

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

1. Manufactured and certified by SCHWARTZ-HAUTMONT C.M.S.A. Antigua ctra de Valencia s/n 43480 VILASECA (TARRAGONA) SPAIN  
(Name and address of Manufacturer)

2. Manufactured for LINDE BOC PROCESS PLANTS LLC-USA  
(Name and address of Purchaser)

3. Location of installation YORKTOWN, VA (U.S.A)  
(Name and address)

4. Type: VERTICAL REACTOR 684-04/4  
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.)

NA 684s000a04-400 Rev8 135 2005  
(CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 Ed. 2004 NA NONE  
[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 multichamber vessels.

6. Shell (a) No. of course(s): 4 (b) Overall length (ft & in.): 23' 8.04"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
3	65.98"	5'11.02"	(1)	1.34"	0	1	FULL	1	1	FULL	1	1283°F	120min
1	65.98"	5'10.98"	(1)	1.34"	0	1	FULL	1	1	FULL	1	1283°F	120min

7. Heads: (a) SA 387 Gr11 Cl2 + clad SA 240 Tp347 1283°F 120 min (b) SA 387 Gr11 Cl2 + clad SA 240 Tp347 1283°F 120 min  
(Mat'l Spec. No., Grade or Type) (H.T. — Time & Temp.) (Mat'l Spec. No., Grade or Type) (H.T. — Time & 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)	TOP	1.34"	0	NA	NA	2:1	NA	NA	NA	NA	NA	1	FULL	1
(b)	BOTTOM	1.34"	0	NA	NA	2:1	NA	NA	NA	NA	NA	1	FULL	1

If removable, bolts used (describe other fastening) NA  
(Mat'l Spec. No., Grade, size, No.)

8. Type of jacket NA Jacket closure NA  
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions NA If bolted, describe or sketch.

9. MAWP 815 14.7 psi at max. temp. 800 350 °F Min. design metal temp. 0 °F at 815 psi.  
(internal) (external) (internal) (external)

10. Impact test YES (SHELL AND HEADS) at test temperature of 0 °F.  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. 1059.5 Proof test NA

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: NA NA NA NA NA  
[Stationary (Mat'l Spec. No.)] [Dia., in. (subject to press.)] (Nom. thk., in.) (Corr. Allow., in.) [Attachment (welded or bolted)]

NA NA NA NA NA  
[Floating (Mat'l Spec. No.)] [Dia., in.] (Nom. thk., in.) (Corr. Allow., in.) [Attachment]

13. Tubes: NA NA NA NA NA  
(Mat'l 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.

14. Shell (a) No. of course(s) NA (b) Overall length (ft & in.): NA

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time

15. Heads: (a) NA (b) NA  
(Mat'l Spec. No., Grade or Type) (H.T. — Time & Temp.) (Mat'l Spec. No., Grade or Type) (H.T. — Time & 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)														
(b)														

If removable, bolts used (describe other fastening) NA  
(Mat'l Spec. No., Grade, size, No.)



#105977

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NA 684s000a04-400 Rev8 135 2005  
(CRN) (Drawing No.) (Nat'l Bd. No.) (Year built)

[illegible]

Certificate of Authorization: Type \_\_\_\_\_ No. 27762 Expires APRIL-16-2006

Date 15-9-2005 Name SCHWARTZ-HAUTMONT C.M.S.A Signed J.SALVADOR  
(Manufacturer) (Representative)

Date 15.9.2005 Name JUAN C. ORTEGA Commission NB 11654 A PA 2720  
(Authorized Inspector) (Notl Board Incl. endorsement, State, Province and No.)

This form (E00118) may be obtained from the ASME Order Dept., 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300

#105977

16. MAWP NA NA psi at max. temp. NA NA °F. Min. design metal temp. NA °F at NA psi.

17. Impact test NA at test temperature of NA °F.  
[Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test press. NA Proof test NA

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
W VAPOR OUTLET	1	6"	LWN 600	(1)	-	1.13"	0	INTEGRAL	UW 16.1 (e)	-	-
B LIQUID OUTLET	1	6"	WE 600	(1)	-	.72"	0	INTEGRAL	UW 16.1 (e)	-	-
D DRAIN	1	2"	LWN 600	(1)	-	.66"	0	-	UW 16.1 (e)	-	-
F MAIN INLET	1	8"	WN 600	(1)	-	.60"	0	INTEGRAL	UW 16.1 (e)	-	TOP HEAD
L1/L2 LEVEL GAUGE	2	2"	LWN 600	(1)	-	.66"	0	INTEGRAL	UW 16.1 (e)	-	-
M MANWAY	1	18"	LWN 600	(1)	-	1.75"	0	INTEGRAL	UW 16.1 (e)	-	-
L3-6 LEVEL TRANSMITTER	4	2"	LWN 600	(1)	-	.66"	0	INTEGRAL	UW 16.1 (e)	-	-

20. Supports: Skirt YES Lugs 2 Legs NO Others NO Attached WELDED TO SHELL  
(Yes or no) (No.) (No.) (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, mfg's. name and identifying number)  
NA

22. Remarks: ITEM 6: (1) MATERIAL SA 387 Gr11 Cl2 + CLAD SA 240 Tp 347

ITEM 19: (1) MATERIAL NOZZLE SA 336 F11 Cl2 + (WOL ER-309L + ER-347)

SAFETY VALVES ON EXTERNAL PIPING

#### 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 Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 27762 Expires APRIL-16-2006

Date 15-9-2005 Name SCHWARTZ-HAUTMONT C.M.S.A.  
(Manufacturer)

Signed J.SALVADO  
(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 PENNSYLVANIA and employed by LR INSURANCE INC. of DELAWARE

have inspected the pressure vessel described in this Manufacturer's Data Report on 15.9.2005, 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 15.9.2005 Signed JUAN C. ORTEGA  
(Authorized Inspector)

Commissions NB 11654 A PA 2720  
(Nat'l 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 \_\_\_\_\_  
(Assembler)

Signed \_\_\_\_\_  
(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 the 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 \_\_\_\_\_ Signed \_\_\_\_\_  
(Authorized Inspector)

Commissions \_\_\_\_\_  
(Nat'l Board Incl. endorsements, State, Province and No.)

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