



- ### GENERAL NOTES
- ALL BOLT HOLES ARE TO STRADDLE CENTERLINES.
 - ALL COUPLINGS ARE 6000 LB. AND PLUGGED.
 - TUBES ARE WELDED AND EXPANDED INTO TUBESHEET. TUBES ARE 3/4" O.D. X .035" AVG. WALL. (SA-688-TP304L)
 - BLAST EXTERIOR AND PAINT ONE COAT OF SHOP PRIMER.
 - SHIP UNDER NITROGEN SEAL.
 - UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE WITHIN TOLERANCES SPECIFIED BY THE HEAT EXCHANGER INSTITUTE STANDARDS FOR CLOSED FEEDWATER HEATERS.
 - START UP TEST VENT SHOULD NOT BE USED DURING NORMAL OPERATION.
 - SAFETY RELIEF VALVE(S) SHOULD BE INSTALLED IN A VERTICAL POSITION.
 - HEATER MUST BE VENTED THROUGH THE OPERATING AIR OUTLETS DURING OPERATION. THREE CRITICAL FLOW DRIFTE ASSEMBLIES WITH 1"-300 LB RF FLANGES SHIP LOOSE. DRIFTE DIAMETERS ARE 1/4".
 - REACTION LOADS SHOWN ARE THE MAXIMUM POSSIBLE WITH THE WEIGHT OF THE VESSEL SUPPORTED AT TWO POINTS.
 - INSULATION CLIPS WELDED ON 18" CENTERS.
 - 3"-300# RF. STUB FOR N-6 NOZZLE SUPPLIED AND WELDED AT SITE BY OTHERS.

REV.	DWG.	CKD.	APPR.	DATE	DESCRIPTION
1	RH	JCB	UGB	9/7/11	REVISED ROLLER SUPPORT AS NOTED
2	RH	UG	UG	8-15-11	REVISED UNIT NUMBER PER CUSTOMER COMMENT
3	BB	RH	UG	7-15-11	REV. PER CUSTOMER COMMENTS

NOZZLE SCHEDULE

NOZZLE	NO.	SIZE AND RATING	TYPE	APPLICATION
N-1	1	16" FORG	W.E.	FEEDWATER INLET
N-2	1	16" FORG	W.E.	FEEDWATER OUTLET
N-3	1	18" FORG	W.E.	STEAM INLET
N-4	1	20" FORG	W.E.	DRAINS OUTLET
N-5	1	10" PIPE	W.E.	DRAINS INLET
N-6	1	3" PIPE	W.E.	SHELL SAFETY RELIEF VALVE
C-7	1	3/4"	S.W.	CHANNEL SAFETY RELIEF VALVE
C-8	3	1"	S.W.	OPERATING AIR OUTLET
N-10	2	3" PIPE	W.E.	GAUGE GLASS CONNECTION
N-10	2	3" PIPE	W.E.	LIQUID LEVEL INSTRUMENT CONN
N-10	2	3" PIPE	W.E.	HIGH LIQUID LEVEL CONTROL
C-12	2	1"	S.W.	CHANNEL START UP TEST VENT
C-13	1	1"	S.W.	CHANNEL START UP TEST VENT
C-14	1	1"	S.W.	SHELL START UP TEST VENT
C-15	2	1 1/2"	S.W.	SHELL DRAIN
N-16	1	6" PIPE	W.E.	HEATER DRAIN TANK VENT
C-17	2	1"	S.W.	TEMPERATURE CONNECTION
C-18	2	1"	S.W.	PRESSURE GAUGE CONNECTION
C-19	2	1"	S.W.	TEMPERATURE CONNECTION
C-20	3	1"	S.W.	PRESSURE GAUGE CONNECTION
N-21	3	4"- 300 LB	R.F. FLG	INSPECTION PORT

HEI ALLOWABLE NOZZLE LOADS

NOZZLE	MRM (FT-LB)	FRRF (LB)
N-1 N-2	44900	46100
N-3	12500	18900
N-4	14100	23200
N-5	5500	7200
N-16	2200	4500

EC ISSUE

43211

ISSUE A

ISSUED FOR FINAL DESIGN

CHKD BY AES

ENG

DEPT

CM

DATE

AUTOMATED ENGINEERING SERVICES CORP.

PREPARED BY: A. Rehfeld DATE: 12/22/2011

REVIEWED BY: P. Stashak DATE: 12/22/2011

APPROVED BY: W. Knous DATE: 12/22/2011

FINAL DESIGN ISSUE A CONSTRUCTION

CODE: ASME SECTION VIII DIV.1, 2010, CODE STAMP REQ'D: YES		
DESIGN DATA	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE	250 PSI & F.V.	700 PSI
TEST PRESSURE	325 PSI	910 PSI
DESIGN TEMPERATURE	420° F.	420° F.
NUMBER OF PASSES OR ZONES	ONE ZONE	TWO PASS
CORROSION ALLOWANCE	1/16"	1/8"
VESSELS REQUIRED PER UNIT TWO, TOTAL UNITS ONE		
EFFECTIVE SURFACE 10,761 SQ. FT. PER VESSEL		
60° F. MIN. DESIGN METAL TEMPERATURE		
POST WELD HEAT TREAT: SHELL AND SKIRT		
RADIOGRAPHY		
		ESTIMATED WEIGHTS
SPOT: SHELL, SKIRT AND CHANNEL		EMPTY 40,700 LB
		FULL 77,400 LB
		BUNDLE 28,100 LB
		OPERATING 59,000 LB
FULL: NONE		
CUSTOMER PURCHASE ORDER NUMBER 159609		
Yuba SPX HEAT TRANSFER INC. 2121 N. 161st E. Ave. TULSA, OKLAHOMA 74116		
SETTING PLAN		
TITLE		
44-574 LOW PRESSURE FEEDWATER HEATER NO. 4A & 4B		
HORIZONTAL ITEM FW-14A & FW-14B		
UNIT NO. 1		
OMAHA PUBLIC POWER DISTRICT		
FORT CALHOUN STATION		
DRAWN	CHKD	APPR.
GNV	RH	UG
DATE	5/11/11	SCALE: NONE
DWG. NO.	WUH/700.110493/1/1	REV. 3

OPPD File No. 64533