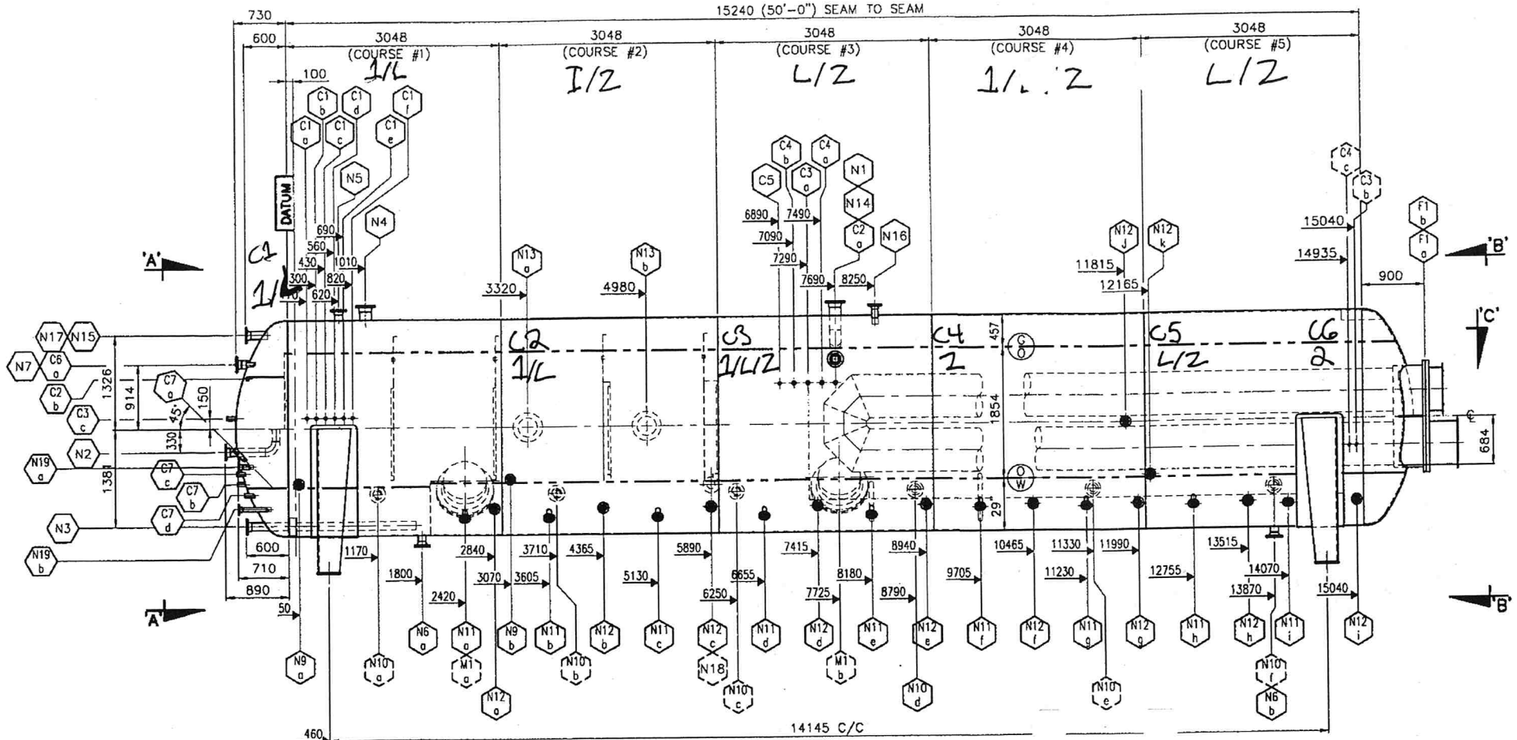
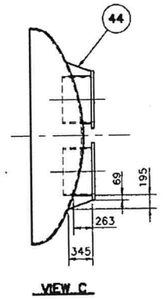




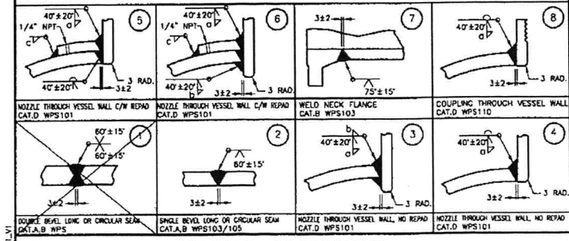
GENERAL NOTES CON'T:

6. VESSEL INTERNALS TO BE RADIUSED FOR INTERNAL COATING.
7. INTERNAL COATING: SANDBLAST TO SSPC-SP5, 2-3 COATS OF DEVOE 253, 12-15 MILS DFT
8. EXTERNAL PAINTING: INSUALTED SURFACES - 1 COAT RED SHOP PRIMER, UNINSULATED SURFACES - SANDBLAST TO SSPC-SP6, PRIME 1 COAT RED SHOP PRIMER, FINISH PAINT 1 COAT OF ENAMEL.
9. FIRETUBE STACK: SANDBLAST TO SSPC-SP10, FINISH PAINT 2 COATS OF HIGH TEMPERATURE BLACK
10. INSULATION: 2" - 3# DENSITY MINERAL FIBRE, STUCCO EMBOSSED ALUMINUM JACKET, POLYKRAFT MOISTURE BARRIER (0.020" THICK ON SHELL), PLOYKRAFT MOISTURE BARRIER (0.025" THICK ON HEADS), STAINLESS STEEL BANDING AT 12" SPACING.
11. FOR PLATFORM AND LADDER CLIP LOCATIONS AND DETAILS REFER TO D-3017-05-0101.
12. FOR CONTINUATION OF BILL OF MATERIAL SEE D-3017-09-0102.

MARK	QTY	SIZE	RATING	TYPE	SCHEDULE	NOMINAL WALL THICKNESS	NECK MATERIAL	INTERNAL PROJECTION	WIDTH RL	KNESS	WEI DET NUMB.	WELD SIZE a	b	c	SERVICE	COMPONENTS
C7d	1	1"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	LSLL 6510	10
C7a	1	1"	6000#	9" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	INT. LT/LS	30
C7b/c	3	1"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	INT. LT/LS	10
C6a/b	2	3/4"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	PRESSURE SWITCH	11
C5	1	1"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	SPARE c/w PLUG	10
C4a-c	3	1"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	TC & HTSD	10
C3a-c	3	1"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	TI	10
C2a/b	2	3/4"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	PI	11
C1a-f	6	3/4"	6000#	6" LONG CPLG.	---	---	SA304L	0	-	-	8	10	-	-	SAMPLE LINES	11
F1a-b	2	24"	---	FAB'D	PLATE	19.05	SA516-70N	25	-	-	3	10	-	-	OBROUND NECK & FLANGE	SEE D-3017-09-0103
M1a/b	2	24"	150#	RFWN	SCH.STD	9.525	SA106-B	GRIND FLUSH	180	9.525	5,7	10	-	6	MANWAY	4,12,17,19,20,21,22
N19a/b	2	2"	150#	RFWN	SCH.160	8.712	SA106-B	10	-	-	3,7	19	6	-	LG	9,16
N18	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	0	-	-	4,7	19	-	-	LOUVRE NOZZ.	6,14,32,36,40,43
N17	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	0	-	-	4,7	23	-	-	GRID DRIVE	6,14,32,36,40,43
N16	1	3"	150#	RFWN	SCH.160	11.125	SA106-B	75	-	-	3,7	10	6	-	FUTURE DEFOAM	8,15,33,37,40,43
N15	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	0	-	-	4,7	23	-	-	LSHH	6,14
N14	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	25	-	-	3,7	10	6	-	LSLL	6,14
N13a/b	2	10"	150#	RFWN	SCH.XH	12.700	SA106-B	GRIND FLUSH	70	9.525	5,7	10	-	6	POWER ENTRANCE	27,28,29,31,35,39,42
N12j/k	2	2"	150#	RFWN	SCH.160	8.712	SA106-B	c - 165 K - 200	-	-	3,7	10	6	-	F.T. SAND JET	9,16,34,38,41,43
N12a-i	9	2"	150#	RFWN	SCH.160	8.712	SA106-B	165	-	-	3,7	10	6	-	SAND JET	9,16,34,38,41,43
N11a-i	9	2"	150#	RFWN	SCH.160	8.712	SA106-B	150	-	-	3,7	10	6	-	DESAND	9,16,34,38,41,43
N10a-l	6	4"	150#	RFLWN	x 14" LG.	19.05	SA105N	20	-	-	3	10	6	-	ANODE	7
N9a/b	2	2"	150#	RFWN	SCH.160	8.712	SA106-B	190	-	-	3,7	10	6	-	INTERFACE DRAW-OFF	9,16
N8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N7	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	0	-	-	4,7	23	-	-	LC (OIL)	6,14
N6a/b	2	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	FLUSH	-	-	4,7	10	-	-	DRAIN	6,14
N5	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	0	-	-	4,7	10	-	-	GAS OUTLET	6,14
N4	1	6"	150#	RFWN	SCH.XH	10.972	SA106-B	0	50	9.525	5,7	10	-	6	P.S.V.	5,13,18
N3	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	180	-	-	3,7	23	6	-	WATER OUTLET	6,14
N2	1	4"	150#	RFWN	SCH.XXH	17.119	SA106-B	354	-	-	3,7	10	6	-	OIL OUTLET	6,14,24
N1	1	6"	150#	RFWN	SCH.XH	10.972	SA106-B	185	51	9.525	6,7	10	6	6	INLET	5,13,18,23

NOZZLE SCHEDULE

1. REGISTERED WELDING PROCEDURES WPS 576.2 AND AS INDICATED BELOW.
2. ALL STRUCTURAL ATTACHMENT WELDS WPS101.
3. SPECIAL PROCEDURES: WPS101 WILL BE USED ON ALL FITTING TACKS AND ALL TACKS WILL BE REMOVED DURING WELDING.
4. SINGLE BEVEL WELDS MAY BE BEVELED FROM INSIDE OR OUTSIDE OF VESSEL.



WELDING PROCEDURES

MARK	QTY.	DESCRIPTION	MATERIAL	WEIGHT (LBS)
1	5	SHELL: 3/8" PLATE ROLL TO 3048 (120") OD x 3048 LG.	SA516-70N	23958
		0.302" minimum.		
2	1	HEAD: 3048 (120") OD F & D, 1/2" NOM., 0.41" MIN.	SA516-70N	1868
		95.2" ICR, 11.9 IKR, c/w 2" STRAIGHT FLANGE.		
3	1	HEAD: 3048 (120") OD F & D 7/8" NOM (0.785" MIN.)	SA516-70N	3444
		94.6" ICR, 11.8 IKR, c/w 2" STRAIGHT FLANGE.		
4	2	FLANGE: 24" 150# RFWN SCH. STD	SA105N	520
5	2	FLANGE: 6" 150# RFWN SCH.XH	SA105N	48
6	10	FLANGE: 4" 150# RFWN SCH.XXH	SA105N	160
7	6	FLANGE: 4" 150# RFLWN x 14" LG.	SA105N	320
8	1	FLANGE: 3" 150# RFWN SCH.160	SA105N	12
9	24	FLANGE: 2" 150# RFWN SCH.160	SA105N	144
10	10	6" LONG CPLG: 1" 6000# THREADED	SA182-F304L	20
11	10	6" LONG CPLG: 3/4" 6000# THREADED	SA182-F304L	20
12	2	PIPE: 24" SCH. STD x 141mm LG. smls	SA106-B	88
13	2	FT. PIPE: 6" SCH.XH smls	SA106-B	57
		1 @ 309mm LG. (N1), 1 @ 75mm LG. (N1), 1 @ 126mm LG. (N5)		
14	9.5	FT. PIPE: 4" SCH.XXH smls	SA106-B	275
		1 @ 482mm LG. (N2), 1@ 590mm LG. (N3), 1 @ 91mm LG. (N4)		
		2 @ 191mm LG. (N5[a\b]), 1 @ 127mm LG. (N7), 1 @ 263mm LG. (N14)		
		1 @ 228mm LG. (N15), 1 @ 277mm LG. (N17)		
15	1	FT. PIPE: 3" SCH.160 x 207mm LG. smls (N16)	SA106-B	14
16	36	FT. PIPE: 2" SCH.160 smls	SA106-B	284
		2 @ 334mm LG. (N9a\b), 9 @ 249mm LG. (N11a-i), 1@ 180mm LG. (N19a)		
		9 @ 451mm LG. (N12 a-i), 2 @ 300 (N12j,N12k), 1 @ 400mm LG. (N19b)		
17	2	REPAD: 3/8" PLATE 990 OD x 616 ID, ROLL TO 3048 ID	SA516-70N	254
18	2	REPAD: 3/8" PLATE 280 OD x 175 ID, ROLL TO 3048 ID	SA516-70N	20
19	2	BLIND: 24" 150# RF	SA105N	822
20	40	STUD: 1 1/4"ø UNS x 7" LG.	SA193-B7M	21
21	80	NUT: 1 1/4"ø UNS	SA194-2HM	-
22	2	GASKET: 24" 150# RF SPIRAL WOUND 1/8" THK. NON ASBESTOS FILLED	SA304L	-
23	1	ELBOW: 6" 45° L.R. SCH.XH	SA234-WPB	35
24	1	ELBOW: 4" 90° L.R. SCH.XXH	SA234-WPB	20
25	1	NAMEPLATE	S.S.	-
26	1	NAMEPLATE BRACKET	SA516-70	5
27	2	FLANGE: 10" 150# RFWN SCH.XH	SA105N	110
28	2	PIPE: 10" SCH.XH x 107mm LG (N13a,N13b)	SA106-B	38
29	2	REPAD: 3/8" PLATE 430 OD x 276mm ID, ROLL TO 3048mm ID	SA516-70N	48
30	1	9" LONG CPLG: 1" 6000# THREADED	SA182-F304L	2

GENERAL NOTES:

1. THE FOLLOWING MATERIAL SUBSTITUTIONS ARE PERMITTED:
   SA-350-LF2 FOR SA-105N
   SA-333-GR6 FOR SA-106-B
   SA-420-WPL6 FOR SA-234-WPB
2. FABRICATION TOLERANCES AS PER KPS STD-324.
3. VESSEL TO BE PREPARED FOR INTERNAL COATING. ALL WELD SPATTER, BURRS AND SHARP EDGES ARE TO BE GROUND SMOOTH.
4. NOZZLE CUT LENGTHS ALLOW FOR A 3mm WELD GAP.
5. DESAND SYSTEM WILL BE CLIPS ONLY.

VESSEL TO BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE 2001 EDITION OF THE A.S.M.E. CODE FOR UNFIRED PRESSURE VESSELS SECTION VIII DIV.1, 2002 ADDENDA

DESIGN DATA

	DESIGN		OPERATING		HYDROTEST	
INTERNAL PRESS	75PSIG	517kPAG	-PSIG	-kPAG	98PSIG	676kPAG
TEMPERATURE	350°F	177°C	-°F	-°C	50°F	10°C
EXTERNAL PRESS	N/APSIG	N/AkPAG	VESSEL LIMITED BY DESIGN			
CORROSION ALLOW.	0.125INCH. 3.175MM		RADIOGRAPHY: UW1(a)		E=1.0	
ALLOWABLE STRESS: SHELL	20000 PSI		HEAD		20000PSI	
PWHT (MIN.)	2HRS.	1150±50°F	MIN. DESIGN METAL TEMP. -20F -29C CHARPY IMPACT TEST NOT REQUIRED PER UG-20(f)1-5			
VOLUME	3731CU.FT	105.7CU.M.				
WEIGHTS: (SHIPPING)	64160 LBS/	29165kg	(FULL OF WATER) 296975LBS/		135000 kg	

NO	BY	DATE	DESCRIPTION	CALC	CHK	APP
3	BJS	24 JUN 03	CHANGED F.T. HEAD MINIMUM THICKNESS TO 0.785"	2	G.H.	BJS
2	SC	27 MAY 03	ADD NOTES 8 TO 11, ADD NAMEPLATE & CLIPS, PWHT REQ'D, CA WAS 1/16",	1	G.H.	BJS
			ADD N18a/b, SWITCHED TAGS N4 & N5, CHANGED FT HEAD MIN, ADD BLINDS,			
			STUDS/NUTS, GASKETS, FT GUSSET			
1	BJS	13 DEC 02	REVISED SADDLE c/c DISTANCE NOW 14145, WAS 14120	0	G.H.	BJS
C	BJS	13 JUNE 02	ISSUED FOR FABRICATION	0	G.H.	BJS

REVISIONS

CERTIFIED BY
Kvaerner Process Systems
A division of Kvaerner Canada Inc.
CALGARY, ALBERTA, CANADA

ASME SECTION VIII DIV.1

M.A.W.P.	75 PSI	AT	350 °F
M.D.M.T.	517 kPa	AT	177 °C
SERIAL NO.	-20°C	AT	33 PSI
CAN./ASME NO.	02-2926	AT	517 kPa
SHELL THK.	D-3647 IN	YEAR BUILT	2003
HEAD THK.	B-2263 IN	TAG NO.	V-100
CODE	0.410/0.785 IN	MAT'L	SA-516-70N
	10.414/19.939 MM	WT	64160 LBS
	UW-11(a)	MAT'L	SA-516-70N
	FIRETUBE CA 0.0625"/1.59MM	WT	3731 CU FT
VESSEL TYPE	HEATER TREATER	CA	0.125IN 3.175M

KVAERNER

NAMEPLATE DATA

DRAWN:	BJS/chauik
DATE:	8 MAY 03
CHECKED:	GH
DATE:	26 MAY 03
APPROVED:	BJS
DATE:	26 MAY 03
CADD REF:	3017090101
SCALE:	1 : 40 UNO

Kvaerner Process Systems
A division of Aker Kvaerner Canada Inc. Calgary, Alberta

PROJECT: KEYSPAN ENERGY CANADA
c/o VECO CANADA LTD.
EASYFORD 11-14 BATTERY MODIFICATIONS

TITLE: HEATER TREATER MODEL #1050-7.00
V-100, LOCATION 11-14-50-8W5
304S (120") OD x 15240 (50'-0") S/S

JOB NO: 30170901
DRAWING NO: D-3017-09-0101
REV: 3

KPS_V1