



National Board Number: 2085
Mr. Representative: Date: Sep. 18/201
Authorized Inspector: Date: Sep. 18. 201

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

1. Manufactured and certified by Ilsung Coporation #74 Daejeong-Ro, Onsan-Eub, Ulju-Gun, Ulsan 689-892, Republic Korea.
2. Manufactured for SHELL CANADA ENERGY 400 4AVE. S.W., BOX 100, STATION M, CALGARY, ALBERTA T2P 0J4
3. Location of installation CARMON CREEK EXPANSION IN PEACE RIVER COMPLEX, ALBERTA, CANADA
4. Type Horizontal Heat Exchanger 15-HE-001
5. ASME Code, Section VIII, Div. 1 2013 ED (July.01,2013) N/A N/A

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multichamber vessels.
6. Shell: (a) Number of course(s) 2 (b) Overall length 3892mm

Table with columns: Course(s), Material, Thickness, Long. Joint (Cat. A), Circum. Joint (Cat. A, B & C), Heat Treatment. Rows include diameter, length, spec/grade, and joint details.

Table for Body Flanges on Shells with columns: No., Type, ID, OD, Flange Thk, Min Hub Thk, Material, How Attached, Location, Bolting (Num & Size, Material, Washer, Washer Material).

7. Heads: (a) SA516-70(+1)/H.T-635°C 1.4Hr (+12) (b) -

Table for Heads with columns: Location, Thickness, Radius, Elliptical Ratio, Conical Apex Angle, Hemispherical Radius, Flat Diameter, Side to Pressure, Category A.

Table for Body Flanges on Heads with columns: Location, Type, ID, OD, Flange Thk, Min Hub Thk, Material, How Attached, Bolting (Num & Size, Material, Washer, Washer Material).

8. Type of jacket N/A Jacket closure N/A
If bar, give dimensions N/A If bolted, describe or sketch.

9. MAWP 3065kPa (Internal) F.V. at max. temp. 200°C (Internal) 200°C (External) Min. design metal temp. -45°C at 3065kPa

10. Impact test YES(SHELL-A02) at test temperature of -45°C

11. Hydro., proof, or comb test pressure 4200kPa Proof test -

Items 12 and 13 to be completed for tube sections.

Table for Tube sections with columns: Tubesheet, Tubes, Material, Diameter, Thickness, Number, Attachment.



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 Authorized Inspector: [Signature] Date: 9/18/20

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

14. Shell: (a) No. of course(s) 1 (b) Overall length 838mm

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	I.D 1275mm	838mm	SA516-70(*1)	30mm	1.5mm	1	Full	1.0	1	Full	1.0	633°C	1.4Hr
	(BLANK)												

Body Flanges on Shells										Bolting			
No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location		Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
1	(*2)	1275mm	1700mm	231mm	30mm	(*3)	Welded, dbl., butt	End		36,2 1/2"-8UNx660L	SA320-L7M	140, 67, 6mm	ASTM-F436
1	(*2)	1275mm	1700mm	231mm	30mm	(*3)	Welded, dbl., butt	End		(*13)	(*13)	(*13)	(*13)
	(BLANK)												

15. Heads: (a) SA765-II(\*1)/H.T-635°C 1.4Hr (b) N/A  
 (Material spec. number, grade or type) (H.T.-time and temp.) (Material spec. number, grade or type) (H.T.-time and temp.)

	Location (Top, Bottom, Ends)	Thickness		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	194mm	1.5mm	-	-	-	-	-	1700mm	-	-	-	-	-

Body Flanges on Heads										Bolting			
Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached			Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
	(BLANK)												

16. MAWP 5157 kPa F.V at max. temp. 250°C 250°C Min. design metal temp. -45°C at 5157 kPa  
 (Internal) (External) (Internal) (External)

17. Impact test YES(CHANNEL-A01) at test temperature of -45°C  
 (Indicate yes or no and the component(s) impact tested)

18. Hydro., ~~press.~~ or Comb. test pressure 7000 kPa Proof test -

19. Nozzles, inspection, and safety valve openings: (\*16)

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
SHELL SIDE INLET	1	DN 650	w.e.	SA516-70(*1)(*5)	-	19mm	3.0mm	SA516-70(*1)	(*4)	-	-
SHELL SIDE OUTLET	1	DN 650	w.e.	SA516-70(*1)(*5)	-	19mm	3.0mm	SA516-70(*1)	(*4)	-	-
SHELL SIDE VENT(*6)	1	DN 50	Cl. 300 lwn.	(*10)	(*10)	16.65mm	3.0mm	INHERENT	(*4)	-	-
SHELL SIDE DRAIN(*6)	1	DN 50	Cl. 300 lwn.	(*10)	(*10)	16.65mm	3.0mm	INHERENT	(*4)	-	-
INSPECTION(*6)	1	DN 50	Cl. 300 lwn.	(*10)	(*10)	16.65mm	3.0mm	INHERENT	(*4)	-	SHELL
SRV1 CONNECTION(*6)	1	DN 50	Cl. 300 lwn.	(*10)	(*10)	16.65mm	3.0mm	INHERENT	(*4)	-	-
(*14)(*6)	1	DN 50	Cl. 300 lwn.	(*10)	(*10)	16.65mm	3.0mm	INHERENT	(*4)	-	-
SPARE(*7)	1	DN 80	Cl. 300 lwn.	(*10)	(*10)	20.6mm	3.0mm	INHERENT	(*4)	-	-

20. Supports: Skirt NO Lugs N/A Legs N/A Others SADDLES Attached WELDED TO SHELL  
 (Yes or no) (Number) (Number) (Describe) (Where and how)

21. 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, Manufacturer's name, and identifying number):  
NONE

Remarks \*1. Normalized condition. \*2. Mandatory App.2 Fig.2-4(6) \*3. SA765-II(\*1) \*4. FIG. UW-16.1 (e) \*5. Single Butt, RT-Full, 1.0  
 \*6. Pressure retaining cover : (\*10), SA320-L7M/SA194-7M, 5/8"-11UNCx100L, 8SETS. \*7. Pressure retaining cover : (\*10), SA320-L7M/SA194-7M, 3/4"-10UNCx125L, 8 SETS. 8. Nameplate is located on the shell. 9. Inspection opening is removable bundle.  
 \*10. SA350-LF2.CL.1 11. Safety valve will be installed in system by others \*12. Heads were performed stress relief at the H.T-880°C. & 0.6 Hr.  
 \*13. Shell flange and channel flange were connected by same bolting materials, refer to shell side bolting of ITEM No.6.  
 \*14. PRESS. TRANSMITTER CONN. 15. Length of tube bundle : 4331.7mm \*16. ITEM No.19&22 WILL BE CONTINUED ON THE U-4 FORM.



National Board Number: 2085  
Mfr. Representative: C. COURT Date: Sep. 18/2015  
Authorized Inspector: S. JANG Date: Sep. 18. 2015

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CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U Certificate of Authorization Number 32,997 Expires DEC. 04, 2016  
Date Sep. 18/2015 Name ILSUNG CORPORATION. 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 the employed by HSB Global Standards of Hartford CT.

have inspected the pressure vessel described in this Manufacturer's Data Report on Sep. 18. 2015, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 Sep. 18. 2015 Signed S. JANG [Signature] Commissions NB#14412(A,N) (Authorized Inspector) (National Board (incl. endorsements))

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number Expires

Date Name Signed (Assembler) (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 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 the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 Signed Commissions (Authorized Inspector) (National Board (incl. endorsements))

