PRINCETON UNIVERSITY
PLASMA PHYSICS LABORATORY—PPPL

PRODUCT QUALITY CERTIFICATION AND SHIPPING RELEASE

PROJECT	ITEM DESCRIPTION	SHIPMENT NUMBER
SE 184-052-01	Support "Tee" Bar Weldment	

PPPL SUBCONTRACT/ ORDER NO.	REV.	ITEM NO.	SUPPLIER REFERENCE NO.	REV.	QUANTITY SHIPPED
PE007982	1	9	w/o 030326-009		1

SUPPLIER'S CERTIFICATION

This is to certify that the products and services identified herein have been produced under a controlled quality assurance program and are in conformance with the procurement requirements including applicable codes, standards and specifications as identified in the above-referenced documents unless noted below. Any supporting documentation will be retained in accordance with the procurement requirements.

SIGNED: Dal M Bla DATE: 05-19-08

TITLE: Quality Manager COMPANY: Vulcan Products Company

PPPL (AUTHORIZED REPRESENTATIVE) SHIPPING RELEASE

This is to certify that evidence supporting the above Supplier's Certification statement has been audited and no product/service nonconformances from procurement requirements have been found unless noted below. This product/service is hereby released for shipment.

This section serves as the Quality Assurance release for the above described product for shipment. It does not constitute an acceptance thereof and does not relieve the Vendor, Manufacturer or Contractor of any and all responsibility or obligation imposed by the purchase contract. It does not waive any rights the Purchaser may have under the purchase contract, including the Purchaser's right to reject the above described material upon discovery of any deviations from requirements of the purchase contract, drawings and specifications.

NONCONFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS:

REMARKS/PRODUCT SERIAL NUMBERS:

BY PPPL QA REPRESENTATIVE (OR DESIGNEE)	DATE

SUPPLIER NONCONFORMANCE REPORT

Date 05-19-08 Number: 1162

Company: Vulcan Products Company

PPPL PO# PE007982-W rev. 01

Item Drawing/Part# SE 184-052-3 – Reinforcing Bar - Short

Job Description: Vacuum Vessel Support Assembly Support "TEE" Bar Weldment

Hold Tag Applied? YES

NONCONFORMING CONDITION (include requirement(s) violated):

VPC Inspection point 12 (see Vulcan Inspection Report);

PPPL drawing requires ¼" x 45° chamfer (Typ 6 places). On item 3, the measured chamfer is 5/16" x 40° in one direction. This condition exists with three of the four chamfers in this location

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Internal work order paperwork has sequence for the chamfer.
Proof (inspection stamp) of standard VPC process of First Production article for the sequence was not reported.

Scheduled work order process overview training with production employees involved with the work order sequence involved.

VPC would like to Use-As-Is.

Reported By D. Barber VPC 1 5-19-08 Date 05-19-08

RECOMMENDED DISPOSITION (include actions to prevent recurrence):

Use-As-Is [X] Repair [ ] Rework [ ] Scrap [ ]

The non-conformance does not affect the function of the part.

Disposition By: Date

PPPL Concurrence Tom Brown Digitally signed by Tom Brown DN: cn=Tom Brown, o=PPPL, ou, email=tbrown@pppl.gov, c=US Date: 2008.05.22 08:24:59 -04'00' Date

Cognizant Engineer (COG)

PPPL Concurrence Lawrence E. Dudek Digitally signed by Lawrence E. Dudek DN: cn=Lawrence E. Dudek, c=US Date: 2008.05.21 17:13:15 -04'00' Date

Responsible Line Manager (RLM)

DISTRIBUTION

Vulcan Products Co., Inc.

CERTIFICATE OF CONFORMANCE

Customer Name: Princeton Plasma Physics Lab	**Customer P.O. Number: PE007982-W rev. 1**
Part Number: SE184-052-01 **Revision: 0**	**Quantity Shipped: 1 Date: TBD**
Shipper Number: n/a	**Work Order Number: 030326-009**

The material, parts and assemblies furnished on this shipment were produced in accordance with all applicable specification required by the referenced contract or subcontract as listed below. Any non-conformances are listed at the bottom of this page.

Drawing or Specification No.:

1. SE184-052 rev. 0

NOTE: This project has been submitted with NCR # 1162 (non-conforming chamfer dimensions). All other items comply with the above drawing.

Material test reports, material certifications and process certifications covering the above listings, are on file and available for examination.

Executed By: Daf M Rh VPC 1 Date: 05-19-05

Title: Q.A Manager

	Number: RFD 18-004R1	RFD Description: Change in Welding Requirements

Initiator: Phil Reddell	Organization: Vulcan

List of Impacted Documents: *(Specification, MIT/QA Plan, SOW, drawing, etc.)*
Drawings

- SE184-051
- SE184-052
- SE184-056
- SE186-306
- SE186-307
- SE186-308
- SE186-327
- SE186-330
- SE186-332
- SE186-333
- SE 186-352
- SE186-352
- SE186-360

Cost Impact: *(If none, so state)*
NONE

Schedule Impact: *(If none, so state):*
NONE

Quality Impact: *(If none, so state):*
NONE

State Requirement Deviation is Requested For: *(Specification, MIT/QA Plan, SOW, drawing, etc.)*
Currently these drawings have a note calling out either GMAW of GTAW.

Full Description of the Deviation Requested: *(Use continuation pages, e-mails, letter, sketches, etc. as needed and include amplifying information as appropriate to support deviation request.)*

On drawing impacted drawings (listed above) wherever the weld process "GMAW or GTAW" appears replace with "GMAW or FCAW".

Attachments: See except from e-mail from Phil Reddell of Vulcan to Larry Dudek dated April 1, 2008

Initiator Signature: Phil Reddell (Vulcan) Date: April 1, 2008 (see attached e-mail)

	Number: RFD 18-004R1	RFD Description: Change in Welding Requirements

RLM(s):	Organization:
Design: N/A Manufacturing: L. Dudek	Design: N/A Manufacturing: PPPL

Impact on Interfaces with Other WBS Elements/Items: *(If none, so state)*

Design RLM Recommendations:

☐ Approve ☐ Do Not Approve

Manufacturing RLM Rcommendations:

☒ Approve ☐ Do Not Approve

Additional remarks:

Should the impacted drawings be formally revised or should the "stamp" process outlined in NCSX Procedure PROC-007 be utilized and should the specification (or other documents) be updated?

☐ No, a formal revision required to the drawing or specification is required

☒ "Stamp" process outlined in PROC-007 is authorized.

- ☐ If the change is substantial, a revision to the impacted drawings will be required after the third RFD stamp marking a substantial revision is placed on the drawing.
- ☐ This change is NOT substantial and no update to the drawing will ever be required => in this case the "3" RFD stamp process does NOT apply.

Does this Change Impact Material Already Procured or Parts/Assemblies Already Assembled/Manufactured using this Material: ☐ Yes ☒ No

If "Yes", what is the recommended disposition of this material/part/assembly and what is the impact?

[illegible]	Number: RFD 18-004R1	RFD Description: Change in Welding Requirements

RLM(s): Design: N/A Manufacturing: L. Dudek	Organization: Design: N/A Manufacturing: PPPL

Design RLM Signature: N/A

Manufacturing RLM Signature: Lawrence E. Dudek Digitally signed by Lawrence E. Dudek DN: cn=Lawrence E. Dudek, c=US Date: 2008.04.22 10:27:26 -04'00'

Project Disposition:

☒ Approved. No ECP required. Bob Simmons Digitally signed by Bob Simmons DN: cn=Bob Simmons, c=US Date: 2008.04.22 09:43:54 -04'00'

NCSX Systems Engineering Support Manager

☐ Approved.

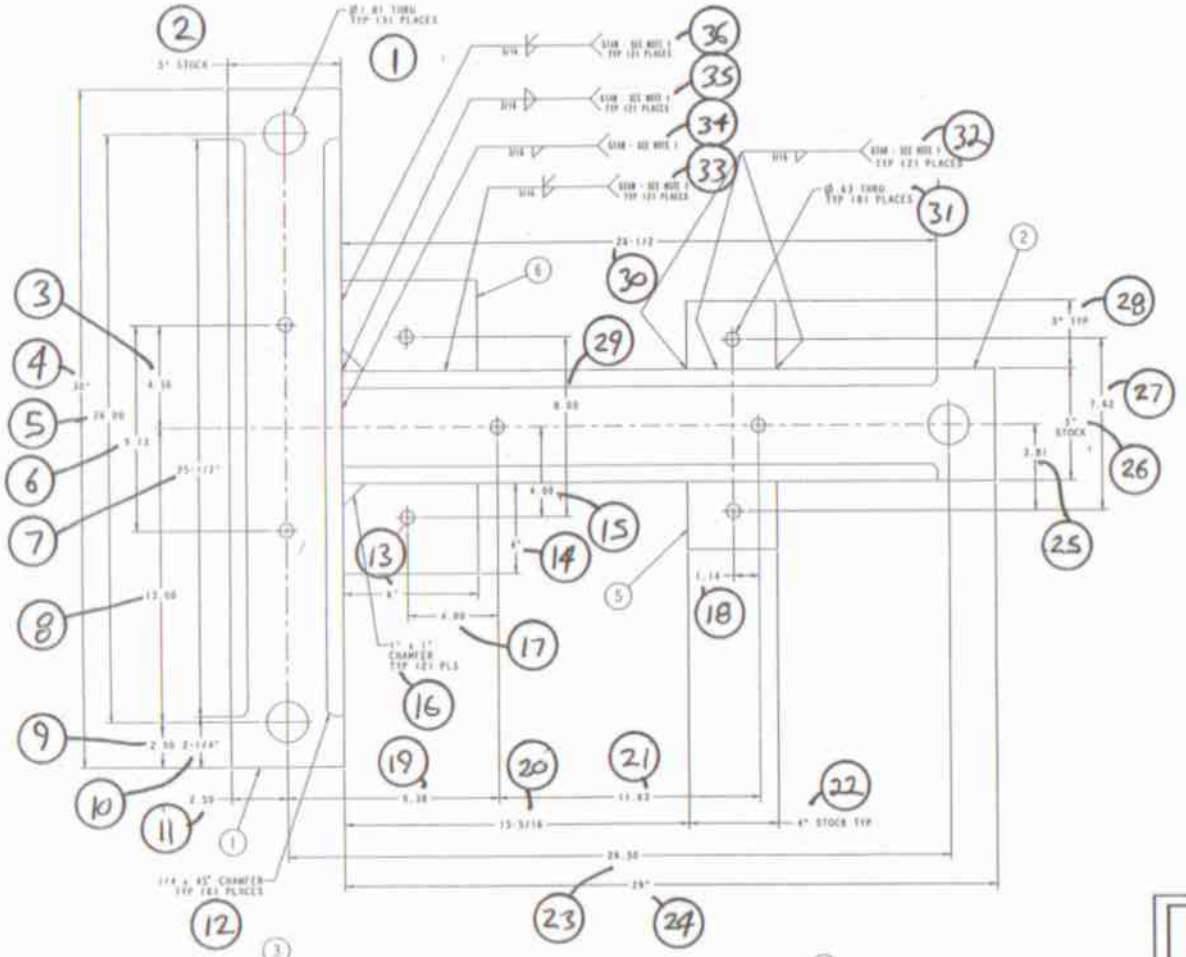
☐ Not Approved. Reason(s) for disapproval:

Attachment:

E-mail from Phil Reddell of Vulcan dated April 1, 2008:

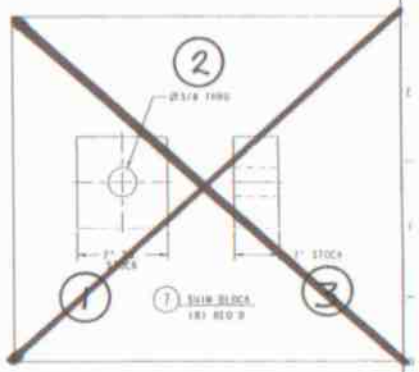
I do however have another question. We would like to use the FCAW method for welding the 2" plate in the wedge pieces No. SE186-352. The drawing is calling out either GMAW of GTAW. Can we get a variance for this?

Thanks,
Phil Reddell



NOTES

1. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF AWS D1.1 OR PPPL PROCEDURE LNG-232. VISUAL WELD INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE ACCEPTANCE CRITERIA OF AWS D1.1 Section 6.
2. ALL HOLES TO BE MACHINED AFTER ALL WELDS ARE COMPLETE



RFD-18-004 replaced either "GMAW or GTAW" welds with either "GMAW or FCAW" welds wherever appearing on this drawing. See RFD-18-004 for details)

w/o C35326-008
-009

RELEASED FOR FABRICATION / INSTALLATION

QTY REQD	MATERIAL	NOMENCLATURE OR DESCRIPTION	DRAWING NO.	PART NO.	ITEM NO.
1	ASTM A36	SHIM BLOCK	THIS DWG	7	—
6	ASTM A36	SUPPORT BLOCK	THIS DWG	6	2
4	ASTM A36	SUPPORT WING	THIS DWG	5	2
2	ASTM A36	REINFORCING BAR - LONG	THIS DWG	4	2
2	ASTM A36	REINFORCING BAR - SHORT	THIS DWG	3	2
1	ASTM A36	BASE BAR - LONG	THIS DWG	2	1
1	ASTM A36	BASE BAR - SHORT	THIS DWG	1	1
1	—	SUPPORT "TEE" BAR WELDMENT	THIS DWG	—	⊠

PARTS LIST

WEIGHT	184.7 lbs
MODEL NAME	SE184-052-01
RELEASE LEVEL: Fabrication	
DWG VERSION NO: B	

PRINCETON PLASMA PHYSICS LABORATORY
NATIONAL COMPACT STELLARATOR EXPERIMENT
TITLE PORTOS ASSEMBLY
VACUUM VESSEL SUPPORT ASSEMBLY
SUPPORT "TEE" BAR WELDMENT

SE184-052

SHEET 1 OF 1

Vulcan Products Co., Inc. INSPECTION AND TEST REPORT

Drawing No.:	Part/Assembly Name:	Spec/Standard No. & Name:	Customer's Name:	Customer's PO/Contract No.:	Work Order/Job No.:
SE184-052 Rev.: 0	Suppt. "TEE" Bar Weld't	N/A	PPPL	PE007982-W	030326-009

First Article:	In-Process:	Final:	Receiving:	Authorized by QA Manager:	Lot-Qty.:	Total Qty Accepted: 1 Total Qty Rejected: 0	MRB ❒ Rework ❒
❒	❒	×	❒	D. Barber	1		

Sampling per MIL Std.105/ANSI-Z 1.4-1993 Yes ❒ No × By Attributes: ❒ By Variables: ❒ Inspection Level:_____ AQL:_____%

D1-8007 Sampling Plan Used? Yes ❒ No × Type:

Engineering Change Order No.(ECO): N/A

Advanced Drawing Change Notice (ADCN): RFD-18-004

Final Review by Q.A. Mgr./Chief Inspector: Accept: Yes ☒ No: ❒ Name: Dan M. Rh (VPC 1) Date: 5-19-08

Item No.:	Drawing or Test Characteristics:	Tolerance Limits:	Measurement Test Results:	Inspection/Test Instrument Used:	Measurement or Test Procedures:	Qty. Accepted:	Qty. Rejected:	I Stamp & Date:
1	Ø 1.81 THRU	± .030	Ø 1.796	CALIPER	N/A	1	0	5/15/08
1	Ø 1.81 THRU	± .030	Ø 1.796	CALIPER	N/A	1	0	5/15/08
1	Ø 1.81 THRU	± .030	Ø 1.795	CALIPER	N/A	1	0	5/15/08
2	5" STOCK	± 1/16	5" STK	TAPE	N/A	1	0	5/15/08
3	4.56	± .030	4.561	CALIPER	N/A	1	0	5/15/08
4	30	± 1/8	30	CALIPER	N/A	1	0	5/15/08
5	26.00	± .030	26.00	TAPE	N/A	1	0	5/15/08
6	9.13	± .030	9.128	CALIPER	N/A	1	0	5/15/08
7	25-1/2"	± 1/8	25-1/2	TAPE	N/A	1	0	5/15/08
8	13.00	± .030	13.00	TAPE	N/A	1	0	5/15/08
9	2.00	± .030	2.020	CALIPER	N/A	1	0	5/15/08
10	2-1/4	± 1/16	2-1/4	TAPE	N/A	1	0	5/15/08
10	2-1/4	± 1/16	2-1/4	TAPE	N/A	1	0	5/15/08
11	2.50	± .030	2.510	CALIPER	N/A	1	0	5/15/08
12	1/4x45° CH	± 1/16 x 0°-15'	1/4x45°	TAPE/ PROTRACTOR	N/A	1	0	5/15/08 (VPC 2)

Comments: (Refer to Item No.) Submitted NCR # 1162 for item 12 (3 of 6) dtd 5-19-08
Recommended disposition "Use-As-Is", dtd 5-19-08

Drawing No.: **SE184-052** Rev.: **0**	Part/Assembly Name: **Suppt. "TEE" Bar Weld't**	Spec/Standard No. & Name: **N/A**	Customer's Name: **PPPL**	Customer's PO/Contract No.: **PE007982-W**	Work Order/Job No.: **030326-009**

Item No.:	Drawing or Test Characteristics:	Tolerance Limits:	Measurement Test Results:	Inspection/Test Instrument Used:	Measurement or Test Procedures:	Qty. Accepted:	Qty. Rejected:	I Stamp & Date:
12	1/4x45° CH	± 1/16 x 0°-15'	1/4x45°	TAPE/ PROTRACTOR	N/A	1	0	5/15/08
12	1/4x45° CH	± 1/16 x 0°-15'	5/16x40°	TAPE/ PROTRACTOR	N/A	0	1	5/15/08
12	1/4x45° CH	± 1/16 x 0°-15'	5/16x40°	TAPE/ PROTRACTOR	N/A	0	1	5/15/08
12	1/4x45° CH	± 1/16 x 0°-15'	1/4x45°	TAPE/ PROTRACTOR	N/A	1	0	5/15/08
12	1/4x45° CH	± 1/16 x 0°-15'	5/16x40°	TAPE/ PROTRACTOR	N/A	0	1	5/15/08
13	6	± 1/16	6	TAPE	N/A	1	0	5/15/08
13	6	± 1/16	6	TAPE	N/A	1	0	5/15/08
14	4	± 1/16	4	TAPE	N/A	1	0	5/15/08
14	4	± 1/16	4	TAPE	N/A	1	0	5/15/08
15	4.00	± .030	4.015	CALIPER	N/A	1	0	5/15/08
15	4.00	± .030	4.020	CALIPER	N/A	1	0	5/15/08
16	1x1 CH	± 1/16	1x1 CH	TAPE	N/A	1	0	5/15/08
16	1x1 CH	± 1/16	1x1 CH	TAPE	N/A	1	0	5/15/08
17	4.00	± .030	4.000	CALIPER	N/A	1	0	5/15/08
17	4.00	± .030	4.010	CALIPER	N/A	1	0	5/15/08
18	1.14	± .030	1.130	CALIPER	N/A	1	0	5/15/08
18	1.14	± .030	1.140	CALIPER	N/A	1	0	5/15/08
19	9.38	± .030	9.374	CALIPER	N/A	1	0	5/15/08
20	15-5/16	± 1/8	15-5/16	TAPE	N/A	1	0	5/15/08
20	15-5/16	± 1/8	15-5/16	TAPE	N/A	1	0	5/15/08
21	11.63	± .030	11.630	CALIPER	N/A	1	0	5/15/08
22	4" STOCK	± 1/16	4" STK	TAPE	N/A	1	0	5/15/08
22	4" STOCK	± 1/16	4" STK	TAPE	N/A	1	0	5/15/08

Drawing No.: **SE184-052** Rev.: **0**	Part/Assembly Name: **Suppt. "TEE" Bar Weld't**	Spec/Standard No. & Name: **N/A**	Customer's Name: **PPPL**	Customer's PO/Contract No.: **PE007982-W**	Work Order/Job No.: **030326-009**

Item No.:	Drawing or Test Characteristics:	Tolerance Limits:	Measurement Test Results:	Inspection/Test Instrument Used:	Measurement or Test Procedures:	Qty. Accepted:	Qty. Rejected:	I Stamp & Date:
23	29.50	± .030	29.50	TAPE	N/A	1	0	5/15/08
24	29	± 1/8	29	TAPE	N/A	1	0	5/15/08
25	3.81	± .030	3.812	CALIPER	N/A	1	0	5/15/08
25	3.81	± .030	3.810	CALIPER	N/A	1	0	5/15/08
26	5" STOCK	± 1/16	5" STK	TAPE	N/A	1	0	5/15/08
27	7.62	± .030	7.620	CALIPER	N/A	1	0	5/15/08
28	3" TYP.	± 1/16	3	TAPE	N/A	1	0	5/15/08
28	3" TYP.	± 1/16	3	TAPE	N/A	1	0	5/15/08
29	8.00	± .030	7.995	CALIPER	N/A	1	0	5/15/08
30	26-1/2	± 1/8	26-1/2	TAPE	N/A	1	0	5/15/08
30	26-1/2	± 1/8	26-1/2	TAPE	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .627	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .625	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .625	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .625	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .627	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .627	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .624	CALIPER	N/A	1	0	5/15/08
31	Ø .63 THRU	± .030	Ø .626	CALIPER	N/A	1	0	5/15/08
32	SEE WELD REPORT	----------			N/A	1	0	5/15/08
33	SEE WELD REPORT	----------			N/A	1	0	5/15/08
34	SEE WELD REPORT	----------			N/A	1	0	5/15/08
35	SEE WELD REPORT	----------			N/A	1	0	5/15/08

Drawing No.: **SE184-052** Rev.: **0**	Part/Assembly Name: **Suppt. "TEE" Bar Weld't**	Spec/Standard No. & Name: **N/A**	Customer's Name: **PPPL**	Customer's PO/Contract No.: **PE007982-W**	Work Order/Job No.: **030326-009**

Item No.:	Drawing or Test Characteristics:	Tolerance Limits:	Measurement Test Results:	Inspection/Test Instrument Used:	Measurement or Test Procedures:	Qty. Accepted:	Qty. Rejected:	I Stamp & Date:
36	SEE WELD REPORT	----------			N/A	1	0	5/15/08
37	SEE WELD REPORT	----------			N/A	1	0	5/15/08
38	3/4" STOCK	± 1/16	3/4 STK	TAPE	N/A	1	0	5/15/08
38	3/4" STOCK	± 1/16	3/4 STK	TAPE	N/A	1	0	5/15/08
39	4" STOCK	± 1/16	4 STK	TAPE	N/A	1	0	5/15/08
39	4" STOCK	± 1/16	4STK	TAPE	N/A	1	0	5/15/08
40	1" STOCK	± 1/16	1STK	TAPE	N/A	1	0	5/15/08
41	SEE WELD REPORT	----------			N/A	1	0	5/15/08
42	SEE WELD REPORT	----------			N/A	1	0	5/15/08

VPC
VULCAN PRODUCTS COMPANY INC.

April 29, 2008

VPC WO# 030326-009,010
PN SE 184-052-01 REV. O
PN SE 184-056-01 REV. O
CUST PO# PE007982-W
Welding AWS D1.1
Material A36

Welding meets visual inspection requirements per section 6 of AWS D 1.1 Structural welding code.
Welding has been performed to meet print requirements. And is in accordance with AWS D1.1 requirements.

M Hyatt
Quality Control

6210 - 234th Street SE / Woodinville, WA 98072-8658
Phone (425) 806-6000 / FAX (425) 806-6006

3/4 x 1" FB

PO#: 19458

SOLD TO: NORTHWEST STEEL & PIPE
PO BOX 11247
TACOMA, WA 98411-0247

SHIP TO: NORTHWEST STEEL & PIPE
3736 SO. TACOMA WAY
TACOMA, WA 98411-0000

NUCOR
BAR MILL GROUP
NUCOR STEEL SEATTLE, INC.

CERTIFIED MILL TEST REPORT

Ship from:
Nucor Steel Seattle, Inc.
2424 SW Andover
SEATTLE, WA 98106-1100
206-933-2222

Date: 27-Mar-2008
B.L. Number: 356561
Load Number: 202811

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

NBMG-08 December 4, 2007

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 / Cb	Cu / Sn	C.E.
PO# =>	5979												
SE0710634301	Nucor Steel Seattle, Inc.	50,043	74,233	25.8%		***	.20	.81	.014	.038	.19	.31	.39
	3/4x4" FL 20'	345MPa	512MPa				.09	.13	.020	.004	.001		
	A36/44W	49,253	73,590	26.6%									
	CSA G40.21-98 44W/ASTM A36/A36M-	340MPa	507MPa										
	ASTM A709/A709M-07 GR 36												
	ASME SA36-2007 EDITION												
	ASTM A36/A36M-05												
PO# =>	5931												
SE0810142001	Nucor Steel Seattle, Inc.	49,837	73,332	31.3%			.19	.68	.014	.032	.21	.36	.36
	1/2x2" FL 20'	344MPa	506MPa				.09	.12	.020	.006	.003		
	A36/44W	50,347	73,785	31.3%									
	CSA G40.21-98 44W/ASTM A36/A36M-	347MPa	509MPa										
	ASTM A709/A709M-07 GR 36												
	ASME SA36-2007 EDITION												
	ASTM A36/A36M-05												
PO# =>	5931												
SE0810152001	Nucor Steel Seattle, Inc.	50,438	74,745	29.7%			.16	.72	.015	.043	.21	.38	.34
	3/8x3" FL 20'	348MPa	515MPa				.10	.12	.020	.007	.003		
	A36/44W	50,152	74,340	28.1%									
	CSA G40.21-98 44W/ASTM A36/A36M-	346MPa	513MPa										
	ASTM A709/A709M-07 GR 36												
	ASME SA36-2007 EDITION												
	ASTM A36/A36M-05												

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.

QUALITY ASSURANCE: M. Lyons

Matthew J. Lyons

1"x 5" FB

BAYOU STEEL CORPORATION
RIVER ROAD P.O. BOX 5000
LA PLACE, LOUISIANA 70069-1156
Telephone (985) 652-4900

MATERIAL CERTIFICATION REPORT

NORTHWEST STEEL & PIPE, INC.
P.O. BOX 11247
TACOMA, WA 98411-0247

NORTHWEST STEEL & PIPE, INC
SPUR# SPINS 050204
TACOMA, WA

TESTED IN ACCORDANCE WITH: ASTM A6

INVOICE NO. BSLP08202627
PRODUCT FLATS
HEAT NO. 56563 14 Pcs
Length 20'0"

DATE 02/08/08
Cust N-4050 -0008
GRADE A36 -05
SIZE F 5 X 1 X 17.02

PO:5879

CHEMICAL ANALYSIS	
C	.12
Mn	.81
P	.019
S	.026
Si	.17
Cu	.27
Ni	.22
Cr	.19
Mo	.066
Cb	.000
V	.000
B	
Al	
Sn	
N	
Ti	

CI	
CE	.34

MECHANICAL PROPERTIES	TEST 1 IMPERIAL	TEST 1 METRIC	TEST 2 IMPERIAL	TEST 2 METRIC	TEST 3 IMPERIAL	TEST 3 METRIC
YIELD STRENGTH	44,191 PSI	305 MPa	43,702 PSI	301 MPa	PSI	MPa
TENSILE STRENGTH	64,803 PSI	447 MPa	64,493 PSI	445 MPa	PSI	MPa
ELONGATION	37.0 %	37.0 %	40.0 %	40.0 %	%	%
GAUGE LENGTH	8 in	203 mm	8 in	203 mm	in	mm
BEND TEST DIAMETER	d	d	d	d	d	d
BEND TEST RESULTS						
SPECIMEN AREA	sq in	sq mm	sq in	sq mm	sq in	sq mm
REDUCTION OF AREA	%	%	%	%	%	%
IMPACT STRENGTH	ft-lbs	J	ft-lbs	J	ft-lbs	J

IMPACT STRENGTH	IMPERIAL	METRIC	INTERNAL CLEANLINESS		GRAIN SIZE HARDNESS	
AVERAGE	ft-lbs	J	SEVERITY			
TEST TEMP	F	C	FREQUENCY		GRAIN PRACTICE REDUCTION RATIO	
ORIENTATION			RATING			

Customer Grade & Specs: ASME SA36

NO WELD REPAIR WAS PERFORMED ON THIS HEAT.

I HEREBY CERTIFY THAT THE MATERIAL TEST RESULTS PRESENTED HERE ARE FROM THE REPORTED HEAT AND ARE CORRECT. ALL TESTS WERE PERFORMED IN ACCORDANCE TO THE SPECIFICATIONS REPORTED ABOVE. ALL STEEL IS ELECTRIC FURNACE MELTED, MANUFACTURED, PROCESSED, AND TESTED IN THE U.S.A WITH SATISFACTORY RESULTS, AND IS FREE OF MERCURY CONTAMINATION IN THE PROCESS.

NOTARIZED UPON REQUEST:
SWORN TO AND SUBSCRIBED BEFORE ME IN AND FOR ST. JOHN PARISH ON THIS _____ DAY OF _____, 20___

Michael E. Soileau, # 81887, Notary Public

SIGNED Mark Edwards
MARK EDWARDS, QUALITY ASSURANCE SUPERVISOR

DIRECT ANY QUESTIONS OR NECESSARY CLARIFICATIONS CONCERNING THIS REPORT TO THE SALES DEPARTMENT.

1-800-535-7692 (USA)

1" HL

From: Northwest Steel & Pipe, Inc.
PO#: 19458

P.O. 0019458
WO 30326
Del 14

NUCOR
PLATE MILL

P.O.Box 279
Winton, NC 27986
(252) 358-3700

Mill Test Report

NUCOR
It's our Nature.

Issuing Date : 10/23/2007 B/L No. : 179587 Load No. : 181283 Our Order No. : 58583/4 Cust. Order No. : 8127

Vehicle No: NOKL 725317

Specification : 1.0000" x 96.000" x 240.000"
ASTM A36-05/ASTM A709 Grade 36-07/ASME SA36-03a

Sold To : RANGER STEEL SERVICES LP
1225 NORTH LOOP W. STE 550
HOUSTON,TX 77008

Ship To : NORTHWEST STEEL & PIPE
SPINS 056204
TACOMA,WA 98409

Marking :

Heat No	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Alz	V	Nb	Ti	N	Ca	B	Sn	CEQ	PCM
7107615	0.18	0.85	0.013	0.002	0.19	0.23	0.07	0.10	0.02	0.003	0.007	0.001	0.002		0.0010	0.0000	0.005	0.37	0.25

Tensile Test								Charpy Impacts											
Plate Serial No	Pieces	Tons	Dir.	(psi) Yield	(psi) Tensile	Elongation % in 2"	Elongation % in 8"	Dir.	1	(%) shear	2	(%) shear	3	(%) shear	Avg.	(%) shear	Size	Temp	Min Avg.
7107615-06	8	28.13	T	41,300	70,800		20.8												
			T	42,100	71,400		18.5												

Manufactured to fully killed practice by Electric Arc Furnace. Welding or weld repair was not performed on this material.
Mercury has not been used in the direct manufacturing of this material. Produced as continuous cast as-rolled discrete plate.
Yield by 0.5EUL method unless otherwise specified. Ceq = C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)
Pcm = C+(Si/30)+(Mn/20)+(Cu/20)+(Ni/60)+(Cr/20)+(Mo/15)+(V/10)+5B
Melted and manufactured in the USA. ISO 9001:2000 certified (#12443-0) by SRI Quality System Registar (80985-08). PED 97/23/EC 7/2 Annex I, Para. 4.3 Compliant.
DIN 50049 3.1.B/EN 10204 3.1.B(2004) compliant. For ABS grades only, Quality Assurance certificate No. 03-HSMPQA-162

We hereby certify that the contents of this report are accurate and correct. All test results and operations performed by the material manufacturer are in compliance with the applicable specifications.

T. A. Dapretis

T. A. Dapretis, Metallurgist

10/23/2007 10:16:09 AM