

E-1001

S.H.E. Order # **8-0185** **FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS** Item no. **E-1001**
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by **Southern Heat Exchanger Corporation - 6100 Old Montgomery Highway - Tuscaloosa, AL.**
 (Name and address of Manufacturer)
 2. Manufactured for **Flint Hill Resources - Marysville, MI.**
 (Name and address of Purchaser)
 3. Location of installation **Flint Hill Resources - Marysville, MI.**
 (Name and address)
 4. Type **Horizontal** **Heat Exchanger** **8-0185** **None** **SB-6900-0** **13290** **2009**
 (Horiz, vert, or sphere) (Tank, separator, jkt. vessel, heat exch, etc.) (mfg. serial no.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)
 5. ASME Code, Section VIII, Div. 1 **2007** **None** **None**
 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): **3** (b) Overall length (ft & in): **19' - 11 7/8"**

Course(s)			Material	Thickness		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.	Time
2	33"	8' - 0"	SA-516 GR. 70 (N)	1/2"	1/8"	1		Spot		85%	1		Spot		85%	-	
1	33"	3' - 7 3/4"	SA-516 GR. 70 (N)	1/2"	1/8"	1		Spot		85%	1		Spot		85%	-	

7. Heads: (a) None (b) None														(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp			
Location (Top, Bottom, Ends)		Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A					
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full	Spot	None	Eff.	Temp.
(a)																	
(b)																	

If removable, bolts used (describe other fastening) **None**
 (Mat'l. Spec. No., Grade, size, no.)

8. Type of jacket: **None** Jacket closure **None** (Describe as ogee & weld, bar, etc.)
 If bar, give dimensions **None** If bolted, describe or sketch.
 9. MAWP **387** **N/A** psi at max. temp. **250°F** **N/A** Min. design metal temp. **20°F** at **387** psi
 (internal) (external) (internal) (external)

10. Impact test **No per UCS-68(a, b & c) and UHA-51**
 (Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. **505** **psig hydro** Proof test

Items 12 and 13 to be completed for tube sections

12. Tubesheet: **SA-240 316L** **37 3/8"** **2 1/8"** **0"** **Welded**
 Stationary (Mat'l. Spec. No.) Dia., in. (subject to pressure) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)

None
 Floating (Mat'l. Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment

13. Tubes **SA-213 TP 316L** **3/4"** **14 BWG** **636** **Straight**
 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.

14. Shell (a) No. of course(s): **2** (b) Overall length (ft & in): **3' - 6 5/8"**

Course(s)			Material	Thickness		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.	Time
1	32 3/4"	1' - 9 1/2"	SA-240 316L	3/8"	0"	1		Spot		85%	1		Spot		85%	-	
1	32 3/4"	0' 10 1/8"	SA-240 316L	3/8"	0"	1		Spot		85%	1		Spot		85%	-	

15. Heads: (a) **SA-516 GR. 70** (b) **None**
 (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

Location (Top, Bottom, Ends)		Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A					
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full	Spot	None	Eff.	Temp.
(a) End		2 3/8"	0"						37 3/8"			N/A	None			100%	
(b)																	

If removable, bolts used (describe other fastening) **SA-193-B7, (36) each, 3/4"-10 diameter**
 (Mat'l. Spec. No., Grade, size, no.)

16. MAWP 112 N/A psi at max. temp. 250°F N/A Min. design metal temp. 20°F at 112 psi
(internal) (external) (internal) (external)

17. Impact test No per UCS-66(a, b & c) and UHA-51
(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. 150 psig hydro Proof test

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	
Inlet / Outlet	2	6"	150#	SA-312 316L	SA-182 F 316L	.280"	0"	SA-240 316L	e	RFWN	
Inlet	2	12"	300#	SA-106 GR. B	SA-105 (N)	.687"	1/8"	SA-516 GR. 70(N)	e	RFWN	
Outlet	1	14"	300#	SA-106 GR. B	SA-105 (N)	.760"	1/8"	SA-516 GR. 70(N)	e	RFWN	
Vent / Drain	2	3/4"	6000	N/A	SA-182 F 316L	N/A	0"	Inherent	bb	Thd. Cplt.	

20. Supports: Skirt No Lugs N/A Legs N/A Others (2) Saddles Attached Shell, Welded
(Yes or No) (No.) (No.) (Describe) (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: UG-46(a)

All 316L stainless steel material is 316 / 316L dual certified.

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. 7037 Expires November 29, 2011

Date 06/01/2009 Name Southern Heat Exchanger Corporation
(Manufacturer)

Signed [Signature]
(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, MA have inspected the pressure vessel described in this Manufacturer's Data Report on 5-28-09, 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 6-2-09 Signed [Signature]
(Authorized Inspector)

Commissions NB6895A
(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.)

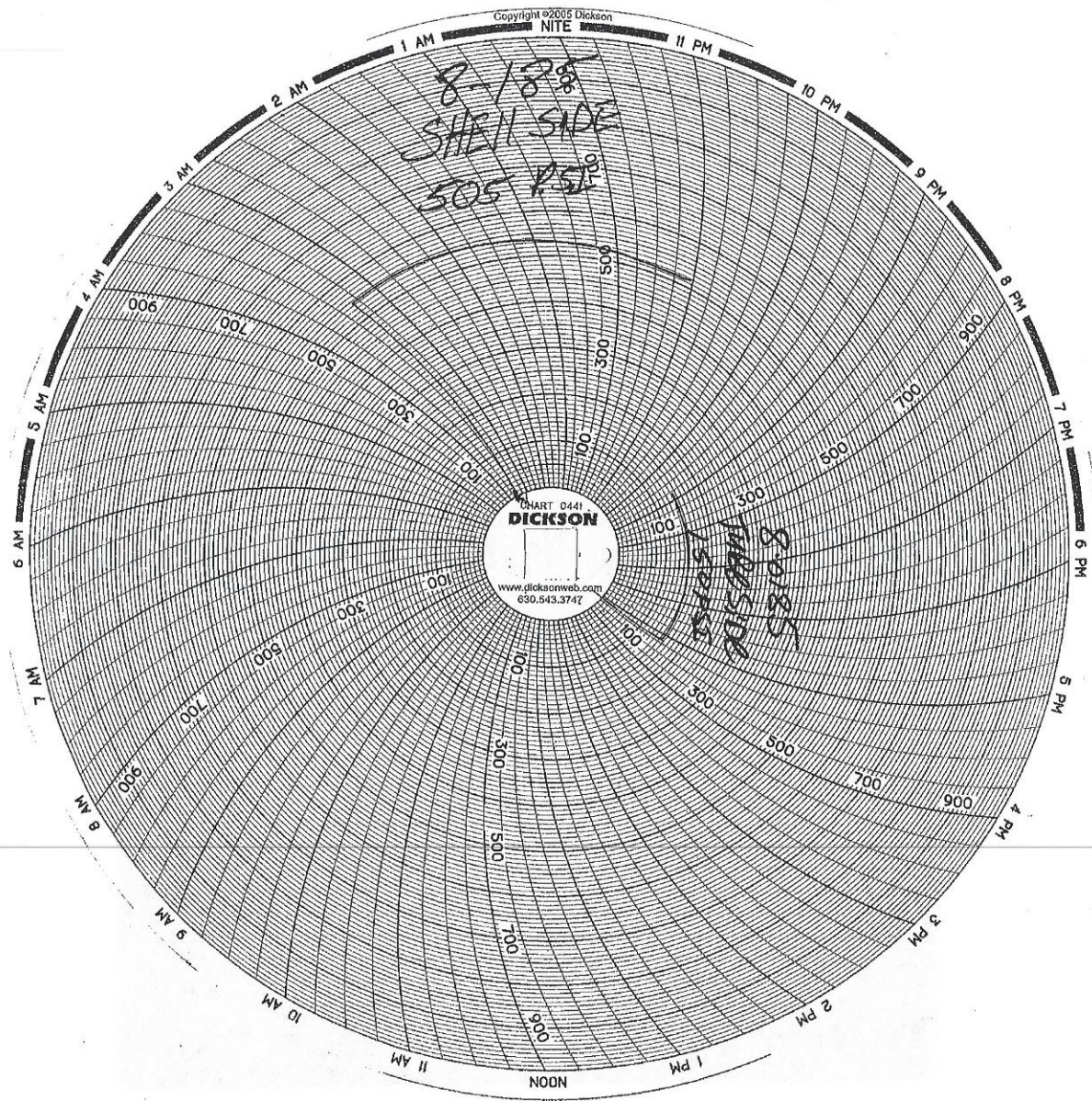


中華民國
陸軍

附錄

337	24	24	1
20	1	337	24
112	24	24	1
20	1	112	24

中華民國
陸軍
附錄

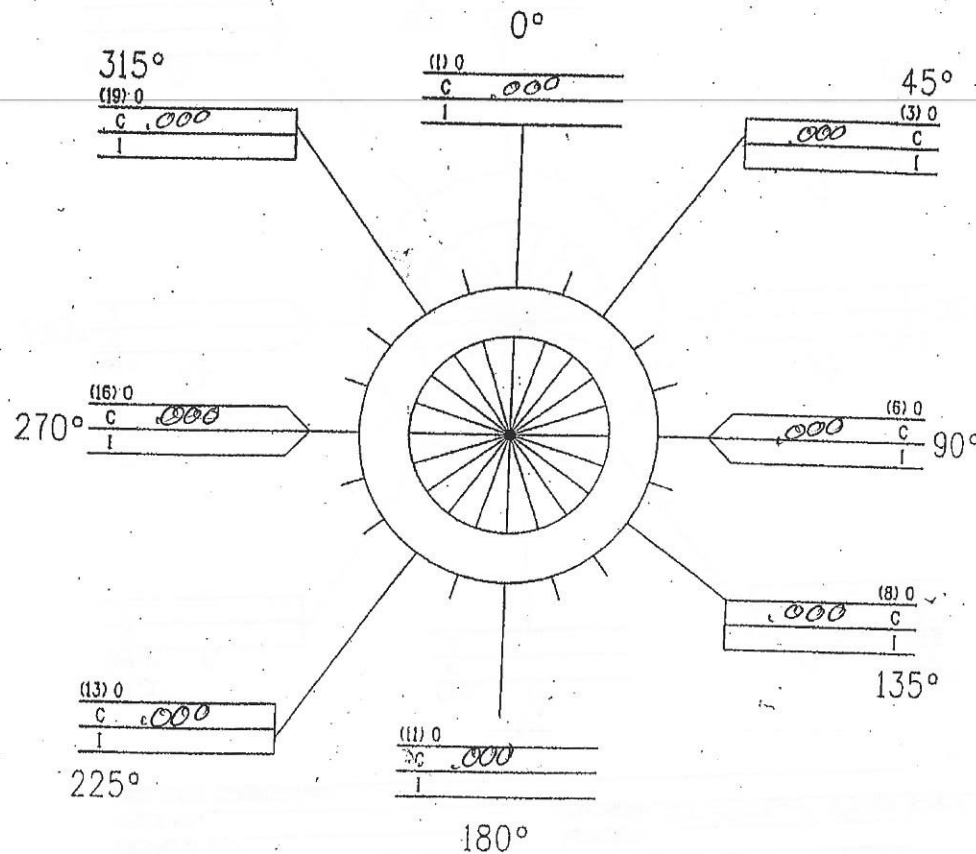


AFTER MACHINING

	Machine Surface Flatness Record	21
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UNIT: 8-0185
EQUIPMENT NO.: _____
ASSET NO.: _____
JOINT UNDER CONSIDERATION: _____

DATE: 5-12-09
INSPECTOR: _____
COMPONENT: LT CHAMPP EP SIDE



AFTER MACHINING

	Machine Surface Flatness Record	21
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UNIT: 8.0185

EQUIPMENT NO.:

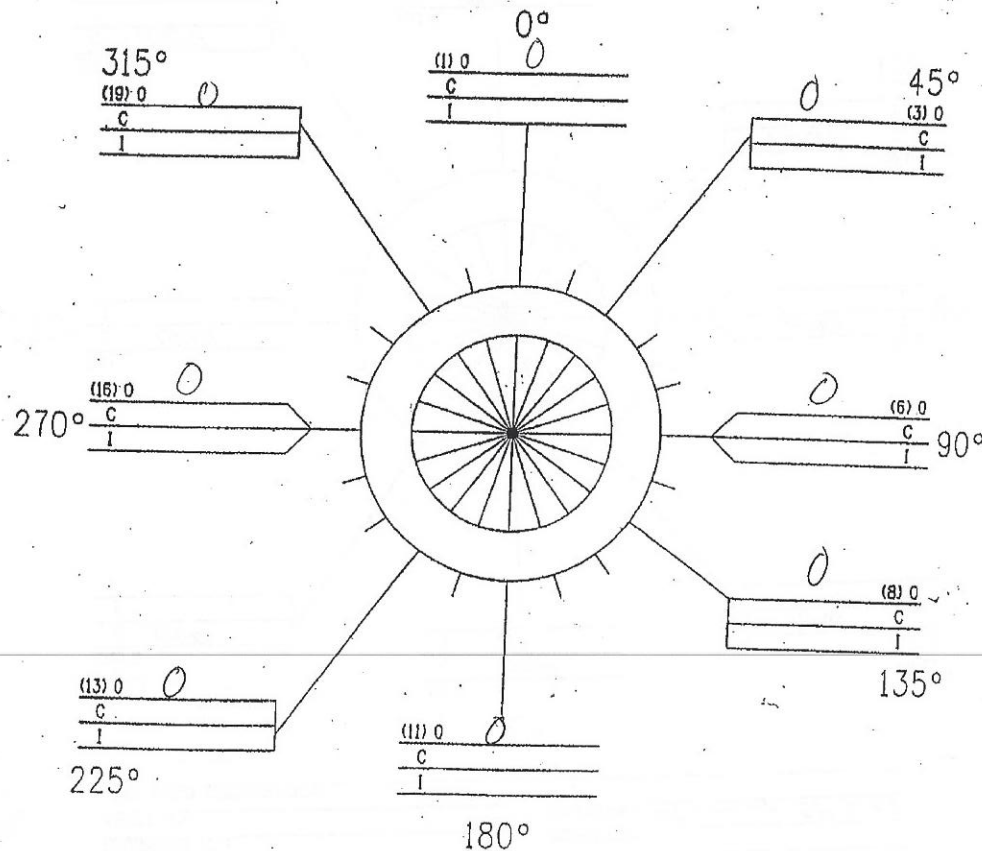
ASSET NO.:

JOINT UNDER CONSIDERATION:

DATE:

INSPECTOR:

COMPONENT: LT CHAM TSH. S. DC



AFTER MACHINING

	Machine Surface Flatness Record	21
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UNIT: R 0185

DATE: 5-12-09

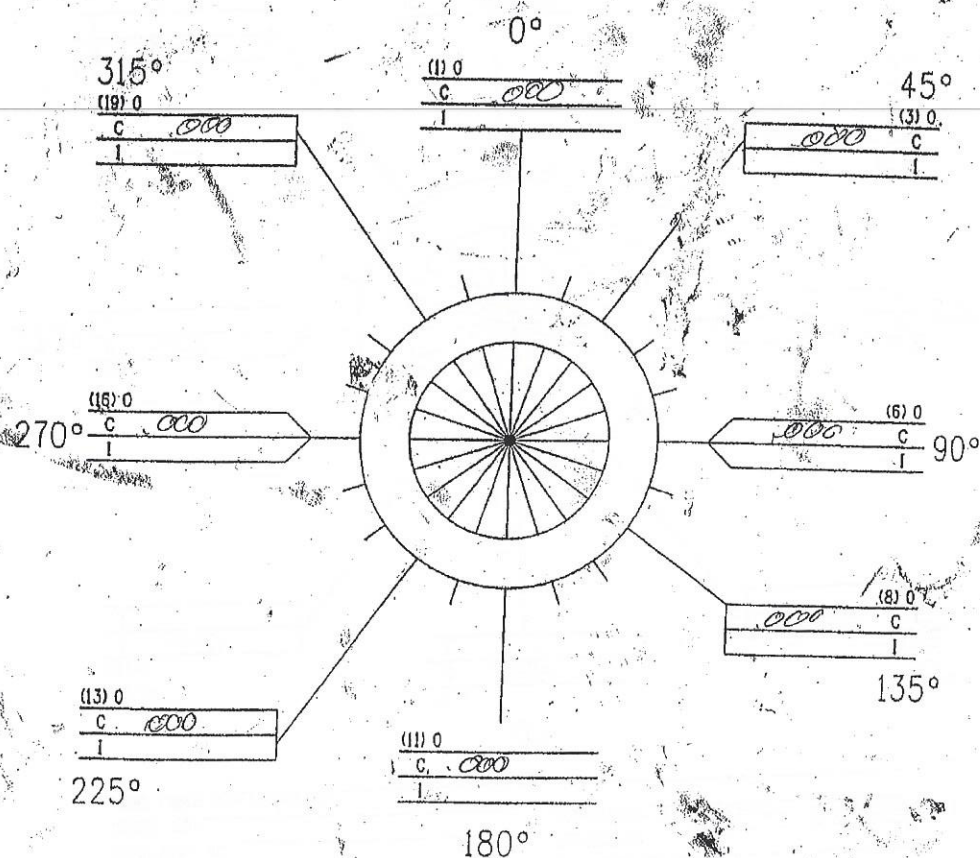
EQUIPMENT NO.: _____

INSPECTOR: _____

ASSET NO.: _____

COMPONENT: RT CHANN TSHF SIDE

JOINT UNDER CONSIDERATION: _____



AFTER MACHINING

	Machine Surface Flatness Record	21
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UNIT: 8-0185

DATE: 5-19-09

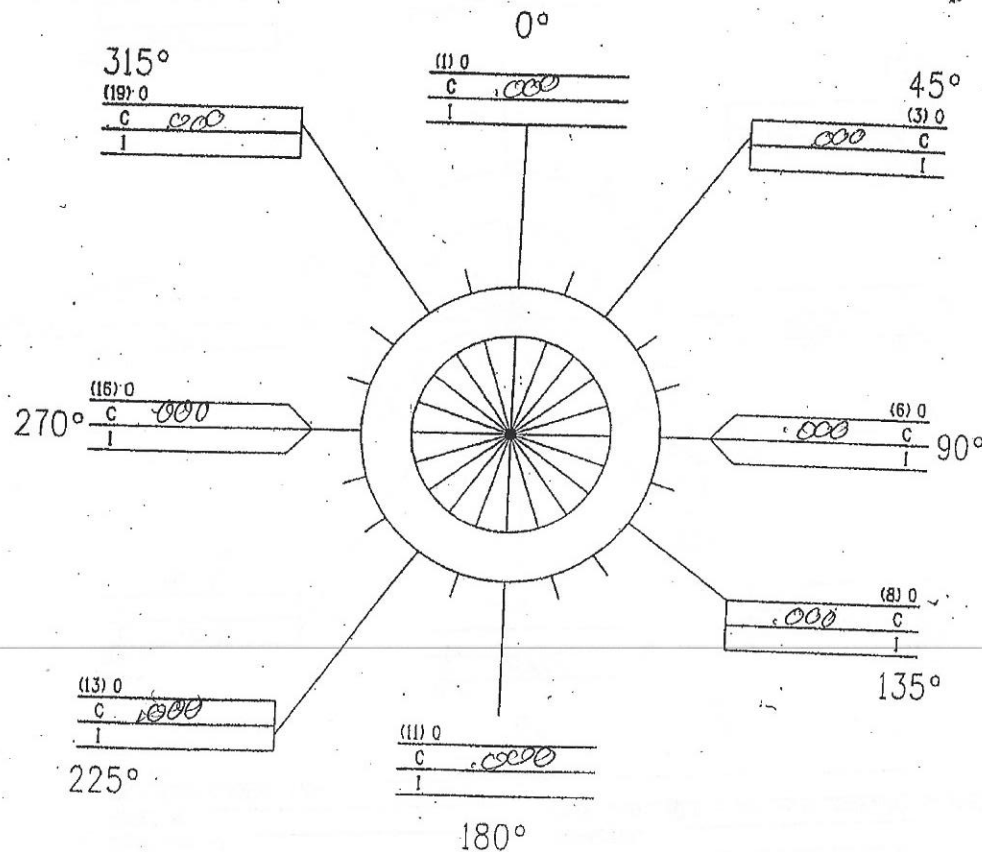
EQUIPMENT NO.:

INSPECTOR:

ASSET NO.:

COMPONENT: RICHANN EP SIDE

JOINT UNDER CONSIDERATION:



additional time: _____

Unified Testing & Engineering Services, Inc.
P.O. Box 37 Woodstock, Alabama 35188
WELD RADIOGRAPHIC INSPECTION REPORT

Reported To: Southern Heat Exchanger Corporation
Tuscaloosa, Alabama

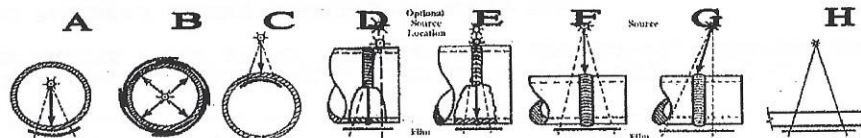
Date: 5-5-09

Page 1 of 1

Product Form:	Rolled plate - pipe	Source:	Ir 192	25.5 curies	Source-Object dist:	see below
Material:	P No. 1, 8	Focal Spot Size:	.167"		Penetrameter (IQI):	ASTM 1A 1B
Pipe Size:	N/A	Film Type:	Fuji IX	50 - 80 - 100 - 150	Sensitivity:	.008", .010"
Nominal:	1/2", 3/8"	Film Size:	5" x 7"		Shim Thickness:	None
Reinforcement:	1/16 inch	Film Per Cassette:	1 2		Unsharpness:	<.020"
Backing Thk:	none	Technique:	see below		Screens:	0.010" 0.001" Pb
Total Thickness:	see below	Viewing:	Single Double		Exposure Time:	see below
Test Method Standard:	UTS NDE-RT-1 rev. 9	Acceptance Standard:	ASME Sect VIII, Division 1 UW-52			

*includes weld reinforcement

JOB NO./FILM VIEW	SET UP	Total THK	S-O	TIME (SEC)	RESULTS		INDICATIONS NOTED	Welder ID	REMARKS
					Meets Code	Fails Code			
8-0185									
GS-3 A-B	A	9/16"	12"	90	√			B-26	
GS-3A A-B	A	9/16"	12"	90	√			B-26	
GS-4 A-B	A	9/16"	12"	90	√			B-26	
GS-5 A-B	A	7/16"	12"	85	√			B	
GS-5A A-B	A	7/16"	12"	85	√			B	
GS-6 A-B	A	7/16"	12"	85	√		POR, SUR	24	
GS-6A A-B	A	7/16"	12"	85	√		SUR	24	



Radiographer:	Michael Graves	Level:	II	Interpreter:	Michael Graves	Level:	II
Assistant:	Ronald Purifoy						

These test results report our findings at the time of inspection. Due to the limitations of nondestructive testing in evaluating all of the factors that determine the overall component quality, no guarantee is made or liability assumed by Unified Testing & Engineering Services, Inc. for the component quality or serviceability.

Reviewed By: _____ Date: _____ SHECO QA Acceptance DL 5-6-09



www.smt.sandvik.com
www.smt.sandvik.com/nafta

Sandvik Materials Technology

Product Area Tube
P.O. Box 1220
Scranton
PA USA 18501
570-585-7500

200910650

Page 1

Sold To: 673765
SOUTHERN HEAT EXCHANGER CORP.
TUSCALOOSA AL
Customer Order No: 28018501
Sandvik Order No: 61060/1
Work Order/Lot: 816689

Ship To:
SOUTHERN HEAT EXCHANGER CORP.
TUSCALOOSA AL
Certification Date: 20090326

ASTM A213-07a, ASME SA-213, ASME Section II, 2007 Edition
NACE MR0175 / ISO 15156, First edition 2003-12-15, (Austenitic)

Cold Finished BRIGHT ANNEALED Seamless Tube
Type TP316/TP316L (UNS S31600/S31603)

Size: .750" X .083" MW
Heat: 521070

ANALYSIS %

	C	Si	Mn	P	S	Cr	Ni
Heat	.016	.40	1.64	.030	.009	17.33	13.15
Prod	.017	.40	1.63	.030	.008	17.34	13.16
	Fe	Mo	Cu	Al	Pb		
Heat		2.53	.28	.003			
Prod		2.52	.27	.006			

Mechanical Tests:

Yield Strength				Tensile Strength		Elongation in %				Reduction Of Area
0.2%		1.0%				E2"	E10"	E4d	E5d	%
psi	MPa	psi	MPa	psi	MPa					
41800	288.3	N/A		92600	638.6	52	N/A	N/A	N/A	N/A
44200	304.8			94100	649.0	50				

Hardness Test Results: 78HRB, 78HRB

Flare Test per ASTM A1016,
No. samples: 4 Result: Acceptable
Flattening Test per ASTM A1016: Acceptable
Tensile Test sample width (1=Full-Size 2=1/2" Strip): 1
Country Of Origin: United States
Material Does Qualify for NAFTA
100% Positive Material Identification performed
All material subjected to a final solution annealing heat treatment with material at a temperature of 1900 deg. F minimum followed by rapid quenching to below 800 deg. F in less than three (3) minutes.
The material has not come in contact with Mercury or Mercury containing compounds.
No welding has been performed on this material.
Material has been eddy current tested in accordance with ASTM A450, ASTM A1016 and is acceptable.
Material has been manufactured/supplied in accordance with Sandvik Materials Technology Quality Manual-Standard Products Revision 10 dated May 29, 2007. Quality system has been approved to ISO 9001:2000.
Certificate produced in accordance with EN 10204 3.1 (formerly EN 10204 3.1.B)
Melt Source: AB Sandvik MT, Sweden
This is to certify that the contents of this certificate are correct and accurate as contained in Sandvik's records,

8.01/85
TUBES
4PSS

OK 4/24/09

and that all above test results and operations performed are in compliance with the requirements of the purchase order and the specification(s) listed above.

Electronically Generated Certificate-Valid without signature
Audrey Kakareka, Quality Engr.
10 (SHE A/SA213E R9) (15) (RAA)



www.smt.sandvik.com
www.smt.sandvik.com/nafta

Sandvik Materials Technology

Product Area Tube
P.O. Box 1220
Scranton
PA USA 18501
570-585-7500

200910649

Page 1

Sold To: 673765
SOUTHERN HEAT EXCHANGER CORP.
TUSCALOOSA AL
Customer Order No: 28018501
Sandvik Order No: 61060/1
Work Order/Lot: 816688

Ship To:
SOUTHERN HEAT EXCHANGER CORP.
TUSCALOOSA AL
Certification Date: 20090326

ASTM A213-07a, ASME SA-213, ASME Section II, 2007 Edition
NACE MR0175 / ISO 15156, First edition 2003-12-15, (Austenitic)

Cold Finished BRIGHT ANNEALED Seamless Tube
Type TP316/TP316L (UNS S31600/S31603)

Size: .750" X .083" MW
Heat: 520898

ANALYSIS %

	C	Si	Mn	P	S	Cr	Ni
Heat	.021	.40	1.53	.028	.010	16.92	12.44
Prod	.022	.40	1.54	.027	.009	16.85	12.34
	Fe	Mo	Cu	Al	Pb		
Heat		2.05	.26	.004	.00005		
Prod		2.03	.26	.003	.00005		

Mechanical Tests:

Yield Strength				Tensile Strength		Elongation in %				Reduction Of Area
0.2%		1.0%								
psi	MPa	psi	MPa	psi	MPa	E2"	E10"	E4d	E5d	%
47200	325.5			90000	620.7	47	N/A	N/A	N/A	N/A
42800	295.2		N/A	90500	624.1	51				

Hardness Test Results: 77HRB, 78HRB

Flare Test per ASTM A1016,

No. samples: 2 Result: Acceptable

Flattening Test per ASTM A1016: Acceptable

Tensile Test sample width (1=Full-Size 2=1/2" Strip): 1

Country Of Origin: United States

Material Does Qualify for NAFTA

100% Positive Material Identification performed

All material subjected to a final solution annealing heat

treatment with material at a temperature of 1900 deg. F

minimum followed by rapid quenching to below 800 deg. F in

less than three (3) minutes.

The material has not come in contact with Mercury or Mercury

containing compounds.

No welding has been performed on this material.

Material has been eddy current tested in accordance with

ASTM A450, ASTM A1016 and is acceptable.

Material has been manufactured/supplied in accordance

with Sandvik Materials Technology Quality Manual-Standard

Products Revision 10 dated May 29, 2007. Quality system

has been approved to ISO 9001:2000.

Certificate produced in accordance with EN 10204 3.1

(formerly EN 10204 3.1.B)

Melt Source: AB Sandvik MT, Sweden

This is to certify that the contents of this certificate
are correct and accurate as contained in Sandvik's records,

dupm
4-21-09

and that all above test results and operations performed are in compliance with the requirements of the purchase order and the specification(s) listed above.

Electronically Generated Certificate-Valid without signature
Audrey Kakareka, Quality Engr.
10 (SHE A/SA213E R9) (15) (RAA)

ACRONI

2-80185-03

ACRONI, d.o.o.
 Costa Borisa Kidriča 44
 SI - 4270 Jesenice
 T: +386 4 584 10 00
 F: +386 4 584 11 11
 E: uprava@acroni.si
 W: http://www.acroni.si

**Potrđilo o prevzemu 3.1 /
 Abnahmeprüfzeugnis 3.1 / Inspection
 Certificate 3.1** EN 10204 3.1 Stran/Seite/Page 1/2

Št./Nr./no. 31091928-2
 Datum/Datum/Date 23.7.2008

Naročilo/Bestellung/Order 3134disp.27829
 Izdelek/Erzeugnis/Product Blech
 Dobavni list/Liefersechein/Dispatch N. 31091928 from 23.7.2008
 Vrsta peči/M. Furnace B+VOD

Naročnik/Kunde/Customer

JACQUET MID ATLANTIC INC 191
 SOUTH KEIM STR.SUITE 108
 Pa19464 POTTSTOWN
 UNITED STATES

	Znak izvedenca TK	Znak proizvajalca
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Specifikacije/Vorschriften/Specifications	Tip/W.Nr./Type	Pov./Fläche/Finish	Kor.test/Int.krist.korr./Corrosion test
ASTM A 240/A 240M/ED.04,AST; A480	316L/316	No.1	ASTM A262 PRACTICE:OK
ASME SA 240 SECT.II PART A/ED-01	316L/316	No.1	
ASME SA 480			
ASM 5513 H			

Obseg dobave / Umfang der Lieferung / Extent of mat. delivery

Poz.Pos./Item	Šarža/Schmelzen Nr./cast No.	Št.plošče/Waltztafel /Plate No	Teža/Gewicht/ Weight	Dimenzije/Abmessungen/Dimensions	Št.Stück/Q.	Št. V.Pr. Nr.
5	264448	88238	5437	2.500x79x210	1	88238

Mehanske lastnosti/Mechanische Eigenschaften/Mechanical properties

Št.vzorca Sample No.	Smer vzorca Positi on	Nap. tečenja 0.2 % Yield 0.2% KSI	Nap. tečenja 1% Yield 1% KSI	Nat. Trdnost Tensile KSI	Raztežek A5 % Elongatio n	Raztez ek A50 % Elongat ion	Trdota Hardne ss Rockw ell B HRCB	Žil.1 Impact FtLb	Žil.2 Impact FtLb	Žil.3 Impact FtLb	Temp. °F
88238	P	39.00	46.97	82.35	52.5	78.1	80	251	247	241	68

JACQUET NO.

11874

SI
 skupine
 Slovenska Industrija Jekla

ACRONI

ACRONI, d.o.o.
 Costa Borisa Kidriča 44, 4270 Jesenice
 Član skupine skupine jekla, 20112200
 Member of Slovenska Industrija Jekla
 19/72

80185
 Tube sheets
 2/35

ok 19m
 8-23-08

ACRONI

ACRONI, d.o.o.
Cesta Borisa Kidriča 44
SI - 4270 Jesenice
T: +386 4 584 10 00
F: +386 4 584 11 11
E: uprava@acroni.si
W: http://www.acroni.si

Potrdilo o prevzemu 3.1 / Abnahmeprüfzeugnis 3.1 / Inspection Certificate 3.1

Id./Nr./no. : **31091928-2**

Stran/Seite/Page 2/2

Kemična analiza/Chemische Zusammensetzung/Chemical composition

Sarža	%C	%Si	%Mn	%P	%S	%Cr	%Co	%Ni	%Mo	%Ti	%N	%B
264448	0.019	0.35	1.46	0.040	0.001	16.82	0.18	10.11	2.02		0.0468	0.0007

Opombe/Remarks

HEAT TREATMENT : QUENCHED AT 1050°C, WATER QUENCHED
- VISUAL AND DIMENSIONAL CHECK : OK
- SPECTROMETER SORTING TEST : OK
- INTERGRANULAR CORROSION TEST ACCORDING TO
ASTM A - 262 PRACTICE E : OK!
NO WELD REPAIR.
MERCURY FREE.

SI
skupina
Slovenska Industrija Jekla

ACRONI
ACRONI, d.o.o.
Cesta Borisa Kidriča 44
4270 Jesenice
Član skupine
Member of SI
19/72

oklpm
3.27.09

Date: 2/23/2009

Customer: SOUTHERN HEAT EXCHANGER CORP.

Purchase Order: 2-80185-02

Order ID: 101354-00

ISO 9001:2000
REGISTERED QUALITY
MANAGEMENT SYSTEM

Sold To: SOUTHERN HEAT EXCHANGER CORP.

P.O. BOX 1850
TUSCALOOSA, AL 35403 USA

Ship To: SOUTHERN HEAT EXCHANGER CORP.

6100 OLD MONTGOMERY HIGHWAY
TUSCALOOSA, AL 35403 USA

Specification: SA182 - F316/316L

Quantity: 4

Weight: 1,000

Part No.

Description: 37.375 X 32.000 X 2.938-MACHINE

Heat No. 47214 - ELECTRALLOY - SEE ATTACHED MILL CERT FOR CHEMISTRY

CONDITION

SOLUTION ANNEAL

TENSILE PROPERTIES

Serial	Yield (KSI) (0.2% Offset)	Ult. Tensile (KSI)	Elong % (In 4D)	R. of A. %	BHN
100953-00-80	40.0	81.0	56.9	60.6	142

Hardness

Serial No.	Hardness
	156 BHN

80185
LT 1/2" x 1/2" x 3/16"
3P95

RECEIVED
FEB 26 2009
BY: MTL
P.T.
P.T.
2/26

WE HEREBY CERTIFY THAT THE ABOVE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE LISTED SPECIFICATION AND ORDER REQUIREMENTS, AND IS IN CONFORMANCE WITH ALL REQUIREMENTS.

THIS PRODUCT HAS BEEN MANUFACTURED UNDER A QUALITY MANAGEMENT SYSTEM REGISTERED AND INDEPENDENTLY CERTIFIED AS COMPLYING WITH ISO 9001:2000.

NOTE: THE RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FEDERAL STATUTES.

McINNES ROLLED RINGS

Julie E. Turner

Julie E. Turner

**ELECTRALLOY**

176 Main Street
Oil City, PA 16901
PHONE: 814-678-4200
Fax: 814-678-4146

**MATERIAL CERTIFICATION
REPORT and CERTIFICATE
OF QUALITY CONFORMANCE**

2-8018502

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without the written approval of Electralloy

CUSTOMER NAME AND ADDRESS McInnes Rolled Rings 1533 East 12th Street, Erie, PA 16511		CUSTOMER ORDER NO. 03214 IDENTIFICATION Heat #47214
PRODUCT DESCRIPTION	Stainless steel round billet, electric arc furnace melted, A.O.D. refined, press forged, hot forged, air cooled, machine ground, with saw cut square ends	

SPECIFICATIONS

Type 316/316L (UNS S31600/S31603) - CHEMISTRY ONLY - ASTM A182/A182M-06,
 ASTM A193/A193M-06a(316), ASTM A320/A320M-05a(316), ASTM A336/A336M-06a,
 ASTM A314-97, ASTM A473-01, ASTM A276-06, ASTM A479/A479M-06a, AMS 5653F,
 NACE MR0175-96, QQ-S-763F, ASME SA-182/SA-182M, ASME SA-320/SA-320M (316)
 ASME SA-336/SA-336M, ASME SA-479/SA-479M(all including 1997 Winter Addenda)
 AMS 5648J and any additional specifications which may be listed below.

CHEMICAL ANALYSIS

Heat Number	C	MN	P	S	SI	CR	NI	MO
47214	0.015	1.80	0.026	0.022	0.54	16.47	10.20	2.08
	CU	N	CO					
	0.65	0.084	0.22					

ITEM DESCRIPTION

Heat Number	HWRR	Quantity & Weight	Size
47214-3A	4.5:1	1 Billet - 8,495 Lbs	Nom 12.00" Rd x 241.25" Lg
47214-4A	4.5:1	1 Billet - 8,535 Lbs	Nom 12.00" Rd x 243.00" Lg

STATEMENTS

Material represented was melted and manufactured in the USA

All items represented are in full compliance with all purchase order and
 specification requirements.

At time of shipment, items and/or material produced under this order
 have not come in contact with mercury or its compounds.

Note: The recording of false,
 fictitious, or fraudulent statements
 or entries on this document may be
 punishable as a felony under
 Federal Statute.

The above are true and correct results
 of tests on samples of the material.
 Results conform to the specification(s)
 listed above and are on record.

Meets EU Electrical "RoHS".
 Contains NO "WEEE" relevant substances.
 Complies with DFARS-225.1-Buy American Act-Supplies

BY

Date: 12/26/08

HWRR = Minimum Hot
 Working Reduction
 Ratio.

Name: David A. Fulkerson

Title: QC Technician/Works Inspector

**ELECTRALLOY**

175 Main Street
 OH City, PA 16301
 PHONE: 814-678-4200
 Fax: 814-678-4148

**MATERIAL CERTIFICATION
 REPORT and CERTIFICATE
 OF QUALITY CONFORMANCE**

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<u>CUSTOMER NAME AND ADDRESS</u> McInnes Rolled Rings 1533 East 12th Street, Erie, PA 16511		CUSTOMER ORDER NO. 03214 IDENTIFICATION <u>Heat #47214</u>
PRODUCT DESCRIPTION Stainless steel round billet, electric arc furnace melted, A.O.D refined, press forged, hot forged, air cooled, machine ground, with saw cut square ends		

STATEMENTS

Material represented was not weld repaired.

Material represented was produced in accordance with the Electralloy
 Quality Control Program dated 08/18/2008, which meets the requirements of
 ISO9001(2000), MIL-I-45208A and ASME Code Section 3, Subsection NCA 3800

ASTM E1019-03, ASTM E572-02a, and ASTM E1086-94, are the methods
 used to determine the chemical analysis for Fe base (high alloy),
 Ni base and Cu base alloys.

Note: The recording of false,
 fictitious, or fraudulent statements
 or entries on this document may be
 punishable as a felony under
 Federal Statute.

The above are true and correct results
 of tests on samples of the material.
 Results conform to the specification(s)
 listed above and are on record.

Meets EU Electrical "RoHS".
 Contains NO "WEEE" relevant substances.
 Complies with DFARS-225.1-Buy American Act-Supplies.

HWRR = Minimum Hot

Working Reduction
 Ratio.

By

Name : David A. Fulkerson

Title: QC Technician/Works Inspector

Date: 12/26/08

ACRONI

ACRONI, d.o.o.
Cesta Borisa Kidriča 44
SI - 4270 Jesenice
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E: uprava@acroni.si
W: http://www.acroni.si

Potrđilo o prevzemu 3.1 / Abnahmeprüfzeugnis 3.1 / Inspection Certificate 3.1 EN 10204 3.1 Stran/Seite/Page 1/2 Št./Nr./no. Datum/Datum/Date 31088085-2 14.4.2008 Naročilo/Bestellung/Order Dobavni list/Liefererschein/Despatch N. 2743dlsp.27167 31088085 from 14.4.2008 Izdelek/Erzeugnis/Product Vesta peč/M. Furnace Blech E+VOD	Naročnik/Kunde/Customer JACQUET MID ATLANTIC INC 191 SOUTH KEIM STR.SUITE 108 Pa19464 POTTSTOWN UNITED STATES
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	Znak izvedenca TK	Znak proizvajalca
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Specifikacije/Vorschriften/Specifications	Tip/V.Nr./Type	Pov./Fleche/Finish	Kor.test/Int.krist.korr./Corrosion test
ASTM A 240/A 240M/ED.04,AST; A480	316L/316	No.1	ASTM A262 PRACTICE:OK
ASME SA 240 SECT.II PART A/ED-01	316L/316	No.1	
ASME SA 480			
ASM 5513 H			

Obseg dobave / Umfang der Lieferung / Extent of mat. delivery

Poz.Pos./Item	Šarža/Schmelzen Nr./cast No.	Št.plošče/Walztafel /Plate No.	Teža/Gewicht/ Weight	Dimenzije/Abmessungen/Dimensions	Št.Stuck/Q.	Št. V.Pr. Nr.
6	262938	71189	5554	2.750x79x195	1	71189
7	262938	71179	5593	3.000x79x180	1	71179

Mehanske lastnosti/Mechanische Eigenschaften/Mechanical properties

Št.vzorca Sample No.	Smr vzorca Positi on	Nap. tečenja 0.2 % Yield 0.2% KSI	Nap. tečenja 1% Yield 1% KSI	Nat. Trdnost Tensile KSI	Raztezek A5 % Elongatio n	Raztez ek A50 % Elongat ion	Trdota Hardne ss Rockw ell B HRCB	Žil.1 Impact FtLb	Žil.2 Impact FtLb	Žil.3 Impact FtLb	Temp. °p
71189	P	38.27	45.52	78.43	48.6	70.9	83	235	240	233	68
71179	P	48.86	57.85	87.72	47.0	69.3	86	232	239	244	68

JACQUET NO.
115784
115794

80185
END covers
2055



Slovenska Industrija Jekla

19/72
ACRONI, d.o.o.
Cesta Borisa Kidriča 44, 4270 Jesenice
Ozn skupine SU
Navedeni podatki so izmerjeni v skladu s
standardi EN 10002-1, EN 10002-2, EN 10002-3, EN 10002-4, EN 10002-5, EN 10002-6, EN 10002-7, EN 10002-8, EN 10002-9, EN 10002-10, EN 10002-11, EN 10002-12, EN 10002-13, EN 10002-14, EN 10002-15, EN 10002-16, EN 10002-17, EN 10002-18, EN 10002-19, EN 10002-20, EN 10002-21, EN 10002-22, EN 10002-23, EN 10002-24, EN 10002-25, EN 10002-26, EN 10002-27, EN 10002-28, EN 10002-29, EN 10002-30, EN 10002-31, EN 10002-32, EN 10002-33, EN 10002-34, EN 10002-35, EN 10002-36, EN 10002-37, EN 10002-38, EN 10002-39, EN 10002-40, EN 10002-41, EN 10002-42, EN 10002-43, EN 10002-44, EN 10002-45, EN 10002-46, EN 10002-47, EN 10002-48, EN 10002-49, EN 10002-50, EN 10002-51, EN 10002-52, EN 10002-53, EN 10002-54, EN 10002-55, EN 10002-56, EN 10002-57, EN 10002-58, EN 10002-59, EN 10002-60, EN 10002-61, EN 10002-62, EN 10002-63, EN 10002-64, EN 10002-65, EN 10002-66, EN 10002-67, EN 10002-68, EN 10002-69, EN 10002-70, EN 10002-71, EN 10002-72, EN 10002-73, EN 10002-74, EN 10002-75, EN 10002-76, EN 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10002-860, EN 10002-861, EN 10002-862, EN 10002-863, EN 10002-864, EN 10002-865, EN 10002-866, EN 10002-867, EN 10002-868, EN 1

Potrdilo o prevzemu 3.1 / Abnahmeprüfzeugnis 3.1 / Inspection Certificate 3.1Št./Nr./no. : **31088085-2**

Stran/Selle/Page 2/2

Kemična analiza/Chemische Zusammensetzung/Chemical composition

Šarža	%C	%Si	%Mn	%P	%S	%Cr	%Co	%Ni	%Mo	%Ti	%N	%B
262938	0.023	0.34	1.59	0.035	0.002	16.90	0.36	10.11	2.07		0.0570	0.0009

Opombe/Remarks

HEAT TREATMENT : QUENCHED AT 1050°C, WATER QUENCHED
- VISUAL AND DIMENSIONAL CHECK : OK
- SPECTROMETER SORTING TEST : OK
- INTERGRANULAR CORROSION TEST ACCORDING TO
ASTM A - 262 PRACTICE E : OK!
NO WELD REPAIR.
MERCURY FREE.

2-80185-05



METALLURGICAL SERVICES: MILL INSPECTION CERTIFICATE AS PER EN10224:2004 TYPE 3.1
Material manufacturer certified to European Directive 97/23/EC
HIGH YIELD STEEL AND VANADIUM CORPORATION LIMITED
Registration No. 1960/00190006

Page 1 of 3

P.O. Box 111, Witbank, 1035
Telephone: National (013) 6909911 Fax (013) 690 9556
International 27 13 6909911

Test Certificate No: P00017863
Product: PRIME HOT ROLLED STEEL PLATES
Dimensions: 5" X 96" X 243.056 KG/M
Length: 480"
Total Pieces: 26

Account No: CREF 01
Customer Order: 0931-P
Sales Order No: 202834 / 1 Packing List No: 18808
Date: 2007-07-05
Quality: ASME SA516 GRADE 70 (IMPACTS) - 2001
ASTM A516 GRADE 70 (IMPACTS) - 2005

Cast No: Slab No:	C	Mn	P	S	Si	Y	Al	Cr	Ni	Al	N	Mo	Nb	W	W.C.E.	PCS
Min	0.000	0.150	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Max	0.280	0.400	0.035	0.035	1.200	0.030	0.400	0.300	0.400	0.100	0.010	0.120	0.020	0.020	0.020	
T6430 988453	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988454	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988455	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	1
T6430 988456	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988457	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988458	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988459	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988460	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988461	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6430 988462	0.186	0.287	0.006	0.007	1.117	0.011	0.120	0.062	0.069	0.038	0.002	0.002	0.000	0.001	0.399	2
T6431 988463	0.200	0.301	0.008	0.005	1.077	0.005	0.124	0.040	0.068	0.037	0.002	0.002	0.000	0.001	0.401	2
T6431 988464	0.200	0.301	0.008	0.005	1.077	0.005	0.124	0.040	0.068	0.037	0.002	0.002	0.000	0.001	0.401	1
T6431 988465	0.200	0.301	0.008	0.005	1.077	0.005	0.124	0.040	0.068	0.037	0.002	0.002	0.000	0.001	0.401	2
T6431 988466	0.200	0.301	0.008	0.005	1.077	0.005	0.124	0.040	0.068	0.037	0.002	0.002	0.000	0.001	0.401	2

REMARKS: GL = GAUGE LENGTH, YP = YIELD POINT, UTS = ULTIMATE TENSILE STRENGTH, ELG = ELONGATION, W.C.E. = WELDABILITY CARBON EQUIVALENT, C1 = CHARPY TEST 1, C2 = CHARPY TEST 2, C3 = CHARPY TEST 3

Universal Steel America
Customer: _____
PO # 2-80185-05
Item # 4
PCS: _____
USA S/O 5120130

TSHIDISO MOFO (METALLURGIST)

IN ANY DISPUTE RELATING TO THIS TEST CERTIFICATE THE ORIGINAL FORMAT AND DATA AS RETAINED BY HIGH YIELD IN ELECTRONIC FORMAT WILL CONSTITUTE PRIMA FACIE PROOF OF THE FORMAT AND CONTENT OF THE CERTIFICATE.

80185
Steel
3P35

okiem
3.17.07



METALLURGICAL SERVICES: MILL INSPECTION CERTIFICATE AS PER EN10204-2004 TYPE 3.1
Material manufacturer certified to European Directive 97/23/EC
HGHVLD STEEL AND VANADIUM CORPORATION LIMITED
Registration No. 196000190006

Page 2 of 3

P.O. Box 111, Witbank, 1035
Telephone: National (013) 6909911
International 27 13 6909911

Fax (013) 690 9556

Test Certificate No: P080117863
Product: PRIME HOT ROLLED STEEL PLATES
Dimensions: 5" X 96" X 243.856 KG/M
Length: 480"
Total Faces: 26

Account No: ORSP 01
Customer Order: 0931-P
Sales Order No: 202834 / 1
Date: 2007-07-05
Quality: ASME SA516 GRADE 70 (IMPACTS) - 2001
ASTM A516 GRADE 70 (IMPACTS) - 2005

Packing List No: 18808

Cast No: Slab No:		AREA	GL	YF	UTS	ELG	C1	C2	C3	AVG	TEMP
		SQ IN	INCH	ksi	ksi	%	J	J	J	CHARPY	DEG C
Min				38	70	17	20	20	20	J	
Max				145	90						
T6430	908433	0.833	8	49	74	25					
T6430	908454	0.810	8	51	75	25	119	109	144	124	- 46
T6430	908455	0.828	8	51	76	24	125	154	133	137	- 46
T6430	908456	0.820	8	51	77	24	45	56	51	51	- 46
T6430	908457	0.799	8	52	77	24	48	56	49	51	- 46
T6430	908458	0.816	8	51	75	25	70	123	106	100	- 46
T6430	908459	0.813	8	50	74	25	113	145	91	116	- 46
T6430	908460	0.815	3	51	76	31	67	53	50	57	- 46
T6430	908461	0.815	8	53	76	24	123	99	97	104	- 46
T6430	908462	0.838	8	49	75	24	104	125	96	109	- 46
T6431	908463	0.830	8	51	75	25	138	86	169	131	- 46
T6431	908464	0.850	8	49	74	24	156	133	121	137	- 46
T6431	908465	0.815	8	53	76	24	110	104	94	105	- 46
T6431	908466	0.815	8	52	76	24	134	99	114	116	- 46

REMARKS: CHARPY SIZES CONFORM TO APPLICABLE SPECIFICATIONS
SLAB 908433/A WAS NORMALISED AT 920°C FOR 0 HR 30 MIN
SLAB 908454/A WAS NORMALISED AT 930°C FOR 0 HR 30 MIN
SLAB 908455/A WAS NORMALISED AT 921°C FOR 0 HR 30 MIN
SLAB 908456/A WAS NORMALISED AT 900°C FOR 0 HR 30 MIN
SLAB 908457/A WAS NORMALISED AT 922°C FOR 0 HR 30 MIN
SLAB 908458/A WAS NORMALISED AT 930°C FOR 0 HR 30 MIN

REMARKS GL - GAUGE LENGTH, YF - YIELD POINT, UTS - ULTIMATE TENSILE STRENGTH, ELG - ELONGATION, W.C.E. - WELDABILITY
CARBON EQUIVALENT, C1 - CHARPY TEST 1, C2 - CHARPY TEST 2, C3 - CHARPY TEST 3

TSHISO MOFO (METALLURGIST)

IN ANY DISPUTE RELATING TO THIS TEST CERTIFICATE THE ORIGINAL FORMAT AND DATA AS RETAINED BY HGHVLD IN ELECTRONIC FORMAT WILL CONSTITUTE PRIMA FACIE PROOF OF THE FORMAT AND CONTENT OF THE CERTIFICATE.

Ok (Pm)
2.7.09



METALLURGICAL SERVICES: MILL INSPECTION CERTIFICATE AS PER EN10204:2004 TYPE 3.1
Material manufacturer certified to European Directive 97/23/EC
HCBVELD STEEL AND VANADIUM CORPORATION LIMITED
Registration No. 1960/001900/06

Page 3 of 3

P.O. Box 111, Witbank, 1035
Telephone: National (013) 6909911 Fax (013) 690 9556
International 27 13 6909911

Test Certificate No: P000117863

Product: PRIME HOT ROLLED STEEL PLATES

Dimensions: 5' X 9' X 24.056 KG/M

Length: 480'

Total Pieces: 26

Account No: DREP 01

Contract Order: 0931-P

Sales Order No: 202834 / 1

Date: 2007-07-05

Quality: ASME SA516 GRADE 70 (IMPACTS) - 2001

ASTM A516 GRADE 70 (IMPACTS) - 2005

Packing List No: 18808

SLAB 908457A WAS NORMALISED AT 925°C FOR 6 HR 30 MIN

SLAB 908460A WAS NORMALISED AT 927°C FOR 6 HR 30 MIN

SLAB 908461A WAS NORMALISED AT 936°C FOR 6 HR 30 MIN

SLAB 908462A WAS NORMALISED AT 925°C FOR 6 HR 30 MIN

SLAB 908463A WAS NORMALISED AT 925°C FOR 6 HR 30 MIN

SLAB 908464A WAS NORMALISED AT 925°C FOR 6 HR 30 MIN

SLAB 908465A WAS NORMALISED AT 917°C FOR 6 HR 30 MIN

SLAB 908466A WAS NORMALISED AT 926°C FOR 6 HR 30 MIN

MATERIAL TESTED AND SUPPLIED IN THE NORMALISED/NORMALISED ROLLED CONDITION.

WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN TESTED PRIOR TO DISPATCH FROM MILL

REMARKS: CL - GAUGE LENGTH, YP - YIELD POINT, UTS - ULTIMATE TENSILE STRENGTH, ELG - ELONGATION, W.C.E. - WELDABILITY
CARBON EQUIVALENT, C1 - CHARPY TEST 1, C2 - CHARPY TEST 2, C3 - CHARPY TEST 3

TSHDISO MOPO (METALLURGIST)

IN ANY DISPUTE RELATING TO THIS TEST CERTIFICATE THE ORIGINAL FORMAT AND DATA AS RETAINED BY HCBVELD IN ELECTRONIC FORMAT WILL CONSTITUTE PRIMA FACIE PROOF OF THE FORMAT AND CONTENT OF THE CERTIFICATE.

SSAD

Test Certificate

12400 Highway 43 North, Axis, Alabama 36505

Form TC1: Revision 1: Date 31 Oct 2000

Customer: UNIVERSAL STEEL AMERICA HOUSTO 1230 E. RICHEY ROAD HOUSTON TX 77073		Customer P.O. No.: P16717		Mill Order No.: 41-236905-01		Shipping Manifest: AT068736	
Product Description: ASME SA516-70/SA516-65/SA516-60(UTED.) ASTM A516-70/A516-65/A516-60(96) LCVN 15/12 FT.LBS @ -60F/A673-P NORMALIZED				Ship Date: 21 Jan 09 Cert Date: 21 Jan 09		Cert No: 081169927 (Page 1 of 1)	
Size: 0.500 X 96.00 X 480.0 (IN)							
Tested Pieces				Tensiles			
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA Elong % 2in 8in	Tst Dir
E9A016	A06	0.501 X 96.00 (DISCRT)	L	53000	75000	26	T
				Charpy Impact Tests			
				Average Hardness			
				Abs. Energy (FTLB)			
				1 2 3 Avg			
				66 63 56 61.7			
				% Shear			
				1 2 3 Avg			
				Tst Temp			
				Tst Dir			
				Tst Siz (mm)			
				BDWTT			
				Tst Temp %Shr			
				-60F L 110			
Chemical Analysis							
Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al
E9A016	.18	.92	.013	.002	.26	.023	.022
Ni Cr Mo Cu V Ti CEV							
.09 .09 .04 .003 .006 .017 .38							
ORGN USA							
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT CEV (IIW) = $C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$ 100% MELTED AND MANUFACTURED IN THE USA. MTR DIN EN10204 TYPE 3.1 COMPLIANT. NORMALIZED PLATES. HEATED AT 1650F FOR 23 MINUTES. E9A016 A06 6118551 PCES: 1, WGT: 6603 E9A016 A06 6118549 PCES: 1, WGT: 6594 E9A016 A06 6118548 PCES: 1, WGT: 6594 E9A016 A06 6118547 PCES: 1, WGT: 6594 E9A016 A06 6118546 PCES: 1, WGT: 6594 E9A016 A06 6118545 PCES: 1, WGT: 6607							
Universal Steel America Customer: _____ PO # <u>2-80185-05</u> Item # <u>4</u> PCS _____ USA S/O <u>5120438</u>							
(P) Cust Part #: 70N.500				WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION			
				Jason Thomas SENIOR METALLURGIST			

Jason Thomas
SENIOR METALLURGISTOK up
3-12-09

ArcelorMittal Burns Harbor Plate

SHIPMENT NO. 803-01501		DATE SHIPPED 01-05-09	CAR OR VEHICLE NO. JHB-PROVI-UP	OTTX 090037	PAGE 6
S H I P T O	UNIVERSAL STEEL AMERICA-HOUSTON 1230 EAST RICHEY ROAD HOUSTON TX 77073		UNIVERSAL STEEL AMERICA A213 YARD 14 TRACK 728 WESTFIELD TX		

N O T E	SERIAL NUMBER	PAT NO.	HEAT NUMBER	NO. PCS.	SIZE AND QUANTITY				YIELD POINT	TENSILE STRENGTH	ELONG.	RED.
					THICKNESS	WIDTH OR DIA.	LENGTH	WEIGHT				
					INCHES	INCHES	INCHES	POUNDS	PSI	PSI	IN	%

QUALITY STEEL MELTED & MANUFACTURED IN THE U. S. A.

PLATES - ASTM A516-06 GR 70 PVQ CE FOR INFO
PER IIW FORMULA, ASTM A516-06 GR 65
PVQ, ASTM A516-06 GR 60 PVQ, ASME
SA516 GR 70 PVQ 2007 EDITION 2008
ADD, ASME SA516 GR 65 PVQ 2007
EDITION 2008 ADD, ASME SA516 GR 60
PVQ 2007 EDITION 2008 ADD, CH-V
SA2085-PLT L-15/12-FTLBS AT -50F
-- PLT NORMALIZED & COOLED IN

Universal Steel America	
Customer	
PO #	8-80185-05
Item #	5
PCS	
USA/SIO	5120438

NO WELD REPAIR WAS PERFORMED ON BELOW PLATE(S)

MFST - LIFT MAX 15 TON-SIZES & GRADES SEP UNLDG
STRADDLE CARRIER-MAGNET

CO# P16011 GH 375-0371C

PLATES HEAT TREATED - TEST SPECIMENS ATTACHED & YIELD STRENGTH @ .5% EUL

A032737	811C12420	2	.5	120	480	16336	52300	75600	8	26
				N 1650 DEG F	- 26 MIN					

Q-QUENCH TEMPERATURE	T-TEMPER TEMPERATURE	N-NORMALIZE TEMPERATURE
----------------------	----------------------	-------------------------

SERIAL NUMBER	PAT NO.	HEAT NUMBER	HARD. BHN	SEND	THICKNESS INCHES	TYPE	SIZE	DIR	TEST TEMP F	CHARPY IMPACT			LAT. EXP	MILS		
										ENERGY	FT	LBS		1	2	3
A032737		811C12420			.500	V FULL	L -50		127	117		93				

HEAT NUMBER	CHEMICAL ANALYSIS															MQUAID GRAIN SIZE
	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Ti	Al	B	Cb	N	Sn
811C12420	.16	1.04	.015	.006	.339	.243	.16	.05	.014	.001	.002	.040	.0002	.002	.007	.002
	CE															
	.37															

**8-0185
SHELL**

I certify that the above results are a true and correct copy of actual results contained in records maintained by ArcelorMittal Burns Harbor and are in full compliance with the requirements of the specification cited above. This test report cannot be altered and must be transmitted intact with any subsequent third party test reports, if required.

SHIP TRPT. TP

JAN-06-2009 08:03

SUPV. QUALITY ASSURANCE

94%

D. W. ELWOOD PER WNK

P.007

*OK'd
3-17-09*

ACRONI

JACQUET NO.

1 2 2 9 3

ACRONI, d.o.o.
 Cesta Bolisa Kidriča 44
 SI - 4270 Jesenice
 T: +386 4 884 10 00
 F: +386 4 884 11 11
 E: uprava@acroni.si
 W: http://www.acroni.si

Potrdilo o prevzemu 3.1 /
 Abnahmeprüfzeugnis 3.1 / Inspection

Certificate 3.1

BN 10704 3.1 Stran/Seite/Page 1/2

It./Nr./no. Datum/Creium/Date

31095900-2 3.12.2008

Narodilo/Bestellung/Order Dobavni list/Vorforscheln/Despatch N.

PCN1346 disp.28134 31095900 from 3.12.2008

Izdelok/Erzeugnis/Product Vrsta posla/M. Purpose

Blah B+VOD

Naročnik/Kunde/Customer

JACQUET HOUSTON INC
 WILLOWBROOK IND.PARK 6707
 TX77066 HOUSTON
 UNITED STATES

Znak izvedence TK

Znak preizvajalca

Specifikacije/Vorschriften/Specifications

ASTM A 240/A 240M/EN 10204, A578, A480

ASME SA 240 SBCT.II PART A/EN-01

ASME SA 480

ASM 5513 H

Tip/V.Nr./Type

316L/316

316L/316

Por./Finish/Finish

No.1

No.1

Kor./Int./Korros./Corrosion test

ASTM A262 PRACTICE OK

Obseg dobave / Umfang der Lieferung / Extent of mat. delivery

Pos./Pos./Item	Serijsko/Shield/No.	Si./Plate/Well/Plate	Teža/Gewicht/Weight	Dimenzije/Abmessungen/Dimensions	Št./Stück/No.	Št. v. Pk./No.
5	264218	93482	932	0.375x79x240	1	85317
7	265112	96141	3728	1.500x79x240	1	96141

Mehanske lastnosti/Mechanische Eigenschaften/Mechanical properties

Št./Vzorak Sample No.	Št./Vzorak Posil on	Nap. teženja Yield 0.2 KSI	Nap. teženja Yield 1% KSI	Nat. tlačnost Tensile KSI	Raztežak A5 % Elongatio n	Raztežak A50 % Elongatio n	Trdota Hardne ss Rockw ell H (HRC)	Zil.1 Impact FTLb	Zil.2 Impact FTLb	Zil.3 Impact FTLb	Temp. °F
85317	P	43.93	32.34	84.98	48.4	69.3	83	231	254	252	68
96141	P	37.40	45.38	82.21	53.6	80.4	81	257	265	259	68

8-0185
 LT RICHANN

si
 Slovenska Industrijska Jekla

ACRONI

ACRONI, d.o.o.

Cesta Bolisa Kidriča 44

SI - 4270 Jesenice

T: +386 4 884 10 00

F: +386 4 884 11 11

E: uprava@acroni.si

W: http://www.acroni.si

19/72

19/72
 12:23 FAX
 3-2209

 ArcelorMittal Maatschappij/ste: ArcelorMittal - Stainless Belgium NV/SA Koning Albert II-steen 35, 1080 Brussel, Belgium Correspondentieadres: ArcelorMittal Denk - Stainless Europe Svinnevlavweg 5, 2800 Genk, Belgium Tel. +32 (0)89 20 21 11		MILL. CERTIFICATE BS EN 10204/3.1 CERTIFICAT DE RECEPTION NF EN 10204/3.1 ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1 Approved acc. AD 2000-MechStahl W/RTD 100 by TÜV SÜD Industrie Service GmbH. Certified acc. PED 2002/EC Annex I § 4.3 by Certification Body 0036 of TÜV SÜD IndusService GmbH with certificate No. 3142007MLK. Renounced of counter signature agreed by TÜV SÜD (9/9/99).		N-Nr-N 2008K0059069																															
Manufacturer's works order number N° de la commande usine productrice Werksauftragsnummer 90A013215/02-69147/012/02 Packing list: 2008K838761 Product - Produit - Erzeugnis		Surveyor's mark Cachet de l'expert Stempel des Werkssachverständigen 		Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger JACQUET MID ATLANTIC INC 191 S. KEIM STREET 19464 DORTMUND PA USA																															
COILS, HOT ROLLED, ANNEALED AND PICKLED COILS, LAMINE A CHAUD, RECUEITS + DECAPE COILS, WARMHALZT, GEWURLT UND GERISTET		Recycling process Mode de fabrication de l'acier - Stahlherstellungsvorfahren Electric arc furnace-VOD/AOD-Continuous casting Four à arc-VOD/AOD-Castings continuus Elektro-Ofen-VOD/AOD-Strengmassanlage		Purchaser's order number N° de commande client Kundenbestellnummer 3267/786415																															
Steel designation Désignation de l'acier Stahlbezeichnung ASTM A 240 (A) - 08 TYPE 316L/316 ASTM A 240-97 TYPE 316L/316		Finish Présentation Auslieferung NO 1 NO 1		Customer article number N° article client Artikelnummer des Kunden 1050 C																															
Material Mercury Free - NO WELD REPAIRING ASTM A480/A480M-08A -- ASME SA 480-SA 480M-07		Any supplementary requirements Prescriptions supplémentaires - Zusätzliche Anforderungen UNS S 31603		Product delivery condition Etat de livraison du produit Lieferzustand Solution treated: Hypertemper: Lösungsgewaltgeglüht 1050 C																															
Identification of the product Identification du produit - Identifizierung des Erzeugnisses Coll. n. N° de bobine - Band Nr 83407810		Dimensions Dimensions - Abmessungen Thickness Epaisseur - Dicke 9.52 mm 0.3750 "		Number of pieces Nombre de pièces - Stückzahl 1																															
Heat n. N° de coulé - Schmelz Nr 834078		Width Largeur - Breite 2000.25 mm 78.750 "		Net weight Poids net - Netto Gewicht 8990 KG 19819 LBS																															
CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG																																			
Required-Exigé % min Anforderung % max		<table border="1"> <tr> <th>C</th> <th>Si</th> <th>Mn</th> <th>Ni</th> <th>Cr</th> <th>Mo</th> <th>Ti</th> <th>N</th> <th>S</th> <th>P</th> </tr> <tr> <td>0.030</td> <td>0.75</td> <td>2.00</td> <td>10.00</td> <td>16.00</td> <td>2.00</td> <td></td> <td>0.100</td> <td>0.030</td> <td>0.045</td> </tr> <tr> <td>0.022</td> <td>0.35</td> <td>1.20</td> <td>10.02</td> <td>16.70</td> <td>2.04</td> <td></td> <td>0.034</td> <td>0.006</td> <td>0.030</td> </tr> </table>				C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P	0.030	0.75	2.00	10.00	16.00	2.00		0.100	0.030	0.045	0.022	0.35	1.20	10.02	16.70	2.04		0.034	0.006	0.030
C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P																										
0.030	0.75	2.00	10.00	16.00	2.00		0.100	0.030	0.045																										
0.022	0.35	1.20	10.02	16.70	2.04		0.034	0.006	0.030																										
Cast Analysis Analyse coulée Analyse schmelze		<table border="1"> <tr> <th>C</th> <th>Si</th> <th>Mn</th> <th>Ni</th> <th>Cr</th> <th>Mo</th> <th>Ti</th> <th>N</th> <th>S</th> <th>P</th> </tr> <tr> <td>0.022</td> <td>0.35</td> <td>1.20</td> <td>10.02</td> <td>16.70</td> <td>2.04</td> <td></td> <td>0.034</td> <td>0.006</td> <td>0.030</td> </tr> </table>				C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P	0.022	0.35	1.20	10.02	16.70	2.04		0.034	0.006	0.030										
C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P																										
0.022	0.35	1.20	10.02	16.70	2.04		0.034	0.006	0.030																										
Tests to verify batch and quality have been carried out: OK Tests de vérification de la conformité de la nuance (marque): OK Verwerkingsproefing wurde durchgeführt: OK		Send test results are satisfactory EN ISO 7438 Les essais de pliage sont satisfaisants 100 Ergebnisse des Biegeversuchs entsprechen den Vorschriften																																	
MECHANICAL PROPERTIES - PROPRIETES MECANQUES - MECHANISCHE WERTE																																			
Location (1) Direction (2) Required Anforderung min max 1		Room temperature - Température ambiante - Raumtemperatur Yield strength Limite d'élasticité Dehnengrenze KSI 30 45 49 83 56 82																																	
Impact strength test Essai de résilience Karbschlagzähigkeitstest		Corrosion test Test de corrosion Korrosionstest ASTM A262 E - 02A (R2) OK																																	
Location of the sample (1) Emplacement du échantillon Lage des Probenbestimmung 1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte		The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen JACQUET NO. 12277																																	
Direction of the test pieces (2) Orientation des échantillons Probenrichtung T. Transverse - Trans - Quer L. Longitudinal - long - Längs		Organisation inspection Organisation et/ou service contrôle Überwachungsabteilung Quality Department 10/11/2008 S. HILLEN The Inspector Le responsable Der Werkssachverständige																																	

8.0185
N022 N3, N4
Repads

8.0185
PASSERBS

注文者 : KANEMATSU CORPORATION
 注文者照会番号 : TJB15 00005034
 契約番号 : 8-868-TH-5-1-BH02
 品名 : HOT ROLLED STAINLESS STEEL PLATES
 規格 : ASTM A240-05A TYPE316/316L/ASME SA-240
 文書番号 : TYPE316/316L-2005A

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 : JACQUET MID ATLANTIC INC.
 Customer

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, Otomachi, 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, Aza-maeda, Chuzumae, Yawatahigashi-Hu, Kitakyushu-City, 805-0058, Japan
 証明書番号 : 163
 発行年月日 : 2008-01-11
 頁 : 1

需要家管理番号 : E10 2
 Customer's Control No. : PO 2597 REV 1 3SSSRW 026 #

寸 法 Dimension mm	張数 Quantity	質量 Mass LBS KG	製鋼番号 Heat 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 %														
					引張力 YS MPa	引張強さ Y.S. Y-F	伸び EL %	伸び率 %	試験温度 Temp °C	試験速度 Rate mm/min	平均 Avg	個々値 Each	HBW 10/1500	C	Si	Mn	P	S	CU	Ni	Cr	Mo	Nb	V	Al	Fe	
														600 1372	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700	2100 4700
														N	TI												
				SPEC. MIN.	30	75	40							217	30	75	200	45	30	1000	1600	200					
				MAX.																1400	1800	300					
				MAX.														10									
			CUSTOMER'S	SPEC. MIN.	30	75	450							207	30	75	200	40	3075	1000	1600	200					
				MAX.		100														1400	1800	300					
				MAX.														10									
EN10204 3.1 0.375"X96"X240"	01	1	E77189 23358	685265-01TCH	46	85	600	A					156	12	43	83	28	6	0	129	1005	1610	209	3			
EN10204 3.1 0.375"X96"X240"	01	1	E77189 23358	685265-02TCH	46	85	600	A					156	12	43	83	28	6	9	129	1005	1610	209	3			
TOTAL	2	5009 2272																									
					SOLUTION HEAT TREATMENT... 1055C X 6MIN. WATER COOLED																						
					CORROSION TEST ASTM A262 PRACTICE C1 ACCEPTABLE																						
					VISUAL & DIMENSIONAL INSPECTION ACCEPTABLE																						
					NO WELD REPAIR / FREE OF MERCURY CONTAMINATION / MADE IN JAPAN																						
					ASTM A480-05/ASME SA480-05A, NACE MR0175-03, AMS5524J/5507F																						

注釈 Notes [1] Location-Orientation 位置・方向 T: 頂部 Top, B: 底部 Bottom, L: 圧延方向 Longitudinal, C: 直角方向 Transverse, Z: 板厚方向 Through Thickness, R: 45° 方向 45deg. to the Longitudinal Axis
 [2] G: L 標点距離 Gauge Length, A: 50mm 矩形試験片 Rectangular, B: 50mm 丸形試験片 Round, C: 70mm 矩形試験片 Rectangular, D: 70mm 丸形試験片 Round, E: 80mm 矩形試験片 Rectangular, F: 80mm 丸形試験片 Round, G: 200mm H: 2", I: 8", J: 5.65/So
 [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: 3.33mm, 5: 5.0mm, 6: 5.7mm, 7: 7.5mm, 8: 6.7mm, 9: 製品板厚 Plate Thickness [6] P: 製品分析 Product Analysis
 [7] N: 焼正 Normalized, Q: 焼入れ Quenched, T: 焼戻し Tempered, CR: Controlled Rolled, NIC: NIC Process, CLC: CLC Process
 SF: 断性破面率 Shear Fracture, CF: 脆性破面率 Crystallinity Fracture, LE: 横断出 Lateral Expansion, AGS: オーステンサイト粒度 Austenite Grain Size, FGS: フェライト粒度 Ferrite Grain Size, SR: Stress Relieved / Post Weld Heat Treatment
 上記注記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。

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

J. Tanaka

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



11416

11417

8-0185
 PASS RIB
 CHANN LUGS

2008
 3/23/08

SSAB

Test Certificate

Form TCI: Revision 1: Date 31 Oct 2000

13609 Industrial Road, Houston, TX 77015

Customer: UNIVERSAL STEEL AMERICA HOUSTO 1230 E. RICHEY ROAD HOUSTON TX 77073		Customer P.O. No.: P16714		MHI Order No.: 41-236852-02		Shipping Manifest: HT055146										
		Product Description: ASTM A516-70(06)/ASME SA516-70(07ED.) LCVN 15/12 FT.LBS. @-50F/A673-P				Ship Date: 20 Jan 09 Cert Date: 20 Jan 09		Cert No: 031090914 (Page 1 of 1)								
		NORMALIZED														
		Size: 0.500 X 96.00 X 475.0 (IN)														
Tested Pieces			Tensiles				Charpy Impact Tests									
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong %	Tst Dir	Average Hardness	Abs. Energy (FTLB)	% Shear	Tst Temp	Tst Dir	Tst Sk (mm)	BDWTT	
W8G814	B80	0.504 X 96.00 (DISCRT)	L	53000	74000		23	T		93 80 55 76.0		-60F	L	10.		
Chemical Analysis																
Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al	Cr	Ni	Cr	Mo	Cb	V	Ti	CEV	ORGN
W8G814	.19	1.15	.011	.002	.19	.024	.023	.24	.12	.08	.02	.002	.004	.014	.42	USA
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE CEV (IIW) = $C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$ MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL 100% MELTED AND MANUFACTURED IN THE U.S.A. NORMALIZED PLATES. HEATED AT 1650F FOR 23 MINUTES. W8G814 B80 6107578 PCES: 1, WGT: 6466																
Universal Steel America Customer: 2-80185-05 PO #: 617 Item #: 5100136 PCS: 1 USA S/O 8-0185 PAD DAVID BASEL R.B.S																
(U) Cust Part #: 70N.500 WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION Jason Thomas CHECKED BY																

3/17/09



Test Certificate

Form TCI: Revision 1: Date 31 Oct 2000

Customer: UNIVERSAL STEEL AMERICA HOUSTO 1230 E. RICHEY ROAD HOUSTON TX 77073			Customer P.O. No.: P12507			Mill Order No.: 41-177824-06			Shipping Manifest: AT036814A							
Product Description: ASTM A516-70(04)/ASME SA516-70(04ED.)			Ship Date: 02 May 07			Cert No.: 061082323			(Page 1 of 1)							
Size: 0.250 X 96.00 X 480.0 (IN)			Normalized													
Tested Pieces			Tensiles			Charpy Impact Tests										
Heat Id	Piece Id	Piece Dimensions	YS (PSI)	UTS (PSI)	%RA	Elong %	Red Tst	Average Hardness	Abs. Energy (FTLB)	% Shear	Tst Temp	Tst Dir	Tst Siz (mm)	BDWTT Temp %Shr		
E7D108	C06	0.247 X 96.00 (DISCRT)	54000	75000		27										
Chemical Analysis																
Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al	Ca	Ni	Cr	Mo	Ch	V	Ti	CEV	ORGN
E7D108	.18	.94	.012	.002	.25	.026	.022	.32	.14	.12	.04	.003	.006	.023	.41	USA
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE CEV (IIFW) $C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$ 100% MELTED AND MANUFACTURED IN THE USA. MFR DIN EN10204 TYPE 3.1 COMPLIANT. NORMALIZED PLATES. HEATED AT 1650F FOR 14 MINUTES. E7D108 C06 6023344 PCS: 1, WGT: 3250																
Universal Steel America Customer _____ PO # <u>280185-65</u> Item # <u>1.2</u> PCS <u>1.2</u> USA S/O <u>5120438</u> 8-2185 DAVIT Grd. Lus. UNIVERSAL STEEL AMERICA <u>Timothy Garcia</u> Garcia, Timothy Quality Assurance																
Cust Part # : 70N.250			WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION						Jason Thomas SENIOR METALLURGIST							

dkm
2-17-09

SSAB

Test Certificate

12400 Highway 43 North, Axis, Alabama 36505

Form TC1: Revision 1: Date 31 Oct 2000

Customer: UNIVERSAL STEEL AMERICA HOUSTO 1230 E. RICHEY ROAD HOUSTON TX 77073		Customer P.O. No.: P16009		Mill Order No.: 41-231196-08		Shipping Manifest: AR063202																	
Product Description: ASME SA516-70/SA516-65/SA516-60(7ED.) ASTM A516-70/A516-65/A516-60(06) LCVN 15/12 FT.LBS @ -60R/A673-P NORMALIZED				Ship Date: 10 Sep 08 Cert Date: 10 Sep 08		Cert No: 081155031 (Page 1 of 1)																	
Size: 1.000 X 120.0 X 480.0 (IN)																							
Tested Pieces			Tensiles			Charpy Impact Tests																	
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong %	Tst Dir	Average Hardness	Abs. Energy (FTLB)				% Shear				Tst Temp	Tst Dir	Tst Siz (mm)	BDWTT Temp	% Shr	
E8H340	C11	0.998 X 120.0 (DISCRT)	IL	49000	72000		28	T		79	87	88	84.7							-60F	L	10	
Chemical Analysis																							
Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	CEV	ORGN							
E8H340	.18	1.12	.011	.005	.21	.029	.026	.27	.11	.09	.03	.002	.004	.017	.42	USA							
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT CEV (IIW) = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15 100% MELTED AND MANUFACTURED IN THE USA. MTR DIN EN10204 TYPE 3.1 COMPLIANT. NORMALIZED PLATES. HEATED AT 1650F FOR 41 MINUTES. E8H340 C11 6099300 PCES: 1, WGT: 16399 E8H340 C11 6099300 PCES: 1, WGT: 16420																							
Universal Steel America Customer _____ PO # <u>2-80185-05</u> Item # <u>8</u> PCS <u>2</u> USA S/O <u>5120438</u> 8-20185 UNIT LIT+LUGS																							
Cust Part #: 70N1.000				WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION								Jason Thomas SENIOR METALLURGIST											

OK WEM
3-17-09



NORTH AMERICAN
STAINLESS

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 390678 07
Customer: 5417 001
Mail To:
JACQUET MID-ATLANTIC
191 SOUTH KEIM STREET
BLDG. 1C-2
POTTSTOWN, PA 19464

Ship To:
JACQUET MID-ATLANTIC
191 SOUTH KEIM STREET
BLDG. 1C-2
POTTSTOWN, PA 19464

Date: 3/19/2008 Page: 1

Steel: 316/316L

Finish: HRAP

Your Order: 3071

NAS Order: XN 0394636 07

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

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HOT ROLLED, ANNEALED AND PICKLED.
ASTMA240/07e1, 480/06b, 666/03, ASMESA240/04-A05, 480/04-A05, SA666/04
(X GRAIN), QQS766D-AX MG PERM, AMS5507F/AMS5524K X MRK,

REMARKS:

Mat'l Free of Mercury Contamination. No weld repairs.
EN 10204 3.1; QQS763F Cond A; RoHS Compliant

Product ID #	Coil #	Thickness	Width	Weight	Length	Mark	Pieces
033EB2 BB	* 033EB2 BB	.4960	49.2000	1,545 PLATE	216.00	9	1

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa)

Heat	CM	C	CO	CR	CU	MN	MO	N	NI	P	S	SI
3EB2	US	.0216	.2637	17.1298	.4980	1.7476	2.1784	.0300	10.2729	.0331	.0063	.7500

MECHANICAL PROPERTIES

Product ID #	Coil #	1 d	0 i	UTS	.2% YS	ELONG	Hard
		c r	RSI	RSI	%-2"	RB	
033EB2 BB	033EB2	F T	81.56	35.12	58.98	75.00	

JACQUET NO.

11337

8.0185
DAVIT

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

QC ENGINEER

ERIC HESS

3/19/2008

OK/PM
3.23.09



12400 Highway 43 North, Axis, Alabama 36505

Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

Customer: UNIVERSAL STEEL AMERICA HOUSTO 1230 E. RICHEY ROAD HOUSTON TX 77073		Customer P.O. No.: P13694		Mill Order No.: 41-202222-02		Shipping Manifest: AR047681										
Product Description: ASME SA516-70/SA516-65/SA516-60(04ED.) ASTM A516-70/A516-65/A516-60(06) LCVN 15/12 FT.LBS @ -60F/A673-P NORMALIZED				Ship Date: 06 Dec 07 Cert Date: 06 Dec 07		Cert No: 081112546 (Page 1 of 1)										
Size: 0.375 X 96.00 X 480.0 (IN)																
Tested Pieces			Tensiles			Charpy Impact Tests										
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in 8in Dir	Average Hardness	Abs. Energy (FTLB) 1 2 3 Avg	% Shear 1 2 3 Avg	Tst Tmp	Tst Dir	Tst Siz (sq in)	BDWTT Tst %Shr		
E7K243	A02	0.371 X 96.00 (DISCRT)	IG52000	74000			26 T		60 75 69 68.0		-60F	L	17.5			
Chemical Analysis																
Heat Id	C	Mn	P	S	Si	Tot Al	Sol Al	Ca	Ni	Cr	Mo	Co	V	Ti	CEV	ORGN
E7K243	.18	1.07	.010	.003	.20	.025	.022	.24	.12	.13	.02	.004	.006	.022	.41	USA
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT CEV (IIW) = $C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$ 100% MELTED AND MANUFACTURED IN THE USA. MTR DIN EN10204 TYPE 3.1 COMPLIANT. CHARPY FULL SIZE EQUIVALENT = ABSORBED ENERGY AVG X 10 / TEST SIZE IN MM WELD REPAIRING HAS NOT BEEN PERFORMED NORMALIZED PLATES. HEATED AT 1650F FOR 18 MINUTES. E7K243 A02 6054940 PCES: 1, WGT: 4895																
Universal Steel America Customer _____ PO # <u>280185-05</u> Item # <u>3</u> PCS <u>1</u> USA S/O <u>5120436</u> 8/01/85 MOZ NIA/B Repairs DAVIT INS Supt. WESLUSS LIFT LSS MP. B. K.T. UNIVERSAL STEEL AMERICA <u>Timothy Garcia 605.70</u> Garcia, Timothy Quality Assurance CE.-4142																
Cust Part #: 70N.375						WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION						Jason Thomas SENIOR METALLURGIST				

OK 12/17/09

SOLD CAIN STEEL & SUPPLY CO INC
PO BOX 1369
TO: TUSCALOOSA, AL 35403-1369

NUCOR
BAR MILL GROUP
NUCOR STEEL JACKSON, INC.

CERTIFIED MILL TEST REPORT

Page: 1

Ship Cain Steel & Supply Co Inc
2650 20Th St
TO: Tuscaloosa, AL 35401-0000

Ship from:

Nucor Steel Jackson, Inc.
3630 Fourth Street
Flowood, MS 39232
800-723-1623

Date: 24-May-2007
B.L. Number: 340599
Load Number: 70048

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

HEAT NUM.*	DESCRIPTION	PHYSICAL TESTS					CHEMICAL TESTS											
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	Si	Co	Cu	Sn
PO# => 402652901	36710 Nucor Steel - Texas 3x3/16" Eq Ang 40' A36/A529Gr50 ASTM A36/A36M-05 A529/A529M-05 ASTM A529/A529M-05 GR 50 ASTM A36/A36M-05	55,000 379MPa	78,500 541MPa	21.0%			.11 .14		1.00 .15		.008 .050		.035 .012		.22		.40	
PO# => 402854601	36710 Nucor Steel - Texas 3x3/16" Eq Ang 20' A36/A529Gr50 ASTM A36/A36M-05 A529/A529M-05 ASTM A529/A529M-05 GR 50 ASTM A36/A36M-05	58,900 406MPa	74,900 516MPa	21.0%			.10 .13		.97 .09		.008 .040		.046 .012		.20		.40	
PO# => JK0610620801	36710 Nucor Steel Jackson, Inc. 1/4x2-1/2" FL 20' A36 ASTM A36/A36M-05 ASTM A709/A709M-07 GR 36 ASME SA36-EDITION 2002	53,600 370MPa	70,400 485MPa	24.0%			.15 .10		.69 .11		.010 .027		.024 .001		.15 .001		.40	.33
PO# => JK0610722701	36710 Nucor Steel Jackson, Inc. 1x1/8" Eq Ang 20' A36 ASTM A36/A36M-05 ASTM A709/A709M-07 GR 36 ASME SA36-EDITION 2002	55,555 383MPa	76,495 527MPa	25.0%	OK	3.8%	.18 .17		.72 .20		.017 .033		.041 .002		.13 .002		.41	.38

80/85
Seal Strips

Nick Tepovich

QUALITY ASSURANCE: Nick Tepovich

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE WELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

Nucor Steel

5/24/2007 5:09:23 PM

PAGE

1/003

Fax Server

OK
5/24/2007

V&M DEUTSCHLAND GmbH Werk Rath-Slopfen Rather Kreuzweg 108 40472 Düsseldorf 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT 3.1 EN 10204:2004 No.: 63836RS08 Page: 1 / 5 Date: 19.07.2008
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MATERIAL TEST REPORT	
(A01) V&M DEUTSCHLAND GmbH	(A06.1) V&M-Order-No. 85189077 (A08.2) Suborder
(A06.1) Customer TUBULAR STEEL INC. 2700 HIGHWAY BOULEVARD USA KATY, TX 77494-1033	
(A06.2) Orderer VALLOUREC & MANNESMANN TUBES / CORPORATION	(A07.2) Order-No. 42-047784 Date 11.04.2008
(A06.3) Client's Client TUBULAR STEEL INC.	(A07.3) Order-No. 1153
(B01, B02, B04) Description of the product	HOT FINISHED SEAMLESS STEEL TUBES ENDS PLAIN, SQUARED TO TUBE AXIS WITHOUT CALIBRATION OF ENDS INSIDE WITHOUT RUST PROTECTION OUTSIDE DRY VARNISH STRAIGHTNESS ACC. TO API 5L DEVIATION FROM STRAIGHTNESS MAX. 0,024"/FOOT, TOTAL DEVIATION OF TUBE LENGTH MAX. 0,20 % TUBES LOOSE WITH CERTIFICATE: MERCHANDISE IS FREE OF MERCURY CONTAMINATION AND NO WELD REPAIR WAS PERFORMED TAG-NO 1153-9 ASTM A 106 - 08 ASTM A 530 - 04 A ASME SA 106, EDITION 2007 ASME SA 530, EDITION 2007 ASME BOILER AND PRESSURE VESSEL CODE, SECTION II, PART A, EDITION 2007 NACE MR 0175/ISO 15156-2:2003/COR.1:2005 / EN ISO 15156-2:2003, ANNEX A.2.1.2 TUBULAR STEEL SPECIFICATION TSI-C52, REV. A, DATED 02/17/03 WITH V&M COMMENTS, REV. 8 DATED 08/18/2008 GRADE B / GRADE C (ASTM A 106) / ASME SA 106) AS ROLLED PIPE ALSO MEETS THE REQUIREMENTS FOR API 5L, 43.EDITION, GRADE X52, PSL2, EXCEPT FOR MARKING AND NDE (WITHOUT API STAMP). AS PER NACE MR-01-75 EDITION 1997 MAXIMUM HARDNESS 22 HRC/237 HB, MAXIMUM NI CONTENT 1 % MAXIMUM COLD FORMING 5 % 8.0185 N022 N2 SP55

V&M DEUTSCHLAND GmbH Werk Rath-Stöple Ralher Kreuzweg 106 40472 Düsseldorf	(A01)		MATERIAL TEST REPORT 3.1 EN 10204:2004	(A02)
	VALLOUREC & MANNESMANN TUBES Vallourec Group		No.: 63836RS08 Page: 2 / 5 Date: 19.07.2008	(A03)

(A15) V&M Item	(A00) Cust. Item	(B14) Item text	(B04) Dimensions	(B10) Single length
9			O.D. 14 IN X WTH. 0,750 IN OUTSIDE DIAMETER TOLERANCE + 1,000 /- 1,000 % WALL THICKNESS TOLERANCE +12,500 /-12,500 %	IN RANDOM MILL LENGTH 35- 42 FT

(A15) V&M Item	(A00) Cust. Item	(B06) Quantity	(B11) Total length ft	(B19) Weight lbs
9		28	1.159,38	121.312

(C71)

HEAT CHEMICAL ANALYSIS

(B07.1) Heat	(D16) Process	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min	-	0.130	0.100	1.00	-	-	-	-	-	-	-
max	-	0.200	0.400	1.35	0.025	0.0100	0.080	0.350	0.300	0.400	0.150
227767	Oxygen (BOF)	0.150	0.250	1.28	0.011	0.0010	0.026	0.020	0.190	0.040	0.010

(B07.1) Heat	V %	Sn %	Ti %	Nb/Cb %	N %	B %	Ca %	CQ 03 %	EF 14 %	EF 02 %		
min	-	-	-	-	-	-	-	-	-	-	-	-
max	0.060	0.0200	0.050	0.040	0.0110	0.0005	9.9999	.44	1.0	0.15		
227767	0.060	0.0020	0.015	0.012	0.0067	0.0003	0.0018	.42	0.3	0.09		

CQ 03	CAE = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15
EF 14	EF = CR + MO + NI + CU + V
EF 02	EF = V + TI + NB

Heats fully killed

EF 3: CR + MO = MAX. 0.320%
 HEAT NO.: 227767
 LADLE ANALYSIS: 0.190%
 CHECK ANALYSIS: 0.175%
 CHECK ANALYSIS: 0.175%

(C72)

PRODUCT CHEMICAL ANALYSIS

drawn
3.12.09

V&M DEUTSCHLAND GmbH (A01) Werk Rath-Stopfen Rathen Kreuzweg 106 40472 Düsseldorf 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT (A02) 3.1 EN 10204:2004 No.: 63838RS08 (A03) Page: 3 / 5 Date: 19.07.2008
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(G72)

PRODUCT CHEMICAL ANALYSIS

(807.1) Heat	(C00.1) Test Piece	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min		0.130	0.100	1.00	-	-	-	-	-	-	-
max		0.200	0.400	1.35	0.025	0.0100	0.060	0.350	0.300	0.400	0.150
227767		0.157	0.255	1.28	0.011	0.0005	0.027	0.020	0.188	0.038	0.007
227767		0.154	0.255	1.27	0.011	0.0005	0.027	0.020	0.169	0.038	0.007

(807.1) Heat	(C00.1) Test Piece	V %	Sn %	Ti %	Nb/Cb %	N %	B %	Ca %	CQ 03 %	EF 14 %	EF 02 %
min		-	-	-	-	-	-	-	-	-	-
max		0.080	0.0200	0.050	0.040	0.0110	0.0005	9.9999	.44	1.0	0.15
227767		0.061	0.0010	0.014	0.007	0.0075	0.0001	0.0022	.42	0.3	0.08
227767		0.061	0.0010	0.014	0.007	0.0076	0.0001	0.0022	.42	0.3	0.08

CQ 03	$CAE = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15$
EF 14	$EF = CR + MO + NI + CU + V$
EF 02	$EF = V + TI + NB$

TENSILE TEST RESULTS

Type (C10.1)	TUBE STRIP TEST SPECIMEN
Test temperature (C03)	ROOM TEMPERATURE
Direction (C02)	transverse

(807.1) Heat	(C00.1) Test Piece	(C10) Dimension	(C11) YS	(C12) TS	(C13) Elong.	(C14.1) Ratio	(C15) Red Area				
		Inch	R _{p0.2} psi	R _m psi	2" %	R/R _m -	Z %				
min		-	52000	70000	12.0	-	-				
max		-	77000	110000	-	-	-				
227767	7501	01.50X00.71	53517	78753	43.3	0.68	70				

IMPACT TEST RESULTS

Type (C40)	Charpy-V
Test temperature (C03)	+ 32 DEGREES F
Direction (C02)	transverse

000000-0002500007

OK
3/2/08

V&M DEUTSCHLAND GmbH (A01) Werk Rath-Stöpfen Rather Kreuzweg 106 40472 Düsseldorf 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT (A02) 3.1 EN 10204:2004 No. : 63838RS08 (A03) Page: 4 / 5 Date: 19.07.2008
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IMPACT TEST RESULTS

(B07.1)	(C00.1)	(C41)	(C42.1)	(C42.1)	(C42.1)	(C43.3)					
Heat	Test Piece		Impact1	Impact2	Impact3	Mean					
		sq.in.	ft.lbs	ft.lbs	ft.lbs	ft.lbs					
min		-	15.0	15.0	15.0	20.0					
max		-	-	-	-	-					
227767	7501	0.124	39,8	34,6	79,6	51,3					

HARDNESS TEST RESULTS

Location (C01.1)											
OUTSIDE CONCERNING WALL											
(B07.1)	(C00.1)	(C31)	(C31)								
Heat	Test Piece	Value	Value								
		HB	HB								
min		137.0	137.0								
max		187.0	187.0								
227767	7501	172.0	172.0								

(D04)

OTHER TESTS ON PIPE

Test	Conditions	Test rate	Result
HEAT TREATMENT	NORMALIZED FINISH-ROLLED	>1562 DEGREES F/AIR	
HYDROSTATIC TEST	4730 PSI, HOLDING TIME 6 SEC.	EACH PIPE/TUBE	NO LEAKAGE
FLATTENING TEST			SATISFACTORY
APPEARANCE AND DIMENSIONS (D01)		EACH PIPE/TUBE	SATISFACTORY
MERCHANDISE IS FREE OF MERCURY CONTAMINATION AND NO WELD REPAIR WAS PERFORMED..			
GRAIN SIZE	ASTM E 112 TABLE 1: 5 - 8		

(A04, B08)

MARKING, IDENTIFICATION

	DIE STAMPED ON ONE SIDE ROUND NOSE TOOLS HEAT-NO. GERMANY DIE STAMP SURROUNDED WHITE PAINT STENCILED ON ONE SIDE V&M41 VALLOUREC & MANNESMANN TERMS OF DELIVERY A100/SA108 B / C HEAT-NO. TEST PRESSURE PSI 4730 14 X 0.75 OD 1% TUBE/PIPE LENGTH FT TUBE/PIPE WEIGHT LBS WA CUSTOMER ORDER-NO. 42-047794 P.O.-NO. 1153 TAG-NO 1153-9 TUBULAR STEEL PORT. OF HOUSTON PIPE NO. (TALLY-NR.)
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(Z01)

The supplied products are in compliance with the requirements of the order

000000-0000000007

V&M DEUTSCHLAND GmbH (A01) Werk Rath-Stopfen Rafter Kreuzweg 108 40472 Düsseldorf 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT (A02) 3.1 EN 10204:2004
		No. : 63838RS08 (A03) Page: 5 / 5 Date: 19.07.2008

(A05, Z02, Z03)

Date	19.07.2008
Validated by	Inspection Representative
	WARTEN <i>Warten</i>
☎	+49(0)2119603954
☎	+49(0)2119602216
@	CERTIFICATES-RS- PLUG@VMTUBES.DE
Stamp	

This testimonial and certification respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal prosecution.

V&M DEUTSCHLAND GmbH Werk Rath-Stopfen Rother Kreuzweg 105 D-40472 Düsseldorf-Rath	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT 3.1 EN 10204:2004
		No. : 56791RS08 Page. 1 / 5 Date: 06.02.2008

[A12] MATERIAL TEST REPORT	
(A01) V&M DEUTSCHLAND GmbH	(A08.1) V&M-Order-No. 85186396 (A09.2) Suborder
(A06.1) Customer TUBULAR STEEL INC. 2700 HIGHWAY BOULEVARD USA KATY, TX 77494-1033	
(A06.2) Orderer VALLOUREC & MANNESMANN TUBES / CORPORATION	(A07.2) Order-No. 42-047000 Date 27.11.2007
(A06.3) Client's Client TUBULAR STEEL INC.	(A07.3) Order-No. 3413
(B01, B02, B04) Description of the product	HOT FINISHED SEAMLESS STEEL TUBES ENDS PLAIN, SQUARED TO TUBE AXIS WITHOUT CALIBRATION OF ENDS INSIDE WITHOUT RUST PROTECTION OUTSIDE DRY VARNISH STRAIGHTNESS ACC. TO API 5L DEVIATION FROM STRAIGHTNESS MAX. 0,024"/FOOT, TOTAL DEVIATION OF TUBE LENGTH MAX. 0,20 % TUBES LOOSE WITH CERTIFICATE: MERCHANDISE IS FREE OF MERCURY CONTAMINATION AND NO WELD REPAIR WAS PERFORMED TAG-NO 3413-103 ASTM A 106 - 06 ASTM A 530 - 04 A ASME SA 106, EDITION 2007 ASME SA 530, EDITION 2007 ASME BOILER AND PRESSURE VESSEL CODE, SECTION II, PART A, EDITION 2007 NACE MR 0175/ISO 15166-2:2003/COR.1:2005 / EN ISO 15166-2:2003, ANNEX A.2.1.2 TUBULAR STEEL SPECIFICATION TSI-062, REV. A, DATED 02/17/03 WITH V&M COMMENTS, REV. 8 DATED 08/18/2006 GRADE B / GRADE C (ASTM A 106) / ASME SA 106) AS ROLLED PIPE ALSO MEETS THE REQUIREMENTS FOR API 5L, 43.EDITION, GRADE X52, PSL2, EXCEPT FOR MARKING AND NDE (WITHOUT API STAMP). AS PER NACE MR-01-75 EDITION 1997 MAXIMUM HARDNESS 22 HRC/237 HB, MAXIMUM NI CONTENT 1 % MAXIMUM COLD FORMING 5 %

8.0185
 M022 N1A
 M022 N1B
 SPBS

V&M DEUTSCHLAND GmbH Werk Rath-Stopfen Rather Kreuzweg 106 D-40472 Düsseldorf-Rath 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT 3.1 EN 10204:2004 No.: 65791RS08 Page: 2 / 5 Date: 06.02.2008
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(A13) V&M Item	(A09) Cust. Item	(B14) Item text	(B09) Dimensions	(B10) Single length
2			O.D. 12 3/4 IN X WTH. 0.688 IN OUTSIDE DIAMETER TOLERANCE + 1,000 / - 1,000 % WALLTHICKNESS TOLERANCE +12,500 / -12,500 %	IN RANDOM MILL LENGTH 39 - 46 FT

(A13) V&M Item	(A09) Cust. Item	(B08) Quantity	(B11) Total length ft	(B13) Weight lbs
2		30	1,361.94	120.638

(C71)

HEAT CHEMICAL ANALYSIS

(B07.1) Heat	(B16) Process	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min	-	0.130	0.100	1.00	-	-	-	-	-	-	-
max	-	0.200	0.400	1.35	0.025	0.0100	0.060	0.350	0.300	0.400	0.150
224784	Oxygen (BOF)	0.150	0.230	1.26	0.011	0.0020	0.034	0.030	0.170	0.040	0.020

(B07.1) Heat	V %	Sn %	Ti %	Nb/Cb %	N %	B %	Ca %	CQ 03 %	EF 14 %	EF 02 %		
min	-	-	-	-	-	-	-	-	-	-	-	-
max	0.080	0.0200	0.050	0.040	0.0110	0.0005	9.9999	.44	1.0	0.15		
224784	0.080	0.0040	0.018	0.014	0.0055	0.0003	0.0013	.41	0.3	0.09		

CQ 03	CAE = C + MN/S + (CR+MO+V)/6 + (NI+CU)/16
EF 14	EF = CR + MO + NI + CU + V
EF 02	EF = V + Ti + NB

Heats fully killed

EF:3 CR + MO = MAX.0.320%
 HEAT NO.: 224784
 LADLE ANALYSIS: 0.190%
 CHECK ANALYSIS: 0.173%
 CHECK ANALYSIS: 0.171%

(C72)

PRODUCT CHEMICAL ANALYSIS

ok
3/10/04

V&M DEUTSCHLAND GmbH Werk Rath-Stöpten Rather Kreuzweg 106 D-40472 Düsseldorf-Rath 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT 3.1 EN 10204:2004 No.: 55791RS08 Page: 3 / 5 Date: 06.02.2008
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(C79)

PRODUCT CHEMICAL ANALYSIS

(B07.1) Heat	(C00.1) Test Piece	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %	Mo %
min		0.130	0.100	1.00	-	-	-	-	-	-	-
max		0.200	0.400	1.35	0.025	0.0100	0.080	0.350	0.300	0.400	0.150
224784		0.153	0.239	1.27	0.010	0.0006	0.036	0.023	0.166	0.040	0.017
224784		0.148	0.238	1.28	0.010	0.0006	0.036	0.023	0.165	0.039	0.016

(B07.1) Heat	(C00.1) Test Piece	V %	Sn %	Ti %	Nb/Cb %	N %	B %	Ca %	CQ 03 %	EF 14 %	EF 02 %
min		-	-	-	-	-	-	-	-	-	-
max		0.080	0.0200	0.050	0.040	0.0110	0.0005	9.9999	.44	1.0	0.15
224784		0.062	0.0030	0.018	0.010	0.0084	0.0001	0.0014	.42	0.3	0.09
224784		0.062	0.0030	0.017	0.010	0.0067	0.0001	0.0016	.41	0.3	0.09

CQ 03 CAE = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/16

EF 14 EF = CR + MO + NI + CU + V

EF 02 EF = V + TI + NB

TENSILE TEST RESULTS

Type (C10.1)	FLAT TEST SPECIMEN
Test temperature (C03)	ROOM TEMPERATURE
Direction (C02)	transverse

(B07.1) Heat	(C00.1) Test Piece	(C10) Dimension	(C11) YS	(C12) TS	(C13) Elong.	(C14.1) Ratio	(C15) Red.Area				
		Inch	R _{0.2} psi	R _m psi	2" %	R/R _m %	Z %				
min		-	62000	70000	12.0	-	-				
max		-	77000	110000	-	-	-				
224784	9212	01.50X00.89	57578	80783	44.0	0.71	57				

IMPACT TEST RESULTS

Type (C40)	Charpy-V
Test temperature (C03)	+ 32 DEGREES F
Direction (C02)	transverse

0000046-00104000049

ek/cm
3/12/04

V&M DEUTSCHLAND GmbH
Werk Raitz-Stopfen
Raitz Kreuzweg 108
D-40472 Düsseldorf-Rath



V&M
VALLOUREC & MANNESMANN TUBES
Valloree Group

MATERIAL TEST REPORT
3.1 EN 10204:2004

No.: 55701RS08
Page: 4 / 5
Date: 06.02.2008

IMPACT TEST RESULTS

(B07.1) Heat	(C00.1) Test Piece	(C41) sq.in.	(C42.1) ft.lbs	(C42.1) ft.lbs	(C42.1) ft.lbs	(C43.3) ft.lbs					
min			15.0	15.0	15.0	20.0					
max											
224784	9212	0.124	39.0	21.3	15.4	25.3					

HARDNESS TEST RESULTS

OUTSIDE CONCERNING WALL

Location (C01.1)

(B07.1) Heat	(C00.1) Test Piece	(C31) Value	(C31) Value								
		HB	HB								
min		137.0	137.0								
max		187.0	187.0								
224784	9212	178.0	177.0								

(D54)

OTHER TESTS ON PIPE

Test	Conditions	Test rate	Result
HEAT TREATMENT	NORMALIZED FINISH-ROLLED	>1562 DEGREES F/AIR	
HYDROSTATIC TEST	4770 PSI, HOLDING TIME 5 SEC.	EACH PIPE/ TUBE	NO LEAKAGE
FLATTENING TEST			SATISFACTORY
APPEARANCE AND DIMENSIONS (D01)		EACH PIPE/ TUBE	SATISFACTORY
MERCHANDISE IS FREE OF MERCURY CONTAMINATION AND NO WELD REPAIR WAS PERFORMED.			

(A04, B06)

MARKING, IDENTIFICATION



DIE STAMPED ON ONE SIDE ROUND NOSE TOOLS HEAT-NO. GERMANY DIE
STAMP SURROUNDED WHITE PAINT STENGLED ON ONE SIDE V&M41
VALLOUREC & MANNESMANN TERMS OF DELIVERY A106/SA106 B / C
HEAT-NO. TEST PRESSURE PSI 4770 12 3/4 X 0.008 OD 1% TUBE/PIPE LENGTH
FT TUBE/PIPE WEIGHT LBS WA CUSTOMER ORDER-NO. 42-047000 P.O.-NO.
3413 TAG-NO 3413-103 TUBULAR STEEL PORT OF HOUSTON PIPE NO.
(TALLY-NR.)

(Z01)

The supplied products are in compliance with the requirements of the order

V&M DEUTSCHLAND GmbH (A01) Werk Rath-Stopfen Rath-Kreuzweg 108 D-40472 Düsseldorf-Rath 	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT (A02) 3.1 EN 10204:2004 No.: 55791RS08 (A03) Page: 5 / 5 Date: 06.02.2008
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(A06, Z02, Z03)

Date	06.02.2008
Validated by	Inspection Representative
	WARTEN 
	+49(0)2119603954
	+49(0)2119602216
	CERTIFICATES-RS- PLUG@VMTUBES.DE
Stamp	

This testimonial and certification respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal prosecution.

S-2044

S-2044

FELKER BROTHERS CORPORATION

ISO 9001 CERTIFIED

22 North Chestnut Avenue • Marshfield, Wisconsin 54449
Telephone (715) 384-3121 • Fax (715) 387-6837

MATERIAL TEST REPORT Inspection Certificate

See Additional Tests for Dual Certification

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AMERICAN STAINLESS & SUPPLY
815 STATE RD
CHERAW
SC 29520

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AMERICAN STAINLESS & SUPPLY
815 STATE ROAD
CHERAW
SC 29520

PAGE NO.	2
ORDER NO.	245213
CUST. PO. NO.	P1011004
DATE SHIPPED	9/05/08

LINE #	DESCRIPTION	HEAT NUMBER	CARBON	MANG.	PHOS.	SULFUR	SILICON	CHROMIUM	NICKEL	NITROGEN	MOLY	COPPER
23	PIPE A312-316L 4 SCH40S	270969	.023	1.35	.029	.011	.59	17.10	10.09	.03	2.05	.44
24	PIPE A312-316L 8 SCH40S	946641	.012	1.58	.042	.014	.45	16.43	10.22	.03	2.05	.44
25	PIPE A312-304L 18 SCH10S	980120	.023	1.22	.026	.001	.39	18.10	8.06	.03	.33	.40
26	PIPE A312-304L 20 SCH10S	705185	.023	1.39	.029	.004	.50	18.05	8.02	.05		
26	PIPE A312-304L 20 SCH10S	705171	.021	1.38	.029	.005	.42	18.09	8.01	.07		

LINE #	HARDNESS	WELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION TEST	ADDITIONAL TESTS
23	81 RB	39800	82000	2 57.0	ABCEFGHIKLMQRUV
24	81 RB	45400	87000	2 54.0	ABCEFGHIKLMQRUV
25	85 RB	43000	95000	2 54.0	ABCEFGHIJLQRUV
26	84 RB	47000	91000	2 54.0	ABCEFGHIJLQRUV
26	87 RB	41000	90000	2 58.0	ABCEFGHIJLQRUV

ASTM Specification Revision Levels

A778 = 01 A774 = 06
A312 = 07 A403 = 07
A269 = 07 A249 = 07

Felker Brothers Corp. does not use mercury in the production nor in the testing of its products.

It is certified that all figures are correct as contained in the records of the company.

Additional Tests:

- | | | |
|-------------------------------|--------------------------------|------------------------------------|
| A. Solution Annealed 1900°F | G. Etching (Weld) | M. Eddy Current - (Full Body) E426 |
| B. Tension Test | H. Dimensional | N. Flange Test |
| C. Bend Test/Rev. Bend Test | I. Visual | Q. Flattening/Rev. Flattening Test |
| D. Hydrostatic Test | J. 304/304L Dual Certification | P. SA403 |
| E. Pickle/Passivated A380 | K. 316/316L Dual Certification | Q. Corrosion - ASTM - A262 - Pass |
| F. Eddy Current - (Weld) E426 | L. ASTM A 312/ASME SA 312 | R. DIN 50049 3.1/EN 10204 3.1 |

- S. 100% Radiographic Exam SA/A312 SS
T. 100% Radiographic Exam
U. NACE MRO175
V. PED 97/23/EC Annex1, Para 4.3
Scott Martinek-Quality Manager

6" 80185
N022 N3, N4

10-27-08



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "type 3.1")

DATE: 10/16/08
TIME: 04:10:30
SERIAL NO: L0025971

MILL ORDER/ITEM NO DR44361 01		SHOPPERS NO. R77880		P.O. NUMBER 002570		VEHICLE ID NS192044																																																																																																
SOLD TO ADDRESS TUBULAR STEEL INC ATTN ACCTS PAYABLE 1031 EXECUTIVE PARKWAY DR SAINT LOUIS MO 63141-6351				MAIL TO ADDRESS TUBULAR STEEL INC ATTN ACCTS PAYABLE 1031 EXECUTIVE PARKWAY DR SAINT LOUIS MO 63141-6351																																																																																																		
				VENDOR USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055																																																																																																		
SPECIFICATION AND GRADE PIPE CARBON SMLS STD PIPE API 5L-43RD EDITION DATED 3/04 PSL-1 GRADE B ASTM A53-06A GRADE B ASME SA53-2007 EDITION GRADE B ASTM A106-06A GRADE B/C ASME SA106-2007 EDITION GRADE B/C BLK REG MILL COAT PR SC MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 +2003/COR.1:2005																																																																																																						
MATERIAL SPEC: AS ROLLED				O.D.: 4.500 (114.300)		WALL: 0.438 (11.125)																																																																																																
PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAGE WIDTH IN	YIELD STRENGTH PSI MIN: 40000 MAX: 47400	EXT. % -50	TENSILE STRENGTH PSI MIN: 70000 MAX: 82000	WT 0.58																																																																																															
A52148	STRIP/L/B	AR	1.500	47400	-50	82000	0.58																																																																																															
** END OF DATA THIS SHEET **																																																																																																						
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DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

okm
3.12.09



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
 (IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "Type 3.1")

DATE: 10/16/08
 TIME: 04:10:30
 SERIAL NO: L0025571

MILL ORDER ITEM NO DR44361 01		SHIPPER'S NO. R77880		P.O. NUMBER 002570		Q022512																																																							
MATERIAL COND: AS ROLLED		C.D. 4.500 (114.300)		WALL 0.438 (11.125)																																																									
PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	DR	TEST LOC	TEMP																																																						
A62148	OK																																																												
** END OF DATA THIS SHEET **																																																													
<table border="1"> <tr> <th colspan="4">CHARTER V-NOTCH IMPACT TESTING</th> <th colspan="4">% SHEAR</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>AVG</th> <th>1</th> <th>2</th> <th>3</th> <th>AVG</th> </tr> <tr> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> </tr> </table>								CHARTER V-NOTCH IMPACT TESTING				% SHEAR				1	2	3	AVG	1	2	3	AVG																																						
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THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: **J. MAJERZAK - MANAGER, Q.A.**

DATE: **10/16/08**

S2101

To: SOUTHERN HEAT EXCHANGER
BR. OR: 10-069800-3

INIT. : AT

12/11/2008 From: MARMON/KEYSTONE

CP.O. : 20-2101-01



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049 "type 3.1")

DATE: 12/03/08
TIME: 04:12:55
SERIAL NO: L0026957

MILL ORDER ITEM NO DR46414 02	SHIPPER NO. T72265	P.O. NUMBER 10-39145	VEHICLE ID FVD4140_OH
SOLD TO ADDRESS MARION KEYSTONE CORP 105 GOODRICH DRIVE BIRMINGHAM AL 35217-1465		MAIL TO ADDRESS MARION KEYSTONE CORP 105 GOODRICH DRIVE BIRMINGHAM AL 35217-1465	
VENDOR USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055			
SPECIFICATION AND GRADE PIPE CARBON SMLS STD PIPE API 5L 43RD EDITION DATED 3/04 PS11 GRADE B AND GRADE X42 ASTM A53-06A ASTM A106-06A GRADE B QUAD STENCIL ASME SA53-2007 EDITION ASME SA106-2007 EDITION GRADE B BLK REG MILK COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *:2003/COR.1:2005 AND MR0103-2007			
MATERIAL COND: AS ROLLED			
YIELD 3,500 (88,900) 295 530			
WALL: 0.300 (7.620)			
TENSILE			
PRODUCT IDENTIFICATION	TEST TYPE ORIENTATION	TEST COND.	GAUGE WIDTH IN
A61908	STRIP/L/B	AR	0.750
H46477	STRIP/L/B	AR	0.750
** END OF DATA THIS SHEET **			
LEGEND: L- LONGITUDINAL U- UPSET T- TRANSVERSE NM- NORMALIZED QT- QUENCH & TEMPERED SR- STRESS RELIEVED AR- AS ROLLED TR- THERMO-MECHANICAL ROLLED B- BODY W- WELD			
PRODUCT IDENTIFICATION	TYPE	C	EN
A61908	HEAT	19	108
A61908	PROD	18	109
A61908	PROD	18	108
H46477	HEAT	19	109
H46477	PROD	20	109
H46477	PROD	21	108
** END OF DATA THIS SHEET **			
*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CB=C+ (NN/6) + (CR+MO+V) /5+ (NI+CU) /15			

3" 82185
DAVIT

3" 2955
exam 12.18.08

Q.C. REVIEWED
DATE 12-9-08
INITIAL SD

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

TO: SOUTHERN HEAT EXCHANGER
BR. OR: 10-069800-3

INIT. :AT

12/11/2008 From: MARION/KEYSTONE

CP.O. :20-2101-01



UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(IN ACCORDANCE WITH ISO 10474/EN10204/DIN50649 "type 3.1")

DATE: 12/03/08
TIME: 04:12:55
SERIAL NO: L0026957

MILL ORDER/ITEM NO. DR46414 02		SHIPPER'S NO. T72265		P.O. NUMBER 10-39145		0023812					
MATERIAL COND. AS ROLLED		O.D. 3.500 (88.900)		WALL 0.300 (7.620)							
PRODUCT IDENTIFICATION A61908 R46477		FLAT OK OK	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING FT-LBS 1 2 3 AVG 1 2 3 AVG					
		** END OF DATA THIS SHEET **									
LEGEND		L - LONGITUDINAL		T - TRANSVERSE		B - BODY		W - WELD		HAZ - HEAT AFFECTED ZONE	
TEST / INSPECTION		YES		TESTING / INSPECTION INFORMATION		RESULTS / COMMENTS					
FULL LENGTH VISUAL		X		OD		OD/D		L		UT	
FULL LENGTH EMI				ID		OD/D		L		UT	
FULL LENGTH MPI				MPI		UT					
FULL LENGTH UT				MPI		UT					
END AREA INSPECTION (PLAIN END)				MPI		UT					
SPECIAL END AREA (SEA) INSP				MPI		UT					
FULL LENGTH DRIFT				DRIFT MANDREL SIZE:							
ADDITIONAL NOTES/COMMENTS											
MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT. PRODUCT WAS HOT ROLLED AND HOT FINISHED											

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PREPARED BY THE OFFICE OF: J. MAJERZAK - MANAGER, Q.A.

DATE 12/03/08

MILL TEST REPORT

TA CHEN INTERNATIONAL CORPORATION

This MTR contains 2 pages (Page: 1)

www.tachen.com

MTR#: SAPS7387 Customer#: MET741 PO#: 11541 SO#: AB8116
Item#: S166L020 Bundle#: P8784004 Heat#: 31169

MAR-22-2004 23:35

TOYOTA TSUSHO INC.

713 871 9105 P.16/17

MATERIAL CERTIFICATE

Date: 03/23/2004 No. 200451770W
SNPR55 02 EC502993Pennsylvania Extruded Tube Company
P.O. Box 1280, Scranton, PA 18501 PH. (570) 585-7777
Plant Location: 882 Griffin Pond Road, Clarke Summit, PA 18411
Sold To: 90 Ship To:
SMI EXTRUDED TUBE INC. TA CHEN INTERNATIONAL CORP.
CHICAGO, IL HOUSTON, TX
Customer Order No: 990598 Certification Date: 20040213
Pexco Order No: 958502/13

Work Order/Lot: 513033

Quantity: 15 Pcs. @ 339.5 FT.
POWL0390ASTM A312-01a, ASTM A376-02a, ASME SA-312, ASME SA-376
ASME SECTION II, 2001 Edition, 2003 Addenda, MIL-P-24691/3
NACE MR0175-98Hot Finished Seamless Pipe
Type TP316/TP316LSize: 2" SCH 160
Heat: 31169

Material Manufacturer: Pennsylvania Extruded Tube Co., USA

ANALYSIS %

	C	Si	Mn	P	S	Cr	Ni
Heat	.014	.38	1.72	.026	.008	17.15	11.10
Prod	.018	.37	1.70	.022	.010	17.10	11.35
Prod	.018	.38	1.75	.027	.010	17.17	11.27

	Mo	Co	Cu	N
Heat	2.14	.055	.34	.084
Prod	2.14	.055	.34	.091
Prod	2.19			

Mechanical Tests:

Yield Strength				Tensile Strength		Elongation in %				Reduction Of Area	
0.2%	1.0%					E2"	E10"	E4d	E5d	%	%
psi	MPa	psi	MPa	psi	MPa						
38900	269.3	N/A		88900	613.1	54	N/A	N/A	N/A	N/A	N/A

Hardness Test Results: 77HRB, 79HRB

Hydrostatic Test (psi): 5440

Hydro Test IAW ASTM A530 and meets MIL-P-11440 pressures,
(minimum 5 second hold-time): 5440

Tensile Test sample width (1=Full-Size 2=1/2" Strip): 2

Flattening Test per MIL-P-24691/3 (meets A999), No. samples: 8

Result: Acceptable

Corrosion Test per ASTM A262 Practice E, MIL-P-24691/3,
and MIL-P-11440, No. Samples: 2 Result: Acceptable
Country Of Origin: United States

Color-coding as agreed upon with customer (fax 3-26-02).

Hardness test meets NACE MR0175 requirements.

Heat number is traceable to the original melt.

In addition to Specifications shown, Hydrostatic Test
pressures meet MIL-P-11440.The grade 304L and 316L are not covered by ASTM A376 or ASME
SA376 specifications. Therefore, these specifications do
not apply to these grades.

All material subjected to a solution annealing heat

<https://www.nafta.smt.sandvik.com/smttemp/1080071869515.html>

3/23/2004

2-80185-10

BOLTEX ELECTRONIC MATERIAL TEST REPORT**REPORT FOR HEAT CODE: B4R**

Material Spec:	SA105-05
Item Number:	19743
Description:	14" 300 RF WN SCH 80
Part Number:	1-2140081

Chemical		Mechanical	
C	.2	Hardness - BHN	157
Si	.3	Charpy	
Mn	.85	Ft-Lb	
P	.014	MLE - %	
S	.001	Shear Fracture - %	
Cr	.09	Test Temperature	
Al	0	Tensile - psi	79190
Cu	.27	Yield - psi	43801
Ni	.14	Elongation - %	27.8
Mo	.06	Area Reduction - %	44.1
V	.003		
Cb	.002		
Carbon Equivalence	.3996		

We certify our flanges are capable of passing a hydrostatic test compatible with their rating and all test results and process information contained herein are correct and true as contained in company records. All flanges meet NACE MRO-175 and/or MRO-103 Latest Revision.

Our quality system has been registered by ABS to ISO 9001, certification no.: 30696. Test results comply with: EN 10204-3.1. Our flanges satisfy the material requirements for PED 97/23/EC annex 1-4.3.

Notwithstanding the absence of a signature, the organization submitting either a printed certificate or an EDI transmitted certificates is responsible for content of the report. (ASTM/A 961-04a Section 19.4)

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80185
N22 N2

ok/pm
4.2.09

BOLTEX ELECTRONIC MATERIAL TEST REPORT

REPORT FOR HEAT CODE: X6J

Material Spec:	SA105-05
Item Number:	19272
Description:	12" 300 RF WN SCH 80
Part Number:	1-2120081

Chemical		Mechanical	
C	.18	Hardness - BHN	155
Si	.3	Charpy	
Mn	1.2	Ft-Lb	
P	.02	MLE - %	
S	.016	Shear Fracture -%	
Cr	.05	Test Temperature	
Al	.027	Tensile - psi	74820
Cu	.22	Yield - psi	52780
Ni	.09	Elongation - %	27
Mo	.02	Area Reduction - %	49.31
V	.001		
Cb	.002		
Carbon Equivalence	.4149		

We certify our flanges are capable of passing a hydrostatic test compatible with their rating and all test results and process information contained herein are correct and true as contained in company records. All flanges meet NACE MRO-175 and/or MRO-103 Latest Revision.

Our quality system has been registered by ABS to ISO 9001, certification no.: 30696. Test results comply with: EN 10204-3.1. Our flanges satisfy the material requirements for PED 97/23/EC annex 1-4.3.

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80185
NACE N1A, N1B



2-80185-09

INSPECTION CERTIFICATE & MILL TEST REPORT - EN 10204 3.1

VIRAJ
Forgings
(A Division of Viraj Profiles Ltd.)

CUSTOMER : M/S: SOUTHWEST STAINLESS 1350 LINDBERGH BEAUMONT, TX 77707	MANUFACTURER'S SYMBOL	MTR NO.	FRG/27028-0
		DATE	30.11.2008
		MATERIAL SPECIFICATION	ASTM A182/A182M-07
		GRADE	ASME SA182/SA182M-07
		DIMENSIONAL SPECIFICATION	F316/316L
		MATERIAL CONFORMS TO NACE MR0103-2005	
ORDER NO.: 325167 / BEAUMONT		STAINLESS STEEL FORGED FLANGES	

CHEMICAL ANALYSIS														
SL NO	ITEM DESCRIPTION	HEAT NO	QTY	%C	%Mn	%Si	%S	%P	%Cr	%Ni	%Mo	NO PPM		
1	4" WNRF S403	1508	78988	25	0.022	1.71	0.41	0.018	0.039	16.50	10.00	2.03	600	
2	4" WNRF S80S	3008	78988	5	0.022	1.71	0.41	0.018	0.039	16.50	10.00	2.03	600	
3	4" WNRF S40S	3008	78988	10	0.022	1.71	0.41	0.018	0.039	16.50	10.00	2.03	600	
4	6" WNRF S40S	3008	16276	10	0.020	1.77	0.42	0.019	0.034	16.54	10.06	2.03	780	
5	6" WNRF S40S	1508	78811	25	0.025	1.70	0.45	0.010	0.034	16.70	10.10	2.02	750	
6	8" WNRF S40S	1508	78833	10	0.028	1.76	0.84	0.014	0.041	16.85	10.10	2.03	750	
7	8" WNRF S40S	3008	78356	25	0.023	1.88	0.40	0.015	0.040	16.75	10.10	2.00	780	
8	10" WNRF S40S	1508	78820	10	0.028	1.70	0.48	0.024	0.038	16.85	10.05	2.01	835	
9	12" WNRF S40S	1508	16061	5	0.022	1.42	0.45	0.027	0.036	16.37	10.01	2.03	540	

MECHANICAL PROPERTIES										IMPACT TEST			
HEAT NO	ITEM DESCRIPTION	TENSILE STRENGTH (N/mm ²)	YIELD STRENGTH (N/mm ²)	ELONGATION % (50mm)	REDUCTION OF AREA %	CHARPY VANTON AT RT (Joules)				HARDNESS (HRC)			
78988	4" WNRF S40S	521.42	257.26	53.60	74.17	1	2	3	AVG	1	2	3	AVG
78988	4" WNRF S80S	521.42	257.26	53.60	74.17	-	-	-	-	-	-	-	-
78988	4" WNRF S40S	521.42	257.26	53.60	74.17	-	-	-	-	-	-	-	-
16276	6" WNRF S40S	519.82	232.80	48.20	70.16	-	-	-	-	-	-	-	-
78811	6" WNRF S40S	579.21	288.85	57.00	73.16	-	-	-	-	-	-	-	-
78833	8" WNRF S40S	616.47	286.48	53.00	69.04	-	-	-	-	-	-	-	-
78356	8" WNRF S40S	688.57	290.95	60.10	66.28	-	-	-	-	-	-	-	-
78820	10" WNRF S40S	666.29	262.25	56.80	71.45	-	-	-	-	-	-	-	-
16061	12" WNRF S40S	626.96	296.63	49.00	69.19	-	-	-	-	-	-	-	-

MELTING PROCESS : INDUCTION / AOD (RHS) / CONCAST
HEAT TREATMENT : SOLUTION ANNEALED AT 1050°C AND WATER QUENCHED
DIMENSIONAL INSPECTION : CONFORM WITH THE SPECIFICATION (100% INSPECTED)
SURFACE INSPECTION : SATISFACTORY
PQR : NO OBJECTION (100% TESTED WITH MOBILE SPECTRO)
MICRO OBSERVATION : NO CARBIDE PRECIPITATION OBSERVED ON GRAIN BOUNDARIES
RADIOACTIVITY TEST : ALL THE ABOVE MATERIAL IS TESTED FOR RADIOACTIVITY AND FOUND WITH IN THE LIMIT OF BACKGROUND RADIATION
WE CERTIFY THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE ORDER CONTRACT AND IS OF INDIAN ORIGIN

80185
NO22 N3, N4

WORKS INSPECTOR

E : 10, Imperial Chambers, 1st Floor, Wilson Road, Ballard Estate, Mumbai - 400 038, INDIA Tel. : (+91-22) 2261 4327, 2261 4284, 2265 7678, 2261 3056 Fax : 91-22-2261 2980 / 2265 9713
FACTORY : 140/75 MIDC Tarapur Industrial Area, Dist. Thane, Maharashtra - 401 506, INDIA. Tel. : (+912525) 279021-24, Fax : (+91-2525) 274444, E-MAIL : vrlqo@viraj.com

OK PM
3.12.08

PENNSYLVANIA MACHINE WORKS, INC.
201 BETHEL AVENUE
ASTON, PENNSYLVANIA 19014
(610) 497-3300 - FAX (610) 497-3325
www.pennusa.com

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MACHINE
Since 1931



TEXAS PMW, INC.
315 NORTH WAYSIDE DRIVE
HOUSTON, TEXAS 77020
(713) 679-7900 - FAX (713) 678-7920
www.pennusa.com

MILL TEST REPORT

AMERICAN PIPE & SUPPLY CO
P.O. BOX 12751
AD# 1000006
BIRMINGHAM, AL 35202

P.O. P1079046
ORDER # 03 164714
3/04/09

3/4

6MTD CPLT 316L

QTY: 2

HEAT CODE: 9Y9T
SPECIFICATION: A182
HEAT TREATMENT: SOLUTION ANNEALED
UNS NUMBER: S31603

MATERIAL: F316/316L

SPEC. YEAR: 98

SPEC. REV: A

	ACTUAL MEASUREMENT	SPECIFICATION MIN % MAX %
C	.019	.030
MN	1.460	2.000
P	.030	.040
S	.024	.030
SI	.670	1.000
NI	10.220	14.000
CR	16.700	18.000
MO	2.050	3.000
CU	.420	.750
N	.060	.100
CO	.230	.500
YIELD (PSI)	37092	
TENSILE (PSI)	83133	30000
ELONGATION (%)	55.000	75000
RED. OF AREA (%)	77.000	45.000
HARDNESS (HB)	164	50.000
GRAIN	6.00	237
		.00

SOLUTION ANNEALED

ACTUAL
MEASUREMENT
1950 F

SPECIFICATION
MINIMUM MAXIMUM
1900 F

MATERIAL I/A/W ASME-SEC.II SA SPECIFICATION-CERTIFICATE I/A/W EN10204 TYPE 3.1
MATERIAL MEETS NACE-MRO175-2003
MATERIAL IS CAPABLE OF PASSING A CORROSION TEST TO ASTM-A262 PRACTICE "E"
MATERIAL MEETS NACE-MRO103-2007
MERCURY FREE MATERIAL - NO WELD REPAIRED MATERIAL - MADE IN THE U.S.A.

WE HEREBY CERTIFY THAT THE REPORTED FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

James B. Friant
JAMES B. FRIANT
QUALITY MANAGER

MANUFACTURERS OF **Penn FORGED** PIPE FITTINGS
QUALITY • SERVICE • PARTNERSHIP



80185
NOZZ N5, N6

OK PMW
3-18-09



7311 Galveston Rd #800
Houston, Texas, 77034
Ph. 713-947-0120
Fax 713-943-8719
www.jjmfg.com

Certified Material Test Report

Customer

Ship To

Sale Information:

Sales Order #	Cust. PO #	WO#
759750	422522	23786

Specification Notes:

Name	Grade	Revision	Description
ASTM/ASME A/SA479/A 479M-05a A/SA182-05; B16.11-05	S31600/531603 (F316/316L)		Stainless Steel Bars

Product Information:

Item #	Product Code	Description	Starting Material	Heat #	Heat Code	Qty
1	RH3MTD.75X3	3/4" X 3" 3M 316/L THRD ROUND HEAD PLUG	1 1/16" 316/L ROUND BAR	13657		1

Chemical Information:

Item #	C	Mn	P	S	Si	Cr	Ni	Mo
Min						16	10	2
Max	0.03	2	0.045	0.03	1	18	14	3
1	.019	1.44	.037	.021	.40	16.14	10.08	2.05

Physical Information:

Item #	Tensile (psi)	Yield (psi)	% Elongation	% Red of Area	Anneal temp F	Hardness (Brinell)
Min	75000	30000	30	50	1900	
Max						
1	106000	69000	46.0	70.0	1922	198

Additional Notes:

Chemical Information Notes:

Physical Information Notes:
1. NACE MR0175; A262/E

We certify that all chemical, mechanical, test results and statements of performed operations recorded herein are according to the records of J&J Inc. Materials herein stated are in compliance with all specifications listed above. EN 10204 3.1.8 - EN ISO 9001:2000
Material free from Mercury contamination when shipped.
No weld repair to seamless products.

M Reeves

QUALITY CONTROL Q.A. DEPARTMENT

Revision Mar-06-2009

MTR Certificate Produced By MTRCreator.
Trace Applications Inc. www.TraceApps.com toll-free: 1.866.429.7007

OK 10/11
2-18-09



HIGHLAND THREADS, INC.

Manufacturer of Industrial Fasteners

11700 GLOGER HOUSTON, TEXAS 77039
(281) 986-5100 • FAX (281) 986-5151

2-80185-12

P.O.# 80185-12

Certification Material Test Report

MAGNOLIA BOLT
8500 FOWLER AVENUE
PENSACOLA, FL 32534

DATE: 11/18/08
CUST. P.O.#: 2979
ORDER #: 1244776
CERT #: 0001492964
LOT#: BKAG
HEAT#: 071-02599

Items:

1 3/4-10 X 144" A193 B7 AT RODS (50 PCS)

Chemical	Actual	Min	Max	Physical	Actual	Min	Max
C	0.3900	0.3700	0.4900	E %	17.00	16.00	
Cr	0.9800	0.7500	1.2000	R/A %	55.00	50.00	
Mn	0.8500	0.6500	1.1000	HARDNESS RC	29.50		35.00
Mo	0.1900	0.1500	0.2500	TENSILE	138000	125000	
P	0.0140		0.0350	YIELD	122000	105000	
S	0.0060		0.0400				
Si	0.2600	0.1500	0.3500				

Certification Comments:

MIN. TEMPERING TEMP. 1100 DEG. F.

Specification Comments:

ASTM A193-96a

TEMPERED @ MIN. 1100 deg F

E 381 MACRO ETCH - GOOD

(3/4x6 B7 STD)

80185
STUDS/NUTS
3PSS

The Physical and Chemical Properties Reported
Herewith are contained in the Records of

HIGHLAND THREADS, INC.

Shirley Keller
HIGHLAND THREADS, INC.
Authorized Official

okpm
8-17-08

P.O.# 2-80185-12

INSPECTION CERTIFICATE

QS 9000 / ISO 9001



KAB



MANUFACTURE OF NUTS & AUTO PARTS

SAMJIN JEONGGONG, CO., LTD

CERTIFICATE No	080328-02	DESCRIPTION	GR 2H HVY HEX NUTS	COUNTRY OF ORIGIN	KOREA
BUYER	AMSAK	QUANTITY	63,000PCS	MATERIAL	AISI1045
INVOICE No	IN08-0308	TESTING SAMPLE Q'TY	5PCS	HEAT No	JU2873
P.O. No	9937	DATE OF ISSUE	28-Mar-08	MFG DATE	21-Feb-08
SPECIFICATION	ASTM A194/A 194M-04a				

1. CHEMICAL COMPOSITION REQUIREMENTS

SIZE	C	Si	Mn	P	S	Ni	Cr	Cu
(mm)	x100			x1000		x100		
25.0	43	20	67	16	15	6	10	17

2. MECHANICAL REQUIREMENTS

1) MATERIAL	SIZE	Tensile stress	Yield point	Elongation	Reduction of area
		Kgf/mm ²		(%)	
Requirement					

2)PRODUCTS	SIZE	Sample No.	Proof Load (KN)	Hardness Test		Tempering Temperature
				Sample nuts after heat-treatment 640℃/24h	Completed nuts	
	3/4-10	1	Pass	HRB 98	HRC 30	510℃
		2	Pass	HRB 99	HRC 31	
		3	Pass	HRB 98	HRC 30	
		4	Pass	HRB 97	HRC 29	
		5	Pass	HRB 98	HRC 30	
Requirement		min 260	HRB min 89	HRC 24~35	min 455℃	

REMARK	1. Hardness tested q'ty	: 6,300Pcs
	2. Macroetch test	: OK

Jong Hoa Park

Chief of Quality Control Dept

We hereby verify that the outcomes test, conducted in accordance ASTM A194 GR 2H specifications, true and correct in every aspects and details.

OK
2-17-08



HIGHLAND THREADS, INC.

Manufacturer of Industrial Fasteners

11700 GLOGER HOUSTON, TEXAS 77039

(281) 986-5100 FAX (281) 986-5151

2-80185-12

Certification Material Test Report

PENSACOLA BOLT INC.
8500 FOWLER AVENUE
PENSACOLA, FL 32534

DATE: 04/28/08
CUST. P.O.#: 21129
ORDER #: 234389
CERT #: 0000468714
LOT#: BGIH
HEAT#: 6605120120

Items:

- 1 B7S.750103.50 3/4-10X3-1/2 B7 AT STUD
- 2 B7S.750103.75 3/4-10X3-3/4 B7 AT STUD
- 3 B7S.750104.00 3/4-10X4 B7 AT STUD
- 4 B7S.750104.25 3/4-10X4-1/4 B7 AT STUD
- 5 B7S.750104.75 3/4-10X4-3/4 B7 AT STUD
- 6 B7S.750105.25 3/4-10X5-1/4 B7 AT STUD
- 7 B7S.750105.50 3/4-10X5-1/2 B7 AT STUD ✓

Chemical	Actual	Min	Max	Physical	Actual	Min	Max
C	0.4200	0.3700	0.4900	E %	18.00	16.00	
Cr	0.9100	0.7500	1.2000	R/A %	53.00	50.00	
Mn	0.7900	0.6500	1.1000	HARDNESS RC	30.00		35.00
Mo	0.1700	0.1500	0.2500	TENSILE	135000	125000	
P	0.0100		0.0350	YIELD	122000	105000	
S	0.0080		0.0400				
Si	0.2200	0.1500	0.3500				

Certification Comments:

MIN. TEMPERING TEMP. 1100 DEG. F.

Specification Comments:

ASTM A193-96a

TEMPERED @ MIN. 1100 deg F

E 381 MACRO ETCH - GOOD

The Physical and Chemical Properties Reported
Herewith are contained in the Records of

HIGHLAND THREADS, INC.

Stacey Kelley
HIGHLAND THREADS, INC.
Authorized Official

ok pm
3-17-08