	22.19	303.7	10.3	5.0	133.5	79.2	242.0	22.62	319.2	10.7	10.6	134.2	81.7	250.0	23.23	329.3	10.8	18.2	134.6	
	60.0	17.3	50	41.3	130.0	21.21	202.4	6.1	5.4	126.7	43.9	138.0	21.46	211.2	6.4	11.4	127.0	45.3	140.0	21.89	214.7	6.4	19.5	127.2
		17.3	60	49.7	154.0	21.30	226.7	7.2	5.3	127.6	52.8	162.0	21.57	235.6	7.5	11.2	127.9	54.5	166.0	22.01	241.1	7.5	19.1	128.0
17.3		70	58.1	178.0	21.46	251.2	8.3	5.2	128.4	61.6	190.0	21.76	264.3	8.7	11.0	128.8	63.5	194.0	22.21	269.8	8.7	18.8	129.0	
17.2		80	66.4	204.0	21.68	278.0	9.4	5.1	129.3	70.3	218.0	22.04	293.2	9.9	10.8	129.8	72.5	224.0	22.52	300.9	9.9	18.4	130.0	
17.2	90	74.7	230.0	21.97	305.0	10.5	5.0	130.2	79.1	246.0	22.40	322.4	11.0	10.6	130.7	81.5	254.0	22.97	332.4	11.1	18.2	131.1		

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 240 – Heating

Source			Load Flow 30.0 GPM									Load Flow 45.0 GPM						Load Flow 60.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	
30	30.0	5.6	60	70.4	156.0	10.64	119.7	4.3	5.1	22.0	67.0	158.0	10.47	122.3	4.4	11.0	21.8	65.3	160.0	10.68	123.5	4.4	18.9	21.8	
		5.6	80	90.0	150.0	13.26	104.8	3.3	5.0	23.0	86.8	152.0	13.06	107.4	3.4	10.6	22.8	85.1	154.0	13.24	108.8	3.4	18.3	22.7	
		5.6	120	129.7	146.0	20.76	75.2	2.1	4.7	25.0	126.5	146.0	20.51	76.0	2.1	10.1	24.9	124.9	148.0	20.66	77.5	2.1	17.3	24.8	
	45.0	11.9	60	70.9	164.0	10.95	126.6	4.4	5.1	24.4	67.4	166.0	10.76	129.3	4.5	11.0	24.3	65.6	168.0	10.95	130.6	4.5	18.9	24.2	
		11.9	80	90.7	160.0	13.61	109.5	3.4	5.0	25.1	87.0	158.0	13.38	112.3	3.5	10.6	25.0	85.3	160.0	13.54	113.8	3.5	18.3	24.9	
		11.9	100	110.1	152.0	16.99	94.0	2.6	4.8	25.8	106.8	154.0	16.75	96.8	2.7	10.3	25.7	105.2	156.0	16.91	98.3	2.7	17.7	25.6	
	60.0	20.4	60	71.2	168.0	11.42	129.0	4.3	5.1	25.7	67.6	170.0	11.21	131.7	4.4	11.0	25.6	65.7	172.0	11.40	133.1	4.4	18.9	25.6	
		20.4	80	90.4	160.0	14.07	112.0	3.3	5.0	26.3	87.2	162.0	13.84	114.8	3.4	10.6	26.2	85.5	164.0	13.99	116.2	3.4	18.3	26.1	
		20.4	100	110.4	156.0	17.48	96.3	2.6	4.8	26.8	106.9	156.0	17.23	97.2	2.7	10.3	26.8	105.3	158.0	17.37	98.7	2.7	17.7	26.7	
	40	30.0	5.5	60	71.9	178.0	10.86	140.9	4.8	5.1	30.6	68.0	180.0	10.62	143.8	5.0	11.0	30.4	66.1	182.0	10.79	145.2	4.9	18.9	30.3
			5.5	80	91.5	172.0	13.52	125.8	3.7	5.0	31.6	87.7	174.0	13.24	128.8	3.9	10.6	31.4	85.9	176.0	13.38	130.3	3.9	18.3	31.3
			5.5	100	111.2	168.0	16.99	110.0	2.9	4.8	32.7	107.6	170.0	16.64	113.2	3.0	10.3	32.5	105.7	170.0	16.73	112.9	3.0	17.7	32.5
45.0		11.7	60	72.5	188.0	11.18	149.8	4.9	5.1	33.3	68.4	190.0	10.91	152.8	5.1	11.0	33.2	66.4	192.0	11.06	154.2	5.1	18.9	33.1	
		11.7	80	92.0	180.0	13.83	132.8	3.8	5.0	34.1	88.1	182.0	13.52	135.9	3.9	10.6	34.0	86.1	184.0	13.65	137.4	3.9	18.3	33.9	
		11.6	100	111.7	176.0	17.29	117.0	3.0	4.8	34.8	107.8	176.0	16.88	118.4	3.1	10.3	34.7	105.9	178.0	16.97	120.1	3.1	17.7	34.7	
60.0		19.9	60	72.9	194.0	11.66	154.2	4.9	5.1	34.9	68.7	196.0	11.37	157.2	5.0	11.0	34.8	66.6	198.0	11.52	158.7	5.0	18.9	34.7	
		19.9	80	92.4	186.0	14.30	137.2	3.8	5.0	35.4	88.4	188.0	13.98	140.3	3.9	10.6	35.3	86.3	190.0	14.10	141.9	3.9	18.3	35.3	
		19.9	100	112.0	180.0	17.75	119.4	3.0	4.8	36.0	108.0	180.0	17.33	120.9	3.0	10.3	36.0	106.1	182.0	17.41	122.6	3.1	17.7	35.9	
50		30.0	5.4	60	73.6	204.0	11.12	166.1	5.4	5.1	38.9	69.2	206.0	10.80	169.1	5.6	11.0	38.7	66.9	208.0	10.93	170.7	5.6	18.9	38.6
			5.4	80	93.1	196.0	13.78	149.0	4.2	5.0	40.1	88.8	198.0	13.41	152.2	4.3	10.6	39.9	86.7	200.0	13.51	153.9	4.3	18.3	39.7
			5.4	100	112.8	192.0	17.20	133.3	3.3	4.8	41.1	108.6	194.0	16.75	136.8	3.4	10.3	40.9	106.5	194.0	16.81	136.6	3.4	17.7	40.9
	45.0	11.4	60	74.4	216.0	11.48	176.8	5.5	5.1	42.1	69.7	218.0	11.12	180.0	5.7	11.0	42.0	67.3	220.0	11.24	181.7	5.7	18.9	41.9	
		11.4	80	93.9	208.0	14.12	159.8	4.3	5.0	42.9	89.3	210.0	13.72	163.2	4.5	10.6	42.7	87.1	212.0	13.80	164.9	4.5	18.2	42.7	
		11.4	100	113.3	200.0	17.52	140.2	3.3	4.8	43.8	109.0	202.0	17.03	143.9	3.5	10.3	43.6	106.8	204.0	17.07	145.7	3.5	17.7	43.5	
	60.0	19.5	60	74.8	222.0	11.97	181.1	5.4	5.1	44.0	70.0	226.0	11.60	186.4	5.7	11.0	43.8	67.6	228.0	11.70	188.1	5.7	18.9	43.7	
		19.5	80	94.3	214.0	14.60	164.2	4.3	4.9	44.5	89.6	216.0	14.18	167.6	4.5	10.6	44.4	87.3	218.0	14.26	169.3	4.5	18.2	44.4	
		19.5	100	113.7	206.0	17.98	144.6	3.4	4.8	45.2	109.2	208.0	17.48	148.3	3.5	10.3	45.1	107.0	210.0	17.51	150.2	3.5	17.7	45.0	
			19.5	120	133.3	200.0	22.30	123.9	2.6	4.7	45.9	129.0	202.0	21.77	127.7	2.7	10.0	45.7	126.8	204.0	21.78	129.7	2.7	17.3	45.7

WRA, WHA 240 – Heating (continued)

Source			Load Flow 30.0 GPM								Load Flow 45.0 GPM						Load Flow 60.0 GPM								
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	
60	30.0	5.3	60	75.5	232.0	11.45	192.9	5.9	5.1	47.1	70.4	234.0	11.04	196.3	6.2	11.0	46.9	67.9	236.0	11.13	198.0	6.2	18.9	46.8	
		5.3	80	94.9	224.0	14.09	175.9	4.7	4.9	48.3	90.0	226.0	13.64	179.5	4.9	10.6	48.0	87.6	228.0	13.69	181.3	4.9	18.2	47.9	
		5.3	100	114.4	216.0	17.48	156.3	3.6	4.8	49.6	109.7	218.0	16.93	160.2	3.8	10.3	49.3	107.3	220.0	16.94	162.2	3.8	17.7	49.2	
	45.0	11.2	60	76.4	246.0	11.86	205.5	6.1	5.1	50.9	71.1	250.0	11.42	211.0	6.4	11.0	50.6	68.4	252.0	11.49	212.8	6.4	18.9	50.5	
		11.2	80	95.7	236.0	14.48	186.6	4.8	4.9	51.7	90.7	240.0	13.99	192.3	5.0	10.6	51.5	88.1	242.0	14.02	194.1	5.1	18.2	51.4	
		11.2	100	115.2	228.0	17.84	167.1	3.7	4.8	52.6	110.2	230.0	17.25	171.1	3.9	10.3	52.4	107.7	232.0	17.24	173.2	3.9	17.7	52.3	
	60.0	19.1	60	76.9	254.0	12.39	211.7	6.0	5.1	52.9	71.5	258.0	11.92	217.3	6.3	11.0	52.8	68.7	262.0	11.98	221.1	6.4	18.8	52.6	
		19.1	80	96.3	244.0	14.99	192.8	4.8	4.9	53.6	91.0	248.0	14.48	198.6	5.0	10.6	53.4	88.3	250.0	14.50	200.5	5.1	18.2	53.3	
		19.1	100	115.6	234.0	18.33	171.5	3.7	4.8	54.3	110.5	236.0	17.72	175.5	3.9	10.3	54.1	108.0	240.0	17.70	179.6	4.0	17.7	54.0	
	70	30.0	5.2	60	77.5	262.0	11.86	221.5	6.5	5.1	55.2	71.7	264.0	11.37	225.2	6.8	11.0	55.0	68.9	268.0	11.42	229.0	6.9	18.8	54.7
			5.2	80	96.8	252.0	14.49	202.5	5.1	4.9	56.5	91.4	256.0	13.94	208.4	5.4	10.6	56.1	88.6	258.0	13.95	210.4	5.4	18.2	56.0
			5.2	100	116.2	244.0	17.84	183.1	4.0	4.8	57.8	110.9	246.0	17.19	187.3	4.2	10.3	57.5	108.3	248.0	17.15	189.5	4.2	17.7	57.4
45.0		11.0	60	78.5	278.0	12.34	235.9	6.6	5.1	59.5	72.5	282.0	11.81	241.7	7.0	11.0	59.3	69.5	286.0	11.84	245.6	7.1	18.8	59.1	
		11.0	80	97.7	266.0	14.93	215.1	5.2	4.9	60.4	92.0	270.0	14.34	221.1	5.5	10.6	60.2	89.1	274.0	14.33	225.1	5.6	18.2	60.0	
		11.0	100	117.1	256.0	18.25	193.7	4.1	4.8	61.4	111.6	260.0	17.56	200.1	4.3	10.3	61.1	108.7	262.0	17.49	202.3	4.4	17.7	61.0	
60.0		18.8	60	79.3	290.0	12.91	245.9	6.6	5.1	61.8	73.1	294.0	12.36	251.8	7.0	10.9	61.6	69.9	298.0	12.37	255.8	7.1	18.8	61.5	
		18.8	80	98.4	276.0	15.49	223.1	5.2	4.9	62.6	92.4	280.0	14.87	229.3	5.5	10.6	62.4	89.5	284.0	14.84	233.3	5.6	18.2	62.2	
		18.8	100	117.6	264.0	18.77	199.9	4.1	4.8	63.3	111.9	268.0	18.05	206.4	4.3	10.3	63.1	109.0	270.0	17.97	208.7	4.4	17.7	63.0	
80		30.0	5.1	60	79.5	292.0	12.37	249.8	6.9	5.1	63.3	73.2	298.0	11.79	257.7	7.4	10.9	62.8	70.0	300.0	11.80	259.7	7.5	18.8	62.7
			5.1	80	98.8	282.0	14.97	230.9	5.5	4.9	64.6	92.7	286.0	14.33	237.1	5.8	10.6	64.2	89.6	288.0	14.29	239.2	5.9	18.2	64.1
			5.1	100	118.1	272.0	18.29	209.6	4.4	4.8	66.0	112.2	274.0	17.53	214.2	4.6	10.3	65.7	109.3	278.0	17.44	218.5	4.7	17.7	65.4
	45.0	10.8	60	80.9	314.0	12.95	269.8	7.1	5.1	68.0	74.2	320.0	12.33	277.9	7.6	10.9	67.6	70.8	324.0	12.31	282.0	7.7	18.8	67.5	
		10.8	80	100.0	300.0	15.53	247.0	5.7	4.9	69.0	93.6	306.0	14.82	255.4	6.0	10.6	68.6	90.3	308.0	14.76	257.6	6.1	18.2	68.5	
		10.8	100	119.1	286.0	18.77	221.9	4.5	4.8	70.1	113.0	292.0	17.97	230.7	4.8	10.3	69.7	109.8	294.0	17.85	233.1	4.8	17.7	69.6	
	60.0	18.5	60	81.7	326.0	13.58	279.7	7.0	5.1	70.7	74.8	332.0	12.93	287.9	7.5	10.9	70.4	71.2	336.0	12.90	292.0	7.6	18.8	70.3	
		18.5	80	100.7	310.0	16.11	255.0	5.6	4.9	71.5	94.0	316.0	15.39	263.5	6.0	10.6	71.2	90.7	320.0	15.31	267.7	6.1	18.2	71.1	
		18.5	100	119.7	296.0	19.33	230.0	4.5	4.8	72.3	113.3	300.0	18.50	236.8	4.8	10.3	72.1	110.1	304.0	18.37	241.3	4.8	17.7	72.0	
			18.4	120	139.3	290.0	23.64	209.3	3.6	4.7	73.0	132.9	290.0	22.63	212.8	3.8	10.0	72.9	129.7	290.0	22.41	213.5	3.8	17.2	72.9

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM - Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 300 – Cooling

Source				Load Flow 37.5 GPM								Load Flow 56.25 GPM								Load Flow 75.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F			
				Data rows for 40, 50, 70, and 80 capacity units, each with 12 sub-rows for different source temperatures and flow rates																							

WRA, WCA 300 – Cooling (continued)

Source			ELT °F	Load Flow 37.5 GPM							Load Flow 56.25 GPM							Load Flow 75.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	37.5	3.6	50	41.7	156.0	22.54	232.9	6.9	2.7	122.4	44.2	164.0	22.75	241.7	7.2	5.5	122.9	45.5	170.0	23.03	248.6	7.4	9.2	123.3
		3.5	60	50.2	184.0	22.80	261.8	8.1	2.6	124.0	53.0	196.0	23.09	274.8	8.5	5.3	124.7	54.6	202.0	23.41	281.9	8.6	8.9	125.0
		3.5	70	58.5	216.0	23.23	295.3	9.3	2.5	125.7	61.9	228.0	23.55	308.4	9.7	5.2	126.4	63.7	236.0	23.94	317.7	9.9	8.7	126.9
		3.5	80	66.8	248.0	23.77	329.1	10.4	2.4	127.6	70.6	264.0	24.21	346.6	10.9	5.0	128.5	72.7	272.0	24.63	356.1	11.0	8.4	129.0
	3.5	90	75.1	280.0	24.45	363.4	11.5	2.4	129.4	79.3	300.0	24.99	385.3	12.0	4.9	130.5	81.7	310.0	25.47	396.9	12.2	8.2	131.2	
	56.25	7.6	50	41.5	160.0	21.95	234.9	7.3	2.7	118.4	44.0	168.0	22.12	243.5	7.6	5.5	118.7	45.4	174.0	22.39	250.4	7.8	9.2	118.9
		7.6	60	50.0	188.0	22.10	263.4	8.5	2.6	119.4	52.9	200.0	22.31	276.1	9.0	5.3	119.8	54.5	206.0	22.62	283.2	9.1	8.9	120.1
		7.6	70	58.3	220.0	22.38	296.4	9.8	2.5	120.5	61.7	234.0	22.67	311.4	10.3	5.2	121.1	63.5	242.0	23.00	320.5	10.5	8.7	121.4
		7.6	80	66.5	254.0	22.77	331.7	11.2	2.4	121.8	70.4	270.0	23.10	348.8	11.7	5.0	122.4	72.5	280.0	23.46	360.1	11.9	8.4	122.8
	7.6	90	74.6	288.0	23.23	367.3	12.4	2.4	123.1	79.0	310.0	23.67	390.8	13.1	4.9	123.9	81.5	320.0	24.09	402.2	13.3	8.2	124.3	
	75.0	13.1	50	41.4	162.0	21.91	236.8	7.4	2.7	116.3	44.0	170.0	22.05	245.3	7.7	5.5	116.5	45.3	176.0	22.32	252.2	7.9	9.2	116.7
		13.1	60	49.8	192.0	22.00	267.1	8.7	2.6	117.1	52.7	204.0	22.20	279.8	9.2	5.3	117.5	54.4	210.0	22.48	286.7	9.3	8.9	117.6
		13.1	70	58.2	222.0	22.21	297.8	10.0	2.5	117.9	61.5	238.0	22.43	314.5	10.6	5.2	118.4	63.4	246.0	22.73	323.6	10.8	8.7	118.6
		13.1	80	66.3	256.0	22.47	332.7	11.4	2.4	118.9	70.3	274.0	22.79	351.8	12.0	5.0	119.4	72.4	284.0	23.14	363.0	12.3	8.4	119.7
	13.1	90	74.4	292.0	22.88	370.1	12.8	2.4	119.9	78.8	314.0	23.27	393.4	13.5	4.9	120.5	81.3	326.0	23.65	406.7	13.8	8.2	120.8	
	120	37.5	3.5	50	42.2	146.0	25.14	231.8	5.8	2.7	132.4	44.5	154.0	25.37	240.6	6.1	5.5	132.8	45.8	158.0	25.67	245.6	6.2	9.2
3.5			60	50.7	174.0	25.48	261.0	6.8	2.6	133.9	53.5	182.0	25.72	269.8	7.1	5.3	134.4	55.0	188.0	26.04	276.9	7.2	8.9	134.8
3.5			70	59.2	202.0	25.86	290.3	7.8	2.5	135.5	62.4	214.0	26.19	303.4	8.2	5.2	136.2	64.1	222.0	26.55	312.6	8.4	8.6	136.7
3.5			80	67.5	234.0	26.41	324.1	8.9	2.4	137.3	71.2	248.0	26.84	339.6	9.2	5.0	138.1	73.2	256.0	27.24	349.0	9.4	8.4	138.6
3.5		90	75.8	266.0	27.11	358.5	9.8	2.4	139.1	79.9	284.0	27.67	378.4	10.3	4.9	140.2	82.2	294.0	28.14	390.0	10.4	8.2	140.8	
56.25		7.5	50	42.0	150.0	24.58	233.9	6.1	2.7	128.3	44.4	158.0	24.78	242.6	6.4	5.5	128.6	45.7	162.0	25.06	247.5	6.5	9.2	128.8
		7.5	60	50.5	178.0	24.76	262.5	7.2	2.6	129.3	53.4	186.0	24.95	271.2	7.5	5.3	129.6	54.8	194.0	25.24	280.1	7.7	8.9	130.0
		7.5	70	58.9	208.0	25.00	293.3	8.3	2.5	130.4	62.2	220.0	25.27	306.2	8.7	5.2	130.9	63.9	228.0	25.58	315.3	8.9	8.6	131.2
		7.5	80	67.2	240.0	25.37	326.6	9.5	2.4	131.6	70.9	256.0	25.72	343.8	10.0	5.0	132.2	73.0	264.0	26.09	353.1	10.1	8.4	132.6
7.5		90	75.4	274.0	25.86	362.3	10.6	2.4	132.9	79.5	294.0	26.33	383.9	11.2	4.9	133.6	81.9	304.0	26.75	395.3	11.4	8.2	134.1	
75.0		13.0	50	42.0	150.0	24.56	233.8	6.1	2.7	126.2	44.3	160.0	24.73	244.4	6.5	5.5	126.5	45.6	164.0	24.99	249.3	6.6	9.2	126.6
		13.0	60	50.5	178.0	24.65	262.1	7.2	2.6	127.0	53.3	188.0	24.81	272.7	7.6	5.3	127.3	54.8	196.0	25.09	281.6	7.8	8.9	127.5
		13.0	70	58.8	210.0	24.83	294.7	8.5	2.5	127.9	62.0	224.0	25.05	309.5	8.9	5.2	128.3	63.9	230.0	25.35	316.5	9.1	8.7	128.4
		12.9	80	67.1	242.0	25.11	327.7	9.6	2.4	128.7	70.8	260.0	25.42	346.8	10.2	5.0	129.2	72.9	268.0	25.76	355.9	10.4	8.4	129.5
12.9		90	75.2	278.0	25.50	365.0	10.9	2.4	129.7	79.4	298.0	25.94	386.5	11.5	4.9	130.3	81.8	308.0	26.32	397.8	11.7	8.2	130.6	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 300 – Heating

Source			ELT °F	Load Flow 37.5 GPM							Load Flow 56.25 GPM							Load Flow 75.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	37.5	2.9	60	69.7	182.0	12.52	139.3	4.3	3.9	22.6	66.5	184.0	12.42	141.6	4.3	8.3	22.4	65.0	186.0	12.66	142.8	4.3	14.2	22.4
		2.9	80	89.4	176.0	15.22	124.1	3.4	3.7	23.4	86.3	176.0	14.96	124.9	3.4	8	23.3	84.7	178.0	15.11	126.4	3.5	13.7	23.3
		2.9	100	109.2	172.0	19.46	105.6	2.6	3.6	24.4	106.1	172.0	19.13	106.7	2.6	7.7	24.3	104.6	174.0	19.22	108.4	2.7	13.3	24.2
		2.8	120	129.1	170.0	24.76	85.5	2.0	3.5	25.4	126.0	170.0	24.40	86.7	2.0	7.6	25.4	124.6	172.0	24.47	88.5	2.1	13.0	25.3
	56.25	5.9	60	70.2	192.0	12.85	148.1	4.4	3.9	24.7	66.9	194.0	12.74	150.5	4.5	8.3	24.6	65.2	196.0	12.97	151.7	4.4	14.2	24.6
		5.9	80	89.7	188.0	15.62	129.0	3.4	3.7	25.4	86.5	184.0	15.26	131.9	3.5	8	25.3	85.0	186.0	15.39	133.5	3.5	13.7	25.3
		5.9	100	109.5	178.0	19.65	110.9	2.7	3.6	26.1	106.3	178.0	19.30	112.1	2.7	7.7	26.0	104.8	180.0	19.39	113.8	2.7	13.3	26.0
		5.9	120	129.4	176.0	24.81	91.3	2.1	3.5	26.8	126.3	176.0	24.45	92.5	2.1	7.6	26.7	124.7	178.0	24.53	94.3	2.1	13.0	26.6
	75.0	9.9	60	70.5	196.0	13.18	151.0	4.4	3.9	26.0	67.1	200.0	13.06	155.4	4.5	8.3	25.9	65.4	202.0	13.28	156.7	4.5	14.2	25.8
		9.8	80	90.0	188.0	15.89	133.8	3.5	3.7	26.4	86.8	190.0	15.28	136.7	3.6	8	26.4	85.1	190.0	15.73	136.3	3.5	13.7	26.4
		9.8	100	109.7	182.0	19.94	114.0	2.7	3.6	27.0	106.5	182.0	19.58	115.2	2.7	7.7	26.9	104.9	184.0	19.67	116.9	2.7	13.3	26.9
		9.8	120	129.5	178.0	25.11	92.3	2.1	3.5	27.5	126.4	180.0	24.70	95.7	2.1	7.6	27.4	124.8	180.0	24.77	95.4	2.1	13.0	27.5
40	30.0	2.8	60	71.2	210.0	12.95	165.8	4.8	3.9	28.9	67.6	214.0	12.80	170.3	4.9	8.3	28.6	65.8	216.0	13.02	171.6	4.9	14.2	28.6
		2.8	80	90.8	202.0	15.62	148.7	3.8	3.7	30.1	87.3	204.0	15.28	151.8	3.9	8	29.9	85.5	206.0	15.39	153.5	3.9	13.7	28.8
		2.8	100	110.5	196.0	19.71	128.7	2.9	3.6	31.4	107.0	198.0	19.30	132.1	3.0	7.7	31.2	105.3	198.0	19.33	132.0	3.0	13.3	31.2
		2.7	120	130.3	194.0	24.74	109.6	2.3	3.5	32.7	126.9	194.0	24.31	111.0	2.3	7.5	32.6	125.2	196.0	24.35	112.9	2.4	13.0	32.5
	45.0	5.7	60	71.9	224.0	13.23	178.8	5.0	3.9	32.1	68.0	226.0	13.07	181.4	5.1	8.3	31.9	66.1	228.0	13.28	182.7	5.0	14.2	31.9
		5.7	80	91.3	212.0	15.85	157.9	3.9	3.7	33.0	87.6	214.0	15.50	161.1	4.0	8	32.8	85.8	216.0	15.59	162.8	4.1	13.7	32.8
		5.7	100	110.9	204.0	19.94	135.9	3.0	3.6	34.0	107.3	206.0	19.46	139.6	3.1	7.7	33.8	105.5	208.0	19.48	141.5	3.1	13.3	33.7
		5.7	120	130.7	200.0	24.92	115.0	2.4	3.5	34.9	127.1	200.0	24.47	116.5	2.4	7.5	34.8	125.4	202.0	24.50	118.4	2.4	13.0	34.7
	60.0	9.5	60	72.3	230.0	13.56	183.7	5.0	3.9	33.9	68.3	234.0	13.39	188.3	5.1	8.2	33.7	66.3	236.0	13.59	189.6	5.1	14.2	33.7
		9.5	80	91.6	218.0	16.16	162.9	4.0	3.7	34.6	87.8	220.0	15.79	166.1	4.1	8	34.5	85.9	222.0	15.88	167.8	4.1	13.7	34.4
		9.5	100	111.1	208.0	20.23	138.9	3.0	3.6	35.4	107.5	210.0	19.72	142.7	3.1	7.7	35.2	105.7	212.0	19.71	144.7	3.2	13.3	35.2
		9.5	120	130.9	204.0	25.19	118.0	2.4	3.5	36.1	127.3	204.0	24.73	119.6	2.4	7.5	36.0	125.5	206.0	24.75	121.5	2.4	13.0	35.9
50	30.0	2.7	60	72.9	242.0	13.33	196.5	5.3	3.8	36.9	68.7	246.0	13.13	201.2	5.5	8.2	36.6	66.6	248.0	13.32	202.5	5.5	14.2	36.5
		2.7	80	92.4	232.0	15.93	177.6	4.3	3.7	38.2	88.3	234.0	15.52	181.0	4.4	8	37.9	86.3	236.0	15.59	182.8	4.4	13.7	37.8
		2.7	100	111.9	224.0	19.97	155.8	3.3	3.6	39.6	108.0	226.0	19.37	159.9	3.4	7.7	39.3	106.1	228.0	19.35	162.0	3.5	13.3	39.2
		2.7	120	131.6	218.0	24.99	132.7	2.6	3.5	41.2	127.8	218.0	24.45	134.6	2.6	7.5	41.0	125.9	222.0	24.42	138.7	2.7	13.0	40.8
	45.0	5.5	60	73.7	256.0	13.63	209.5	5.5	3.8	40.7	69.3	262.0	13.40	216.3	5.7	8.2	40.4	67.0	264.0	13.59	217.6	5.7	14.2	40.3
		5.5	80	93.0	244.0	16.20	188.7	4.4	3.7	41.6	88.8	248.0	15.76	194.2	4.6	8	41.4	86.7	250.0	15.82	196.0	4.6	13.7	41.3
		5.5	100	112.5	234.0	20.16	165.2	3.4	3.6	42.7	108.4	236.0	19.55	169.3	3.5	7.7	42.5	106.3	238.0	19.52	171.4	3.6	13.3	42.4
		5.5	120	132.2	228.0	25.17	142.1	2.7	3.5	43.7	128.1	228.0	24.62	144.0	2.7	7.5	43.6	126.1	230.0	24.59	146.1	2.7	13.0	43.5
	60.0	9.2	60	74.2	266.0	13.97	218.3	5.6	3.8	42.7	69.6	270.0	13.73	223.2	5.8	8.2	42.6	67.3	274.0	13.90	226.6	5.8	14.2	42.4
		9.2	80	93.4	252.0	16.53	195.6	4.5	3.7	43.5	89.0	254.0	16.07	199.2	4.6	8	43.4	86.9	258.0	16.12	203.0	4.7	13.7	43.2
		9.2	100	112.8	240.0	20.45	170.2	3.4	3.6	44.3	108.6	242.0	19.82	174.3	3.6	7.7	44.2	106.5	244.0	19.78	176.5	3.6	13.3	44.1
		9.2	120	132.4	232.0	25.47	145.1	2.7	3.5	45.2	128.3	234.0	24.90	149.0	2.8	7.5	45.0	126.2	234.0	24.86	149.2	2.8	13.0	45.0

WRA, WHA 300 – Heating (continued)

Source			Load Flow 37.5 GPM								Load Flow 56.25 GPM								Load Flow 75.0 GPM							
EST °F	Flow GPM	WPD (Ft)	ELT °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F		
60	37.5	2.6	60	74.7	276.0	13.72	229.2	5.9	3.8	44.7	70.0	280.0	13.45	234.1	6.1	8.2	44.4	67.6	284.0	13.61	237.5	6.1	14.2	44.2		
		2.6	80	94.1	264.0	16.31	208.3	4.7	3.7	46.1	89.5	266.0	15.81	212.0	4.9	8	45.9	87.2	270.0	15.84	215.9	5.0	13.7	45.6		
		2.6	100	113.5	254.0	20.22	185.0	3.7	3.6	47.7	109.1	256.0	19.55	189.3	3.8	7.7	47.4	106.9	258.0	19.48	191.5	3.9	13.3	47.2		
		2.6	120	133.1	246.0	25.29	159.7	2.9	3.5	49.4	128.8	248.0	24.61	164.0	3.0	7.5	49.1	126.7	250.0	24.53	166.3	3.0	13.0	48.9		
	56.25	5.3	60	75.7	294.0	14.05	246.1	6.1	3.8	49.1	70.6	298.0	13.74	251.1	6.4	8.2	48.8	68.1	302.0	13.88	254.6	6.4	14.1	48.7		
		5.3	80	94.8	278.0	16.63	221.2	4.9	3.7	50.2	90.0	282.0	16.09	227.1	5.1	8	49.9	87.6	286.0	16.10	231.1	5.2	13.7	49.7		
		5.3	100	114.2	266.0	20.48	196.1	3.8	3.6	51.3	109.6	270.0	19.78	202.5	4.0	7.7	51.0	107.3	272.0	19.70	204.8	4.0	13.3	50.9		
		5.3	120	133.8	258.0	25.53	170.9	3.0	3.5	52.4	129.2	258.0	24.81	173.3	3.0	7.5	52.3	126.9	260.0	24.70	175.7	3.1	13.0	52.2		
	75.0	8.9	60	76.1	302.0	14.38	252.9	6.2	3.8	51.6	71.0	308.0	14.06	260.0	6.4	8.2	51.3	68.3	312.0	14.19	263.6	6.4	14.1	51.2		
		8.9	80	95.4	288.0	16.98	230.1	5.0	3.7	52.3	90.4	292.0	16.41	236.0	5.2	8	52.1	87.8	294.0	16.41	238.0	5.2	13.7	52.1		
		8.9	100	114.6	274.0	20.81	203.0	3.9	3.6	53.2	109.8	276.0	20.08	207.5	4.0	7.7	53.1	107.5	280.0	19.99	211.8	4.1	13.3	52.9		
		8.9	120	134.0	262.0	25.83	173.8	3.0	3.5	54.2	129.5	266.0	25.08	180.4	3.1	7.5	54.0	127.1	268.0	24.96	182.8	3.1	13.0	53.9		
70	37.5	2.5	60	76.6	312.0	14.12	263.8	6.5	3.8	52.4	71.2	316.0	13.76	269.0	6.7	8.2	52.1	68.5	320.0	13.89	272.6	6.8	14.1	51.8		
		2.5	80	95.9	298.0	16.75	240.8	5.2	3.7	53.9	90.7	302.0	16.15	246.9	5.5	8	53.5	88.1	304.0	16.13	249.0	5.5	13.7	53.4		
		2.5	100	114.2	286.0	20.62	215.6	4.1	3.6	55.6	110.2	288.0	19.84	220.3	4.3	7.7	55.3	107.8	292.0	19.72	224.7	4.3	13.3	55.0		
		2.5	120	134.7	276.0	25.65	188.5	3.2	3.5	57.4	129.9	278.0	24.84	193.2	3.3	7.5	57.1	127.5	280.0	24.68	195.8	3.3	13.0	56.9		
	56.25	5.2	60	77.6	330.0	14.47	280.6	6.7	3.8	57.5	71.9	336.0	14.06	288.0	7.0	8.2	57.2	69.1	342.0	14.16	293.7	7.1	14.1	56.9		
		5.2	80	96.7	314.0	17.10	255.6	5.4	3.7	58.6	91.4	320.0	16.45	263.8	5.7	7.9	58.3	88.6	322.0	16.41	266.0	5.7	13.7	58.2		
		5.2	100	116.0	300.0	20.93	228.6	4.2	3.6	59.8	110.8	304.0	20.11	235.4	4.4	7.7	59.5	108.2	306.0	19.97	237.8	4.5	13.3	59.4		
		5.2	120	135.5	290.0	25.97	201.4	3.3	3.5	61.0	130.4	292.0	25.10	206.3	3.4	7.5	60.8	127.8	294.0	24.91	209.0	3.5	13.0	60.7		
	75.0	8.7	60	78.2	342.0	14.82	291.4	6.8	3.8	60.3	72.4	350.0	14.39	300.9	7.1	8.2	60.0	69.4	354.0	14.47	304.6	7.2	14.1	59.8		
		8.7	80	97.4	326.0	17.50	266.3	5.5	3.7	61.1	91.7	330.0	16.80	272.7	5.8	7.9	60.9	88.9	334.0	16.74	276.9	5.8	13.7	60.8		
		8.7	100	116.5	310.0	21.33	237.2	4.3	3.6	62.1	111.2	314.0	20.46	244.2	4.5	7.7	61.9	108.5	318.0	20.29	248.7	4.6	13.3	61.7		
		8.6	120	135.9	298.0	26.31	208.2	3.3	3.5	63.1	130.7	300.0	25.40	213.3	3.5	7.5	62.9	128.1	302.0	25.20	216.0	3.5	13.0	62.8		
80	37.5	2.5	60	78.6	348.0	14.54	298.4	7.0	3.8	60.1	72.6	354.0	14.07	306.0	7.4	8.2	59.6	69.5	358.0	14.14	309.7	7.4	14.1	59.4		
		2.5	80	97.7	332.0	17.25	273.1	5.6	3.7	61.8	92.0	338.0	16.52	281.6	6.0	7.9	61.2	89.1	342.0	16.44	285.9	6.1	13.7	60.9		
		2.4	100	117.1	320.0	21.14	247.9	4.4	3.6	63.5	111.5	324.0	20.22	255.0	4.7	7.7	63.0	108.7	326.0	20.03	257.6	4.8	13.3	62.8		
		2.4	120	136.5	310.0	26.17	220.7	3.5	3.5	65.3	131.1	312.0	25.20	226.0	3.6	7.5	64.9	128.4	314.0	24.97	228.8	3.7	13.0	64.7		
	56.25	5.1	60	79.7	370.0	14.92	319.1	7.3	3.8	65.8	73.4	378.0	14.38	328.9	7.7	8.2	65.4	70.2	384.0	14.41	334.8	7.8	14.1	65.1		
		5.0	80	98.9	354.0	17.68	293.7	5.9	3.7	66.9	92.8	360.0	16.88	302.4	6.2	7.9	66.6	89.7	364.0	16.76	306.8	6.4	13.7	66.4		
		5.0	100	118.0	338.0	21.57	264.4	4.6	3.6	68.3	112.2	342.0	20.58	271.8	4.9	7.7	67.9	109.2	346.0	20.35	276.5	5.0	13.3	67.7		
		5.0	120	137.4	326.0	26.57	235.3	3.6	3.5	69.5	131.7	328.0	25.53	240.9	3.8	7.5	69.3	128.9	332.0	25.26	245.8	3.9	13.0	69.1		
	75.0	8.4	60	80.5	384.0	15.30	331.8	7.4	3.8	68.9	73.9	392.0	14.71	341.8	7.8	8.2	68.6	70.6	398.0	14.72	347.8	7.9	14.1	68.4		
		8.4	80	99.5	366.0	18.08	304.3	5.9	3.7	69.9	93.2	372.0	17.24	313.2	6.3	7.9	69.6	90.0	376.0	17.09	317.7	6.4	13.7	69.4		
		8.4	100	118.6	348.0	21.97	273.0	4.6	3.6	70.9	112.6	354.0	20.94	282.5	5.0	7.7	70.6	109.5	358.0	20.69	287.4	5.1	13.3	70.4		
		8.4	120	138.8	352.0	27.35	258.6	3.8	3.5	71.4	132.5	352.0	26.08	263.0	4.0	7.5	71.2	129.4	352.0	25.71	264.2	4.0	13.0	71.2		

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 360 – Cooling

Source			Load Flow 45.0 GPM									Load Flow 67.5 GPM						Load Flow 90.0 GPM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
EST °F	Flow GPM	WPD (F)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				Data rows for WRA, WCA 360 - Cooling Group 40 <tr> <td rowspan="12">40</td> <td rowspan="4">45.0</td> <td>2.0</td><td>50</td><td>37.4</td><td>284.0</td><td>13.99</td><td>331.8</td><td>20.3</td><td>2.0</td><td>54.7</td><td>41.0</td><td>304.0</td><td>14.40</td><td>353.2</td><td>21.1</td><td>4.2</td><td>55.7</td><td>43.0</td><td>316.0</td><td>14.79</td><td>366.5</td><td>21.4</td><td>3.0</td><td>56.3</td> </tr> <tr> <td>2.0</td><td>60</td><td>45.6</td><td>324.0</td><td>14.58</td><td>373.8</td><td>22.2</td><td>2.0</td><td>56.6</td><td>49.7</td><td>348.0</td><td>15.07</td><td>399.4</td><td>23.1</td><td>4.1</td><td>57.8</td><td>52.0</td><td>362.0</td><td>15.51</td><td>414.9</td><td>23.3</td><td>2.9</td><td>58.4</td> </tr> <tr> <td>2.0</td><td>70</td><td>53.6</td><td>368.0</td><td>15.26</td><td>420.1</td><td>24.1</td><td>1.9</td><td>58.7</td><td>58.3</td><td>396.0</td><td>15.84</td><td>450.1</td><td>25.0</td><td>4.0</td><td>60.0</td><td>60.8</td><td>415.0</td><td>16.34</td><td>470.8</td><td>25.4</td><td>2.9</td><td>60.9</td> </tr> <tr> <td>2.0</td><td>80</td><td>61.6</td><td>415.0</td><td>16.02</td><td>469.7</td><td>25.9</td><td>1.9</td><td>60.9</td><td>66.8</td><td>445.0</td><td>16.71</td><td>502.0</td><td>26.6</td><td>3.9</td><td>62.3</td><td>69.7</td><td>465.0</td><td>17.28</td><td>524.0</td><td>26.9</td><td>2.8</td><td>63.3</td> </tr> <tr> <td>2.0</td><td>90</td><td>69.6</td><td>460.0</td><td>16.86</td><td>517.6</td><td>27.3</td><td>1.8</td><td>63.0</td><td>75.2</td><td>500.0</td><td>17.69</td><td>560.4</td><td>28.3</td><td>3.8</td><td>64.9</td><td>78.4</td><td>520.0</td><td>18.33</td><td>582.6</td><td>28.4</td><td>2.8</td><td>65.9</td> </tr> <tr> <td rowspan="4">67.5</td> <td>4.2</td><td>50</td><td>37.1</td><td>290.0</td><td>13.42</td><td>335.8</td><td>21.6</td><td>2.0</td><td>50.0</td><td>40.8</td><td>310.0</td><td>13.80</td><td>357.1</td><td>22.5</td><td>4.2</td><td>50.6</td><td>42.8</td><td>324.0</td><td>14.16</td><td>372.3</td><td>22.9</td><td>3.0</td><td>51.0</td> </tr> <tr> <td>4.2</td><td>60</td><td>45.2</td><td>332.0</td><td>13.93</td><td>379.5</td><td>23.8</td><td>2.0</td><td>51.2</td><td>49.4</td><td>358.0</td><td>14.37</td><td>407.0</td><td>24.9</td><td>4.1</td><td>52.1</td><td>51.7</td><td>372.0</td><td>14.77</td><td>422.4</td><td>25.2</td><td>2.9</td><td>52.5</td> </tr> <tr> <td>4.2</td><td>70</td><td>53.3</td><td>376.0</td><td>14.50</td><td>425.5</td><td>25.9</td><td>1.9</td><td>52.6</td><td>58.0</td><td>405.0</td><td>15.03</td><td>456.3</td><td>26.9</td><td>4.0</td><td>53.5</td><td>60.6</td><td>425.0</td><td>15.49</td><td>477.9</td><td>27.4</td><td>2.9</td><td>54.2</td> </tr> <tr> <td>4.1</td><td>80</td><td>61.1</td><td>425.0</td><td>15.15</td><td>476.7</td><td>28.1</td><td>1.9</td><td>54.1</td><td>66.4</td><td>460.0</td><td>15.78</td><td>513.9</td><td>29.2</td><td>3.9</td><td>55.2</td><td>69.3</td><td>480.0</td><td>16.30</td><td>535.6</td><td>29.5</td><td>2.8</td><td>55.9</td> </tr> <tr> <td>4.1</td><td>90</td><td>68.9</td><td>475.0</td><td>15.88</td><td>529.2</td><td>29.9</td><td>1.8</td><td>55.7</td><td>74.7</td><td>515.0</td><td>16.63</td><td>571.8</td><td>31.0</td><td>3.8</td><td>56.9</td><td>78.0</td><td>540.0</td><td>17.23</td><td>598.8</td><td>31.3</td><td>2.8</td><td>57.7</td> </tr> <tr> <td rowspan="4">90.0</td> <td>7.1</td><td>50</td><td>37.0</td><td>292.0</td><td>13.30</td><td>337.4</td><td>21.9</td><td>2.0</td><td>47.5</td><td>40.7</td><td>314.0</td><td>13.66</td><td>360.6</td><td>23.0</td><td>4.2</td><td>48.0</td><td>42.7</td><td>328.0</td><td>14.00</td><td>375.8</td><td>23.4</td><td>3.0</td><td>48.4</td> </tr> <tr> <td>7.1</td><td>60</td><td>45.1</td><td>336.0</td><td>13.76</td><td>383.0</td><td>24.4</td><td>2.0</td><td>48.5</td><td>49.3</td><td>362.0</td><td>14.18</td><td>410.4</td><td>25.5</td><td>4.1</td><td>49.1</td><td>51.6</td><td>378.0</td><td>14.57</td><td>427.7</td><td>25.9</td><td>2.9</td><td>49.5</td> </tr> <tr> <td>7.1</td><td>70</td><td>53.0</td><td>382.0</td><td>14.29</td><td>430.8</td><td>26.7</td><td>1.9</td><td>49.6</td><td>57.9</td><td>410.0</td><td>14.79</td><td>460.5</td><td>27.7</td><td>4.0</td><td>50.2</td><td>60.4</td><td>430.0</td><td>15.23</td><td>482.0</td><td>28.2</td><td>2.9</td><td>50.7</td> </tr> <tr> <td>7.0</td><td>80</td><td>60.9</td><td>430.0</td><td>14.88</td><td>480.8</td><td>28.9</td><td>1.9</td><td>50.7</td><td>66.2</td><td>465.0</td><td>15.47</td><td>517.8</td><td>30.1</td><td>3.9</td><td>51.5</td><td>69.1</td><td>490.0</td><td>15.97</td><td>544.5</td><td>30.7</td><td>2.8</td><td>52.1</td> </tr> <tr> <td>7.0</td><td>90</td><td>68.7</td><td>480.0</td><td>15.56</td><td>533.1</td><td>30.9</td><td>1.8</td><td>51.8</td><td>74.4</td><td>525.0</td><td>16.26</td><td>580.5</td><td>32.3</td><td>3.8</td><td>52.9</td><td>77.8</td><td>550.0</td><td>16.81</td><td>607.4</td><td>32.7</td><td>2.8</td><td>53.5</td> </tr> Group 50 <tr> <td rowspan="12">50</td> <td rowspan="4">45.0</td> <td>1.9</td><td>50</td><td>37.8</td><td>274.0</td><td>15.34</td><td>326.4</td><td>17.9</td><td>2.0</td><td>64.5</td><td>41.3</td><td>292.0</td><td>15.74</td><td>345.7</td><td>18.6</td><td>4.2</td><td>65.4</td><td>43.2</td><td>304.0</td><td>16.12</td><td>359.0</td><td>18.9</td><td>3.0</td><td>66.0</td> </tr> <tr> <td>1.9</td><td>60</td><td>46.0</td><td>314.0</td><td>15.92</td><td>368.3</td><td>19.7</td><td>2.0</td><td>66.4</td><td>50.0</td><td>336.0</td><td>16.39</td><td>391.9</td><td>20.5</td><td>4.1</td><td>67.4</td><td>52.2</td><td>350.0</td><td>16.82</td><td>407.4</td><td>20.8</td><td>2.9</td><td>68.1</td> </tr> <tr> <td>1.9</td><td>70</td><td>54.2</td><td>356.0</td><td>16.59</td><td>412.6</td><td>21.5</td><td>1.9</td><td>68.3</td><td>58.6</td><td>384.0</td><td>17.15</td><td>442.5</td><td>22.4</td><td>4.0</td><td>69.7</td><td>61.1</td><td>400.0</td><td>17.64</td><td>460.2</td><td>22.7</td><td>2.9</td><td>70.5</td> </tr> <tr> <td>1.9</td><td>80</td><td>62.2</td><td>400.0</td><td>17.34</td><td>459.2</td><td>23.1</td><td>1.9</td><td>70.4</td><td>67.1</td><td>435.0</td><td>18.02</td><td>496.5</td><td>24.1</td><td>3.9</td><td>72.1</td><td>70.0</td><td>450.0</td><td>18.57</td><td>513.4</td><td>24.2</td><td>2.8</td><td>72.8</td> </tr> <tr> <td>1.9</td><td>90</td><td>70.0</td><td>450.0</td><td>18.19</td><td>512.1</td><td>24.7</td><td>1.8</td><td>72.8</td><td>75.6</td><td>485.0</td><td>19.00</td><td>549.8</td><td>25.5</td><td>3.8</td><td>74.4</td><td>78.8</td><td>505.0</td><td>19.63</td><td>572.0</td><td>25.7</td><td>2.8</td><td>75.4</td> </tr> <tr> <td rowspan="4">67.5</td> <td>4.1</td><td>50</td><td>37.6</td><td>278.0</td><td>14.73</td><td>328.3</td><td>18.9</td><td>2.0</td><td>59.7</td><td>41.2</td><td>298.0</td><td>15.09</td><td>349.5</td><td>19.8</td><td>4.2</td><td>60.4</td><td>43.1</td><td>310.0</td><td>15.43</td><td>362.7</td><td>20.1</td><td>3.0</td><td>60.7</td> </tr> <tr> <td>4.1</td><td>60</td><td>45.8</td><td>320.0</td><td>15.21</td><td>371.9</td><td>21.0</td><td>2.0</td><td>61.0</td><td>49.8</td><td>344.0</td><td>15.63</td><td>397.4</td><td>22.0</td><td>4.1</td><td>61.8</td><td>52.0</td><td>358.0</td><td>16.03</td><td>412.7</td><td>22.3</td><td>2.9</td><td>62.2</td> </tr> <tr> <td>4.0</td><td>70</td><td>53.8</td><td>364.0</td><td>15.77</td><td>417.8</td><td>23.1</td><td>1.9</td><td>62.4</td><td>58.3</td><td>394.0</td><td>16.28</td><td>449.6</td><td>24.2</td><td>4.0</td><td>63.3</td><td>60.9</td><td>410.0</td><td>16.72</td><td>467.1</td><td>24.5</td><td>2.9</td><td>63.8</td> </tr> <tr> <td>4.0</td><td>80</td><td>61.8</td><td>410.0</td><td>16.41</td><td>466.0</td><td>25.0</td><td>1.9</td><td>63.8</td><td>66.8</td><td>445.0</td><td>17.02</td><td>503.1</td><td>26.1</td><td>3.9</td><td>64.9</td><td>69.7</td><td>465.0</td><td>17.53</td><td>524.8</td><td>26.5</td><td>2.8</td><td>65.6</td> </tr> <tr> <td>4.0</td><td>90</td><td>69.6</td><td>460.0</td><td>17.13</td><td>518.5</td><td>26.8</td><td>1.8</td><td>65.4</td><td>75.2</td><td>500.0</td><td>17.86</td><td>561.0</td><td>28.0</td><td>3.8</td><td>66.6</td><td>78.4</td><td>520.0</td><td>18.45</td><td>583.0</td><td>28.2</td><td>2.8</td><td>67.3</td> </tr> <tr> <td rowspan="4">90.0</td> <td>6.9</td><td>50</td><td>37.5</td><td>282.0</td><td>14.59</td><td>331.8</td><td>19.3</td><td>2.0</td><td>57.4</td><td>41.1</td><td>302.0</td><td>14.92</td><td>352.9</td><td>20.2</td><td>4.2</td><td>57.8</td><td>43.0</td><td>314.0</td><td>15.22</td><td>366.0</td><td>20.6</td><td>3.0</td><td>58.1</td> </tr> <tr> <td>6.9</td><td>60</td><td>45.6</td><td>324.0</td><td>15.02</td><td>375.3</td><td>21.6</td><td>2.0</td><td>58.3</td><td>49.7</td><td>348.0</td><td>15.42</td><td>400.6</td><td>22.6</td><td>4.1</td><td>58.9</td><td>51.9</td><td>364.0</td><td>15.79</td><td>417.9</td><td>23.1</td><td>2.9</td><td>59.3</td> </tr> <tr> <td>6.9</td><td>70</td><td>53.6</td><td>368.0</td><td>15.53</td><td>421.0</td><td>23.7</td><td>1.9</td><td>59.4</td><td>58.1</td><td>400.0</td><td>15.99</td><td>454.6</td><td>25.0</td><td>4.0</td><td>60.1</td><td>60.8</td><td>415.0</td><td>16.43</td><td>471.1</td><td>25.3</td><td>2.9</td><td>60.5</td> </tr> <tr> <td>6.8</td><td>80</td><td>61.6</td><td>415.0</td><td>16.11</td><td>470.0</td><td>25.8</td><td>1.9</td><td>60.4</td><td>66.7</td><td>450.0</td><td>16.68</td><td>506.9</td><td>27.0</td><td>3.9</td><td>61.3</td><td>69.6</td><td>470.0</td><td>17.17</td><td>528.6</td><td>27.4</td><td>2.8</td><td>61.7</td> </tr> <tr> <td>6.8</td><td>90</td><td>69.3</td><td>465.0</td><td>16.77</td><td>522.2</td><td>27.7</td><td>1.8</td><td>61.6</td><td>75.0</td><td>505.0</td><td>17.45</td><td>564.6</td><td>28.9</td><td>3.8</td><td>62.5</td><td>78.2</td><td>530.0</td><td>18.01</td><td>591.5</td><td>29.4</td><td>2.8</td><td>63.1</td> </tr> Group 70 <tr> <td rowspan="12">70</td> <td rowspan="4">45.0</td> <td>1.8</td><td>50</td><td>38.8</td><td>252.0</td><td>18.67</td><td>315.7</td><td>13.5</td><td>2.0</td><td>84.0</td><td>42.1</td><td>268.0</td><td>19.02</td><td>332.9</td><td>14.1</td><td>4.2</td><td>84.8</td><td>43.9</td><td>276.0</td><td>19.37</td><td>342.1</td><td>14.3</td><td>3.0</td><td>85.2</td> </tr> <tr> <td>1.8</td><td>60</td><td>47.1</td><td>290.0</td><td>19.21</td><td>355.6</td><td>15.1</td><td>2.0</td><td>85.8</td><td>50.8</td><td>310.0</td><td>19.63</td><td>377.0</td><td>15.8</td><td>4.1</td><td>86.8</td><td>52.8</td><td>322.0</td><td>20.05</td><td>390.4</td><td>16.1</td><td>2.9</td><td>87.4</td> </tr> <tr> <td>1.8</td><td>70</td><td>55.2</td><td>332.0</td><td>19.85</td><td>399.8</td><td>16.7</td><td>1.9</td><td>87.8</td><td>59.5</td><td>354.0</td><td>20.37</td><td>423.5</td><td>17.4</td><td>4.0</td><td>88.8</td><td>61.8</td><td>368.0</td><td>20.84</td><td>439.1</td><td>17.7</td><td>2.9</td><td>89.5</td> </tr> <tr> <td>1.8</td><td>80</td><td>63.4</td><td>374.0</td><td>20.60</td><td>444.3</td><td>18.2</td><td>1.9</td><td>89.7</td><td>68.1</td><td>400.0</td><td>21.23</td><td>472.5</td><td>18.8</td><td>3.9</td><td>91.0</td><td>70.8</td><td>415.0</td><td>21.77</td><td>489.3</td><td>19.1</td><td>2.8</td><td>91.7</td> </tr> <tr> <td>1.8</td><td>90</td><td>71.3</td><td>420.0</td><td>21.46</td><td>493.2</td><td>19.6</td><td>1.8</td><td>91.9</td><td>76.7</td><td>450.0</td><td>22.21</td><td>525.8</td><td>20.3</td><td>3.8</td><td>93.4</td><td>79.6</td><td>470.0</td><td>22.83</td><td>547.9</td><td>20.6</td><td>2.8</td><td>94.4</td> </tr> <tr> <td rowspan="4">67.5</td> <td>3.9</td><td>50</td><td>38.6</td><td>256.0</td><td>17.96</td><td>317.3</td><td>14.3</td><td>2.0</td><td>79.4</td><td>41.9</td><td>274.0</td><td>18.26</td><td>336.3</td><td>15.0</td><td>4.2</td><td>80.0</td><td>43.7</td><td>284.0</td><td>18.59</td><td>347.5</td><td>15.3</td><td>3.0</td><td>80.3</td> </tr> <tr> <td>3.9</td><td>60</td><td>46.8</td><td>296.0</td><td>18.38</td><td>358.7</td><td>16.1</td><td>2.0</td><td>80.6</td><td>50.6</td><td>318.0</td><td>18.76</td><td>382.0</td><td>17.0</td><td>4.1</td><td>81.3</td><td>52.7</td><td>330.0</td><td>19.13</td><td>395.3</td><td>17.3</td><td>2.9</td><td>81.7</td> </tr> <tr> <td>3.8</td><td>70</td><td>55.0</td><td>338.0</td><td>18.91</td><td>402.5</td><td>17.9</td><td>1.9</td><td>81.9</td><td>59.2</td><td>364.0</td><td>19.37</td><td>430.1</td><td>18.8</td><td>4.0</td><td>82.7</td><td>61.6</td><td>378.0</td><td>19.78</td><td>445.5</td><td>19.1</td><td>2.9</td><td>83.2</td> </tr> <tr> <td>3.8</td><td>80</td><td>62.9</td><td>384.0</td><td>19.52</td><td>450.6</td><td>19.7</td><td>1.9</td><td>83.4</td><td>67.7</td><td>415.0</td><td>20.08</td><td>483.5</td><td>20.7</td><td>3.9</td><td>84.3</td><td>70.4</td><td>430.0</td><td>20.56</td><td>500.2</td><td>20.9</td><td>2.8</td><td>84.8</td> </tr> <tr> <td>3.8</td><td>90</td><td>70.9</td><td>430.0</td><td>20.23</td><td>499.1</td><td>21.3</td><td>1.8</td><td>84.8</td><td>76.2</td><td>465.0</td><td>20.91</td><td>536.4</td><td>22.2</td><td>3.8</td><td>85.9</td><td>79.2</td><td>485.0</td><td>21.46</td><td>558.2</td><td>22.6</td><td>2.8</td><td>86.5</td> </tr> <tr> <td rowspan="4">90.0</td> <td>6.5</td><td>50</td><td>38.5</td><td>258.0</td><td>17.76</td><td>318.6</td><td>14.5</td><td>2.0</td><td>77.1</td><td>41.8</td><td>276.0</td><td>18.04</td><td>337.6</td><td>15.3</td><td>4.2</td><td>77.5</td><td>43.6</td><td>286.0</td><td>18.36</td><td>348.7</td><td>15.6</td><td>3.0</td><td>77.7</td> </tr> <tr> <td>6.5</td><td>60</td><td>46.7</td><td>300.0</td><td>18.13</td><td>361.9</td><td>16.5</td><td>2.0</td><td>78.0</td><td>50.5</td><td>322.0</td><td>18.48</td><td>385.1</td><td>17.4</td><td>4.1</td><td>78.6</td><td>52.6</td><td>334.0</td><td>18.82</td><td>398.2</td><td>17.7</td><td>2.9</td><td>78.8</td> </tr> <tr> <td>6.5</td><td>70</td><td>54.8</td><td>342.0</td><td>18.59</td><td>405.5</td><td>18.4</td><td>1.9</td><td>79.0</td><td>59.1</td><td>368.0</td><td>19.02</td><td>432.9</td><td>19.4</td><td>4.0</td><td>79.6</td><td>61.5</td><td>384.0</td><td>19.41</td><td>450.2</td><td>19.8</td><td>2.9</td><td>80.0</td> </tr> <tr> <td>6.5</td><td>80</td><td>62.8</td><td>388.0</td><td>19.14</td><td>453.3</td><td>20.3</td><td>1.9</td><td>80.1</td><td>67.6</td><td>420.0</td><td>19.66</td><td>487.1</td><td>21.4</td><td>3.9</td><td>80.8</td><td>70.2</td><td>440.0</td><td>20.11</td><td>508.6</td><td>21.9</td><td>2.8</td><td>81.3</td> </tr> <tr> <td>6.5</td><td>90</td><td>70.7</td><td>435.0</td><td>19.78</td><td>502.5</td><td>22.0</td><td>1.8</td><td>81.2</td><td>76.1</td><td>470.0</td><td>20.41</td><td>539.7</td><td>23.0</td><td>3.8</td><td>82.0</td><td>79.0</td><td>495.0</td><td>20.94</td><td>566.5</td><td>23.6</td><td>2.8</td><td>82.6</td> </tr> Group 80 <tr> <td rowspan="12">80</td> <td rowspan="4">45.0</td> <td>1.8</td><td>50</td><td>39.3</td><td>240.0</td><td>20.68</td><td>310.6</td><td>11.6</td><td>2.0</td><td>93.8</td><td>42.4</td><td>256.0</td><td>21.01</td><td>327.7</td><td>12.2</td><td>4.2</td><td>94.6</td><td>44.1</td><td>264.0</td><td>21.36</td><td>336.9</td><td>12.4</td><td>3.0</td><td>95.0</td> </tr> <tr> <td>1.8</td><td>60</td><td>47.6</td><td>278.0</td><td>21.20</td><td>350.4</td><td>13.1</td><td>2.0</td><td>95.6</td><td>51.2</td><td>296.0</td><td>21.62</td><td>369.8</td><td>13.7</td><td>4.1</td><td>96.4</td><td>53.2</td><td>306.0</td><td>22.01</td><td>381.1</td><td>13.9</td><td>2.9</td><td>96.9</td> </tr> <tr> <td>1.8</td><td>70</td><td>55.9</td><td>318.0</td><td>21.84</td><td>392.5</td><td>14.6</td><td>1.9</td><td>97.4</td><td>59.9</td><td>340.0</td><td>22.35</td><td>416.3</td><td>15.2</td><td>4.0</td><td>98.5</td><td>62.2</td><td>352.0</td><td>22.79</td><td>429.8</td><td>15.4</td><td>2.9</td><td>99.1</td> </tr> <tr> <td>1.8</td><td>80</td><td>64.0</td><td>360.0</td><td>22.58</td><td>437.1</td><td>15.9</td><td>1.9</td><td>99.4</td><td>68.6</td><td>384.0</td><td>23.17</td><td>463.1</td><td>16.6</td><td>3.9</td><td>100.6</td><td>71.1</td><td>400.0</td><td>23.71</td><td>480.9</td><td>16.9</td><td>2.8</td><td>101.4</td> </tr> <tr> <td>1.8</td><td>90</td><td>72.0</td><td>405.0</td><td>23.44</td><td>485.0</td><td>17.3</td><td>1.8</td><td>101.6</td><td>77.3</td><td>430.0</td><td>24.16</td><td>512.5</td><td>17.8</td><td>3.8</td><td>102.8</td><td>80.0</td><td>450.0</td><td>24.77</td><td>534.5</td><td>18.2</td><td>2.8</td><td>103.8</td> </tr> <tr> <td rowspan="4">67.5</td> <td>3.8</td><td>50</td><td>39.2</td><td>244.0</td><td>19.92</td><td>312.0</td><td>12.2</td><td>2.0</td><td>89.2</td><td>42.2</td><td>262.0</td><td>20.21</td><td>331.0</td><td>13.0</td><td>4.2</td><td>89.8</td><td>44.0</td><td>270.0</td><td>20.52</td><td>340.0</td><td>13.2</td><td>3.0</td><td>90.1</td> </tr> <tr> <td>3.8</td><td>60</td><td>47.4</td><td>284.0</td><td>20.32</td><td>353.4</td><td>14.0</td><td>2.0</td><td>90.5</td><td>51.1</td><td>302.0</td><td>20.67</td><td>372.5</td><td>14.6</td><td>4.1</td><td>91.0</td><td>53.0</td><td>314.0</td><td>21.03</td><td>385.8</td><td>14.9</td><td>2.9</td><td>91.4</td> </tr> <tr> <td>3.8</td><td>70</td><td>55.5</td><td>326.0</td><td>20.82</td><td>397.0</td><td>15.7</td><td>1.9</td><td>91.8</td><td>59.7</td><td>348.0</td><td>21.25</td><td>420.5</td><td>16.4</td><td>4.0</td><td>92.5</td><td>62.0</td><td>362.0</td><td>21.66</td><td>435.9</td><td>16.7</td><td>2.9</td><td>92.9</td> </tr> <tr> <td>3.8</td><td>80</td><td>63.6</td><td>368.0</td><td>21.42</td><td>441.1</td><td>17.2</td><td>1.9</td><td>93.1</td><td>68.</td></tr>																										40	45.0	2.0	50	37.4	284.0	13.99	331.8	20.3	2.0	54.7	41.0	304.0	14.40	353.2	21.1	4.2	55.7	43.0	316.0	14.79	366.5	21.4	3.0	56.3	2.0	60	45.6	324.0	14.58	373.8	22.2	2.0	56.6	49.7	348.0	15.07	399.4	23.1	4.1	57.8	52.0	362.0	15.51	414.9	23.3	2.9	58.4	2.0	70	53.6	368.0	15.26	420.1	24.1	1.9	58.7	58.3	396.0	15.84	450.1	25.0	4.0	60.0	60.8	415.0	16.34	470.8	25.4	2.9	60.9	2.0	80	61.6	415.0	16.02	469.7	25.9	1.9	60.9	66.8	445.0	16.71	502.0	26.6	3.9	62.3	69.7	465.0	17.28	524.0	26.9	2.8	63.3	2.0	90	69.6	460.0	16.86	517.6	27.3	1.8	63.0	75.2	500.0	17.69	560.4	28.3	3.8	64.9	78.4	520.0	18.33	582.6	28.4	2.8	65.9	67.5	4.2	50	37.1	290.0	13.42	335.8	21.6	2.0	50.0	40.8	310.0	13.80	357.1	22.5	4.2	50.6	42.8	324.0	14.16	372.3	22.9	3.0	51.0	4.2	60	45.2	332.0	13.93	379.5	23.8	2.0	51.2	49.4	358.0	14.37	407.0	24.9	4.1	52.1	51.7	372.0	14.77	422.4	25.2	2.9	52.5	4.2	70	53.3	376.0	14.50	425.5	25.9	1.9	52.6	58.0	405.0	15.03	456.3	26.9	4.0	53.5	60.6	425.0	15.49	477.9	27.4	2.9	54.2	4.1	80	61.1	425.0	15.15	476.7	28.1	1.9	54.1	66.4	460.0	15.78	513.9	29.2	3.9	55.2	69.3	480.0	16.30	535.6	29.5	2.8	55.9	4.1	90	68.9	475.0	15.88	529.2	29.9	1.8	55.7	74.7	515.0	16.63	571.8	31.0	3.8	56.9	78.0	540.0	17.23	598.8	31.3	2.8	57.7	90.0	7.1	50	37.0	292.0	13.30	337.4	21.9	2.0	47.5	40.7	314.0	13.66	360.6	23.0	4.2	48.0	42.7	328.0	14.00	375.8	23.4	3.0	48.4	7.1	60	45.1	336.0	13.76	383.0	24.4	2.0	48.5	49.3	362.0	14.18	410.4	25.5	4.1	49.1	51.6	378.0	14.57	427.7	25.9	2.9	49.5	7.1	70	53.0	382.0	14.29	430.8	26.7	1.9	49.6	57.9	410.0	14.79	460.5	27.7	4.0	50.2	60.4	430.0	15.23	482.0	28.2	2.9	50.7	7.0	80	60.9	430.0	14.88	480.8	28.9	1.9	50.7	66.2	465.0	15.47	517.8	30.1	3.9	51.5	69.1	490.0	15.97	544.5	30.7	2.8	52.1	7.0	90	68.7	480.0	15.56	533.1	30.9	1.8	51.8	74.4	525.0	16.26	580.5	32.3	3.8	52.9	77.8	550.0	16.81	607.4	32.7	2.8	53.5	50	45.0	1.9	50	37.8	274.0	15.34	326.4	17.9	2.0	64.5	41.3	292.0	15.74	345.7	18.6	4.2	65.4	43.2	304.0	16.12	359.0	18.9	3.0	66.0	1.9	60	46.0	314.0	15.92	368.3	19.7	2.0	66.4	50.0	336.0	16.39	391.9	20.5	4.1	67.4	52.2	350.0	16.82	407.4	20.8	2.9	68.1	1.9	70	54.2	356.0	16.59	412.6	21.5	1.9	68.3	58.6	384.0	17.15	442.5	22.4	4.0	69.7	61.1	400.0	17.64	460.2	22.7	2.9	70.5	1.9	80	62.2	400.0	17.34	459.2	23.1	1.9	70.4	67.1	435.0	18.02	496.5	24.1	3.9	72.1	70.0	450.0	18.57	513.4	24.2	2.8	72.8	1.9	90	70.0	450.0	18.19	512.1	24.7	1.8	72.8	75.6	485.0	19.00	549.8	25.5	3.8	74.4	78.8	505.0	19.63	572.0	25.7	2.8	75.4	67.5	4.1	50	37.6	278.0	14.73	328.3	18.9	2.0	59.7	41.2	298.0	15.09	349.5	19.8	4.2	60.4	43.1	310.0	15.43	362.7	20.1	3.0	60.7	4.1	60	45.8	320.0	15.21	371.9	21.0	2.0	61.0	49.8	344.0	15.63	397.4	22.0	4.1	61.8	52.0	358.0	16.03	412.7	22.3	2.9	62.2	4.0	70	53.8	364.0	15.77	417.8	23.1	1.9	62.4	58.3	394.0	16.28	449.6	24.2	4.0	63.3	60.9	410.0	16.72	467.1	24.5	2.9	63.8	4.0	80	61.8	410.0	16.41	466.0	25.0	1.9	63.8	66.8	445.0	17.02	503.1	26.1	3.9	64.9	69.7	465.0	17.53	524.8	26.5	2.8	65.6	4.0	90	69.6	460.0	17.13	518.5	26.8	1.8	65.4	75.2	500.0	17.86	561.0	28.0	3.8	66.6	78.4	520.0	18.45	583.0	28.2	2.8	67.3	90.0	6.9	50	37.5	282.0	14.59	331.8	19.3	2.0	57.4	41.1	302.0	14.92	352.9	20.2	4.2	57.8	43.0	314.0	15.22	366.0	20.6	3.0	58.1	6.9	60	45.6	324.0	15.02	375.3	21.6	2.0	58.3	49.7	348.0	15.42	400.6	22.6	4.1	58.9	51.9	364.0	15.79	417.9	23.1	2.9	59.3	6.9	70	53.6	368.0	15.53	421.0	23.7	1.9	59.4	58.1	400.0	15.99	454.6	25.0	4.0	60.1	60.8	415.0	16.43	471.1	25.3	2.9	60.5	6.8	80	61.6	415.0	16.11	470.0	25.8	1.9	60.4	66.7	450.0	16.68	506.9	27.0	3.9	61.3	69.6	470.0	17.17	528.6	27.4	2.8	61.7	6.8	90	69.3	465.0	16.77	522.2	27.7	1.8	61.6	75.0	505.0	17.45	564.6	28.9	3.8	62.5	78.2	530.0	18.01	591.5	29.4	2.8	63.1	70	45.0	1.8	50	38.8	252.0	18.67	315.7	13.5	2.0	84.0	42.1	268.0	19.02	332.9	14.1	4.2	84.8	43.9	276.0	19.37	342.1	14.3	3.0	85.2	1.8	60	47.1	290.0	19.21	355.6	15.1	2.0	85.8	50.8	310.0	19.63	377.0	15.8	4.1	86.8	52.8	322.0	20.05	390.4	16.1	2.9	87.4	1.8	70	55.2	332.0	19.85	399.8	16.7	1.9	87.8	59.5	354.0	20.37	423.5	17.4	4.0	88.8	61.8	368.0	20.84	439.1	17.7	2.9	89.5	1.8	80	63.4	374.0	20.60	444.3	18.2	1.9	89.7	68.1	400.0	21.23	472.5	18.8	3.9	91.0	70.8	415.0	21.77	489.3	19.1	2.8	91.7	1.8	90	71.3	420.0	21.46	493.2	19.6	1.8	91.9	76.7	450.0	22.21	525.8	20.3	3.8	93.4	79.6	470.0	22.83	547.9	20.6	2.8	94.4	67.5	3.9	50	38.6	256.0	17.96	317.3	14.3	2.0	79.4	41.9	274.0	18.26	336.3	15.0	4.2	80.0	43.7	284.0	18.59	347.5	15.3	3.0	80.3	3.9	60	46.8	296.0	18.38	358.7	16.1	2.0	80.6	50.6	318.0	18.76	382.0	17.0	4.1	81.3	52.7	330.0	19.13	395.3	17.3	2.9	81.7	3.8	70	55.0	338.0	18.91	402.5	17.9	1.9	81.9	59.2	364.0	19.37	430.1	18.8	4.0	82.7	61.6	378.0	19.78	445.5	19.1	2.9	83.2	3.8	80	62.9	384.0	19.52	450.6	19.7	1.9	83.4	67.7	415.0	20.08	483.5	20.7	3.9	84.3	70.4	430.0	20.56	500.2	20.9	2.8	84.8	3.8	90	70.9	430.0	20.23	499.1	21.3	1.8	84.8	76.2	465.0	20.91	536.4	22.2	3.8	85.9	79.2	485.0	21.46	558.2	22.6	2.8	86.5	90.0	6.5	50	38.5	258.0	17.76	318.6	14.5	2.0	77.1	41.8	276.0	18.04	337.6	15.3	4.2	77.5	43.6	286.0	18.36	348.7	15.6	3.0	77.7	6.5	60	46.7	300.0	18.13	361.9	16.5	2.0	78.0	50.5	322.0	18.48	385.1	17.4	4.1	78.6	52.6	334.0	18.82	398.2	17.7	2.9	78.8	6.5	70	54.8	342.0	18.59	405.5	18.4	1.9	79.0	59.1	368.0	19.02	432.9	19.4	4.0	79.6	61.5	384.0	19.41	450.2	19.8	2.9	80.0	6.5	80	62.8	388.0	19.14	453.3	20.3	1.9	80.1	67.6	420.0	19.66	487.1	21.4	3.9	80.8	70.2	440.0	20.11	508.6	21.9	2.8	81.3	6.5	90	70.7	435.0	19.78	502.5	22.0	1.8	81.2	76.1	470.0	20.41	539.7	23.0	3.8	82.0	79.0	495.0	20.94	566.5	23.6	2.8	82.6	80	45.0	1.8	50	39.3	240.0	20.68	310.6	11.6	2.0	93.8	42.4	256.0	21.01	327.7	12.2	4.2	94.6	44.1	264.0	21.36	336.9	12.4	3.0	95.0	1.8	60	47.6	278.0	21.20	350.4	13.1	2.0	95.6	51.2	296.0	21.62	369.8	13.7	4.1	96.4	53.2	306.0	22.01	381.1	13.9	2.9	96.9	1.8	70	55.9	318.0	21.84	392.5	14.6	1.9	97.4	59.9	340.0	22.35	416.3	15.2	4.0	98.5	62.2	352.0	22.79	429.8	15.4	2.9	99.1	1.8	80	64.0	360.0	22.58	437.1	15.9	1.9	99.4	68.6	384.0	23.17	463.1	16.6	3.9	100.6	71.1	400.0	23.71	480.9	16.9	2.8	101.4	1.8	90	72.0	405.0	23.44	485.0	17.3	1.8	101.6	77.3	430.0	24.16	512.5	17.8	3.8	102.8	80.0	450.0	24.77	534.5	18.2	2.8	103.8	67.5	3.8	50	39.2	244.0	19.92	312.0	12.2	2.0	89.2	42.2	262.0	20.21	331.0	13.0	4.2	89.8	44.0	270.0	20.52	340.0	13.2	3.0	90.1	3.8	60	47.4	284.0	20.32	353.4	14.0	2.0	90.5	51.1	302.0	20.67	372.5	14.6	4.1	91.0	53.0	314.0	21.03	385.8	14.9	2.9	91.4	3.8	70	55.5	326.0	20.82	397.0	15.7	1.9	91.8	59.7	348.0	21.25	420.5	16.4	4.0	92.5	62.0	362.0	21.66	435.9	16.7	2.9	92.9	3.8	80	63.6	368.0	21.42	441.1
40	45.0	2.0	50	37.4	284.0	13.99	331.8	20.3	2.0	54.7	41.0	304.0	14.40	353.2	21.1	4.2	55.7	43.0	316.0	14.79	366.5	21.4	3.0	56.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		2.0	60	45.6	324.0	14.58	373.8	22.2	2.0	56.6	49.7	348.0	15.07	399.4	23.1	4.1	57.8	52.0	362.0	15.51	414.9	23.3	2.9	58.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		2.0	70	53.6	368.0	15.26	420.1	24.1	1.9	58.7	58.3	396.0	15.84	450.1	25.0	4.0	60.0	60.8	415.0	16.34	470.8	25.4	2.9	60.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		2.0	80	61.6	415.0	16.02	469.7	25.9	1.9	60.9	66.8	445.0	16.71	502.0	26.6	3.9	62.3	69.7	465.0	17.28	524.0	26.9	2.8	63.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	2.0	90	69.6	460.0	16.86	517.6	27.3	1.8	63.0	75.2	500.0	17.69	560.4	28.3	3.8	64.9	78.4	520.0	18.33	582.6	28.4	2.8	65.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	67.5	4.2	50	37.1	290.0	13.42	335.8	21.6	2.0	50.0	40.8	310.0	13.80	357.1	22.5	4.2	50.6	42.8	324.0	14.16	372.3	22.9	3.0	51.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.2	60	45.2	332.0	13.93	379.5	23.8	2.0	51.2	49.4	358.0	14.37	407.0	24.9	4.1	52.1	51.7	372.0	14.77	422.4	25.2	2.9	52.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.2	70	53.3	376.0	14.50	425.5	25.9	1.9	52.6	58.0	405.0	15.03	456.3	26.9	4.0	53.5	60.6	425.0	15.49	477.9	27.4	2.9	54.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.1	80	61.1	425.0	15.15	476.7	28.1	1.9	54.1	66.4	460.0	15.78	513.9	29.2	3.9	55.2	69.3	480.0	16.30	535.6	29.5	2.8	55.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	4.1	90	68.9	475.0	15.88	529.2	29.9	1.8	55.7	74.7	515.0	16.63	571.8	31.0	3.8	56.9	78.0	540.0	17.23	598.8	31.3	2.8	57.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	90.0	7.1	50	37.0	292.0	13.30	337.4	21.9	2.0	47.5	40.7	314.0	13.66	360.6	23.0	4.2	48.0	42.7	328.0	14.00	375.8	23.4	3.0	48.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		7.1	60	45.1	336.0	13.76	383.0	24.4	2.0	48.5	49.3	362.0	14.18	410.4	25.5	4.1	49.1	51.6	378.0	14.57	427.7	25.9	2.9	49.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
7.1		70	53.0	382.0	14.29	430.8	26.7	1.9	49.6	57.9	410.0	14.79	460.5	27.7	4.0	50.2	60.4	430.0	15.23	482.0	28.2	2.9	50.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
7.0		80	60.9	430.0	14.88	480.8	28.9	1.9	50.7	66.2	465.0	15.47	517.8	30.1	3.9	51.5	69.1	490.0	15.97	544.5	30.7	2.8	52.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
7.0	90	68.7	480.0	15.56	533.1	30.9	1.8	51.8	74.4	525.0	16.26	580.5	32.3	3.8	52.9	77.8	550.0	16.81	607.4	32.7	2.8	53.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
50	45.0	1.9	50	37.8	274.0	15.34	326.4	17.9	2.0	64.5	41.3	292.0	15.74	345.7	18.6	4.2	65.4	43.2	304.0	16.12	359.0	18.9	3.0	66.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.9	60	46.0	314.0	15.92	368.3	19.7	2.0	66.4	50.0	336.0	16.39	391.9	20.5	4.1	67.4	52.2	350.0	16.82	407.4	20.8	2.9	68.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.9	70	54.2	356.0	16.59	412.6	21.5	1.9	68.3	58.6	384.0	17.15	442.5	22.4	4.0	69.7	61.1	400.0	17.64	460.2	22.7	2.9	70.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.9	80	62.2	400.0	17.34	459.2	23.1	1.9	70.4	67.1	435.0	18.02	496.5	24.1	3.9	72.1	70.0	450.0	18.57	513.4	24.2	2.8	72.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	1.9	90	70.0	450.0	18.19	512.1	24.7	1.8	72.8	75.6	485.0	19.00	549.8	25.5	3.8	74.4	78.8	505.0	19.63	572.0	25.7	2.8	75.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	67.5	4.1	50	37.6	278.0	14.73	328.3	18.9	2.0	59.7	41.2	298.0	15.09	349.5	19.8	4.2	60.4	43.1	310.0	15.43	362.7	20.1	3.0	60.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.1	60	45.8	320.0	15.21	371.9	21.0	2.0	61.0	49.8	344.0	15.63	397.4	22.0	4.1	61.8	52.0	358.0	16.03	412.7	22.3	2.9	62.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.0	70	53.8	364.0	15.77	417.8	23.1	1.9	62.4	58.3	394.0	16.28	449.6	24.2	4.0	63.3	60.9	410.0	16.72	467.1	24.5	2.9	63.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		4.0	80	61.8	410.0	16.41	466.0	25.0	1.9	63.8	66.8	445.0	17.02	503.1	26.1	3.9	64.9	69.7	465.0	17.53	524.8	26.5	2.8	65.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	4.0	90	69.6	460.0	17.13	518.5	26.8	1.8	65.4	75.2	500.0	17.86	561.0	28.0	3.8	66.6	78.4	520.0	18.45	583.0	28.2	2.8	67.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	90.0	6.9	50	37.5	282.0	14.59	331.8	19.3	2.0	57.4	41.1	302.0	14.92	352.9	20.2	4.2	57.8	43.0	314.0	15.22	366.0	20.6	3.0	58.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		6.9	60	45.6	324.0	15.02	375.3	21.6	2.0	58.3	49.7	348.0	15.42	400.6	22.6	4.1	58.9	51.9	364.0	15.79	417.9	23.1	2.9	59.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
6.9		70	53.6	368.0	15.53	421.0	23.7	1.9	59.4	58.1	400.0	15.99	454.6	25.0	4.0	60.1	60.8	415.0	16.43	471.1	25.3	2.9	60.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.8		80	61.6	415.0	16.11	470.0	25.8	1.9	60.4	66.7	450.0	16.68	506.9	27.0	3.9	61.3	69.6	470.0	17.17	528.6	27.4	2.8	61.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.8	90	69.3	465.0	16.77	522.2	27.7	1.8	61.6	75.0	505.0	17.45	564.6	28.9	3.8	62.5	78.2	530.0	18.01	591.5	29.4	2.8	63.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
70	45.0	1.8	50	38.8	252.0	18.67	315.7	13.5	2.0	84.0	42.1	268.0	19.02	332.9	14.1	4.2	84.8	43.9	276.0	19.37	342.1	14.3	3.0	85.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	60	47.1	290.0	19.21	355.6	15.1	2.0	85.8	50.8	310.0	19.63	377.0	15.8	4.1	86.8	52.8	322.0	20.05	390.4	16.1	2.9	87.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	70	55.2	332.0	19.85	399.8	16.7	1.9	87.8	59.5	354.0	20.37	423.5	17.4	4.0	88.8	61.8	368.0	20.84	439.1	17.7	2.9	89.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	80	63.4	374.0	20.60	444.3	18.2	1.9	89.7	68.1	400.0	21.23	472.5	18.8	3.9	91.0	70.8	415.0	21.77	489.3	19.1	2.8	91.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	1.8	90	71.3	420.0	21.46	493.2	19.6	1.8	91.9	76.7	450.0	22.21	525.8	20.3	3.8	93.4	79.6	470.0	22.83	547.9	20.6	2.8	94.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	67.5	3.9	50	38.6	256.0	17.96	317.3	14.3	2.0	79.4	41.9	274.0	18.26	336.3	15.0	4.2	80.0	43.7	284.0	18.59	347.5	15.3	3.0	80.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.9	60	46.8	296.0	18.38	358.7	16.1	2.0	80.6	50.6	318.0	18.76	382.0	17.0	4.1	81.3	52.7	330.0	19.13	395.3	17.3	2.9	81.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.8	70	55.0	338.0	18.91	402.5	17.9	1.9	81.9	59.2	364.0	19.37	430.1	18.8	4.0	82.7	61.6	378.0	19.78	445.5	19.1	2.9	83.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.8	80	62.9	384.0	19.52	450.6	19.7	1.9	83.4	67.7	415.0	20.08	483.5	20.7	3.9	84.3	70.4	430.0	20.56	500.2	20.9	2.8	84.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	3.8	90	70.9	430.0	20.23	499.1	21.3	1.8	84.8	76.2	465.0	20.91	536.4	22.2	3.8	85.9	79.2	485.0	21.46	558.2	22.6	2.8	86.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	90.0	6.5	50	38.5	258.0	17.76	318.6	14.5	2.0	77.1	41.8	276.0	18.04	337.6	15.3	4.2	77.5	43.6	286.0	18.36	348.7	15.6	3.0	77.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		6.5	60	46.7	300.0	18.13	361.9	16.5	2.0	78.0	50.5	322.0	18.48	385.1	17.4	4.1	78.6	52.6	334.0	18.82	398.2	17.7	2.9	78.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
6.5		70	54.8	342.0	18.59	405.5	18.4	1.9	79.0	59.1	368.0	19.02	432.9	19.4	4.0	79.6	61.5	384.0	19.41	450.2	19.8	2.9	80.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.5		80	62.8	388.0	19.14	453.3	20.3	1.9	80.1	67.6	420.0	19.66	487.1	21.4	3.9	80.8	70.2	440.0	20.11	508.6	21.9	2.8	81.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.5	90	70.7	435.0	19.78	502.5	22.0	1.8	81.2	76.1	470.0	20.41	539.7	23.0	3.8	82.0	79.0	495.0	20.94	566.5	23.6	2.8	82.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
80	45.0	1.8	50	39.3	240.0	20.68	310.6	11.6	2.0	93.8	42.4	256.0	21.01	327.7	12.2	4.2	94.6	44.1	264.0	21.36	336.9	12.4	3.0	95.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	60	47.6	278.0	21.20	350.4	13.1	2.0	95.6	51.2	296.0	21.62	369.8	13.7	4.1	96.4	53.2	306.0	22.01	381.1	13.9	2.9	96.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	70	55.9	318.0	21.84	392.5	14.6	1.9	97.4	59.9	340.0	22.35	416.3	15.2	4.0	98.5	62.2	352.0	22.79	429.8	15.4	2.9	99.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		1.8	80	64.0	360.0	22.58	437.1	15.9	1.9	99.4	68.6	384.0	23.17	463.1	16.6	3.9	100.6	71.1	400.0	23.71	480.9	16.9	2.8	101.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	1.8	90	72.0	405.0	23.44	485.0	17.3	1.8	101.6	77.3	430.0	24.16	512.5	17.8	3.8	102.8	80.0	450.0	24.77	534.5	18.2	2.8	103.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	67.5	3.8	50	39.2	244.0	19.92	312.0	12.2	2.0	89.2	42.2	262.0	20.21	331.0	13.0	4.2	89.8	44.0	270.0	20.52	340.0	13.2	3.0	90.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.8	60	47.4	284.0	20.32	353.4	14.0	2.0	90.5	51.1	302.0	20.67	372.5	14.6	4.1	91.0	53.0	314.0	21.03	385.8	14.9	2.9	91.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.8	70	55.5	326.0	20.82	397.0	15.7	1.9	91.8	59.7	348.0	21.25	420.5	16.4	4.0	92.5	62.0	362.0	21.66	435.9	16.7	2.9	92.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		3.8	80	63.6	368.0	21.42	441.1	17.2	1.9	93.1	68.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

WRA, WCA 360 – Cooling (continued)

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	45.0	1.7	50	40.9	204.0	28.28	300.5	7.2	2.0	123.4	43.6	216.0	28.63	313.7	7.5	4.2	123.9	45.1	222.0	28.98	320.9	7.7	3.0	124.3
		1.7	60	49.4	238.0	28.92	336.7	8.2	1.9	125.0	52.5	252.0	29.29	352.0	8.6	4.1	125.6	54.2	260.0	29.64	361.2	8.8	2.9	126.1
		1.7	70	57.8	274.0	29.54	374.8	9.3	1.9	126.7	61.4	290.0	29.98	392.3	9.7	3.9	127.4	63.4	296.0	30.34	399.6	9.8	2.9	127.8
		1.7	80	66.2	310.0	30.27	413.3	10.2	1.9	128.4	70.2	330.0	30.80	435.1	10.7	3.9	129.3	72.4	340.0	31.26	446.7	10.9	2.8	129.9
	1.7	90	74.4	350.0	31.12	456.2	11.2	1.8	130.3	79.0	372.0	31.78	480.5	11.7	3.8	131.4	81.5	384.0	32.28	494.2	11.9	2.8	132.0	
	67.5	3.6	50	40.8	208.0	27.47	301.8	7.6	2.0	118.9	43.5	218.0	27.75	312.7	7.9	4.2	119.3	45.0	226.0	28.09	321.9	8.0	3.0	119.5
		3.5	60	49.2	242.0	27.94	337.4	8.7	1.9	120.0	52.4	256.0	28.21	352.3	9.1	4.0	120.4	54.1	266.0	28.55	363.4	9.3	2.9	120.8
		3.5	70	57.6	280.0	28.38	376.8	9.9	1.9	121.2	61.2	296.0	28.70	394.0	10.3	3.9	121.7	63.2	306.0	29.06	405.2	10.5	2.9	122.0
		3.5	80	65.8	320.0	28.93	418.8	11.1	1.9	122.4	70.0	338.0	29.34	438.1	11.5	3.9	123.0	72.2	352.0	29.79	453.7	11.8	2.8	123.4
	3.5	90	74.0	360.0	29.55	460.8	12.2	1.8	123.7	78.6	384.0	30.11	486.8	12.8	3.8	124.4	81.2	398.0	30.62	502.5	13.0	2.8	124.9	
	90.0	6.0	50	40.7	210.0	27.20	302.8	7.7	2.0	116.7	43.5	220.0	27.45	313.7	8.0	4.2	117.0	44.9	228.0	27.79	322.8	8.2	3.0	117.2
		6.0	60	49.2	244.0	27.58	338.1	8.8	1.9	117.5	52.3	260.0	27.82	354.9	9.3	4.0	117.9	54.0	268.0	28.09	363.9	9.5	2.9	118.1
6.0		70	57.4	284.0	27.89	379.2	10.2	1.9	118.4	61.1	300.0	28.18	396.2	10.6	3.9	118.8	63.1	310.0	28.54	407.4	10.9	2.9	119.1	
6.0		80	65.6	324.0	28.34	420.7	11.4	1.9	119.3	69.8	344.0	28.71	442.0	12.0	3.9	119.8	72.0	358.0	29.12	457.4	12.3	2.8	120.2	
6.0	90	73.7	366.0	28.89	464.6	12.7	1.8	120.3	78.4	390.0	29.38	490.3	13.3	3.8	120.9	81.0	405.0	29.85	506.9	13.6	2.8	121.3		
120	45.0	1.7	50	41.5	192.0	31.29	298.8	6.1	2.0	133.3	44.1	200.0	31.62	307.9	6.3	4.2	133.7	45.4	208.0	31.97	317.1	6.5	3.0	134.1
		1.7	60	50.0	224.0	31.94	333.0	7.0	1.9	134.8	53.0	236.0	32.33	346.3	7.3	4.0	135.4	54.6	244.0	32.70	355.6	7.5	2.9	135.8
		1.7	70	58.5	258.0	32.66	369.5	7.9	1.9	136.4	61.9	274.0	33.08	386.9	8.3	3.9	137.2	63.7	282.0	33.46	396.2	8.4	2.9	137.6
		1.6	80	66.9	294.0	33.39	408.0	8.8	1.9	138.1	70.9	308.0	33.80	423.4	9.1	3.8	138.8	72.9	320.0	34.33	437.2	9.3	2.8	139.4
	1.6	90	75.3	330.0	34.24	446.9	9.6	1.8	139.9	79.6	350.0	34.86	469.0	10.0	3.8	140.8	82.0	360.0	35.37	480.7	10.2	2.8	141.4	
	67.5	3.5	50	41.3	196.0	30.48	300.0	6.4	2.0	128.9	44.0	204.0	30.74	308.9	6.6	4.2	129.2	45.3	212.0	31.08	318.1	6.8	3.0	129.4
		3.5	60	49.9	228.0	30.97	333.7	7.4	1.9	129.9	52.9	240.0	31.26	346.7	7.7	4.0	130.3	54.4	250.0	31.63	358.0	7.9	2.9	130.6
		3.5	70	58.3	264.0	31.49	371.5	8.4	1.9	131.0	61.8	278.0	31.78	386.5	8.7	3.9	131.5	63.6	290.0	32.17	399.8	9.0	2.9	131.8
		3.5	80	66.6	302.0	32.02	411.3	9.4	1.9	132.2	70.6	318.0	32.38	428.5	9.8	3.9	132.7	72.7	330.0	32.83	442.0	10.1	2.8	133.1
	3.5	90	74.9	340.0	32.67	451.5	10.4	1.8	133.4	79.3	362.0	33.19	475.3	10.9	3.8	134.1	81.7	374.0	33.64	488.8	11.1	2.8	134.5	
	90.0	5.9	50	41.3	196.0	30.22	299.1	6.5	2.0	126.6	43.9	206.0	30.44	309.9	6.8	4.2	126.9	45.2	214.0	30.77	319.0	7.0	3.0	127.1
		5.9	60	49.8	230.0	30.62	334.5	7.5	1.9	127.4	52.8	244.0	30.90	349.5	7.9	4.0	127.8	54.4	252.0	31.22	358.6	8.1	2.9	128.0
5.9		70	58.1	268.0	31.03	373.9	8.6	1.9	128.3	61.6	282.0	31.30	388.8	9.0	3.9	128.6	63.5	294.0	31.65	402.0	9.3	2.9	128.9	
5.9		80	66.4	306.0	31.47	413.4	9.7	1.9	129.2	70.4	324.0	31.81	432.6	10.2	3.9	129.6	72.5	336.0	32.21	445.9	10.4	2.8	129.9	
5.9	90	74.6	346.0	32.02	455.3	10.8	1.8	130.1	79.1	368.0	32.49	478.9	11.3	3.8	130.6	81.6	380.0	32.92	492.3	11.5	2.8	130.9		

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 360 – Heating

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (F)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (F)	LST °F
30	45.0	2.1	60	70.5	236.0	15.48	183.2	4.5	1.9	21.9	67.1	238.0	15.05	186.6	4.6	4.0	21.7	65.3	240.0	15.00	188.8	4.7	6.7	21.6
		2.1	80	90.0	226.0	19.18	160.5	3.5	1.8	22.9	86.8	228.0	18.70	164.2	3.6	3.8	22.7	85.1	228.0	18.61	164.5	3.6	6.4	22.7
		2.1	120	129.5	214.0	29.94	111.8	2.1	1.7	25.0	126.4	216.0	29.45	115.5	2.1	3.5	24.9	124.8	216.0	29.34	115.8	2.2	5.9	24.9
	67.5	4.4	60	70.9	246.0	15.83	192.0	4.6	1.9	24.3	67.4	250.0	15.38	197.5	4.8	4.0	24.1	65.6	250.0	15.31	197.7	4.8	6.7	24.1
		4.4	80	90.5	236.0	19.88	169.4	3.5	1.8	25.0	87.1	238.0	19.02	173.1	3.7	3.8	24.9	85.3	238.0	18.91	173.5	3.7	6.4	24.9
		4.4	100	110.0	226.0	24.38	142.8	2.7	1.7	25.8	106.8	228.0	23.83	146.7	2.8	3.6	25.7	105.1	228.0	23.70	147.1	2.8	6.1	25.6
	90.0	7.5	60	71.2	252.0	16.20	196.7	4.6	1.9	25.6	67.6	256.0	15.73	202.3	4.8	4.0	25.5	65.7	258.0	15.65	204.6	4.8	6.7	25.5
		7.5	80	90.5	240.0	19.88	172.2	3.5	1.8	26.2	87.2	242.0	19.35	175.9	3.7	3.8	26.1	85.4	244.0	19.24	178.3	3.7	6.4	26.0
		7.5	100	110.2	230.0	24.72	145.6	2.7	1.7	26.8	106.9	232.0	24.16	149.5	2.8	3.6	26.7	105.2	234.0	24.02	152.0	2.9	6.1	26.6
40	45.0	2.1	60	71.9	268.0	16.13	212.9	4.9	1.9	30.5	68.0	270.0	15.62	216.7	5.1	4.0	30.4	66.0	272.0	15.52	219.0	5.1	6.7	30.3
		2.1	80	91.5	258.0	19.01	190.1	3.8	1.8	31.5	87.6	258.0	19.30	192.1	3.9	3.8	31.5	85.8	260.0	19.15	194.6	4.0	6.4	31.3
		2.1	100	111.1	250.0	24.72	165.6	3.0	1.7	32.6	107.4	250.0	24.11	167.7	3.0	3.6	32.5	105.6	252.0	23.94	170.3	3.1	6.1	32.4
	67.5	4.3	60	72.5	282.0	16.55	225.5	5.0	1.9	33.3	68.4	284.0	16.00	229.4	5.2	4.0	33.2	66.4	286.0	15.88	231.8	5.3	6.7	33.1
		4.3	80	92.0	270.0	20.29	200.8	3.9	1.8	34.1	88.1	272.0	19.66	204.9	4.1	3.8	33.9	86.1	274.0	19.50	207.5	4.1	6.4	33.9
		4.3	100	111.6	260.0	25.01	174.6	3.0	1.7	34.8	107.8	262.0	24.33	178.9	3.2	3.6	34.7	105.8	262.0	24.14	179.6	3.2	6.1	34.7
	90.0	7.2	60	72.9	290.0	16.87	232.4	5.0	1.9	34.8	68.7	294.0	16.30	238.4	5.3	4.0	34.7	66.6	296.0	16.17	240.8	5.4	6.7	34.6
		7.2	80	92.3	276.0	20.63	205.6	3.9	1.8	35.4	88.3	280.0	19.97	211.8	4.1	3.8	35.3	86.2	280.0	19.79	212.5	4.1	6.4	35.3
		7.2	100	111.8	266.0	25.34	179.5	3.1	1.7	36.0	107.8	264.0	24.59	180.1	3.1	3.6	36.0	105.9	266.0	24.40	182.7	3.2	6.1	35.9
50	45.0	2.0	60	73.5	304.0	16.70	247.0	5.3	1.9	39.0	69.1	306.0	16.08	251.1	5.6	4.0	38.8	66.9	310.0	15.93	255.6	5.7	6.7	38.6
		2.0	80	93.0	292.0	20.46	222.2	4.2	1.8	40.1	88.7	294.0	19.75	226.6	4.4	3.8	39.9	86.6	296.0	19.54	229.3	4.4	6.4	39.8
		2.0	100	112.5	282.0	25.28	195.7	3.3	1.7	41.3	108.4	284.0	24.49	200.4	3.4	3.6	41.1	106.4	286.0	24.26	203.2	3.5	6.1	41.0
	67.5	4.2	60	74.3	322.0	17.05	263.8	5.5	1.9	42.2	69.7	326.0	16.39	270.1	5.8	4.0	42.0	67.3	328.0	16.22	272.6	5.9	6.7	41.9
		4.2	80	93.7	308.0	20.77	237.1	4.3	1.8	43.0	89.2	312.0	20.02	243.7	4.6	3.8	42.8	87.0	314.0	19.79	246.5	4.6	6.4	42.7
		4.2	100	113.2	296.0	25.59	208.7	3.4	1.7	43.8	108.8	298.0	24.76	213.5	3.5	3.6	43.7	106.7	300.0	24.48	216.4	3.6	6.1	43.6
	90.0	7.0	60	74.8	332.0	17.41	272.6	5.6	1.9	43.9	70.0	336.0	16.73	278.9	5.9	4.0	43.8	67.6	340.0	16.54	283.5	6.0	6.7	43.7
		7.0	80	94.1	318.0	21.11	246.0	4.4	1.8	44.5	89.5	320.0	20.33	250.6	4.6	3.8	44.4	87.2	324.0	20.09	255.4	4.7	6.4	44.3
		7.0	100	113.5	304.0	25.93	215.5	3.4	1.7	45.2	109.1	306.0	25.05	220.5	3.6	3.6	45.1	106.8	308.0	24.75	223.5	3.6	6.1	45.0
		7.0	120	133.1	294.0	31.61	186.1	2.7	1.7	45.9	128.8	296.0	30.78	190.9	2.8	3.5	45.8	126.6	296.0	30.51	191.9	2.8	5.9	45.7

WRA, WHA 360 – Heating (continued)

Source			ELT °F	Load Flow 45.0 GPM							Load Flow 67.5 GPM							Load Flow 90.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	45.0	2.0	60	75.3	344.0	17.23	285.2	5.8	1.9	47.3	70.3	348.0	16.51	291.6	6.2	4.0	47.0	67.8	350.0	16.31	294.3	6.3	6.7	46.9
		2.0	80	94.8	332.0	20.95	260.5	4.6	1.8	48.4	89.9	334.0	20.13	265.3	4.9	3.8	48.2	87.5	336.0	19.86	268.2	5.0	6.4	48.1
		1.9	100	114.2	320.0	25.82	231.9	3.6	1.7	49.7	109.5	322.0	24.85	237.2	3.8	3.6	49.5	107.2	324.0	24.52	240.3	3.9	6.1	49.3
		1.9	120	133.9	312.0	31.58	204.2	2.9	1.7	50.9	129.2	312.0	30.68	207.3	3.0	3.5	50.8	127.0	314.0	30.37	210.4	3.0	5.9	50.7
	67.5	4.1	60	76.3	366.0	17.66	305.7	6.1	1.9	50.9	71.0	372.0	16.89	314.3	6.5	4.0	50.7	68.3	374.0	16.67	317.1	6.6	6.7	50.6
		4.1	80	95.6	350.0	21.34	277.2	4.8	1.8	51.8	90.5	354.0	20.46	284.2	5.1	3.8	51.6	88.0	358.0	20.17	289.2	5.2	6.4	51.4
		4.1	100	114.9	336.0	26.13	246.8	3.8	1.7	52.7	110.1	340.0	25.13	254.2	4.0	3.6	52.5	107.6	342.0	24.78	257.4	4.0	6.1	52.4
		4.0	120	134.4	324.0	31.95	215.0	3.0	1.7	53.6	129.7	326.0	31.00	220.2	3.1	3.5	53.5	127.3	328.0	30.65	223.4	3.1	5.9	53.4
	90.0	6.8	60	76.8	378.0	18.06	316.3	6.1	1.9	53.0	71.4	384.0	17.26	325.1	6.5	4.0	52.8	68.6	386.0	17.02	327.9	6.6	6.7	52.7
		6.8	80	96.1	362.0	21.72	287.9	4.9	1.8	53.6	90.8	366.0	20.81	295.0	5.2	3.8	53.4	88.2	370.0	20.50	300.0	5.3	6.4	53.3
		6.8	100	115.4	346.0	26.48	255.6	3.8	1.7	54.3	110.3	348.0	25.45	261.1	4.0	3.6	54.2	107.8	352.0	25.08	266.4	4.1	6.1	54.1
		6.8	120	134.8	332.0	32.31	221.7	3.0	1.7	55.1	129.9	334.0	31.32	227.1	3.1	3.5	55.0	127.5	336.0	30.97	230.3	3.2	5.9	54.9
70	45.0	1.9	60	77.2	388.0	17.86	327.0	6.4	1.9	55.5	71.6	392.0	17.03	333.9	6.7	4.0	55.2	68.8	396.0	16.78	338.7	6.9	6.7	54.9
		1.9	80	96.5	372.0	21.56	298.4	5.1	1.8	56.7	91.1	376.0	20.60	305.7	5.3	3.8	56.4	88.4	380.0	20.28	310.8	5.5	6.4	56.2
		1.9	100	116.8	358.0	26.35	268.1	4.0	1.7	57.1	110.7	382.0	25.63	275.8	4.2	3.6	57.7	108.1	384.0	24.87	279.1	4.3	6.1	57.6
		1.9	120	135.5	348.0	32.28	237.8	3.2	1.7	59.4	130.4	350.0	31.22	243.5	3.3	3.5	59.2	127.8	352.0	30.80	246.9	3.3	5.9	59.0
	67.5	4.0	60	78.4	415.0	18.39	352.2	6.6	1.9	59.6	72.4	420.0	17.49	360.3	7.0	3.9	59.3	69.4	425.0	17.21	366.3	7.2	6.7	59.1
		4.0	80	97.6	396.0	22.04	320.8	5.3	1.8	60.5	91.9	400.0	21.02	328.3	5.6	3.8	60.3	89.0	405.0	20.66	334.5	5.7	6.4	60.1
		4.0	100	116.8	378.0	26.78	286.6	4.1	1.7	61.5	111.3	382.0	25.63	294.5	4.4	3.6	61.3	108.6	386.0	25.20	300.0	4.5	6.1	61.1
		3.9	120	135.9	358.0	32.60	246.7	3.2	1.7	62.7	130.7	362.0	31.47	254.6	3.4	3.5	62.5	128.1	364.0	31.04	258.1	3.4	5.9	62.4
	90.0	6.7	60	78.9	425.0	18.81	360.8	6.6	1.9	62.0	72.9	435.0	17.90	373.9	7.1	3.9	61.7	69.8	440.0	17.61	379.9	7.3	6.7	61.6
		6.7	80	98.2	410.0	22.48	333.3	5.3	1.8	62.6	92.3	415.0	21.41	341.9	5.7	3.8	62.4	89.3	420.0	21.03	348.2	5.9	6.4	62.3
		6.7	100	117.2	388.0	27.18	295.2	4.2	1.7	63.4	111.7	394.0	25.99	305.3	4.4	3.6	63.2	108.8	398.0	25.54	310.8	4.6	6.1	63.1
		6.7	120	136.5	372.0	33.07	259.1	3.3	1.7	64.2	131.1	376.0	31.87	267.2	3.5	3.5	64.1	128.4	378.0	31.40	270.8	3.5	5.9	64.0
80	45.0	1.9	60	79.3	435.0	18.58	371.6	6.9	1.9	63.5	73.0	440.0	17.64	379.8	7.3	3.9	63.1	69.9	445.0	17.33	385.9	7.5	6.7	62.9
		1.9	80	98.4	415.0	22.28	339.0	5.5	1.8	64.9	92.4	420.0	21.18	347.7	5.8	3.8	64.5	89.4	425.0	20.79	354.1	6.0	6.4	64.3
		1.9	100	117.8	400.0	27.05	307.7	4.3	1.7	66.3	112.0	405.0	25.80	316.9	4.6	3.6	65.9	109.0	405.0	25.33	318.5	4.7	6.1	65.8
		1.9	120	137.2	386.0	33.00	273.4	3.4	1.7	67.8	131.5	388.0	31.72	279.7	3.6	3.5	67.6	128.7	390.0	31.22	283.5	3.7	5.9	67.4
	67.5	3.9	60	80.7	465.0	19.22	399.4	7.1	1.9	68.2	74.1	475.0	18.21	412.8	7.6	3.9	67.8	70.6	475.0	17.85	414.1	7.8	6.7	67.7
		3.9	80	99.8	445.0	22.87	366.9	5.7	1.8	69.1	93.3	450.0	21.70	376.0	6.1	3.8	68.9	90.1	455.0	21.26	382.4	6.3	6.4	68.7
		3.9	100	118.7	420.0	27.58	325.9	4.5	1.7	70.3	112.7	430.0	26.26	340.4	4.8	3.6	69.9	109.6	430.0	25.72	342.2	4.9	6.1	69.9
		3.9	120	138.4	415.0	33.69	300.0	3.6	1.6	71.1	132.1	410.0	32.14	300.3	3.7	3.5	71.1	129.1	410.0	31.58	302.2	3.8	5.9	71.0
	90.0	6.5	60	81.3	480.0	19.76	412.6	7.1	1.9	70.8	74.5	490.0	18.68	426.2	7.7	3.9	70.5	71.0	495.0	18.31	432.5	7.9	6.7	70.4
		6.5	80	100.4	460.0	23.36	380.3	5.8	1.8	71.5	93.8	465.0	22.14	389.4	6.2	3.8	71.3	90.4	470.0	21.70	396.0	6.3	6.4	71.2
		6.5	100	120.4	460.0	28.52	362.7	4.7	1.7	71.9	113.5	455.0	26.86	363.3	5.0	3.6	71.9	110.0	450.0	26.22	360.5	5.0	6.1	72.0
		6.5	120	138.4	414.0	33.94	298.2	3.6	1.7	73.4	132.4	419.0	32.54	308.0	3.8	3.5	73.2	129.4	423.0	31.97	313.9	3.9	5.9	73.0

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM -Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WCA 420 – Cooling

Source				Load Flow 52.5 GPM								Load Flow 78.75 GPM								Load Flow 105.0 GPM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
EST °F	Flow GPM	WPD (F)	ELT °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (F)	LST °F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Data rows for WRA, WCA 420 - Cooling Section 40 <tr> <td rowspan="12">40</td> <td rowspan="4">52.5</td> <td>2.6</td><td>50</td><td>37.5</td><td>328.0</td><td>16.45</td><td>384.2</td><td>19.9</td><td>2.7</td><td>54.6</td><td>41.1</td><td>350.0</td><td>16.99</td><td>408.0</td><td>20.6</td><td>5.5</td><td>55.5</td><td>43.1</td><td>362.0</td><td>17.53</td><td>421.8</td><td>20.6</td><td>9.3</td><td>56.1</td> </tr> <tr> <td>2.6</td><td>60</td><td>45.8</td><td>374.0</td><td>17.15</td><td>432.5</td><td>21.8</td><td>2.6</td><td>56.5</td><td>49.8</td><td>400.0</td><td>17.77</td><td>460.6</td><td>22.5</td><td>5.4</td><td>57.5</td><td>52.1</td><td>415.0</td><td>18.36</td><td>477.7</td><td>22.6</td><td>9.1</td><td>58.2</td> </tr> <tr> <td>2.6</td><td>70</td><td>53.8</td><td>425.0</td><td>17.94</td><td>486.2</td><td>23.7</td><td>2.5</td><td>58.5</td><td>58.4</td><td>455.0</td><td>18.67</td><td>518.7</td><td>24.4</td><td>5.2</td><td>59.8</td><td>61.0</td><td>475.0</td><td>19.32</td><td>540.9</td><td>24.6</td><td>8.8</td><td>60.6</td> </tr> <tr> <td>2.6</td><td>80</td><td>61.9</td><td>475.0</td><td>18.83</td><td>539.3</td><td>25.2</td><td>2.5</td><td>60.5</td><td>66.9</td><td>515.0</td><td>19.69</td><td>582.2</td><td>26.2</td><td>5.1</td><td>62.2</td><td>69.8</td><td>535.0</td><td>20.42</td><td>604.7</td><td>26.2</td><td>8.6</td><td>63.0</td> </tr> <tr> <td>2.6</td><td>90</td><td>69.6</td><td>535.0</td><td>19.83</td><td>602.7</td><td>27.0</td><td>2.4</td><td>63.0</td><td>75.4</td><td>575.0</td><td>20.83</td><td>646.1</td><td>27.6</td><td>5.0</td><td>64.6</td><td>78.6</td><td>600.0</td><td>21.65</td><td>673.9</td><td>27.7</td><td>8.5</td><td>65.7</td> </tr> <tr> <td>5.5</td><td>50</td><td>37.3</td><td>334.0</td><td>15.81</td><td>388.0</td><td>21.1</td><td>2.7</td><td>49.0</td><td>40.9</td><td>358.0</td><td>16.30</td><td>413.6</td><td>22.0</td><td>5.0</td><td>50.5</td><td>43.0</td><td>370.0</td><td>16.81</td><td>427.4</td><td>22.0</td><td>9.3</td><td>50.9</td> </tr> <tr> <td>5.5</td><td>60</td><td>45.4</td><td>382.0</td><td>16.41</td><td>438.0</td><td>23.3</td><td>2.6</td><td>51.1</td><td>49.6</td><td>410.0</td><td>16.97</td><td>467.9</td><td>24.2</td><td>5.4</td><td>51.9</td><td>51.9</td><td>425.0</td><td>17.52</td><td>484.8</td><td>24.3</td><td>9.1</td><td>52.3</td> </tr> <tr> <td>5.5</td><td>70</td><td>53.4</td><td>435.0</td><td>17.08</td><td>493.3</td><td>25.5</td><td>2.5</td><td>52.5</td><td>58.1</td><td>470.0</td><td>17.73</td><td>530.5</td><td>26.5</td><td>5.3</td><td>53.5</td><td>60.7</td><td>490.0</td><td>18.35</td><td>552.6</td><td>26.7</td><td>8.8</td><td>54.0</td> </tr> <tr> <td>5.5</td><td>80</td><td>61.3</td><td>490.0</td><td>17.84</td><td>550.9</td><td>27.5</td><td>2.5</td><td>54.0</td><td>66.5</td><td>530.0</td><td>18.61</td><td>593.5</td><td>28.5</td><td>5.1</td><td>55.1</td><td>69.4</td><td>555.0</td><td>19.29</td><td>620.8</td><td>28.8</td><td>8.6</td><td>55.8</td> </tr> <tr> <td>5.5</td><td>90</td><td>69.2</td><td>545.0</td><td>18.69</td><td>608.8</td><td>29.2</td><td>2.4</td><td>55.5</td><td>74.9</td><td>595.0</td><td>19.59</td><td>661.9</td><td>30.4</td><td>5.0</td><td>56.8</td><td>78.2</td><td>620.0</td><td>20.36</td><td>689.5</td><td>30.4</td><td>8.5</td><td>57.5</td> </tr> <tr> <td>9.4</td><td>50</td><td>37.1</td><td>338.0</td><td>15.74</td><td>391.7</td><td>21.5</td><td>2.7</td><td>47.5</td><td>40.8</td><td>362.0</td><td>16.21</td><td>417.3</td><td>22.3</td><td>5.5</td><td>47.9</td><td>42.9</td><td>374.0</td><td>16.71</td><td>431.0</td><td>22.4</td><td>9.3</td><td>48.2</td> </tr> <tr> <td>9.4</td><td>60</td><td>45.3</td><td>386.0</td><td>16.29</td><td>441.6</td><td>23.7</td><td>2.6</td><td>48.4</td><td>49.5</td><td>415.0</td><td>16.81</td><td>472.4</td><td>24.7</td><td>5.4</td><td>49.0</td><td>51.7</td><td>435.0</td><td>17.36</td><td>494.2</td><td>25.1</td><td>9.1</td><td>49.4</td> </tr> <tr> <td>9.3</td><td>70</td><td>53.2</td><td>440.0</td><td>16.90</td><td>497.7</td><td>26.0</td><td>2.5</td><td>49.5</td><td>57.9</td><td>475.0</td><td>17.52</td><td>534.8</td><td>27.1</td><td>5.3</td><td>50.2</td><td>60.6</td><td>495.0</td><td>18.11</td><td>556.8</td><td>27.3</td><td>8.8</td><td>50.6</td> </tr> <tr> <td>9.3</td><td>80</td><td>61.1</td><td>495.0</td><td>17.59</td><td>555.0</td><td>28.1</td><td>2.5</td><td>50.6</td><td>66.3</td><td>540.0</td><td>18.32</td><td>602.5</td><td>29.5</td><td>5.1</td><td>51.5</td><td>69.3</td><td>560.0</td><td>18.98</td><td>624.8</td><td>29.5</td><td>8.6</td><td>51.9</td> </tr> <tr> <td>9.3</td><td>90</td><td>68.9</td><td>555.0</td><td>18.37</td><td>617.7</td><td>30.2</td><td>2.4</td><td>51.8</td><td>74.6</td><td>605.0</td><td>19.23</td><td>670.6</td><td>31.5</td><td>5.0</td><td>52.8</td><td>78.0</td><td>630.0</td><td>19.96</td><td>698.1</td><td>31.6</td><td>8.5</td><td>53.3</td> </tr> Section 50 <tr> <td rowspan="12">50</td> <td rowspan="4">52.5</td> <td>2.6</td><td>50</td><td>38.0</td><td>316.0</td><td>18.06</td><td>377.7</td><td>17.5</td><td>2.7</td><td>64.4</td><td>41.5</td><td>336.0</td><td>18.56</td><td>399.3</td><td>18.1</td><td>5.5</td><td>65.2</td><td>43.4</td><td>348.0</td><td>19.11</td><td>413.2</td><td>18.2</td><td>9.3</td><td>65.7</td> </tr> <tr> <td>2.5</td><td>60</td><td>46.2</td><td>362.0</td><td>18.74</td><td>425.9</td><td>19.3</td><td>2.6</td><td>66.2</td><td>50.2</td><td>386.0</td><td>19.34</td><td>452.0</td><td>20.0</td><td>5.4</td><td>67.2</td><td>52.4</td><td>400.0</td><td>19.93</td><td>468.0</td><td>20.1</td><td>9.1</td><td>67.8</td> </tr> <tr> <td>2.5</td><td>70</td><td>54.4</td><td>410.0</td><td>19.52</td><td>476.6</td><td>21.0</td><td>2.5</td><td>68.2</td><td>58.8</td><td>440.0</td><td>20.23</td><td>509.0</td><td>21.7</td><td>5.2</td><td>69.4</td><td>61.2</td><td>460.0</td><td>20.88</td><td>531.3</td><td>22.0</td><td>8.8</td><td>70.2</td> </tr> <tr> <td>2.5</td><td>80</td><td>62.3</td><td>465.0</td><td>20.42</td><td>534.7</td><td>22.8</td><td>2.5</td><td>70.4</td><td>67.3</td><td>500.0</td><td>21.24</td><td>572.5</td><td>23.5</td><td>5.1</td><td>71.8</td><td>70.1</td><td>520.0</td><td>21.97</td><td>595.0</td><td>23.7</td><td>8.6</td><td>72.7</td> </tr> <tr> <td>2.5</td><td>90</td><td>70.4</td><td>515.0</td><td>21.42</td><td>588.1</td><td>24.0</td><td>2.4</td><td>72.4</td><td>75.8</td><td>560.0</td><td>22.39</td><td>636.4</td><td>25.0</td><td>5.0</td><td>74.2</td><td>79.0</td><td>580.0</td><td>23.21</td><td>659.2</td><td>25.0</td><td>8.5</td><td>75.1</td> </tr> <tr> <td>5.4</td><td>50</td><td>37.7</td><td>322.0</td><td>17.35</td><td>381.2</td><td>18.6</td><td>2.7</td><td>59.7</td><td>41.3</td><td>344.0</td><td>17.83</td><td>404.9</td><td>19.3</td><td>5.5</td><td>60.3</td><td>43.2</td><td>356.0</td><td>18.33</td><td>418.6</td><td>19.4</td><td>9.3</td><td>60.6</td> </tr> <tr> <td>5.4</td><td>60</td><td>46.0</td><td>368.0</td><td>17.94</td><td>429.2</td><td>20.5</td><td>2.6</td><td>60.9</td><td>49.9</td><td>396.0</td><td>18.47</td><td>459.0</td><td>21.4</td><td>5.4</td><td>61.7</td><td>52.2</td><td>410.0</td><td>19.02</td><td>474.9</td><td>21.6</td><td>9.1</td><td>62.1</td> </tr> <tr> <td>5.4</td><td>70</td><td>54.0</td><td>420.0</td><td>18.59</td><td>483.5</td><td>22.6</td><td>2.5</td><td>62.3</td><td>58.6</td><td>450.0</td><td>19.22</td><td>515.6</td><td>23.4</td><td>5.2</td><td>63.1</td><td>61.0</td><td>470.0</td><td>19.83</td><td>537.7</td><td>23.7</td><td>8.8</td><td>63.7</td> </tr> <tr> <td>5.3</td><td>80</td><td>61.9</td><td>475.0</td><td>19.34</td><td>541.0</td><td>24.6</td><td>2.5</td><td>63.7</td><td>66.9</td><td>515.0</td><td>20.09</td><td>583.6</td><td>25.6</td><td>5.1</td><td>64.8</td><td>69.8</td><td>535.0</td><td>20.76</td><td>605.8</td><td>25.8</td><td>8.6</td><td>65.4</td> </tr> <tr> <td>5.3</td><td>90</td><td>69.8</td><td>530.0</td><td>20.19</td><td>598.9</td><td>26.3</td><td>2.4</td><td>65.2</td><td>75.4</td><td>575.0</td><td>21.07</td><td>646.9</td><td>27.3</td><td>5.0</td><td>66.4</td><td>78.6</td><td>600.0</td><td>21.82</td><td>674.5</td><td>27.5</td><td>8.5</td><td>67.1</td> </tr> <tr> <td>9.1</td><td>50</td><td>37.7</td><td>324.0</td><td>17.25</td><td>382.9</td><td>18.8</td><td>2.7</td><td>57.3</td><td>41.2</td><td>348.0</td><td>17.71</td><td>408.4</td><td>19.7</td><td>5.5</td><td>57.8</td><td>43.1</td><td>360.0</td><td>18.19</td><td>422.1</td><td>19.8</td><td>9.3</td><td>58.0</td> </tr> <tr> <td>9.1</td><td>60</td><td>45.8</td><td>372.0</td><td>17.78</td><td>432.7</td><td>20.9</td><td>2.6</td><td>58.2</td><td>49.8</td><td>400.0</td><td>18.28</td><td>462.4</td><td>21.9</td><td>5.4</td><td>58.8</td><td>52.1</td><td>415.0</td><td>18.81</td><td>479.2</td><td>22.1</td><td>9.1</td><td>59.1</td> </tr> <tr> <td>9.1</td><td>70</td><td>53.8</td><td>425.0</td><td>18.37</td><td>487.7</td><td>23.1</td><td>2.5</td><td>59.3</td><td>58.3</td><td>460.0</td><td>18.97</td><td>524.7</td><td>24.3</td><td>5.2</td><td>60.0</td><td>60.9</td><td>480.0</td><td>19.54</td><td>546.7</td><td>24.6</td><td>8.8</td><td>60.4</td> </tr> <tr> <td>9.1</td><td>80</td><td>61.7</td><td>480.0</td><td>19.05</td><td>545.0</td><td>25.2</td><td>2.5</td><td>60.4</td><td>66.8</td><td>520.0</td><td>19.75</td><td>587.4</td><td>26.3</td><td>5.1</td><td>61.2</td><td>69.6</td><td>545.0</td><td>20.40</td><td>614.6</td><td>26.7</td><td>8.6</td><td>61.7</td> </tr> <tr> <td>9.1</td><td>90</td><td>69.4</td><td>540.0</td><td>19.82</td><td>607.6</td><td>27.2</td><td>2.4</td><td>61.6</td><td>75.1</td><td>585.0</td><td>20.65</td><td>655.5</td><td>28.3</td><td>5.0</td><td>62.5</td><td>78.4</td><td>610.0</td><td>21.38</td><td>683.0</td><td>28.5</td><td>8.5</td><td>63.0</td> </tr> Section 70 <tr> <td rowspan="12">70</td> <td rowspan="4">52.5</td> <td>2.4</td><td>50</td><td>39.0</td><td>290.0</td><td>22.01</td><td>365.1</td><td>13.2</td><td>2.7</td><td>83.9</td><td>42.2</td><td>308.0</td><td>22.45</td><td>384.6</td><td>13.7</td><td>5.5</td><td>84.7</td><td>43.9</td><td>318.0</td><td>22.97</td><td>396.4</td><td>13.8</td><td>9.3</td><td>85.1</td> </tr> <tr> <td>2.4</td><td>60</td><td>47.3</td><td>334.0</td><td>22.66</td><td>411.3</td><td>14.7</td><td>2.6</td><td>85.7</td><td>51.0</td><td>356.0</td><td>23.21</td><td>435.2</td><td>15.3</td><td>5.4</td><td>86.6</td><td>53.0</td><td>370.0</td><td>23.76</td><td>451.1</td><td>15.6</td><td>9.1</td><td>87.2</td> </tr> <tr> <td>2.4</td><td>70</td><td>55.4</td><td>382.0</td><td>23.42</td><td>461.9</td><td>16.3</td><td>2.5</td><td>87.6</td><td>59.6</td><td>410.0</td><td>24.07</td><td>492.2</td><td>17.0</td><td>5.2</td><td>88.7</td><td>61.9</td><td>425.0</td><td>24.71</td><td>509.3</td><td>17.2</td><td>8.8</td><td>89.4</td> </tr> <tr> <td>2.4</td><td>80</td><td>63.6</td><td>430.0</td><td>24.31</td><td>513.0</td><td>17.7</td><td>2.5</td><td>89.5</td><td>68.3</td><td>460.0</td><td>25.07</td><td>545.6</td><td>18.3</td><td>5.1</td><td>90.8</td><td>70.9</td><td>480.0</td><td>25.78</td><td>568.0</td><td>18.6</td><td>8.6</td><td>91.6</td> </tr> <tr> <td>2.4</td><td>90</td><td>71.5</td><td>485.0</td><td>25.32</td><td>571.4</td><td>19.2</td><td>2.4</td><td>91.8</td><td>76.8</td><td>520.0</td><td>26.24</td><td>609.5</td><td>19.8</td><td>5.0</td><td>93.2</td><td>79.7</td><td>540.0</td><td>27.03</td><td>632.2</td><td>20.0</td><td>8.4</td><td>94.1</td> </tr> <tr> <td>5.1</td><td>50</td><td>38.7</td><td>296.0</td><td>21.19</td><td>368.3</td><td>14.0</td><td>2.7</td><td>79.4</td><td>42.0</td><td>314.0</td><td>21.57</td><td>387.6</td><td>14.6</td><td>5.5</td><td>79.8</td><td>43.8</td><td>326.0</td><td>22.09</td><td>401.4</td><td>14.8</td><td>9.3</td><td>80.2</td> </tr> <tr> <td>5.1</td><td>60</td><td>47.0</td><td>342.0</td><td>21.70</td><td>416.1</td><td>15.8</td><td>2.6</td><td>80.6</td><td>50.8</td><td>364.0</td><td>22.20</td><td>439.8</td><td>16.4</td><td>5.4</td><td>81.2</td><td>52.8</td><td>378.0</td><td>22.72</td><td>455.6</td><td>16.6</td><td>9.1</td><td>81.6</td> </tr> <tr> <td>5.1</td><td>70</td><td>55.1</td><td>390.0</td><td>22.32</td><td>466.2</td><td>17.5</td><td>2.5</td><td>81.8</td><td>59.3</td><td>420.0</td><td>22.91</td><td>498.2</td><td>18.3</td><td>5.2</td><td>82.7</td><td>61.7</td><td>435.0</td><td>23.48</td><td>515.2</td><td>18.5</td><td>8.8</td><td>83.1</td> </tr> <tr> <td>5.1</td><td>80</td><td>63.2</td><td>440.0</td><td>23.05</td><td>518.7</td><td>19.1</td><td>2.5</td><td>83.2</td><td>67.9</td><td>475.0</td><td>23.74</td><td>556.0</td><td>20.0</td><td>5.1</td><td>84.1</td><td>70.6</td><td>495.0</td><td>24.39</td><td>578.2</td><td>20.3</td><td>8.6</td><td>84.7</td> </tr> <tr> <td>5.1</td><td>90</td><td>71.1</td><td>495.0</td><td>23.89</td><td>576.5</td><td>20.7</td><td>2.4</td><td>84.6</td><td>76.4</td><td>535.0</td><td>24.72</td><td>619.4</td><td>21.6</td><td>5.0</td><td>85.7</td><td>79.3</td><td>560.0</td><td>25.43</td><td>646.8</td><td>22.0</td><td>8.4</td><td>86.4</td> </tr> <tr> <td>8.7</td><td>50</td><td>38.6</td><td>298.0</td><td>21.02</td><td>369.7</td><td>14.2</td><td>2.7</td><td>77.0</td><td>41.9</td><td>318.0</td><td>21.40</td><td>391.0</td><td>14.9</td><td>5.5</td><td>77.4</td><td>43.7</td><td>330.0</td><td>21.88</td><td>404.7</td><td>15.1</td><td>9.3</td><td>77.7</td> </tr> <tr> <td>8.7</td><td>60</td><td>46.9</td><td>344.0</td><td>21.46</td><td>417.2</td><td>16.0</td><td>2.6</td><td>77.9</td><td>50.6</td><td>370.0</td><td>21.93</td><td>444.8</td><td>16.9</td><td>5.4</td><td>78.5</td><td>52.7</td><td>384.0</td><td>22.43</td><td>460.5</td><td>17.1</td><td>9.1</td><td>78.8</td> </tr> <tr> <td>8.6</td><td>70</td><td>55.0</td><td>394.0</td><td>22.02</td><td>469.2</td><td>17.9</td><td>2.5</td><td>78.9</td><td>59.2</td><td>425.0</td><td>22.56</td><td>502.0</td><td>18.8</td><td>5.2</td><td>79.6</td><td>61.6</td><td>440.0</td><td>23.11</td><td>518.9</td><td>19.0</td><td>8.8</td><td>79.9</td> </tr> <tr> <td>8.6</td><td>80</td><td>62.9</td><td>450.0</td><td>22.66</td><td>527.4</td><td>19.9</td><td>2.5</td><td>80.0</td><td>67.7</td><td>485.0</td><td>23.31</td><td>564.6</td><td>20.8</td><td>5.1</td><td>80.8</td><td>70.4</td><td>505.0</td><td>23.92</td><td>586.6</td><td>21.1</td><td>8.6</td><td>81.2</td> </tr> <tr> <td>8.6</td><td>90</td><td>70.8</td><td>505.0</td><td>23.41</td><td>584.9</td><td>21.6</td><td>2.4</td><td>81.1</td><td>76.2</td><td>545.0</td><td>24.19</td><td>627.5</td><td>22.5</td><td>5.0</td><td>82.0</td><td>79.1</td><td>570.0</td><td>24.87</td><td>654.9</td><td>22.9</td><td>8.5</td><td>82.5</td> </tr> Section 80 <tr> <td rowspan="12">80</td> <td rowspan="4">52.5</td> <td>2.4</td><td>50</td><td>39.5</td><td>276.0</td><td>24.41</td><td>359.3</td><td>11.3</td><td>2.7</td><td>93.7</td><td>42.6</td><td>292.0</td><td>24.84</td><td>376.8</td><td>11.8</td><td>5.5</td><td>94.4</td><td>44.2</td><td>302.0</td><td>25.34</td><td>388.5</td><td>11.9</td><td>9.3</td><td>94.8</td> </tr> <tr> <td>2.4</td><td>60</td><td>47.8</td><td>320.0</td><td>25.03</td><td>405.4</td><td>12.8</td><td>2.6</td><td>95.4</td><td>51.4</td><td>340.0</td><td>25.56</td><td>427.2</td><td>13.3</td><td>5.4</td><td>96.3</td><td>53.3</td><td>352.0</td><td>26.10</td><td>441.1</td><td>13.5</td><td>9.1</td><td>96.8</td> </tr> <tr> <td>2.4</td><td>70</td><td>56.1</td><td>366.0</td><td>25.79</td><td>454.0</td><td>14.2</td><td>2.5</td><td>97.3</td><td>60.1</td><td>390.0</td><td>26.40</td><td>480.1</td><td>14.8</td><td>5.2</td><td>98.3</td><td>62.3</td><td>405.0</td><td>27.03</td><td>497.2</td><td>15.0</td><td>8.8</td><td>98.9</td> </tr> <tr> <td>2.4</td><td>80</td><td>64.2</td><td>415.0</td><td>26.68</td><td>506.1</td><td>15.6</td><td>2.5</td><td>99.3</td><td>68.8</td><td>440.0</td><td>27.40</td><td>533.5</td><td>16.1</td><td>5.1</td><td>100.3</td><td>71.2</td><td>460.0</td><td>28.11</td><td>555.9</td><td>16.4</td><td>8.6</td><td>101.2</td> </tr> <tr> <td>2.3</td><td>90</td><td>72.3</td><td>465.0</td><td>27.69</td><td>559.5</td><td>16.8</td><td>2.4</td><td>101.3</td><td>77.4</td><td>495.0</td><td>28.56</td><td>592.5</td><td>17.3</td><td>5.0</td><td>102.6</td><td>80.2</td><td>515.0</td><td>29.35</td><td>615.2</td><td>17.5</td><td>8.4</td><td>103.4</td> </tr> <tr> <td>5.0</td><td>50</td><td>39.3</td><td>282.0</td><td>23.54</td><td>362.3</td><td>12.0</td><td>2.7</td><td>89.2</td><td>42.4</td><td>300.0</td><td>23.89</td><td>381.6</td><td>12.6</td><td>5.5</td><td>89.7</td><td>44.1</td><td>310.0</td><td>24.37</td><td>393.2</td><td>12.7</td><td>9.3</td><td>90.0</td> </tr> <tr> <td>5.0</td><td>60</td><td>47.6</td><td>326.0</td><td>24.01</td><td>408.0</td><td>13.6</td><td>2.6</td><td>90.4</td><td>51.2</td><td>348.0</td><td>24.47</td><td>431.5</td><td>14.2</td><td>5.4</td><td>91.0</td><td>53.1</td><td>362.0</td><td>24.98</td><td>447.3</td><td>14.5</td><td>9.1</td><td>91.4</td> </tr> <tr> <td>5.0</td><td>70</td><td>55.8</td><td>374.0</td><td>24.60</td><td>458.0</td><td>15.2</td><td>2.5</td><td>91.6</td><td>59.8</td><td>400.0</td><td>25.15</td><td>485.9</td><td>15.9</td><td>5.2</td><td>92.3</td><td>62.1</td><td>415.0</td><td>25.72</td><td>502.8</td><td>16.1</td><td>8.8</td><td>92.8</td> </tr> <tr> <td>5.0</td><td>80</td><td>63.8</td><td>425.0</td><td>25.32</td><td>511.4</td><td>16.8</td><td>2.5</td><td>93.0</td><td>68.4</td><td>455.0</td><td>25.97</td><td>543.6</td><td>17.5</td><td>5.1</td><td>93.8</td><td>71.0</td><td>475.0</td><td>26.61</td><</tr>																										40	52.5	2.6	50	37.5	328.0	16.45	384.2	19.9	2.7	54.6	41.1	350.0	16.99	408.0	20.6	5.5	55.5	43.1	362.0	17.53	421.8	20.6	9.3	56.1	2.6	60	45.8	374.0	17.15	432.5	21.8	2.6	56.5	49.8	400.0	17.77	460.6	22.5	5.4	57.5	52.1	415.0	18.36	477.7	22.6	9.1	58.2	2.6	70	53.8	425.0	17.94	486.2	23.7	2.5	58.5	58.4	455.0	18.67	518.7	24.4	5.2	59.8	61.0	475.0	19.32	540.9	24.6	8.8	60.6	2.6	80	61.9	475.0	18.83	539.3	25.2	2.5	60.5	66.9	515.0	19.69	582.2	26.2	5.1	62.2	69.8	535.0	20.42	604.7	26.2	8.6	63.0	2.6	90	69.6	535.0	19.83	602.7	27.0	2.4	63.0	75.4	575.0	20.83	646.1	27.6	5.0	64.6	78.6	600.0	21.65	673.9	27.7	8.5	65.7	5.5	50	37.3	334.0	15.81	388.0	21.1	2.7	49.0	40.9	358.0	16.30	413.6	22.0	5.0	50.5	43.0	370.0	16.81	427.4	22.0	9.3	50.9	5.5	60	45.4	382.0	16.41	438.0	23.3	2.6	51.1	49.6	410.0	16.97	467.9	24.2	5.4	51.9	51.9	425.0	17.52	484.8	24.3	9.1	52.3	5.5	70	53.4	435.0	17.08	493.3	25.5	2.5	52.5	58.1	470.0	17.73	530.5	26.5	5.3	53.5	60.7	490.0	18.35	552.6	26.7	8.8	54.0	5.5	80	61.3	490.0	17.84	550.9	27.5	2.5	54.0	66.5	530.0	18.61	593.5	28.5	5.1	55.1	69.4	555.0	19.29	620.8	28.8	8.6	55.8	5.5	90	69.2	545.0	18.69	608.8	29.2	2.4	55.5	74.9	595.0	19.59	661.9	30.4	5.0	56.8	78.2	620.0	20.36	689.5	30.4	8.5	57.5	9.4	50	37.1	338.0	15.74	391.7	21.5	2.7	47.5	40.8	362.0	16.21	417.3	22.3	5.5	47.9	42.9	374.0	16.71	431.0	22.4	9.3	48.2	9.4	60	45.3	386.0	16.29	441.6	23.7	2.6	48.4	49.5	415.0	16.81	472.4	24.7	5.4	49.0	51.7	435.0	17.36	494.2	25.1	9.1	49.4	9.3	70	53.2	440.0	16.90	497.7	26.0	2.5	49.5	57.9	475.0	17.52	534.8	27.1	5.3	50.2	60.6	495.0	18.11	556.8	27.3	8.8	50.6	9.3	80	61.1	495.0	17.59	555.0	28.1	2.5	50.6	66.3	540.0	18.32	602.5	29.5	5.1	51.5	69.3	560.0	18.98	624.8	29.5	8.6	51.9	9.3	90	68.9	555.0	18.37	617.7	30.2	2.4	51.8	74.6	605.0	19.23	670.6	31.5	5.0	52.8	78.0	630.0	19.96	698.1	31.6	8.5	53.3	50	52.5	2.6	50	38.0	316.0	18.06	377.7	17.5	2.7	64.4	41.5	336.0	18.56	399.3	18.1	5.5	65.2	43.4	348.0	19.11	413.2	18.2	9.3	65.7	2.5	60	46.2	362.0	18.74	425.9	19.3	2.6	66.2	50.2	386.0	19.34	452.0	20.0	5.4	67.2	52.4	400.0	19.93	468.0	20.1	9.1	67.8	2.5	70	54.4	410.0	19.52	476.6	21.0	2.5	68.2	58.8	440.0	20.23	509.0	21.7	5.2	69.4	61.2	460.0	20.88	531.3	22.0	8.8	70.2	2.5	80	62.3	465.0	20.42	534.7	22.8	2.5	70.4	67.3	500.0	21.24	572.5	23.5	5.1	71.8	70.1	520.0	21.97	595.0	23.7	8.6	72.7	2.5	90	70.4	515.0	21.42	588.1	24.0	2.4	72.4	75.8	560.0	22.39	636.4	25.0	5.0	74.2	79.0	580.0	23.21	659.2	25.0	8.5	75.1	5.4	50	37.7	322.0	17.35	381.2	18.6	2.7	59.7	41.3	344.0	17.83	404.9	19.3	5.5	60.3	43.2	356.0	18.33	418.6	19.4	9.3	60.6	5.4	60	46.0	368.0	17.94	429.2	20.5	2.6	60.9	49.9	396.0	18.47	459.0	21.4	5.4	61.7	52.2	410.0	19.02	474.9	21.6	9.1	62.1	5.4	70	54.0	420.0	18.59	483.5	22.6	2.5	62.3	58.6	450.0	19.22	515.6	23.4	5.2	63.1	61.0	470.0	19.83	537.7	23.7	8.8	63.7	5.3	80	61.9	475.0	19.34	541.0	24.6	2.5	63.7	66.9	515.0	20.09	583.6	25.6	5.1	64.8	69.8	535.0	20.76	605.8	25.8	8.6	65.4	5.3	90	69.8	530.0	20.19	598.9	26.3	2.4	65.2	75.4	575.0	21.07	646.9	27.3	5.0	66.4	78.6	600.0	21.82	674.5	27.5	8.5	67.1	9.1	50	37.7	324.0	17.25	382.9	18.8	2.7	57.3	41.2	348.0	17.71	408.4	19.7	5.5	57.8	43.1	360.0	18.19	422.1	19.8	9.3	58.0	9.1	60	45.8	372.0	17.78	432.7	20.9	2.6	58.2	49.8	400.0	18.28	462.4	21.9	5.4	58.8	52.1	415.0	18.81	479.2	22.1	9.1	59.1	9.1	70	53.8	425.0	18.37	487.7	23.1	2.5	59.3	58.3	460.0	18.97	524.7	24.3	5.2	60.0	60.9	480.0	19.54	546.7	24.6	8.8	60.4	9.1	80	61.7	480.0	19.05	545.0	25.2	2.5	60.4	66.8	520.0	19.75	587.4	26.3	5.1	61.2	69.6	545.0	20.40	614.6	26.7	8.6	61.7	9.1	90	69.4	540.0	19.82	607.6	27.2	2.4	61.6	75.1	585.0	20.65	655.5	28.3	5.0	62.5	78.4	610.0	21.38	683.0	28.5	8.5	63.0	70	52.5	2.4	50	39.0	290.0	22.01	365.1	13.2	2.7	83.9	42.2	308.0	22.45	384.6	13.7	5.5	84.7	43.9	318.0	22.97	396.4	13.8	9.3	85.1	2.4	60	47.3	334.0	22.66	411.3	14.7	2.6	85.7	51.0	356.0	23.21	435.2	15.3	5.4	86.6	53.0	370.0	23.76	451.1	15.6	9.1	87.2	2.4	70	55.4	382.0	23.42	461.9	16.3	2.5	87.6	59.6	410.0	24.07	492.2	17.0	5.2	88.7	61.9	425.0	24.71	509.3	17.2	8.8	89.4	2.4	80	63.6	430.0	24.31	513.0	17.7	2.5	89.5	68.3	460.0	25.07	545.6	18.3	5.1	90.8	70.9	480.0	25.78	568.0	18.6	8.6	91.6	2.4	90	71.5	485.0	25.32	571.4	19.2	2.4	91.8	76.8	520.0	26.24	609.5	19.8	5.0	93.2	79.7	540.0	27.03	632.2	20.0	8.4	94.1	5.1	50	38.7	296.0	21.19	368.3	14.0	2.7	79.4	42.0	314.0	21.57	387.6	14.6	5.5	79.8	43.8	326.0	22.09	401.4	14.8	9.3	80.2	5.1	60	47.0	342.0	21.70	416.1	15.8	2.6	80.6	50.8	364.0	22.20	439.8	16.4	5.4	81.2	52.8	378.0	22.72	455.6	16.6	9.1	81.6	5.1	70	55.1	390.0	22.32	466.2	17.5	2.5	81.8	59.3	420.0	22.91	498.2	18.3	5.2	82.7	61.7	435.0	23.48	515.2	18.5	8.8	83.1	5.1	80	63.2	440.0	23.05	518.7	19.1	2.5	83.2	67.9	475.0	23.74	556.0	20.0	5.1	84.1	70.6	495.0	24.39	578.2	20.3	8.6	84.7	5.1	90	71.1	495.0	23.89	576.5	20.7	2.4	84.6	76.4	535.0	24.72	619.4	21.6	5.0	85.7	79.3	560.0	25.43	646.8	22.0	8.4	86.4	8.7	50	38.6	298.0	21.02	369.7	14.2	2.7	77.0	41.9	318.0	21.40	391.0	14.9	5.5	77.4	43.7	330.0	21.88	404.7	15.1	9.3	77.7	8.7	60	46.9	344.0	21.46	417.2	16.0	2.6	77.9	50.6	370.0	21.93	444.8	16.9	5.4	78.5	52.7	384.0	22.43	460.5	17.1	9.1	78.8	8.6	70	55.0	394.0	22.02	469.2	17.9	2.5	78.9	59.2	425.0	22.56	502.0	18.8	5.2	79.6	61.6	440.0	23.11	518.9	19.0	8.8	79.9	8.6	80	62.9	450.0	22.66	527.4	19.9	2.5	80.0	67.7	485.0	23.31	564.6	20.8	5.1	80.8	70.4	505.0	23.92	586.6	21.1	8.6	81.2	8.6	90	70.8	505.0	23.41	584.9	21.6	2.4	81.1	76.2	545.0	24.19	627.5	22.5	5.0	82.0	79.1	570.0	24.87	654.9	22.9	8.5	82.5	80	52.5	2.4	50	39.5	276.0	24.41	359.3	11.3	2.7	93.7	42.6	292.0	24.84	376.8	11.8	5.5	94.4	44.2	302.0	25.34	388.5	11.9	9.3	94.8	2.4	60	47.8	320.0	25.03	405.4	12.8	2.6	95.4	51.4	340.0	25.56	427.2	13.3	5.4	96.3	53.3	352.0	26.10	441.1	13.5	9.1	96.8	2.4	70	56.1	366.0	25.79	454.0	14.2	2.5	97.3	60.1	390.0	26.40	480.1	14.8	5.2	98.3	62.3	405.0	27.03	497.2	15.0	8.8	98.9	2.4	80	64.2	415.0	26.68	506.1	15.6	2.5	99.3	68.8	440.0	27.40	533.5	16.1	5.1	100.3	71.2	460.0	28.11	555.9	16.4	8.6	101.2	2.3	90	72.3	465.0	27.69	559.5	16.8	2.4	101.3	77.4	495.0	28.56	592.5	17.3	5.0	102.6	80.2	515.0	29.35	615.2	17.5	8.4	103.4	5.0	50	39.3	282.0	23.54	362.3	12.0	2.7	89.2	42.4	300.0	23.89	381.6	12.6	5.5	89.7	44.1	310.0	24.37	393.2	12.7	9.3	90.0	5.0	60	47.6	326.0	24.01	408.0	13.6	2.6	90.4	51.2	348.0	24.47	431.5	14.2	5.4	91.0	53.1	362.0	24.98	447.3	14.5	9.1	91.4	5.0	70	55.8	374.0	24.60	458.0	15.2	2.5	91.6	59.8	400.0	25.15	485.9	15.9	5.2	92.3	62.1	415.0	25.72	502.8	16.1	8.8	92.8	5.0	80	63.8	425.0	25.32	511.4	16.8	2.5	93.0	68.4	455.0	25.97	543.6	17.5	5.1
40	52.5	2.6	50	37.5	328.0	16.45	384.2	19.9	2.7	54.6	41.1	350.0	16.99	408.0	20.6	5.5	55.5	43.1	362.0	17.53	421.8	20.6	9.3	56.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.6	60	45.8	374.0	17.15	432.5	21.8	2.6	56.5	49.8	400.0	17.77	460.6	22.5	5.4	57.5	52.1	415.0	18.36	477.7	22.6	9.1	58.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.6	70	53.8	425.0	17.94	486.2	23.7	2.5	58.5	58.4	455.0	18.67	518.7	24.4	5.2	59.8	61.0	475.0	19.32	540.9	24.6	8.8	60.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.6	80	61.9	475.0	18.83	539.3	25.2	2.5	60.5	66.9	515.0	19.69	582.2	26.2	5.1	62.2	69.8	535.0	20.42	604.7	26.2	8.6	63.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	2.6	90	69.6	535.0	19.83	602.7	27.0	2.4	63.0	75.4	575.0	20.83	646.1	27.6	5.0	64.6	78.6	600.0	21.65	673.9	27.7	8.5	65.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.5	50	37.3	334.0	15.81	388.0	21.1	2.7	49.0	40.9	358.0	16.30	413.6	22.0	5.0	50.5	43.0	370.0	16.81	427.4	22.0	9.3	50.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.5	60	45.4	382.0	16.41	438.0	23.3	2.6	51.1	49.6	410.0	16.97	467.9	24.2	5.4	51.9	51.9	425.0	17.52	484.8	24.3	9.1	52.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.5	70	53.4	435.0	17.08	493.3	25.5	2.5	52.5	58.1	470.0	17.73	530.5	26.5	5.3	53.5	60.7	490.0	18.35	552.6	26.7	8.8	54.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.5	80	61.3	490.0	17.84	550.9	27.5	2.5	54.0	66.5	530.0	18.61	593.5	28.5	5.1	55.1	69.4	555.0	19.29	620.8	28.8	8.6	55.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.5	90	69.2	545.0	18.69	608.8	29.2	2.4	55.5	74.9	595.0	19.59	661.9	30.4	5.0	56.8	78.2	620.0	20.36	689.5	30.4	8.5	57.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	9.4	50	37.1	338.0	15.74	391.7	21.5	2.7	47.5	40.8	362.0	16.21	417.3	22.3	5.5	47.9	42.9	374.0	16.71	431.0	22.4	9.3	48.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	9.4	60	45.3	386.0	16.29	441.6	23.7	2.6	48.4	49.5	415.0	16.81	472.4	24.7	5.4	49.0	51.7	435.0	17.36	494.2	25.1	9.1	49.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
9.3	70	53.2	440.0	16.90	497.7	26.0	2.5	49.5	57.9	475.0	17.52	534.8	27.1	5.3	50.2	60.6	495.0	18.11	556.8	27.3	8.8	50.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
9.3	80	61.1	495.0	17.59	555.0	28.1	2.5	50.6	66.3	540.0	18.32	602.5	29.5	5.1	51.5	69.3	560.0	18.98	624.8	29.5	8.6	51.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
9.3	90	68.9	555.0	18.37	617.7	30.2	2.4	51.8	74.6	605.0	19.23	670.6	31.5	5.0	52.8	78.0	630.0	19.96	698.1	31.6	8.5	53.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
50	52.5	2.6	50	38.0	316.0	18.06	377.7	17.5	2.7	64.4	41.5	336.0	18.56	399.3	18.1	5.5	65.2	43.4	348.0	19.11	413.2	18.2	9.3	65.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.5	60	46.2	362.0	18.74	425.9	19.3	2.6	66.2	50.2	386.0	19.34	452.0	20.0	5.4	67.2	52.4	400.0	19.93	468.0	20.1	9.1	67.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.5	70	54.4	410.0	19.52	476.6	21.0	2.5	68.2	58.8	440.0	20.23	509.0	21.7	5.2	69.4	61.2	460.0	20.88	531.3	22.0	8.8	70.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.5	80	62.3	465.0	20.42	534.7	22.8	2.5	70.4	67.3	500.0	21.24	572.5	23.5	5.1	71.8	70.1	520.0	21.97	595.0	23.7	8.6	72.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	2.5	90	70.4	515.0	21.42	588.1	24.0	2.4	72.4	75.8	560.0	22.39	636.4	25.0	5.0	74.2	79.0	580.0	23.21	659.2	25.0	8.5	75.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.4	50	37.7	322.0	17.35	381.2	18.6	2.7	59.7	41.3	344.0	17.83	404.9	19.3	5.5	60.3	43.2	356.0	18.33	418.6	19.4	9.3	60.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.4	60	46.0	368.0	17.94	429.2	20.5	2.6	60.9	49.9	396.0	18.47	459.0	21.4	5.4	61.7	52.2	410.0	19.02	474.9	21.6	9.1	62.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.4	70	54.0	420.0	18.59	483.5	22.6	2.5	62.3	58.6	450.0	19.22	515.6	23.4	5.2	63.1	61.0	470.0	19.83	537.7	23.7	8.8	63.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.3	80	61.9	475.0	19.34	541.0	24.6	2.5	63.7	66.9	515.0	20.09	583.6	25.6	5.1	64.8	69.8	535.0	20.76	605.8	25.8	8.6	65.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.3	90	69.8	530.0	20.19	598.9	26.3	2.4	65.2	75.4	575.0	21.07	646.9	27.3	5.0	66.4	78.6	600.0	21.82	674.5	27.5	8.5	67.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	9.1	50	37.7	324.0	17.25	382.9	18.8	2.7	57.3	41.2	348.0	17.71	408.4	19.7	5.5	57.8	43.1	360.0	18.19	422.1	19.8	9.3	58.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	9.1	60	45.8	372.0	17.78	432.7	20.9	2.6	58.2	49.8	400.0	18.28	462.4	21.9	5.4	58.8	52.1	415.0	18.81	479.2	22.1	9.1	59.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
9.1	70	53.8	425.0	18.37	487.7	23.1	2.5	59.3	58.3	460.0	18.97	524.7	24.3	5.2	60.0	60.9	480.0	19.54	546.7	24.6	8.8	60.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
9.1	80	61.7	480.0	19.05	545.0	25.2	2.5	60.4	66.8	520.0	19.75	587.4	26.3	5.1	61.2	69.6	545.0	20.40	614.6	26.7	8.6	61.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
9.1	90	69.4	540.0	19.82	607.6	27.2	2.4	61.6	75.1	585.0	20.65	655.5	28.3	5.0	62.5	78.4	610.0	21.38	683.0	28.5	8.5	63.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
70	52.5	2.4	50	39.0	290.0	22.01	365.1	13.2	2.7	83.9	42.2	308.0	22.45	384.6	13.7	5.5	84.7	43.9	318.0	22.97	396.4	13.8	9.3	85.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	60	47.3	334.0	22.66	411.3	14.7	2.6	85.7	51.0	356.0	23.21	435.2	15.3	5.4	86.6	53.0	370.0	23.76	451.1	15.6	9.1	87.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	70	55.4	382.0	23.42	461.9	16.3	2.5	87.6	59.6	410.0	24.07	492.2	17.0	5.2	88.7	61.9	425.0	24.71	509.3	17.2	8.8	89.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	80	63.6	430.0	24.31	513.0	17.7	2.5	89.5	68.3	460.0	25.07	545.6	18.3	5.1	90.8	70.9	480.0	25.78	568.0	18.6	8.6	91.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	2.4	90	71.5	485.0	25.32	571.4	19.2	2.4	91.8	76.8	520.0	26.24	609.5	19.8	5.0	93.2	79.7	540.0	27.03	632.2	20.0	8.4	94.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.1	50	38.7	296.0	21.19	368.3	14.0	2.7	79.4	42.0	314.0	21.57	387.6	14.6	5.5	79.8	43.8	326.0	22.09	401.4	14.8	9.3	80.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.1	60	47.0	342.0	21.70	416.1	15.8	2.6	80.6	50.8	364.0	22.20	439.8	16.4	5.4	81.2	52.8	378.0	22.72	455.6	16.6	9.1	81.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.1	70	55.1	390.0	22.32	466.2	17.5	2.5	81.8	59.3	420.0	22.91	498.2	18.3	5.2	82.7	61.7	435.0	23.48	515.2	18.5	8.8	83.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.1	80	63.2	440.0	23.05	518.7	19.1	2.5	83.2	67.9	475.0	23.74	556.0	20.0	5.1	84.1	70.6	495.0	24.39	578.2	20.3	8.6	84.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.1	90	71.1	495.0	23.89	576.5	20.7	2.4	84.6	76.4	535.0	24.72	619.4	21.6	5.0	85.7	79.3	560.0	25.43	646.8	22.0	8.4	86.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	8.7	50	38.6	298.0	21.02	369.7	14.2	2.7	77.0	41.9	318.0	21.40	391.0	14.9	5.5	77.4	43.7	330.0	21.88	404.7	15.1	9.3	77.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	8.7	60	46.9	344.0	21.46	417.2	16.0	2.6	77.9	50.6	370.0	21.93	444.8	16.9	5.4	78.5	52.7	384.0	22.43	460.5	17.1	9.1	78.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
8.6	70	55.0	394.0	22.02	469.2	17.9	2.5	78.9	59.2	425.0	22.56	502.0	18.8	5.2	79.6	61.6	440.0	23.11	518.9	19.0	8.8	79.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
8.6	80	62.9	450.0	22.66	527.4	19.9	2.5	80.0	67.7	485.0	23.31	564.6	20.8	5.1	80.8	70.4	505.0	23.92	586.6	21.1	8.6	81.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
8.6	90	70.8	505.0	23.41	584.9	21.6	2.4	81.1	76.2	545.0	24.19	627.5	22.5	5.0	82.0	79.1	570.0	24.87	654.9	22.9	8.5	82.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
80	52.5	2.4	50	39.5	276.0	24.41	359.3	11.3	2.7	93.7	42.6	292.0	24.84	376.8	11.8	5.5	94.4	44.2	302.0	25.34	388.5	11.9	9.3	94.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	60	47.8	320.0	25.03	405.4	12.8	2.6	95.4	51.4	340.0	25.56	427.2	13.3	5.4	96.3	53.3	352.0	26.10	441.1	13.5	9.1	96.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	70	56.1	366.0	25.79	454.0	14.2	2.5	97.3	60.1	390.0	26.40	480.1	14.8	5.2	98.3	62.3	405.0	27.03	497.2	15.0	8.8	98.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		2.4	80	64.2	415.0	26.68	506.1	15.6	2.5	99.3	68.8	440.0	27.40	533.5	16.1	5.1	100.3	71.2	460.0	28.11	555.9	16.4	8.6	101.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	2.3	90	72.3	465.0	27.69	559.5	16.8	2.4	101.3	77.4	495.0	28.56	592.5	17.3	5.0	102.6	80.2	515.0	29.35	615.2	17.5	8.4	103.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.0	50	39.3	282.0	23.54	362.3	12.0	2.7	89.2	42.4	300.0	23.89	381.6	12.6	5.5	89.7	44.1	310.0	24.37	393.2	12.7	9.3	90.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.0	60	47.6	326.0	24.01	408.0	13.6	2.6	90.4	51.2	348.0	24.47	431.5	14.2	5.4	91.0	53.1	362.0	24.98	447.3	14.5	9.1	91.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.0	70	55.8	374.0	24.60	458.0	15.2	2.5	91.6	59.8	400.0	25.15	485.9	15.9	5.2	92.3	62.1	415.0	25.72	502.8	16.1	8.8	92.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	5.0	80	63.8	425.0	25.32	511.4	16.8	2.5	93.0	68.4	455.0	25.97	543.6	17.5	5.1	93.8	71.0	475.0	26.61																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

WRA, WCA 420 – Cooling (continued)

Source			ELT °F	Load Flow 52.5 GPM							Load Flow 78.75 GPM							Load Flow 105.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F	LLT °F	TC Mbtuh	Power kW	HR Mbtuh	EER	WPD (Ft)	LST °F
110	52.5	2.2	50	41.1	234.0	33.68	349.0	6.9	2.6	123.3	43.8	246.0	34.09	362.3	7.2	5.5	123.8	45.2	254.0	34.54	371.9	7.4	9.3	124.2
		2.2	60	49.6	272.0	34.29	389.0	7.9	2.6	124.8	52.6	290.0	34.75	408.6	8.3	5.4	125.6	54.3	298.0	35.24	418.3	8.5	9.0	125.9
		2.2	70	58.0	314.0	35.01	433.5	9.0	2.5	126.5	61.5	334.0	35.57	455.4	9.4	5.2	127.3	63.4	344.0	36.11	467.3	9.5	8.8	127.8
		2.2	80	66.4	358.0	35.88	480.4	10.0	2.5	128.3	70.4	378.0	36.43	502.3	10.4	5.1	129.1	72.5	392.0	37.15	518.8	10.6	8.6	129.8
		2.2	90	74.6	405.0	36.90	530.9	11.0	2.4	130.2	79.2	425.0	37.58	553.3	11.3	5.0	131.1	81.6	440.0	38.37	570.9	11.5	8.4	131.8
	78.75	4.7	50	41.0	236.0	32.73	347.7	7.2	2.6	118.8	43.6	252.0	33.04	364.8	7.6	5.5	119.3	45.0	260.0	33.45	374.2	7.8	9.3	119.5
		4.7	60	49.4	278.0	33.11	391.0	8.4	2.6	119.9	52.5	294.0	33.47	408.2	8.8	5.4	120.4	54.2	306.0	33.95	421.9	9.0	9.0	120.7
		4.7	70	57.7	322.0	33.64	436.8	9.6	2.5	121.1	61.3	342.0	34.10	458.4	10.0	5.2	121.6	63.3	354.0	34.61	472.1	10.2	8.8	122.0
		4.7	80	66.0	368.0	34.29	485.0	10.7	2.5	122.3	70.1	390.0	34.80	508.8	11.2	5.1	122.9	72.3	405.0	35.44	525.9	11.4	8.6	123.4
	105.0	4.7	90	74.2	415.0	35.09	534.8	11.8	2.4	123.6	78.8	440.0	35.78	562.1	12.3	5.0	124.3	81.3	455.0	36.41	579.3	12.5	8.4	124.7
		8.0	50	40.9	240.0	32.44	350.7	7.4	2.6	116.7	43.5	254.0	32.72	365.7	7.8	5.5	117.0	45.0	262.0	33.12	375.0	7.9	9.3	117.1
		8.0	60	49.3	282.0	32.74	393.7	8.6	2.6	117.5	52.4	298.0	33.07	410.9	9.0	5.4	117.8	54.1	310.0	33.51	424.4	9.3	9.0	118.1
8.0		70	57.6	326.0	33.16	439.2	9.8	2.5	118.4	61.2	348.0	33.58	462.6	10.4	5.2	118.8	63.1	360.0	34.01	476.1	10.6	8.8	119.1	
120	52.5	8.0	80	65.8	372.0	33.66	486.9	11.1	2.5	119.3	69.9	396.0	34.13	512.5	11.6	5.1	119.8	72.2	410.0	34.70	528.4	11.8	8.6	120.1
		7.9	90	74.0	420.0	34.32	537.1	12.2	2.4	120.2	78.6	450.0	34.92	569.2	12.9	5.0	120.8	81.1	465.0	35.54	586.3	13.1	8.4	121.2
		2.2	50	41.6	220.0	37.28	347.2	5.9	2.6	133.2	44.1	232.0	37.72	360.7	6.2	5.5	133.7	45.5	236.0	38.19	366.3	6.2	9.3	134.0
		2.2	60	50.2	256.0	38.04	385.8	6.7	2.6	134.7	53.1	272.0	38.48	403.3	7.1	5.4	135.4	54.7	278.0	38.96	411.0	7.1	9.0	135.7
		2.2	70	58.6	298.0	38.74	430.2	7.7	2.5	136.4	62.0	314.0	39.29	448.1	8.0	5.2	137.1	63.9	322.0	39.82	457.9	8.1	8.8	137.4
	78.75	2.2	80	67.1	338.0	39.62	473.2	8.5	2.5	138.0	70.9	358.0	40.26	495.4	8.9	5.1	138.9	73.0	368.0	40.86	507.4	9.0	8.6	139.3
		2.2	90	75.5	380.0	40.64	518.7	9.3	2.4	139.8	79.7	405.0	41.42	546.4	9.8	5.0	140.8	82.1	415.0	42.09	558.7	9.9	8.4	141.3
		4.6	50	41.5	222.0	36.35	346.0	6.1	2.6	128.8	44.0	236.0	36.72	361.3	6.4	5.5	129.2	45.4	242.0	37.18	368.9	6.5	9.3	129.4
		4.6	60	50.0	262.0	36.86	387.8	7.1	2.6	129.8	52.9	278.0	37.21	405.0	7.5	5.4	130.3	54.6	286.0	37.65	414.5	7.6	9.0	130.5
		4.6	70	58.4	304.0	37.36	431.5	8.1	2.5	131.0	61.8	322.0	37.79	451.0	8.5	5.2	131.5	63.7	332.0	38.28	462.7	8.7	8.8	131.8
		4.6	80	66.7	348.0	37.99	477.7	9.2	2.5	132.1	70.7	368.0	38.53	499.5	9.6	5.1	132.7	72.8	380.0	39.08	513.4	9.7	8.6	133.0
		4.6	90	75.1	392.0	38.77	524.3	10.1	2.4	133.3	79.5	415.0	39.43	549.6	10.5	5.0	134.0	81.8	430.0	40.03	566.6	10.7	8.4	134.4
105.0	7.8	50	41.5	224.0	36.08	347.1	6.2	2.6	126.6	44.0	238.0	36.44	362.4	6.5	5.5	126.9	45.4	244.0	36.86	369.8	6.6	9.3	127.0	
	7.8	60	49.9	266.0	36.47	390.5	7.3	2.6	127.4	52.9	280.0	36.78	405.5	7.6	5.4	127.7	54.5	290.0	37.22	417.0	7.8	9.0	127.9	
	7.8	70	58.3	308.0	36.88	433.9	8.4	2.5	128.3	61.7	326.0	37.26	453.2	8.7	5.2	128.6	63.6	338.0	37.73	466.8	9.0	8.8	128.9	
	7.8	80	66.6	352.0	37.39	479.6	9.4	2.5	129.1	70.5	374.0	37.87	503.3	9.9	5.1	129.6	72.6	386.0	38.40	517.1	10.1	8.6	129.8	
	7.8	90	74.8	398.0	38.05	527.9	10.5	2.4	130.1	79.2	425.0	38.65	556.9	11.0	5.0	130.6	81.6	440.0	39.21	573.8	11.2	8.4	130.9	

Legend:

Source - Heat rejection water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit

EST - Entering Source Temperature

GPM - Gallons Per Minute

WPD - Water Pressure Drop, Ft. of water

EER - Energy Efficiency Ratio

ELT - Entering Load Temperature

LLT - Leaving Load Temperature

TC - Total Cooling

kW - Kilowatts

HR - Heat Rejected

WPD - Water Pressure Drop

LST - Leaving Source Temperature

LWT - Leaving Water Temperature, (°F)

Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

Notes: 1. Interpolation is permissible, extrapolation is not.

2. All data is based on 100% water as the heat transfer fluid.

3. Apply capacity correction factors when using an anti-freeze solution.

4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.

5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA 420 – Heating

Source			ELT °F	Load Flow 52.5 GPM							Load Flow 78.75 GPM							Load Flow 105.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
30	52.5	2.8	60	70.6	278.0	18.69	214.2	4.4	2.5	21.8	67.1	280.0	18.19	217.9	4.5	5.3	21.7	65.4	282.0	18.19	219.9	4.5	8.9	21.6
		2.8	80	90.2	268.0	23.18	188.9	3.4	2.4	22.8	86.9	270.0	22.62	192.8	3.5	5.0	22.7	85.2	272.0	22.57	195.0	3.5	8.5	22.6
		2.8	100	109.9	260.0	28.97	161.1	2.6	2.3	23.9	106.7	262.0	28.40	165.1	2.7	4.8	23.7	105.0	262.0	28.36	165.2	2.7	8.2	23.7
	78.75	2.8	120	129.8	256.0	35.89	133.5	2.1	2.2	24.9	126.5	256.0	35.29	135.6	2.1	4.6	24.8	124.9	258.0	35.19	137.9	2.1	7.9	24.7
		5.9	60	71.0	290.0	19.17	224.6	4.4	2.5	24.3	67.5	294.0	18.60	230.5	4.6	5.3	24.1	65.6	296.0	18.56	232.7	4.7	8.9	24.1
		5.9	80	90.6	278.0	23.65	197.3	3.4	2.4	25.0	87.1	280.0	23.05	201.3	3.6	5.0	24.9	85.4	282.0	22.98	203.6	3.6	8.5	24.8
		5.9	100	110.3	270.0	29.33	169.9	2.7	2.3	25.7	106.9	272.0	28.72	174.0	2.8	4.8	25.6	105.2	272.0	28.63	174.3	2.8	8.1	25.6
		5.9	120	130.1	264.0	36.12	140.7	2.1	2.2	26.4	126.8	266.0	35.52	144.8	2.2	4.6	26.3	125.1	266.0	35.42	145.1	2.2	7.9	26.3
		9.9	60	71.4	298.0	19.58	231.2	4.5	2.5	25.6	67.7	302.0	19.02	237.1	4.7	5.3	25.5	65.8	304.0	18.98	239.2	4.7	8.9	25.4
	105.0	9.9	80	90.9	286.0	24.11	203.7	3.5	2.4	26.1	87.3	288.0	23.48	207.8	3.6	5.0	26.0	85.5	290.0	23.38	210.2	3.6	8.5	26.0
		9.9	100	110.4	274.0	29.78	172.4	2.7	2.3	26.7	107.0	276.0	29.15	176.5	2.8	4.8	26.6	105.3	278.0	29.06	178.8	2.8	8.1	26.6
		9.9	120	130.3	270.0	36.56	145.2	2.2	2.2	27.2	126.9	270.0	35.94	147.4	2.2	4.6	27.2	125.2	272.0	35.83	149.7	2.2	7.9	27.1
40	52.5	2.7	60	72.0	316.0	19.23	250.4	4.8	2.5	30.5	68.1	318.0	18.62	254.4	5.0	5.3	30.3	66.1	322.0	18.55	258.7	5.1	8.9	30.1
		2.7	80	91.6	304.0	23.75	222.9	3.8	2.4	31.5	87.8	306.0	23.05	227.3	3.9	5.0	31.3	85.9	308.0	22.93	229.7	3.9	8.5	31.2
		2.7	100	111.3	296.0	29.56	195.1	2.9	2.3	32.6	107.6	298.0	28.85	199.5	3.0	4.8	32.4	105.7	298.0	28.71	200.0	3.0	8.1	32.4
	78.75	2.7	120	131.1	292.0	36.38	167.8	2.4	2.2	33.6	127.4	292.0	35.65	170.3	2.4	4.6	33.5	125.6	294.0	35.50	172.8	2.4	7.9	33.4
		5.7	60	72.6	332.0	19.62	265.0	5.0	2.5	33.3	68.5	336.0	18.98	271.2	5.2	5.3	33.1	66.5	340.0	18.89	275.5	5.3	8.9	33.0
		5.7	80	92.1	318.0	24.11	235.7	3.9	2.4	34.0	88.2	322.0	23.36	242.3	4.0	5.0	33.8	86.2	324.0	23.22	244.8	4.1	8.5	33.8
		5.7	100	111.7	308.0	29.97	205.7	3.0	2.3	34.8	107.9	310.0	29.17	210.4	3.1	4.8	34.7	105.9	312.0	28.92	213.3	3.2	8.1	34.6
		5.7	120	131.5	302.0	36.75	176.6	2.4	2.2	35.5	127.7	304.0	35.98	181.2	2.5	4.6	35.4	125.8	304.0	35.80	181.8	2.5	7.9	35.4
		9.6	60	73.0	342.0	20.10	273.4	5.0	2.5	34.8	68.8	346.0	19.43	279.7	5.2	5.3	34.7	66.7	350.0	19.33	284.0	5.3	8.9	34.6
	105.0	9.6	80	92.5	328.0	24.55	244.2	3.9	2.4	35.3	88.4	330.0	23.79	248.8	4.1	5.0	35.3	86.4	334.0	23.63	253.4	4.1	8.5	35.2
		9.6	100	112.0	316.0	30.41	212.2	3.0	2.3	36.0	108.1	318.0	29.52	217.2	3.2	4.8	35.9	106.1	320.0	29.31	220.0	3.2	8.1	35.8
		9.6	120	131.7	308.0	37.20	181.0	2.4	2.2	36.6	127.9	310.0	36.41	185.7	2.5	4.6	36.5	125.9	310.0	36.22	186.4	2.5	7.9	36.4
50	52.5	2.7	60	73.6	358.0	19.76	290.6	5.3	2.5	38.9	69.2	362.0	19.05	297.0	5.6	5.2	38.7	67.0	366.0	18.93	301.4	5.7	8.9	38.5
		2.7	80	93.2	346.0	24.24	263.3	4.2	2.4	40.0	88.8	348.0	23.40	268.1	4.4	5.0	39.8	86.7	350.0	23.22	270.8	4.4	8.5	39.7
		2.6	100	112.7	334.0	30.15	231.1	3.2	2.3	41.2	108.6	338.0	29.14	238.5	3.4	4.8	40.9	106.5	340.0	28.86	241.5	3.5	8.1	40.8
	78.75	2.6	120	132.6	330.0	37.04	203.6	2.6	2.2	42.2	128.4	330.0	36.15	206.6	2.7	4.6	42.1	126.3	332.0	35.91	209.4	2.7	7.8	42.0
		5.5	60	74.5	380.0	20.24	310.9	5.5	2.5	42.1	69.8	384.0	19.47	317.5	5.8	5.2	41.9	67.4	388.0	19.32	322.0	5.9	8.9	41.8
		5.5	80	93.9	364.0	24.67	279.8	4.3	2.4	42.9	89.3	368.0	23.78	286.8	4.5	5.0	42.7	87.0	370.0	23.56	289.6	4.6	8.5	42.6
		5.5	100	113.4	352.0	30.50	247.9	3.4	2.3	43.7	109.0	354.0	29.44	253.5	3.5	4.8	43.6	106.8	356.0	29.15	256.5	3.6	8.1	43.5
		5.5	120	133.0	342.0	37.47	214.1	2.7	2.2	44.6	128.7	344.0	36.52	219.4	2.8	4.6	44.4	126.6	346.0	36.25	222.3	2.8	7.8	44.4
		9.3	60	74.9	392.0	20.75	321.2	5.5	2.5	43.9	70.1	398.0	19.95	329.9	5.8	5.2	43.7	67.6	400.0	19.79	332.4	5.9	8.9	43.7
	105.0	9.3	80	94.3	376.0	25.16	290.1	4.4	2.4	44.5	89.7	380.0	24.23	297.3	4.6	5.0	44.3	87.3	382.0	24.00	300.1	4.7	8.5	44.3
		9.3	100	113.7	360.0	30.93	254.4	3.4	2.3	45.2	109.2	364.0	29.86	262.1	3.6	4.8	45.0	107.0	366.0	29.55	265.1	3.6	8.1	44.9
		9.3	120	133.3	350.0	37.94	220.5	2.7	2.2	45.8	128.9	352.0	36.96	225.9	2.8	4.6	45.7	126.7	354.0	36.68	228.8	2.8	7.8	45.6

WRA, WHA 420 – Heating (continued)

Source			ELT °F	Load Flow 52.5 GPM							Load Flow 78.75 GPM							Load Flow 105.0 GPM						
EST °F	Flow GPM	WPD (Ft)		LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F	LLT °F	TH Mbtuh	Power kW	HA Mbtuh	COP	WPD (Ft)	LST °F
60	52.5	2.6	60	75.4	405.0	20.42	335.3	5.8	2.5	47.2	70.4	410.0	19.57	343.2	6.1	5.2	46.9	67.9	415.0	19.39	348.8	6.3	8.9	46.7
		2.6	80	94.9	390.0	24.86	305.2	4.6	2.4	48.4	90.0	394.0	23.87	312.5	4.8	5.0	48.1	87.6	398.0	23.61	317.4	4.9	8.5	47.9
		2.6	100	114.4	378.0	30.66	273.4	3.6	2.3	49.6	109.7	382.0	29.50	281.3	3.8	4.8	49.3	107.3	384.0	29.16	284.5	3.9	8.1	49.2
		2.6	120	134.1	370.0	37.79	241.0	2.9	2.2	50.8	129.4	372.0	36.66	246.9	3.0	4.6	50.6	127.1	372.0	36.31	248.1	3.0	7.8	50.5
	78.75	5.4	60	76.4	430.0	20.98	358.4	6.0	2.5	50.9	71.0	435.0	20.07	366.5	6.4	5.2	50.7	68.4	440.0	19.86	372.2	6.5	8.9	50.5
		5.4	80	95.8	415.0	25.37	328.4	4.8	2.4	51.7	90.7	420.0	24.32	337.0	5.1	5.0	51.4	88.0	420.0	24.03	338.0	5.1	8.5	51.4
		5.4	100	115.2	398.0	31.10	291.8	3.7	2.3	52.6	110.2	400.0	29.90	298.0	3.9	4.8	52.4	107.7	405.0	29.52	304.2	4.0	8.1	52.3
		5.4	120	134.7	386.0	38.22	255.5	3.0	2.2	53.5	129.9	388.0	37.02	261.7	3.1	4.6	53.4	127.4	390.0	36.63	265.0	3.1	7.8	53.3
	105.0	9.1	60	77.0	445.0	21.54	371.5	6.1	2.5	52.9	71.4	450.0	20.59	379.7	6.4	5.2	52.8	68.7	455.0	20.36	385.5	6.5	8.9	52.7
		9.1	80	96.2	425.0	25.91	336.6	4.8	2.4	53.6	90.9	430.0	24.82	345.3	5.1	5.0	53.4	88.3	435.0	24.50	351.4	5.2	8.5	53.3
		9.0	100	115.6	410.0	31.60	302.2	3.8	2.3	54.2	110.5	415.0	30.36	311.4	4.0	4.8	54.1	107.9	415.0	29.96	312.7	4.1	8.1	54.0
			9.0	120	135.0	394.0	38.69	261.9	3.0	2.2	55.0	130.1	396.0	37.45	268.2	3.1	4.6	54.9	127.6	400.0	37.04	273.6	3.2	7.8
70	52.5	2.5	60	77.3	455.0	21.18	382.7	6.3	2.5	55.4	71.7	460.0	20.20	391.1	6.7	5.2	55.1	68.9	465.0	19.95	396.9	6.8	8.9	54.9
		2.5	80	96.8	440.0	25.60	352.6	5.0	2.4	56.6	91.3	445.0	24.46	361.5	5.3	5.0	56.2	88.6	450.0	24.12	367.7	5.5	8.5	56.0
		2.5	100	115.2	425.0	31.34	318.0	4.0	2.3	57.9	110.9	430.0	30.03	327.5	4.2	4.8	57.5	108.2	430.0	29.60	329.0	4.3	8.1	57.5
		2.5	120	135.6	410.0	38.49	278.6	3.1	2.2	59.4	130.5	415.0	37.16	288.2	3.3	4.6	59.0	127.9	415.0	36.70	289.7	3.3	7.8	59.0
	78.75	5.2	60	78.5	485.0	21.83	410.5	6.5	2.5	59.6	72.6	495.0	20.78	424.1	7.0	5.2	59.2	69.5	500.0	20.50	430.0	7.1	8.9	59.1
		5.2	80	97.7	465.0	26.19	375.6	5.2	2.4	60.5	91.9	470.0	24.98	384.7	5.5	5.0	60.2	89.0	475.0	24.61	391.0	5.7	8.5	60.1
		5.2	100	117.0	445.0	31.90	336.1	4.1	2.3	61.5	111.4	450.0	30.51	345.9	4.3	4.8	61.2	108.7	455.0	30.02	352.5	4.4	8.1	61.0
		5.2	120	136.4	430.0	39.01	296.9	3.2	2.2	62.5	131.0	435.0	37.59	306.7	3.4	4.6	62.2	128.3	435.0	37.09	308.4	3.4	7.8	62.2
	105.0	8.8	60	79.2	505.0	22.44	428.4	6.6	2.5	61.8	73.1	515.0	21.37	442.1	7.1	5.2	61.6	69.9	520.0	21.06	448.1	7.2	8.9	61.5
		8.8	80	98.3	480.0	26.82	388.5	5.2	2.4	62.6	92.4	490.0	25.54	402.8	5.6	5.0	62.3	89.4	495.0	25.14	409.2	5.8	8.5	62.2
		8.8	100	117.5	460.0	32.46	349.2	4.2	2.3	63.3	111.8	465.0	31.02	359.1	4.4	4.8	63.2	109.0	470.0	30.53	365.8	4.5	8.1	63.0
			8.8	120	136.8	440.0	39.53	305.1	3.3	2.2	64.2	131.3	445.0	38.06	315.1	3.4	4.6	64.0	128.6	450.0	37.54	321.9	3.5	7.8
80	52.5	2.5	60	79.4	510.0	22.05	434.7	6.8	2.5	63.4	73.1	515.0	20.92	443.6	7.2	5.2	63.1	69.9	520.0	20.60	449.7	7.4	8.9	62.9
		2.5	80	98.7	490.0	26.47	399.7	5.4	2.4	64.8	92.6	495.0	25.15	409.1	5.8	5.0	64.4	89.5	500.0	24.73	415.6	5.9	8.5	64.2
		2.5	100	117.9	470.0	32.18	360.2	4.3	2.3	66.3	112.1	475.0	30.68	370.3	4.5	4.8	65.9	109.1	480.0	30.16	377.1	4.7	8.1	65.6
		2.5	120	137.3	455.0	39.34	320.7	3.4	2.2	67.8	131.7	460.0	37.78	331.1	3.6	4.6	67.4	128.9	465.0	37.21	338.0	3.7	7.8	67.1
	78.75	5.1	60	80.8	545.0	22.85	467.0	7.0	2.5	68.1	74.1	555.0	21.63	481.2	7.5	5.2	67.8	70.7	560.0	21.26	487.4	7.7	8.8	67.6
		5.1	80	99.8	520.0	27.22	427.1	5.6	2.4	69.2	93.5	530.0	25.81	441.9	6.0	5.0	68.8	90.2	535.0	25.34	448.5	6.2	8.4	68.6
		5.1	100	119.0	500.0	32.87	387.8	4.5	2.3	70.2	112.8	505.0	31.27	398.3	4.7	4.8	69.9	109.7	510.0	30.70	405.2	4.9	8.1	69.7
		5.1	120	138.3	480.0	39.96	343.6	3.5	2.2	71.3	132.3	485.0	38.31	354.3	3.7	4.6	71.0	129.2	485.0	37.69	356.4	3.8	7.8	70.9
	105.0	8.6	60	81.5	565.0	23.54	484.7	7.0	2.5	70.8	74.6	575.0	22.27	499.0	7.6	5.2	70.5	71.1	585.0	21.88	510.3	7.8	8.8	70.3
		8.6	80	100.6	540.0	27.87	444.9	5.7	2.4	71.5	94.0	550.0	26.41	459.8	6.1	5.0	71.2	90.6	555.0	25.92	466.5	6.3	8.4	71.1
		8.6	100	119.6	515.0	33.49	400.7	4.5	2.3	72.4	113.2	520.0	31.84	411.3	4.8	4.8	72.2	110.0	525.0	31.24	418.4	4.9	8.1	72.0
			8.6	120	139.8	520.0	41.27	379.2	3.7	2.2	72.8	133.1	515.0	39.15	381.4	3.9	4.6	72.7	129.8	515.0	38.38	384.0	3.9	7.8

Legend:

- Source - Heat added water loop; geothermal or boiler/tower loop Load Flow - Water loop serving the unit
- EST - Entering Source Temperature GPM - Gallons Per Minute
- WPD - Water Pressure Drop, Ft. of water EER - Energy Efficiency Ratio
- ELT - Entering Load Temperature LLT - Leaving Load Temperature
- TH - Total Heating kW - Kilowatts
- HA - Heat Added WPD - Water Pressure Drop
- LST - Leaving Source Temperature LWT - Leaving Water Temperature, (°F)
- Mbtuh - Mega British Thermal Units per Hour of Heat Transfer

- Notes:
1. Interpolation is permissible, extrapolation is not.
 2. All data is based on 100% water as the heat transfer fluid.
 3. Apply capacity correction factors when using an anti-freeze solution.
 4. Do not select units at leaving load-side temperatures below 40°F in the cooling mode.
 5. Less than 9.0 GPM of source water is not recommended at EWT of 110° F.

WRA, WHA, WCA 036 – 420
Physical Data

Unit Size	Cabinet Dimensions (in.)			Unit Weight (lb.)		Factory Refrigerant Charge Per Circuit (lb.)	Water Connections (in.)
	Width	Depth	Height	Operating	Shipping		FPT
036	28.125	28.125	19.00	250	259	2.80	0.75
048	28.125	28.125	21.00	297	300	3.50	1.00
060	28.125	28.125	21.00	302	505	4.40	1.00
072	35.125	28.125	21.00	320	370	5.00	1.00
120	34.00	42.00	41.00	570	610	2.75/2.75	1.50
150	34.00	42.00	41.00	735	770	4.25/4.25	1.50
180	34.00	42.00	41.00	900	950	8.00/8.00	2.00
240	34.00	50.00	63.125	1040	1140	10.0/10.0	2.00
300	34.00	50.00	63.125	1130	1230	16.0/16.0	2.00
360	34.00	50.00	63.125	1420	1540	17.5/17.5	2.00
420	34.00	50.00	63.125	1620	1750	20.0/20.0	2.00

Antifreeze Correction

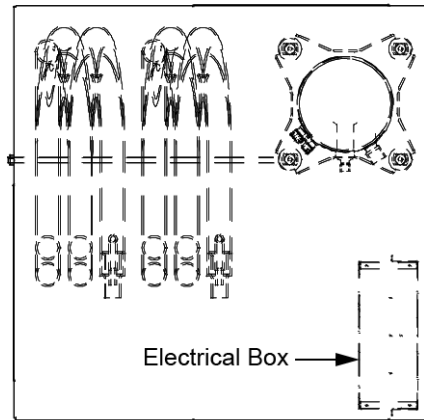
Antifreeze		Heating Capacity		Cooling Capacity		Pressure Drop
		Load	Source	Load	Source	
Type	Percent	90°F EWT	30°F EWT	45°F EWT	90°F EWT	30°F EWT
Water	0	1.000	1.000	1.000	1.000	1.000
Ethylene Glycol	10	0.991	0.973	0.975	0.991	1.075
	20	0.979	0.943	0.946	0.979	1.163
	30	0.965	0.917	0.920	0.965	1.225
	40	0.955	0.890	0.895	0.955	1.324
	50	0.943	0.865	0.870	0.943	1.419
Propylene Glycol	10	0.981	0.958	0.959	0.981	1.130
	20	0.969	0.913	0.919	0.969	1.270
	30	0.950	0.854	0.866	0.950	1.433
	40	0.937	0.813	0.829	0.937	1.614
	50	0.922	0.770	0.789	0.922	1.816
Methanol	10	0.986	0.957	0.961	0.986	1.127
	20	0.970	0.924	0.928	0.970	1.197
	30	0.951	0.895	0.897	0.951	1.235
	40	0.936	0.863	0.865	0.936	1.323
	50	0.920	0.833	0.835	0.920	1.399
Ethanol	10	0.991	0.927	0.941	0.991	1.242
	20	0.972	0.887	0.901	0.972	1.343
	30	0.947	0.856	0.866	0.947	1.383
	40	0.930	0.815	0.826	0.930	1.523
	50	0.911	0.779	0.791	0.911	1.639

= Operation in the shaded areas should be avoided as antifreeze solutions greater than 35% will result in extreme performance reductions.

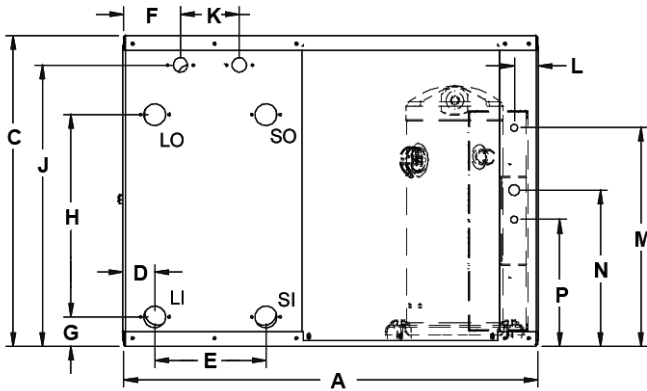
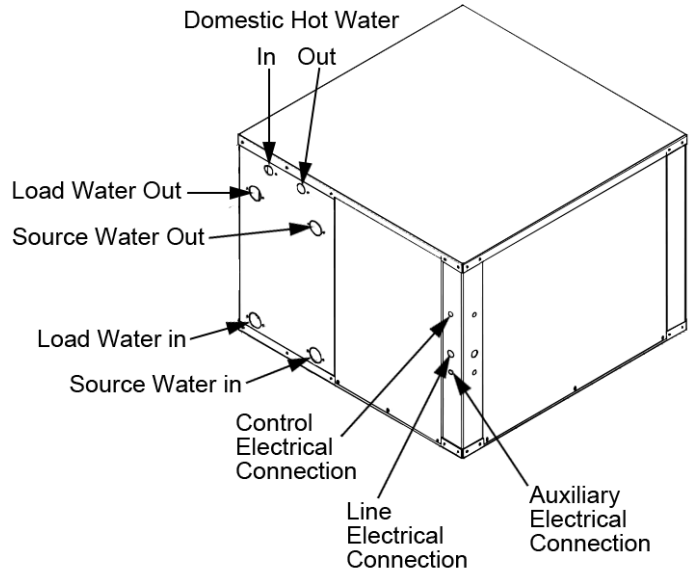
Waterflow Correction

	Flow	Heating		Cooling	
	GPM/Ton	Tons	kW	Tons	kW
Load	1.2	0.982	1.040	0.970	1.044
	1.8	0.990	1.022	0.983	1.024
	2.4	1.000	1.000	1.000	1.000
Source	1.5	0.973	1.042	0.984	1.038
	2.3	0.987	1.021	0.993	1.019
	3.0	1.000	1.000	1.000	1.000

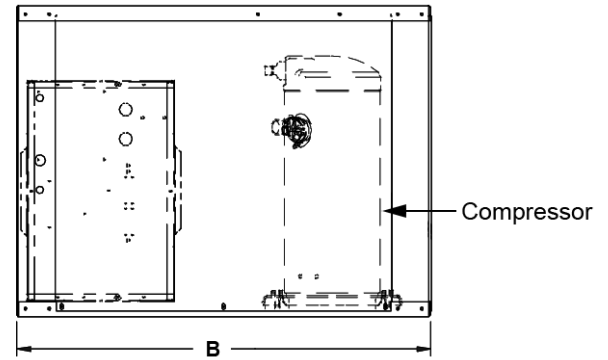
WRA, WCA, WHA – Size 036-072



Top View



Front View



Right Side View

Dimensions - Size 036

Dimensions (in.)										Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water
28 $\frac{3}{8}$ "	28 $\frac{3}{8}$ "	19	1 $\frac{3}{4}$ "	6 $\frac{3}{8}$ "	3 $\frac{3}{8}$ "	2	11 $\frac{3}{8}$ "	17 $\frac{3}{8}$ "	4	1 $\frac{1}{2}$ "	14 $\frac{7}{8}$ "	10 $\frac{3}{8}$ "	8 $\frac{3}{8}$ "	1/2" KO	3/4" KO	1/2" KO	3/4" FPT	1/2" FPT

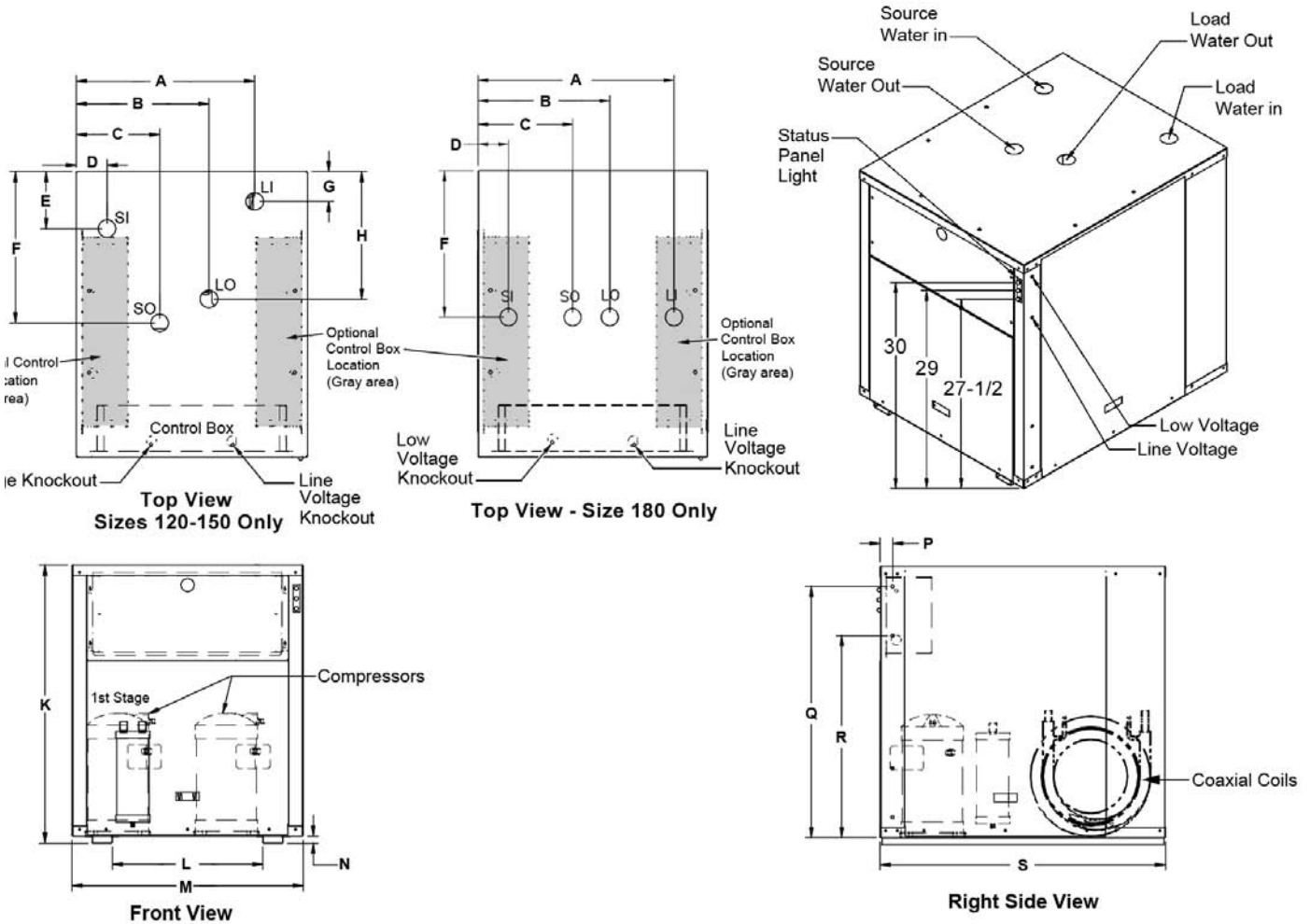
Dimensions - Size 048-060

Dimensions (in.)										Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water
28 $\frac{3}{8}$ "	28 $\frac{3}{8}$ "	21	2 $\frac{1}{4}$ "	7 $\frac{1}{2}$ "	3 $\frac{3}{8}$ "	2	13 $\frac{3}{4}$ "	19	4	1 $\frac{1}{2}$ "	14 $\frac{7}{8}$ "	10 $\frac{3}{8}$ "	8 $\frac{3}{8}$ "	1/2" KO	3/4" KO	1/2" KO	1" FPT	1/2" FPT

Dimensions - Size 072

Dimensions (in.)										Pipe Size (FPT)				Connection Size				
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Control	Electric	Auxiliary Electric	Load Source	Domestic Hot Water
35 $\frac{3}{8}$ "	28 $\frac{3}{8}$ "	21	9 $\frac{11}{16}$ "	10 $\frac{3}{8}$ "	10 $\frac{3}{8}$ "	2	12 $\frac{1}{4}$ "	19	4	1 $\frac{1}{2}$ "	14 $\frac{7}{8}$ "	10 $\frac{3}{8}$ "	8 $\frac{3}{8}$ "	1/2" KO	3/4" KO	1/2" KO	1" FPT	1/2" FPT

WRA, WCA, WHA – Size 120-180



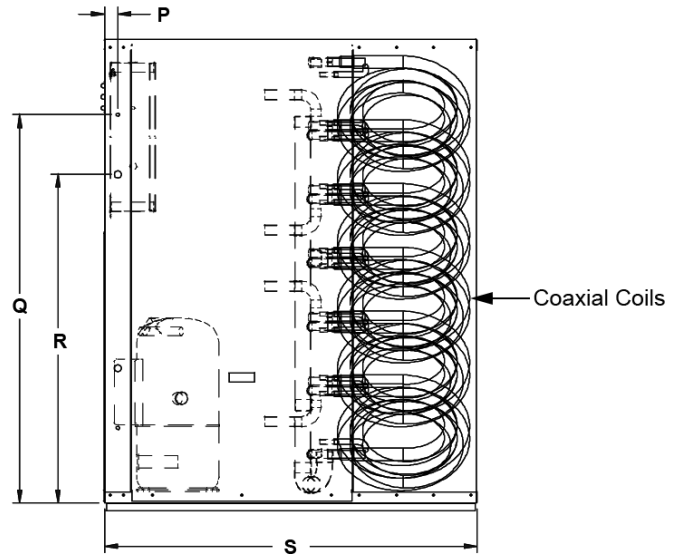
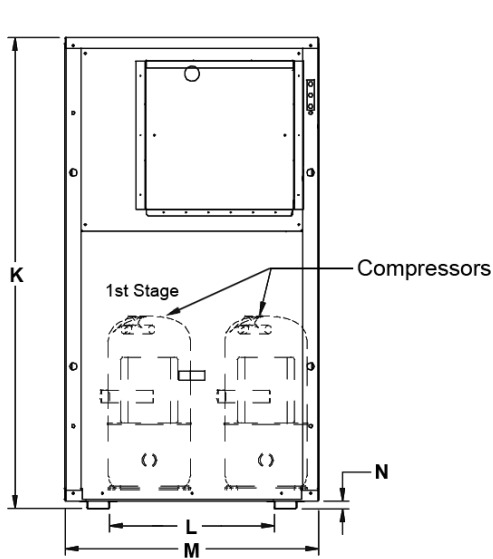
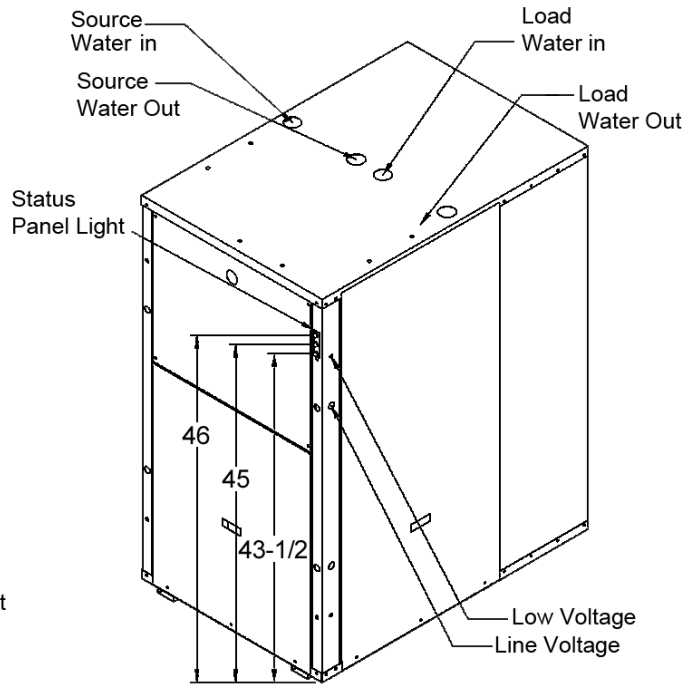
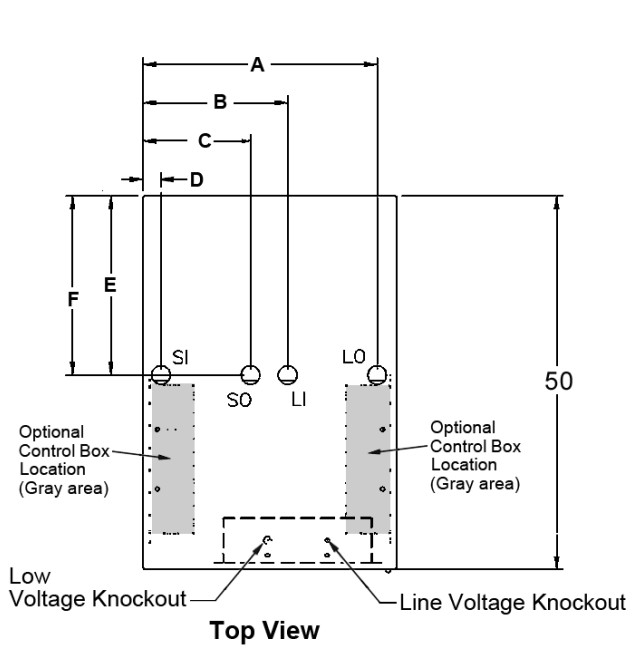
Dimensions - Size 120 – 150

Dimensions (in.)																Water Connection Size
A	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	S	Load Source FPT
26 ³ / ₄	19 ¹ / ₂	12 ¹ / ₄	4 ¹ / ₂	8 ³ / ₈	22 ¹ / ₄	4 ³ / ₈	18 ³ / ₄	41	22 ¹ / ₂	34	1	1 ¹³ / ₁₆	37	29 ³ / ₄	42	1 ¹ / ₂ "

Dimensions - Size 180

Dimensions (in.)																Water Connection Size
A	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	S	Load Source FPT
29	19 ¹ / ₂	14	4 ¹ / ₂	8 ³ / ₈	21 ¹ / ₂	4 ³ / ₈	18 ³ / ₄	41	22 ¹ / ₂	34	1	1 ¹³ / ₁₆	37	29 ³ / ₄	42	2"

WRA, WCA, WHA – Size 240-420



Dimensions - Size 240 – 420

Dimensions (in.)														Water Connection Size
A	B	C	D	E	F	K	L	M	N	P	Q	R	S	Load Source FPT
31 ³ / ₈	19 ³ / ₈	14 ³ / ₈	2 ³ / ₈	24	24	63 ³ / ₈	22 ³ / ₈	34	1	1 ¹³ / ₁₆	52 ³ / ₈	44 ³ / ₈	50	2"

Water-to-Water Source Heat Pump Unit

Models: WRA, WRC, WHA

1.01 System Description

- A. Heat pump units designed to operate with 30 to 110°F entering water temperature range. Units shall consist of high-efficiency scroll compressors and shall have dual independent refrigeration circuits.
- B. Units shall be individually packaged with wooden skid covered with protective corner posts and plastic stretch wrapping for maximum protection.

1.02 Quality Assurance

- A. Basic unit shall be rated in accordance with ISO/ASHRAE Standards and ETL listed.
- B. Units shall have insulation and adhesive which meet NFPA 90A requirements for flame spread and smoke generation, and assembled units shall be ETL listed to UL standard 1995.
- C. Units shall be factory tested under normal operating conditions at nominal water flow rates to assure proper operation of all components and safety devices.
- D. Units shall have ARI/ISO and ETL, US and Canada labels.

2.01 Equipment

A. General:

1. Factory-tested and assembled single-piece water source heat pump units shall be factory wired, charged with HFC-410A, contain refrigerant to-water heat exchanger, 4-way reversing valve, compressor, metering device, and all internal controls and safety devices.
2. Extended Range:
 - a. Unit shall operate at entering water temperature of 30 to 110°F.
 - b. Extended range adds closed cell isolation to internal water lines and provides insulation on suction side refrigeration tubing including refrigerant-to-water heat exchangers.
 - c. Units operating in cooling mode with an entering water temperature of 75°F (23.9°C) or higher do not require water regulating valves. Units operating AT ANY TIME in cooling mode with an entering water temperature less than 75°F (23.9°C) require water regulating valves. Includes valves, bypass refrigeration circuit and check valve

B. Unit Cabinet:

1. Unit shall be constructed of heavy gage, powder-painted, galvanized sheet metal with removable service panels (3).
2. Unit shall have separate entrances for high and low-voltage electrical supplies.
3. Supply and return water connections shall be copper FPT fittings, terminating out the top of the unit to facilitate heading on multiple units side-by-side.
4. All interior surfaces shall be lined with 1/2-in. thick, 1-3/4 lb per cu ft density acoustic type fiberglass

insulation. All fiberglass shall be coated and all edges shall be tucked under flanges.

C. Compressors:

1. Unit shall have heat pump duty, scroll compressors with internal and external isolation.

D. Heat Exchangers:

1. Refrigerant-to-water heat exchanger shall be steel/copper tube-in-tube type rated for coaxial 625 psig refrigerant, 450 psig water-side pressures. Heat exchanger shall be powder coated for extra protection.
2. Optional steel/cupronickel refrigerant-to-water heat exchanger shall be used for open loop applications, or where water quality cannot be maintained as specified by manufacturer.

E. Refrigerant Components:

1. Refrigeration circuit components shall include liquid line service valve, suction line service valve, reversing valve, a full charge of compressor oil, and a holding charge of refrigerant.
2. Thermostatic expansion valves shall be provided for refrigerant metering. Reversing valve shall be 4-way solenoid activated that defaults to heating.

F. Solid-State Controls:

1. Two light-emitting diodes (LEDs) shall be externally mounted to indicate compressor ON status and unit fault modes.

G. Controls and Safeties:

1. Safety devices on all units shall include low pressure sensor, high-pressure switch and low water temperature sensor.
2. Electronic control system(s) shall be a solid-state control system.

Units utilizing electro-mechanical control systems shall not be acceptable. The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI and RFI interference. The control system shall interface with a heat pump type thermostat. The control system shall have the following features:

- a. Anti-short cycle time delay on compressor operation.
- b. Random start on power-up.
- c. Low voltage protection.
- d. High voltage protection.
- e. Unit shutdown on high or low refrigerant pressures.
- f. Unit shutdown on low water temperature.
- g. Option to reset unit at thermostat or disconnect.
- h. Automatic intelligent reset. Unit shall automatically restart 5 minutes after shutdown if the fault has cleared. Should a fault occur 3 times sequentially, then lockout will occur.
- i. Ability to defeat time delays for servicing.
- j. Light-emitting diode (LED) to indicate high pressure, low pressure, improper voltage, source freeze protection, load freeze.



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