SERIAL NUMBER: T288 COOK DATE: _____

MOLD SIZE _____ BY _____ PO _____

ORDER DATE _____ SHIP DATE: _____

FOR: Yellowjacket

SIZE 2.0 TYPE SPTT

THREAD 1" MT OTHER _____

MATRIX (H) _____ WEIGHT _____

MATRIX (S) _____ WEIGHT _____

BINDER _____ WEIGHT _____

BLANK _____ TJ _____

BILLET 100892634 TUBE _____

WELD _____ MPI _____ MPI PIC _____ BRAZE Richard

THREAD GAGE _____ STAND OFF _____

FINAL DIAMOND GRIND SIZE 2.0

LENGTH TO WELD _____ / _____

FINISHED PIC TAKEN BY RO CRATED BY RO DATE: 12/6/23

International _____ domestic X

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

Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
T-288	2.00	SPTT	Steel		

Component	Material	Vender	Lot or Heat Number
Billett	4140	RHW	100892634
Hard Powder			
Soft Capping Powder			
Tool Joint			
MIG Weld			
Tubing			

Inspection	
Diamond Grinding To Size	
Weld MPI	
Thread Gaging	1" MT

Signed By: PBeggs

date: 6/30/2023

NUCOR

Mill Certification

03/11/2019

MTR#:151166-3
Lot #:100892634221
2911 E NUCOR ROAD
PO BOX 309
NORFOLK, NE 68701 US
402-644-0200
Fax: 402-644-0329

Sold To: CAPITAL STEEL & WIRE INC
240 S BRIDGE ST STE 300
DEWITT, MI 48820 US

Ship To: CAPITAL STEEL & WIRE INC
240 S BRIDGE ST STE 300
DEWITT, MI 48820 US

Customer PO	015404	Sales Order #	10017324 - 3.1
Product Group	Hot Roll - Engineered Bar	Product #	1045763
Grade	4140DHA5P7	Lot #	100892634221
Size	2.5"	Heat #	100892634
BOL #	BOL-241745	Load #	151166
Description	Hot Roll - Engineered Bar Round 2 1/2" 4140DHA5P7 20' 0" [240"] Quench and Tempered 4001-6000 lbs	Customer Part #	
Production Date	11/21/2018	Qty Shipped LBS	17220
Product Country Of Origin	United States	Qty Shipped EA	51
Original Item Description		Original Item Number	

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

Melting Date: 06/22/2018

Melt Country of Origin : United States

C (%)	Mn (%)	V (%)	Si (%)	S (%)	P (%)	Cu (%)	Cr (%)	Ni (%)	Mo (%)	Al (%)	Nb (%)
0.42	0.89	0.004	0.26	0.021	0.009	0.16	0.99	0.10	0.18	0.03	0.003
Pb (%)	Sn (%)	Ca (%)	B (%)	Ti (%)	As (%)	Zr (%)	N (PPM)	H (PPM)			
0.000	0.007	0.001	0.0000	0.001	0.004	0.001	78	2			

Reduction Ratio 8.94 : 1

Jominy Calculated

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32
57	57	57	57	57	57	57	56	55	53	52	51	50	49	48	47	46	46	45	44	43	42	40	39

ASTM E45 Method A (Worst)
Sulfides:T: 2.0 H: 1.0 Alumina : T: 0.5 H: 0.0 Silicates T: 0.5 H: 0.0 Globular T: 0.5 H: 0.5

Other Test Results
Macroetch E381 Surface : 1 Macroetch E381 Mid Radius : 1 Macroetch E381 Center : 2

DI Calculated (IN) : 5.43

Comments:

ASTM A322-13
ASTM A304-11
Meets chemistry requirements of ASTM A193 B7
All Results on the MTR are Hot Roll Values unless noted.
All manufacturing processes of the steel materials in this product, including melting, have been performed in 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.
Test conform to ASTM A29-16, ASTM E415 and ASTM E1019-resulphurized grades or applicable customer requirements.
All material melted at Nucor Steel Nebraska is produced in an Electric Arc Furnace.
Strand Cast
Tests included in ISO 17025 scope: Chemistry, Tensile, Brinell Hardness, Rockwell Hardness, Inclusion, and Grain Size.
Exporting Country-USA

Jim Hill

Jim Hill, Division Metallurgist

NBMG-10 January 1, 2012

NUCOR

Mill Certification

03/11/2019

MTR#:151166-3
Lot #:100892634221
2911 E NUCOR ROAD
PO BOX 309
NORFOLK, NE 68701 US
402-644-0200
Fax: 402-644-0329

Sales@nucorne.com

Jim Hill

Jim Hill, Division Metallurgist

NBMG-10 January 1, 2012

JOB CERTIFICATION

Job No: 2963 **Job Information** **Certified Date:** 9/24/18

Lots: S567714 S567719

Customer: Nucor - Nebraska

Ship To: REFER TO DISPATCH FOR DELIVERY LOCATION
2911 E. Nucor Rd
Norfolk, NE 68701

King Steel Item No: 2.500 A193B7/A434BC SBQ HR RD Q&T BAR 240 IN.

Customer Part No: 2.500 A193B7/A434BC Q&T X 240 IN.

Customer PO No: 1045763 **Shipped Qty:** 17220 lb

Order No: 52844 **Line No:** 1

Note:

Applicable Specifications

Type	Specification	Rev	Amend	Option
Heat Treat	A434BC	2012		
	ASTM A193B7/ASME SA193B7	2014a		

Test Results

Item No: 2.500 A193B7/A434BC SBQ HR RD Q&T BAR 240 IN.

Test No: 2870 **Test:** Quench & Temper Physicals - Machined

Description	Tensile (psi)	Yield 0.2% Offset (psi)	Elongation (%)	ROA (%)	Mid Radius Hardness (HRC)	Note
	146,829	129,012	20.6	62.1	32.0	lot#S567713
	141,129	121,889	21.3	61.6	31.0	lot#S567714
	147,391	130,028	20.4	61.8	31.0	lot#S567719
	142,164	123,790	21.7	63.3	33.5	lot#S567720
	144,649	126,299	21.3	62.1	31.5	lot#S567725
	149,428	131,915	19.3	62.1	34.1	lot#S567726

Test No: 2868 **Test:** Quench & Temper Line Info

Description	Austenitize Temp (F)	Austenitize Time (Min.)	Quench Water Temp (F)	Quench Time (Min.)	Temper1 Temp (F)	Temper1 Time (Min.)	Temper2 Temp (F)	Temper2 Time (Min.)	Line Speed (Ft/Min.)	Note
	1,750	0.75	100	2.0	1,300	0.75	1,300	0.75	6.00	

Test No: 2894 **Test:** Hardness Report

Description	Lot#	Surface (HRC)	Surface (BHN)	MidRadius (HRC)	MidRadius (BHN)	Note
		32.50	306	32.75	308	BHN converted from HRC lot#S567709
		31.00	294	32.00	301	BHN converted from HRC lot#S567713
		31.50	298	31.00	294	BHN converted from HRC lot#S567714
		31.00	294	31.00	294	BHN converted from HRC lot#S567719
		32.75	308	33.50	315	BHN converted from HRC lot#S567720
		31.75	299	31.50	298	BHN converted from HRC lot#S567725
		33.94	319	34.06	319	BHN converted from HRC lot#S567726

Certified Mill Analysis

JOB CERTIFICATION

Job No: 2963 **Job Information** **Certified Date:** 9/24/18

Lots: S567714 S567719

Heat No: 100892634 **Grade:** 4140

C	Mn	P	S	Si	Ni	Cr	Mo	Al
0.4200	0.8900	0.0090	0.0200	0.2600	0.1000	0.9900	0.1800	0.0300
Cu	**Ti**	**V**	**Nb**	**Zr**	**Sn**	**Ca**	**As**	**N**
0.1600	0.0010	0.0040	0.0030	0.0010	0.0070	0.0010	0.0040	78.0000

N (PPM)	H (PPM)	Tensile Full-Size (PSI)	% Elongation 8" gage	Reduction Ratio:	Macro Etch Test (E381)	DI Calculated:	Austenitic Grain Size	Melted & Manufactured in:
78	2	130,900	7	8.94:1	S1R1C2	5.4300	8.0	USA

Notes

Processed material is Quenched and Tempered - No weld repair performed on the material. Mercury, in any form, has not been used in the production or testing of this material.
Melted and Manufactured in the USA
Material is 100% stress free
Induction Heat Treated
Average Gauss Reading: <15
Water Quenched/Air Cooled
100% of material passed eddy current test inspection. Test conforms to ASTM A108.

Kevin L Kortje 9/24/18

Kortje; Kevin - Quality Manager Date

2.0 SPIT
T288