



Fasteners & Metals Testing Program

Summary Report # 86 - 2nd Q 2009

[About the Metals Program](#), [About CTS](#)

[Key to Tables and Graphs](#)

Analysis

Analysis Name

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

Tensile Tests

130	Tensile Strength (Flat Steel)
131	Yield Strength (Flat Steel)
132	Elongation (Flat Steel)

Hardness Tests

118	Rockwell Hardness (C Scale)
120	Rockwell Hardness (C Scale)
136	Rockwell Superficial Hardness (30N Scale)
145	Total Case Depth
146	Effective Case Depth

Chemical Analysis - Nickel-Based Alloy

150	Chemical Analysis: Nickel-based Alloy (Cr)
151	Chemical Analysis: Nickel-based Alloy (Mn)
152	Chemical Analysis: Nickel-based Alloy (Fe)
153	Chemical Analysis: Nickel-based Alloy (Mo)
154	Chemical Analysis: Nickel-based Alloy (Al)
155	Chemical Analysis: Nickel-based Alloy (Si)
156	Chemical Analysis: Nickel-based Alloy (Ti)
157	Chemical Analysis: Nickel-based Alloy (Nb)

Chemical Analysis - Corrosion Resistant Steel

180	Chemical Analysis: Corrosion Resistant Steel (C)
181	Chemical Analysis: Corrosion Resistant Steel (Mn)
182	Chemical Analysis: Corrosion Resistant Steel (P)
183	Chemical Analysis: Corrosion Resistant Steel (Co)
184	Chemical Analysis: Corrosion Resistant Steel (Si)
185	Chemical Analysis: Corrosion Resistant Steel (Cu)
186	Chemical Analysis: Corrosion Resistant Steel (Ni)
187	Chemical Analysis: Corrosion Resistant Steel (Cr)
188	Chemical Analysis: Corrosion Resistant Steel (Mo)
189	Chemical Analysis: Corrosion Resistant Steel (N)

[Instrument and Method Code List](#)

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.

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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 web site.
- 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 Flag	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 except Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data is excluded.
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.

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

WebCode	Data Flag	Sample X77			Sample X78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
144T9D		165.83	-0.13	-0.11	168.41	2.31	1.43	TO
19BQXE		166.87	0.91	0.75	168.87	2.77	1.71	SA
1YJNU5		165.43	-0.53	-0.43	164.90	-1.20	-0.74	SA
2CDGWX		165.90	-0.06	-0.05	166.80	0.70	0.43	TO
2JUKRM		163.80	-2.16	-1.78	165.00	-1.10	-0.68	TO
328SP9		166.40	0.44	0.36	165.43	-0.66	-0.41	XX
3867SE		165.27	-0.69	-0.57	166.90	0.80	0.50	SA
3MB551	X	168.53	2.57	2.12	164.43	-1.66	-1.03	TO
3SMSZA		166.97	1.01	0.83	165.00	-1.10	-0.68	TO
4B6K57		166.73	0.77	0.64	168.47	2.37	1.46	TO
4CPYYG		163.12	-2.84	-2.34	163.60	-2.49	-1.54	FI
4QVJ8F		167.29	1.33	1.09	165.84	-0.26	-0.16	SA
58ZHWG		165.07	-0.89	-0.74	164.17	-1.93	-1.19	SA
5FKYQX		165.03	-0.93	-0.76	165.31	-0.78	-0.48	HT
67LWNL	X	164.62	-1.34	-1.10	170.13	4.03	2.49	FI
6HU9A7		165.47	-0.49	-0.41	167.30	1.20	0.74	TO
6PS32F		167.12	1.16	0.95	165.61	-0.48	-0.30	TO
6UCRFL		166.53	0.57	0.47	166.13	0.04	0.02	TO
7URZZT		166.07	0.11	0.09	165.73	-0.36	-0.22	SA
7VCRNR		166.79	0.84	0.69	166.79	0.70	0.43	FI
7YSU8W		166.76	0.80	0.66	166.78	0.69	0.42	SH
85GTEP		168.33	2.37	1.96	169.20	3.10	1.91	TO
8SVFDY		165.15	-0.81	-0.67	165.29	-0.81	-0.50	GA
8ZXFZL		167.00	1.04	0.86	167.33	1.24	0.76	TO
9273QK	X	174.92	8.96	7.38	174.98	8.89	5.48	XX
96ZY25		163.37	-2.59	-2.14	164.77	-1.33	-0.82	XX
9TJB3S		166.30	0.34	0.28	166.25	0.15	0.09	SA
A3SCWY		165.20	-0.76	-0.63	167.03	0.94	0.58	UN
C47Q2S		163.33	-2.63	-2.16	163.00	-3.10	-1.91	BA
DJDVN2	X	178.49	12.53	10.32	178.92	12.83	7.91	BA
DKX4YQ		165.50	-0.46	-0.38	166.27	0.17	0.10	IN
EA95SX		167.03	1.07	0.88	168.07	1.97	1.21	TO
EBL9EG		167.66	1.70	1.40	165.72	-0.38	-0.23	BA
EUPRYM		165.74	-0.22	-0.18	166.11	0.02	0.01	TO
G6BLCA		166.17	0.21	0.17	166.53	0.44	0.27	IN
G71GL6	X	116.00	-49.96	-41.15	118.00	-48.10	-29.66	SA
GD2QVE		165.40	-0.56	-0.46	164.73	-1.36	-0.84	TO
GDUDN4		165.70	-0.26	-0.21	163.30	-2.80	-1.72	UN
GJJZN4		166.53	0.57	0.47	164.67	-1.43	-0.88	SA
GPKXJF		166.02	0.06	0.05	164.45	-1.64	-1.01	MT
GUJXAY		166.03	0.07	0.06	166.50	0.40	0.25	SA
H4TJJX		166.80	0.84	0.69	166.45	0.36	0.22	TO
H6WZFM	*	166.27	0.31	0.25	169.93	3.84	2.37	XX
H86GQD		167.78	1.82	1.50	169.94	3.85	2.37	IN
H9XM7A	X	172.66	6.70	5.52	172.57	6.48	3.99	TO

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

WebCode	Data Flag	Sample X77			Sample X78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
HAH5LH		166.15	0.19	0.16	165.46	-0.64	-0.39	BA
HE3HNT		166.63	0.67	0.56	166.97	0.87	0.54	SA
JNGVSP		166.40	0.44	0.36	166.27	0.17	0.10	XX
JQFF78		165.67	-0.29	-0.24	167.13	1.04	0.64	BA
JR9DCT		165.63	-0.33	-0.27	164.33	-1.76	-1.09	BA
JU1HP5		163.50	-2.46	-2.03	165.20	-0.90	-0.55	XX
KBK7D1		166.98	1.03	0.84	167.14	1.05	0.65	UN
KSGQSA	X	174.40	8.44	6.95	171.13	5.04	3.11	TO
LGDDV2		164.47	-1.49	-1.22	163.91	-2.18	-1.35	TO
LMHU99		168.17	2.21	1.82	167.17	1.07	0.66	TO
LPYZZK		167.13	1.17	0.97	167.37	1.27	0.78	SA
LYPKG4		167.67	1.71	1.41	168.20	2.10	1.30	MT
M353K7		165.68	-0.28	-0.23	165.72	-0.38	-0.23	BA
M8Q781		165.90	-0.06	-0.05	164.47	-1.63	-1.01	SA
MC3G6H		165.03	-0.93	-0.76	166.23	0.14	0.08	SH
MYXMBW		166.00	0.04	0.03	167.83	1.74	1.07	TO
NHXTYL		168.11	2.15	1.77	167.45	1.35	0.83	SA
NNR8P1		164.20	-1.76	-1.45	166.07	-0.03	-0.02	TO
P9M9BN		166.20	0.24	0.20	166.63	0.54	0.33	SA
PGMH7G		163.27	-2.69	-2.22	162.73	-3.36	-2.07	SA
PMB4U9	X	177.93	11.97	9.86	169.73	3.64	2.24	TO
PY6DGH		166.03	0.07	0.06	163.97	-2.13	-1.31	BA
QR7ARR		165.05	-0.91	-0.75	165.81	-0.29	-0.18	RI
RLZ1HM		167.49	1.53	1.26	167.68	1.58	0.97	SH
RWHHAU		166.10	0.14	0.12	166.97	0.87	0.54	SH
RXTZ8K		167.40	1.44	1.19	165.40	-0.70	-0.43	BA
SRND4N		167.13	1.17	0.97	167.30	1.20	0.74	BA
T6CUHK		165.59	-0.37	-0.30	167.20	1.11	0.68	TO
TPNWTK		165.83	-0.13	-0.10	165.37	-0.73	-0.45	TO
TWLFHU		165.83	-0.13	-0.11	168.39	2.29	1.41	TO
UFR29Z		164.63	-1.33	-1.09	164.20	-1.90	-1.17	TO
UH7YCJ		166.83	0.87	0.72	164.47	-1.63	-1.01	TO
V5LUIYY		168.10	2.14	1.76	168.40	2.30	1.42	TO
V7G68K		165.17	-0.79	-0.65	167.75	1.65	1.02	SA
VHX35B		164.33	-1.63	-1.34	164.67	-1.43	-0.88	TO
VNQ3LS		166.97	1.01	0.83	167.33	1.24	0.76	SA
VPJGUX		164.80	-1.16	-0.95	163.77	-2.33	-1.44	SA
VY7RFR		166.98	1.02	0.84	166.59	0.49	0.30	HT
WFWPNK		165.07	-0.89	-0.74	165.30	-0.80	-0.49	XX
WM83VV		165.17	-0.79	-0.65	162.60	-3.50	-2.16	TO
X3MRDW		166.57	0.61	0.50	163.60	-2.50	-1.54	SA
XE816P		165.30	-0.66	-0.54	165.50	-0.60	-0.37	TO
Y8PDEA		166.27	0.31	0.25	167.33	1.24	0.76	IN
Y9WN11		163.51	-2.45	-2.02	165.34	-0.75	-0.46	SA

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

Summary Statistics

	Sample X77	Sample X78
Grand Means	165.959 ksi	166.097 ksi
Std Dev Btwn Labs	1.214 ksi	1.622 ksi
Statistics based on 81 of 89 reporting participants		

Samples X77 , X78 : Fastener size 3/8-16x2.25

Comments on assigned Data Flags for Test #115

3MB551 (X) - Inconsistent in testing between samples.

67LWNL (X) - Inconsistent in testing between samples.

9273QK (X) - Data for both samples are high, and inconsistent within the determinations for Sample X77.

DJDVN2 (X) - Data for both samples are high.

G71GL6 (X) - Data for both samples are low. Possibly the data were reported in kgf/mm² instead of ksi.

H9XM7A (X) - Data for both samples are high.

KSGQSA (X) - Data for both samples are high.

PMB4U9 (X) - Data for both samples are high, and inconsistent within the determinations for Sample X77.

Interlaboratory Testing Program for Metals

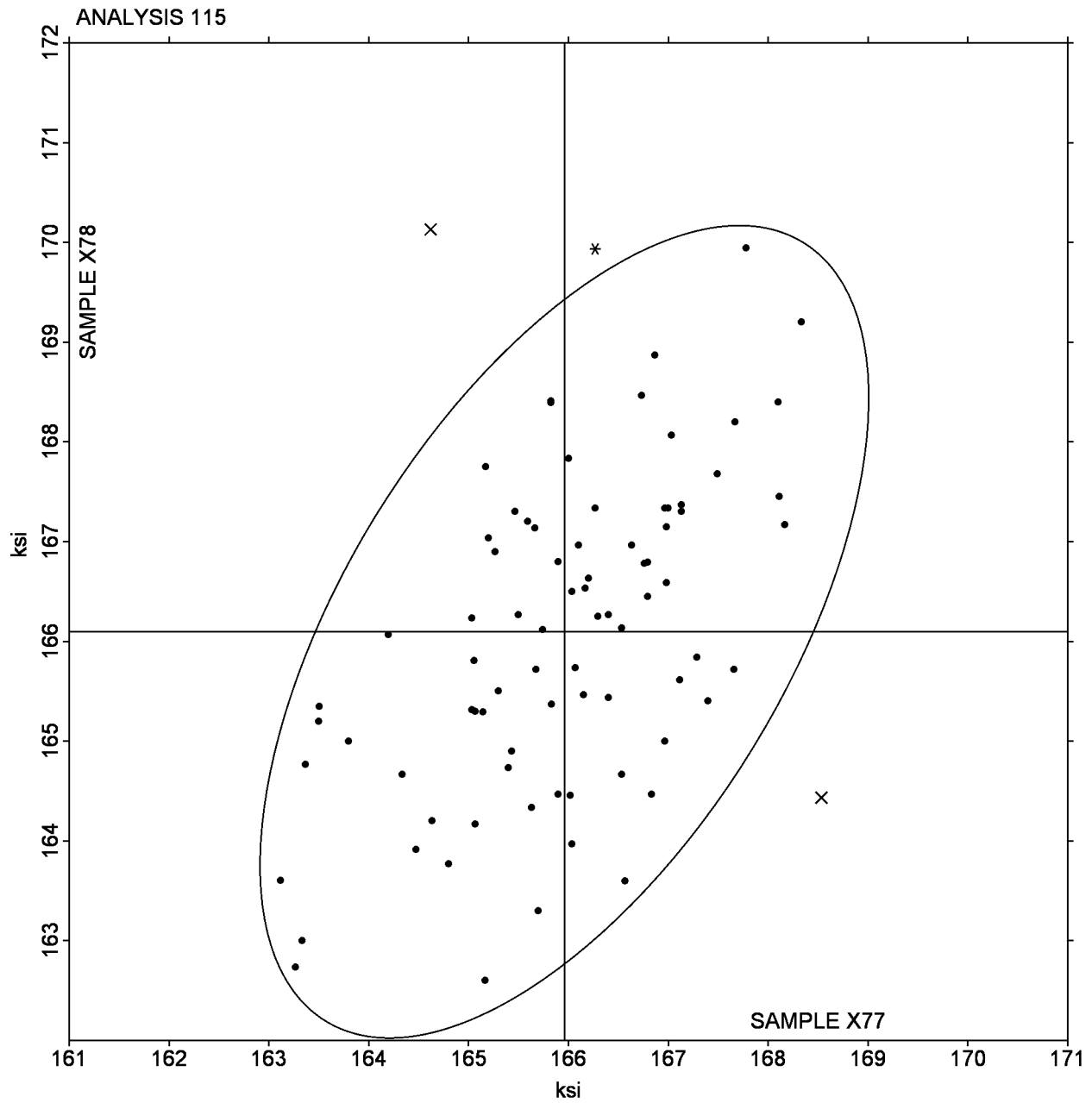
Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

SAMPLE X77 = 165.959 ksi

SAMPLE X78 = 166.097 ksi



Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q77			Sample Q78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
124LCT		167.03	0.61	0.41	165.50	-0.83	-0.69	TO
13URNE		165.83	-0.59	-0.40	167.93	1.60	1.32	TO
18KYD2		165.98	-0.44	-0.29	165.64	-0.69	-0.57	SA
1NVCFC		166.47	0.05	0.03	168.63	2.30	1.90	SA
1WKXHQ		164.83	-1.59	-1.06	165.70	-0.63	-0.52	RI
269FTB		166.87	0.45	0.30	166.63	0.30	0.25	XX
279ZQS		165.20	-1.22	-0.81	165.50	-0.83	-0.69	XX
2DY24X		168.69	2.27	1.51	167.27	0.94	0.77	TO
2LJKGQ		165.07	-1.35	-0.90	166.57	0.23	0.19	TO
3AVHH8		167.27	0.85	0.57	167.77	1.43	1.18	TO
3KPPXT		166.33	-0.09	-0.06	166.20	-0.13	-0.11	IN
3RCNLM		165.90	-0.52	-0.35	166.30	-0.03	-0.03	TO
4EX66H		168.89	2.47	1.65	168.83	2.50	2.06	IN
526V51		166.17	-0.25	-0.17	164.60	-1.73	-1.43	SA
57TFBP		166.30	-0.12	-0.08	166.03	-0.30	-0.25	IN
5GSXJZ	X	174.09	7.67	5.12	175.03	8.70	7.16	TO
5RGLD2		164.60	-1.82	-1.21	165.23	-1.10	-0.90	TO
64L26Q	X	182.53	16.11	10.75	173.20	6.87	5.66	TO
6AQYSA		166.17	-0.25	-0.17	166.29	-0.04	-0.03	SA
6LELFB		166.17	-0.25	-0.17	167.17	0.83	0.69	SA
756UC7		165.33	-1.09	-0.73	166.70	0.37	0.30	SA
77JCM4		166.57	0.15	0.10	166.20	-0.13	-0.11	SA
79GHHR		168.57	2.15	1.43	168.23	1.90	1.57	TO
892YQB		166.13	-0.29	-0.19	167.13	0.80	0.66	TO
8GXGXD		164.97	-1.45	-0.97	165.27	-1.07	-0.88	SA
8LGQBZ		165.87	-0.55	-0.37	165.77	-0.57	-0.47	XX
8PSLGP		167.87	1.45	0.97	165.60	-0.73	-0.60	TO
9BTRHE		165.20	-1.22	-0.81	165.77	-0.57	-0.47	TO
9J772T		163.20	-3.22	-2.15	164.97	-1.37	-1.12	HT
9N71UB		166.53	0.11	0.07	167.15	0.82	0.67	SA
9PX4JB		166.97	0.55	0.36	165.20	-1.13	-0.93	SA
AJ2943		165.50	-0.92	-0.61	165.33	-1.00	-0.82	TO
ANBLS5		166.53	0.11	0.08	166.83	0.50	0.41	SA
CK9MMA		166.60	0.18	0.12	167.23	0.90	0.74	SA
CW4BUR		167.37	0.95	0.64	165.90	-0.43	-0.35	SH
DTHGG4		164.17	-2.25	-1.50	165.90	-0.43	-0.36	TO
E4SVZA		166.90	0.48	0.32	166.20	-0.13	-0.11	TO
EVCV26		168.32	1.90	1.27	168.78	2.45	2.02	SA
EWVEPR	X	43.03	-123.39	-82.35	43.27	-123.06	-101.36	XX
EZUENG		164.60	-1.82	-1.21	164.43	-1.90	-1.56	TO
FAWPKP		163.53	-2.89	-1.93	166.87	0.53	0.44	XX
FGAHQF		167.20	0.78	0.52	166.90	0.57	0.47	TO
GN9VXG		165.97	-0.45	-0.30	166.11	-0.22	-0.18	MT
GR1VL6	*	170.34	3.92	2.62	166.47	0.14	0.12	TO
GWAFPX		166.67	0.25	0.16	165.97	-0.37	-0.30	SA

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q77			Sample Q78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
HWZSJH		166.20	-0.22	-0.15	165.13	-1.20	-0.99	SA
JAT8P8		168.15	1.73	1.15	167.55	1.21	1.00	SH
JHQC9W	X	178.92	12.50	8.35	176.34	10.01	8.25	BA
JTYP3M		166.63	0.21	0.14	165.90	-0.43	-0.36	SA
JV9XK7	X	159.75	-6.67	-4.45	163.01	-3.32	-2.74	SA
K2AJ26		164.10	-2.32	-1.55	166.24	-0.09	-0.08	TO
KB1VPN		166.83	0.41	0.28	166.03	-0.30	-0.25	XX
KW2JZW		168.33	1.91	1.28	166.87	0.53	0.44	BA
LANQW2	X	118.67	-47.75	-31.87	119.00	-47.33	-38.98	SA
LMWHZM		167.37	0.95	0.63	166.87	0.53	0.44	IN
LS3R54		167.57	1.15	0.77	166.20	-0.13	-0.11	MT
M6GPUH		167.77	1.35	0.90	166.90	0.57	0.47	SH
MN9CNE		165.15	-1.27	-0.85	165.54	-0.80	-0.66	SA
N72HUK		163.72	-2.70	-1.81	166.77	0.43	0.36	GA
NA47J8		165.77	-0.65	-0.44	167.83	1.50	1.24	IN
NYDE85		166.63	0.21	0.14	165.77	-0.57	-0.47	BA
P26FE6		167.06	0.64	0.43	167.54	1.21	1.00	TO
P7L4B8		169.20	2.78	1.86	167.17	0.83	0.69	TO
PE7EPW		167.93	1.51	1.01	169.15	2.82	2.32	UN
PEZ3GL		166.70	0.28	0.19	166.60	0.27	0.22	UN
Q9D565	X	176.66	10.24	6.83	171.49	5.15	4.25	XX
QKM52W		165.57	-0.85	-0.57	165.80	-0.53	-0.44	TO
QPPH7F		163.67	-2.75	-1.84	164.00	-2.33	-1.92	BA
RYQNZM		165.17	-1.25	-0.83	165.89	-0.44	-0.36	WZ
T3CSGA	*	168.47	2.05	1.37	164.47	-1.87	-1.54	TO
U9D54M		168.27	1.85	1.23	168.23	1.90	1.57	SA
UAKB4J		168.17	1.75	1.17	166.60	0.27	0.22	SH
US46EA		166.33	-0.09	-0.06	163.93	-2.40	-1.98	IN
UUJE7V		166.53	0.11	0.08	165.97	-0.37	-0.30	SA
VCGV25		167.70	1.28	0.85	168.13	1.80	1.48	TO
VJV4DP		168.53	2.11	1.41	168.03	1.70	1.40	SA
VXLE75		165.98	-0.44	-0.30	167.27	0.94	0.77	BA
W1K4WR		163.91	-2.51	-1.68	166.08	-0.25	-0.21	SA
W6C9Z8	*	169.45	3.03	2.02	165.44	-0.89	-0.73	TO
WFATJG		164.84	-1.58	-1.06	163.44	-2.89	-2.38	TO
XCWAUY		164.52	-1.90	-1.27	165.05	-1.28	-1.05	FI
Y1QFNR		164.67	-1.75	-1.17	163.97	-2.37	-1.95	TO
YM7M89		167.70	1.28	0.85	167.92	1.59	1.31	MT
ZC1RHV		166.87	0.45	0.30	167.23	0.90	0.74	SA
ZGNNE		165.47	-0.95	-0.64	164.80	-1.53	-1.26	TO
ZQ67NR		165.61	-0.81	-0.54	165.18	-1.15	-0.95	TO

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

Summary Statistics

	Sample Q77	Sample Q78
Grand Means	166.420 ksi	166.332 ksi
Stnd Dev Btwn Labs	1.498 ksi	1.214 ksi
Statistics based on 79 of 86 reporting participants		

Samples Q77 , Q78 : Fastener size 3/8-16x2.25

Comments on assigned Data Flags for Test #116

5GSXJZ (X) - Data for both samples are high.

64L26Q (X) - Data for both samples are high, and inconsistent within the determinations for Sample X77.

EWVEPR (X) - Extreme data.

JHQC9W (X) - Data for both samples are high.

JV9XK7 (X) - Low data for Sample Q77.

LANQW2 (X) - Data for both samples are low. Possibly the data were reported in kgf/mm² instead of ksi.

Q9D565 (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

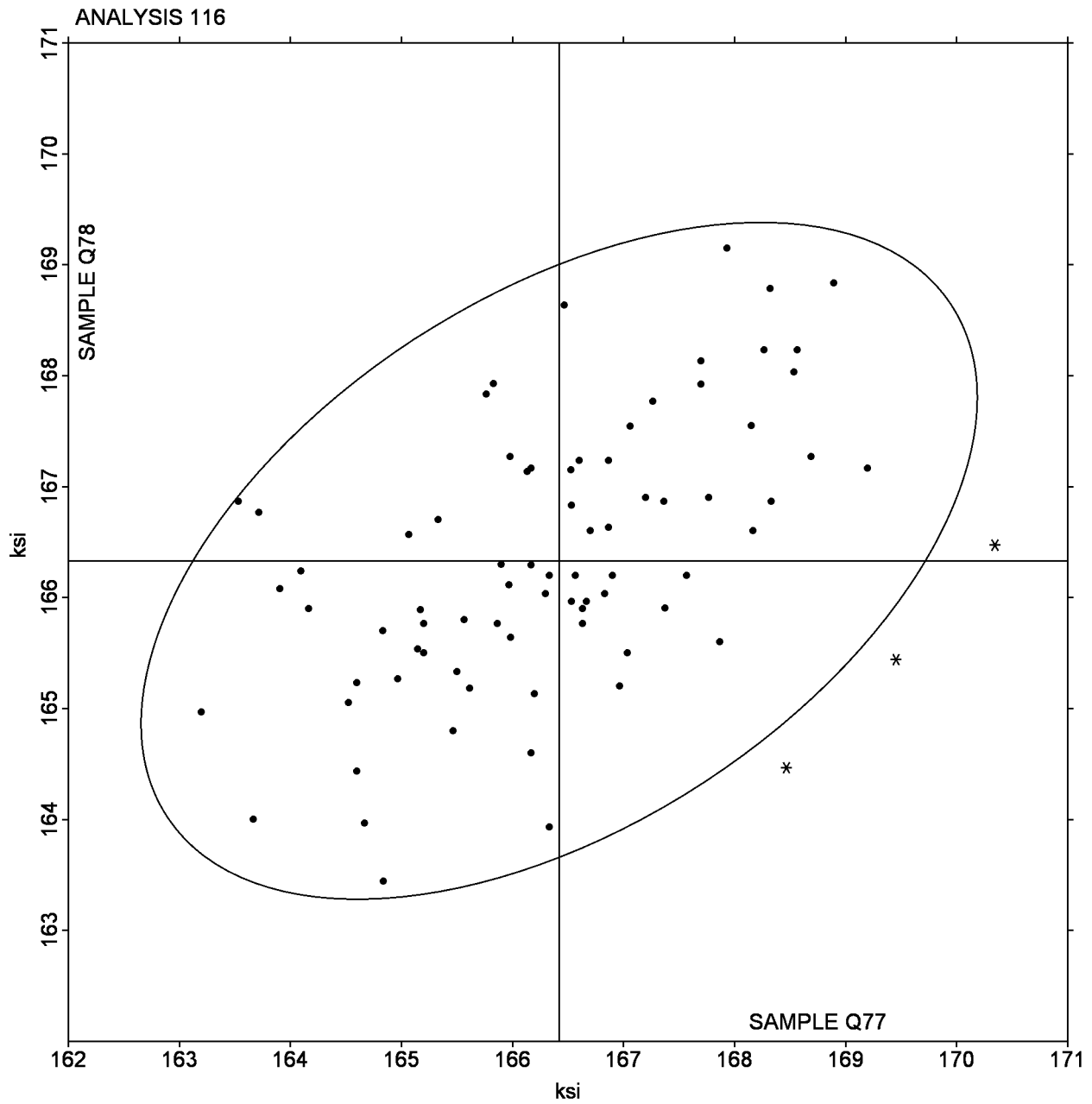
Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

SAMPLE Q77 = 166.420 ksi

SAMPLE Q78 = 166.332 ksi



Interlaboratory Testing Program for Metals

Analysis 125

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

WebCode	Data Flag	Sample G77			Sample G78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
16NB7J		36.93	-0.12	-0.17	36.89	-0.18	-0.27	GR
1FWWHT		36.48	-0.57	-0.79	36.39	-0.67	-1.01	MI
1MVXLM		37.37	0.32	0.44	37.61	0.54	0.81	NA
1NPMTW		36.86	-0.19	-0.26	36.86	-0.20	-0.30	WI
1XLVUL		37.57	0.52	0.72	37.91	0.85	1.27	BU
2L45HE		37.52	0.47	0.65	37.52	0.45	0.68	UN
2STHLQ		37.51	0.46	0.63	37.02	-0.05	-0.07	WI
35RCBH		37.56	0.51	0.71	37.44	0.37	0.56	WI
3R8AP5		38.00	0.95	1.31	37.83	0.76	1.14	MI
3ZZA4B		37.74	0.69	0.96	38.00	0.94	1.40	UN
4BW54Z		37.03	-0.02	-0.02	37.47	0.40	0.61	LE
4QU43N		37.32	0.27	0.37	37.34	0.27	0.41	WI
4YGP5U		36.18	-0.87	-1.20	36.08	-0.98	-1.48	MI
5DGM4C		37.00	-0.05	-0.07	37.00	-0.06	-0.10	SP
5F7FU8		37.81	0.76	1.04	37.76	0.69	1.04	XX
5R6J5A		38.57	1.52	2.10	38.48	1.41	2.12	UN
6AC94Q		36.92	-0.13	-0.18	37.01	-0.06	-0.09	WI
6AJA9Q		35.46	-1.59	-2.20	36.25	-0.81	-1.22	WI
6H12G3		37.19	0.14	0.19	37.16	0.09	0.14	UN
6JHR7A		38.38	1.33	1.83	37.50	0.44	0.65	WI
6MGS2J		36.56	-0.49	-0.68	36.73	-0.34	-0.51	UN
6NLGTF		36.59	-0.46	-0.63	36.44	-0.62	-0.93	KF
6QLC1Q	X	43.54	6.49	8.96	41.69	4.62	6.94	NA
6WAARJ		36.44	-0.61	-0.84	35.81	-1.25	-1.88	WI
73HD3Y		37.81	0.76	1.05	38.15	1.09	1.63	RS
7GF4L9		37.16	0.11	0.15	36.58	-0.49	-0.74	UN
7X2SFE		36.19	-0.86	-1.18	36.47	-0.60	-0.90	NA
88XN8L		36.10	-0.95	-1.31	36.63	-0.44	-0.66	WI
8BNC1K		37.29	0.24	0.33	37.51	0.45	0.67	WI
8F52DP		36.98	-0.07	-0.10	37.01	-0.06	-0.09	MI
8U58ME		36.99	-0.06	-0.09	36.68	-0.38	-0.58	WI
96FRNU		37.48	0.43	0.59	37.37	0.30	0.46	AK
98NBKN		37.05	0.00	0.00	36.99	-0.07	-0.11	WI
9DVWF7		35.78	-1.27	-1.76	35.54	-1.53	-2.29	NA
AHEGJN		37.94	0.89	1.23	37.48	0.42	0.63	WI
AR4697		37.73	0.68	0.94	37.79	0.73	1.09	AF
AZJDXX		37.75	0.70	0.97	37.71	0.64	0.96	WI
BA3P3N	X	38.64	1.59	2.19	39.39	2.33	3.50	RS
BXGPW2		36.84	-0.21	-0.28	36.93	-0.13	-0.20	WI
C3PD2E		37.30	0.25	0.35	37.39	0.32	0.48	WI
CAUZD2		38.03	0.98	1.36	37.19	0.12	0.18	AV
D3GTDC		35.45	-1.60	-2.21	35.68	-1.39	-2.09	WI
DANLHM		36.74	-0.31	-0.43	36.93	-0.14	-0.21	TG
DGG5S3		37.17	0.12	0.16	37.28	0.21	0.32	WI
F2E65H		37.93	0.88	1.22	37.83	0.76	1.14	XX

Interlaboratory Testing Program for Metals

Analysis 125

Rockwell Hardness of Externally Threaded Fasteners - Rockwell Hardness Number

ASTM F606/F606M AND ASTM E18

WebCode	Data Flag	Sample G77			Sample G78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
F9NP89		35.75	-1.30	-1.79	36.38	-0.69	-1.04	MI
GB54FN		36.89	-0.16	-0.22	37.16	0.10	0.15	XX
GS1S3Z		35.97	-1.08	-1.49	36.56	-0.50	-0.75	WI
H7HCJ7		37.39	0.34	0.48	37.94	0.88	1.32	IN
HCCB5G		37.48	0.43	0.59	37.33	0.27	0.40	UN
HKTBM5		37.14	0.09	0.13	37.33	0.26	0.39	WI
HKU2YJ	*	35.14	-1.91	-2.63	35.01	-2.06	-3.09	WO
HL3WAE		36.80	-0.25	-0.34	36.95	-0.11	-0.17	UN
K49CKY		36.37	-0.68	-0.94	36.21	-0.85	-1.28	UN
K9Z7LQ		36.81	-0.24	-0.33	37.44	0.37	0.56	XX
LBHV89		37.50	0.45	0.62	37.19	0.12	0.18	WI
LR76H5		37.95	0.90	1.24	37.44	0.38	0.57	LE
LUUL81	X	33.24	-3.81	-5.25	30.93	-6.14	-9.22	WI
M6RF8M		36.19	-0.86	-1.18	37.18	0.11	0.17	EM
M8LYMU		37.34	0.29	0.40	36.64	-0.43	-0.64	BU
MDV5CY		37.16	0.11	0.16	36.86	-0.20	-0.30	WI
MENKL4		38.13	1.08	1.48	38.33	1.27	1.90	XX
MFASDS		37.66	0.61	0.84	37.34	0.28	0.42	FR
MGW18V		38.17	1.12	1.54	37.94	0.87	1.31	UN
MQALEL		37.25	0.20	0.28	37.73	0.67	1.00	XX
MRWJYJ		37.79	0.74	1.02	37.46	0.40	0.60	WI
MUXWRV		36.78	-0.27	-0.37	36.58	-0.48	-0.73	XX
MZ3T9V		36.52	-0.53	-0.73	36.91	-0.16	-0.24	WO
MZMZST		37.01	-0.04	-0.06	37.11	0.05	0.07	XX
P5S6TH		37.19	0.14	0.20	36.98	-0.09	-0.13	WI
P64HF6		36.41	-0.64	-0.88	36.98	-0.09	-0.13	WI
P7XGAJ		37.04	-0.01	-0.02	37.79	0.73	1.09	BU
PSB6HB		36.94	-0.11	-0.15	36.86	-0.20	-0.30	BU
PTP7BH		37.13	0.08	0.10	37.38	0.31	0.47	WI
PV352C		35.66	-1.39	-1.92	36.11	-0.96	-1.44	WI
Q5G894		37.85	0.80	1.11	37.39	0.33	0.49	WI
RJW6YK		37.37	0.32	0.44	37.47	0.40	0.61	NA
RZASZ8		38.06	1.01	1.39	37.92	0.85	1.28	CL
T2MR4D		37.64	0.59	0.82	37.76	0.70	1.05	UN
TBD9HM		37.52	0.47	0.65	37.26	0.20	0.30	NA
TDEZDA		36.76	-0.29	-0.40	36.21	-0.85	-1.28	WI
TNW598		36.28	-0.77	-1.06	36.34	-0.72	-1.08	CL
TUYEF1		37.59	0.54	0.75	37.62	0.55	0.83	WI
TYSZZ3		38.09	1.04	1.44	37.64	0.57	0.86	UN
U2ZB13		37.27	0.22	0.30	37.06	0.00	0.00	UN
UGPPTB		36.86	-0.19	-0.27	37.13	0.07	0.10	CL
UJ1XGB		37.64	0.59	0.82	37.18	0.11	0.17	UN
UT2RMP		36.41	-0.64	-0.89	36.20	-0.86	-1.30	WI
VBGJY4		37.49	0.44	0.61	37.69	0.63	0.94	BU
VBHNRT		36.53	-0.52	-0.72	36.56	-0.50	-0.76	UN

Interlaboratory Testing Program for Metals

Analysis 125

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

WebCode	Data Flag	Sample G77			Sample G78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VGHUQW		35.99	-1.06	-1.46	36.03	-1.04	-1.56	WI
W35HA9		37.39	0.34	0.48	37.14	0.08	0.12	CL
WHT57L	*	35.91	-1.14	-1.58	37.00	-0.06	-0.10	CL
WL2JAC		36.09	-0.96	-1.33	35.98	-1.08	-1.63	WO
WLDQGV		37.09	0.04	0.06	36.73	-0.33	-0.50	WI
WPN2SR		36.99	-0.06	-0.09	36.46	-0.60	-0.90	FT
WQ85SJ		36.96	-0.09	-0.12	37.54	0.47	0.71	BU
WRD78N	*	35.54	-1.51	-2.09	36.74	-0.32	-0.48	NA
WS7RUV		37.94	0.89	1.23	38.16	1.09	1.64	NA
XPGBWT		37.64	0.59	0.82	37.31	0.24	0.36	WI
Y46TZ3		36.33	-0.72	-1.00	36.29	-0.77	-1.16	WI
YH988D		37.39	0.34	0.47	36.84	-0.22	-0.33	WI
YPSJFM		37.58	0.53	0.73	38.29	1.23	1.85	UN
Z8W5A6	X	35.70	-1.35	-1.86	37.21	0.15	0.22	UN
ZCSR6E		36.76	-0.29	-0.40	37.09	0.02	0.03	UN
ZSUWTQ		37.39	0.34	0.47	36.64	-0.42	-0.63	WI
ZV9WWR	*	35.51	-1.54	-2.13	35.29	-1.78	-2.67	WI

Summary Statistics

	Sample G77		Sample G78	
Grand Means	37.049	HRC	37.065	HRC
Std Dev Btwn Labs	0.725	HRC	0.666	HRC

Statistics based on 103 of 107 reporting participants

Samples G77 , G78 : Fastener size 1/2-20x2.5

Comments on assigned Data Flags for Test #125

6QLC1Q (X) - Data for both samples are high, and inconsistent within the determinations for both samples.

BA3P3N (X) - High data for Sample G78.

LUUL81 (X) - Data for both samples are low.

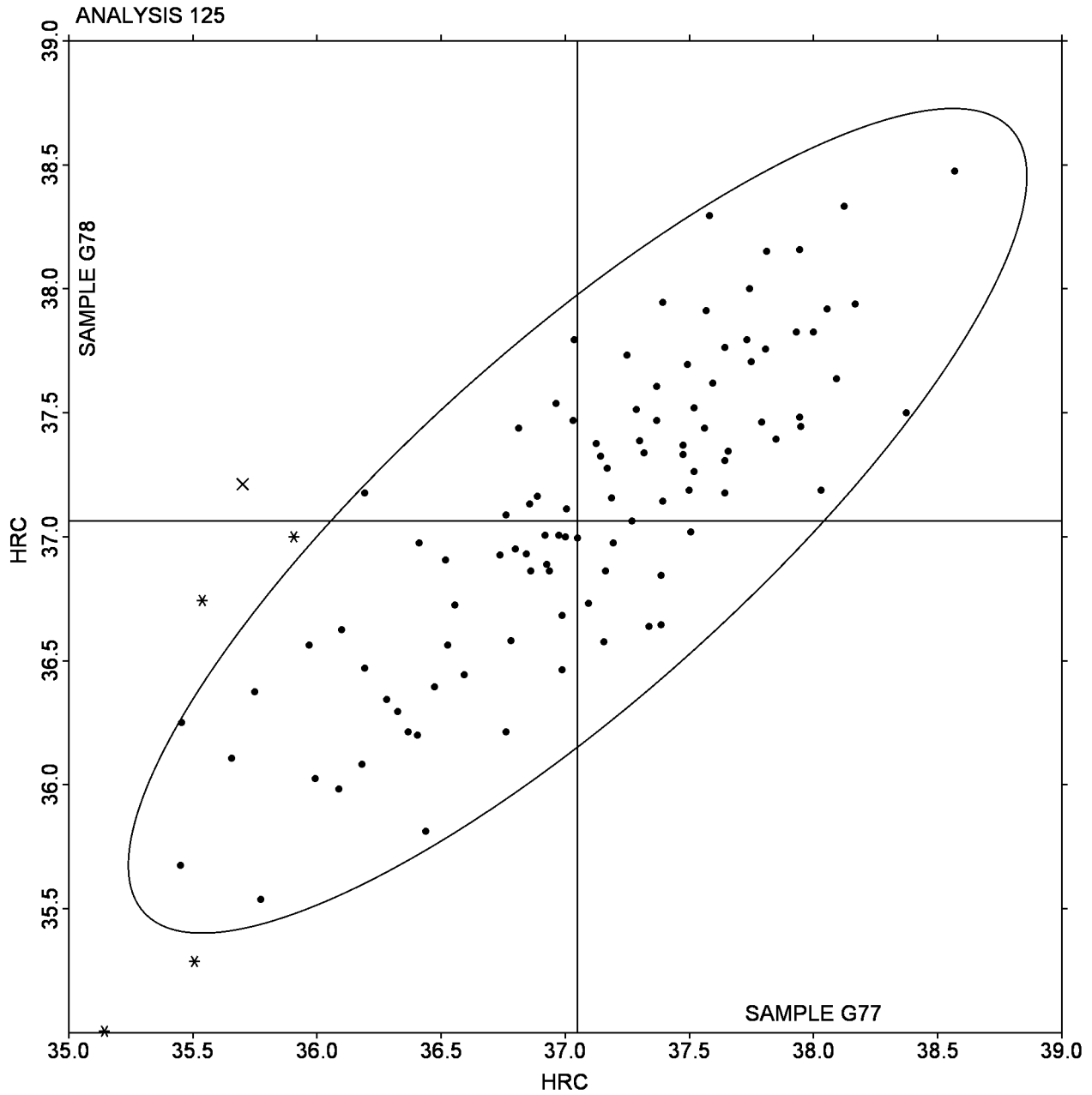
Z8W5A6 (X) - Inconsistent in testing between samples.

Interlaboratory Testing Program for Metals

Analysis 125

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

SAMPLE G77 = 37.049 HRC SAMPLE G78 = 37.065 HRC



Interlaboratory Testing Program for Metals

Analysis 126

Vickers Hardness of Externally Threaded Fasteners - Vickers Hardness Number
ASTM E92

WebCode	Data Flag	Sample V77			Sample V78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
36J5U2		357.1	-4.3	-0.71	362.1	0.5	0.07	AK
5TADPD		362.3	1.0	0.16	360.3	-1.3	-0.20	AK
8VMX45		362.0	0.7	0.11	362.5	0.9	0.14	AR
98UTBF		356.0	-5.3	-0.89	359.4	-2.2	-0.35	LE
CG3CPM		363.5	2.2	0.37	368.4	6.8	1.05	XX
PNNHZA		359.6	-1.7	-0.28	353.9	-7.7	-1.19	WO
QZYL BQ		359.9	-1.5	-0.24	361.6	0.0	0.00	XX
S1K8GD		360.4	-0.9	-0.15	360.3	-1.3	-0.20	LE
URBMV3		375.8	14.5	2.42	376.8	15.1	2.35	XX
W38JNM		367.2	5.9	0.98	368.1	6.5	1.01	WO
WDX48C		366.6	5.3	0.88	364.6	3.0	0.46	SH
YWK1LH		351.1	-10.2	-1.70	352.8	-8.8	-1.36	WO
Z92QNK		355.7	-5.6	-0.94	356.9	-4.7	-0.72	LE
ZTMG5V		361.4	0.0	0.01	354.8	-6.9	-1.06	GN

Summary Statistics

	Sample V77		Sample V78	
Grand Means	361.33	HV	361.60	HV
Std Dev Btwn Labs	5.99	HV	6.45	HV
Statistics based on 14 of 14 reporting participants				

Samples V77 , V78 : Fastener size 1/2-20x2.5

Analysis Notes for Test #126

No "X" flags were assigned for this analysis.

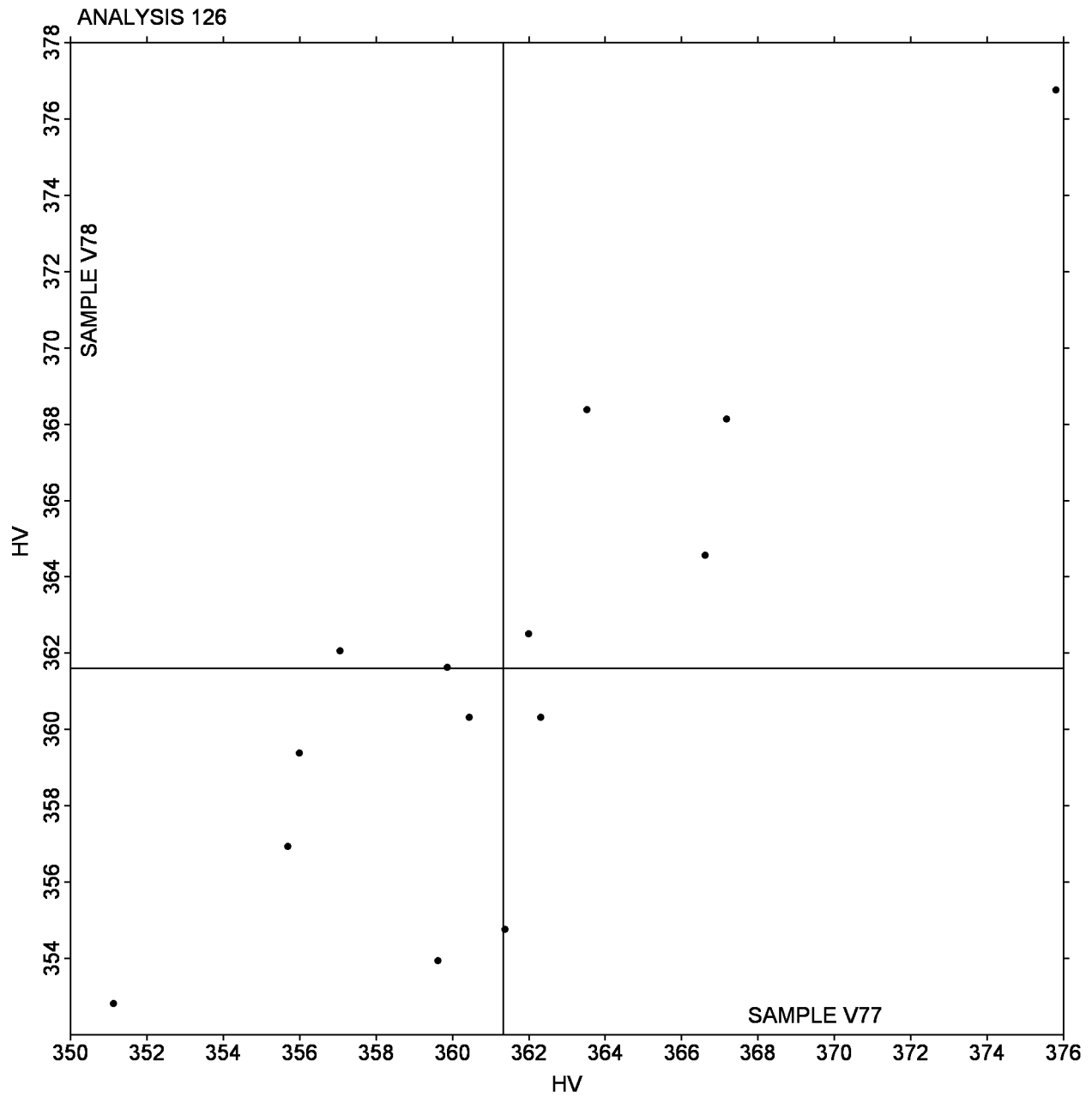
Interlaboratory Testing Program for Metals

Analysis 126

Vickers Hardness of Externally Threaded Fasteners - Vickers Hardness Number
ASTM E92

SAMPLE V77 = 361.33 HV

SAMPLE V78 = 361.60 HV



Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample B77			Sample B78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2GYZQG		1,157	3	0.33	1,164	11	1.13	SA
2PT9SZ		1,133	-21	-2.35	1,139	-13	-1.32	HP
4BUCEA		1,146	-8	-0.95	1,141	-12	-1.17	ST
4H6JM3		1,159	4	0.47	1,163	10	1.00	MF
5MGGKU		1,153	-2	-0.20	1,144	-9	-0.87	XX
64UCJU		1,142	-13	-1.42	1,136	-16	-1.61	MR
7H685H		1,157	2	0.25	1,159	6	0.63	TO
82V7KD		1,159	4	0.47	1,154	2	0.17	LO
8G5DGQ		1,157	3	0.33	1,157	4	0.40	SA
8T9T64		1,157	3	0.32	1,150	-3	-0.30	RO
9VYBX1		1,161	6	0.70	1,156	4	0.37	WZ
B2L82F		1,148	-7	-0.75	1,147	-6	-0.59	TO
B8XZ2Z		1,163	9	0.96	1,158	6	0.57	UN
CRT7VB		1,150	-5	-0.53	1,159	6	0.63	TO
D63DNM		1,164	10	1.07	1,174	22	2.15	TO
DJC1XX	X	1,115	-39	-4.35	1,106	-46	-4.60	SA
E62RUF		1,141	-14	-1.53	1,138	-15	-1.45	TO
GCY7DK		1,140	-15	-1.65	1,143	-10	-0.95	XX
HP54X4		1,154	-1	-0.08	1,144	-9	-0.85	WB
JPKRWZ	*	1,173	19	2.07	1,150	-3	-0.26	XX
K65T5L		1,155	1	0.10	1,140	-13	-1.28	TO
KUNKJM		1,156	2	0.18	1,155	3	0.27	UN
RTEBL3		1,147	-7	-0.83	1,148	-5	-0.49	XX
UGB1ZQ		1,152	-2	-0.23	1,150	-3	-0.29	SH
W64V1S		1,161	6	0.70	1,156	3	0.34	IN
XE1GUJ		1,159	5	0.51	1,164	11	1.13	TO
XV1ZF2		1,161	6	0.72	1,165	12	1.19	TO
YUVSD3		1,167	12	1.36	1,167	15	1.45	SA

Summary Statistics

	Sample B77	Sample B78
Grand Means	1,154.4 MPa	1,152.6 MPa
Std Dev Btwn Labs	9.0 MPa	10.1 MPa
Statistics based on 27 of 28 reporting participants		

Samples B77 , B78 : Fastener size M10 x 1.5 x 90

Comments on assigned Data Flags for Test #127

DJC1XX (X) - Data for both samples are low. Possible systematic error.

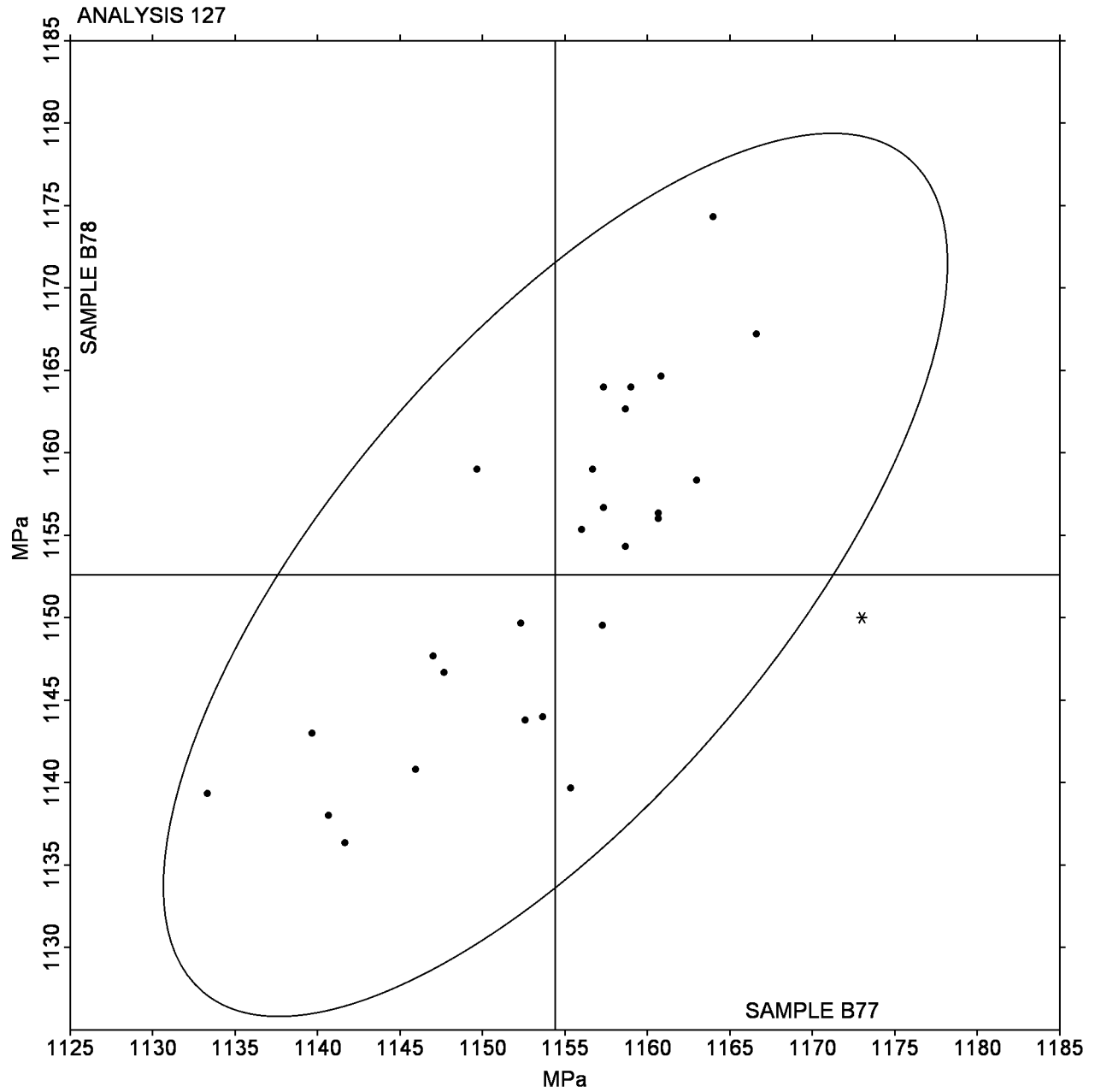
Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

SAMPLE B77 = 1,154.4 MPa SAMPLe B78 = 1,152.6 MPa



Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample T77			Sample T78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1K4BXH		1,115	3	0.46	1,115	5	0.52	XX
3WEKPD		1,110	-2	-0.21	1,124	14	1.47	TO
7XAGA6		1,105	-7	-0.96	1,106	-4	-0.38	RO
8G9EKJ		1,106	-6	-0.83	1,114	4	0.42	TO
9FHYG8		1,106	-6	-0.78	1,103	-7	-0.74	XX
ERS4P3		1,106	-6	-0.76	1,101	-9	-0.93	GA
EWJA7B		1,122	10	1.35	1,122	12	1.26	IN
FQQ94K		1,111	-1	-0.10	1,095	-15	-1.54	XX
JBYGBE		1,111	-1	-0.12	1,097	-13	-1.37	IN
JHBLN7		1,108	-4	-0.47	1,105	-5	-0.50	WO
JWPX4W		1,119	7	0.95	1,120	10	1.09	SH
LWJUJFF		1,108	-4	-0.52	1,110	1	0.07	LO
M9B9DM		1,117	6	0.74	1,110	0	0.01	MT
SPHN41		1,124	12	1.66	1,117	8	0.80	TO
SXPN7V		1,098	-14	-1.90	1,106	-3	-0.36	WB
T7KEML		1,120	8	1.08	1,121	11	1.16	SA
TM4RQJ		1,102	-10	-1.36	1,089	-21	-2.18	ST
U3LTNM		1,112	0	-0.01	1,103	-6	-0.68	XX
UMC5MP		1,108	-4	-0.52	1,117	8	0.80	SA
UUNNCM		1,114	2	0.24	1,121	11	1.16	TO
XWKD1T		1,128	16	2.11	1,113	3	0.31	TO
YQPBGR		1,111	-1	-0.07	1,106	-4	-0.39	IN

Summary Statistics

	Sample T77	Sample T78
Grand Means	1,111.9 MPa	1,109.7 MPa
Std Dev Btwn Labs	7.5 MPa	9.5 MPa
Statistics based on 22 of 22 reporting participants		

Samples T77 , T78 : Fastener size M10 x 1.5 x 70

Analysis Notes for Test #128

No "X" flags were assigned for this analysis.

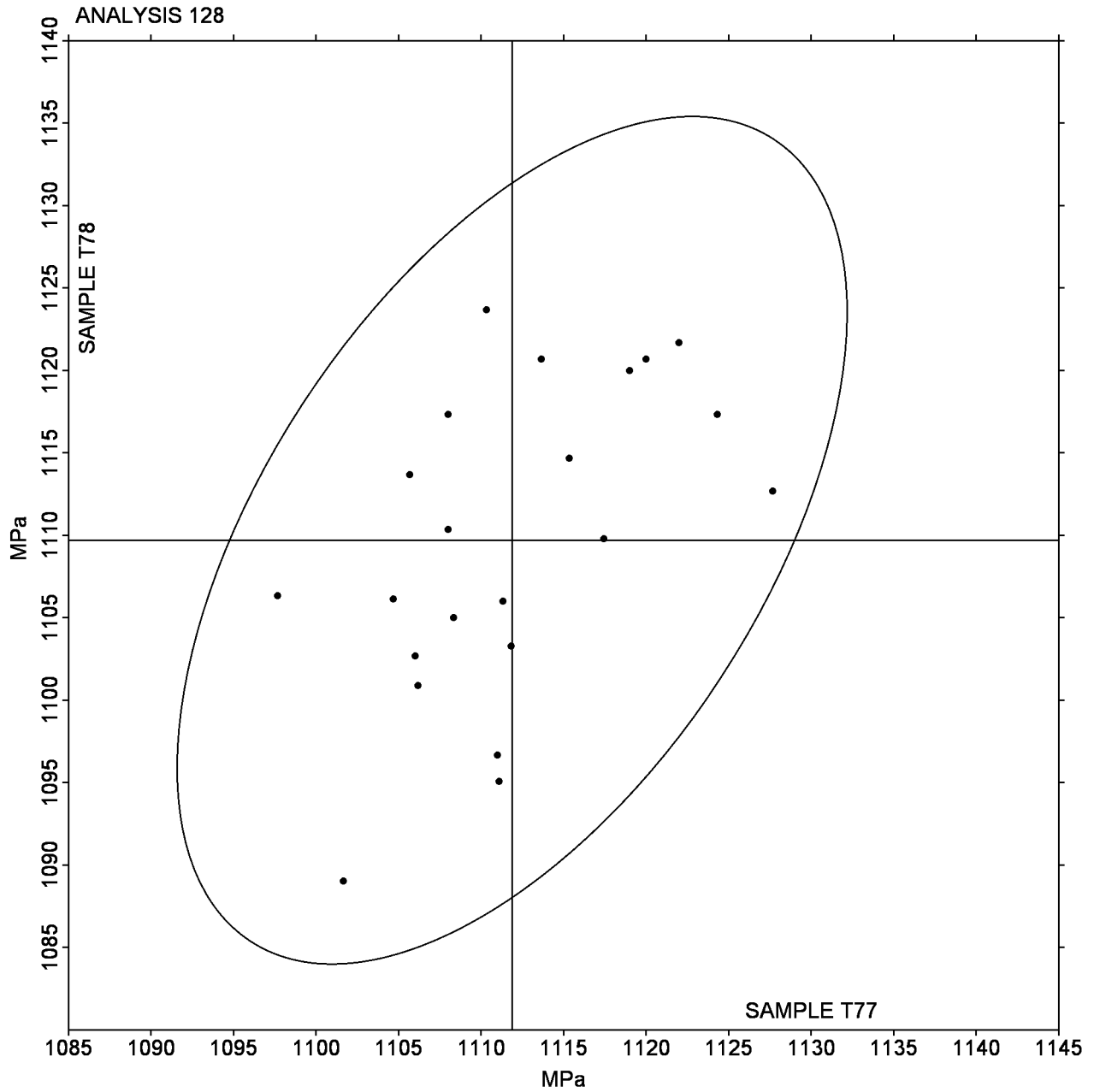
Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa

ASTM F606M

SAMPLE T77 = 1,111.9 MPa SAMPLe T78 = 1,109.7 MPa



Interlaboratory Testing Program for Metals

Analysis 129

Fastener Double Shear - lb

NASM 1312-13

WebCode	Data Flag	Sample Z77			Sample Z78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1JD88G		21,626	130	0.20	21,300	-212	-0.34	TO
4BPFPT	*	19,591	-1,905	-2.91	19,405	-2,107	-3.34	IN
5SAJKN		21,293	-203	-0.31	21,315	-197	-0.31	TO
8FUCVR		21,919	423	0.65	21,869	357	0.57	SA
9WP5NX		21,776	280	0.43	21,650	138	0.22	XX
BDDQ1M	*	23,093	1,597	2.44	22,247	735	1.17	TO
NNAW6V		20,973	-523	-0.80	20,999	-513	-0.81	SA
P7RUP5		22,020	524	0.80	21,750	238	0.38	XX
QA4AM2		21,333	-163	-0.25	21,600	88	0.14	TO
T67RFT		21,317	-179	-0.27	21,287	-225	-0.36	XX
TCPB4L		21,180	-316	-0.48	21,257	-255	-0.40	WZ
TYU76P		21,317	-179	-0.27	21,367	-145	-0.23	RI
V4XP1V	*	21,163	-333	-0.51	22,547	1,035	1.64	SA
VKRQV7		21,600	104	0.16	21,617	105	0.17	RI
W84AXJ		21,850	354	0.54	21,975	463	0.74	TO
WN7382		21,600	104	0.16	21,733	221	0.35	TO
X26BMT		21,252	-244	-0.37	21,344	-168	-0.27	SA
XCFEH5		21,862	366	0.56	21,761	249	0.39	TO
ZC4SH1		21,659	163	0.25	21,706	194	0.31	XX

Summary Statistics

	Sample Z77	Sample Z78
Grand Means	21,496.0 lb	21,511.9 lb
Std Dev Btwn Labs	654.5 lb	630.2 lb
Statistics based on 19 of 19 reporting participants		

Samples Z77 , Z78 : Fastener size 3/8-16x2.25

Analysis Notes for Test #129

No "X" flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

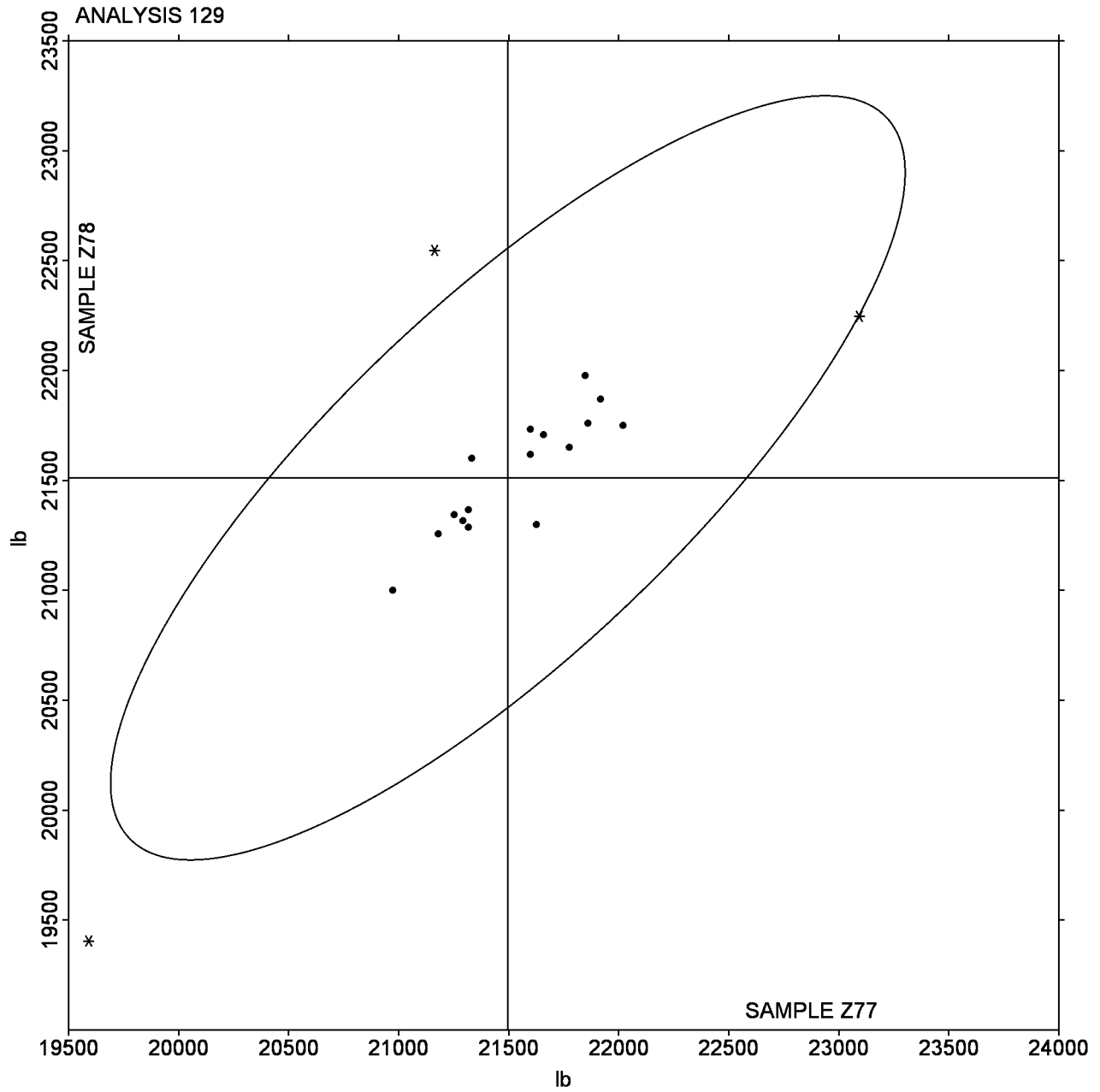
Analysis 129

Fastener Double Shear - lb

NASM 1312-13

SAMPLE Z77 = 21,496.0 lb

SAMPLE Z78 = 21,511.9 lb



Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1AYFSS		44.90	-0.88	-1.32	48.60	-1.14	-1.49	ZZ
1JK8JJ		45.90	0.12	0.17	49.10	-0.64	-0.84	ZZ
1NAT5Z		46.27	0.48	0.72	50.62	0.88	1.15	ZZ
2EL13F		45.30	-0.48	-0.73	50.10	0.36	0.47	ZZ
2KWS7S		46.12	0.34	0.51	49.82	0.08	0.10	ZZ
35666Q		45.12	-0.66	-0.99	49.26	-0.49	-0.63	ZZ
3B8UQY	X	45.40	-0.39	-0.58	52.07	2.33	3.04	ZZ
3CHX5G		45.57	-0.21	-0.32	49.32	-0.42	-0.55	ZZ
3CUYLP		45.90	0.12	0.17	48.80	-0.94	-1.23	ZZ
3HGTAW		45.38	-0.40	-0.61	49.42	-0.32	-0.42	ZZ
3VXDCY		44.80	-0.98	-1.47	48.90	-0.84	-1.10	ZZ
3Y4PMR	X	45.76	-0.02	-0.04	51.24	1.50	1.96	ZZ
45N7GD		46.48	0.70	1.05	51.20	1.46	1.91	ZZ
48NHAT		46.60	0.82	1.22	50.70	0.96	1.25	ZZ
4DB3E8		44.30	-1.48	-2.22	48.50	-1.24	-1.62	ZZ
4JT5U6	X	45.90	0.12	0.17	47.90	-1.84	-2.40	ZZ
54QV7P		47.20	1.42	2.12	51.10	1.36	1.78	ZZ
56DSQV		45.80	0.02	0.02	49.50	-0.24	-0.31	ZZ
5J983H		46.30	0.52	0.77	50.40	0.66	0.86	ZZ
5WP4QM		45.69	-0.10	-0.14	49.75	0.01	0.01	ZZ
6QVFEA		46.10	0.32	0.47	50.30	0.56	0.73	ZZ
75GBXR		45.82	0.03	0.05	49.75	0.01	0.01	ZZ
764LKS		46.10	0.32	0.47	50.00	0.26	0.34	ZZ
7EKQN4		45.30	-0.48	-0.73	48.90	-0.84	-1.10	ZZ
7H4QQS		45.20	-0.58	-0.87	48.70	-1.04	-1.36	ZZ
8EGAZX		45.00	-0.78	-1.17	48.40	-1.34	-1.75	ZZ
8GD4D2		44.90	-0.88	-1.32	49.70	-0.04	-0.05	ZZ
8X9SYS		45.83	0.05	0.07	49.79	0.05	0.07	ZZ
8ZGH6G		46.25	0.47	0.70	50.85	1.11	1.45	ZZ
94TBT7		44.74	-1.04	-1.56	48.81	-0.94	-1.22	ZZ
96Q5TF		46.80	1.02	1.52	50.20	0.46	0.60	ZZ
96SHLC		46.10	0.32	0.47	49.70	-0.04	-0.05	ZZ
9CCY5F		47.20	1.42	2.12	51.00	1.26	1.65	ZZ
9CLTZ3		45.49	-0.29	-0.44	50.21	0.47	0.61	ZZ
9CUDJR		46.30	0.52	0.77	49.70	-0.04	-0.05	ZZ
A8236C	X	43.30	-2.48	-3.72	47.20	-2.54	-3.32	ZZ
AAUJLK		45.68	-0.10	-0.15	50.22	0.48	0.62	ZZ
ARWYEE		45.10	-0.68	-1.02	49.50	-0.24	-0.31	ZZ
AX26VH		46.50	0.72	1.07	50.25	0.51	0.67	ZZ
B113K2		44.80	-0.98	-1.47	48.70	-1.04	-1.36	ZZ
DU1P44	*	45.80	0.02	0.02	51.00	1.26	1.65	ZZ
FM39PJ	X	45.40	-0.39	-0.58	36.11	-13.63	-17.81	ZZ
FPSXEG		46.05	0.27	0.40	50.30	0.56	0.73	ZZ
GC5ZKD		45.70	-0.08	-0.13	49.20	-0.54	-0.71	ZZ
GCC1QD		45.89	0.11	0.16	49.33	-0.41	-0.54	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
GDQH23	*	44.10	-1.68	-2.52	47.80	-1.94	-2.54	ZZ
GKWHJU		46.10	0.32	0.47	49.50	-0.24	-0.31	ZZ
GU2Z27		46.06	0.28	0.42	50.08	0.34	0.45	ZZ
GXNL72		45.06	-0.72	-1.08	49.27	-0.47	-0.62	ZZ
HAHVYS		45.30	-0.48	-0.73	49.80	0.06	0.08	ZZ
HKY1D3		45.36	-0.43	-0.64	49.34	-0.40	-0.52	ZZ
JGLVTP		46.30	0.52	0.77	49.70	-0.04	-0.05	ZZ
JKBY2K		46.00	0.22	0.32	50.20	0.46	0.60	ZZ
JWXS9N		44.70	-1.08	-1.62	48.60	-1.14	-1.49	ZZ
KBYST4		46.40	0.62	0.92	50.20	0.46	0.60	ZZ
L5Y6N5	*	45.20	-0.58	-0.87	48.00	-1.74	-2.27	ZZ
L8M3JL		46.50	0.72	1.07	50.60	0.86	1.12	ZZ
M2D3JE		46.00	0.22	0.32	49.90	0.16	0.21	ZZ
N44XCT		46.47	0.69	1.03	51.10	1.36	1.77	ZZ
N9M9XA		45.60	-0.18	-0.28	50.10	0.36	0.47	ZZ
NASMRB		46.06	0.28	0.41	50.47	0.73	0.95	ZZ
NBU9TP		45.50	-0.28	-0.43	49.50	-0.24	-0.31	ZZ
NJ4CDT	*	47.40	1.62	2.42	50.70	0.96	1.25	ZZ
P2MUP2		45.80	0.02	0.02	50.10	0.36	0.47	ZZ
PL5X28		45.80	0.02	0.02	49.00	-0.74	-0.97	ZZ
PQ27WE		46.90	1.12	1.67	50.30	0.56	0.73	ZZ
PVNRW3		45.83	0.05	0.07	49.88	0.14	0.18	ZZ
PW4EG9	X	43.00	-2.78	-4.17	49.40	-0.34	-0.45	ZZ
PZT6PT		45.80	0.02	0.02	50.10	0.36	0.47	ZZ
Q4ALDC		46.47	0.69	1.03	50.62	0.88	1.15	ZZ
Q9GVBY		44.90	-0.88	-1.32	49.00	-0.74	-0.97	ZZ
QLQGC6		45.95	0.16	0.25	49.99	0.25	0.33	ZZ
QRB28D		46.20	0.42	0.62	50.40	0.66	0.86	ZZ
R29QT1		45.00	-0.78	-1.17	49.00	-0.74	-0.97	ZZ
RD2WDQ		46.04	0.25	0.38	50.01	0.27	0.35	ZZ
RF4E7L	X	42.30	-3.48	-5.22	47.70	-2.04	-2.67	ZZ
RSYHQU	*	44.80	-0.98	-1.47	47.80	-1.94	-2.54	ZZ
T5X433		45.34	-0.45	-0.67	49.57	-0.17	-0.23	ZZ
TGNZ52		46.22	0.44	0.66	50.21	0.47	0.61	ZZ
UB1W3V		46.00	0.22	0.32	49.90	0.16	0.21	ZZ
UEV169		45.43	-0.35	-0.53	49.76	0.02	0.02	ZZ
URHADM		46.34	0.56	0.84	49.71	-0.03	-0.03	ZZ
V5CKLT	*	47.30	1.52	2.27	50.60	0.86	1.12	ZZ
V5RM6G		45.50	-0.28	-0.43	49.00	-0.74	-0.97	ZZ
VK3NVW		45.60	-0.18	-0.28	49.60	-0.14	-0.18	ZZ
VERF468		45.19	-0.59	-0.88	49.37	-0.37	-0.48	ZZ
VWH2YP		44.50	-1.28	-1.92	48.20	-1.54	-2.01	ZZ
WCUNL1		46.20	0.42	0.62	50.10	0.36	0.47	ZZ
WKN2Z6		46.30	0.52	0.77	50.30	0.56	0.73	ZZ
X2FV1Q		46.00	0.22	0.32	50.00	0.26	0.34	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X5J4CA		46.00	0.22	0.32	50.10	0.36	0.47	ZZ
XXHKPA		45.69	-0.10	-0.14	50.33	0.59	0.77	ZZ
YBTRW2		45.90	0.12	0.17	50.30	0.56	0.73	ZZ

Summary Statistics

	Sample F77	Sample F78
Grand Means	45.784 ksi	49.741 ksi
Stnd Dev Btwn Labs	0.667 ksi	0.765 ksi
Statistics based on 86 of 93 reporting participants		

Samples F77 , F78 : AISI 1010 steel

Comments on assigned Data Flags for Test #130

- 3B8UQY (X) - High data for Sample F78.
- 3Y4PMR (X) - Inconsistent in testing between samples.
- 4JT5U6 (X) - Inconsistent in testing between samples.
- A8236C (X) - Data for both samples are low. Possible systematic error.
- FM39PJ (X) - Low data for Sample F78.
- PW4EG9 (X) - Low data for Sample F77.
- RF4E7L (X) - Low data for Sample F77.

Interlaboratory Testing Program for Metals

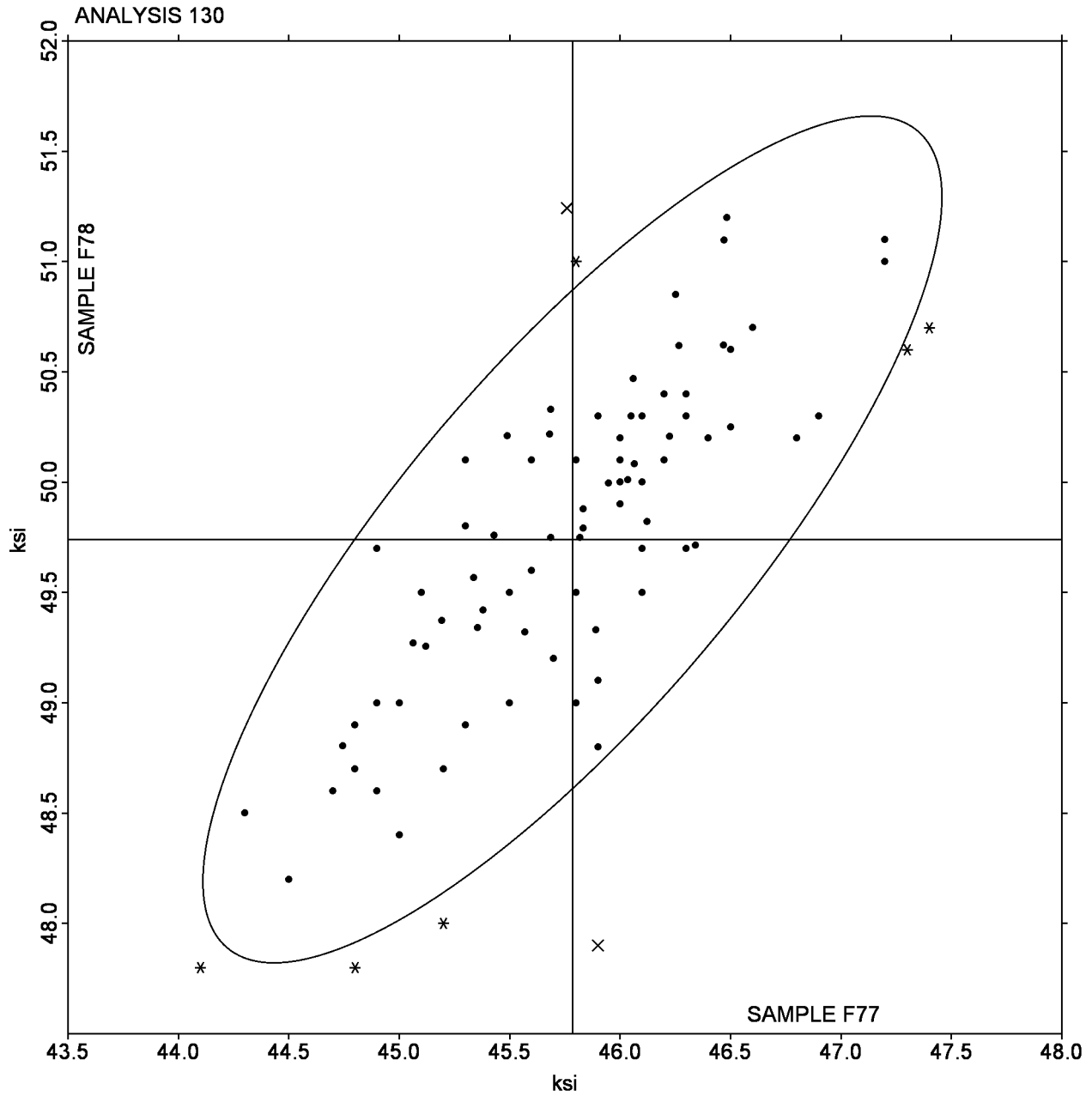
Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

SAMPLE F77 = 45.784 ksi

SAMPLE F78 = 49.741 ksi



Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1EN4UB		27.30	-0.60	-0.69	29.30	-0.39	-0.39	ZZ
1G74WZ		26.40	-1.50	-1.72	28.60	-1.09	-1.07	ZZ
1PQW6T		27.10	-0.80	-0.92	29.00	-0.69	-0.68	ZZ
2HC7RB	X	24.50	-3.40	-3.89	28.20	-1.49	-1.46	ZZ
2N7UZA		27.00	-0.90	-1.03	29.00	-0.69	-0.68	ZZ
2P8323		27.80	-0.10	-0.12	28.80	-0.89	-0.88	ZZ
2UK3PU		27.90	0.00	0.00	30.70	1.01	0.99	ZZ
2V24S9		28.00	0.10	0.11	28.80	-0.89	-0.88	ZZ
3E9NGT		28.50	0.60	0.68	31.03	1.33	1.31	ZZ
41VNCF		26.70	-1.20	-1.37	29.30	-0.39	-0.39	ZZ
4E4NVM		29.00	1.10	1.25	30.90	1.21	1.18	ZZ
4TS1NF		29.02	1.12	1.28	30.21	0.52	0.51	ZZ
4V61YN		27.90	0.00	0.00	29.50	-0.19	-0.19	ZZ
52KRLV		28.00	0.10	0.11	29.80	0.11	0.10	ZZ
53QDX2	*	26.40	-1.50	-1.72	26.90	-2.79	-2.74	ZZ
55RLQD		28.30	0.40	0.45	31.20	1.51	1.48	ZZ
5A4BGS	*	30.10	2.20	2.51	32.15	2.46	2.41	ZZ
5DTVPS		26.98	-0.92	-1.05	28.30	-1.39	-1.37	ZZ
5F2MS7	*	28.90	1.00	1.14	28.90	-0.79	-0.78	ZZ
5TR3XC		28.11	0.21	0.24	29.86	0.16	0.16	ZZ
6RX1FV		27.56	-0.35	-0.40	28.43	-1.27	-1.24	ZZ
8AS6QE		28.10	0.20	0.22	29.80	0.11	0.10	ZZ
8DGFXU		27.50	-0.40	-0.46	29.50	-0.19	-0.19	ZZ
8FSCNG		26.84	-1.06	-1.21	28.93	-0.76	-0.75	ZZ
96R4WB	X	31.17	3.27	3.73	31.82	2.13	2.09	ZZ
97GAZV		27.90	0.00	0.00	29.00	-0.69	-0.68	ZZ
9FEVLP		27.40	-0.50	-0.57	29.60	-0.09	-0.09	ZZ
9HXQVQ	X	31.30	3.40	3.88	32.30	2.61	2.56	ZZ
9LCBBQ		29.20	1.30	1.48	30.30	0.61	0.59	ZZ
9NLF1K		28.31	0.41	0.47	30.97	1.27	1.25	ZZ
9SV6CJ		28.14	0.23	0.27	30.44	0.75	0.74	ZZ
A2FCKG		29.17	1.26	1.44	30.18	0.49	0.48	ZZ
A8K8EN		28.14	0.24	0.27	30.12	0.43	0.42	ZZ
AEHYL6		29.10	1.20	1.37	31.20	1.51	1.48	ZZ
AR4RSA		28.10	0.20	0.22	28.90	-0.79	-0.78	ZZ
BCB4S2		29.20	1.30	1.48	30.96	1.27	1.24	ZZ
BK1Q2L		28.00	0.10	0.11	29.70	0.01	0.01	ZZ
BK2EK9		28.56	0.66	0.75	29.21	-0.48	-0.47	ZZ
BKVSS4		27.99	0.09	0.10	29.72	0.02	0.02	ZZ
BYSEUL		26.80	-1.10	-1.26	29.35	-0.35	-0.34	ZZ
CDC37F		27.00	-0.90	-1.03	30.00	0.31	0.30	ZZ
CEXP7B		28.90	1.00	1.14	29.70	0.01	0.01	ZZ
CKTCZP	*	27.70	-0.20	-0.23	31.33	1.63	1.60	ZZ
CWQVM3		26.90	-1.00	-1.15	28.50	-1.19	-1.17	ZZ
E7Z114		27.95	0.05	0.05	29.56	-0.13	-0.13	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ETFZ7B		27.40	-0.50	-0.57	29.30	-0.39	-0.39	ZZ
F3KVWF		28.07	0.16	0.19	29.66	-0.03	-0.03	ZZ
FS47X1		28.40	0.50	0.57	30.20	0.51	0.50	ZZ
FY3P59		28.47	0.57	0.65	30.08	0.39	0.38	ZZ
GE1GZM		27.96	0.06	0.06	30.29	0.60	0.58	ZZ
GH4L12		27.10	-0.80	-0.92	28.30	-1.39	-1.37	ZZ
GJVS3Y		27.70	-0.20	-0.23	29.50	-0.19	-0.19	ZZ
HEAT6Q		27.85	-0.05	-0.06	30.00	0.31	0.30	ZZ
HZWLV1		27.20	-0.70	-0.80	29.70	0.01	0.01	ZZ
J34FTH		27.70	-0.20	-0.23	28.70	-0.99	-0.97	ZZ
JLXB54		26.10	-1.80	-2.06	27.40	-2.29	-2.25	ZZ
JXCNL2		27.70	-0.20	-0.23	28.20	-1.49	-1.46	ZZ
JXZXW3		26.40	-1.50	-1.72	28.00	-1.69	-1.66	ZZ
KASECF		27.60	-0.30	-0.35	29.40	-0.29	-0.29	ZZ
LS88U9	*	30.23	2.32	2.66	31.83	2.13	2.09	ZZ
MK9RTA		27.60	-0.30	-0.35	29.90	0.21	0.20	ZZ
MN42HV		28.50	0.60	0.68	29.50	-0.19	-0.19	ZZ
MSKB2E	X	32.00	4.10	4.68	33.20	3.51	3.44	ZZ
MUZ8P7		28.14	0.24	0.27	29.91	0.22	0.21	ZZ
NLJTF9		27.60	-0.30	-0.35	29.90	0.21	0.20	ZZ
NMNCFG		29.40	1.50	1.71	30.80	1.11	1.09	ZZ
NRMK95		29.10	1.20	1.37	32.10	2.41	2.36	ZZ
NT8PS5		26.25	-1.65	-1.89	27.27	-2.43	-2.38	ZZ
PEJ4R8		26.70	-1.20	-1.37	27.70	-1.99	-1.96	ZZ
PHJKVQ		27.50	-0.40	-0.46	29.50	-0.19	-0.19	ZZ
QUNSX9		27.68	-0.23	-0.26	29.06	-0.63	-0.62	ZZ
QWCGA1		27.40	-0.50	-0.57	29.80	0.11	0.10	ZZ
QWZ6YQ		26.77	-1.13	-1.29	28.79	-0.90	-0.89	ZZ
QXA6N5		28.59	0.69	0.78	31.43	1.74	1.71	ZZ
RR53Q9		27.46	-0.45	-0.51	28.86	-0.83	-0.81	ZZ
T57R63		29.10	1.20	1.37	30.60	0.91	0.89	ZZ
TB8ZCV		27.66	-0.24	-0.28	29.09	-0.60	-0.59	ZZ
TQAYFE	*	26.70	-1.20	-1.37	30.60	0.91	0.89	ZZ
TTGGSG		27.80	-0.10	-0.12	30.30	0.61	0.59	ZZ
UJHA2U		28.60	0.70	0.80	30.40	0.71	0.69	ZZ
UT3N4K		26.70	-1.20	-1.37	29.20	-0.49	-0.48	ZZ
UT6544		28.90	1.00	1.14	30.40	0.71	0.69	ZZ
UZ9NM7		28.10	0.20	0.22	29.50	-0.19	-0.19	ZZ
V9SARN		28.08	0.18	0.20	29.79	0.10	0.10	ZZ
VFD33N		27.92	0.02	0.02	29.98	0.29	0.28	ZZ
WHDENG		27.19	-0.71	-0.81	30.03	0.34	0.33	ZZ
WJWKZD		28.30	0.40	0.45	29.40	-0.29	-0.29	ZZ
XJL9CR		29.50	1.60	1.82	30.50	0.81	0.79	ZZ
Y1D385		27.72	-0.19	-0.21	29.59	-0.11	-0.10	ZZ
YD1WKP		28.10	0.20	0.22	29.60	-0.09	-0.09	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YLK4E1		29.01	1.10	1.26	31.62	1.92	1.89	ZZ
YVP1EW		26.67	-1.23	-1.41	29.52	-0.17	-0.17	ZZ
YXD9KS		28.90	1.00	1.14	29.90	0.21	0.20	ZZ

Summary Statistics

	Sample F77	Sample F78
Grand Means	27.903 ksi	29.694 ksi
Stnd Dev Btwn Labs	0.875 ksi	1.020 ksi
Statistics based on 89 of 93 reporting participants		

Samples F77 , F78 : AISI 1010 steel

Comments on assigned Data Flags for Test #131

- 2HC7RB (X) - Low data for Sample F77.
 96R4WB (X) - High data for Sample F77.
 9HXQVQ (X) - High data for Sample F77.
 MSKB2E (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1R5R7Y		38.60	-4.74	-2.09	36.60	-4.17	-1.65	ZZ
2CSYKA		43.30	-0.04	-0.02	42.20	1.43	0.56	ZZ
3C586R		42.40	-0.94	-0.41	41.60	0.83	0.33	ZZ
3HPCEZ		43.19	-0.15	-0.06	40.59	-0.18	-0.07	ZZ
3MPU6S		43.00	-0.34	-0.15	40.00	-0.77	-0.30	ZZ
3XHHHT	X	39.00	-4.34	-1.91	42.00	1.23	0.49	ZZ
3YUHP5		39.60	-3.74	-1.65	36.90	-3.87	-1.53	ZZ
4AZX8F		39.60	-3.74	-1.65	37.00	-3.77	-1.49	ZZ
4E5ZKU		42.65	-0.69	-0.30	41.85	1.08	0.43	ZZ
4VUJFR		44.12	0.78	0.35	42.49	1.72	0.68	ZZ
5141JB		42.00	-1.34	-0.59	39.00	-1.77	-0.70	ZZ
5ZAPZX		42.20	-1.14	-0.50	39.50	-1.27	-0.50	ZZ
6EYHLM		44.10	0.76	0.34	42.10	1.33	0.53	ZZ
6LD6WE		44.50	1.16	0.51	41.50	0.73	0.29	ZZ
6Q3SGK		38.70	-4.64	-2.04	36.50	-4.27	-1.69	ZZ
74CL7P		45.40	2.06	0.91	40.90	0.13	0.05	ZZ
8AZP1Q		45.30	1.96	0.86	42.90	2.13	0.84	ZZ
8MLRTY		44.00	0.66	0.29	41.10	0.33	0.13	ZZ
8MXDZS		45.30	1.96	0.86	42.20	1.43	0.56	ZZ
8UBCJ5		40.50	-2.84	-1.25	39.00	-1.77	-0.70	ZZ
8VLHRB		39.40	-3.94	-1.73	37.20	-3.57	-1.41	ZZ
93T4YM		45.60	2.26	1.00	42.80	2.03	0.80	ZZ
9WZ38F		46.00	2.66	1.17	44.00	3.23	1.28	ZZ
AP1E6N		46.10	2.76	1.22	43.60	2.83	1.12	ZZ
AP941D		45.20	1.86	0.82	41.80	1.03	0.41	ZZ
ATVE8A		41.00	-2.34	-1.03	39.00	-1.77	-0.70	ZZ
AVBSJ1		42.10	-1.24	-0.54	40.00	-0.77	-0.30	ZZ
BJR3ZL		44.60	1.26	0.56	43.00	2.23	0.88	ZZ
BVWD1P		39.60	-3.74	-1.65	36.70	-4.07	-1.61	ZZ
CJZET3		41.50	-1.84	-0.81	37.00	-3.77	-1.49	ZZ
D3KVA2		40.20	-3.14	-1.38	37.90	-2.87	-1.13	ZZ
D678GK		46.50	3.16	1.39	43.50	2.73	1.08	ZZ
DHGHS8	X	72.31	28.97	12.76	70.38	29.61	11.69	ZZ
E43LH6	X	23.40	-19.94	-8.78	23.90	-16.87	-6.66	ZZ
ECB4Y4	X	35.50	-7.84	-3.45	34.00	-6.77	-2.67	ZZ
EGYJ1B		43.30	-0.04	-0.02	41.00	0.23	0.09	ZZ
EM4944		42.50	-0.84	-0.37	39.50	-1.27	-0.50	ZZ
ENFXM3		47.00	3.66	1.61	45.00	4.23	1.67	ZZ
EPCU4K		44.20	0.86	0.38	42.50	1.73	0.68	ZZ
ETQ6VK		43.00	-0.34	-0.15	42.00	1.23	0.49	ZZ
EYESHD		44.80	1.46	0.64	40.70	-0.07	-0.03	ZZ
FPF8D5		43.00	-0.34	-0.15	40.00	-0.77	-0.30	ZZ
FSNQ8M		43.10	-0.24	-0.10	39.80	-0.97	-0.38	ZZ
FW1Q5D		40.70	-2.64	-1.16	37.00	-3.77	-1.49	ZZ
G745WK		45.00	1.66	0.73	43.00	2.23	0.88	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
H2PBKD		46.90	3.56	1.57	44.00	3.23	1.28	ZZ
HGTKMC		41.50	-1.84	-0.81	38.00	-2.77	-1.09	ZZ
HQJ97W		44.50	1.16	0.51	40.00	-0.77	-0.30	ZZ
HV88LG		44.55	1.21	0.53	42.36	1.59	0.63	ZZ
HVZWDT	X	49.00	5.66	2.49	41.40	0.63	0.25	ZZ
J6RFAB		45.40	2.06	0.91	42.70	1.93	0.76	ZZ
JD5T5N		44.30	0.96	0.42	41.20	0.43	0.17	ZZ
JP6EE8		41.00	-2.34	-1.03	38.00	-2.77	-1.09	ZZ
K66PWJ		46.00	2.66	1.17	43.00	2.23	0.88	ZZ
KMYWY4		43.20	-0.14	-0.06	40.70	-0.07	-0.03	ZZ
L1X5DX		42.50	-0.84	-0.37	38.50	-2.27	-0.90	ZZ
L5MW3R		43.80	0.46	0.20	42.00	1.23	0.49	ZZ
LALV2A		39.10	-4.24	-1.87	36.10	-4.67	-1.84	ZZ
LHAC5E		44.70	1.36	0.60	41.70	0.93	0.37	ZZ
LKTH83		45.10	1.76	0.78	43.87	3.10	1.22	ZZ
LLFR36		44.90	1.56	0.69	43.00	2.23	0.88	ZZ
LUPWG3		42.80	-0.54	-0.24	39.60	-1.17	-0.46	ZZ
LVA732		44.20	0.86	0.38	41.20	0.43	0.17	ZZ
MJX1HL		40.70	-2.64	-1.16	38.20	-2.57	-1.01	ZZ
MRN2JJ		43.80	0.46	0.20	42.40	1.63	0.64	ZZ
MRRG8R		43.20	-0.14	-0.06	40.60	-0.17	-0.07	ZZ
MTBFAE		46.80	3.46	1.53	44.50	3.73	1.47	ZZ
MZ9YYK		42.00	-1.34	-0.59	40.00	-0.77	-0.30	ZZ
N6T6K9		39.90	-3.44	-1.51	37.20	-3.57	-1.41	ZZ
NP7R56		41.50	-1.84	-0.81	39.00	-1.77	-0.70	ZZ
NT4A9Q		44.98	1.64	0.72	41.94	1.17	0.46	ZZ
P3WGRD		42.00	-1.34	-0.59	37.60	-3.17	-1.25	ZZ
PEBUE4	*	48.00	4.66	2.05	47.90	7.13	2.82	ZZ
PPKKG1	*	43.50	0.16	0.07	38.10	-2.67	-1.05	ZZ
PV2EP3		45.20	1.86	0.82	42.40	1.63	0.64	ZZ
RE27QS	*	48.00	4.66	2.05	47.00	6.23	2.46	ZZ
REWU6B	*	40.10	-3.24	-1.43	39.80	-0.97	-0.38	ZZ
RMKZ8C		43.45	0.11	0.05	40.53	-0.24	-0.09	ZZ
RXCKYQ		45.90	2.56	1.13	44.30	3.53	1.39	ZZ
S49QDC		39.00	-4.34	-1.91	36.00	-4.77	-1.88	ZZ
SA9S4Z		43.90	0.56	0.25	40.50	-0.27	-0.11	ZZ
SFJL4		39.80	-3.54	-1.56	37.30	-3.47	-1.37	ZZ
SNVZ57		44.30	0.96	0.42	42.40	1.63	0.64	ZZ
SWA66A		44.00	0.66	0.29	40.00	-0.77	-0.30	ZZ
TE7DYZ	*	47.20	3.86	1.70	42.80	2.03	0.80	ZZ
TJRATQ		45.20	1.86	0.82	43.70	2.93	1.16	ZZ
UCL14N		42.60	-0.74	-0.32	41.00	0.23	0.09	ZZ
UZLF5S		43.65	0.31	0.14	42.02	1.25	0.49	ZZ
VSY9J5		43.90	0.56	0.25	40.30	-0.47	-0.19	ZZ
XH8YTA		44.00	0.66	0.29	43.00	2.23	0.88	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F77			Sample F78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YAQ9BD		40.00	-3.34	-1.47	36.00	-4.77	-1.88	ZZ
Z2CZLQ		44.40	1.06	0.47	41.70	0.93	0.37	ZZ
Z4KP7G		45.30	1.96	0.86	42.70	1.93	0.76	ZZ

Summary Statistics

	Sample F77		Sample F78	
Grand Means	43.336	Percent	40.770	Percent
Stnd Dev Btwn Labs	2.271	Percent	2.532	Percent

Statistics based on 88 of 93 reporting participants

Samples F77 , F78 : AISI 1010 steel

Comments on assigned Data Flags for Test #132

- 3XHHHT (X) - Inconsistent in testing between samples.
 DHGHS8 (X) - Data for both samples are high.
 E43LH6 (X) - Data for both samples are low.
 ECB4Y4 (X) - Low data for Sample F77.
 HVZWDT (X) - Inconsistent in testing between samples.

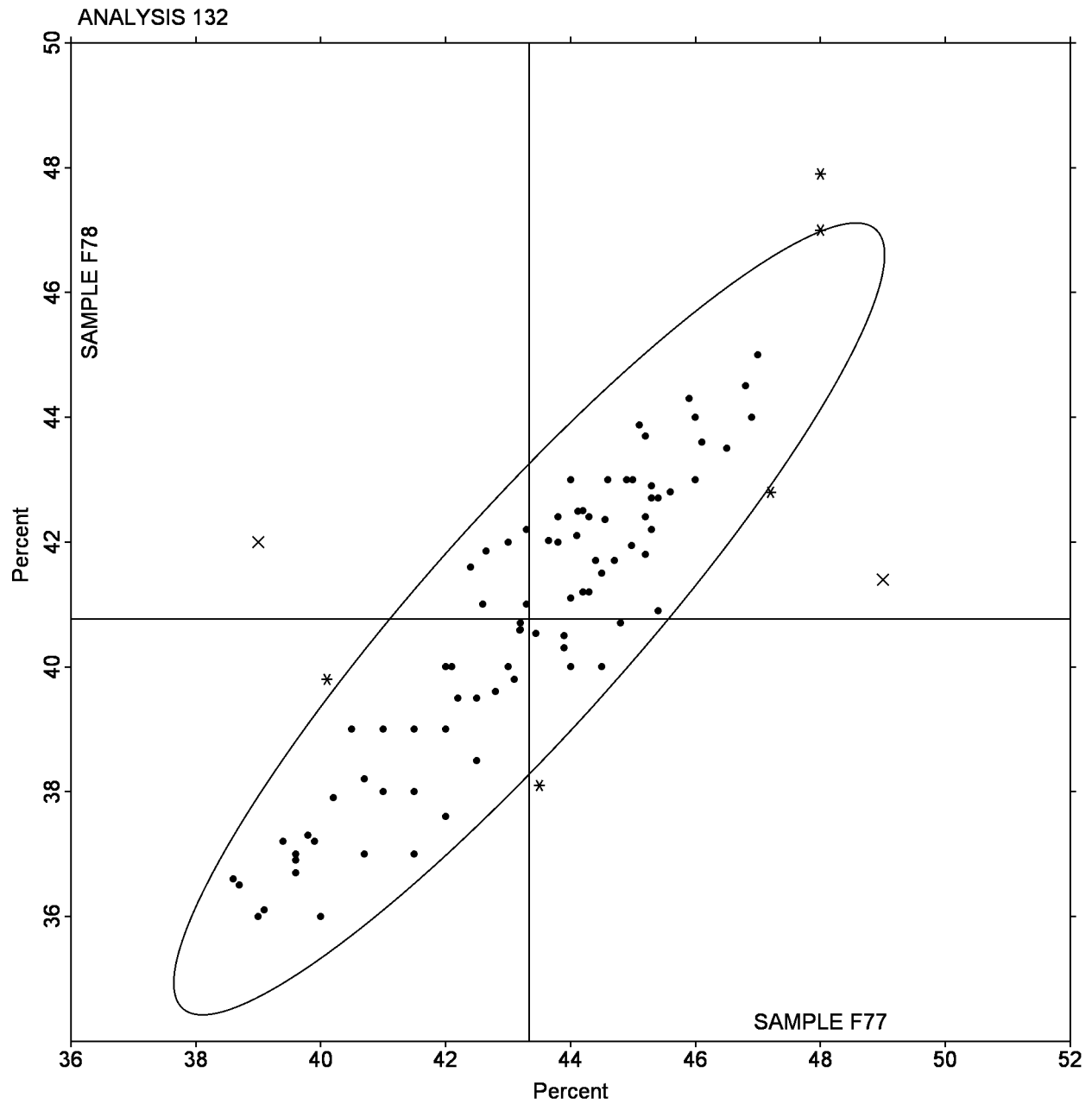
Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

SAMPLE F77 = 43.336 Percent SAMPLe F78 = 40.770 Percent



Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
113NWT		44.46	1.08	1.95	46.64	0.89	1.69	CL
1GTNNC		44.36	0.98	1.76	46.82	1.07	2.04	WI
1MKAUE		44.20	0.82	1.48	46.12	0.37	0.70	UN
1MNKGS		43.26	-0.12	-0.22	45.78	0.03	0.05	MA
1T4P4D		43.02	-0.36	-0.65	45.86	0.11	0.20	WI
27EQC8		43.38	0.00	0.00	46.00	0.25	0.47	WI
27MS7N		43.54	0.16	0.29	45.72	-0.03	-0.07	UN
2EE7SL		42.90	-0.48	-0.87	45.40	-0.35	-0.68	NA
2N33DU		43.40	0.02	0.03	46.30	0.55	1.04	XX
34TREZ		43.30	-0.08	-0.15	46.24	0.49	0.93	WI
36CH8U		43.40	0.02	0.03	45.20	-0.55	-1.06	WI
3VFE4Z		42.50	-0.88	-1.59	44.80	-0.95	-1.83	UN
43Q51B		43.84	0.46	0.83	46.23	0.48	0.91	UN
54ADHA		44.00	0.62	1.12	46.02	0.27	0.51	WI
56C35L		42.24	-1.14	-2.06	45.06	-0.69	-1.33	WI
5H9V5X		43.24	-0.14	-0.26	45.20	-0.55	-1.06	WI
5K2693		43.50	0.12	0.21	46.06	0.31	0.58	XX
5R2TQW		43.78	0.40	0.72	46.18	0.43	0.81	WI
6SAL85		43.60	0.22	0.39	45.80	0.05	0.09	UN
6UL2J3		43.38	0.00	0.00	45.64	-0.11	-0.22	WI
796FCF		43.22	-0.16	-0.29	45.40	-0.35	-0.68	WI
7Q5YLY		43.00	-0.38	-0.69	45.00	-0.75	-1.44	WI
7RLEW1		43.28	-0.10	-0.18	45.96	0.21	0.39	WI
7ZUND7		43.50	0.12	0.21	45.70	-0.05	-0.10	UN
8BXAX8		43.68	0.30	0.54	46.10	0.35	0.66	WI
8QTRG4		43.50	0.12	0.21	46.16	0.41	0.78	XX
8QVFTZ		44.00	0.62	1.12	46.40	0.65	1.23	WI
8QVZMN		42.60	-0.78	-1.41	45.70	-0.05	-0.10	UN
94Y86G		43.36	-0.02	-0.04	46.06	0.31	0.58	WI
9561WJ		42.80	-0.58	-1.05	45.46	-0.29	-0.56	MI
97T75Z		43.20	-0.18	-0.33	45.64	-0.11	-0.22	NA
9GN58E		42.80	-0.58	-1.05	45.40	-0.35	-0.68	WI
9M4E2B		43.54	0.16	0.29	46.04	0.29	0.55	WI
9XV4CC		43.74	0.36	0.65	45.92	0.17	0.32	UN
A5NFSK		42.82	-0.56	-1.01	45.32	-0.43	-0.83	NA
A88P6K		44.20	0.82	1.48	46.20	0.45	0.85	MS
AVXUK2		44.10	0.72	1.30	46.32	0.57	1.08	UN
B2WTDR		43.84	0.46	0.83	45.54	-0.21	-0.41	WI
BZ3ZFL		44.18	0.80	1.44	46.42	0.67	1.27	IN
BZC4L6		43.30	-0.08	-0.15	45.86	0.11	0.20	WI
C9QTDH		43.40	0.02	0.03	45.88	0.13	0.24	UN
CRNR9P		42.90	-0.48	-0.87	45.48	-0.27	-0.53	CL
DET41C		43.02	-0.36	-0.65	45.30	-0.45	-0.87	BU
DMK6PY		43.30	-0.08	-0.15	45.42	-0.33	-0.64	WI
DP51DB	*	42.24	-1.14	-2.06	45.44	-0.31	-0.60	WI

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
DRDAC9		43.40	0.02	0.03	46.00	0.25	0.47	XX
DV7C2G		43.22	-0.16	-0.29	45.68	-0.07	-0.14	WI
EHU5HW		43.52	0.14	0.25	46.16	0.41	0.78	BU
G3DM41		43.32	-0.06	-0.11	45.94	0.19	0.35	LE
G5WVZE		43.36	-0.02	-0.04	46.18	0.43	0.81	CL
GDRCLX		42.70	-0.68	-1.23	45.26	-0.49	-0.95	BU
H2M2J6		43.36	-0.02	-0.04	45.22	-0.53	-1.02	WI
H642Q8		43.72	0.34	0.61	46.02	0.27	0.51	WI
HA9GRG	X	460.60	417.22	752.87	493.40	447.65	856.26	UN
HPPZG6		43.24	-0.14	-0.26	46.20	0.45	0.85	WI
HU3E7X		42.86	-0.52	-0.94	45.68	-0.07	-0.14	NA
J871GS		43.12	-0.26	-0.47	45.66	-0.09	-0.18	MI
J9BS5U		43.20	-0.18	-0.33	45.54	-0.21	-0.41	WI
JEFVP1		43.48	0.10	0.18	45.46	-0.29	-0.56	CL
JGS5YL		43.72	0.34	0.61	46.04	0.29	0.55	UN
JL3E8V		43.20	-0.18	-0.33	45.62	-0.13	-0.26	NA
JMVEAL		43.64	0.26	0.47	45.96	0.21	0.39	WI
JRQTP5		43.00	-0.38	-0.69	45.20	-0.55	-1.06	WI
JRWH28		43.98	0.60	1.08	46.28	0.53	1.00	MA
JUXYQV		44.36	0.98	1.76	46.78	1.03	1.96	MI
KAMLKZ		42.82	-0.56	-1.01	45.16	-0.59	-1.14	WI
KLD91V		42.68	-0.70	-1.27	45.32	-0.43	-0.83	WI
KWHBJY	*	45.00	1.62	2.92	47.20	1.45	2.76	AV
L81YSB		43.42	0.04	0.07	45.90	0.15	0.28	NA
LSV713		44.20	0.82	1.48	46.04	0.29	0.55	IN
MSU6V2		43.28	-0.10	-0.18	45.24	-0.51	-0.98	NA
N7APPL		43.18	-0.20	-0.36	45.38	-0.37	-0.72	CL
NHEL4A		43.82	0.44	0.79	45.76	0.01	0.01	NA
NSNSTK		43.20	-0.18	-0.33	46.40	0.65	1.23	XX
PBW9GV	*	44.70	1.32	2.38	47.16	1.41	2.69	UN
PC9P3J		43.50	0.12	0.21	45.46	-0.29	-0.56	WI
PNZQZS		42.78	-0.60	-1.09	45.94	0.19	0.35	WI
PPQ1QK		43.62	0.24	0.43	45.60	-0.15	-0.29	UN
Q65MQM		43.74	0.36	0.65	45.90	0.15	0.28	XX
Q8QP92		42.68	-0.70	-1.27	45.54	-0.21	-0.41	WI
QARUH1		44.28	0.90	1.62	46.04	0.29	0.55	WI
QMPJMG		43.26	-0.12	-0.22	45.68	-0.07	-0.14	WI
QZG3AZ		43.38	0.00	0.00	45.14	-0.61	-1.18	WI
S8JNCD		43.42	0.04	0.07	46.18	0.43	0.81	WI
SGE2LK		43.86	0.48	0.86	46.28	0.53	1.00	NA
SM6267		43.40	0.02	0.03	45.80	0.05	0.09	WI
SN91N1	X	43.02	-0.36	-0.65	44.30	-1.45	-2.78	WI
T2APC8		42.70	-0.68	-1.23	45.70	-0.05	-0.10	WI
T9X925	*	43.14	-0.25	-0.44	44.75	-1.00	-1.92	UN
TGLP7Q	X	41.60	-1.78	-3.22	43.80	-1.95	-3.74	WI

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
TJ3VSZ		43.50	0.12	0.21	45.50	-0.25	-0.49	XX
TW4VHC		43.39	0.01	0.02	46.05	0.29	0.56	WI
U1R6S8		42.40	-0.98	-1.77	44.60	-1.15	-2.21	XX
U1W1N7		43.78	0.40	0.72	46.32	0.57	1.08	BU
UFA46F	X	41.94	-1.44	-2.60	45.46	-0.29	-0.56	WI
UFJCVV		43.36	-0.02	-0.04	45.70	-0.05	-0.10	WI
UKFYTW		44.00	0.62	1.12	46.20	0.45	0.85	OG
UUCS8N		42.94	-0.44	-0.80	45.56	-0.19	-0.37	WI
UUVK95		43.38	0.00	0.00	45.48	-0.27	-0.53	NA
V2EJTJ	*	42.48	-0.90	-1.63	45.74	-0.01	-0.03	WI
WLVHU8		43.02	-0.36	-0.65	45.52	-0.23	-0.45	LE
WPJSBL		43.25	-0.13	-0.24	45.29	-0.46	-0.89	WI
WQ8BZ5	*	42.12	-1.26	-2.28	44.46	-1.29	-2.48	WI
WTNDM2		43.00	-0.38	-0.69	44.80	-0.95	-1.83	CL
X5JLC6		43.08	-0.30	-0.54	45.00	-0.75	-1.44	CL
XC7L7W	*	44.70	1.32	2.38	46.38	0.63	1.20	WI
XTJBE9		44.14	0.76	1.37	46.62	0.87	1.66	WI
XU47FJ		42.80	-0.58	-1.05	44.68	-1.07	-2.06	WI
XV4GUF		42.24	-1.14	-2.06	44.56	-1.19	-2.29	MI
XWPPFW		44.02	0.64	1.15	46.44	0.69	1.31	WI
XYHRES		42.14	-1.24	-2.24	44.92	-0.83	-1.60	UN
Y7PD26		43.30	-0.08	-0.15	45.76	0.01	0.01	WI
YHVA1T		43.50	0.12	0.21	45.48	-0.27	-0.53	NA
Z57YGM		43.46	0.08	0.14	45.64	-0.11	-0.22	WI
Z79WS4		43.50	0.12	0.21	45.70	-0.05	-0.10	LE
ZHC5FD		43.64	0.26	0.47	46.16	0.41	0.78	WI
ZVVZAT		43.74	0.36	0.65	46.08	0.33	0.62	WI

Summary Statistics

	Sample E77		Sample E78	
Grand Means	43.382	Rockwell Number	45.755	Rockwell Number
Std Dev Btwn Labs	0.554	Rockwell Number	0.523	Rockwell Number

Statistics based on 113 of 117 reporting participants

Samples E77 , E78 : steel (Use C scale)

Comments on assigned Data Flags for Test #118

HA9GRG (X) - Extreme data.

SN91N1 (X) - Inconsistent in testing between samples, data for Sample E78 are low.

TGLP7Q (X) - Data for both samples are low. Possible systematic error.

UFA46F (X) - Inconsistent in testing between samples and inconsistent within the determinations for Sample E77.

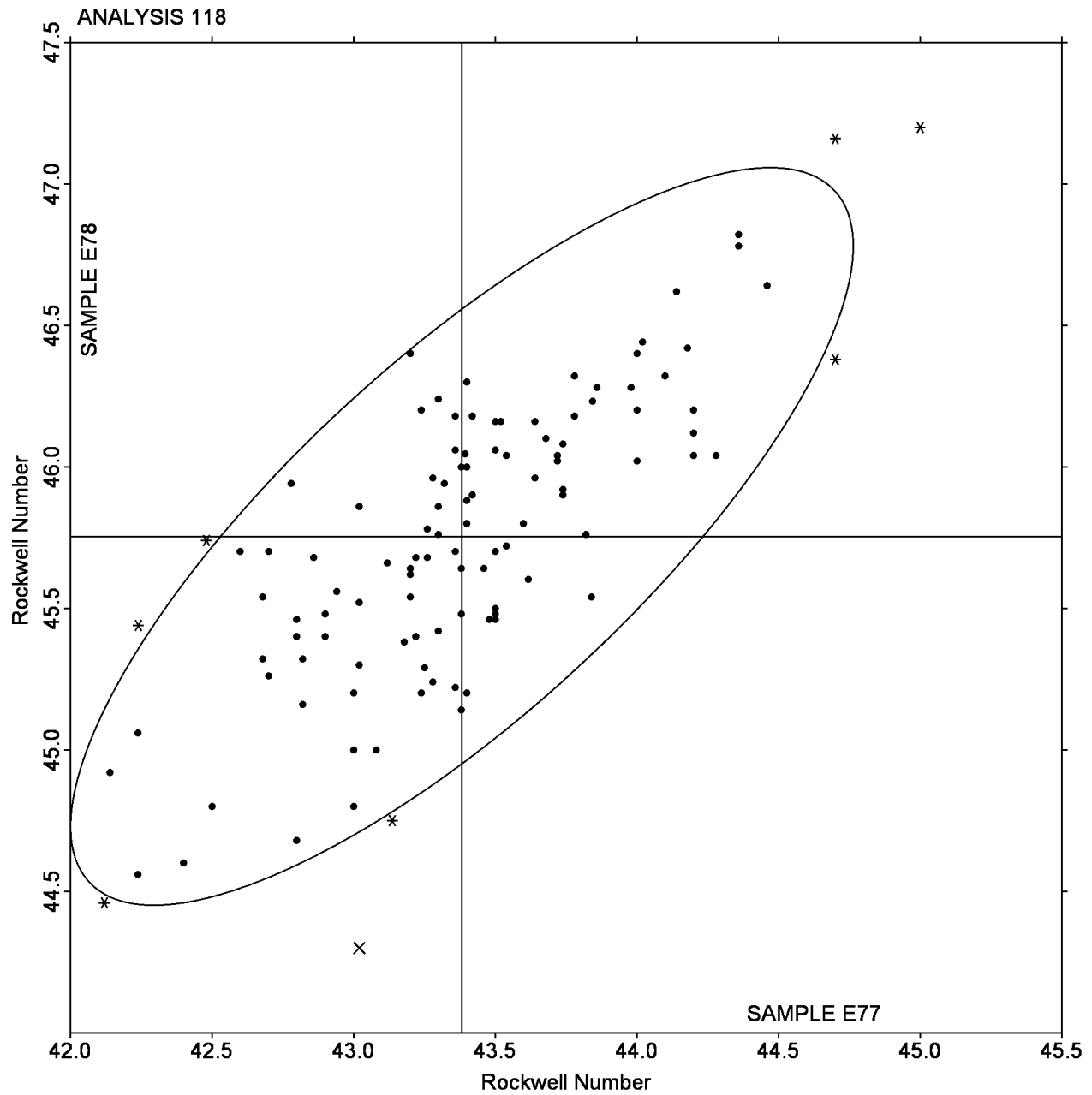
Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

SAMPLE E77 = 43.382 Rockwell Number SAMPLe E78 = 45.755 Rockwell Number



Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
11N6XT	*	43.92	0.06	0.18	45.30	-0.64	-1.76	WI
17F7FL		43.88	0.02	0.06	45.60	-0.34	-0.94	WI
2JYH14		44.02	0.16	0.47	46.22	0.28	0.75	LE
324YLM	*	43.90	0.04	0.12	45.24	-0.70	-1.92	WI
3AQ1QA		43.98	0.12	0.36	46.16	0.22	0.59	WI
421SRJ		43.74	-0.12	-0.34	46.20	0.26	0.70	WI
4BN6N4		44.20	0.34	1.00	46.40	0.46	1.25	CL
4FQ8VP		44.20	0.34	1.00	46.16	0.22	0.59	NA
4WSAMB		43.90	0.04	0.12	45.64	-0.30	-0.83	CL
4XLRET		43.32	-0.54	-1.56	45.72	-0.22	-0.61	MI
56FZYA	*	42.92	-0.94	-2.73	45.46	-0.48	-1.32	UN
5H7PLB		44.34	0.48	1.40	46.52	0.58	1.57	IN
5ZDFRT		43.82	-0.04	-0.11	45.96	0.02	0.04	WI
69GQZ3		44.00	0.14	0.41	46.00	0.06	0.15	WI
6E9G8Q		44.00	0.14	0.41	46.00	0.06	0.15	WI
6X7K1H		44.10	0.24	0.70	45.76	-0.18	-0.50	LE
737L88		43.50	-0.36	-1.04	45.76	-0.18	-0.50	AK
7XHFND		43.90	0.04	0.12	45.58	-0.36	-0.99	BU
8CG99Y		44.28	0.42	1.23	46.62	0.68	1.85	NA
8E3U4G		43.22	-0.64	-1.85	45.60	-0.34	-0.94	WO
8S3TD7		44.04	0.18	0.53	46.50	0.56	1.52	FU
8WAFKK		43.58	-0.28	-0.81	45.90	-0.04	-0.12	WI
8YCU2D		44.00	0.14	0.41	46.08	0.14	0.37	IN
9LUXW8		43.60	-0.26	-0.75	45.40	-0.54	-1.49	MI
9UB5X9		44.12	0.26	0.76	46.30	0.36	0.97	EM
A4U2FL		43.48	-0.38	-1.10	45.58	-0.36	-0.99	MI
ADR57A		43.96	0.10	0.30	46.36	0.42	1.14	WI
BDGE4X		43.58	-0.28	-0.81	45.74	-0.20	-0.56	UN
BSXJ5Y		43.92	0.06	0.18	45.80	-0.14	-0.39	WI
BYSXUM	*	43.86	0.00	0.01	46.78	0.84	2.28	XX
E8PF1B		43.78	-0.08	-0.23	45.68	-0.26	-0.72	NA
F9ML46	*	42.88	-0.98	-2.84	45.28	-0.66	-1.81	BU
FH4THG		44.02	0.16	0.47	46.34	0.40	1.08	XX
FHPPQA	*	43.00	-0.86	-2.49	45.68	-0.26	-0.72	NA
G3M7NQ		44.32	0.46	1.34	46.22	0.28	0.75	WI
GKFQ1Q		43.80	-0.06	-0.17	45.60	-0.34	-0.94	WI
H4VYTB		43.60	-0.26	-0.75	45.70	-0.24	-0.67	WI
JLCUTH		43.76	-0.10	-0.28	45.68	-0.26	-0.72	WI
JQS4B1		44.04	0.18	0.53	45.90	-0.04	-0.12	UN
KTG66D		43.78	-0.08	-0.23	45.76	-0.18	-0.50	XX
KV8AWZ		43.36	-0.50	-1.45	45.86	-0.08	-0.23	WI
LEEX24		44.16	0.30	0.88	45.92	-0.02	-0.06	WI
LQ58Z4		43.76	-0.10	-0.28	45.92	-0.02	-0.06	WI
LXQ9LL		43.50	-0.36	-1.04	45.70	-0.24	-0.67	WI
M5GA5J		43.94	0.08	0.24	46.30	0.36	0.97	CL

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MXD8TR		43.93	0.07	0.20	46.15	0.20	0.55	UN
N2VQW8		44.24	0.38	1.11	46.34	0.40	1.08	WI
NDDU97		44.34	0.48	1.40	46.38	0.44	1.19	MA
NRBTYB		44.14	0.28	0.82	46.42	0.48	1.30	CL
NZ91QN		43.70	-0.16	-0.45	45.78	-0.16	-0.45	WI
P98N11		43.54	-0.32	-0.92	45.78	-0.16	-0.45	WI
PZSRH1		43.96	0.10	0.30	46.10	0.16	0.43	UN
Q6ZCHB		43.68	-0.18	-0.52	46.08	0.14	0.37	WI
QEFW2A		44.00	0.14	0.41	46.04	0.10	0.26	NA
QKM3JQ		44.56	0.70	2.04	46.72	0.78	2.12	EM
RD6TXU	X	44.24	0.38	1.11	45.18	-0.76	-2.09	FI
RTXMPM		43.74	-0.12	-0.34	45.76	-0.18	-0.50	WI
RY9GP3		43.56	-0.30	-0.87	45.74	-0.20	-0.56	BU
S1EEPX		44.20	0.34	1.00	46.16	0.22	0.59	NA
SZDWEA		43.96	0.10	0.30	45.92	-0.02	-0.06	WI
T9U66P		43.20	-0.66	-1.91	45.10	-0.84	-2.30	CL
TBHCF6		44.20	0.34	1.00	45.96	0.02	0.04	BU
U386FT		44.16	0.30	0.88	45.94	0.00	-0.01	AN
UQMK8T		43.86	0.00	0.01	45.86	-0.08	-0.23	WI
VF55MJ		44.26	0.40	1.17	46.36	0.42	1.14	WI
VXTH45		43.82	-0.04	-0.11	45.38	-0.56	-1.54	WI
W7SJY1		44.40	0.54	1.58	46.40	0.46	1.25	WI
XWKFTP		43.66	-0.20	-0.58	45.68	-0.26	-0.72	NA
YQJPN1		43.86	0.00	0.01	45.80	-0.14	-0.39	CL
YR58V4	X	43.24	-0.62	-1.80	44.64	-1.30	-3.56	BU
ZACS9J		44.16	0.30	0.87	46.41	0.47	1.28	WI
ZB1PP5		43.94	0.08	0.24	45.92	-0.02	-0.06	WI

Summary Statistics

	Sample E77	Sample E78
Grand Means	43.858 HRC	45.944 HRC
Std Dev Btwn Labs	0.344 HRC	0.366 HRC

Statistics based on 70 of 72 reporting participants

Samples E77 , E78 : steel (use C scale)

Comments on assigned Data Flags for Test #120

RD6TXU (X) - Inconsistent in testing between samples.

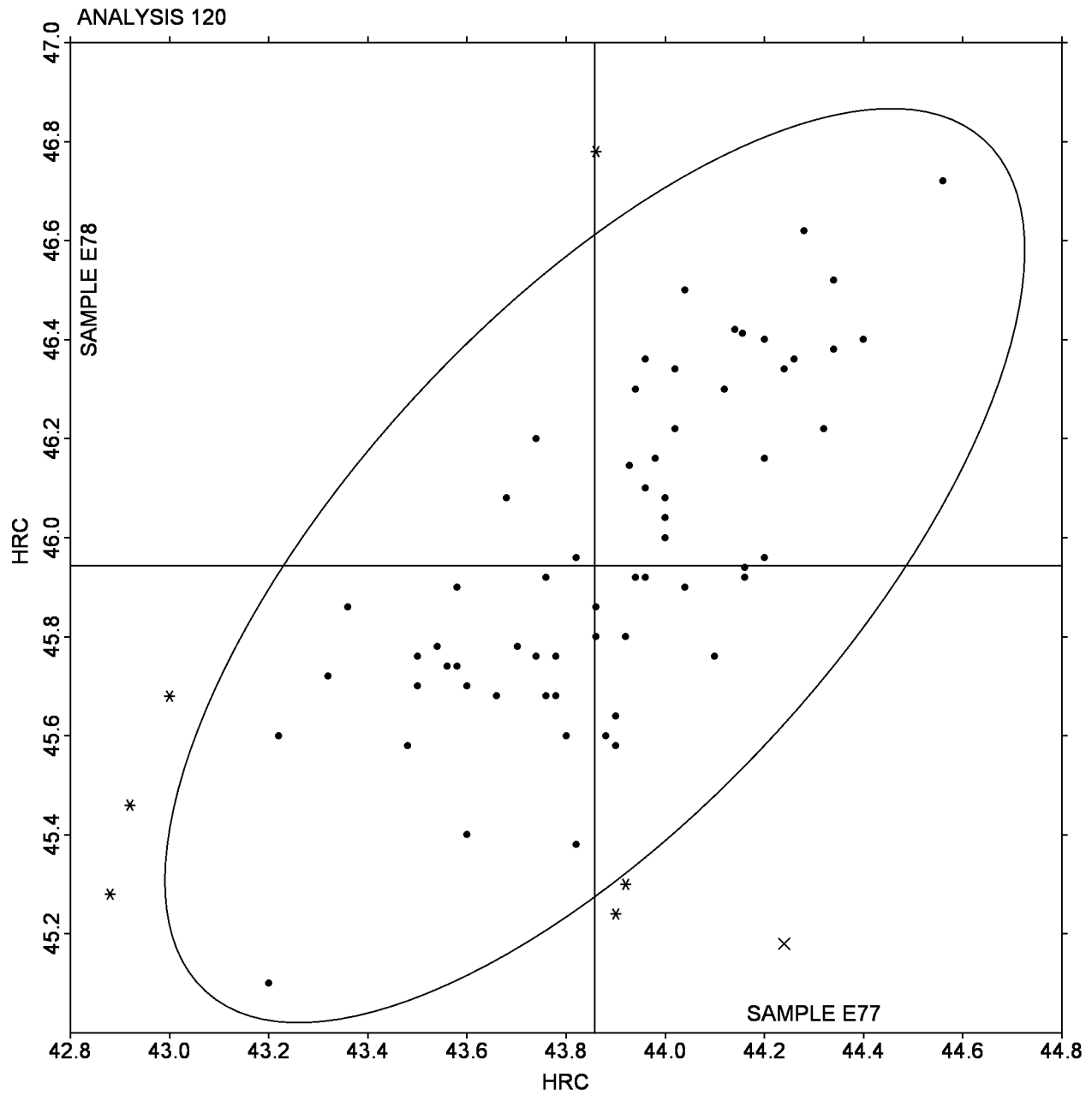
YR58V4 (X) - Low data for Sample E78, and inconsistent within the determinations for Sample 78.

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number
ASTM E18

SAMPLE E77 = 43.858 HRC SAMPLe E78 = 45.944 HRC



Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1F2ZM5		63.9	0.3	0.41	65.1	-0.1	-0.20	WI
2LZLG7		62.7	-0.9	-1.40	64.0	-1.2	-1.99	WI
3SERRJ		62.2	-1.4	-2.09	64.7	-0.5	-0.79	UN
3V6S2Y		63.3	-0.3	-0.53	65.3	0.0	0.06	NA
5ACKXD		62.9	-0.7	-1.10	63.9	-1.3	-2.15	WI
99ECFX		63.5	-0.1	-0.13	65.7	0.5	0.78	WI
A9FW9X		64.4	0.8	1.16	65.6	0.4	0.61	WI
APT3ZX		63.4	-0.2	-0.38	65.4	0.2	0.26	CL
ATPU69	X	64.4	0.8	1.16	62.0	-3.2	-5.25	WI
CJFNXC		63.6	0.0	0.02	65.1	-0.1	-0.17	UN
DN583Z		64.4	0.8	1.19	65.7	0.5	0.78	XX
DYRN78		62.9	-0.7	-1.07	64.7	-0.5	-0.82	NA
EHAQ7U	*	62.5	-1.2	-1.76	65.3	0.1	0.09	WI
EKRN9K		63.6	0.0	-0.04	64.8	-0.4	-0.66	WI
ESEC6C		63.7	0.1	0.17	65.4	0.1	0.22	WI
FYEBC2		62.9	-0.7	-1.13	64.1	-1.1	-1.80	WI
G3EVHZ		63.7	0.1	0.08	65.1	-0.1	-0.20	XX
GM3BCY		64.7	1.1	1.67	66.7	1.5	2.47	AN
GU3USA		63.6	0.0	-0.07	65.4	0.2	0.29	BU
HFK87W		63.8	0.2	0.26	64.9	-0.4	-0.59	BU
HG95BB		64.7	1.1	1.64	66.1	0.8	1.36	WI
JV2851		63.5	-0.1	-0.23	65.1	-0.1	-0.20	WI
JZKGG7		63.8	0.2	0.29	64.4	-0.9	-1.40	WI
K8U3C2		63.9	0.3	0.47	65.8	0.6	0.91	CL
KCV8ZZ		63.8	0.2	0.26	65.7	0.5	0.74	WI
KJRQZY		63.6	-0.1	-0.10	65.7	0.5	0.74	XX
NE5YR4		63.5	-0.1	-0.13	65.1	-0.1	-0.14	WI
NFG2JP		63.8	0.2	0.26	65.1	-0.2	-0.27	XX
NFR4ZJ		63.4	-0.2	-0.38	65.8	0.6	0.91	CL
NMHHXR		63.1	-0.6	-0.86	64.4	-0.9	-1.40	AN
PG8DYP		63.8	0.2	0.23	66.1	0.9	1.39	UN
Q5MFXJ		63.6	0.0	0.02	65.2	-0.1	-0.10	WI
QD5L9F		63.7	0.1	0.14	65.2	0.0	0.03	LE
R783SB		63.9	0.2	0.35	65.8	0.5	0.87	WI
R8LD5H		64.1	0.5	0.68	65.5	0.3	0.52	UN
RBCZ2C		63.0	-0.6	-0.89	65.4	0.1	0.22	LE
SKNDVC		64.6	1.0	1.46	65.8	0.6	0.97	NA
SQ5NGW		63.6	0.0	-0.04	65.4	0.2	0.29	NA
T3HGYM		63.9	0.2	0.35	65.3	0.0	0.06	MI
URW6W3		65.3	1.6	2.45	66.6	1.4	2.24	WI
V3MYP5		63.1	-0.5	-0.74	64.7	-0.6	-0.92	CL
VCYZHH		62.1	-1.6	-2.38	64.5	-0.8	-1.26	WI
VMDE2S		63.4	-0.3	-0.41	65.0	-0.2	-0.40	CL
WKR6VQ		63.2	-0.4	-0.59	64.5	-0.7	-1.11	UN
WWWBK5	*	65.4	1.8	2.73	66.4	1.1	1.85	XX

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E77			Sample E78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X3Y9TE		63.3	-0.3	-0.50	65.2	-0.1	-0.10	WI
X9PJDJ		63.7	0.1	0.14	65.0	-0.2	-0.36	WI
XSZYDK		63.7	0.1	0.14	64.8	-0.4	-0.69	WI
XY1DSL		63.5	-0.1	-0.23	64.8	-0.4	-0.62	WI
Z9H6QD		64.1	0.4	0.65	65.0	-0.2	-0.33	FT

Summary Statistics

	Sample E77		Sample E78	
Grand Means	63.63	HR30N	65.22	HR30N
Std Dev Btwn Labs	0.66	HR30N	0.61	HR30N
Statistics based on 49 of 50 reporting participants				

Samples E77 , E78 are hardness test blocks made from steel. The blocks are heat treated to hardness levels specified by CTS.

Comments on assigned Data Flags for Test #136

ATPU69 (X) - Low data for Sample E78.

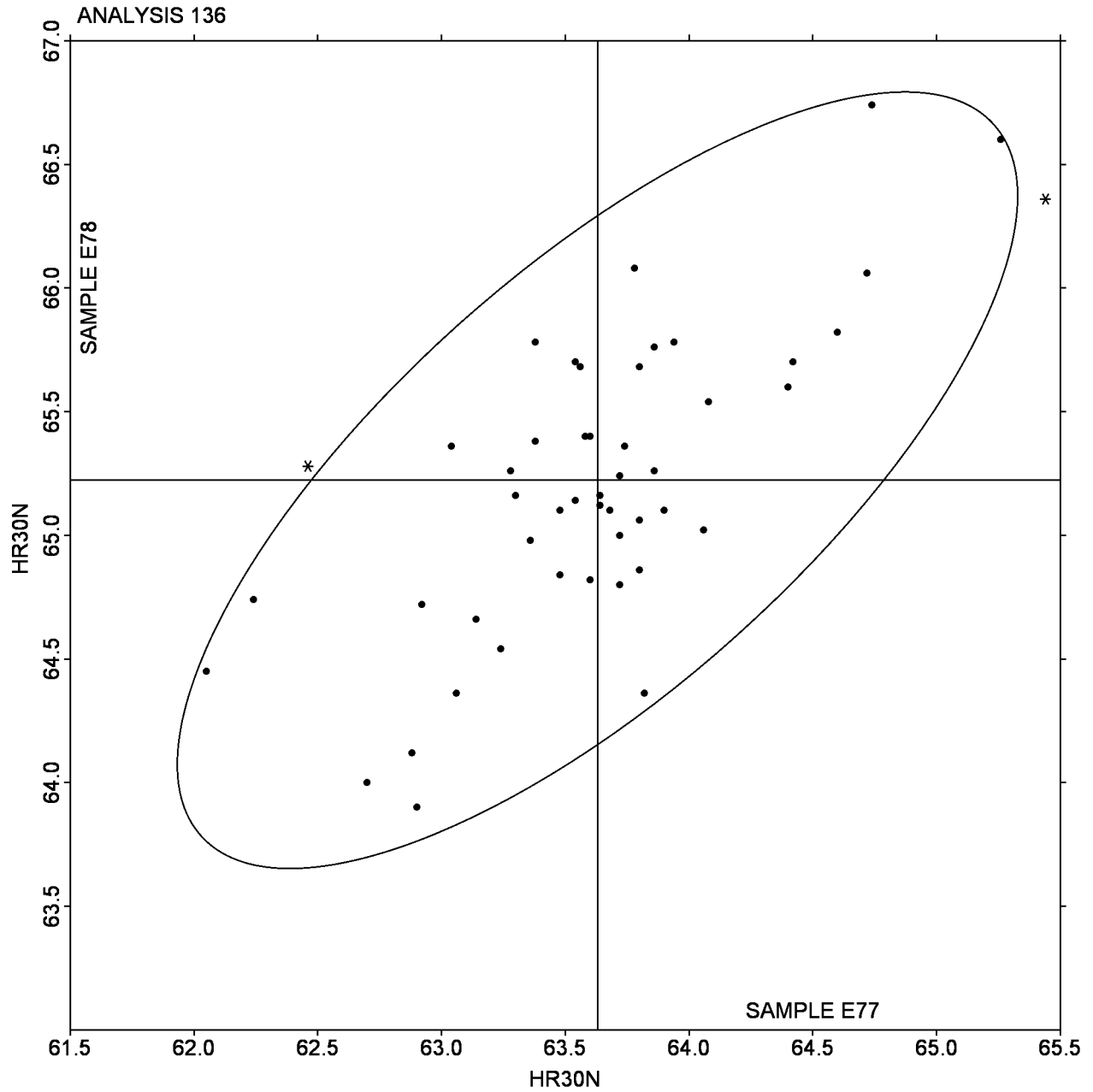
Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

SAMPLE E77 = 63.63 HR30N SAMPLE E78 = 65.22 HR30N



Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C77			Sample C78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2S1KRN	*	0.0300	0.0062	1.00	0.0280	-0.0019	-0.26	OL
36V966		0.0246	0.0008	0.13	0.0340	0.0041	0.55	WT
3QRV8A		0.0244	0.0006	0.09	0.0292	-0.0007	-0.10	ZA
4BL26R		0.0269	0.0031	0.50	0.0311	0.0012	0.17	NI
4FM3GV		0.0131	-0.0107	-1.73	0.0176	-0.0123	-1.66	ZU
4VYZP8		0.0224	-0.0014	-0.22	0.0291	-0.0008	-0.11	RE
58F674		0.0169	-0.0070	-1.13	0.0193	-0.0107	-1.44	VE
5KA6FD		0.0160	-0.0078	-1.27	0.0206	-0.0094	-1.27	NP
5XJ339		0.0224	-0.0014	-0.23	0.0276	-0.0023	-0.31	WT
6BA6FB	*	0.0366	0.0128	2.07	0.0495	0.0196	2.66	LE
74Z38H		0.0276	0.0038	0.61	0.0384	0.0085	1.15	NE
7YU3DF		0.0139	-0.0099	-1.61	0.0191	-0.0108	-1.46	LI
8Y5HT1		0.0294	0.0056	0.90	0.0355	0.0055	0.75	OL
ANLHVW		0.0256	0.0018	0.29	0.0299	0.0000	0.00	BR
C5P91N		0.0257	0.0018	0.30	0.0332	0.0033	0.44	RE
D2DPPW		0.0246	0.0008	0.13	0.0261	-0.0038	-0.51	OG
DKT3XC		0.0330	0.0092	1.49	0.0350	0.0051	0.69	WT
FCC1A1		0.0134	-0.0104	-1.69	0.0225	-0.0074	-1.00	FU
FRZBS4		0.0278	0.0040	0.64	0.0340	0.0041	0.55	NI
GKMVQD		0.0240	0.0002	0.03	0.0354	0.0055	0.74	ZA
JFME8G		0.0121	-0.0117	-1.90	0.0186	-0.0113	-1.53	LC
KCPPSN		0.0277	0.0039	0.63	0.0337	0.0038	0.51	OL
M468JK		0.0306	0.0068	1.10	0.0448	0.0149	2.02	XX
MTAAKS		0.0218	-0.0020	-0.33	0.0317	0.0017	0.24	NI
NMWZL4		0.0248	0.0010	0.15	0.0300	0.0001	0.01	BL
NQATE3		0.0250	0.0012	0.20	0.0255	-0.0044	-0.60	XX
QGAEGG		0.0145	-0.0093	-1.52	0.0191	-0.0108	-1.46	OL
RWUNK4		0.0160	-0.0078	-1.27	0.0234	-0.0065	-0.88	XX
SAXX1G		0.0304	0.0066	1.07	0.0360	0.0061	0.82	BR
U2X7AD		0.0192	-0.0046	-0.75	0.0271	-0.0028	-0.38	XX
UDRLF2		0.0226	-0.0012	-0.20	0.0271	-0.0028	-0.38	LE
VNPJ9P		0.0301	0.0063	1.02	0.0397	0.0098	1.32	LC
X2ANJA	X	0.0330	0.0092	1.49	0.0555	0.0256	3.46	XX
X4TVC7		0.0272	0.0034	0.55	0.0293	-0.0006	-0.08	LI
XR65Q3		0.0255	0.0017	0.27	0.0315	0.0015	0.21	BU
YPGN4S		0.0281	0.0043	0.69	0.0344	0.0045	0.61	LE

Summary Statistics

	Sample C77	Sample C78
Grand Means	0.02383 inch	0.02992 inch
Std Dev Btwn Labs	0.00616 inch	0.00738 inch

Statistics based on 35 of 36 reporting participants

Samples C77 , C78 : AISI 8620

Analysis 145

Total Case Depth
SAE J423, SAE J78

Comments on assigned Data Flags for Test #145

X2ANJA (X) - High data for Sample C78.

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C77			Sample C78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
14SEFJ		0.0220	-0.0003	-0.21	0.0274	-0.0002	-0.14	BU
1CRUD4		0.0232	0.0008	0.55	0.0283	0.0007	0.49	LI
1F7PZ8	*	0.0202	-0.0021	-1.41	0.0300	0.0024	1.60	WT
1JVR98		0.0222	-0.0001	-0.08	0.0270	-0.0006	-0.40	BU
2K5LCL		0.0252	0.0029	1.91	0.0294	0.0018	1.20	WT
2RQH5P	X	0.0288	0.0064	4.27	0.0270	-0.0006	-0.40	WT
2Y8WZ7		0.0218	-0.0005	-0.35	0.0272	-0.0004	-0.27	AT
49HQJ5		0.0234	0.0011	0.71	0.0300	0.0024	1.60	MI
4HSEAQ		0.0212	-0.0011	-0.76	0.0256	-0.0020	-1.34	NA
5DBJ2L		0.0220	-0.0003	-0.21	0.0282	0.0006	0.40	WT
5MPY38		0.0239	0.0016	1.07	0.0286	0.0010	0.65	CL
641Q1P		0.0244	0.0021	1.38	0.0276	0.0000	0.00	LE
6AFBZF		0.0200	-0.0023	-1.54	0.0286	0.0010	0.66	BU
84B3PK		0.0212	-0.0011	-0.74	0.0266	-0.0010	-0.67	SH
9JRL54		0.0242	0.0019	1.25	0.0294	0.0018	1.20	BU
9UR6J5		0.0208	-0.0015	-1.01	0.0252	-0.0024	-1.60	MI
AFYJHX		0.0222	-0.0001	-0.08	0.0276	0.0000	0.00	LE
BL1K5Q		0.0234	0.0010	0.69	0.0280	0.0004	0.26	LC
D9FQ1V		0.0253	0.0030	1.97	0.0291	0.0015	1.00	XX
EBESYV		0.0226	0.0003	0.19	0.0284	0.0008	0.53	CL
ELWXN1		0.0226	0.0003	0.19	0.0262	-0.0014	-0.94	BU
FCJ4AJ		0.0248	0.0025	1.67	0.0264	-0.0012	-0.79	LE
FUG4WY		0.0198	-0.0025	-1.67	0.0266	-0.0010	-0.67	WT
G6PU1J		0.0204	-0.0019	-1.27	0.0264	-0.0012	-0.80	WT
HQKNH2	X	0.0278	0.0055	3.64	0.0240	-0.0036	-2.40	BU
LDFDWA		0.0242	0.0019	1.26	0.0286	0.0010	0.64	SH
LRG8WY		0.0212	-0.0011	-0.76	0.0286	0.0010	0.65	LE
LZXPWD		0.0230	0.0007	0.45	0.0274	-0.0002	-0.14	MA
MF9XNN		0.0232	0.0009	0.58	0.0268	-0.0008	-0.54	BU
MHH557		0.0225	0.0002	0.13	0.0279	0.0003	0.18	LE
NXDEVY		0.0209	-0.0014	-0.94	0.0256	-0.0020	-1.34	CM
PM2UG2		0.0210	-0.0013	-0.88	0.0278	0.0002	0.13	WT
Q13B2G		0.0224	0.0000	0.03	0.0268	-0.0008	-0.56	WT
R7TGVG		0.0208	-0.0015	-1.01	0.0272	-0.0004	-0.27	LE
RP6SYV		0.0232	0.0009	0.58	0.0292	0.0016	1.06	BU
SAYESV		0.0224	0.0001	0.05	0.0278	0.0002	0.13	WT
U6JLS7		0.0225	0.0002	0.14	0.0308	0.0032	2.14	MI
U7YMMG		0.0202	-0.0021	-1.41	0.0258	-0.0018	-1.20	LE
UKXNSC		0.0211	-0.0012	-0.81	0.0261	-0.0015	-1.03	SH
ULTRCS		0.0241	0.0018	1.18	0.0294	0.0018	1.23	WZ
XDVB3B	X	63.1200	63.0977	41,872.70	67.3400	67.3124	44,859.23	ST
YTHNPH	*	0.0230	0.0007	0.45	0.0235	-0.0041	-2.76	LE
Z5FUG1		0.0204	-0.0019	-1.27	0.0272	-0.0004	-0.27	BU

Analysis 146

Effective Case Depth

SAE J423, SAE J78

Summary Statistics

	Sample C77	Sample C78
Grand Means	0.02232 inch	0.02761 inch
Std Dev Btwn Labs	0.00151 inch	0.00150 inch
Statistics based on 40 of 43 reporting participants		

Samples C77 , C78 : AISI 8620**Comments on assigned Data Flags for Test #146**

2RQH5P (X) - High data for Sample C77.

HQKNH2 (X) - High data for Sample C77. The data were possibly transposed between samples.

XDVB3B (X) - Extreme data.

Interlaboratory Testing Program for Metals

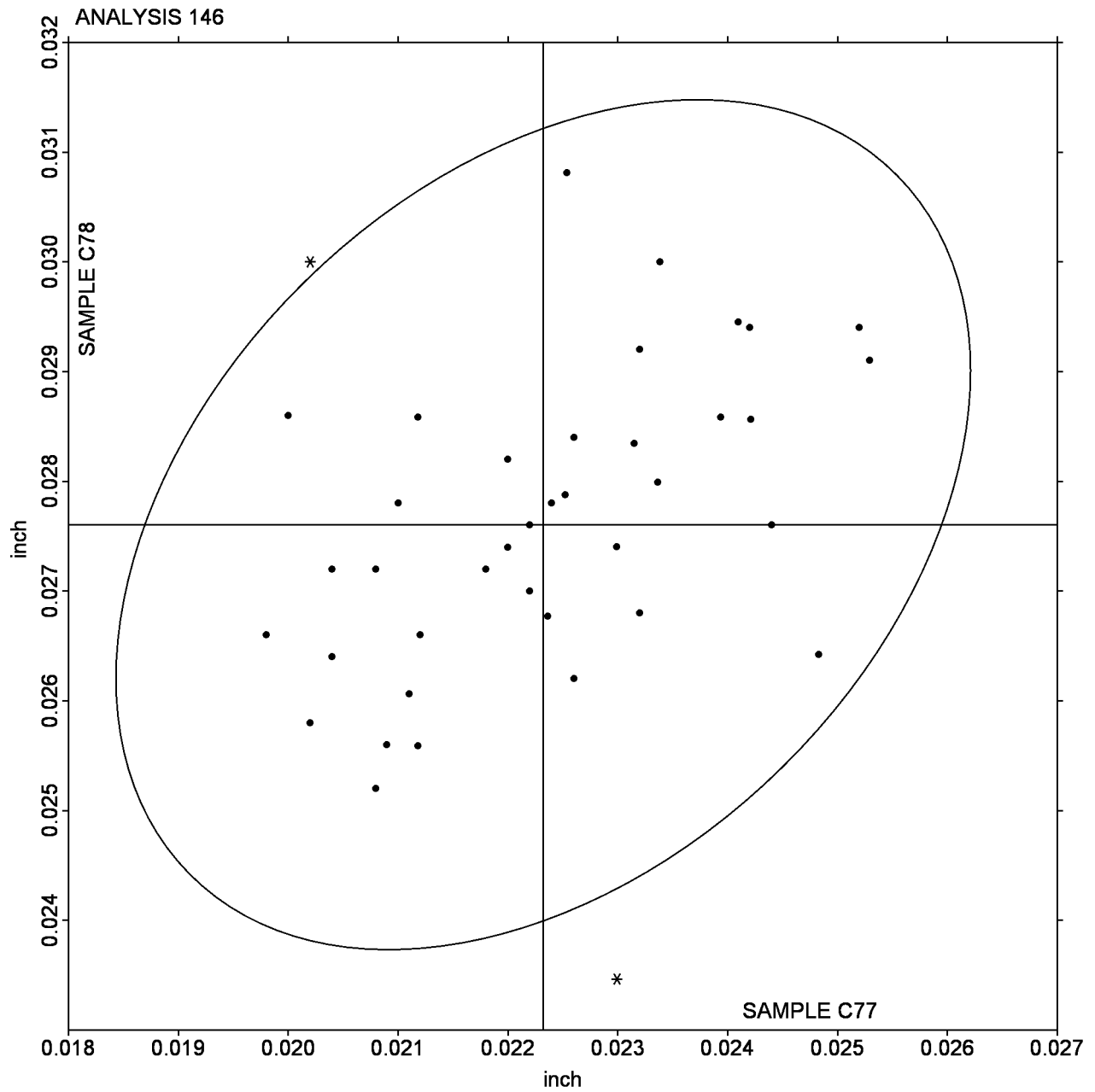
Analysis 146

Effective Case Depth

SAE J423, SAE J78

SAMPLE C77 = 0.02232 inch

SAMPLE C78 = 0.02761 inch



Interlaboratory Testing Program for Metals

Analysis 150

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

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1QMWCQ		22.36	0.50	2.00	22.32	0.46	2.30	OE
1QXSGH		21.98	0.12	0.49	21.85	-0.01	-0.05	OE
3L27UJ		22.07	0.21	0.84	21.97	0.11	0.54	GD
6892K4		21.80	-0.06	-0.25	21.75	-0.11	-0.53	XR
7GTXV3		21.86	0.00	0.01	21.76	-0.10	-0.48	DR
7KZXRV		21.73	-0.13	-0.50	21.70	-0.16	-0.80	IC
8VTXE6		21.58	-0.28	-1.11	21.72	-0.14	-0.70	ED
A5GEGJ		22.04	0.18	0.74	21.79	-0.07	-0.35	OE
DXZ3P8		21.71	-0.15	-0.61	21.70	-0.16	-0.80	WD
FCAYC3		21.67	-0.19	-0.74	21.59	-0.27	-1.36	OE
GLDHRQ		21.80	-0.06	-0.23	21.85	-0.01	-0.03	IC
GPJD1Z		21.57	-0.29	-1.17	21.73	-0.13	-0.63	IC
H2XLTW		21.77	-0.09	-0.34	21.73	-0.13	-0.63	WD
HWUH95	X	18.61	-3.25	-13.06	18.79	-3.07	-15.34	OE
J5WW8P		22.01	0.15	0.60	22.04	0.18	0.91	OE
MJF3H		22.01	0.15	0.61	22.00	0.14	0.68	WD
NUNHKK		21.59	-0.27	-1.09	21.57	-0.29	-1.44	OE
QHDANE		21.96	0.10	0.42	21.92	0.06	0.30	WD
RA38EJ	*	22.45	0.59	2.36	22.40	0.54	2.70	OE
TSDB1D		21.87	0.01	0.03	21.79	-0.07	-0.35	OE
U5FWNJ		21.89	0.03	0.11	21.90	0.04	0.22	OE
W6BZMB		22.04	0.18	0.72	21.86	0.00	-0.01	OE
WQJP8M		21.93	0.07	0.27	22.08	0.22	1.10	OE
YMCUJF		21.39	-0.47	-1.88	21.76	-0.10	-0.51	IC
YWYZLZ		21.54	-0.32	-1.28	21.84	-0.02	-0.10	XR

Summary Statistics

	Sample J77		Sample J78	
Grand Means	21.858	Percent	21.859	Percent
Std Dev Btwn Labs	0.249	Percent	0.200	Percent

Statistics based on 24 of 25 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #150

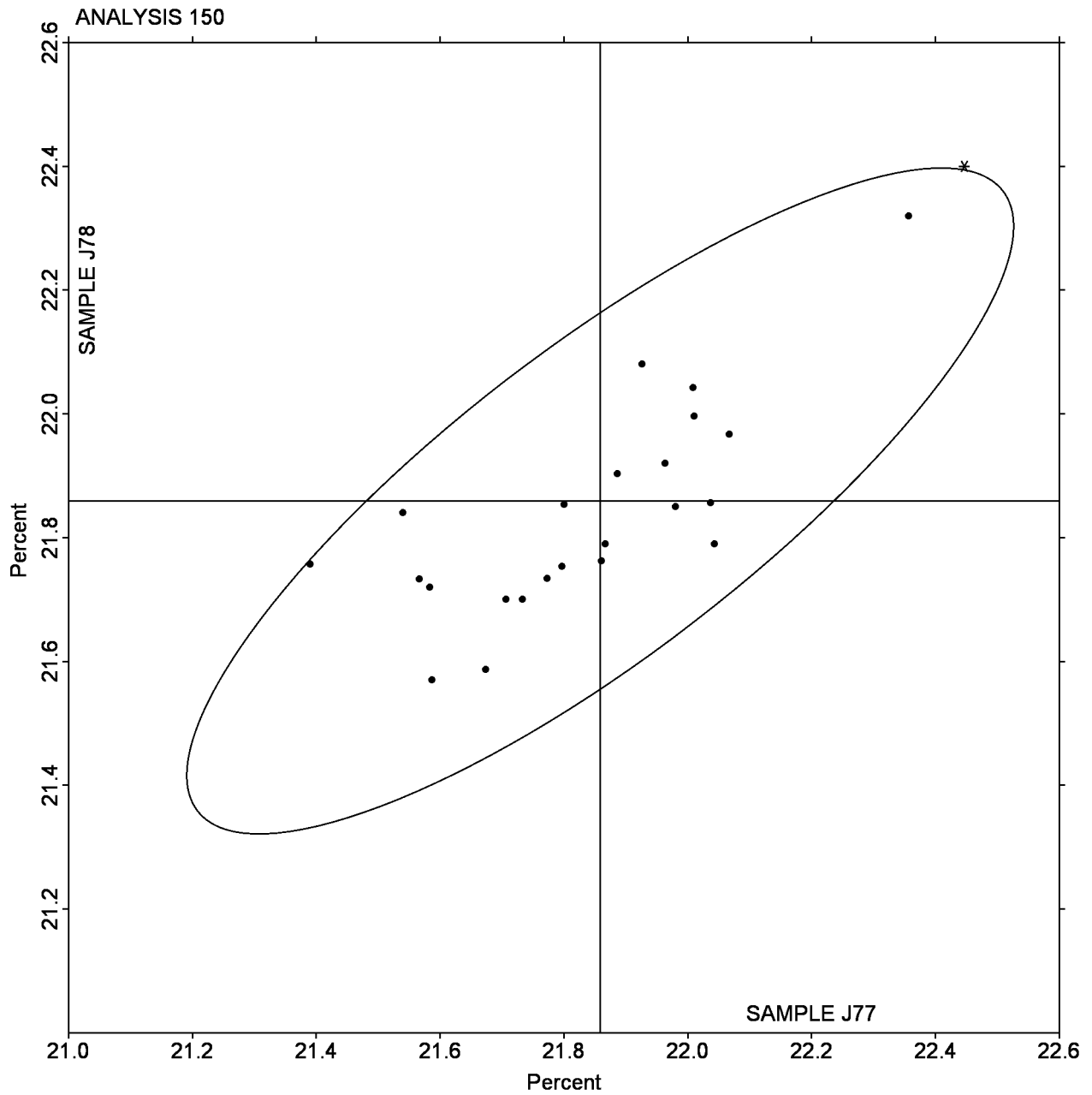
HWUH95 (X) - Data for both samples are low, and inconsistent within the determinations for Sample J77.

Interlaboratory Testing Program for Metals

Analysis 150

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

SAMPLE J77 = 21.858 Percent SAMPLe J78 = 21.859 Percent



Interlaboratory Testing Program for Metals

Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent

MANGANESE (Mn)

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1KD3AM		0.096	-0.014	-1.38	0.161	-0.026	-2.24	OE
2Q2WXL		0.093	-0.017	-1.75	0.188	0.001	0.06	GD
4QBCU3		0.108	-0.002	-0.16	0.184	-0.003	-0.28	OE
7UHVT7		0.113	0.003	0.34	0.180	-0.007	-0.60	DR
9QTNNY		0.107	-0.003	-0.32	0.181	-0.006	-0.52	IC
BGFTRM		0.125	0.015	1.53	0.207	0.019	1.68	OE
BPUMTX		0.112	0.002	0.21	0.191	0.004	0.35	OE
DMMD66		0.113	0.003	0.28	0.190	0.003	0.23	OE
DWQYBK		0.111	0.001	0.11	0.173	-0.014	-1.23	WD
DZPKQV	X	0.038	-0.072	-7.25	0.200	0.012	1.07	OE
EU9BPR		0.128	0.018	1.83	0.200	0.012	1.07	WD
JATGMK		0.103	-0.007	-0.67	0.181	-0.006	-0.51	IC
JWB9X1		0.105	-0.005	-0.47	0.176	-0.012	-1.00	OE
KHCPFA		0.112	0.002	0.24	0.194	0.007	0.58	OE
LAVLUU		0.105	-0.005	-0.47	0.175	-0.013	-1.09	OE
N5JATQ		0.112	0.002	0.24	0.192	0.004	0.38	OE
NHJ4XU		0.118	0.008	0.85	0.208	0.021	1.82	IC
QBSGBE		0.104	-0.006	-0.57	0.179	-0.008	-0.72	WD
SD2N9H		0.128	0.018	1.83	0.202	0.014	1.24	XR
SG5HZM		0.101	-0.009	-0.90	0.185	-0.002	-0.17	IC
TV118X		0.119	0.009	0.92	0.199	0.012	1.01	OE
VDQFQE		0.110	0.000	0.01	0.191	0.004	0.32	OE
YUXGKK		0.093	-0.017	-1.71	0.183	-0.004	-0.37	OE

Summary Statistics

	Sample J77		Sample J78	
Grand Means	0.1099	Percent	0.1873	Percent
Std Dev Btwn Labs	0.0099	Percent	0.0116	Percent
Statistics based on 22 of 23 reporting participants				

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #151

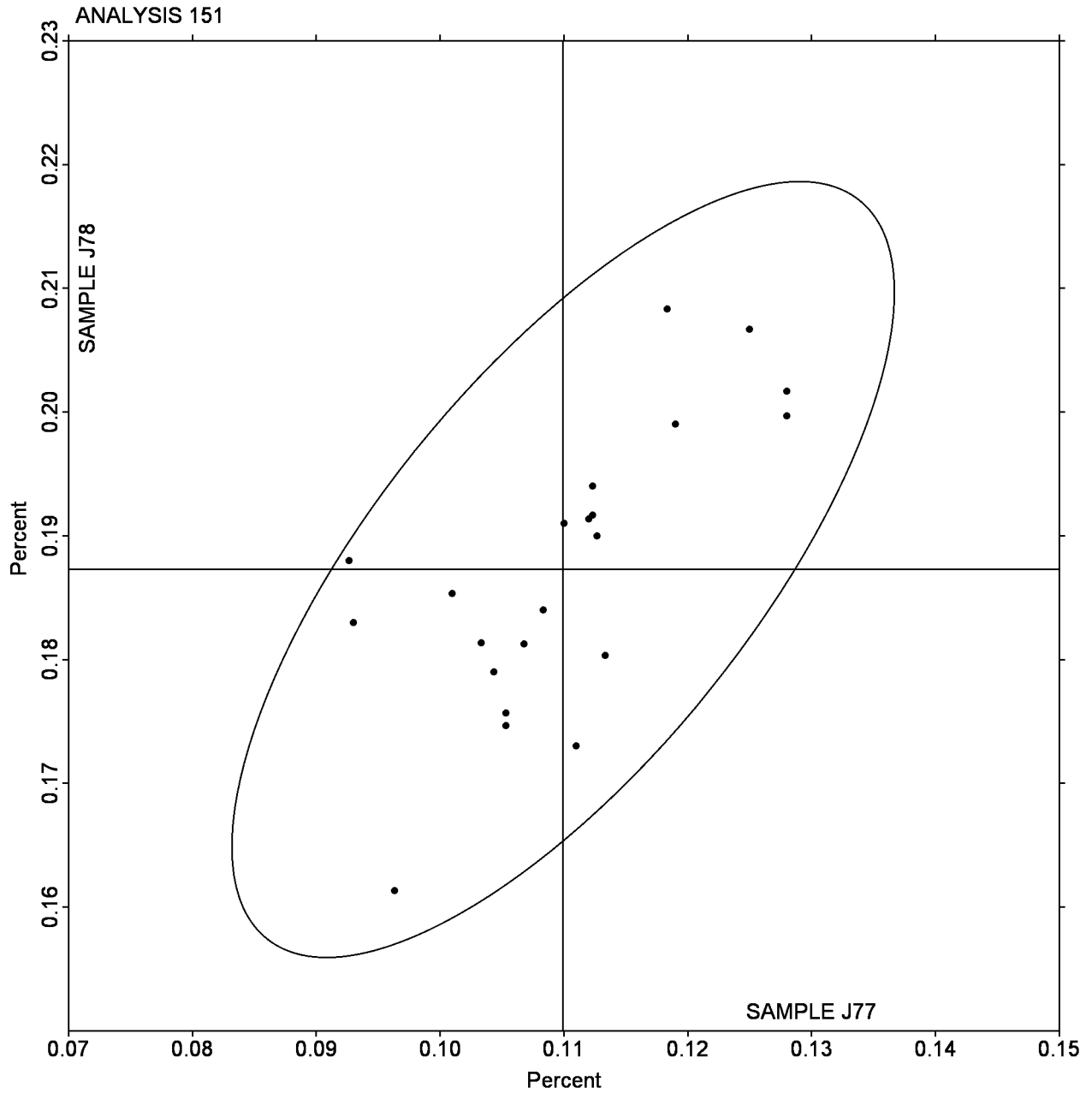
DZPKQV (X) - Low data for Sample J77.

Interlaboratory Testing Program for Metals

Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent
MANGANESE (Mn)

SAMPLE J77 = 0.1099 Percent SAMPLe J78 = 0.1873 Percent



Interlaboratory Testing Program for Metals

Analysis 152

Chemical Analysis Element #3: Nickel-based Alloy - Percent

IRON (Fe)

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1TVUYK	*	3.877	0.189	2.04	3.923	0.123	1.44	OE
33VFLH		3.690	0.002	0.02	3.820	0.019	0.23	OE
4X9TSN		3.596	-0.091	-0.99	3.693	-0.107	-1.26	OE
5P9AH1		3.690	0.002	0.02	3.800	-0.001	-0.01	WD
5YZVYH		3.683	-0.004	-0.05	3.800	-0.001	-0.01	GD
7MQSBC		3.787	0.099	1.07	3.903	0.103	1.21	OE
9GLQZV		3.724	0.037	0.39	3.827	0.027	0.31	OE
ALFGVP		3.590	-0.098	-1.05	3.723	-0.077	-0.91	XR
AY9B9D	X	4.867	1.179	12.72	4.957	1.156	13.61	OE
CX5454		3.635	-0.052	-0.57	3.794	-0.007	-0.08	ED
E43CKV		3.757	0.069	0.74	3.876	0.075	0.89	OE
E7TL6F		3.560	-0.128	-1.38	3.670	-0.131	-1.54	OE
EMX4P2	X	4.230	0.542	5.85	4.297	0.496	5.84	IC
ENLM4G		3.668	-0.020	-0.22	3.783	-0.018	-0.21	WD
GK5WFM		3.553	-0.134	-1.45	3.667	-0.134	-1.58	IC
HE7BPS		3.749	0.061	0.66	3.846	0.046	0.54	OE
HZC6MF		3.697	0.010	0.10	3.823	0.023	0.27	WD
JPRKVR		3.697	0.009	0.10	3.810	0.009	0.11	XR
KT1HXD		3.695	0.007	0.08	3.803	0.002	0.03	IC
LMKT1W		3.680	-0.008	-0.08	3.810	0.009	0.11	IC
LR6PKM		3.709	0.021	0.23	3.783	-0.017	-0.20	OE
P9F3WL		3.553	-0.134	-1.45	3.657	-0.144	-1.70	OE
PNAM5G		3.579	-0.108	-1.17	3.741	-0.059	-0.70	WD
YR8SUD		3.753	0.065	0.70	3.853	0.052	0.61	DR
Z5G6DA		3.896	0.209	2.25	4.009	0.209	2.46	OE

Summary Statistics

	Sample J77		Sample J78	
Grand Means	3.6878	Percent	3.8007	Percent
Std Dev Btwn Labs	0.0927	Percent	0.0850	Percent

Statistics based on 23 of 25 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #152

AY9B9D (X) - Data for both samples are high, and inconsistent within the determinations for both samples.

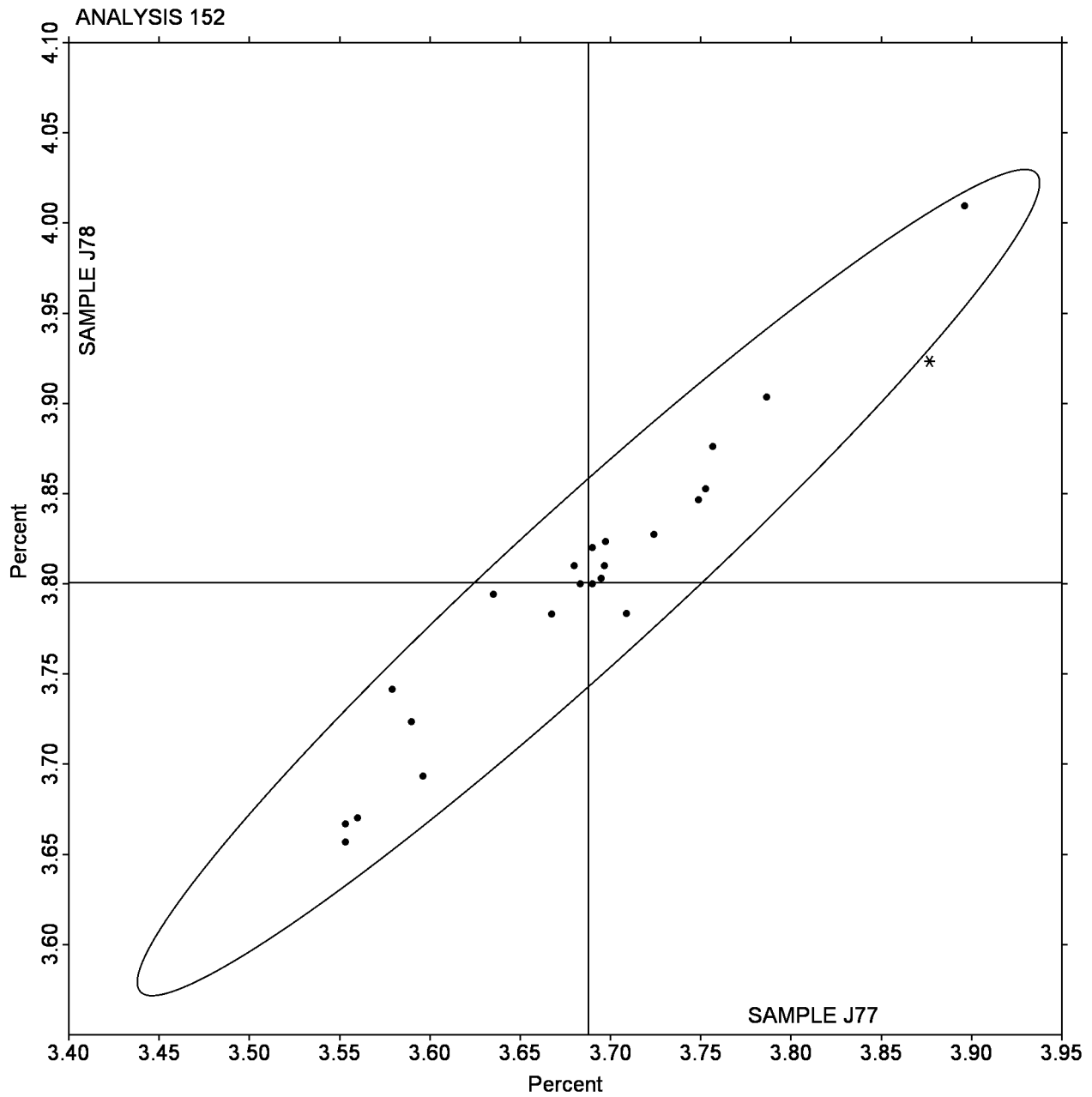
EMX4P2 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 152

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

SAMPLE J77 = 3.6878 Percent SAMPLE J78 = 3.8007 Percent



Interlaboratory Testing Program for Metals

Analysis 153

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

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
117KEY		9.177	-0.031	-0.21	8.843	-0.013	-0.12	IC
3YKT3T		9.197	-0.011	-0.07	8.837	-0.020	-0.18	WD
4MXW37		9.260	0.053	0.35	8.897	0.040	0.37	OE
51U2LU		9.175	-0.033	-0.22	8.805	-0.052	-0.48	WD
6XMZAA		9.497	0.289	1.94	9.017	0.160	1.47	IC
9CSAN7		9.172	-0.035	-0.24	8.803	-0.054	-0.49	ED
A1EFY1		9.301	0.094	0.63	8.913	0.057	0.52	OE
AK7DDK		8.937	-0.271	-1.82	8.647	-0.210	-1.93	IC
AKLFL1		9.331	0.123	0.83	8.960	0.103	0.95	OE
BMFSQK	*	8.803	-0.404	-2.72	8.530	-0.327	-3.00	OE
DVDGWL		9.213	0.006	0.04	8.870	0.013	0.12	XR
E2WKL9	*	9.463	0.256	1.72	8.847	-0.010	-0.09	OE
HPRS9M	X	8.610	-0.597	-4.02	8.270	-0.587	-5.39	GD
KH5RJS		9.100	-0.107	-0.72	8.730	-0.127	-1.16	XR
MR54J5		9.171	-0.036	-0.24	8.959	0.103	0.94	OE
P9N29W		9.190	-0.017	-0.12	8.810	-0.047	-0.43	OE
QD6UBG		9.338	0.131	0.88	8.991	0.134	1.23	WD
QHG2QE		9.280	0.073	0.49	8.920	0.063	0.58	OE
QVHS2T		9.147	-0.061	-0.41	8.863	0.007	0.06	IC
SF62ZJ		9.028	-0.179	-1.21	8.787	-0.069	-0.64	OE
TNQMPG		9.167	-0.041	-0.27	8.883	0.027	0.25	OE
TYT4QS		9.317	0.109	0.73	8.917	0.060	0.55	OE
U52XJE		9.235	0.027	0.18	8.968	0.112	1.03	OE
UZ4EA3		9.290	0.082	0.55	8.894	0.037	0.34	WD
XV8FYF		9.192	-0.015	-0.10	8.869	0.013	0.12	DR

Summary Statistics

	Sample J77		Sample J78	
Grand Means	9.2075	Percent	8.8566	Percent
Stnd Dev Btwn Labs	0.1487	Percent	0.1088	Percent

Statistics based on 24 of 25 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #153

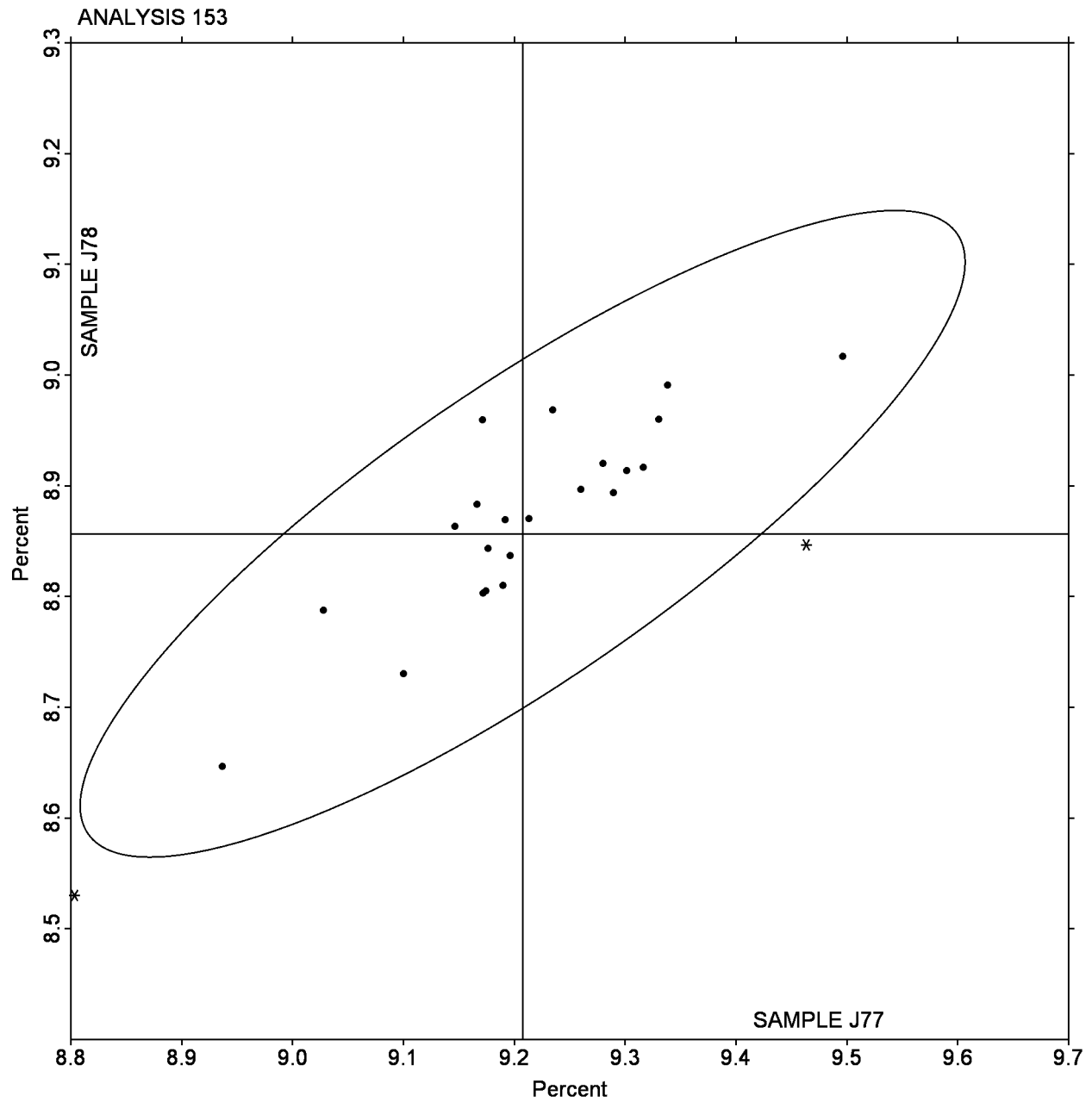
HPRS9M (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 153

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

SAMPLE J77 = 9.2075 Percent SAMPLE J78 = 8.8566 Percent



Interlaboratory Testing Program for Metals

Analysis 154

Chemical Analysis Element #5: Nickel-based Alloy - Percent

ALUMINUM (Al)

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
145HR2		0.294	0.007	0.31	0.238	0.010	0.64	DR
22CEJN	X	0.188	-0.099	-4.61	0.142	-0.086	-5.34	OE
2H6EKF		0.311	0.024	1.10	0.245	0.017	1.05	DR
6EJ6WQ	*	0.350	0.063	2.93	0.274	0.046	2.87	OE
757MAE		0.279	-0.008	-0.37	0.226	-0.002	-0.11	OE
9EL4FA		0.312	0.025	1.16	0.258	0.030	1.86	IC
9PKYE1		0.281	-0.006	-0.26	0.220	-0.007	-0.47	OE
9ZGNVV		0.275	-0.012	-0.57	0.222	-0.006	-0.36	GD
BMCPS9		0.284	-0.003	-0.12	0.223	-0.004	-0.28	OE
HSVRUY		0.255	-0.032	-1.51	0.202	-0.026	-1.63	IC
HV9JF		0.255	-0.032	-1.51	0.214	-0.014	-0.86	WD
LMU84R		0.262	-0.025	-1.18	0.217	-0.010	-0.65	OE
LW4WDX		0.305	0.018	0.82	0.239	0.011	0.68	OE
MH4E79		0.270	-0.017	-0.79	0.215	-0.013	-0.80	IC
QDW85L		0.271	-0.016	-0.73	0.211	-0.017	-1.07	OE
QG6Z4F		0.302	0.015	0.68	0.233	0.005	0.32	OE
RM1RZ9		0.267	-0.020	-0.95	0.213	-0.015	-0.94	XR
S9K9NJ		0.293	0.006	0.28	0.229	0.001	0.05	OE
U4S9LG		0.285	-0.002	-0.09	0.228	0.001	0.03	OE
VYN791		0.295	0.008	0.36	0.230	0.003	0.16	WD
WHHZ74		0.301	0.014	0.66	0.241	0.013	0.82	IC
X686G2		0.283	-0.004	-0.19	0.223	-0.005	-0.32	WD
Z7Q33K		0.296	0.009	0.40	0.221	-0.007	-0.42	OE
ZVMKQC		0.278	-0.009	-0.44	0.219	-0.009	-0.57	OE

Summary Statistics

	Sample J77		Sample J78	
Grand Means	0.2870	Percent	0.2278	Percent
Stnd Dev Btwn Labs	0.0215	Percent	0.0161	Percent

Statistics based on 23 of 24 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #154

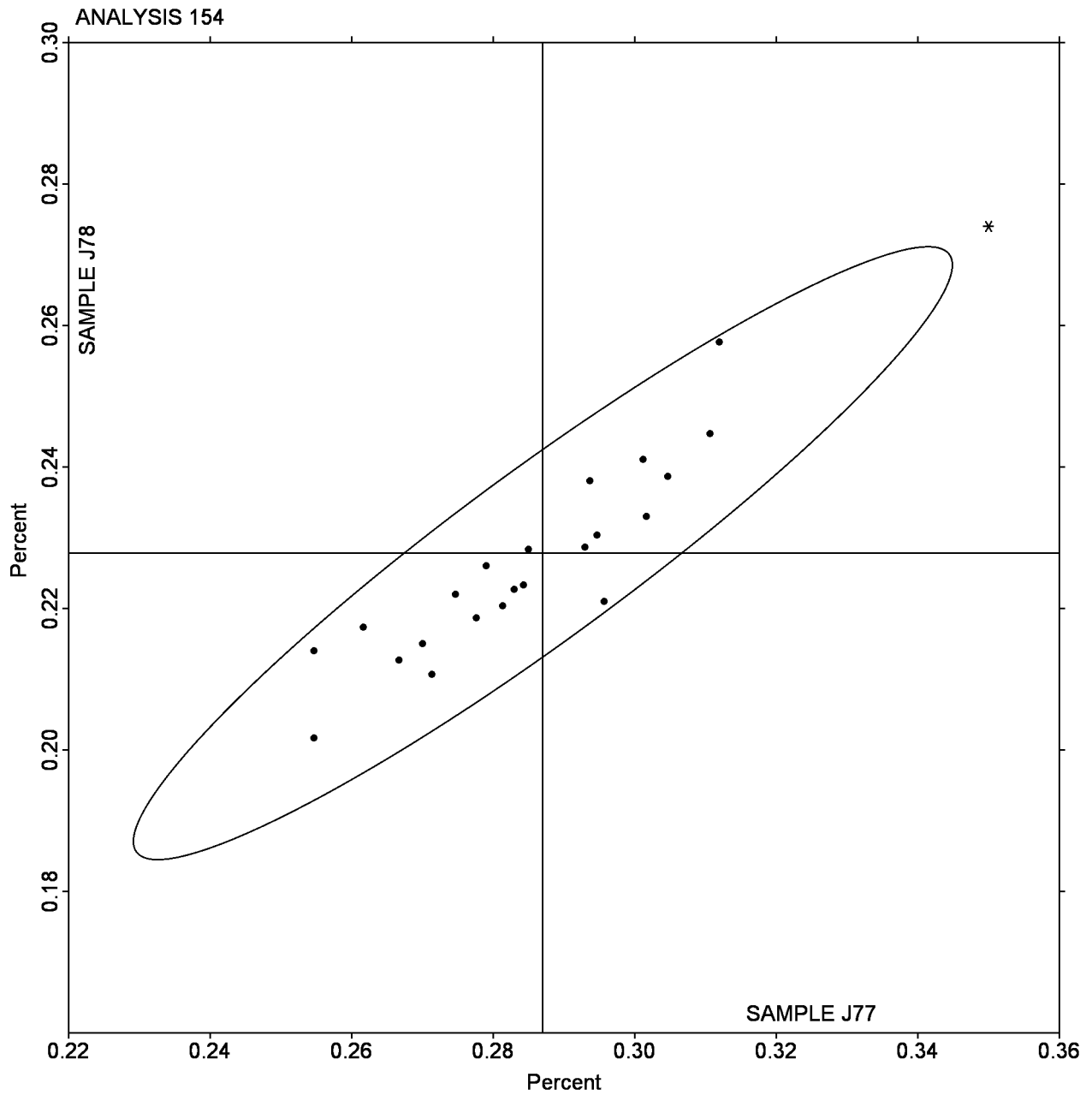
22CEJN (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 154

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

SAMPLE J77 = 0.2870 Percent SAMPLe J78 = 0.2278 Percent



Interlaboratory Testing Program for Metals

Analysis 155

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

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1RGY81		0.129	0.012	0.38	0.195	0.004	0.13	IC
2T1AKB		0.070	-0.046	-1.42	0.157	-0.034	-1.14	OE
7M22U5		0.079	-0.038	-1.16	0.171	-0.020	-0.68	OE
7VL83Q		0.095	-0.022	-0.67	0.177	-0.014	-0.46	WD
88GY1S		0.104	-0.012	-0.38	0.199	0.008	0.26	OE
BL2M6A		0.130	0.013	0.40	0.201	0.010	0.32	OE
CLDAUV		0.127	0.010	0.32	0.192	0.001	0.03	DR
CY52JJ		0.093	-0.024	-0.74	0.177	-0.014	-0.48	IC
GDS5K6		0.090	-0.026	-0.81	0.179	-0.012	-0.41	OE
H2F7DS		0.129	0.012	0.37	0.200	0.009	0.29	OE
HXQMLJ		0.160	0.043	1.34	0.250	0.059	1.98	OE
K7164M		0.104	-0.013	-0.39	0.178	-0.013	-0.43	GD
K9H9AC		0.105	-0.012	-0.36	0.185	-0.006	-0.21	WD
M86Y2Y		0.087	-0.030	-0.91	0.174	-0.017	-0.58	OE
MAX4EG		0.105	-0.012	-0.36	0.186	-0.005	-0.17	DR
NN8PYP		0.169	0.053	1.62	0.213	0.022	0.73	OE
PPBVM9		0.110	-0.007	-0.20	0.187	-0.004	-0.15	IC
RVY915		0.111	-0.005	-0.16	0.193	0.002	0.05	OE
U7RKFB	*	0.224	0.107	3.31	0.290	0.099	3.31	OE
ULT8FB		0.121	0.004	0.12	0.204	0.013	0.42	OE
V5VJLB		0.111	-0.005	-0.16	0.170	-0.021	-0.72	OE
WH1ZCE	*	0.107	-0.009	-0.29	0.135	-0.056	-1.89	OE
WSNSWX		0.135	0.019	0.58	0.193	0.002	0.05	OE
ZRN8UC		0.103	-0.014	-0.43	0.183	-0.008	-0.27	XR

Summary Statistics

	Sample J77		Sample J78	
Grand Means	0.1166	Percent	0.1911	Percent
Stnd Dev Btwn Labs	0.0325	Percent	0.0298	Percent
Statistics based on 24 of 24 reporting participants				

Samples J77 , J78 : 625 alloy, two different heats

Analysis Notes for Test #155

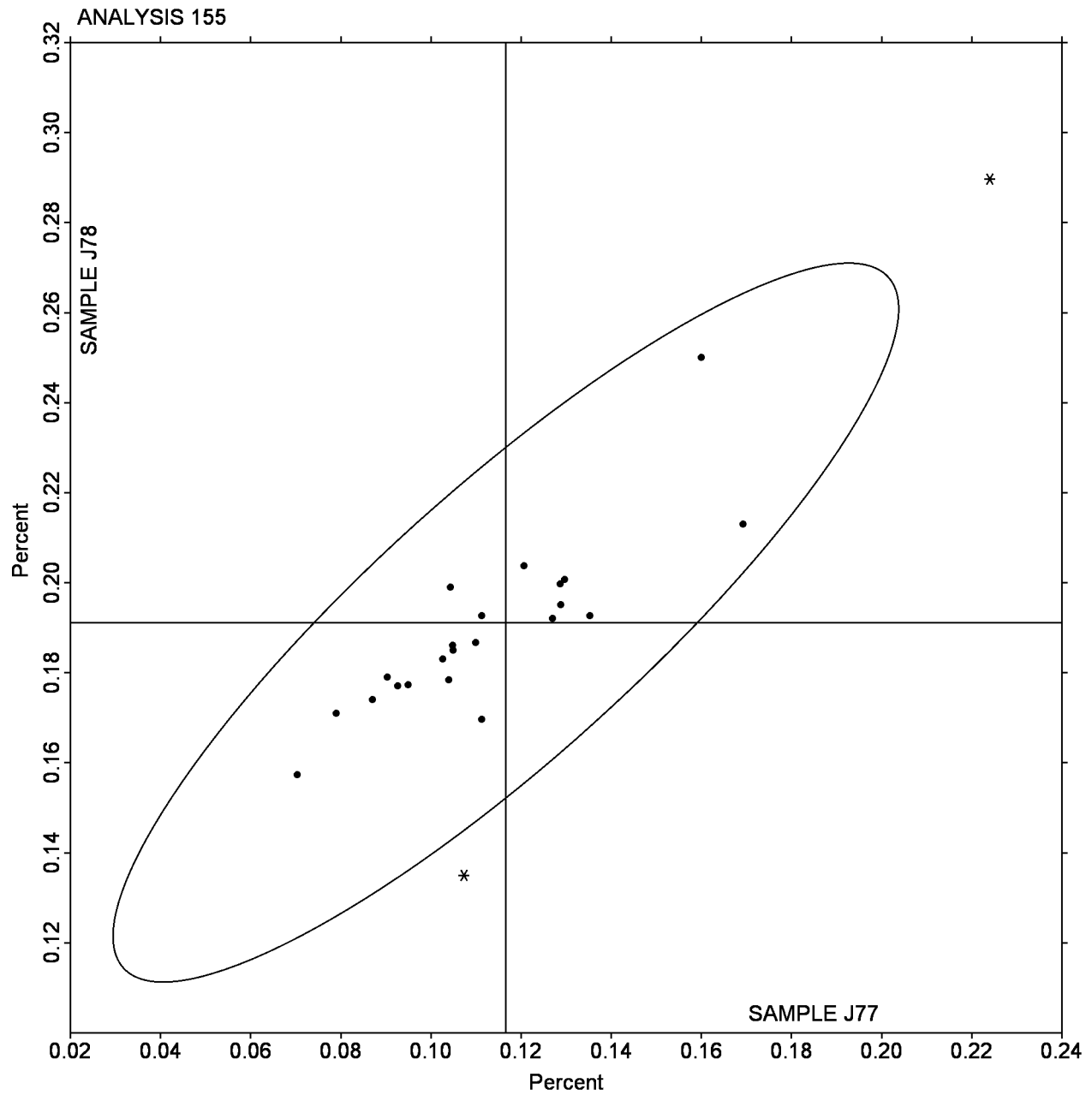
No overall flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

Analysis 155

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

SAMPLE J77 = 0.1166 Percent SAMPLe J78 = 0.1911 Percent



Interlaboratory Testing Program for Metals

Analysis 156

Chemical Analysis Element #7: Nickel-based Alloy - Percent

TITANIUM (Ti)

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1JMFZP		0.264	-0.028	-1.32	0.263	-0.027	-1.33	IC
3TD9Z5		0.293	0.001	0.03	0.292	0.003	0.16	OE
5AZCYL		0.250	-0.042	-2.00	0.247	-0.042	-2.12	OE
5FGZE3	*	0.356	0.063	2.99	0.349	0.059	2.99	OE
5WDGN8		0.291	-0.002	-0.08	0.298	0.009	0.44	OE
7QLTQM		0.304	0.012	0.55	0.299	0.009	0.48	OE
8FX3XT		0.295	0.003	0.14	0.295	0.006	0.31	OE
CXVZXK		0.283	-0.009	-0.43	0.279	-0.010	-0.49	IC
CYYRRT		0.297	0.004	0.21	0.294	0.004	0.22	DR
EDK3X6		0.286	-0.007	-0.32	0.278	-0.011	-0.55	OE
FPPVG6		0.294	0.001	0.06	0.290	0.001	0.06	OE
GNB35W		0.312	0.019	0.91	0.299	0.010	0.49	OE
MB2QXR		0.306	0.014	0.64	0.301	0.012	0.59	OE
MX9KXE		0.292	-0.001	-0.04	0.287	-0.002	-0.12	IC
MYNAFC		0.293	0.001	0.05	0.282	-0.007	-0.34	IC
N62FQP		0.308	0.015	0.72	0.304	0.015	0.76	OE
PEN1GC		0.283	-0.009	-0.44	0.283	-0.006	-0.31	WD
Q5CNQG		0.324	0.032	1.49	0.319	0.030	1.50	GD
R1FDYF		0.302	0.010	0.47	0.294	0.004	0.23	OE
S5A5V9		0.257	-0.036	-1.68	0.256	-0.033	-1.67	XR
SSNWAQ		0.299	0.006	0.30	0.293	0.004	0.19	XR
UE9LMC	*	0.283	-0.009	-0.43	0.295	0.005	0.28	ED
YBMVDZ		0.281	-0.011	-0.52	0.277	-0.012	-0.60	WD
YT5JEZ		0.276	-0.016	-0.77	0.277	-0.012	-0.60	WD
ZX1ZPD		0.281	-0.011	-0.54	0.278	-0.012	-0.58	OE

Summary Statistics

	Sample J77		Sample J78	
Grand Means	0.2924	Percent	0.2892	Percent
Std Dev Btwn Labs	0.0212	Percent	0.0199	Percent

Statistics based on 25 of 25 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Analysis Notes for Test #156

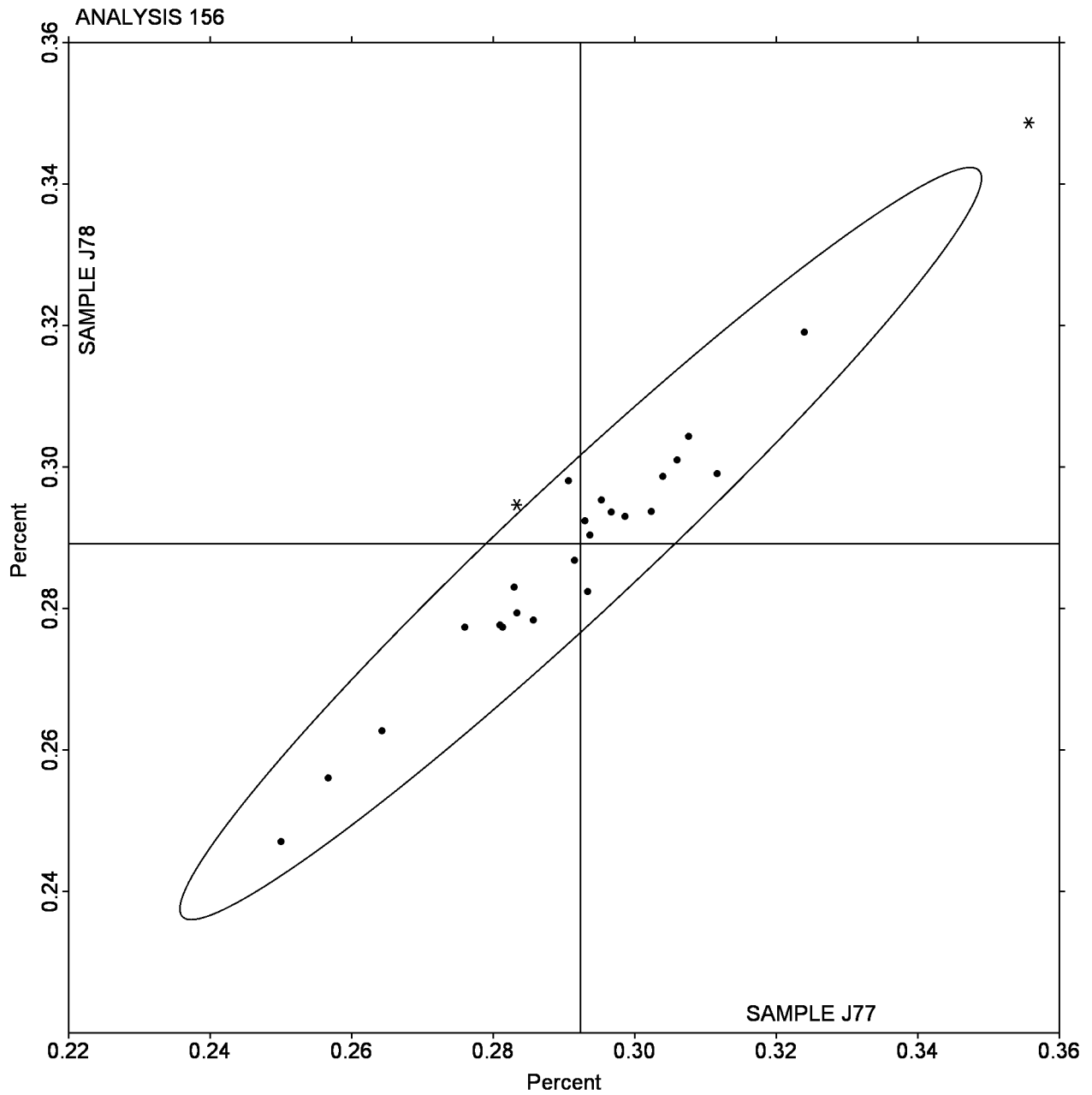
No overall flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

Analysis 156

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

SAMPLE J77 = 0.2924 Percent SAMPLE J78 = 0.2892 Percent



Interlaboratory Testing Program for Metals

Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NIOBIUM (Nb)

WebCode	Data Flag	Sample J77			Sample J78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3KGNH5		3.613	0.026	0.28	3.473	0.018	0.27	OE
3Q6QFK		3.550	-0.037	-0.41	3.420	-0.035	-0.52	OE
46ZVYK		3.544	-0.043	-0.47	3.451	-0.004	-0.06	OE
4PKX4D		3.580	-0.007	-0.08	3.430	-0.025	-0.37	XR
4TT5YX		3.583	-0.004	-0.04	3.468	0.013	0.19	IC
A6JAN2		3.468	-0.119	-1.30	3.378	-0.078	-1.15	OE
CSCXET		3.557	-0.030	-0.33	3.468	0.012	0.18	DR
EDTYXJ		3.470	-0.117	-1.28	3.360	-0.095	-1.41	IC
EYRPLJ	*	3.890	0.303	3.30	3.647	0.191	2.84	IC
FVZV5J		3.522	-0.066	-0.72	3.391	-0.064	-0.95	WD
FW496A		3.517	-0.071	-0.77	3.427	-0.029	-0.42	XX
J5UJVP		3.588	0.001	0.01	3.429	-0.026	-0.39	OE
JLD5RT		3.540	-0.047	-0.52	3.420	-0.035	-0.52	OE
LG6EF6	X	4.073	0.486	5.31	3.853	0.398	5.90	OE
MEACLM		3.615	0.028	0.31	3.459	0.004	0.06	WD
MEN3JK		3.633	0.046	0.50	3.457	0.001	0.02	GD
MJNQLE		3.550	-0.037	-0.41	3.410	-0.045	-0.67	WD
PRF4G6	*	3.791	0.204	2.22	3.633	0.177	2.63	OE
QFUVGW		3.605	0.017	0.19	3.492	0.037	0.55	OE
QGSEPC		3.607	0.019	0.21	3.467	0.011	0.17	OE
SK84YL		3.557	-0.031	-0.33	3.447	-0.008	-0.12	OE
TJ9AQE		3.651	0.064	0.70	3.490	0.035	0.52	ED
X3MKPE		3.550	-0.037	-0.41	3.430	-0.025	-0.37	XR
XABTS1		3.523	-0.064	-0.70	3.383	-0.072	-1.06	WD
YGWUF		3.590	0.003	0.03	3.495	0.039	0.58	OE

Summary Statistics

	Sample J77		Sample J78	
Grand Means	3.5873	Percent	3.4552	Percent
Std Dev Btwn Labs	0.0916	Percent	0.0675	Percent

Statistics based on 24 of 25 reporting participants

Samples J77 , J78 : 625 alloy, two different heats

Comments on assigned Data Flags for Test #157

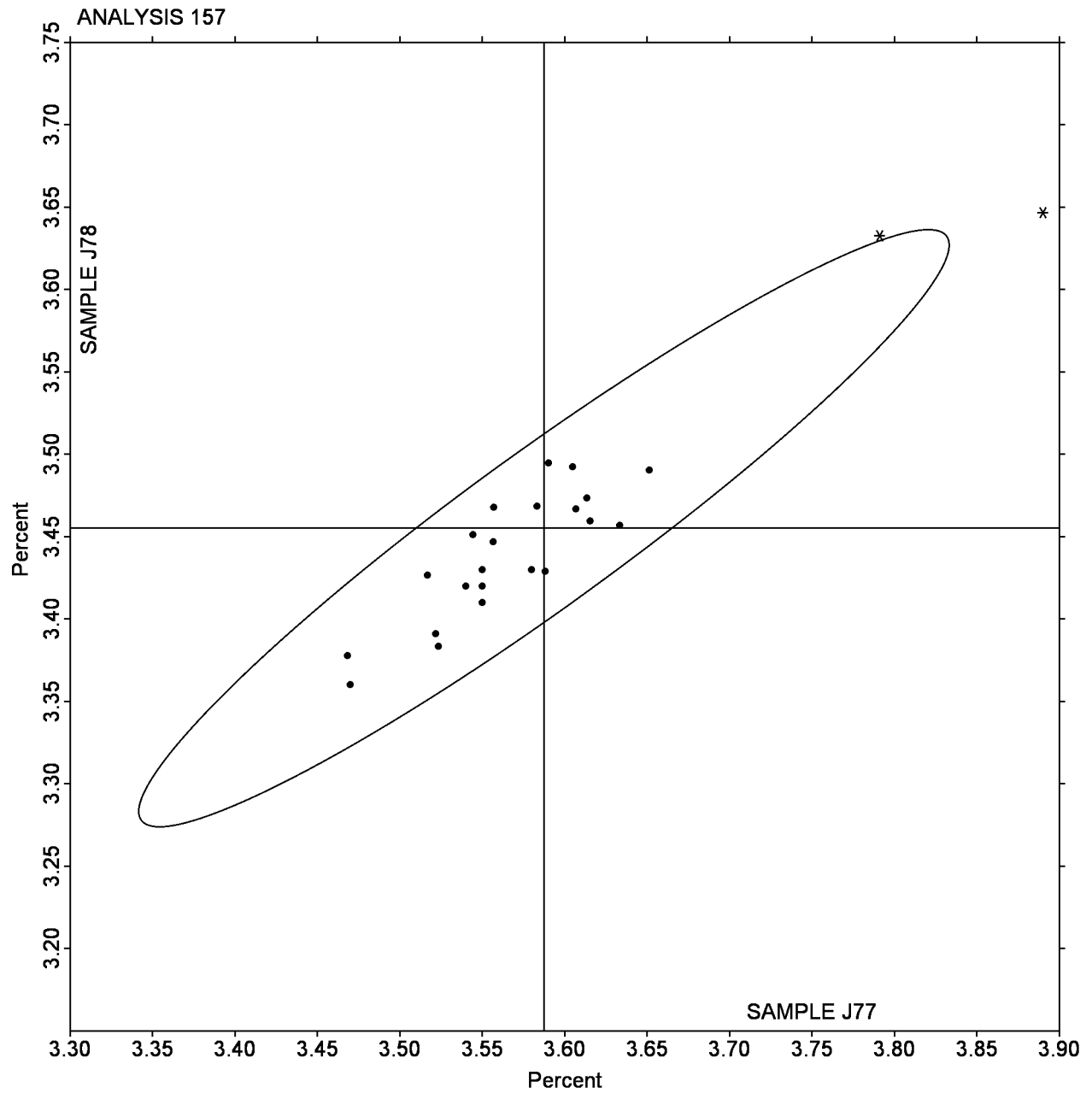
LG6EF6 (X) - Data for both samples are high, and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NIOBIUM (Nb)

SAMPLE J77 = 3.5873 Percent SAMPLE J78 = 3.4552 Percent



Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1AU1ZY		0.053	0.001	0.56	0.042	-0.001	-0.66	OE
2AKPN7		0.054	0.002	1.03	0.045	0.001	0.34	GD
3BXFKA	*	0.046	-0.006	-2.63	0.042	-0.001	-0.66	OE
4PCH7L		0.054	0.002	0.86	0.046	0.002	0.94	CO
4S9DEM		0.052	0.000	0.08	0.043	-0.001	-0.40	CI
4U8WXM	X	0.062	0.010	4.70	0.059	0.016	6.84	OE
5LUKQA		0.050	-0.001	-0.68	0.045	0.001	0.44	CO
6NZXXG		0.049	-0.003	-1.43	0.041	-0.003	-1.38	CI
9L4EP5		0.050	-0.002	-1.05	0.044	0.000	0.19	OE
ABWHFE		0.052	0.000	0.24	0.044	0.000	0.08	OE
AKCY8P		0.054	0.002	1.19	0.046	0.003	1.10	OE
AY4J8B		0.055	0.003	1.42	0.048	0.004	1.72	OE
B2CVAQ		0.054	0.002	1.03	0.046	0.002	0.96	DR
B3HGL4		0.049	-0.003	-1.19	0.042	-0.002	-0.81	IR
BFLM6W		0.050	-0.002	-0.92	0.041	-0.002	-1.06	OE
CKQREG		0.052	0.001	0.30	0.045	0.001	0.35	CI
CLGJW1		0.052	0.000	-0.08	0.046	0.002	0.81	OE
CYL6BQ		0.050	-0.002	-0.88	0.045	0.001	0.47	OE
D7B9MC	X	0.065	0.013	6.29	0.056	0.012	5.22	XX
D8ABUU		0.053	0.001	0.40	0.045	0.001	0.65	OE
DW7H2J	X	0.060	0.008	3.90	0.052	0.009	3.75	OE
EG2GD2		0.050	-0.002	-0.78	0.042	-0.002	-0.95	CI
EZPQ63		0.056	0.004	1.99	0.048	0.004	1.69	OE
F4CT21		0.053	0.001	0.72	0.044	0.001	0.27	CI
FERGQS		0.052	0.000	0.24	0.041	-0.003	-1.32	GD
G5K1JS		0.053	0.001	0.56	0.047	0.003	1.40	CO
J3RBJ4		0.052	0.000	-0.16	0.042	-0.002	-1.01	CO
JM4BTC	X	0.058	0.006	2.79	0.052	0.009	3.75	OE
K5T2AJ		0.050	-0.002	-0.92	0.041	-0.002	-1.10	OE
KVGWZ1		0.051	-0.001	-0.40	0.044	0.000	-0.07	CI
L811QG		0.052	0.000	0.24	0.045	0.001	0.37	OE
MSKCWZ		0.054	0.002	1.19	0.046	0.002	0.96	OE
MY79EV		0.054	0.002	0.84	0.046	0.002	0.80	OE
ND2X6L	*	0.047	-0.004	-2.09	0.037	-0.007	-3.20	DR
NZ31EL		0.054	0.002	0.80	0.044	0.000	0.02	CI
P7P1ST	*	0.050	-0.002	-0.88	0.047	0.003	1.25	OE
QCSGMY		0.057	0.005	2.31	0.047	0.003	1.40	OE
QDZU1E		0.048	-0.004	-1.83	0.039	-0.004	-1.98	GD
QFFCD4		0.054	0.002	1.03	0.043	-0.001	-0.37	OE
QUTVZ1		0.050	-0.002	-0.88	0.043	0.000	-0.22	OE
RTMPMB		0.050	-0.002	-0.88	0.042	-0.002	-0.75	IR
RUUB2B		0.053	0.001	0.56	0.047	0.003	1.22	OE
S2E9HG		0.051	-0.001	-0.40	0.043	-0.001	-0.37	CI
S5URLE		0.054	0.002	0.84	0.046	0.002	0.81	CO
SUN9BV		0.052	0.000	0.22	0.044	0.000	0.02	CO

Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
U5LJEP		0.051	-0.001	-0.24	0.042	-0.001	-0.66	CI
U83BDD		0.053	0.001	0.40	0.043	-0.001	-0.35	CI
URSFFS		0.050	-0.002	-0.72	0.044	0.000	-0.07	CO
V1Y24B		0.051	-0.001	-0.40	0.043	-0.001	-0.37	CI
VVKVBS		0.053	0.001	0.72	0.044	0.000	0.13	CI
X4BDFY		0.051	-0.001	-0.40	0.040	-0.004	-1.57	OE
X5X8JC	X	0.041	-0.011	-5.01	0.031	-0.012	-5.51	CO
YDEX7S		0.051	0.000	-0.22	0.047	0.003	1.21	OE
YK3V9S		0.051	-0.001	-0.35	0.042	-0.002	-0.75	GD
YVNNN4		0.054	0.002	0.88	0.045	0.001	0.37	OE
YVYV7Y	X	0.042	-0.009	-4.49	0.034	-0.010	-4.29	OE
ZWV85C		0.051	-0.001	-0.24	0.044	0.000	0.10	OE

Summary Statistics

	Sample M77		Sample M78	
Grand Means	0.0518	Percent	0.0438	Percent
Std Dev Btwn Labs	0.0021	Percent	0.0023	Percent

Statistics based on 51 of 57 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #180

4U8WXM (X) - Data for both samples are high.

D7B9MC (X) - Data for both samples are high. Possible systematic error.

DW7H2J (X) - Data for both samples are high. Possible systematic error.

JM4BTC (X) - Data for both samples are high, and inconsistent within the determinations for Sample M77.

X5X8JC (X) - Data for both samples are low. Possible systematic error.

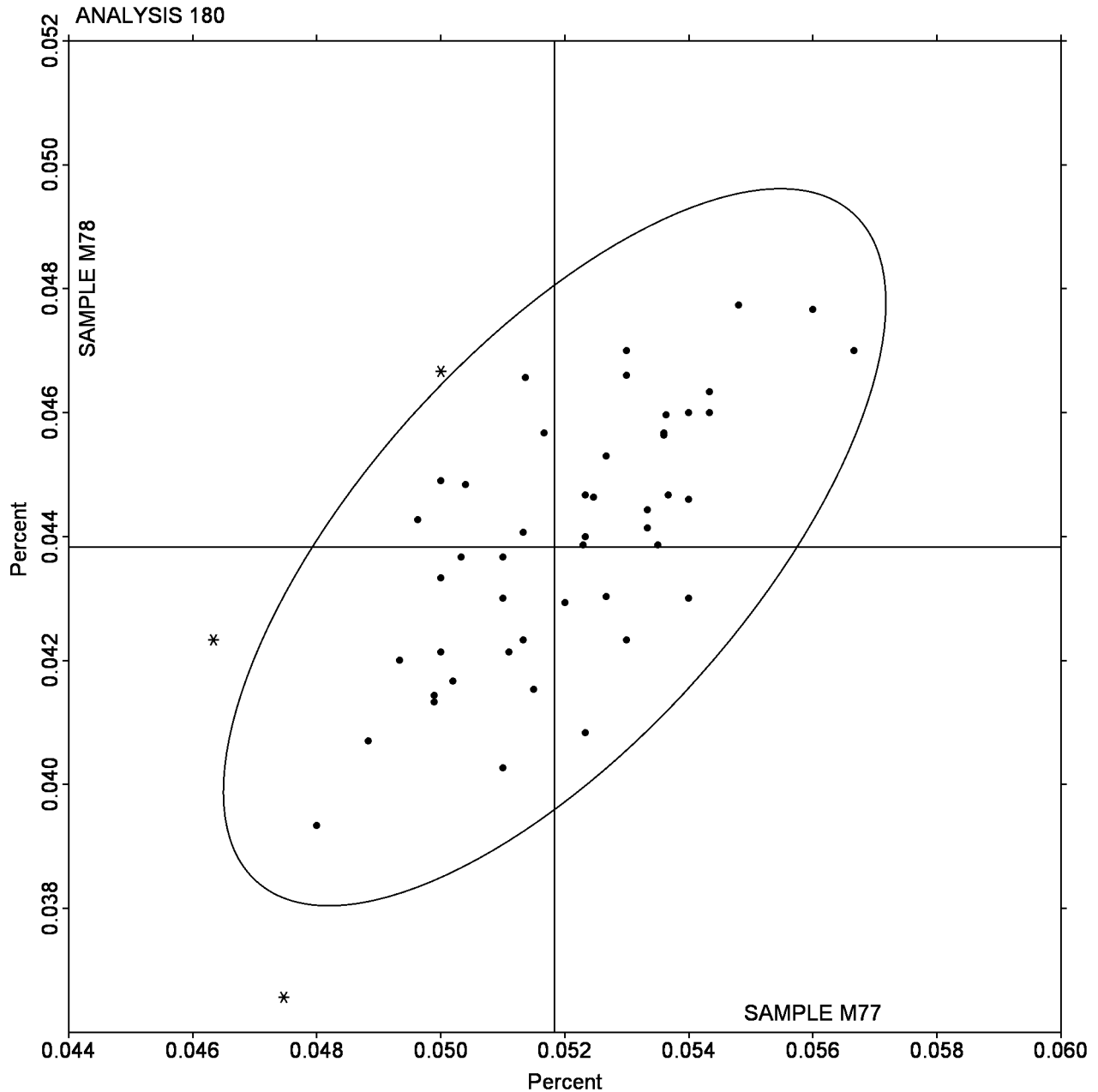
YVYV7Y (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 180

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

SAMPLE M77 = 0.0518 Percent SAMPLE M78 = 0.0438 Percent



Interlaboratory Testing Program for Metals

Analysis 181

Chemical Analysis Element #2 - Corrosion Resistant Steel - Percent

MANGANESE (Mn)

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1HQ5WU		1.200	-0.004	-0.16	1.063	-0.011	-0.42	OE
28YMRU		1.201	-0.004	-0.13	1.081	0.007	0.29	OE
2RVU37		1.143	-0.061	-2.16	1.020	-0.054	-2.13	GD
2TYT16		1.214	0.010	0.35	1.077	0.003	0.11	DR
3B7LME		1.200	-0.004	-0.16	1.070	-0.004	-0.14	WD
3PS44X		1.193	-0.011	-0.39	1.063	-0.011	-0.42	OE
3Y9L2P		1.239	0.035	1.22	1.114	0.040	1.58	WD
3YAWY1		1.137	-0.068	-2.39	1.020	-0.054	-2.13	OE
4S1L2J		1.218	0.014	0.48	1.090	0.016	0.63	WD
4ZADD2	*	1.277	0.072	2.55	1.130	0.056	2.21	GD
5JHNP4		1.237	0.033	1.16	1.102	0.028	1.09	GD
6DGEHG		1.197	-0.008	-0.28	1.070	-0.004	-0.16	XR
6DPGQ3		1.194	-0.011	-0.38	1.063	-0.011	-0.43	OE
7N232V		1.182	-0.022	-0.78	1.047	-0.027	-1.05	OE
88B2NH		1.207	0.002	0.08	1.071	-0.003	-0.13	OE
9JUJUZ		1.252	0.048	1.68	1.105	0.031	1.21	DR
AACY1G		1.210	0.006	0.21	1.085	0.011	0.42	OE
AE9DUY		1.195	-0.009	-0.33	1.056	-0.018	-0.70	OE
C4PD95		1.197	-0.008	-0.28	1.063	-0.011	-0.42	OE
CZDC2F		1.214	0.009	0.33	1.083	0.009	0.34	OE
DE6AUQ		1.183	-0.021	-0.75	1.043	-0.031	-1.21	OE
DGWZAJ		1.160	-0.044	-1.57	1.033	-0.041	-1.60	OE
EN3B81		1.172	-0.032	-1.13	1.050	-0.024	-0.96	IC
FCY27Y		1.160	-0.044	-1.57	1.040	-0.034	-1.34	OE
FZ1VUR		1.193	-0.011	-0.39	1.064	-0.010	-0.41	DR
GDW5SR		1.203	-0.001	-0.04	1.067	-0.007	-0.29	OE
GLKZDA	X	1.090	-0.114	-4.04	0.960	-0.114	-4.50	XX
H6SEYZ	X	1.200	-0.004	-0.16	0.870	-0.204	-8.05	OE
HBQCRH		1.183	-0.021	-0.75	1.060	-0.014	-0.55	OE
HH181C		1.207	0.002	0.08	1.073	-0.001	-0.02	WD
HZZPNW		1.246	0.041	1.46	1.099	0.025	0.99	OE
J2F9X5		1.196	-0.008	-0.29	1.067	-0.007	-0.26	WD
JK2XNR		1.185	-0.020	-0.70	1.072	-0.002	-0.06	OE
K8JP8Y		1.192	-0.013	-0.45	1.062	-0.012	-0.49	OE
KLW966		1.180	-0.024	-0.86	1.077	0.003	0.11	OE
LB2ZUU		1.208	0.003	0.11	1.079	0.005	0.21	WD
LE5AY5		1.198	-0.007	-0.24	1.062	-0.012	-0.48	OE
LTVH9H		1.222	0.018	0.63	1.089	0.015	0.61	OE
LV2K11		1.226	0.022	0.76	1.095	0.021	0.84	OE
MNEXT2		1.226	0.021	0.75	1.098	0.024	0.95	OE
MVEQ5B		1.205	0.001	0.02	1.066	-0.008	-0.30	OE
N4EW2X		1.183	-0.021	-0.75	1.067	-0.007	-0.29	IC
NRVUMZ		1.210	0.006	0.20	1.083	0.009	0.37	OE
P45UM4		1.173	-0.032	-1.12	1.048	-0.026	-1.02	OE
QABDEL		1.203	-0.001	-0.04	1.063	-0.011	-0.42	OE

Interlaboratory Testing Program for Metals

Analysis 181

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
QLQZB9		1.180	-0.024	-0.86	1.089	0.015	0.58	OE
U4BHTQ		1.213	0.009	0.31	1.090	0.016	0.63	XR
V5NHAX		1.198	-0.006	-0.23	1.067	-0.007	-0.29	OE
VGKJY7	X	1.416	0.212	7.48	1.253	0.179	7.08	OE
VRWFB6		1.208	0.004	0.14	1.080	0.006	0.23	DR
WAJVHL		1.202	-0.002	-0.08	1.069	-0.005	-0.21	WD
X71HEW		1.273	0.069	2.43	1.137	0.063	2.48	OE
XJSTMU	*	1.260	0.055	1.95	1.134	0.060	2.38	GD
Y6FBAB		1.231	0.027	0.94	1.106	0.032	1.28	WD
YXKWAF		1.196	-0.008	-0.30	1.060	-0.014	-0.55	OE
ZNAJFA		1.220	0.016	0.55	1.123	0.049	1.95	WD

Summary Statistics

	Sample M77	Sample M78
Grand Means	1.2045 Percent	1.0739 Percent
Std Dev Btwn Labs	0.0283 Percent	0.0253 Percent

Statistics based on 50 of 56 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #181

GLKZDA (X) - Data for both samples are low. Possible systematic error.

H6SEYZ (X) - Low data for Sample M78.

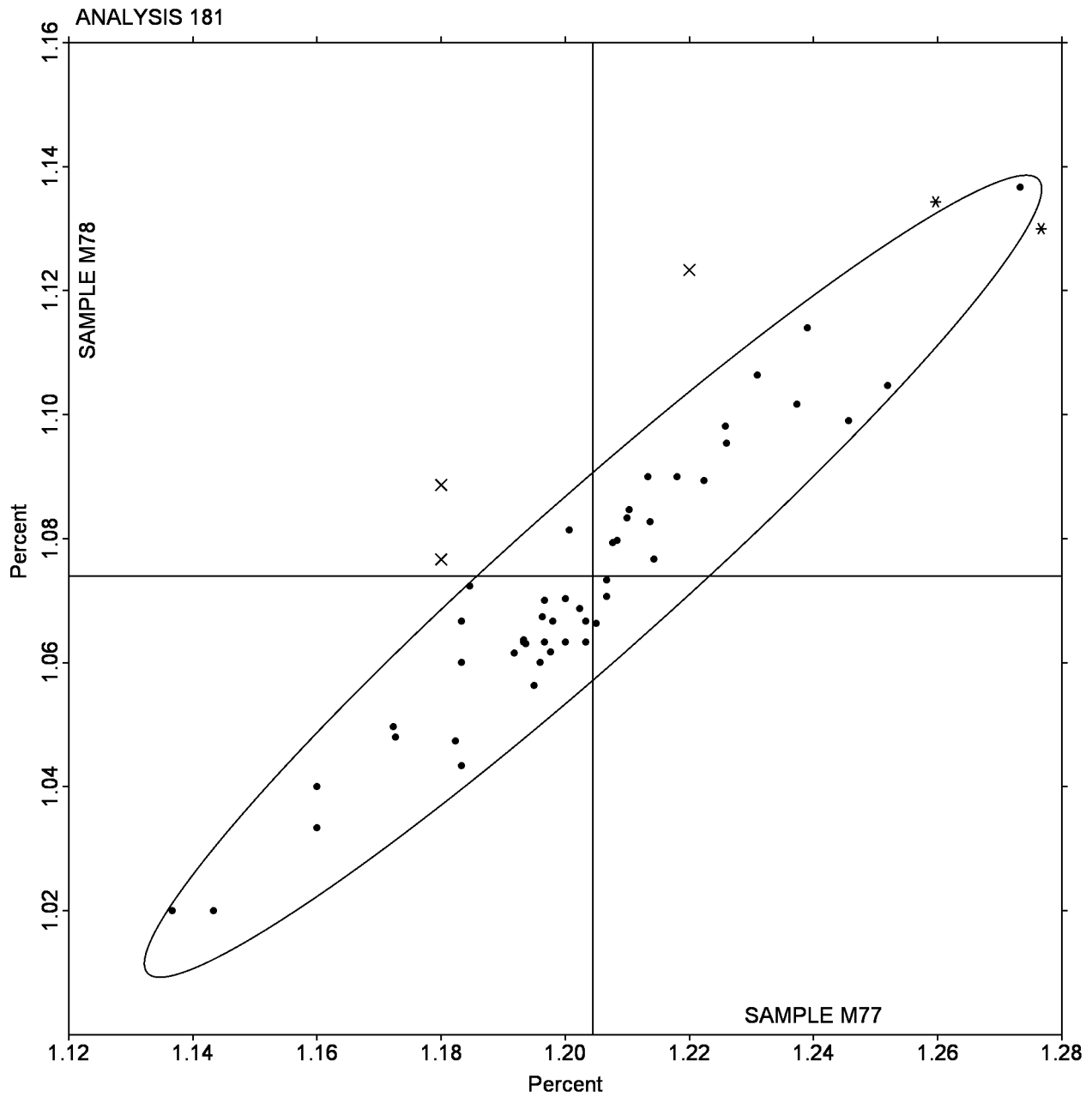
VGKJY7 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 181

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

SAMPLE M77 = 1.2045 Percent SAMPLe M78 = 1.0739 Percent



Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1RDLCR		0.0211	-0.0005	-0.31	0.0206	-0.0020	-1.14	OE
1UJFF9		0.0222	0.0007	0.41	0.0232	0.0006	0.33	DR
2AMRQT	*	0.0171	-0.0045	-2.76	0.0175	-0.0051	-2.93	OE
2GLHP9	*	0.0266	0.0050	3.09	0.0279	0.0053	3.05	OE
2LBCFQ		0.0209	-0.0007	-0.41	0.0213	-0.0013	-0.73	OE
44SQAY		0.0210	-0.0006	-0.35	0.0210	-0.0016	-0.92	DR
6MKB3T	*	0.0205	-0.0011	-0.65	0.0233	0.0007	0.41	OE
6RGBDC		0.0212	-0.0004	-0.24	0.0228	0.0002	0.10	WD
81YL3F		0.0209	-0.0007	-0.43	0.0219	-0.0007	-0.42	OE
8K7A85		0.0208	-0.0008	-0.47	0.0226	0.0000	-0.02	OE
93Y71E		0.0217	0.0001	0.06	0.0230	0.0004	0.23	OE
9A7GQB		0.0210	-0.0006	-0.37	0.0212	-0.0014	-0.81	IC
AB5TPY		0.0210	-0.0006	-0.35	0.0217	-0.0009	-0.54	DR
AE7VAT		0.0217	0.0001	0.08	0.0227	0.0001	0.04	OE
ASRGJ1		0.0200	-0.0016	-0.96	0.0210	-0.0016	-0.92	IC
AT3B5T		0.0250	0.0034	2.11	0.0260	0.0034	1.97	OE
B2LCJF		0.0209	-0.0006	-0.39	0.0216	-0.0010	-0.60	GD
CB37CA		0.0218	0.0002	0.14	0.0231	0.0005	0.29	OE
CS1WNM		0.0230	0.0014	0.88	0.0237	0.0011	0.62	OE
D8M3E6		0.0226	0.0011	0.66	0.0237	0.0011	0.64	OE
E1UV2K	X	0.0275	0.0060	3.67	0.0286	0.0060	3.46	OE
EN8KLU		0.0204	-0.0012	-0.74	0.0215	-0.0011	-0.65	OE
EYF72Z		0.0210	-0.0006	-0.35	0.0223	-0.0003	-0.15	OE
EZSBMW		0.0210	-0.0006	-0.35	0.0213	-0.0013	-0.73	DR
FSCNUF		0.0217	0.0001	0.06	0.0227	0.0001	0.04	WD
G488TB		0.0243	0.0028	1.70	0.0259	0.0033	1.91	OE
GAEA5K		0.0227	0.0011	0.68	0.0243	0.0017	1.01	OE
GDMCA2		0.0217	0.0001	0.06	0.0233	0.0007	0.43	OE
GGSVPC		0.0211	-0.0005	-0.31	0.0222	-0.0004	-0.21	OE
GPV7CD	X	0.0287	0.0071	4.36	0.0220	-0.0006	-0.34	OE
H8DU26		0.0214	-0.0002	-0.10	0.0228	0.0002	0.14	OE
HA4XSS		0.0212	-0.0003	-0.20	0.0222	-0.0004	-0.25	GD
HGWKW8		0.0218	0.0002	0.12	0.0225	-0.0001	-0.07	OE
HSQ5UR		0.0242	0.0026	1.60	0.0253	0.0027	1.59	GD
J4BPM9		0.0197	-0.0019	-1.17	0.0200	-0.0026	-1.50	XX
M3LXZS		0.0223	0.0008	0.47	0.0236	0.0010	0.60	OE
M5YS3S	*	0.0257	0.0042	2.56	0.0256	0.0030	1.74	OE
N54EGB		0.0213	-0.0002	-0.14	0.0230	0.0004	0.23	WD
PP3KA3		0.0230	0.0014	0.88	0.0240	0.0014	0.81	OE
Q8EGQ7		0.0219	0.0003	0.19	0.0226	0.0000	-0.02	OE
QZRRXD		0.0227	0.0011	0.68	0.0230	0.0004	0.23	OE
R9DGFQ		0.0192	-0.0023	-1.43	0.0203	-0.0023	-1.33	WD
RV4KTH		0.0207	-0.0009	-0.53	0.0224	-0.0002	-0.11	OE
SQLSWW		0.0203	-0.0012	-0.76	0.0217	-0.0009	-0.54	XR
T4QFSP		0.0220	0.0004	0.27	0.0230	0.0004	0.23	OE

Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
TLBCBA	*	0.0220	0.0004	0.27	0.0213	-0.0013	-0.73	OE
UEJJMN		0.0219	0.0003	0.21	0.0230	0.0004	0.23	OE
UPJX18		0.0202	-0.0013	-0.82	0.0215	-0.0011	-0.63	OE
VP51QW		0.0220	0.0004	0.27	0.0227	0.0001	0.04	OE
VV9DQL		0.0198	-0.0018	-1.08	0.0223	-0.0003	-0.15	IC
VVXX3Y		0.0217	0.0001	0.06	0.0233	0.0007	0.41	OE
W5QHAA		0.0183	-0.0032	-1.99	0.0190	-0.0036	-2.08	GD
XS19HV		0.0213	-0.0002	-0.14	0.0230	0.0004	0.23	WD
Y7XQ5L		0.0220	0.0004	0.27	0.0237	0.0011	0.62	XR
ZMPLYX	X	0.0040	-0.0176	-10.79	1.1100	1.0874	629.61	OE

Summary Statistics

	Sample M77	Sample M78
Grand Means	0.02156 Percent	0.02260 Percent
Std Dev Btwn Labs	0.00163 Percent	0.00173 Percent

Statistics based on 52 of 55 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #182

E1UV2K (X) - Data for both samples are high. Possible systematic error.

GPV7CD (X) - High data for Sample M77, and inconsistent within the determinations for both samples.

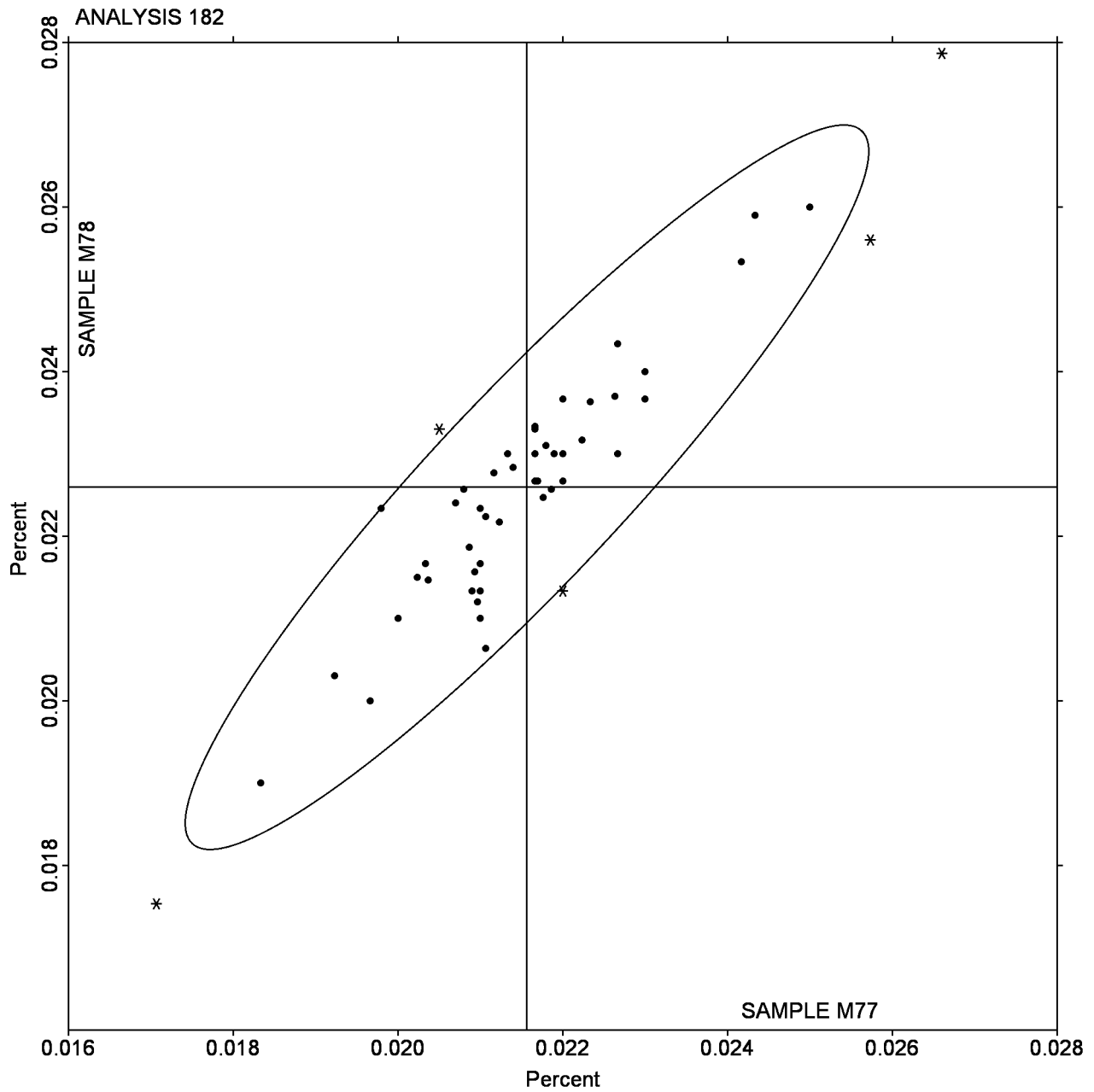
ZMPLYX (X) - Low data for Sample M77. Extreme data for Sample M78.

Interlaboratory Testing Program for Metals

Analysis 182

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

SAMPLE M77 = 0.02156 Percent SAMPLE M78 = 0.02260 Percent



Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
COBALT(Co)

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2C1AUP		0.067	-0.001	-0.13	0.066	-0.002	-0.32	OE
3CRS2Q		0.069	0.001	0.21	0.072	0.004	0.66	OE
3EYYPB		0.069	0.001	0.20	0.070	0.002	0.27	OE
3JEYF		0.062	-0.006	-0.96	0.062	-0.006	-0.92	OE
3VYFV8		0.069	0.001	0.15	0.069	0.001	0.16	DR
53GFCP		0.065	-0.003	-0.52	0.064	-0.004	-0.59	OE
87EXLU	X	0.088	0.020	3.31	0.087	0.019	3.09	DR
8NBYS2		0.069	0.001	0.14	0.069	0.001	0.15	OE
8RF3NF	*	0.050	-0.018	-3.01	0.050	-0.018	-2.92	XR
8SF31M		0.067	-0.001	-0.13	0.067	-0.001	-0.16	WD
A24YQZ		0.069	0.001	0.23	0.069	0.001	0.14	DR
A34P6F		0.076	0.008	1.37	0.076	0.008	1.36	OE
A5L9FP		0.067	-0.001	-0.13	0.067	-0.001	-0.16	WD
AQ319T		0.080	0.012	1.98	0.080	0.012	1.90	OE
B6SZYC		0.073	0.005	0.76	0.073	0.005	0.73	OE
BAS5RC		0.061	-0.007	-1.18	0.061	-0.007	-1.14	OE
BP51XZ		0.074	0.005	0.90	0.074	0.006	0.94	OE
BVA36G		0.080	0.012	1.98	0.080	0.012	1.95	OE
F1FK2K		0.069	0.001	0.20	0.067	-0.001	-0.21	OE
FM4LDR	X	0.099	0.031	5.14	0.095	0.027	4.33	GD
FTWWGF		0.071	0.003	0.43	0.073	0.005	0.76	OE
GKR8EV		0.068	0.000	-0.02	0.067	-0.001	-0.16	IC
GKTERY		0.078	0.010	1.64	0.078	0.010	1.63	OE
GNDC72		0.069	0.001	0.15	0.070	0.002	0.33	WD
HDTMLF		0.073	0.005	0.76	0.073	0.005	0.81	OE
HRD6ZH	X	0.088	0.020	3.36	0.093	0.025	4.12	GD
JYTU69		0.073	0.005	0.87	0.074	0.006	0.98	WD
K9ZG7U		0.070	0.001	0.24	0.070	0.002	0.25	OE
KKR33Z		0.070	0.002	0.31	0.070	0.002	0.33	OE
L8EL3Z		0.070	0.002	0.31	0.069	0.001	0.22	XR
LD2JFF		0.068	0.000	-0.02	0.068	0.000	-0.05	OE
PJQW9S		0.063	-0.005	-0.85	0.063	-0.005	-0.81	WD
Q4THSY		0.064	-0.004	-0.74	0.063	-0.005	-0.76	OE
RXDGK7		0.058	-0.010	-1.74	0.057	-0.011	-1.84	OE
S6R2RV	X	0.070	0.002	0.31	0.081	0.013	2.11	IC
SQC2EC		0.072	0.004	0.70	0.069	0.001	0.11	OE
SZQWVC		0.063	-0.005	-0.85	0.063	-0.005	-0.81	OE
TY6Y47		0.060	-0.008	-1.35	0.060	-0.008	-1.30	OE
UZA3TN		0.070	0.002	0.26	0.070	0.002	0.27	IC
VRR5KE		0.068	0.000	-0.02	0.068	0.000	0.00	DR
XHM6FW		0.068	0.000	0.04	0.069	0.001	0.16	OE
XN4BQC		0.061	-0.007	-1.24	0.060	-0.008	-1.35	OE
XTDC3U		0.070	0.002	0.37	0.071	0.003	0.49	OE
Y228HT		0.076	0.008	1.37	0.076	0.008	1.36	GD
YJQFTL		0.064	-0.004	-0.66	0.063	-0.005	-0.76	OE

Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
COBALT(Co)

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YNHHNK		0.070	0.002	0.31	0.070	0.002	0.33	WD
YQAX9W		0.063	-0.005	-0.90	0.063	-0.005	-0.86	OE
Z428T5		0.069	0.001	0.09	0.069	0.001	0.16	OE

Summary Statistics

	Sample M77		Sample M78	
Grand Means	0.0681	Percent	0.0680	Percent
Stnd Dev Btwn Labs	0.0060	Percent	0.0062	Percent
Statistics based on 40 of 48 reporting participants				

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #183

87EXLU (X) - Data for both samples are high. Possible systematic error.

FM4LDR (X) - Data for both samples are high. Possible systematic error.

HRD6ZH (X) - Data for both samples are high, and inconsistent within the determinations for Sample M78.

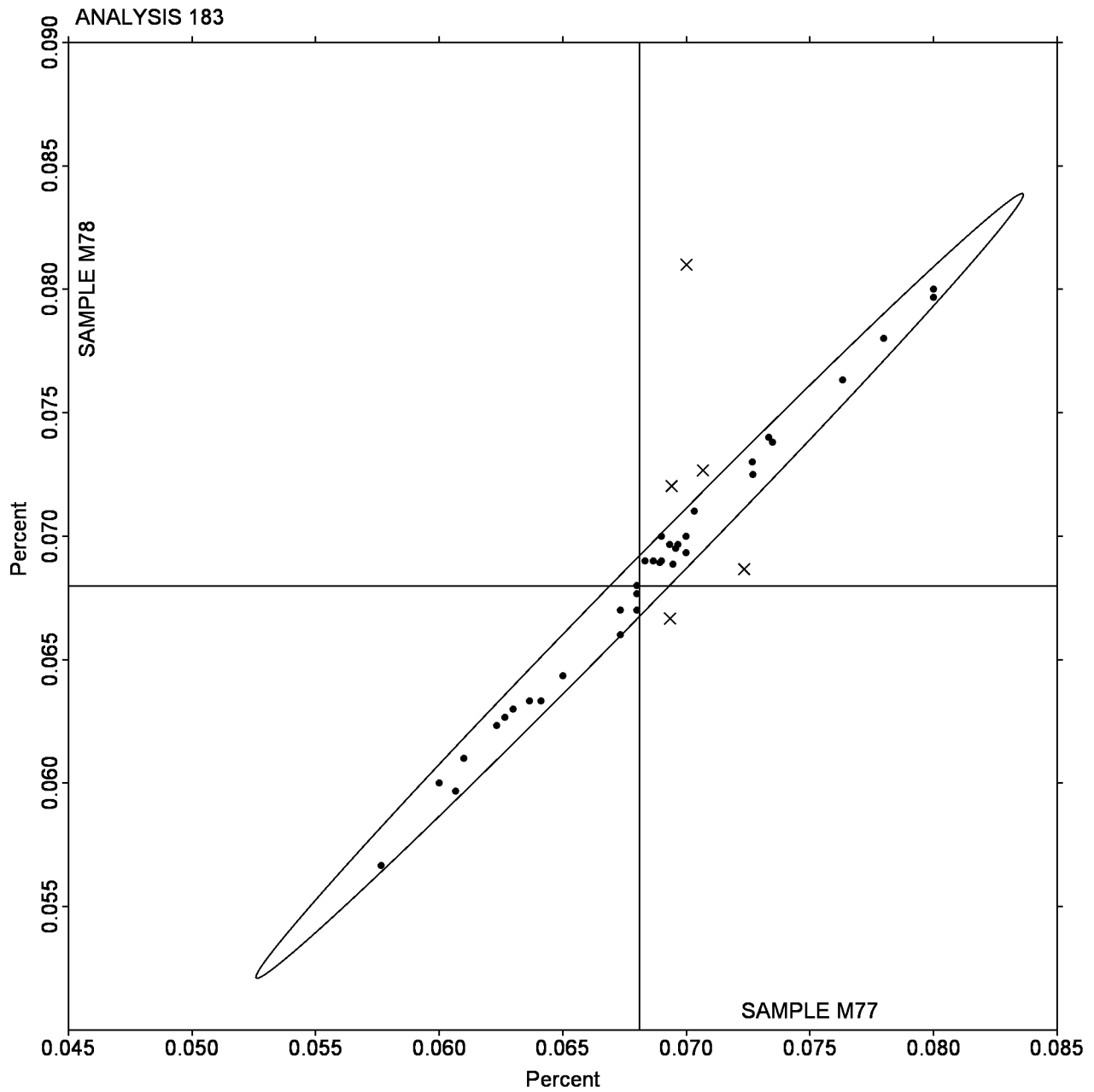
S6R2RV (X) - Inconsistent within the determinations for Sample M77.

Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
COBALT(Co)

SAMPLE M77 = 0.0681 Percent SAMPLE M78 = 0.0680 Percent



Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
16YZTX	X	0.366	-0.120	-8.48	0.387	-0.127	-8.53	OE
2EBKZL		0.483	-0.003	-0.18	0.515	0.002	0.13	IC
38HU2P		0.477	-0.009	-0.62	0.496	-0.017	-1.15	OE
3AZEBX		0.482	-0.004	-0.30	0.512	-0.002	-0.12	DR
3LZV2M		0.495	0.009	0.63	0.527	0.014	0.93	OE
5A8Q1V		0.488	0.002	0.18	0.516	0.003	0.17	OE
6976M6		0.500	0.014	1.00	0.517	0.003	0.22	DR
7FD1CL		0.498	0.012	0.85	0.532	0.019	1.25	OE
8Q512G		0.493	0.007	0.53	0.527	0.013	0.89	XR
9EHDET		0.483	-0.003	-0.18	0.517	0.003	0.22	OE
9J39BK		0.462	-0.024	-1.68	0.495	-0.018	-1.24	XX
9NNJXM		0.480	-0.006	-0.39	0.507	-0.007	-0.46	OE
9ZBSAJ		0.483	-0.003	-0.18	0.507	-0.007	-0.46	OE
A9HTJ8		0.497	0.011	0.76	0.529	0.015	1.02	WD
AF4TR8		0.487	0.001	0.10	0.521	0.008	0.51	OE
B39UJ3		0.492	0.006	0.43	0.516	0.003	0.17	OE
BC3UD8		0.471	-0.015	-1.07	0.509	-0.004	-0.30	DR
CS6JES		0.491	0.005	0.36	0.531	0.017	1.16	OE
DDTQZ7		0.476	-0.010	-0.72	0.506	-0.007	-0.50	XR
EPRWJX		0.489	0.003	0.25	0.518	0.004	0.28	OE
FIEFAV		0.456	-0.030	-2.11	0.478	-0.036	-2.41	DR
FDEC28		0.477	-0.009	-0.65	0.506	-0.008	-0.52	OE
FLKRJ5		0.490	0.005	0.32	0.522	0.008	0.56	OE
HGDK2J	*	0.505	0.019	1.33	0.516	0.003	0.19	OE
HHT8NA		0.486	0.000	-0.01	0.515	0.002	0.13	WD
JG7WYA	X	0.429	-0.057	-3.99	0.457	-0.057	-3.82	OE
JJF1G1		0.483	-0.003	-0.18	0.500	-0.013	-0.90	OE
JTECNS	X	0.538	0.052	3.70	0.548	0.035	2.32	GD
KFY9HA		0.469	-0.017	-1.21	0.492	-0.022	-1.47	OE
KPD4UB		0.487	0.001	0.06	0.513	0.000	-0.01	WD
L3WZS8	X	0.423	-0.063	-4.41	0.447	-0.067	-4.49	GD
LFYJZZ		0.480	-0.006	-0.44	0.511	-0.002	-0.14	OE
LNFM2U		0.471	-0.015	-1.05	0.498	-0.015	-1.04	OE
LPJGB6		0.500	0.014	0.97	0.530	0.017	1.11	OE
MV1EBD		0.502	0.016	1.14	0.530	0.016	1.09	GD
PHXF8R	X	0.391	-0.095	-6.72	0.407	-0.107	-7.18	OE
PLRKDR		0.496	0.010	0.69	0.526	0.012	0.82	OE
PU2R9U		0.483	-0.003	-0.20	0.519	0.006	0.40	IC
Q3JF6Z	*	0.443	-0.043	-3.00	0.467	-0.047	-3.15	OE
R151SQ		0.483	-0.003	-0.18	0.510	-0.003	-0.21	OE
R2MT4L		0.481	-0.005	-0.34	0.506	-0.007	-0.48	OE
RCQ2UJ		0.479	-0.007	-0.51	0.508	-0.005	-0.34	DR
RKQE2E		0.481	-0.005	-0.37	0.517	0.003	0.22	OE
RVP265		0.505	0.019	1.37	0.530	0.016	1.09	OE
S37M79		0.483	-0.003	-0.18	0.507	-0.007	-0.46	OE

Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
S7GAMC	*	0.526	0.040	2.83	0.548	0.035	2.35	GD
U95Q2Q		0.519	0.033	2.34	0.545	0.032	2.12	OE
UZEAG6		0.488	0.002	0.18	0.512	-0.002	-0.12	OE
V3RNF3		0.499	0.013	0.93	0.529	0.016	1.05	OE
VS4ZTE		0.475	-0.011	-0.77	0.501	-0.013	-0.86	OE
VVMYAQ		0.476	-0.010	-0.72	0.506	-0.008	-0.52	OE
W7TYAV		0.482	-0.004	-0.25	0.509	-0.005	-0.32	OE
W8WTK7		0.478	-0.008	-0.53	0.501	-0.013	-0.86	DR
WYA1F9		0.481	-0.005	-0.34	0.498	-0.015	-1.04	OE
YP9NXL		0.483	-0.003	-0.20	0.516	0.003	0.19	WD
ZMJAQT		0.504	0.018	1.28	0.526	0.012	0.82	OE

Summary Statistics

	Sample M77	Sample M78
Grand Means	0.4859 Percent	0.5135 Percent
Std Dev Btwn Labs	0.0142 Percent	0.0149 Percent
Statistics based on 51 of 56 reporting participants		

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #184

16YZTX (X) - Data for both samples are low, and inconsistent within the determinations for Sample M78.

JG7WYA (X) - Data for both samples are low. Possible systematic error.

JTECNS (X) - High data for Sample M77.

L3WZS8 (X) - Data for both samples are low, and inconsistent within the determinations for both samples.

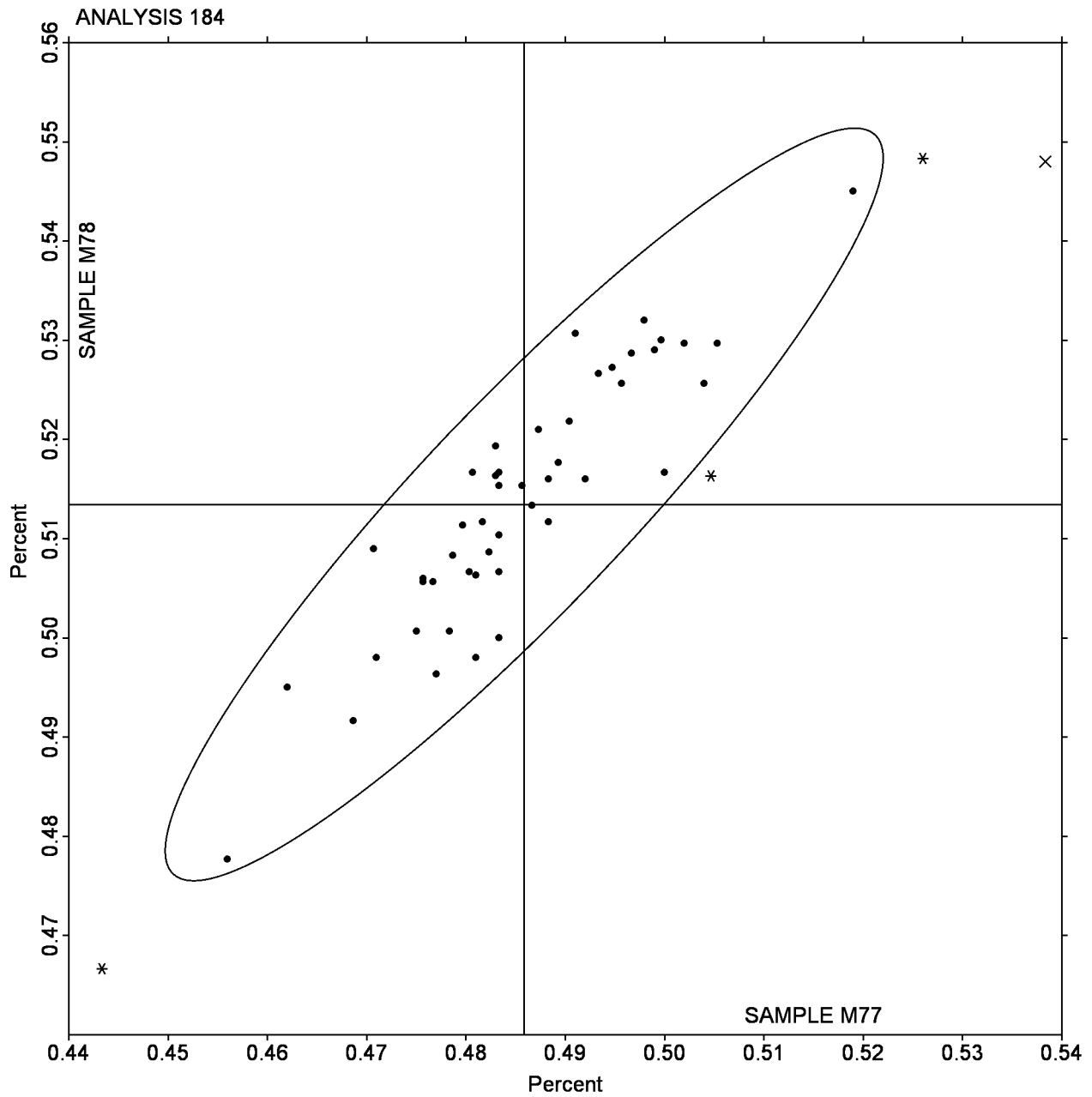
PHXF8R (X) - Data for both samples are low, and inconsistent within the determinations for Sample M78.

Interlaboratory Testing Program for Metals

Analysis 184

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

SAMPLE M77 = 0.4859 Percent SAMPLE M78 = 0.5135 Percent



Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1KWL3R		0.220	0.007	0.86	0.237	0.007	0.86	OE
29Q252	*	0.227	0.014	1.72	0.240	0.011	1.26	GD
2RUPCH		0.205	-0.008	-0.94	0.222	-0.008	-0.90	WD
2XXUPV		0.203	-0.010	-1.27	0.218	-0.011	-1.29	OE
3UXK2Q		0.202	-0.011	-1.31	0.219	-0.010	-1.21	WD
4E8GWM		0.202	-0.011	-1.40	0.217	-0.013	-1.48	OE
4EW81L	X	0.244	0.031	3.85	0.236	0.006	0.75	OE
4U3FRQ	*	0.200	-0.013	-1.60	0.220	-0.009	-1.09	OE
58MG6S		0.214	0.001	0.16	0.233	0.003	0.39	OE
5HWB97	X	0.210	-0.003	-0.33	0.239	0.010	1.14	OE
735XWC		0.213	0.000	0.00	0.230	0.000	0.04	WD
749GET	*	0.195	-0.018	-2.26	0.208	-0.022	-2.54	OE
7CM3LG		0.208	-0.005	-0.62	0.224	-0.005	-0.58	IC
8B4CRN		0.206	-0.007	-0.86	0.221	-0.008	-0.94	OE
9CEH6C		0.215	0.002	0.20	0.232	0.003	0.35	OE
A1AMX1		0.214	0.001	0.08	0.229	-0.001	-0.08	OE
A6BYFR		0.217	0.004	0.45	0.230	0.001	0.08	WD
AAXQWN		0.205	-0.008	-1.03	0.219	-0.010	-1.17	OE
APQ2W6		0.204	-0.009	-1.11	0.221	-0.009	-1.02	OE
AZUCY8		0.210	-0.003	-0.33	0.228	-0.002	-0.19	IC
DARV5Y		0.219	0.006	0.74	0.233	0.004	0.43	DR
DD87VN		0.215	0.002	0.29	0.230	0.001	0.08	WD
EDGRY2	X	0.205	-0.008	-0.94	0.234	0.005	0.59	GD
EFGJNA		0.220	0.007	0.86	0.240	0.011	1.26	XR
FK82F5		0.225	0.012	1.52	0.241	0.012	1.41	OE
FVGFZZ		0.215	0.002	0.24	0.229	0.000	-0.04	OE
GA1M9X		0.216	0.003	0.33	0.223	-0.006	-0.74	OE
GLGDT1		0.210	-0.003	-0.41	0.226	-0.003	-0.39	OE
H34TLX		0.218	0.005	0.61	0.236	0.007	0.79	OE
H53M4N		0.201	-0.012	-1.44	0.216	-0.014	-1.60	OE
H664P6		0.220	0.007	0.86	0.243	0.014	1.65	DR
HCLJY9		0.222	0.009	1.06	0.231	0.002	0.20	OE
HCS42A		0.214	0.001	0.12	0.231	0.002	0.24	OE
HMEYFS	X	0.181	-0.032	-3.98	0.196	-0.034	-3.95	DR
JANKUG		0.216	0.003	0.37	0.232	0.003	0.35	GD
JFWUBB	*	0.234	0.021	2.58	0.250	0.021	2.47	OE
KH2BTZ		0.214	0.001	0.08	0.228	-0.001	-0.15	WD
MCMCNW		0.217	0.004	0.54	0.233	0.004	0.42	DR
MQXX65		0.216	0.003	0.33	0.233	0.003	0.39	OE
N3T734		0.208	-0.005	-0.66	0.227	-0.002	-0.27	OE
NM2BKM		0.210	-0.003	-0.37	0.230	0.001	0.08	OE
P53VEU		0.222	0.009	1.06	0.250	0.021	2.43	XX
PDAXFF		0.214	0.001	0.16	0.231	0.002	0.20	DR
PF2HHX		0.221	0.008	1.02	0.238	0.008	0.98	XR
PYF1HW		0.213	0.000	0.03	0.229	0.000	-0.06	OE

Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
RYNH8L		0.226	0.013	1.64	0.243	0.013	1.57	OE
SBNZTY		0.215	0.002	0.25	0.232	0.002	0.29	OE
U65PGV		0.210	-0.003	-0.37	0.227	-0.003	-0.31	OE
UFVVVZ		0.207	-0.006	-0.72	0.224	-0.006	-0.68	OE
VNJ29Q		0.204	-0.009	-1.07	0.217	-0.012	-1.41	OE
XYUVJ4		0.220	0.007	0.86	0.240	0.011	1.26	OE
Z112L2		0.219	0.006	0.78	0.237	0.008	0.94	OE
ZJWPP5		0.223	0.010	1.27	0.240	0.011	1.26	GD
ZXY547	X	0.335	0.122	15.04	0.358	0.128	15.07	OE

Summary Statistics

	Sample M77	Sample M78
Grand Means	0.2130 Percent	0.2293 Percent
Std Dev Btwn Labs	0.0081 Percent	0.0085 Percent

Statistics based on 45 of 54 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #185

4EW81L (X) - High data for Sample M77.

5HWB97 (X) - Inconsistent in testing between samples and inconsistent within the determinations for both samples.

EDGRY2 (X) - Inconsistent within the determinations for Sample M78.

HMEYFS (X) - Data for both samples are low. Possible systematic error.

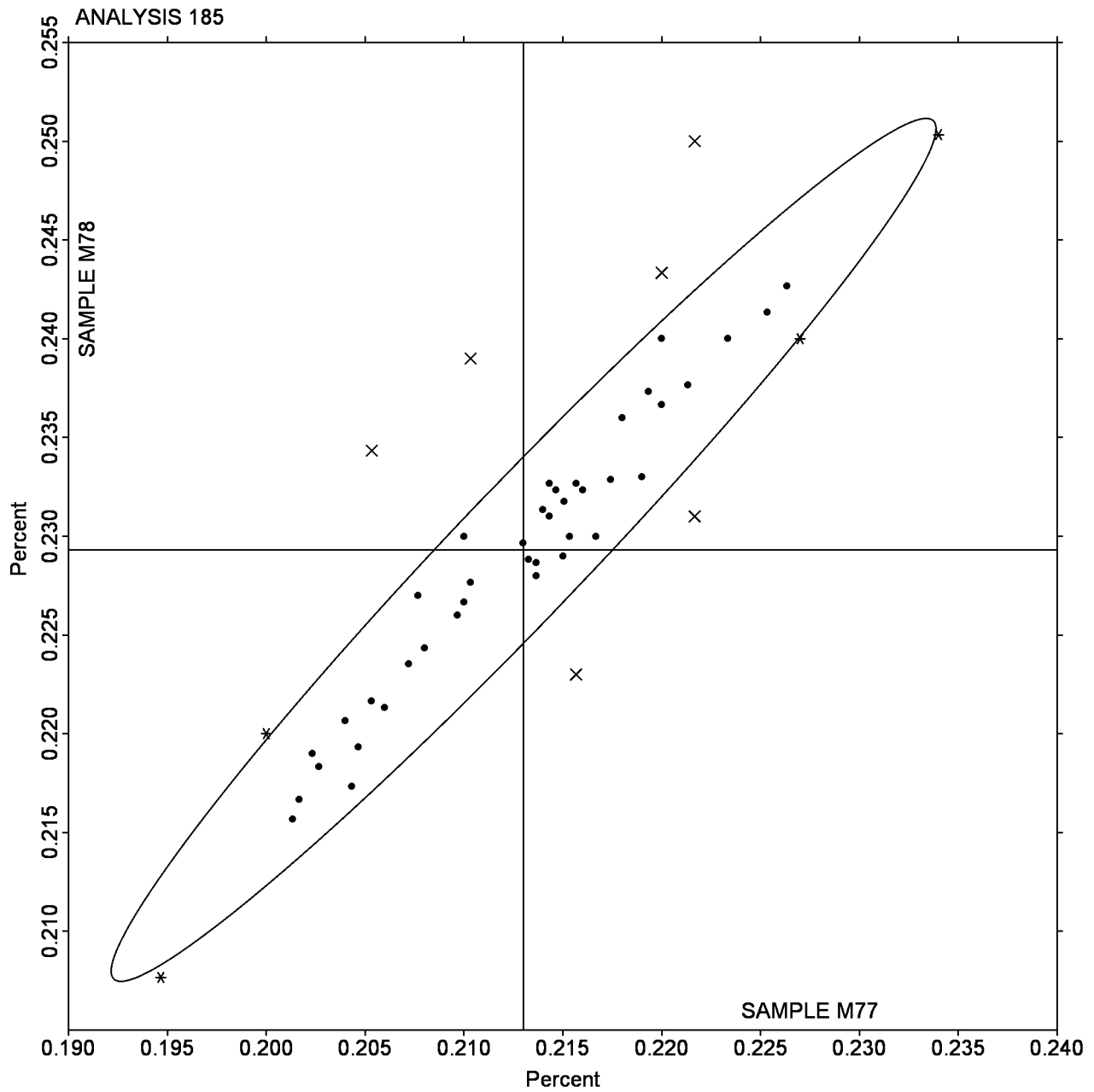
ZXY547 (X) - Data for both samples are high, and inconsistent within the determinations for Sample M77.

Interlaboratory Testing Program for Metals

Analysis 185

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

SAMPLE M77 = 0.2130 Percent SAMPLe M78 = 0.2293 Percent



Interlaboratory Testing Program for Metals

Analysis 186

Chemical Analysis Element #7 - Corrosion Resistant Steel - Percent

NICKEL (Ni)

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
13Y9RH		20.20	0.02	0.12	20.13	0.00	-0.01	OE
2AK8JG		20.08	-0.10	-0.50	19.99	-0.14	-0.72	IC
2ZEXHE		20.25	0.07	0.37	20.23	0.10	0.53	OE
3GT8XB		20.30	0.12	0.61	20.33	0.20	1.06	OE
3U675R		20.29	0.11	0.54	20.19	0.06	0.34	WD
3X6EE3	X	19.47	-0.71	-3.54	19.67	-0.46	-2.40	GD
48CHHK		20.10	-0.08	-0.40	20.00	-0.13	-0.65	OE
4DLX8V	*	19.62	-0.56	-2.78	19.63	-0.50	-2.61	OE
5MXK69		20.20	0.02	0.12	20.23	0.10	0.54	IC
5N7MR7		20.27	0.09	0.46	20.21	0.08	0.42	XR
619PSF	X	21.21	1.03	5.15	21.24	1.11	5.78	OE
79V7JF		20.28	0.10	0.50	20.17	0.04	0.21	ED
7FBGBP		20.04	-0.13	-0.66	19.94	-0.19	-0.98	OE
8P67TB	*	20.72	0.54	2.71	20.60	0.47	2.46	XX
9DYB8Z	*	20.43	0.26	1.28	20.50	0.37	1.94	OE
A11VEB		19.77	-0.40	-2.01	19.79	-0.34	-1.77	OE
A3DVVD		20.09	-0.08	-0.42	20.18	0.05	0.27	WC
A51XUS		20.17	-0.01	-0.05	20.09	-0.04	-0.18	WD
A8HYG6		20.26	0.08	0.42	20.16	0.03	0.16	OE
AJJPLS		20.54	0.37	1.83	20.45	0.32	1.65	OE
ANAFKJ		20.19	0.01	0.07	20.04	-0.09	-0.46	OE
AQD3HL		20.17	-0.01	-0.03	20.15	0.02	0.13	OE
BF3QRQ		20.23	0.06	0.28	20.20	0.07	0.37	GD
BNJ6JZ		20.12	-0.05	-0.27	19.97	-0.16	-0.84	OE
BV4P7D		20.26	0.08	0.40	20.21	0.08	0.42	XR
BYCADY		20.19	0.01	0.07	20.11	-0.02	-0.11	WD
C6S3FJ		20.15	-0.03	-0.15	20.11	-0.02	-0.08	WD
EHEMUH		20.43	0.26	1.28	20.43	0.30	1.55	OE
F7T42B		19.90	-0.28	-1.37	19.90	-0.23	-1.17	OE
G7MJF9		20.11	-0.07	-0.33	20.16	0.03	0.15	OE
GYF5PL		20.25	0.07	0.37	20.19	0.06	0.30	OE
HGS8VH		20.11	-0.06	-0.31	20.10	-0.03	-0.14	DR
HGW4MM		19.97	-0.20	-1.01	20.02	-0.11	-0.56	GD
JD5VVS		20.16	-0.01	-0.07	20.13	0.00	0.01	OE
K5MG8H		20.29	0.11	0.55	20.24	0.11	0.59	OE
KVSWT9		20.29	0.11	0.57	20.24	0.11	0.56	WD
L2AP67		20.25	0.07	0.35	20.14	0.01	0.06	OE
M2YHCV	X	18.98	-1.19	-5.95	18.94	-1.19	-6.19	GD
ML9177	X	20.44	0.26	1.30	19.94	-0.19	-0.98	OE
N5627A		20.46	0.28	1.40	20.30	0.17	0.88	OE
NKJ3N7		20.17	0.00	-0.02	20.10	-0.03	-0.17	OE
Q1V2E4		20.13	-0.05	-0.23	19.83	-0.30	-1.55	OE
Q42Y8R		20.10	-0.07	-0.37	20.06	-0.07	-0.37	ED
QFDUDU		20.57	0.40	1.98	20.49	0.36	1.87	WD
RF9LYT		20.37	0.19	0.96	20.58	0.45	2.32	DR

Interlaboratory Testing Program for Metals

Analysis 186

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
S95UDP		20.12	-0.06	-0.30	20.07	-0.06	-0.29	OE
T238US		20.00	-0.17	-0.86	20.02	-0.11	-0.57	OE
THXP2Y		20.08	-0.09	-0.47	20.08	-0.05	-0.27	OE
UKE9B7		20.20	0.02	0.12	20.17	0.04	0.21	WD
VK7L7Y	*	19.62	-0.56	-2.79	19.56	-0.57	-2.95	OE
WDWC5Q		20.02	-0.15	-0.76	19.97	-0.16	-0.84	OE
XMAG5F		20.11	-0.06	-0.32	20.12	-0.01	-0.06	OE
Y81FEQ		20.24	0.07	0.33	20.17	0.04	0.20	WD
Y915CT		20.23	0.05	0.25	20.15	0.02	0.09	OE
YFJQZ6	X	21.22	1.05	5.22	21.32	1.19	6.16	DR
Z2M756		20.00	-0.17	-0.86	19.87	-0.26	-1.33	OE
ZZQ8WT		20.21	0.03	0.15	20.16	0.03	0.18	OE

Summary Statistics

	Sample M77		Sample M78	
Grand Means	20.177	Percent	20.129	Percent
Std Dev Btwn Labs	0.201	Percent	0.193	Percent

Statistics based on 50 of 57 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #186

3X6EE3 (X) - Low data for Sample M77.

619PSF (X) - Data for both samples are high. Possible systematic error.

M2YHCV (X) - Data for both samples are low. Possible systematic error.

ML9177 (X) - Inconsistent within the determinations for Sample M77..

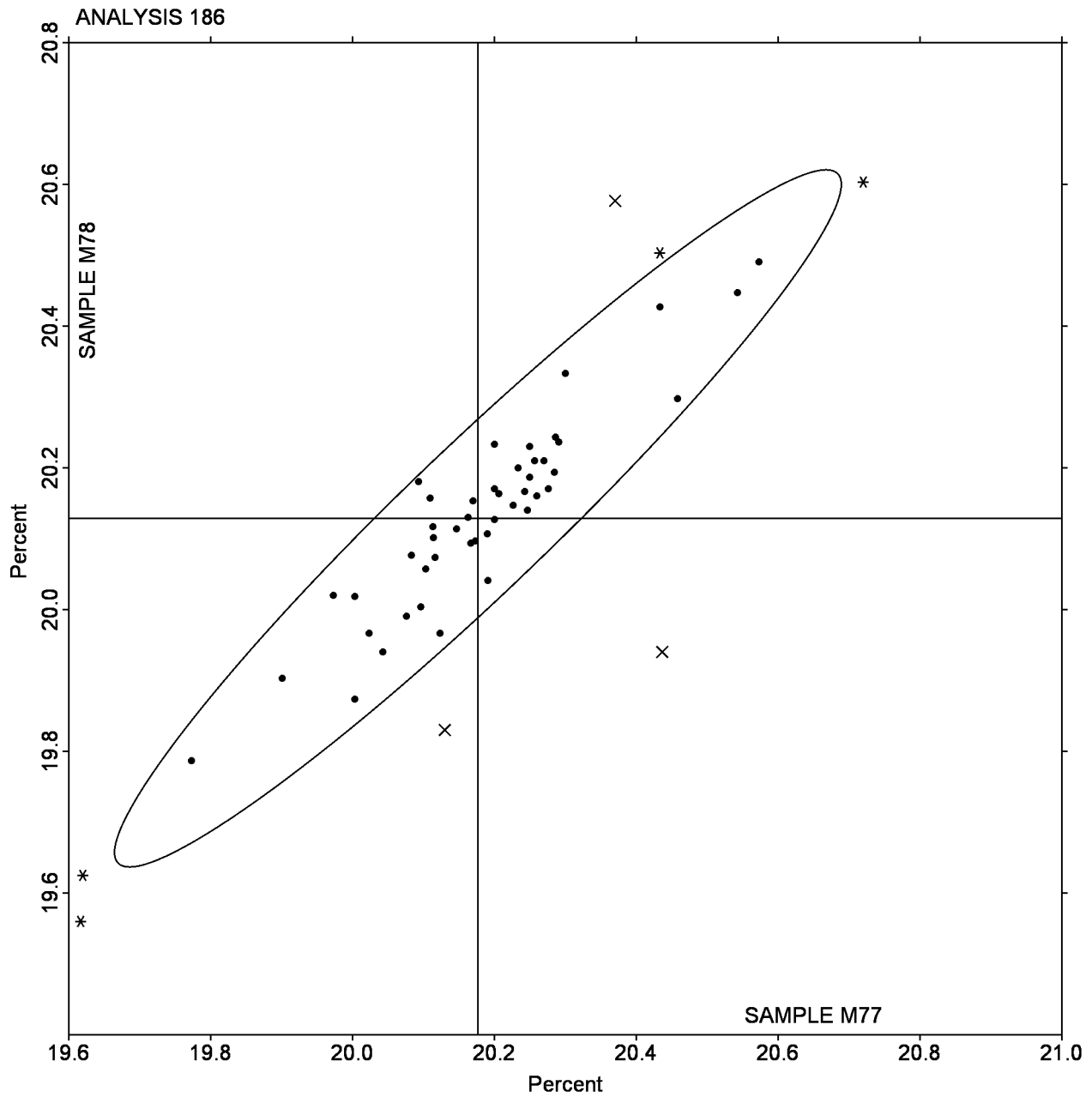
YFJQZ6 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 186

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

SAMPLE M77 = 20.177 Percent SAMPLE M78 = 20.129 Percent



Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
216291		24.21	-0.12	-0.93	24.08	-0.17	-1.13	OE
3QC67H		24.49	0.16	1.31	24.44	0.19	1.24	OE
3S8BU9		24.16	-0.17	-1.39	24.09	-0.16	-1.04	XR
3ST56E		24.39	0.06	0.52	24.29	0.04	0.25	OE
42F3CR		24.49	0.16	1.31	24.43	0.17	1.15	XR
4TXBE8		24.44	0.11	0.93	24.37	0.12	0.80	OE
6NFDRP		24.44	0.11	0.90	24.37	0.11	0.75	OE
6Y7F3K		24.28	-0.05	-0.42	24.25	0.00	0.01	WD
87DJZF		24.20	-0.13	-1.01	24.17	-0.09	-0.56	WC
8961AV		24.39	0.06	0.50	24.32	0.06	0.42	OE
8GAHJG	*	24.29	-0.04	-0.31	24.44	0.19	1.23	OE
8QJ9P5		24.26	-0.07	-0.55	24.26	0.00	0.03	OE
996QEX		24.24	-0.09	-0.72	24.14	-0.11	-0.72	OE
9C2LKS		24.34	0.01	0.07	24.22	-0.03	-0.19	OE
AGQKGT		24.24	-0.08	-0.68	24.19	-0.06	-0.40	OE
AK1XML	X	23.44	-0.89	-7.19	23.39	-0.87	-5.69	OE
BH5N1H		24.07	-0.26	-2.09	23.96	-0.30	-1.94	IC
DMWA9W		24.39	0.06	0.52	24.42	0.17	1.10	OE
DNEEQ9		24.40	0.07	0.58	24.26	0.01	0.07	OE
E8N55N		24.22	-0.11	-0.88	24.08	-0.17	-1.11	WD
EGRFX6		24.31	-0.02	-0.19	24.30	0.05	0.34	DR
ENPU7F		24.49	0.16	1.31	24.50	0.24	1.61	DR
F22WJ3	*	24.71	0.38	3.09	24.70	0.44	2.92	GD
F3J6KV		24.35	0.02	0.14	24.27	0.02	0.13	OE
G2KME3		24.40	0.07	0.60	24.23	-0.02	-0.15	OE
GALX1D	*	24.27	-0.06	-0.47	24.44	0.19	1.23	OE
GLXTQP		24.35	0.02	0.17	24.14	-0.11	-0.72	GD
HWPSYT		24.28	-0.05	-0.42	24.20	-0.05	-0.32	WD
J6T8C5		24.34	0.01	0.09	24.19	-0.06	-0.39	ED
KDBVRK	*	24.33	0.00	0.04	24.00	-0.25	-1.66	OE
KFTR17		24.37	0.04	0.36	24.23	-0.02	-0.12	OE
LASN96		24.16	-0.17	-1.36	24.11	-0.14	-0.93	OE
LN2JW8		24.42	0.09	0.71	24.42	0.17	1.11	WD
LV3XNG		24.32	-0.01	-0.10	24.33	0.07	0.49	OE
MHBH9F		24.37	0.04	0.31	24.13	-0.12	-0.78	GD
MMB4BA		24.21	-0.12	-0.96	24.14	-0.11	-0.74	OE
N99RTH		24.63	0.30	2.47	24.53	0.28	1.85	GD
NQQ97X	X	24.85	0.52	4.22	24.74	0.49	3.20	WD
PJAHIY		24.33	0.00	0.04	24.28	0.03	0.18	OE
PJG97S		24.37	0.04	0.31	24.27	0.02	0.14	OE
R32A56		24.07	-0.26	-2.11	23.93	-0.33	-2.14	OE
RKQSUU	X	23.82	-0.51	-4.14	23.90	-0.36	-2.34	XX
SMXC61	X	24.77	0.44	3.60	24.47	0.22	1.43	OE
SUAF22		24.38	0.05	0.42	24.32	0.07	0.47	OE
TPEXE9		24.30	-0.03	-0.20	24.24	-0.01	-0.08	WD

Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V2CFUL		24.36	0.03	0.25	24.27	0.02	0.12	ED
VVCE2X		24.42	0.09	0.76	24.37	0.12	0.76	WD
VVM1Z7	X	23.70	-0.63	-5.11	23.55	-0.70	-4.59	OE
VXQW7P		24.38	0.05	0.44	24.29	0.03	0.23	OE
WLSBKR		24.10	-0.23	-1.85	24.01	-0.24	-1.57	OE
XCPM8R		24.26	-0.07	-0.54	24.17	-0.08	-0.52	OE
XDPBE3	X	23.63	-0.69	-5.62	23.52	-0.73	-4.80	OE
XPGVHM	X	24.04	-0.29	-2.31	24.37	0.11	0.75	OE
XT9124		24.32	-0.01	-0.07	24.22	-0.03	-0.19	DR
YM1ZCG		24.20	-0.13	-1.04	24.03	-0.22	-1.44	TI
YUALV4		24.37	0.04	0.31	24.28	0.03	0.18	OE
Z69XEW		24.31	-0.02	-0.15	24.26	0.00	0.03	WD

Summary Statistics

	Sample M77		Sample M78	
Grand Means	24.329	Percent	24.252	Percent
Std Dev Btwn Labs	0.124	Percent	0.152	Percent
Statistics based on 50 of 57 reporting participants				

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #187

AK1XML (X) - Data for both samples are low.

NQQ97X (X) - Data for both samples are high.

RKQSUU (X) - Low data for Sample M77.

SMXC61 (X) - High data for Sample M77, and inconsistent within the determinations for Sample M78.

VVM1Z7 (X) - Data for both samples are low, and inconsistent within the determinations for Sample M78.

XDPBE3 (X) - Data for both samples are low.

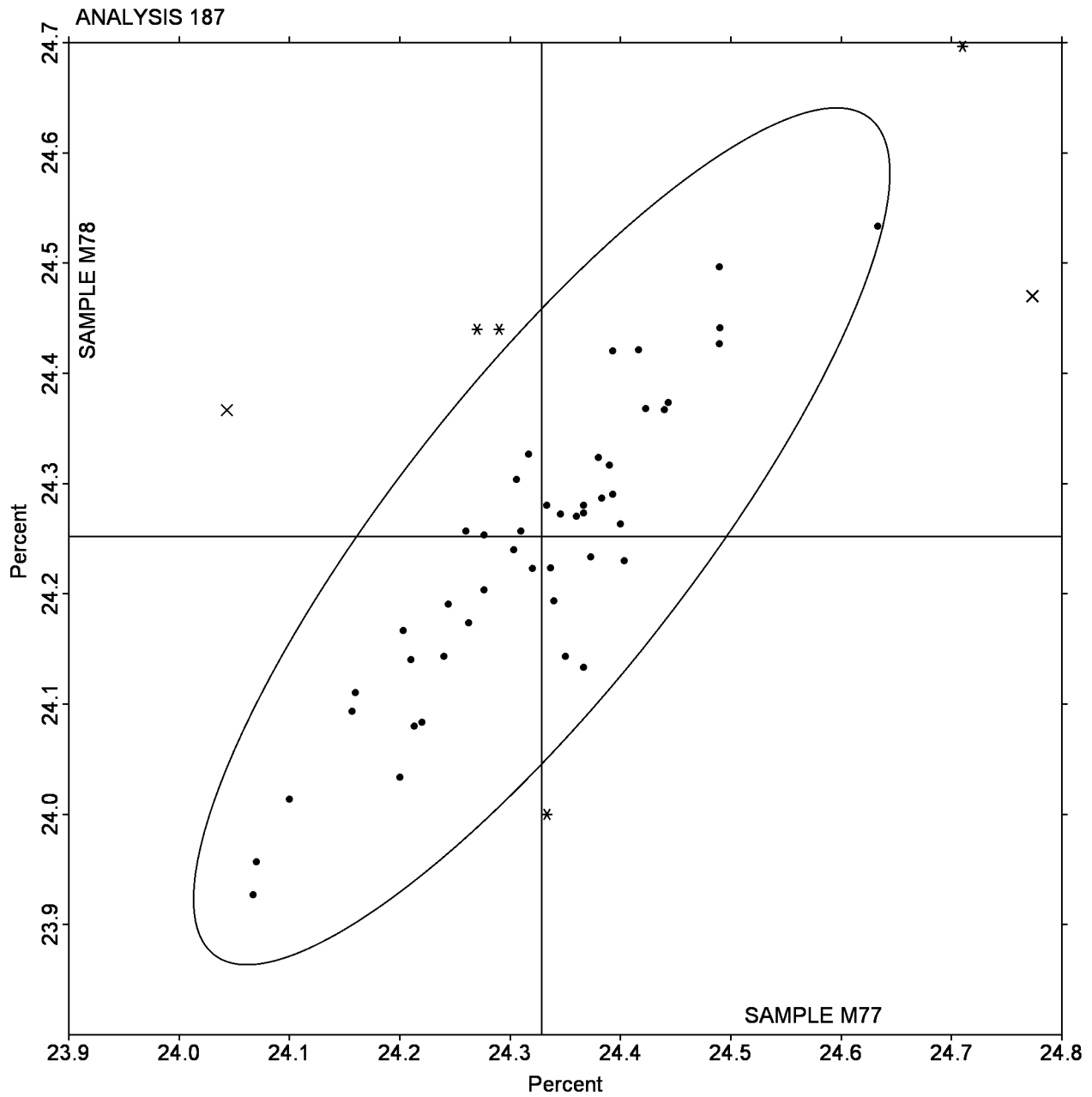
XPGVHM (X) - Inconsistent in testing between samples and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 187

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

SAMPLE M77 = 24.329 Percent SAMPLE M78 = 24.252 Percent



Interlaboratory Testing Program for Metals

Analysis 188

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1D59XH		0.430	0.049	2.30	0.354	0.041	2.29	GD
28KAL2		0.372	-0.010	-0.46	0.303	-0.010	-0.55	OE
295142		0.390	0.009	0.41	0.320	0.007	0.38	WD
2GXQQR		0.404	0.023	1.06	0.335	0.022	1.22	OE
3B14TL		0.430	0.048	2.27	0.350	0.037	2.06	OE
3EYKDH	X	0.318	-0.064	-2.99	0.272	-0.041	-2.29	XX
3PGKQ1		0.383	0.002	0.08	0.312	-0.001	-0.07	GD
3QE3HT		0.353	-0.029	-1.35	0.295	-0.018	-1.00	OE
4P6F3U		0.388	0.006	0.30	0.318	0.005	0.29	OE
716AV6		0.393	0.012	0.55	0.324	0.010	0.59	XR
7M5LTE		0.387	0.006	0.26	0.324	0.011	0.59	DR
88XBF4		0.387	0.006	0.26	0.318	0.005	0.28	OE
8G636F		0.350	-0.031	-1.46	0.290	-0.023	-1.30	OE
93K8YV		0.375	-0.006	-0.28	0.310	-0.003	-0.16	OE
9MUUPE		0.355	-0.027	-1.26	0.291	-0.023	-1.26	DR
9WJTMU		0.389	0.007	0.34	0.316	0.002	0.14	OE
A2UNEF		0.367	-0.015	-0.69	0.297	-0.017	-0.93	DR
A3LVGC		0.424	0.043	2.00	0.346	0.033	1.84	OE
ADWWFK		0.376	-0.005	-0.25	0.306	-0.007	-0.40	OE
B9QKHS	*	0.327	-0.055	-2.57	0.267	-0.047	-2.61	OE
BFPG6V		0.380	-0.002	-0.08	0.315	0.002	0.10	GD
DC7VXD		0.371	-0.011	-0.50	0.301	-0.012	-0.66	OE
DSPJBH		0.356	-0.025	-1.19	0.294	-0.019	-1.07	DR
DVNXY7		0.394	0.012	0.58	0.322	0.009	0.51	OE
E4PUWG		0.397	0.015	0.72	0.327	0.013	0.76	XR
E6Z7TW		0.390	0.009	0.41	0.319	0.005	0.31	WD
E7H71S		0.414	0.033	1.53	0.340	0.027	1.50	OE
EGTBCW		0.368	-0.013	-0.63	0.305	-0.008	-0.44	OE
EV64XX		0.400	0.019	0.88	0.330	0.017	0.94	OE
G33G9A	X	0.419	0.037	1.75	0.360	0.047	2.62	OE
GFF6MD		0.386	0.005	0.23	0.318	0.005	0.27	IC
GQSND5		0.389	0.008	0.37	0.319	0.005	0.31	WD
H5AXC1		0.384	0.003	0.14	0.317	0.004	0.21	OE
JY4BRW	*	0.382	0.001	0.03	0.323	0.010	0.55	IC
MBNNAG		0.369	-0.012	-0.58	0.306	-0.007	-0.40	OE
MUMF79		0.363	-0.018	-0.85	0.297	-0.016	-0.89	OE
N2FHLX		0.371	-0.011	-0.50	0.304	-0.010	-0.54	OE
PWQB5Q		0.386	0.005	0.22	0.315	0.002	0.12	OE
QFFWCU		0.401	0.020	0.92	0.328	0.015	0.83	OE
QT7CNE		0.388	0.007	0.31	0.315	0.002	0.10	OE
RYB564		0.333	-0.048	-2.26	0.273	-0.040	-2.23	OE
SBN3A5		0.386	0.005	0.22	0.316	0.002	0.14	WD
SJ5F94		0.380	-0.001	-0.06	0.317	0.003	0.20	OE
TBPVNP		0.374	-0.008	-0.36	0.303	-0.011	-0.59	OE
UTGPN7		0.357	-0.025	-1.16	0.287	-0.027	-1.49	OE

Interlaboratory Testing Program for Metals

Analysis 188

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

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V3LGV7		0.371	-0.010	-0.47	0.310	-0.003	-0.18	DR
VLWDZA		0.397	0.016	0.73	0.321	0.007	0.42	IC
VVWB7X		0.411	0.030	1.41	0.345	0.031	1.77	OE
VWYSZB		0.367	-0.015	-0.69	0.293	-0.020	-1.11	GD
W1CTR1		0.366	-0.016	-0.74	0.303	-0.010	-0.55	OE
WXCWF6		0.392	0.010	0.48	0.320	0.006	0.36	WD
XYV19R		0.386	0.005	0.22	0.316	0.003	0.16	OE
ZTPWYB		0.352	-0.029	-1.38	0.289	-0.025	-1.37	OE
ZZYMDU		0.393	0.012	0.56	0.323	0.010	0.55	WD

Summary Statistics

	Sample M77	Sample M78
Grand Means	0.3814 Percent	0.3132 Percent
Std Dev Btwn Labs	0.0213 Percent	0.0178 Percent

Statistics based on 52 of 54 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #188

3EYKDH (X) - Low data for Sample M77.

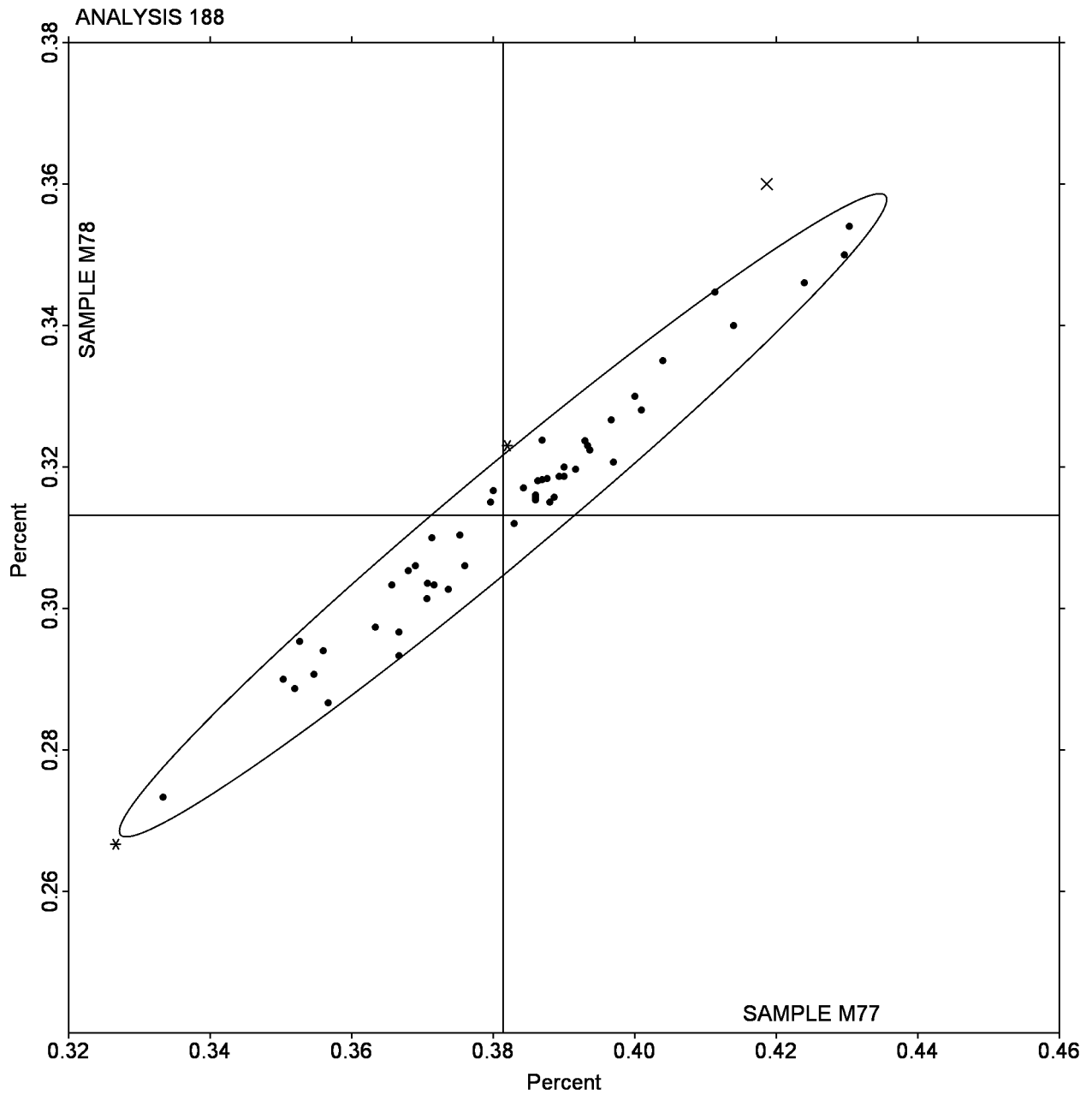
G33G9A (X) - Inconsistent within the determinations for Sample M78.

Interlaboratory Testing Program for Metals

Analysis 188

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

SAMPLE M77 = 0.3814 Percent SAMPLE M78 = 0.3132 Percent



Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
NITROGEN(N)

WebCode	Data Flag	Sample M77			Sample M78			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
1LYDTT	*	0.0427	-0.0023	-0.59	0.0317	-0.0055	-1.51	OE
1ZZMGF		0.0453	0.0004	0.11	0.0383	0.0012	0.32	IG
22YXH3		0.0465	0.0016	0.41	0.0383	0.0012	0.32	CO
3EWUUV		0.0468	0.0018	0.48	0.0385	0.0014	0.37	CI
4Q18XS		0.0467	0.0017	0.45	0.0410	0.0038	1.05	OE
53BUCH		0.0469	0.0020	0.51	0.0377	0.0006	0.15	CO
6YLNST		0.0435	-0.0014	-0.37	0.0378	0.0006	0.17	CI
863LY4		0.0431	-0.0018	-0.47	0.0352	-0.0020	-0.55	CI
9YD76W		0.0503	0.0054	1.40	0.0353	-0.0018	-0.51	CO
AJT35T		0.0383	-0.0066	-1.71	0.0323	-0.0048	-1.33	OE
BV7A4T	*	0.0567	0.0118	3.05	0.0481	0.0109	3.00	OE
C613QB		0.0441	-0.0009	-0.22	0.0361	-0.0011	-0.31	CO
CHR4Z		0.0410	-0.0039	-1.02	0.0350	-0.0022	-0.60	OE
CZ6A81		0.0470	0.0020	0.53	0.0387	0.0015	0.42	CO
DMUVGG		0.0463	0.0014	0.37	0.0383	0.0012	0.32	XX
EPJJGN		0.0440	-0.0009	-0.23	0.0361	-0.0010	-0.29	CO
EQLSFF		0.0471	0.0021	0.56	0.0387	0.0016	0.43	CO
G1MHCE		0.0447	-0.0003	-0.07	0.0372	0.0000	0.00	CO
H45H5L		0.0474	0.0025	0.64	0.0392	0.0020	0.54	CO
JA63YU	*	0.0347	-0.0103	-2.66	0.0289	-0.0083	-2.28	OE
MZFHC7		0.0447	-0.0003	-0.07	0.0377	0.0005	0.13	IR
NE215G		0.0458	0.0009	0.23	0.0382	0.0010	0.28	OE
T7YWKK		0.0482	0.0033	0.85	0.0397	0.0026	0.70	CO
TMQP7U	X	0.0190	-0.0259	-6.72	0.0163	-0.0208	-5.72	OE
U79471		0.0440	-0.0009	-0.24	0.0373	0.0002	0.04	OE
UEJ5Z9		0.0468	0.0019	0.49	0.0383	0.0012	0.32	CO
UNYNVV		0.0462	0.0013	0.33	0.0384	0.0012	0.33	XX
X43QFQ		0.0447	-0.0003	-0.07	0.0371	-0.0001	-0.04	OE
XGF1MP		0.0400	-0.0049	-1.28	0.0300	-0.0072	-1.97	OE

Summary Statistics

	Sample M77	Sample M78
Grand Means	0.04493 Percent	0.03718 Percent
Std Dev Btwn Labs	0.00386 Percent	0.00364 Percent

Statistics based on 27 of 29 reporting participants

Samples M77 , M78 : AISI 310, two different heats

Comments on assigned Data Flags for Test #189

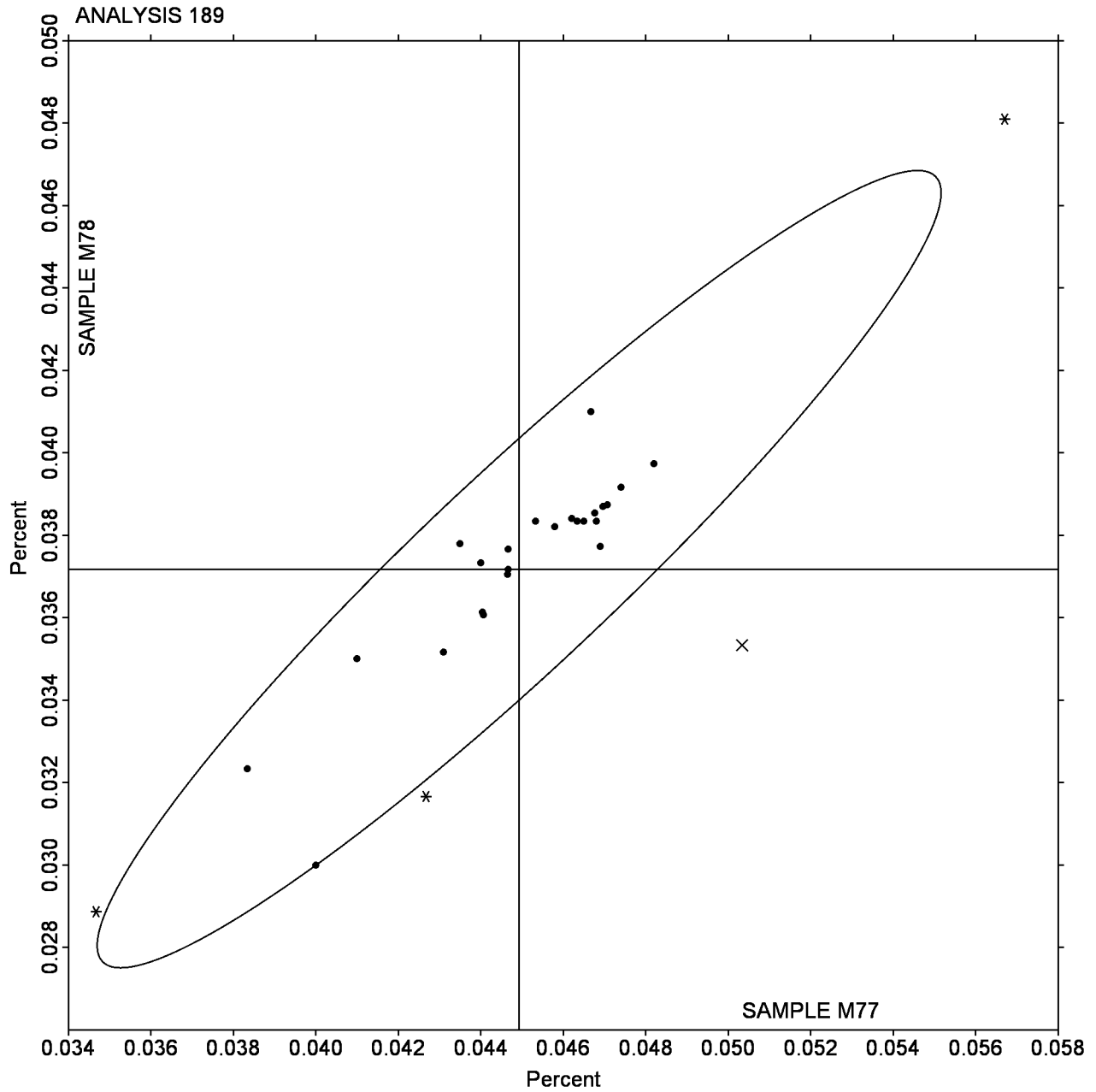
TMQP7U (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
NITROGEN(N)

SAMPLE M77 = 0.04493 Percent SAMPLE M78 = 0.03718 Percent



Instrument and Method Code List - Report# 86

Instrument information as provided by laboratories

Analysis Analysis Name

115 **Fastener Wedge Tensile (10 degree)**

Instrument code and description

BA	Baldwin	FI	Fuel Instruments & Engineers
GA	Galdabini	HT	Hung Ta Instrument
IN	Instron	MT	MTS / Sintech
RI	Riehle Test System	SA	Satec
SH	Shimadzu	TO	Tinius Olsen
UN	United Testing Systems	XX	Instrument manufacturer not specified by la

116 **Fastener Axial Tensile**

Instrument code and description

BA	Baldwin	FI	Fuel Instruments & Engineers
GA	Galdabini	HT	Hung Ta Instrument
IN	Instron	MT	MTS / Sintech
RI	Riehle Test System	SA	Satec
SH	Shimadzu	TO	Tinius Olsen
UN	United Testing Systems	WZ	Zwick
XX	Instrument manufacturer not specified by la		

118 **Rockwell Hardness: C & B Scales**

Instrument code and description

AV	Avery	BU	Buehler
CL	Clark	IN	Indentec
LE	Leco	MA	Matsuzawa
MI	Mitutoyo	MS	Misawaseiki
NA	New Age Industries	OG	Officine Galileo
UN	United Testing Systems	WI	Wilson / Instron Instruments
XX	Instrument manufacturer not specified by la		

120 **Rockwell Hardness: C Scale**

Instrument code and description

AK	Akashi	AN	Antonik
BU	Buehler	CL	Clark
EM	EMCO	FI	FIE
FU	Future-Tech	IN	Indentec
LE	Leco	MA	Matsuzawa
MI	Mitutoyo	NA	New Age Industries
UN	United Testing Systems	WI	Wilson / Instron Instruments
WO	Wolpert Tester	XX	Instrument manufacturer not specified by la

125 **Rockwell Hardness: Externally Threaded Fasteners**

Instrument code and description

AF	AFFRI	AK	Akashi
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125 **Rockwell Hardness: Externally Threaded Fasteners**

Instrument code and description

AV	Avery	BU	Buehler
CL	Clark	EM	EMCO
FR	Frank Well	FT	Future-Tech
GR	Greenslade & Co.	IN	Indentec
KF	Karl Frank GmbH	LE	Leco
MI	Mitutoyo	NA	New Age Industries
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 la		

126 **Vickers Hardness: Externally Threaded Fasteners**

Instrument code and description

AK	Akashi	AR	Vickers Armstrongs hardness tester
GN	Albert Gnehm	LE	Leco
SH	Shimadzu	WO	Wolpert Tester
XX	Instrument manufacturer not specified by la		

127 **Fastener Wedge Tensile (10 degree) - Metric**

Instrument code and description

HP	Hegewald & Peschke	IN	Instron
LO	Losenhausen	MF	MFL Systeme
MR	Mohr & Federhaft Ag	RO	Roell & Korthaus
SA	Satec	SH	Shimadzu
ST	Schenck-Trebel	TO	Tinius Olsen
UN	United Testing Systems	WB	Walter + Bai
WZ	Zwick	XX	Instrument manufacturer not specified by la

128 **Fastener Axial Tensile - Metric**

Instrument code and description

GA	Galdabini	IN	Instron
LO	Losenhausen	MT	MTS / Sintech
RO	Roell & Korthaus	SA	Satec
SH	Shimadzu	ST	Schenck-Trebel
TO	Tinius Olsen	WB	Walter + Bai
WO	Wolpert	XX	Instrument manufacturer not specified by la

129 **Fastener Double Shear**

Instrument code and description

IN	Instron	RI	Riehle Test System
SA	Satec	TO	Tinius Olsen
WZ	Zwick	XX	Instrument manufacturer not specified by la

130 **Tensile Strength: Lab-Machined Flat Steel**

Instrument code and description

ZZ	Instruments No Longer Tracked
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136 **Rockwell Superficial Hardness (30N Scale)**

Instrument code and 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 la

145 **Total Case Depth**

Instrument code and description

BL	Bausch & Lomb	BR	Brinell Glass
BU	Buehler, Ltd.	FU	Future-Tech
LC	Leica	LE	Leco
LI	Leitz	NE	Nikon Eclipse
NI	Nikon Epiphoto	NP	Neophot 21
OG	Olympus PMG	OL	Olympus PME
RE	Reichert-Jung MeF3	VE	Versamet Unitron
WT	Wilson-Tukon	XX	Instrument manufacturer not specified by la
ZA	Zeiss Axiovert	ZU	Zeiss Universal

146 **Effective Case Depth**

Instrument code and description

AT	ATS	BU	Buehler, Ltd.
CL	Clark	CM	Clemex
LC	Leica	LE	Leco
LI	Leitz	MA	Matsuzawa
MI	Mitutoyo	NA	New Age
SH	Shimadzu	ST	Struers
WT	Wilson-Tukon	WZ	Zwick
XX	Instrument manufacturer not specified by la		

150 **Nickel-based Alloy, Element #1**

Method code and description

DR	Direct Reading Optical Emission Spectrome	ED	X-ray Fluorescence, Energy Dispersive
GD	Glow Discharge Spectroscopy	IC	ICP Spectrometry
OE	Optical Emission Spectrometry	WD	X-ray Fluorescence, Wavelength Dispersive
XR	X-ray Fluorescence (ED or WD not specifie		

180 **Corrosion Resistant Steel, Element #1**

Method code and description

CI	Combustion/IR	CO	Combustion
DR	Direct Reading Optical Emission Spectrome	GD	Glow Discharge Spectroscopy
IR	IR (Absorption/Detection)	OE	Optical Emission Spectrometry
XX	Method not specified by lab		