

Phone (262) 670-6600										AMERICAN EXCHANGER SERVICES, INC.										Fax (262) 670-6645																			
FEEDWATER HEATER SPECIFICATION SHEET																				AM-EX NO.					4109-01A 304														
CUSTOMER		We Energies															DATE:					02/10/17																	
STATION		OCPP (Oak Creek)										Unit No		5		MW =			275			REV. NO.					1												
SERVICE		HP 5 A & B										NO. OF SHELLS/UNIT					2					MARK NO.																	
SIZE		36 5 312					TYPE: DEU										INSTALLATION					Horizontal																	
PERFORMANCE OF ONE SHELL																																							
DATA BY PURCHASER										SHELL SIDE										TUBE SIDE																			
FLUID CIRCULATED										STEAM					DRAINS 1					DRAINS 2					FEEDWATER														
INLET FLOW RATE										#/HR					26,925					142,278					848,750														
INLET / SAT TEMP										°F					589.66					/ 322.1					276.8														
OUTLET TEMPERATURE / FLOW										°F / #/Hr					286.8					/ 169,203					317.1														
INLET ENTHALPY										BTU/#					1,324.50					298.00					251.4														
OUTLET ENTHALPY										BTU/#															292.3														
PRESSURE AT INLET										PSIA					92.30										2,800														
PRESSURE DROP ALLOW										PSI					DSH					2.00					DC					5.00					10.00				
PRESSURE DROP CALC										PSI					DSH					2.53					DC					3.80					9.17				
VELOCITY										FPS															7.36					@ 60 °F= 6.85									
NUMBER OF PASSES															3					ZONE(S)					2					PASS(ES)									
TERMINAL TEMP DIFFERENCE										°F					4.96					DCA					10.00														
ZONE										DESUPERHEATING					CONDENSING					SUBCOOLING					TOTAL														
GROSS SURFACE										SQ FT					284					2,517					755					3,555									
EFFECTIVE SURFACE										SQ FT					245					2,517					717					3,479									
DUTY (MIL)										BTU/HR					2,588,240					26,012,690					6,109,995					34,710,925									
LMTD										°F					160.51					16.91					20.49														
SERVICE U										BTU/HR-SQ FT °F					65.7					611.3					415.9														
RESISTANCE		TUBE SIDE FOULING								1/U		0.000249					0.000249					0.000249																	
		TUBE SIDE FILM								1/U		0.000411					0.000411					0.000411																	
		TUBE WALL								1/U		0.000574					0.000574					0.000574																	
		SHELL SIDE FILM								1/U		0.013685					0.000402					0.000871																	
		SHELL SIDE FOULING								1/U		0.000300										0.000300																	
CONSTRUCTION - EACH SHELL																																							
										SHELL SIDE										TUBE SIDE																			
										SKIRT					SHELL					Straight					Bends														
DESIGN TEMPERATURE										°F					680					650					405					370									
DESIGN PRESSURE										PSIG					150					& Full Vac					3,000														
TEST PRESSURE										PSIG					PER ASME CODE					PER ASME CODE																			
CORROSION ALLOWANCE										IN.					0.0625					0.0625					EXCEPT TUBES														
CODE REQUIREMENTS:										ASME SEC. VIII Div 1										STD: HEAT EXCHANGER INSTITUTE (HEI) / TEMA																			
TUBES:		NO U-BENDS 400								OD		5/8		" THK (in)		0.058 Min			SETL (in)		312		Pitch (in)		13/16														
ID SHELL		36		" Min		NOM. O.D.		37		"		CAPACITANCE (@ NORMAL OPERATING LEVEL)																											
WEIGHTS #		DRY								30,020								SHELL		6,280																			
(APPROX.)		OPERATING		34,270								TUBE BUNDLE		22,070								FLOODED		43,790															
MATERIALS										THICK Min.										CONNECTIONS																			
PART		ASME SPEC. / MATERIAL										(in)				SIZE		RATING		TYPE		QTY																	
TUBE		SA-688 TP304 (.05maxC)										See Above		FW INLET		10		160		WE		1																	
SHELL		SA-516 Gr70										5/8		FW OUTLET		10		160		WE		1																	
SKIRT		SA-516 Gr70										5/8		STEAM INLET		8		40		WE		1																	
TUBE SHEET		SA-266 Gr2										7		COND. OUTLET		6		40		WE		1																	
TUBESHEET OVERLAY		309L/308L										1/4		Drip In Flash Tk 1		5		80		WE		1																	
SUPPORT PLATES		SA-36										5/8		Drip In Flash Tk 2		6		80		WE		1																	
SHELL DISHED HEAD		SA-516 Gr70										5/8																											
CHANNEL		SA-266 Gr2										5 1/8																											
CHANNEL COVER		SA-516 Gr70										5 5/8		T.S. PSV		Y		3/4		6000#		NPT		1															
SHROUD		SA-516 Gr70										3/8		S.S. PSV		Y		4		300#		RF FLG		1															
ZONE BAFFLES		SA-36										3/8																											
VENT SYSTEM		SA-240 TP 304										3/16		ORIFICE (DIA.)		13/64																							
IMPINGEMENT RODS		SA-240 TP 304										3/8																											
GASKETS		Diaphragm (Seal Wld)										0.250		EST. OAL (ft)		31.0		ALLOW. OAL (ft)		29.0																			
REMARKS: Note: Welded Tube Joints Note: Tube Explosive Expanded to Tubesheet																																							
TUBE WALL OF INNER BEND QTY 4 at 0.065 Min WALL WITH BALANCE ABOVE																																							