

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

Manufactured and certified by DAEKYUNG MACHINERY & ENGINEERING CO., LTD / 125-2, BUGOK-DONG, NAM-KU, ULSAN, 680-110. SOUTH KOREA
(Name and address of Manufacturer)

Manufactured for C/O BANTREL TOWER 4TH FLOOR, 700-6TH AVENUE S.W CALGARY, ALBERTA CANADA
(Name and address of Purchaser)

Location of installation SUNCOR VOYAGEUR UPGRADE / FORT McMURRAY ALBERTA CANADA
(Name and address)

Type: HORIZ HEAT EXH. DK2007-090B
(Dish, vert., or sphere) (Tank, separator, etc., vessel, heat exch., etc.) (Mfg's serial No.)

U2511.2 DK2007-090-001 REV.5 2418 2008
(CRD) (Drawing No.) (Natl. Bd. No.) (Year built)

ASME Code, Section VIII, Div. 1 2004 ED. + 2006 ADD.(JULY) N/A N/A
(Edition and Addenda (Date)) (Code Case No.) (Special Service per UG-120(d))

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

Shell (a) No. of course(s): 4 (b) Overall length (ft & in.): 21' & 10.66"

No.	Course(s)	Diameter, In.	Length (ft & in.)	Material		Thickness (in.)		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
				Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time	
1	52" (I.D.)	9' & 8.14"	SA516-70N	0.87"	0.125"	1	SPOT	85%	1	SPOT	85%	-	-		
1	52" (I.D.)	5' & 7.38"	SA516-70N	0.87"	0.125"	1	SPOT	85%	1	SPOT	85%	-	-		
1	52" (I.D.)	5' & 7.33"	SA516-70N	0.87"	0.125"	1	SPOT	85%	1	SPOT	85%	-	-		
1	57" (I.D.)	11.81"	SA516-70N	1"	0.125"	1	SPOT	85%	1	SPOT	85%	-	-		

Heads: (a) SA516-70N (60min. & 1125°F) (b) N/A
(Mater. Spec. No., Grade or Type) H.T. - Time & Temp. (Mater. Spec. No., Grade or Type) H.T. - Time & Temp.

Location (Top, Bottom, Ends)	Thickness (in.)		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
	Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
a) END	0.81"	0	51.30"	9.69"	2:1	-	-	-	-	YES	S	-	100%
b)	-	-	-	-	-	-	-	-	-	-	-	-	-

removable, bolts used (describe other fastening) N/A
(Mater. Spec. No., Grade, size, No.)

Type of jacket N/A Jacket closure N/A
(Describe as open & weld, bar, etc.)

If bar, give dimensions N/A If bolted, describe or sketch.
MAWP 425.0 F.V. psig at Max. temp 650 400 °F Min. design metal temp. -20 °F at 425(INT.) / F.V.(EXT) psig
(internal) (external) (internal) (external)

Impact test YES (SHELL FLANGE, SHELL COVER FLANGE, S1/S2-NOZZLE NECK) at test temperature of -20 °F
(Indicate yes or no and the component(s) impact tested)

1. Hydro., ~~pressure~~ test press. 566 psig Proof test N/A

Items 12 and 13 to be completed for tube sections.

2. Tubesheet: SA182-F6a CL.1 54.87" 6.87" 0.125" BOLTED
Stationary (Mater. Spec. No.) Dia., in. (subject to press.) Nom. thk., in. Cor. Allow., in. Attachment (welded or bolted)

SA182-F6a CL.1 51.56" 6.87" 0.125" BOLTED
Floating (Mater. Spec. No.) Dia., in. (Subject to press.) Nom. thk., in. Cor. Allow., in. Attachment (welded or bolted)

3. Tubes: SA268-TP405 1" 0.065" 1008 STRAIGHT
Mater. Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge Number Type (Straight or U)

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

Shell (a) No. of course(s): 1 (b) Overall length (ft & in.): 3' & 9.85"

No.	Course(s)	Diameter, In.	Length (ft & in.)	Material		Thickness (mm)		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
				Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time	
1	52" (I.D.)	3' & 9.85"	SA516-70N	1"	0.125"	1	SPOT	85%	1	SPOT	85%	1125°F	60 min.		
-	-	-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-	-	-	-		

5. Heads: (a) CHANNEL COVER: SA266-2N (b) FLOATING HEAD: SA266-2N(135min. & 1125°F)
(Mater. Spec. No., Grade or Type) H.T. - Time & Temp. (Mater. Spec. No., Grade or Type) H.T. - Time & Temp.

Location (Top, Bottom, Ends)	Thickness (in.)		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
	Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
a) END	6"	0.125"	-	-	-	-	62"	-	-	S	-	100%	
b) END	2.03"	0.25"	-	-	-	-	IR: 43"	YES	YES	S	-	100%	

removable, bolts used (describe other fastening) (a) SA193-B7; 1 3/8-8UN x 17.32L; 52sets (b) SA193-B7; 1 1/4-8UN x 20.08L; 56sets
(Mater. Spec. No., Grade, size, No.)

A2

FORM U-1 (Back)

6. MAWP, 503 (internal) F.V. F.V (external) psig at max. temp. 650 (internal) 400 (external) °F Min. design metal temp. -20 °F at 503(INT.) / F.V(EXT) psig

7. Impact test YES (CHANNEL (COVER, FLANGE), TUBESHEET, FLOATING(HEAD, FLANGE), BACKING DEVICE) at test temperature of -20 °F
(Indicate yes or no and the component(s) impact tested)

8. Hydro., ~~pen., or comb.~~ test press. 663 psig Proof test N/A

9. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness(In.)		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
SHELL SIDE INLET	1	16"	CL 300 WN	SA266-2N	SA105N	1.25"	0	-	*2	*4	-
SHELL SIDE OUTLET	1	16"	CL 300 WN	SA266-2N	SA105N	1.25"	0	-	*2	*4	-
TUBE SIDE INLET	1	10"	CL 300 WN	SA106-B	SA105N	0.59"	0	SA516-70N	*3	*5	-
TUBE SIDE OUTLET	1	10"	CL 300 WN	SA106-B	SA105N	0.59"	0	SA516-70N	*3	*5	-
PRESSURE GAGE CONN.	4	2"	CL 300 LWN	-	SA105N	1.31"	0	-	-	*1	-
TEMPERATURE GAGE CONN.	2	2"	CL 300 LWN	-	SA105N	1.31"	0	-	-	*1	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

10. Supports: Skirt NO (Yes or no) Lugs N/A (No.) Legs N/A (No.) Other SADDLE (Describe) Attached SHELL & WELDED (Where and how)

11. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report :
(List the name of part, item number, mfg's, name and identifying number)

N/A

12. Remarks:

1) OVER PRESSURE PROTECTION DEVICE WILL BE INSTALLED IN THE SYSTEM.

2) THE MARK(*) OF ABOVE ITEM 19 IS AS FOLLOWS : *1 : FIG. UW-16.1 (c) *2 : FIG. UW-16.1 (g) *3 : FIG. UW-16.1 (d-1)

*4 : SNGL., BUTT WELD, RT-SPOT *5 : SNGL., BUTT WELD, RT-NO

3) ADDITIONAL IMPACT TEST : YES (SUPPORT SADDLE, LIFTING LUG, STIFFENING RINGS, NAME PLATE BRACKET) AT TEST TEMPERATURE OF -49 °F

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 22,056 Expires JUNE. 24 2009

Date MAY 30, 2008 Name DAEKYUNG MACHINERY & ENGINEERING CO., LTD. Signed [Signature]
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of OHIO and employed by HSBCT OF HARTFORD CT have inspected the component described in this Manufacturer's Data Report on MAY 30th, 2008 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date MAY 30th, 2008 [Signature] Commissions 12281(A)
(Authorized Inspector) (Natl Board Incl. endorsements, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. _____ Expires _____

Date _____ Name _____ Signed _____
(Manufacturer) (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of _____ and employed by _____ of _____ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Commissions _____
(Authorized Inspector) (Natl Board Incl. endorsements, State, Province and No.)