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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-5831

Munufactured and certified by Ward Tank & Heat Exchanger Corp. 6870 East Harris Blvd. Charlotte, NC 28215 (Name and address of Manufacturer)														
2. Manufactured for Invista 1245	50 Strano Road I aRo	do Tavos 77	1674	(Name	e and address	FOI ME	inulaclı	itėt)						
Manufactured for Invista 124550 Strang Road LaPorte, Texas 77571 (Name and address of Purchaser)														
3. Location of installation Unknown														
(Name and address) 4. Type: Horizontal Heat Eychanger HC_5931														
4. Type: Horizontal (Horiz., vert., or sphere)	Heat Ex (Tank, separator, jkt.	xh. etc.)		-5831 serial No.)		(CRN)		(Drawing No.)	(No	3438 (1. Bd. No.)	2005 (Year built)			
5. ASME Code, Section VIII, Div. 1 2001 A03														
Edition and Addenda (date) Code Case No. Special Service per UG-120(d)														
tions 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): 5 (b) Overall length (ft & in.): 15 ft 9.375 in														
No. Diameter, in. Length (ft & In.	Material T								m. Joint (Cat. A			eatment		
No. Diameter in Length (ft & In 2 24" 7 ft 4.312 in		Nom. 0.375*	Corr. 0.125"	Type Full, Spot, I S None				Type Full, Spot, Non-		ne Eff		Time		
	-	-	-	-	- 1,13,10		÷		-			-		
	<u> </u>	<u> </u>		-			<u> </u>		_	- 1				
7. Heads: (a)														
	c. No., Grade or Type) H	I.T Time & 1	emp				(Mat'l S	pec. No.,	Grade or Type) H.T '	Time & Temp			
Location (Top, Thickn Bottom, Ends) Min.	Ses Redius Corr. Crown K				emispherical Radius	Fl. Diam			Pressure	Ŧ	Calegory A			
(a)	- VIVIII IS		100	010	- Vedins	Distri-	ieiei	Convex	Concave	TYDE .	Full, Spot, No	one Elf.		
(b)	<u>· </u>				•									
ां । जाnovable, bolis used (describe oti	er fastening) -													
♦ Toron of Section					(Mat'l Spe		., Grade), size, N	0.)					
8. Type of jacket					Jacket clos	 ure				-				
if bar, give dimensions -								(Di	escribe as oge		- ,			
· · · · ·											bolted, describ	e of sketch.		
	- psi at max. tem emal)	p. <u>217</u> (Intern		dernal)	* F	Min. c	n ngiset	nelal tem	ip. <u>-20</u>	•	Fat100) psi.		
10. Impact test No Per UG-20(f)	,	(, (,					at toot	tamaara	duca al	, c		
	(Indicate yea	or no and the	component(s) impa	act tested)				at toet	tompera	ture of	<u> </u>		
11. Hydro., proces, continues test pre	ss 188	P	roof test						_					
noms 12 and 13 to be completed for	ube sections.		_								- ,			
12. Tubesheet: SA-240 30	V304L	23.500"			1.1875*						Welded			
Stationary (Mat'i	Spec. No.) Dia., i	in. (subject to	press.)	1	Nom. thk., in.			Corr. A	llow., in.	Atlac	hment (welder			
Floating (Mart Spec. No.)	Dia., in.			- 46.1.	T	<u> </u>	<u>-</u> -	-	 .					
	Nort	m. thk., in. Corr. Allow., in. Attachmen												
13. Tubes: SA-249TP304 Maři Spec. No., Gra	0.D., in.									Straight e (Straight or U)				
Items 14 - 18 incl. to be completed for	**	•	r obonnale of			or year	490		Millings		rype (Straight	or O)		
14. Shell (a) No. of course(s):	7	3100 1000010 (I			oth (ft & in.):				2642	*0.1-				
Course(s)	Material	Thick						T 0	2 ft 1.2					
No. Diameter in Length (fi & In.	neter, in. Length (ft & (n.) Spec/Grade or Type		Corr.	Long, Joint Type Full, Spot					m. Joint (Cat. A Full. Spot. Nor			eatment Time		
1 24" 1 ft 0.625 in 1 24" 0 ft 9.125"	SA-240 304/304L	0.187"		_1_	Spot		.85	11	Spot	.85	5 -	-		
1 24" 0 ft 9.125"	SA-240 304/304L	0.187"			Spot		.85	1 Spot		B5	5 -	-		
15 Marian (a)														
15. Huads: (a) SA-240 304/304L (b) SA-240 304/304L (Mai'l Spec. No., Grade or Type) H.T Time & Temp (Mai'l Spec. No., Grade or Type) H.T Time & Temp														
		.T Time & T	emp				Mat'l S	pec. No	Grade or Tyne	H.T -	Time & Temp			
(Mari Spe	c. No., Grade or Type) H	 -		ai He	emispherical			· · · · · · · · · · · · · · · · · · ·) H.T 1				
(Mar'i Spe	c. No., Grade or Type) H	Ellipt	ical Conic io Apex Ar		emispherical Radius	Ftı Dlam	at eter	Side to Convex	Pressure Concave	Type	Category A Full, Spot, No	ne Eff		
(Mari Spe	c. No., Grade or Type) H	Ellipt	ical Conic io Apex Ar 1 -			Fla	at eter	Side to	Pressure		Category A			

I J. MAWP	FV/150)	- 1	osi at max, temp.	240						•
	(interna) (e	xternal)		212	*F	Min.	design metal temp.	20	"F at	150
17. Impact test	No De		· · ·		(internal)	(external)					<u></u>
	IVO FE	r UHA-51	(d)(1)(a)	<u> </u>					al lest to	riperature of	
10 (1)				(Indicate yes or no	and the compo	nent(s) impact test	led)		01 1001 102	inbergrate of	
18. Hydro., pew				225	Proof test	_					
19. Nozzles, ins	pection,	and safety	valve openin	QS:	_						
Purpose (inlet	.	Diameter	Flange		aterial	Mozzlo 1	hickness				
Outlet, Drain, et	<u>531 No.</u> 1 Ea	or Size	Type	Nozzle	Flang	e Nom	Corr.	Reinforcement Material		flached	Location
In/Outlet	1 Ea		RFSO	SA-106B	SA-10		0.125"	- IFRICI GI	Nozzie Welded	Flanne Welded	(Insp. Open
Drain	2	0.75*	LJ_	SA-312TP304/304	4L SA-10	X5 0.134"		-	Welded	Welded	Shell
	1	0.75		SA-182F 304/304	<u> </u>	3000#			Welded	***************************************	Channel Channel
_	 			 			-	-			Cilamine
	+-		 	 		-	-		-		
+				 	- 						
20 Sugaran St			<u> </u>			<u>-</u>	<u> </u>		-		
20, Supports: Ski		No	Lugs _	21	egs	Others	Fixe	Support(2)	Attached		
		es or No)		(No.)	(No	0.)				Shell, V	
4 i. Manufacturer	6 Pertial	Data Rep	orts properly	identified and signed	by Commission	ned inspectors have	a boan furn	Describe) ished for the following		(Where a	ind How)
** Evenesia	orpan,	item numb	er, mig's, na	me and identifying nu	ımber)	The state of the s	V 00001 10111	isingo toi tiig tottowitič	liems of the r	eport:	
Expansion	JOINT S	ystems ir	nc. S/N 135	5.							•
20.5											
22. Remarks: T	he custo	mer is re	sponsible (c	or the pressure relie	f device per U	IG 125a * 2005.	UC 5821 I	Day 4			
Customer Po	38000	040884. C	ustomer Ed	uipment No. 5001-	7011-14 00		110-00011	tev.),			
-					2417 711.00	· · · · · · · · · · · · · · · · · · ·					
											
											
lain	id ab ear			CE	RIFICATE	OF SHOP COMP	LIANCE				
APPAR COLU	ily that th	10 Staleme	nts made in	this report are correct	and that all det	tails of design may	edal const	ruction, and workman	11 (4)		
ASME C	ode for i	Pressure V	essels, Sect	ion VIII, Division 1,		rano el adelBul, Illia	erial, const	ruction, and workman	ship of this ve	ssel conform	to the
O Certai	cale of A	wthorizatio	on No.	18365	i	Expires		\	2000		
Date S	16.93	2002	Name u.					411	2008		
	32.	<u> </u>	_yva	rd Tank & Heat Ex	changer Corp		Signed	March.	· 'W. +		
					nufacturer)				presentative)		·
1.45				CE	RTIFICATE	OF SHOP INSPE	CTION				
i, the unders	igned, he	olding a va	lid commissi	on issued by The Na	tional Board of E	Boiler and Pressure	e Vessel In	spectors and the State	D :		
							of				ic
the pressure	vessel (lescribed i	n this Menufa	Clurer's Data Report		26-05		Rale			inspected
Manufacture	t þas cor	nstructed t	his pressure	vessel in accordance	WITH ASME CO.	do Continuitos		nd state that, to the be signing this certificate			lief, the
employer ma	kes any	warranty, i	expressed or	Implied, concerning	the pressure ve	stel described in t	tibilli i. Dy bio Manusa	signing this certificate sturer's Data Report. (e neither the Ir	spector nor h	is
inspector no	his emp	oloyer shal	l be liable in	any manner for any o	ersonal injury or	t ornooth doeses	IIIX IVIANUTAC	cturer's Data Report. if any kind arising from	-urthermore, n	either the	
Dale <u>9.2</u>	1/ -1			00	- committingery of	a brobertà dettialle	OF ELICISE OF	any kind arising from	or connected	with this insp	ection.
Date 7.2	<u>.p~cc</u>	Sig	ned	Kay Yaya	re	Comm	issions N	B# 11458(A)(B); No	C# 1950		
		 		(Authorized	nspector)			(Nat'l Board incl. ende	reament Stat	o Province	- 4 5 1 - 5
				CERTIFIC	ATE OF FIFE	D ASSEMBLY (2014011	VA-			
We certify th	at the st	alements d	on this report	are correct and that	the field accomi	bk accepting (OMPLIA	NCE this vessel conforms t			
Code, Section	n VIII, D	ivision 1	•		nie nete 5220111	ray countingtion of	all parts of	lhis vessel conforms (with the require	ements of ASi	ME
U Certificate	of Author	rization No	o.								
Date						EX	oires				
		Na	me				Signed				·
				(Ass	embl e r)		· —	/P/	presentative)		
				CERTIFIC	ATE OF FIFE	D ASSEMBLY	NCDEAT				
i, the undersi	ned, ho	lding a vali	d commissio	in issued by The Medi	onal Passet - (D	-D MODEWINEL (MSPECI	ON pectors and the State			
and employed	i by				ous postá ol Bi	ollet and Liesenie	Vessel ins	pectors and the State	or Province of		
		PRINTER II	· · · · · · · · · · · · · · · · · · ·	willier & Data Report	with the describ	peq blessnle Aess	el and state	that parts referred to	as data items		
										t of my knowle	adno and
inenanta di ma	unisciule	a uss cour	structed and		ture vessel in ac	ccordance with AS	ME Code. 9	een inspected by me : lection VIII, Division 1	The deepsit -	d vocaci	aoña suo
inspected and	subject	ed to a hyd	rostatic test	of	_ psi. By signi	ing this certificate	neither the i	nspector nor his emp	no nascribe	A42261 M32	
or implied, col	noerning	the pressu	ire vessel de	scribed in this Manuf	acturer's Data R	Report, Furthermor	a naithar ti	nspector nor his emp he Inspector nor his en	юунл ппахез аг ••••	ny warranty, e	xpressed
manner for an	y person	al injury or	property dar	nage or a loss of any	kind erisina from	m or connected ud	-, montroi U In this inn-	in mahacint that the Ol	riployer shall t	oe liable in an	у
Date							ar uas inspi	жиоп.			
		Sigr		(Authorized In		Comm	issions				
				(Authorized In:	spector)	_ _		Nat'l Board incl. endo	reament State	Drovino :	al black
							`		. Jonney II., 3(8)6	, movince an	ia No.)

FORM U-2A MANUFACTURER'S PARTIAL DATA REPORT (ALTERNATIVE FORM) A Part of a Pressure Vessel Fabricated by One manufacturer for Another Manufacturer As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

											·						
1.	Manufac	ured a	ad certified	by:	Expan	sion Join	t System	s, Inc.	8575 Rola	nd A.	res Dri	ve Sant	ee. CA-91	2071 (JSA		
2.	Manuraci	med fi	or: Ward	Fank & He		figati.	ic ford Added	is of Man	otáciorer) Ivd., Charle								
3.	Location of					·	(Name	: and addr	ess of Purchase)							
		-				 		known द कर्ज अधेर	13)								
4.	13pc: 2- (t)	escription	Single Exp not vessel par	ransion Joi 1 (shell, two-pic	nt Ass')'- ube bundle)		(A)fe	1355 's. scrial No.)				NΛ				
		NA TBJ. No			NIG				Expansion				(CRN)		2005		
5,	ASME Co	de, Se	ction VIII,	, Div. 1		2004			None	(DI #WI	ng hichaic	1 67)	Non		(Year	bailt)	
6.	Shell (a) l	Ju ota	Markov.	3	(Edition	rand Agenda			(Case Code		•	(Sp	ecial Service j		130(d)		
			,O113C3.			·		erall Le	ngth (it & in	1)		1' 1"					
No Dia In. Length R. & in. Spec/Grade or Type Nom. Corr. Type Full, Spot. 8									En	Circu Type	nt. Joint (Cat Full, Spot,		EII		t Teratin		
2	24.00°O	5.3	138" 775"	SA 106 G		0.375" 0.036"	0.063"	NA 1	None None		Ī	-				Ten	φ. T ₁
3	[24.00"()]) 4	138"	SA106 G	r. B	U.375"	0.063"	NA	None		1 1			-	-	-	
7	Heads: (a)			None I'l Spec. No., G	itade or Ty	pel II.TTim	r &:			lone							_
	Location (Top. Bottom, Ends)	l' ita	hickness	Kadir		Elliptical	Co.		(Mai'l Spec.) Hemispheric	$\overline{}$	Flat	Side to	Pressure	- 0	alagory	Α	
-:-		-				Matiu	Apri	Augle	at Radius	<u> </u>	liameter	Convex	Concave	Full	L Spot. N	Vane	£11.
If ren	iovable, bolis	used (c	lescribe other	r fastanina)		<u>[</u>											
				tostenit g /					(Nta(*) 5	pec. N.	. Grade, Si.	(c, No.)		 -			
8.	MAWP F		psi; External)	gat 212		max. temai)	temp. *i	;	Mm. design				at FV/I	02		psi	ig
9.	Impact test	No	per UG-2		, (<u> </u>	
10.	Hydro., Pn	eu. or	comb Test	INTHIO	43			the comp	onent(s) impac	tened)	<u> </u>					·	—
						3 psig by	others				Proul	test					
Ր Աւթա	Nozzles, insp e (Inlet, drain, etc.)		Diameter	Flange	1	Material		Nuzzle TI	ıjekaess	Rein	lurcement	· · · · · ·					
		Ny.	or size	type	Nuzzle	Flame		OIN.	Curr		laterial	Nuz	low Attached de Flai			ecation p. Open.	
												_					
12.	Supports:	Skirt		Lugs		Legs	······································	0	thers:		, <u> </u>	Attache	rd		•		
13.	Remarks: A		(Yes or No) oring Rate 1		ia) /iu Asi	nt Manage	(No.)		Describ	r)				d how)			
Expar	Remarks: A	vstem.	tor ice	ennusil-1. C		ar Movine	111 0.034	Desig	n Cycle life	per A	ppendix	26, 200	0 cycles				
Per	ision Joint S Appendix 2	6	, m /s rc	sponsible to	or the de	sign of the	expansi	on join	t per ASME	VIII,	Div., 1,	2004 Ed	lition.				
					CERT	TFICATE	OF SHO		COMPLIA	N/C 117							- ₁
we ce vessel	rtify that the part confor	stater us to th	nents made e ASME C	in this repo						constr	action, a	nd work	uunship o	f this	pressu.	re	
	ificate of A				4,671	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	tton vili	, DIVIS	IOIT 1								
Date	6/81	40					 -		pires:	Mari	:h 6, 200	18					
		<u>~>_</u>	····	Na	ime	Expansion (Manuf.		tems, in	c. Sig	ned 🔑	40	1	TO	-			_
l, the w	odersigned, h	oldine a	Valid como	decima locum	CERT	TITICATE	OF SHO	P/FIELI	O INSPECTI	ON		(At)	presentative)				
	odersigned, h ployed by ince with ASI	70	0	بتنافي مسجم الحد				p		mr uc	さくいわてい 川	: IIII ii Mian	ulacioner's	Date R	OFFICE AND		İ
											kas consu mplayer i	ucted this	i pressure ve warranty, e	ssel pa	artin; educin	natari	
41111	SOUTH AMERICA	r proper	Ty daminee o	ar a lines of SA	a tringle	ining the co	•				ios noi in	a contained	a saan be na	ibic m	ithy rat	maries. Mae: 1c	11
Dае "		<u>=</u> s	igned <u>L</u> t	<u></u>	The charge of th	Z L		/ (dus inspection outmissions		CA 12	194					
lindorser	nent, Stare, Pro	viisay and	No.)	ţ. vu	izeu li	wheeler)				t	Saci float	d mel					· i
																	i