



McAbee
CONSTRUCTION, Inc.

5724 21st Street
P.O. Drawer 1460
Tuscaloosa, Alabama
35403

INDUSTRIAL CONTRACTORS • EQUIPMENT ERECTION • HVAC & PLUMBING • PIPE FABRICATION • VESSELS
PROCESS MODULES • AUTOCLAVES • HEAT EXCHANGERS • CODE REPAIRS

INSPECTION DATA BOOK

McAbee Job No. 211694

Equipment: Methyl Acetate Column
Item No. : T - 79100



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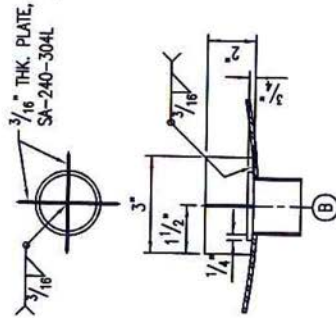
3.) Material Documentation

- Material Test Certificates
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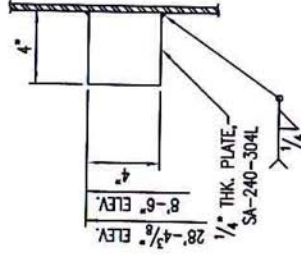
4.) NDE

- Radiography Report
- Hydro Report

[illegible]



VORTEX BREAKER DETAIL
(1)-REQUIRED



PACK BED SUPPORT CLIP DETAIL
(8)-REQUIRED, (4)-EACH ELEVATION
0, 90, 180, 270 IN ORIENTATION

NOTE: SEE PG. 1 FOR DESIGN INFORMATION
SEE PG. 2 FOR ELEVATION & ORIENTATION
SEE PG. 3 FOR EXTERNAL DETAILS

ISSUED
"AS BUILT"
DATE: 10 APR '12

22" / 42" O.D. x 40'-5" I.L.-T.L.
METHYL ACETATE COLUMN

ITEM NO.: T-79100
DRAWING NO.: MCA1694-T79100-04
DRAWING TITLE: INTERNAL DETAILS
TOTAL REQ'D: (1)-REQUIRED

McABEE CONSTRUCTION, INC.
TUSCALOOSA
ALABAMA

NO.	BY	CHK'D	DATE	DESCRIPTION	REV. NO.
1	JWJ	WB	13 DEC '11	ADDED THIS PAGE	1
				CHECKED BY: W.BEDSOLE	
				SCALE: N.T.S.	
				SHOP ORDER & JOB NUMBER	
				DRAWING/EQUIPMENT NAME	
				METHYL ACETATE COLUMN	

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

1. Manufactured and certified by McAbee Construction Inc. -5724 21st St. Tuscaloosa, Alabama 35403

2. Manufactured for _____

3. Location of installation _____
 (Name & address)

4. Type Vert Column Pressure Vessel 211694-T-79100 E00118.6 * 2395 2012
 (Horiz,vert,sphere) (Tank,separator,jkt. vessel,heat exh,etc.) (mfg. ser. no.) (CRN) (Dwg. No.) (Natl. Bd. No.) (Yr. built)

5. ASME Code, Section VIII, Div. I 2010 Edition / 2011a N/A N/A
 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): 9 (b) Overall length (ft & in): 40' - 4 5/8"

(OD) Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum.Joint(Cat. A,B,&C)			Heat Treat.	
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	22"	2"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
2	22"	5' - 7"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
3	22"	7' - 7"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
4	22"	3' - 4"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
5	22"	7' - 9 1/2"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
6	22"	7' - 7"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
7	22"	6 1/2"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
8	22"X42"	1' - 5"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----
9	42"	4' - 6"	SA-240 - 304L	.250"	None	1	Spot	85	1	Spot	85	----	----

7. Heads: (a) SA-240 - 304L (b) SA-240 - 304L
 (Mat'l Spec. No., Grade or Type) H.T.- Time & Temp (Mat'l Spec. No., Grade or Type) H.T.- Time & Temp

Location	Thickness	Radius	Elliptical	Conical	Hemisph.	Flat	Side to Pressure		Category A		
							Convex	Concave	Type	Full, Spot, None	Eff.
(a) Top	.188"	None	-----	-----	-----	-----	X	X	N/A	Spot	85
(b) Bottom	.313"	None	-----	-----	-----	-----	X	X	N/A	Spot	85

If removable, bolts used (describe other fastening) SA-193-B7 / SA-194-2H (60) 1 1/4"

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

If bar, give dimensions N/A If bolted, describe or sketch.

9. MAWP 200 31 psi. at max. temp. 325 325 ° F. Min. design metal temp. -49 ° F. at 200 psi.
 (internal) (external) (internal) (external)

10. Impact test Impact testing not required per UHA - 51 - (d) (1) (a)
 (Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. Hydro at 264 psi.

Items 12 and 13 to be completed for tube sections

12. Tubesheet: N/A
 Stationary (Mat'l. Spec. No.) _____ Dia., in. (subject to pressure) _____ 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 N/A
 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.

(OD) Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treat.	
No.	Diameter, in.	Length (ft & in)	Spec/Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time

15. Heads: (a) N/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	Thickness	Radius	Elliptical	Conical	Hemisph.	Flat	Side to Pressure		Category A				
							Convex	Concave	Type	Full, Spot, None	Eff.		
Top, Bottom, Ends	Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.

If removable, bolts used (describe other fastening) N/A
 (Mat'l. Spec. No., Grade, size, no.)

McAbee Serial No. 211694 - T79100

16. MAWP N/A (internal) (external) psi at max. temp. N/A (internal) (external) ° F. Min. design metal temp. N/A ° F. at _____ psi

17. Impact test N/A

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

18. Hydro., pneu., or comb. test press. N/A

19. Nozzles, inspection, and safety valve openings:

(UW-16.1)

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or size	Flange Type	Material		Nozzle Thk.		Reinforcement Material	How Attached		Location (Insp. Opn.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
In/Out	1	3"	300#	SA-312-304L	SA-182-F304L	.216"	None	SA-240 - 304L	(d)	RFSO	Shell
Inlet	2	3"	300#	SA-312-304L	SA-182-F304L	.216"	None	-----	(d)	RFSO	Shell
Outlet	2	1 1/2"	300#	SA-312-304L	SA-182-F304L	.145"	None	-----	(d)	RFSO	Head/Shell
Outlet	1	4"	300#	SA-312-304L	SA-182-F304L	.237"	None	-----	(d)	RFSO	Head
Outlet	1	20"	150#	SA-240 - 304L	SA-105	.375"	None	SA-240 - 304L	(d)	RFSO	Shell
Outlet	5	1"	300#	SA-312-304L	SA-182-F304L	.133"	None	-----	(d)	RFSO	Shell
Outlet	1	2"	300#	SA-312-304L	SA-182-F304L	.154"	None	-----	(d)	RFSO	Shell
Body Flanges	3	22"	150#	-----	SA-105	-----	None	-----	(c)	RFSO	Shell

20. Supports: Skirt NO (Yes or No) Lugs 2 (No.) Legs N/A (No.) Others N/A (Describe) Attached Weld to Shell (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: * MCA1694 - T7900 rev. 1

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. 14,540 Expires 3/19, 20 14

Date 4-13-12 Name McAbee Construction, Inc.
(Manufacturer)

Signed Keith Bush
(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 AL and employed by One Beacon America of Lynn, Mass. have inspected the pressure vessel described in this Manufacturer's Data Report on 4-13 20 12, 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 4/13/2012 Signed William Hunter
(Authorized Inspector)

Commissions NB3869AB AL10136BC
(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 _____, 20 _____

Date _____ Name _____
(Assembler)

Signed _____
(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 _____
(Authorized Inspector)

Commissions _____
(Nat'l Board incl. endorsement, State, Province and No.)



CERTIFIED BY

(Q) 2393

McAbee

CONSTRUCTION, INC.

TUSCALOOSA, ALABAMA

W
U

RT-3

SHELL

WKT/TUBE/COIL

M.A.W.P. 200 PSI @ 325 °F

= PSI @ °F

M.D.M.T. -49 °F @ 200 PSI

= °F @ PSI

M.A.E.W.P. 31 PSI @ 325 F

YEAR 2012

SER # 21189-T 79100

P.O. # 1007011-01

CUST. ENERVEL

NET-WE ACETATE COIL, NY

TAG NO. T-79100

CHADWIN REG. E00118.6

T. 67870138



CONFIDENTIAL	Mail To:
--------------	----------

Customer: 000540 064 XEN-MAC METALS DIVISION
CUSTOMER PICKUP 801 TWIN RAIL DRIVE
MINOOKA, IL 60447

Ship To:
 THYSSENKRUPP MATERIALS NA
 KEN-MAC METALS DIVISION
 CUSTOMER PICKUP
 801 TWIN RAIL DRIVE
 MINOOKA, IL 60447

Date: 9/30/2011 Page: 1

Steel: 304/304L

Finish: FRAP

Your Order: 614324

NAS Order: IN 0130276 01

Corrosion: ASTM A262/02aE;180Bend-OK

PRODUCT DESCRIPTION:

STAINLESS STEEL COIL, HRAP; UNS 30403

ASTM A240/11, A480/11, A666/10; ASME SA240/10, SA480/10, SA666/10
CHEM ONLY ON FOLLOWING ASTM: A276/10, A479/10a, A484/10, A312/09

CHEM ONLY ON FOLLOWING ASME: SA312/10, SA479/10

RAMS 5511H XMRK; MTL-5059D AMD3 (X CRN MEAS): MTL-4043B

NAME MR0175/01, MR0103/07; QOS766D-A X MAG PERM

MIN. SOLUTION ANNEAL TEMP 1900F. WATER QUENCHED

ASME Section II, 1995 Edition, 1996 & 1997 Addenda

000000 - 1-1 1972 EXHIBITION; 1970 & 1971 Exhibitions

Product Id	Coil #	Skid #	Thickness	Width	Weight	-----Length-----	Mark	Pieces	Commodity Code
039TWL B	039TWL B		.2450	48.0000	19,540	COIL	I	1	

CHEMICAL ANALYSIS

HEAT	CM	✓C	CR	CU	MN	MO	N	NI	P	S
9TW1	US	-0285	18.2170	-5055	1.9992	-3405	-0662	8.0335	.0370	.0010
APPROVED SI -5730										

MECHANICAL PROPERTIES

Product Id#	Coil #	1 d c i c z	UTS KSI	.2% YS KSI	ELONG %-2"	Hard RB	Tail Hard	A 262 P F A
039TWL B	039TWL B	P T	91.05	47.44	51.32	85.00	85.00	1.00

Q.C. DEPT

A

K.B.

NAS hereby certifies that the analysis on this certification is correct and the material meets the specifications stated.

Technical Dept. Mgr.

ERIC HESS

10/03/2011

H I I F F

operam Correspondence address: Operam Stalco NV/SA Aperam-Gonk Swinnoweg 5, 3600 Genk, Belgium Tel. +32 (0)89 30 21 11		MILL CERTIFICATE BS EN 10204/3.1 CERTIFICAT DE RECEPTION NF EN 10204/3.1 ABNAHMEPRÜFZEUGNIS DIN EN 10204/3.1		N-Nr-N 11K0013846-01 V01 A03 Jacquet NO 14915	
		Company Certificate: Certified acc. PRD 97/22/EC Annex 1 § 4.3 by Certification Body D036 of TÜV SÜD Industrie Service GmbH with certificate No.: 3142007/MUC. Renounced of company signature agreed by TÜV SÜD (9/3/2007). Approved acc. AD 2000-Multiblok WQ/TRD 100 by TÜV SÜD Industrie Service GmbH. Confirmation letter from TÜV SÜD Industrie Service GmbH of 07/05/2010 about the uniformity of coils acc. AD 2000 W2 M4.1.1. Tech. Req. AD 2000 W2/2006 -- AD 2000 W19/2007 -- EN 13445-3/2009 (cor.2010)		Purchaser's order number N° de commande client Kundenbestellnummer 5306788179	
Manufacturer's works order number N° de la commande usine productrice Werkauftragsnummer 80022899/02-69147/048/01		Surveyor's mark Cachet de l'export Stamp of the Wykazowca wyrobów		Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger Jacquet MM Atlantic, Inc. 191 South Main St Suite 108 19464 Portstown USA	
Product - Produit - Erzeugnis COILS, HOT ROLLED, ANNEALED AND PICKLED COILS, LAMINÉ A CHAUD, RECUTS + DECAPÉ COILS, WARMGEWALZT, GRGLUTHT UND GEBEIZT		Steel designation Désignation de l'acier Stahlbezeichnung ASTM A 240-2008 TYPE 304L / 304 ASME SA 240-2008 TYPE 304L / 304 EN 10228-7/2008 1.4307 / 1.4301		Steelmaking process Mode d'élaboration de l'acier - Stahlherstellungsverfahren Prod. process: Electric arc furnace - VOD/AOD - Continuous casting Proc. fabric.: Four à arc - VOD/AOD - Coulée continue Fertigungsverfahren: Elektro-Ofen - VOD/AOD - Stranggießerei	
Product delivery condition État de livraison du produit - Lieferzustand Solution treated Hyperbromp Lösungstherapie/abgeschreckt: 1050 C Ferret air - Air ferre Gebläse Luft		Any supplementary requirements Prescriptions supplémentaires - Zusätzliche Anforderungen MA 304/304L/316L/309L		Product delivery condition État de livraison du produit - Lieferzustand Solution treated Hyperbromp Lösungstherapie/abgeschreckt: 1050 C Ferret air - Air ferre Gebläse Luft	
ASTM A480 / A480M-10 -- ASME SA480 / SA480M-10 -- AMS 5511-HE3 -- ASTM A276 (CHEM.COMP) -- ASTM A312 (CHEM.COMP) -- MAT MERCURY FREE -- NO WELD RU2/ALUMINUM // CORROSION TEST: ASTM A262-B // OK // ATTESTATION PRD 97/22/EC PAR TÜV SÜD					
Identification of the product Identification du produit - Identifizierung des Erzeugnisses MELTED IN BELGIUM, MADE IN BELGIUM		Dimensions Dimensions - Abmessungen Thickness Epaisseur - Dicke 9.52 mm 0.375"		Number of pieces Nombre de pièces - Stückzahl 1	
Coil n. N° bobine - Band Nr. 10708538		Heat n. N° coulée - Schmelz Nr. 107085		Width Largeur - Breite 2000.25 mm 78.750"	
Length Longueur - Länge 10330 KG 22773 LBS		Net weight Poids net - netto Gewicht 10330 KG 22773 LBS		Chemical analysis - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG	
Required - Exigé Anforderung 0.030 0.75 2.00 8.00 18.00 10.50 19.50 0.100 0.015 0.045		Actual Réel 0.026 0.42 1.45 8.03 18.10 0.068 0.002 0.031		C V Si Mn Ni Cr Mo Ti N S P	
Tests to verify batch and quality have been carried out: OK Tests de vérification de la conformité de la marchandise fournie: OK Verwechslungsprüfung wurde durchgeführt: OK		Mechanical properties - PROPRIÉTÉS MÉCANIQUES - MECHANISCHE WERTE ASTM A570		Test temperature (°C) Température de l'échantillon	
Location (1) Direction (2) Required Exigé Anforderung min max		Yield or proof strength Limite d'élasticité Dehnungsform KSI Rp0.2% Rp1% Rm		Tensile strength Résistance à la traction Zugfestigkeit KSI Rm Rp0.2% Rp1% Rm	
Elongation after fracture Allongement après rupt. Bruchdehnung % 40 40 40		Hardness Dureté Rockwell HRB C30 C30 C30		Yield or proof strength Limite d'élasticité Dehnungsform KSI Rp0.2% Rp1% Rm	
Impact strength test Essai de résilience Charpy C40 C40 C40		Corrosion test Test de corrosion Konformitätsprüfung C44 C44 C44		Sample thickness Épaisseur 9.52 mm 0.375"	
Location of the sample (1) Emplacement de l'échantillon Lage des Probenabschnittes 1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte		The delivery is in accordance with the order La livraison est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen		Organisation inspection Organisation et/ou service contrôle Überwachungsabteilung Quality Department 18/3/2011	
Direction of the test pieces (2) Orientation des éprouvettes		Marking, inspection and measurement: without objection Contrôle de marquage, d'aspect et de dimensions: satisfaisant		Internal classification Classification interne A: B: C: D:	

K.B.

OUTOKUMPU

* CERTIFICATION *

Outokumpu Stainless Coil, Inc.

500 Park Boulevard, Suite 40
Itasca, IL 60143
Tel (847) 517-4050
Tel (800) 833-8703
Fax (847) 517-2950
Fax (800) 645-8617

www.outokumpu.com/stainless/nad

TO:
CHATHAM STEEL
P. O. Box 2567
Vendor #V10697
Savannah

GA 31401

HEAT 413074-004 ORDER 0613681/001 SON 2045729 B00000000 TAG 0062994 11/02/11

P108409 0/00/00 YOUR ORDER & DATE CUST# CHASTE01 CUST TAG# 550625

GRADE 304L ITEM DESCRIPTION
Size 304L HRAP .250 X 72 X COIL Country of Melt : SWE
Ship Condition A Country of Mfg. : SWE

Total PCS Total Weight 31129

SPECIFICATIONS
ASTM A262-02A PRAC A AND E ASME SA240 2007 10ED
ASME SA480-2007 09AD AMS 5511H EXCEPT LINE MARK
AMS 5513J EXCEPT LINE MARK EN10204-3.1
ASTM A240-11A ASTM A480-11
HEAT TREAT: MATL. TEMP 1100 C QUENCHED (FORCED AIR & WATER)
ASTM A666-03 UNS-S30400
UNS-S30403

MECHANICAL & OTHER TESTS
Test Condition A
Hardness as tested HB 174
Hardness as tested HB 163
Tensile strength, KSI (MPa) 90.0 { 621 }
Yield strength, KSI (MPa) 44.0 { 303 }
Elongation % 57.0
Reduction of area % 0

Micro
Intergranular corrosion
Macro

NA
OK
OK

CHEMICAL COMPOSITION
Carbon (C) .020
Phosphorus (P) .029
Silicon (Si) .300
Nickel (Ni) 8.030
Copper (Cu) .360
Nitrogen (N) .059
Iron (Fe) Balance
Melt Practice
Refining Practice

Manganese (Mn) 1.600
Sulphur (S) .001
Chromium (Cr) 18.050
Cobalt (Co) .170
Moly (Mo) .410

LHDF
211694

We hereby certify that the material herein has been made and tested in accordance with the listed specification(s) and that the results of all tests are acceptable.

Free of known mercury contamination

For Material Safety Data Sheets go to the following link:
<http://www.outokumpu.com/ABOUT-US/NORTH-AMERICA/MATERIAL-SAFETY-DATA-SHEETS/> REVISED 09/09

Item# 550625

Quality Manager

Authorized Signature Chuck Turack

KB

OUTOKUMPU

Outokumpu Stainless Steel, Inc.

500 Park Boulevard, Suite 40
Itasca, IL 60143
Tel (847) 517-4050
Tel (800) 833-8703
Fax (847) 517-2950
Fax (800) 545-8617

www.outokumpu.com/stainless/had

* CERTIFICATION *

TO:
CHATHAM STEEL
P. O. Box 2567
Vendor #V10697
Savannah

GA 31401

HEAT 413075-003 ORDER 0613681/002 SON 2045711 B00000000 TAG 0063007 11/02/11

----- YOUR ORDER & DATE -----
P108409 0/00/00 CUST# CHASTE01 CUST TAG# 550627

----- ITEM DESCRIPTION -----

GRADE 304L
Size 304L HRAP .375 X 72 X COIL
Ship Condition A
Country of Melt : SWE
Country of Mfg. : SWE

Total PCS Total Weight 22906

----- SPECIFICATIONS -----
ASTM A262-02A PRAC A AND E
ASME SA480-2007 09AD
AMS 5513J EXCEPT LINE MARK
ASTM A240-11A
HEAT TREAT: MAIL. TEMP 1100 C
ASTM A666-03
UNS-S30403
ASME SA240 2007 10ED
AMS 5511H EXCEPT LINE MARK
EN10204-3.1
ASTM A480-11
QUENCHED (FORCED AIR & WATER)
UNS-S30400

----- MECHANICAL & OTHER TESTS -----

Test Condition A
Hardness as tested HB 183
Hardness as tested HB 178
Tensile strength, KSI (MPa) 89.0 (614) ✓
Yield strength, KSI (MPa) 46.0 (317) ✓
Elongation % 58.0 ✓
Reduction of area % .0 ✓

----- CHEMICAL COMPOSITION -----
Carbon (C) .019 ✓
Phosphorus (P) .035 ✓
Silicon (Si) .400 ✓
Nickel (Ni) 8.120 ✓
Copper (Cu) .410 ✓
Nitrogen (N) .065 ✓
Iron (Fe) Balance
Melt Practice
Refining Practice
Manganese (Mn) 1.580 ✓
Sulphur (S) .001 ✓
Chromium (Cr) 18.200 ✓
Cobalt (Co) .130 ✓
Moly (Mo) .340 ✓

LHEFF
211694

We hereby certify that the material herein has been made and tested in accordance with the listed specification(s) and that the results of all tests are acceptable.

Free of known mercury contamination

For Material Safety Data Sheets go to the following link:
<http://www.outokumpu.com/ABOUT-US/NORTH-AMERICA/MATERIAL-SAFETY-DATA-SHEETS/> REVISED 09/09

KB

PO# P108409 R# B147300
Item# 550627

Quality Manager
Authorized Signature Chuck Turack

注 文 者

SHIMPO NIPPON STEEL TRADING CO., LTD.

注文者照会番号

Reference No. 1XA 1XAS0174

契約番号

Contract No. 1-868-TH-5-0-BX04

製品名

Commodity HOT ROLLED STAINLESS STEEL PLATES

規格

ASTM A240-10B TYPE304/304L/ASME SA-240

文書番号

Document No. TYPE304/304L-2010E

新日鐵住金ステンレス株式会社

Nippon Steel & Sumikin Stainless Steel Corporation

鋼材検査証明書

INSPECTION CERTIFICATE

需要家

Customer

EMPIRE RESOURCES INC.

需要家管理番号

Customer's Control No. 500127

本社 〒100-0004 東京都千代田区大町二丁目6番1号

Head Office 2-6-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan

八幡製造所 〒805-0058 北九州市八幡東区大字南川字波戸2108-1

Yawata Works 1-8-1, Aza-nanawa, Yamahiro-ku, Fukuoka 805-0058, Japan

証明書番号

Certificate No. 01Y1003377 - 1/2

発行年月日

Date of Issue 2011-09-14

行番 Item No.	寸 法 Dimension INCH	個数 Quan- tity	重量 Mass KG	製鋼番号 Cast No. 試験番号 Test No.	製品番号 Plate No.	引張試験 Tensile Test				衝撃試験 Impact Test				化学成分 Chemical Composition %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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注釈 Notes [1] Location 位置・方向 T: 頭部 Top, B: 底部 Bottom, L: 長さ方向 Longitudinal, C: 幅方向 Transverse, Z: 板厚方向 Through Thickness. [2] 試験方法 Test Method. [3] 試験結果 Test Result. [4] 試験条件 Test Condition. [5] 試験装置 Test Equipment. [6] 試験場所 Test Place. [7] 試験日 Test Date. [8] 試験者 Test Operator. [9] 試験員 Test Engineer. [10] 試験長 Test Supervisor. [11] 試験責任者 Test Responsible. [12] 試験承認者 Test Approver. [13] 試験報告書 Test Report. [14] 試験結果表 Test Result Table. [15] 試験結果図 Test Result Diagram. [16] 試験結果写真 Test Result Photo. [17] 試験結果ビデオ Test Result Video. [18] 試験結果音声 Test Result Audio. [19] 試験結果データ Test Result Data. [20] 試験結果ファイル Test Result File. [21] 試験結果データベース Test Result Database. [22] 試験結果クラウド Test Result Cloud. [23] 試験結果ブロックチェーン Test Result Blockchain. [24] 試験結果量子 Test Result Quantum. [25] 試験結果人工知能 Test Result AI. [26] 試験結果ロボット Test Result Robot. [27] 試験結果ドローン Test Result Drone. [28] 試験結果衛星 Test Result Satellite. [29] 試験結果宇宙 Test Result Space. [30] 試験結果未来 Test Result Future.

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.

八幡製造所
厚板管理室長
Group Manager, Plate Quality Control Dept.
Yawata Works

H. Suetsugu



304L 211694

NSCC社内分類番号 E08

* 111 0175

Y16-02-2 Rev. 5

注 文 者
Shipper

注文者照合番号: 1XA 1XAS0174
Reference No.

契約番号
Contract No. 1-868-TH-5-0-BY04

Contract No.	100011000004
製品名	40T DOLLER STAINLESS STEEL
Commodity	

規 格 : ASTM A240-10B TYPE304/304L/ASME

Specification TYPE304/304L-2010E
文書番号:

Document No. _____

新日鐵住金スチール株式会社
Nippon Steel & Sumikin Stainless Steel Corporation
鋼材検査証明書

INSPECTION CERTIFICATE

家 家
: ENCLIDE DESIGNS INC

EMPIRE RESOURCES INC.

Customer's Control No. 500127

本社
Head Office
2-5-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
〒100-0004 東京都千代田区大手町2丁目6番1号

八幡製造所
Yawata Works
〒805-0058 北九州市八幡東区大字瀬田字波戸2108-1
2108-1, Azahato, Cazamameda, Yawatahigashi-ku,
Kitakyushu-City, 805-0058, Japan

証明番号

Certificate No. UYI1003583 - 2/3

Date Of Issue : 2011-10-13

需要家管理番号
Customer's Control No. : 500127

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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行番 Item No.	寸 法 Dimension INCH	員数 Quantity	質量 Mass KG	製鋼番号 Cast No. 試験番号 Test No.	製品番号 Plate No.	引張試験 Tensile Test				衝撃試験 Impact Test			化 学 成 分 Chemical Composition %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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上記注文品は御指定の規格または仕様に従って製造され、その要求事項を満足していることを証明します。
 TO BE CONTINUED

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.

7777

3042

211694

56cs

K.B.

八幡製造所
厚板管理室長

Group Manager, Plate Quality Control Dept.
Yawata Works

803 吡叻華僑社會服務中心

* 111 0362

Y16-02-2 Rev. 5

注文者: NIPPON STEEL TRADING CO., LTD.

注文者照会番号: 1XA 1XAS0174

契約番号: 1-868-TH-5-0-8X04

製品名: HOT ROLLED STAINLESS STEEL PLATES

規格: ASTM A240-10B TYPE304/304L/ASME SA-240

文書番号: TYPE304/304L-2010E

新日鐵住金ステンレス株式会社

Nippon Steel & Sumikin Stainless Steel Corporation

鋼材検査証明書

INSPECTION CERTIFICATE

需要家: EMPIRE RESOURCES INC.

需要家管理番号: 500127

本社: 〒100-0004 東京都千代田区大手町二丁目6番1号

Head Office: 2-6-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan

八幡製造所: 〒805-0058 北九州市八幡東区大字前田字波戸2108-1

Yawata Works: 2108-1, Azahato, Oazamada, Yawatahigashi-ku, Kitakyushu-City, 805-0058, Japan

証明書番号: 01Y1003583 - 1/3

Certificate No.: 01Y1003583 - 1/3

発行年月日: 2011-10-13

行番 Item No.	寸 法 Dimension INCH	数量 Quan tity	質 量 Mass KG	製鋼番号 Cast No. 試験番号 Test No.	製 品 番 号 Plate No.	引 張 試 験 Tensile Test				衝撃試験 Impact Test			化 学 成 分 Chemical Composition %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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注釈 Notes: [1] 位置・方向: 頭部 Top, 底部 Bottom, L: 縦方向, C: 横方向, Transverse, Z: 板厚方向 Through Thickness. [2] GL 隅点距離 Gage Length, A: 50mm 矩形 Rectangular, B: 50mm 丸形 Round, C: 70mm 矩形 Rectangular, D: 70mm 丸形 Round, E: 80mm 矩形 Rectangular, F: 80mm 丸形 Round, G: 200mm, H: 2' x 1' 8", J: 5' 65x50, K: 1' x 4' 50, L: 4' 50, S: 30mm 丸形 Round, T: 40mm 丸形 Round, U: 60mm 丸形 Round, V: 60mm 丸形 Round, W: 60mm 丸形 Round, X: 60mm 丸形 Round, Y: 60mm 丸形 Round, Z: 60mm 丸形 Round. [3] R: A: 絞り Reduction Of Area, Y: R: 降伏比 Yield Ratio [4] A: 合格 Acceptable [5] 2: 2.5mm, 3: 3.3mm, 4: 3.3mm, 5: 5.0mm, 6: 6.67mm, 7: 7.5mm, 8: 8.67mm, 9: 製品板厚 Plate Thickness [6] P: 製品分析 Product Analysis [7] S: 延性破面率 Shear Fracture, CF: 脆性破面率 Crystallinity Fracture. [8] E: 横断面 Lateral Expansion, AGS: 3-5% 延伸率 Austenite Grain Size, FGS: 5-10% 延伸率 Ferrite Grain Size, SR: Stress Relieved / Post Weld Heat Treatment

上記注文品は鋼材の規格または仕様に従って製造され、その要求事項を満足していることを証明します。

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE RULES OF THE CONTRACT.

LHMFF 304L 211694 (2) pcs

八幡製造所 厚板管理室長 八幡製鉄株式会社 八幡製鉄所 厚板管理室長 Group Manager, Plate Quality Control Dept. Yawata Works

NSSC 社内分類番号 E08 * 111 0361 Y16-02-2 Rev. 5

I HUFF

THAI - GERMAN PRODUCTS PUBLIC CO., LTD MILL TEST CERTIFICATE TO EN 10204/3.1B

ISSUED DATE : 3/11/2010
S/N NO. : 2010035 ORDER 6
INVOICE NO. : TGP20100074
CUSTOMER'S REF. NO. : 525/001443

L/C NO. :

STANDARD SPECIFICATION : ASTM / ASME A 58 312																				
GRADE NO.	DIMENSION OD. X Thick X Length	QTY	WEIGHT	HEAT/ PRODUCTION	GRADE TP 304/294L												Flat- testing	Width of specimen		
					I. CHEMICAL COMPOSITION (%)															
	UNIT INCH	(Pcs.)			C	SI	Mn	P	S	√S	√Ni	Mo	Hardness (HRC)	YS (KSI)	TS (KSI)	EL (%)	Hydro- static test AT 5 SEC.			
256	2 1/2" X SCH40S X 20FT.	1	53.41	FM15111053	0.035 Max	1.00 Max	2.00 Max	0.045 Max	0.030 Max	0.000 Max	0.000 Max	0.000 Max	81 90 max	25 70	70	35	✓			
256	2 1/2" X SCH40S X 20FT.	19	1014.73	FM15091053	0.028	0.443	1.567	0.034	0.010	0.009	0.009	0.009	81	58	93	41	2200	32.9	25.4	
256	2 1/2" X SCH10S X 20FT.	9	292.95	FM15041053	0.024	0.430	1.423	0.028	0.014	0.009	0.009	0.009	82	58	93	40	2200	32.9	25.4	
257	2 1/2" X SCH10S X 20FT.	6	195.30	FM15041053	0.024	0.430	1.423	0.028	0.014	0.009	0.009	0.009	82	58	93	41	1300	23.4	25.4	
281	2 1/2" X SCH40S X 20FT.	51	1715.73	FM05011053	0.025	0.612	1.667	0.035	0.013	0.008	0.008	0.008	82	65	93	41	1300	23.4	25.4	
282	2 1/2" X SCH40S X 20FT.	2	67.28	FM05011053	0.025	0.612	1.667	0.035	0.013	0.008	0.008	0.008	82	65	93	41	1300	23.4	25.4	
282	2 1/2" X SCH40S X 20FT.	26	874.69	FM05041053	0.026	0.610	1.662	0.030	0.014	0.007	0.007	0.007	82	66	96	40	2000	27.5	25.4	
282	2 1/2" X SCH40S X 20FT.	23	773.76	FM05021053	0.026	0.610	1.662	0.030	0.014	0.007	0.007	0.007	82	65	95	40	2000	27.5	25.4	
312	1 1/2" X SCH40S X 20FT.	49	1225.90	FM07300953	0.027	0.672	1.603	0.029	0.011	0.008	0.008	0.008	83	66	92	40	2000	27.5	25.4	
312	1 1/2" X SCH40S X 20FT.	11	275.20	FM07280953	0.024	0.435	1.426	0.028	0.012	0.003	0.003	0.003	82	65	96	40	2300	22.7	19.0	

STANDARD SPECIFICATION : ASTM / ASME A58 312

PROCESS : WELDED
FINISH : ANNEALED AND PICKLED
TESTING : FLATTENING

HEAT TREATMENT : 1040 C WATER QUENCHING
SURFACE & DIMENSIONAL CONTROL BY VISUAL ACCORDING TO A 999 : GOOD

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED
AND TESTED IN ACCORDANCE WITH THE SPECIFICATION

ASSURED BY : C. HUFF
QA DIVISION MANAGER

REMARK : MATERIAL FREE OF MERCURY CONTAMINATION NO WELD REPAIR

Rev. 2 : 09/50



I HUFF



IRI AN B E R H A D



MILL TEST REPORT

IN ACCORDANCE TO EN 10204 3.1

KANZEN TETSU Bhd

Lot 4 Persiaran Perumahan

1708 Shah Alam, Selangor Darul Ehsan, Malaysia.
0200 Fax: (603) 5541 9777
izen-tetsu.com e-mail: info@kanzen-tetsu.com

CERTIFICATE NO : 9135067 (1) DATE : 19/08/2011
CONTRACT NO : 9107645
SHIPPER : KANZEN TETSU SDN BHD
ORDER NO : 109050
CUSTOMER : WARREN ALLOY VALVE & FITTING
PRODUCT : COMPANY, L.P.
SPECIFICATION : WELDED AUSTENITIC STAINLESS STEEL

PIPES ASTM A312/ASME SA312M-08

SIZE	QTY	TOTAL LENGTH	WEIGHT	HEAT NO	TENSILE TEST			HARDNESS TEST (HRC)	HYDROSTATIC TEST (MPa)	FLAT TENSILE TEST	CORROSION TEST IN ACCORDANCE TO ASTM A262 PRACTICE E	CHEMICAL COMPOSITION (%)									
					EL %							X 100				X 1000				X 100	
					Y.S.	T.S.	N/mm ²					C	Si	Mn	P	S	Ni	Cr	Mo		
L X 1" X SCH40S	PCS		KGS		205	515	35														
	42	-	646	4410-1106	305	635	59	85	17.2	PASSED	PASSED	3.5	100	200	45	30	800	1800	-	-	-
	164	-	2529	4410-1107	345	693	51	87	17.2	PASSED	PASSED	2.1	39	128	30	5	815	1805	-	-	-
L X 1 1/2" X SCH40S					305	635	59	85	17.2	PASSED	PASSED	2.1	55	91	38	3	808	1841	-	-	-
	44	-	679	4410-1108	305	635	59	85	17.2	PASSED	PASSED	2.1	39	128	30	5	815	1805	-	-	-
	1	-	8	4405-1107	310	655	58	86	17.2	PASSED	PASSED	2.6	34	134	32	3	807	1826	-	-	-
L X 1-1/2" X SCH40S					320	657	50	85	17.2	PASSED	PASSED	2.3	40	142	28	8	801	1831	-	-	-
	149	-	1164	4405-1108	320	657	50	85	17.2	PASSED	PASSED	2.3	40	142	28	8	801	1831	-	-	-
	2	-	50	4415-1105	271	598	56	84	15.9	PASSED	PASSED	1.9	37	146	29	6	808	1818	-	-	-
L X 1-1/4" X SCH40S					273	631	52	81	15.9	PASSED	PASSED	1.9	39	147	29	3	804	1817	-	-	-
	69	-	1720	4415-1106	273	631	52	81	15.9	PASSED	PASSED	1.9	39	147	29	3	804	1817	-	-	-
	79	-	1970	4415-1107	277	646	50	80	15.9	PASSED	PASSED	1.9	33	145	31	3	805	1808	-	-	-
X 1-1/4" X SCH40S					281	648	51	83	17.2	PASSED	PASSED	2.1	36	144	31	2	802	1815	-	-	-
	15	-	313	4412-1107	281	648	51	83	17.2	PASSED	PASSED	2.1	36	144	31	2	802	1815	-	-	-
	32	-	1073	4420-1104	277	656	51	82	13.8	PASSED	PASSED	1.9	33	145	31	3	805	1808	-	-	-
X 2" X SCH40S					276	629	54	83	13.8	PASSED	PASSED	2.3	44	146	29	3	805	1813	-	-	-
	98	-	3285	4420-1107	276	629	54	83	13.8	PASSED	PASSED	2.3	44	146	29	3	805	1813	-	-	-
	1	-	53	4425-1102	280	638	51	84	15.2	PASSED	PASSED	2.6	38	142	28	4	803	1821	-	-	-
X 2-1/2" X SCH40S					290	640	62	85	15.2	PASSED	PASSED	2.4	37	132	31	4	806	1810	-	-	-
	11	-	585	4425-1105	290	640	62	85	15.2	PASSED	PASSED	2.4	37	132	31	4	806	1810	-	-	-
	3	-	160	4425-1107	344	663	55	88	15.2	PASSED	PASSED	2.9	61	94	32	5	807	1836	-	-	-
X 3" X SCH40S					341	660	54	88	13.1	PASSED	PASSED	2.9	61	94	32	5	807	1836	-	-	-
	25	-	1740	4430-1107	341	660	54	88	13.1	PASSED	PASSED	2.9	61	94	32	5	807	1836	-	-	-
	150	-	1557	4407-1107	274	633	51	82	17.2	PASSED	PASSED	1.9	38	144	28	4	810	1810	-	-	-
X 3/4" X SCH40S					274	633	51	82	17.2	PASSED	PASSED	1.9	38	144	28	4	810	1810	-	-	-

ENT 1050 DEGREE CELSIUS QUENCHED IN WATER

REDUCED SILENT
ENSURE STRENGTH
TEMPERATURE IN 100°C
10-40°C min. 30

• Hardness are in accordance to NACE MR 0175 / ISO 15156-3 (Latest Edition)

K.B.

QA DEPARTMENT

LOW YEE HENG
QA MANAGER

Certificate No.

F110907005

Date:

SEP 06, 2011

MILL'S TEST CERTIFICATE

EN 10204/3.1

THAREUS COMPANY L

50043 Moo3 Tambol Tasi Amphur Phakdaeng Rayong F

Customer: WARREN ALLOY VALVE & FITTING COMPANY, L.P.

Invoice No.

Contract No.

109887-HOUSTON/109895-HOUSTON

T/T

L/C No.

Specification ASTM A312-11 ASME SA312-07

Description

STAINLESS STEEL WELDED PIPE ASTM A312-11,
ASME SA312 TP 304/304L, ANNEALED AND PICKLED.
SQUARE CUT END FINISH ANDCUT IN THE LENGTH OF 20FT
MILL'S INSPECTION TO BE FINAL.
COUNTRY OF ORIGIN: THAILAND.

SIZE

Item No.	51	52	53	54	55	56	57
4" X SCH 10S	4" X SCH 40S	4" X SCH 40S	4" X SCH 40S	4" X SCH 40S	4" X SCH 40S	4" X SCH 40S	6" X SCH 10S

Type

304/304L	304/304L	304/304L	304/304L	304/304L	304/304L	304/304L	304/304L
----------	----------	----------	----------	----------	----------	----------	----------

Heat No.

TVJ050088	TSM050032	TVM050074	TVM050076	TVM050078	TVM050111	TVM050094
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QTY(FT)

280.00	280.00	1,120.00	300.00	100.00	600.00	100.00
--------	--------	----------	--------	--------	--------	--------

Heat Treatment
Overheat/°C

1065	1070	1070	1070	1070	1070	1065
------	------	------	------	------	------	------

Finish

PICKLED	PICKLED	PICKLED	PICKLED	PICKLED	PICKLED	PICKLED
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Hydrostatic
Test (Mpa)

7.00	13.00	13.00	13.00	13.00	13.00	5.00
------	-------	-------	-------	-------	-------	------

Chemical Composition (%)

Item No.	C	Si	Mn	P	S	Cr	Ni	Mo	N	Tensile (N/mm ²)	0.2% Yield (N/mm ²)	Elongation%	Hardness HRB	Flattening Test
Min.										515.00	205.00	35.00		
Max.														
51	.035	1.000	2.00	.045	.030	20.00	13.00			644.00	353.00	56.00	80.00	OK
52	.028	.408	1.45	.028	.002	18.12	8.05			835.00	290.00	54.00	88.00	OK
53	.018	.380	1.47	.032	.003	18.26	8.16			616.00	374.00	56.00	94.70	OK
54	.022	.390	1.48	.035	.001	18.15	8.08			609.00	362.00	57.00	85.80	OK
55	.022	.390	1.46	.035	.001	18.15	8.08			609.00	362.00	57.00	84.50	OK
56	.022	.390	1.46	.035	.001	18.15	8.08			618.00	371.00	54.00	84.50	OK
57	.024	.550	1.02	.043	.005	18.07	8.01			662.00	318.00	55.00	85.80	OK

Mechanical Test

1. WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED BY US, IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS SPECIFIED BY YOU THAT IT SATISFIES THE REQUIREMENTS.

2. THE MATERIAL DESCRIBED BY SUPPLIER AND HAS NO RADIATION CONTAMINATION.

3. THE CHEMICAL COMPOSITIONS OF THE MATERIAL ARE IN ACCORDANCE WITH ASTM A240.

4. 1 Ksi = 1000Psi, 1Mpa = 1 N/mm² = 0.145038 Ksi

5. THE MATERIAL DESCRIBED HEREIN IS CERTIFIED FOR NO RADIATION CONTAMINATION BY ORIGINAL MANUFACTURER

6. WE ARE A STAINLESS STEEL WELDED PIPE & TUBE MANUFACTURER CERTIFIED WITH ISO 9001 QUALITY MANAGEMENT.

7. THAREUS Has Been Approved Acc to 97/23/EC, Annex 1, 4.3

*MADE IN THAILAND

*HARDNESS IS ACCORDING TO NACE MR-0175/ISO 15156.

KB



QA Manager / V

Q-F

2) NACE MR-01-03 LATEST EDITION HARDNESS ONLY
5) 100% PWI TESTED

外観・寸法	VISUAL & DIMENSIONS : GOOD
非破壊検査	NON-DESTRUCTIVE INSPECTION ET (A989 OR FILLED HOLES) : G.
熱処理	HEAT TREATMENT SH MIN. 1900 DEG. F X 30 SEC. RAPID COOLING
引張試験	TENSILE TEST : GOOD

II DFF

REGD. OFFICE:
 'Suraj House',
 Opp. Usmanpura Garden, Ashram Road,
 Ahmedabad - 380 014, Gujarat (INDIA)
 Tel. : 0091-79-2754 0720 / 2754 0721
 Fax : 0091-79-2754 0722
 Email : export@surajgroup.com



F / QA / 24 REV. NO. 04

WORKS :
 Survey No. 779/A, Thol, Kadi - Sanand Highway,
 Tal. - Kadi, Dist. Mehsana, Gujarat (India)
 Tel. : (02764) 274216 / 274217 Fax : (02764) 274419
 Email : quality@surajgroup.com
 Visit us at www.surajgroup.com

TEST CERTIFICATE

IN ACCORDANCE WITH EN 10204/3.1

CUSTOMER: WARREN ALLOY VALVE & FITTING CO L.P.
 HOUSTON, TEXAS
 PRODUCT: S.S WELDED PIPES.

T.C NO: 857
 P.O.NO: 108364
 W.O.NO: 1011/OEW100035

DATE: 05.08.2011
 DATE: 04.10.2010
 DATE: 09.10.2010

SR. NO.	SPECIFICATION	GRADE	HEAT NO	DIMENSIONS		QUANTITY			HYDRO TEST PRESSURE
				OD/ NB	THK / SCH	LENGTH MM	PCS.	TOTAL	
3	ASTM A-312'09/ ASME SA- 312'10/ NACE MR 0175	TP 304/ 304L	UZ 204057	5"	10S	20FT RL	35	FEET 707.053	750 PSIG
9A		TP 304/ 304L	DEN 188	1.1/2"	40S	20FT RL	32	643.699	2300 PSIG

CHEMICAL ANALYSIS %

HEAT NO.	REQUIRED MIN MAX	C	MN	P	S	SI	CR	NI	MO	N	TI
		0.035	2.00	0.045	0.030	1.00	18.00 20.00	8.00 13.00	---	---	---
UZ 204057	HEAT ANALYSIS	0.027	1.40	0.029	0.002	0.50	18.12	8.02	---	---	---
	PRODUCT ANALYSIS	0.025	1.38	0.027	0.004	0.48	18.14	8.04	---	---	---
DEN 188	HEAT ANALYSIS	0.024	1.46	0.040	0.021	0.43	18.65	8.05	---	---	---
	PRODUCT ANALYSIS	0.026	1.44	0.038	0.019	0.41	18.61	8.07	---	---	---

MECHANICAL TEST

HEAT NO	REQUIRED			FLARE TEST	FLANGE TEST	FLATTENING R.FLATTENING	BEND R.BEND	HARDNESS HRB	NDT TEST	MICRO STRUCTURE
	TENSILE MPa	YIELD MPa	ELONGATION % GL. = 50mm							
MIN MAX	515 ---	205 ---	35 ---	---	---	---	---	MAX 90 HRB	---	---
UZ 204057	602.32	363.15	62.00	---	---	H=32.49 No Crack Found	---	70-76	---	OK
DEN 188	609.09 625.73	317.21 325.87	56.00 60.00	---	---	H=24.13 No Crack Found	---	74-78	---	OK

HEAT TREATMENT: SOLUTION ANNEALING DONE AT 1040-1051 °C TEMPERATURE AND RAPID WATER QUENCHING.
 AFTER FINAL WELDING PROCESS

MARKING ON PIPE: SURAJ STAINLESS 5" / 1.1/2"NB X SCH 10S / 40S X RL WLD ASTM/ASME A/SA-312
 TP 304/304L HEAT NO. UZ 204057 / DEN 188 MADE IN INDIA SSL-13

REMARKS: *100% HYDRO TEST CARRIED OUT AT REQUIRED ' WITH 10 SEC. HOLDING TIME &
 FOUND SATISFACTORY WITHOUT ANY LEAKAG'
 *100% VISUAL & DIMENSIONS (OD/THK/LENGTH
 *100% MATERIAL IDENTIFICATION (PMI) DONE
 *IGC PRACTICE 'E' DONE AS PER ASTM A-267
 FREE FROM ORANGE PEEL SURFACE AT :

REQUIREMENT OF SPECIFICATION.
 TO SPECIFICATION.
 (CRACK

Prepared by
 PREPARED BY

Checked by
 CHECKED BY



We hereby certify that the material described herein are in accordance with the specification and results comply.

rements of the Purchase order.



Vital Inspection Professionals, Inc.
180 Airpark Industrial Rd. Alabaster, AL 35007
Phone (205) 620-0460 • Fax (205) 620-0407

RADIOGRAPHIC INSPECTION REPORT

Page _____ of _____

RADIOGRAPHIC INSPECTION REPORT

The undersigned of Vital Inspection Professionals to perform the services under this contract, purchase order or other similar agreements extends only to those services requested therein. Under no circumstances shall such services extend beyond the performance of the requested inspection of specific equipment and the preparation of reports or similar documents following the inspection data obtained or the opinion formulated on the basis of such inspection. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinion or observation of the examiner and are not intended nor can they be construed as representation or warranties as to the actual circumstances. In performing these services, No other warranty, express or implied, is made or intended by Vital Inspection Professionals Inc. The undersigned of Vital Inspection Professionals Inc. reserves the right to refuse to perform the services requested if the inspection data obtained or the opinion formulated is such that the inspection of the equipment is not warranted. In performing these services, No other warranty, express or implied, is made or intended by Vital Inspection Professionals Inc. The undersigned of Vital Inspection Professionals Inc. reserves the right to refuse to perform the services requested if the inspection data obtained or the opinion formulated is such that the inspection of the equipment is not warranted.

Order No.: V-105
Report No.: 1-3-1
Date: 1
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Vital Inspection Professionals, Inc.
180 Airpark Industrial Rd. Alabaster, AL 35007
Phone (205) 620-0460 • Fax (205) 620-0407

RADIOGRAPHIC INSPECTION REPORT

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The undersigned of Vital Inspection Professionals to perform the services under this contract, purchase order or other similar agreements admits only to those services requested herein. Under no circumstances shall such services extend beyond the requested inspection of specific equipment and the preparation of reports or similar documents obtained or the opinion furnished on the basis of such inspection. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinion or observation of the examiner and are not intended nor can they be construed as representation or warranties as to the actual circumstances. In performing the services requested, Vital Inspection Professionals Inc. uses the best and most accurate information available to it at the time of the inspection. No other warranty, expressed or implied, is made or intended by Vital Inspection Professionals Inc.

Order No.: V-105
Report No.:
Date: 2/10/1
Page: 1

[illegible]

McAbee

Construction Inc.

Hydrostatic Test Record

Equipment: Methyl Acetate Column

Date: 4/13/12

Customer: Enerkem

Job No: 211694

Test Pressure: 264 PSIG

Hold Time: 1 Hour

Vessel Tested: Serial # 211694 - T - 79100

Comments : Gauge : 15

Statement of Calibration: Guage Calibrated on 4/12/12

McAbee Approval:

Keith Bush

Customer Approval: