



SERIAL NUMBER: N-272
N-273 COOK DATE: 9/18/18

MOLD SIZE _____ BY _____

ORDER DATE 07SEP18 SHIP DATE: 21SEP18 PO NKIWI30837

SIZE 2.28 x 1.78 TYPE SXDS FOR SLB

THREAD 1 1/2 MT Pin OTHER 2.25 x 1.78 WP 24" Swallow

NOTES _____

MATRIX (H) _____ WEIGHT _____

MATRIX (S) 2022 WEIGHT _____

BINDER 23679 WEIGHT _____

BLANK MM14104218 TJ 173718

BILLET _____ TUBE 58457

WELD BY JM MPI BY AH MPI PIC AH

THREAD GAGE _____ STAND OFF .370/.370

FINAL DIAMOND GRIND SIZE 2.28 x 1.78

LENGTH TO WELD _____

FINISHED PIC TAKEN BY AH SHIPPED BY AH DATE: _____

SHORT BIT & TOOL CO
225 GOLD STREET
GARLAND TX 75042
972-205-1011
main@shortbits.com



Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
N-272, N-273	2.28 x 1.78	SXDS	Steel		
Component	Material	Vender	Lot or Heat Number		
Blank	8620 Steel	RHW	MM14104218		
Hard Powder					
Soft Capping Powder	W2	HWP	2022		
Tool Joint	4130 Steel	MERCER	173718		
MIG Weld					
WP Tube	N-80Q		584157		
Inspection					
Diamond Grinding To Size					
Weld MPI					
Thread Gaging		1 1/2 MT Pin			
Signed By: <i>P. Beegs</i>			date: <i>9/24/2018</i>		

Document Number:	F-Q-018
Revision:	Orig.
Date of Origin:	8/12/2012
Manual:	P-Q-001
Page:	PAGE 1 OF 1
Title:	MATERIAL PROPERTIES CERTIFICATION



CUSTOMER:	SHORT BITS
CUSTOMER PO#:	6000959
ITEM ID:	PWCTPM002
ITEM DESCRIPTION	CTPM CRYSTALLINE W 80 X 325 MESH
ITEM LOT #	MPW2022
DATE	7/13/18
WEIGHT	100.0 LB.

**CHEMICAL COMPOSITION
(Weight Percent)**

Element	Minimum	Maximum	RESULT
Tungsten (T)			99.90

**PRODUCT SIZING
(Weight Percent)**

Sieve	Minimum	Maximum	RESULT
(U.S. Standard Mesh per ASTM B214)			
+80	-	5.0	0.9
-80 + 325	-	-	98.4
-325	-	10.00	0.6

PHYSICAL PROPERTIES

Testing Procedure	Minimum	Maximum	RESULT
Apparent Density ASTM B212 (g/cc)	7.2	8.1	7.7
Tap Density ASTM B527 (g/cc)	9.2	10.4	10.4
Hall Flow Rate ASTM B213 (sec/50g)		Must Flow	11.5
			-
			-



330 Belmont Avenue, Brooklyn, NY 11207-4000 U.S.A
tel:+1.718.342.4900 fax:+1.718.342.0175

Certificate of Analysis

July 27, 2018

To: Short Bits & Tool
225 Gold Street
Garland, TX 750426648 USA

Customer Order No: Phone/Vicki

Customer ID: SHORTC

Sales Order No: 31363

Material: 4483D

BELMONT *Virgin Grade Binder Alloy*

Shape: 1/2" x 1/2" x 3/4" Tumbled Sheared Pcs.

Packaging: 250 Lb. Drums

Lot: 23679

Copper (Cu)	47.68
Manganese (Mn)	23.60
Nickel (Ni)	20.06
Zinc (Zn)	8.18
Boron (B)	0.19
Iron (Fe)	0.07
Silicon (Si)	0.17
Lead (Pb)	< 0.05
Tin (Sn)	< 0.05

BELMONT METALS, INC.

Nasir Naseer

QC Administrat

BELMONT



METALS

Sold To:

Ship To:

Customer P.O.	69334	Sales Order	131840.12
Product Group	Special Bar Quality	Part Number	30003000240MTS0
Grade	8620HLA; 8620/8622H; MECH PROP REPORT	Lot #	MM1410421806
Size	3" (3.0000) Round	Heat #	MM14104218
Product	3" (3.0000) Round 20' 8620-C2R7	B.L. Number	G1-266681
Description	8620-C2R7	Load Number	G1-144046
Customer Spec		Customer Part #	8620-3

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.

Roll Date: 9/9/2014 Melt Date: 7/30/2014 Qty Shipped LBS: 26,835

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Al	B
0.21%	0.82%	0.010%	0.020%	0.23%	0.18%	0.42%	0.53%	0.20%	0.005%	0.024%	0.0003%
Sn	Ti	Cb	Co	Ca	Pb	As	Bi	Sb	H		
0.006%	0.0019%	0.005%	0.0067%	0.0010%	0.0000%	0.005%	0.0000%	0.0017%	1.5 ppm		

Austenitic fine grain by chemical analysis per the latest revision of ASTM A29

DI value: 2.09

Simulated Hardenability Band

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32
45	45	42	36	30	26	25	24	23	22		20		19		18	18	17		16		15		14

Brinell Converted Mid-Radius: 174.0bhn

Brinell Converted Surface: 174.0bhn

Brinell: 174.000bhn

Tensile 1: 94,800psi (654MPa)

Yield 1: 58,600psi (404MPa)

Elongation: 20.4% in 2"(% in 50.8mm)

Reduction of Area: 36.38%

Grain Size per ASTM E112 = 7

Reduction Ratio 20.3 : 1

ASTM E381

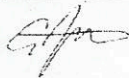
Surface: 1 Mid Radius: 1 Center: 1

ASTM E45 Method A (Worst)

Sulfides: T: 1.0 H: 1.0 Alumina: T: 0.0 H: 0.0 Silicates: T: 0.0 H: 0.0 Globular: T: 1.0 H: 0.5

Specification Comments: EAF, LMF, VACUUM DEGASSED, CONTINUOUSLY CAST MATERIAL IS IN CONFORMANCE TO EN 10204

- All manufacturing processes, including melting have been performed in the U.S.A.
- No mercury, mercury compounds or mercury containing devices came into contact with this product.
- Welding or weld repair was not performed on this material.
- This material conforms to the specifications described on this document and may not be reproduced except in full, without written approval of Nucor Corporation.
- This product is NAFTA certified under Paragraph "B" of the NAFTA rule of origin.
- Material is Free of Radioactive Contamination.
- This document is in compliance with EN 10204 "type 3.1"
- Test procedures folled with an asterisk(*) are outside of NSMEM - ISO17025 Accreditation scope
- Results reported for ASTM E45 (Inclusion content) and ASTM E112 (Grain size) are provided as interpretation of ASTM procedures.
- Reported results relate to the material samples subject to test, and are used to qualify material lot# indicated in within this report.
- Export Country USA e-mail contact Memphis.Sales@nsmem.nucor.com



Cory Anthony
 Division Metallurgist

Sold To:

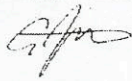
Ship To:

Customer P.O.	69334	Sales Order	131840.12
Product Group	Special Bar Quality	Part Number	30003000240MTS0
Grade	8620HLA; 8620/8622H; MECH PROP REPORT	Lot #	MM1410421806
Size	3" (3.0000) Round	Heat #	MM14104218
Product	3" (3.0000) Round 20' 8620-C2R7	B.L. Number	G1-266681
Description	8620-C2R7	Load Number	G1-144046
Customer Spec		Customer Part #	8620-3

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed above and that it satisfies those requirements.

3.1 MATERIAL CONFORMS TO ASTM A29; ASTM A322 A304 FINE GRAIN OF 5 OR FINER TO BE MEASURED IN ACCORDANCE WITH ASTM E112

1. All manufacturing processes, including melting have been performed in the U.S.A.
2. No mercury, mercury compounds or mercury containing devices came into contact with this product.
3. Welding or weld repair was not performed on this material.
4. This material conforms to the specifications described on this document and may not be reproduced except in full, without written approval of Nucor Corporation.
5. This product is NAFTA certified under Paragraph "B" of the NAFTA rule of origin.
6. Material is Free of Radioactive Contamination.
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10. Reported results relate to the material samples subject to test, and are used to qualify material lot# indicated in within this report.
11. Export Country USA e-mail contact Memphis.Sales@nsmem.nucor.com



Cory Anthony
 Division Metallurgist



Basauri Plant

MILL TEST CERTIFICATE

ISO 9001 - ISO/TS 16949



Product Made in Spain

CUSTOMER: MAGELLAN CORPORATION	WORKS REFERENCE: 1720543
REFERENCE: 209657	SALES ORDER: 270958-6
PRODUCT NR:	HEAT NUMBER: 173718
	MASTER REFERENCE: 180504
	ROLLED: 11.04.2014

REQUIRED PRODUCT			
AISI4130 ROUND BARS AS ROLLED NORM. QUENCH, TEMP 2.5" ASTM A-29 (") 20-23' RANDOM			
EXPEDITION	DELIVERY: 0080464270	WEIGHT (KG): 27.960	BUNDLES: 13
			UNITS: 161

MADE ACCORDING TO	
ASTM E709 - 2008 ; ASTM E45 - 2010E1 ; ASTM A322 07 2007 ; ASTM A304 - 2005E2	
ASTM A751-01 - 2001 ; ASTM E381 2001 R2006 ; ASTM E10 .07A .2007	
ASTM A255 - . . . 2010 ; ASTM E112 - . . . 2010 ; ASTM A29-A29M - . . . 2011	
ASTM A370 11A 15.11.2011 ; ASTM A388-A388M - . . . 2011 ; SAE-AMS-H 6875A - 01.12.1998	
MAGELLAN MIC2016 1 30.01.2012 ; MAGELLAN MIC2016 AD.12 - 20.01.2010	
API SPEC.16A 3" EDICION+ERR.11/04 06.2004	
API SPEC 16C 1" EDICION (R 2001) 29.01.1993	
API SPEC 6A 20" ED.+ERI&2+AD12.3 . . 03.2013	
NACE MR0175/ISO 15156-2 2" EDICION 15.10.2009 ; EN 10204:2004 3.1	

CHEMICAL ANALYSIS OF HEAT											U:% HEAT NUMBER: 173718
	C	Mn	Si	P	S	Cr	Ni	Mo	V	Cu	Al
Min.	0,280	0,400	0,200			0,800		0,150			0,015
Max.	0,330	0,600	0,300	0,025	0,025	1,100	0,250	0,250	0,030	0,350	0,045
cer.	0,300	0,570	0,270	0,006	0,003	1,090	0,140	0,232	0,015	0,110	0,029
	Ca	Nb	H								
Min.											
Max.	0,0350	0,00020									
cer.	0,0004	0,0020	0,00013								
P+S<=0,040:0,009 3,200<=D.I.ASTMA255 ("):3,572											

JOMINY HARDENABILITY													HARDNESS U.: HRC	NORM. TEMP.: 1.650 °F	QUENCHING TEMP.: 1.600 °F
	1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	8/16"	10/16"	12/16"	14/16"	16/16"				
Min.	49,0	46,0	42,0	38,0	34,0	31,0	27,0	26,0	25,0	24,0	23,0				
Max.	56,0	55,0	53,0	51,0	49,0	47,0	42,0	38,0	35,0	34,0	33,0				
cer.	50,5	50,5	50,5	48,0	46,5	43,5	39,5	37,0	34,0	32,0	30,0				
	20/16"	24/16"	28/16"	32/16"											
Min.	21,0														
Max.	32,0	31,0	30,0	29,0											
cer.	28,0	26,5	25,0	24,0											
JOMINY Standard (ASTM A255-... 2010)															

INCLUSIONS (MICROINCLUSIONS)	
Standard (ASTM E45-2010E1) ; Type/method (A) ; A(t):1 ; A(h):0 ; B(t):1,5 ; B(h):1 ; C(t):0 ; C(h):0	
D(t):1 ; D(h):0,5	

MECHANICAL PROPERTIES AS SUPPLIED (CONDITIONS)	
Specimen Test location: At 1/2 radius ; Temperature of: (1): Normalising 1.652 °F ; Time: (1): 360 Minutes	
Cooling: (1): Air ; Temperature of: (2): Austenitizing 1.616 °F ; Time: (2): 180 Minutes	
Cooling: (2): Water 76/87 °F ; Temperature of: (3): Tempering 1.292 °F ; Time: (3): 3 hours	
MECHANICAL PROPERTIES AS SUPPLIED (TEST)	
Standard (ASTM A37011A15.11.2011) ; Tensile test specimen direction (Longitudinal): Longitudinal	
Tensile Strength (>= 100.000 PSI): 113.802 PSI	

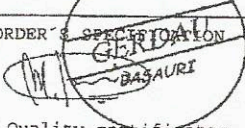
TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATION

APPROVED BY: MARCELINO GARCIA ZAYAS

DATE: 23.05.2014

REF.: 1002044920000

Page 1 of 2

SIGN:  BASAURI

Analyst of Quality certificates

97/14
 523068
 173718
 R455790 @



Basauri Plant

MILL TEST CERTIFICATE

ISO 9001 - ISO/TS 16949



Product Made in Spain

CUSTOMER: MAGELLAN CORPORATION	WORKS REFERENCE: 1720543
REFERENCE: 209657	SALES ORDER: 270958-6
PRODUCT NR:	HEAT NUMBER: 173718
	MASTER REFERENCE: 180504
	ROLLED: 11.04.2014

Yield Strength(1) (Rp(0,2%) >= 80.000 PSI):Rp(0,2%) 87.715 PSI
Yield Strength(2) ((0,02%) PSI):(0,02%) 83.478 PSI ; Elongation (2 " >= 18 %):2 " 24,8 %
Reduction of Area (>= 40 %):74,8 % ; Notch impact sample direction (Longitudinal):Longitudinal
Notch Impact sample type (CHARPY-V):CHARPY-V ; Notch Impact test Temperature (-75 °F):-75 °F
K(1):131 Ft.Lb ; K(2):132 Ft.Lb ; K(3):128 Ft.Lb ; K (average) (>= 25 Ft.Lb):130 Ft.Lb
K (single) (>= 15 Ft.Lb):128 Ft.Lb ; lateral expansion:1.89-1.90-1.85 mm
Brittle fracture:90-90-90 % ; Standard (ASTM E10..07A..2007)
Surface hardness(1) (207/235 HB):228-230 HB ; Surface hardness(2) (<= 22 HRC):20,5-20,5 HRC
Hardness at 1/2 radius (HB):221-224 HB
Notch impact sample direction (Transverse):Transverse ; Notch Impact sample type (CHARPY-V):CHARPY-V
Notch Impact test Temperature (-75 °F):-75 °F ; K(1):30 Ft.Lb ; K(2):29 Ft.Lb ; K(3):29 Ft.Lb
K (average) (>= 15 Ft.Lb):29 Ft.Lb ; K (single) (>= 12 Ft.Lb):29 Ft.Lb
lateral expansion:0.52-0.53-0.56 mm ; Brittle fracture:50-50-50 %

ADDITIONAL TESTS
Standard (ASTM E112-. . .2010) ; Grain size:Austenitic 7 ; Standard (ASTM E3812001R2006)
macroetching(1):S 1 ; macroetching(2):R 1 ; macroetching(3):C 1 ; radiactivity:FREE

NON DESTRUCTIVE TESTS
Surface defects standard (ASTM E709-2008)
Internal defects standard(1) (API SPEC 6A20*ED.+ER1&2+AD12.3. .03.2013)
Internal defects standard(2) (ASTM A388-A388M-...2011) ; ULTRASONIC INSPECTION 100% : O.K. (1)
ULTRASONIC INSPECTION 100% : O.K. (2) ; API 6A point 7.4.2.3.15 (1)
ANTIMIXING TEST SPECTROSCOPY 100%: OK ; CRACKS CONTROL 100% : O.K.

ADDITIONAL INFORMATION
Reduction ratio:10,7 ; NO WELD REPAIR PERFORMED ; CONTINUOUS CASTING 185 X 185 mm
MATERIAL IS FREE OF MERCURY CONTAMINATION ; MADE IN ELECTRIC FURNACE AND VACUUM DEGASSED.
" MATERIAL ACCORDING TO : API 6A,API 16A,API 16C, " PSL" 1-4 " ; & API Material designation 75K
& SAE-AMS-H6875A ; & NACE MR0175-02 ; Mechanical Properties obtained from test bar AS SUPPLIED
TEMPERATURE CONTROL METHOD: ATMOSPHERIC THERMOCOUPLE ; Molten steel in the factory of: BASAURI
Surface and volumetric NDE results are satisfactory
Ultrasonic Inspection Results ("Satisfactory per ASTM A388")
"Free of harmful radioactive contamination" ; "COUNTRY OF MELT AND MANUFACTURE: SPAIN"
Heat treated in accordance to SAE-AMS-H6875A requirements ; ; .

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATION	SIGNATURE
APPROVED BY: MARCELINO GARCIA ZAYAS	SIGN:
DATE: 23.05.2014	Analyst of Quality certificates
REF.: 1002044920000	



CERTIFICATION

To: SHORT BIT & TOOL CO.
 225 GOLD STREET
 GARLAND TX 75042

Purchase Order No.: THT-173718
 Material: 4130
 Customer Spec
 HRC 32-35, Per P.O.

Quantity	Part Number / Part Name / Part Description	Container	Pounds
66	1 1/2 MT 2 1/2" dia, 4130 w/ machined end	Metal Pan 2 Skid 1	560

[1] Harden at 1,575°F for 2 hours. Oil quench.
 [2] Temper at 1,000°F for 3 hours 2 minutes. Air cool.

Insp. Type	Scale	Minimum	Maximum	Insp. Type	Scale	Minimum	Maximum	Value
Customer Requirements:				Results:				
Surface	HRC	.0	.0	Surface	HRC	34.6	35.0	
Method: E18				5 Pieces Inspected, Date Tested: 04-02-2017				
Tensile Strength	KSI			Tensile Strength	KSI			155.8
Method: E8/8M				Date Tested: 04-03-2017				
Yield Strength	KSI			Yield Strength	KSI			138.4
Report Values				0.2% Offset				
% Elongation	%			% Elongation	%			20.0
Report Values				1" Initial Gauge				
% Reduction in	%			% Reduction in Area	%			65.4
Report Values				0.255" Initial Diameter				

* 1 part scrapped for mechanical testing

IMPORTANT STATEMENT:

All test specimens and testing conforms to applicable ASTM Standards, unless otherwise specified per written customer requirement. Reported values apply to the sample(s) tested and/or inspected and are not necessarily indicative of the quality of apparently identical or similar products and do not extend to the lot or batch from which the tested components were drawn. The information in this metallurgical report is intended for the use of Texas Heat Treating's client and may not be published or reproduced except in full without Texas Heat Treating's expressed consent. Texas Heat Treating accepts no responsibility or liability for results due to non-representative test items, improper sampling, insufficient testing or misinformation. Material submitted to metallurgical lab will be discarded after 30 days, except by prior written agreement.



TEXAS HEAT TREATING, INC.
6113 NORTH FREEWAY
FORT WORTH, TEXAS 76106
(972) 263-9755 Phone
(817) 238-0408 Fax

CERTIFICATION

Order No.: 303093

Date: 04/04/2017

Page: 2 of 2

To: SHORT BIT & TOOL CO.
225 GOLD STREET

GARLAND TX 75042

Purchase Order No.: THT-173718

Material: 4130

Customer Spec

HRC 32-35, Per P.O.

William Weed
Quality Representative
Texas Heat Treating

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 65-803834/001/P
 Document No.:
 No. du document:

Prüf-Nr.:
 Inspection No.:
 No. du certificat:

Blatt: 4 / 4
 Page:
 Page:

Zugversuch längs Streifenprobe / Tensile test longitudinal Strip test specimen / Essai de traction longitudinale Bande decoupee sur tube

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouvette	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouv.	Streckgrenze Yield strength Limite élastique	Zugfestigkeit Tensile strength Résistance à la traction	Dehnung Elongation Allongement	Einschnürung Area reduction Coefficient de striction
Anforderungen Requirements Exigences			mm	ReH KSI 55-80	Rm KSI MIN 75	A2" %	1. Formel 1. Formula 1. Formule
0001	000001	581607	19,00 X 4,10	73	94	22,00	16,86
0001	000002	581607	19,00 X 4,20	70	90	26,00	16,95
0001	000001	581758	19,00 X 4,40	67	86	26,00	17,11
0001	000002	581758	19,00 X 4,40	69	88	24,00	17,11
0001	000001	582790	19,00 X 4,40	64	84	26,00	17,11
0001	000002	582790	19,00 X 4,30	64	86	28,00	17,03
0001	000001	584157	19,00 X 4,20	67	85	28,00	16,95
0001	000002	584157	19,00 X 4,50	66	85	24,00	17,18
0001	000001	584160	19,00 X 4,20	62	83	26,00	16,95
0001	000002	584160	19,00 X 4,30	63	88	26,00	17,03

Formeln zur Dehnung / Elongation formula / Formule de l'allongement

1. Formel METRIC FORMULA E = 1942,57 * A^{0,2} / U^{0,9}

Vermerk / Remark / Remarque

Certificate remarks: The steel grade corresponds to GRADE J 55 acc. to API spec. 5CT

Verkäufer(in) / Sales personel / Personne chargée : Mr Storm, Tel.: 05254 81-204274, Fax: 204289

Dinslaken, 01.04.2014, TEL.: 02064.623-5380 FAX: 02064.623-5390

Abnahmebeauftragter
 Inspection representative

Contrôleur

DR. BASEL KEITA / SCHEF

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
 We certify that the supplied products comply with the order specification. This document was prepared by means of electronic data processing and is valid without signature.
 Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.

186

Inspection Report

Texas Steel Conversion
Department 06419

Report Date: 5/1/2017

Date Completed: 4/29/2017

Purch. Order #: 231353

Location: West Plant # 1

Shop Order #: 512/0078A

Revision #: 0

Ordered By: Lou Shreiber

Revision Date:

Type Inspection Performed:	Spectalog 5			I.D. Long & Trans 1/16" Drill Hole	O.D. Long & Trans 1/16" Drill Hole
Description:	2.063 Size	3.25 Weight	N-80Q Grade	.156 Wall	5.0% Insp. Level
Tubing Type	PE End Finish	R2+ Range	BENT Manufacturer	SMLS SMLS / ERW	87.5% RBW

Summary Of Inspection Results

214	Lengths-Banded	White	(Accepted Lengths)	Footage:	
3	Lengths-Banded	Red	(Rejected Lengths)	Footage:	100.8
0	Lengths-Banded	Red / Yellow	(Repairable Lengths)	Footage:	0
0	Lengths-Banded	Yellow / Yellow	(Customer Rejects)	Footage:	0
217	Total Lengths Inspected		Total Reject	Footage:	100.8

Defect Evaluation Summary

O.D. Lap		I.D. Gouge		Mill Grind	
I.D. Lap		O.D. Cut		Stretch Mill Indentation	
O.D. Crack		I.D. Cut		S.M.I./O.D. Lap	
I.D. Crack		O.D. Pit		I.D. Reflector	
Weld Line Crack		I.D. Pit		I.D. Reflector >5%	2
O.D. Slug		Thin Wall		Uninspectable	
I.D. Slug		Dent		Stretch Marks	
O.D. Gouge	1	Roll Burn		Other	

For additional Defect information see Defect Summary Sheet

Total Rejects

3

Comments:

Prepared By: A. Romero

Operator(s): G. Garcia

Spec.(S) Used: API 5CT & API 5A5 E309, E570 L.E

Prove-up Insp.: A. Gutierrez

Unit Number: 5507

Shift: 1st

OSP00907J13

484157 3064

TEXAS STEEL CONVERSION, INC.



MANUFACTURER/PROCESSOR OF OIL COUNTRY TUBULAR GOODS

MATERIAL CERTIFICATION

The herein described material has been manufactured or processed, sampled, tested, and/or inspected in accordance with the referenced sales order using the applicable API specification as the guidelines and meets the customer's requirements for the grade indicated.

CUSTOMER: MACARONI TUBING, LTD

SO# 512/0078A

SIZE : 2.063x0.156

GRADE : N80Q

HEAT TREAT : Q&T & Str.Rel

UPSET: PE

PO# W158

MILL: BENTELER/DINSLAKEN

MFG. PROC.: SMLS

SPEC:

PSL: 1

RANGE: R2+

API:5CT(9th edition)

<u>TEST#</u>	<u># JTS</u>	<u>HEAT #</u>	<u>LOT #</u>
214622	45	584160	512268
214623	37	581607	512269
214624	135	584157	512270

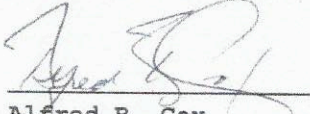
<u>HEAT#</u>	<u>C</u>	<u>Si</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Cr</u>	<u>Mo</u>	<u>Ni</u>	<u>V</u>	<u>Al</u>	<u>Nb</u>	<u>Sn</u>	<u>Ti</u>	<u>Cu</u>	<u>Ca</u>	<u>B</u>
584160	.24	.20	1.31	.009	.002	1.01	.14	.10		.049		.010		.21		
581607	.23	.21	1.31	.009	.003	1.00	.16	.09		.043		.013		.22		
584157	.23	.19	1.31	.011	.002	.98	.15	.10		.044		.010		.28		

The above referenced material was hydrostatically pressure tested to at least 9,700 PSI for a minimum of 5 seconds.

Austenitized at 1625°F and water spray quenched.

Tempered at 1210°F for approximately 30 minute(s) at temperature.

This material was stress relieved at 900°F.


Alfred B. Cox
V.P. Quality

5/3/17
DATE

ABC/tp

3101 HOLMES ROAD • HOUSTON, TEXAS 77051-1199 • (713)733-6013 • FAX (713)733-9248

3064

TEXAS STEEL CONVERSION, INC.

QUALITY TEST REPORT

CUSTOMER: MACARONI TUBING, LTD		TEST #	214624
SO# 512/0078A	SIZE: 2.063X0.156	LOT #	512270
PO# W158	UPSET: PE	HEAT#:	584157
PSL: 1	GRADE: N80Q .5% EUL	MFG.PROC.	SMLS
MILL: BENTELER/ DINSLAKEN	SPEC: API:5CT(9th edition)	HEAT TREAT:	Q&T & Str.Rel
		# JTS/LOT :	135


TENSILE TEST

DIMENSIONS (Inches)	AREA (Sq. In.)	YIELD STRENGTH (Lbs/Sq. In.)	TENSILE STRENGTH (Lbs/Sq. In.)	ELONG (IN 2")	ROA (%)
0.160X0.763	0.126	99600	109800	15.4	

BODY TYPE: LONGITUDINAL STRIP

BODY HARDNESS VARIATION (HRC)

QUADRANT	1	2	3	4
MID M.H.N.	22.6	22.0	22.7	22.9

 Quality Department

sl2ln
DATE

484157 4064