



S O L O D	M2M MACHINING 15-4216 64 AVE SE Calgary, AB T2C 2B3 <div style="font-size: 2em; font-family: cursive; margin-left: 100px;">W2412</div>	Shipping Information	Material Cert Number
			805673 DJ005R0
			Revision Date
			01/24/2014

Item 1 of 1	
Material	ASTM A-694-08 Gr F70, in accordance with NACE MR0175.
Heat Treat	per Specification
Destructive Test	per Specification
Finish	Charpy test included at -40C for information only.
Other	Rough Machine with allowance to finish
Reference	Ultrasonic examination per ASTM A 388-11 - 1/8" F.B.H. Rejection Criteria
Size	Job Number: 315
	OD Length (inches)
	3.25 20
Surface	250 RMS Saw Cut

Heat Number	# of Pieces	(MILL - EQS-ELLWOOD QUALITY)
W2412	1	

Note: Additional prefix letter stamped on product with heat number is for our inventory purposes only and not relevant to heat number.

Chemical Composition (Wt. %)

C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Al	V
0.19	1.28	0.010	0.022	0.35	0.29	0.50	0.05	0.32	0.017	0.038
As	B	Ca	Cb	Co	H	N	Pb	Sb	Sn	
0.007	0.0003	0.0004	0.002	0.013	0.00010	0.0081	0.0001	0.0010	0.010	

(26.01*Cu)+(3.88*Ni)+(1.20*Cr)+(1.49*Si)+(17.28*P)-(7.29*Cu*Ni)-(9.10*Ni*P)-(33.39*Cu*Cu)
0.620

Austenite grain size 7/8

Mechanical Properties:

Pcs	Tensile PSI	Yield ¹ PSI	Elongation %	Reduction of Area %	Comments
1	98,064	77,265	24.3	63.9	MID-RAD;LONG

¹(Offset: .2%)


Jerry Giessinger

Corporate Quality Assurance Manager
This certification has been created and reviewed in compliance with the Scot Forge QMS

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M2M MACHINING

Material Cert Number
805673 DJ005R0

Charpy Impact Results:

Temp	1st	2nd	3rd	Comments
-40 C	23 ft-lbf	17 ft-lbf	36 ft-lbf	MID-RAD;LONG

Brinell Hardness Results:

Pcs	3000 Kg Load
1	223

Other Testing or Inspections:

Normalize at 1750 degrees F for 13.25 hours
Austenitized at 1750 degrees F for 12. hours and quenched
Temper at 1000 degrees F for 10 hours

Ultrasonic Testing - Reference Block Technique

ASTM A 388-11 - 1/8" F.B.H. Rejection Criteria
RADIAL & AXIAL STRAIGHT BEAM TEST

Test Number	Test Date	Make	Serial No	Model
17-001	01/23/2014	Krautkramer	015840	USN-58L

Material Condition	Sensitivity	Couplant	Transducer	Reference Standard
Machined 250 RMS or Better	80% Full Screen Height	Echo Gel	.75" Round 5.00 MHZ	Hole Size: 1/8" FBH Metal Path: DGS METHOD Alloy: A-588

Qty Tested	Remarks
1	No reportable indications/acceptable S/N: 805673-1

John Herman
Level II
Cert Exp: 01/24/2014

Compliance Statements:

We certify that the material listed was not processed with mercury bearing instruments and/or equipment which might cause contamination, nor was mercury handled in the immediate vicinity during the manufacturing process. We also certify that the material was not processed or cleaned with low melting point materials as alloying constituents, i.e. lead, zinc, cadmium, tin, antimony, bismuth, sulfur, or their compounds.

Jerry Giessinger
Corporate Quality Assurance Manager
This certification has been created and reviewed in
compliance with the Scot Forge QMS

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SCOT FORGE



8001 Winn Rd., Box 8
Spring Grove, IL 60081
847/587-1000
FAX 847/587-2000

024907 3 S
Heat # W2412

PO # 2012-402 MATERIAL CERTIFICATION

Page 3 of 3

M2M MACHINING

Material Cert Number 805673 DJ005R0
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Compliance Statements:

In accordance with the requirements of the Pressure Equipment Directive, all testing, inspection, and documentation is produced in accordance with EN 10204:2004 Type 3.1 and ISO 10474 Type 3.1.B

Material provided has been produced by Scot Forge under an approved quality program as defined within the Scot Forge Quality Management System Manual, Revision 4, dated 10/15/12.

The products supplied are in compliance with the quantity and quality requirements of the purchase order and specifications noted. The test reports represent the actual attributes of the items furnished and the test results are in full compliance with all applicable specifications and order requirements.

SCOT FORGE only processes materials manufactured or only processes materials manufactured or purchased to produce the forgings you purchase. Our process in no way adds to or changes constituents in the raw material as received.

This is to certify that the reported ladle analysis (an/or tests) shown on the report are correct as contained in the records of the company.

Attached is the appropriate raw material Material Safety Data Sheet.

Jerry Glessinger

Corporate Quality Assurance Manager

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PHONE - 403/265-6064
024907
1-01-3

SCOT FORGE

Phone 847/587-1000
Fax 847/587-2000
Toll Free 800/435-6621

8001 Winn Road, Box 8
Spring Grove, IL 60081



ORDER NO.
805673

SOLD TO:

SHIP TO:

M2M MACHINING
15-4216 64 AVE SE
Calgary, ALBERTA
CANADA

T2C 2B3

M2M MACHINING
15-4216 64 AVE SE
Calgary, ALBERTA, T2C 2B3
CANADA

CUST ORDER DATE	CUSTOMER ORDER NUMBER	ITEM	OF	REQUESTED DATE	ACK SHIP DATE	DATE SHIPPED	
12/17/13	2012-402	1	1	12/17/2013	01/31/2014		
PART NUMBER		B/P NUMBER			F.O.B. SCOT FORGE		
					VIA:		
QUANTITY ORDERED	QUANTITY SHIPPED	SHIPPING WEIGHT			CUSTOMER JOB NUMBER	RESALE	FREIGHT
1	1	100 LBS			315	X	COLLECT
DESCRIPTION							

Material ASTM A-694-08 Gr F70, in accordance with NACE MR0175.

Heat Treat per Specification

Destructive Test per Specification

Finish Charpy test included at -40C for information only.

Other Rough Machine with allowance to finish

Reference Ultrasonic examination per ASTM A 388-11 - 1/8"

Size F.B.H. Rejection Criteria

Job Number: 315

OD Length (inches)

3.25 20

Surface 250 RMS Saw Cut

Hard*Markings Method: Stamping

HT#

Soft Marking Method: Painting

805673

2012-402

SHIPPED FROM CLINTON, WI

MATERIAL CERTIFICATION ATTACHED

PHONE - 403/265-6064
024907
1-01-3

SCOT FORGE

Phone 847/587-1000
Fax 847/587-2000
Toll Free 800/435-6621

8001 Winn Road, Box 8
Spring Grove, IL 60081



ORDER NO.
805673

SOLD TO:

SHIP TO:

M2M MACHINING
15-4216 64 AVE SE
Calgary, ALBERTA
CANADA

T2C 2B3

M2M MACHINING
15-4216 64 AVE SE
Calgary, ALBERTA, T2C 2B3
CANADA

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12/17/13	2012-402	1	1	12/17/2013	01/31/2014	

PART NUMBER	B/P NUMBER	VIA:	F.O.B. SCOT FORGE

QUANTITY ORDERED	QUANTITY SHIPPED	SHIPPING WEIGHT	CUSTOMER JOB NUMBER	RESALE	FREIGHT
1	1	100 LBS	315	X	COLLECT

DESCRIPTION

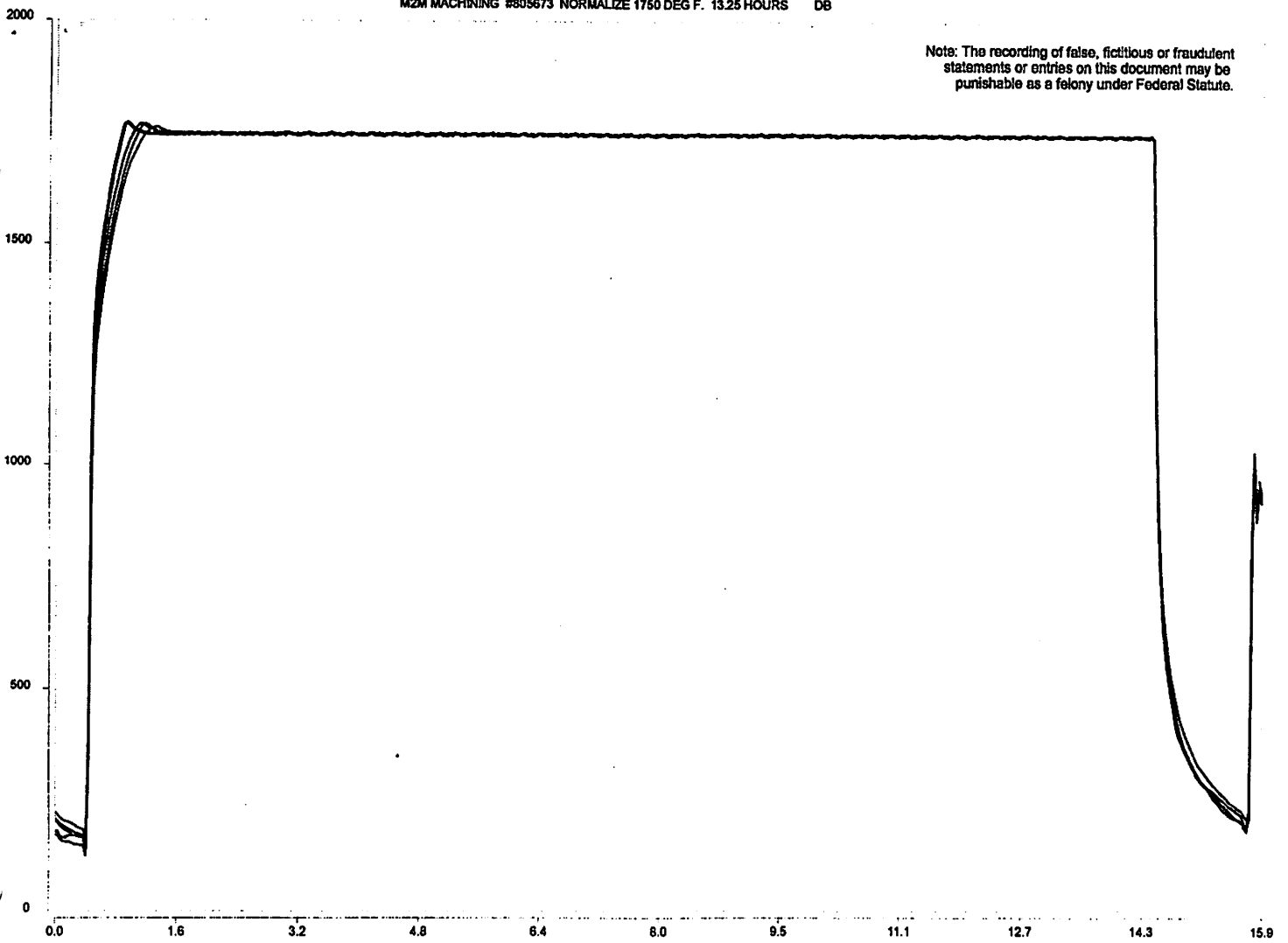
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Charpy test included at -40C for information only.
Finish Rough Machine with allowance to finish
Other Ultrasonic examination per ASTM A 388-11 - 1/8" F.B.H. Rejection Criteria
Reference Job Number: 315
Size OD Length (inches)
3.25 20

Surface 250 RMS Saw Cut
Stamp: 2012-402
Hard Markings Method: Stamping
HT#
Soft Marking Method: Painting
805673
2012-402

SHIPPED FROM CLINTON, WI

MATERIAL CERTIFICATION ATTACHED

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1/06/2014 09:38:16

15.803 Hrs

01/07/2014 01:32:25

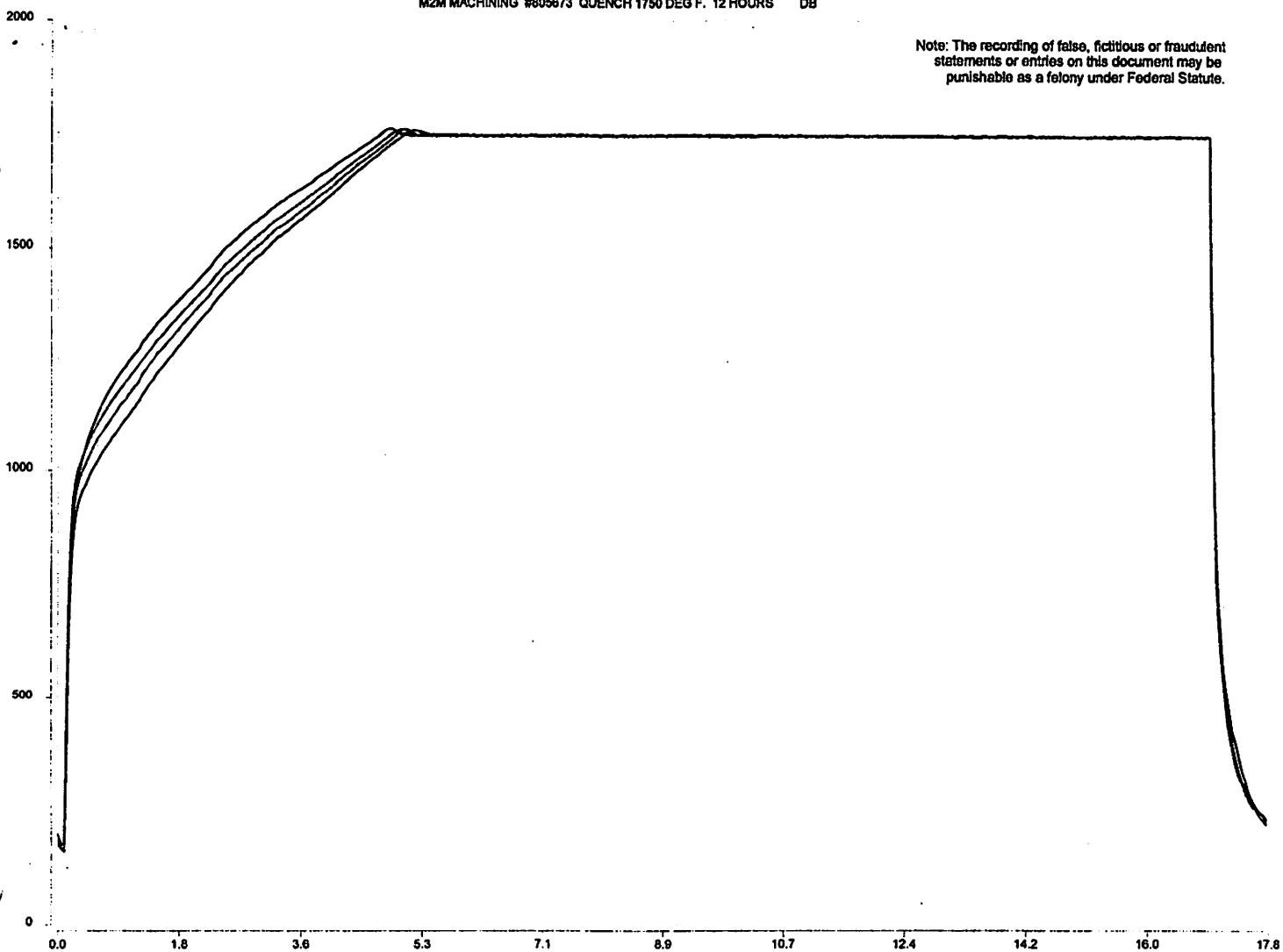
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Z3RT
Z5RT

0 2000
0 2000
0 2000

Z2RT
Z4RT

0 2000
0 2000

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1/08/2014 23:58:15

17.758 Hrs

01/09/2014 17:41:45

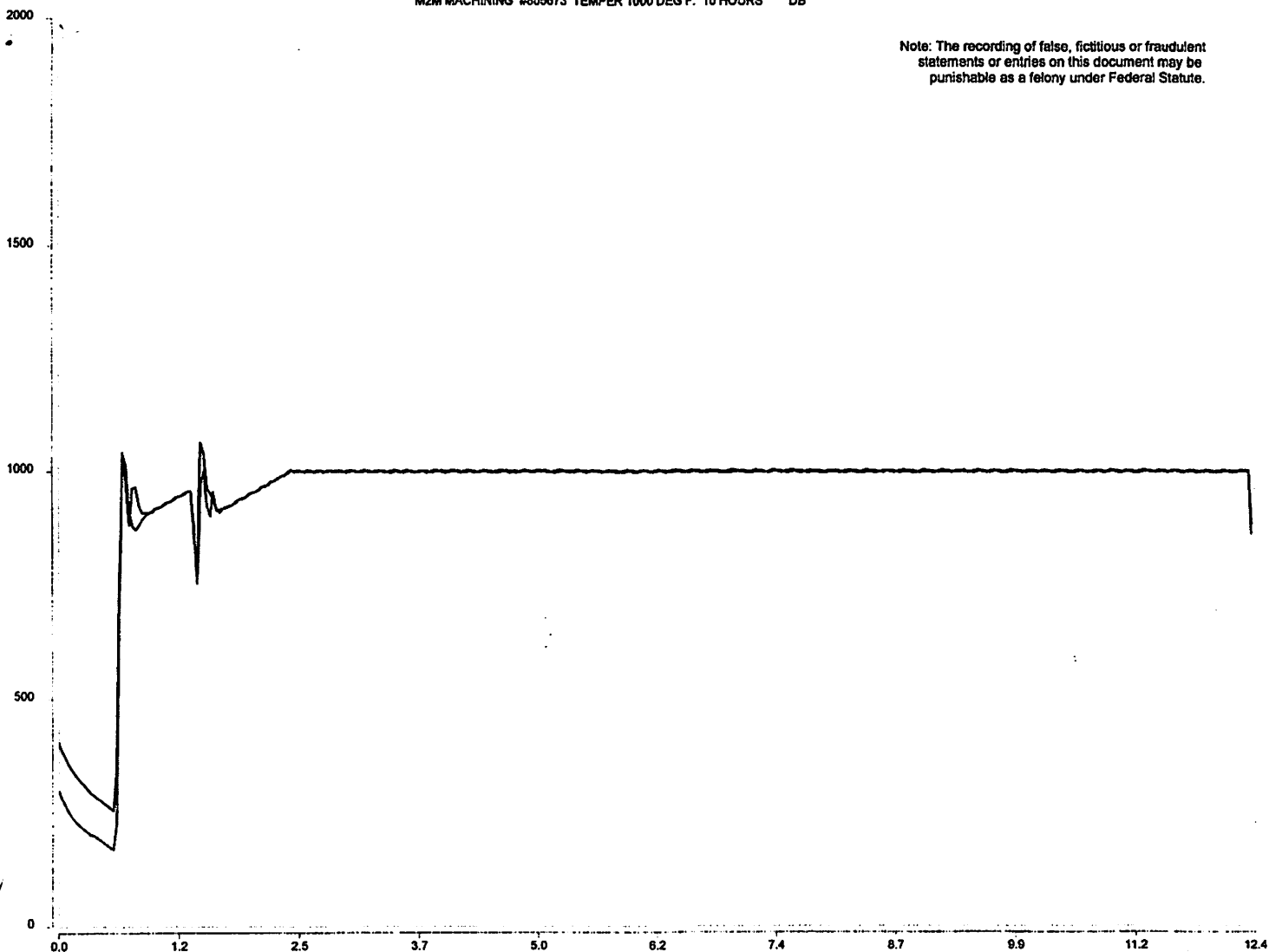
Z1RT
Z3RT

0 2000
0 2000

Z2RT
Z4RT

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0 2000

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1/09/2014 15:58:14

12.397 Hrs

01/10/2014 04:22:02

Z1RT

0

2000

Z2RT

0

2000

SCOT FORGE



8001 Winn Road
Spring Grove, IL 60081
Phone: (847) 587-1000
Fax: (847) 587-2000
www.scotforge.com

Certificate of Compliance

Company:	<u>M2M MACHINING</u>	Shop Order:	<u>805673</u>
Purchase Order:	<u>2012-402</u>	Quantity:	<u>1</u>
PO Line Item:	<u>1</u>	Heat No.:	<u>W2412</u>
Drawing:	<u>N/A</u>	Serial No.:	<u>805673-1</u>
Part Number:	<u>N/A</u>		
Material:	<u>ASTM A-594-08 Gr F70, in accordance with NACE MR0175.</u>		

It is hereby certified that the product supplied above is in the quantities and of the quality specified on the above purchase order and that the Material Certification and test reports represent the actual attributes of the items furnished. The results are in full compliance with all applicable specifications and all procurement requirements. Actual test, inspection and other verifiable quality data is also on file at the address above and available for review.

The material listed above was not processed with mercury or mercury bearing instruments and / or equipment which might cause contamination, nor was mercury handled in the immediate vicinity during the manufacturing process.

Manufactured under Scot Forge Quality Manual: Rev 4, Dated 10/15/12.

Authorized Signature: 

Printed Name: Paul Lesch

Title: QA Leadperson

Date: 01/30/2014

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Standard C of C
QAC-ALL-FRM-6078
Revision: 6
Approved: 10/9/2012