

① 548018

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

1. Manufactured and certified by Bilton Welding and Manufacturing Ltd., 5815 - 37th Street, Innisfail, AB T4G 1S8  
(Name and address of manufacturer)

2. Manufactured for Zazula Process Equipment Ltd., 1526 - 10th Ave SW, Calgary, AB T3C 0J5  
(Name and address of purchaser)

3. Location of installation Canadian Natural Resources Ltd., Suite 1800, 324 - 8th Ave SW, Calgary, AB T2P 2Z2 (Ft. MacKay)  
(Name and address)

4. Type Horizontal Vessel 14404 T8790.2 05-7960-23 Rev. F 2007  
(Name and address) (Drawing No.) (Natl. 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 1 2004  
Year

to 2005  
Addenda (Date)

6. Shell: SA-516-70N 0.375" 0.125" 4" - 6" 6" - 6"  
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: Butt Welded Full 85% N/A N/A Butt Weld Spot 85% 1  
Long. (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Temp. (°F) Time (hr) Girth (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) No. of Courses

8. Heads: (a) Matl. SA-516-70N (Spec. No., Grade) (b) Matl. SA-516-70N (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Left	0.313"	0.125"			2:1				Concave
(b)	Right	0.313"	0.125"			2:1				Concave

If removable, bolts used (describe other fastenings) SA-193-B7M, SA-194-2HM, 1 1/4", 20  
(Matl., Spec. No., Gr., Sim. No.)

9. MAWP 51 7.25 250 250 °F  
(internal) (external) (internal) (external)

Min. design metal temp. -20 °F at 51 psi. Hydro., pneu., or comb. test pressure 75 psi.

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
N1 - Inlet	1	NPS 2	CL 150 RFWN	SA106B/SA109N	0.344"	N/A	UW-16.1(c)	SHELL
N2 - Vent	1	NPS 6	CL 150 RFWN	SA106B/SA109N	0.432"	N/A	UW-16.1(c)	SHELL
J1A/B-Vent, LT	2	NPS 3	CL 300 RFWN	SA106B/SA109N	0.300"	N/A	UW-16.1(c)	SHELL
M1 - Manway	1	NPS 24	CL 150 RFWN	SA106B/SA109N	0.500"	N/A	UW-16.1(c)	HEAD

11. Supports: Skirt No Lugs 0 Legs 0 Other Saddles Attached Welded to Shell  
(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: \_\_\_\_\_  
(Name of part, item number, Mfr's name and identifying stamp)

Const. Dwg: B995-1 R0, PSV installed by Owner per UG-125, Impacts Exempt per UG-20(f)(1-5), RT-2 per UW-11(a)(5)(b)  
Volume: 132 Cu. ft (3.75 m³), See Supplementary

CERTIFICATE OF SHOP/FIELD 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. <u>33.470</u> expires <u>August 16, 2008</u>	
Date <u>Feb. 16/07</u> Co. name <u>Bilton Welding and Manufacturing Ltd.</u> Signed <u>[Signature]</u> (Manufacturer) (Representative)	
CERTIFICATE OF SHOP/FIELD INSPECTION	
Vessel constructed by <u>Bilton Welding and Manufacturing Ltd.</u> at <u>5815 - 37th Street, Innisfail, AB T4G 1S8</u>	
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 <u>Alberta</u> and employed by <u>ABSA</u>	
have inspected the component described in this Manufacturer's Data Report on <u>Feb. 16/07</u> , 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 <u>Feb. 16/07</u> Signed <u>[Signature]</u> Commissions <u>845179A</u> (Authorized Inspector) (Natl. Board (incl. endorsements), State, Prov. and No.)	

548018

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET  
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Bilton Welding and Manufacturing Ltd., 5815 - 37th Street, Innisfail, AB, T4G 1S8  
(Name and address of Manufacturer)  
2. Manufactured for Zazula Process Equipment Ltd., 1526 - 10th Ave SW, Calgary, AB T3C 0J5  
(Name and address of Purchaser)  
3. Location of installation Canadian Natural Resources Ltd., Suite 1800, 324 - 8th Ave SW, Calgary, AB T2P 2Z2 (Ft. MacKay)  
(Name and address)  
4. Type: Horizontal Ammonia Solution Tank 14404  
(Horizontal, vertical, or spherical) (Tank, separator, float exch., etc.) (Mfg's serial No.)  
T8790.2 05-7960-23 Rev. F 2007  
(CRN) (Drawing No.) (Date, Sec. No.) (Year built)

Data Report Item Number	Remarks							
PURPOSE	No.	Diarn. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
N3 - Liquid Out, N6 - PSV	2	NPS 1	Cl. 150 RFWN	SA-106-B/SA-105-N	0.358"	N/A	UW-16.1(c)	Shell
N8 - Hose Conn.	1	NPS 2	Cl. 150 RFWN	SA-106-B/SA-105-N	0.344"	N/A	UW-16.1(c)	Head
N7 - Calibration Column	1	NPS 2	Cl. 150 RFWN	SA-106-B/SA-105-N	0.344"	N/A	UW-16.1(c)	Shell
J2A - LG	1	NPS 2	Cl. 300 RFWN	SA106B/SA105N/SA234WPB	0.344"	N/A	UW-16.1(c)	Shell
N4 - Drain & J2B - LG	2*	NPS 2	**	SA106B/SA105N/SA234WPB	0.344"	N/A	UW-16.1(c)	Shell
N5 - Vent	1	NPS 3	Cl. 150 RFWN	SA-106-B/SA-105-N	0.300"	N/A	UW-16.1(c)	Shell
*NOTE: N4 & J2B Flanges are attached to a Tee which is welded to a pipe inserted into the bottom of the vessel.								
** J2B is Cl. 300 RFWN, N4 is Cl. 150 RFWN								

Certificate of Authorization: Type ASME "U" Stamp No. 33,470 Expires August 16, 2008  
Date Feb 16/07 Name Bilton Welding and Manufacturing Ltd. Signed [Signature]  
Date Feb 16/2007 Name [Signature] Commission AS 177A  
(Manufacturer) (Authorized Inspector) (Record Number) (Next Exam 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



the pressure equipment safety authority

9410 - 20 Ave N.W  
Edmonton, Alberta, Canada T6N 0A4  
Tel: (780) 437-9100 / Fax: (780) 437-7787

February 15, 2007

Jeffry Mydland  
BILTON WELDING & MANUFACTURING LTD  
5815 37 STREET  
INNISFAIL, AB T4G 1S8

Dear Jeffry Mydland,

The drawings, specifications and/or information received on January 25, 2007 are accepted for registration as follows:

CRN : T8790.2

Accepted on: February 15, 2007

Tracking No. : 2007-00628

Reg Type : Revision To Acc. Design

Drawing No. : 05-7960-23 Rev F

Description	MAWP	Design Temperature	MDMT
Internal Pressure	350 kPa	60°C	-29°C
External Pressure	50 kPa	120°C	-29°C

Registered under owner / manufacturer name ZAZULA PROCESS EQUIPMENT LTD.

**An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.**

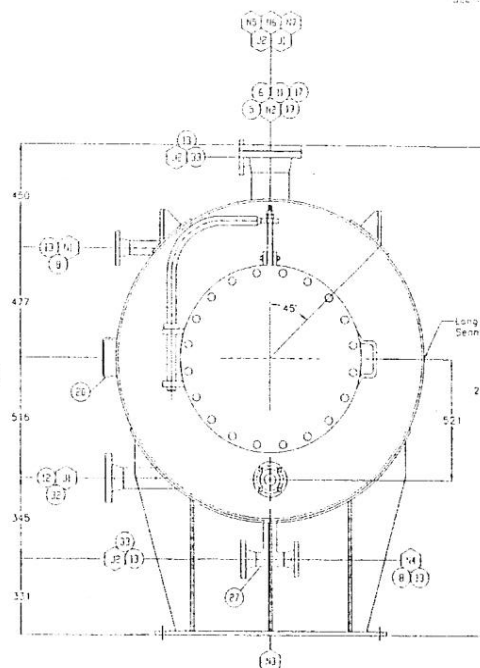
Enclosed are stamped prints for your reference.

Sincerely,

RADISAVLJEVIC, ZANA, R.E.T.  
Design Surveyor







DEQ No. 18790.2

REQ. No. 10790-2

CWG. No. 05-7960-23 R

	MAWP
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											kPa										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

Interval	350	-
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External	50
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ACCEPTED  
FEB 15 2007

FEB 15 2007  
Signed \_\_\_\_\_

Date ZANA RADISAVLJE

Full article available at: <http://www.sagepub.com/journalsPermissions.nav>

REVISIONS BY APP ENGINEER

AS PER CLIENT	AR	SW	DRAWN
AS PER CLIENT	AR	SW	CHECKED
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ED MURRAY (MI) MATHEM


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2. DETAIL BOM AS BELOW

MC	QTY	DESCRIPTION	MAT'L	MT NUM
2-1	4	5/8" x 3 5/8" T 14453	SA516 J55	
2-2	8	3/8" x 3 5/8" T 22452	SA516 J55	
2-3	2	5/8" DIA	SA516 J55	

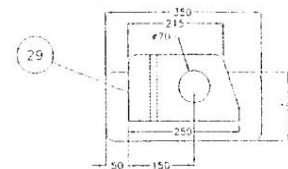
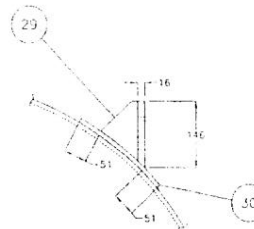
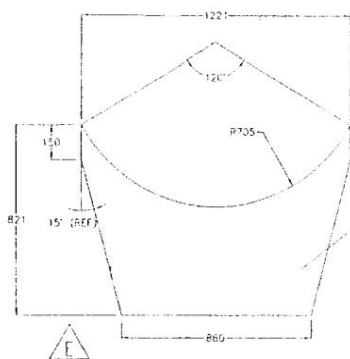
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 <b>ZAZA PROCESS EQUIPMENT LTD</b> UNIT 13, 14 & 15 SOUTHVIEW PARK, WILSON RD. WILSON, WILSON, WILSON			
PROJECT		CIVIL WSP - PRIMARY TREATMENTS 1372 ID x 2000 S/S AMMAGRA SOLUTION TANK SW 1/3	
SCALE	JOB NO.	DWG NO.	REV.
NIS	SM5-1988	05-2800-23	1

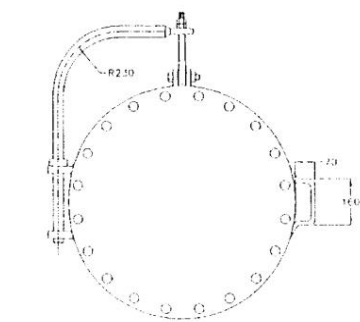
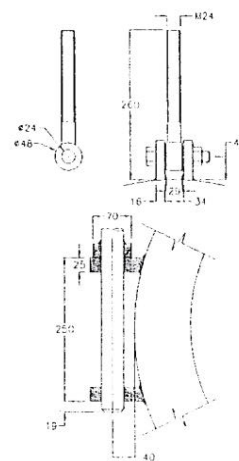




Technical drawing of a circular part with a central hole. The outer diameter is 100, the inner diameter is 60, and the wall thickness is 20. A detail view shows a cross-section of the wall with a 20mm thickness and a 40mm diameter hole.



WASHER 12



FEB 15 2007

2P.

NO		DATE	REVISIONS	BY	APP	ENGINEERING RECORD	DATE	PROJECT	
A	1	10/17/78	25 AMMONIA GAS CORRECT	SA	CHAND	10	10/17/78	CURL HOSP PRIMARY UPGRAVING	
A	2	10/17/78	8.110 0.510 0.510 0.510	SA	CHAND	10	10/17/78	1372 ID x 2000 5/5 AMMONIA SOLUTION TANK	
A	3	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78	SH 2 OF 3	
A	4	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	5	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	6	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	7	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	8	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	9	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	10	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	11	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	12	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	13	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	14	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	15	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	17	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	18	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	19	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	20	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	21	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	22	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	23	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	24	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	25	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	26	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	41	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	46	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	61	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	68	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	81	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	82	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	83	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	84	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
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A	88	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	89	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	90	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	91	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	92	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	93	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	94	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	95	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	96	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	97	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	98	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	99	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		
A	100	10/17/78	10.000 10.000 10.000 10.000	SA	CHAND	10	10/17/78		

**CERTIFIED BY**  
**ZAZULA PROCESS EQUIPMENT LTD.**  
**CRICHTON, ALBERTA**

**MAWP** IN 50.8 PSI AT IN 140 °F  
EX 7.3 EX 28.1  
IN 350 EX 60  
EX 50 kPo EX 120 °C

**MDMT** -20 °F AT IN 50.8 PSI  
-29 °C EX 7.3 EX 350  
EX 50 kPo EX 120 °C

**SERIAL NO.** 05-7960-23 **YEAR BUILT** 2007

**CRN.** 18790.2

**ENGINEERS • FABRICATORS • SALES & SERVICE**  
**(403) 244-0751**

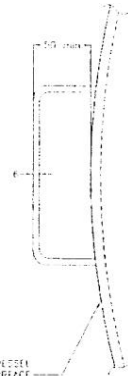
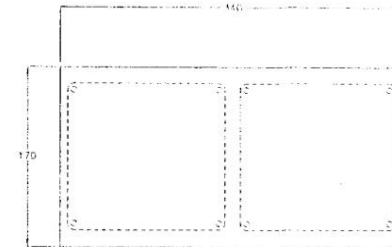
**CERTIFIED BY**

**BUILT FOR** CANADIAN NATURAL RESOURCES LTD.  
**DESIGN BY** ZAZULA PROCESS EQUIPMENT LTD.  
**CONTRACTOR** TECHNIP ITALY  
**ITEM** 31-0-31  
**SERVICE** AMMONIA SOLUTION

**DESIGN TEMPERATURE** 60 °F  
**DESIGN PRESSURE** 350 PSI  
**MAWP** 350 PSI  
**MDMT** -20 °F  
**SHOP TEST PRESSURE** 350 PSI  
**FIELD TEST PRESSURE** 350 PSI  
**HEAT TREATMENT TEMP** RT  
**RADIOGRAPHY** RT  
**FLOW CONTENTS** 2  
**CORROSION ALLOW** 0.010  
**SHELL BASE MET THK** 0.500  
**HEAD BASE MET THK** 0.500  
**TOTAL WEIGHT EMPTY** 1712  
**AS REC NO**

**YEAR OF BUILT** 2007  
**DATE OF ISS**

**CRN NO** 18790.2  
**RULES/CODE** ASME SECTION VIII DIV 1 2004



PIPING FOR VESSEL  
EXTERNAL SURFACE

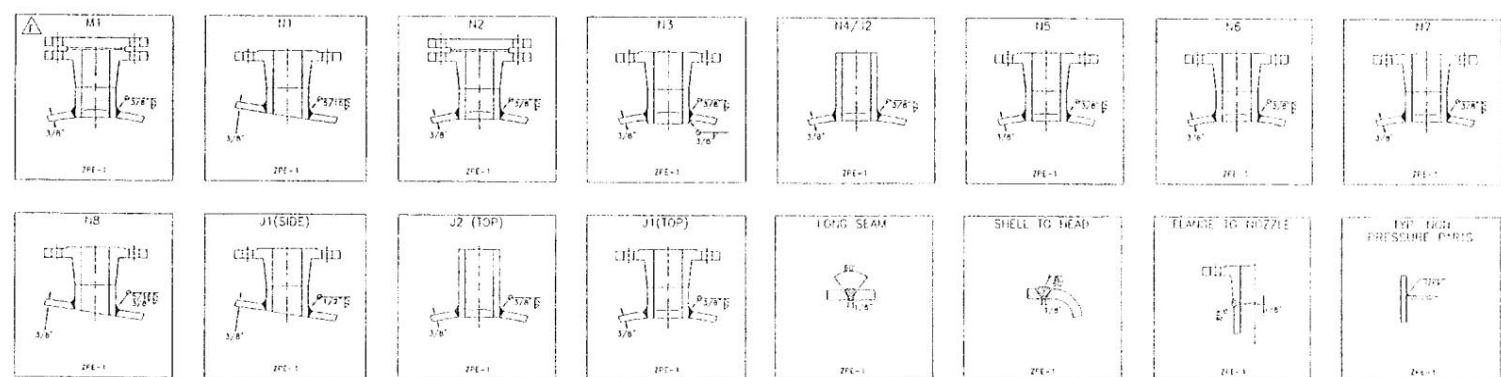
18790.2

FEB 15 2007

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NAMEPLATE

NAMEPLATE BRACKET



WELDING MAP

NO	DATE	REVISIONS	BY	APP	ENGINEERING RECORDS	DATE
1	10-10-06	FOR REVIEW TO CLIENT	W	W	W	10-10-06
2	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
3	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
4	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
5	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
6	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
7	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
8	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
9	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06
10	10-10-06	REDESIGN FOR FAB	W	W	W	10-10-06

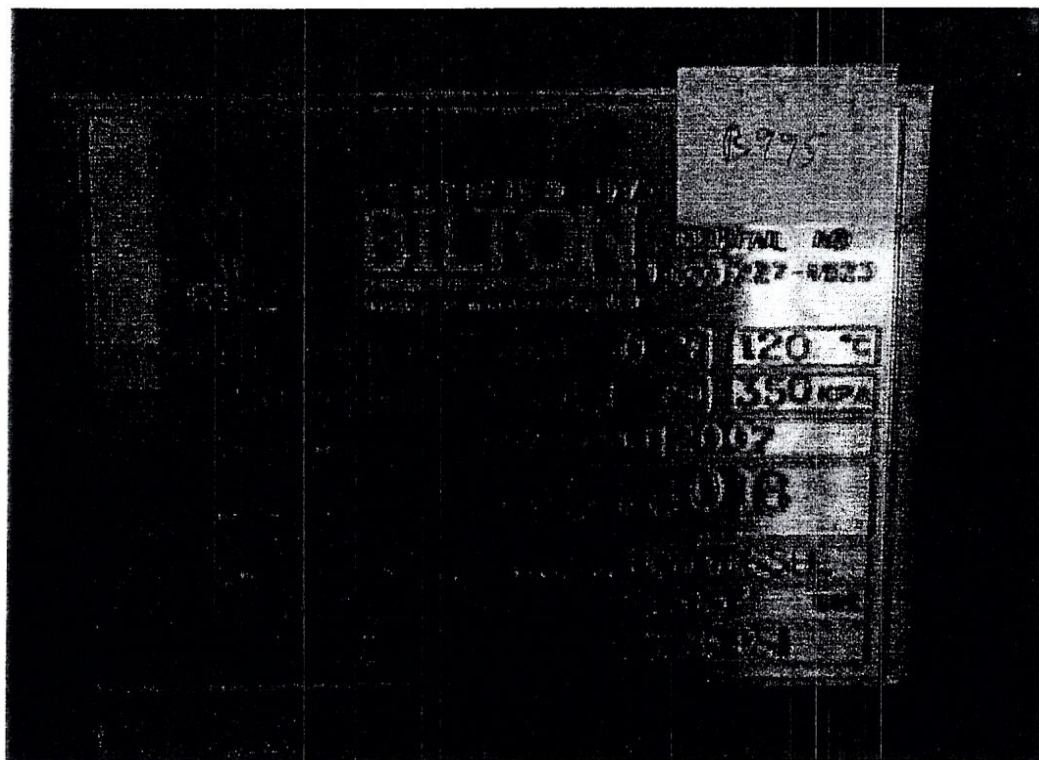
<b>ZAZULA PROCESS EQUIPMENT LTD.</b>	
1372 10 x 2000 S/S AMMONIA SOLUTION TANK	
SH 3 OF 3	
SCALE	1:1
JOB NO.	SM05-7960
ISS. NO.	05-7960-23
REV.	1

Nameplate Facsimile

Ammonia Solution Storage Drum (Tag 31-D-31)

Canadian Natural Resources Limited  
Horizon Oil Sands Project – Primary Upgrading  
Technip Italy S.p.A., Canadian Corporation, Agent  
Purchase Order No. 2213AL 010  
Requisition No. MR 4046.01  
Zazula Ref.: S05-7960-Z

Ammonia Injection Package  
Tag 31-V-1





Nameplate Facsimile

Ammonia Solution Storage Drum (Tag 31-D-31)

Canadian Natural Resources Limited  
Horizon Oil Sands Project – Primary Upgrading  
Technip Italy S.p.A., Canadian Corporation, Agent  
Purchase Order No. 2213AL 010  
Requisition No. MR 4046.01  
Zazula Ref.: S05-7960-Z

Ammonia Injection Package  
Tag 31-V-1

BUILT FOR	CANADIAN NATURAL RESOURCES LTD.		
DESIGN BY	ZAZULA PROCESS EQUIPMENT LTD.		
CONTRACTOR	TECHNIP ITALY		
ITEM	31-D-31	MFRS SERIAL NO.	
SERVICE	AMMONIA SOLUTION		
DESIGN TEMP.	60	C	YEAR BUILT
DESIGN PRESS.	350	KPag	
MAWP	350	KPag@C	TEST DATE
MDMT	29	C@KPag	
SHOP TEST PRESS.	455	KPag	
FIELD TEST PRESS.		KPag	
HEAT TRMT. TEMP.		C	
RADIOGRAPHY	RT2		
FLUID CONTENTS			
CORROSION ALLOW	3	mm	
SHET J. BASE MET. THK.	9.525	mm	
HEAD BASE MET. THK.	9.525	7.94 min.	mm
TOTAL WT. EMPTY	1712	kg	
AIB REG NO.			
CIRN NO.	18790.2		
RULES/CODE	ASME SECTION VIII DIV.1 2004		