

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

HC-4981

1. Manufactured and certified by Ward Tank & Heat Exchanger Corp., 6670 East Harris Blvd., Charlotte, NC 28215
(Name and address of Manufacturer)
2. Manufactured for KOSA, 4600 Highway 421 North, Wilmington, NC 28401
(Name and address of Purchaser)
3. Location of installation KOSA, 4600 Highway 421 North, Wilmington, NC 28401
(Name and address)
4. Type: Vertical Heat Exchanger HC-4981 - 02-HC-4981 3019 2003
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)
5. ASME Code, Section VIII, Div. 1 2001
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.

6. Shell (a) No. of course(s): 3 (b) Overall length (ft & in.): 7'-8.25"

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
1	57" ID	3'-10.875"	SA516-70	0.50"	0.0625"	1	Spot	85%	1	Spot	85%	-	-
1	57" ID	2'-10.375"	SA516-70	0.50"	0.0625"	1	Spot	85%	1	Spot	85%	-	-
1	SEE	REMARKS	SA516-70	0.50"	0.0625"	S	None	85%	1	Spot	85%	-	-

7. Heads: (a) - (b) -
(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) -

(Mat'l Spec. No., Grade, size, No.)

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

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

9. MAWP 150 15 psi at max. temp. 375 - °F Min. design metal temp. -20 °F at 150 psi.
(internal) (external) (internal) (external)

10. Impact test No per UG-20f at test temperature of - °F
(Indicate yes or no and the component(s) impact tested)

11. Hydro., ~~burst~~, test press. 195 Proof test -

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-240 S31803 60.75" 1.75" 0" Welded
Stationary (Mat'l Spec. No.) Dia., in. (subject to press.) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)
- - - -
Floating (Mat'l Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment
13. Tubes: SA-789 S31803 1" 0.083" 1794 Straight
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): 4 (b) Overall length (ft & in.): 7'-5"

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
2	57" ID	0'-10.3125"	SA-240 T316	0.375"	0"	1	Spot	85%	1	Spot	85%	-	-
1	57.75"X24"	2'-6.50"	SA-240 T316	0.375"	0"	1	Spot	85%	1	Spot	85%	-	-
1	57.75X16"	3'-1.75"	SA-240 T316	0.375"	0"	1	Spot	85%	1	Spot	85%	-	-

15. Heads: (a) - (b) -
(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) (128) Studs, 0.750"-UNC X 7.25" SA-193 B7 ; (256) Nuts, Hex, 0.750"-UNC SA-194 2H

(Mat'l Spec. No., Grade, Size, No.)

16. MAWP 100 15 psi at max. temp. 400 - °F Min. design metal temp. -20 °F at 100 I
(internal) (external) (internal) (external)

17. Impact test No per UHA-51d at test temperature of -

(Indicate yes or no and the component(s) impact tested)

18. Hydro., ~~per UHA-51d~~ test press. 130 Proof test -

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	
Inlet	1	24"	150# WN	-	SA-182 F316	0.375"	0"	-	-	UW16.1d	Channel
Outlet	1	16"	150# WN	-	SA-182 F316	0.375"	0"	-	-	UW16.1d	Channel
Outlet	1	10"	150# SO	SA-106B	SA-105	0.365"	0.0625"	-	UW16.1d	fig2-4(3)	Shell
Inlet	1	6"	150# SO	SA-106B	SA-105	0.432"	0.0625"	-	UW16.1d	fig2-4(3)	Shell
Outlet	2	1"	150# SO	SA-106B	SA-105	0.250"	0.0625"	-	UW16.1d	fig2-4(3)	Shell
Spray	1	4"	150# LJ	SA-312 TP316	SA-403 WP316	0.237"	0"	-	UW16.1d	fig2-4(1)	Channel
Drain/Vent	4	0.50"	CPLG	-	SA-182 F316	3000#	0.0625"	-	-	UW16.1a	Tubesheet

20. Supports: Skirt No Lugs 4 Legs - Others - 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)

22. Remarks: The customer is responsible for the pressure relief device per UG 125 a.

Customer P.O. No. 4800105039 ; Customer Equipment No. E-4220-7R . Channel Shell & Nozzle Materials all meet the requirements of SA-240, SA-312, SA-403 & SA-182 T316 & T316L Item No. 6 (cont.) Shell has an expansion joint consisting of (2) Flanged & Flued Heads 0.50" TK X 72" OD X 57" ID X 5.50" W .

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. 18365 Expires 2/17/2005

Date 17 MAR 2003 Name Ward Tank & Heat Exchanger Corp. 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 State or Province of NC and employed by NC Department of Labor of Raleigh have inspected the pressure vessel described in this Manufacturer's Data Report on 3-17-2003, 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 3-17-2003 Signed [Signature] Commissions NB 10652 (A)(B)(N)(NS), NC 1206
(Authorized Inspector) (Nat'l Board incl. endorsement, 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 -
(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 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 - Signed - Commissions -
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)