Fasteners & Metals Testing Program

Summary Report Cycle 106, 2nd Quarter - 2014

Collaborative Testing Services, Inc.

About the Metals Program About CTS Key to Tables and Graphs Instrument and Method Code List

Analysis	Test Group
	Tensile Tests
130	Tensile Strength (Flat Steel)
131	Yield Strength (Flat Steel)
132	Elongation (Flat Steel)
	Fasteners Tests
115	Fastener Wedge Tensile (10 degree)
116	Fastener Axial Tensile
125	Fasteners Hardness
126	Vickers Hardness
127	Fastener Wedge Tensile (10 deg) Metric
128	Fastener Axial Tensile - Metric
129	Fastener Double Shear
	Hardness / Metallography Tests
118	Rockwell Hardness: C & B Scales (HRC)
120	Rockwell Hardness (C Scale)
136	Rockwell Superficial Hardness (30N Scale)
145	Total Case Depth
146	Effective Case Depth
147	Grain Size (Stainless Steel)
	Chemical Analyses
150 - 157	Chemical Analysis: Nickel-based Alloy
180 - 189	Chemical Analysis: Corrosion Resistant Steel
190 - 197	Chemical Analysis: Aluminum Alloy

ABOUT THE FASTENERS & METALS PROGRAM

Collaborative Testing Services operates and maintains the program for Fasteners and Metals as part of a series of Proficiency and Interlaboratory Testing Programs offered by CTS in cooperation with various associations for a wide range of industries. Personnel from the National Institute of Standards and Technology (formerly the National Bureau of Standards), Industrial Fasteners Institute (IFI), and the Naval Shipyard Laboratories provide technical guidance and advice to this program.

The purpose of the program is to give participating laboratories a means to compare periodically the level and uniformity of their testing with that of other laboratories in the industry. It also provides a realistic assessment of the state of fasteners and metals testing proficiency.

In each report, there is a summary of the statistics for the analysis and a graphical representation of the data for each test. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations. Refer to the KEY TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 50 countries, currently participate in the CTS programs.
For further information contact:

COLLABORATIVE TESTING SERVICES, INC.
21331 Gentry Drive
Sterling, VA 20166

Phone: (571) 434-1925
FAX: (571)434-1937
e-mail: metals@cts-interlab.com
www.collaborativetesting.com
Office Hours: 8:00 a.m. - 4:30 p.m. ET

Key for Fasteners & Metals Program Web Summary Report

WebCode - Assigned laboratory identification number(temporary)used to ensure lab confidentiality while permitting a lab to locate its data in the report published on the CTS website.

Lab Mean - The average of the test results obtained by the participant.

Grand Mean - The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.

Between-Lab Standard Deviation - An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

Comparative Performance Value (CPV) - An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. CPV = (LAB MEAN - GRAND MEAN)/ BETWEEN-LAB STANDARD DEVIATION. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa).

Instr. Code - A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section).

Data Flag - DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

Data Flags

Data Flag Type	Statistically Included/Excluded	ACTION REQUIRED
*	INCLUDED	**CAUTION** - review testing procedure and monitor future results. Results fall outside the drawn 95% ellipse but within a 99% ellipse that is calculated but not drawn. Labs flagged with an * do not typically receive a specific note regarding the flag. If this error is repeated in future rounds, however, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm.
X	EXCLUDED	**STOP** - immediate review of data and/or testing procedure is required (all tests exept Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data are excluded. For Chemical Analyses see an additional Memo.
M	EXCLUDED	**PROCEED** - lab was unable to report data for at least one sample. However, a lab receiving two or more M flags for a test may need to stop and review its testing procedures.

Graph - For each laboratory, the Lab Mean for the second sample (y-axis) is plotted against the Lab Mean for the first sample (x-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the Grand Means for each sample. When 20 or more laboratories are included in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above. Labs not receiving a data flag appear as points on the plot.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

		Sample X19			Sample X20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		169.87	1.24	0.82	164.00	-0.07	-0.05	TO
2BCYL4		170.63	2.01	1.32	163.80	-0.27	-0.19	TO
2ZUKJ2		166.16	-2.46	-1.63	163.29	-0.78	-0.56	BA
38MBWA	X	12.97	-155.66	-102.67	12.83	-151.23	-107.81	BA
3B4JHN		168.00	-0.62	-0.41	166.65	2.58	1.84	UN
3NWKXH		167.01	-1.62	-1.07	164.02	-0.05	-0.03	XX
4HPFUP		167.27	-1.36	-0.90	162.80	-1.27	-0.90	TO
4UETZZ	X	165.53	-3.09	-2.04	158.87	-5.20	-3.71	SA
4VCEVZ		168.27	-0.36	-0.24	163.09	-0.98	-0.70	BA
6FN4B2		171.93	3.31	2.18	165.10	1.03	0.74	SA
6PVCLT		169.38	0.75	0.49	164.86	0.80	0.57	XX
78727Y		167.77	-0.86	-0.57	162.43	-1.63	-1.17	XX
7FL6JX		169.91	1.29	0.85	165.40	1.33	0.95	TO
8AF8VY		169.61	0.98	0.65	164.12	0.06	0.04	TO
8QHD22		168.51	-0.12	-0.08	163.54	-0.53	-0.38	SH
8R93ZG		169.85	1.23	0.81	164.36	0.29	0.21	XX
8T82ZM	*	167.67	-0.96	-0.63	167.33	3.27	2.33	TO
8VTL8C		169.22	0.59	0.39	164.13	0.06	0.04	GA
96WY2K		170.08	1.45	0.96	164.98	0.91	0.65	SA
9GQNA6		170.55	1.92	1.27	164.65	0.58	0.41	XX
A6Y2CB		169.63	1.00	0.66	164.93	0.86	0.61	TO
AWNAW9		167.73	-0.89	-0.59	162.60	-1.47	-1.05	TO
BWQCE2		167.60	-1.03	-0.68	163.33	-0.73	-0.52	TO
C7WB7B		169.14	0.51	0.34	165.38	1.32	0.94	IN
CB82XJ		167.81	-0.82	-0.54	163.54	-0.52	-0.37	IN
CEBB7K		165.25	-3.37	-2.23	163.62	-0.44	-0.32	IN
CUAJNF		169.30	0.67	0.44	163.50	-0.57	-0.40	TO
CUNHMC		167.23	-1.40	-0.92	163.17	-0.90	-0.64	SH
CUUBMR		168.20	-0.43	-0.28	162.03	-2.03	-1.45	SH
CXZJDN		168.07	-0.56	-0.37	165.20	1.13	0.81	BA
F2Q9AW		171.43	2.81	1.85	164.00	-0.07	-0.05	MT
FFWK6J		168.17	-0.46	-0.30	164.50	0.43	0.31	TO
FJ8Q8J		169.46	0.83	0.55	163.23	-0.84	-0.60	TO
FRT4NC		170.67	2.04	1.34	164.01	-0.06	-0.04	TO
GA6PKQ		169.03	0.41	0.27	163.77	-0.30	-0.21	SA
GAP9QX		168.47	-0.15	-0.10	165.47	1.40	1.00	IN
H24GAB		170.13	1.51	0.99	165.83	1.77	1.26	IN
H6Z36K		169.15	0.52	0.35	164.95	0.88	0.63	SA
HAL283		169.00	0.37	0.25	164.33	0.27	0.19	TO
HCGM26		169.03	0.40	0.27	163.87	-0.20	-0.14	RI
HHFTBF		169.86	1.23	0.81	166.76	2.70	1.92	TO
HQRKJY		168.17	-0.46	-0.30	164.40	0.33	0.24	TO
HTJGAE		165.40	-3.23	-2.13	161.40	-2.67	-1.90	XX
J89HA6		169.97	1.34	0.88	162.07	-2.00	-1.43	SA
JMQR92		170.63	2.01	1.32	164.97	0.91	0.65	TO
JQ39A7		169.03	0.40	0.26	165.59	1.52	1.08	SA
JRQX6H		168.07	-0.56	-0.37	162.67	-1.40	-1.00	IN
JT8YGK	*	164.63	-3.99	-2.63	162.23	-1.83	-1.31	SA
KDQ6LM		167.73	-0.89	-0.59	163.50	-0.57	-0.40	XX

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

		Sample X19			Sample X20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
KZKQ76		166.50	-2.13	-1.40	160.57	-3.50	-2.50	SA
L3QH6W		168.75	0.12	0.08	164.39	0.32	0.23	BA
L6WDV8		168.30	-0.33	-0.22	163.17	-0.90	-0.64	SA
MMYVMC	X	177.00	8.37	5.52	169.07	5.00	3.56	XX
NFJFYJ		168.10	-0.53	-0.35	166.37	2.30	1.64	TO
NJTMXR		169.50	0.87	0.58	163.75	-0.32	-0.23	FI
NKL8KG		167.50	-1.13	-0.74	163.47	-0.60	-0.43	TO
NPHHHW		166.77	-1.85	-1.22	162.44	-1.63	-1.16	SA
P4PAR8		171.74	3.11	2.05	165.74	1.67	1.19	SA
QDN287		168.15	-0.48	-0.32	163.94	-0.13	-0.09	SA
QM6CCK		169.72	1.09	0.72	165.03	0.96	0.69	IN
QZN4UZ		168.87	0.24	0.16	166.07	2.00	1.42	TO
RDT46A		166.53	-2.09	-1.38	161.83	-2.23	-1.59	SA
RJX664		167.23	-1.39	-0.92	165.10	1.03	0.74	TO
RYA6PG		168.53	-0.10	-0.07	165.02	0.96	0.68	XX
T6A3RE		169.23	0.61	0.40	162.99	-1.08	-0.77	UN
TQQUXE		170.00	1.37	0.90	163.97	-0.10	-0.07	TO
TXNDC4		168.26	-0.37	-0.25	164.26	0.19	0.14	CH
U2NYM7	X	169.93	1.31	0.86	169.37	5.30	3.78	SH
U6D8D9		169.80	1.17	0.77	165.47	1.40	1.00	IN
U72QYT		168.17	-0.46	-0.30	160.83	-3.23	-2.31	BA
V7XRWW		169.37	0.74	0.49	166.93	2.87	2.04	SA
VJJWCF		169.45	0.83	0.54	166.41	2.34	1.67	UT
W3NNJT		167.97	-0.66	-0.44	163.40	-0.67	-0.48	MT
X2U7A6		170.90	2.27	1.50	163.90	-0.17	-0.12	TO
X6EH3L		166.27	-2.36	-1.56	162.73	-1.33	-0.95	SA
XMB2L2		167.10	-1.53	-1.01	163.97	-0.10	-0.07	TO
XPE8CN		166.77	-1.86	-1.23	162.80	-1.27	-0.90	TO
XZE4LX		168.40	-0.23	-0.15	162.47	-1.60	-1.14	TO
YG4NLH		169.14	0.52	0.34	163.71	-0.36	-0.25	FI
YLDJB8		166.10	-2.53	-1.67	163.10	-0.97	-0.69	SA
Z2LHPA		171.57	2.94	1.94	166.00	1.93	1.38	BA

Summary Statistics

	Sample X19		Sample X20	
Grand Means	168.63	ksi	164.07	ksi
Stnd Dev Btwn Labs	1.52	ksi	1.40	ksi

Samples X19 , X20 : Fastener sizes: 3/8-16 x 2, 3/8-16 x 2 3/4

Statistics based on 77 of 81 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

Comments on assigned Data Flags for Analysis #115

WebCode	Flag	Analyst Comment
38MBWA	X	Extreme data.
4UETZZ	X	Data for sample X20 are low.
MMYVMC	X	Data for both samples are high.
U2NYM7	X	Data for sample X20 are high.

Cycle 106
2nd Q, 2014

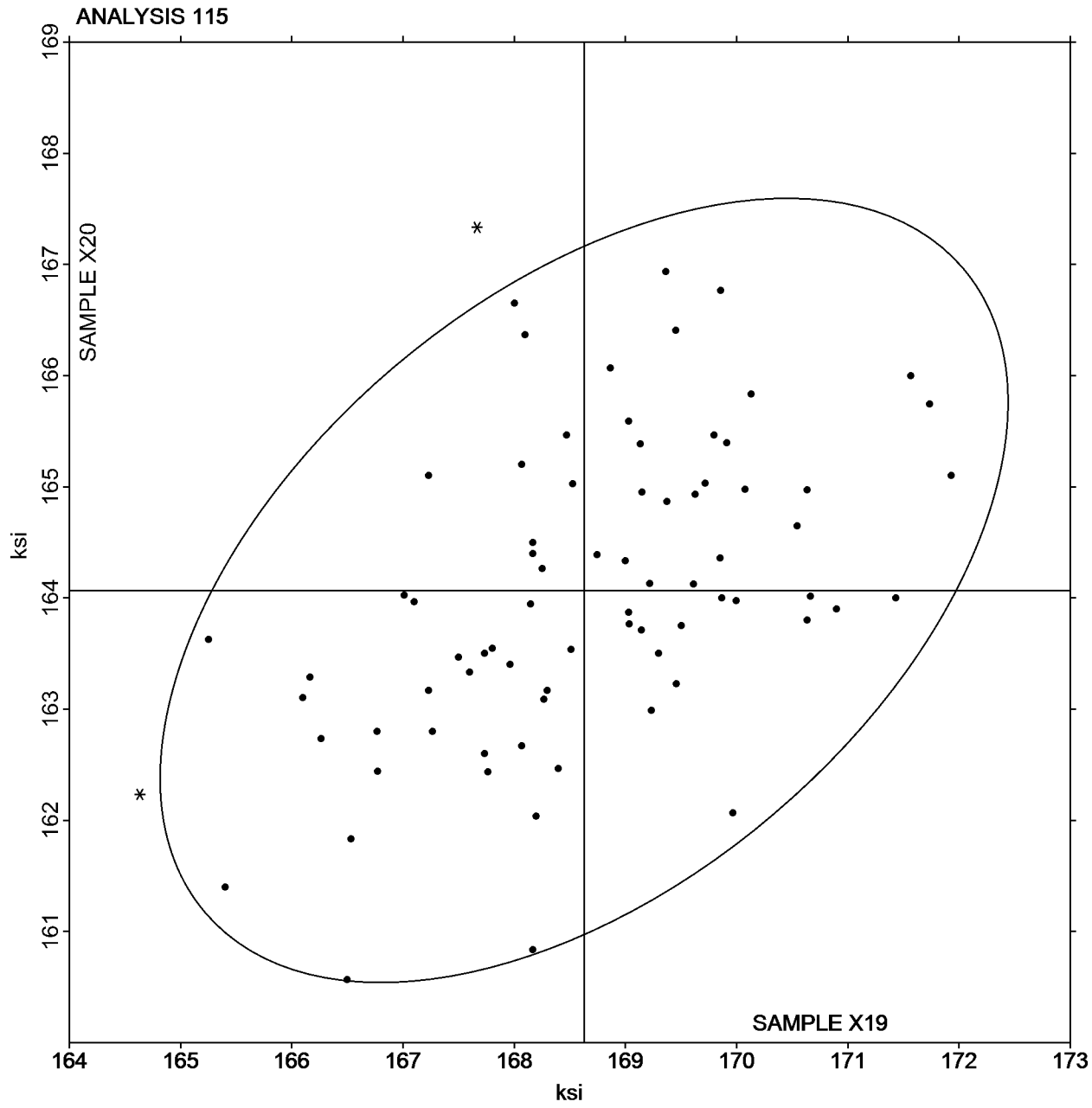
Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

SAMPLE X19
168.63 ksi

SAMPLE X20
164.07 ksi



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

		Sample Q19			Sample Q20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		170.57	-0.54	-0.31	169.27	-0.65	-0.41	TO
2U3WD4	X	193.20	22.09	12.63	187.40	17.49	11.01	UN
2Z9NQ9		172.23	1.12	0.64	168.70	-1.21	-0.76	UT
38MBWA	X	13.27	-157.84	-90.21	12.97	-156.95	-98.79	BA
3B4JHN		168.44	-2.67	-1.53	169.94	0.02	0.02	UN
3E4ANM		171.99	0.88	0.50	171.97	2.06	1.30	XX
3NWKXH		173.12	2.01	1.15	170.41	0.50	0.31	XX
4HPFUP		169.13	-1.98	-1.13	171.00	1.09	0.68	TO
4VCEVZ		169.23	-1.88	-1.07	168.43	-1.48	-0.93	BA
6B2XAM		169.73	-1.38	-0.79	170.63	0.72	0.45	TO
6FN4B2		172.67	1.56	0.89	172.07	2.15	1.36	SA
6PFT4G		171.20	0.09	0.05	170.77	0.85	0.54	TO
6PVCLT		172.24	1.13	0.65	168.52	-1.40	-0.88	XX
6W3Z4G		171.39	0.28	0.16	168.63	-1.28	-0.81	IN
78727Y		168.63	-2.48	-1.42	168.87	-1.05	-0.66	XX
7FL6JX		171.63	0.53	0.30	171.85	1.94	1.22	TO
7YY47N	X	152.37	-18.74	-10.71	150.50	-19.41	-12.22	TO
87BVH7		170.33	-0.78	-0.44	170.00	0.09	0.05	XX
8QHD22		170.15	-0.96	-0.55	168.22	-1.69	-1.07	SH
8R93ZG		171.30	0.19	0.11	171.88	1.96	1.23	XX
8VTL8C		172.30	1.19	0.68	169.69	-0.23	-0.14	GA
96WY2K		170.05	-1.06	-0.61	169.91	0.00	0.00	SA
9GQNA6		171.24	0.13	0.08	170.24	0.33	0.21	XX
AWNAW9		174.57	3.46	1.98	170.90	0.99	0.62	TO
BWQCE2		169.03	-2.08	-1.19	168.77	-1.15	-0.72	TO
C7WB7B		170.98	-0.13	-0.07	170.63	0.72	0.45	IN
CB82XJ		170.90	-0.21	-0.12	168.22	-1.69	-1.07	IN
CEBB7K		172.82	1.71	0.98	169.07	-0.84	-0.53	IN
CMMT2K	*	174.13	3.02	1.73	174.87	4.96	3.12	IN
CUAJNF		168.40	-2.71	-1.55	170.17	0.25	0.16	TO
CUNHMC		170.76	-0.35	-0.20	168.25	-1.67	-1.05	SH
CUUBMR		169.13	-1.98	-1.13	167.60	-2.31	-1.46	SH
DAQ7AP		171.97	0.86	0.49	172.80	2.89	1.82	TO
DHLAWY		171.11	0.00	0.00	172.34	2.43	1.53	SH
F2Q9AW		172.13	1.02	0.59	169.67	-0.25	-0.16	MT
FD7GCC		173.33	2.22	1.27	171.00	1.09	0.68	TR
FJ8Q8J		171.18	0.07	0.04	171.18	1.27	0.80	TO
FRT4NC		170.86	-0.25	-0.14	171.07	1.16	0.73	TO
FT4B4K		170.08	-1.03	-0.59	170.27	0.36	0.23	XX
GA6PKQ		171.53	0.42	0.24	169.40	-0.51	-0.32	SA
GAP9QX	*	175.42	4.31	2.47	170.59	0.67	0.42	IN
GPLGUR		171.57	0.46	0.26	172.07	2.15	1.36	SA
H24GAB		172.60	1.49	0.85	172.73	2.82	1.78	IN
HHFTBF		169.18	-1.93	-1.10	171.11	1.20	0.75	TO
HRV4H3		172.77	1.66	0.95	170.57	0.65	0.41	IN
HTJGAE		169.23	-1.88	-1.07	169.70	-0.21	-0.13	XX
J3WVVN		174.58	3.47	1.98	172.13	2.22	1.40	TO
JMQR92		172.22	1.11	0.63	170.38	0.46	0.29	TO
JQ39A7		170.75	-0.36	-0.21	170.32	0.41	0.26	SA

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

		Sample Q19			Sample Q20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
JRQX6H	X	168.47	-2.64	-1.51	164.47	-5.45	-3.43	IN
JT8YGK		170.97	-0.14	-0.08	166.87	-3.05	-1.92	SA
KDQ6LM		168.67	-2.44	-1.40	168.37	-1.55	-0.97	XX
KL448K		171.37	0.26	0.15	170.91	0.99	0.63	SH
L3QH6W		172.46	1.35	0.77	167.56	-2.36	-1.48	BA
L6WDV8		169.43	-1.68	-0.96	166.13	-3.78	-2.38	SA
LGY6Q2		170.93	-0.18	-0.10	167.40	-2.51	-1.58	TO
NJTMXR		168.44	-2.67	-1.53	169.02	-0.89	-0.56	FI
NPHHHW		172.07	0.96	0.55	170.96	1.04	0.66	SA
P4PAR8		172.68	1.57	0.90	169.62	-0.29	-0.18	SA
QGYZWZ		170.17	-0.94	-0.54	170.52	0.61	0.38	TO
QL3DPJ		170.87	-0.24	-0.14	168.50	-1.41	-0.89	XX
QM6CCK		172.09	0.98	0.56	169.33	-0.58	-0.37	IN
QZN4UZ		173.73	2.62	1.50	170.90	0.99	0.62	TO
RDT46A		166.83	-4.28	-2.44	168.07	-1.85	-1.16	SA
RJTCUJ	X	8,588	8,416.60	4,810.33	8,796	8,626.36	5,430.07	XX
T6A3RE		169.19	-1.92	-1.10	168.56	-1.36	-0.85	UN
TQQWJD		172.22	1.11	0.63	171.12	1.20	0.76	MT
TXNDC4		169.63	-1.48	-0.84	170.59	0.68	0.43	CH
U2NYM7		171.57	0.46	0.26	168.57	-1.35	-0.85	XX
U2WWAH		174.09	2.98	1.70	171.46	1.55	0.98	RI
U6ACA3	X	135.53	-35.58	-20.33	134.87	-35.05	-22.06	TO
U72QYT		168.37	-2.74	-1.57	168.80	-1.11	-0.70	BA
UAG88X		172.69	1.58	0.90	170.41	0.50	0.31	TO
V7XRWW		173.90	2.79	1.60	170.60	0.69	0.43	SA
VJJWCF	X	166.84	-4.27	-2.44	163.99	-5.92	-3.73	UT
W3NNJT		169.40	-1.71	-0.98	169.20	-0.71	-0.45	MT
WEKY6Z		170.23	-0.88	-0.50	170.53	0.62	0.39	SA
WGCHEL	X	170.67	-0.44	-0.25	181.33	11.42	7.19	XX
WX2K6X		170.99	-0.12	-0.07	171.30	1.38	0.87	TO
X2U7A6		168.30	-2.81	-1.61	168.87	-1.05	-0.66	TO
X8KBBL		172.26	1.15	0.66	168.10	-1.81	-1.14	UT
XZE4LX		171.53	0.42	0.24	167.37	-2.55	-1.60	TO
YCBZBQ	X	185.61	14.50	8.29	183.16	13.25	8.34	IN
YG4NLH		169.26	-1.85	-1.06	168.38	-1.53	-0.96	FI
YLDJB8		169.63	-1.48	-0.84	167.27	-2.65	-1.67	SA
Z2LHPA		172.63	1.52	0.87	171.27	1.35	0.85	BA

Summary Statistics

	Sample Q19		Sample Q20	
Grand Means	171.11	ksi	169.91	ksi
Stnd Dev Btwn Labs	1.75	ksi	1.59	ksi

Samples Q19 , Q20 : Fastener sizes: 3/8-16 x 2, 3/8-16 x 2

Statistics based on 77 of 86 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

Comments on assigned Data Flags for Analysis #116

WebCode	Flag	Analyst Comment
2U3WD4	X	Data for both samples are high.
38MBWA	X	Extreme data.
7YY47N	X	Data for both samples are low.
JRQX6H	X	Data for sample Q20 are low.
RJTCUJ	X	Extreme data.
U6ACA3	X	Data for both samples are low.
VJJWCF	X	Data for sample Q20 are low.
WGCHEL	X	Data for sample Q20 are high. Inconsistent within the determinations of sample Q20.
YCBZBQ	X	Data for both samples are high.

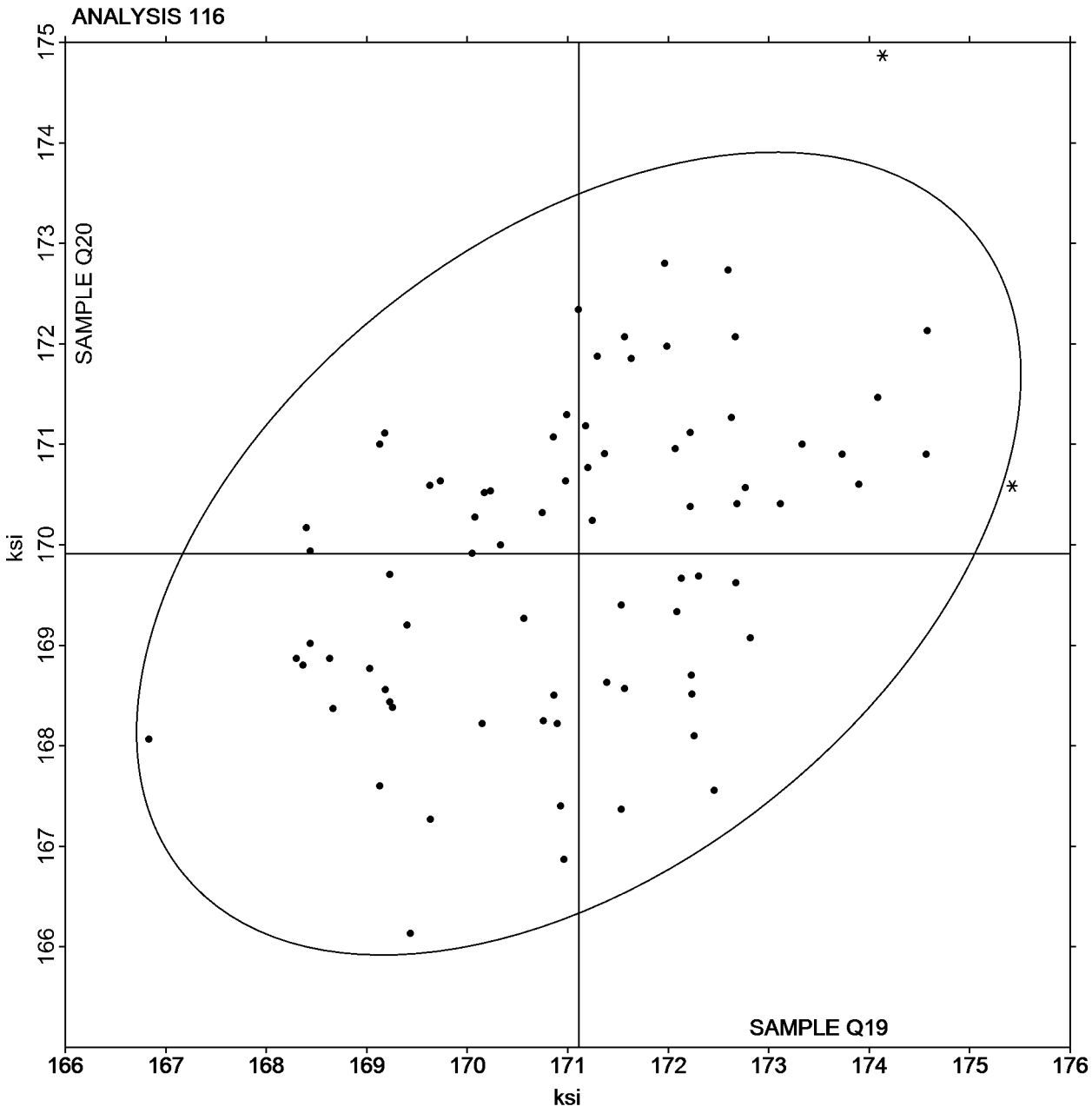
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

SAMPLE Q19	**SAMPLE Q20**
171.11 ksi	**169.91 ksi**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

		Sample E19			Sample E20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2QH7UL		52.48	0.39	1.01	56.60	0.28	0.64	WI
38MBWA		51.38	-0.71	-1.84	55.80	-0.52	-1.19	WI
39TBXP		51.96	-0.13	-0.33	55.98	-0.34	-0.78	UN
3LJM8Y		52.16	0.07	0.18	56.44	0.12	0.27	WI
3PHWJM		51.44	-0.65	-1.68	56.00	-0.32	-0.73	WI
3YFYBL		51.94	-0.15	-0.39	56.18	-0.14	-0.32	WI
44XVXG		52.30	0.21	0.55	56.60	0.28	0.64	UN
4E46UR		51.90	-0.19	-0.49	55.84	-0.48	-1.10	LE
6FN4B2		52.20	0.11	0.29	56.38	0.06	0.14	WI
6PFT4G		51.98	-0.11	-0.28	56.28	-0.04	-0.09	WI
6V82RU	*	51.42	-0.67	-1.74	56.30	-0.02	-0.05	NA
78727Y		51.96	-0.13	-0.33	56.48	0.16	0.36	XX
7FARFH		52.46	0.37	0.96	56.58	0.26	0.59	MI
87YV3N		52.08	-0.01	-0.02	56.16	-0.16	-0.37	WI
8D3W3J		52.32	0.23	0.60	56.38	0.06	0.14	WI
8R93ZG		52.48	0.39	1.01	57.00	0.68	1.55	NA
8T82ZM		51.68	-0.41	-1.06	55.92	-0.40	-0.91	UN
8T99LV		52.04	-0.05	-0.13	56.12	-0.20	-0.46	XX
8VJVKA		52.18	0.09	0.24	56.56	0.24	0.55	WI
8WLLWA		51.88	-0.21	-0.54	55.92	-0.40	-0.91	WI
8X6UFJ		51.94	-0.15	-0.39	55.86	-0.46	-1.05	CL
8YW3EM	X	51.48	-0.61	-1.58	56.66	0.34	0.78	MI
9A3HDD		53.00	0.91	2.36	57.24	0.92	2.10	WI
9PRWUL		52.44	0.35	0.91	57.12	0.80	1.82	WI
A6TXEP		51.72	-0.37	-0.96	56.38	0.06	0.14	MA
AXHYBM		52.32	0.23	0.60	56.66	0.34	0.78	NA
B929DR		52.40	0.31	0.81	56.60	0.28	0.64	NA
BFU436		51.86	-0.23	-0.59	56.32	0.00	0.00	XX
C8YGTK		52.44	0.35	0.91	56.58	0.26	0.59	WI
CC82BP		51.84	-0.25	-0.65	56.40	0.08	0.18	CL
CPPBX8		52.54	0.45	1.17	56.96	0.64	1.46	WI
CRW3YF		51.95	-0.14	-0.36	56.25	-0.07	-0.16	CL
CU7PQ9	*	51.30	-0.79	-2.05	56.16	-0.16	-0.37	CL
CUNHMC		52.34	0.25	0.65	56.32	0.00	0.00	IN
CWELFH		51.74	-0.35	-0.91	55.96	-0.36	-0.82	WI
DPQ2MA	*	53.06	0.97	2.52	57.12	0.80	1.82	WI
ECHKCY		52.58	0.49	1.27	57.14	0.82	1.87	WI
EQRCV6		52.00	-0.09	-0.23	56.00	-0.32	-0.73	WI
F2Q9AW		52.36	0.27	0.70	56.80	0.48	1.09	UN
F9AUEH		52.28	0.19	0.50	56.42	0.10	0.23	WI
FA4KAB		52.64	0.55	1.43	56.86	0.54	1.23	WI
FA6W96		51.98	-0.11	-0.28	56.50	0.18	0.41	WI
FNDFFQ		52.70	0.61	1.59	56.94	0.62	1.41	CL
FPCEYY	*	51.90	-0.19	-0.49	56.86	0.54	1.23	MI
G4XJ9L		51.74	-0.35	-0.91	56.04	-0.28	-0.64	WI
GAPQUE		51.70	-0.39	-1.01	56.10	-0.22	-0.50	UN
GEY9QL		52.16	0.07	0.18	55.74	-0.58	-1.32	WI
GNZQ3B		51.58	-0.51	-1.32	56.10	-0.22	-0.50	WI
H24GAB		52.59	0.50	1.31	56.78	0.46	1.04	WI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

		Sample E19			Sample E20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
H76ULN		51.44	-0.65	-1.68	55.70	-0.62	-1.41	WI
H8GLHC		52.44	0.35	0.91	56.62	0.30	0.68	UN
HAL283		51.98	-0.11	-0.28	55.92	-0.40	-0.91	WI
HCGM26		52.26	0.17	0.44	56.02	-0.30	-0.68	WI
HRV4H3		52.00	-0.09	-0.23	56.16	-0.16	-0.37	NA
J89HA6		52.04	-0.05	-0.13	56.52	0.20	0.46	WI
JEEFAH	X	55.90	3.81	9.89	52.12	-4.20	-9.59	XX
JRQX6H		52.40	0.31	0.81	56.90	0.58	1.32	WI
JT8YGK		52.48	0.39	1.01	56.54	0.22	0.50	NA
JWA3LA		51.30	-0.79	-2.05	55.30	-1.02	-2.33	XX
K78PQB		52.10	0.01	0.03	56.10	-0.22	-0.50	WI
L3P2VX		52.40	0.31	0.81	56.28	-0.04	-0.09	LE
LGY6Q2		51.80	-0.29	-0.75	56.36	0.04	0.09	UN
LYCTUZ		51.92	-0.17	-0.44	56.42	0.10	0.23	WI
M9BAYN		51.72	-0.37	-0.96	55.70	-0.62	-1.41	WI
MKJCYC		52.18	0.09	0.24	56.44	0.12	0.27	WI
MKJTBW		52.06	-0.03	-0.08	56.14	-0.18	-0.41	MI
MMAW64		52.26	0.17	0.44	56.64	0.32	0.73	CL
MMQ2GH		51.74	-0.35	-0.91	56.08	-0.24	-0.55	WI
N346LV	*	51.56	-0.53	-1.37	55.16	-1.16	-2.65	UN
N8BTYW		52.52	0.43	1.12	56.32	0.00	0.00	WI
NFJFYJ		52.34	0.25	0.65	56.00	-0.32	-0.73	CL
NPHHHW		51.80	-0.29	-0.75	56.00	-0.32	-0.73	UN
P4PAR8		51.67	-0.42	-1.08	55.70	-0.62	-1.42	LE
PEQEGM		52.00	-0.09	-0.23	55.80	-0.52	-1.19	WI
PZMJ9Y		52.42	0.33	0.86	56.50	0.18	0.41	UN
Q6HXTM		52.64	0.55	1.43	56.92	0.60	1.37	WI
Q6QHRW		52.08	-0.01	-0.02	56.36	0.04	0.09	XX
QDN287		51.52	-0.57	-1.48	56.14	-0.18	-0.41	WI
QM6CCK	*	52.96	0.87	2.26	57.40	1.08	2.46	UN
RJKYRA		51.50	-0.59	-1.53	55.48	-0.84	-1.93	CL
RJX664		51.80	-0.29	-0.75	56.08	-0.24	-0.55	WI
RL2BKJ		52.00	-0.09	-0.23	56.00	-0.32	-0.73	WI
T6A3RE		51.84	-0.25	-0.65	56.18	-0.14	-0.32	XX
TJW6HJ	X	52.54	0.45	1.17	57.54	1.22	2.78	EM
TUTX33		51.90	-0.19	-0.49	56.18	-0.14	-0.32	NA
U6D8D9		52.38	0.29	0.76	56.56	0.24	0.55	UN
U72QYT		51.82	-0.27	-0.70	56.00	-0.32	-0.73	PH
U9LVZB		52.42	0.33	0.86	56.70	0.38	0.87	WI
UJZ8FA		52.20	0.11	0.29	56.64	0.32	0.73	WI
UW7EJK		52.24	0.15	0.39	56.64	0.32	0.73	WI
UXH2PD	X	50.62	-1.47	-3.81	54.64	-1.68	-3.83	IN
V3BGZ7		51.88	-0.21	-0.54	55.98	-0.34	-0.78	WI
V4UH32		52.34	0.25	0.65	56.80	0.48	1.09	NA
V7XRWW		52.26	0.17	0.44	56.46	0.14	0.32	CL
VLLDDB		52.02	-0.07	-0.18	55.90	-0.42	-0.96	WI
VN9QXJ		51.90	-0.19	-0.49	56.20	-0.12	-0.27	WI
W3NNJT		52.24	0.15	0.39	56.18	-0.14	-0.32	WI
W7WHW7		52.90	0.81	2.10	57.24	0.92	2.10	TI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

		Sample E19			Sample E20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
WP23DE		52.05	-0.04	-0.10	56.44	0.12	0.27	CL
WTL2V3		51.70	-0.39	-1.01	56.00	-0.32	-0.73	MI
WXNUER	X	51.26	-0.83	-2.15	52.00	-4.32	-9.85	WI
X2U7A6		52.30	0.21	0.55	56.44	0.12	0.27	WI
XAUGQV		51.86	-0.23	-0.59	56.18	-0.14	-0.32	WI
XJJ6MJ	*	51.06	-1.03	-2.67	55.12	-1.20	-2.74	WI
XKKV8W		52.30	0.21	0.55	56.96	0.64	1.46	UN
XZE4LX		52.26	0.17	0.44	56.02	-0.30	-0.68	WI
Y6D96G		52.54	0.45	1.17	56.66	0.34	0.78	MI
ZWVGVV		52.08	-0.01	-0.02	56.08	-0.24	-0.55	WI

Summary Statistics

	Sample E19		Sample E20	
Grand Means	52.09	HRC	56.32	HRC
Stnd Dev Btwn Labs	0.39	HRC	0.44	HRC

Samples E19 , E20 : Steel

Statistics based on 103 of 108 reporting participants

Comments on assigned Data Flags for Analysis #118

WebCode	Flag	Analyst Comment
8YW3EM	X	Inconsistent in testing between samples.
JEEFAH	X	Data for sample E19 are high and data for sample E20 are low.
TJW6HJ	X	Data for sample E20 are high. Inconsistent in testing between samples.
UXH2PD	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample E19.
WXNUER	X	Data for sample E20 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample E20.

Cycle 106
2nd Q, 2014

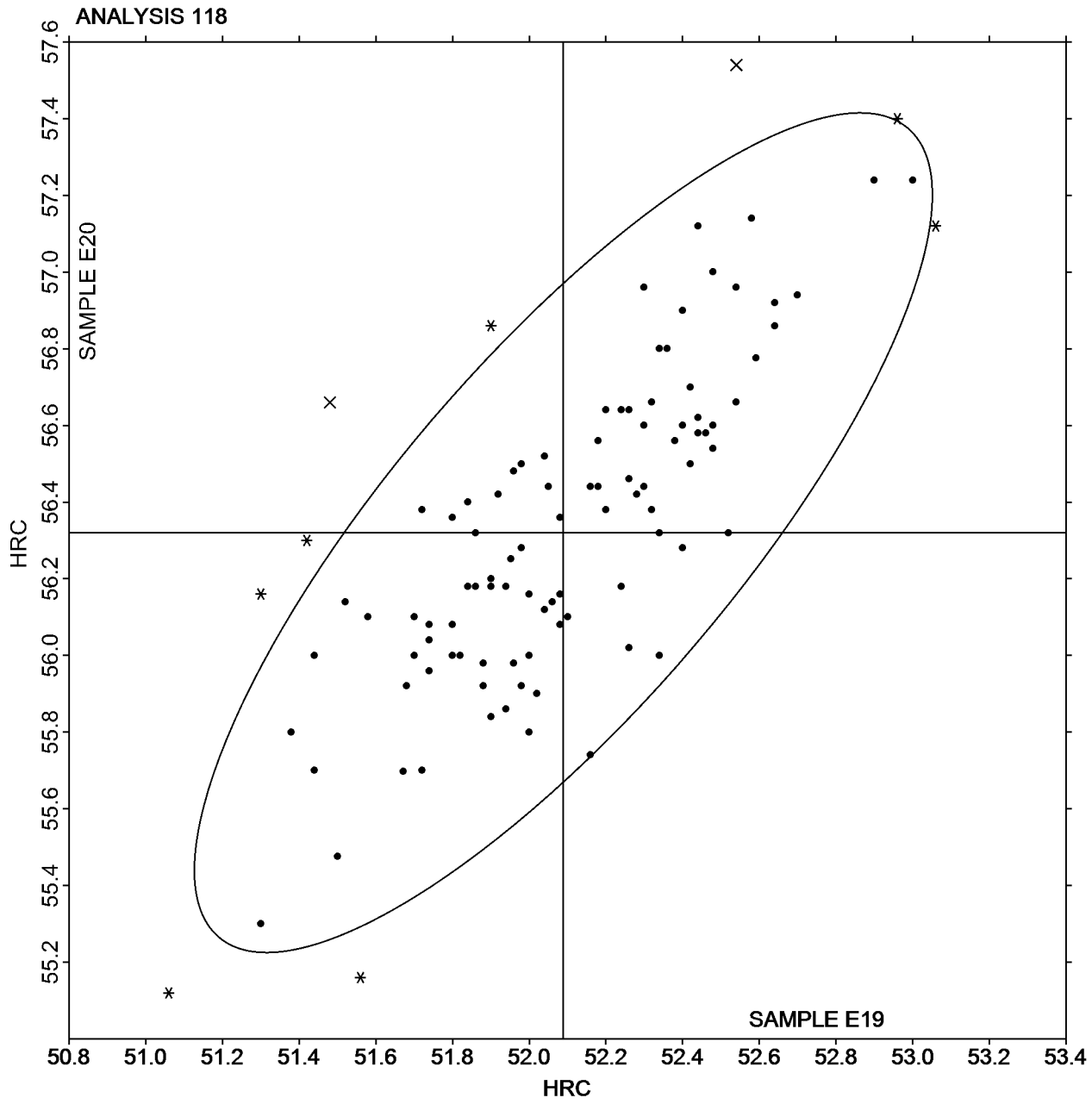
Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

SAMPLE E19
52.09 HRC

SAMPLE E20
56.32 HRC



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - HRC
ASTM E18

		Sample E19			Sample E20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
29YN6D		52.72	0.47	1.02	56.76	0.34	0.71	WI
2BCYL4		52.58	0.33	0.72	56.48	0.06	0.13	WI
2U3WD4		52.84	0.59	1.28	57.00	0.58	1.20	LE
2ZUKJ2		52.20	-0.05	-0.10	56.28	-0.14	-0.29	WI
3FZ8YV		52.36	0.11	0.24	56.50	0.08	0.17	RO
44HJLV		52.60	0.35	0.76	56.64	0.22	0.46	EM
66YFYL		52.96	0.71	1.54	57.14	0.72	1.49	WI
696TQL		52.34	0.09	0.20	56.42	0.00	0.00	NA
6B2XAM		52.12	-0.13	-0.28	56.24	-0.18	-0.37	UN
6PVCLT		52.32	0.07	0.16	56.76	0.34	0.71	MA
78C82U		52.20	-0.05	-0.10	56.50	0.08	0.17	WI
78ZDJ9		52.86	0.61	1.33	56.88	0.46	0.95	MI
7YKQF7		52.22	-0.03	-0.06	56.50	0.08	0.17	NA
7YY47N		51.76	-0.49	-1.06	56.32	-0.10	-0.21	NA
8ET2WP		52.57	0.32	0.70	57.07	0.65	1.34	UN
8LUQB2		52.66	0.41	0.89	56.74	0.32	0.66	WI
96RCVL		52.26	0.01	0.03	56.78	0.36	0.75	NA
98NPX7	*	51.30	-0.95	-2.05	55.10	-1.32	-2.73	XX
9GQNA6		52.48	0.23	0.50	56.54	0.12	0.25	XX
9NNB3Q		51.76	-0.49	-1.06	55.98	-0.44	-0.91	WI
9PXXLJ	X	50.10	-2.15	-4.66	54.40	-2.02	-4.18	WI
9XFYCU		53.04	0.79	1.72	57.28	0.86	1.78	NA
A98FMU		52.60	0.35	0.76	57.12	0.70	1.45	IN
BYBALF		51.80	-0.45	-0.97	56.02	-0.40	-0.83	BU
CUUBMR		51.76	-0.49	-1.06	55.98	-0.44	-0.91	LE
CXZJDN		51.62	-0.63	-1.36	55.54	-0.88	-1.82	WI
DC7YA6		52.16	-0.09	-0.19	56.10	-0.32	-0.66	WI
DRWJPC		51.56	-0.69	-1.49	55.68	-0.74	-1.53	NA
F6LA9Z		52.14	-0.11	-0.23	56.16	-0.26	-0.54	WI
FA2V3T		52.06	-0.19	-0.41	56.16	-0.26	-0.54	WI
FD7GCC		52.80	0.55	1.20	57.00	0.58	1.20	WI
FFWK6J		51.26	-0.99	-2.14	55.40	-1.02	-2.11	CL
G7NDTG		52.34	0.09	0.20	56.58	0.16	0.33	WI
G97NK2		51.78	-0.47	-1.01	56.28	-0.14	-0.29	LE
GA6PKQ		52.10	-0.15	-0.32	56.28	-0.14	-0.29	WI
GMVD2K		52.38	0.13	0.29	56.26	-0.16	-0.33	UN
HL87KK		52.10	-0.15	-0.32	56.20	-0.22	-0.45	MI
J3ZNJN	X	53.80	1.55	3.37	57.00	0.58	1.20	WI
JDB8DQ		52.66	0.41	0.89	56.60	0.18	0.37	FU
JMQR92		52.82	0.57	1.24	57.28	0.86	1.78	WI
K9G2M8		52.38	0.13	0.29	56.50	0.08	0.17	UN
KPMUJU		51.98	-0.27	-0.58	56.37	-0.05	-0.10	WI
KQGVND		52.58	0.33	0.72	56.44	0.02	0.04	MI
LVRXZF		51.98	-0.27	-0.58	56.16	-0.26	-0.54	UN
MMYVMC		51.98	-0.27	-0.58	55.90	-0.52	-1.08	XX
NKL8KG		52.56	0.31	0.68	56.56	0.14	0.29	MI
PBDP7Q		52.36	0.11	0.24	56.58	0.16	0.33	EM
PLPGLY		51.86	-0.39	-0.84	56.04	-0.38	-0.79	BU
PMK4ZN		51.72	-0.53	-1.14	56.34	-0.08	-0.16	WI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - HRC
ASTM E18

		Sample E19			Sample E20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
PMVMP8		52.34	0.09	0.20	56.70	0.28	0.58	WO
PQ788G		52.28	0.03	0.07	56.58	0.16	0.33	WI
Q23Q89	*	51.38	-0.87	-1.88	55.96	-0.46	-0.95	WI
Q3LYMA		53.28	1.03	2.24	57.62	1.20	2.49	WI
QRL4V7		52.86	0.61	1.33	56.72	0.30	0.62	WI
QZN4UZ	X	50.60	-1.65	-3.57	55.52	-0.90	-1.86	WI
TF8FUC		51.62	-0.63	-1.36	55.84	-0.58	-1.20	WI
TTTJCG		51.72	-0.53	-1.14	55.98	-0.44	-0.91	WI
TXGKPP		52.15	-0.10	-0.22	56.40	-0.02	-0.04	EM
U2NYM7		52.52	0.27	0.59	56.64	0.22	0.46	IN
UQ7BT8		52.54	0.29	0.63	56.72	0.30	0.62	CL
V2TZGT		52.01	-0.24	-0.52	55.82	-0.60	-1.23	UN
VJ6WLK		52.50	0.25	0.55	56.50	0.08	0.17	WI
WP2N2K		51.26	-0.99	-2.14	55.48	-0.94	-1.95	BU
WX2K6X		52.80	0.55	1.20	57.12	0.70	1.45	NA
XWDWQ8		52.62	0.37	0.81	56.48	0.06	0.13	NA
Z64Z4T		52.98	0.73	1.59	57.14	0.72	1.49	XX
ZGKKTV		51.88	-0.37	-0.80	56.18	-0.24	-0.50	CL
ZJPBYB		52.02	-0.23	-0.49	56.48	0.06	0.13	WI
ZYYUBN		52.10	-0.15	-0.32	55.86	-0.56	-1.16	WI

Summary Statistics

	Sample E19		Sample E20	
Grand Means	52.25	HRC	56.42	HRC
Stnd Dev Btwn Labs	0.46	HRC	0.48	HRC

Samples E19 , E20 : Steel

Statistics based on 66 of 69 reporting participants

Comments on assigned Data Flags for Analysis #120

WebCode	Flag	Analyst Comment
9PXXLJ	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample E19.
J3ZNJN	X	Data for sample E19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample E19.
QZN4UZ	X	Data for sample E19 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

Cycle 106
2nd Q, 2014

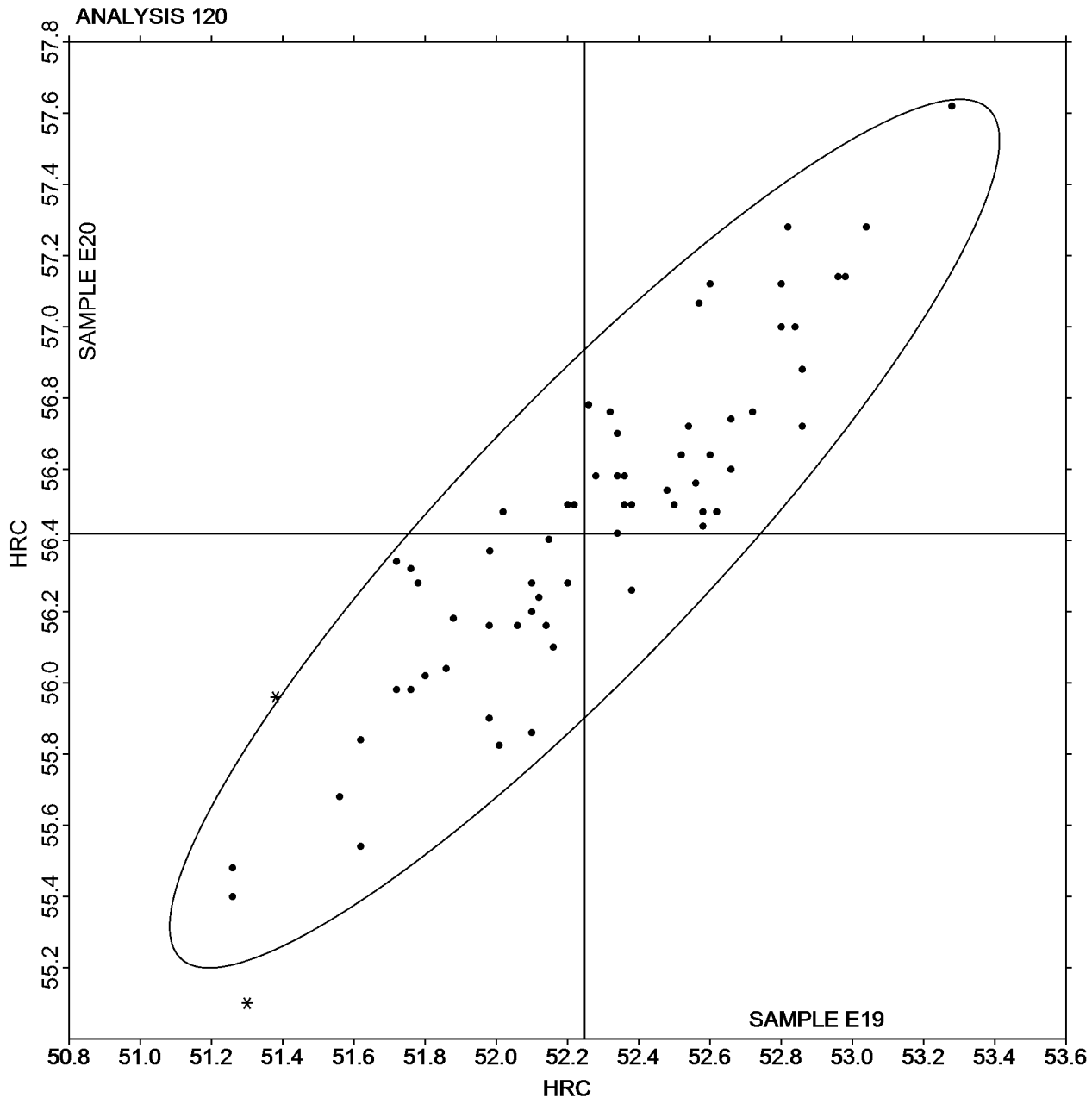
Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - HRC
ASTM E18

SAMPLE E19
52.25 HRC

SAMPLE E20
56.42 HRC



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 125

Rockwell Hardness of Externally Threaded Fasteners - HRC
ASTM F606/F606M AND ASTM E18

		Sample G19			Sample G20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		36.97	0.08	0.13	35.79	-0.33	-0.56	WI
2MKJGQ		35.94	-0.95	-1.59	35.64	-0.48	-0.82	AN
2RDTKW		36.96	0.07	0.12	36.11	-0.01	-0.01	XX
38MBWA	X	37.33	0.43	0.72	39.61	3.49	5.92	WI
3B4JHN		36.39	-0.50	-0.84	35.99	-0.12	-0.21	WI
3NWKXH		37.06	0.17	0.27	36.12	0.00	0.00	XX
4HPFUP		37.69	0.80	1.34	36.96	0.84	1.43	WI
4VCEVZ		36.88	-0.01	-0.02	36.26	0.14	0.25	UN
6FN4B2		37.29	0.40	0.67	35.91	-0.21	-0.35	WI
6PFT4G		37.06	0.17	0.27	36.18	0.06	0.10	WI
6PYDR9		36.59	-0.30	-0.50	35.75	-0.37	-0.62	UN
7EVDVF		36.65	-0.24	-0.40	35.66	-0.45	-0.77	KF
7FL6JX		38.34	1.45	2.42	37.22	1.10	1.87	UN
7GLGNM		37.56	0.67	1.12	37.48	1.36	2.31	WI
7RZ6BK		38.14	1.25	2.08	37.13	1.01	1.72	WI
8AF8VY		35.75	-1.14	-1.90	35.96	-0.16	-0.26	CL
8PQXPR		36.11	-0.78	-1.30	35.73	-0.39	-0.66	WI
8QHD22		37.22	0.33	0.55	36.24	0.12	0.21	FT
8R93ZG	X	26.33	-10.57	-17.60	28.28	-7.84	-13.30	NA
8T82ZM		35.94	-0.95	-1.59	35.86	-0.26	-0.43	UN
8VTL8C		37.52	0.63	1.05	36.89	0.77	1.31	EM
96WY2K	*	37.96	1.07	1.78	37.86	1.74	2.96	UN
9VJXXQ		37.00	0.11	0.18	36.63	0.51	0.87	WO
A6Y2CB		36.99	0.10	0.17	36.03	-0.09	-0.16	UN
AFRRP2		37.03	0.13	0.22	36.13	0.01	0.02	WI
AWNAW9		36.79	-0.10	-0.17	36.12	0.00	0.00	MI
BMJ23Y		36.39	-0.50	-0.84	35.89	-0.22	-0.38	WI
BWQCE2	*	36.34	-0.55	-0.91	36.78	0.66	1.12	WI
C8YGTK		36.83	-0.07	-0.11	36.34	0.22	0.37	WI
CB82XJ		36.66	-0.23	-0.38	36.27	0.15	0.26	UN
CEBB7K		36.99	0.10	0.16	36.28	0.16	0.28	FT
CUAJNF		37.07	0.18	0.29	36.42	0.30	0.51	UN
CUNHMC		37.30	0.41	0.68	36.46	0.34	0.58	IN
EYUX4D		37.04	0.15	0.24	36.36	0.24	0.40	BU
F2Q9AW		37.65	0.76	1.26	36.64	0.52	0.88	UN
FD7GCC		37.94	1.05	1.74	36.31	0.19	0.33	WI
FJ8Q8J	X	36.85	-0.04	-0.07	37.71	1.59	2.70	WI
FRT4NC		37.77	0.88	1.46	36.47	0.35	0.60	WI
FXHYMH		37.00	0.11	0.18	35.78	-0.34	-0.58	MI
FY9NP3		37.19	0.30	0.50	36.08	-0.04	-0.06	LE
G3RMQB	*	37.36	0.47	0.77	35.26	-0.86	-1.46	MI
GA6PKQ		36.84	-0.05	-0.09	35.79	-0.32	-0.55	WI
GAPQUE		36.91	0.02	0.03	35.50	-0.62	-1.05	UN
GPLGUR		36.94	0.05	0.08	35.84	-0.27	-0.47	WI
H24GAB		37.29	0.39	0.66	36.31	0.19	0.32	WI
HDF4PH		36.72	-0.17	-0.29	35.56	-0.56	-0.95	FR
HRHBJY		36.50	-0.39	-0.65	35.83	-0.29	-0.49	UN
JMQR92		37.11	0.22	0.36	36.48	0.36	0.61	WI
JQ39A7		37.61	0.72	1.19	36.16	0.04	0.06	WI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 125

Rockwell Hardness of Externally Threaded Fasteners - HRC
ASTM F606/F606M AND ASTM E18

		Sample G19			Sample G20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
JRQX6H		36.25	-0.64	-1.07	36.31	0.19	0.33	WI
JT8YGK		37.68	0.79	1.32	37.15	1.03	1.75	NA
JWN9NX		36.38	-0.52	-0.86	36.06	-0.06	-0.09	TG
KDQ6LM		37.19	0.30	0.50	36.71	0.59	1.01	XX
KL448K		37.44	0.55	0.91	36.68	0.56	0.96	AK
KZKQ76		36.78	-0.11	-0.18	36.23	0.11	0.19	MI
L3QH6W		37.18	0.29	0.48	36.36	0.24	0.41	NA
L6WDV8		36.63	-0.27	-0.44	35.60	-0.52	-0.88	WI
LGY6Q2		36.88	-0.02	-0.03	36.46	0.34	0.57	UN
M9BAYN		37.01	0.12	0.19	36.53	0.41	0.69	wi
MNP883		37.39	0.50	0.84	36.77	0.65	1.10	WI
N7JDN9		36.83	-0.07	-0.11	35.97	-0.15	-0.25	XX
NCHC8X	X	35.88	-1.02	-1.69	34.13	-1.99	-3.38	XX
NFJFYJ		36.40	-0.49	-0.82	35.58	-0.54	-0.91	CL
NJTMXR		36.61	-0.28	-0.47	35.71	-0.41	-0.70	XX
P4PAR8		35.79	-1.10	-1.83	35.09	-1.02	-1.74	LE
PJZQ6M		37.10	0.21	0.35	37.08	0.96	1.64	WO
QEX8MF		37.89	1.00	1.67	36.76	0.64	1.08	BU
QGYZWZ		36.31	-0.58	-0.97	35.23	-0.89	-1.51	UN
QM6CCK		36.99	0.10	0.17	36.70	0.58	0.99	UN
RDT46A		36.14	-0.75	-1.26	35.10	-1.02	-1.73	WI
T4XAXC		35.51	-1.38	-2.30	35.33	-0.79	-1.35	NA
T6T6P8		36.26	-0.63	-1.05	35.52	-0.60	-1.02	NA
TQQUXE		35.79	-1.10	-1.83	35.40	-0.72	-1.22	WI
U2NYM7		37.10	0.21	0.35	36.60	0.48	0.82	IN
U2WWAH	*	35.95	-0.94	-1.57	34.52	-1.60	-2.72	WI
U644ZP		37.59	0.70	1.17	36.53	0.41	0.69	RS
U72QYT		36.64	-0.25	-0.42	35.69	-0.42	-0.72	PH
UAG88X		35.63	-1.27	-2.11	35.31	-0.81	-1.38	WI
V7XRWW		37.68	0.79	1.32	36.69	0.58	0.98	CL
VJJWCF		36.66	-0.23	-0.39	36.07	-0.05	-0.08	FT
W3NNJT		37.99	1.10	1.84	36.59	0.47	0.79	WI
WEKY6Z		37.17	0.28	0.46	35.72	-0.40	-0.68	UN
X2DXB3		35.86	-1.03	-1.72	34.74	-1.37	-2.33	UN
X2U7A6		36.70	-0.19	-0.32	36.39	0.27	0.46	WI
X6EH3L		36.10	-0.79	-1.32	35.49	-0.62	-1.06	WI
XMB2L2		36.23	-0.67	-1.11	35.25	-0.87	-1.47	UN
XMQCMF		36.78	-0.11	-0.18	35.19	-0.92	-1.57	NA
XPE8CN		37.31	0.42	0.70	36.34	0.22	0.37	BU
XZE4LX		37.09	0.20	0.33	35.86	-0.26	-0.44	WI
YCBZBQ		36.45	-0.44	-0.73	36.26	0.14	0.23	WI
YG4NLH		36.69	-0.20	-0.34	35.79	-0.33	-0.56	XX
YLDJB8		37.13	0.23	0.39	36.10	-0.02	-0.03	UN
Z2LHPA		37.00	0.11	0.18	36.13	0.01	0.01	SP
ZMTYH8		36.52	-0.37	-0.62	36.53	0.41	0.69	HT
ZYXFQV		37.18	0.28	0.47	36.20	0.08	0.14	WO

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 125

Rockwell Hardness of Externally Threaded Fasteners - HRC
ASTM F606/F606M AND ASTM E18

Summary Statistics

	Sample G19		Sample G20	
Grand Means	36.89	HRC	36.12	HRC
Stnd Dev Btwn Labs	0.60	HRC	0.59	HRC

Samples G19 , G20 : Fastener sizes: 1/2-20 x 2 1/2 , 1/2-20 x 1/4

Statistics based on 91 of 95 reporting participants

Comments on assigned Data Flags for Analysis #125

WebCode	Flag	Analyst Comment
38MBWA	X	Data for sample G20 are high. Inconsistent in testing between samples.
8R93ZG	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples.
FJ8Q8J	X	Inconsistent in testing between samples.
NCHC8X	X	Data for sample G20 are low. Inconsistent in testing between samples.

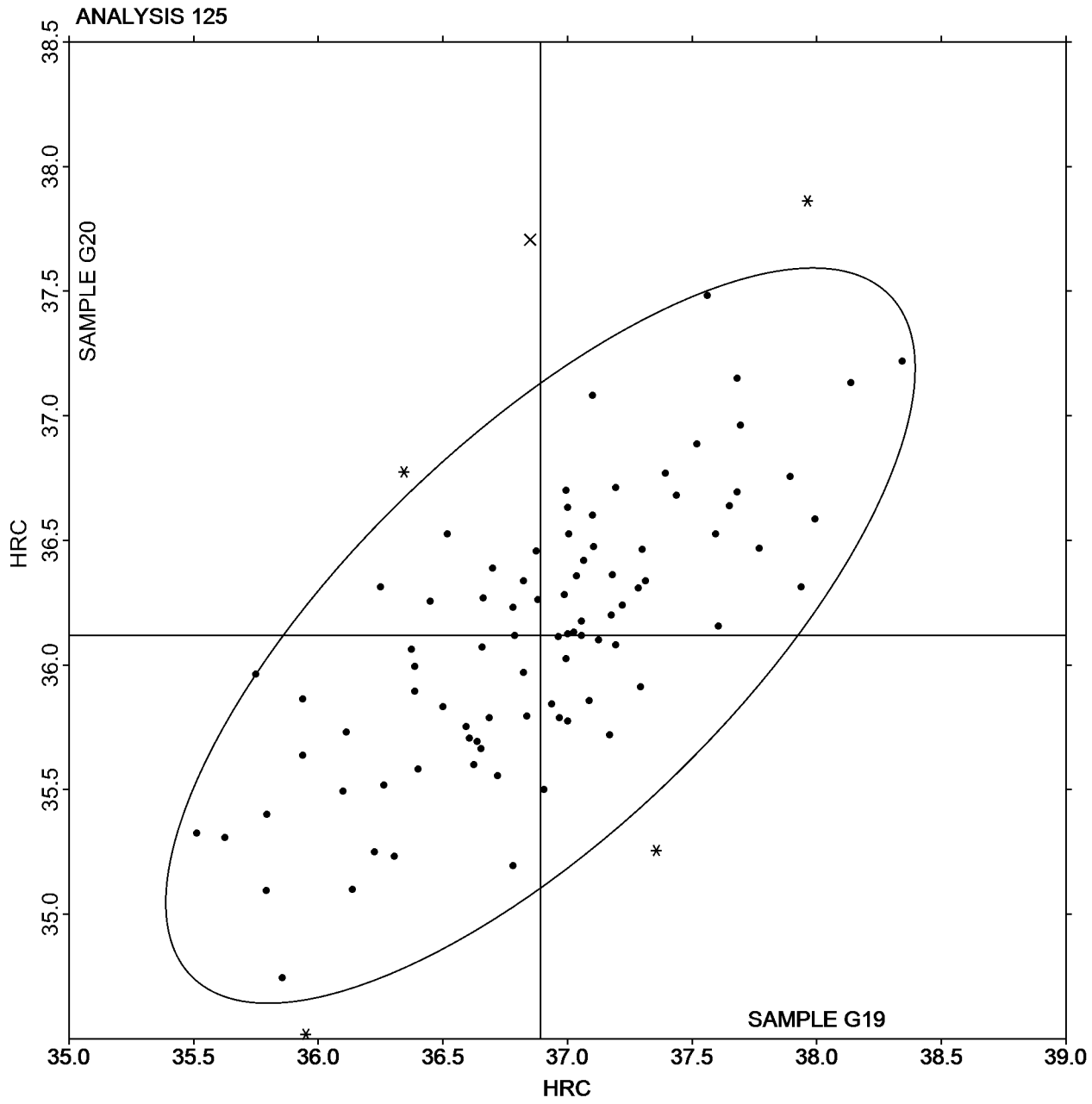
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 125

Rockwell Hardness of Externally Threaded Fasteners - HRC
ASTM F606/F606M AND ASTM E18

SAMPLE G19	**SAMPLE G20**
36.89 HRC	**36.12 HRC**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 126

Vickers Hardness of Externally Threaded Fasteners - HV
ASTM E384

		Sample V19			Sample V20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2AMVTW		360.38	-3.07	-0.48	358.31	-2.39	-0.38	WO
2TTVL4		363.38	-0.07	-0.01	361.38	0.67	0.11	AR
3FZ8YV		363.91	0.46	0.07	360.53	-0.17	-0.03	BU
3LJM8Y		375.93	12.48	1.95	376.51	15.81	2.55	LE
44HJLV	X	308.75	-54.69	-8.54	327.06	-33.64	-5.42	AV
4QNERC		365.75	2.31	0.36	359.56	-1.14	-0.18	GN
4VCEVZ	*	350.25	-13.19	-2.06	354.63	-6.08	-0.98	LE
8QHD22		365.28	1.84	0.29	362.90	2.20	0.35	FU
8VTL8C		367.44	3.99	0.62	363.50	2.80	0.45	WO
BFU436		370.03	6.58	1.03	370.40	9.70	1.56	XX
FRT4NC		372.63	9.18	1.43	368.50	7.80	1.26	WO
HRHBJY		364.34	0.90	0.14	358.61	-2.09	-0.34	CL
JWA3LA		362.68	-0.77	-0.12	357.92	-2.78	-0.45	MI
KL448K		373.41	9.96	1.56	368.61	7.91	1.27	AK
L3QH6W		358.31	-5.13	-0.80	362.13	1.42	0.23	BU
NCNW6L		364.50	1.06	0.17	363.69	2.99	0.48	MI
T3Y2UU		361.63	-1.82	-0.28	358.38	-2.33	-0.37	XX
TPDPGP		362.25	-1.19	-0.19	357.88	-2.83	-0.46	AK
TXGKPP		354.00	-9.44	-1.47	356.63	-4.08	-0.66	EM
UDHDM4		358.81	-4.63	-0.72	353.06	-7.64	-1.23	LE
UPCAL4		355.39	-8.06	-1.26	349.59	-11.11	-1.79	FU
W3NNJT		368.13	4.68	0.73	363.06	2.36	0.38	ST
X8KBBL		356.88	-6.57	-1.03	354.00	-6.70	-1.08	WO
XRVNBU		369.94	6.49	1.01	364.31	3.61	0.58	SH
ZM4KNF		357.43	-6.02	-0.94	352.73	-7.97	-1.28	XX

Summary Statistics

	Sample V19		Sample V20	
Grand Means	363.44	HV	360.70	HV
Stnd Dev Btwn Labs	6.41	HV	6.21	HV

Samples V19 , V20 : Fastener sizes: 1/2-20 x 2 3/4 , 1/2-20 x 1/4

Statistics based on 24 of 25 reporting participants

Comments on assigned Data Flags for Analysis #126

WebCode	Flag	Analyst Comment
44HJLV	X	Data for both samples are low. Possible Systematic error.

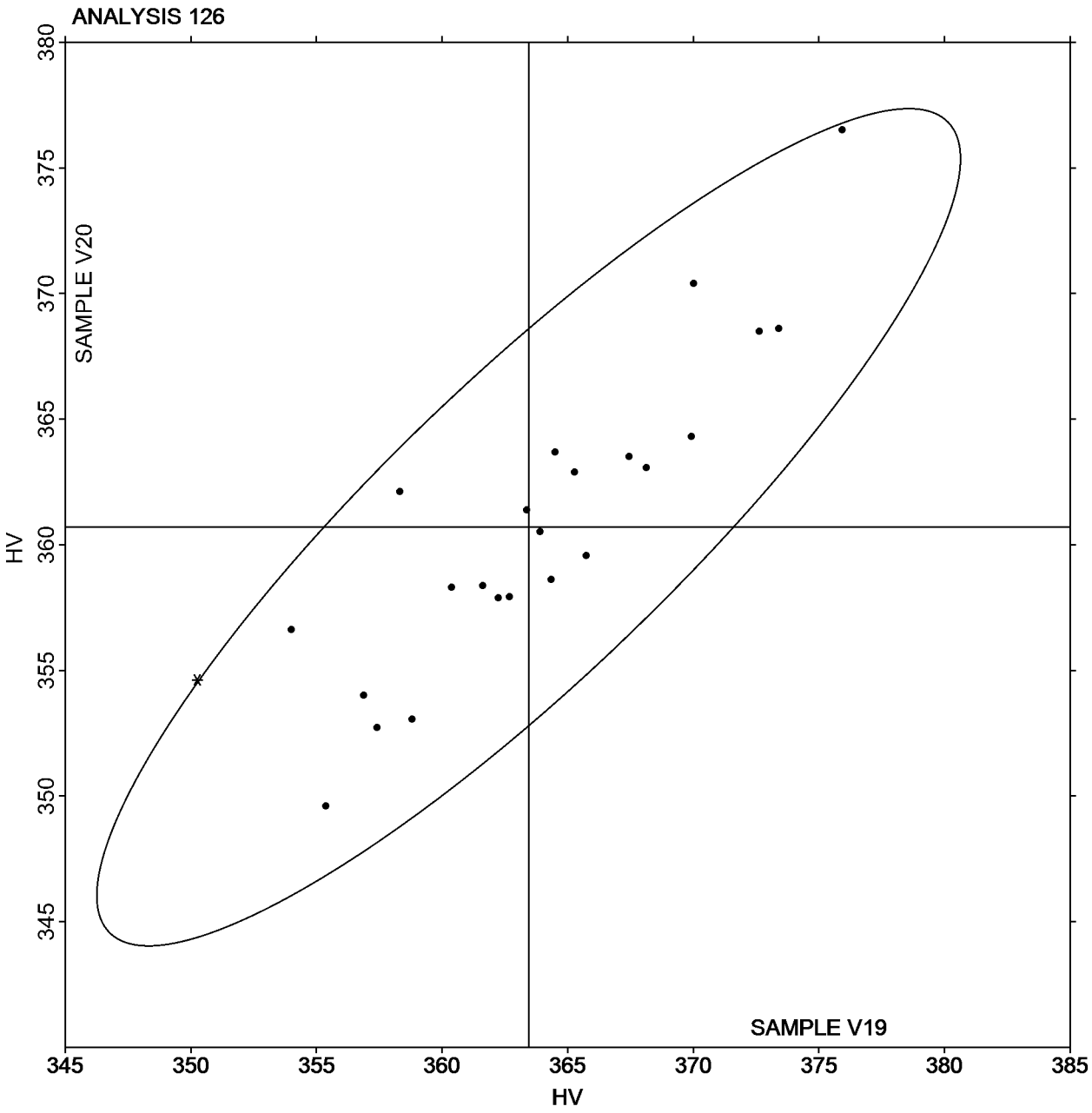
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 126

Vickers Hardness of Externally Threaded Fasteners - HV
ASTM E384

SAMPLE V19	**SAMPLE V20**
363.44 HV	**360.70 HV**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa
ASTM F606M

		Sample B19			Sample B20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2MKJGQ		1,138	-3	-0.23	1,126	-5	-0.31	UN
4QNERC		1,144	3	0.30	1,136	5	0.32	WB
7EVDVF		1,134	-7	-0.59	1,119	-12	-0.79	LO
7GLGNM		1,126	-15	-1.34	1,109	-22	-1.44	IN
96RCVL		1,161	20	1.83	1,144	13	0.83	XX
AFRRP2		1,148	7	0.61	1,125	-7	-0.42	SA
BMJ23Y		1,133	-8	-0.68	1,127	-4	-0.28	TO
BZGXNY		1,135	-6	-0.50	1,126	-6	-0.36	XX
C9QPJF		1,140	-1	-0.08	1,122	-9	-0.57	HP
F9AUEH		1,165	24	2.15	1,164	33	2.16	XX
FNM3G7		1,155	14	1.26	1,148	17	1.09	XX
GAPQUE		1,132	-9	-0.83	1,123	-8	-0.51	SA
HDF4PH		1,132	-8	-0.76	1,123	-8	-0.53	ST
HRHBJY		1,152	11	0.97	1,137	6	0.40	WZ
L3QH6W		1,140	-1	-0.05	1,126	-5	-0.31	BA
L6WDV8		1,144	3	0.28	1,143	12	0.77	SA
NFJFYJ		1,140	-1	-0.05	1,130	-1	-0.08	TO
QEX8MF	X	14.67	-1,126	-101.45	14.51	-1,117	-72.57	TO
T4XAXC		1,124	-17	-1.55	1,111	-21	-1.33	SA
T6T6P8		1,136	-5	-0.41	1,133	1	0.10	TO
U644ZP		1,130	-10	-0.94	1,112	-19	-1.25	MF
UDHDM4	*	1,155	14	1.27	1,171	40	2.61	TO
XZE4LX		1,129	-12	-1.04	1,121	-10	-0.66	TO
ZM4KNF		1,155	14	1.27	1,151	20	1.28	UN
ZMTYH8		1,130	-11	-1.02	1,127	-5	-0.30	WZ
ZNXP8A		1,142	1	0.09	1,125	-6	-0.40	RO

Summary Statistics

	Sample B19		Sample B20	
Grand Means	1,141	MPa	1,131	MPa
Stnd Dev Btwn Labs	11	MPa	15	MPa

Samples B19 , B20 : Fastener sizes: M10 x 1.5 x 70, M10 x 1.5 x 80

Statistics based on 25 of 26 reporting participants

Comments on assigned Data Flags for Analysis #127

WebCode	Flag	Analyst Comment
QEX8MF	X	Extreme data.

Cycle 106
2nd Q, 2014

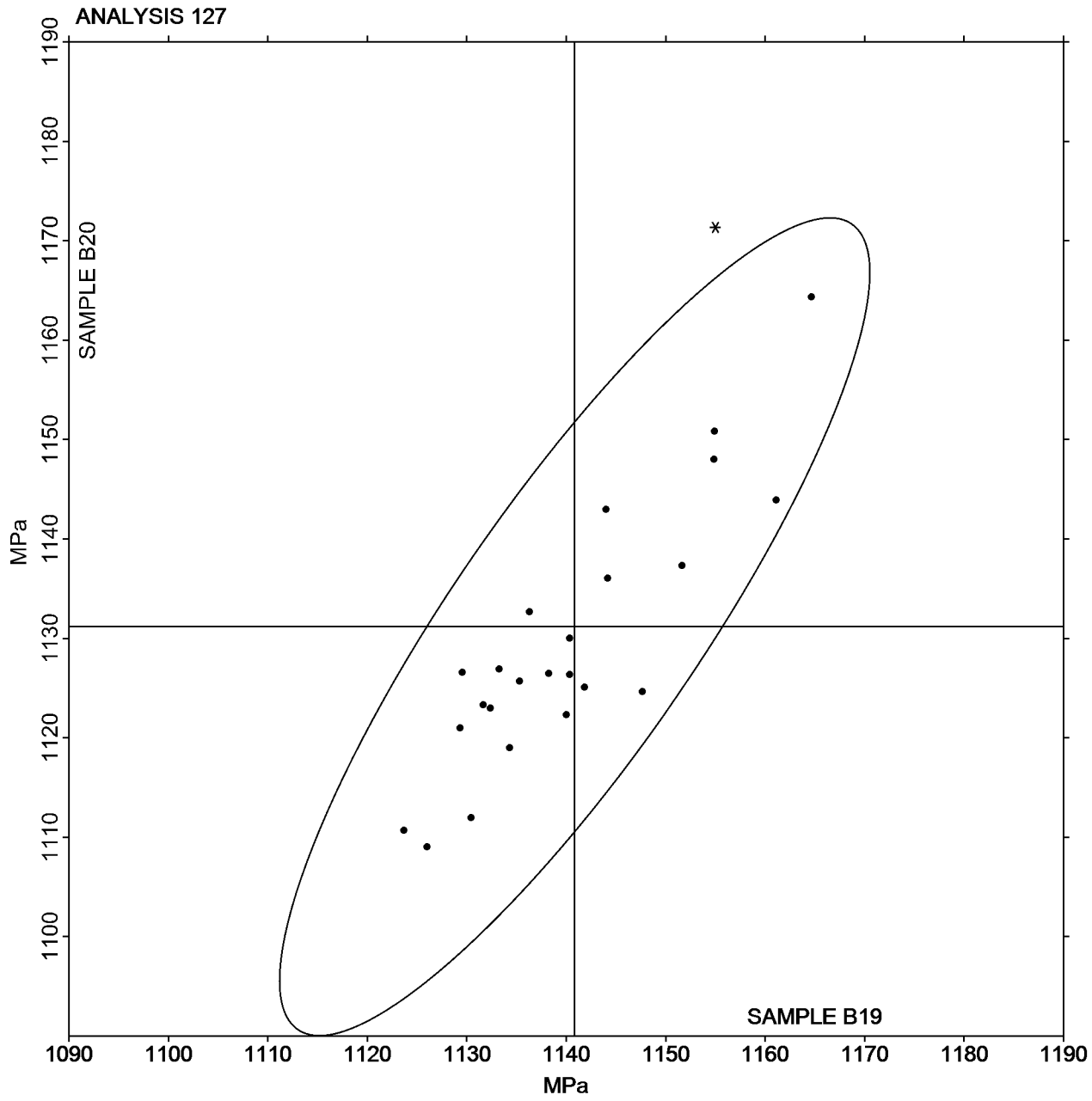
Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa
ASTM F606M

SAMPLE B19
1,141 MPa

SAMPLE B20
1,131 MPa



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa
ASTM F606M

		Sample T19			Sample T20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		1,131	-12	-0.88	1,131	-2	-0.16	XX
4QNERC		1,134	-9	-0.66	1,133	-1	-0.04	WB
8T82ZM		1,162	18	1.30	1,148	15	1.14	TO
F9AUEH		1,177	34	2.40	1,156	23	1.76	XX
FNM3G7		1,151	8	0.56	1,152	19	1.49	XX
FY9NP3		1,142	-1	-0.10	1,128	-5	-0.39	TO
JWN9NX		1,146	2	0.16	1,125	-8	-0.62	LO
KGUJ6T		1,124	-19	-1.37	1,120	-13	-1.04	HT
L3QH6W		1,145	1	0.09	1,125	-8	-0.65	BA
PJZQ6M		1,128	-16	-1.12	1,118	-15	-1.17	ST
T6T6P8		1,141	-3	-0.19	1,125	-9	-0.67	TO
UDHDM4		1,147	3	0.23	1,150	16	1.27	TO
ZLEFRH		1,148	5	0.35	1,133	0	0.00	HT
ZNXP8A		1,132	-11	-0.77	1,121	-12	-0.93	RO

Summary Statistics

	Sample T19		Sample T20	
Grand Means	1,143	MPa	1,133	MPa
Stnd Dev Btwn Labs	14	MPa	13	MPa

Samples T19 , T20 : Fastener sizes: M10 x 1.5 x 70, M10 x 1.5 x 80

Statistics based on 14 of 14 reporting participants

Cycle 106
2nd Q, 2014

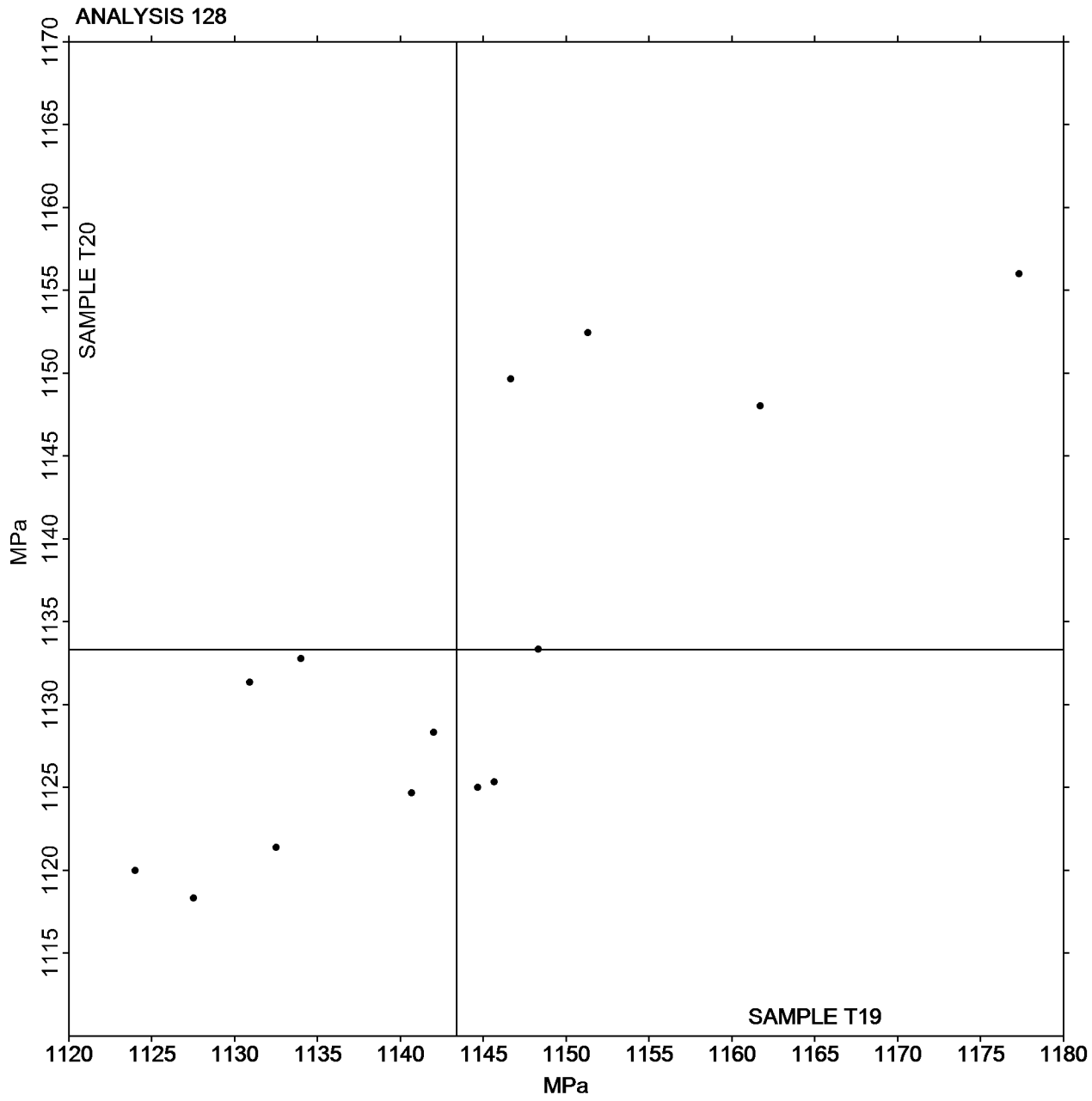
Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa
ASTM F606M

SAMPLE T19
1,143 MPa

SAMPLE T20
1,133 MPa



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 129

Fastener Double Shear - lb
NASM 1312-13

		Sample Z19			Sample Z20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		19,078	-190	-0.33	21,601	-22	-0.04	XX
4HPFUP		19,503	234	0.40	21,866	244	0.40	TO
6B2XAM		19,353	84	0.14	21,802	180	0.29	TO
6PFT4G		18,733	-535	-0.92	21,333	-289	-0.47	TO
7FL6JX		19,850	581	1.00	21,967	344	0.56	TO
AWNAW9		18,640	-628	-1.08	20,853	-770	-1.25	TO
B366C3		19,465	196	0.34	21,859	236	0.38	XX
FD7GCC		18,590	-679	-1.17	21,063	-559	-0.91	TR
FJ8Q8J		19,183	-85	-0.15	21,300	-323	-0.52	TO
FPZVEU		19,709	440	0.76	22,138	515	0.84	SH
FRT4NC	*	19,877	608	1.04	22,767	1,144	1.86	TR
GAPQUE		19,261	-8	-0.01	21,677	54	0.09	SA
GPLGUR	X	22,164	2,895	4.98	21,844	222	0.36	SA
H24GAB		19,011	-258	-0.44	21,363	-260	-0.42	XX
HCGM26		19,133	-135	-0.23	21,467	-156	-0.25	RI
JT8YGK		18,985	-283	-0.49	21,381	-242	-0.39	SA
L3QH6W	*	17,804	-1,465	-2.52	19,810	-1,812	-2.94	BA
NPHHHW		19,229	-39	-0.07	21,627	4	0.01	SA
RJTCUJ		19,257	-12	-0.02	21,864	241	0.39	IN
U2WWAH		18,960	-308	-0.53	21,307	-316	-0.51	RI
U6ACA3		18,969	-300	-0.52	21,160	-462	-0.75	TO
W3NNJT		20,282	1,013	1.74	22,502	880	1.43	MT
WEKY6Z	*	20,662	1,393	2.39	22,703	1,081	1.75	TO
YCBZBQ		19,287	18	0.03	21,683	61	0.10	IN
YLDJB8		19,630	361	0.62	21,853	230	0.37	SA

Summary Statistics

	Sample Z19		Sample Z20	
Grand Means	19,269	lb	21,623	lb
Stnd Dev Btwn Labs	582	lb	617	lb

Samples Z19 , Z20 : Fastener size 3/8-16 x 2 1/4, 3/8-16 x 2 3/4

Statistics based on 24 of 25 reporting participants

Comments on assigned Data Flags for Analysis #129

WebCode	Flag	Analyst Comment
GPLGUR	X	Data for sample Z19 are high. Inconsistent in testing between samples.

Cycle 106
2nd Q, 2014

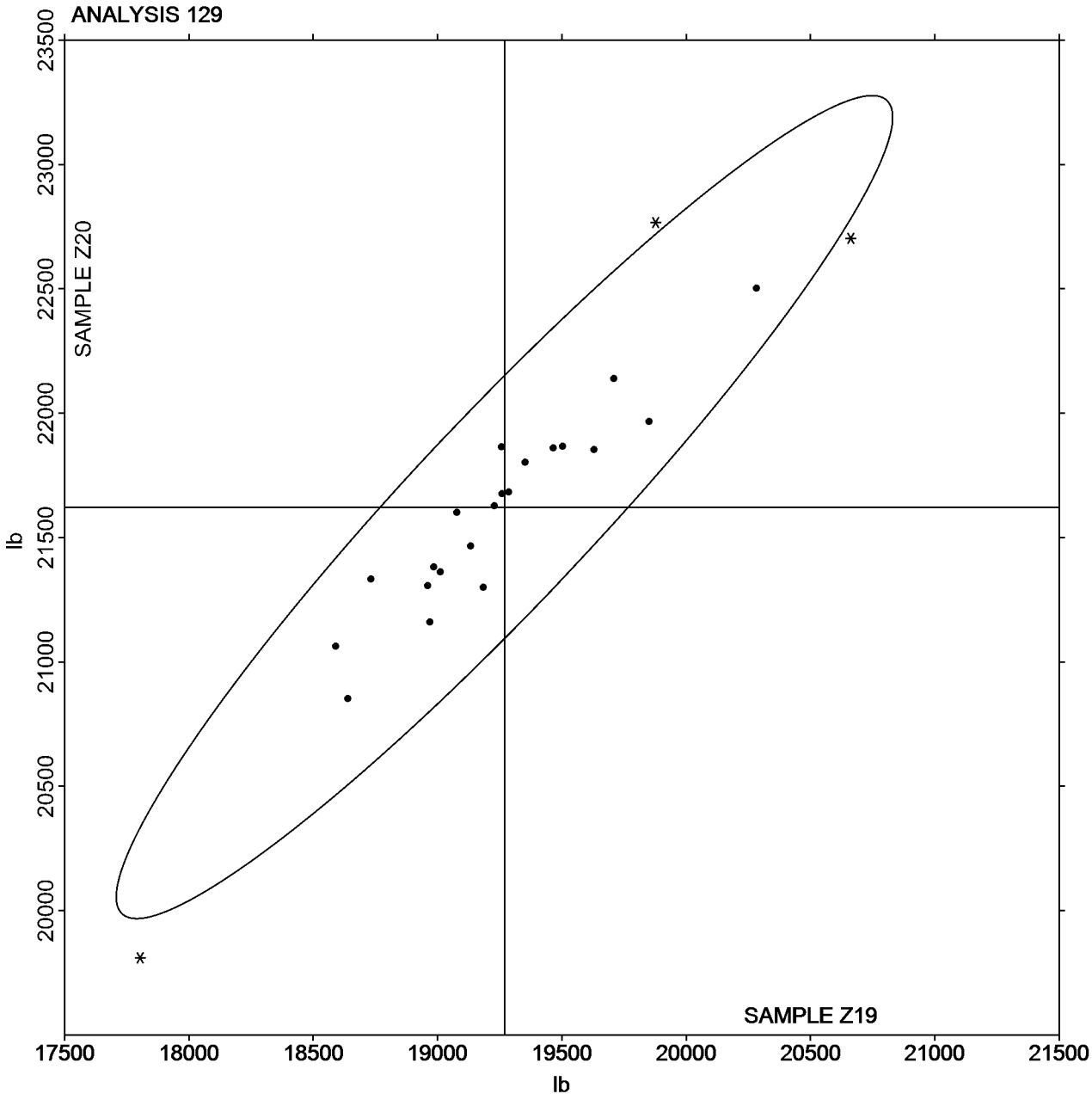
Interlaboratory Testing Program for Metals

Analysis 129

Fastener Double Shear - lb
NASM 1312-13

SAMPLE Z19
19,269 lb

SAMPLE Z20
21,623 lb



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		45.70	-0.47	-0.75	48.40	-0.52	-0.82	ZZ
3KURW8	*	45.54	-0.63	-1.00	49.31	0.39	0.61	ZZ
3YTMGE		46.43	0.25	0.40	49.12	0.20	0.31	ZZ
479PY2		46.20	0.03	0.04	49.00	0.08	0.12	ZZ
6V82RU		45.83	-0.34	-0.54	48.88	-0.05	-0.07	ZZ
6VL4D3		45.80	-0.37	-0.59	48.10	-0.82	-1.30	ZZ
6W3Z4G	*	47.90	1.73	2.74	49.80	0.88	1.38	ZZ
74T8QF	X	48.80	2.63	4.17	47.68	-1.24	-1.95	ZZ
78ZDJ9		45.60	-0.57	-0.91	48.20	-0.72	-1.14	ZZ
79AEDU	X	43.96	-2.21	-3.51	46.64	-2.29	-3.60	ZZ
8DV9RJ		46.20	0.03	0.04	49.00	0.08	0.12	ZZ
8ET2WP		46.61	0.44	0.69	49.76	0.84	1.31	ZZ
8ET3GN		46.00	-0.17	-0.27	49.50	0.58	0.90	ZZ
8R93ZG		46.40	0.23	0.36	49.20	0.28	0.43	ZZ
ADNTFU		47.10	0.93	1.47	50.10	1.18	1.85	ZZ
AUBYJ2		45.60	-0.57	-0.91	48.20	-0.72	-1.14	ZZ
B929DR		45.70	-0.47	-0.75	48.10	-0.82	-1.30	ZZ
BRZXWL	X	48.38	2.21	3.50	49.30	0.38	0.59	ZZ
C23HRM		46.43	0.25	0.40	49.05	0.13	0.20	ZZ
CTJBNC		46.33	0.15	0.24	48.50	-0.42	-0.67	ZZ
CU7PQ9		47.30	1.13	1.79	50.10	1.18	1.85	ZZ
D4BGW2	X	43.18	-2.99	-4.75	45.83	-3.09	-4.86	ZZ
D72MB7		46.30	0.13	0.20	48.90	-0.02	-0.04	ZZ
DRWJPC		46.10	-0.07	-0.12	49.60	0.68	1.06	ZZ
DVR7EF	X	48.80	2.63	4.17	45.50	-3.42	-5.38	ZZ
ERXE9H		46.05	-0.12	-0.20	49.01	0.08	0.13	ZZ
F2Q9AW	*	47.70	1.53	2.42	50.60	1.68	2.63	ZZ
F7NM2T		46.60	0.43	0.68	49.40	0.48	0.75	ZZ
FPCEYY	X	43.77	-2.40	-3.81	47.61	-1.32	-2.07	ZZ
FRT4NC		45.83	-0.34	-0.55	48.57	-0.35	-0.56	ZZ
FZVKV9		46.60	0.43	0.68	50.00	1.08	1.69	ZZ
G4XJ9L		46.30	0.13	0.20	48.60	-0.32	-0.51	ZZ
G79YJL		45.30	-0.87	-1.38	47.70	-1.22	-1.93	ZZ
G97NK2		45.30	-0.87	-1.38	48.30	-0.62	-0.98	ZZ
GB6LEV		44.71	-1.46	-2.32	47.66	-1.26	-1.99	ZZ
GGHNV4		47.30	1.13	1.79	50.10	1.18	1.85	ZZ
HAQ2D4		46.90	0.73	1.15	49.80	0.88	1.38	ZZ
HHFTBF		46.10	-0.07	-0.12	48.60	-0.32	-0.51	ZZ
HJQZNQ	X	46.48	0.30	0.48	61.43	12.50	19.66	ZZ
HP8V6L		45.54	-0.63	-1.00	48.01	-0.92	-1.44	ZZ
HRAWUW	X	49.76	3.59	5.69	51.60	2.68	4.21	ZZ
HWYPVT		47.10	0.93	1.47	49.30	0.38	0.59	ZZ
J3ZNJN		46.00	-0.17	-0.27	48.00	-0.92	-1.45	ZZ
J8NNLP		45.10	-1.07	-1.70	48.50	-0.42	-0.67	ZZ
J9YL3C		46.50	0.33	0.52	49.30	0.38	0.59	ZZ
JMTXPG		45.80	-0.37	-0.59	48.40	-0.52	-0.82	ZZ
JNGRCE		45.90	-0.27	-0.43	48.60	-0.32	-0.51	ZZ
K78PQB		46.40	0.23	0.36	48.70	-0.22	-0.35	ZZ
KDTPZW	*	46.07	-0.10	-0.17	49.89	0.97	1.52	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
KJDZED		46.08	-0.09	-0.15	48.98	0.06	0.09	ZZ
KNWN6P	X	48.90	2.73	4.33	50.00	1.08	1.69	ZZ
KYBZGE		46.64	0.46	0.74	49.07	0.14	0.23	ZZ
L39EMN	X	26.20	-19.97	-31.68	29.50	-19.42	-30.54	ZZ
LGY6Q2		46.20	0.03	0.04	48.80	-0.12	-0.20	ZZ
LKQ2PJ		46.70	0.53	0.84	49.30	0.38	0.59	ZZ
LYCTUZ		46.30	0.13	0.20	49.20	0.28	0.43	ZZ
M6WBM3		46.80	0.63	0.99	49.80	0.88	1.38	ZZ
MB8C9H		46.30	0.13	0.20	49.00	0.08	0.12	ZZ
MFQQAH		45.59	-0.59	-0.93	48.02	-0.90	-1.42	ZZ
N39NV6		45.50	-0.67	-1.07	47.95	-0.97	-1.53	ZZ
N8BTYW		44.70	-1.47	-2.34	47.70	-1.22	-1.93	ZZ
NWZTUC		45.54	-0.63	-1.00	48.33	-0.59	-0.93	ZZ
PEQEGM	X	52.00	5.83	9.24	53.30	4.38	6.88	ZZ
PMK4ZN		47.40	1.23	1.95	49.50	0.58	0.90	ZZ
PZMJ9Y		46.20	0.03	0.04	48.90	-0.02	-0.04	ZZ
Q3LYMA		46.41	0.24	0.38	49.15	0.23	0.36	ZZ
Q6QHRW		46.11	-0.07	-0.10	48.69	-0.23	-0.37	ZZ
Q9HT9W	*	45.60	-0.57	-0.91	49.50	0.58	0.90	ZZ
QDZVM7		46.30	0.13	0.20	49.10	0.18	0.28	ZZ
QRL4V7		46.48	0.31	0.50	48.97	0.04	0.06	ZZ
RC8ULU		45.80	-0.37	-0.59	48.90	-0.02	-0.04	ZZ
RCWEM9		45.83	-0.34	-0.54	48.60	-0.32	-0.51	ZZ
RGMPLK		45.64	-0.53	-0.85	48.44	-0.48	-0.76	ZZ
RQHKRW		46.78	0.61	0.96	48.98	0.06	0.09	ZZ
TX8VBQ		45.00	-1.17	-1.86	47.70	-1.22	-1.93	ZZ
UJZ8FA	*	44.80	-1.37	-2.18	47.30	-1.62	-2.55	ZZ
UXH2PD		46.78	0.61	0.96	49.37	0.44	0.70	ZZ
V3BGZ7		46.27	0.09	0.15	49.02	0.10	0.16	ZZ
V4UH32		47.10	0.93	1.47	49.60	0.68	1.06	ZZ
VKRM7B		46.12	-0.05	-0.08	49.46	0.53	0.84	ZZ
VLLDDB		45.11	-1.07	-1.69	48.60	-0.32	-0.51	ZZ
VN9QXJ		46.20	0.03	0.04	49.00	0.08	0.12	ZZ
VPW47D		46.40	0.23	0.36	49.50	0.58	0.90	ZZ
VTNYJX		46.50	0.33	0.52	49.20	0.28	0.43	ZZ
W927F3		45.88	-0.29	-0.46	48.72	-0.20	-0.32	ZZ
W93WTC		46.41	0.24	0.38	49.08	0.16	0.25	ZZ
WARCU8		46.55	0.37	0.59	49.15	0.23	0.35	ZZ
WGCHEL		46.56	0.38	0.61	48.88	-0.05	-0.07	ZZ
X962PZ		45.88	-0.29	-0.46	48.78	-0.14	-0.23	ZZ
XJJ6MJ	X	48.90	2.73	4.33	46.00	-2.92	-4.60	ZZ
XKF37W		46.50	0.33	0.52	49.20	0.28	0.43	ZZ
XKKV8W		46.20	0.03	0.04	49.00	0.08	0.12	ZZ
XRVNBU		47.14	0.96	1.53	49.31	0.39	0.61	ZZ
XRY7DZ		46.11	-0.07	-0.10	48.44	-0.48	-0.76	ZZ
YBXALY		45.74	-0.43	-0.68	49.01	0.09	0.14	ZZ
YGAGMK		46.50	0.33	0.52	48.90	-0.02	-0.04	ZZ
YXLEDA		45.90	-0.27	-0.43	48.60	-0.32	-0.51	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

Summary Statistics

	Sample F19		Sample F20	
Grand Means	46.17	ksi	48.92	ksi
Stnd Dev Btwn Labs	0.63	ksi	0.64	ksi

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 85 of 97 reporting participants

Comments on assigned Data Flags for Analysis #130

WebCode	Flag	Analyst Comment
74T8QF	X	Data for sample F19 are high. Inconsistent in testing between samples.
79AEDU	X	Data for both samples are low. Possible Systematic error.
BRZXWL	X	Data for sample F19 are high. Inconsistent in testing between samples.
D4BGW2	X	Data for both samples are low. Possible Systematic error.
DVR7EF	X	Data for sample F19 are high and data for sample F20 are low.
FPCEYY	X	Data for sample F19 are low. Inconsistent in testing between samples.
HJQZNQ	X	Data for sample F20 are high. Inconsistent in testing between samples.
HRAWUW	X	Data for both samples are high. Possible Systematic error.
KNWN6P	X	Data for sample F19 are high. Inconsistent in testing between samples.
L39EMN	X	Data for both samples are low. Possible Systematic error.
PEQEGM	X	Data for both samples are high. Possible Systematic error.
XJJ6MJ	X	Data for sample F19 are high and data for sample F20 are low.

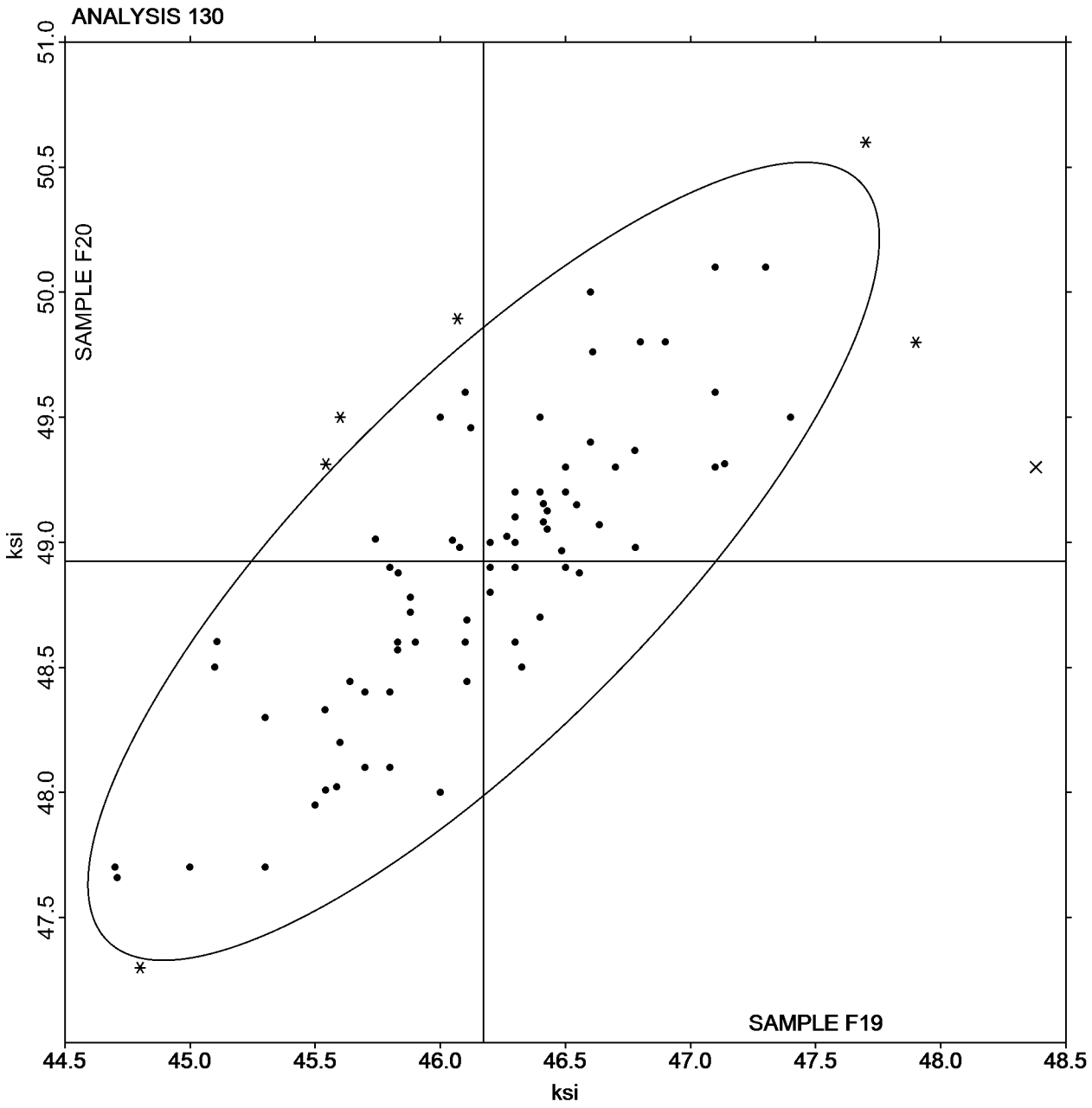
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

SAMPLE F19	**SAMPLE F20**
46.17 ksi	**48.92 ksi**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		25.40	-0.66	-0.71	29.50	0.39	0.41	ZZ
3KURW8		24.95	-1.11	-1.19	28.57	-0.53	-0.55	ZZ
3YTMGE		25.25	-0.81	-0.87	28.38	-0.72	-0.75	ZZ
479PY2		27.00	0.94	1.01	29.30	0.19	0.20	ZZ
6V82RU		25.53	-0.53	-0.57	29.01	-0.10	-0.10	ZZ
6VL4D3		25.30	-0.76	-0.81	28.30	-0.81	-0.84	ZZ
6W3Z4G		28.20	2.14	2.29	30.80	1.69	1.76	ZZ
74T8QF	X	29.01	2.95	3.16	30.10	0.99	1.03	ZZ
78ZDJ9		25.90	-0.16	-0.17	29.10	-0.01	-0.01	ZZ
79AEDU		25.50	-0.56	-0.60	28.16	-0.95	-0.99	ZZ
8DV9RJ		26.20	0.14	0.15	29.50	0.39	0.41	ZZ
8ET2WP		26.11	0.05	0.05	29.84	0.74	0.77	ZZ
8ET3GN	X	28.00	1.94	2.08	28.50	-0.61	-0.63	ZZ
8R93ZG		24.40	-1.66	-1.78	27.70	-1.41	-1.46	ZZ
ADNTFU		25.90	-0.16	-0.17	29.40	0.29	0.31	ZZ
AUBYJ2		26.00	-0.06	-0.06	28.30	-0.81	-0.84	ZZ
B929DR		26.60	0.54	0.58	29.30	0.19	0.20	ZZ
BRZXWL	X	33.82	7.76	8.31	34.24	5.14	5.33	ZZ
C23HRM		26.09	0.03	0.03	28.79	-0.32	-0.33	ZZ
CTJBNC		26.63	0.57	0.61	28.43	-0.68	-0.70	ZZ
CU7PQ9		25.70	-0.36	-0.39	29.70	0.59	0.62	ZZ
D4BGW2	X	23.26	-2.80	-2.99	25.08	-4.03	-4.19	ZZ
D72MB7		26.10	0.04	0.04	29.20	0.09	0.10	ZZ
DRWJPC		27.40	1.34	1.44	30.00	0.89	0.93	ZZ
DVR7EF	X	28.40	2.34	2.51	24.90	-4.21	-4.37	ZZ
ERXE9H		25.95	-0.11	-0.12	28.57	-0.53	-0.55	ZZ
F2Q9AW		26.30	0.24	0.26	28.90	-0.21	-0.21	ZZ
F7NM2T		26.00	-0.06	-0.06	29.10	-0.01	-0.01	ZZ
FPCEYY	X	22.99	-3.07	-3.29	25.25	-3.86	-4.01	ZZ
FRT4NC		25.45	-0.62	-0.66	29.05	-0.05	-0.05	ZZ
FZVKV9	X	32.60	6.54	7.00	30.50	1.39	1.45	ZZ
G4XJ9L		25.30	-0.76	-0.81	28.80	-0.31	-0.32	ZZ
G79YJL		25.00	-1.06	-1.14	27.60	-1.51	-1.56	ZZ
G97NK2		25.00	-1.06	-1.14	28.50	-0.61	-0.63	ZZ
GB6LEV		26.01	-0.05	-0.05	28.41	-0.70	-0.72	ZZ
GGHNV4		25.60	-0.46	-0.49	28.10	-1.01	-1.04	ZZ
HAQ2D4		26.10	0.04	0.04	29.20	0.09	0.10	ZZ
HHFTBF		25.50	-0.56	-0.60	28.60	-0.51	-0.53	ZZ
HJQZNQ	X	27.97	1.91	2.05	37.94	8.83	9.18	ZZ
HP8V6L		26.98	0.92	0.98	29.01	-0.10	-0.10	ZZ
HRAWUW	X	35.89	9.83	10.53	33.44	4.33	4.50	ZZ
HWYPVT		26.30	0.24	0.26	28.90	-0.21	-0.21	ZZ
J3ZNJN		26.00	-0.06	-0.06	28.00	-1.11	-1.15	ZZ
J8NNLP	X	35.70	9.64	10.32	30.20	1.09	1.14	ZZ
J9YL3C		25.30	-0.76	-0.81	28.60	-0.51	-0.53	ZZ
JMTXPG		27.30	1.24	1.33	30.20	1.09	1.14	ZZ
K78PQB		27.50	1.44	1.54	30.50	1.39	1.45	ZZ
KDTPZW		27.68	1.62	1.73	30.20	1.09	1.13	ZZ
KJDZED		24.51	-1.55	-1.66	28.07	-1.04	-1.08	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
KNWN6P	X	30.10	4.04	4.33	32.30	3.19	3.32	ZZ
KYBZGE		25.10	-0.96	-1.02	27.64	-1.47	-1.53	ZZ
L39EMN	X	46.20	20.14	21.57	49.20	20.09	20.87	ZZ
LGY6Q2		24.80	-1.26	-1.35	27.90	-1.21	-1.25	ZZ
LKQ2PJ		26.30	0.24	0.26	29.50	0.39	0.41	ZZ
LYCTUZ		25.90	-0.16	-0.17	28.60	-0.51	-0.53	ZZ
M6WBM3		26.10	0.04	0.04	28.60	-0.51	-0.53	ZZ
MB8C9H		25.80	-0.26	-0.28	29.30	0.19	0.20	ZZ
MFQQAH		28.20	2.14	2.29	30.36	1.25	1.30	ZZ
N39NV6	*	24.80	-1.26	-1.35	29.35	0.24	0.25	ZZ
N8BTYW		24.40	-1.66	-1.78	27.40	-1.71	-1.77	ZZ
NWZTUC		27.90	1.84	1.97	30.94	1.83	1.91	ZZ
PEQEGM	X	40.20	14.14	15.14	37.60	8.49	8.82	ZZ
PMK4ZN		26.50	0.44	0.47	28.20	-0.91	-0.94	ZZ
PZMJ9Y		26.10	0.04	0.04	29.50	0.39	0.41	ZZ
Q3LYMA		25.24	-0.82	-0.88	28.95	-0.16	-0.16	ZZ
Q6QHRW	*	25.56	-0.50	-0.54	30.30	1.19	1.24	ZZ
Q9HT9W		26.00	-0.06	-0.06	30.10	0.99	1.03	ZZ
QDZVM7		26.60	0.54	0.58	30.30	1.19	1.24	ZZ
QRL4V7		26.15	0.09	0.10	29.23	0.12	0.12	ZZ
RC8ULU		25.40	-0.66	-0.71	28.80	-0.31	-0.32	ZZ
RCWEM9		27.21	1.15	1.23	30.57	1.46	1.52	ZZ
RGMPLK		26.40	0.34	0.37	28.89	-0.22	-0.22	ZZ
RQHKRW		24.86	-1.20	-1.29	27.17	-1.94	-2.01	ZZ
TX8VBQ	*	24.50	-1.56	-1.67	26.50	-2.61	-2.71	ZZ
UJZ8FA		25.00	-1.06	-1.14	29.00	-0.11	-0.11	ZZ
UXH2PD		26.49	0.43	0.46	29.63	0.52	0.54	ZZ
V3BGZ7		25.96	-0.10	-0.11	29.73	0.63	0.65	ZZ
V4UH32		25.80	-0.26	-0.28	28.80	-0.31	-0.32	ZZ
VKRM7B		25.82	-0.24	-0.26	28.72	-0.39	-0.40	ZZ
VLLDDB		26.56	0.50	0.54	29.76	0.65	0.68	ZZ
VN9QXJ		26.30	0.24	0.26	29.40	0.29	0.31	ZZ
VPW47D		25.90	-0.16	-0.17	29.10	-0.01	-0.01	ZZ
VTNYJX		25.60	-0.46	-0.49	28.60	-0.51	-0.53	ZZ
W927F3		26.79	0.73	0.78	29.62	0.51	0.53	ZZ
W93WTC		26.06	0.00	0.00	28.44	-0.66	-0.69	ZZ
WARCU8		26.63	0.57	0.61	29.13	0.03	0.03	ZZ
WGCHEL	*	28.28	2.22	2.38	31.47	2.37	2.46	ZZ
X962PZ		27.82	1.76	1.88	31.10	1.99	2.07	ZZ
XJJ6MJ	X	30.00	3.94	4.22	26.50	-2.61	-2.71	ZZ
XKF37W		26.70	0.64	0.69	30.30	1.19	1.24	ZZ
XKKV8W		25.30	-0.76	-0.81	28.80	-0.31	-0.32	ZZ
XRVNBU	*	28.57	2.51	2.69	31.76	2.66	2.76	ZZ
XRY7DZ	X	36.72	10.66	11.42	36.65	7.55	7.84	ZZ
YBXALY		25.03	-1.03	-1.10	28.03	-1.07	-1.11	ZZ
YGAGMK		26.10	0.04	0.04	29.00	-0.11	-0.11	ZZ
YXLEDA		26.40	0.34	0.36	29.50	0.39	0.41	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

Summary Statistics

	Sample F19		Sample F20	
Grand Means	26.06	ksi	29.11	ksi
Stnd Dev Btwn Labs	0.93	ksi	0.96	ksi

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 81 of 96 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

Comments on assigned Data Flags for Analysis #131

WebCode	Flag	Analyst Comment
74T8QF	X	Data for sample F19 are high. Inconsistent in testing between samples.
8ET3GN	X	Inconsistent in testing between samples.
BRZXWL	X	Data for both samples are high. Possible Systematic error.
D4BGW2	X	Data for both samples are low. Possible Systematic error.
DVR7EF	X	Data for sample F20 are low. Inconsistent in testing between samples.
FPCEYY	X	Data for both samples are low. Possible Systematic error.
FZVKV9	X	Data for sample F19 are high. Inconsistent in testing between samples.
HJQZNQ	X	Data for sample F20 are high. Inconsistent in testing between samples.
HRAWUW	X	Data for both samples are high. Possible Systematic error.
J8NNLP	X	Data for sample F19 are high. Inconsistent in testing between samples.
KNWN6P	X	Data for both samples are high. Possible Systematic error.
L39EMN	X	Data for both samples are high. Possible Systematic error.
PEQEGM	X	Data for both samples are high. Possible Systematic error.
XJJ6MJ	X	Data for sample F19 are high. Inconsistent in testing between samples.
XRY7DZ	X	Data for both samples are high. Possible Systematic error.

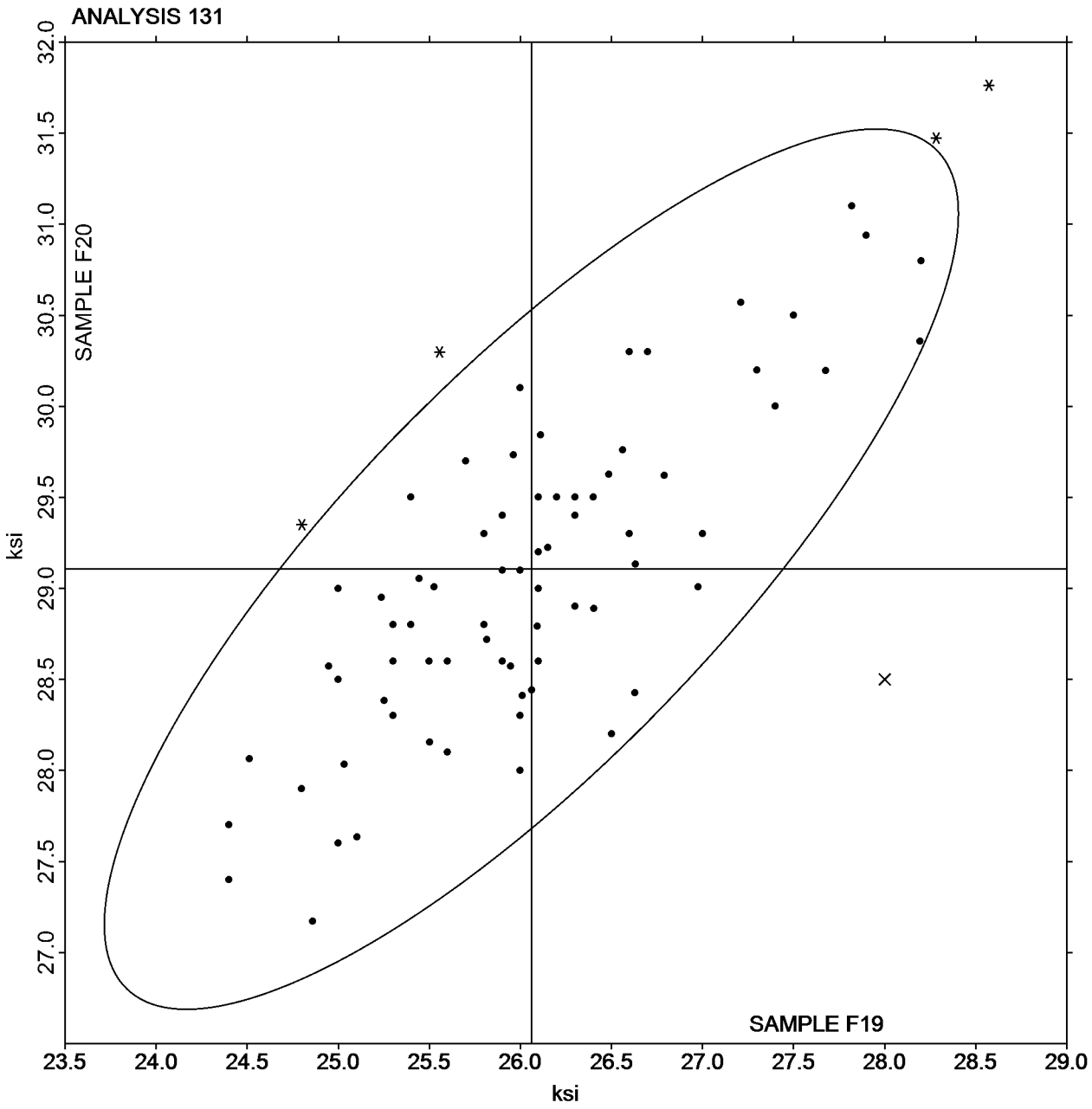
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

SAMPLE F19	**SAMPLE F20**
26.06 ksi	**29.11 ksi**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2AMVTW		42.70	-0.56	-0.21	39.80	-1.87	-0.72	ZZ
3KURW8		41.80	-1.46	-0.56	38.70	-2.97	-1.15	ZZ
3YTMGE		42.80	-0.46	-0.18	40.70	-0.97	-0.38	ZZ
479PY2		42.50	-0.76	-0.29	41.40	-0.27	-0.11	ZZ
6V82RU	*	48.10	4.84	1.85	43.20	1.53	0.59	ZZ
6VL4D3		43.50	0.24	0.09	42.40	0.73	0.28	ZZ
6W3Z4G		43.40	0.14	0.05	43.30	1.63	0.63	ZZ
74T8QF	X	28.50	-14.76	-5.65	29.00	-12.67	-4.89	ZZ
78ZDJ9		46.20	2.94	1.13	44.30	2.63	1.01	ZZ
79AEDU	X	30.00	-13.26	-5.08	29.00	-12.67	-4.89	ZZ
8DV9RJ		40.50	-2.76	-1.06	39.00	-2.67	-1.03	ZZ
8ET2WP		43.50	0.24	0.09	40.00	-1.67	-0.65	ZZ
8ET3GN	*	42.00	-1.26	-0.48	44.00	2.33	0.90	ZZ
8R93ZG		45.00	1.74	0.67	44.00	2.33	0.90	ZZ
ADNTFU		43.30	0.04	0.02	42.90	1.23	0.47	ZZ
AUBYJ2	X	52.50	9.24	3.54	51.70	10.03	3.87	ZZ
B929DR		43.00	-0.26	-0.10	42.50	0.83	0.32	ZZ
BRZXWL		40.35	-2.91	-1.11	37.78	-3.89	-1.50	ZZ
C23HRM		42.50	-0.76	-0.29	41.30	-0.37	-0.14	ZZ
CTJBNC		40.10	-3.16	-1.21	38.60	-3.07	-1.19	ZZ
CU7PQ9		47.50	4.24	1.62	45.00	3.33	1.28	ZZ
D4BGW2	*	50.60	7.34	2.81	48.40	6.73	2.60	ZZ
D72MB7		43.20	-0.06	-0.02	41.60	-0.07	-0.03	ZZ
DRWJPC	X	40.80	-2.46	-0.94	43.50	1.83	0.70	ZZ
DVR7EF	*	44.20	0.94	0.36	45.60	3.93	1.51	ZZ
ERXE9H		40.30	-2.96	-1.13	37.80	-3.87	-1.50	ZZ
F2Q9AW		39.50	-3.76	-1.44	38.50	-3.17	-1.23	ZZ
F7NM2T		44.00	0.74	0.28	43.00	1.33	0.51	ZZ
FPCEYY		45.30	2.04	0.78	42.90	1.23	0.47	ZZ
FRT4NC		41.00	-2.26	-0.87	42.00	0.33	0.13	ZZ
FZVKV9		40.10	-3.16	-1.21	39.10	-2.57	-0.99	ZZ
G4XJ9L		41.40	-1.86	-0.71	40.80	-0.87	-0.34	ZZ
G79YJL		40.00	-3.26	-1.25	37.00	-4.67	-1.80	ZZ
G97NK2		45.50	2.24	0.86	43.20	1.53	0.59	ZZ
GB6LEV		42.80	-0.46	-0.18	42.60	0.93	0.36	ZZ
GGHNV4		41.80	-1.46	-0.56	39.60	-2.07	-0.80	ZZ
HAQ2D4		43.00	-0.26	-0.10	40.70	-0.97	-0.38	ZZ
HHFTBF		41.00	-2.26	-0.87	39.00	-2.67	-1.03	ZZ
HJQZNQ	X	33.00	-10.26	-3.93	37.00	-4.67	-1.80	ZZ
HP8V6L		48.60	5.34	2.05	45.40	3.73	1.44	ZZ
HRAWUW	*	43.32	0.06	0.02	38.70	-2.97	-1.15	ZZ
HWYPVT		44.60	1.34	0.51	42.70	1.03	0.40	ZZ
J3ZNJN		44.80	1.54	0.59	44.90	3.23	1.24	ZZ
J8NNLP		41.00	-2.26	-0.87	41.00	-0.67	-0.26	ZZ
J9YL3C		39.60	-3.66	-1.40	38.10	-3.57	-1.38	ZZ
JMTXPG		44.80	1.54	0.59	43.70	2.03	0.78	ZZ
K78PQB		41.70	-1.56	-0.60	40.10	-1.57	-0.61	ZZ
KDTPZW		47.54	4.28	1.64	45.79	4.12	1.59	ZZ
KJDZED		42.70	-0.56	-0.21	42.10	0.43	0.16	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

		Sample F19			Sample F20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
KNWN6P	*	36.80	-6.46	-2.47	36.60	-5.07	-1.96	ZZ
KYBZGE		46.00	2.74	1.05	42.40	0.73	0.28	ZZ
L39EMN		42.80	-0.46	-0.18	41.90	0.23	0.09	ZZ
LGY6Q2		41.45	-1.81	-0.69	40.15	-1.52	-0.59	ZZ
LKQ2PJ		45.00	1.74	0.67	43.50	1.83	0.70	ZZ
LYCTUZ		39.80	-3.46	-1.32	38.00	-3.67	-1.42	ZZ
M6WBM3		46.40	3.14	1.20	44.30	2.63	1.01	ZZ
MB8C9H		41.00	-2.26	-0.87	41.50	-0.17	-0.07	ZZ
MFQQAH		46.20	2.94	1.13	44.70	3.03	1.17	ZZ
N39NV6	X	44.55	1.29	0.49	37.00	-4.67	-1.80	ZZ
N8BTYW		44.00	0.74	0.28	42.50	0.83	0.32	ZZ
NWZTUC		48.00	4.74	1.82	45.00	3.33	1.28	ZZ
PEQEGM	*	37.40	-5.86	-2.24	34.50	-7.17	-2.77	ZZ
PMK4ZN		44.70	1.44	0.55	41.50	-0.17	-0.07	ZZ
PZMJ9Y		45.10	1.84	0.71	43.40	1.73	0.67	ZZ
Q3LYMA		42.50	-0.76	-0.29	40.60	-1.07	-0.41	ZZ
Q6QHRW		44.60	1.34	0.51	42.20	0.53	0.20	ZZ
Q9HT9W		42.80	-0.46	-0.18	42.10	0.43	0.16	ZZ
QDZVM7		40.10	-3.16	-1.21	39.00	-2.67	-1.03	ZZ
QRL4V7		42.10	-1.16	-0.44	40.40	-1.27	-0.49	ZZ
RC8ULU		44.10	0.84	0.32	42.50	0.83	0.32	ZZ
RCWEM9		48.00	4.74	1.82	46.00	4.33	1.67	ZZ
RGMPLK		43.56	0.30	0.12	43.01	1.34	0.52	ZZ
RQHKRW	X	46.80	3.54	1.36	50.50	8.83	3.41	ZZ
TX8VBQ		45.00	1.74	0.67	41.70	0.03	0.01	ZZ
UJZ8FA		47.60	4.34	1.66	47.30	5.63	2.17	ZZ
UXH2PD		40.06	-3.20	-1.23	39.11	-2.56	-0.99	ZZ
V3BGZ7		42.00	-1.26	-0.48	41.00	-0.67	-0.26	ZZ
V4UH32		42.70	-0.56	-0.21	40.20	-1.47	-0.57	ZZ
VKRM7B		44.70	1.44	0.55	42.30	0.63	0.24	ZZ
VLLDDB		41.83	-1.43	-0.55	39.56	-2.11	-0.82	ZZ
VN9QXJ		46.30	3.04	1.16	46.30	4.63	1.78	ZZ
VPW47D		44.20	0.94	0.36	43.40	1.73	0.67	ZZ
VTNYJX		40.50	-2.76	-1.06	40.00	-1.67	-0.65	ZZ
W927F3		44.35	1.09	0.42	40.95	-0.72	-0.28	ZZ
W93WTC		43.70	0.44	0.17	41.20	-0.47	-0.18	ZZ
WARCU8		44.60	1.34	0.51	45.00	3.33	1.28	ZZ
WGCHEL		39.89	-3.37	-1.29	37.93	-3.74	-1.45	ZZ
X962PZ		48.00	4.74	1.82	46.00	4.33	1.67	ZZ
XJJ6MJ	X	37.80	-5.46	-2.09	42.10	0.43	0.16	ZZ
XKF37W		41.90	-1.36	-0.52	40.70	-0.97	-0.38	ZZ
XKKV8W		43.03	-0.23	-0.09	41.21	-0.46	-0.18	ZZ
XRVNBU		40.00	-3.26	-1.25	39.00	-2.67	-1.03	ZZ
XRY7DZ		42.00	-1.26	-0.48	40.00	-1.67	-0.65	ZZ
YBXALY		46.30	3.04	1.16	43.60	1.93	0.74	ZZ
YGAGMK		42.00	-1.26	-0.48	40.00	-1.67	-0.65	ZZ
YXLEDA		42.60	-0.66	-0.25	42.00	0.33	0.13	ZZ

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

Summary Statistics

	Sample F19		Sample F20	
Grand Means	43.26	Percent	41.67	Percent
Stnd Dev Btwn Labs	2.61	Percent	2.59	Percent

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 88 of 96 reporting participants

Comments on assigned Data Flags for Analysis #132

WebCode	Flag	Analyst Comment
74T8QF	X	Data for both samples are low. Possible Systematic error.
79AEDU	X	Data for both samples are low. Possible Systematic error.
AUBYJ2	X	Data for both samples are high. Possible Systematic error.
DRWJPC	X	Inconsistent in testing between samples.
HJQZNQ	X	Data for sample F19 are low. Inconsistent in testing between samples.
N39NV6	X	Inconsistent in testing between samples.
RQHKRW	X	Data for sample F20 are high. Inconsistent in testing between samples.
XJJ6MJ	X	Inconsistent in testing between samples.

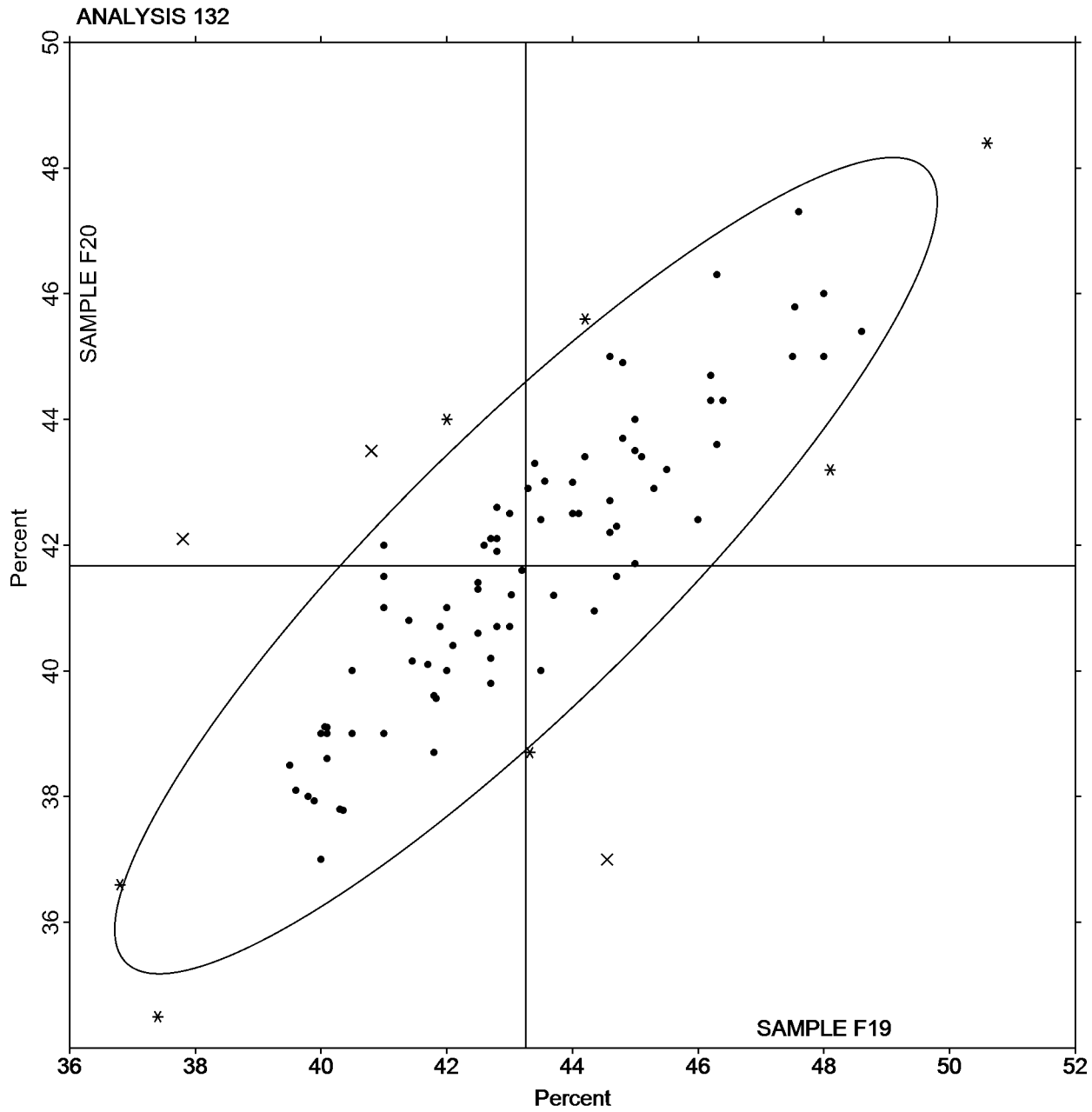
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

SAMPLE F19	**SAMPLE F20**
43.26 Percent	**41.67 Percent**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)
ASTM E18

		Sample E19			Sample E20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2MKJGQ		70.86	0.30	0.52	74.68	0.29	0.51	AN
3372PX	X	72.02	1.46	2.50	74.66	0.27	0.48	WI
38MBWA		70.44	-0.12	-0.20	74.52	0.13	0.23	WI
3YFYBL		70.76	0.20	0.35	74.76	0.37	0.65	WI
6FN4B2		69.88	-0.68	-1.16	73.84	-0.55	-0.96	WI
6PFT4G		71.38	0.82	1.41	75.24	0.85	1.50	WI
78C82U		71.38	0.82	1.41	74.88	0.49	0.86	WI
78ZDJ9		71.18	0.62	1.06	74.46	0.07	0.13	MI
7YY47N		70.72	0.16	0.28	74.50	0.11	0.20	NA
8T99LV		70.36	-0.20	-0.34	74.28	-0.11	-0.19	XX
AFRRP2		71.90	1.34	2.30	75.68	1.29	2.27	WI
BWQCE2		70.00	-0.56	-0.95	73.40	-0.99	-1.74	WI
CFZMZJ		70.32	-0.24	-0.41	74.62	0.23	0.41	WI
CUUBMR		70.48	-0.08	-0.13	74.16	-0.23	-0.40	LE
CXZJDN		70.40	-0.16	-0.27	74.60	0.21	0.37	WI
DAQ7AP		70.14	-0.42	-0.71	74.08	-0.31	-0.54	WI
DPQ2MA		70.42	-0.14	-0.23	74.24	-0.15	-0.26	WI
DUGE8K		71.16	0.60	1.03	74.24	-0.15	-0.26	XX
F9AUEH		70.50	-0.06	-0.10	74.44	0.05	0.09	WI
FA4KAB		70.74	0.18	0.31	74.34	-0.05	-0.09	WI
FFWK6J		70.98	0.42	0.72	74.82	0.43	0.76	CL
FNDFFQ		71.12	0.56	0.96	74.40	0.01	0.02	CL
GA6PKQ		70.80	0.24	0.42	75.24	0.85	1.50	WI
GAPQUE		70.78	0.22	0.38	74.76	0.37	0.65	UN
H76ULN		69.22	-1.34	-2.29	73.40	-0.99	-1.74	WI
HHFTBF		70.54	-0.02	-0.03	74.18	-0.21	-0.37	NA
JNDG6A		70.78	0.22	0.38	74.54	0.15	0.27	CL
JT8YGK		70.36	-0.20	-0.34	74.12	-0.27	-0.47	NA
K78PQB		69.54	-1.02	-1.74	74.06	-0.33	-0.58	WI
KDQ6LM		70.42	-0.14	-0.23	74.40	0.01	0.02	XX
LCGYZT		69.90	-0.66	-1.12	73.84	-0.55	-0.96	WI
LGY6Q2		70.58	0.02	0.04	74.48	0.09	0.16	UN
MMQ2GH		69.88	-0.68	-1.16	73.40	-0.99	-1.74	WI
MMYVMC		70.78	0.22	0.38	75.22	0.83	1.46	XX
N8BTYW		70.06	-0.50	-0.85	73.52	-0.87	-1.53	WI
NFJFYJ		69.56	-1.00	-1.71	73.36	-1.03	-1.81	CL
P4PAR8		69.85	-0.71	-1.21	73.81	-0.58	-1.02	LE
PLPGLY		70.86	0.30	0.52	74.30	-0.09	-0.16	BU
QDN287		69.50	-1.06	-1.81	74.02	-0.37	-0.65	WI
QM6CCK		71.46	0.90	1.54	74.94	0.55	0.97	UN
R7N3HV		71.14	0.58	1.00	75.12	0.73	1.29	FT
T4XAXC		71.32	0.76	1.30	74.94	0.55	0.97	NA
U6ACA3		70.82	0.26	0.45	75.06	0.67	1.18	WI
U9LVZB		71.76	1.20	2.06	75.50	1.11	1.95	WI
UJZ8FA		70.84	0.28	0.48	74.28	-0.11	-0.19	WI
V4UH32		70.72	0.16	0.28	74.58	0.19	0.34	NA
VN9QXJ		70.00	-0.56	-0.95	74.00	-0.39	-0.68	WI
W3NNJT		70.94	0.38	0.65	74.50	0.11	0.20	WI
WX2K6X		71.10	0.54	0.93	75.08	0.69	1.22	NA

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)
ASTM E18

		Sample E19			Sample E20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
X2U7A6		70.40	-0.16	-0.27	74.18	-0.21	-0.37	WI
XAUGQV		69.66	-0.90	-1.53	73.50	-0.89	-1.56	WI
XJJ6MJ		70.24	-0.32	-0.54	74.68	0.29	0.51	WI
XWDWQ8		70.88	0.32	0.55	74.78	0.39	0.69	UN
Z64Z4T		70.14	-0.42	-0.71	73.52	-0.87	-1.53	XX
ZGKKTV		70.14	-0.42	-0.71	73.50	-0.89	-1.56	CL

Summary Statistics

	Sample E19		Sample E20	
Grand Means	70.56	HR30N	74.39	HR30N
Stnd Dev Btwn Labs	0.58	HR30N	0.57	HR30N

Samples E19 , E20 : Steel

Statistics based on 54 of 55 reporting participants

Comments on assigned Data Flags for Analysis #136

WebCode	Flag	Analyst Comment
3372PX	X	Inconsistent in testing between samples.

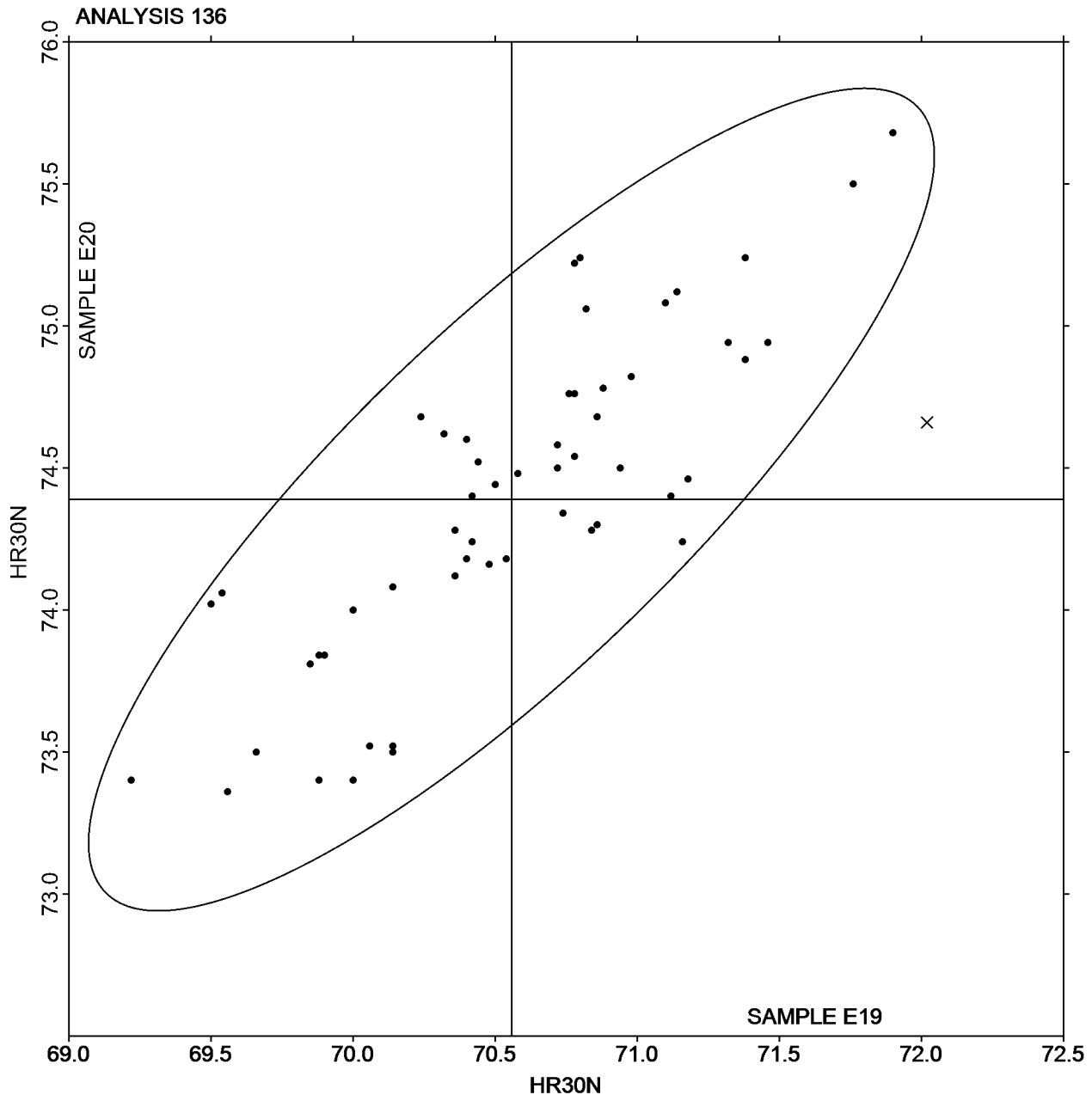
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)
ASTM E18

SAMPLE E19	**SAMPLE E20**
70.56 HR30N	**74.39 HR30N**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

		Sample C19			Sample C20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
29YN6D		0.0156	-0.0006	-0.23	0.0262	-0.0035	-0.85	NP
3YFYBL	X	0.0170	0.0008	0.31	0.0412	0.0115	2.79	WT
6FN4B2	X	0.00476	-0.0114	-4.39	0.00966	-0.0201	-4.87	OL
78C82U	X	0.0198	0.0036	1.39	0.0225	-0.0072	-1.76	WT
8LUQB2		0.0180	0.0018	0.70	0.0330	0.0033	0.80	OL
8VTL8C		0.0150	-0.0011	-0.44	0.0320	0.0023	0.55	LC
8WLLWA		0.0140	-0.0022	-0.83	0.0283	-0.0014	-0.34	NX
9A3HDD	X	0.0277	0.0115	4.40	0.0355	0.0058	1.41	NE
9PXXLJ		0.0217	0.0055	2.12	0.0390	0.0093	2.25	NI
AFRRP2		0.0129	-0.0033	-1.26	0.0249	-0.0048	-1.16	LE
B9PM8P	X	0.0286	0.0124	4.77	0.0470	0.0173	4.20	BU
BYBALF		0.0134	-0.0028	-1.07	0.0254	-0.0043	-1.05	ZA
CUNHMC		0.0184	0.0022	0.86	0.0328	0.0030	0.74	ZI
DPQ2MA		0.0141	-0.0021	-0.80	0.0269	-0.0028	-0.68	ZX
EQRCV6		0.0194	0.0032	1.24	0.0387	0.0090	2.18	OL
F2Q9AW		0.0175	0.0013	0.51	0.0320	0.0023	0.55	OL
F4ZK6Z	X	0.0288	0.0126	4.85	0.0324	0.0027	0.65	XX
FRT4NC		0.0141	-0.0021	-0.80	0.0282	-0.0015	-0.37	ON
G7NDTG		0.0119	-0.0043	-1.64	0.0227	-0.0070	-1.69	XX
H24GAB		0.0158	-0.0004	-0.15	0.0300	0.0003	0.07	OI
H76ULN	*	0.0206	0.0044	1.69	0.0308	0.0011	0.27	RE
HHFTBF		0.0154	-0.0008	-0.30	0.0320	0.0023	0.55	ZA
HL87KK		0.0177	0.0015	0.59	0.0328	0.0031	0.76	XX
HRV4H3		0.0136	-0.0026	-1.00	0.0280	-0.0017	-0.42	BR
J89HA6		0.0152	-0.0010	-0.38	0.0302	0.0005	0.12	ZE
JMQR92		0.0127	-0.0035	-1.34	0.0234	-0.0063	-1.53	XX
JT8YGK		0.0105	-0.0057	-2.19	0.0209	-0.0088	-2.13	ZA
LNLVKY		0.0171	0.0009	0.34	0.0298	0.0001	0.03	LI
LYCTUZ		0.0213	0.0051	1.98	0.0335	0.0037	0.91	XX
MMYVMC		0.0141	-0.0021	-0.80	0.0231	-0.0066	-1.61	XX
MXC7MM		0.0164	0.0002	0.08	0.0280	-0.0017	-0.42	NX
N8BTYW		0.0196	0.0035	1.33	0.0323	0.0026	0.63	CM
PEQEGM		0.0170	0.0008	0.29	0.0305	0.0008	0.19	LC
PJVCT8		0.0176	0.0014	0.53	0.0302	0.0004	0.11	XX
Q3QMBL		0.0186	0.0024	0.94	0.0351	0.0054	1.30	XX
QEMC9T		0.0148	-0.0014	-0.53	0.0270	-0.0027	-0.66	LE
QZN4UZ		0.0170	0.0008	0.31	0.0285	-0.0012	-0.29	CM
TJW6HJ		0.0175	0.0013	0.51	0.0342	0.0045	1.09	ZT
U2NYM7		0.0169	0.0007	0.28	0.0343	0.0045	1.10	XX
V9UUMC		0.0174	0.0012	0.47	0.0294	-0.0004	-0.09	NI
VN9QXJ		0.0162	0.0000	0.00	0.0308	0.0011	0.27	NI
WXNUER		0.0178	0.0016	0.63	0.0297	0.0000	-0.01	RP
XAUGQV		0.0134	-0.0028	-1.08	0.0275	-0.0022	-0.54	OX
XJJ6MJ		0.0178	0.0016	0.62	0.0296	-0.0001	-0.03	OG
XZE4LX	X	0.0204	0.0042	1.62	0.0254	-0.0043	-1.05	NI
Y6RYNL		0.0124	-0.0038	-1.46	0.0232	-0.0065	-1.58	LE
ZNXP8A		0.0169	0.0007	0.28	0.0339	0.0041	1.01	XX

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

Summary Statistics

	Sample C19		Sample C20	
Grand Means	0.0162	inches	0.0297	inches
Stnd Dev Btwn Labs	0.0026	inches	0.0041	inches

Samples C19 , C20 : Steel

Statistics based on 40 of 47 reporting participants

Comments on assigned Data Flags for Analysis #145

WebCode	Flag	Analyst Comment
3YFYBL	X	Data for sample C20 are high. Inconsistent within the determinations of sample C20.
6FN4B2	X	Data for both samples are low.
78C82U	X	Inconsistent in testing between samples.
9A3HDD	X	Data for sample C19 are high.
B9PM8P	X	Data for both samples are high. Inconsistent within the determinations of both samples.
F4ZK6Z	X	Data for sample C19 are high. Inconsistent within the determinations of both samples.
XZE4LX	X	Inconsistent in testing between samples.

Cycle 106
2nd Q, 2014

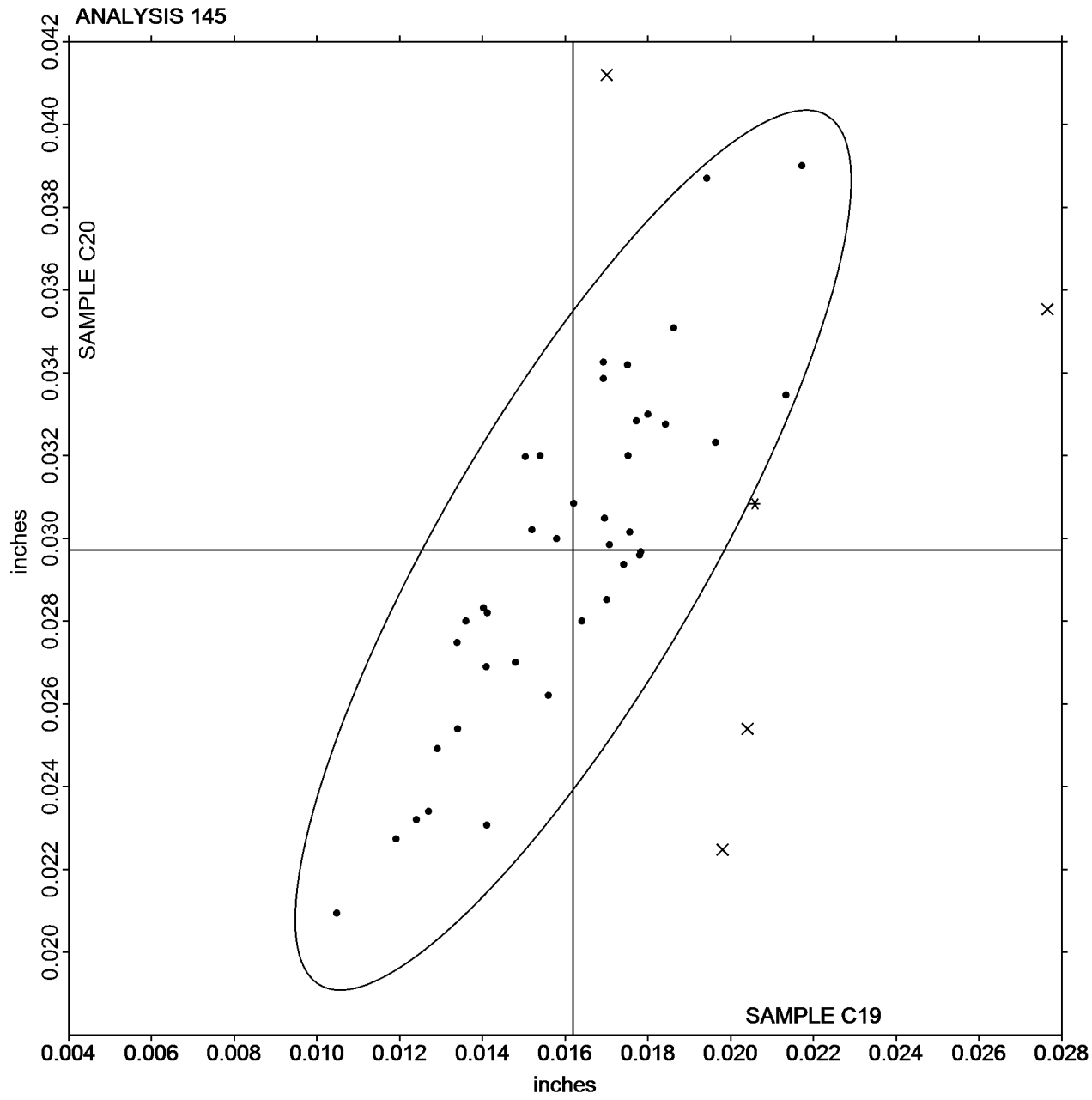
Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

SAMPLE C19
0.0162 inches

SAMPLE C20
0.0297 inches



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

		Sample C19			Sample C20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
29YN6D		0.0142	-0.0005	-0.59	0.0290	0.0006	0.32	LE
2UNXBK		0.0147	0.0000	-0.01	0.0287	0.0003	0.18	LE
3LJM8Y		0.0159	0.0011	1.28	0.0289	0.0005	0.25	LE
3YFYBL	X	0.0126	-0.0021	-2.38	0.0416	0.0132	7.10	WT
6B2XAM		0.0136	-0.0011	-1.26	0.0250	-0.0034	-1.83	LE
78C82U		0.0154	0.0007	0.74	0.0282	-0.0002	-0.11	WT
8LUQB2		0.0148	0.0001	0.10	0.0289	0.0005	0.29	WT
8VTL8C		0.0144	-0.0003	-0.33	0.0307	0.0023	1.26	ED
8WLLWA		0.0139	-0.0009	-0.95	0.0266	-0.0018	-0.99	WT
9A3HDD		0.0163	0.0016	1.76	0.0296	0.0011	0.62	LE
9PXXLJ		0.0147	-0.0001	-0.09	0.0282	-0.0002	-0.11	CM
A98FMU	X	0.0238	0.0090	10.10	0.0398	0.0114	6.11	MA
AFRRP2		0.0127	-0.0020	-2.22	0.0253	-0.0031	-1.65	LE
B9PM8P		0.0150	0.0003	0.30	0.0288	0.0004	0.21	BU
BMJ23Y	X	0.0179	0.0031	3.49	0.0311	0.0027	1.45	BU
BYBALF		0.0136	-0.0011	-1.26	0.0268	-0.0016	-0.87	BU
CUNHMC		0.0137	-0.0010	-1.15	0.0262	-0.0022	-1.18	MI
DPQ2MA		0.0146	-0.0001	-0.11	0.0284	0.0000	-0.01	LE
DVR7EF	*	0.0148	0.0001	0.07	0.0324	0.0040	2.15	LE
EQRCV6		0.0129	-0.0018	-2.05	0.0262	-0.0022	-1.19	BU
F2Q9AW		0.0152	0.0005	0.52	0.0286	0.0002	0.10	SH
F4ZK6Z		0.0161	0.0013	1.51	0.0279	-0.0005	-0.25	ST
FRT4NC		0.0138	-0.0009	-1.04	0.0282	-0.0002	-0.11	WT
G7NDTG		0.0149	0.0001	0.14	0.0273	-0.0011	-0.59	XX
H24GAB		0.0156	0.0009	0.97	0.0288	0.0004	0.21	ST
H76ULN		0.0146	-0.0001	-0.10	0.0291	0.0006	0.35	CL
HHFTBF		0.0140	-0.0007	-0.82	0.0306	0.0022	1.18	ST
HL87KK		0.0150	0.0003	0.34	0.0312	0.0028	1.49	XX
HRV4H3		0.0148	0.0001	0.07	0.0288	0.0004	0.21	CL
JT8YGK		0.0148	0.0001	0.07	0.0280	-0.0004	-0.22	WT
KZKQ76	*	0.0124	-0.0023	-2.60	0.0228	-0.0056	-3.02	BU
L6WDV8		0.0156	0.0009	0.97	0.0284	0.0000	0.00	XX
LGY6Q2		0.0160	0.0013	1.41	0.0284	0.0000	0.00	LE
LNLVKY		0.0154	0.0007	0.74	0.0314	0.0030	1.62	BU
MMYVMC	X	0.0198	0.0051	5.65	0.0350	0.0066	3.55	XX
MXC7MM		0.0148	0.0001	0.07	0.0282	-0.0002	-0.11	CM
N8BTYW		0.0144	-0.0004	-0.42	0.0286	0.0002	0.11	CM
NJTMXR		0.0139	-0.0008	-0.89	0.0272	-0.0012	-0.67	WZ
PEQEGM		0.0147	-0.0001	-0.08	0.0287	0.0003	0.16	BU
PJVCT8		0.0156	0.0009	0.97	0.0277	-0.0007	-0.39	CM
Q3QMBL		0.0155	0.0008	0.87	0.0306	0.0022	1.20	XX
QDN287		0.0146	-0.0001	-0.10	0.0279	-0.0005	-0.29	NA
QEMC9T		0.0146	-0.0001	-0.15	0.0284	0.0000	0.00	XX
QHN4P8		0.0160	0.0013	1.44	0.0312	0.0027	1.48	LE
QZN4UZ		0.0136	-0.0011	-1.26	0.0254	-0.0030	-1.62	CM
TJW6HJ		0.0155	0.0007	0.83	0.0293	0.0009	0.47	ST
U2NYM7		0.0163	0.0016	1.77	0.0318	0.0034	1.83	XX
V9UUMC		0.0157	0.0010	1.13	0.0285	0.0001	0.05	LE
VN9QXJ		0.0147	0.0000	0.00	0.0281	-0.0003	-0.15	CM

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

		Sample C19			Sample C20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
WXNUER		0.0149	0.0002	0.22	0.0285	0.0001	0.06	BU
XAUGQV		0.0151	0.0003	0.39	0.0293	0.0009	0.50	SH
XJJ6MJ	X	0.0102	-0.0045	-5.06	0.0208	-0.0076	-4.09	WT
XZE4LX	X	0.0210	0.0063	6.99	0.0269	-0.0015	-0.82	BU
Y6RYNL		0.0142	-0.0005	-0.59	0.0254	-0.0030	-1.62	XX
YG4NLH		0.0139	-0.0008	-0.89	0.0273	-0.0011	-0.58	MA
ZNXP8A		0.0150	0.0002	0.25	0.0308	0.0024	1.28	LE

Summary Statistics

	Sample C19		Sample C20	
Grand Means	0.0147	inches	0.0284	inches
Stnd Dev Btwn Labs	0.0009	inches	0.0019	inches

Samples C19 , C20 : Steel

Statistics based on 50 of 56 reporting participants

Comments on assigned Data Flags for Analysis #146

WebCode	Flag	Analyst Comment
3YFYBL	X	Data for sample C20 are high. Inconsistent within the determinations of sample C20.
A98FMU	X	Data for both samples are high. Inconsistent within the determinations of sample C20.
BMJ23Y	X	Data for sample C19 are high.
MMYVMC	X	Data for both samples are high.
XJJ6MJ	X	Data for both samples are low.
XZE4LX	X	Data for sample C19 are high. Inconsistent within the determinations of sample C19.

Cycle 106
2nd Q, 2014

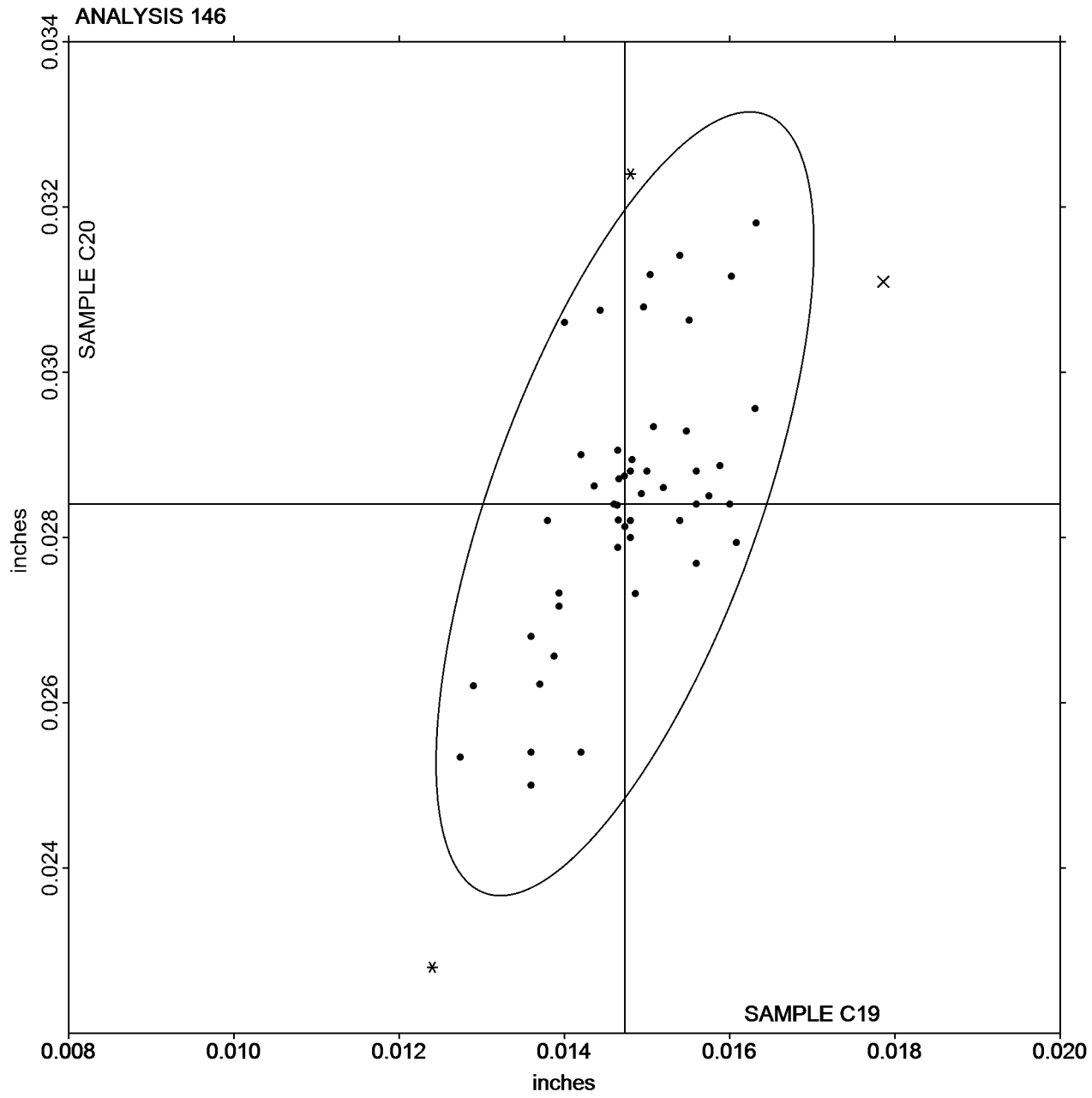
Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

SAMPLE C19
0.0147 inches

SAMPLE C20
0.0284 inches



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 147

Grain Size (Stainless Steel) - ASTM Grain Size Number (G)
ASTM E112, ASTM E1382

		Sample Y19			Sample Y20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2AMVTW		9.70	0.07	0.07	4.50	-1.14	-1.31	XX
2VT3RA		9.12	-0.51	-0.49	5.30	-0.34	-0.39	XX
2Z9NQ9		8.80	-0.83	-0.80	5.00	-0.64	-0.73	XX
3YTMGE		10.84	1.21	1.16	6.56	0.92	1.06	XX
4L7RMZ		9.90	0.27	0.26	5.20	-0.44	-0.50	XX
4VCEVZ		8.00	-1.63	-1.56	5.20	-0.44	-0.50	XX
696TQL		8.00	-1.63	-1.56	4.80	-0.84	-0.96	XX
8DV9RJ		10.40	0.77	0.74	5.40	-0.24	-0.27	XX
8QUZP3		9.50	-0.13	-0.12	7.00	1.36	1.57	XX
8YW3EM		11.12	1.49	1.43	6.20	0.56	0.65	XX
A6TXEP		9.66	0.03	0.03	5.40	-0.24	-0.27	XX
ARAKKC		10.00	0.37	0.36	7.00	1.36	1.57	XX
AUBYJ2		10.46	0.83	0.80	5.68	0.04	0.05	XX
B76F7G		8.80	-0.83	-0.80	6.40	0.76	0.88	XX
B9PM8P		11.54	1.91	1.83	6.34	0.70	0.81	XX
BCFER9		10.00	0.37	0.36	5.00	-0.64	-0.73	XX
DVR7EF		10.00	0.37	0.36	5.70	0.06	0.07	XX
ECHKCY		9.20	-0.43	-0.41	3.90	-1.74	-2.00	XX
FA6W96		10.60	0.97	0.93	5.40	-0.24	-0.27	XX
G8Y3CT		10.24	0.61	0.59	5.20	-0.44	-0.50	XX
G8Y6XQ		9.50	-0.13	-0.12	5.50	-0.14	-0.16	XX
H76ULN		9.20	-0.43	-0.41	5.40	-0.24	-0.27	XX
HHDQBK		10.00	0.37	0.36	6.00	0.36	0.42	XX
HRV4H3		8.30	-1.33	-1.27	5.10	-0.54	-0.62	XX
JEEFAH		10.67	1.04	1.00	6.31	0.68	0.78	XX
JT8YGK		7.80	-1.83	-1.75	5.40	-0.24	-0.27	XX
NCNW6L		11.00	1.37	1.32	6.60	0.96	1.11	XX
PEQEGM		9.40	-0.23	-0.22	4.40	-1.24	-1.42	XX
Q3LYMA		10.46	0.83	0.80	6.32	0.68	0.79	XX
RC8ULU		8.00	-1.63	-1.56	4.00	-1.64	-1.89	XX
TGJNUJ		8.80	-0.83	-0.80	6.80	1.16	1.34	XX
UXH2PD		9.00	-0.63	-0.60	7.00	1.36	1.57	XX
W3NNJT		9.60	-0.03	-0.03	5.80	0.16	0.19	XX
XJJ6MJ		11.50	1.87	1.79	7.00	1.36	1.57	XX
ZHY874		7.90	-1.73	-1.66	4.50	-1.14	-1.31	XX

Summary Statistics

	Sample Y19		Sample Y20	
Grand Means	9.63	ASTM, G	5.64	ASTM, G
Stnd Dev Btwn Labs	1.04	ASTM, G	0.87	ASTM, G

Samples Y19 , Y20 : AISI 316LVM, AISI 304

Statistics based on 35 of 35 reporting participants

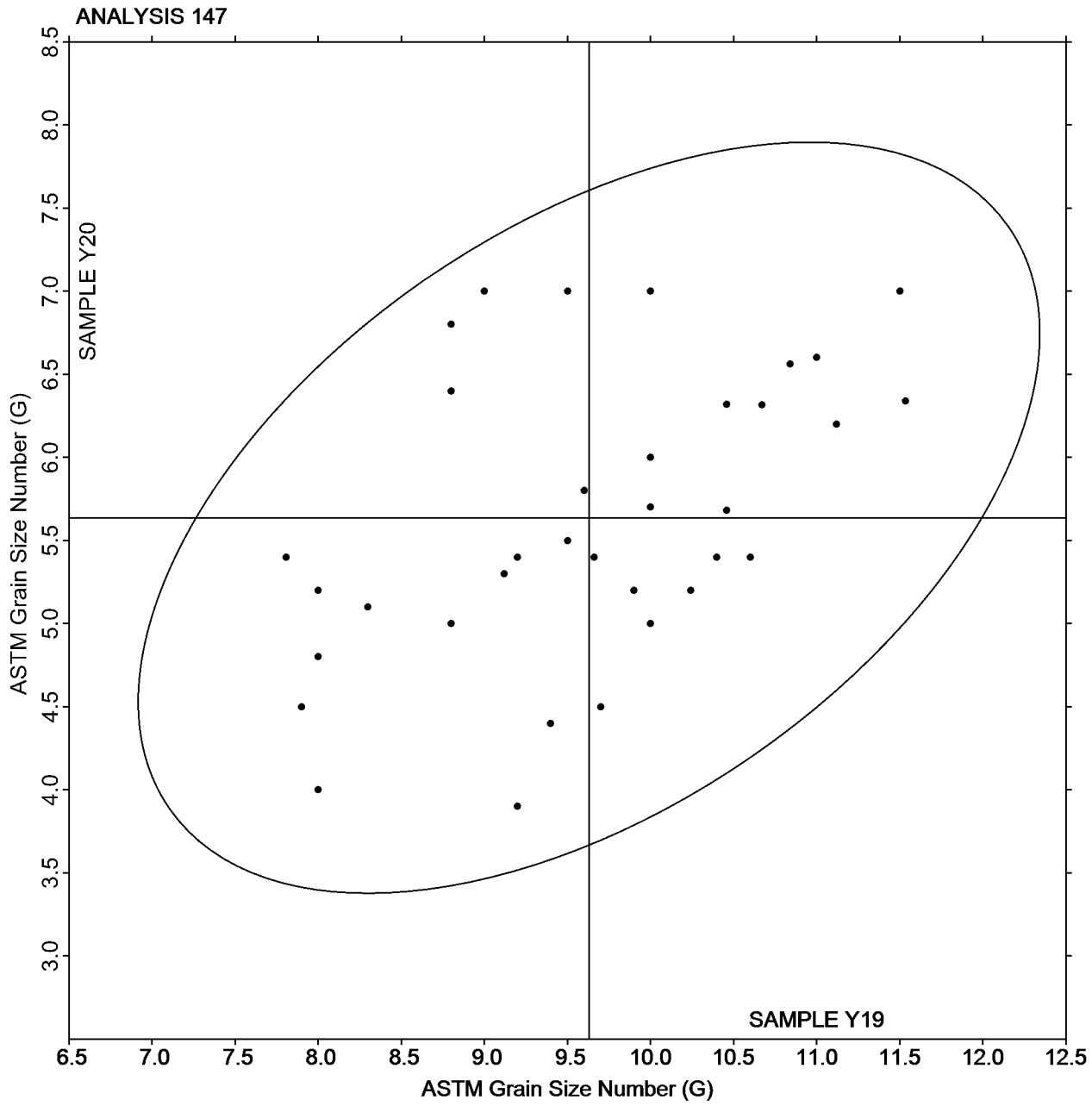
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 147

Grain Size (Stainless Steel) - ASTM Grain Size Number (G)
ASTM E112, ASTM E1382

SAMPLE Y19	**SAMPLE Y20**
9.63 ASTM, G	**5.64 ASTM, G**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 150

Chemical Analysis Element #1: Nickel-based Alloy - Percent
CHROMIUM (Cr)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2BCYL4		18.23	-0.16	-1.27	17.55	-0.31	-2.06	ED
2ZUKJ2		18.35	-0.04	-0.31	17.81	-0.05	-0.34	OE
3B9E8A	*	18.64	0.25	2.02	18.28	0.43	2.82	OE
43RD8Q		18.35	-0.04	-0.31	17.85	0.00	-0.03	IC
6NERRC		18.53	0.14	1.10	18.06	0.21	1.37	WD
6PFT4G		18.36	-0.03	-0.28	17.76	-0.10	-0.67	OE
8WLLWA		18.61	0.22	1.77	18.02	0.17	1.11	WD
8YDY62		18.41	0.02	0.12	17.90	0.04	0.26	OE
9X6W2H		18.31	-0.08	-0.68	17.74	-0.12	-0.80	IC
9XFYCU		18.44	0.05	0.42	17.96	0.11	0.70	XR
ARAKKC		18.32	-0.07	-0.55	17.82	-0.03	-0.23	OE
CPPBX8		18.33	-0.06	-0.47	17.80	-0.06	-0.38	OE
CUUBMR		18.21	-0.18	-1.46	17.71	-0.14	-0.96	WD
EXFDEA	X	17.44	-0.96	-7.68	16.69	-1.17	-7.73	OE
F2Q9AW		18.33	-0.06	-0.49	17.86	0.01	0.04	IC
GEY9QL		18.50	0.11	0.87	17.92	0.06	0.41	OE
H24GAB		18.34	-0.06	-0.45	17.78	-0.08	-0.53	OE
HRV4H3		18.37	-0.02	-0.20	17.95	0.10	0.63	DR
JKY8EG		18.53	0.14	1.14	17.93	0.08	0.50	GD
NCNW6L		18.47	0.08	0.63	17.98	0.12	0.80	OE
NKL8KG	X	17.38	-1.01	-8.16	16.99	-0.87	-5.77	OE
PFFQYE		18.45	0.06	0.47	17.90	0.05	0.30	WD
QDN287	X	17.79	-0.60	-4.86	16.86	-1.00	-6.61	OE
QZN4UZ		18.30	-0.09	-0.74	17.73	-0.13	-0.85	OE
RLK6E3		18.17	-0.22	-1.81	17.67	-0.19	-1.27	OE
TXACHW		18.29	-0.10	-0.84	17.74	-0.12	-0.80	XR
U6D8D9		18.55	0.16	1.30	17.85	-0.01	-0.05	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	18.39	Percent	17.86	Percent
Stnd Dev Btwn Labs	0.12	Percent	0.15	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 27 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 150

Chemical Analysis Element #1: Nickel-based Alloy - Percent CHROMIUM (Cr)

Comments on assigned Data Flags for Analysis #150

WebCode	Flag	Analyst Comment
EXFDEA	X	Data for both samples are low. Inconsistent within the determinations of sample J19.
NKL8KG	X	Data for both samples are low.
QDN287	X	Data for both samples are low. Inconsistent within the determinations of sample J19.

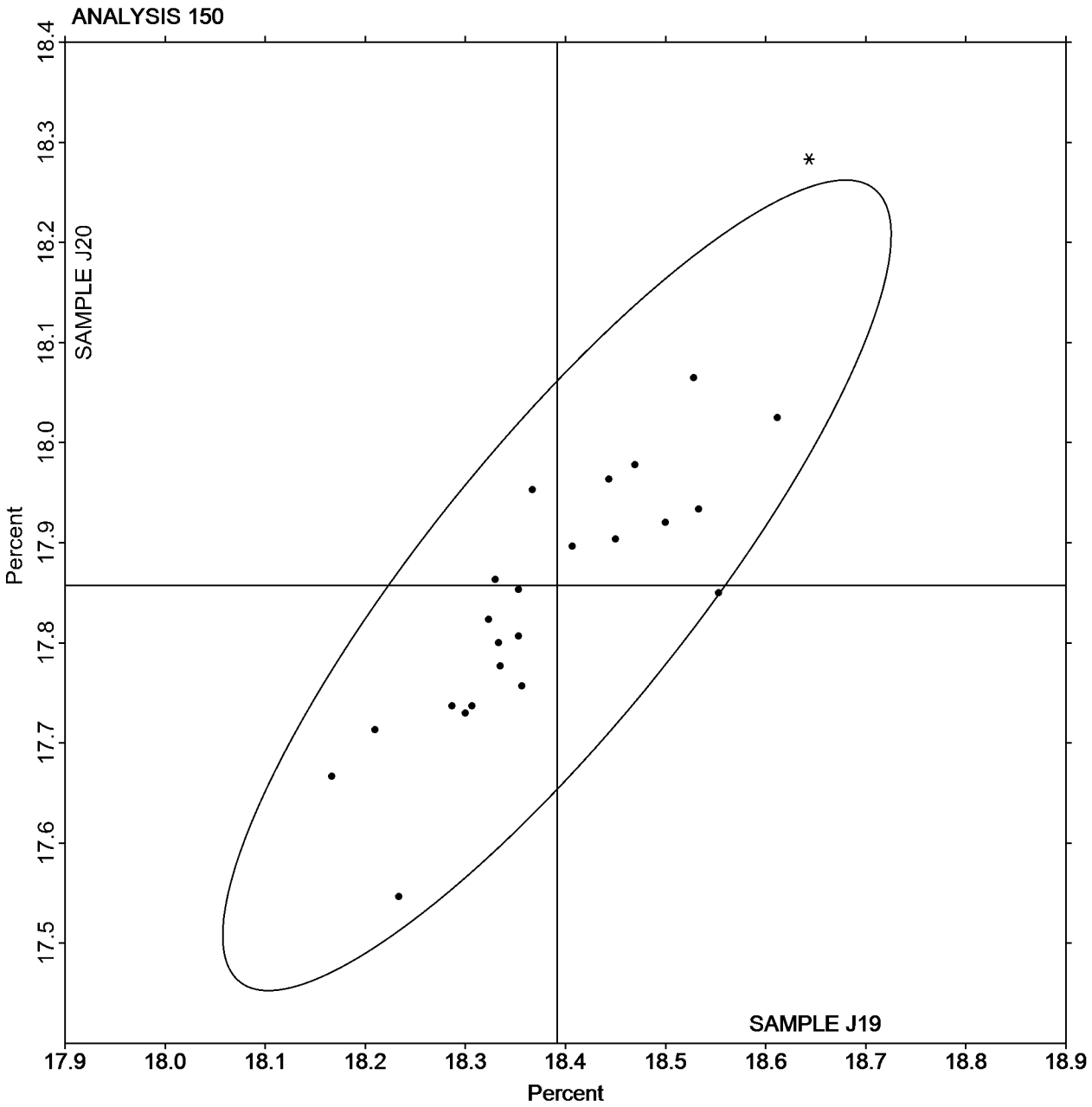
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 150

Chemical Analysis Element #1: Nickel-based Alloy - Percent
CHROMIUM (Cr)

SAMPLE J19	**SAMPLE J20**
18.39 Percent	**17.86 Percent**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent
NIOBIUM (Nb)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2BCYL4		5.064	-0.034	-0.46	5.156	-0.012	-0.12	ED
2ZUKJ2		4.980	-0.118	-1.62	4.920	-0.248	-2.48	OE
3B9E8A		5.181	0.084	1.15	5.311	0.143	1.43	OE
43RD8Q		5.113	0.016	0.22	5.170	0.002	0.02	IC
6NERRC		5.130	0.033	0.45	5.207	0.039	0.39	WD
6PFT4G		5.103	0.006	0.08	5.193	0.025	0.25	XX
8WLLWA		5.065	-0.033	-0.45	5.170	0.002	0.02	WD
8YDY62	*	4.990	-0.108	-1.48	5.213	0.045	0.45	OE
9X6W2H		5.130	0.033	0.45	5.211	0.043	0.43	IC
9XFYCU		5.100	0.002	0.03	5.190	0.022	0.22	XR
ARAKKC		5.102	0.004	0.05	5.167	-0.001	-0.01	OE
CPPBX8		5.200	0.102	1.41	5.200	0.032	0.32	OE
CUUBMR		5.093	-0.004	-0.06	5.189	0.021	0.21	WD
EXFDEA	X	5.693	0.596	8.21	5.660	0.492	4.92	OE
F2Q9AW		5.127	0.029	0.40	5.223	0.055	0.55	IC
GEY9QL		5.282	0.184	2.54	5.350	0.182	1.82	OE
H24GAB		5.113	0.015	0.21	5.215	0.047	0.47	OE
HRV4H3		5.181	0.084	1.15	5.231	0.063	0.63	DR
JKY8EG		5.060	-0.038	-0.52	5.177	0.009	0.09	GD
NCNW6L		5.097	-0.001	-0.01	5.153	-0.015	-0.15	OE
NKL8KG		4.993	-0.104	-1.44	4.970	-0.198	-1.98	OE
PFFQYE		5.105	0.007	0.10	5.195	0.027	0.27	WD
QDN287		5.083	-0.014	-0.20	5.170	0.002	0.02	OE
QZN4UZ		5.107	0.009	0.12	5.210	0.042	0.42	OE
RLK6E3	*	5.083	-0.014	-0.20	4.947	-0.221	-2.21	OE
TXACHW		5.127	0.029	0.40	5.217	0.049	0.49	XR
U6D8D9		4.929	-0.168	-2.32	5.011	-0.157	-1.57	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	5.098	Percent	5.168	Percent
Stnd Dev Btwn Labs	0.073	Percent	0.100	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 26 of 27 reporting participants

Comments on assigned Data Flags for Analysis #151

WebCode	Flag	Analyst Comment
EXFDEA	X	Data for both samples are high. Inconsistent within the determinations of both samples.

Cycle 106
2nd Q, 2014

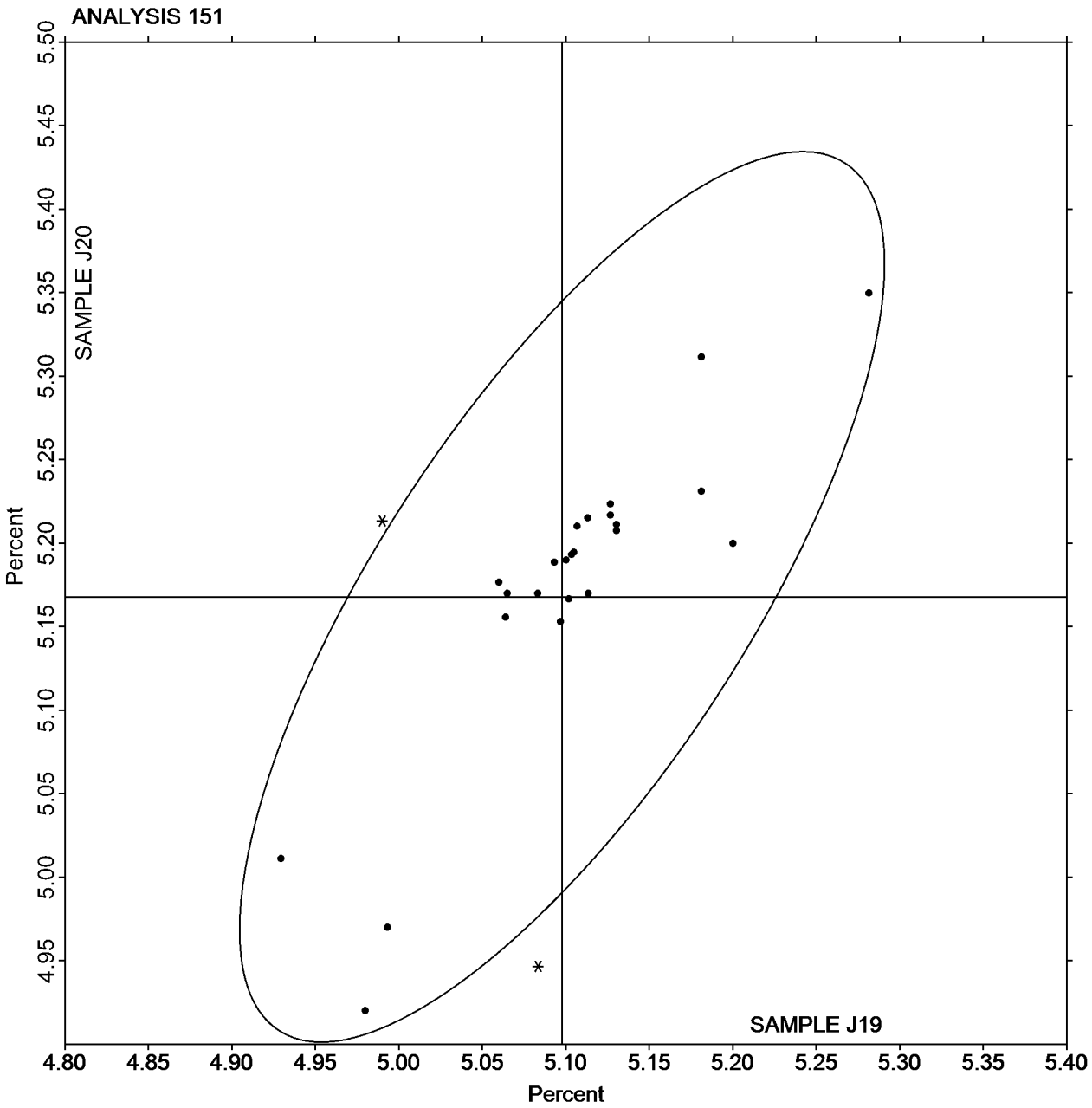
Interlaboratory Testing Program for Metals

Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent
NIOBIUM (Nb)

SAMPLE J19
5.098 Percent

SAMPLE J20
5.168 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 152

Chemical Analysis Element #3: Nickel-based Alloy - Percent
IRON (Fe)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2BCYL4		18.20	0.05	0.20	18.74	0.16	0.64	ED
2ZUKJ2		18.05	-0.10	-0.44	18.53	-0.05	-0.22	OE
3B9E8A	X	17.12	-1.03	-4.52	17.32	-1.26	-5.10	OE
43RD8Q		18.10	-0.05	-0.24	18.36	-0.22	-0.89	IC
6NERRC		18.18	0.03	0.12	18.77	0.19	0.76	WD
6PFT4G		17.88	-0.28	-1.21	18.34	-0.24	-0.97	OE
8WLLWA		18.23	0.07	0.33	18.65	0.06	0.26	WD
8YDY62		18.07	-0.09	-0.38	18.37	-0.21	-0.87	OE
9X6W2H		17.99	-0.17	-0.73	18.46	-0.12	-0.50	IC
9XFYCU		18.25	0.10	0.42	18.66	0.08	0.32	BD
ARAKKC		18.32	0.16	0.71	18.65	0.07	0.28	OE
CPPBX8		18.07	-0.09	-0.38	18.63	0.05	0.20	OE
CUUBMR		18.22	0.06	0.27	18.74	0.16	0.64	WD
EXFDEA	*	18.91	0.76	3.32	19.33	0.74	2.99	OE
F2Q9AW		17.95	-0.20	-0.88	18.37	-0.21	-0.85	IC
GEY9QL		18.19	0.04	0.17	18.51	-0.07	-0.29	OE
H24GAB		18.06	-0.10	-0.43	18.43	-0.15	-0.62	OE
HRV4H3		18.17	0.02	0.08	18.59	0.01	0.03	DR
JKY8EG	X	16.80	-1.35	-5.91	17.40	-1.18	-4.78	GD
NCNW6L		18.19	0.03	0.14	18.49	-0.10	-0.39	OE
NKL8KG		17.88	-0.27	-1.18	18.23	-0.35	-1.42	OE
PFFQYE		18.13	-0.03	-0.12	18.57	-0.01	-0.06	WD
QDN287		18.71	0.55	2.41	19.22	0.63	2.55	OE
QZN4UZ		18.00	-0.15	-0.66	18.45	-0.13	-0.53	OE
RLK6E3		18.03	-0.12	-0.53	18.53	-0.05	-0.21	OE
TXACHW		18.00	-0.15	-0.67	18.44	-0.14	-0.58	XR
U6D8D9		18.08	-0.07	-0.31	18.52	-0.06	-0.25	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	18.15	Percent	18.58	Percent
Stnd Dev Btwn Labs	0.23	Percent	0.25	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 25 of 27 reporting participants

Comments on assigned Data Flags for Analysis #152

WebCode	Flag	Analyst Comment
3B9E8A	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample J19.
JKY8EG	X	Data for both samples are low. Possible Systematic error.

Cycle 106
2nd Q, 2014

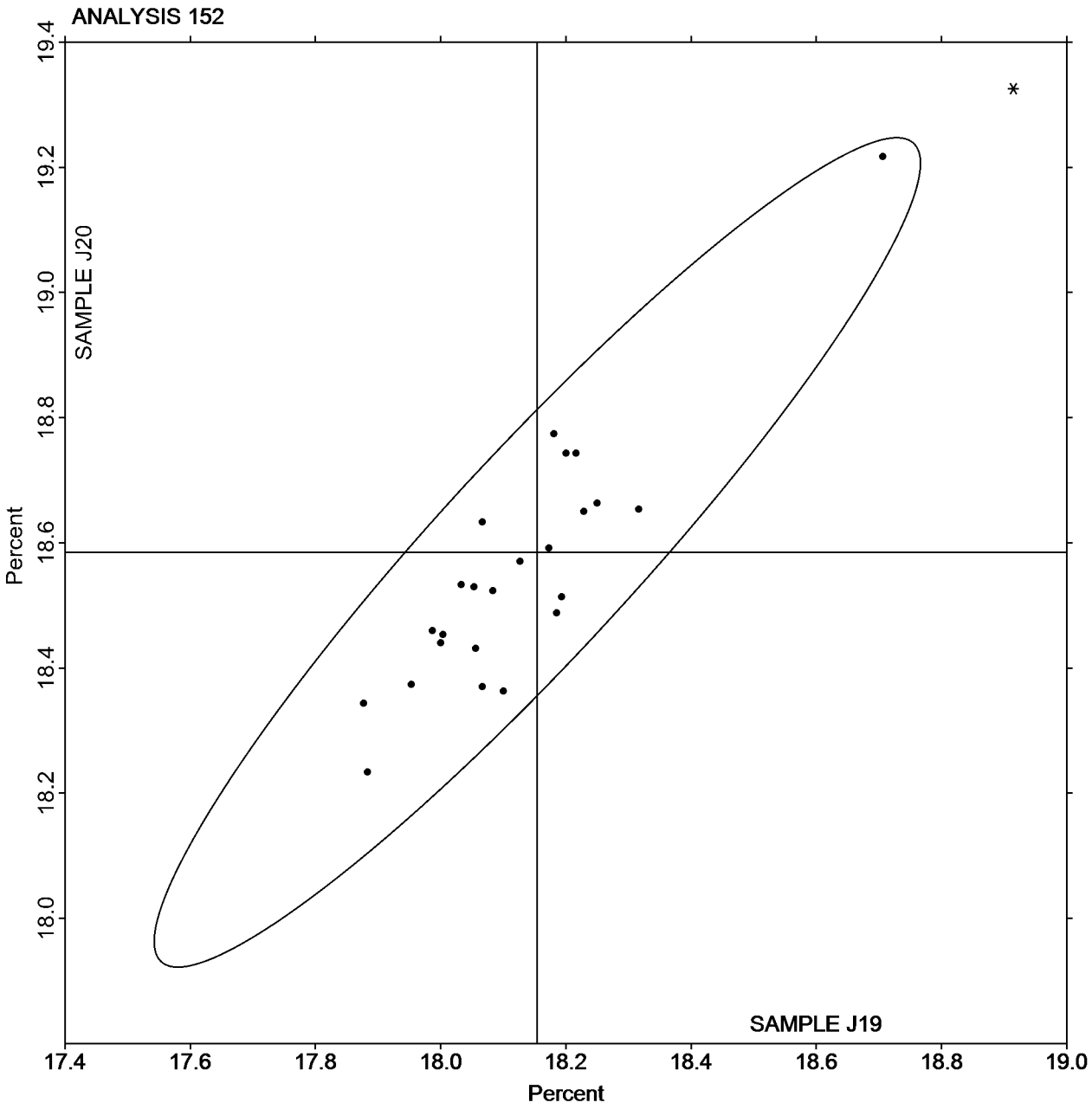
Interlaboratory Testing Program for Metals

Analysis 152

Chemical Analysis Element #3: Nickel-based Alloy - Percent
IRON (Fe)

SAMPLE J19
18.15 Percent

SAMPLE J20
18.58 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 153

Chemical Analysis Element #4: Nickel-based Alloy- Percent
MOLYBDENUM (Mo)

		Sample J19			Sample J20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2BCYL4		3.001	-0.055	-1.77	2.848	-0.054	-1.47	ED
2ZUKJ2		3.063	0.008	0.24	2.913	0.012	0.32	OE
3B9E8A		3.077	0.021	0.68	2.884	-0.018	-0.48	OE
43RD8Q		3.053	-0.002	-0.08	2.880	-0.022	-0.59	IC
6NERRC		3.070	0.014	0.45	2.914	0.012	0.33	WD
6PFT4G		3.053	-0.002	-0.08	2.923	0.022	0.60	OE
8WLLWA		3.013	-0.042	-1.36	2.869	-0.033	-0.89	WD
8YDY62		3.043	-0.012	-0.40	2.880	-0.022	-0.59	OE
9X6W2H		3.013	-0.043	-1.38	2.893	-0.008	-0.23	IC
9XFYCU		3.040	-0.016	-0.51	2.900	-0.002	-0.04	XR
ARAKKC		3.038	-0.018	-0.57	2.885	-0.017	-0.45	OE
CPPBX8		3.100	0.044	1.42	2.900	-0.002	-0.04	OE
CUUBMR		3.050	-0.006	-0.19	2.893	-0.009	-0.23	WD
EXFDEA	X	3.290	0.234	7.53	3.060	0.158	4.33	OE
F2Q9AW		3.060	0.004	0.13	2.918	0.016	0.45	IC
GEY9QL		3.073	0.017	0.56	2.924	0.022	0.61	OE
H24GAB		3.055	-0.001	-0.03	2.899	-0.003	-0.08	OE
HRV4H3	*	3.047	-0.009	-0.29	2.963	0.061	1.68	DR
JKY8EG		3.050	-0.006	-0.18	2.910	0.008	0.23	GD
NCNW6L		3.048	-0.008	-0.26	2.892	-0.009	-0.25	OE
NKL8KG		3.133	0.078	2.49	2.990	0.088	2.42	OE
PFFQYE		3.062	0.006	0.19	2.904	0.002	0.07	WD
QDN287		3.120	0.065	2.08	2.976	0.075	2.04	OE
QZN4UZ		3.013	-0.043	-1.37	2.864	-0.038	-1.03	OE
RLK6E3		3.027	-0.029	-0.93	2.817	-0.085	-2.32	OE
TXACHW		3.077	0.021	0.67	2.913	0.012	0.32	XR
U6D8D9		3.071	0.016	0.50	2.888	-0.014	-0.37	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	3.056	Percent	2.902	Percent
Stnd Dev Btwn Labs	0.031	Percent	0.037	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 26 of 27 reporting participants

Comments on assigned Data Flags for Analysis #153

WebCode	Flag	Analyst Comment
EXFDEA	X	Data for both samples are high. Inconsistent within the determinations of both samples.

Cycle 106
2nd Q, 2014

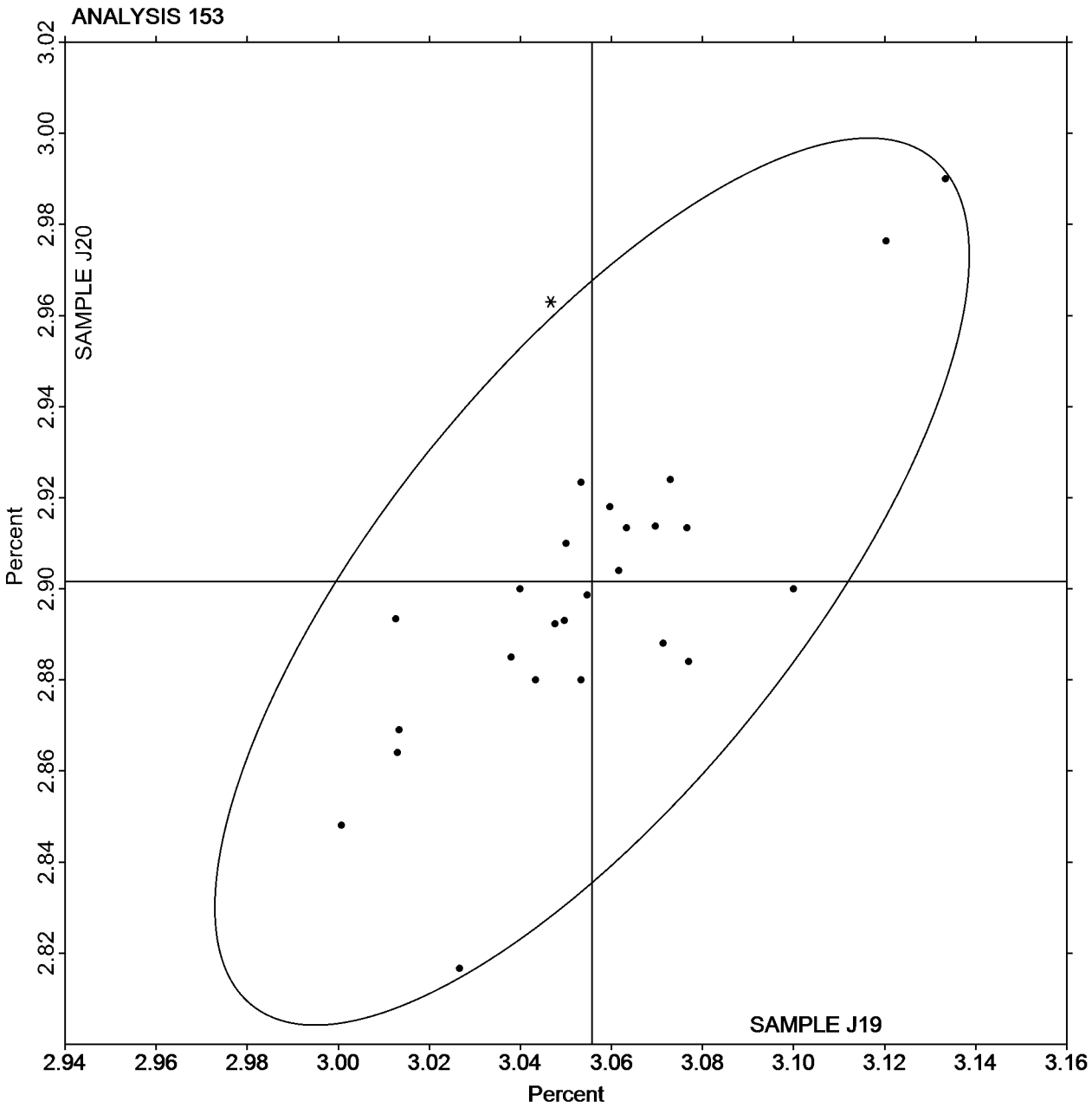
Interlaboratory Testing Program for Metals

Analysis 153

Chemical Analysis Element #4: Nickel-based Alloy- Percent
MOLYBDENUM (Mo)

SAMPLE J19
3.056 Percent

SAMPLE J20
2.902 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 154

Chemical Analysis Element #5: Nickel-based Alloy - Percent
ALUMINUM (Al)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2ZUKJ2		0.5300	-0.0020	-0.10	0.5067	0.0006	0.03	OE
3B9E8A		0.5503	0.0184	0.91	0.5280	0.0219	1.11	OE
43RD8Q		0.5207	-0.0113	-0.56	0.5050	-0.0011	-0.06	IC
6NERRC		0.5497	0.0177	0.88	0.5217	0.0156	0.79	OE
6PFT4G		0.5400	0.0080	0.40	0.5000	-0.0061	-0.31	OE
8WLLWA		0.5173	-0.0146	-0.72	0.5027	-0.0034	-0.17	WD
8YDY62		0.5300	-0.0020	-0.10	0.5007	-0.0054	-0.28	OE
9X6W2H		0.5313	-0.0006	-0.03	0.5010	-0.0051	-0.26	IC
9XFYCU		0.5300	-0.0020	-0.10	0.5100	0.0039	0.20	XR
ARAKKC		0.5276	-0.0044	-0.22	0.5026	-0.0035	-0.18	OE
CPPBX8		0.5300	-0.0020	-0.10	0.5133	0.0072	0.37	OE
CUUBMR		0.5497	0.0177	0.88	0.5097	0.0036	0.18	WD
EXFDEA		0.4970	-0.0350	-1.73	0.4877	-0.0184	-0.94	OE
F2Q9AW		0.5370	0.0050	0.25	0.4917	-0.0144	-0.73	IC
GEY9QL		0.4970	-0.0350	-1.73	0.4707	-0.0354	-1.80	OE
H24GAB		0.5370	0.0050	0.25	0.4980	-0.0081	-0.41	OE
HRV4H3		0.5392	0.0073	0.36	0.5206	0.0145	0.74	DR
JKY8EG		0.4983	-0.0336	-1.66	0.4763	-0.0298	-1.51	GD
NCNW6L		0.5363	0.0044	0.22	0.5177	0.0116	0.59	OE
NKL8KG	*	0.5967	0.0647	3.20	0.5733	0.0672	3.42	OE
PFFQYE		0.5230	-0.0090	-0.44	0.4973	-0.0088	-0.45	WD
QDN287	X	0.5183	-0.0136	-0.67	0.5843	0.0782	3.97	OE
QZN4UZ		0.5320	0.0000	0.00	0.5010	-0.0051	-0.26	OE
RLK6E3	X	5.413	4.8814	241.55	5.227	4.7206	239.77	OE
TXACHW		0.5303	-0.0016	-0.08	0.4937	-0.0124	-0.63	OE
U6D8D9		0.5363	0.0044	0.22	0.5170	0.0109	0.55	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	0.5320	Percent	0.5061	Percent
Stnd Dev Btwn Labs	0.0202	Percent	0.0197	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 26 reporting participants

Comments on assigned Data Flags for Analysis #154

WebCode	Flag	Analyst Comment
QDN287	X	Data for sample J20 are high. Inconsistent in testing between samples.
RLK6E3	X	Extreme data.

Cycle 106
2nd Q, 2014

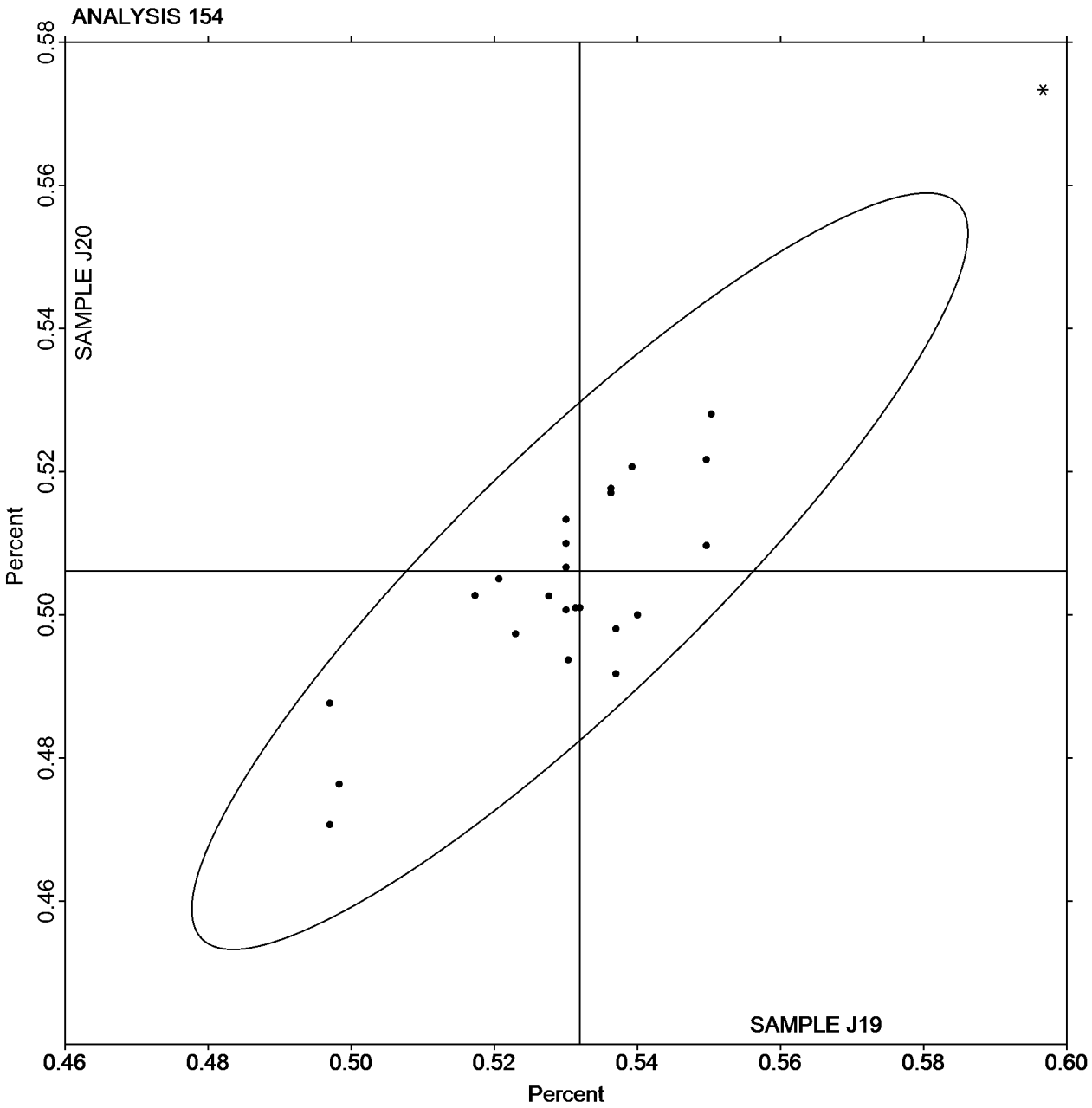
Interlaboratory Testing Program for Metals

Analysis 154

Chemical Analysis Element #5: Nickel-based Alloy - Percent
ALUMINUM (Al)

SAMPLE J19
0.5320 Percent

SAMPLE J20
0.5061 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 155

Chemical Analysis Element #6: Nickel-based Alloy - Percent
SILICON (Si)

		Sample J19			Sample J20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2ZUKJ2		0.0530	0.0013	0.14	0.0547	-0.0019	-0.24	OE
3B9E8A		0.0610	0.0093	1.00	0.0660	0.0094	1.18	OE
6PFT4G		0.0300	-0.0217	-2.34	0.0400	-0.0166	-2.07	XX
8WLLWA		0.0387	-0.0130	-1.40	0.0427	-0.0139	-1.73	WD
8YDY62		0.0611	0.0094	1.01	0.0630	0.0065	0.81	OE
9X6W2H		0.0525	0.0008	0.08	0.0562	-0.0003	-0.04	IC
9XFYCU		0.0487	-0.0030	-0.33	0.0557	-0.0009	-0.11	OE
ARAKKC		0.0592	0.0075	0.80	0.0627	0.0061	0.77	OE
CPPBX8	X	0.0933	0.0416	4.49	0.1000	0.0434	5.42	OE
CUUBMR		0.0567	0.0050	0.54	0.0653	0.0088	1.09	WD
EXFDEA	X	0.00200	-0.0497	-5.35	0.00200	-0.0546	-6.81	OE
F2Q9AW		0.0548	0.0031	0.33	0.0578	0.0012	0.15	IC
GEY9QL		0.0700	0.0183	1.97	0.0730	0.0164	2.05	OE
H24GAB		0.0540	0.0023	0.25	0.0573	0.0008	0.10	OE
HRV4H3		0.0588	0.0071	0.76	0.0606	0.0040	0.50	DR
JKY8EG		0.0553	0.0036	0.39	0.0620	0.0054	0.68	GD
NCNW6L		0.0410	-0.0107	-1.15	0.0500	-0.0066	-0.82	OE
NKL8KG	*	0.0580	0.0063	0.68	0.0540	-0.0026	-0.32	OE
PFFQYE		0.0426	-0.0091	-0.98	0.0499	-0.0067	-0.83	OE
QDN287		0.0406	-0.0111	-1.19	0.0466	-0.0100	-1.24	OE
QZN4UZ		0.0491	-0.0026	-0.28	0.0543	-0.0022	-0.28	OE
RLK6E3		0.0497	-0.0020	-0.21	0.0575	0.0009	0.12	OE
TXACHW		0.0590	0.0073	0.79	0.0650	0.0084	1.05	XR
U6D8D9		0.0436	-0.0081	-0.87	0.0500	-0.0066	-0.82	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	0.0517	Percent	0.0566	Percent
Stnd Dev Btwn Labs	0.0093	Percent	0.0080	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 22 of 24 reporting participants

Comments on assigned Data Flags for Analysis #155

WebCode	Flag	Analyst Comment
CPPBX8	X	Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample J19.
EXFDEA	X	Data for both samples are low. Possible Systematic error.

Cycle 106
2nd Q, 2014

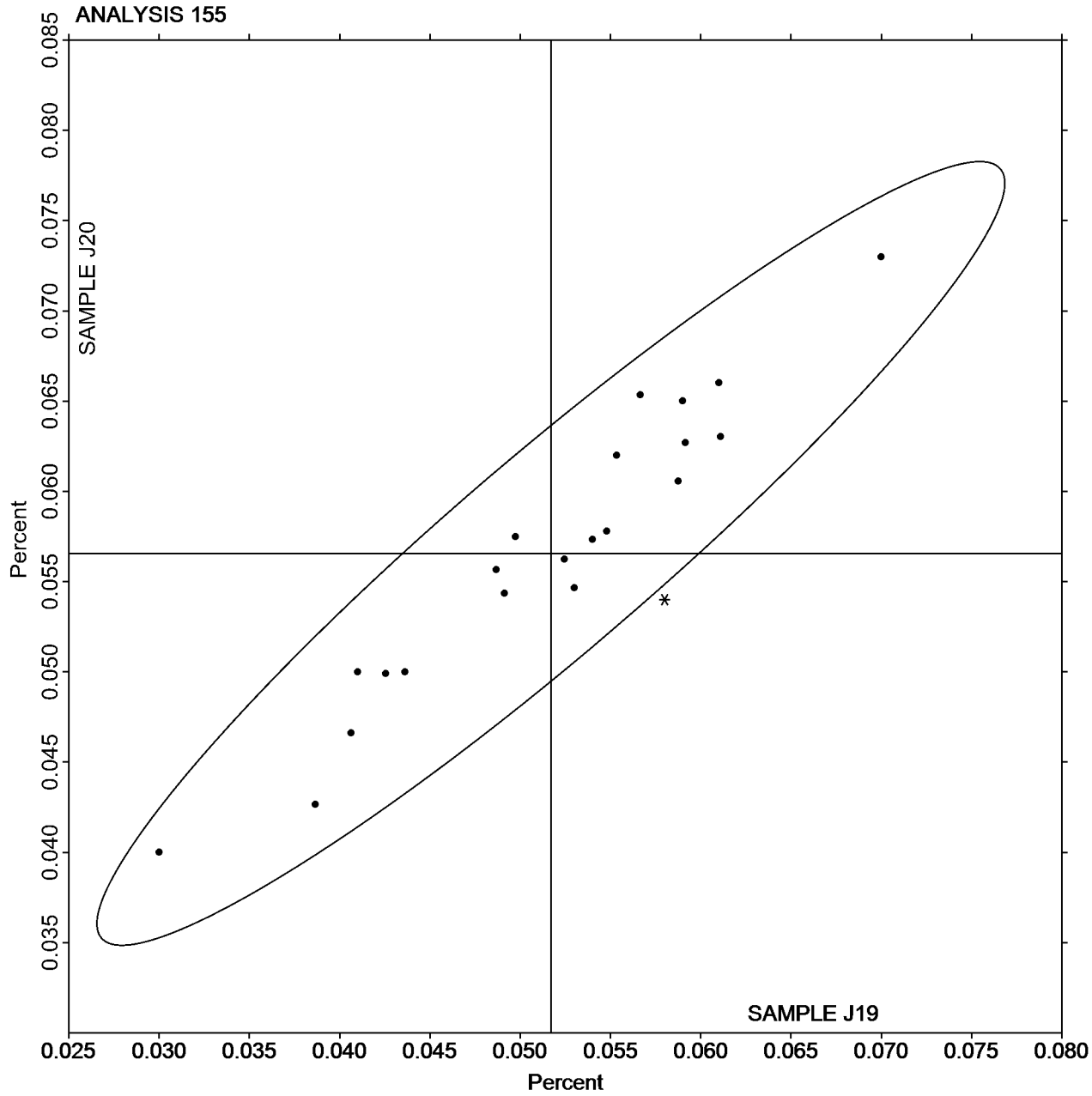
Interlaboratory Testing Program for Metals

Analysis 155

Chemical Analysis Element #6: Nickel-based Alloy - Percent
SILICON (Si)

SAMPLE J19
0.0517 Percent

SAMPLE J20
0.0566 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 156

Chemical Analysis Element #7: Nickel-based Alloy - Percent
TITANIUM (Ti)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2BCYL4		0.9433	-0.0052	-0.40	0.9707	-0.0021	-0.13	ED
2ZUKJ2		0.9467	-0.0019	-0.15	0.9667	-0.0061	-0.37	OE
3B9E8A		0.9383	-0.0102	-0.79	0.9457	-0.0271	-1.63	OE
6NERRC		0.9777	0.0291	2.24	0.9873	0.0146	0.88	OE
6PFT4G		0.9367	-0.0119	-0.92	0.9467	-0.0261	-1.57	OE
8WLLWA		0.9547	0.0061	0.47	0.9743	0.0016	0.09	WD
8YDY62	*	0.9177	-0.0309	-2.38	0.9660	-0.0068	-0.41	OE
9X6W2H		0.9517	0.0031	0.24	0.9950	0.0222	1.34	IC
9XFYCU		0.9467	-0.0019	-0.15	0.9700	-0.0028	-0.17	XR
ARAKKC		0.9550	0.0064	0.49	0.9827	0.0099	0.60	OE
CPPBX8		0.9300	-0.0186	-1.43	0.9567	-0.0161	-0.97	OE
CUUBMR		0.9390	-0.0096	-0.74	0.9613	-0.0114	-0.69	WD
EXFDEA		0.9367	-0.0119	-0.92	0.9500	-0.0228	-1.37	OE
F2Q9AW		0.9490	0.0004	0.03	0.9733	0.0006	0.03	IC
GEY9QL		0.9513	0.0028	0.21	0.9720	-0.0008	-0.05	OE
H24GAB		0.9433	-0.0052	-0.40	0.9667	-0.0061	-0.37	OE
HRV4H3		0.9693	0.0207	1.59	0.9911	0.0183	1.10	DR
JKY8EG	X	0.8757	-0.0729	-5.61	0.9077	-0.0651	-3.93	GD
NCNW6L		0.9493	0.0008	0.06	0.9717	-0.0011	-0.07	OE
NKL8KG		0.9500	0.0014	0.11	0.9800	0.0072	0.44	OE
PFFQYE		0.9533	0.0048	0.37	0.9720	-0.0008	-0.05	WD
QDN287	X	1.068	0.1198	9.22	1.108	0.1356	8.17	OE
QZN4UZ		0.9633	0.0148	1.14	0.9923	0.0196	1.18	OE
RLK6E3	*	0.9690	0.0204	1.57	1.020	0.0472	2.85	OE
TXACHW		0.9487	0.0001	0.01	0.9670	-0.0058	-0.35	XR
U6D8D9		0.9453	-0.0032	-0.25	0.9677	-0.0051	-0.31	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	0.9486	Percent	0.9728	Percent
Stnd Dev Btwn Labs	0.0130	Percent	0.0166	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 26 reporting participants

Comments on assigned Data Flags for Analysis #156

WebCode	Flag	Analyst Comment
JKY8EG	X	Data for both samples are low.
QDN287	X	Data for both samples are high.

Cycle 106
2nd Q, 2014

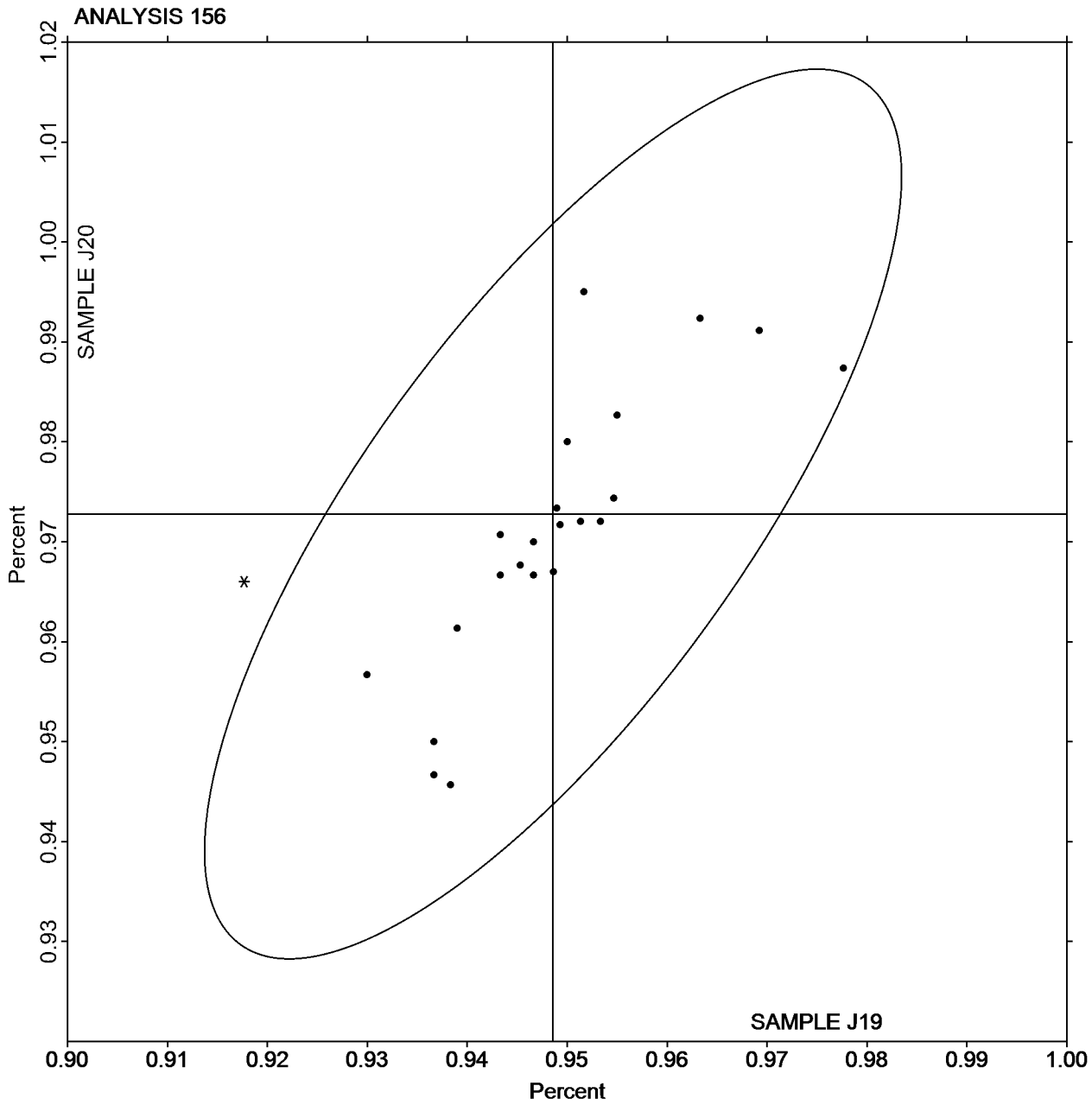
Interlaboratory Testing Program for Metals

Analysis 156

Chemical Analysis Element #7: Nickel-based Alloy - Percent
TITANIUM (Ti)

SAMPLE J19
0.9486 Percent

SAMPLE J20
0.9728 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NICKEL (Ni)

		Sample J19			Sample J20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2BCYL4		52.94	-0.53	-1.30	53.02	-0.71	-1.72	ED
2ZUKJ2		53.67	0.20	0.49	53.97	0.24	0.57	OE
3B9E8A		53.82	0.35	0.87	54.11	0.38	0.91	OE
43RD8Q		53.37	-0.10	-0.25	53.63	-0.10	-0.23	IC
6NERRC		53.18	-0.28	-0.70	53.36	-0.37	-0.90	WD
6PFT4G		52.87	-0.60	-1.48	53.17	-0.56	-1.36	OE
8WLLWA		52.82	-0.65	-1.59	53.05	-0.68	-1.63	WD
8YDY62		53.67	0.20	0.49	54.03	0.30	0.73	OE
9XFYCU		53.40	-0.07	-0.16	53.56	-0.17	-0.40	XX
ARAKKC		53.43	-0.04	-0.09	53.65	-0.08	-0.20	OE
CPPBX8		53.30	-0.17	-0.41	53.53	-0.20	-0.47	OE
CUUBMR		53.55	0.08	0.21	53.77	0.04	0.10	WD
EXFDEA	*	52.87	-0.59	-1.46	53.49	-0.24	-0.57	OE
F2Q9AW		53.72	0.26	0.63	53.90	0.17	0.41	BD
GEY9QL		53.33	-0.13	-0.33	53.78	0.05	0.13	BD
H24GAB		53.55	0.08	0.20	53.72	-0.01	-0.04	OE
HRV4H3		53.45	-0.01	-0.03	53.45	-0.28	-0.68	DR
JKY8EG	*	54.67	1.20	2.96	54.97	1.24	2.99	GD
NCNW6L		53.45	-0.02	-0.05	53.79	0.06	0.14	OE
NKL8KG		54.11	0.65	1.60	54.19	0.46	1.12	OE
PFFQYE		53.29	-0.18	-0.44	53.49	-0.24	-0.59	WD
QDN287		53.48	0.02	0.04	53.91	0.18	0.43	OE
RLK6E3		53.67	0.20	0.49	53.97	0.24	0.57	OE
U6D8D9		53.59	0.12	0.31	54.02	0.29	0.70	OE

Summary Statistics

	Sample J19		Sample J20	
Grand Means	53.47	Percent	53.73	Percent
Stnd Dev Btwn Labs	0.41	Percent	0.41	Percent

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 24 reporting participants

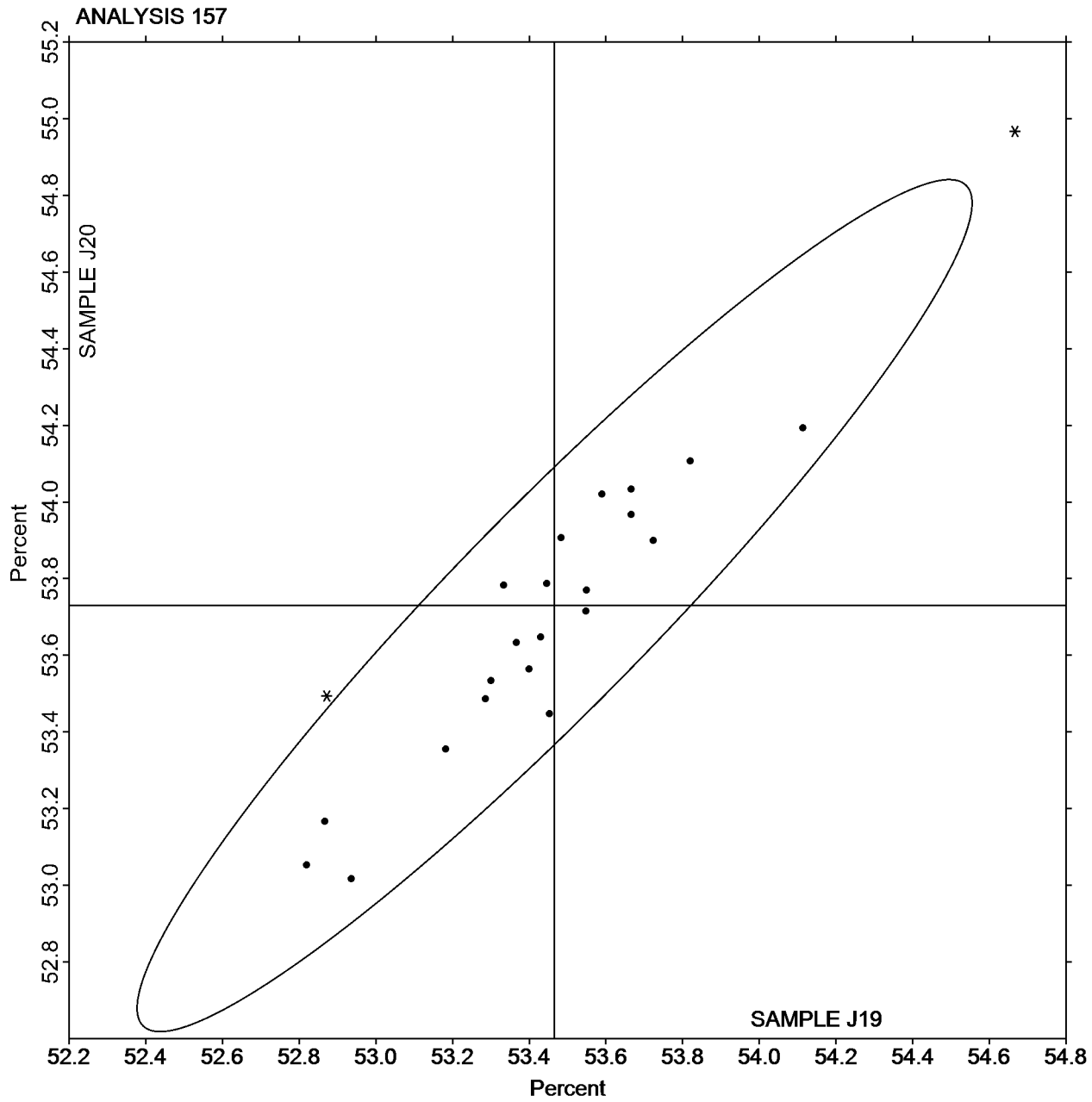
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NICKEL (Ni)

SAMPLE J19	**SAMPLE J20**
53.47 Percent	**53.73 Percent**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 180

Chemical Analysis Element #1 - Corrosion Resistant Steel - Percent
CARBON (C)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.0477	0.0004	0.11	0.0500	0.0002	0.06	OE
29YN6D		0.0530	0.0058	1.54	0.0540	0.0042	1.35	CI
2ZUKJ2		0.0483	0.0011	0.29	0.0497	-0.0002	-0.05	CI
3B9E8A		0.0477	0.0004	0.11	0.0517	0.0018	0.60	OE
4QNERC		0.0460	-0.0012	-0.33	0.0483	-0.0015	-0.48	OE
6NERRC		0.0447	-0.0025	-0.67	0.0465	-0.0034	-1.09	CO
6PFT4G		0.0447	-0.0026	-0.69	0.0467	-0.0032	-1.02	OE
6V82RU		0.0494	0.0021	0.57	0.0519	0.0020	0.66	OE
6W3Z4G		0.0450	-0.0022	-0.60	0.0500	0.0002	0.06	OE
8DV9RJ		0.0464	-0.0009	-0.23	0.0492	-0.0007	-0.21	CO
8WLLWA		0.0444	-0.0028	-0.75	0.0475	-0.0024	-0.76	CI
997KWK		0.0472	0.0000	-0.01	0.0498	0.0000	-0.01	CI
9F4C4T		0.0460	-0.0012	-0.33	0.0479	-0.0019	-0.62	CI
9PD4W3		0.0479	0.0007	0.18	0.0507	0.0009	0.30	CO
BRZXWL		0.0473	0.0001	0.03	0.0500	0.0002	0.06	OE
CPPBX8	X	0.0500	0.0028	0.74	0.0567	0.0068	2.22	OE
CTJBNC		0.0473	0.0001	0.03	0.0503	0.0005	0.17	OE
CUNHMC		0.0467	-0.0006	-0.15	0.0510	0.0012	0.38	OE
CUUBMR		0.0457	-0.0016	-0.42	0.0489	-0.0009	-0.29	OE
DCC7WY		0.0480	0.0008	0.20	0.0503	0.0005	0.17	CI
DXLWTL		0.0483	0.0011	0.28	0.0497	-0.0001	-0.03	CI
EXFDEA	X	0.0853	0.0381	10.18	0.0787	0.0288	9.35	OE
F2Q9AW		0.0469	-0.0003	-0.09	0.0496	-0.0002	-0.07	OE
FA2V3T		0.0530	0.0058	1.55	0.0551	0.0053	1.71	OE
GEY9QL		0.0483	0.0011	0.29	0.0507	0.0008	0.27	OE
GRPGLB	*	0.0417	-0.0056	-1.49	0.0483	-0.0015	-0.48	OE
H24GAB		0.0453	-0.0019	-0.51	0.0477	-0.0022	-0.70	CI
JKY8EG		0.0476	0.0004	0.11	0.0499	0.0001	0.03	GD
JMQR92	X	0.0520	0.0048	1.27	0.0583	0.0085	2.76	GD
JRUUZV		0.0460	-0.0013	-0.34	0.0499	0.0000	0.01	CO
JWN9NX	*	0.0517	0.0044	1.18	0.0557	0.0058	1.89	OE
KJDZED		0.0470	-0.0002	-0.05	0.0492	-0.0007	-0.21	CI
LNLVKY		0.0483	0.0011	0.29	0.0495	-0.0004	-0.12	CO
MNP883	*	0.0580	0.0108	2.88	0.0570	0.0072	2.33	OE
NCHC8X		0.0503	0.0031	0.83	0.0517	0.0018	0.60	OE
NCNW6L		0.0453	-0.0019	-0.51	0.0480	-0.0018	-0.59	OE
NKL8KG	*	0.0580	0.0108	2.88	0.0587	0.0088	2.87	OE
PBPCT7	X	0.0273	-0.0199	-5.32	0.0283	-0.0215	-6.96	OE
PMK4ZN		0.0447	-0.0026	-0.69	0.0470	-0.0028	-0.91	OE
Q6QHRW		0.0440	-0.0033	-0.87	0.0480	-0.0019	-0.60	GD
QDN287		0.0498	0.0026	0.69	0.0508	0.0010	0.32	OE
QTR9RV		0.0460	-0.0012	-0.33	0.0483	-0.0016	-0.50	DR
RJX664	X	0.0493	0.0021	0.56	0.0570	0.0072	2.33	CO
TXACHW		0.0433	-0.0039	-1.04	0.0457	-0.0042	-1.35	CI
U6D8D9		0.0484	0.0012	0.31	0.0507	0.0008	0.27	OE
UELRR3		0.0420	-0.0052	-1.40	0.0450	-0.0048	-1.56	CI
VN9QXJ	*	0.0364	-0.0109	-2.91	0.0417	-0.0081	-2.63	OE
W4HDK2		0.0420	-0.0052	-1.40	0.0453	-0.0045	-1.45	CI
W6LN7X		0.0470	-0.0003	-0.07	0.0496	-0.0002	-0.07	CI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 180

Chemical Analysis Element #1 - Corrosion Resistant Steel - Percent
CARBON (C)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
W7WHW7		0.0463	-0.0009	-0.24	0.0507	0.0008	0.27	OE
WXNUER		0.0520	0.0048	1.27	0.0557	0.0058	1.89	OE
X2U7A6		0.0500	0.0028	0.74	0.0500	0.0002	0.06	OE
ZNXP8A		0.0463	-0.0009	-0.24	0.0483	-0.0015	-0.48	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.0472	Percent	0.0498	Percent
Stnd Dev Btwn Labs	0.0037	Percent	0.0031	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 48 of 53 reporting participants

Comments on assigned Data Flags for Analysis #180

WebCode	Flag	Analyst Comment
CPPBX8	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
EXFDEA	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample M19.
JMQR92	X	Data for sample M20 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
PBPCT7	X	Data for both samples are low. Possible Systematic error.
RJX664	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.

Cycle 106
2nd Q, 2014

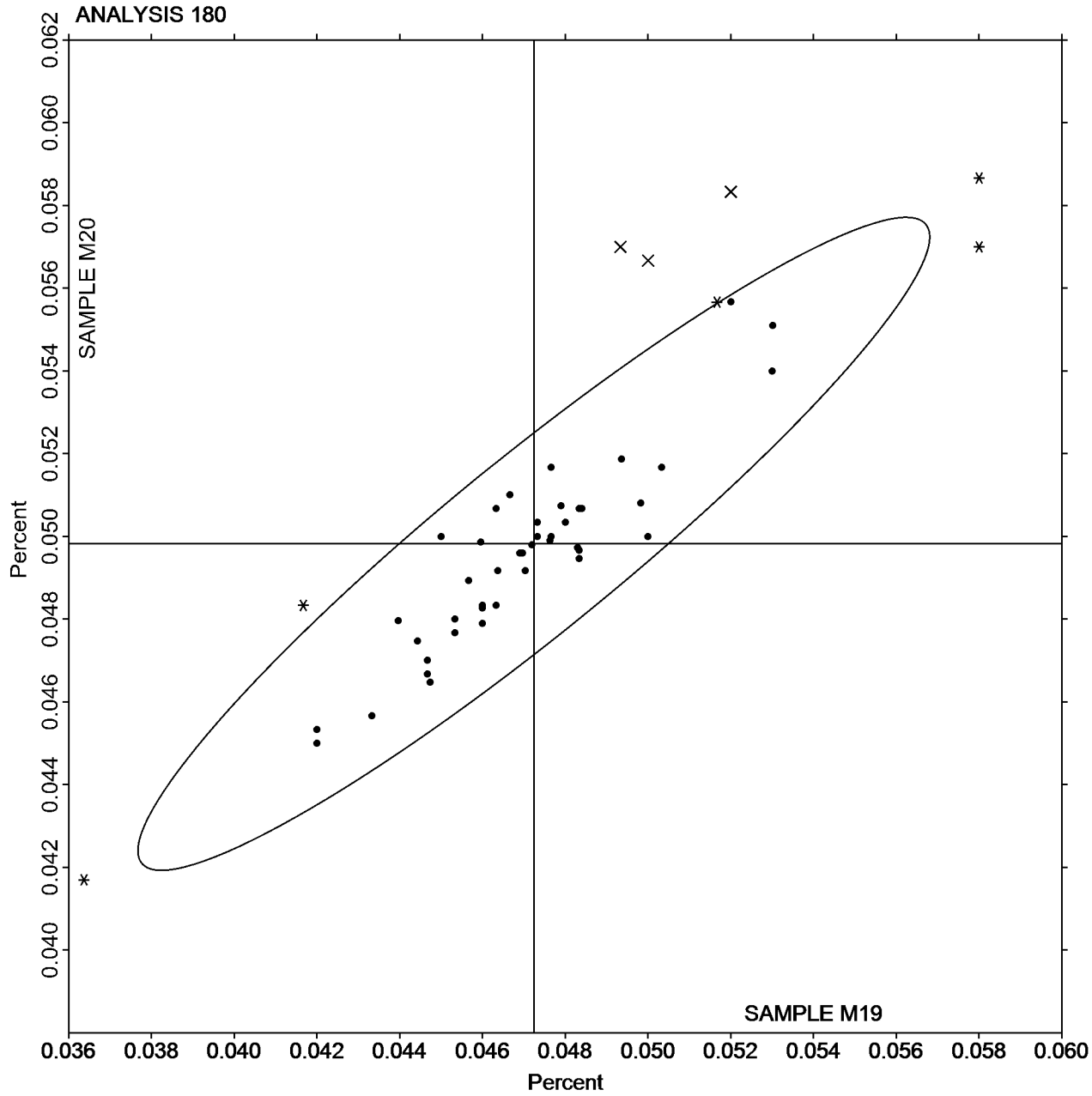
Interlaboratory Testing Program for Metals

Analysis 180

Chemical Analysis Element #1 - Corrosion Resistant Steel - Percent
CARBON (C)

SAMPLE M19
0.0472 Percent

SAMPLE M20
0.0498 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 181

Chemical Analysis Element #2 - Corrosion Resistant Steel - Percent
MANGANESE (Mn)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		1.449	-0.017	-0.72	1.431	-0.016	-0.64	OE
29YN6D		1.443	-0.023	-0.97	1.423	-0.024	-0.97	IC
2ZUKJ2		1.420	-0.046	-1.96	1.393	-0.054	-2.19	OE
3B9E8A		1.428	-0.038	-1.62	1.402	-0.045	-1.85	OE
4QNERC		1.427	-0.039	-1.68	1.410	-0.037	-1.51	OE
6NERRC		1.457	-0.009	-0.38	1.437	-0.010	-0.40	WD
6PFT4G		1.453	-0.013	-0.54	1.437	-0.010	-0.43	OE
6V82RU		1.476	0.010	0.42	1.462	0.015	0.62	OE
6W3Z4G		1.463	-0.003	-0.11	1.437	-0.010	-0.43	OE
8DV9RJ		1.482	0.016	0.69	1.447	0.000	-0.02	IC
8WLLWA		1.471	0.005	0.22	1.440	-0.007	-0.29	WD
997KWK		1.479	0.013	0.56	1.465	0.018	0.74	OE
9F4C4T		1.443	-0.023	-1.00	1.424	-0.023	-0.93	WD
9PD4W3		1.489	0.023	1.00	1.474	0.027	1.11	OE
9X6W2H		1.457	-0.009	-0.37	1.446	-0.001	-0.03	IC
BJD6DJ		1.465	-0.001	-0.05	1.440	-0.007	-0.29	OE
BRZXWL		1.456	-0.010	-0.44	1.438	-0.009	-0.37	OE
CPPBX8	*	1.500	0.034	1.46	1.500	0.053	2.15	OE
CTJBNC		1.450	-0.016	-0.68	1.433	-0.014	-0.56	WD
CUNHMC		1.488	0.022	0.94	1.474	0.027	1.09	OE
CUUBMR		1.457	-0.009	-0.38	1.442	-0.005	-0.21	WD
DCC7WY		1.482	0.016	0.69	1.466	0.019	0.78	DR
DWVTZE		1.467	0.001	0.03	1.443	-0.004	-0.15	OE
DXLWTL		1.443	-0.023	-0.99	1.424	-0.024	-0.96	XR
EXFDEA	X	0.4007	-1.065	-45.56	0.3693	-1.078	-43.87	OE
F2Q9AW		1.463	-0.003	-0.11	1.463	0.016	0.66	OE
FA2V3T		1.506	0.040	1.73	1.490	0.043	1.75	OE
GEY9QL		1.475	0.009	0.37	1.443	-0.004	-0.17	OE
GRPGLB		1.492	0.026	1.13	1.485	0.038	1.56	OE
H24GAB		1.453	-0.013	-0.57	1.432	-0.015	-0.60	OE
JKY8EG		1.483	0.017	0.74	1.463	0.016	0.66	GD
JMQR92	X	1.427	-0.039	-1.68	1.377	-0.070	-2.87	GD
JRUUZV	*	1.527	0.061	2.60	1.497	0.050	2.02	OE
JWN9NX		1.439	-0.027	-1.17	1.427	-0.020	-0.82	OE
KJDZED		1.464	-0.002	-0.10	1.447	0.000	0.01	WD
LNLVKY		1.463	-0.003	-0.11	1.442	-0.005	-0.19	GD
MNP883		1.496	0.030	1.29	1.476	0.029	1.16	OE
NCHC8X		1.430	-0.036	-1.54	1.420	-0.027	-1.10	OE
NCNW6L		1.468	0.002	0.10	1.448	0.001	0.05	OE
NKL8KG		1.467	0.001	0.03	1.440	-0.007	-0.29	OE
PBPCT7	X	1.540	0.074	3.17	1.493	0.046	1.88	OE
PMK4ZN		1.480	0.014	0.60	1.463	0.016	0.66	OE
Q6QHRW		1.490	0.024	1.02	1.470	0.023	0.95	GD
QDN287	*	1.536	0.070	3.01	1.518	0.071	2.90	OE
QTR9RV		1.461	-0.005	-0.21	1.445	-0.002	-0.09	DR
QZN4UZ		1.459	-0.007	-0.30	1.445	-0.002	-0.09	OE
RJX664		1.460	-0.006	-0.25	1.423	-0.024	-0.97	IC
TXACHW		1.460	-0.006	-0.25	1.443	-0.004	-0.15	XR
U6D8D9		1.456	-0.010	-0.44	1.435	-0.012	-0.51	OE

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 181

Chemical Analysis Element #2 - Corrosion Resistant Steel - Percent
MANGANESE (Mn)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
UELRR3		1.429	-0.037	-1.59	1.408	-0.039	-1.58	WD
VN9QXJ		1.470	0.004	0.17	1.462	0.015	0.61	OE
W4HDK2		1.460	-0.006	-0.24	1.441	-0.006	-0.25	WD
W6LN7X		1.454	-0.012	-0.50	1.439	-0.008	-0.34	WD
W7WHW7		1.458	-0.008	-0.34	1.446	-0.001	-0.03	OE
WXNUER		1.497	0.031	1.33	1.469	0.022	0.89	OE
X2U7A6		1.467	0.001	0.03	1.430	-0.017	-0.70	OE
ZNXP8A		1.453	-0.013	-0.54	1.440	-0.007	-0.29	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	1.466	Percent	1.447	Percent
Stnd Dev Btwn Labs	0.023	Percent	0.025	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 54 of 57 reporting participants

Comments on assigned Data Flags for Analysis #181

WebCode	Flag	Analyst Comment
EXFDEA	X	Extreme data.
JMQR92	X	Data for sample M20 are low. Inconsistent in testing between samples.
PBPCT7	X	Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

Cycle 106
2nd Q, 2014

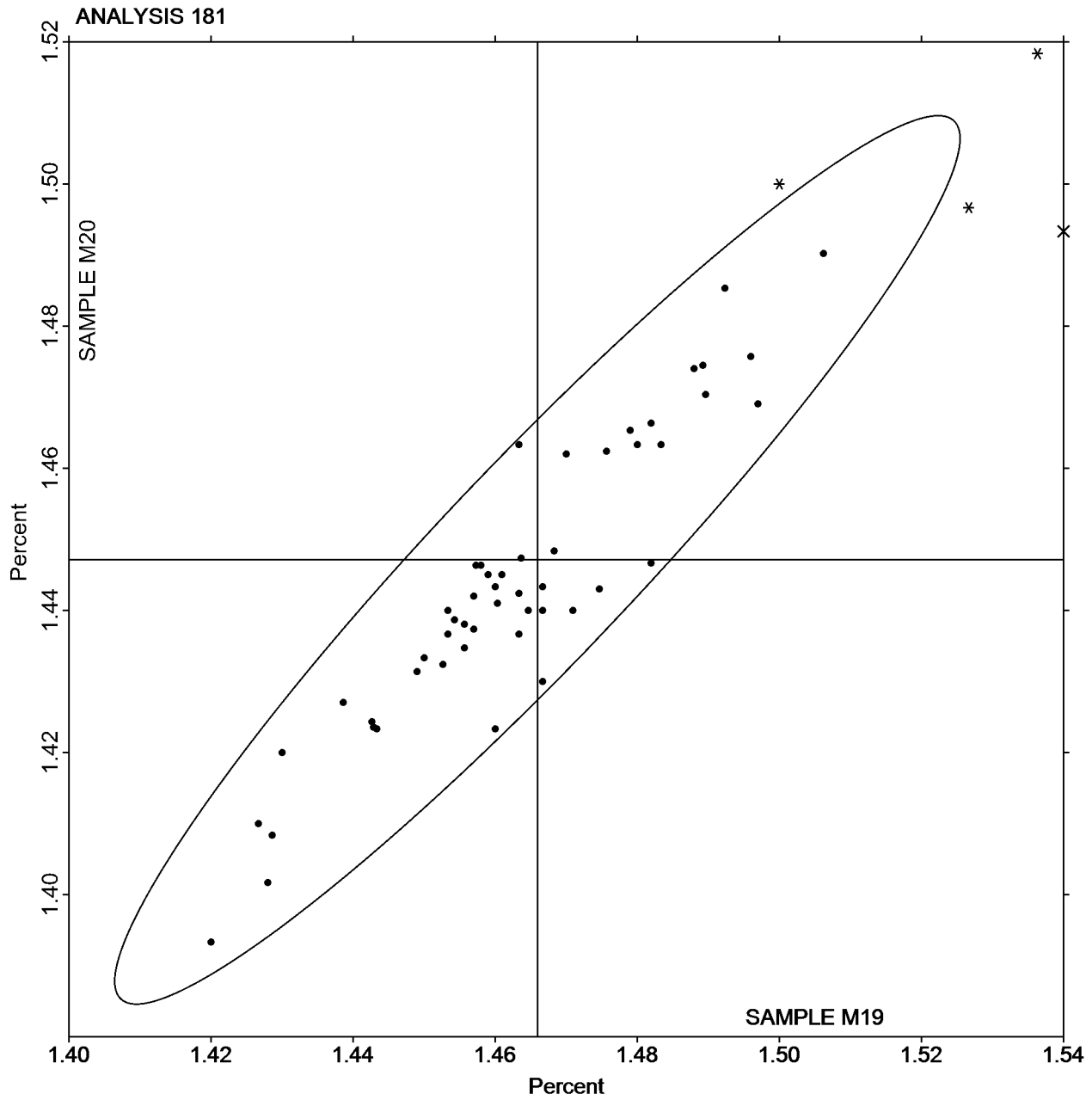
Interlaboratory Testing Program for Metals

Analysis 181

Chemical Analysis Element #2 - Corrosion Resistant Steel - Percent
MANGANESE (Mn)

SAMPLE M19
1.466 Percent

SAMPLE M20
1.447 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 182

Chemical Analysis Element #3 - Corrosion Resistant Steel - Percent
PHOSPHORUS (P)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.0297	-0.0010	-0.70	0.0267	-0.0020	-1.51	OE
29YN6D		0.0310	0.0003	0.19	0.0290	0.0003	0.22	IC
2ZUKJ2		0.0310	0.0003	0.19	0.0300	0.0013	0.96	OE
3B9E8A		0.0320	0.0013	0.86	0.0307	0.0020	1.46	OE
4QNERC		0.0333	0.0026	1.76	0.0310	0.0023	1.71	OE
6PFT4G		0.0297	-0.0010	-0.70	0.0277	-0.0010	-0.77	OE
6V82RU		0.0313	0.0006	0.39	0.0292	0.0005	0.35	OE
6W3Z4G		0.0303	-0.0004	-0.25	0.0280	-0.0007	-0.52	OE
8DV9RJ	X	0.0396	0.0089	5.94	0.0369	0.0082	6.11	IC
8WLLWA		0.0337	0.0030	1.98	0.0307	0.0020	1.46	WD
997KWK		0.0304	-0.0003	-0.23	0.0288	0.0001	0.05	OE
9F4C4T		0.0336	0.0029	1.94	0.0300	0.0013	0.94	WD
9PD4W3		0.0305	-0.0002	-0.16	0.0294	0.0007	0.52	OE
9X6W2H		0.0296	-0.0011	-0.74	0.0277	-0.0010	-0.77	IC
BRZXWL	X	0.0360	0.0053	3.54	0.0353	0.0066	4.92	OE
CPPBX8	*	0.0323	0.0016	1.09	0.0283	-0.0004	-0.27	OE
CTJBNC		0.0300	-0.0007	-0.48	0.0280	-0.0007	-0.52	WD
CUNHMC		0.0299	-0.0008	-0.57	0.0276	-0.0011	-0.82	OE
CUUBMR		0.0312	0.0005	0.31	0.0288	0.0001	0.05	WD
DCC7WY		0.0310	0.0003	0.19	0.0290	0.0003	0.22	DR
DXLWTL		0.0307	0.0000	-0.03	0.0283	-0.0004	-0.27	XR
EXFDEA	X	0.1530	0.1223	81.96	0.1580	0.1293	95.96	OE
F2Q9AW		0.0316	0.0009	0.62	0.0308	0.0021	1.53	OE
FA2V3T		0.0280	-0.0027	-1.83	0.0264	-0.0023	-1.68	OE
GEY9QL		0.0287	-0.0020	-1.37	0.0263	-0.0024	-1.78	OE
GRPGLB		0.0293	-0.0014	-0.92	0.0277	-0.0010	-0.77	OE
H24GAB	X	0.0283	-0.0024	-1.59	0.0300	0.0013	0.96	OE
JKY8EG		0.0316	0.0009	0.62	0.0290	0.0003	0.20	GD
JMQR92	X	0.0253	-0.0054	-3.60	0.0233	-0.0054	-3.98	GD
JRUUZV		0.0285	-0.0023	-1.51	0.0280	-0.0007	-0.51	WC
JWN9NX	*	0.0269	-0.0038	-2.58	0.0255	-0.0032	-2.35	OE
KJDZED		0.0316	0.0009	0.60	0.0290	0.0003	0.22	WD
LNLVKY	X	0.0300	-0.0007	-0.48	0.0454	0.0167	12.37	GD
MNP883		0.0300	-0.0007	-0.48	0.0280	-0.0007	-0.52	OE
NCHC8X		0.0330	0.0023	1.53	0.0317	0.0030	2.20	OE
NCNW6L		0.0307	0.0000	-0.03	0.0287	0.0000	-0.02	OE
NKL8KG		0.0303	-0.0004	-0.25	0.0283	-0.0004	-0.27	OE
PBPCT7		0.0303	-0.0004	-0.25	0.0280	-0.0007	-0.52	OE
PMK4ZN		0.0297	-0.0010	-0.70	0.0280	-0.0007	-0.52	OE
Q6QHRW		0.0290	-0.0017	-1.15	0.0281	-0.0006	-0.47	GD
QDN287		0.0329	0.0022	1.44	0.0311	0.0024	1.81	OE
QTR9RV		0.0307	0.0000	-0.01	0.0280	-0.0007	-0.54	DR
QZN4UZ		0.0295	-0.0012	-0.79	0.0276	-0.0011	-0.84	OE
RJX664		0.0317	0.0010	0.64	0.0293	0.0006	0.47	IC
TXACHW		0.0290	-0.0017	-1.15	0.0273	-0.0014	-1.01	XR
U6D8D9		0.0323	0.0016	1.07	0.0297	0.0010	0.72	OE
UELRR3		0.0310	0.0003	0.19	0.0300	0.0013	0.96	WD
VN9QXJ		0.0328	0.0021	1.42	0.0305	0.0018	1.34	OE
W4HDK2		0.0300	-0.0007	-0.48	0.0280	-0.0007	-0.52	WD

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 182

Chemical Analysis Element #3 - Corrosion Resistant Steel - Percent
PHOSPHORUS (P)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
W6LN7X		0.0290	-0.0017	-1.15	0.0275	-0.0012	-0.87	WD
W7WHW7		0.0310	0.0003	0.19	0.0293	0.0006	0.47	OE
WXNUER		0.0320	0.0013	0.84	0.0285	-0.0002	-0.17	OE
X2U7A6	X	0.0310	0.0003	0.19	0.0240	-0.0047	-3.49	OE
ZNXP8A		0.0313	0.0006	0.42	0.0300	0.0013	0.96	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.0307	Percent	0.0287	Percent
Stnd Dev Btwn Labs	0.0015	Percent	0.0013	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 47 of 54 reporting participants

Comments on assigned Data Flags for Analysis #182

WebCode	Flag	Analyst Comment
8DV9RJ	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
BRZXWL	X	Data for both samples are high. Possible Systematic error.
EXFDEA	X	Extreme data.
H24GAB	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
JMQR92	X	Data for both samples are low. Possible Systematic error.
LNLVKY	X	Data for sample M20 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
X2U7A6	X	Data for sample M20 are low. Inconsistent in testing between samples.

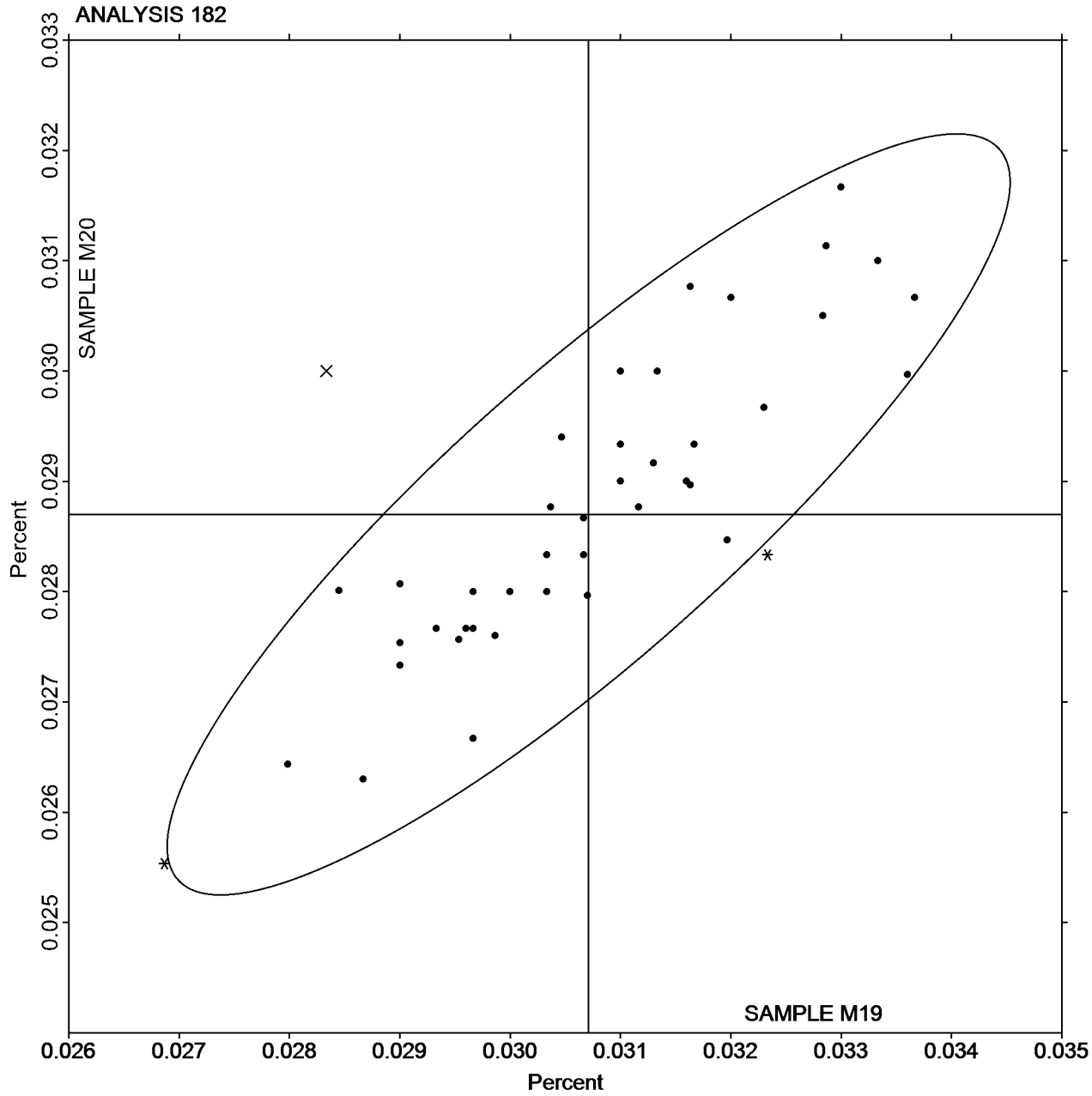
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 182

Chemical Analysis Element #3 - Corrosion Resistant Steel - Percent
PHOSPHORUS (P)

SAMPLE M19	**SAMPLE M20**
0.0307 Percent	**0.0287 Percent**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.0303	0.0016	0.91	0.0327	0.0005	0.26	OE
29YN6D		0.0303	0.0016	0.91	0.0343	0.0022	1.12	CI
2ZUKJ2		0.0290	0.0003	0.17	0.0310	-0.0012	-0.61	CI
3B9E8A		0.0310	0.0023	1.28	0.0327	0.0005	0.26	OE
4QNERC		0.0300	0.0013	0.72	0.0333	0.0012	0.60	OE
6NERRC		0.0268	-0.0019	-1.03	0.0298	-0.0024	-1.24	CO
6PFT4G		0.0273	-0.0014	-0.75	0.0300	-0.0022	-1.13	OE
6V82RU		0.0285	-0.0002	-0.09	0.0327	0.0006	0.29	OE
6W3Z4G		0.0280	-0.0007	-0.38	0.0310	-0.0012	-0.61	OE
8DV9RJ		0.0278	-0.0009	-0.47	0.0309	-0.0013	-0.66	CO
8WLLWA		0.0301	0.0014	0.76	0.0342	0.0021	1.07	CI
997KWK		0.0274	-0.0013	-0.71	0.0304	-0.0018	-0.93	CI
9F4C4T		0.0279	-0.0008	-0.44	0.0308	-0.0014	-0.73	CI
9PD4W3		0.0272	-0.0015	-0.84	0.0317	-0.0004	-0.23	CO
BRZXWL		0.0257	-0.0030	-1.67	0.0290	-0.0032	-1.65	OE
CPPBX8		0.0293	0.0006	0.36	0.0330	0.0008	0.43	OE
CTJBNC	X	0.0361	0.0074	4.11	0.0382	0.0061	3.16	WD
CUNHMC	*	0.0270	-0.0017	-0.95	0.0336	0.0014	0.74	OE
CUUBMR	X	0.0198	-0.0089	-4.93	0.0230	-0.0092	-4.78	WD
DCC7WY		0.0250	-0.0037	-2.04	0.0290	-0.0032	-1.65	CI
DXLWTL		0.0283	-0.0004	-0.22	0.0305	-0.0017	-0.87	CI
EXFDEA	X	0.0146	-0.0141	-7.77	0.1370	0.1048	54.61	OE
F2Q9AW		0.0316	0.0029	1.61	0.0335	0.0013	0.69	CI
FA2V3T		0.0259	-0.0028	-1.55	0.0288	-0.0034	-1.78	OE
GEY9QL		0.0275	-0.0012	-0.68	0.0320	-0.0001	-0.07	OE
GRPGLB		0.0297	0.0010	0.54	0.0340	0.0018	0.95	OE
H24GAB		0.0293	0.0006	0.36	0.0320	-0.0002	-0.09	CI
JKY8EG		0.0285	-0.0002	-0.09	0.0313	-0.0009	-0.46	GD
JMQR92	X	0.00933	-0.0194	-10.70	0.0117	-0.0205	-10.69	GD
JRUUZV		0.0293	0.0006	0.32	0.0321	-0.0001	-0.04	CO
JWN9NX		0.0287	0.0000	0.01	0.0324	0.0003	0.13	OE
KJDZED		0.0289	0.0002	0.10	0.0317	-0.0005	-0.25	CI
LNLVKY		0.0269	-0.0018	-1.01	0.0303	-0.0019	-0.98	CO
MNP883		0.0273	-0.0014	-0.75	0.0320	-0.0002	-0.09	OE
NCHC8X	X	0.0197	-0.0090	-4.99	0.0203	-0.0118	-6.17	OE
NCNW6L		0.0293	0.0006	0.36	0.0347	0.0025	1.30	OE
NKL8KG		0.0270	-0.0017	-0.93	0.0303	-0.0018	-0.96	OE
PBPCT7		0.0303	0.0016	0.91	0.0337	0.0015	0.78	OE
PMK4ZN		0.0303	0.0016	0.91	0.0317	-0.0005	-0.27	OE
Q6QHRW		0.0316	0.0029	1.63	0.0341	0.0020	1.02	GD
QDN287	X	0.0338	0.0051	2.84	0.0414	0.0093	4.82	OE
QTR9RV		0.0330	0.0043	2.36	0.0364	0.0042	2.20	DR
RJX664		0.0290	0.0003	0.17	0.0330	0.0008	0.43	CO
TXACHW	X	0.0367	0.0080	4.43	0.0419	0.0097	5.05	CI
U6D8D9		0.0310	0.0023	1.28	0.0361	0.0039	2.03	OE
UELRR3		0.0261	-0.0026	-1.41	0.0287	-0.0034	-1.79	CI
VN9QXJ		0.0304	0.0017	0.93	0.0354	0.0032	1.68	OE
W4HDK2		0.0261	-0.0026	-1.41	0.0290	-0.0031	-1.64	CI
W6LN7X		0.0282	-0.0005	-0.25	0.0330	0.0008	0.43	CI

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
W7WHW7		0.0293	0.0006	0.36	0.0333	0.0012	0.60	OE
WXNUER		0.0311	0.0024	1.33	0.0335	0.0014	0.71	OE
X2U7A6		0.0300	0.0013	0.72	0.0333	0.0012	0.60	OE
ZNXP8A	*	0.0263	-0.0024	-1.30	0.0330	0.0008	0.43	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.0287	Percent	0.0322	Percent
Stnd Dev Btwn Labs	0.0018	Percent	0.0019	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 46 of 53 reporting participants

Comments on assigned Data Flags for Analysis #183

WebCode	Flag	Analyst Comment
CTJBNC	X	Data for both samples are high. Possible Systematic error.
CUUBMR	X	Data for both samples are low. Possible Systematic error.
EXFDEA	X	Data for sample M19 are low and data for sample M20 are high.
JMQR92	X	Data for both samples are low. Possible Systematic error.
NCHC8X	X	Data for both samples are low. Possible Systematic error.
QDN287	X	Data for both samples are high. Possible Systematic error.
TXACHW	X	Data for both samples are high. Possible Systematic error.

Cycle 106
2nd Q, 2014

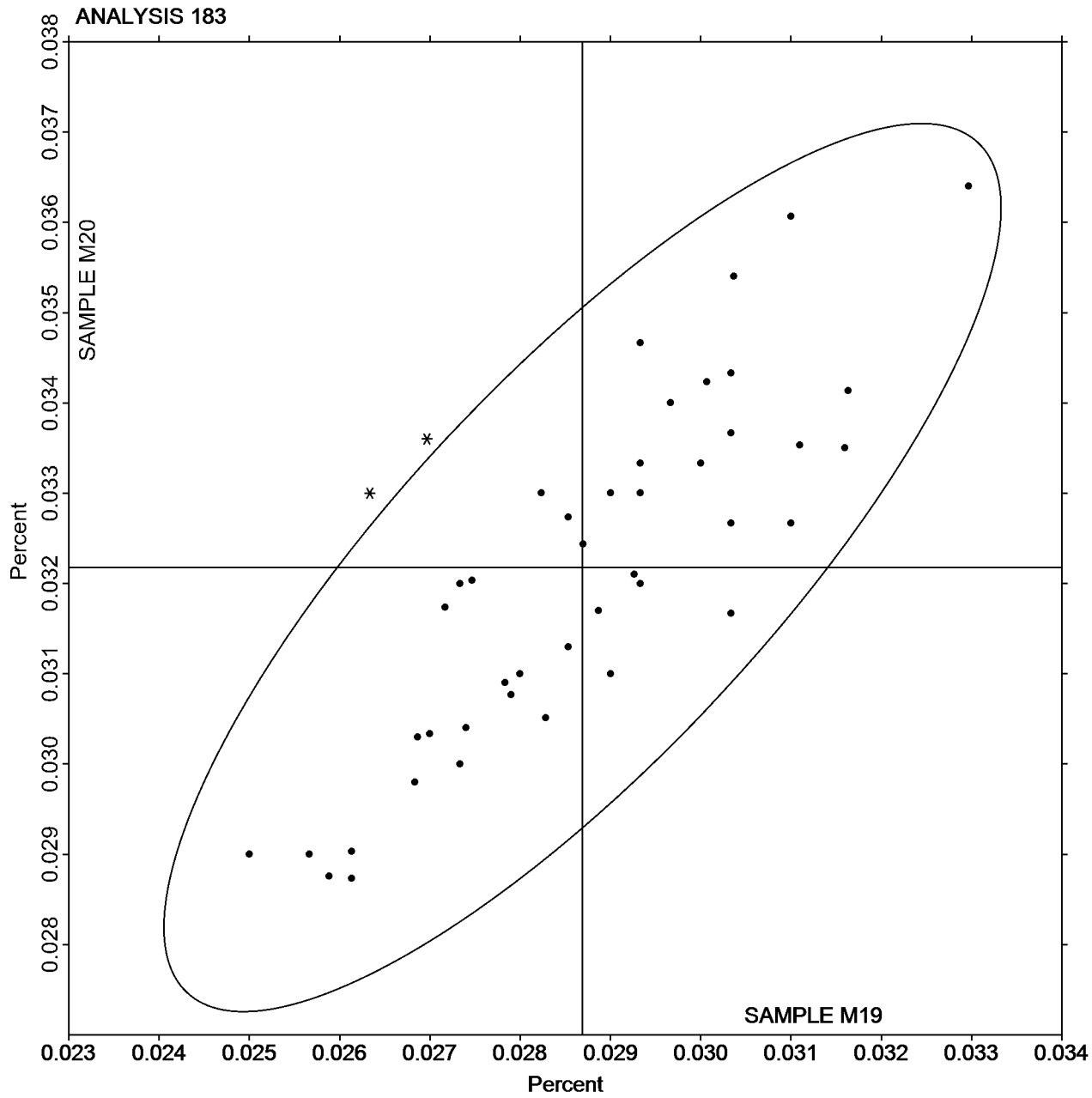
Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

SAMPLE M19
0.0287 Percent

SAMPLE M20
0.0322 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 184

Chemical Analysis Element #5 - Corrosion Resistant Steel - Percent
SILICON (Si)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.4323	0.0224	1.78	0.4513	0.0162	1.19	OE
29YN6D		0.4210	0.0111	0.88	0.4427	0.0075	0.55	IC
2ZUKJ2		0.4167	0.0067	0.54	0.4400	0.0048	0.36	OE
3B9E8A		0.4097	-0.0003	-0.02	0.4300	-0.0052	-0.38	OE
4QNERC		0.4120	0.0021	0.17	0.4370	0.0018	0.14	OE
6NERRC		0.4003	-0.0096	-0.76	0.4230	-0.0122	-0.89	OE
6PFT4G		0.3900	-0.0199	-1.59	0.4133	-0.0218	-1.61	OE
6V82RU		0.4127	0.0027	0.22	0.4410	0.0058	0.43	OE
6W3Z4G		0.3900	-0.0199	-1.59	0.4333	-0.0018	-0.13	OE
8DV9RJ		0.4087	-0.0013	-0.10	0.4227	-0.0125	-0.92	IC
8WLLWA	*	0.3720	-0.0379	-3.02	0.3930	-0.0422	-3.10	WD
997KWK		0.4173	0.0074	0.59	0.4330	-0.0022	-0.16	OE
9F4C4T		0.4230	0.0131	1.04	0.4507	0.0155	1.14	WD
9PD4W3		0.4092	-0.0007	-0.06	0.4344	-0.0008	-0.06	OE
9X6W2H		0.4037	-0.0063	-0.50	0.4360	0.0008	0.06	IC
BJD6DJ		0.3993	-0.0107	-0.85	0.4245	-0.0106	-0.78	OE
BRZXWL		0.4147	0.0047	0.38	0.4317	-0.0035	-0.26	OE
CPPBX8		0.4067	-0.0033	-0.26	0.4333	-0.0018	-0.13	OE
CTJBNC		0.4100	0.0001	0.01	0.4300	-0.0052	-0.38	WD
CUNHMC		0.4197	0.0097	0.77	0.4493	0.0142	1.04	OE
CUUBMR		0.4113	0.0014	0.11	0.4367	0.0015	0.11	WD
DCC7WY		0.4173	0.0074	0.59	0.4450	0.0098	0.72	DR
DWVTZE		0.3983	-0.0116	-0.92	0.4247	-0.0105	-0.77	OE
DXLWTL		0.4310	0.0211	1.68	0.4620	0.0268	1.98	OE
EXFDEA	X	0.3510	-0.0589	-4.69	0.4140	-0.0212	-1.56	OE
F2Q9AW		0.4193	0.0094	0.75	0.4427	0.0075	0.55	IC
FA2V3T	*	0.4421	0.0322	2.56	0.4727	0.0375	2.76	OE
GEY9QL		0.3897	-0.0203	-1.61	0.4077	-0.0275	-2.02	OE
GRPGLB		0.4150	0.0051	0.40	0.4413	0.0062	0.45	OE
H24GAB		0.4110	0.0011	0.09	0.4330	-0.0022	-0.16	OE
JKY8EG		0.4043	-0.0056	-0.44	0.4340	-0.0012	-0.09	GD
JMQR92		0.3867	-0.0233	-1.85	0.4110	-0.0242	-1.78	GD
JRUUZV	X	0.4590	0.0491	3.90	0.4475	0.0123	0.91	GR
JWN9NX		0.4260	0.0161	1.28	0.4513	0.0162	1.19	OE
KJDZED		0.4050	-0.0049	-0.39	0.4323	-0.0028	-0.21	WD
LNLVKY		0.4010	-0.0089	-0.71	0.4223	-0.0128	-0.94	GD
MNP883		0.4013	-0.0086	-0.68	0.4297	-0.0055	-0.40	OE
NCHC8X		0.4000	-0.0099	-0.79	0.4267	-0.0085	-0.62	OE
NCNW6L		0.4227	0.0127	1.01	0.4517	0.0165	1.22	OE
NKL8KG	X	0.4533	0.0434	3.45	0.4700	0.0348	2.56	OE
PBPCT7		0.4053	-0.0046	-0.37	0.4273	-0.0078	-0.58	OE
PMK4ZN		0.4293	0.0194	1.54	0.4537	0.0185	1.36	OE
Q6QHRW		0.4153	0.0054	0.43	0.4386	0.0034	0.25	GD
QDN287		0.4068	-0.0031	-0.25	0.4302	-0.0049	-0.36	OE
QTR9RV		0.4223	0.0124	0.99	0.4503	0.0152	1.12	DR
QZN4UZ		0.4007	-0.0093	-0.74	0.4347	-0.0005	-0.04	OE
RJX664	X	0.3463	-0.0636	-5.06	0.3790	-0.0562	-4.13	WD
TXACHW		0.4027	-0.0073	-0.58	0.4293	-0.0058	-0.43	XR
U6D8D9		0.4257	0.0157	1.25	0.4500	0.0148	1.09	OE

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 184

Chemical Analysis Element #5 - Corrosion Resistant Steel - Percent
SILICON (Si)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
UELRR3		0.3950	-0.0149	-1.19	0.4253	-0.0098	-0.72	WD
VN9QXJ		0.4047	-0.0053	-0.42	0.4377	0.0025	0.18	OE
W4HDK2		0.4063	-0.0036	-0.29	0.4333	-0.0018	-0.13	WD
W6LN7X		0.3977	-0.0123	-0.98	0.4290	-0.0062	-0.45	WD
W7WHW7		0.4150	0.0051	0.40	0.4447	0.0095	0.70	OE
WXNUER		0.4120	0.0021	0.17	0.4300	-0.0052	-0.38	OE
X2U7A6		0.4033	-0.0066	-0.52	0.4300	-0.0052	-0.38	OE
ZNXP8A		0.4130	0.0031	0.24	0.4423	0.0072	0.53	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.4099	Percent	0.4352	Percent
Stnd Dev Btwn Labs	0.0126	Percent	0.0136	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 57 reporting participants

Comments on assigned Data Flags for Analysis #184

WebCode	Flag	Analyst Comment
EXFDEA	X	Data for sample M19 are low. Inconsistent in testing between samples.
JRUUZV	X	Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
NKL8KG	X	Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M19.
RJX664	X	Data for both samples are low. Possible Systematic error.

Cycle 106
2nd Q, 2014

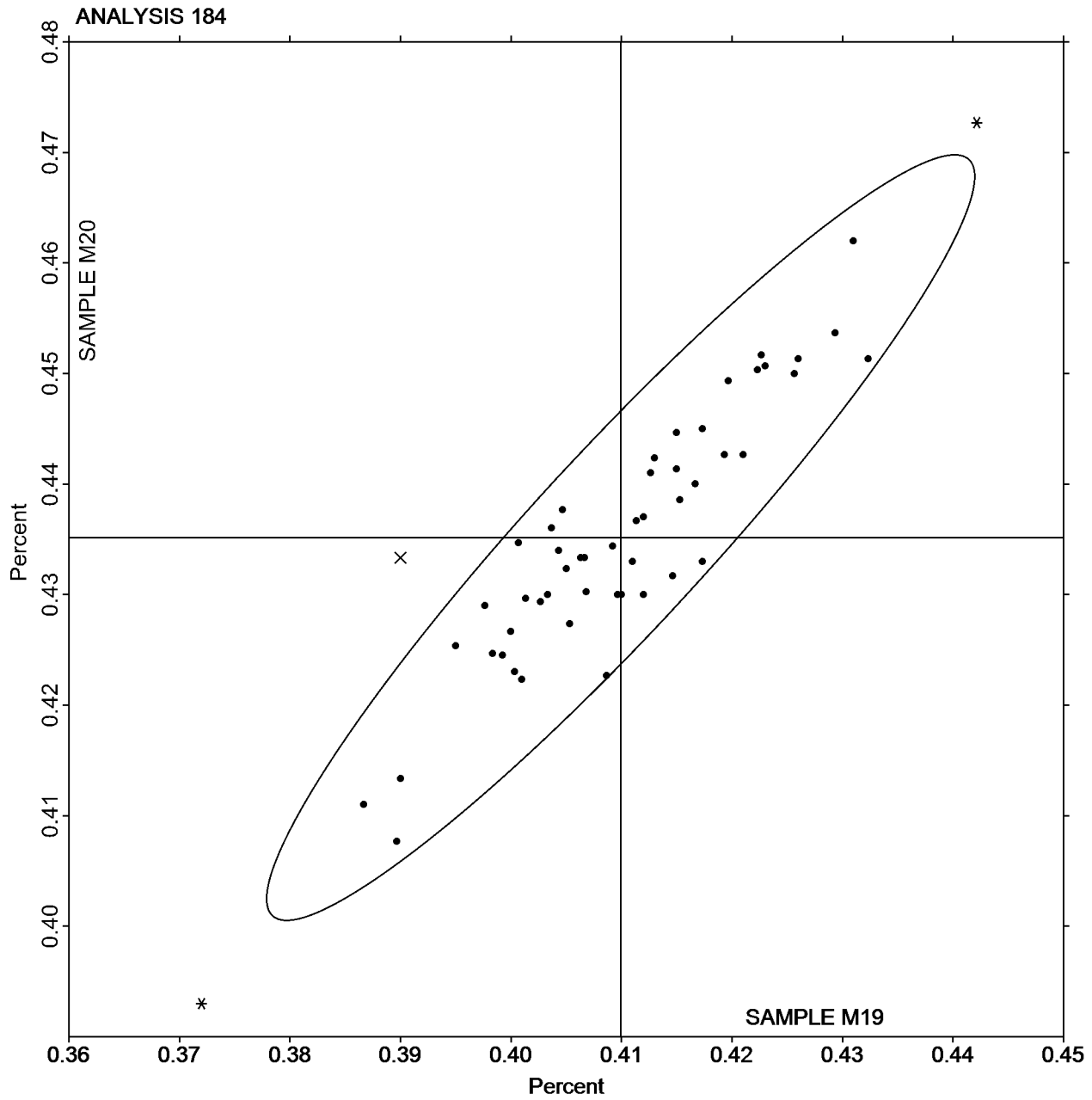
Interlaboratory Testing Program for Metals

Analysis 184

Chemical Analysis Element #5 - Corrosion Resistant Steel - Percent
SILICON (Si)

SAMPLE M19
0.4099 Percent

SAMPLE M20
0.4352 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 185

Chemical Analysis Element #6 - Corrosion Resistant Steel - Percent
COPPER (Cu)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.4580	-0.0113	-0.79	0.4910	-0.0059	-0.44	OE
29YN6D		0.4540	-0.0153	-1.07	0.4873	-0.0095	-0.71	IC
2ZUKJ2		0.4567	-0.0127	-0.89	0.4867	-0.0102	-0.76	OE
3B9E8A	*	0.4357	-0.0337	-2.36	0.4593	-0.0375	-2.78	OE
4QNERC		0.4877	0.0183	1.28	0.5127	0.0158	1.17	OE
6NERRC		0.4527	-0.0167	-1.17	0.4773	-0.0195	-1.45	OE
6PFT4G		0.4600	-0.0093	-0.65	0.4833	-0.0135	-1.00	OE
6V82RU		0.4697	0.0003	0.02	0.5000	0.0031	0.23	OE
6W3Z4G		0.4800	0.0107	0.75	0.5133	0.0165	1.22	OE
8DV9RJ	*	0.4810	0.0117	0.82	0.4947	-0.0022	-0.16	IC
8WLLWA		0.4660	-0.0033	-0.23	0.4910	-0.0059	-0.44	WD
997KWK		0.4700	0.0007	0.05	0.4987	0.0018	0.13	OE
9F4C4T		0.4700	0.0007	0.05	0.4933	-0.0035	-0.26	WD
9PD4W3	X	0.4891	0.0197	1.38	0.5375	0.0406	3.01	OE
9X6W2H		0.4597	-0.0097	-0.68	0.4913	-0.0055	-0.41	IC
BJD6DJ		0.4586	-0.0107	-0.75	0.4924	-0.0045	-0.33	OE
BRZXWL		0.4500	-0.0193	-1.35	0.4953	-0.0015	-0.11	OE
CPPBX8	X	0.4700	0.0007	0.05	0.5167	0.0198	1.47	OE
CTJBNC		0.4667	-0.0027	-0.19	0.4900	-0.0069	-0.51	WD
CUNHMC		0.4740	0.0047	0.33	0.5030	0.0061	0.45	OE
CUUBMR		0.4593	-0.0100	-0.70	0.4897	-0.0072	-0.53	WD
DCC7WY		0.4633	-0.0060	-0.42	0.4887	-0.0082	-0.61	DR
DWVTZE		0.4640	-0.0053	-0.37	0.4927	-0.0042	-0.31	OE
DXLWTL		0.4666	-0.0028	-0.19	0.4998	0.0029	0.22	XR
EXFDEA	X	0.00700	-0.4623	-32.35	0.00233	-0.4945	-36.67	OE
F2Q9AW		0.4470	-0.0223	-1.56	0.4797	-0.0172	-1.28	OE
FA2V3T		0.4454	-0.0239	-1.67	0.4729	-0.0240	-1.78	OE
GEY9QL	X	0.4303	-0.0390	-2.73	0.4507	-0.0462	-3.43	OE
GRPGLB		0.4477	-0.0217	-1.52	0.4817	-0.0152	-1.13	OE
H24GAB		0.4980	0.0287	2.01	0.5247	0.0278	2.06	OE
JKY8EG		0.4667	-0.0027	-0.19	0.4970	0.0001	0.01	GD
JMQR92	*	0.5037	0.0343	2.40	0.5190	0.0221	1.64	GD
JRUUZV	X	0.5473	0.0780	5.46	0.5707	0.0738	5.47	OE
JWN9NX		0.4820	0.0127	0.89	0.5147	0.0178	1.32	OE
KJDZED		0.4633	-0.0060	-0.42	0.4910	-0.0059	-0.44	WD
LNLVKY		0.4703	0.0010	0.07	0.4940	-0.0029	-0.21	GD
MNP883		0.4647	-0.0047	-0.33	0.4943	-0.0025	-0.19	OE
NCHC8X		0.4733	0.0040	0.28	0.5033	0.0065	0.48	OE
NCNW6L		0.4733	0.0040	0.28	0.5017	0.0048	0.36	OE
NKL8KG		0.4637	-0.0057	-0.40	0.4873	-0.0095	-0.71	OE
PBPCT7		0.4750	0.0057	0.40	0.5033	0.0065	0.48	OE
PMK4ZN		0.4680	-0.0013	-0.09	0.4943	-0.0025	-0.19	OE
Q6QHRW		0.4800	0.0107	0.75	0.4983	0.0015	0.11	GD
QDN287	*	0.5117	0.0423	2.96	0.5373	0.0405	3.00	OE
QTR9RV		0.4693	0.0000	0.00	0.5010	0.0041	0.31	DR
QZN4UZ		0.4593	-0.0100	-0.70	0.4860	-0.0109	-0.81	OE
RJX664		0.4743	0.0050	0.35	0.5037	0.0068	0.50	IC
TXACHW		0.4803	0.0110	0.77	0.5103	0.0135	1.00	XR
U6D8D9		0.4840	0.0147	1.03	0.5117	0.0148	1.10	OE

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 185

Chemical Analysis Element #6 - Corrosion Resistant Steel - Percent
COPPER (Cu)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
UELRR3		0.4637	-0.0057	-0.40	0.4923	-0.0045	-0.34	WD
VN9QXJ	X	0.4550	-0.0143	-1.00	0.4543	-0.0425	-3.15	OE
W4HDK2		0.4663	-0.0030	-0.21	0.4940	-0.0029	-0.21	WD
W6LN7X		0.4640	-0.0053	-0.37	0.4960	-0.0009	-0.06	WD
W7WHW7		0.4700	0.0007	0.05	0.5003	0.0035	0.26	OE
WXNUER		0.4850	0.0157	1.10	0.5107	0.0138	1.02	OE
X2U7A6		0.4733	0.0040	0.28	0.4900	-0.0069	-0.51	OE
ZNXP8A		0.4897	0.0203	1.42	0.5170	0.0201	1.49	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.4693	Percent	0.4969	Percent
Stnd Dev Btwn Labs	0.0143	Percent	0.0135	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 50 of 57 reporting participants

Comments on assigned Data Flags for Analysis #185

WebCode	Flag	Analyst Comment
9PD4W3	X	Data for sample M20 are high. Inconsistent in testing between samples.
CPPBX8	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.
EXFDEA	X	Data for both samples are low. Possible Systematic error.
GEY9QL	X	Data for both samples are low. Possible Systematic error.
JRUUZV	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample M20.
VN9QXJ	X	Data for sample M20 are low. Inconsistent in testing between samples.

Cycle 106
2nd Q, 2014

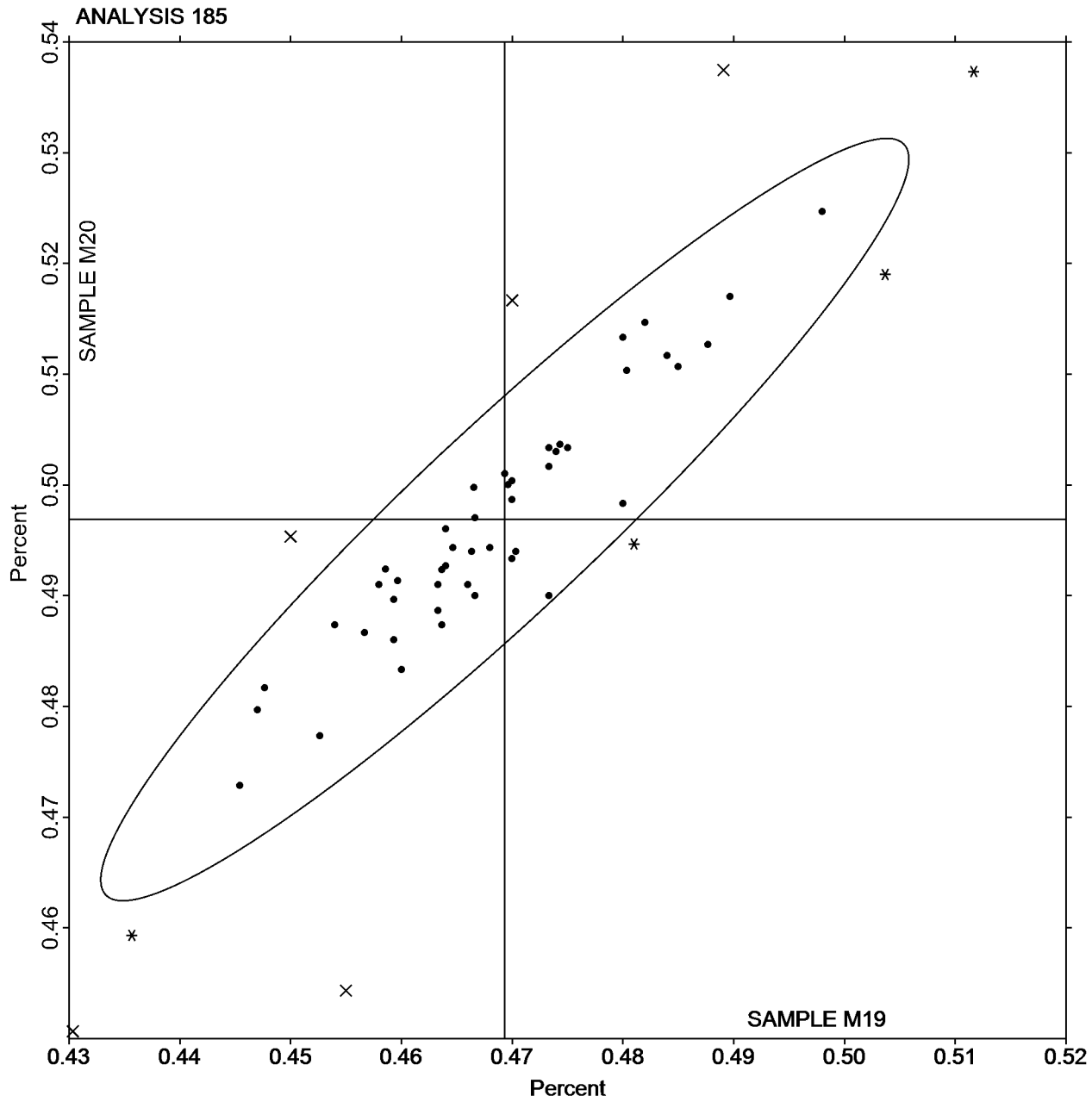
Interlaboratory Testing Program for Metals

Analysis 185

Chemical Analysis Element #6 - Corrosion Resistant Steel - Percent
COPPER (Cu)

SAMPLE M19
0.4693 Percent

SAMPLE M20
0.4969 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 186

Chemical Analysis Element #7 - Corrosion Resistant Steel - Percent
NICKEL (Ni)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		10.08	0.07	0.73	10.07	0.04	0.47	OE
29YN6D		9.850	-0.16	-1.70	9.953	-0.07	-0.78	IC
2ZUKJ2		9.947	-0.06	-0.68	9.930	-0.10	-1.03	OE
3B9E8A		9.882	-0.13	-1.36	9.864	-0.16	-1.73	OE
4QNERC		10.06	0.05	0.48	10.06	0.04	0.40	OE
6NERRC		9.951	-0.06	-0.63	10.01	-0.02	-0.18	WD
6PFT4G		9.933	-0.08	-0.82	9.923	-0.10	-1.10	OE
6V82RU		9.915	-0.10	-1.01	9.927	-0.10	-1.06	OE
6W3Z4G		10.02	0.01	0.13	10.02	0.00	-0.03	OE
8DV9RJ		10.08	0.07	0.76	10.06	0.03	0.34	IC
8WLLWA		10.08	0.06	0.68	10.07	0.04	0.46	WD
997KWK		9.997	-0.01	-0.15	10.04	0.02	0.19	OE
9F4C4T		9.960	-0.05	-0.54	9.987	-0.04	-0.42	WD
9PD4W3		9.809	-0.20	-2.13	9.985	-0.04	-0.44	OE
9X6W2H		10.03	0.02	0.24	10.08	0.05	0.54	IC
BJD6DJ	X	9.593	-0.42	-4.41	9.663	-0.36	-3.88	OE
BRZXWL		9.912	-0.10	-1.05	9.954	-0.07	-0.77	OE
CPPBX8		10.03	0.02	0.24	10.00	-0.03	-0.28	OE
CTJBNC		9.990	-0.02	-0.22	10.03	0.00	0.04	XX
CUNHMC		9.943	-0.07	-0.71	9.990	-0.04	-0.39	OE
CUUBMR		9.974	-0.04	-0.39	10.01	-0.02	-0.17	WD
DCC7WY		9.977	-0.03	-0.36	10.01	-0.01	-0.14	DR
DWVTZE	X	9.650	-0.36	-3.81	9.750	-0.28	-2.95	OE
DXLWTL		9.947	-0.06	-0.67	9.981	-0.05	-0.48	XR
EXFDEA	X	9.607	-0.40	-4.27	9.277	-0.75	-8.02	OE
F2Q9AW		9.953	-0.06	-0.61	10.06	0.04	0.40	IC
FA2V3T	*	9.745	-0.27	-2.81	9.758	-0.27	-2.86	OE
GEY9QL		10.18	0.17	1.78	10.01	-0.01	-0.14	OE
GRPGLB		9.826	-0.18	-1.95	9.870	-0.16	-1.67	OE
H24GAB		10.04	0.03	0.33	10.06	0.04	0.38	OE
JKY8EG		10.20	0.19	2.00	10.20	0.17	1.86	GD
JMQR92	*	10.17	0.16	1.65	10.07	0.04	0.47	GD
JRUUZV		10.08	0.07	0.70	10.04	0.02	0.19	OE
JWN9NX		10.11	0.10	1.01	10.14	0.11	1.22	OE
KJDZED		10.02	0.01	0.10	10.04	0.01	0.11	WD
LNLVKY		10.07	0.06	0.66	10.09	0.06	0.65	GD
MNP883		10.17	0.16	1.64	10.21	0.18	1.92	OE
NCHC8X		10.04	0.03	0.34	10.11	0.09	0.93	OE
NCNW6L		10.01	0.00	-0.03	10.02	-0.01	-0.11	OE
NKL8KG		9.927	-0.08	-0.89	9.873	-0.15	-1.63	OE
PBPCT7		10.04	0.03	0.34	10.03	0.00	0.01	OE
PMK4ZN	*	10.06	0.05	0.55	10.20	0.17	1.83	OE
Q6QHRW		10.19	0.18	1.93	10.15	0.13	1.36	GD
QDN287	X	10.33	0.32	3.37	10.41	0.38	4.07	OE
QTR9RV		9.946	-0.06	-0.68	9.930	-0.10	-1.03	DR
QZN4UZ		10.03	0.02	0.17	10.07	0.04	0.43	OE
RJX664		9.927	-0.08	-0.89	9.963	-0.06	-0.67	WD
TXACHW		10.00	-0.01	-0.08	10.02	0.00	-0.03	XR
U6D8D9	*	10.28	0.27	2.81	10.28	0.25	2.72	OE

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 186

Chemical Analysis Element #7 - Corrosion Resistant Steel - Percent
NICKEL (Ni)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
UELRR3		10.03	0.02	0.18	10.06	0.03	0.31	WD
VN9QXJ	*	10.03	0.02	0.20	9.913	-0.11	-1.21	OE
W4HDK2		10.02	0.01	0.11	10.04	0.01	0.14	WD
W6LN7X		9.953	-0.06	-0.61	9.997	-0.03	-0.31	WD
W7WHW7		10.01	0.00	-0.01	10.06	0.03	0.36	OE
WXNUER		10.05	0.04	0.38	9.973	-0.05	-0.56	OE
X2U7A6		10.07	0.06	0.59	10.07	0.04	0.43	OE
ZMJZQV		9.967	-0.04	-0.46	9.991	-0.04	-0.38	WC
ZNXP8A		10.05	0.04	0.38	10.11	0.08	0.86	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	10.01	Percent	10.03	Percent
Stnd Dev Btwn Labs	0.09	Percent	0.09	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 58 reporting participants

Comments on assigned Data Flags for Analysis #186

WebCode	Flag	Analyst Comment
BJD6DJ	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample M19.
DWVTZE	X	Data for both samples are low. Possible Systematic error.
EXFDEA	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample M19.
QDN287	X	Data for both samples are high. Possible Systematic error.

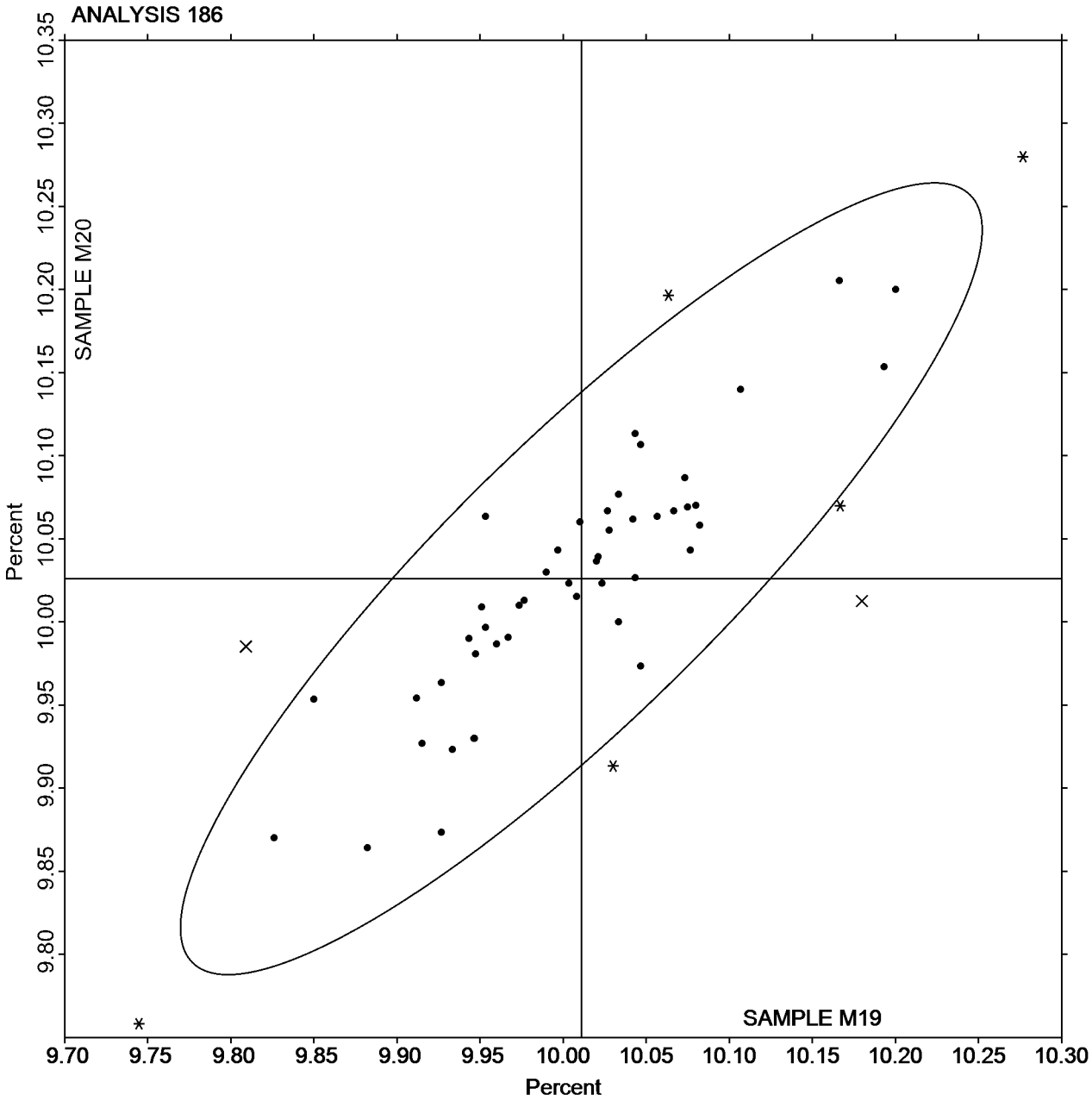
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 186

Chemical Analysis Element #7 - Corrosion Resistant Steel - Percent
NICKEL (Ni)

SAMPLE M19	**SAMPLE M20**
10.01 Percent	**10.03 Percent**



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 187

Chemical Analysis Element #8 - Corrosion Resistant Steel - Percent
CHROMIUM (Cr)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		16.81	-0.03	-0.47	16.70	0.04	0.51	OE
29YN6D		16.80	-0.04	-0.56	16.61	-0.05	-0.80	TI
2ZUKJ2		16.88	0.04	0.56	16.71	0.05	0.70	OE
3B9E8A		16.84	0.00	-0.03	16.72	0.06	0.85	OE
4QNERC	*	16.99	0.14	2.12	16.84	0.17	2.50	OE
6NERRC		16.88	0.04	0.53	16.70	0.03	0.50	WD
6PFT4G		16.85	0.00	0.07	16.65	-0.01	-0.22	OE
6V82RU		16.98	0.14	2.07	16.75	0.08	1.19	OE
6W3Z4G		16.82	-0.02	-0.27	16.60	-0.07	-0.99	OE
8DV9RJ	X	17.09	0.24	3.58	16.77	0.11	1.58	IC
8WLLWA		16.87	0.03	0.38	16.59	-0.08	-1.10	WD
997KWK		16.80	-0.04	-0.61	16.65	-0.01	-0.22	OE
9F4C4T		16.80	-0.05	-0.66	16.62	-0.04	-0.65	WD
9PD4W3		16.79	-0.05	-0.69	16.66	0.00	-0.05	OE
9X6W2H		16.89	0.05	0.75	16.61	-0.06	-0.85	IC
BJD6DJ		16.86	0.01	0.22	16.73	0.07	0.99	OE
BRZXWL		16.88	0.03	0.50	16.70	0.04	0.55	OE
CPPBX8	*	16.83	-0.01	-0.12	16.80	0.14	1.96	OE
CTJBNC		16.81	-0.03	-0.47	16.58	-0.08	-1.24	WD
CUNHMC		16.85	0.00	0.07	16.64	-0.02	-0.36	OE
CUUBMR		16.81	-0.03	-0.47	16.65	-0.01	-0.22	WD
DCC7WY		16.92	0.08	1.21	16.70	0.04	0.54	DR
DWVTZE		16.81	-0.04	-0.51	16.75	0.09	1.24	OE
DXLWTL		16.78	-0.06	-0.94	16.64	-0.03	-0.37	XR
EXFDEA	X	8.690	-8.15	-119.32	8.090	-8.57	-124.70	OE
F2Q9AW		16.78	-0.06	-0.86	16.58	-0.08	-1.19	OE
FA2V3T		16.83	-0.01	-0.12	16.67	0.01	0.13	OE
GEY9QL		16.89	0.04	0.66	16.48	-0.18	-2.64	OE
GRPGLB		16.80	-0.04	-0.61	16.63	-0.03	-0.49	OE
H24GAB		16.86	0.01	0.19	16.65	-0.02	-0.28	OE
JKY8EG		16.77	-0.08	-1.10	16.67	0.00	0.02	GD
JMQR92	X	17.43	0.59	8.66	17.83	1.17	16.99	GD
JRUUZV		16.68	-0.16	-2.37	16.54	-0.13	-1.87	OE
JWN9NX	X	16.54	-0.30	-4.42	16.37	-0.30	-4.34	OE
KJDZED		16.86	0.01	0.22	16.67	0.01	0.12	WD
LNLVKY		16.91	0.06	0.95	16.73	0.07	0.95	GD
MNP883		16.99	0.15	2.21	16.80	0.13	1.92	OE
NCHC8X		16.87	0.03	0.46	16.65	-0.02	-0.27	OE
NCNW6L		16.81	-0.03	-0.41	16.63	-0.03	-0.48	OE
NKL8KG		16.95	0.10	1.53	16.78	0.11	1.62	OE
PBPCT7		16.78	-0.06	-0.90	16.61	-0.06	-0.85	OE
PMK4ZN	X	16.71	-0.13	-1.93	16.38	-0.28	-4.10	OE
Q6QHRW		16.90	0.06	0.85	16.75	0.09	1.29	GD
QDN287	X	16.66	-0.19	-2.71	16.35	-0.31	-4.58	OE
QTR9RV		16.84	0.00	0.02	16.64	-0.02	-0.31	DR
QZN4UZ		16.87	0.03	0.41	16.62	-0.05	-0.70	OE
RJX664		16.86	0.01	0.22	16.67	0.00	0.02	WD
TXACHW		16.97	0.13	1.88	16.78	0.12	1.67	XR
U6D8D9		16.94	0.10	1.44	16.64	-0.02	-0.36	OE

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 187

Chemical Analysis Element #8 - Corrosion Resistant Steel - Percent
CHROMIUM (Cr)

WebCode	Data Flag	Sample M19 Lab Mean	Sample M19 Diff. from Grand Mean	Sample M19 CPV	Sample M20 Lab Mean	Sample M20 Diff. from Grand Mean	Sample M20 CPV	Instr Code
UELRR3		16.77	-0.07	-1.03	16.60	-0.07	-0.95	WD
VN9QXJ	*	16.72	-0.13	-1.83	16.69	0.02	0.32	OE
W4HDK2		16.81	-0.03	-0.49	16.60	-0.07	-0.95	WD
W6LN7X		16.83	-0.02	-0.25	16.64	-0.03	-0.40	WD
W7WHW7		16.79	-0.05	-0.76	16.59	-0.07	-1.04	OE
WXNUER		16.83	-0.02	-0.22	16.58	-0.08	-1.19	OE
X2U7A6		16.90	0.06	0.90	16.75	0.09	1.24	OE
ZMJZQV		16.73	-0.11	-1.59	16.59	-0.08	-1.15	WC
ZNXP8A		16.74	-0.10	-1.44	16.58	-0.09	-1.28	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	16.84	Percent	16.66	Percent
Stnd Dev Btwn Labs	0.07	Percent	0.07	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 51 of 58 reporting participants

Comments on assigned Data Flags for Analysis #187

WebCode	Flag	Analyst Comment
8DV9RJ	X	Data for sample M19 are high.
EXFDEA	X	Extreme data.
JMQR92	X	Data for both samples are high. Inconsistent within the determinations of sample M20.
JWN9NX	X	Data for both samples are low.
PMK4ZN	X	Data for sample M20 are low.
QDN287	X	Data for sample M20 are low.

Cycle 106
2nd Q, 2014

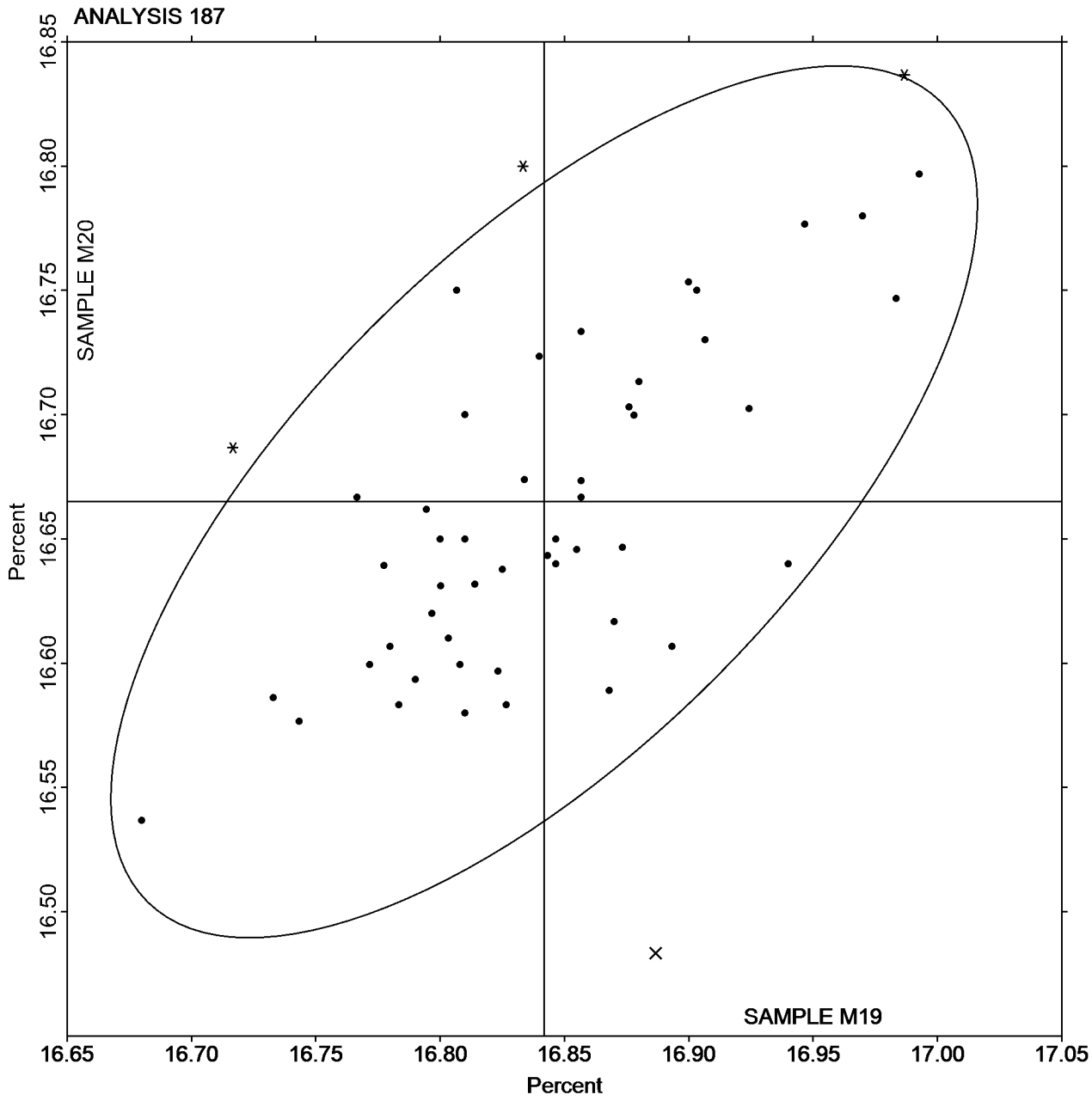
Interlaboratory Testing Program for Metals

Analysis 187

Chemical Analysis Element #8 - Corrosion Resistant Steel - Percent
CHROMIUM (Cr)

SAMPLE M19
16.84 Percent

SAMPLE M20
16.66 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 188

Chemical Analysis Element #9 - Corrosion Resistant Steel - Percent
MOLYBDENUM (Mo)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
23XTJF	*	2.023	-0.015	-0.54	2.052	0.017	0.65	OE
29YN6D		2.017	-0.021	-0.77	2.027	-0.008	-0.33	IC
2ZUKJ2		2.027	-0.011	-0.39	2.023	-0.012	-0.46	OE
3B9E8A		2.025	-0.012	-0.46	2.022	-0.013	-0.53	OE
4QNERC		2.007	-0.031	-1.14	2.001	-0.034	-1.33	OE
6NERRC		2.053	0.016	0.59	2.048	0.013	0.50	WD
6PFT4G		2.013	-0.024	-0.89	2.017	-0.018	-0.73	OE
6V82RU		2.019	-0.019	-0.69	2.014	-0.021	-0.84	OE
6W3Z4G		2.030	-0.007	-0.27	2.030	-0.005	-0.20	OE
8DV9RJ	*	2.065	0.027	1.02	2.036	0.001	0.02	IC
8WLLWA		2.041	0.004	0.15	2.027	-0.008	-0.33	WD
997KWK		2.042	0.005	0.18	2.043	0.008	0.31	OE
9F4C4T		2.034	-0.004	-0.13	2.035	0.000	-0.02	WD
9PD4W3		2.034	-0.003	-0.13	2.040	0.005	0.21	OE
9X6W2H		2.030	-0.007	-0.26	2.032	-0.003	-0.12	IC
BJD6DJ		2.033	-0.004	-0.14	2.023	-0.012	-0.46	OE
BRZXWL		2.049	0.011	0.43	2.046	0.011	0.43	OE
CPPBX8		2.000	-0.037	-1.39	2.000	-0.035	-1.38	OE
CTJBNC		2.040	0.003	0.10	2.040	0.005	0.19	WD
CUNHMC		2.043	0.006	0.23	2.057	0.022	0.85	OE
CUUBMR		2.034	-0.004	-0.13	2.035	0.000	0.01	WD
DCC7WY		2.014	-0.023	-0.85	2.020	-0.015	-0.61	DR
DWVTZE		2.027	-0.011	-0.39	2.023	-0.012	-0.46	OE
DXLWTL		2.018	-0.020	-0.74	2.029	-0.006	-0.24	XR
EXFDEA	X	2.537	0.499	18.63	2.870	0.835	32.92	OE
F2Q9AW		2.043	0.006	0.23	2.040	0.005	0.19	OE
GEY9QL		2.011	-0.026	-0.97	2.021	-0.014	-0.57	OE
GRPGLB		2.064	0.027	1.01	2.067	0.032	1.26	OE
H24GAB		2.032	-0.005	-0.18	2.041	0.006	0.25	OE
JKY8EG	X	1.483	-0.554	-20.66	1.463	-0.572	-22.54	GD
JMQR92	X	1.787	-0.251	-9.35	1.783	-0.252	-9.93	GD
JRUUZV		2.047	0.009	0.35	2.040	0.005	0.19	OE
JWN9NX		2.096	0.059	2.19	2.099	0.064	2.51	OE
KJDZED		2.032	-0.006	-0.21	2.031	-0.004	-0.16	WD
LNLVKY		2.086	0.049	1.83	2.075	0.040	1.59	GD
MNP883		2.084	0.046	1.73	2.078	0.043	1.71	OE
NCHC8X		2.030	-0.007	-0.27	2.037	0.002	0.06	OE
NCNW6L		2.012	-0.025	-0.94	2.006	-0.029	-1.15	OE
NKL8KG		2.017	-0.021	-0.77	1.977	-0.058	-2.30	OE
PBPCT7		2.043	0.006	0.23	2.037	0.002	0.06	OE
PMK4ZN		2.043	0.006	0.23	2.017	-0.018	-0.73	OE
Q6QHRW		2.079	0.042	1.57	2.070	0.035	1.36	GD
QDN287	*	1.954	-0.083	-3.09	1.957	-0.078	-3.08	OE
QTR9RV		1.991	-0.047	-1.74	1.979	-0.056	-2.21	DR
QZN4UZ		2.030	-0.007	-0.26	2.032	-0.003	-0.13	OE
RJX664		2.030	-0.007	-0.27	2.030	-0.005	-0.20	WD
TXACHW		2.040	0.003	0.10	2.037	0.002	0.06	XR
U6D8D9		2.075	0.038	1.42	2.049	0.014	0.56	OE
UELRR3		2.003	-0.034	-1.26	2.005	-0.030	-1.20	WD

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 188

Chemical Analysis Element #9 - Corrosion Resistant Steel - Percent
MOLYBDENUM (Mo)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
VN9QXJ		2.101	0.064	2.38	2.094	0.059	2.34	OE
W4HDK2		2.030	-0.007	-0.26	2.029	-0.006	-0.24	WD
W6LN7X		2.033	-0.004	-0.16	2.035	0.000	-0.02	WD
W7WHW7		2.067	0.030	1.12	2.067	0.032	1.25	OE
WXNUER		2.060	0.023	0.85	2.034	-0.001	-0.05	OE
X2U7A6		2.037	-0.001	-0.02	2.030	-0.005	-0.20	OE
ZNXP8A		2.063	0.026	0.97	2.070	0.035	1.38	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	2.037	Percent	2.035	Percent
Stnd Dev Btwn Labs	0.027	Percent	0.025	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 56 reporting participants

Comments on assigned Data Flags for Analysis #188

WebCode	Flag	Analyst Comment
EXFDEA	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
JKY8EG	X	Data for both samples are low. Possible Systematic error.
JMQR92	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples.

Cycle 106
2nd Q, 2014

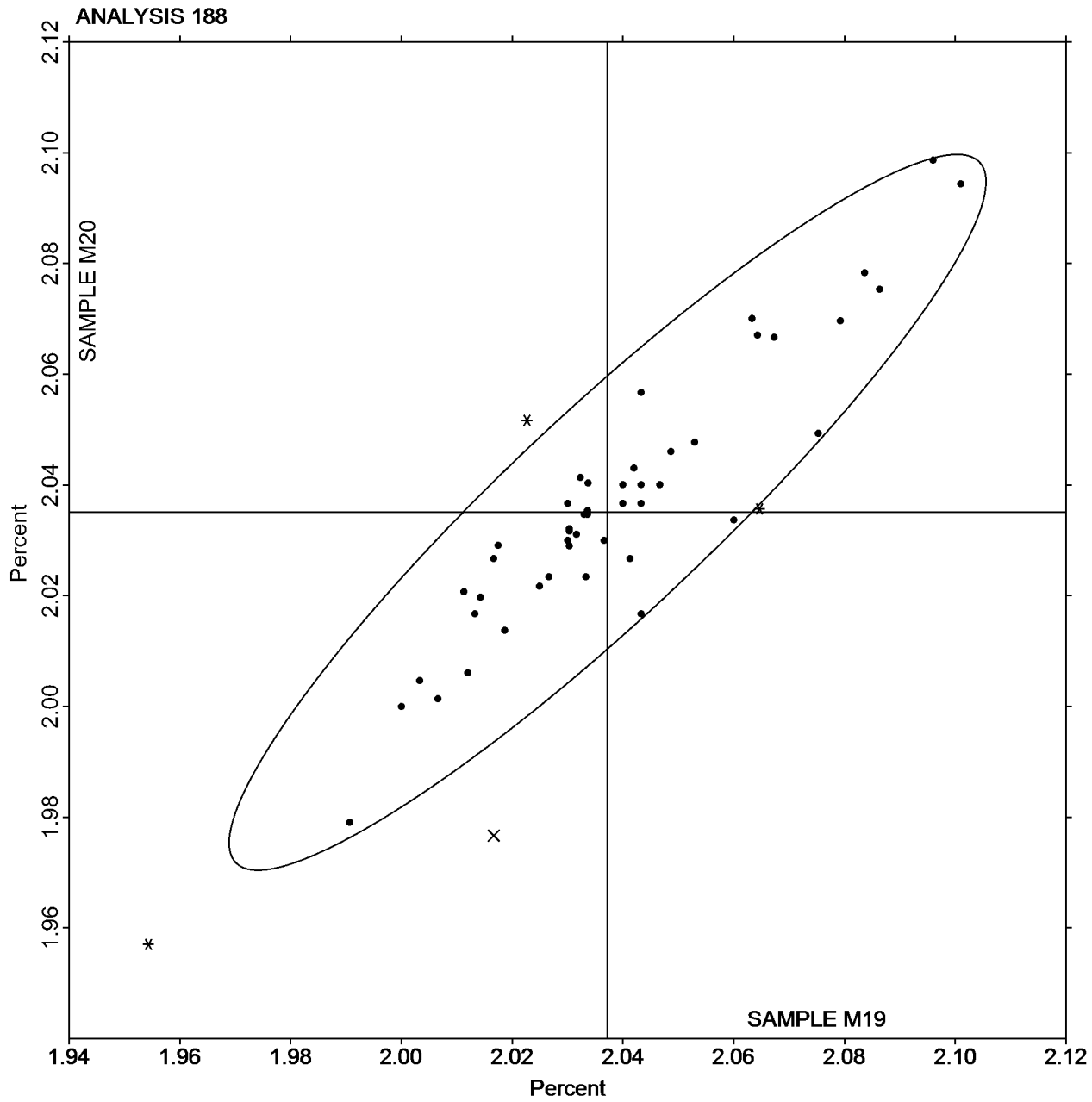
Interlaboratory Testing Program for Metals

Analysis 188

Chemical Analysis Element #9 - Corrosion Resistant Steel - Percent
MOLYBDENUM (Mo)

SAMPLE M19
2.037 Percent

SAMPLE M20
2.035 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

		Sample M19			Sample M20			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
23XTJF		0.2483	0.0053	0.89	0.1830	0.0017	0.46	OE
29YN6D		0.2323	-0.0107	-1.81	0.1750	-0.0063	-1.73	IC
2ZUKJ2	*	0.2600	0.0169	2.86	0.1900	0.0087	2.38	OE
3B9E8A	X	0.2607	0.0176	2.97	0.1733	-0.0080	-2.19	OE
4QNERC		0.2353	-0.0077	-1.30	0.1730	-0.0083	-2.28	OE
6NERRC		0.2357	-0.0074	-1.25	0.1777	-0.0036	-1.00	OE
6PFT4G		0.2400	-0.0031	-0.52	0.1800	-0.0013	-0.36	OE
6V82RU		0.2553	0.0123	2.07	0.1863	0.0050	1.38	OE
6W3Z4G		0.2400	-0.0031	-0.52	0.1800	-0.0013	-0.36	OE
8DV9RJ		0.2480	0.0049	0.83	0.1837	0.0024	0.65	IC
8WLLWA		0.2523	0.0093	1.57	0.1863	0.0050	1.38	WD
997KWK		0.2397	-0.0034	-0.57	0.1800	-0.0013	-0.36	OE
9F4C4T		0.2463	0.0033	0.55	0.1823	0.0010	0.28	WD
9PD4W3		0.2392	-0.0039	-0.66	0.1790	-0.0023	-0.63	OE
9X6W2H		0.2437	0.0006	0.10	0.1837	0.0024	0.65	IC
BJD6DJ		0.2400	-0.0031	-0.52	0.1800	-0.0013	-0.36	OE
BRZXWL	*	0.2293	-0.0137	-2.32	0.1777	-0.0036	-1.00	OE
CPPBX8		0.2467	0.0036	0.61	0.1800	-0.0013	-0.36	OE
CTJBNC		0.2450	0.0019	0.33	0.1843	0.0030	0.83	WD
CUNHMC		0.2430	-0.0001	-0.01	0.1803	-0.0010	-0.27	OE
CUUBMR		0.2403	-0.0027	-0.46	0.1800	-0.0013	-0.36	WD
DCC7WY		0.2410	-0.0021	-0.35	0.1790	-0.0023	-0.63	DR
DWVTZE		0.2423	-0.0007	-0.12	0.1783	-0.0030	-0.81	OE
DXLWTL		0.2422	-0.0009	-0.15	0.1795	-0.0018	-0.49	XR
EXFDEA	X	0.0430	-0.2001	-33.77	0.0273	-0.1540	-42.20	OE
F2Q9AW		0.2390	-0.0041	-0.69	0.1837	0.0024	0.65	OE
FA2V3T	X	0.2134	-0.0297	-5.01	0.1590	-0.0223	-6.12	OE
GEY9QL		0.2483	0.0053	0.89	0.1810	-0.0003	-0.08	OE
GRPGLB		0.2453	0.0023	0.38	0.1817	0.0004	0.10	OE
H24GAB		0.2500	0.0069	1.17	0.1860	0.0047	1.29	OE
JKY8EG		0.2400	-0.0031	-0.52	0.1803	-0.0010	-0.27	GD
JMQR92	X	0.2190	-0.0241	-4.06	0.1670	-0.0143	-3.92	GD
JRUUZV	X	0.2607	0.0176	2.97	0.2047	0.0234	6.40	OE
KJDZED		0.2440	0.0009	0.16	0.1820	0.0007	0.19	WD
LNLVKY		0.2430	-0.0001	-0.01	0.1853	0.0040	1.10	GD
MNP883		0.2500	0.0069	1.17	0.1840	0.0027	0.74	OE
NCHC8X		0.2400	-0.0031	-0.52	0.1767	-0.0046	-1.27	OE
NCNW6L		0.2503	0.0073	1.23	0.1853	0.0040	1.10	OE
NKL8KG	*	0.2390	-0.0041	-0.69	0.1723	-0.0090	-2.46	OE
PBPCT7		0.2393	-0.0037	-0.63	0.1770	-0.0043	-1.18	OE
PMK4ZN	X	0.2473	0.0043	0.72	0.1920	0.0107	2.93	OE
Q6QHRW	X	0.2300	-0.0131	-2.20	0.1830	0.0017	0.46	GD
QDN287		0.2412	-0.0019	-0.31	0.1837	0.0024	0.67	OE
QTR9RV		0.2443	0.0013	0.22	0.1817	0.0004	0.10	DR
QZN4UZ		0.2390	-0.0041	-0.69	0.1837	0.0024	0.65	OE
RJX664		0.2477	0.0046	0.78	0.1823	0.0010	0.28	IC
TXACHW		0.2430	-0.0001	-0.01	0.1813	0.0000	0.01	XR
U6D8D9		0.2387	-0.0044	-0.74	0.1787	-0.0026	-0.72	OE
UELRR3		0.2400	-0.0031	-0.52	0.1790	-0.0023	-0.63	WD

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

		Sample M19			Sample M20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
VN9QXJ		0.2434	0.0003	0.06	0.1840	0.0027	0.74	OE
W4HDK2		0.2430	-0.0001	-0.01	0.1790	-0.0023	-0.63	WD
W6LN7X		0.2510	0.0079	1.33	0.1841	0.0028	0.76	WD
W7WHW7		0.2370	-0.0061	-1.02	0.1787	-0.0026	-0.72	OE
WXNUER	*	0.2320	-0.0111	-1.87	0.1807	-0.0006	-0.18	OE
X2U7A6	*	0.2500	0.0069	1.17	0.1900	0.0087	2.38	XX
ZNXP8A		0.2453	0.0023	0.38	0.1827	0.0014	0.37	OE

Summary Statistics

	Sample M19		Sample M20	
Grand Means	0.2431	Percent	0.1813	Percent
Stnd Dev Btwn Labs	0.0059	Percent	0.0036	Percent

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 49 of 56 reporting participants

Comments on assigned Data Flags for Analysis #189

WebCode	Flag	Analyst Comment
3B9E8A	X	Data for sample M19 are high.
EXFDEA	X	Extreme data.
FA2V3T	X	Data for both samples are low.
JMQR92	X	Data for both samples are low.
JRUUZV	X	Data for both samples are high. Inconsistent within the determinations of sample M19.
PMK4ZN	X	Data for sample M20 are high.
Q6QHRW	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.

Cycle 106
2nd Q, 2014

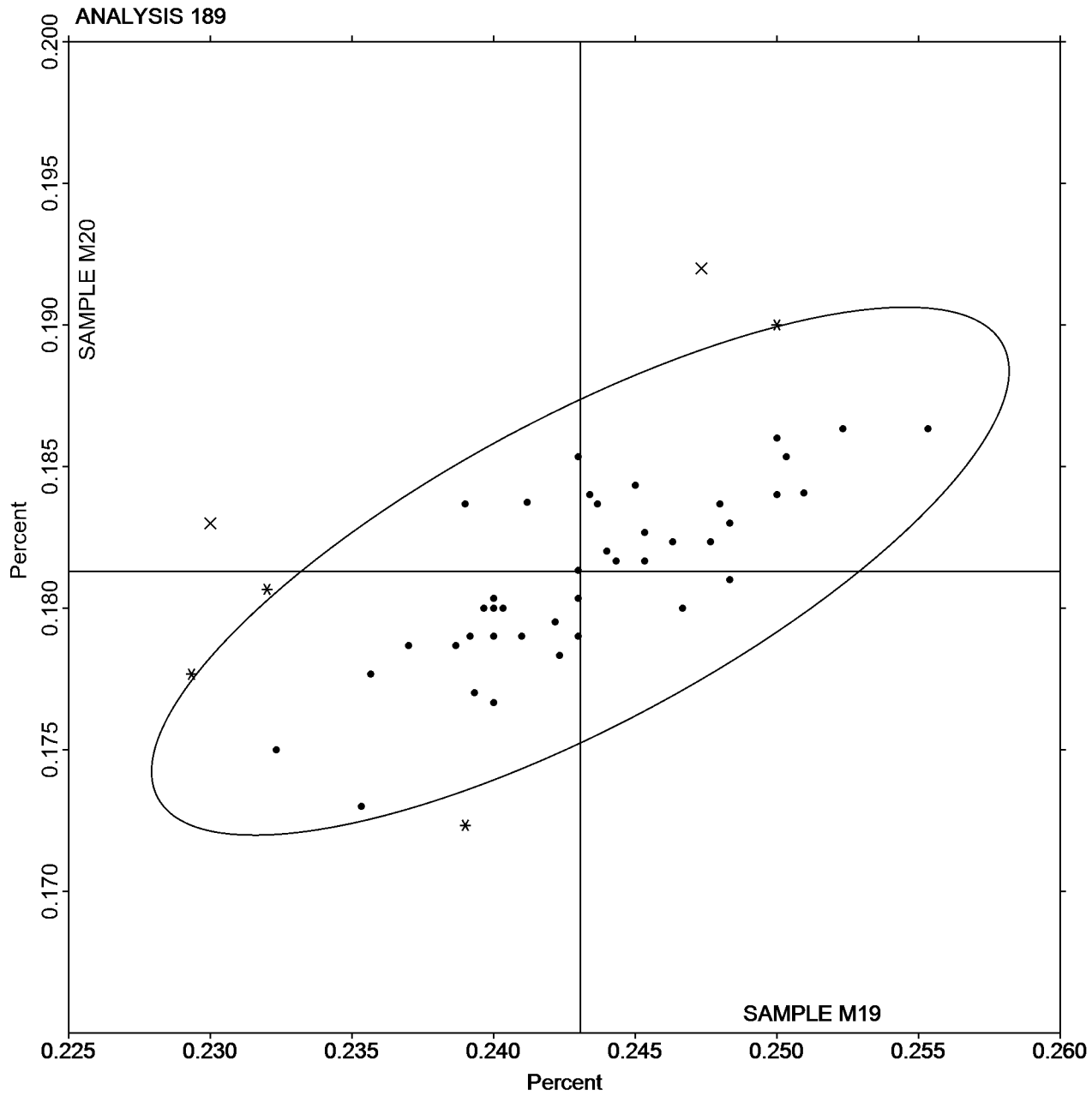
Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

SAMPLE M19
0.2431 Percent

SAMPLE M20
0.1813 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 190

Chemical Analysis Element #1: Aluminum - Percent
TITANIUM (Ti)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.00173	-0.0158	-2.04	0.00163	-0.0149	-2.04	DR
6PFT4G		0.0177	0.0001	0.02	0.0160	-0.0005	-0.07	OE
6W3Z4G		0.0160	-0.0015	-0.20	0.0153	-0.0012	-0.16	OE
78ZDJ9		0.0177	0.0001	0.02	0.0163	-0.0002	-0.03	OE
88NVRZ		0.0183	0.0008	0.10	0.0160	-0.0005	-0.07	GD
8DV9RJ		0.0169	-0.0006	-0.08	0.0158	-0.0007	-0.09	IC
8L83LY		0.0167	-0.0009	-0.11	0.0162	-0.0003	-0.04	OE
8QNB9D		0.0162	-0.0013	-0.17	0.0155	-0.0010	-0.14	OE
CDZC86		0.0178	0.0003	0.04	0.0164	-0.0001	-0.02	OE
DDZ8FM		0.0180	0.0005	0.06	0.0170	0.0005	0.06	OE
E7VVQ4	*	0.0423	0.0248	3.20	0.0397	0.0232	3.18	GD
F2EM4P		0.0179	0.0004	0.05	0.0166	0.0001	0.01	OE
HEBT3C		0.0177	0.0001	0.02	0.0167	0.0002	0.02	OE
PBPCT7		0.0123	-0.0052	-0.67	0.0113	-0.0052	-0.71	OE
UPCAL4		0.0162	-0.0013	-0.17	0.0151	-0.0014	-0.20	IC
X8KBBL	*	0.0171	-0.0005	-0.06	0.0187	0.0022	0.30	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.0175	Percent	0.0165	Percent
Stnd Dev Btwn Labs	0.0077	Percent	0.0073	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

Cycle 106
2nd Q, 2014

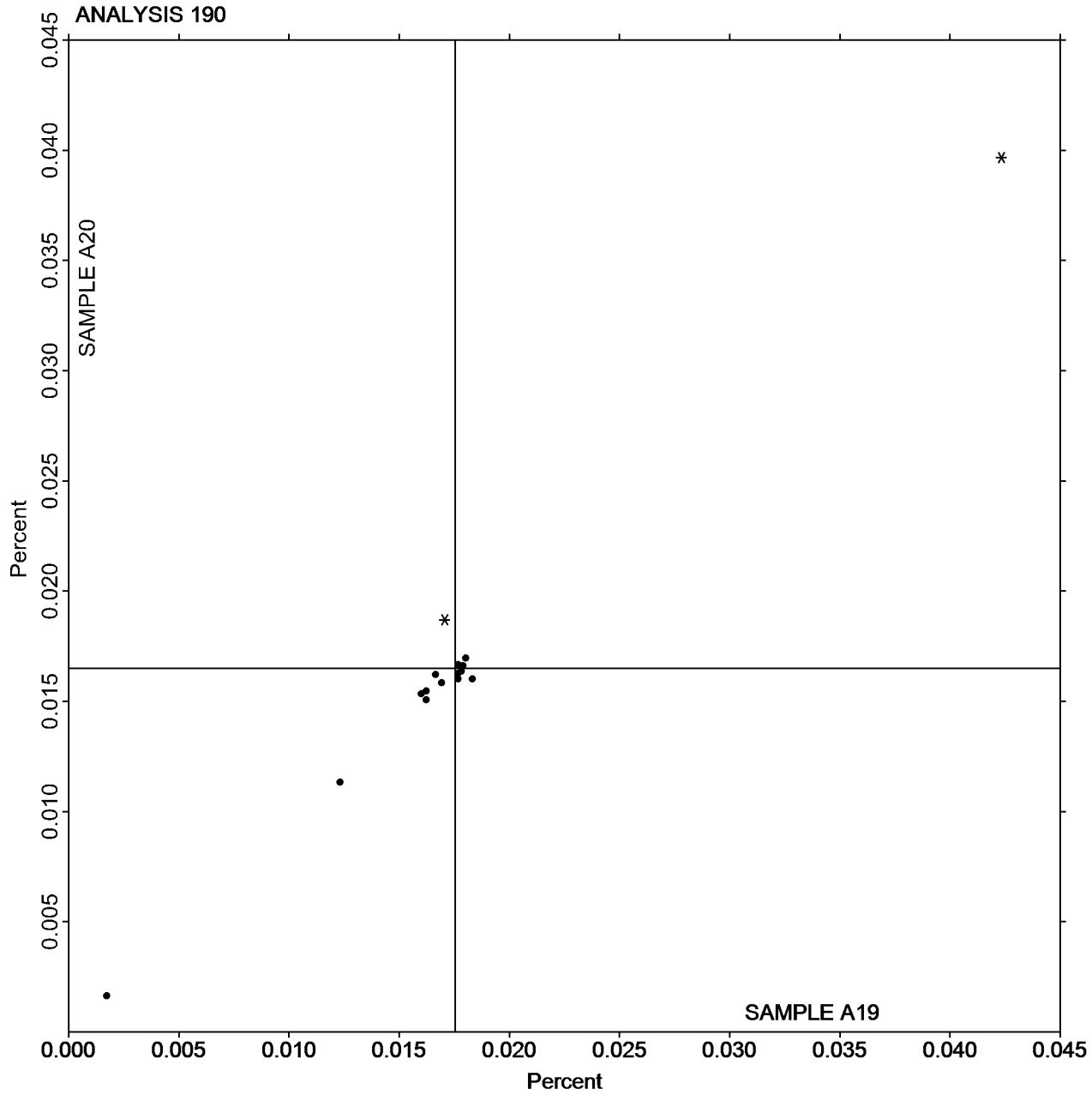
Interlaboratory Testing Program for Metals

Analysis 190

Chemical Analysis Element #1: Aluminum - Percent
TITANIUM (Ti)

SAMPLE A19
0.0175 Percent

SAMPLE A20
0.0165 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 191

Chemical Analysis Element #2: Aluminum - Percent
COPPER (Cu)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.3096	0.0040	0.16	0.2662	0.0015	0.06	DR
6PFT4G		0.3100	0.0045	0.18	0.2700	0.0053	0.22	OE
6W3Z4G		0.3100	0.0045	0.18	0.2700	0.0053	0.22	OE
78ZDJ9		0.3030	-0.0025	-0.10	0.2721	0.0074	0.30	OE
88NVRZ		0.2963	-0.0092	-0.36	0.2727	0.0080	0.33	GD
8DV9RJ		0.3050	-0.0005	-0.02	0.2590	-0.0057	-0.23	IC
8L83LY		0.2977	-0.0079	-0.31	0.2597	-0.0051	-0.21	OE
8QNB9D		0.3304	0.0248	0.98	0.2852	0.0205	0.84	OE
CDZC86		0.3116	0.0061	0.24	0.2736	0.0089	0.36	OE
DDZ8FM	*	0.2275	-0.0780	-3.09	0.1980	-0.0667	-2.74	OE
E7VVQ4		0.3250	0.0195	0.77	0.2823	0.0176	0.72	GD
F2EM4P		0.3087	0.0031	0.12	0.2673	0.0026	0.11	OE
HEBT3C		0.3010	-0.0045	-0.18	0.2610	-0.0037	-0.15	OE
PBPCT7		0.3483	0.0428	1.70	0.3110	0.0463	1.90	OE
UPCAL4		0.2889	-0.0166	-0.66	0.2574	-0.0073	-0.30	IC
X8KBBL	*	0.3153	0.0098	0.39	0.2300	-0.0347	-1.42	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.3055	Percent	0.2647	Percent
Stnd Dev Btwn Labs	0.0252	Percent	0.0244	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

Cycle 106
2nd Q, 2014

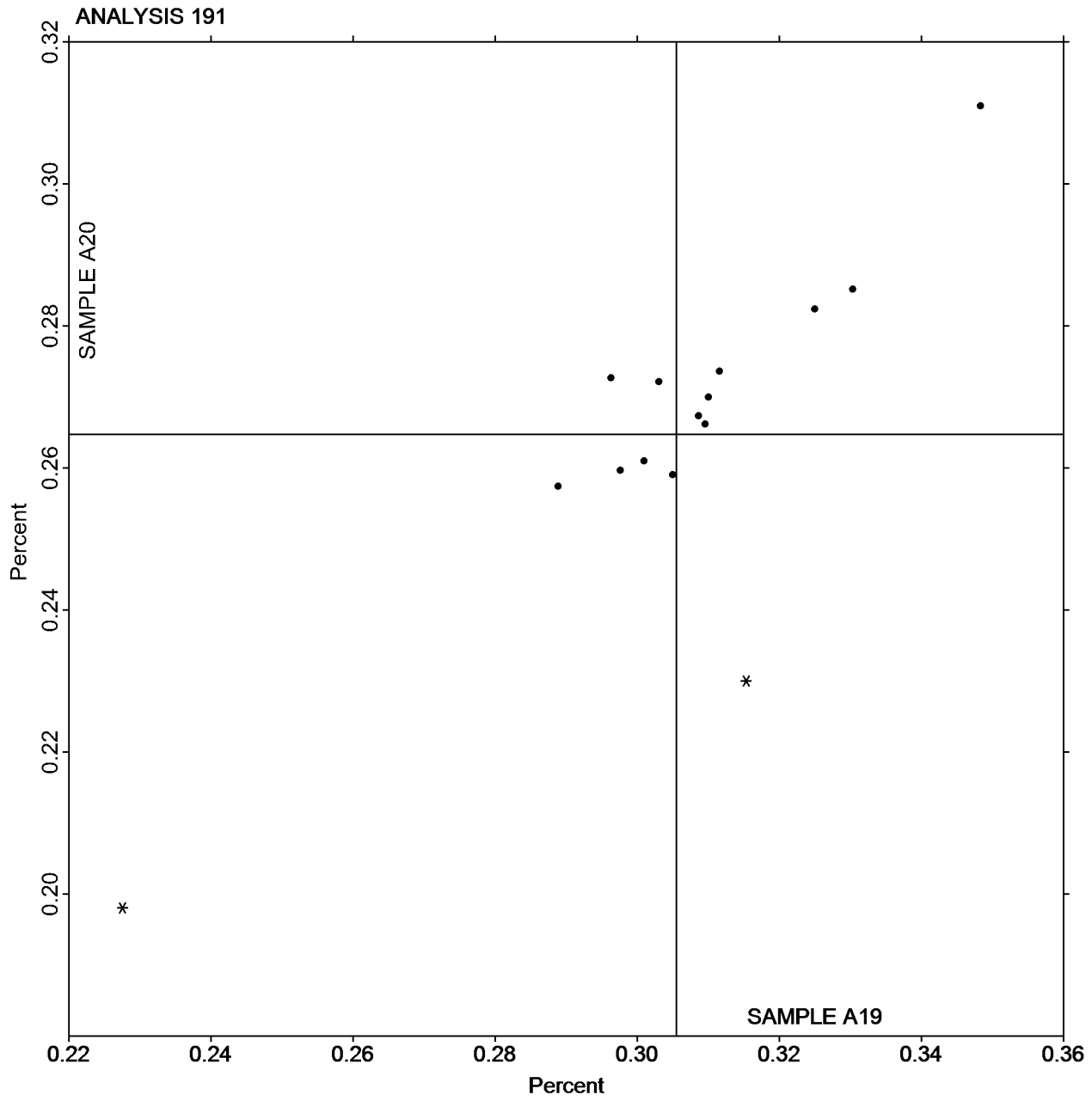
Interlaboratory Testing Program for Metals

Analysis 191

Chemical Analysis Element #2: Aluminum - Percent
COPPER (Cu)

SAMPLE A19
0.3055 Percent

SAMPLE A20
0.2647 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 192

Chemical Analysis Element #3: Aluminum - Percent
IRON (Fe)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.5330	-0.0059	-0.17	0.3054	-0.0036	-0.20	DR
6PFT4G		0.5567	0.0178	0.52	0.3200	0.0110	0.60	OE
6W3Z4G		0.5300	-0.0089	-0.26	0.3100	0.0010	0.05	OE
78ZDJ9		0.5155	-0.0234	-0.68	0.3123	0.0033	0.18	OE
88NVRZ		0.6090	0.0701	2.04	0.3100	0.0010	0.05	GD
8DV9RJ		0.5187	-0.0202	-0.59	0.3060	-0.0030	-0.17	IC
8L83LY		0.5527	0.0138	0.40	0.3157	0.0067	0.37	OE
8QNB9D		0.5462	0.0073	0.21	0.3165	0.0075	0.41	OE
CDZC86		0.5077	-0.0312	-0.91	0.2987	-0.0103	-0.57	OE
DDZ8FM		0.5893	0.0504	1.47	0.3286	0.0196	1.08	OE
E7VVQ4		0.5457	0.0068	0.20	0.3327	0.0237	1.30	GD
F2EM4P		0.5467	0.0078	0.23	0.3137	0.0047	0.26	OE
HEBT3C		0.5153	-0.0236	-0.69	0.3043	-0.0047	-0.26	OE
PBPCT7		0.4643	-0.0746	-2.17	0.3097	0.0007	0.04	OE
X8KBBL	*	0.5530	0.0141	0.41	0.2517	-0.0573	-3.15	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.5389	Percent	0.3090	Percent
Stnd Dev Btwn Labs	0.0343	Percent	0.0182	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

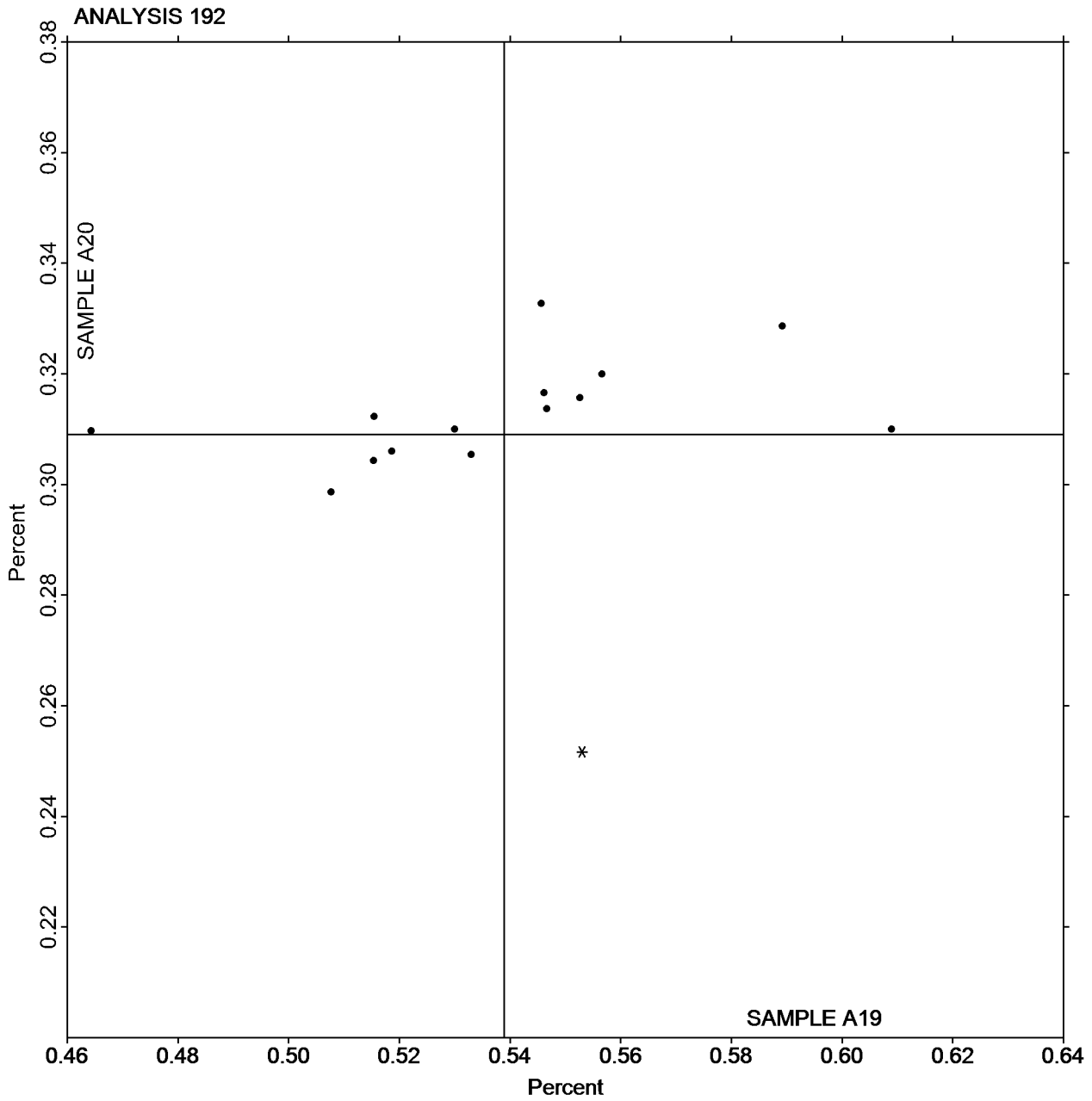
Interlaboratory Testing Program for Metals

Analysis 192

Chemical Analysis Element #3: Aluminum - Percent
IRON (Fe)

SAMPLE A19
0.5389 Percent

SAMPLE A20
0.3090 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 193

Chemical Analysis Element #4: Aluminum - Percent
SILICON (Si)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.6100	0.0035	0.11	0.7013	-0.0008	-0.02	DR
6PFT4G		0.6167	0.0101	0.31	0.7200	0.0178	0.46	OE
6W3Z4G		0.6100	0.0035	0.11	0.7100	0.0078	0.20	OE
78ZDJ9		0.6102	0.0037	0.11	0.7047	0.0025	0.06	OE
88NVRZ		0.6293	0.0228	0.69	0.7287	0.0265	0.68	GD
8DV9RJ		0.6280	0.0215	0.65	0.7380	0.0358	0.92	IC
8L83LY		0.6210	0.0145	0.44	0.7187	0.0165	0.42	OE
8QNB9D		0.6220	0.0154	0.47	0.7061	0.0040	0.10	OE
CDZC86		0.5994	-0.0071	-0.22	0.6985	-0.0037	-0.09	OE
DDZ8FM	*	0.4912	-0.1153	-3.49	0.5670	-0.1351	-3.46	OE
E7VVQ4		0.6067	0.0001	0.00	0.6967	-0.0055	-0.14	GD
F2EM4P		0.6040	-0.0025	-0.08	0.7043	0.0022	0.06	OE
HEBT3C		0.6207	0.0141	0.43	0.7167	0.0145	0.37	OE
PBPCT7		0.6167	0.0101	0.31	0.7067	0.0045	0.12	OE
X8KBBL		0.6120	0.0055	0.17	0.7150	0.0128	0.33	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.6065	Percent	0.7022	Percent
Stnd Dev Btwn Labs	0.0330	Percent	0.0391	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

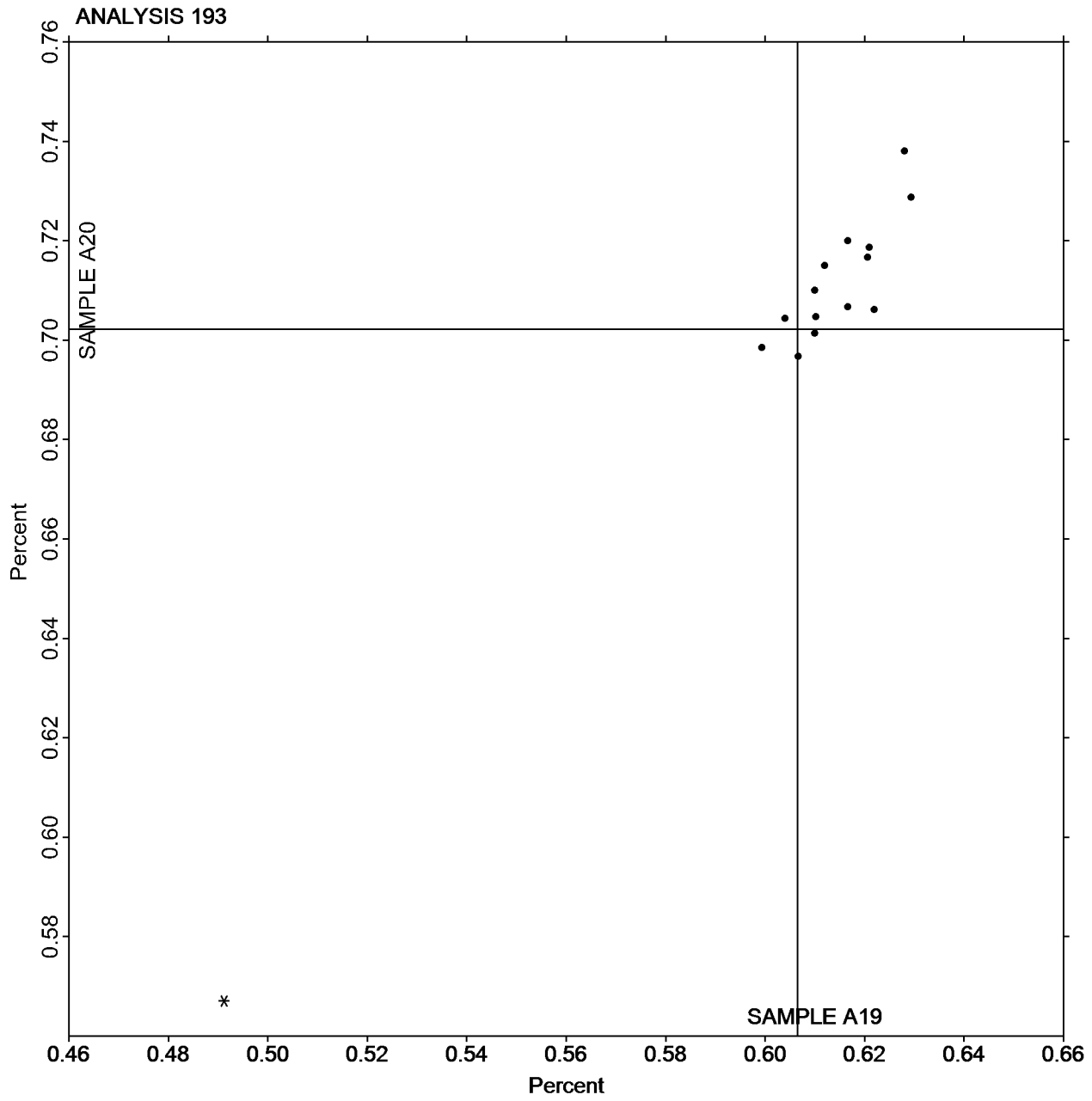
Interlaboratory Testing Program for Metals

Analysis 193

Chemical Analysis Element #4: Aluminum - Percent
SILICON (Si)

SAMPLE A19
0.6065 Percent

SAMPLE A20
0.7022 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 194

Chemical Analysis Element #5: Aluminum - Percent
MANGANESE (Mn)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.1089	-0.0002	-0.07	0.1047	0.0006	0.16	DR
6PFT4G		0.1090	-0.0001	-0.03	0.1040	-0.0001	-0.04	OE
6W3Z4G		0.1100	0.0009	0.30	0.1000	-0.0041	-1.16	OE
78ZDJ9		0.1045	-0.0046	-1.51	0.0998	-0.0044	-1.22	OE
88NVRZ		0.1097	0.0006	0.19	0.1053	0.0012	0.34	GD
8DV9RJ		0.1090	-0.0001	-0.03	0.1040	-0.0001	-0.04	IC
8L83LY		0.1060	-0.0031	-1.01	0.1000	-0.0041	-1.16	OE
8QNB9D		0.1064	-0.0026	-0.86	0.1009	-0.0032	-0.91	OE
CDZC86		0.1059	-0.0032	-1.05	0.1022	-0.0020	-0.55	OE
DDZ8FM		0.1083	-0.0007	-0.24	0.1013	-0.0029	-0.80	OE
E7VVQ4		0.1177	0.0086	2.80	0.1130	0.0089	2.49	GD
F2EM4P		0.1097	0.0006	0.19	0.1043	0.0002	0.06	OE
HEBT3C		0.1113	0.0023	0.74	0.1067	0.0025	0.71	OE
PBPCT7		0.1110	0.0019	0.63	0.1090	0.0049	1.37	OE
UPCAL4		0.1110	0.0019	0.62	0.1059	0.0018	0.51	IC
X8KBBL		0.1070	-0.0021	-0.68	0.1050	0.0009	0.24	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.1091	Percent	0.1041	Percent
Stnd Dev Btwn Labs	0.0031	Percent	0.0036	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

Cycle 106
2nd Q, 2014

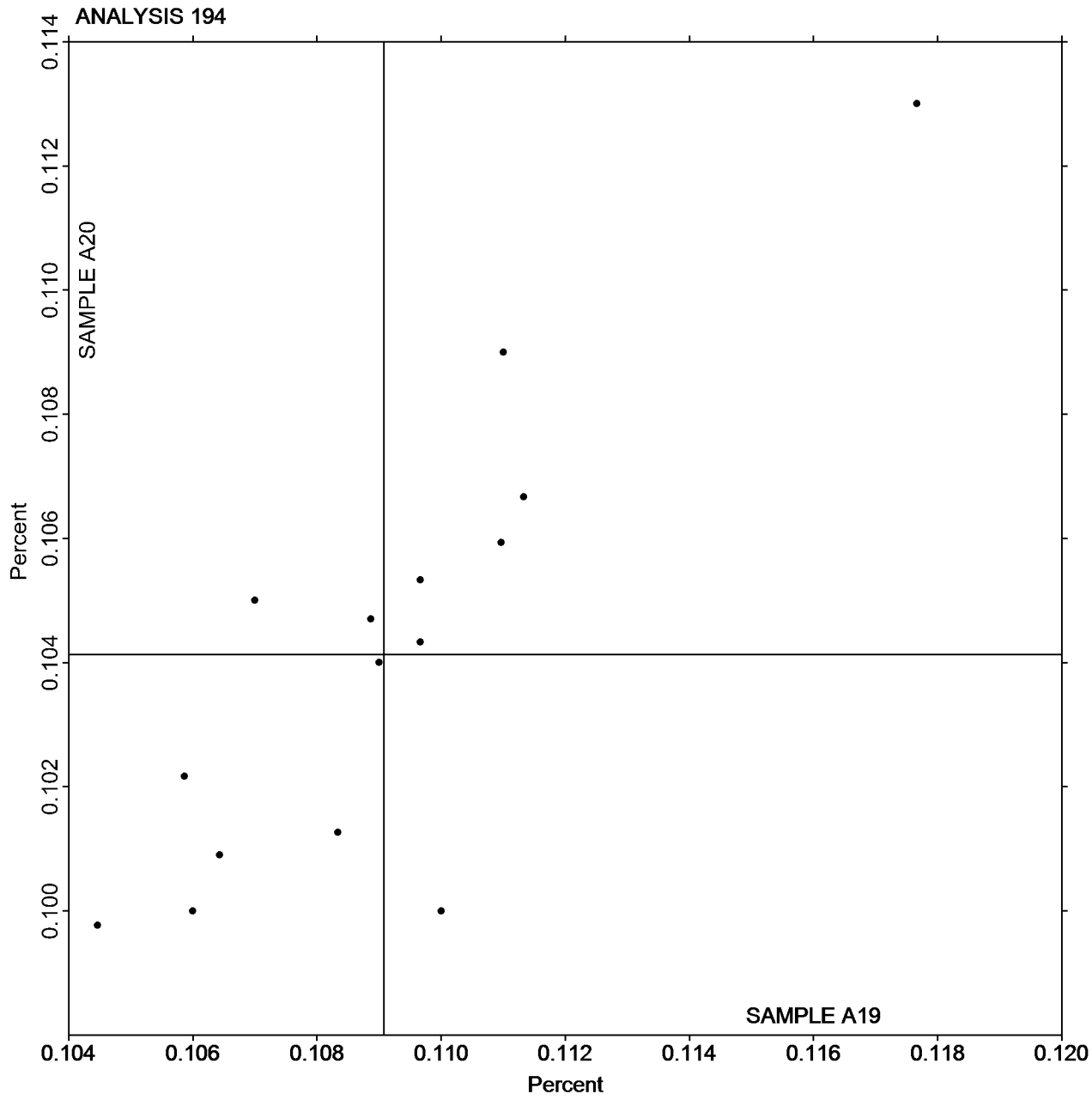
Interlaboratory Testing Program for Metals

Analysis 194

Chemical Analysis Element #5: Aluminum - Percent
MANGANESE (Mn)

SAMPLE A19
0.1091 Percent

SAMPLE A20
0.1041 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 195

Chemical Analysis Element #6: Aluminum - Percent
MAGNESIUM (Mg)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.8507	0.0252	0.42	0.8749	0.0078	0.12	DR
6PFT4G		0.8300	0.0045	0.07	0.8733	0.0062	0.09	OE
6W3Z4G		0.8433	0.0178	0.29	0.8767	0.0095	0.15	OE
78ZDJ9		0.8497	0.0241	0.40	0.8884	0.0213	0.33	OE
88NVRZ		0.8457	0.0201	0.33	0.9010	0.0338	0.52	GD
8DV9RJ		0.8480	0.0225	0.37	0.8990	0.0318	0.49	IC
8L83LY		0.7673	-0.0582	-0.96	0.8050	-0.0622	-0.96	OE
8QNB9D		0.8726	0.0471	0.78	0.9226	0.0554	0.85	OE
CDZC86		0.8286	0.0031	0.05	0.8647	-0.0025	-0.04	OE
DDZ8FM		0.8354	0.0099	0.16	0.8791	0.0119	0.18	OE
E7VVQ4		0.8560	0.0305	0.50	0.9047	0.0375	0.58	GD
F2EM4P		0.8283	0.0028	0.05	0.8687	0.0015	0.02	OE
HEBT3C		0.8597	0.0341	0.56	0.9033	0.0362	0.56	OE
PBPCT7		0.8433	0.0178	0.29	0.8933	0.0262	0.40	OE
X8KBBL	*	0.6240	-0.2015	-3.33	0.6530	-0.2142	-3.29	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.8255	Percent	0.8672	Percent
Stnd Dev Btwn Labs	0.0605	Percent	0.0650	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

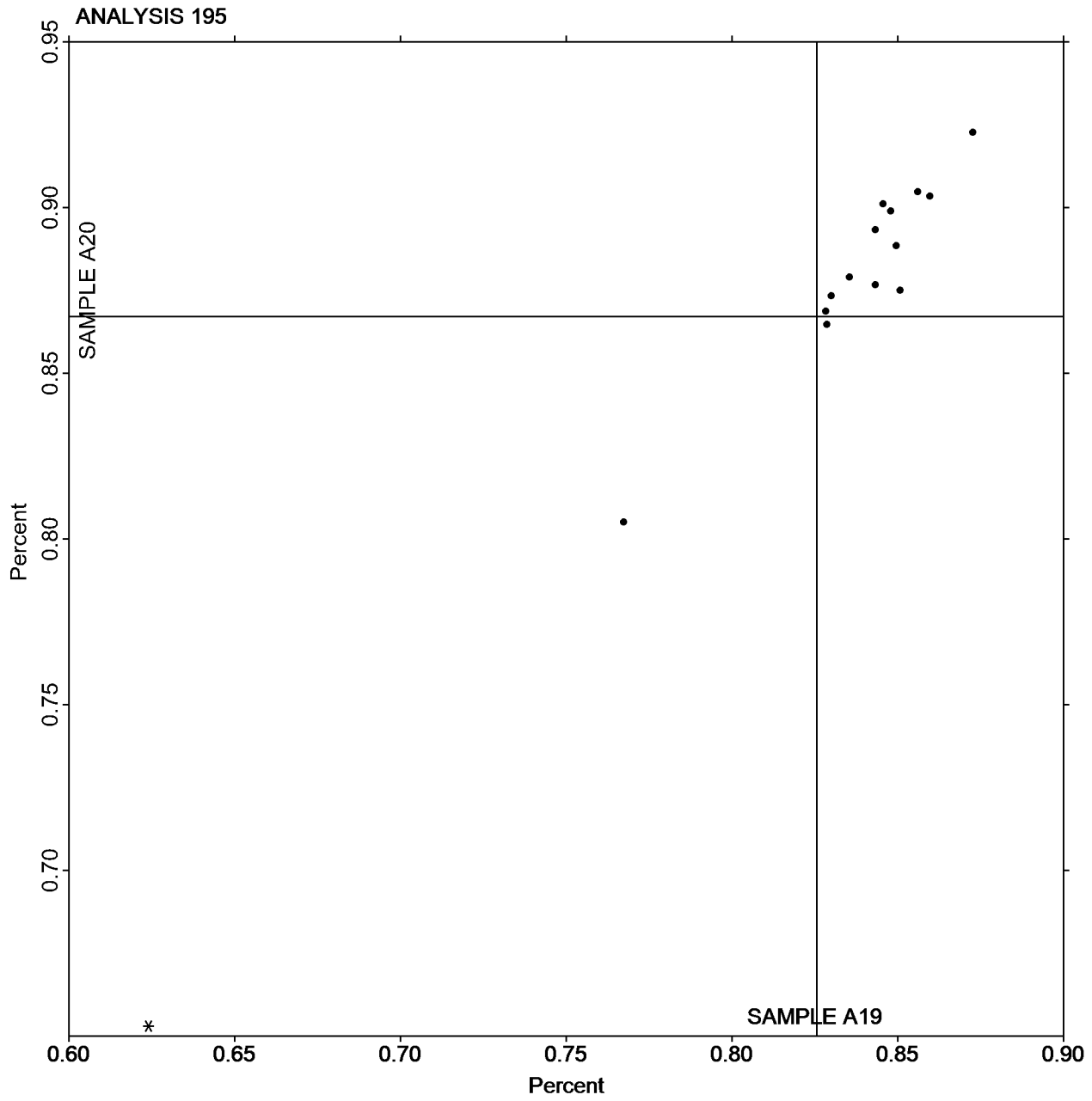
Interlaboratory Testing Program for Metals

Analysis 195

Chemical Analysis Element #6: Aluminum - Percent
MAGNESIUM (Mg)

SAMPLE A19
0.8255 Percent

SAMPLE A20
0.8672 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 196

Chemical Analysis Element #7: Aluminum - Percent
CHROMIUM (Cr)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.1073	0.0094	1.42	0.1095	0.0088	1.14	DR
6PFT4G		0.1000	0.0021	0.32	0.1000	-0.0007	-0.09	OE
6W3Z4G		0.1020	0.0041	0.62	0.1067	0.0059	0.77	OE
78ZDJ9		0.1036	0.0057	0.86	0.1072	0.0065	0.84	OE
88NVRZ		0.0970	-0.0009	-0.14	0.0997	-0.0011	-0.14	GD
8DV9RJ		0.0950	-0.0029	-0.44	0.0987	-0.0021	-0.27	IC
8L83LY	*	0.0970	-0.0009	-0.14	0.0879	-0.0128	-1.66	OE
8QNB9D		0.0998	0.0019	0.29	0.1029	0.0021	0.28	OE
CDZC86		0.0997	0.0018	0.28	0.1045	0.0037	0.49	OE
DDZ8FM		0.0975	-0.0004	-0.06	0.1019	0.0012	0.16	OE
E7VVQ4		0.1063	0.0084	1.27	0.1120	0.0113	1.46	GD
F2EM4P		0.0933	-0.0046	-0.69	0.0982	-0.0025	-0.33	OE
HEBT3C		0.0987	0.0008	0.12	0.1037	0.0029	0.38	OE
PBPCT7		0.0913	-0.0066	-0.99	0.0950	-0.0057	-0.74	OE
X8KBBL		0.0800	-0.0179	-2.70	0.0830	-0.0177	-2.30	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.0979	Percent	0.1007	Percent
Stnd Dev Btwn Labs	0.0066	Percent	0.0077	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

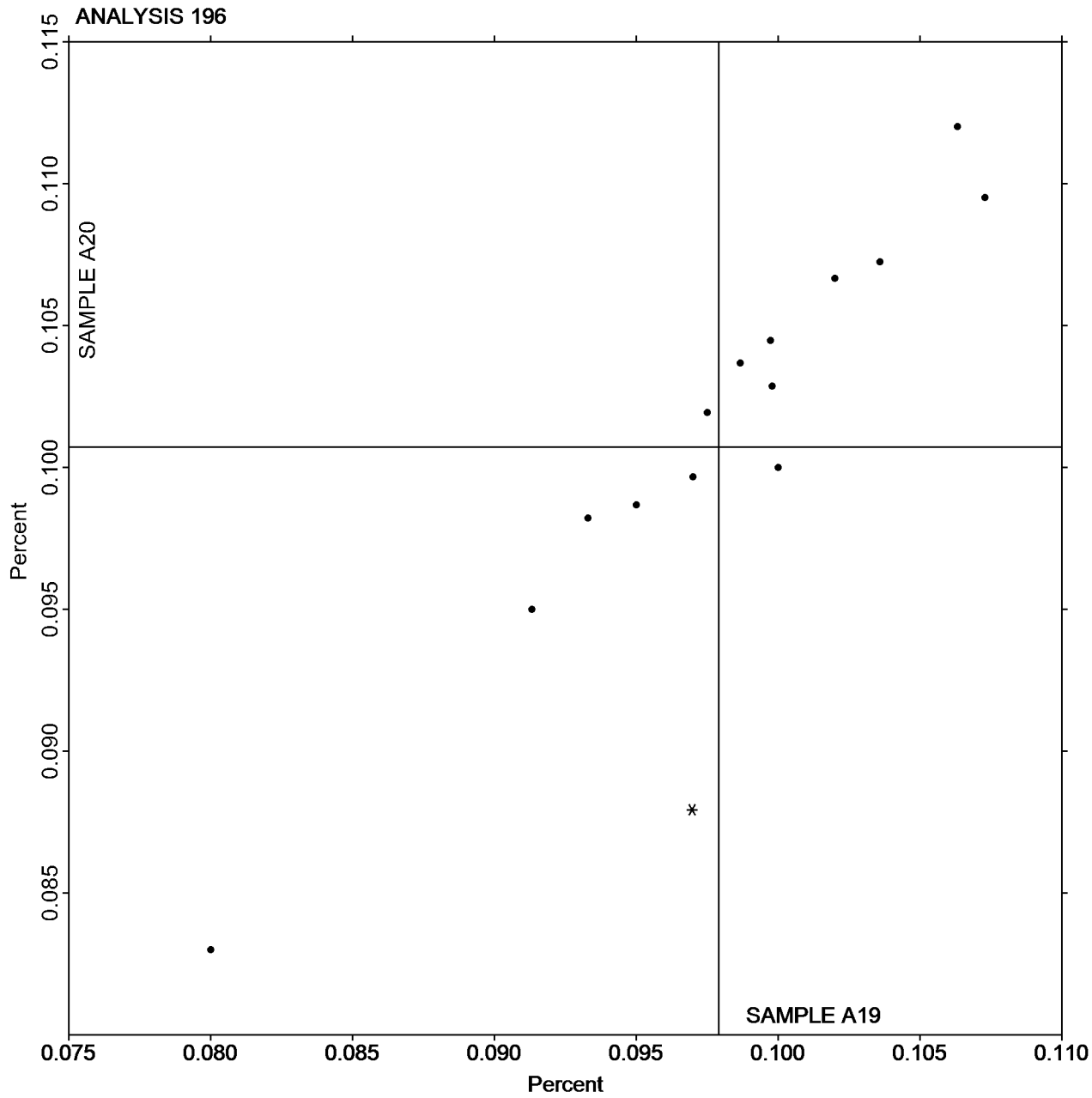
Interlaboratory Testing Program for Metals

Analysis 196

Chemical Analysis Element #7: Aluminum - Percent
CHROMIUM (Cr)

SAMPLE A19
0.0979 Percent

SAMPLE A20
0.1007 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 197

Chemical Analysis Element #8: Aluminum - Percent
VANADIUM (V)

		Sample A19			Sample A20			
WebCode	**Data Flag**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Lab Mean**	**Diff. from Grand Mean**	**CPV**	**Instr Code**
2Z9NQ9		0.00893	-0.0013	-0.58	0.0115	-0.0010	-0.55	DR
6W3Z4G		0.00900	-0.0013	-0.55	0.0110	-0.0015	-0.84	OE
78ZDJ9		0.00873	-0.0015	-0.66	0.0109	-0.0016	-0.88	OE
88NVRZ		0.0113	0.0011	0.47	0.0130	0.0005	0.26	GD
8DV9RJ		0.00913	-0.0011	-0.49	0.0117	-0.0009	-0.48	IC
8QNB9D		0.0101	-0.0001	-0.05	0.0124	-0.0001	-0.05	OE
CDZC86		0.00907	-0.0012	-0.52	0.0112	-0.0013	-0.71	OE
DDZ8FM		0.0114	0.0011	0.49	0.0145	0.0019	1.06	OE
E7VVQ4	*	0.0177	0.0074	3.24	0.0180	0.0055	3.00	GD
F2EM4P		0.00960	-0.0007	-0.29	0.0121	-0.0005	-0.26	XX
HEBT3C		0.00967	-0.0006	-0.26	0.0127	0.0002	0.11	OE
PBPCT7		0.00947	-0.0008	-0.34	0.0120	-0.0005	-0.29	OE
UPCAL4		0.00923	-0.0010	-0.45	0.0118	-0.0007	-0.38	IC
X8KBBL		0.0102	0.0000	-0.01	0.0126	0.0000	0.02	OE

Summary Statistics

	Sample A19		Sample A20	
Grand Means	0.0103	Percent	0.0125	Percent
Stnd Dev Btwn Labs	0.0023	Percent	0.0018	Percent

Samples A19 , A20 : AA6061, two different heats

Statistics based on 14 of 14 reporting participants

Cycle 106
2nd Q, 2014

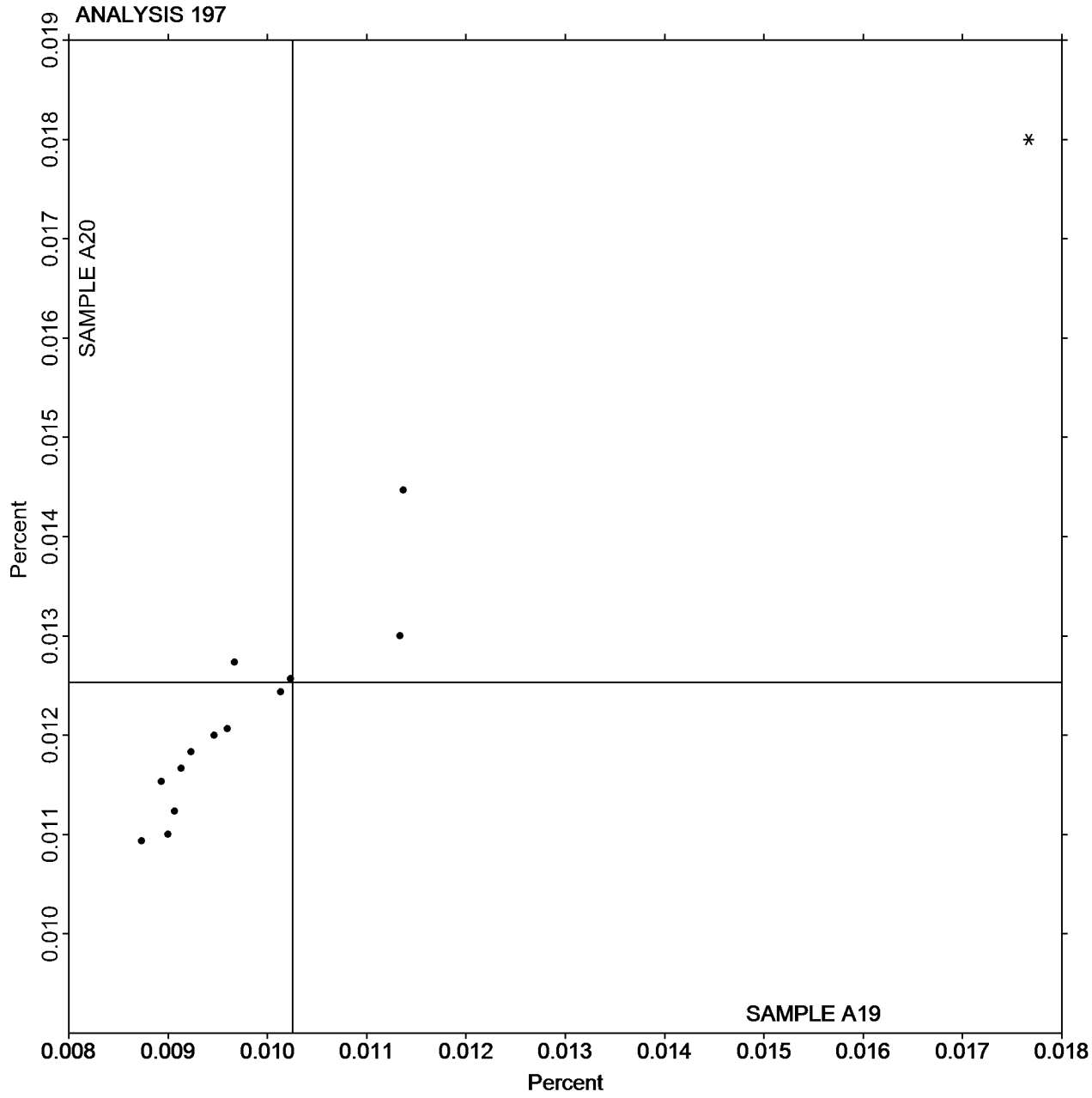
Interlaboratory Testing Program for Metals

Analysis 197

Chemical Analysis Element #8: Aluminum - Percent
VANADIUM (V)

SAMPLE A19
0.0103 Percent

SAMPLE A20
0.0125 Percent



Instrument and Method Code List - Cycle 106

Instrument and Method information as provided by laboratories

115: Fastener Wedge Tensile (10 degree) - ASTM F606

Instrument code	Description
BA	Baldwin
CH	Chun Yen Testing Machines
FI	Fuel Instruments & Engineers
GA	Galdabini
IN	Instron
MT	MTS / Sintech
RI	Riehle Test System
SA	Satec
SH	Shimadzu
TO	Tinius Olsen
UN	United Testing Systems
UT	UNIVERSAL TESTING MACHINE
XX	Instrument manufacturer not specified by lab

116: Fastener Axial Tensile - ASTM F606

Instrument code	Description
BA	Baldwin
CH	Chun Yen Testing Machines
FI	Fuel Instruments & Engineers
GA	Galdabini
IN	Instron
MT	MTS / Sintech
RI	Riehle Test System
SA	Satec
SH	Shimadzu
TO	Tinius Olsen
TR	Tinius Olsen with retrofit
UN	United Testing Systems
UT	UNIVERSAL TESTING MACHINE
XX	Instrument manufacturer not specified by lab

118: Rockwell Hardness: C & B Scales - ASTM E18

Instrument code	Description
CL	Clark
EM	EMCO
IN	Indentec
LE	Leco
MA	Matsuzawa
MI	Mitutoyo
NA	New Age Industries
PH	Phase II
TI	Tinius Olsen
UN	United Testing Systems
WI	Wilson / Instron Instruments
XX	Instrument manufacturer not specified by lab

120: Rockwell Hardness: C Scale - ASTM E18

Instrument code	Description
BU	Buehler
CL	Clark
EM	EMCO
FU	Future-Tech
IN	Indentec
LE	Leco
MA	Matsuzawa
MI	Mitutoyo
NA	New Age Industries
RO	Rockwell Tester
UN	United Testing Systems
WI	Wilson / Instron Instruments
WO	Wolpert Tester
XX	Instrument manufacturer not specified by lab

125: Rockwell Hardness: Externally Threaded Fasteners - ASTM F606/F606M AND ASTM E18

Instrument code	Description
AK	Akashi
AN	Antonik
BU	Buehler
CL	Clark
EM	EMCO
FR	Frank Well
FT	Future-Tech
HT	Hoytom
IN	Indentec
KF	Karl Frank GmbH
LE	Leco
MI	Mitutoyo
NA	New Age Industries
PH	Phase II
RS	Reicherter/C.Stiefelmayer Briro
SP	Service Physical Tester
TG	Time Group
UN	United Testing Systems
WI	Wilson / Instron Instruments
WO	Wolpert Tester
XX	Instrument manufacturer not specified by lab

126: Vickers Hardness: Externally Threaded Fasteners - ASTM E384

Instrument code	Description
AK	Akashi
AR	Vickers Armstrongs hardness tester
AV	Avery Denison
BU	Buehler, Ltd.
CL	Clark
EM	EMCO
FU	Future-Tech
GN	Albert Gnehm
LE	Leco
MI	Mitutoyo
SH	Shimadzu
ST	Struers
WO	Wolpert Tester
XX	Instrument manufacturer not specified by lab

127: Fastener Wedge Tensile (10 degree) - Metric - ASTM F606M

Instrument code	Description
BA	Baldwin
HP	Hegewald & Peschke
IN	Instron
LO	Losenhausen
MF	MFL Systeme
RO	Roell & Korthaus
SA	Satec
ST	Schenck-Trebel
TO	Tinius Olsen
UN	United Testing Systems
WB	Walter + Bai
WZ	Zwick
XX	Instrument manufacturer not specified by lab

128: Fastener Axial Tensile - Metric - ASTM F606M

Instrument code	Description
BA	Baldwin
HT	Hung Ta Instrument
LO	Losenhausen
RO	Roell & Korthaus
ST	Schenck-Trebel
TO	Tinius Olsen
WB	Walter + Bai
XX	Instrument manufacturer not specified by lab

129: Fastener Double Shear - NASM 1312-13

Instrument code	Description
BA	Baldwin
IN	Instron
MT	MTS / Sintech
RI	Riehle Test System
SA	Satec
SH	Shimadzu
TO	Tinius Olsen
TR	Tinius Olsen with retrofit
XX	Instrument manufacturer not specified by lab

130: Tensile Strength: Lab-Machined Flat Steel - ASTM E8

Instrument code	Description
ZZ	Instruments No Longer Tracked
ZZ	Instruments No Longer Tracked
ZZ	Instruments No Longer Tracked

136: Rockwell Superficial Hardness (30N Scale) - ASTM E18

Instrument code	Description
AN	Antonik
BU	Buehler
CL	Clark
FT	Future-Tech
LE	Leco
MI	Mitutoyo
NA	New Age Industries
UN	United Testing Systems
WI	Wilson / Instron Instruments
XX	Instrument manufacturer not specified by lab

145: Total Case Depth - SAE J423, SAE J78

Instrument code	Description
BR	Brinell Glass
BU	Buehler, Ltd.
CM	Clemex
LC	Leica
LE	Leco
LI	Leitz
NE	Nikon Eclipse
NI	Nikon Epiphot
NP	Neophot 21
NX	Nikon (model not specified)
OG	Olympus PMG
OI	Olympus IX70
OL	Olympus PME
ON	Olympus (model not specified)
OX	Olympus GX71
RE	Reichert-Jung MeF3
RP	Reichert-Jung Polyvar

145: Total Case Depth - SAE J423, SAE J78

Instrument code	Description
WT	Wilson-Tukon
XX	Instrument manufacturer not specified by lab
ZA	Zeiss Axiovert
ZE	Zeiss Jenaplan
ZI	Zeiss Imager
ZT	Zeiss Axiotech
ZX	Zeiss (model not specified)

146: Effective Case Depth - SAE J423, SAE J78

Instrument code	Description
BU	Buehler, Ltd.
CL	Clark
CM	Clemex
ED	Emco Durascan
LE	Leco
MA	Matsuzawa
MI	Mitutoyo
NA	New Age
SH	Shimadzu
ST	Struers
WT	Wilson-Tukon
WZ	Zwick
XX	Instrument manufacturer not specified by lab

147: Grain Size (Stainless Steel) - ASTM E112, ASTM E1382

Instrument code	Description
XX	Instrument manufacturer not specified by lab

150: Nickel-based Alloy, Element #1 - CHROMIUM (Cr)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

151: Nickel-based Alloy, Element #2 - NIOBIUM (Nb)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element

152: Nickel-based Alloy, Element #3 - IRON (Fe)

Instrument code	Description
BD	By Difference
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

153: Nickel-based Alloy, Element #4 - MOLYBDENUM (Mo)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

154: Nickel-based Alloy, Element #5 - ALUMINUM (Al)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

155: Nickel-based Alloy, Element #6 - SILICON (Si)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element

156: Nickel-based Alloy, Element #7 - TITANIUM (Ti)

Instrument code	Description
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

157: Nickel-based Alloy, Element #8 - NICKEL (Ni)

Instrument code	Description
BD	By Difference
DR	Spectrometry - Direct Reading OE (DROES)
ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element

180: Corrosion Resistant Steel, Element #1 - CARBON (C)

Method Code	Description
CI	Combustion / IR
CO	Combustion
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
OE	Spectrometry - Optical Emission (OES)

181: Corrosion Resistant Steel, Element #2 - MANGANESE (Mn)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

182: Corrosion Resistant Steel, Element #3 - PHOSPHORUS (P)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WC	Wet Chemistry
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

183: Corrosion Resistant Steel, Element #4 - SULFUR (S)

Method Code	Description
CI	Combustion / IR
CO	Combustion
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)

184: Corrosion Resistant Steel, Element #5 - SILICON (Si)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
GR	Gravimetry
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

185: Corrosion Resistant Steel, Element #6 - COPPER (Cu)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

186: Corrosion Resistant Steel, Element #7 - NICKEL (Ni)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WC	Wet Chemistry
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element

187: Corrosion Resistant Steel, Element #8 - CHROMIUM (Cr)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
TI	Titrimetry
WC	Wet Chemistry
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

188: Corrosion Resistant Steel, Element #9 - MOLYBDENUM (Mo)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified

189: Corrosion Resistant Steel, Element #10 - COBOLT (Co)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element

190: Aluminum, Element #1 - TITANIUM (Ti)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

191: Aluminum, Element #2 - COPPER (Cu)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

192: Aluminum, Element #3 - IRON (Fe)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

193: Aluminum, Element #4 - SILICON (Si)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

194: Aluminum, Element #5 - MANGANESE (Mn)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

195: Aluminum, Element #6 - MAGNESIUM (Mg)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

196: Aluminum, Element #7 - CHROMIUM (Cr)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)

197: Aluminum, Element #8 - VANADIUM (V)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element