

DWG 42586-55 REV2

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 I

A465646

1. Manufactured and certified by: NATCO CANADA LTD., 5710 – 17TH STREET, EDMONTON, ALBERTA, T6P 1S4
(Name and address of manufacturer)
2. Manufactured for: HUSKY OIL OPERATIONS LIMITED., 707-8TH AVE. SW., CALGARY, AB., T2P 1H5
(Name and address of purchaser)
3. Location of installation: HUSKY OIL LIMITED, LLOYDMINSTER
(Name and address)
4. Type: VERTICAL 42586-55 P6749.2 42586-55 REV 2 N/A 2001
(Horiz. Or vert. tank) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l Bd. No.) (Year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division I. 1998
(Year)
- to 2000 N/A N/A
(Addenda (Date)) (Code Case Nos.) (Special Service per UG-120 (d))
6. Shell: SA-53-B 0.375" 0.0625" 20" 6'-0" S/S
(Mat'l. (Spec. No. Grade)) (Nom. Thk (in)) (Corr. Allow (in)) (Diam O.D. (ft. & in.)) (Length (overall) (ft. & in.))
7. Seams: SMLS N/A 100% N/A N/A TYPE I *SPOT 1
(Long (Welded, Dbl, Singl., Lap Butt)) (R.T. (Spot or Full)) (E/F (%) (H.T. Temp. (°F)) (Time (hr)) (Girth (Welded, Dbl, Singl., Lap Butt)) (R.T. (Spot, Partial, Full)) (No. of Courses)
8. Heads: (a) Mat'l. SA-516-70N / TOP (b) Mat'l. SA-516-70N / BOTTOM
(Spec. No. Grade) (Spec. No. Grade)

	Location (Top Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispheric Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	TOP	0.438"	0.0625"			2:1				CONCAVE
(b)	BOTTOM	0.205"	0.0625"			2:1				CONCAVE

If removable, bolts used (describe other fastenings) : _____

9. MAWP 285 psi at max. Temp., 100 °F
Min. design metal temperature -20 °F at 285 psi (Mat'l. spec. No., Gr., Size, No.)
psi (Hydro., pneu., or comb. test pressure) 371 psi.

10. Nozzles inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Material	Nom. Thick.	Reinforcement Mat'l.	How Attached	Location
See Attached U-4								

11. Supports: Skirt YES Lugs ---- Legs ----- Other ----- Attached BTM HEAD/WELDED
(Yes or no) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: CLOSURE, #15, R & M ENERGY SYSTEM, MV 192
(Name of part, item number, Mfg's name and identifying stamp)

IMPACT TEST EXEMPT PER UG-20(f) & UCS-66, TOTAL VOLUME 0.36 CU. M. / 12.69 CU.FT

CONSTRUCTION DRAWING 42586-55 REV 2, PSV LOCATION IS AT C1

RT-2 AS PER UW-11(a)5(b), R & M ENERGY CLOSURE HEAD MIN. THICKNESS 0.750"

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 I. "U" Certificate of Authorization No 24 376 expires July 17, 2004.

Date: NOVEMBER 5, 2001 Co. Name NATCO CANADA LTD. Signed [Signature]
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by NATCO CANADA LTD. at EDMONTON, ALBERTA. I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of ALBERTA and employed by ALBERTA BOILERS SAFETY ASSOCIATION have inspected the component described in this Manufacturer's Data Report on

NOVEMBER 5, 2001 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 I. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in these 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: NOVEMBER 5, 2001 Signed: [Signature] Commissions: ALBERTA #87
(Authorized Inspector) (Nat'l Board (incl. endorsements) State, Prov. and Nat'l)

SHOP ORDER # 42586

A465646

A465646

- | | | | |
|----------------------------------|---|---|--------------------------------|
| 1. Manufactured and certified by | NATCO CANADA LTD., 5710-17 TH STREET, EDMONTON, ALBERTA, T6P 1S4
(Name and address of Manufacturer) | | |
| 2. Manufactured for | HUSKY OIL OPERATIONS LIMITED, 707-8TH AVE, SW, CALGARY, AB., T2P 1H5
(Name and address of Purchaser) | | |
| 3. Location of installation | HUSKY OIL OPERATIONS LIMITED, LLOYDMINSTER
(Name and address) | | |
| 4. Type: | VERTICAL
(Horiz., vert., or sphere) | DESI-DRY
(Tank, separator, heat exch., etc.) | 42586-55
(Mfg's serial No.) |
| P6749.2
(CRN) | 42586-55 REV 2
(Drawing No) | N/A
(Nat'l. Bd. No.) | 2001
(Year built) |

[illegible]

Certificate of Authorization	Type	U	No.	24,376	Expires	JULY 17, 2004
Date	NOVEMBER 5, 2001	Name	NATCO CANADA LTD.		Signed	<i>J. Hantanka</i>
			(Manufacturer)			(Representative)
Date	NOVEMBER 5, 2001	Name	<i>Harold Rube</i>		Commission	ALBERTA #87
			(Authorized Inspector)		(Nat'l. Board incl. endorsement), State, Province and No.)	

Shop Order #: 42586

SO No **8503407**

PO No.

FORM U-2A MANUFACTURER'S PARTIAL DATA REPORT (ALTERNATE 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****A465646**

1. Manufactured and certified by **R&M ENERGY SYSTEMS 10906 FM 2920 TOMBALL, TEXAS 77375**
(Name and address of Manufacturer)
2. Manufactured for **R & M ENERGY SYSTEMS CANADA 8750-58TH AVE, EDMONTON, ALBERTA, CANADA T6E 6G6**
(Name and address of Purchaser)
3. Location of installation **UNKNOWN**
(Name and address)
4. Type: **(2) 12" VERTICAL CLOSURE**
(Description of vessel part (shell, two-piece head, tube bundle))
- N/A** **50D12V-R0** **R&M ENERGY SYSTEMS** **OH2363.2134568Y**
(Mat'l Bd. No.) (Drawing No.) (Drawing prepared by:) (CRN)
- 2001**
(Year Built)
5. ASME Code, Section VIII, Div. 1 **1998 ADDENDA 00** **N/A** **N/A**
(Edition and Addenda (Date)) (Code Case No.) (Special service per UG-120(d))
6. Shell (a) No. of course(s) **1** (b) Overall length (ft. and in.): **0-05.5**

Course(s)			Material		Thickness, in.		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., F	Time
1	12.000	0-05.5	SA 350 LF2		0.438	0.063	S	NONE	1	S	NONE	1	N/A	N/A

7. Heads: (a) SA 350 LF2 (b) N/A														
(Mat'l Spec. no., Grade or Type)(H.T. - Time and Temp.)														
	Location (Top, Bottom Ends)	Thickness, in.		Radius, in.		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckles	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	0.750	0.063								X	S	NONE	1
(b)														

If removable, bolts used (describe other fastening)

8. MAWP **285** **PSI** @ max temp. = **100** **°F**. Min Design Metal Temp **-20** **°F** at **285** **PSI**
(Internal external) (Material Spec., Grade, Size, No.) (Internal external)

9. Impact test **Yes - CAP & HUB** At a test temp of **-50 & -50** **°F**
Indicate yes or no and the component(s) impact tested

10. Hydro., pneu., or comb. Test pressure **SEE REMARKS** Proof Test: **UG-101(c) TESTED & ACCEPTED 01-17-00**

11. Nozzles, inspection, and safety valve openings: **UG-125(a)** At **3600 PSIG**

Purpose		No.	Dia. or Size, in.	Flange Type	Material		Nozzle Thickness, in.		Reinforcement	How Attached		Location
(Inlet, Outlet, Drain, etc.)					Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
SEE REMARKS												
PAV		1	1/2" NPT	TH'D	SA 350 LF2		N/A	N/A	INHERENT	INT THD		SHELL

12. Supports: Skirt **Lugs** **Legs** **Others** **Attached**
(Yes or No) (No) (No) (Describe) (Where and How)

13. Remarks: **THIS TEMPERATURE APPLICABLE TO CLOSURE METAL COMPONENTS ONLY. ACTUAL SERVICE TEMPERATURE IS DETERMINED BY TEMPERATURE LIMITATIONS OF O-RING MATERIAL.**
UG-120,c.2 DESIGN & CALCULATION BY R&M ENERGY SYSTEMS. CLOSURE ASSEMBLY IS NOT HYDROSTATICALLY TESTED, PRESSURE ALERT VALVE FURNISHED.

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. **10052** Expires: **July 16, 2002**

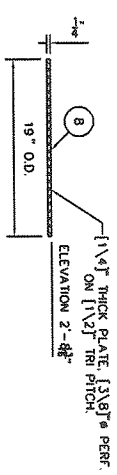
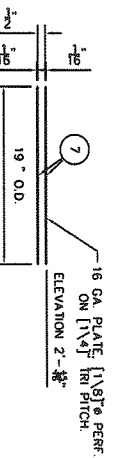
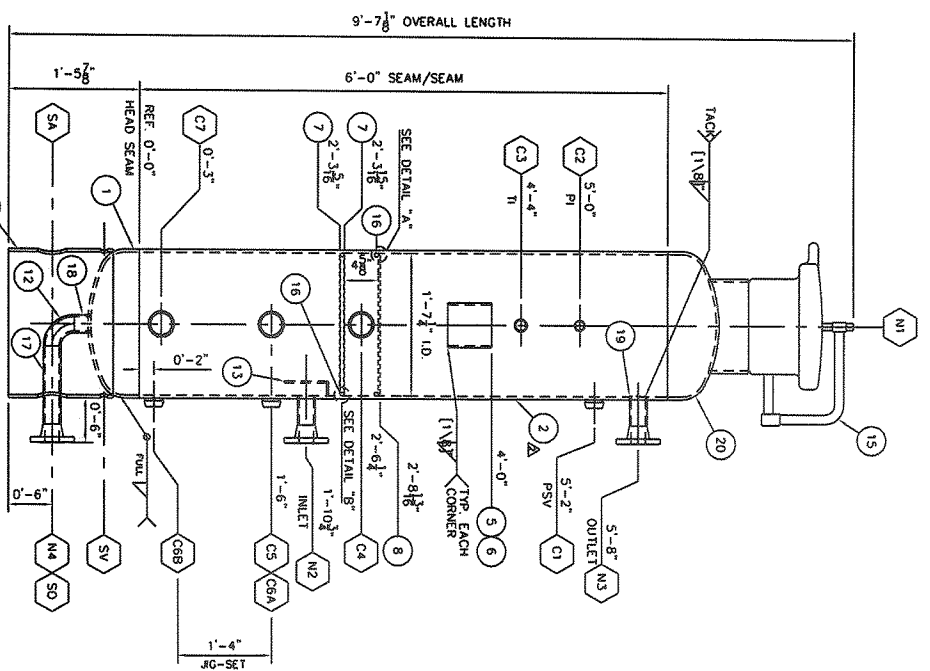
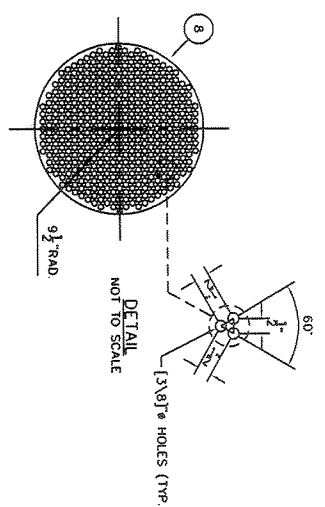
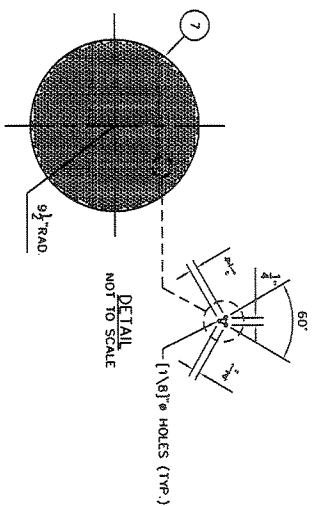
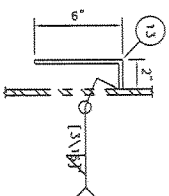
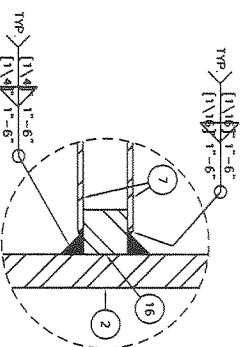
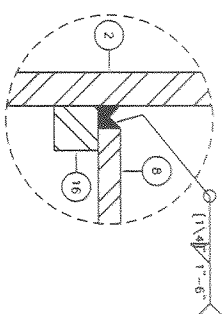
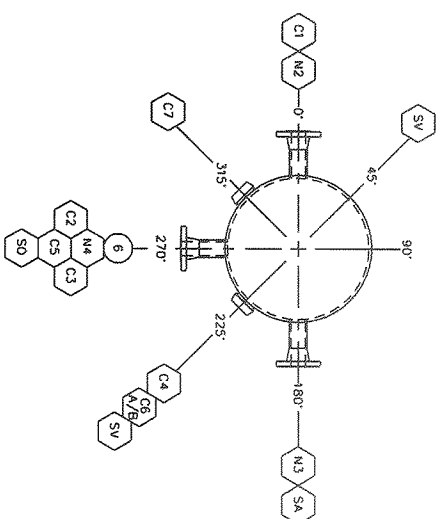
Date: **09/21/01** Name: **R&M ENERGY SYSTEMS** Signed: **James R. Dwyer**
(Manufacturer) (Representative)

CERTIFICATE OF SHOP/FIELD 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 **TEXAS** and employed by **HARTFORD STEAM BOILER INSPECTION & INSURANCE CO. of CONNECTICUT** have inspected the pressure vessel part described in this Manufacturer's Data Report on **09-21-2001** and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel part 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 part 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: **09-21-01** Signed: **[Signature]** Commissions: **TEXAS 755**
(Authorized Inspector) (National Board Incl. Endorsement, State, Province and No.)

NATCO CANADA
P.O. No: **070436**
DATE: **09/21/01**
W.O. No: **4258656**
INITIAL **550008**

[illegible][illegible]

MATERIAL LIST									
ITEM	QTY	PAR/COMP. NO.	DESCRIPTION	MATERIAL	WT				
1	1		BOTTOM HEAD	20" O.D. HEAD 0.375" THK (0.205" MIN)	SA-516-70N 79				
2	1		SHELL	21 S.E. (E.W) 2" S.E. (NOT FORMED)	SA-53-B 473				
3	1		SHIRT	20" SCH STD (0.375" WT) PIPE x 6'-0" LG	SA-106-B 79				
4	1		PIPE	20" SCH STD (0.375" WT) PIPE x 1'-2 1/2" LG	SA-106-B 10				
5	1		NAME PLATE	NATCO STANDARD 19" O.D. TYPE NAME PLATE BRACKET	SA-36/44W 6				
6	1		PERF PLATE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-36/44W 17				
7	2		TOE	PLATE 11 GA. 19" x 19" O.D. (SEE DETAIL)	SA-105N 5				
8	1		TOE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-105N 5				
9	3		TOE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-105N 5				
10	5		TOE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-105N 5				
11	3		FLANGE	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-105N 5				
12	1		DRAIN	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-105N 5				
13	1		INLET DEF.	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-105N 5				
14	2		PIPE	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-106-B 5				
15	1		CLOSURE	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-106-B 5				
16	2		SUPPORT RING	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-106-B 8				
17	1		PIPE	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-106-B 6				
18	1		PIPE	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-106-B 1				
19	1		TOE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-36				
20	1		TOE	PLATE 10 GA. 19" x 19" O.D. (SEE DETAIL)	SA-516-70N 86				
21	1		PLUG	21" S.E. (E.W) 2" S.E. (NOT FORMED)	SA-105N 1				

DESIGN DATA

CODE: ASME SECTION VIII, DIV. 1, 1998 EDITION, 2000 ADDENDA, PARAGRAPH: UW-11(c)(5)(b)

IMPACT TEST EXEMPTION PER: UG-20(f) & UCS-66 "U" STAMP REQUIRED YES

C.R.N. PG749.23 FROM DWG. SERIAL NO. 42586-55

DESIGN FACTOR	PS/MPa	D.P.	MAMP	N & C	HYDRO TEST
INTERNAL PRESSURE	PS/MPa	285	1965	-	-
EXTERNAL PRESSURE	PS/MPa	100	38	-	-
TEMPERATURE	°F/°C	-20	-29	-	-
M.O.M.T.	°F/°C	-	-	-	-
LIMITED BY		DESIGN			
CORROSION ALLOWANCE	INCH/MM	0.0625/1.6			
LONG JOINT EFFICIENCY		N/A			
PERM. TEST WEIGHT	854 lbs / 388 kg				
SHIPPING WEIGHT	1640 lbs / 745 kg				
HYDRO TEST WEIGHT					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

REVISIONS

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1	10/01/09	GR			MATL CHANGE
2	10/01/09	GR			WELD PROCEDURE & MATL DESIGNATION CHANGED
3	10/01/09	GR			ISSUED FOR CONSTRUCTION
4	10/01/09	GR			RE-ISSUED FOR APPROVAL
5	10/01/09	GR			ISSUED FOR APPROVAL

NOTES

1. THIS DRAWING IS THE PROPERTY OF NATCO CANADA and is loaned to the recipient for his confidential use only. It is not to be reproduced, copied, lent, or otherwise disposed of, directly or indirectly, without the written approval of NATCO CANADA.

2. THIS DRAWING IS THE PROPERTY OF NATCO CANADA and is loaned to the recipient for his confidential use only. It is not to be reproduced, copied, lent, or otherwise disposed of, directly or indirectly, without the written approval of NATCO CANADA.

EDMONTON

ALBERTA

20.00" O.D. x 6'-0" S/S

DESIGN VESSEL

HUSKY OIL OPERATIONS LIMITED

LLOYDMINISTER

42586

CONTACT NO.

42586-55

REV. 1 OF 1

DATE: AUG 24/07

BY: GLENN R.

SCALE: 1"=1'-0"

PROJECT: 42586-55