SECTION A)

**SALES INFORMATION** 

**SECTION B)** 

**BOILER BRANCH INFORMATION** 

SECTION C)

**PICTURES** 

MW UNIT #4 MARMATON MISSOURI

## SECTION A ) SALES INFORMATION

#### STEAM GENERATION EQUIPMENT SALES INFORMATION

Tobago Management Reference Number: Unit #4

Equipment Location: Lloydminster, Sask.; WSS yardsite location B, D

#### **Equipment History:**

The following equipment was purchased from Koch exploration in 1997 and relocated to Lloydminster, Sask. The steam generator has undergone an extensive rebuild program which was completed in 1999. The rebuild program included new boiler feed water pump, instrument air compressor, electrical and instrumentation. It is our understanding that the unit was in use for approximately two years before being moth balled in the late 1980's.

#### **Description:**

Unit #4 - consists of one skid mounted 50 MMBTU / Hr. Thermotics steam generator, blower assembly and Gardner Denver boiler feed water pump. Unit also includes a Gardner Denver instrument air compressor.

#### Details:

#### Steam Generation Skid

Steam Generator:

Manufacturer:

**Thermotics** 

Serial Number:

78208

Alberta "A" Number:

115763

National Board Number: 235

. . . . . .

Year Built:

1978

Capacity:

50 million BTU

MAWP:

14822 Kpa

Heating Surface:

7710 sq. ft.

#### Economizer:

Manufacturer:

Serial Number:

Alberta "A" Number:

National Board Number:

Year Built:

#### Burner:

Manufacturer:

North American

Model Number:

4131.G-62.5

Serial Number:

BD6942-1

#### Blower / Feed Water Skid:

Blower Motor:

Manufacturer:

Toshiba

Horsepower:

50

Voltage:

460/3/60

#### Relief Valves:

Manufacturer:

Crosby

Model Number:

H555

Serial Number:

HR673, HR674

Set Pressure:

13788 Kpa

#### Fuel System:

Regulator:

Fisher 4", Type 298T-EK

Gas Valves:

Maxon 808CP

Feed Water Pump:

Manufacturer:

Gardner Denver

Model Number:

QBXB

Serial Number:

917664

**Pulsation Dampener** 

Performance Pulsation Dampener / Serial # 1333-D-1

Feed Water Pump Motor:

Manufacturer:

Lincoln

Serial Number:

1916446

Horsepower:

150

Voltage:

460/3/60

Instrument Air Compressor:

Manufacturer:

Gardner Denver

Model Number:

ASDRMD-AFAAGA

Horsepower:

5

Voltage:

480/3/60

Instrument Air Dryer:

Manufacturer:

Pall

Model Number:

10-HA7

**Burner Circuit Control:** 

Manufacturer:

Honeywell

Model Number:

SECTION B) BOILER BRANCH INFORMATION



# Unit #4

#### **BOILER AND PRESSURE VESSEL STATUS REPORT**

This status report form has been provided for you to report any changes to your boilers and/or pressure vessels. If you complete the form below, we would be pleased to make the required changes to our records and credit your account if credits are due. 10115763 RE: Vessel (A) Serial No. CRN C 6749.2 [ ] The above vessel(s) was (were) sold. Please transfer the registration of the vessel(s) to: Name of New Owner: Mailing Address: Location of Vessel: The above vessel(s) was (were) removed from service on Dec. 197 IMI I will advise Alberta Boilers Safety Association when it is returned to service. The above vessel(s) was (were) destroyed and disposed of as scrap material on (Date). The Alberta Identification (A) Number has been obliterated. The above vessel(s) has (have) been relocated to The above vessel(s) has (have) been operating outside of the Province of Alberta since (Date). Please remove from annual registration. Company Name: TRINITY ENERGY LTO Tel: (403) 875-1350 Position Title: CHIEF ENGINEER

(Please print name) FLOYD PRITES ONLY

Signature: Floyd Himm Date: Dec 10/98 Note: The owner of the boiler or pressure vessel is responsible for ensuring that the above equipment is inspected by Alberta Boilers Safety Association prior to its being returned to service in the Province of Alberta.

Please Return This Report To:

ALBERTA BOILERS SAFETY ASSOCIATION #200, 4208 - 97 Street, Edmonton, AB T6E 5Z9 (403) 437-9100 Fax (403) 437-7787

on.

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jn	it Identifica	tion <u>C</u>	nce-	thre	ougl	n wate	r tube	(c	dentify	ying No	\$,	78-	208 j	erial N	0.1	
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12/15/2004 11:41

Nat'l Board, State, Province and No.

Form P-3 (Back)	A115763.
96) SZANONANNONNK Feedwate Piping	subuhhhhkkunkx Inlet Valves
3" Sch. 8D, SA-53 (ALS 0.300) thk. 2"	Jack Valve, Edwards #1038Y
	top valve, Edwards #10484
10(a) Other Parts (1) Steam Separator (3)	10(b) Tubes for Other Parts
1 6" Sch. 160, SMLS Pipe SA-53-Bl 0.718" thk.	
2 6" Sch. 150 Weld Caps, SA-234-WPB, 0.718" thk.	
3	2)1½", 1500# RFWN Flange
11 Openings (1) State Injet - 3" Sch 80 (2) Safety Valva (No., size; and type of nozzles or outlets)	No., size, and type of nozzles or outlets)
(3) EXAMP Outlet - 3" Sch. 80 (4) Feed (7) 5".	
	13 Field hydro. (3)3/4" 6000 (5)1" 6000 (5)1
Maximum Allow- Code Par, and/or Heating eble Working Formula on which Shop hydro, test Surface	Heating surface test psi
12 Pressure AWP is Based psi sq. ft.	to be stamped
a passer Rad. 2150 27.2.1 3225 1990 b was revealed con 2150 27.2.1 3225 5726	n drum heads.
b x yex yexteen 2150 27.2.1 3225 5726 27.2.1 &2 3375	- te not to be
d Superheater	termining mini-
• PXXXXXXXXII 104! Assy. 3225 7710	mum safety valve capacity.
CERTIFICATE OF COMPLIANCE	
We certify the statement in this data report to be correct.	101
Date July 7, 1978 signed Thermotics, Inc.	by (Authorized Representative)
Our Certificate of Authorization No. 8795 to use the (A) or (S	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
<u>an. 31</u> , 19 79	
CERTIFICATE OF SHOP INSPECTION Thermotics, Inc.	ouston, it /as
BOILER MADE BY THE TRIBUTIES, THE. at 11	
Province of and employed by H.S.	B. Insp. & Ins. Co.
of Hartford Conn have inspected part	s of this boiler referred to as data items
	sufecturer's Partial Date Reports for items
and state that, to the best of my knowledge and belief, the manufacturer has constructed t	his builter in accordance with the applicable
sections of the ASME BOILER AND PRESSURE VESSEL CODE.	
By signing this certificate neither the inspector nor his employer makes any warranty, a	xpressed or Implied, concerning the boiler
described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his empersonal injury or property demage or a loss of any kind arising from or connected with this is	
Date 27, 1578	Aliana Maria
Commissions	8430
	Board, State, Bestiffer and 16.
CERTIFICATE OF COMPLIANCE We cartify that the field assembly of all parts of this boiler conforms with the requirements	OF SECTION LOS ING ASME BOLLER AND
PRESSURE VESSEL CODE.	N. C. Carrier
DateSigned(Assembler)	ByBy
Our Certificate of Authorization No	S}Symbol expires
19	— ·····
CERTIFICATE OF FIELD ASSEMBLY INSPE	CTION
1, the undersigned, holding a valid commission issued by the National Board of Boller and Po	ressure Vestel Inspectors and/or the State or
Province of and employed by	o!
have compared the statements in this Manufacturer's Data Report with the described boile	r and state that the parts referred to as data
items, not included in t inspected by me and that to the best of my knowledge and belief the manufacturer and/or t	ne continuate of snop inspection, nave been
this boiler in accordance with the applicable sections of the ASME BOILER AND PRESSUR	
inspected and subjected to a hydrostatic test ofpsi.	
By signing this certificate neither the inspector nor his employer makes any warranty, e	
described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his en	
personal injury or property demage or a loss of any kind arising from or connected with this	inspection.
DateCommissions	

Inspector

The following is all the paperwork showing the pulsation dampeners are "re-rated". They have to be hydro-tested to 3031 psi and witnessed by the boiler branch inspector and then a repair/alteration nameplate must be attached.

Wy.

## Saskatchewan



Municipal Affairs, Culture and Housing

**Protection Services Branch Boiler & Pressure Vessel Safety** 330 - 1855 Victoria Avenue Regina, Saskatchewan S4P 3V7

PLEASE DO NOT SEND REMITTANCE WITHOUT A COPY OF THIS INVOICE WHICH IS DUE WITHIN 30 DAYS.

TEL: (306)787-4522 FAX: (306)787-9273

#### APPROVAL AND INVOICE

Municipal Services Division

Tuesday, April 03, 2001 Waterflood Service & Sales Ltd. Box 1490 Estevan, Saskatchewan S4A 2L7

> Our File 29239 [ 0 V]

**ATTENTION:** Brent Blackburn

With reference to your submission respecting the registration of the item below, for legal use in the province, please note we have surveyed, approved and registered this design as noted.

MANUFACTURER:	Performance Pulsation Control			
ITEM:	DRAWING NUMBER :	CRN:		
	DR18008-A0 Rev 1	A4321.3		
REGISTRATION FEE: \$180.00	( CANADIAN FUNDS (	ONLY)		

We wish to point out that every vessel must be constructed strictly in accordance with the registered design.

In addition to stamping every vessel with the registration number given above and as required in CSA Code B51, a Manufacturer's Data Report must be forwarded to this office immediately at the time a vessel is shipped. Such forms may be obtained upon request.

Sincerely,

Brian Krasiun, P. Eng

Design and Registration

#327 Reg. of Design

REMARKS: Arroval for the rerate of vessels with serial numbers 1333-D1 thru 1333-D3 from

1600 psi to 2021 psi. Vessels require hydro and Alteration nameplate.

e-mail greg M. March 19 pl for prints.

April 3/01- talked to Brian at Borta Branch.

and he advised we would get a

Che for repair / alteration But hydro

test pressure must be 1.5 to 3031 per.

Legic to Brian for his records.

Blent Blackburn.

11/1



#### BOX 1490 ESTEVAN, SASKATCHEWAN — S4A 2L7 Phone (306) 634-7212 - Fax (306) 634-7887

PUMPS, COMPRESSORS, ENGINES AND MACHINING

Maried to Barta Brench March. 21/01 But.

Protection Services Branch Boiler & Pressure Vessel Safety 3<sup>rd</sup> Floor - 1855 Victoria Ave. Regina, Sask. S4P 3V7

March 21, 2001

Attention: Mr. Brian Krasiun

Reference: Quality Control Manual Review

Dear Mr. Krasiun;

Brian, as per our discussion a couple of weeks ago, in regards to the repair/alteration of three existing pulsation dampener. I have three dampeners that are new and have never been used. We wish to do a repair/alteration to re-rate them to 2021 MAWP. As per your request please find attached all paperwork required, I have included the following:

Manufactures Data Report
Calculations (based on old Code Numbers)
Original design drawings
Repair/Alteration Report (Exhibit #7) for each vessel

Please review and give me a call if you have any questions. Thank You.

Sincerely,

Waterflood Service & Sales

Brent Blackburn, P. Eng. Project Engineer

# EXHIBIT #7 REPAIR / ALTERATION REPORT

SECTION XVII PAGE 17.16

Saskatchewan	
Environment and	Job No.
Public Safety	Provincial No.
	Manufacturer Performance Pulsation Cons
Boiler and Pressure	CRN 4-3261.2
Vessel Safety Branch	Serial No. /333-D-/
•	
1 Name of Company Performing Repair Alteration Address Box 1490 ESTEVAN, 2 Name of Owner Tobago MAN, Address Box 1859, LLOYDMINSTER Location of Installation LLOYDMINSTER 3 Type of Vessel PALSATION DAMPNER. 4 Design Pressure Shell 2021 PS Jacket/Tubeside MA	SASK. S4A ZL7  AGEMENT L+d.  R, SK , S9V 1N 4-  P, SK . Co. Code  Dia. 18" U.D Length  Temperature  At N/A Temperature
When repairs involve any of the items 5 thru 10,	
5 Head Material Specification \$A 516 Gr 70	Thickness .6250 in nominal
6 Tubesheet Material Specification	Thickness
7 Shell Material Specification NA	Thickness N/A
8 Tube Material Specification NA	Tube Diameter MA Th.
9 Flange Rating Standard N/A	Fitting Rating V/A
10 Nozzle Material Specification and Schedule	SA-106 GR B., 2" schedule XXH
11 Details of Repair/Alteration (Attach repair proce	
	rerate of vessel from 1600 MAWP
	Is new and have never been used or
12 Partial Data Reports/Affidavits have been furnis	had for the following parts:
· · · · · · · · · · · · · · · · · · ·	fred for the following parts.
<u>NIA</u>	
13 Radiography Not required	
13 Radiography <u>Not required</u> 14 Other N.D.E. <u>not required</u>	
15 Post Weld Heat Treatment not required.	
16 Hydrostatic Test Pressure Shell 263	A vs. Tubes NA
17 Alternative or Additional Tests 3037	
18 Weld Procedure Specifications NIA	
requirements of the Design, Construction and Instal	correct and that the repair/alteration conforms to the llation of Boilers and Pressure Vessels Regulations.
Signed	Date */ */
(Repair / Alteration Company)	
Saskatchewan Inspector	
When not inspected by a Saskatchewan Inspec	otor
Poport received by	Nate

# EXHIBIT #7 REPAIR / ALTERATION REPORT

SECTION XVII PAGE 17.16

Saskatchewan	
Environment and	Job No.
Public Safety	Provincial No.
	Manufacturer Performance Pulsation Con
Boiler and Pressure	CRN L- 3261.2
Vessel Safety Branch	Serial No. /333-D-2
•	
	ON WATERFLOOD SQUICE & SALES LAD. SASK., SAA 2L7 MENT LAD.
Address Box 1859, LLOYDMINS	
Location of Installation LloyDmins 127	
3 Type of Vessel PULSATION DAMPNER	Dia. 18" 0.1) Length N/A
4 Design Pressure Shell Zozi P	SI At Z50 ° F Temperature
Jacket/Tubeside ///A	At <u>MA</u> Temperature
When repairs involve any of the items 5 thru 10	0. complete as applicable:
5 Head Material Specification SA 516 SC 70	
6 Tubesheet Material Specification	Thickness NA
7 Shell Material Specification NA	Thickness $\alpha/A$
8 Tube Material Specification N/A	Tube Diameter N/A Th.
9 Flange Rating Standard N/A	Fitting Rating NA
10 Nozzle Material Specification and Schedule	
11 Details of Repair/Alteration (Attach repair proc	
No physical alteration, rec	rate vessel from 1600 MAUP to
2021 MAWP. VESSEZ IS NE	W AND HAS never been used or
put in service	
12 Partial Data Reports/Affidavits have been furni	shed for the following parts:
NA	
13 Radiography Not required	
14 Other N.D.E. · not required	
15 Post Weld Heat Treatment not require	
16 Hydrostatic Test Pressure Shell 26	Tubes <u>N/A</u>
17 Alternative or Additional Tests 305	31
18 Weld Procedure Specifications	
	25.440.546
(STATEMENT TO BE MADE ON COMPLETION C	
I certify that the statements made in this report are	e correct and that the repair/alteration conforms to the
requirements of the Design, Construction and Inst	allation of Boilers and Pressure Vessels Regulations.
	5 1874
Signed	Date 7
For (Repair / Alteration Company)	
	d above and state that to the best of my knowledge and
	I in accordance with requirements of the Design,
· · · · · · · · · · · · · · · · · · ·	
Construction and Installation of Boilers and Pro	
SignedSaskatchewan Inspector	Date
When not inspected by a Saskatchewan Inspe	ector
Report received by	Date

REVISION 0 Nov. 24/99

# EXHIBIT #7 REPAIR / ALTERATION REPORT

SECTION XVII PAGE 17.16

Saskatchewan	
Environment and Job No.	
Public Safety Provincial No.	
Manufacturer <u>/</u>	Performance PULSATION CONTROL
Boiler and Pressure CRN	1-3261.2
Vessel Safety Branch Serial No.	1333-D-3
1 Name of Company Performing Repair Alteration WaterPeloo	
Address Box 1490, ESTEVAN, SASK. SAA 2  2 Name of Owner Tobago Management Ltd.  Address Box 1859, LLOYOMINSTER SASK.	L7  S9V IN4  of Code  ength Temperature Temperature
5 Head Material Specification SA 516 6, 70 Thickness	
	.6250 in Hominal
6 Tubesheet Material Specification MA Thickness 7 Shell Material Specification NA Thickness	MA
8 Tube Material Specification $NA$ Tube Diameter	er , I/A Th.
9 Flange Rating Standard  9 Flange Rating Standard  1/A Fitting Rating	
10 Nozzle Material Specification and Schedule SA-106 & GR. B	7"- schedale XXH
11 Details of Repair/Alteration (Attach repair procedure when approved)	, E SCHEAULE XIII
No physical alteration, regate vessel 2021 MAWP. Vessel is new and has new	from 1600 MAWP To ver been used or
Partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits have been furnished for the following partial Data Reports/Affidavits/Affidavits/Affidavits/Affidavits/Affidavits/Affidavits	arts:
13 Radiography not required	
14 Other N.D.E. not required.	
15 Post Weld Heat Treatment not required	•
	U/A
17 Alternative or Additional Tests 303 /	
18 Weld Procedure Specifications WA.	
(STATEMENT TO BE MADE ON COMPLETION OF WORK) I certify that the statements made in this report are correct and that the reprequirements of the Design, Construction and Installation of Boilers and Programments of the Design, Construction and Installation of Boilers and Programments of the Design, Construction and Installation of Boilers and Programments of the Design, Construction and Installation of Boilers and Programments of the Design, Construction and Installation of Boilers and Programments and Programment	
Signed Date	
For	
(Repair / Alteration Company)  I have inspected the repair/alteration described above and state that to belief the repair/alteration has been completed in accordance with requestion and Installation of Boilers and Pressure Vessels Regulations Signed  Date	uirements of the Design,
Saskatchewan Inspector	
When not inspected by a Saskatchewan Inspector	
Report received by Date	

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

	٠	4
0	,	

1. Manu	dactured and	certifi	ed by P	edomnance Pul:	sation Control,	Inc., 390 Clay	Road, Sunny	ale TX 75182	)		
	factured for				4810	-6		re of unsurphysicians)	7 7	iter 1	<u></u>
3. Locat	Ion of installa	tion (	Jnknown			(8	कान कर क्या	Purchaser!	1.710m	aley 1	
4. Type	S	ohere		17333	·· 4937 () 2		THE DE IN SE				
t The	chamical ac	or vert.	krá)	(Mark	end No.)		3261.2 7CR04	DR180	08-AO Rev 1 The ASME BO	9 <b>(2</b> )8	1938
VES	SEL CODE.	The	design co	postruction, and	paris meet ine Workmanship ci			specifications (	of the ASME BO		
lo		4000	,	•			a issied! GEA!O	11. ANY DIAMEN	· · · · · · · · · · · · · · · · · · ·	199 Yea	
-	AZI	enda (C	(ala)	<del>,</del>	Code Case Nos.	<del></del>	···	3	pecial Service par UG 1	20(a)	_
6. Shell:	- List	۸ ۱. /۵۵۰	ione :. No., Grada)	<del></del>	0.625* Nom. TNL (h.)		0.0*	d.	18.75° IO	•	NA
7. Seams	1:			None	85	N/A	Con. Now. (n.)	1	Dam 10. (h. 4 h.) Spot		ish forcial (IL & ii)
	Long. (We Sight	म्बर्स, ( ap, 8u	) <del>[]</del>	T. (Spot or Ful)	EH. (%)	.T. Temp (F)	Time (hr)	GVI (सम्बंध की 1981.	RT. (Spot. P	Me	None No. of Courses
8. Heads	: (a) Mati			SA-516			(b) Mall.	SngL, Lep, Buttl	•	8 Gr 70	•
<u></u>	ocation (Top,	1 1	dh!mum	(Spec No. Corresion	Grade)	Knuckle		1	(Spac Ho	),, Qrode)	
	Rollom, Ends)	1	hickness	Allowance	Radkıs	Radius	Eláptice). Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure [Convex or Correave
(a)	End	<del>-}</del>	0.47	0.0'				*****	-8.375*	***	Сопсаче
(0)	End		0.47	0.0"		*****			8.375*	<del></del>	Consave
II 18	moyable, cold	use.	o (desenbe	other fastenings)			······································	(Mad, Spec, No., C	E San Val		
9. MAWP				1800		psi at ma		freene above 1801 o	250		<b>▼</b> g
	sign metal ter		<del></del>		Fal 1600	psi. H	/dro., spined.,	or d <b>ilikkty</b> (est pr	essure	2400	, , , , , , , , , , , , , , , , , , ,
	es, inspection upose	and i	Salety velve	openings:			Nom.	1 100			
· · · · · · · · · · · · · · · · · · ·	Outlet Drain)	No.	or Size			Ast1.	Thk.		ilorcument Matt.	How Allached	Location
Inis	VOullet	2	2"	PIPE	SA-106	Gr B \$MLS	0.436*	<del> </del>	None	Welded	Head
· \ <del></del>	*~			<del></del>	<del> </del>	· · · · · · · · · · · · · · · · · · ·	<del></del>	<del></del>		ļ	
ı <del></del>					<del> </del>		· .	<del> </del>			
11. Suppo	rts: Skirt		No	Lugs	0 Legs	0	Other	Fooload		<u> </u>	
			(Yes or no)		No.1	Nat		Footpad (Osscribe)		77	ad-Welderl
None None	Kş. Manuiaçı	urers	Paruai Da	ta Reports proper	ly identified and	signed by Com	missioned Inspe	clors have been	n furnished for the	following items	of this report:
	. Dallat .				(Name of pert,	Kem muniber, Migr	name and Benklying	<b>ξί</b> μπρ)			
Designo	d per UG-2	2(0	o exempt	ion per UG-1	25(a)		<del> </del>	<del></del>	<del></del>		
	lost examp			-20(1)				<del></del>	·		
			<del></del>	· · · · · · · · · · · · · · · · · · ·	CERTIF	ICATE OF SH	OP COMPLIAN	CF		· · · · · · · · · · · · · · · · · · ·	
We conti	fy that the s E Code for Pn	tatem essun	ients made e Vessels.	s in this report Section Vill, Divi	are comed and	ستاحلماء ناد أحطأ	of decises must	dal, constructio	on, and workmans	ship of this vo	assel spritorm to
Date	8/12/98	••-•	. Name	COCKOII FIRI DIVI	41411 II D C010	Pulsation Cont	124UVII 140	59,511	Symps	April 11	20:10
		<del></del>				danyfacturer)			igned	THE DEWNALD	100 ·
Vessel co	onstructed by			Perform	nadea Dukallan	Cantal Iss	OP INSPECTION		<i>V</i>		
i, the un	idersign <b>e</b> d, hi	olding	a valid c	ommission issu	ed by The Nat	lone) Board o	Boiler and Pri	at essure, Vessel	Inspectors and	the State or	Province of
le	xas an	q emi	ployed by		Old Republic	Insurance Corr	ipany	<del></del>	Arlington,		have Inspected
line comp Manufaci	onenl describ Urer has con	ed in ed in	this Manufi fed this ov	ecturer's Date Re ressure vessel in	port on	June 12	19 2007 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100	98 and sta	ite that, to the best	of my knowled	lon and belief, the
swordwa	makes any	Walls	ENIV. BXDN	issea or imblied. (	concerning the n	jassav enitssav	deterition in this	والمسترية والمساورة والما	. Dala 17 aa a da 17	t **	Inspector nor his her the inspector
norms er Date	npioyer snaii ( 6/12/98	ou nu	no in pity ti	nanner ior any pe	ranual injury or t	property damag	e or a losa or an	kind arising fro	on or connected w	ilh this inspect	ion.
vala	Ur 14/30	_ ગ	gned		Cultored Impect	<del>,</del> ,	Comm	issions .	NA-147	4 /	-
						<del></del>			(Kall Board Inc. and	veneroenel) ( VAI. )	TON BUCKET

# MAR-22-99 12:43 FROM: TRINITY ENERGY LTD

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

4/9
(3)

1. Manufactured an	id certifi	ed by P	erformance Puls	ation Control,	Inc., 390 Cla	y Road, Sunny	vale, TX 75182			
2. Manufactured for					-6	2 Name and adding	A MENDERONAL		in the	14.
3. Location of insta	Ilation <u>L</u>	Jaknowa				NBAH END ESSENTE	purchasely	(11)	alta J	<u> </u>
4. Туре	Sphere	~ <b>~</b> ~~	1333-D-1 thr	i 1333-D-3	•	(Name and ed L-3261,2	•	08-AO Rev 1	670	
5. The chemical VESSEL CODE	Spinere Z or vert and ph	vsical oro	(Allow the period of all of	retto.)	monditaes and	(CRN)	UNIOU (Or	awing no.)	8,7,0 F.58 <i>(1</i> 69)	1998 101 - 1702, EUR
VESSEL CODE	. The	design, co	instruction, and	workmanship c	onform to ASM	s of material E Rules Section	specifications ( on VIII Division	of the ASME Bo	DILER AND	PRESSURE
to	4004			•			are and Dialities	· · · · · · · · · · · · · · · · · · ·	199 Yes	
·	dderda (t	14)	<del></del>	Code Case Nos.	<del></del>			pecal Service per U()	2828	
6. Shell:	, k	lone		0.825*		. 0,0*		16.75° ID	rvioj	NA
7 Casmal	un. (Spec	No., Grada)		Hom. The (n.)		Соп. Дож. (п.)	<del></del>	Dam. I.D. (6, 4 h.)	<del></del>	त्या (बर्द्ध वे) (ब्रिट्स स्ट्री
7. Seams: Long.	Wassed, C	) <del>U.,</del> R	None T. (Spot or Full)	85 EH. (%) H	N/A LT. Temp (F)	NA Time (hr)	1 Grai (welded, DSI.	Spot		None
Singl	, Lap, By	a <b>)</b>			and a decay (i. )	• •	Singl., Lep. Butt)	RT. (Spot, P or Full)	and,	rlo. d'Causa
8. Heads: (a) Mati.			SA-516 (Spec No.	Gr 70	<u> </u>	(b) MaU		SA-51	6 Gr 70	
Location (Top	.   A	dinimum	Corresion	Crown	Knuckie	Elkpticel.	Conkal	(Spec No		
Bollom, Ends		nickness	Allowance	Radius	Radius	Rallo	Apex Angle	Hemispherical Redius	Flat Dizmeler	Side to Pressure [Convex or Correave
(a) End		0.47	0.0*		-		****	8,375*		Concave
(b) End		0.47"	0.0*					8.375*		Consave.
If removable, b	olis usc	d (describe	other fastenings)			<del></del>	<del> </del>		·	401130112
9. MAWP			1800		1-1-		(Hat., Spec. No., C		***********	
Min. design metal	loma	<del></del>		Fat 1600		x. temp,	<del></del>	250	·	* F
10. Nozzies, inspecii		eafely yelys	SZ OBěninner	Fat 1600	psi, i	Aque" MAMA	or destable (est pr	.essn.e	2400	psi
Purpose	7	Diam.		<del></del>	<del></del>	Nom.	Reli	locoment	T Row	
(Inlet, Oultet, Orain)		or Size			Mell.	Thk.		Mail.	Alsched	Location
Inlet/Outlet	- 2	2"	PIPE	SA-108	Gr B SMLS	0.436*		None	Welded	bseti
·				ļ ·	<u> </u>			·		
<u> </u>		·	-							
					<del></del>					
11. Supports: Skirt		No (Yes or no)	Lugs	O Legs	0	Other	Foolpad	Allache	d He	ead-Welderf
12. Remarks: Manufi	iclurer's	Partial Dai	a Reports proper			anani banoizzimi	(Describe)	himlohad for the	fallowin there	किन्द्र प्रवेशिक्तः
None								a munished for Me	tonowing items	of this topod:
Prossure Rellef	velv	Avenal	ina ana iiG d	(Name of part,	Kein minber, Migr	a came and Bently'n	g stamp)			
Designed par UG	-22(8)	)	100 per 03-1	20(4)	······································		· · · · · · · · · · · · · · · · · · ·			
Impact test exe			-20(1)				· · · · · · · · · · · · · · · · · · ·	·	······································	
				CERTIE	ICATE OF BL	OP COMPLIAN	100			
We certify that the	slatem	ents made	In this report	ate cornel and	libal all datalle	of dealer male	NGE Plát, constructio	n and workman	chin of this u	AAAA( t-
the ASME Code for	Pressur	e Vessels,	Section VIII, Divi	sion 1. "U" Certi	ificate of Author	rization No.	29,537	expires	יא צונט זט קטונ 11 והם4ר/	20:10
Date 6/12/98	Co	). Name			Pulsation Con	troi, inc.	S	Igned J.F.	(2500)	101
		<del>· · · · · · · · · · · · · · · · · · · </del>	· · · · · · · · · · · · · · · · · · ·		Manufactyrar)		<del></del>		<u> निस्कृतिकारी</u>	1946
Vessel constructed	ÞΥ		Perform	iance Pukalion	Control Inc	HOP INSPECTI	-1	<i>V</i>	<b>TV T</b> C	
i, the undersigned,	nolding	a valid c	ommission issu	ed by The Nat	Ional Board	8oller and Pi	at ressura Vessel	Inspectors and	lale, TX 7518:	Province of
Texas	and emp	ployed by		Old Republic	Insurance,Cor	прапу		Arlington,		have inspected
the component desc	noed in	this Manuf	acturer's Data Re	port on	June 12,	.,; 1	998 and sta			dge and belief, the
Manufacturer has c	טחזוניים	ted this pr	ni isaacov erusae	accordance will	h ASME Code	Section VIII, Di	NOTABLE DILLA		1 116 - 170	
employer makes ar nor his employer sha	l be lial	pie in any u	Janner for any de	raonal injury or a	nessure vesse Moderty damac	i described in (hi: 10 of a losa of an	~ Line:::	Onla Danad C.	_11	
Date 6/12/98	Si	gned	00	Thin-	14		nissions	AIN POT	un una Rispeci	VIAI.
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									المالية والمرابعة منتسب	ال بديديد ((الإناية) كليات با

3/9

# FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only) As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

(2)	1

1. 8	danulaclured and	certifi	ed by Pe	rformance Pul	sation Control,	Inc., 390 Cla	y Road, Sunny	rale TX 7518	2		
	Aanulactured for				4810	-6	Hampi and address	es of manufactures			·
	ocation of installa	***					HERO AND	purchasery	Lloymin	aley to	15
4. T	voe S	ohara		1333.D.1 (b)	n: 1737-D.3		(Name and ed				
5 T	he chamical se	or vari	(vil)	(Migra	ru 1333-D-3	<del></del>	L-3261.2 (CRI))	DR180	108-AO Rev 1 THE ASME BO	6,7,8 (A) (N)	1938
J. 11	VESSEL CODE.	ru pri The	ysical prop design co	nstruction, and	parts meet the	demoniuper:	s of maledal	specifications	of the ASME BO	ILER AND	PRESSURE
					······································	amailit ta 174tt	r water about	W AIII' fhiáití	/ l	199 Yaz	
•	0 <u> </u>	ever ((	) 3(4)	<del></del>	Code Case Hos.	<del></del>			poced Service par UC 12	1026	
6. SI	hell:	۸ خو <del>رت</del>	lone . No., Grada)	<del> </del>	0.625*		0,0*		46 75* (1)	•	N/A
7 Se	aama'			Mone	Hom. The (In.) 85		Corr. Alow. (in.)		Diam. (.D. (ii, 4, h.)		तिम (करवे वे) (स.स. नि.)
., .,	Long. (W	सन्	U., R.	T. (Spot or Ful)		N/A .T. Yemp (F)	NA Time (hr)	1 Givis (west set, 108)	Spot RT. (Spot Pa		None
8. He		ւթ, Ձտ	•	SA-51			` ,	Sngl., Lep, Burt)	or Ful)		तिन, से देखांक्र
•				(Spec No			(b) Mail		SA-518 (Spec No.		
	Location (Top, Bottom, Ends)		linlmum	Corresion	Crown	Knuckle	Eliptical.	Conical	Hemispherical	Flat	Side to Pressure
(a)	End		0.47°	0.0°	Radius	Radius	Ralfo	Apex Angle	Radius	Diameler	CONVEX OF CONCENT
(6)	End	<del></del>	0.47*	0.0*		*****	<del></del>		8.375*	-	Concave
$\overline{}$	If removable, boll								8.375	·	Consave.
	·	- 450	i lacacine.	adiai instruikiĝs	·	·		(Hell, Spec. No., C	Sz. Sze. No.)	************	
9. 144	AMP			1600	<del></del>	pel at ma	ix, temp.		250		• 1
	n, design metal te			32	*Fat 1600	psl. H	ydro., prove.,	or diament (est p	resture	2400	ps
10. N	lozzies, inspection Purpose	and t	alely valve Diam.	openings:	<del></del> -	<del></del>					
<u> (In</u>	lei, Oullet, Drain)	No.	or Size			Ault.	Nom. Thk.	Rei	nforcement Matt.	How Attached	Location
-	InleVOutlet	2	2"	PIPE	SA-108	Gr B SMLS	0.436		None	Welded	Head
( <u> </u>	<del></del>				ļ						· · · · · · · · · · · · · · · · · · ·
-			<del></del>								
				_ <u></u> _	<u></u>		<u> </u>				
11. St	upports: Skirt		No (Yes or no)	Lugs	0 Legs	(No.)	Other	Footpad	Attached		au-Wolded
12. Re	emarks: Manufac	lurer s	Partial Date	a Reports prope	(w.) Ny identified and	(no.) signed by Con	missioned inspe	(Ossenbe)	n fumished for the fo	(V) smuli naistolk	्रा कि इस्से विर्
Yone		<del>,</del>	<del></del> ,		01		a viewe myd Reist Wyd			MANING HUINS	or any titlott.
ros	sure Rellef	/# <u>) y</u> (	exemp()	ion per UG-1	(NAMe or part, 125(a)	प्रकथा सम्तर्भग्रेक्षर' (Miðs)	a vews and perigitals	stamp)			· · · · · · · · · · · · · · · · · · ·
1 : 3 (	phod per UG-1	22(0)						•	<del></del>		
mpac	ci lesi exem	1101	per UG-	20(1)						·-·	
	and at a st				CERTIF	ICATE OF SH	OP COMPLIAN	CE		•	
the A	ceruly that the s ASME Code for Pi	itatem essur	enis made Vesseis S	In this report Section VIII, Divi	Sin Annual and	That all datalla		dal, constructly	on, and workmansh	ip of this vo	essel conform to
Date			. Name			Pulsation Conf		29,537	expires	April 11	2000
						(anviacture)			ligned	H80reunui)	30X
Vace	el constructed by			Oarlan	CERTIF	ICATE OF SE	OP INSPECTION	N	. 0	· · · · · · · · · · · · · · · · · · ·	
l, the	s undersigned, h	olding	a valid co	mmission issu	nance Pulsation	onal Board o	Boller and Pri	al essure Vessel	Sunnyva Inspectors and	le, TX 75102	Province
	Texas ar	iq ewi	oloyed by		Old Republic	Insurance Con	npany		Arlington, Y		have inspectors
the c	omponent descrit	ed in	this Manufa	clurer's Dala Re	port on	June 12	. 19	98 and sta	ate that, to the best of		
епюн	ifacturer has con	Wanz	INIV. #YARH	rean or implian	CAACAMING Iba a	MOREUM HARRA	daaa.N	ision 1. By s	Igning this certificate	neither the I	inspector nor his
nor h	is employer shall	be lial	le in any m	anner for any pe	araonal injury or p	roperty damag	ocachoed in this on a loss of any	manuracturers kind arisino fro	i Dala Report. Furt om ar connected wit	nermore, neith h this inspecti	ner the Inspector
Date	6/12/98	SI	gned	16	3 ffrom	•.	Comm		NA- P934	11/11	••••
		<del></del>			(Authorized Trapects	н)			(Nail Board Incl endor	Hariana) Stitu. F	ov, we No.
							•			<del></del>	

Performance Pulsation Control, Inc. 1325 19th Street Plano, TX 75074

Date Printed: 2/2/01

#### CUSTOMER

WATERFLOOD SERVICE & SALES LTD BOX 1490 ESTEVAN, SASKATCHEWAN, CANADA S4A 2L7

#### **VESSEL LOCATION**

UNKNOWN

#### **VESSEL DESCRIPTION**

DR-18-2220CS

Vessel designed per the ASME Boiler & Pressure Vessel Code, Section VIII Division 1,1998 Edition 1999 Addenda with Advanced Pressure Vessel for Windows, Version: 7.1.4 Vessel is ASME Code Stamped

Seismic Analysis is Not Required

1333-D OLD DESIGN Vessel Number:

#### NAMEPLATE INFORMATION

MAWP: 2021.00 PSI at 250 °F

MDMT: -20 °F at 2021.00 PSI

Serial Number(s): 1333-D-1 THRU 1333-D-3

National Board Number(s): :

Year Built: 1999

Radiography: RT3

Postweld Heat Treated: NONE

Construction Types: W

Design Engineer: Jung	Signatures Mathia Divin	Date:	 / て	101
Supervisor:	,	Date:	 /	<i>!</i>
muthorized Inspector:	1	Date:	 	<u>/</u>

FROM: 1 PERFORMANCEPULSATION CONTROL

PHONE NO. : 972 633 8700

Feb. 05 2001 09:09AM P6

Performance Pulsation Control, Inc. 1325 19th Street Plano, TX 75074

Date Printed: 2/2/01

**Project Description** 

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#### Table of Contents

í	OD HEMI HEAD
·	2" SCH XXH BFW CONNECTIONS
	MDMT Summary
	MAWP Summary
	Summary Information

PHONE NO. : 972 633 8700

#### Performance Pulsation Control, Inc.

18" OD HEMI HEAD

Justomer: WATERFLOOD SERVICE & SALES LTD

1333-D OLD DESIGN

lead Number: 1

Vessel Number: 1 Mark Number: H1

Date Printed: 2/2/01

	•				
	He	mispherical l	Head Design Information		
Design Pressure:	2021.00	PSI	Design Temperature:	250	°F
Static Head:	0.00		Joint Efficiency:	.85	%
Head Material:			Factor B Chart:	CS-2	
Material Condition:	Normalized		Material Stress (hot):	17500	PSI
Corrosion Allowance:	0.0000	in.	Material Stress (cold):	17500	PSI
Head Location:	Bottom	•••	Actual Head Stress:	17496	PSI
Outside Diameter:	18.0000	in.	Straight Flange:	0.0000	in.
Odigida Biantia					
Crown Radius (Lo):	9.0000	in.	Thin Out:	0.0450	
			Extreme Fiber Elongation:	5.40	%
Head Surface Area:	3.53	Sq. Ft.	Specific Gravity:	1.00	
lead Estimated Volume:	5,33		Weight of Fluid:	44.42	lþ.
Head Weight:	90.02		Total Flooded Head Weight:	134,44	lb.
•	Mín	imum Desigr	n Metal Temperature Data		
E. Termorofuro Cumios	D		Pressure at MDMT:	2021.00	PSI
in. Temperature Curve:	• •		Minimum Design Metal Temperature:	-20	
UCS-66(b) reduction: UCS-68(c) reduction:	No		Computed Minimum Temperature:	-55	

#### Design Thickness Calculations

#### Design Thickness Calculations per Appendix 1-1

2021.00 \* 9.0000 = 0.5799 + 0.0000 (corrosion) + 0.0450(thin out) = minimum of 0.6249 in. : 2 \* 17500 \* 0.85 + 0.8 \* 2021.00

> Nominal Head Thickness Selected = 0.6250 in. Minimum Thickness after forming = 0.5800 in.

Vessel Number: 1

Mark Number: N1

# Performance Pulsation Control, Inc. 2" SCH XXH BFW CONNECTIONS

omer: WATERFLOOD SERVICE & SALES LTD

1333-D OLD DESIGN

Number: 1 ID Number: 1

MOZZIE passes through the vessel, attached by a groove weld.

ozzle does not pass through a Category A joint.

Date Printed: 2/2/01

#### Nozzle Design Information

			Nozzle Efficiency E:	100	%
Nozzle Material:	SA-106 Gr B	OLD	Joint Efficiency E1:	1.00	
, (DZZZZ MATOLIA)			Factor B Chart;	C8-2	
External Projection:	4.0000	in.	Allowable Stress at Design Temperature (S n):	15000	PS!
Internal Projection:	1.0900	in.	Allowable Stress at Ambient Temperature:	15000	PSI
Nozzle Corrosion Allowance:	0.0000	in.	Correction Factor F:	1.00	
Nozzle Pipe Size:	2		Nozzle Pipe Schedule:	XXH	
Nozzle ID (new):	1.5030	ín.	Nozzle Wall Thickness(new):	0.4360	ln.
Nozzie ID (corroded):	1.5030	in.	Nozzle Wall Thickness(corroded):	0.4360	in.
Outer "h" Limit:	1,0900	in.	Upper Weld Leg Size(Weld 41):	0.3750	In.
Internal "h" Limit;	1,0900	in.	Internal Weld Leg Size(Weld 43):	0.0000	in.
OD, Limit of Reinforcement:	3,5350		Outside Groove Weld Depth:	0.6250	in.

#### Minimum Design Metal Temperature

Min. Temp. Curve: B Pressure at MDMT: 2021.00 PSI UCS-66(b) reduction: Yes Minimum Design Metal Temperature: -20 °F Computed Minimum Temperature: -155 °F

#### Head Information

Material: SA-516 Gr 70 OLD Head wall thickness(new): 0.6250 in.

Material Stress(S<sub>v</sub>): 17500 PSI Head wall thickness - thin out (corroded): 0.5800 in.

Pipe Size: 2 Schedule: XXH

Nozzle is adequate for UG-45 requirements.

Opening is adequately reinforced for Internal Pressure.

Reinforcement calculations are not required per UG-36(c)(3)(a)

Weld Strength Paths are adequate.

Vessel Number: 1

Mark Number: N1

# Performance Pulsation Control, Inc. 2" SCH XXH BFW CONNECTIONS

1333-D OLD DESIGN

Number: 1 lumber: 1

Date Printed: 2/2/01

### Required Head Thickness per Paragraph UG-37(a)

= 0.4967 in.

#### Nozzle Required Thickness Calculations

## Required Nozzlo Thickness for Internal Pressure per Paragraph UG-37(a)

$$n = \frac{PRn}{SE - 0.6P} = \frac{2021.00 * 0.7615}{15000 * 1 - 0.6 * 2021.00}$$

= 0.1102 in.

#### Strength Reduction Factors

$$fr1 = \frac{Sn}{Sv} = \frac{15000}{17500} = 0.8571$$

$$fr2 = \frac{6n}{Sv} = \frac{15000}{17500} = 0.857$$

#### **UG-45 Thickness Calculations**

## Nozzle Thickness for Pressure Loading (plus corrosion) per Paragraph UG-45(a)

= 0.1102 in.

## Nozzle Thickness for Internal Pressure (plus corrosion) per Paragraph UG-45(b)(1)

$$A = \frac{PLo}{(2SE + 0.8P)} + Ga = \frac{2021.00 * 9.0000}{(2 * 17600 * 1 + 0.8 * 2021.00)} + Ga = \frac{2021.00 * 9.0000}{(2 * 17600 * 1 + 0.8 * 2021.00)}$$

**∞ 0.4**967 in.

## Minimum Thickness of Standard Wall Pipe (plus corrosion) per Paragraph UG-45(b)(4)

= minimum thickness of standard wall pipe + Ca

= **0.1347** in.

## Nozzle Minimum Thickness per Paragraph UG-45(b)

= Smallest of UG-45(b)(1) or UG-45(b)(4)

= 0.1347 in.

Minimum Nozzle Wall Thickness = tn - 12 ½% (for pipe) = 0.3815 in.

Minimum Nozzle Wall Thickness of 0.3815 in. is greater than UG-45(a) value of 0.1102 in.

Minimum Nozzle Wall Thickness of 0.3815 in. is greater than UG-45(b) value of 0.1347 in.

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#### Performance Pulsation Control, Inc. DR-18-2220CS

tomer: WATERFLOOD SERVICE & SALES LTD 1333-D OLD DESIGN

Vessel Number: 1

Date Printed: 2/2/01

MDMT Report by Components

Design MDMT is -20 °F

Material

CurvePressure MDMT

SA-516 Gr 70 OLD D 2021.00 PSI

-55 °F

" OD HEMI HĖAD 2" SCH XXH BFW CONNECTIONS

Component

SA-106 Gr B OLD

B 2021.00 PSI -155 °F

Component with highest MDMT: 18" OD HEMI HEAD.

Computed MDMT = -55 °F

The required design MDMT of -20 °F has been met or exceeded.

ANSI Flanges Are Not Included in MDMT Calculations.

#### Performance Pulsation Control, Inc. DR-18-2220CS

..omer: WATERFLOOD SERVICE & SALES LTD

1333-D OLD DESIGN

Vessel Number: 1

Date Printed: 2/2/01

MAWP	Report by	Components
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Design Component Pressure 3" OD HEM! HEAD 2021.00 PSI 2" SCH XXH BFW CONNECTIONS 021.00 PSI	<u>Head</u> 0.00 PSI	Vessel MAWP New & Cold UG-98(a) 2021.44 PSI 2378.37 PSI	Component MAWP Hot & Corroded UG-98(b) 2021.44 PSI 2378.37 PSI	Vessel MAWP Hot & Corroded <u>UG-98(a)</u> 2021.44 PSI 2378.37 PSI
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NC = Not Calculated Inc = Incomplete

#### Summary

omponent with the lowest vessel MAWP(New & Cold): 18" OD HEMI HEAD

ne lowest vessel MAWP(New & Cold):

2021.44 PSI

omponent with the lowest vessel MAWP(Hot & Corroded): 18" OD HEMI HEAD

ne lowest vessel MAWP(Hot & Corroded):

Pressures are exclusive of any external loads.

2021.44 PSI

ROM: PERFORMANCEPULSATION CONTROL PHONE NO.: 972 633 8700

Feb. 05 2001 09:12AM P13

#### Performance Pulsation Control, Inc. DR-18-2220CS

...omer: WATERFLOOD SERVICE & SALES LTD

1333-D OLD DESIGN

Vessel Number: 1

	Date Printed: 2/2/01
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Şui	mmary information

	Dry Weight	Flooded Weight
	90.02 lb.	134.44 lb.
l ad	4.40 lb.	4.40 lb.
i zzle		
,	94,42 lb.	138.85 lb.
T-tals T-tals		
•	<u>Volume</u>	
	5.33 Gal.	·
Head	0.08 Gal.	
i zzle		
	5.40 Gal.	
Totals		
	<u>Area</u>	
	3.53 Sq. Ft.	
head	0.27 Sq. Ft.	
Nozzle		
i !	3.80 Sq. Ft.	
: tals		

#### Hydrostatic Test Information (UG-99) Gauge at Top

Component with controlling ratio is: 16" OD HEMI HEAD amponent with controlling pressure is: 18" OD HEMI HEAD

Cold Stress 2627.30 P\$I = 2021.00 \* 1.3 \*

. Specified Test Pressure :

2627.30 PSI











