

Fasteners & Metals Testing Program

Summary Report # 90 - 2Q 2010

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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 X85			Sample X86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22768L		166.31	0.48	0.30	165.86	-0.14	-0.09	IN
28WTQX		166.37	0.54	0.34	165.27	-0.74	-0.44	TO
2D3PPJ		164.80	-1.03	-0.64	164.00	-2.01	-1.20	SA
3TRBF3		165.84	0.01	0.01	165.78	-0.23	-0.14	FI
49FDJ8		165.53	-0.29	-0.18	166.03	0.03	0.02	XX
4DHDC3		166.79	0.97	0.60	165.39	-0.62	-0.37	XX
6BJN6K		165.07	-0.76	-0.47	164.80	-1.21	-0.72	BA
6JQCKT		163.13	-2.69	-1.68	165.10	-0.91	-0.54	TO
6P3YE6		165.57	-0.26	-0.16	165.63	-0.37	-0.22	FI
6ZQPFM	X	172.18	6.36	3.96	173.76	7.75	4.62	TO
7EZBG6		166.77	0.94	0.59	164.60	-1.41	-0.84	SA
7LGN6K		164.86	-0.97	-0.61	165.43	-0.58	-0.35	XX
7VWECN		165.33	-0.49	-0.31	167.10	1.09	0.65	TO
8497LY		165.90	0.07	0.04	166.37	0.36	0.21	SA
84C4XZ		164.52	-1.31	-0.82	166.67	0.66	0.39	BA
8H9M7B	*	170.17	4.34	2.71	168.09	2.08	1.24	UN
8N68PM		165.57	-0.26	-0.16	167.70	1.69	1.01	SA
9F6JHZ		166.13	0.31	0.19	165.37	-0.64	-0.38	TO
9FYWMB		164.87	-0.96	-0.60	166.50	0.49	0.29	TO
A43Q8N		165.61	-0.22	-0.13	165.73	-0.28	-0.16	TO
B88EW6		165.87	0.04	0.02	167.33	1.33	0.79	TO
CBKTP2		165.71	-0.12	-0.07	165.00	-1.01	-0.60	SA
CC8DDU	X	16.92	-148.91	-92.82	16.89	-149.12	-88.80	MT
CLUB2E		164.80	-1.03	-0.64	165.20	-0.81	-0.48	SA
CV29PH	X	171.63	5.81	3.62	171.42	5.41	3.22	TO
DGVEVK		168.80	2.97	1.85	169.00	2.99	1.78	SH
DJEPCB		163.40	-2.43	-1.51	165.97	-0.04	-0.02	MT
DMALG4		166.23	0.41	0.25	167.20	1.19	0.71	TO
E2V3E2		168.18	2.35	1.46	166.33	0.32	0.19	IN
EDYMK8		166.47	0.64	0.40	167.13	1.13	0.67	SA
F2TVLY	*	161.43	-4.39	-2.74	163.80	-2.21	-1.31	TO
FRFTF8		167.01	1.18	0.74	168.62	2.61	1.56	TO
GU3VVJ	X	158.91	-6.91	-4.31	156.69	-9.32	-5.55	FI
HPMB2W		167.67	1.84	1.15	166.90	0.89	0.53	TO
J8FJKC		167.27	1.44	0.90	164.40	-1.61	-0.96	IN
JAYJL3	X	117.00	-48.83	-30.44	116.33	-49.67	-29.58	SA
JKDMKL		167.23	1.41	0.88	169.53	3.53	2.10	BA
JPREKL		164.87	-0.96	-0.60	164.00	-2.01	-1.20	TO
K637AD		167.44	1.61	1.00	167.01	1.00	0.60	SH
K7TYY9		166.38	0.55	0.34	165.60	-0.40	-0.24	XX
KD4L7N		167.20	1.37	0.86	164.93	-1.07	-0.64	TO
KZUE4Q		167.47	1.64	1.02	165.87	-0.14	-0.08	TO
LJNV6K		163.70	-2.13	-1.33	161.90	-4.11	-2.45	SA
LL2XA6		164.58	-1.25	-0.78	164.16	-1.84	-1.10	SA
M3PL4Z		168.80	2.97	1.85	166.59	0.59	0.35	TO

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

WebCode	Data Flag	Sample X85			Sample X86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MGZCKL		166.77	0.94	0.59	167.43	1.43	0.85	TO
MP2URP		165.31	-0.52	-0.33	166.59	0.58	0.34	MT
MXVZLQ		164.90	-0.93	-0.58	164.56	-1.45	-0.86	BA
N7Q4JL		163.58	-2.24	-1.40	166.44	0.43	0.26	GA
NWTBGE		163.89	-1.93	-1.21	164.14	-1.87	-1.11	SA
NZMREU		163.90	-1.93	-1.20	166.03	0.03	0.02	SA
QBJWTK	X	12.80	-153.03	-95.38	12.90	-153.11	-91.17	BA
QE3NP3	*	169.43	3.61	2.25	170.13	4.13	2.46	BT
QGGFBB	*	162.19	-3.63	-2.27	161.85	-4.16	-2.48	BA
QHHLBP		165.62	-0.20	-0.13	165.61	-0.39	-0.23	CH
R2P6U7		162.97	-2.86	-1.78	165.37	-0.64	-0.38	SA
R4JYL9		167.10	1.27	0.79	166.99	0.98	0.58	RI
RVCJDV		165.10	-0.73	-0.45	164.60	-1.41	-0.84	SH
TQTVZ3		168.39	2.56	1.60	168.77	2.77	1.65	IN
UBMZML		164.09	-1.74	-1.08	163.43	-2.58	-1.54	TO
UHJCCH	*	165.10	-0.73	-0.45	161.93	-4.07	-2.43	XX
UJ23WL		165.63	-0.19	-0.12	166.33	0.33	0.19	TO
ULMUYB		166.77	0.95	0.59	166.34	0.34	0.20	TO
V2Y9X8		165.83	0.01	0.00	165.77	-0.24	-0.14	TO
V3E4L7		165.00	-0.83	-0.52	165.67	-0.34	-0.20	BA
VCHQMX		164.37	-1.46	-0.91	165.13	-0.87	-0.52	TO
WJ3F6R		165.00	-0.83	-0.52	165.53	-0.47	-0.28	SA
X7BDWK		169.10	3.27	2.04	170.07	4.06	2.42	IN
X82FRN		166.40	0.57	0.36	167.07	1.06	0.63	TO
X9JTLX		165.29	-0.54	-0.34	167.52	1.52	0.90	SA
XNDCLU		165.05	-0.78	-0.49	164.53	-1.48	-0.88	XX
Y9VTHC	X	127.90	-37.93	-23.64	128.37	-37.64	-22.42	SA
YAN4HZ		166.67	0.84	0.52	168.60	2.59	1.54	UN
YAVUCP		166.27	0.44	0.27	164.73	-1.27	-0.76	BA
YD69CN		166.94	1.11	0.69	166.27	0.26	0.16	SA
YDMDT2		165.91	0.08	0.05	166.20	0.19	0.11	SH
YQCVH8		166.00	0.17	0.11	166.87	0.86	0.51	XX
YREDZ3		165.27	-0.56	-0.35	166.84	0.83	0.49	XX
YTYN3M		166.30	0.47	0.29	167.40	1.39	0.83	MT
ZK47JR		165.73	-0.09	-0.06	164.47	-1.54	-0.92	SA
ZUR69C		165.78	-0.05	-0.03	167.48	1.47	0.88	SA

Summary Statistics

	Sample X85	Sample X86
Grand Means	165.828 ksi	166.008 ksi
Stnd Dev Btwn Labs	1.604 ksi	1.679 ksi

Statistics based on 74 of 81 reporting participants

Samples X85 , X86 : Fastener size 3/8-16x2.25

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

Comments on assigned Data Flags for Test #115

- 6ZQPFM (X) - Data for both samples are high. Possible systematic error.
CC8DDU (X) - It appears that the data were off by a factor of 10.
CV29PH (X) - Data for both samples are high. Possible systematic error.
GU3VVJ (X) - Data for both samples are low. Possible systematic error.
JAYJL3 (X) - Data for both samples are low.
QBJWTK (X) - Data were reported as load values, instead of tensile strength.
Y9VTHC (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

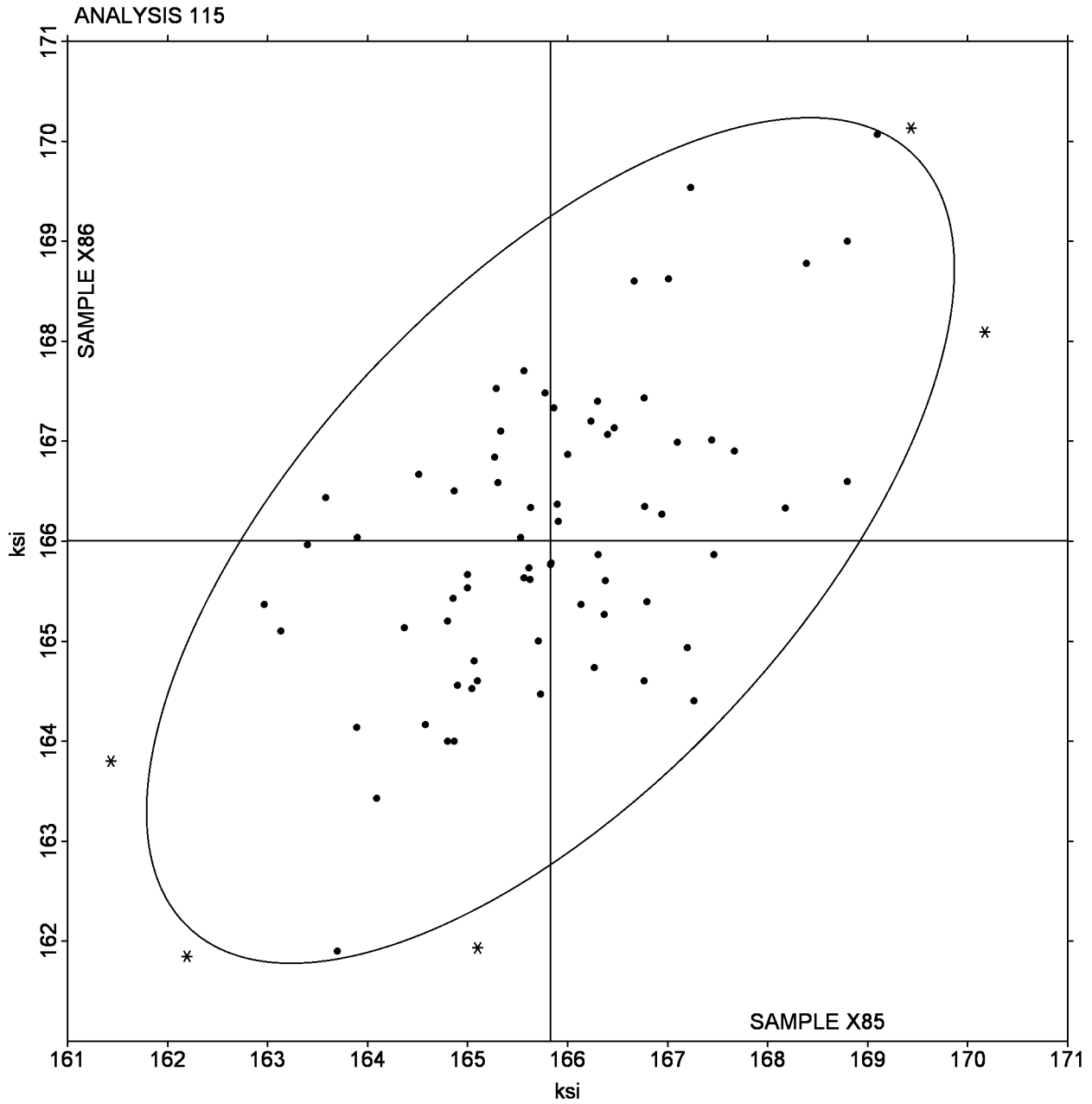
Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

SAMPLE X85 = 165.828 ksi

SAMPLE X86 = 166.008 ksi



Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q85			Sample Q86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
299TZR		164.97	-1.52	-0.77	164.17	-2.25	-1.41	SA
2WCBAK		166.53	0.04	0.02	167.33	0.91	0.57	IN
3DEG4Z		161.76	-4.73	-2.38	164.00	-2.42	-1.51	BA
3QGMNR		163.73	-2.76	-1.39	165.62	-0.81	-0.50	XX
3ZH2GB		165.23	-1.26	-0.63	166.23	-0.19	-0.12	TO
4A8LHA		166.10	-0.39	-0.20	165.96	-0.47	-0.29	CH
4FN4E6		164.18	-2.31	-1.16	164.09	-2.33	-1.45	GA
4YVRLU		165.63	-0.86	-0.43	165.70	-0.72	-0.45	TO
4YY3QE		163.40	-3.09	-1.56	164.72	-1.70	-1.06	SA
64MNVY		163.13	-3.36	-1.69	163.13	-3.29	-2.05	SA
6CZKXX		165.50	-0.99	-0.50	165.70	-0.72	-0.45	BA
6GBUNV		164.86	-1.63	-0.82	165.96	-0.46	-0.29	TO
6VJZAZ		166.03	-0.46	-0.23	165.53	-0.89	-0.55	TO
7HEK44		164.10	-2.39	-1.20	163.67	-2.75	-1.72	TO
7MLZJU		168.03	1.54	0.78	167.33	0.91	0.57	TO
7Q799Z		168.50	2.01	1.01	168.77	2.35	1.46	BA
7UXU8N		168.63	2.14	1.08	165.80	-0.62	-0.39	SA
7XD87P		166.67	0.18	0.09	165.00	-1.42	-0.89	TO
86938F		168.13	1.64	0.83	168.23	1.81	1.13	TO
8KUG2T	*	171.97	5.48	2.76	170.73	4.31	2.69	TO
9B9Z2C		166.21	-0.28	-0.14	166.92	0.50	0.31	SA
9DTXHF		168.56	2.07	1.05	168.70	2.28	1.42	TO
9W7U6F		165.53	-0.96	-0.48	166.97	0.55	0.34	SH
A7E8XA		170.28	3.79	1.91	169.07	2.65	1.65	IN
BGPNZR		163.67	-2.82	-1.42	164.67	-1.75	-1.09	BA
BVHQTH		169.43	2.94	1.48	169.03	2.61	1.63	DY
C9Z99K		168.20	1.71	0.86	166.13	-0.29	-0.18	TO
CLDVP4		167.07	0.58	0.29	167.00	0.58	0.36	IN
CPWC4W		166.40	-0.09	-0.05	165.47	-0.95	-0.60	XX
D8GVTM		164.40	-2.09	-1.05	166.20	-0.22	-0.14	IN
DDAQZL	X	158.04	-8.45	-4.26	160.70	-5.72	-3.57	FI
DUY2MN		164.77	-1.72	-0.87	163.93	-2.49	-1.55	TO
ENJD3D		165.76	-0.73	-0.37	164.67	-1.75	-1.09	XX
F99JCU		167.54	1.05	0.53	168.34	1.91	1.19	TO
FP8A3Q		167.07	0.58	0.29	166.06	-0.36	-0.23	XX
FT8ER6	X	116.33	-50.16	-25.28	117.00	-49.42	-30.83	SA
G746TU		166.70	0.21	0.10	167.77	1.35	0.84	SA
GNQFNA		165.20	-1.29	-0.65	165.43	-0.99	-0.62	SA
GUATEV		165.83	-0.66	-0.33	163.70	-2.72	-1.70	TO
GYT2G9		166.77	0.28	0.14	166.25	-0.18	-0.11	SA
H64XVU	X	173.07	6.58	3.32	172.73	6.31	3.94	XX
HFQYNB		167.14	0.65	0.33	167.35	0.93	0.58	IN
J4V48T		167.63	1.14	0.58	165.67	-0.75	-0.47	TO
J6KZAM		165.85	-0.64	-0.32	166.64	0.22	0.14	SH
J84APD		166.27	-0.22	-0.11	163.97	-2.45	-1.53	SA

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q85			Sample Q86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
JKKB37		166.83	0.34	0.17	166.60	0.18	0.11	SA
KKRGWF		169.03	2.54	1.28	167.93	1.51	0.94	UN
LWYHFX		163.57	-2.92	-1.47	166.20	-0.22	-0.14	TO
MZ2YM7	*	170.99	4.50	2.27	171.20	4.78	2.98	TO
MZYWN9		168.30	1.81	0.91	167.83	1.41	0.88	SA
N4W2B7		164.43	-2.06	-1.04	163.93	-2.49	-1.55	TO
NBT8KY		166.07	-0.42	-0.21	165.72	-0.70	-0.44	XX
NG43L3		166.00	-0.49	-0.25	165.50	-0.92	-0.57	SA
NGKE48		166.23	-0.26	-0.13	167.13	0.71	0.44	XX
NV3GT7		167.13	0.64	0.32	165.83	-0.59	-0.37	TO
PA7GUE		167.10	0.61	0.31	166.67	0.24	0.15	TO
PFJ8LT		171.01	4.52	2.28	168.45	2.03	1.26	UN
PQ3NGM	*	164.37	-2.12	-1.07	167.90	1.48	0.92	TO
Q8CV3U		167.00	0.51	0.26	165.93	-0.49	-0.30	SA
QUQYYX		166.90	0.41	0.21	165.83	-0.59	-0.37	RI
R6TV37		168.45	1.96	0.99	167.85	1.43	0.89	MT
RTKPAZ		167.45	0.96	0.48	167.14	0.72	0.45	XX
TL8BFD		166.57	0.08	0.04	165.87	-0.55	-0.35	TO
U4G82C		163.75	-2.74	-1.38	166.59	0.17	0.11	FI
U7GZYB		166.63	0.14	0.07	166.83	0.41	0.26	SA
U826VL		166.12	-0.37	-0.19	167.24	0.82	0.51	IN
UCMX49		165.51	-0.98	-0.50	168.60	2.18	1.36	TO
UCRJ3F		166.40	-0.09	-0.05	166.35	-0.07	-0.05	MT
UR96VT		169.13	2.64	1.33	167.20	0.78	0.49	TO
VEQCJR		166.73	0.24	0.12	166.30	-0.12	-0.08	MT
VH8PZM		163.90	-2.59	-1.31	165.40	-1.02	-0.64	TO
WMT4XT	X	13.08	-153.41	-77.32	13.01	-153.41	-95.69	UN
WNZDXD		166.74	0.25	0.13	167.17	0.75	0.47	SH
XA9YKG		167.77	1.28	0.64	168.34	1.92	1.20	TO
XBUCNL		166.60	0.11	0.06	165.47	-0.95	-0.60	XX
Y2DJRB	*	169.79	3.30	1.66	165.92	-0.50	-0.31	IN
YN6DKC		163.89	-2.60	-1.31	166.21	-0.21	-0.13	FI

Summary Statistics

	Sample Q85	Sample Q86
Grand Means	166.490 ksi	166.422 ksi
Std Dev Btwn Labs	1.984 ksi	1.603 ksi
Statistics based on 73 of 77 reporting participants		

Samples Q85 , Q86 : Fastener size 3/8-16x2.25

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

Comments on assigned Data Flags for Test #116

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

FT8ER6 (X) - Data for both samples are low.

H64XVU (X) - Data for both samples are high. Possible systematic error.

WMT4XT (X) - Data were reported as load values, instead of tensile strength.

Interlaboratory Testing Program for Metals

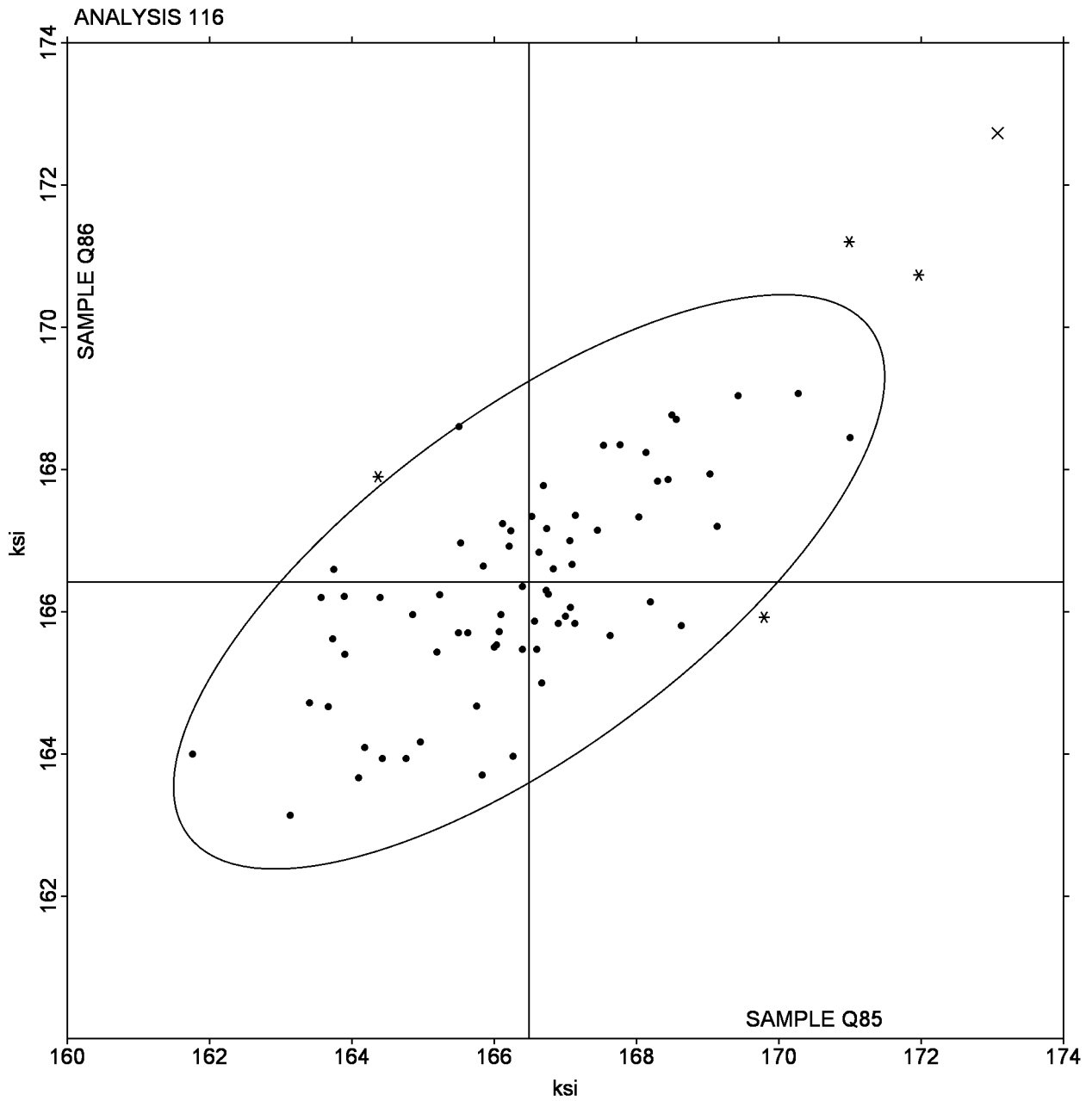
Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

SAMPLE Q85 = 166.490 ksi

SAMPLE Q86 = 166.422 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 G85			Sample G86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24PFMC		36.02	-1.02	-1.65	35.82	-0.98	-1.53	BU
26EU6V		37.89	0.85	1.37	37.74	0.95	1.47	UN
2FY6EM		37.76	0.72	1.16	37.48	0.68	1.05	AF
2ZHTKK		36.71	-0.33	-0.53	36.86	0.06	0.09	UN
36YTYC		36.25	-0.79	-1.27	35.88	-0.92	-1.44	WI
3DZDPT		36.31	-0.73	-1.17	36.09	-0.70	-1.10	BU
3GG7UL		36.71	-0.33	-0.53	36.64	-0.15	-0.24	MI
3PJTZ2		36.99	-0.05	-0.08	37.24	0.45	0.69	AK
3RVQT4	*	36.54	-0.50	-0.80	37.34	0.55	0.85	WI
3V9GEJ		37.45	0.41	0.66	37.21	0.41	0.64	WI
4AYNYX	X	36.85	-0.19	-0.30	34.21	-2.59	-4.03	WI
4KVVGB		36.91	-0.13	-0.21	36.73	-0.07	-0.10	UN
4NPUC8		35.59	-1.45	-2.33	35.82	-0.98	-1.53	NA
4PKUJD		37.42	0.38	0.61	37.44	0.64	1.00	UN
4XXWQZ		38.00	0.96	1.55	37.25	0.45	0.70	SP
6BPAU9		36.49	-0.55	-0.89	36.11	-0.69	-1.08	UN
6LJ8K9		37.83	0.79	1.28	37.74	0.95	1.47	BU
6LWA3V		36.79	-0.25	-0.40	36.29	-0.50	-0.79	ML
7HNVWU		37.60	0.56	0.91	37.38	0.58	0.91	MI
7HURC6		36.93	-0.11	-0.17	36.77	-0.03	-0.05	WI
7LKTWK		37.44	0.40	0.65	37.03	0.23	0.35	NA
7NZW2X		37.16	0.12	0.20	36.75	-0.05	-0.08	WI
7QWVNH		37.77	0.73	1.18	37.54	0.74	1.15	UN
8AEHDA	X	34.64	-2.40	-3.87	36.14	-0.66	-1.03	WI
8BAJEF		36.77	-0.27	-0.44	36.69	-0.10	-0.16	WI
8D78LV		37.30	0.26	0.42	37.01	0.21	0.32	WO
9687DG		36.56	-0.48	-0.78	36.56	-0.24	-0.38	UN
97UKBK		37.46	0.42	0.67	36.95	0.15	0.24	UN
9GN36M		37.41	0.37	0.59	37.53	0.73	1.14	HT
A6DTUM		37.09	0.05	0.09	36.81	0.01	0.02	CL
BAX4CW		36.73	-0.31	-0.51	36.62	-0.18	-0.28	CL
BFAZ7Y		36.11	-0.93	-1.50	36.03	-0.77	-1.20	UN
BXUVT8		37.29	0.25	0.40	37.14	0.35	0.54	UN
C4CBBH		36.54	-0.50	-0.81	35.58	-1.22	-1.90	BU
CDJQW3		37.33	0.29	0.46	37.35	0.55	0.86	WI
E4BT8P		36.76	-0.28	-0.46	36.51	-0.29	-0.45	NA
E8T9YP		37.71	0.67	1.09	37.67	0.87	1.36	NA
EKR4EX		38.01	0.97	1.56	37.74	0.94	1.46	XX
F4KQPU	*	37.66	0.62	1.01	36.56	-0.24	-0.37	LE
F6E2KG		36.78	-0.26	-0.43	36.63	-0.17	-0.26	WI
FPDZCZ		37.08	0.04	0.06	36.88	0.08	0.13	FR
FQVQYR		37.06	0.02	0.04	37.31	0.51	0.80	UN
FRV44E		37.21	0.17	0.27	36.77	-0.03	-0.05	WI
FVMFKK		36.38	-0.66	-1.07	36.12	-0.68	-1.06	WI
G8FHC3		37.47	0.43	0.69	37.12	0.32	0.50	IN

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 G85			Sample G86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
G9YRJ6		35.79	-1.25	-2.01	35.77	-1.03	-1.60	WI
GP9P8G		37.11	0.07	0.12	36.14	-0.65	-1.02	WI
GTJKFT		37.66	0.62	1.00	37.45	0.65	1.02	XX
GXYJWY		37.04	0.00	0.00	36.47	-0.33	-0.51	WI
GZ3B6Y		37.79	0.75	1.22	37.33	0.53	0.82	EM
H6UWED	*	35.37	-1.67	-2.70	35.60	-1.20	-1.87	WI
H86K9C		37.20	0.16	0.26	36.83	0.03	0.04	WO
HDYLLC		37.14	0.10	0.16	36.99	0.20	0.30	UN
HEBLXT		36.96	-0.08	-0.12	36.07	-0.73	-1.14	WI
HRH3WN	X	35.83	-1.21	-1.95	34.74	-2.05	-3.20	RS
JB9F3Z		38.35	1.31	2.12	38.28	1.48	2.30	BU
JFHW23		36.99	-0.05	-0.07	36.41	-0.39	-0.60	NA
JRD6YX		37.03	-0.01	-0.01	37.09	0.30	0.46	NA
JUMM62		37.60	0.56	0.91	37.18	0.38	0.59	LE
K98PTQ		36.23	-0.81	-1.31	35.43	-1.37	-2.14	XX
KGB9A2		36.64	-0.40	-0.64	37.20	0.40	0.63	WI
KNFBUL		37.06	0.02	0.04	36.83	0.03	0.05	WI
LBUQCJ		36.65	-0.39	-0.63	36.79	-0.01	-0.02	WI
MXJ6D7		37.51	0.47	0.75	37.83	1.03	1.60	WI
NNYFQQ		35.99	-1.05	-1.70	35.98	-0.82	-1.28	WI
NU4WXW		37.13	0.09	0.15	36.73	-0.07	-0.10	FT
P29JJR		36.94	-0.10	-0.15	36.76	-0.04	-0.06	KF
PEBU7C		36.99	-0.05	-0.07	36.36	-0.44	-0.68	TG
Q79HW2		37.51	0.47	0.75	36.89	0.10	0.15	UN
QHG8RP		37.20	0.16	0.26	37.04	0.24	0.37	WI
RCYXN6		36.94	-0.10	-0.15	36.98	0.18	0.28	GR
RDPRYA		37.13	0.09	0.15	37.05	0.25	0.40	XX
T4A4D2		36.11	-0.93	-1.50	35.64	-1.15	-1.80	WI
TBGK99		37.09	0.05	0.08	36.89	0.09	0.14	UN
TP8Y4V		37.61	0.57	0.93	37.26	0.46	0.71	BU
TTCQ9F		36.72	-0.32	-0.52	36.69	-0.10	-0.16	WO
U6XVP6		37.53	0.49	0.79	37.08	0.28	0.43	WI
UL8E4P	*	35.81	-1.23	-1.98	35.13	-1.67	-2.60	WI
UQWABM		37.74	0.70	1.14	37.06	0.26	0.41	BU
UTGUPH	X	35.62	-1.42	-2.29	36.51	-0.29	-0.46	WI
VBXCGH		37.11	0.07	0.11	36.63	-0.17	-0.27	BU
VMZDP8		36.86	-0.18	-0.28	35.89	-0.91	-1.42	WI
W8Y LXU		38.01	0.97	1.57	38.03	1.23	1.91	XX
WCAT98		38.11	1.07	1.73	37.31	0.51	0.80	WI
WQ67PQ		37.16	0.12	0.19	36.75	-0.05	-0.08	WI
X9KUFW		37.03	-0.01	-0.01	37.01	0.21	0.32	WI
XF9QPY		35.73	-1.31	-2.12	36.04	-0.76	-1.19	UN
XUHKXA		36.73	-0.31	-0.51	36.98	0.18	0.28	XX
XYV3WK		38.40	1.36	2.20	38.21	1.41	2.19	WI
YHHAB2		37.25	0.21	0.34	37.09	0.29	0.45	BU

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 G85			Sample G86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YQGLTF		36.98	-0.06	-0.10	37.03	0.23	0.35	UN
ZAGC4P		36.97	-0.07	-0.11	36.19	-0.61	-0.95	WI
ZY8YG2		36.32	-0.72	-1.16	35.99	-0.80	-1.25	UN

Summary Statistics

	Sample G85	Sample G86
Grand Means	37.039 HRC	36.798 HRC
Std Dev Btwn Labs	0.620 HRC	0.642 HRC

Statistics based on 89 of 93 reporting participants

Samples G85 , G86 : Fastener size 1/2-20x2.5, 1/2-20x2.75

Comments on assigned Data Flags for Test #125

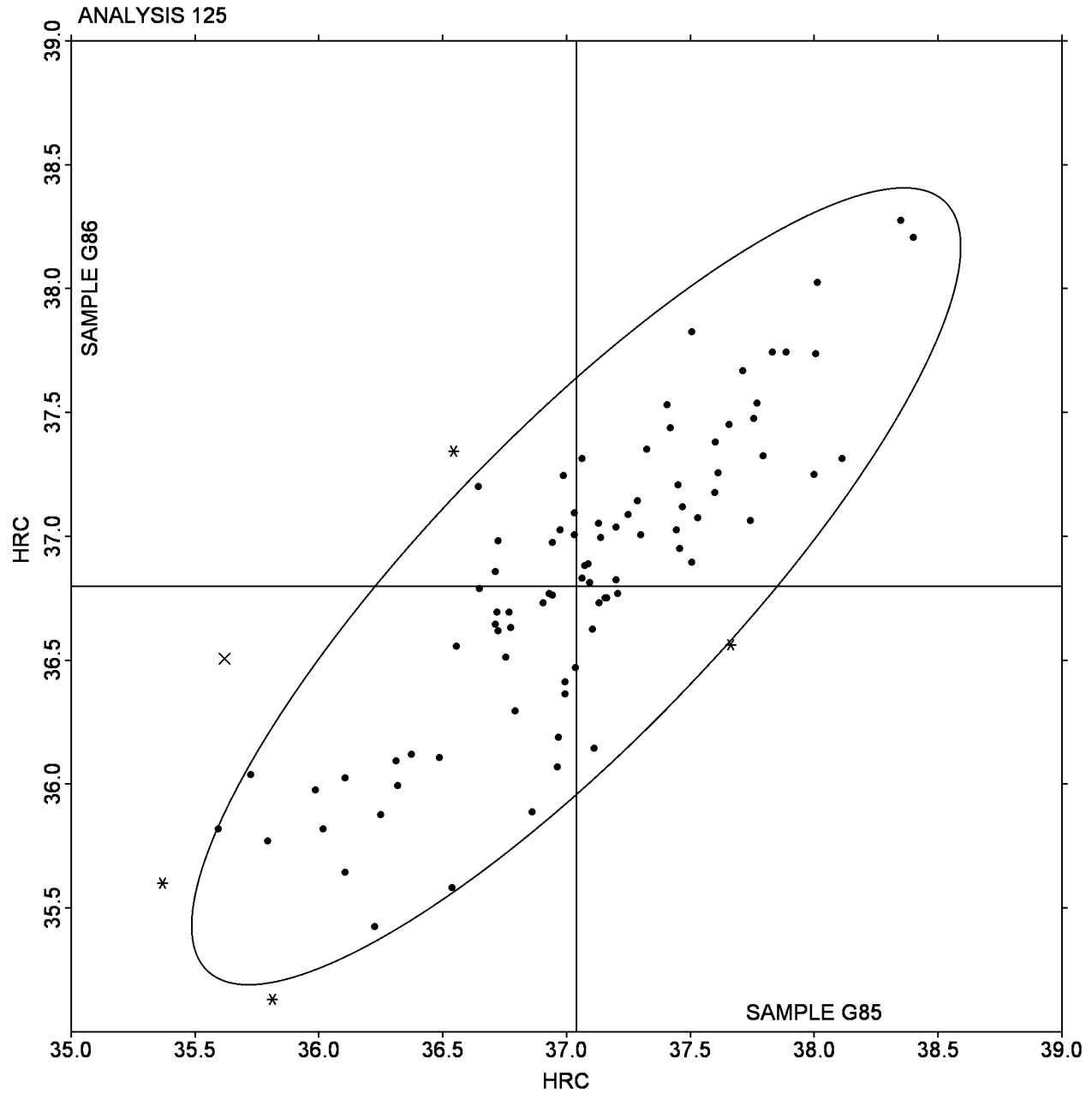
- 4AYNYX (X) - Inconsistent in testing between samples, data for Sample G86 are low.
 8AEHDA (X) - Inconsistent in testing between samples, data for Sample G85 are low.
 HRH3WN (X) - Inconsistent in testing between samples, data for Sample G86 are low.
 UTGUPH (X) - Inconsistent in testing between samples and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 125

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

SAMPLE G85 = 37.039 HRC SAMPLe G86 = 36.798 HRC



Interlaboratory Testing Program for Metals

Analysis 126

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

WebCode	Data Flag	Sample V85			Sample V86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DDWBZ		359.6	-1.7	-0.33	363.5	2.0	0.38	FU
2EGAHT		367.1	5.8	1.17	366.8	5.3	0.99	AR
3C9ZZ3		357.1	-4.2	-0.84	355.4	-6.1	-1.12	XX
42ERMK		358.9	-2.3	-0.46	358.1	-3.4	-0.62	AR
42J64D		355.3	-5.9	-1.19	354.6	-6.9	-1.29	WO
CNWEMA		364.0	2.8	0.56	362.8	1.3	0.25	LE
FTFW4G		372.4	11.1	2.24	373.4	11.9	2.21	ST
FV2M87		364.0	2.8	0.56	361.3	-0.2	-0.03	WO
JBXZ2Q		355.4	-5.9	-1.18	357.1	-4.4	-0.82	BU
JWQUGL		364.4	3.2	0.64	366.5	5.0	0.93	AK
LQGEUV		363.6	2.3	0.47	367.5	6.0	1.12	AV
QKQP8L		359.5	-1.7	-0.35	357.1	-4.4	-0.81	AK
QTE3UT		356.4	-4.9	-0.98	360.3	-1.2	-0.23	GN
RDLQX3		363.3	2.0	0.40	360.6	-0.9	-0.16	WO
THP8HH		364.5	3.3	0.66	364.5	3.0	0.56	SH
YWYHDD		354.6	-6.7	-1.35	354.3	-7.2	-1.34	WO

Summary Statistics

	Sample V85	Sample V86
Grand Means	361.24 HV	361.48 HV
Std Dev Btwn Labs	4.97 HV	5.39 HV
Statistics based on 16 of 16 reporting participants		

Samples V85 , V86 : Fastener size 1/2-20x2.5

Analysis Notes for Test #126

No Flags were assigned for this analysis

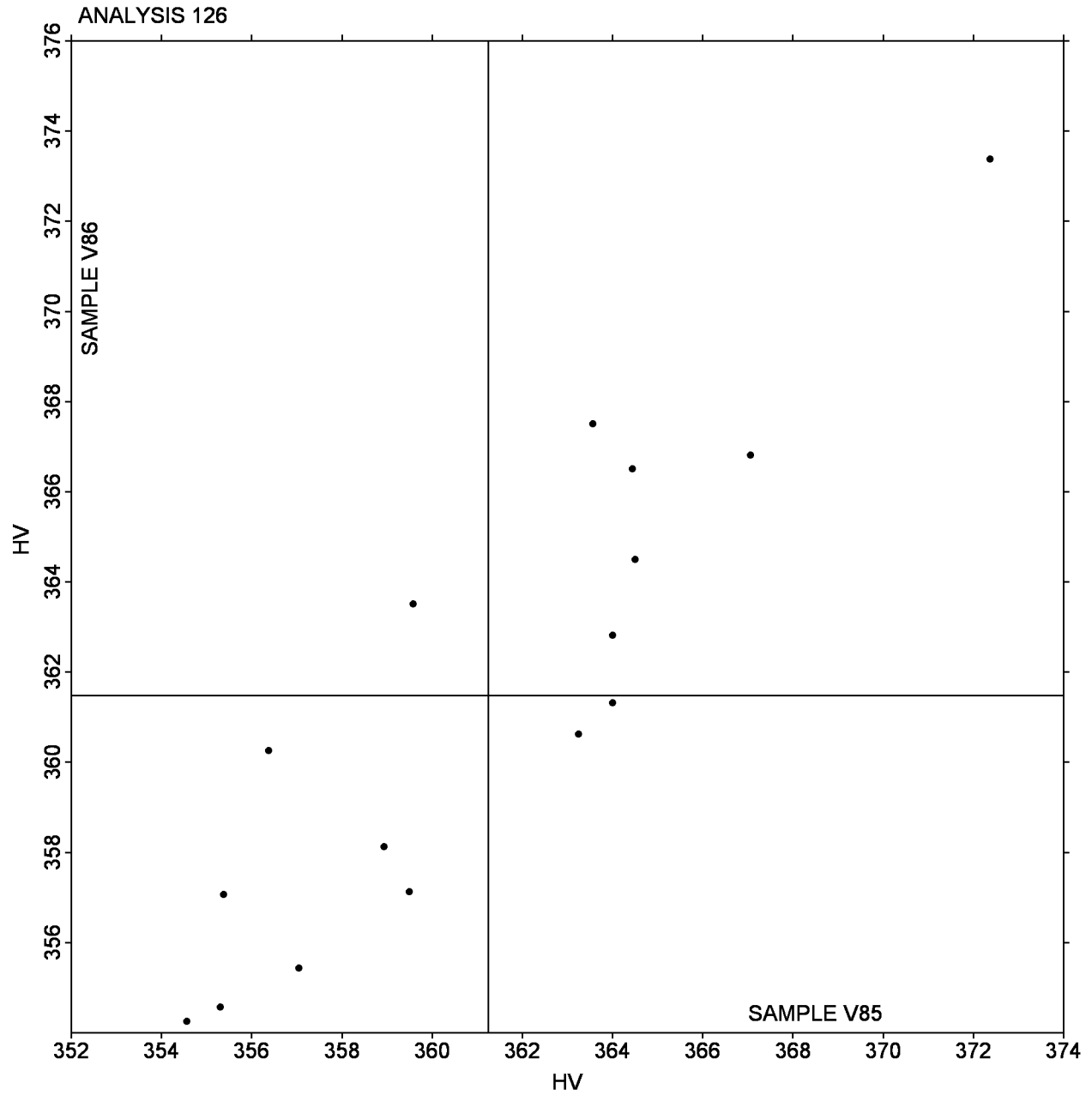
Interlaboratory Testing Program for Metals

Analysis 126

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

SAMPLE V85 = 361.24 HV

SAMPLE V86 = 361.48 HV



Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample B85			Sample B86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3DRRHC		1,110	-1	-0.09	1,096	-13	-1.27	UN
467MLX		1,115	5	0.44	1,109	0	-0.01	UN
687M9V		1,089	-22	-1.99	1,099	-10	-0.99	TO
69GKMD		1,112	1	0.12	1,111	1	0.14	WB
6QRHMB		1,113	2	0.18	1,096	-14	-1.34	HP
AMXBEB		1,105	-6	-0.51	1,111	2	0.17	TO
BBLUU6		1,101	-10	-0.91	1,092	-18	-1.69	LO
C4YGCF		1,119	9	0.79	1,112	2	0.23	SA
DF3LZ2		1,119	9	0.79	1,111	2	0.17	MR
FXJW4K		1,102	-9	-0.81	1,112	3	0.26	WZ
HE68XQ		1,107	-4	-0.37	1,112	2	0.20	RO
HWDT3Z		1,097	-14	-1.27	1,106	-3	-0.31	TO
JRWTGR		1,112	2	0.15	1,108	-1	-0.12	SH
K3M34Z	X	100	-1,011	-91.77	100	-1,010	-97.00	TO
LEXUAK	*	1,143	32	2.91	1,143	34	3.23	TO
LX3ELT		1,108	-3	-0.24	1,113	3	0.33	TO
M92DMX		1,113	2	0.18	1,107	-3	-0.28	SA
PAAM6U		1,103	-8	-0.69	1,100	-10	-0.92	TO
PDG8RM		1,109	-2	-0.15	1,114	4	0.39	SA
RAXV3A		1,112	1	0.12	1,111	1	0.14	WZ
W7L6TV		1,118	7	0.63	1,123	14	1.31	WI
WWJ3TK		1,103	-8	-0.71	1,112	2	0.21	ST
ZQEATT		1,126	16	1.42	1,111	2	0.17	IN

Summary Statistics

	Sample B85	Sample B86
Grand Means	1,110.6 MPa	1,109.6 MPa
Std Dev Btwn Labs	11.0 MPa	10.4 MPa
Statistics based on 22 of 23 reporting participants		

Samples B85 , B86 : Fastener size M10 x 1.5 x 70

Comments on assigned Data Flags for Test #127

K3M34Z (X) - Extreme data.

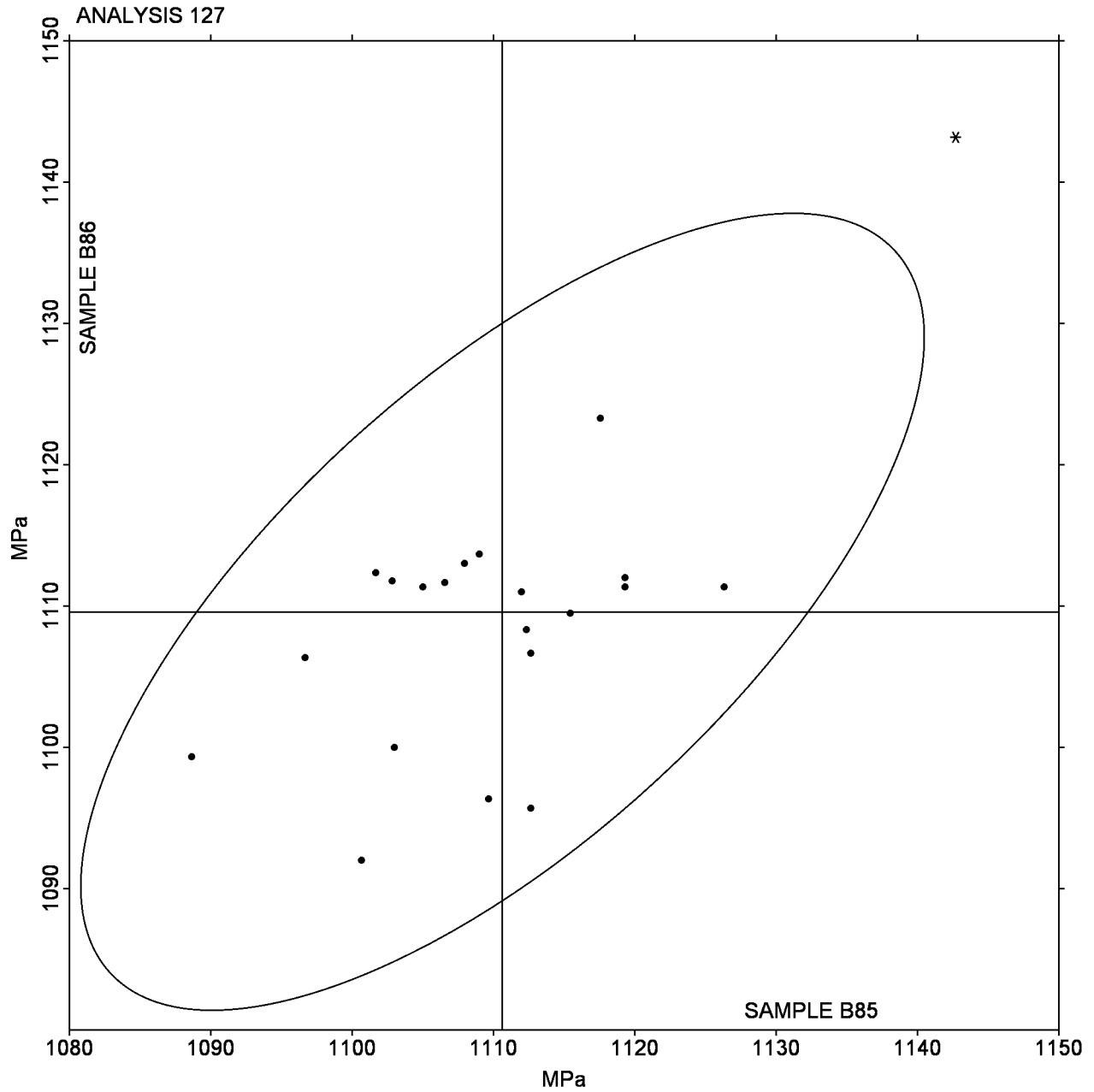
Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

SAMPLE B85 = 1,110.6 MPa SAMPLe B86 = 1,109.6 MPa



Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample T85			Sample T86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3JTZFF		1,111	6	0.23	1,121	16	0.56	WB
6K378F	*	1,021	-84	-3.54	1,002	-103	-3.55	TO
7P7HEC		1,113	8	0.32	1,103	-2	-0.07	WO
7U4H4E		1,096	-9	-0.38	1,121	16	0.56	TO
AQE8KR	X	760	-346	-14.56	754	-351	-12.12	LO
CNCBMG		1,131	26	1.08	1,134	29	1.01	IN
DBRH48		1,120	15	0.61	1,108	3	0.10	TO
DREQ8W		1,111	5	0.23	1,110	5	0.17	SH
E3LE3E	X	1,341	236	9.92	1,305	200	6.91	UN
K2EUWZ		1,102	-3	-0.14	1,095	-9	-0.32	GA
KVUBXE		1,112	7	0.29	1,115	10	0.35	IN
L9WHQU		1,113	8	0.32	1,112	7	0.24	TO
NM2TRK		1,109	4	0.16	1,099	-6	-0.21	ST
RLKWRB		1,101	-5	-0.20	1,108	3	0.11	XX
U9MM89		1,116	10	0.43	1,115	10	0.35	TO
UW4QW4		1,110	5	0.19	1,118	13	0.46	TO
Y8GFRV		1,111	6	0.23	1,111	7	0.23	XX
ZDFQD8		1,109	4	0.16	1,106	1	0.02	RO

Summary Statistics

	Sample T85	Sample T86
Grand Means	1,105.4 MPa	1,104.8 MPa
Stnd Dev Btwn Labs	23.8 MPa	29.0 MPa
Statistics based on 16 of 18 reporting participants		

Samples T85 , T86 : Fastener size M10 x 1.5 x 70

Comments on assigned Data Flags for Test #128

AQE8KR (X) - Data for both samples are low.

E3LE3E (X) - Data for both samples are high.

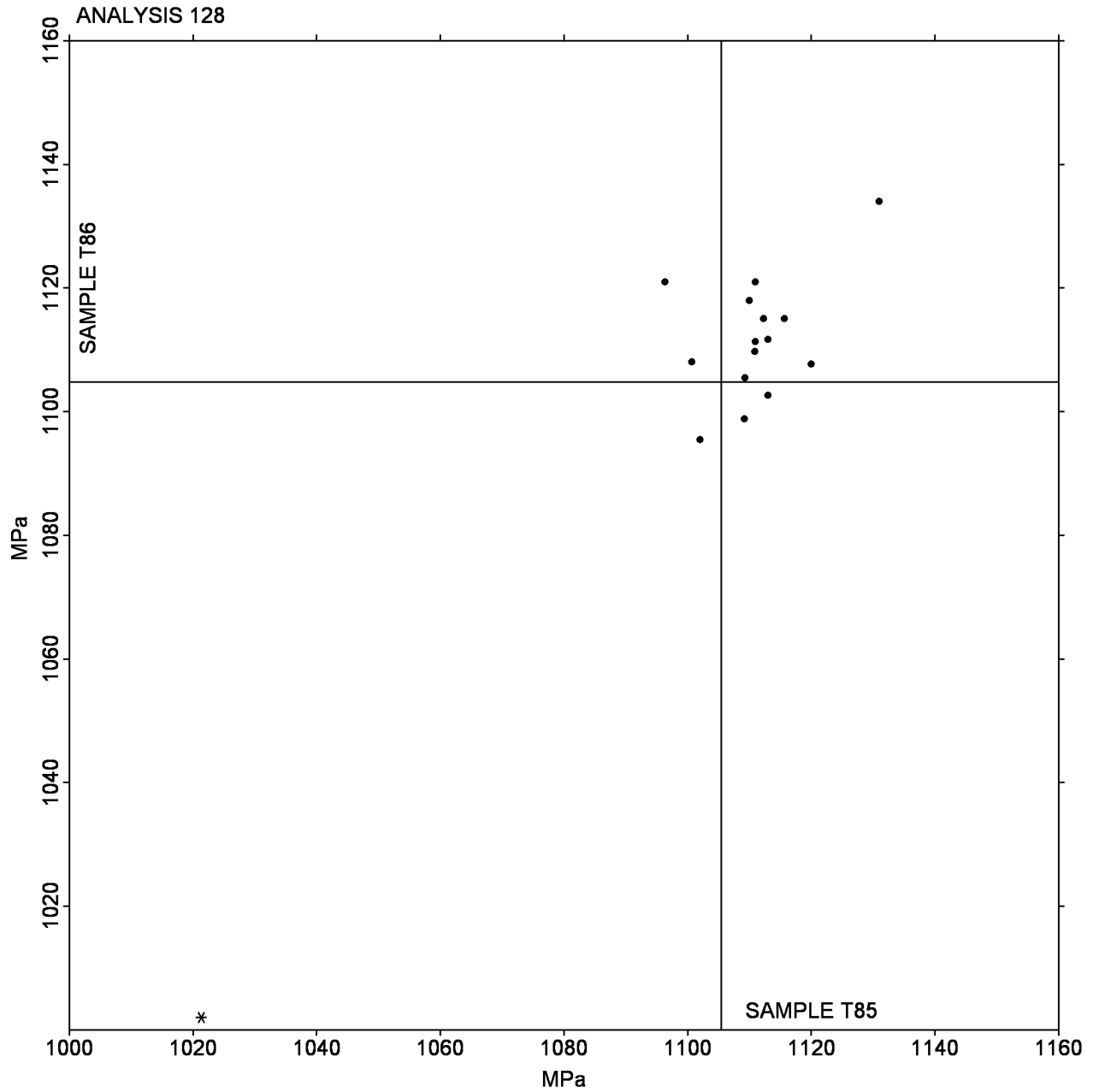
Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa

ASTM F606M

SAMPLE T85 = 1,105.4 MPa SAMPLe T86 = 1,104.8 MPa



Interlaboratory Testing Program for Metals

Analysis 129

Fastener Double Shear - lb

NASM 1312-13

WebCode	Data Flag	Sample Z85			Sample Z86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3U4NYD		21,847	382	0.76	21,927	454	0.92	AV
6H4QB2		20,800	-665	-1.32	20,933	-539	-1.09	TO
6KPREJ		21,526	61	0.12	21,623	150	0.30	XX
7Q9QX6	*	20,660	-805	-1.60	21,647	174	0.35	TO
7XVU7E		22,000	534	1.06	21,992	520	1.05	TO
9RFLQY		21,630	165	0.33	21,605	133	0.27	SA
B48HWA		21,690	225	0.45	21,331	-141	-0.29	SA
DCETL8		21,349	-116	-0.23	21,131	-342	-0.69	SA
DK9XE9		20,840	-625	-1.24	20,920	-552	-1.12	XX
GKEVAF		21,400	-65	-0.13	21,343	-130	-0.26	TO
HL7WL6		21,825	359	0.71	21,918	445	0.90	XX
PWJBL Y		21,767	301	0.60	21,917	444	0.90	RI
PWV7UJ		21,729	263	0.52	21,615	143	0.29	TO
TEGW7M		22,540	1,075	2.13	22,433	961	1.94	SA
WXRZYU		20,633	-832	-1.65	20,233	-1,239	-2.50	TO
X3PKZX		21,610	145	0.29	21,439	-34	-0.07	SA
XQQFJX		21,789	323	0.64	21,657	184	0.37	MT
XR9PPZ		20,975	-490	-0.97	21,209	-263	-0.53	TO
YLFVYX		21,233	-232	-0.46	21,100	-372	-0.75	RI

Summary Statistics

	Sample Z85	Sample Z86
Grand Means	21,465.4 lb	21,472.2 lb
Std Dev Btwn Labs	503.8 lb	495.2 lb
Statistics based on 19 of 19 reporting participants		

Samples Z85 , Z86 : Fastener size 3/8-16x2.25

Analysis Notes for Test #129

No Flags were assigned for this analysis

Interlaboratory Testing Program for Metals

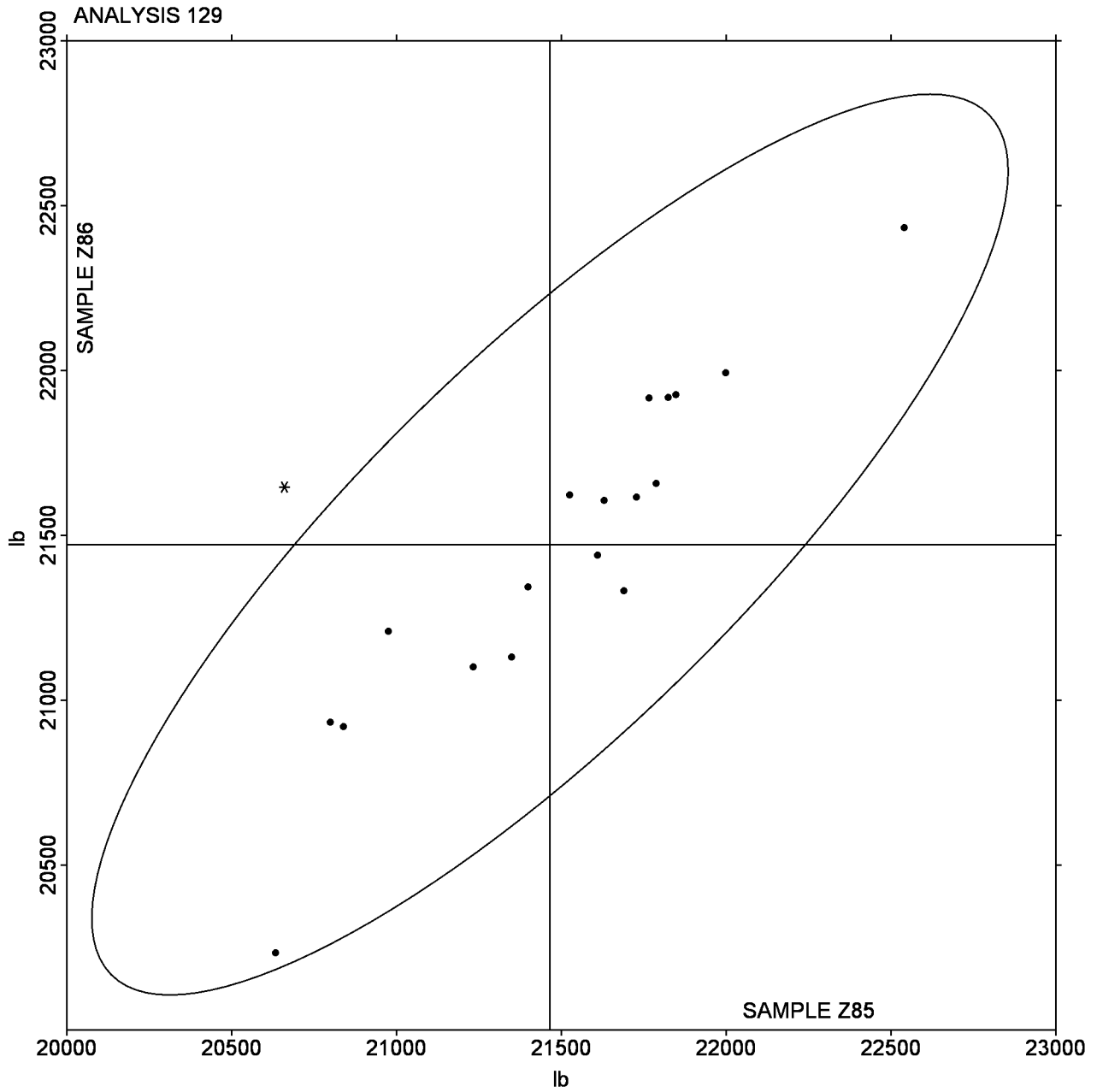
Analysis 129

Fastener Double Shear - lb

NASM 1312-13

SAMPLE Z85 = 21,465.4 lb

SAMPLE Z86 = 21,472.2 lb



Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2G6RNK	*	50.80	2.43	3.06	53.50	2.54	2.82	ZZ
2PWJ72		48.80	0.43	0.54	50.40	-0.56	-0.62	ZZ
2VRHNV	X	49.00	0.63	0.79	53.30	2.34	2.60	ZZ
2YEB4P		48.47	0.10	0.13	51.27	0.31	0.34	ZZ
3REBGU		47.70	-0.67	-0.84	50.20	-0.76	-0.85	ZZ
3VRNTU		48.00	-0.37	-0.46	50.90	-0.06	-0.07	ZZ
48KHPN		48.53	0.16	0.20	51.47	0.51	0.57	ZZ
4W6GHV		49.10	0.73	0.92	51.40	0.44	0.49	ZZ
4ZWPCD		48.44	0.07	0.09	50.87	-0.10	-0.11	ZZ
6DUB42	*	49.00	0.63	0.79	52.80	1.84	2.04	ZZ
6HJH2U		47.94	-0.43	-0.55	50.10	-0.87	-0.96	ZZ
6HMT4Q		48.27	-0.10	-0.12	51.44	0.47	0.53	ZZ
7YV7CZ		47.57	-0.80	-1.00	50.18	-0.78	-0.86	ZZ
9BEVEH		47.62	-0.75	-0.95	49.62	-1.34	-1.49	ZZ
AE23FJ		49.00	0.63	0.79	51.10	0.14	0.15	ZZ
B94ZJ4		49.22	0.85	1.07	52.42	1.46	1.62	ZZ
BH2HKZ		48.73	0.36	0.46	52.07	1.11	1.23	ZZ
C67TXX		48.90	0.53	0.67	51.50	0.54	0.60	ZZ
C7DKJD		49.00	0.63	0.79	51.30	0.34	0.38	ZZ
CD8VMG		48.40	0.03	0.04	51.20	0.24	0.26	ZZ
CFXJ3B		48.30	-0.07	-0.09	50.90	-0.06	-0.07	ZZ
DQ8FLF		47.10	-1.27	-1.60	49.90	-1.06	-1.18	ZZ
EFHN6A		46.40	-1.97	-2.48	49.30	-1.66	-1.85	ZZ
EMF9DW		47.99	-0.38	-0.48	50.53	-0.43	-0.48	ZZ
EYGR8W		49.80	1.43	1.80	52.50	1.54	1.71	ZZ
F8U3ZN		47.90	-0.47	-0.59	50.20	-0.76	-0.85	ZZ
FGZLDY		49.01	0.64	0.80	51.51	0.55	0.61	ZZ
FHTCP6		49.80	1.43	1.80	51.90	0.94	1.04	ZZ
FJNWC6		49.40	1.03	1.30	52.10	1.14	1.26	ZZ
GBBA7A		48.20	-0.17	-0.21	50.70	-0.26	-0.29	ZZ
GQLY64		48.00	-0.37	-0.46	50.30	-0.66	-0.74	ZZ
H76LV6		48.30	-0.07	-0.09	50.90	-0.06	-0.07	ZZ
H7V2JV		49.72	1.35	1.70	51.85	0.89	0.99	ZZ
H9ZQNX	*	47.66	-0.71	-0.89	51.72	0.76	0.84	ZZ
HLJG28		49.09	0.72	0.91	51.21	0.25	0.28	ZZ
HMUA6M		48.59	0.22	0.28	51.92	0.96	1.07	ZZ
J3E73N		46.50	-1.87	-2.35	48.90	-2.06	-2.29	ZZ
JCGALZ		47.20	-1.17	-1.47	49.30	-1.66	-1.85	ZZ
JYPEV6	*	47.54	-0.83	-1.04	51.54	0.58	0.65	ZZ
K7YBPC		48.20	-0.17	-0.21	51.40	0.44	0.49	ZZ
KC7NRG		48.60	0.23	0.29	51.20	0.24	0.26	ZZ
KCUDEG		49.10	0.73	0.92	51.40	0.44	0.49	ZZ
KRD2RM		47.88	-0.49	-0.62	50.73	-0.23	-0.25	ZZ
L87BLQ		47.79	-0.58	-0.73	50.17	-0.79	-0.88	ZZ
M72W3Q	*	47.70	-0.67	-0.84	48.90	-2.06	-2.29	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MACB2E		49.30	0.93	1.17	51.50	0.54	0.60	ZZ
MFKJMR		48.37	0.00	0.00	50.98	0.02	0.02	ZZ
MJ3AYU		49.70	1.33	1.67	51.40	0.44	0.49	ZZ
MJHVQ6		48.95	0.58	0.73	51.16	0.20	0.22	ZZ
MKAMAJ		48.80	0.43	0.54	51.29	0.33	0.36	ZZ
MKLJEL		46.80	-1.57	-1.97	49.45	-1.51	-1.68	ZZ
MRMKVG		48.00	-0.37	-0.46	51.00	0.04	0.04	ZZ
MTBKPY		47.20	-1.17	-1.47	49.90	-1.06	-1.18	ZZ
MU2CBW		48.40	0.03	0.04	51.00	0.04	0.04	ZZ
NVPPB9		48.50	0.13	0.17	51.06	0.10	0.11	ZZ
P37BTY		48.30	-0.07	-0.09	51.05	0.09	0.10	ZZ
P6KYZN		48.83	0.47	0.59	51.37	0.41	0.46	ZZ
PULCWY		49.05	0.68	0.86	51.40	0.44	0.49	ZZ
QAPQHF		48.10	-0.27	-0.34	50.00	-0.96	-1.07	ZZ
QCQR8Q		49.10	0.73	0.92	51.50	0.54	0.60	ZZ
QT7PRJ		48.15	-0.22	-0.27	50.66	-0.30	-0.33	ZZ
QTZCNZ		49.01	0.64	0.81	51.64	0.68	0.75	ZZ
QXZDC3		49.10	0.73	0.92	51.15	0.19	0.21	ZZ
QZCDLW		49.10	0.73	0.92	51.60	0.64	0.71	ZZ
RJKLAF		48.20	-0.17	-0.21	50.85	-0.11	-0.12	ZZ
RK6RJ8		48.40	0.03	0.04	50.90	-0.06	-0.07	ZZ
RYMUTJ		49.13	0.77	0.96	52.32	1.36	1.51	ZZ
T9BGL6		47.85	-0.52	-0.65	50.56	-0.40	-0.45	ZZ
TKDX42		47.90	-0.47	-0.59	51.10	0.14	0.15	ZZ
TYGHJX		48.43	0.06	0.07	51.07	0.11	0.12	ZZ
U6AN82		48.50	0.13	0.16	50.80	-0.16	-0.18	ZZ
U6UDLF		49.02	0.65	0.82	51.49	0.53	0.59	ZZ
UJC68Z		47.51	-0.85	-1.07	49.79	-1.17	-1.30	ZZ
UZY3F3		47.10	-1.27	-1.60	50.15	-0.81	-0.90	ZZ
V2HNBW		47.10	-1.27	-1.60	50.50	-0.46	-0.51	ZZ
VGGJW2		47.70	-0.67	-0.84	50.60	-0.36	-0.40	ZZ
WPXVTM		46.70	-1.67	-2.10	48.90	-2.06	-2.29	ZZ
X37UQB		48.70	0.33	0.42	51.70	0.74	0.82	ZZ
X7VGMT		47.40	-0.97	-1.22	49.90	-1.06	-1.18	ZZ
XDUN4T		48.50	0.13	0.16	50.70	-0.26	-0.29	ZZ
XDZXD8		49.00	0.63	0.79	51.70	0.74	0.82	ZZ
XG9P7L	*	48.40	0.03	0.04	49.50	-1.46	-1.62	ZZ
XJHPNZ		47.80	-0.57	-0.72	50.10	-0.86	-0.96	ZZ
XTAVPC	*	49.10	0.73	0.92	53.00	2.04	2.26	ZZ
XY6TBN		47.60	-0.77	-0.97	50.40	-0.56	-0.62	ZZ
XY83G9	X	45.90	-2.47	-3.10	49.90	-1.06	-1.18	ZZ
YPJYWY		48.70	0.33	0.42	51.00	0.04	0.04	ZZ
Z3L6QB		49.12	0.75	0.95	52.19	1.23	1.36	ZZ
ZF9TZU		48.49	0.12	0.15	51.00	0.04	0.05	ZZ
ZNTE4C		48.08	-0.29	-0.37	50.57	-0.39	-0.43	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	

Summary Statistics

	Sample F85	Sample F86
Grand Means	48.369 ksi	50.962 ksi
Std Dev Btwn Labs	0.795 ksi	0.900 ksi
Statistics based on 88 of 90 reporting participants		

Samples F85 , F86 : AISI 4130 steel

Comments on assigned Data Flags for Test #130

2VRHNV (X) - Inconsistent in testing between samples.

XY83G9 (X) - Low data for Sample F85.

Interlaboratory Testing Program for Metals

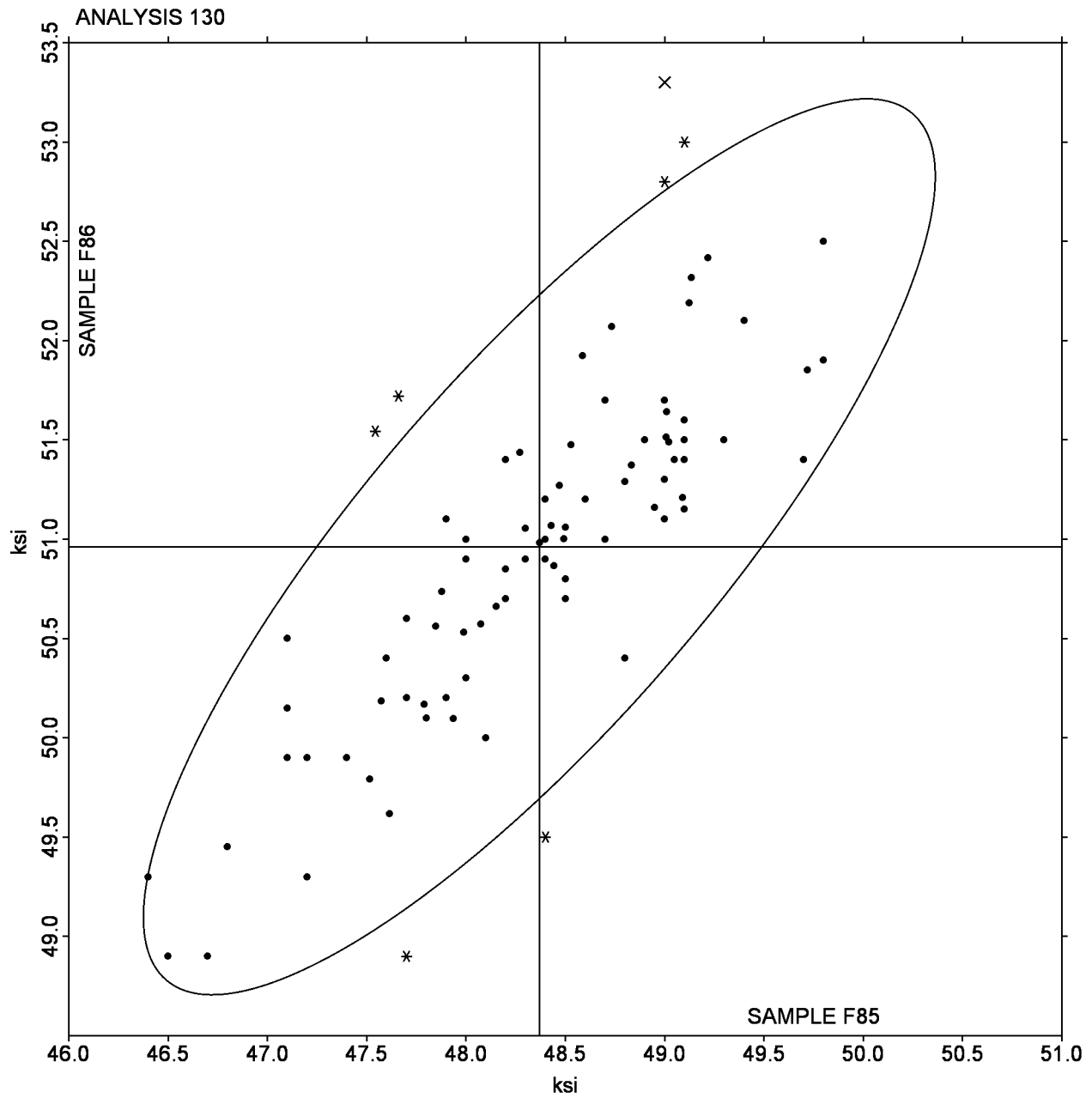
Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

SAMPLE F85 = 48.369 ksi

SAMPLE F86 = 50.962 ksi



Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27JWKT	*	24.30	-2.46	-2.70	35.15	-1.60	-1.59	ZZ
2TCMNQ		28.20	1.44	1.58	37.40	0.65	0.64	ZZ
2UB3HG		25.50	-1.26	-1.39	36.00	-0.75	-0.75	ZZ
33ZBDP		26.30	-0.46	-0.51	36.50	-0.25	-0.25	ZZ
3PFQ39		26.90	0.14	0.15	36.60	-0.15	-0.15	ZZ
3PZ3LM		27.25	0.49	0.53	37.07	0.32	0.31	ZZ
3UGM8V		26.60	-0.16	-0.18	37.30	0.55	0.54	ZZ
4CX8JJ		27.20	0.44	0.48	36.60	-0.15	-0.15	ZZ
62AMNK		26.70	-0.06	-0.07	36.30	-0.45	-0.45	ZZ
6HRWMG		27.10	0.34	0.37	36.00	-0.75	-0.75	ZZ
7JPBFR		27.10	0.34	0.37	36.60	-0.15	-0.15	ZZ
8C99WV		27.10	0.34	0.37	36.40	-0.35	-0.35	ZZ
8EL3BG	X	45.40	18.64	20.45	34.30	-2.45	-2.43	ZZ
8QV7CX		26.60	-0.16	-0.18	37.86	1.11	1.10	ZZ
92BURC		26.50	-0.26	-0.29	36.50	-0.25	-0.25	ZZ
97ELA2		25.80	-0.96	-1.06	37.20	0.45	0.44	ZZ
98FL3V		27.41	0.65	0.71	38.44	1.68	1.67	ZZ
9J8GTV	X	26.90	0.14	0.15	40.10	3.35	3.31	ZZ
AEL2UM	X	30.05	3.29	3.61	39.15	2.40	2.37	ZZ
B3HEMW		26.74	-0.03	-0.03	37.45	0.70	0.69	ZZ
BC6DCG		26.60	-0.16	-0.18	37.00	0.25	0.24	ZZ
BYJ7KZ		28.62	1.86	2.04	38.61	1.86	1.84	ZZ
D4HFBY		27.50	0.74	0.81	38.20	1.45	1.43	ZZ
DWW7UU		27.30	0.54	0.59	38.30	1.55	1.53	ZZ
EKEUYK		27.40	0.64	0.70	37.20	0.45	0.45	ZZ
EL9FPV	*	29.15	2.39	2.62	38.00	1.25	1.24	ZZ
EMNC29		27.20	0.44	0.48	36.80	0.05	0.05	ZZ
EQXTXR	*	24.70	-2.06	-2.26	34.50	-2.25	-2.23	ZZ
FBLEFU		28.08	1.32	1.45	36.54	-0.21	-0.21	ZZ
FFYNQH		28.10	1.34	1.47	37.20	0.45	0.44	ZZ
FHWA89		26.80	0.04	0.04	37.40	0.65	0.64	ZZ
FVD2DA		26.80	0.04	0.04	37.20	0.45	0.44	ZZ
FZCBQW		27.73	0.97	1.06	37.66	0.90	0.89	ZZ
G2FXEF		26.52	-0.24	-0.27	36.19	-0.56	-0.56	ZZ
G8JETM		27.00	0.24	0.26	36.60	-0.15	-0.15	ZZ
G9T29T		26.10	-0.66	-0.73	36.10	-0.65	-0.65	ZZ
GKEYW4		25.40	-1.36	-1.50	35.60	-1.15	-1.14	ZZ
GV2EPT		25.60	-1.16	-1.28	34.40	-2.35	-2.33	ZZ
GVBLLU		26.22	-0.54	-0.59	36.35	-0.41	-0.40	ZZ
HKR3T3		27.30	0.54	0.59	38.60	1.85	1.83	ZZ
JPPCLN		27.27	0.50	0.55	37.75	1.00	0.99	ZZ
JQEP68		26.60	-0.16	-0.18	36.50	-0.25	-0.25	ZZ
JTAMV8		27.11	0.35	0.38	37.07	0.32	0.32	ZZ
JU9PY4		26.40	-0.37	-0.40	35.97	-0.78	-0.78	ZZ
K36TVD	*	27.38	0.62	0.68	35.11	-1.64	-1.62	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
KC8ZPR	X	36.62	9.86	10.82	37.06	0.30	0.30	ZZ
KD6RTW	X	35.40	8.64	9.48	29.60	-7.15	-7.08	ZZ
KWMAYJ		26.00	-0.76	-0.84	36.00	-0.75	-0.75	ZZ
KWNWTQ		26.40	-0.37	-0.40	38.44	1.68	1.67	ZZ
KXMQF9	X	30.04	3.27	3.59	34.74	-2.02	-2.00	ZZ
LF2FER		26.54	-0.22	-0.24	36.48	-0.28	-0.27	ZZ
LGNEEC	*	25.60	-1.16	-1.28	34.00	-2.75	-2.73	ZZ
LPZX9V		26.00	-0.76	-0.84	35.50	-1.25	-1.24	ZZ
LTPF7U		26.63	-0.13	-0.15	36.65	-0.10	-0.10	ZZ
LULZRQ		26.24	-0.52	-0.57	37.39	0.63	0.63	ZZ
MD6T8B		26.79	0.03	0.03	36.69	-0.06	-0.06	ZZ
ME2EN7		26.93	0.17	0.18	36.87	0.12	0.12	ZZ
NFB7CZ		26.76	0.00	0.00	36.42	-0.33	-0.33	ZZ
NHQ79W	X	26.90	0.14	0.15	41.00	4.25	4.21	ZZ
NLW4X3		27.00	0.24	0.26	36.40	-0.35	-0.35	ZZ
NMTLUC		28.10	1.34	1.47	36.70	-0.05	-0.05	ZZ
NMZ6E2		25.19	-1.57	-1.72	35.88	-0.87	-0.86	ZZ
PBDHF7		26.70	-0.06	-0.07	38.70	1.95	1.93	ZZ
PBP9ZK	X	29.12	2.35	2.58	40.38	3.63	3.59	ZZ
PH9K4B		26.80	0.04	0.04	37.50	0.75	0.74	ZZ
QQ2A7Y		25.10	-1.66	-1.82	34.80	-1.95	-1.93	ZZ
QWRBXD		28.23	1.47	1.61	37.41	0.65	0.65	ZZ
RJ2H2E		26.10	-0.66	-0.73	36.10	-0.65	-0.65	ZZ
RJ4TQD		27.50	0.74	0.81	36.70	-0.05	-0.05	ZZ
RQ2CZV		26.50	-0.26	-0.29	36.60	-0.15	-0.15	ZZ
T2TC3X		26.06	-0.70	-0.77	37.33	0.58	0.57	ZZ
T7EJYL		26.10	-0.67	-0.73	35.79	-0.96	-0.95	ZZ
TFVQDU		27.10	0.34	0.37	36.90	0.15	0.15	ZZ
TKNZEE		26.00	-0.76	-0.84	35.30	-1.45	-1.44	ZZ
TPMD37		26.80	0.04	0.04	36.40	-0.35	-0.35	ZZ
TT27W4		27.17	0.40	0.44	37.12	0.37	0.37	ZZ
U24T4J		27.56	0.79	0.87	37.12	0.36	0.36	ZZ
UDU9ZC	*	24.10	-2.66	-2.92	35.10	-1.65	-1.64	ZZ
UYQF6N		27.40	0.64	0.70	38.30	1.55	1.53	ZZ
UYUX9E		27.90	1.14	1.25	36.90	0.15	0.15	ZZ
V4VGLJ		27.24	0.48	0.52	36.84	0.09	0.09	ZZ
VAR7H9	*	28.20	1.44	1.58	35.70	-1.05	-1.04	ZZ
W4D3JR		26.90	0.14	0.15	36.60	-0.15	-0.15	ZZ
WKGJUH		26.75	-0.02	-0.02	38.83	2.07	2.05	ZZ
WM7Q83		27.60	0.84	0.92	37.20	0.45	0.44	ZZ
WMRXNQ		25.66	-1.10	-1.21	37.47	0.72	0.71	ZZ
XDQAB8		27.04	0.27	0.30	36.19	-0.57	-0.56	ZZ
XEYDUX		26.40	-0.36	-0.40	38.00	1.25	1.24	ZZ
XJGAFL		25.79	-0.97	-1.06	36.09	-0.67	-0.66	ZZ
Z86MET		27.50	0.74	0.81	37.10	0.35	0.34	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	

Summary Statistics

	Sample F85	Sample F86
Grand Means	26.763 ksi	36.753 ksi
Stnd Dev Btwn Labs	0.911 ksi	1.010 ksi
Statistics based on 82 of 90 reporting participants		

Samples F85 , F86 : AISI 4130 steel

Comments on assigned Data Flags for Test #131

- 8EL3BG (X) - High data for Sample F85.
- 9J8GTV (X) - High data for Sample F86.
- AEL2UM (X) - High data for Sample F85.
- KC8ZPR (X) - High data for Sample F85.
- KD6RTW (X) - High data for Sample F85. Low data for Sample F86.
- KXMQF9 (X) - High data for Sample F85.
- NHQ79W (X) - High data for Sample F86.
- PBP9ZK (X) - High data for Sample F86.

Interlaboratory Testing Program for Metals

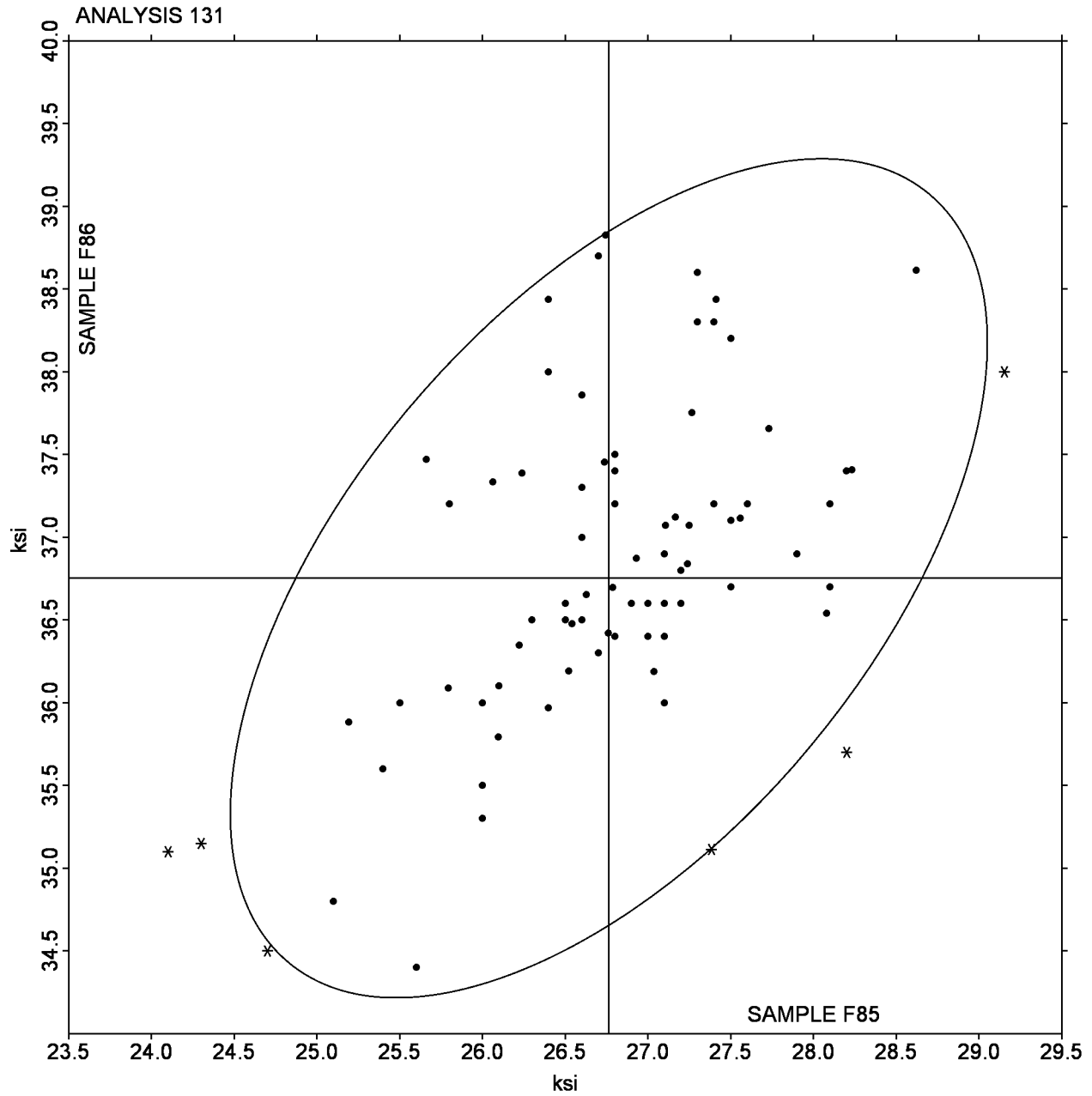
Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

SAMPLE F85 = 26.763 ksi

SAMPLE F86 = 36.753 ksi



Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27YBUN		40.40	-1.52	-0.61	35.90	-1.50	-0.67	ZZ
29FFWL	*	47.50	5.58	2.22	40.20	2.80	1.25	ZZ
2GBWMV		42.00	0.08	0.03	38.00	0.60	0.27	ZZ
2NNVVM		39.40	-2.52	-1.00	35.20	-2.20	-0.98	ZZ
2THB7B		43.20	1.28	0.51	39.00	1.60	0.72	ZZ
3JPV2J		42.70	0.78	0.31	37.40	0.00	0.00	ZZ
44QAVF		43.70	1.78	0.71	39.30	1.90	0.85	ZZ
4AWFHT		46.00	4.08	1.62	41.00	3.60	1.61	ZZ
4DJYUA		43.10	1.18	0.47	35.80	-1.60	-0.71	ZZ
7B4E3D	*	35.81	-6.11	-2.43	31.21	-6.19	-2.76	ZZ
7B9UFE		37.90	-4.02	-1.60	36.50	-0.90	-0.40	ZZ
7JPFJ		42.50	0.58	0.23	38.40	1.00	0.45	ZZ
7KQ829		36.81	-5.11	-2.03	33.30	-4.10	-1.83	ZZ
7VG6CV		41.80	-0.12	-0.05	37.80	0.40	0.18	ZZ
7VTR4		40.00	-1.92	-0.77	36.00	-1.40	-0.62	ZZ
7YXA8J		41.30	-0.62	-0.25	37.00	-0.40	-0.18	ZZ
877KFW		39.00	-2.92	-1.16	34.00	-3.40	-1.52	ZZ
89XEJR		43.00	1.08	0.43	39.00	1.60	0.72	ZZ
8HVFJP		46.00	4.08	1.62	41.00	3.60	1.61	ZZ
9EDMVU		40.00	-1.92	-0.77	35.00	-2.40	-1.07	ZZ
9LKV8H		43.00	1.08	0.43	36.00	-1.40	-0.62	ZZ
9VRJXA		39.80	-2.12	-0.84	34.40	-3.00	-1.34	ZZ
ATCRZH		43.20	1.28	0.51	40.00	2.60	1.16	ZZ
B2W7WG		37.00	-4.92	-1.96	33.40	-4.00	-1.79	ZZ
B6CM4X		38.50	-3.42	-1.36	35.00	-2.40	-1.07	ZZ
B6ZBRT		41.50	-0.42	-0.17	37.80	0.40	0.18	ZZ
BBYEKR		43.40	1.48	0.59	38.00	0.60	0.27	ZZ
C3KWLR		38.83	-3.09	-1.23	35.09	-2.31	-1.03	ZZ
DT6P79		46.50	4.58	1.82	39.60	2.20	0.98	ZZ
EF6AU6		43.60	1.68	0.67	39.30	1.90	0.85	ZZ
EGTQTU		40.30	-1.62	-0.65	36.20	-1.20	-0.53	ZZ
ELX4FC		44.17	2.25	0.89	38.50	1.10	0.49	ZZ
EXTWMW		36.04	-5.88	-2.34	32.22	-5.18	-2.31	ZZ
F9HGH7		44.00	2.08	0.82	39.30	1.90	0.85	ZZ
FBK4WP		43.80	1.88	0.75	39.10	1.70	0.76	ZZ
FLMCLM		40.00	-1.92	-0.77	38.50	1.10	0.49	ZZ
G3P4R3		42.75	0.83	0.33	38.17	0.77	0.35	ZZ
GPNGAT		42.30	0.38	0.15	38.90	1.50	0.67	ZZ
HBGWLD		41.00	-0.92	-0.37	39.00	1.60	0.72	ZZ
HNK4HC		43.60	1.68	0.67	36.50	-0.90	-0.40	ZZ
K4Z9KF		38.70	-3.22	-1.28	35.60	-1.80	-0.80	ZZ
KC9FUH		44.00	2.08	0.82	39.70	2.30	1.03	ZZ
KDUQ7X	X	37.00	-4.92	-1.96	38.00	0.60	0.27	ZZ
KZDNAR		44.50	2.58	1.02	39.40	2.00	0.89	ZZ
L23CAZ		44.00	2.08	0.82	40.00	2.60	1.16	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
L2FP74		41.80	-0.12	-0.05	37.60	0.20	0.09	ZZ
LD86AK		40.90	-1.02	-0.41	36.80	-0.60	-0.27	ZZ
M6TM9Y		42.80	0.88	0.35	37.50	0.10	0.05	ZZ
MQ6QM3		44.20	2.28	0.90	40.10	2.70	1.21	ZZ
MR26FC		45.00	3.08	1.22	40.00	2.60	1.16	ZZ
N97XME		39.40	-2.52	-1.00	35.70	-1.70	-0.76	ZZ
NFN8BB		45.50	3.58	1.42	38.50	1.10	0.49	ZZ
NH3JEX		43.30	1.38	0.55	38.70	1.30	0.58	ZZ
NV9GGC		42.00	0.08	0.03	38.00	0.60	0.27	ZZ
NZB64M		43.00	1.08	0.43	39.00	1.60	0.72	ZZ
PLT4B8		41.40	-0.52	-0.21	37.90	0.50	0.22	ZZ
PQJJH2		40.70	-1.22	-0.49	36.70	-0.70	-0.31	ZZ
PU7FJJ		41.50	-0.42	-0.17	39.60	2.20	0.98	ZZ
Q88THB		38.50	-3.42	-1.36	33.50	-3.90	-1.74	ZZ
QDU7YJ		42.58	0.66	0.26	36.33	-1.07	-0.48	ZZ
QJDJP7		45.40	3.48	1.38	38.90	1.50	0.67	ZZ
QQBCKQ		37.80	-4.12	-1.64	35.90	-1.50	-0.67	ZZ
QQLD8R		39.80	-2.12	-0.84	35.90	-1.50	-0.67	ZZ
QWCNGP		42.30	0.38	0.15	38.70	1.30	0.58	ZZ
R97D3G		41.50	-0.42	-0.17	37.00	-0.40	-0.18	ZZ
RABYGG	*	46.00	4.08	1.62	43.00	5.60	2.50	ZZ
RGRZJ7		43.00	1.08	0.43	38.90	1.50	0.67	ZZ
RW9XUK		41.08	-0.84	-0.34	37.44	0.04	0.02	ZZ
TMX6R4		41.50	-0.42	-0.17	36.50	-0.90	-0.40	ZZ
TQZAXH		36.50	-5.42	-2.16	32.35	-5.05	-2.25	ZZ
UCHVJP		42.00	0.08	0.03	36.20	-1.20	-0.53	ZZ
UYUCK7		41.00	-0.92	-0.37	37.00	-0.40	-0.18	ZZ
V68ANY	X	41.50	-0.42	-0.17	41.70	4.30	1.92	ZZ
V7MNXU		42.12	0.20	0.08	37.85	0.45	0.20	ZZ
V9MFLD		39.50	-2.42	-0.96	35.50	-1.90	-0.85	ZZ
VR2RRB		44.00	2.08	0.82	38.00	0.60	0.27	ZZ
VRRLRT	*	40.00	-1.92	-0.77	33.00	-4.40	-1.96	ZZ
W2YE39		45.00	3.08	1.22	39.50	2.10	0.94	ZZ
WG3QYL		43.80	1.88	0.75	36.10	-1.30	-0.58	ZZ
WHA9XG		42.10	0.18	0.07	38.60	1.20	0.54	ZZ
WMGDYA		45.00	3.08	1.22	39.40	2.00	0.89	ZZ
WULYFC		40.30	-1.62	-0.65	34.25	-3.15	-1.41	ZZ
XP87ZQ		41.40	-0.52	-0.21	36.70	-0.70	-0.31	ZZ
XR6ADY	X	23.90	-18.02	-7.17	20.80	-16.60	-7.41	ZZ
Y66MUH		44.90	2.98	1.18	40.70	3.30	1.48	ZZ
Y9ANBD		42.00	0.08	0.03	37.50	0.10	0.05	ZZ
YJPHBK		44.90	2.98	1.18	38.90	1.50	0.67	ZZ
YMAV64		39.60	-2.32	-0.92	37.90	0.50	0.22	ZZ
YWFCYZ		41.48	-0.44	-0.18	35.27	-2.13	-0.95	ZZ
ZK4MXV		44.30	2.38	0.94	40.00	2.60	1.16	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F85			Sample F86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	

Summary Statistics

	Sample F85	Sample F86
Grand Means	41.925 Percent	37.397 Percent
Std Dev Btwn Labs	2.516 Percent	2.238 Percent
Statistics based on 87 of 90 reporting participants		

Samples F85 , F86 : AISI 4130 steel

Comments on assigned Data Flags for Test #132

- KDUQ7X (X) - Inconsistent in testing between samples.
- V68ANY (X) - Inconsistent in testing between samples.
- XR6ADY (X) - Data for both samples are low. Possible systematic error.

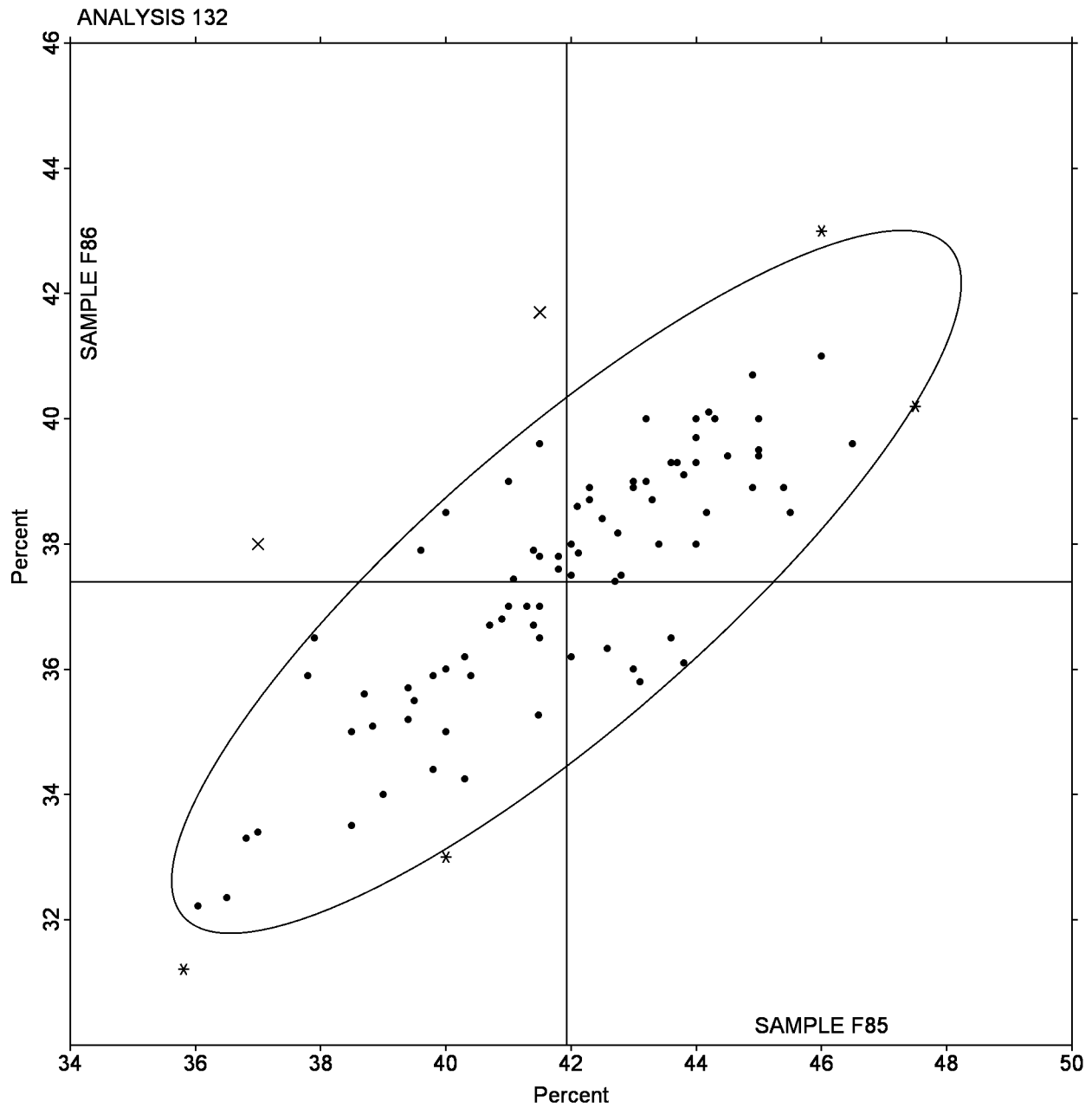
Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

SAMPLE F85 = 41.925 Percent SAMPLe F86 = 37.397 Percent



Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2F9FP7		44.86	-0.27	-0.58	49.48	-0.17	-0.43	UN
2GHRMV		45.28	0.15	0.33	49.88	0.23	0.58	WI
2T8PA2		45.12	-0.01	-0.02	49.48	-0.17	-0.43	WI
37ZQKU		45.86	0.73	1.58	50.26	0.61	1.54	CL
3FA23J		44.26	-0.87	-1.87	48.84	-0.81	-2.03	MI
4D8BZN		45.00	-0.13	-0.28	49.60	-0.05	-0.13	XX
4U7W3B		44.36	-0.77	-1.66	49.16	-0.49	-1.23	UN
4ZK6Q9		45.46	0.33	0.71	49.86	0.21	0.54	UN
67JFDJ		45.28	0.15	0.33	49.70	0.05	0.13	UN
6ZMFTC	X	44.30	-0.83	-1.79	47.96	-1.69	-4.24	WI
72JA7Z		45.66	0.53	1.15	50.06	0.41	1.03	WI
799GE7		44.64	-0.49	-1.05	49.26	-0.39	-0.98	LE
7PPGQ3		45.14	0.01	0.03	49.20	-0.45	-1.13	LE
7R82JC	X	113.62	68.49	148.01	115.46	65.81	164.97	UN
7XRC3N		45.22	0.09	0.20	49.64	-0.01	-0.03	UN
8TZ964		45.50	0.37	0.81	49.74	0.09	0.23	UN
8XLKMC		45.82	0.69	1.50	50.24	0.59	1.48	UN
97XUWR		45.46	0.33	0.72	49.80	0.15	0.38	WI
9GDHC6		45.54	0.41	0.89	49.98	0.33	0.83	WI
9UDN8N	X	47.98	2.85	6.16	50.32	0.67	1.68	WI
9WQK6M		45.28	0.15	0.33	49.80	0.15	0.38	XX
A3HN2V		45.18	0.05	0.11	49.80	0.15	0.38	WI
AWPBJ7		45.12	-0.01	-0.02	49.64	-0.01	-0.03	WI
AX7A8P		44.56	-0.57	-1.23	49.28	-0.37	-0.93	NA
BEXJBT		44.76	-0.37	-0.79	49.66	0.01	0.03	WI
BGG72T		46.00	0.87	1.89	50.00	0.35	0.88	WI
BJJR46		44.76	-0.37	-0.79	49.72	0.07	0.18	NA
BKXF7H	*	44.66	-0.47	-1.01	49.82	0.17	0.43	WI
BYE7CE		45.94	0.81	1.76	49.96	0.31	0.78	UN
C66EBJ		44.92	-0.21	-0.45	49.36	-0.29	-0.73	UN
CRFMJN		45.02	-0.11	-0.23	49.42	-0.23	-0.58	WI
D2RTRN		45.02	-0.11	-0.23	49.78	0.13	0.33	NA
D8H8DQ		45.48	0.35	0.76	50.04	0.39	0.98	WI
D8P82X		44.96	-0.17	-0.36	49.20	-0.45	-1.13	NA
D934LP		45.00	-0.13	-0.28	49.50	-0.15	-0.38	XX
D94HVX		45.04	-0.09	-0.19	49.80	0.15	0.38	BU
DLZZ2X		44.82	-0.31	-0.66	49.40	-0.25	-0.62	WI
DU86RL		44.66	-0.47	-1.01	49.12	-0.53	-1.33	WI
DVYRFQ		45.56	0.43	0.93	49.70	0.05	0.13	NA
EBRTJB		45.40	0.27	0.59	49.90	0.25	0.63	MA
EVLBHU		45.10	-0.03	-0.06	50.00	0.35	0.88	MS
FEJWTL		44.74	-0.39	-0.84	49.08	-0.57	-1.43	WI
FTG82R		45.36	0.23	0.50	50.12	0.47	1.18	NA
HCWZQQ		45.22	0.09	0.20	49.48	-0.17	-0.43	CL
HEJFZY		45.67	0.54	1.16	49.97	0.32	0.80	WI

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
HHTKTF		45.26	0.13	0.29	50.06	0.41	1.03	WI
HLZBMV		44.44	-0.69	-1.49	48.74	-0.91	-2.28	BU
HMDCT9		44.92	-0.21	-0.45	49.94	0.29	0.73	WI
HR97QA		44.76	-0.37	-0.79	49.34	-0.31	-0.78	WI
HXP8L8		44.60	-0.53	-1.14	49.58	-0.07	-0.18	WI
J6JLN9		45.28	0.15	0.33	49.82	0.17	0.43	WI
JQ62F8		45.70	0.57	1.24	50.20	0.55	1.38	NA
K3QQFC		45.10	-0.03	-0.06	49.66	0.01	0.03	WI
K43U7C		45.86	0.73	1.58	50.44	0.79	1.98	WI
KF3D9N		44.20	-0.93	-2.00	49.24	-0.41	-1.03	WI
L2CHXB		45.06	-0.07	-0.15	49.80	0.15	0.38	WI
LBB4D2		44.48	-0.65	-1.40	48.98	-0.67	-1.68	MI
LDLDUL	*	43.78	-1.35	-2.91	48.88	-0.77	-1.93	WI
LGDK29		45.18	0.05	0.11	49.76	0.11	0.28	LE
LH8T9L		45.46	0.33	0.72	50.06	0.41	1.03	WI
MFUCWE		45.28	0.15	0.33	49.66	0.01	0.03	NA
MLGL3J		45.16	0.03	0.07	49.50	-0.15	-0.38	UN
N7K8JM		44.52	-0.61	-1.31	48.96	-0.69	-1.73	IN
N7LETN		45.50	0.37	0.81	50.06	0.41	1.03	CL
N9AFR6		45.02	-0.11	-0.23	49.88	0.23	0.58	WI
N9KNQJ		44.70	-0.43	-0.92	49.34	-0.31	-0.78	WI
NAABU8		44.84	-0.29	-0.62	49.50	-0.15	-0.38	WI
NCGQZD		45.34	0.21	0.46	49.58	-0.07	-0.18	WI
NF9X7G		45.60	0.47	1.02	50.02	0.37	0.93	WI
NUY4WW		45.20	0.07	0.16	49.84	0.19	0.48	MI
NV3LFD		44.62	-0.51	-1.10	49.42	-0.23	-0.58	LE
P26E8G		45.08	-0.05	-0.10	49.36	-0.29	-0.73	BU
P6DJ7P		45.14	0.01	0.03	49.50	-0.15	-0.38	BU
P8GF96		45.56	0.43	0.93	49.96	0.31	0.78	CL
PJVURC		45.20	0.07	0.16	49.36	-0.29	-0.73	WI
QBBJRB		44.92	-0.21	-0.45	49.40	-0.25	-0.63	WI
QQG29A		45.48	0.35	0.76	49.64	-0.01	-0.03	WI
QUBWT4		45.84	0.71	1.54	50.24	0.59	1.48	NA
R3934B		44.48	-0.65	-1.40	49.08	-0.57	-1.43	WI
R4BJ6F		45.72	0.59	1.28	50.26	0.61	1.53	UN
R6TAR8		45.50	0.37	0.81	49.92	0.27	0.68	NA
R7RJV9		45.04	-0.09	-0.19	49.68	0.03	0.08	WI
RNEHX7		44.10	-1.03	-2.22	48.82	-0.83	-2.08	UN
T2ZWVF		45.34	0.21	0.46	49.66	0.01	0.03	UN
T3UAKY		45.16	0.03	0.07	49.44	-0.21	-0.53	UN
TEAPMK		44.58	-0.55	-1.18	49.40	-0.25	-0.63	XX
TGTPM9		44.80	-0.33	-0.71	49.22	-0.43	-1.08	WI
TGX364		46.08	0.95	2.06	50.50	0.85	2.13	EM
TNWFEC		44.88	-0.25	-0.53	49.38	-0.27	-0.68	UN
U9VU6G		44.54	-0.59	-1.27	49.30	-0.35	-0.88	WI

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UDM373		44.68	-0.45	-0.97	49.16	-0.49	-1.23	MI
VCP3TN		45.26	0.13	0.29	49.90	0.25	0.63	XX
VHVUTM	X	46.60	1.47	3.18	51.00	1.35	3.38	AV
VJGAN4		45.72	0.59	1.28	49.92	0.27	0.68	NA
VJHUP		45.90	0.77	1.67	50.00	0.35	0.88	MI
VW2RJT	*	45.00	-0.13	-0.28	49.00	-0.65	-1.63	MI
W2G7TR		45.22	0.09	0.20	49.64	-0.01	-0.03	WI
WCQXQ8		45.86	0.73	1.58	50.42	0.77	1.93	WI
WHCCFR		44.98	-0.15	-0.32	49.62	-0.03	-0.08	WI
WJWH8B	*	46.10	0.97	2.10	50.82	1.17	2.93	MI
WTUJ89		45.60	0.47	1.02	50.22	0.57	1.43	WI
XHE8QB		44.72	-0.41	-0.88	49.00	-0.65	-1.63	WI
XXWZTN		45.56	0.43	0.93	49.86	0.21	0.53	WI
YYZ267		44.72	-0.41	-0.88	49.29	-0.36	-0.91	UN
ZG9WLH		44.82	-0.31	-0.66	49.86	0.21	0.53	LE
ZGUFLH		44.50	-0.63	-1.36	49.50	-0.15	-0.38	NA
ZHWY9C		45.48	0.35	0.76	49.68	0.03	0.08	WI
ZMAQKW		44.92	-0.21	-0.45	49.46	-0.19	-0.48	WI
ZXDVN9		45.36	0.23	0.50	49.78	0.13	0.33	WI

Summary Statistics

	Sample E85		Sample E86	
Grand Means	45.127	Rockwell Number	49.650	Rockwell Number
Stnd Dev Btwn Labs	0.463	Rockwell Number	0.399	Rockwell Number
Statistics based on 105 of 109 reporting participants				

Samples E85 , E86 : steel (Use C scale)

Comments on assigned Data Flags for Test #118

6ZMFTC (X) - Low data for Sample E86.

7R82JC (X) - Extreme data.

9UDN8N (X) - High data for Sample E85.

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

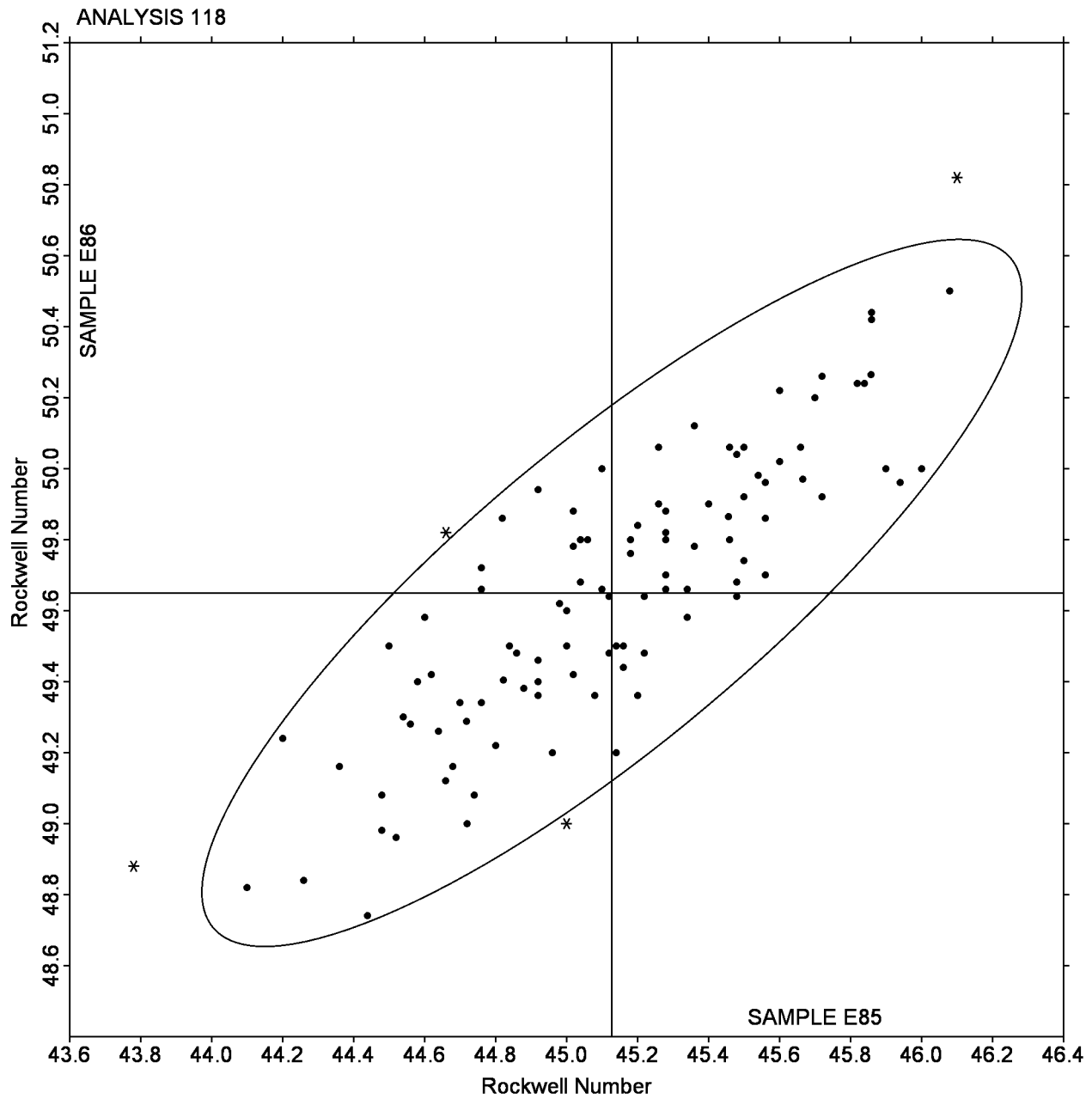
Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness - Rockwell Hardness Number

ASTM E18

SAMPLE E85 = 45.127 Rockwell Number SAMPLe E86 = 49.650 Rockwell Number



Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23TC6H		44.92	0.48	1.15	49.44	0.33	0.80	XX
37E2ET		44.90	0.46	1.10	49.98	0.87	2.10	UN
4UE6W4		44.48	0.04	0.09	49.14	0.03	0.07	NA
6RTAZB		44.68	0.24	0.57	49.56	0.45	1.09	EM
7C9NHJ		44.84	0.40	0.96	49.06	-0.05	-0.12	NA
7QHT9H		44.28	-0.16	-0.39	48.44	-0.67	-1.62	XX
7XQDWU		44.20	-0.24	-0.59	48.74	-0.37	-0.90	NA
844AT8		44.54	0.10	0.23	49.02	-0.09	-0.22	MI
86C3RU		44.46	0.02	0.04	49.20	0.09	0.22	WI
88XKD6		44.22	-0.22	-0.54	49.00	-0.11	-0.27	WI
8FCFJZ		44.46	0.02	0.04	48.84	-0.27	-0.65	WI
8MF86H		44.34	-0.10	-0.25	48.98	-0.13	-0.32	UN
A8E7BF	X	45.90	1.46	3.51	50.10	0.99	2.39	XX
AAHCV9		44.28	-0.16	-0.39	49.00	-0.11	-0.27	WO
AJ97XX		44.38	-0.06	-0.15	49.14	0.03	0.07	CL
BANCXT		43.44	-1.00	-2.42	48.44	-0.67	-1.62	MI
CF8G83		44.30	-0.14	-0.35	48.86	-0.25	-0.61	WI
CJYK6T		44.58	0.14	0.33	49.48	0.37	0.89	AN
CTRQHQ		44.18	-0.26	-0.63	49.02	-0.09	-0.22	WI
CV2QMZ		44.68	0.24	0.57	49.50	0.39	0.94	EM
CZBW4E		43.82	-0.62	-1.50	48.76	-0.35	-0.85	LE
D6BA7G		44.74	0.30	0.72	49.26	0.15	0.36	WI
D7NJY3		43.86	-0.58	-1.41	48.40	-0.71	-1.72	EM
DC7CVL		43.92	-0.52	-1.26	48.68	-0.43	-1.04	WI
DDV9D9		44.90	0.46	1.10	49.38	0.27	0.65	BU
DF4KRN	*	43.50	-0.94	-2.27	47.90	-1.21	-2.93	MI
DNFXBZ		44.82	0.38	0.91	49.38	0.27	0.65	WI
DP8F99		45.06	0.62	1.49	49.70	0.59	1.42	LE
DUU8LN		43.88	-0.56	-1.36	48.94	-0.17	-0.41	WI
E3C6RU		44.69	0.25	0.59	49.45	0.34	0.82	UN
E972TR		44.54	0.10	0.23	49.34	0.23	0.55	FU
EULZYY		43.90	-0.54	-1.31	48.46	-0.65	-1.57	WI
F3RAMT		44.40	-0.04	-0.10	49.16	0.05	0.12	MI
F8XGQV		44.04	-0.40	-0.97	49.02	-0.09	-0.22	NA
FVUMW6		44.10	-0.34	-0.83	48.84	-0.27	-0.65	CL
GDMTP6		44.38	-0.06	-0.15	49.18	0.07	0.17	LE
GG67AT		44.22	-0.22	-0.54	49.34	0.23	0.55	FI
HH9NLL		45.34	0.90	2.16	49.74	0.63	1.52	XX
HK4N7Y		44.68	0.24	0.57	49.50	0.39	0.94	WI
HLATFU		43.90	-0.54	-1.31	48.20	-0.91	-2.20	CL
HLBDXA		44.70	0.26	0.62	49.22	0.11	0.26	CL
HW2T4P		44.02	-0.42	-1.02	48.56	-0.55	-1.33	CL
J24RN9		44.48	0.04	0.09	49.22	0.11	0.26	WI
JHLMA4		44.46	0.02	0.04	49.42	0.31	0.75	WI
JL4YX8	X	49.48	5.04	12.14	53.58	4.47	10.80	NA

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
KZQDZY		44.56	0.12	0.28	49.00	-0.11	-0.27	IN
L76ZDV		44.02	-0.42	-1.02	48.76	-0.35	-0.85	XX
MK766T		44.68	0.24	0.57	49.24	0.13	0.31	UN
MUERZC		44.46	0.02	0.04	49.40	0.29	0.70	WI
NWTKJR	X	41.94	-2.50	-6.04	47.50	-1.61	-3.89	MA
P7U63R		44.24	-0.20	-0.49	48.44	-0.67	-1.62	XX
PMMQTD		44.76	0.32	0.76	49.40	0.29	0.70	IN
PQEXYE		44.58	0.14	0.33	49.12	0.01	0.02	NA
QHFEUJ	*	43.70	-0.74	-1.79	49.00	-0.11	-0.27	WI
RQRMG6		44.74	0.30	0.72	49.20	0.09	0.22	WI
RYPCXA		44.30	-0.14	-0.35	49.40	0.29	0.70	WI
T2WHDE		44.46	0.02	0.04	48.98	-0.13	-0.32	AK
U7LQ9K		44.70	0.26	0.62	49.00	-0.11	-0.27	WI
UA4P7U		44.80	0.36	0.86	49.42	0.31	0.75	MA
VEQQVL		44.72	0.28	0.67	49.34	0.23	0.55	BU
VPKKE9		45.06	0.62	1.49	49.20	0.09	0.22	WI
WRUP64		44.28	-0.16	-0.39	48.76	-0.35	-0.85	UN
Y94NM6		44.22	-0.22	-0.54	49.18	0.07	0.17	UN
YAN84N		45.08	0.64	1.54	49.68	0.57	1.38	WI
YH3UED		44.00	-0.44	-1.07	48.90	-0.21	-0.51	BU
YL7KND	*	45.52	1.08	2.60	50.12	1.01	2.44	NA
YXEAFN		44.42	-0.02	-0.06	49.00	-0.11	-0.27	WI
ZY9EMU		45.00	0.56	1.34	49.76	0.65	1.57	WI

Summary Statistics

	Sample E85	Sample E86
Grand Means	44.443 HRC	49.111 HRC
Std Dev Btwn Labs	0.415 HRC	0.414 HRC

Statistics based on 65 of 68 reporting participants

Samples E85 , E86 : steel (use C scale)

Comments on assigned Data Flags for Test #120

A8E7BF (X) - Inconsistent in testing between samples, data for Sample E85 are high.

JL4YX8 (X) - Data for both samples are high. Possible systematic error.

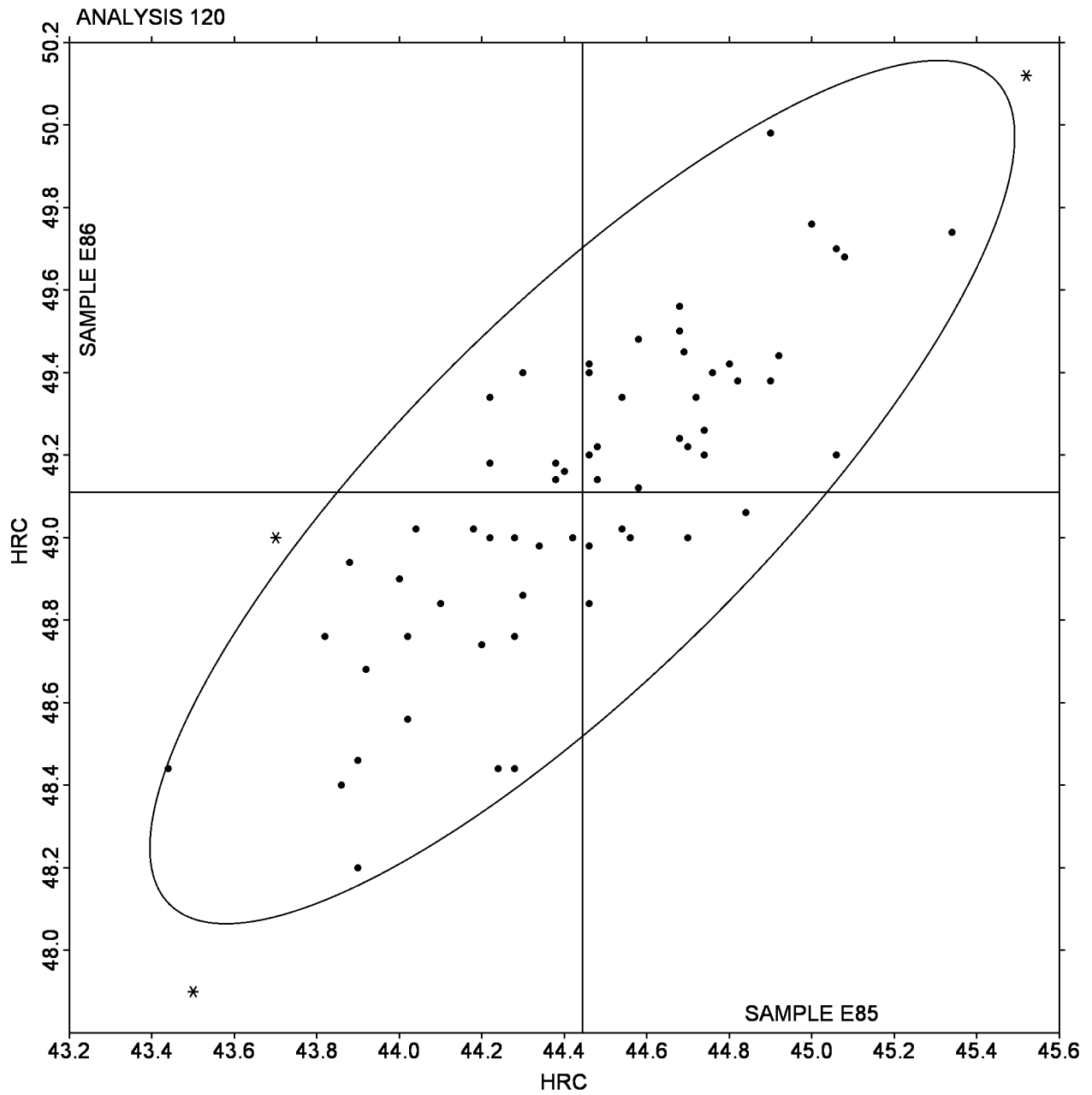
NWTKJR (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 120

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

SAMPLE E85 = 44.443 HRC SAMPLE E86 = 49.111 HRC



Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2UVX2W		66.4	0.4	0.60	68.7	-0.3	-0.41	WI
3EAMF6		66.2	0.2	0.36	68.4	-0.6	-0.90	WI
3GKL98		65.5	-0.4	-0.64	69.0	0.1	0.14	NA
3XU9FN		65.9	0.0	-0.06	69.5	0.5	0.82	UN
3YZ8G4	*	67.7	1.7	2.50	70.9	1.9	3.17	AN
46RK7X		66.2	0.2	0.33	69.5	0.5	0.89	WI
4J7GYR		66.5	0.5	0.78	69.5	0.6	0.93	WI
722R2L		65.5	-0.5	-0.73	68.6	-0.4	-0.61	WI
74JZYZ		67.1	1.1	1.67	69.2	0.3	0.47	NA
8CZC9R		66.3	0.3	0.48	68.6	-0.3	-0.51	NA
8DPBTW		64.5	-1.5	-2.21	68.5	-0.5	-0.80	WI
8GR8KC	X	64.5	-1.5	-2.18	66.0	-3.0	-4.81	DE
9GQ6HX		65.8	-0.2	-0.29	69.1	0.2	0.31	NA
AL9U98		66.5	0.5	0.72	69.4	0.4	0.73	WI
B8EG4Q		65.7	-0.3	-0.44	68.3	-0.7	-1.13	WI
BG6K76		66.5	0.5	0.72	68.8	-0.2	-0.25	UN
BMR2E4		65.0	-1.0	-1.50	68.5	-0.4	-0.70	WI
CBQFKU		66.2	0.2	0.30	69.1	0.2	0.27	XX
CDJC84		66.6	0.6	0.87	69.3	0.3	0.53	XX
DABX4P		66.1	0.2	0.25	69.2	0.2	0.40	IN
DAK39M		65.5	-0.5	-0.70	68.1	-0.8	-1.36	WI
DZH948		65.3	-0.7	-1.03	68.5	-0.4	-0.67	XX
ERHMFZ		66.1	0.1	0.22	69.3	0.3	0.57	BU
FG97WM		65.2	-0.8	-1.12	69.3	0.3	0.57	NA
FJ3EDP		67.1	1.1	1.67	69.0	0.0	0.08	WI
G3GG6N		65.5	-0.5	-0.73	68.3	-0.6	-1.03	CL
GCJKQR		66.0	0.0	-0.02	68.7	-0.3	-0.41	WI
HBBQM6		67.0	1.1	1.58	69.3	0.3	0.53	UN
JYUJMB		64.7	-1.3	-1.89	68.1	-0.9	-1.45	CL
K2Y8JY		66.0	0.0	0.01	69.6	0.6	0.99	CL
KT3GUH		65.5	-0.5	-0.73	68.1	-0.8	-1.32	WI
KUXAWA		66.1	0.1	0.16	68.8	-0.2	-0.31	WI
MZ89UW		65.7	-0.2	-0.35	69.4	0.5	0.76	UN
MZU4M8		65.5	-0.4	-0.64	68.3	-0.7	-1.13	UN
PBPRZL	X	47.1	-18.9	-27.96	49.5	-19.5	-31.69	WI
PRUTME	*	66.0	0.0	0.07	67.5	-1.5	-2.43	WI
Q7BU7A		65.4	-0.6	-0.85	69.0	0.0	0.08	WI
QGYPJW		66.4	0.4	0.63	69.4	0.4	0.70	WI
QZXD23		65.7	-0.3	-0.47	69.2	0.2	0.40	CL
RDBTWR		66.0	0.0	-0.02	69.4	0.5	0.80	LE
TEEJNK		66.6	0.6	0.96	69.6	0.7	1.12	WI
TFTDGM		65.4	-0.5	-0.79	68.6	-0.4	-0.61	WI
TPXY9E		66.0	0.0	0.04	69.0	0.1	0.14	LE
UUCDT6		66.2	0.2	0.30	68.9	-0.1	-0.15	WI
W6D8ML		65.6	-0.3	-0.50	69.2	0.2	0.34	FT

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E85			Sample E86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
W7FBUB		66.1	0.1	0.16	68.5	-0.4	-0.70	UN
WULFUF		65.1	-0.9	-1.30	68.4	-0.6	-0.90	WI
X89646		65.4	-0.6	-0.85	68.6	-0.3	-0.51	UN
YW77WX	*	67.7	1.7	2.50	70.5	1.5	2.52	WI

Summary Statistics

	Sample E85		Sample E86	
Grand Means	65.97	HR30N	68.95	HR30N
Stnd Dev Btwn Labs	0.67	HR30N	0.61	HR30N

Statistics based on 47 of 49 reporting participants

Samples E85 , E86 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

8GR8KC (X) - Low data for Sample E86 and inconsistent within the determinations for Sample E85.

PBPRZL (X) - Data were reported as Rockwell C scale values, instead of Rockwell 30N scale values.

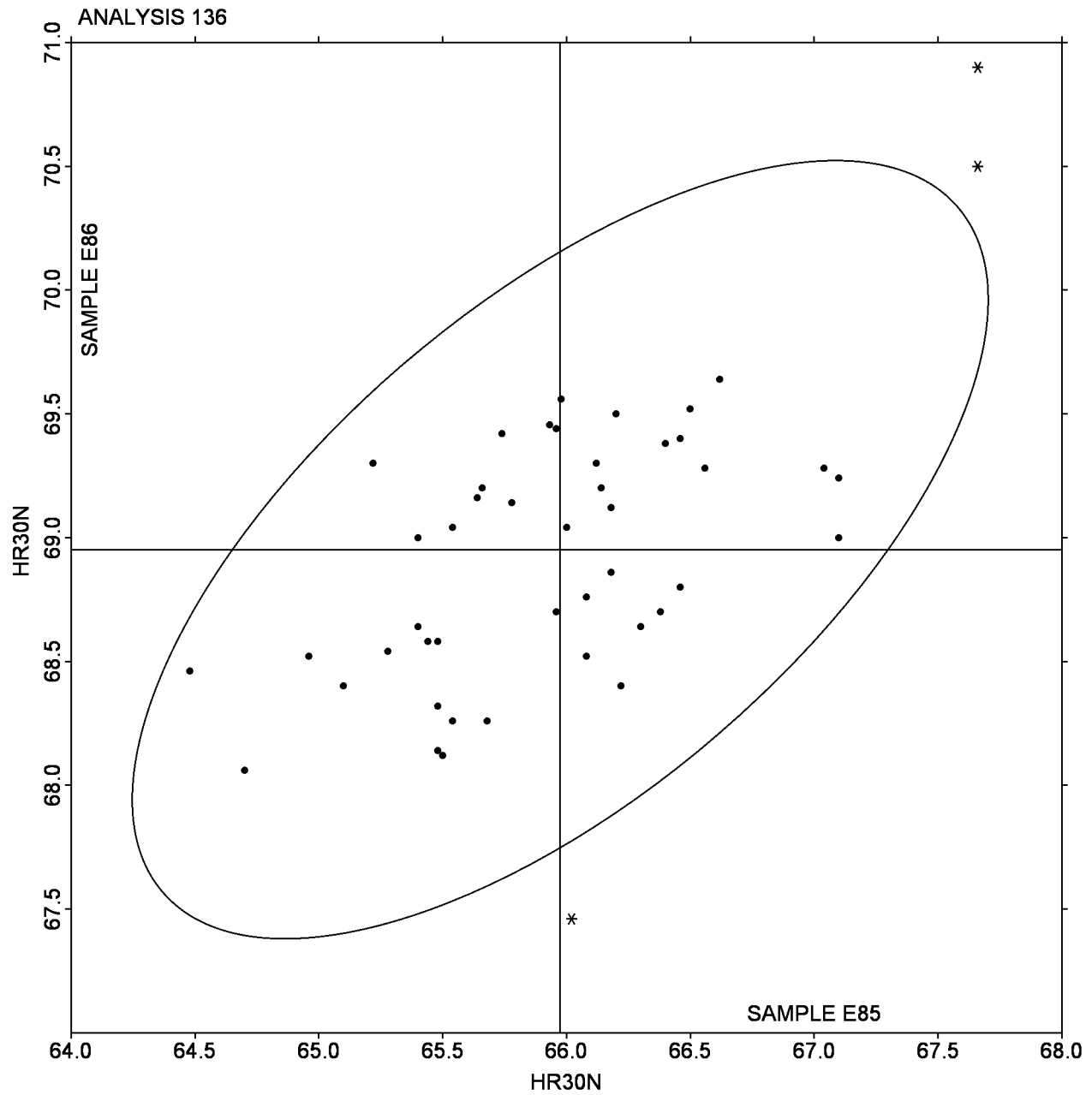
Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

SAMPLE E85 = 65.97 HR30N SAMPLe E86 = 68.95 HR30N



Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C85			Sample C86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27HPBQ		0.0179	0.0027	0.82	0.0365	0.0060	1.28	LE
2PDUP7		0.0165	0.0013	0.40	0.0324	0.0019	0.40	RE
3X3GVA		0.0160	0.0008	0.25	0.0298	-0.0008	-0.17	ON
7NPB8A		0.0109	-0.0043	-1.30	0.0250	-0.0056	-1.20	LC
82JT4F	*	0.0208	0.0056	1.71	0.0320	0.0014	0.31	XX
83CCMN		0.0201	0.0050	1.51	0.0347	0.0042	0.89	XX
8LK3F6		0.0226	0.0075	2.26	0.0412	0.0106	2.28	LC
8QQRLQ		0.0124	-0.0028	-0.84	0.0278	-0.0028	-0.60	ZE
9JFNQ4		0.0138	-0.0014	-0.42	0.0244	-0.0061	-1.32	LI
9NYPC2		0.0094	-0.0057	-1.73	0.0221	-0.0084	-1.82	BU
9TRXDP		0.0098	-0.0054	-1.63	0.0252	-0.0054	-1.16	WT
BLYW8N		0.0128	-0.0023	-0.71	0.0257	-0.0048	-1.04	BR
BWCVLB		0.0138	-0.0014	-0.41	0.0274	-0.0032	-0.68	WT
C3C8Q2		0.0177	0.0025	0.76	0.0342	0.0036	0.78	OL
CB2E9Y		0.0140	-0.0012	-0.35	0.0268	-0.0038	-0.81	LE
CRGRAD		0.0176	0.0024	0.74	0.0324	0.0018	0.39	XX
CRGT7U		0.0081	-0.0070	-2.14	0.0215	-0.0091	-1.95	OL
D66HW8		0.0161	0.0009	0.27	0.0331	0.0025	0.54	XX
DYNAM8V		0.0108	-0.0044	-1.32	0.0284	-0.0022	-0.47	BR
FILTUR		0.0174	0.0022	0.68	0.0335	0.0030	0.64	XX
HQ9KPX		0.0150	-0.0002	-0.05	0.0276	-0.0030	-0.64	SF
JPXZKV		0.0216	0.0065	1.96	0.0349	0.0044	0.94	OB
JYT839		0.0149	-0.0002	-0.07	0.0279	-0.0027	-0.58	OG
K8RPCN		0.0120	-0.0032	-0.96	0.0290	-0.0016	-0.34	ZA
KEM6TA		0.0134	-0.0018	-0.54	0.0276	-0.0029	-0.63	LE
KFYDYG		0.0128	-0.0024	-0.72	0.0281	-0.0024	-0.52	RE
KTAQGV	X	0.0008	-0.0144	-4.36	0.0173	-0.0132	-2.85	LC
LHLTTH		0.0180	0.0028	0.86	0.0380	0.0074	1.60	WT
LJXMJQ		0.0167	0.0015	0.47	0.0282	-0.0024	-0.52	LE
P788KE		0.0154	0.0002	0.07	0.0300	-0.0006	-0.13	ZU
QGKDMD		0.0144	-0.0007	-0.22	0.0298	-0.0008	-0.17	BU
QTKUZM		0.0165	0.0013	0.39	0.0329	0.0023	0.50	XX
RNLC7M		0.0138	-0.0014	-0.41	0.0326	0.0020	0.44	LE
U3TUTK		0.0137	-0.0015	-0.44	0.0300	-0.0006	-0.12	BU
UHB4VW		0.0193	0.0042	1.26	0.0396	0.0091	1.95	NI
UHT4QL		0.0154	0.0002	0.07	0.0328	0.0022	0.48	LE
UNQPJE		0.0143	-0.0008	-0.25	0.0312	0.0007	0.14	ZA
VP6B9A		0.0111	-0.0041	-1.24	0.0276	-0.0030	-0.65	ZX
WC69K7	X	0.0262	0.0110	3.33	0.0484	0.0178	3.84	NE
WMNWJW	*	0.0183	0.0032	0.97	0.0415	0.0109	2.35	OZ
XRN7QK		0.0168	0.0016	0.50	0.0280	-0.0026	-0.55	OL
Z28CTT		0.0160	0.0008	0.26	0.0320	0.0014	0.31	OL
Z78ZHA		0.0136	-0.0016	-0.47	0.0298	-0.0008	-0.17	ZA

Analysis 145

Total Case Depth
SAE J423, SAE J78

Summary Statistics

	Sample C85	Sample C86
Grand Means	0.01516 inch	0.03057 inch
Stnd Dev Btwn Labs	0.00330 inch	0.00465 inch
Statistics based on 41 of 43 reporting participants		

Samples C85 , C86 : AISI 8620**Comments on assigned Data Flags for Test #145**

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

WC69K7 (X) - Data for both samples are high.

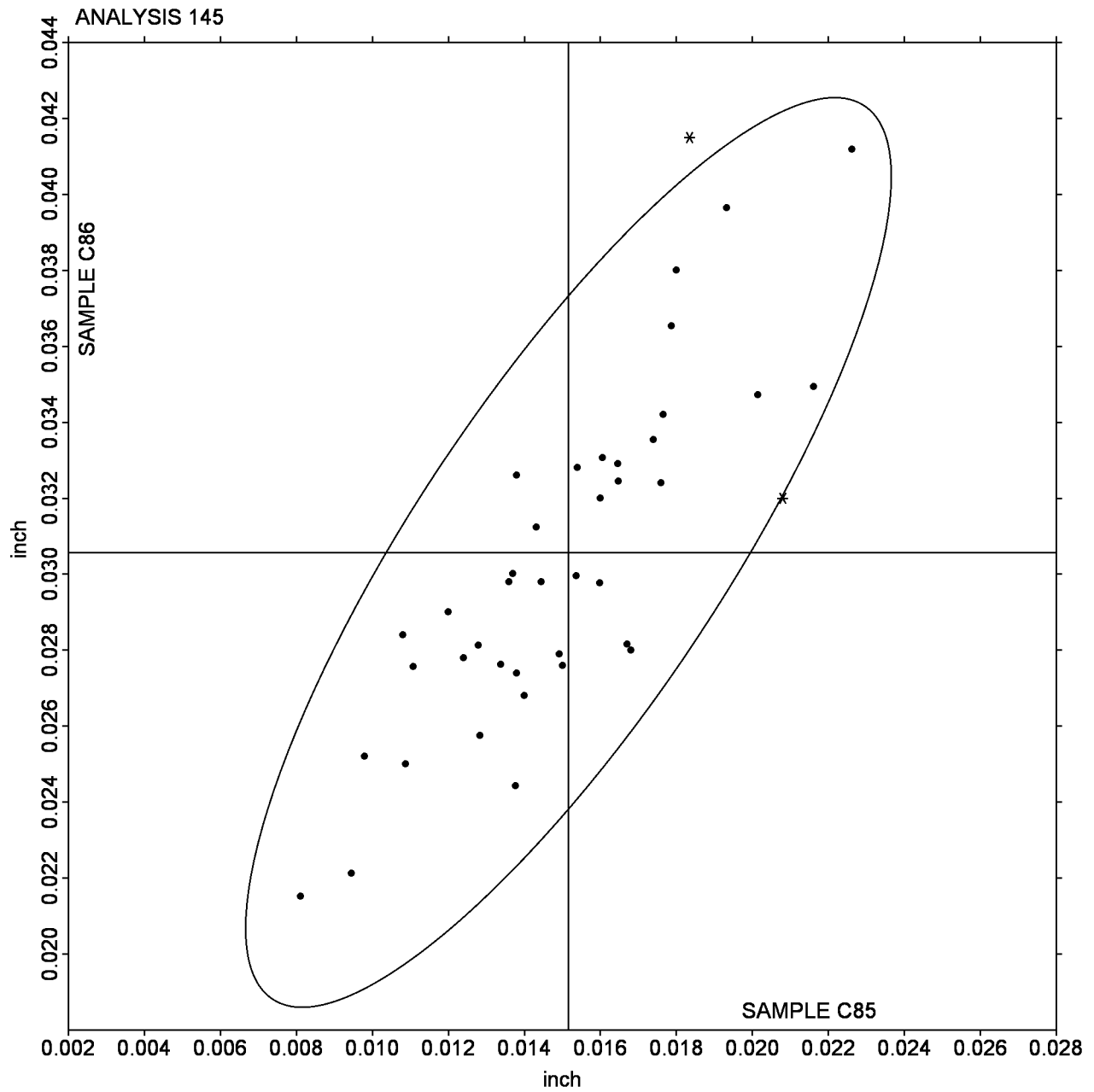
Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth
SAE J423, SAE J78

SAMPLE C85 = 0.01516 inch

SAMPLE C86 = 0.03057 inch



Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C85			Sample C86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2H9Q92		0.0113	-0.0010	-0.92	0.0275	-0.0001	-0.06	LE
2KA2BA	X	0.0128	0.0005	0.44	0.0236	-0.0040	-3.40	LI
2P4QJM		0.0126	0.0003	0.26	0.0266	-0.0010	-0.82	WT
2X73AX		0.0144	0.0021	1.87	0.0296	0.0020	1.75	WT
76VRT3	X	0.0070	-0.0053	-4.77	0.0146	-0.0130	-11.12	BU
77K7BK		0.0126	0.0002	0.22	0.0285	0.0010	0.85	LE
7F96PL		0.0126	0.0003	0.26	0.0262	-0.0014	-1.16	CM
7WX6VB		0.0119	-0.0004	-0.33	0.0277	0.0001	0.11	WT
84ALTA		0.0118	-0.0005	-0.46	0.0260	-0.0016	-1.34	BU
8QPF4A		0.0117	-0.0007	-0.59	0.0267	-0.0009	-0.74	NA
8XJD27		0.0130	0.0007	0.62	0.0272	-0.0004	-0.31	LE
9C6KYW		0.0122	-0.0001	-0.09	0.0277	0.0002	0.16	BU
9C6YNW		0.0106	-0.0017	-1.54	0.0258	-0.0018	-1.51	BU
9JEGH4	*	0.0090	-0.0033	-2.97	0.0268	-0.0008	-0.65	WT
B3T4J2		0.0114	-0.0009	-0.80	0.0269	-0.0006	-0.53	BU
B9FR2Z		0.0114	-0.0009	-0.82	0.0270	-0.0006	-0.48	BU
CJVK2Z	*	0.0130	0.0007	0.62	0.0310	0.0034	2.96	CM
CWWE2P		0.0116	-0.0007	-0.64	0.0258	-0.0018	-1.51	WT
DUDW2V	X	0.0093	-0.0030	-2.71	0.0226	-0.0050	-4.29	BU
EMUY2F		0.0120	-0.0003	-0.31	0.0270	-0.0005	-0.47	WT
F46P6X		0.0130	0.0007	0.62	0.0268	-0.0008	-0.65	BU
FEKUXH		0.0121	-0.0002	-0.17	0.0271	-0.0005	-0.40	WZ
GEC9QZ		0.0128	0.0005	0.44	0.0276	0.0000	0.04	AT
GRX4QZ		0.0132	0.0008	0.76	0.0266	-0.0010	-0.86	LC
HGVME9		0.0124	0.0001	0.08	0.0270	-0.0006	-0.48	BU
HLNR7P		0.0130	0.0007	0.62	0.0284	0.0008	0.72	NA
JDTREB		0.0122	-0.0001	-0.10	0.0260	-0.0016	-1.34	WT
JNL8UL		0.0110	-0.0013	-1.18	0.0278	0.0002	0.21	BU
KA2EY8		0.0128	0.0004	0.40	0.0293	0.0017	1.49	FU
LKUAHU		0.0104	-0.0019	-1.72	0.0256	-0.0020	-1.68	XX
LNF3PF		0.0138	0.0014	1.29	0.0273	-0.0002	-0.20	LE
MUPLPK		0.0126	0.0003	0.26	0.0270	-0.0006	-0.51	SH
MWGFTG		0.0125	0.0002	0.19	0.0282	0.0006	0.54	MA
N3WAUP		0.0140	0.0017	1.53	0.0294	0.0018	1.56	XX
N7DH6H		0.0134	0.0011	0.96	0.0287	0.0011	0.95	LE
NEHDGG		0.0133	0.0010	0.89	0.0303	0.0027	2.35	BU
PUDD3V		0.0133	0.0010	0.89	0.0288	0.0013	1.08	XX
PWN6MX		0.0110	-0.0013	-1.18	0.0274	-0.0002	-0.13	BU
QUZKJK		0.0135	0.0012	1.11	0.0278	0.0002	0.21	FU
U3F2CN		0.0136	0.0013	1.17	0.0280	0.0004	0.34	XX
U3T8L2		0.0149	0.0026	2.31	0.0292	0.0017	1.42	ST
U422QT		0.0122	-0.0001	-0.10	0.0278	0.0002	0.21	LE
UJGH94	X	0.0065	-0.0058	-5.22	0.0194	-0.0082	-7.00	CL
VCRF9C		0.0106	-0.0017	-1.54	0.0270	-0.0006	-0.48	BU
WRMFXC		0.0116	-0.0007	-0.64	0.0276	0.0000	0.04	CL

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C85			Sample C86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X6ZFLP	X	0.0180	0.0057	5.10	0.0250	-0.0026	-2.19	LE
XAC9U4		0.0113	-0.0010	-0.87	0.0277	0.0002	0.14	CL
XQQ3RH		0.0116	-0.0007	-0.64	0.0272	-0.0004	-0.31	LC
YJWYUY		0.0122	-0.0001	-0.10	0.0275	-0.0001	-0.07	CM
YV6WHY		0.0124	0.0001	0.08	0.0274	-0.0002	-0.13	WT
Z2M8AN		0.0126	0.0003	0.26	0.0272	-0.0004	-0.31	XX

Summary Statistics

	Sample C85	Sample C86
Grand Means	0.01231 inch	0.02756 inch
Std Dev Btwn Labs	0.00111 inch	0.00117 inch

Statistics based on 46 of 51 reporting participants

Samples C85 , C86 : AISI 8620

Comments on assigned Data Flags for Test #146

2KA2BA (X) - Low data for Sample C86.

76VRT3 (X) - Data for both samples are low.

DUDW2V (X) - Data for both samples are low.

UJGH94 (X) - Data for both samples are low.

X6ZFLP (X) - High data for Sample C85 and inconsistent within the determinations for Sample C85.

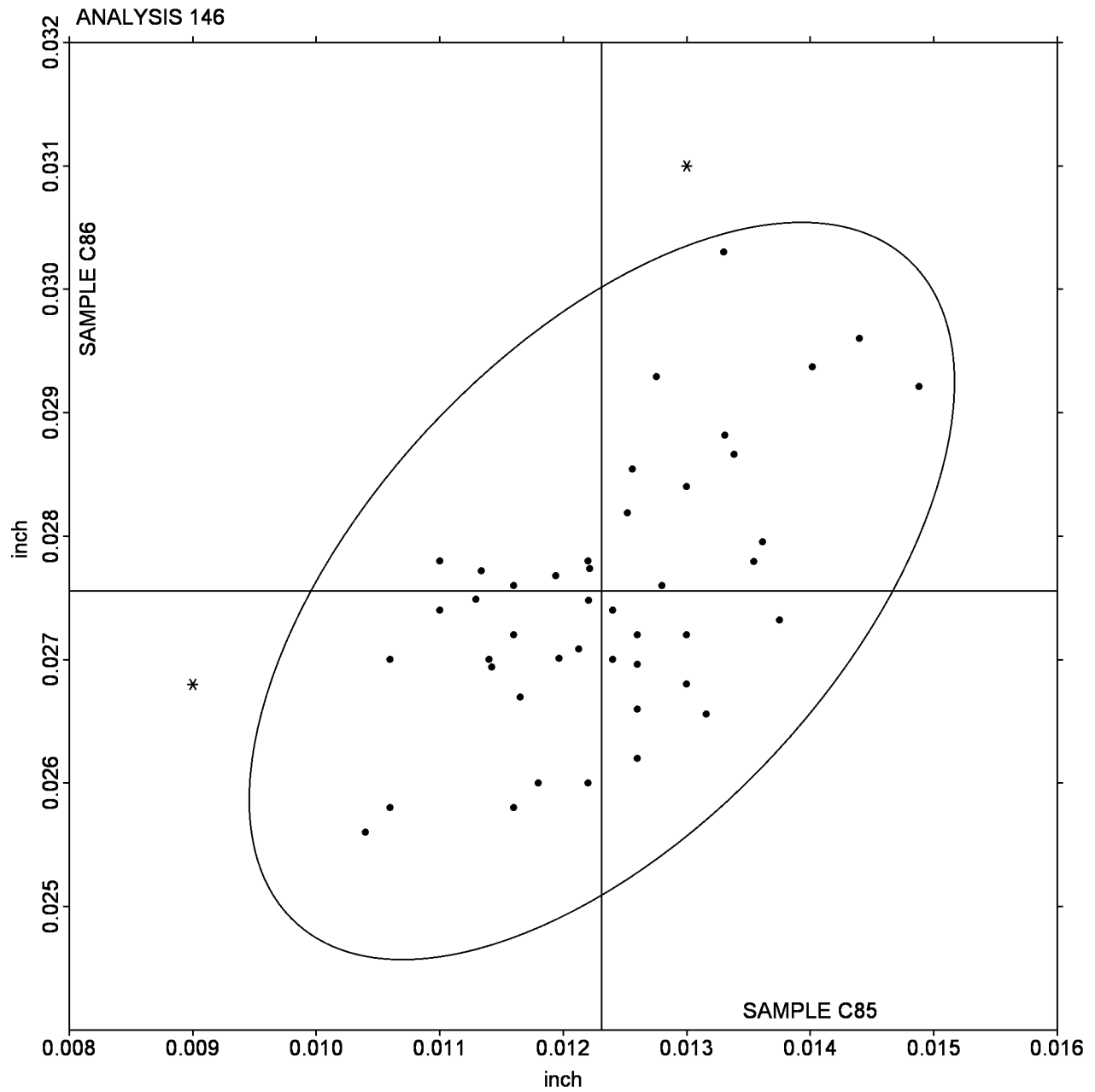
Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

SAMPLE C85 = 0.01231 inch SAMPLE C86 = 0.02756 inch



Interlaboratory Testing Program for Metals

Analysis 150

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

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2KJTPD	*	17.82	-0.46	-2.48	17.76	-0.58	-3.11	OE
2ZMWMC		18.27	-0.01	-0.06	18.45	0.11	0.57	OE
3AEMBK		18.16	-0.12	-0.65	18.25	-0.09	-0.48	OE
3BEAV8		18.33	0.05	0.28	18.48	0.14	0.75	OE
4MLFLZ		18.27	-0.01	-0.06	18.27	-0.08	-0.40	OE
63P2XF		18.30	0.02	0.10	18.36	0.02	0.11	DR
7L86T9		18.33	0.05	0.26	18.40	0.06	0.32	WD
8QQL2		18.33	0.05	0.28	18.40	0.06	0.31	IC
9T397G		18.65	0.37	1.98	18.75	0.41	2.17	XX
AQTXR6		18.31	0.03	0.14	18.33	-0.02	-0.08	OE
AWYCB8		18.43	0.15	0.80	18.39	0.05	0.25	IC
BHYBBX		18.28	-0.01	-0.03	18.31	-0.03	-0.16	OE
CDDDYF		18.53	0.25	1.34	18.60	0.26	1.39	OE
E92NTP	X	16.75	-1.53	-8.25	16.99	-1.35	-7.21	OE
F346TQ	*	18.64	0.36	1.95	18.50	0.15	0.82	ED
FDTNV7		18.27	-0.01	-0.04	18.31	-0.03	-0.16	WD
H4VYL8	X	18.93	0.65	3.49	19.22	0.88	4.70	OE
JF6P9D	*	17.87	-0.41	-2.23	18.07	-0.28	-1.47	OE
K69B9N		18.38	0.09	0.51	18.47	0.13	0.67	WD
L6PM66		18.19	-0.09	-0.47	18.25	-0.09	-0.48	XR
M3FT7J		18.32	0.04	0.19	18.37	0.03	0.15	WD
M8N39L		18.13	-0.15	-0.80	18.19	-0.15	-0.80	DR
PYCLW7		18.33	0.05	0.26	18.47	0.12	0.66	XR
TQGDKW		18.39	0.11	0.60	18.52	0.18	0.96	OE
TVZXXH		18.31	0.03	0.18	18.35	0.00	0.01	WD
UC4A4L		18.17	-0.11	-0.58	18.21	-0.13	-0.71	OE
VBLUWX		18.18	-0.10	-0.54	18.27	-0.07	-0.37	XX
YRVGLH		18.11	-0.17	-0.90	18.16	-0.18	-0.96	IC

Summary Statistics

	Sample J85		Sample J86	
Grand Means	18.281	Percent	18.343	Percent
Stnd Dev Btwn Labs	0.186	Percent	0.188	Percent

Statistics based on 26 of 28 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #150

E92NTP (X) - Data for both samples are low. Possible systematic error.

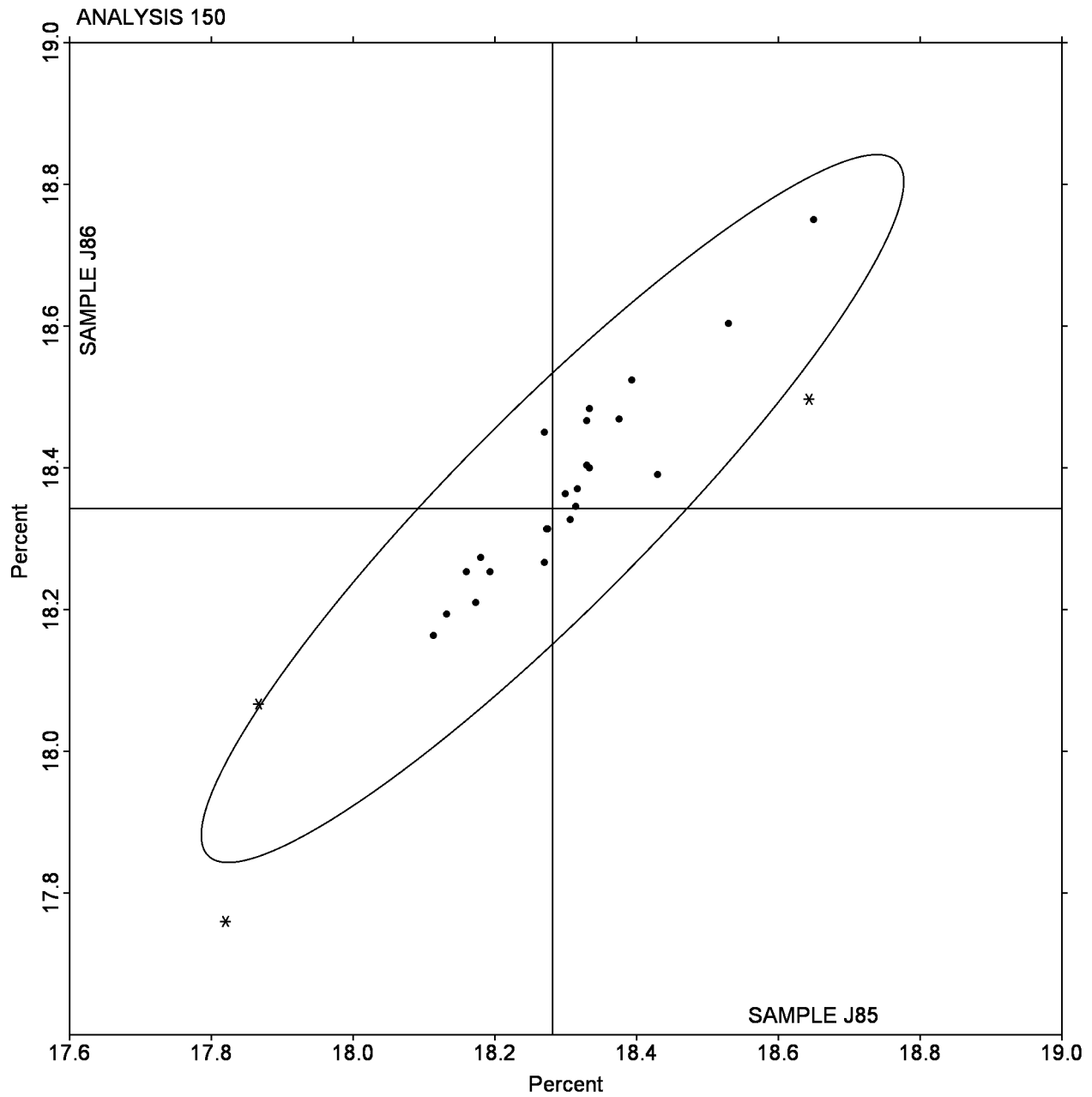
H4VYL8 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 150

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

SAMPLE J85 = 18.281 Percent SAMPLe J86 = 18.343 Percent



Interlaboratory Testing Program for Metals

Analysis 151

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

NICKEL (Ni)

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2867R8		53.45	-0.03	-0.10	53.38	0.00	-0.01	WD
3MT3Q9		52.90	-0.58	-2.07	52.80	-0.58	-1.86	OE
442GRG		53.60	0.13	0.46	53.61	0.23	0.73	DR
6MBAZW	X	55.58	2.10	7.55	55.11	1.73	5.55	OE
92CQDU		53.04	-0.44	-1.58	52.98	-0.40	-1.28	XX
AWVTAW	X	54.43	0.95	3.42	53.78	0.40	1.27	ED
BNNAP7		53.51	0.03	0.12	53.33	-0.05	-0.16	BD
CQTXLU		53.53	0.06	0.21	53.43	0.05	0.17	IC
FJDPTA		53.80	0.32	1.16	53.70	0.32	1.02	XX
GZYQ8D		53.54	0.06	0.23	53.49	0.11	0.35	WD
HB2XQN		53.61	0.13	0.48	53.59	0.21	0.66	WD
HME6FW		53.94	0.46	1.67	53.90	0.52	1.65	OE
HRYE2M		53.66	0.18	0.65	53.38	0.00	-0.01	WD
J2U9RH		53.43	-0.05	-0.17	53.36	-0.02	-0.07	BD
JB66MV		53.44	-0.04	-0.14	53.41	0.03	0.10	WD
PXZY9Q		53.30	-0.18	-0.63	53.20	-0.18	-0.58	OE
QA7VKJ		53.27	-0.21	-0.75	53.17	-0.21	-0.69	OE
QN3AKD		54.06	0.58	2.10	54.01	0.63	2.02	BD
RBV8RB		53.64	0.16	0.58	53.43	0.05	0.15	XR
VP62UC		53.24	-0.24	-0.85	53.01	-0.37	-1.18	DR
WU4LVT	*	53.52	0.05	0.17	53.70	0.32	1.01	BD
XW7BTN		53.43	-0.04	-0.15	53.27	-0.11	-0.37	OE
YMBRPX		53.03	-0.44	-1.59	52.80	-0.58	-1.86	OE
YNW6QH		53.54	0.06	0.23	53.44	0.06	0.20	IC

Summary Statistics

	Sample J85		Sample J86	
Grand Means	53.476	Percent	53.381	Percent
Stnd Dev Btwn Labs	0.278	Percent	0.312	Percent

Statistics based on 22 of 24 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #151

6MBAZW (X) - Data for both samples are high. Possible systematic error.

AWVTAW (X) - Inconsistent in testing between samples, data for Sample J85 are high.

Interlaboratory Testing Program for Metals

Analysis 152

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

IRON (Fe)

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2474XY	X	18.39	0.60	6.14	18.65	0.60	5.92	XX
3RHTLK		17.81	0.03	0.27	17.85	-0.20	-1.94	OE
3YN9LR		17.99	0.21	2.11	18.14	0.09	0.93	ED
46HDKG		17.80	0.02	0.16	17.98	-0.06	-0.59	DR
7A3GYN	X	18.60	0.81	8.33	18.97	0.92	9.01	OE
7DDYZ8		17.79	0.00	0.03	18.10	0.06	0.57	WD
7NT22Y		17.83	0.04	0.42	18.07	0.03	0.29	DR
8DFL8K		17.79	0.00	-0.01	18.02	-0.03	-0.25	WD
A3NBNV		17.72	-0.07	-0.69	18.00	-0.05	-0.44	WD
AFWCME		17.59	-0.19	-1.99	17.89	-0.15	-1.48	XX
DP2UAY		17.80	0.02	0.17	17.99	-0.06	-0.54	OE
E74Y8V		17.87	0.09	0.88	18.11	0.07	0.67	OE
F3BM9P		17.73	-0.05	-0.55	18.10	0.05	0.54	IC
GCDTKX		17.66	-0.13	-1.34	18.03	-0.01	-0.12	OE
GJLYYT		17.85	0.07	0.69	17.96	-0.09	-0.88	WD
H6E6EP		17.81	0.02	0.19	18.08	0.03	0.32	WD
KCQKDG		17.87	0.08	0.81	18.17	0.12	1.22	XR
LQXK7E	X	16.45	-1.33	-13.67	17.00	-1.05	-10.22	OE
LRNZMU		17.78	-0.01	-0.11	18.26	0.21	2.10	IC
M9D9WK		17.75	-0.04	-0.36	18.03	-0.01	-0.10	OE
MQJQL3		17.71	-0.08	-0.83	18.00	-0.04	-0.41	XR
P4CE3V		17.76	-0.02	-0.24	18.03	-0.02	-0.15	OE
QNPXMP		17.93	0.14	1.46	18.21	0.16	1.61	OE
RB8FNA		17.62	-0.17	-1.75	17.90	-0.15	-1.45	OE
XEC2X3		17.90	0.11	1.12	18.06	0.02	0.18	OE
YJ2BTG		17.66	-0.13	-1.30	17.93	-0.12	-1.13	IC
ZHZELD		17.87	0.08	0.85	18.15	0.11	1.06	OE

Summary Statistics

	Sample J85		Sample J86	
Grand Means	17.787	Percent	18.045	Percent
Stnd Dev Btwn Labs	0.098	Percent	0.102	Percent

Statistics based on 24 of 27 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #152

2474XY (X) - Data for both samples are high. Possible systematic error.

7A3GYN (X) - Data for both samples are high and inconsistent within the determinations for Sample J85.

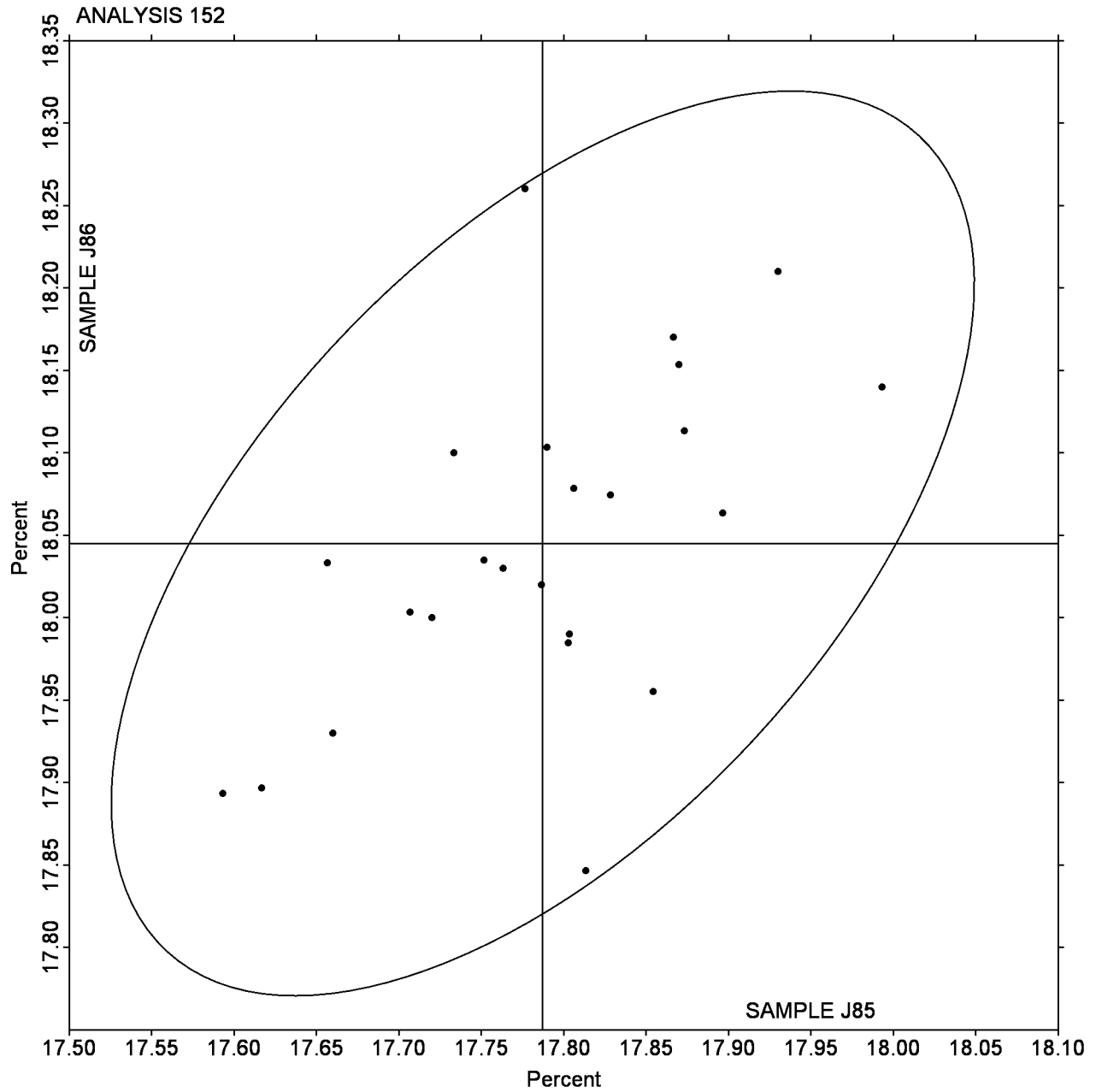
LQXK7E (X) - Data for both samples are low and inconsistent within the determinations for Sample J85.

Interlaboratory Testing Program for Metals

Analysis 152

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

SAMPLE J85 = 17.787 Percent SAMPLE J86 = 18.045 Percent



Interlaboratory Testing Program for Metals

Analysis 153

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

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2KBHJM		3.010	-0.019	-0.55	3.030	-0.024	-0.70	XX
2TYPDK		3.031	0.001	0.04	3.033	-0.021	-0.62	OE
3949W4		3.020	-0.009	-0.26	3.037	-0.017	-0.50	IC
3EYU6H		3.033	0.004	0.12	3.067	0.013	0.38	OE
3FDWVB		3.000	-0.029	-0.83	3.040	-0.014	-0.40	OE
3R66EP		2.983	-0.046	-1.31	3.023	-0.030	-0.90	ED
4GDN4A		3.026	-0.003	-0.09	3.059	0.005	0.16	WD
6LMMW9		3.102	0.072	2.06	3.138	0.084	2.48	OE
6X9M7H	X	2.953	-0.076	-2.17	3.053	-0.001	-0.02	OE
768PTE	*	3.083	0.054	1.54	3.067	0.013	0.38	OE
7ZL2JN		3.036	0.006	0.18	3.062	0.009	0.25	WD
9Y3EF6		3.023	-0.006	-0.17	3.053	0.000	-0.01	XR
AAJZ3R		3.088	0.058	1.66	3.130	0.076	2.24	OE
BHZFZL		2.973	-0.056	-1.59	3.017	-0.037	-1.09	OE
CUKNPZ		3.008	-0.021	-0.59	3.032	-0.021	-0.63	OE
CXBBKT		3.021	-0.009	-0.25	3.052	-0.001	-0.04	OE
D6TWLW		3.037	0.008	0.22	3.066	0.012	0.35	OE
E8Q647		3.053	0.024	0.68	3.051	-0.003	-0.08	DR
EA6PAM		3.013	-0.016	-0.45	3.040	-0.014	-0.40	XR
EUJD8Z		3.031	0.002	0.06	3.069	0.015	0.45	IC
EWJ4EU		3.032	0.003	0.09	3.039	-0.015	-0.43	WD
GR6LDC		3.013	-0.016	-0.45	3.030	-0.023	-0.69	WD
JDTHJK		3.073	0.044	1.26	3.100	0.046	1.37	WD
JXQDTU		3.013	-0.016	-0.45	3.050	-0.004	-0.11	IC
LLEXAF		2.943	-0.086	-2.44	2.970	-0.084	-2.47	XX
UBXB37	X	3.257	0.227	6.47	3.307	0.253	7.46	OE
VR98E4		3.055	0.026	0.74	3.079	0.026	0.76	OE
WBY6BA		3.056	0.027	0.77	3.063	0.009	0.26	DR

Summary Statistics

	Sample J85		Sample J86	
Grand Means	3.0292	Percent	3.0537	Percent
Std Dev Btwn Labs	0.0351	Percent	0.0339	Percent

Statistics based on 26 of 28 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #153

6X9M7H (X) - Inconsistent in testing between samples and inconsistent within the determinations for both samples.

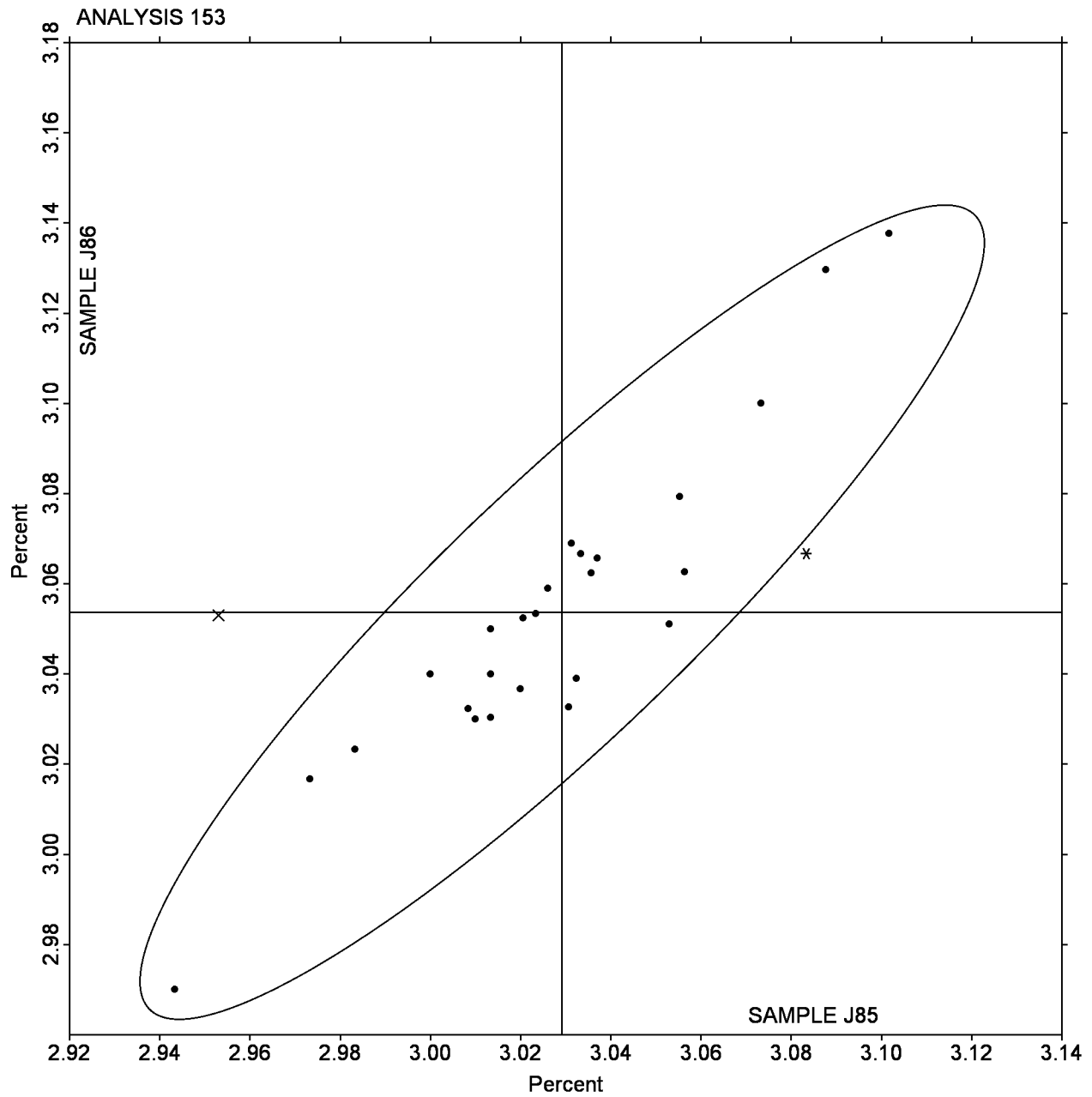
UBXB37 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 153

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

SAMPLE J85 = 3.0292 Percent SAMPLe J86 = 3.0537 Percent



Interlaboratory Testing Program for Metals

Analysis 154

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

ALUMINUM (Al)

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24WFBL		0.514	0.004	0.25	0.542	0.013	0.72	OE
2QUXNR		0.509	-0.001	-0.03	0.530	0.001	0.03	WD
32K6P2		0.521	0.012	0.67	0.528	-0.001	-0.06	IC
3PZ9EX		0.508	-0.002	-0.08	0.524	-0.005	-0.30	XX
4UUNEF		0.511	0.002	0.12	0.533	0.004	0.20	DR
8E3B6B		0.520	0.011	0.60	0.540	0.011	0.59	OE
B2BZNV		0.525	0.015	0.84	0.525	-0.004	-0.22	OE
CV2KHY		0.503	-0.007	-0.36	0.530	0.001	0.03	OE
CV8GWA		0.505	-0.004	-0.23	0.530	0.000	0.01	OE
DZPNMG		0.514	0.004	0.25	0.547	0.018	1.00	DR
ELMNE6		0.522	0.013	0.71	0.539	0.009	0.51	OE
G93NCU		0.500	-0.009	-0.51	0.522	-0.007	-0.41	WD
GATQZV		0.507	-0.003	-0.14	0.527	-0.003	-0.15	IC
GBRT6R		0.512	0.003	0.16	0.526	-0.004	-0.20	WD
LR82D6		0.489	-0.020	-1.10	0.513	-0.016	-0.91	WD
PGP2JC		0.522	0.013	0.72	0.537	0.008	0.44	OE
PL7HJP		0.510	0.001	0.04	0.535	0.006	0.31	OE
RKAQVA	*	0.553	0.044	2.43	0.553	0.024	1.33	OE
RQ764G		0.489	-0.021	-1.13	0.510	-0.020	-1.10	OE
VCE6UY		0.512	0.003	0.15	0.535	0.006	0.33	DR
VDQYE6		0.520	0.011	0.60	0.540	0.011	0.59	XR
VKGLUR		0.506	-0.003	-0.16	0.524	-0.005	-0.30	XX
WRENJ9	*	0.459	-0.050	-2.75	0.475	-0.055	-3.05	OE
X7HW62		0.466	-0.043	-2.38	0.485	-0.044	-2.45	OE
XQBCP7	*	0.512	0.003	0.17	0.555	0.026	1.44	WD
YCQ8JF		0.523	0.014	0.78	0.547	0.018	1.00	IC
YGWRYE		0.516	0.007	0.38	0.541	0.012	0.64	OE

Summary Statistics

	Sample J85		Sample J86	
Grand Means	0.5092	Percent	0.5294	Percent
Stnd Dev Btwn Labs	0.0181	Percent	0.0180	Percent

Statistics based on 27 of 27 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Analysis Notes for Test #154

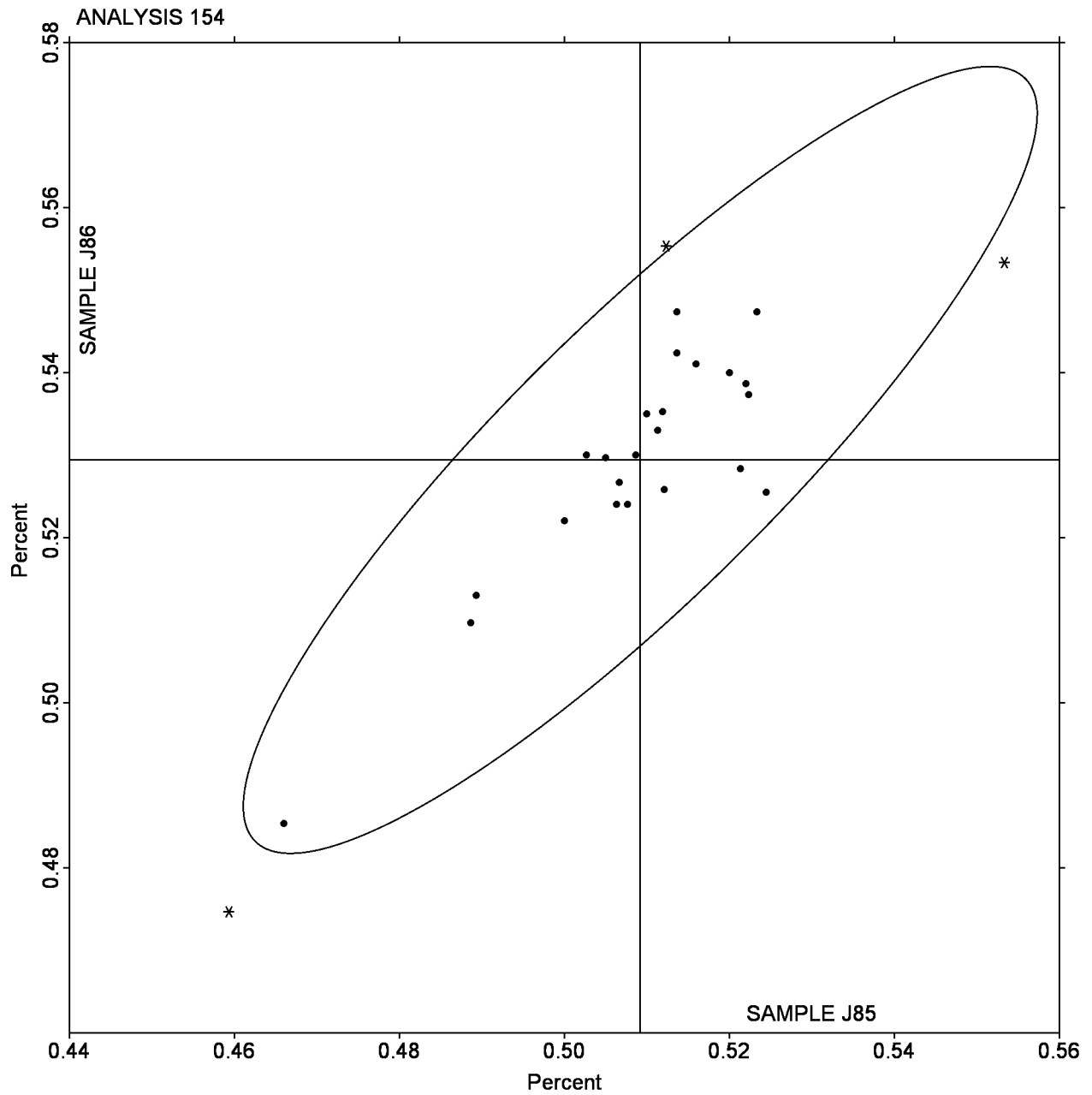
No overall flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

Analysis 154

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

SAMPLE J85 = 0.5092 Percent SAMPLE J86 = 0.5294 Percent



Interlaboratory Testing Program for Metals

Analysis 155

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

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2B3GZZ		0.072	-0.011	-1.00	0.036	-0.022	-1.76	OE
2CGCPL		0.085	0.002	0.23	0.046	-0.012	-0.93	XX
2K6GTU		0.085	0.003	0.26	0.054	-0.004	-0.32	OE
2QGTEF		0.083	0.001	0.06	0.081	0.024	1.91	WD
3YVDHH		0.058	-0.025	-2.32	0.046	-0.011	-0.92	DR
464MEP		0.065	-0.018	-1.69	0.052	-0.005	-0.42	OE
6HEPX8		0.087	0.004	0.39	0.067	0.010	0.78	WD
7EMWDN		0.097	0.014	1.35	0.070	0.013	1.01	DR
9R99L4		0.092	0.009	0.86	0.060	0.003	0.22	XR
ABV4NP		0.087	0.005	0.45	0.062	0.004	0.35	OE
CR6FZT		0.081	-0.002	-0.19	0.046	-0.012	-0.92	OE
DAPJG6		0.094	0.011	1.05	0.078	0.020	1.60	OE
EFDHNX		0.089	0.007	0.64	0.070	0.012	0.96	OE
F9HPEW		0.067	-0.016	-1.50	0.048	-0.010	-0.77	IC
FYHPUH		0.095	0.013	1.21	0.073	0.016	1.26	OE
FZF8JL		0.083	0.000	0.04	0.056	-0.002	-0.13	OE
MXAD2P		0.085	0.002	0.20	0.053	-0.005	-0.40	OE
N34K6G	X	0.009	-0.074	-6.98	0.002	-0.056	-4.45	OE
QLBQDG		0.085	0.003	0.24	0.058	0.000	0.00	OE
RFDYPX	X	0.170	0.087	8.26	0.140	0.082	6.59	OE
RFR7FZ		0.097	0.015	1.40	0.070	0.012	0.96	DR
WW8TBT		0.082	-0.001	-0.05	0.055	-0.002	-0.18	WD
X2M8H3		0.073	-0.010	-0.90	0.040	-0.018	-1.44	OE
Z6CC4K		0.074	-0.008	-0.77	0.047	-0.011	-0.87	OE

Summary Statistics

	Sample J85		Sample J86	
Grand Means	0.0825	Percent	0.0576	Percent
Stnd Dev Btwn Labs	0.0106	Percent	0.0125	Percent

Statistics based on 22 of 24 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #155

N34K6G (X) - Data for both samples are low and inconsistent within the determinations for Sample J85.

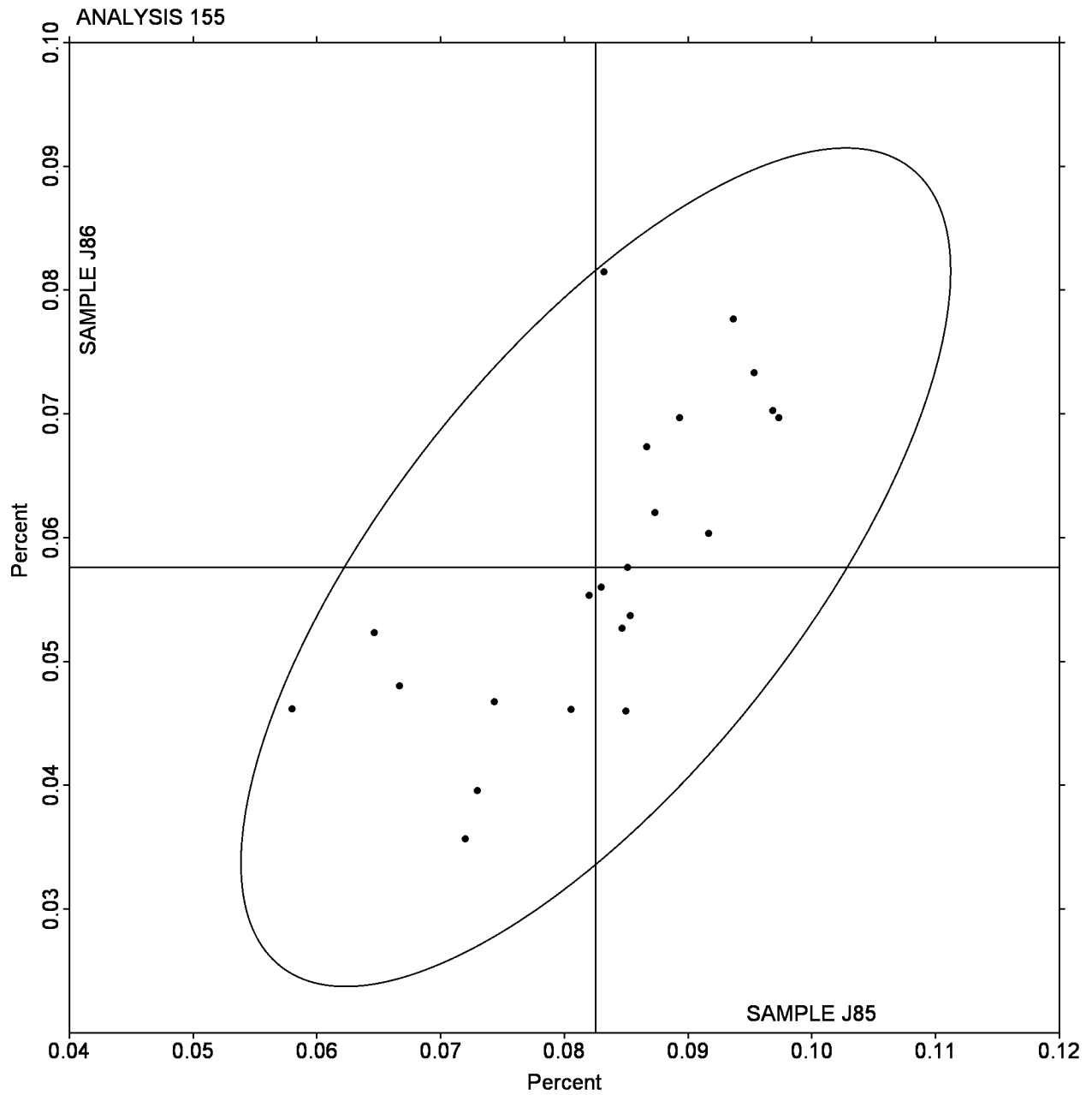
RFDYPX (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 155

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

SAMPLE J85 = 0.0825 Percent SAMPLe J86 = 0.0576 Percent



Interlaboratory Testing Program for Metals

Analysis 156

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

TITANIUM (Ti)

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
47QUBY		0.897	-0.019	-1.22	0.910	-0.035	-1.94	OE
6DJVZ7		0.892	-0.024	-1.52	0.927	-0.018	-1.01	WD
7BD27D		0.937	0.021	1.36	0.970	0.025	1.41	DR
7CJW2B		0.923	0.008	0.48	0.943	-0.002	-0.09	OE
7H42RQ		0.928	0.013	0.80	0.954	0.009	0.50	OE
846WZR		0.910	-0.006	-0.37	0.950	0.005	0.28	XR
8FM6ML		0.920	0.004	0.26	0.951	0.006	0.34	OE
96MXFR		0.927	0.012	0.74	0.955	0.010	0.54	OE
9Y92ZC		0.890	-0.026	-1.65	0.930	-0.015	-0.83	XX
CM9DX9		0.897	-0.019	-1.22	0.927	-0.018	-0.98	OE
DUADX8	X	1.115	0.200	12.75	1.149	0.204	11.33	OE
KE2DFW		0.922	0.007	0.42	0.934	-0.011	-0.61	WD
KPNMA6		0.912	-0.003	-0.22	0.947	0.002	0.13	WD
LA9CB2	X	1.003	0.088	5.59	1.030	0.085	4.72	OE
M8A9FK		0.926	0.010	0.63	0.949	0.004	0.22	OE
PKRPF4		0.904	-0.012	-0.77	0.925	-0.020	-1.12	WD
PMM78H		0.931	0.015	0.95	0.940	-0.005	-0.29	OE
QP83ZL		0.912	-0.004	-0.26	0.945	0.000	0.02	IC
RVNY3A		0.938	0.022	1.42	0.951	0.006	0.34	OE
T7WBMG		0.915	-0.001	-0.05	0.947	0.002	0.11	XR
UT4XZ7		0.927	0.011	0.72	0.959	0.014	0.78	WD
UUWV6R	*	0.950	0.034	2.19	1.000	0.055	3.05	IC
V4KZ2X		0.920	0.004	0.24	0.948	0.003	0.16	DR
VK6D7U		0.904	-0.012	-0.75	0.939	-0.006	-0.31	DR
WFJJ6G		0.915	-0.001	-0.05	0.947	0.002	0.11	IC
YJ9XPA		0.903	-0.013	-0.84	0.958	0.013	0.72	OE
ZN77WV		0.895	-0.020	-1.30	0.917	-0.028	-1.53	OE

Summary Statistics

	Sample J85		Sample J86	
Grand Means	0.9158	Percent	0.9450	Percent
Stnd Dev Btwn Labs	0.0157	Percent	0.0180	Percent

Statistics based on 25 of 27 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #156

DUADX8 (X) - Data for both samples are high. Possible systematic error.

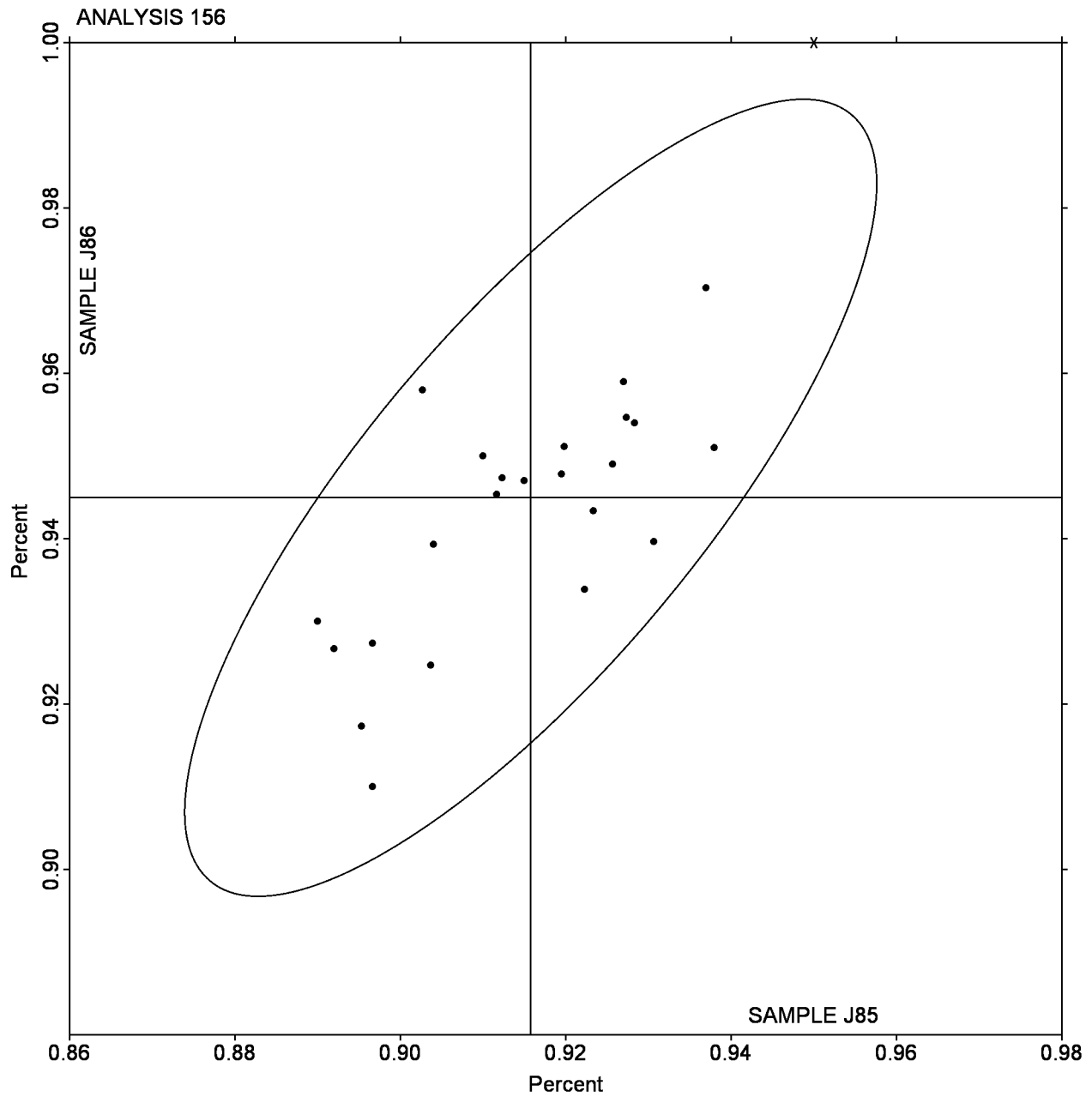
LA9CB2 (X) - Data for both samples are high and inconsistent within the determinations for Sample J85.

Interlaboratory Testing Program for Metals

Analysis 156

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

SAMPLE J85 = 0.9158 Percent SAMPLe J86 = 0.9450 Percent



Interlaboratory Testing Program for Metals

Analysis 157

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

WebCode	Data Flag	Sample J85			Sample J86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
238C7Y		5.290	-0.038	-0.62	5.117	-0.030	-0.40	XR
3C4N2K	X	5.730	0.402	6.55	5.487	0.340	4.47	OE
4ZNUKQ		5.357	0.030	0.48	5.120	-0.027	-0.35	OE
66LP4B		5.327	-0.001	-0.02	5.107	-0.040	-0.53	OE
7LLZ7M		5.294	-0.034	-0.55	5.078	-0.069	-0.90	WD
AQ922B		5.240	-0.087	-1.42	5.107	-0.040	-0.53	OE
B9QLD2		5.320	-0.008	-0.13	5.127	-0.020	-0.27	XR
BWQ86N		5.299	-0.028	-0.46	5.106	-0.041	-0.53	WD
C9722A		5.320	-0.008	-0.13	5.090	-0.057	-0.75	XX
CQQL8R		5.450	0.122	1.99	5.150	0.003	0.04	OE
FVYBQH		5.437	0.110	1.78	5.285	0.138	1.82	OE
JW766T		5.277	-0.051	-0.83	5.060	-0.087	-1.14	WD
JWEDJV		5.295	-0.033	-0.54	5.071	-0.076	-1.00	WD
NN34ZH		5.260	-0.068	-1.10	5.210	0.063	0.83	OE
NQFHZW		5.323	-0.004	-0.07	5.137	-0.010	-0.14	IC
PK9RC2		5.287	-0.041	-0.67	5.093	-0.054	-0.71	ED
Q7QH2A		5.287	-0.041	-0.67	5.107	-0.040	-0.53	IC
URWLEN		5.326	-0.002	-0.03	5.289	0.142	1.87	WD
V469YL		5.393	0.066	1.07	5.253	0.106	1.40	OE
VCFJ47		5.265	-0.062	-1.02	5.026	-0.121	-1.59	OE
VULAPG		5.297	-0.031	-0.51	5.077	-0.070	-0.92	IC
XTZFN6		5.420	0.092	1.50	5.230	0.083	1.09	OE
YD9EQH		5.300	-0.028	-0.46	5.204	0.057	0.75	OR
YQDZ9V		5.468	0.141	2.29	5.228	0.081	1.07	OE
Z4MF2Q		5.359	0.032	0.51	5.268	0.121	1.60	DR
ZWH8AJ		5.303	-0.024	-0.40	5.133	-0.014	-0.18	OE

Summary Statistics

	Sample J85		Sample J86	
Grand Means	5.3278	Percent	5.1470	Percent
Stnd Dev Btwn Labs	0.0614	Percent	0.0760	Percent

Statistics based on 25 of 26 reporting participants

Samples J85 , J86 : 718 alloy, two different heats

Comments on assigned Data Flags for Test #157

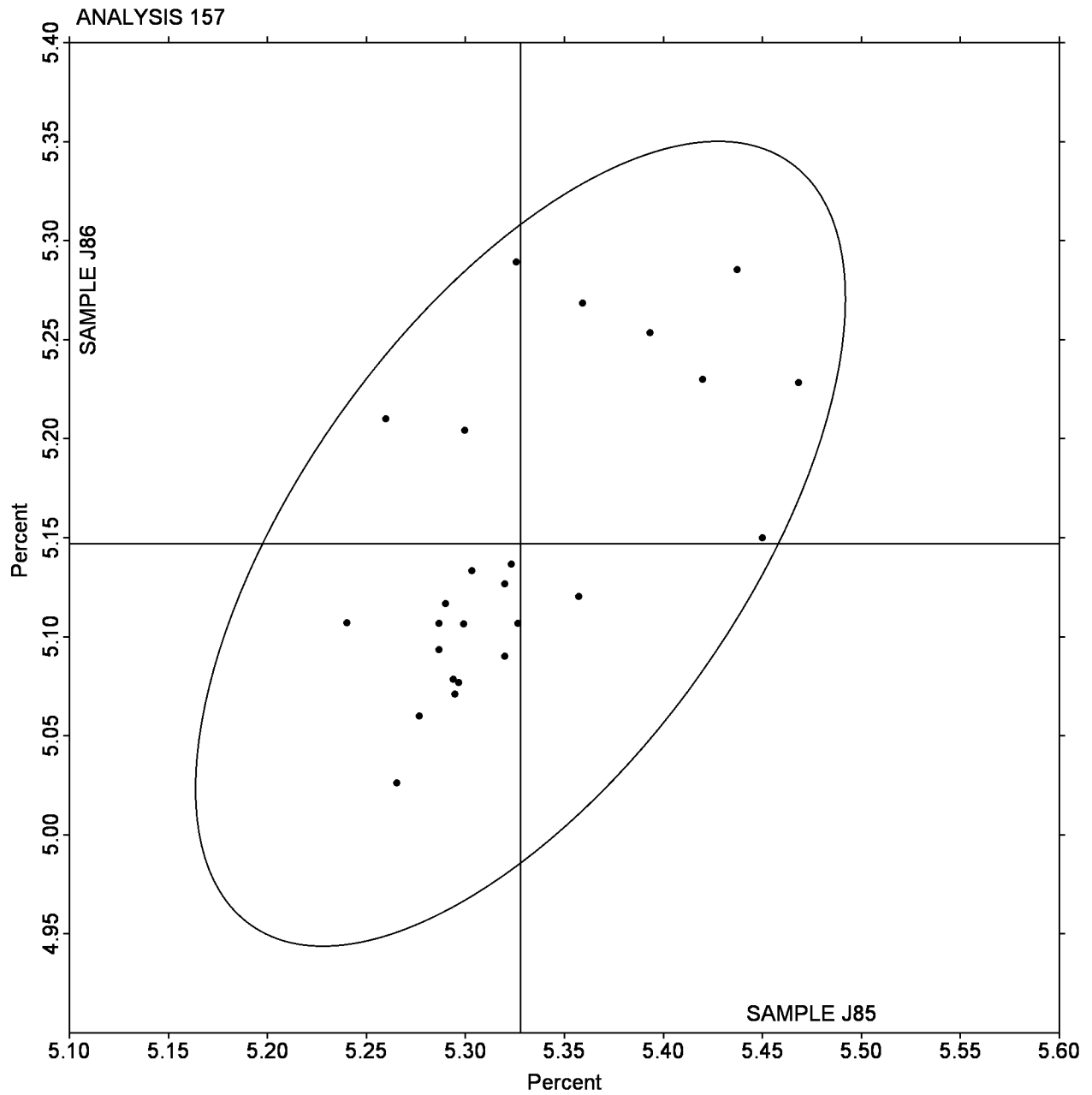
3C4N2K (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 157

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

SAMPLE J85 = 5.3278 Percent SAMPLE J86 = 5.1470 Percent



Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
229EC6		0.0404	-0.0037	-1.20	0.0263	0.0025	0.82	CM
2BKDEL		0.0443	0.0002	0.05	0.0247	0.0009	0.30	CI
2Q43NA		0.0433	-0.0008	-0.27	0.0227	-0.0011	-0.36	OE
33Q9YW		0.0490	0.0049	1.56	0.0276	0.0039	1.27	OE
37WPG3		0.0440	-0.0002	-0.05	0.0233	-0.0004	-0.14	CO
49P6W9		0.0467	0.0025	0.80	0.0263	0.0026	0.85	OE
4DKE3N		0.0438	-0.0004	-0.12	0.0272	0.0035	1.14	CO
4K3WNW		0.0510	0.0068	2.19	0.0310	0.0072	2.38	OE
62WJAF		0.0437	-0.0005	-0.16	0.0217	-0.0021	-0.69	CO
6GT8LL		0.0458	0.0017	0.54	0.0241	0.0003	0.11	OE
6WKMAD		0.0437	-0.0005	-0.16	0.0240	0.0002	0.08	OE
7T868N		0.0475	0.0034	1.08	0.0246	0.0008	0.27	DR
83H94J		0.0399	-0.0043	-1.38	0.0209	-0.0028	-0.93	OE
8XDZH9		0.0433	-0.0008	-0.27	0.0210	-0.0028	-0.90	OE
9P26CA		0.0428	-0.0014	-0.45	0.0211	-0.0027	-0.87	CO
A4CGWE		0.0491	0.0050	1.60	0.0262	0.0025	0.81	CO
BTJMLB	X	0.0330	-0.0112	-3.58	0.0263	0.0026	0.85	OE
CC8EW8		0.0437	-0.0005	-0.16	0.0240	0.0002	0.08	OE
CVG6ZA		0.0465	0.0023	0.75	0.0238	0.0001	0.02	OE
EUNDFL		0.0447	0.0006	0.18	0.0248	0.0010	0.34	OE
EYQ2HH		0.0401	-0.0041	-1.31	0.0173	-0.0065	-2.12	OE
F4VBXP		0.0490	0.0048	1.55	0.0300	0.0062	2.05	OE
GW4TWL	X	0.0560	0.0118	3.80	0.0360	0.0122	4.02	OE
HZWE6Z		0.0440	-0.0002	-0.05	0.0250	0.0012	0.41	OE
JE436F		0.0376	-0.0066	-2.11	0.0227	-0.0010	-0.34	DR
JG6BWL	*	0.0481	0.0039	1.25	0.0321	0.0083	2.73	OE
JPTK8V		0.0431	-0.0011	-0.34	0.0220	-0.0018	-0.58	CI
LRJTYG	*	0.0362	-0.0080	-2.57	0.0182	-0.0055	-1.81	CO
M4GWAF		0.0470	0.0028	0.91	0.0267	0.0029	0.95	OE
MHX29V		0.0451	0.0009	0.29	0.0214	-0.0024	-0.77	OE
MYGZUT		0.0467	0.0025	0.81	0.0235	-0.0003	-0.08	CI
NG9BC3		0.0427	-0.0015	-0.48	0.0230	-0.0008	-0.25	CO
PAU9VY		0.0437	-0.0004	-0.14	0.0219	-0.0019	-0.61	CI
PFQ9TE		0.0447	0.0005	0.16	0.0227	-0.0011	-0.36	DR
PLF3XL		0.0450	0.0008	0.27	0.0230	-0.0008	-0.25	CI
Q8V3H6		0.0483	0.0042	1.34	0.0230	-0.0008	-0.25	OE
QGDY7K		0.0431	-0.0011	-0.35	0.0221	-0.0017	-0.54	CI
QNXBCR		0.0437	-0.0004	-0.14	0.0205	-0.0032	-1.06	CO
RCWBV8		0.0432	-0.0010	-0.31	0.0224	-0.0014	-0.46	CI
RFBG7F		0.0423	-0.0018	-0.59	0.0197	-0.0041	-1.34	OE
RH6LBE		0.0480	0.0038	1.23	0.0240	0.0002	0.08	OE
T4DWJG		0.0433	-0.0008	-0.27	0.0223	-0.0014	-0.47	CI
TBCZBF		0.0460	0.0018	0.59	0.0293	0.0056	1.83	OE
THBMZR		0.0419	-0.0022	-0.72	0.0204	-0.0034	-1.10	OE
W2LK7T	*	0.0370	-0.0072	-2.30	0.0230	-0.0008	-0.25	XX

Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WDQCLY		0.0437	-0.0005	-0.16	0.0267	0.0029	0.95	OE
WE4A9B		0.0443	0.0002	0.05	0.0216	-0.0022	-0.71	CI
WXDCP	X	0.0301	-0.0140	-4.51	0.0113	-0.0125	-4.09	DR
XM8YRZ		0.0417	-0.0025	-0.80	0.0227	-0.0011	-0.36	GD
ZA2FQA		0.0429	-0.0012	-0.39	0.0241	0.0003	0.11	OE

Summary Statistics

	Sample M85		Sample M86	
Grand Means	0.04416	Percent	0.02376	Percent
Std Dev Btwn Labs	0.00312	Percent	0.00305	Percent
Statistics based on 47 of 50 reporting participants				

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #180

BTJMLB (X) - Inconsistent in testing between samples, data for Sample M85 are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

GW4TWL (X) - Data for both samples are high and inconsistent within the determinations for both samples.

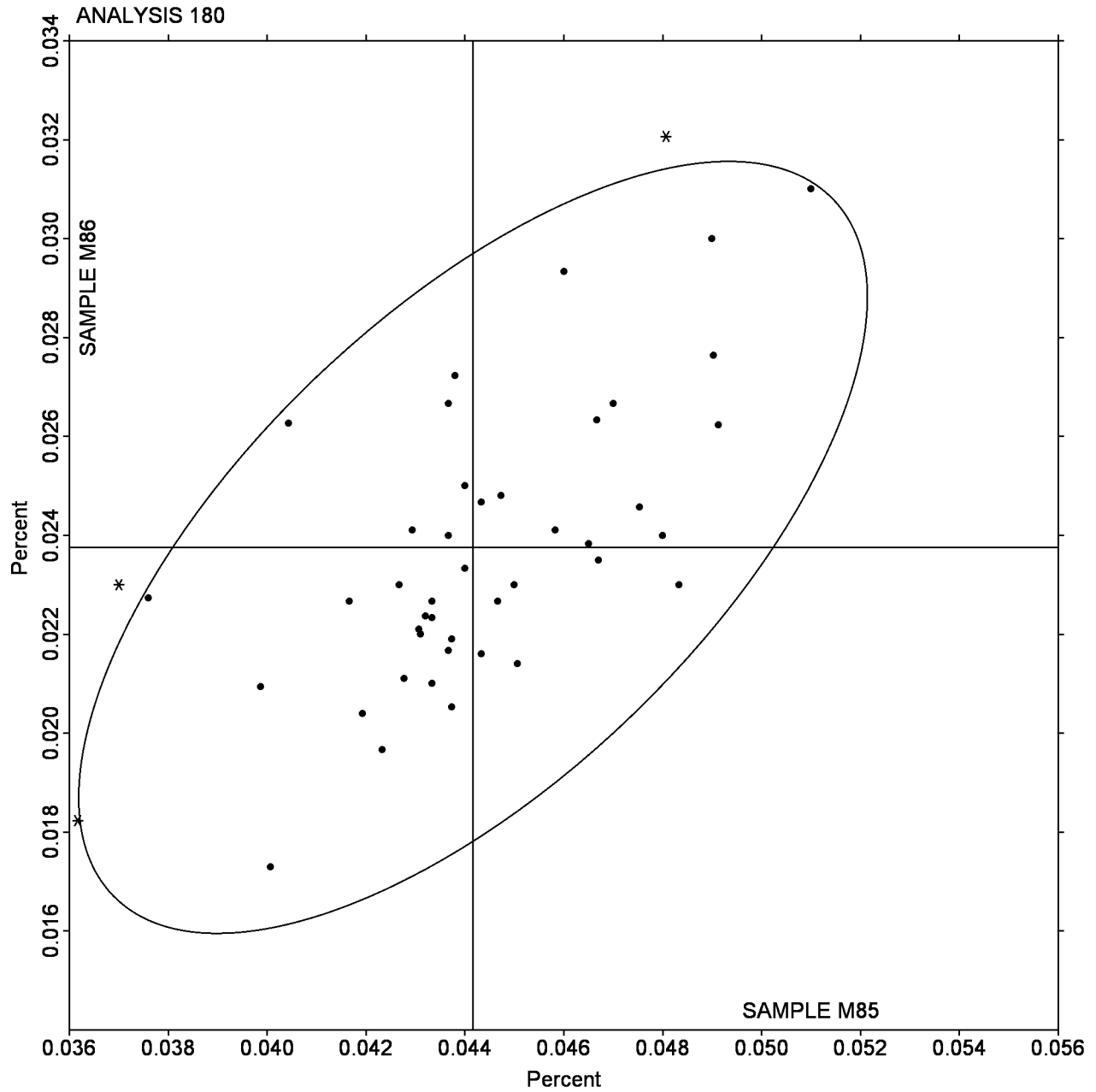
WXDCP (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 180

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

SAMPLE M85 = 0.04416 Percent SAMPLE M86 = 0.02376 Percent



Interlaboratory Testing Program for Metals

Analysis 181

Chemical Analysis Element #2 - Corrosion Resistant Steel - Percent

MANGANESE (Mn)

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2D2K2G		1.633	-0.025	-1.03	1.687	-0.019	-0.77	OE
2D6378		1.656	-0.003	-0.11	1.711	0.005	0.22	DR
2KJF3Y		1.623	-0.035	-1.45	1.655	-0.050	-2.07	OE
4XRRUB		1.658	-0.001	-0.03	1.717	0.011	0.47	WD
6BDH8C		1.697	0.039	1.59	1.733	0.028	1.15	OE
79H6ZK		1.678	0.020	0.81	1.730	0.025	1.03	OE
8BZ6TQ		1.645	-0.013	-0.54	1.668	-0.037	-1.54	DR
8EE8XB		1.658	0.000	-0.02	1.701	-0.004	-0.16	OE
8K2EK6		1.677	0.019	0.76	1.729	0.024	0.98	OE
8URH2Q		1.667	0.008	0.34	1.697	-0.009	-0.36	GD
9CECTL		1.637	-0.022	-0.89	1.707	0.002	0.08	OE
9D9UR8		1.659	0.000	0.01	1.691	-0.014	-0.59	DR
BHETXC		1.655	-0.003	-0.14	1.706	0.000	0.01	WD
CWX2R9		1.653	-0.005	-0.21	1.680	-0.025	-1.04	OE
DBY37N		1.694	0.036	1.48	1.742	0.037	1.51	DR
DKFVYK		1.655	-0.003	-0.14	1.702	-0.003	-0.14	WD
DN24HY		1.640	-0.018	-0.75	1.693	-0.012	-0.49	XR
EZNATK		1.667	0.008	0.34	1.713	0.008	0.33	OE
F6M7QX		1.643	-0.015	-0.62	1.700	-0.005	-0.22	OE
FJREU2		1.650	-0.008	-0.33	1.693	-0.012	-0.51	OE
FPKGVF		1.668	0.009	0.38	1.712	0.006	0.26	OE
FRMV86		1.653	-0.005	-0.22	1.711	0.006	0.23	OE
G7H4KR		1.680	0.022	0.89	1.720	0.015	0.60	OE
GB7E8N		1.633	-0.025	-1.03	1.683	-0.022	-0.91	CM
GRAYYK	X	1.957	0.298	12.25	1.977	0.271	11.18	OE
HFBKEF	*	1.610	-0.048	-1.99	1.697	-0.009	-0.36	XX
JHB7CC		1.637	-0.022	-0.89	1.687	-0.019	-0.77	WD
JNJ2GR	*	1.716	0.057	2.35	1.737	0.031	1.29	OE
JRQCRK		1.603	-0.055	-2.26	1.653	-0.052	-2.14	OE
LH6HBB		1.632	-0.027	-1.10	1.674	-0.031	-1.29	OE
M4U42H		1.680	0.022	0.89	1.740	0.035	1.43	OE
MDU9VW		1.678	0.020	0.81	1.738	0.033	1.36	OE
MEY2B6		1.670	0.012	0.49	1.707	0.002	0.08	OE
MR9MUX	X	0.095	-1.563	-64.17	0.054	-1.652	-68.08	OE
N39QEC		1.673	0.015	0.61	1.706	0.001	0.04	OE
P7KZV7	*	1.670	0.012	0.48	1.673	-0.032	-1.32	OE
R9FXEQ		1.686	0.027	1.12	1.740	0.035	1.44	OE
RFDK2Y		1.707	0.049	2.01	1.737	0.032	1.31	OE
RXJGUM		1.642	-0.016	-0.66	1.705	0.000	0.00	IC
T77GCF		1.635	-0.023	-0.95	1.687	-0.018	-0.76	OE
TTZ8RC		1.648	-0.010	-0.43	1.694	-0.011	-0.45	WD
TWE2CP		1.633	-0.025	-1.03	1.683	-0.022	-0.91	DR
W8QLZA		1.697	0.039	1.60	1.756	0.051	2.09	OE
W8Z4UD		1.630	-0.028	-1.17	1.687	-0.019	-0.77	XR
WB2DEA		1.667	0.008	0.34	1.747	0.041	1.70	OE

Interlaboratory Testing Program for Metals

Analysis 181

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X9MBQN		1.660	0.002	0.07	1.715	0.009	0.38	DR
XDYCXD	X	1.650	-0.009	-0.36	1.620	-0.086	-3.53	GD
XKYWVZ		1.640	-0.019	-0.77	1.679	-0.026	-1.07	OE
Y242XQ		1.662	0.003	0.13	1.707	0.002	0.08	DR
YFX8RZ		1.654	-0.004	-0.18	1.694	-0.012	-0.48	WD
Z8UK7Z		1.700	0.042	1.71	1.740	0.035	1.43	OE
Z9QE6B		1.651	-0.007	-0.29	1.696	-0.009	-0.38	OE

Summary Statistics

	Sample M85	Sample M86
Grand Means	1.6584 Percent	1.7053 Percent
Stnd Dev Btwn Labs	0.0244 Percent	0.0243 Percent
Statistics based on 49 of 52 reporting participants		

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #181

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

MR9MUX (X) - Extreme data. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

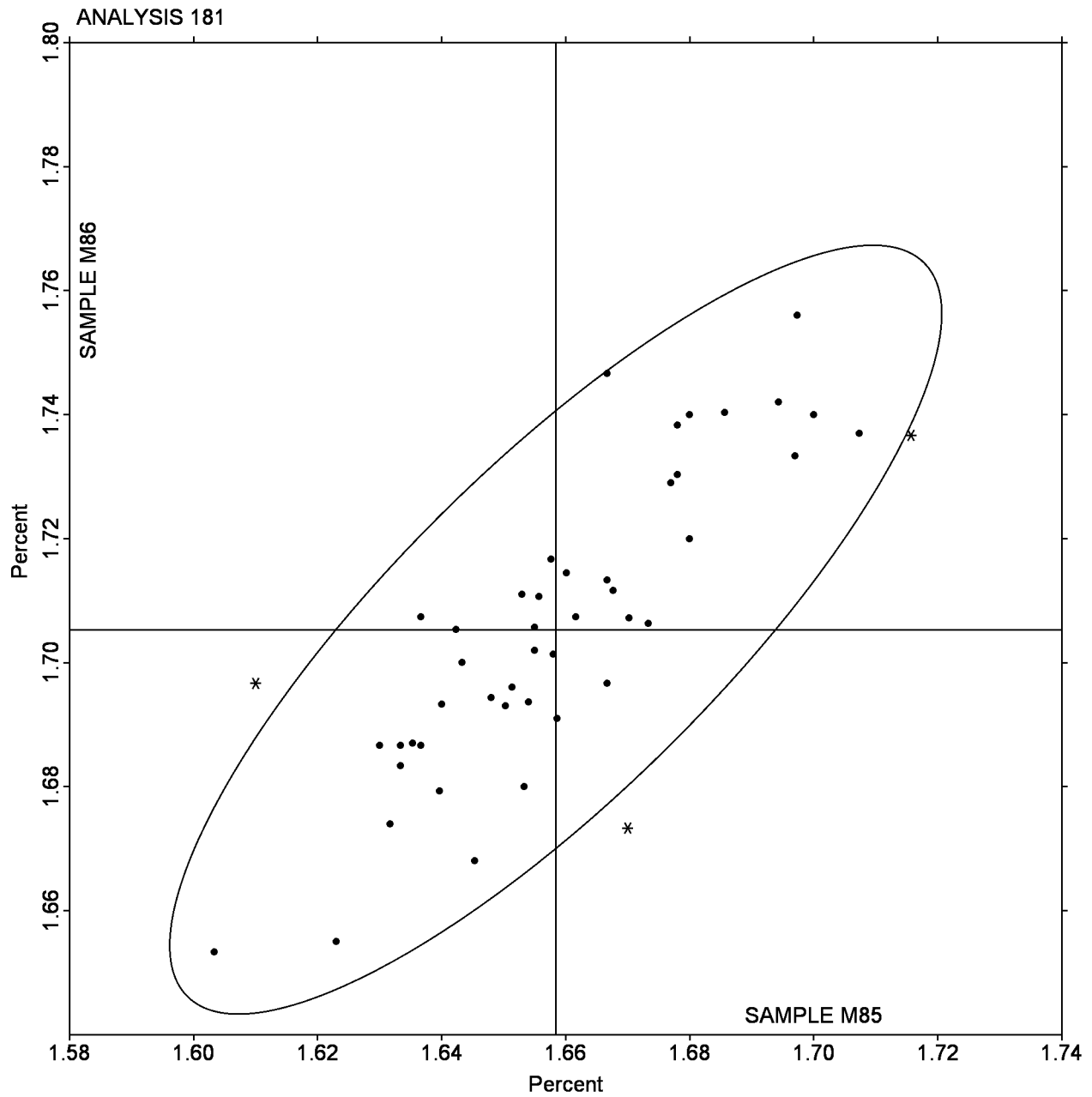
XDYCXD (X) - Low data for Sample M86 and inconsistent within the determinations for Sample M85.

Interlaboratory Testing Program for Metals

Analysis 181

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

SAMPLE M85 = 1.6584 Percent SAMPLe M86 = 1.7053 Percent



Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
26AZ4T		0.0273	-0.0005	-0.32	0.0334	0.0007	0.43	OE
42BAHU		0.0276	-0.0002	-0.11	0.0328	0.0000	0.01	OE
43T7VD		0.0274	-0.0004	-0.23	0.0332	0.0005	0.31	OE
4P2KNW	X	0.0420	0.0142	8.99	0.0403	0.0076	4.86	OE
4VN68X		0.0267	-0.0011	-0.70	0.0331	0.0003	0.20	OE
4XT3PZ	X	0.0246	-0.0032	-2.00	0.0411	0.0083	5.34	OE
6G2BUR		0.0270	-0.0008	-0.51	0.0317	-0.0011	-0.70	OE
6JALQT		0.0270	-0.0008	-0.51	0.0325	-0.0002	-0.14	OE
6PWL TU		0.0297	0.0019	1.20	0.0337	0.0009	0.58	OE
6ZDN32	*	0.0280	0.0002	0.14	0.0363	0.0036	2.30	OE
7LF643		0.0281	0.0003	0.19	0.0325	-0.0003	-0.17	OE
7XCKDH		0.0275	-0.0003	-0.19	0.0322	-0.0006	-0.36	OE
928VJ3		0.0273	-0.0005	-0.30	0.0331	0.0003	0.22	DR
9HMCAN		0.0302	0.0024	1.53	0.0348	0.0020	1.31	OE
9WECGP		0.0272	-0.0006	-0.38	0.0304	-0.0023	-1.49	DR
APU9U2		0.0288	0.0010	0.65	0.0343	0.0015	0.97	WD
B8FECY		0.0290	0.0012	0.76	0.0348	0.0020	1.29	OE
C4DA37		0.0300	0.0022	1.41	0.0353	0.0026	1.65	OE
D2YBZ9	X	0.0330	0.0052	3.30	0.0393	0.0066	4.22	OE
DK6EEY	X	0.0257	-0.0020	-1.29	0.0263	-0.0065	-4.17	GD
DLTRZW		0.0273	-0.0004	-0.28	0.0320	-0.0008	-0.49	XR
DWFP2L		0.0294	0.0017	1.05	0.0347	0.0020	1.27	OE
E4FQG7		0.0287	0.0009	0.57	0.0333	0.0006	0.37	OE
ECKCD3		0.0282	0.0004	0.25	0.0317	-0.0011	-0.68	DR
EJ9ER6		0.0287	0.0009	0.59	0.0331	0.0004	0.24	OE
G23RLN	*	0.0310	0.0032	2.04	0.0330	0.0002	0.16	OE
J8VTD2	X	0.0053	-0.0224	-14.18	0.0067	-0.0261	-16.75	OE
J9Z4QC		0.0255	-0.0023	-1.44	0.0300	-0.0027	-1.75	WD
JUB6KG		0.0302	0.0024	1.53	0.0346	0.0018	1.18	OE
KJXWJF		0.0290	0.0012	0.78	0.0327	-0.0001	-0.06	OE
MBUZTA		0.0268	-0.0009	-0.59	0.0320	-0.0008	-0.49	GD
MGF3QE		0.0277	-0.0001	-0.07	0.0303	-0.0024	-1.56	OE
QHBFGF		0.0280	0.0002	0.14	0.0337	0.0009	0.58	OE
RWZWE		0.0287	0.0009	0.57	0.0337	0.0009	0.58	WD
T82HBW		0.0279	0.0001	0.08	0.0325	-0.0003	-0.19	OE
TNDV8K		0.0283	0.0006	0.35	0.0339	0.0011	0.73	OE
TP9W9P		0.0273	-0.0004	-0.28	0.0323	-0.0004	-0.27	XR
UEYFQC		0.0290	0.0012	0.78	0.0327	-0.0001	-0.06	DR
UFVZDC		0.0290	0.0012	0.78	0.0347	0.0019	1.23	OE
UK8TLP	X	0.0370	0.0092	5.83	0.0353	0.0026	1.65	OE
UM4YQN		0.0253	-0.0024	-1.54	0.0304	-0.0024	-1.54	DR
UVKKXJ		0.0246	-0.0031	-1.98	0.0312	-0.0016	-1.00	CM
VF8JUH		0.0275	-0.0003	-0.17	0.0343	0.0015	0.97	OE
VGWUHM		0.0276	-0.0002	-0.11	0.0335	0.0007	0.46	OE
W28HT8		0.0262	-0.0016	-1.01	0.0316	-0.0011	-0.72	OE

Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WDP3MU		0.0257	-0.0021	-1.33	0.0310	-0.0018	-1.13	OE
XXGQ3L		0.0260	-0.0018	-1.13	0.0312	-0.0015	-0.99	DR
YDKW8N		0.0291	0.0013	0.82	0.0328	0.0000	0.01	WD
YG7V6Z	*	0.0227	-0.0051	-3.23	0.0287	-0.0041	-2.63	XX
Z3Z96H		0.0281	0.0003	0.21	0.0318	-0.0010	-0.64	OE

Summary Statistics

	Sample M85		Sample M86	
Grand Means	0.02777	Percent	0.03276	Percent
Std Dev Btwn Labs	0.00158	Percent	0.00156	Percent
Statistics based on 44 of 50 reporting participants				

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #182

4P2KNW (X) - Data for both samples are high and inconsistent within the determinations for both samples.

4XT3PZ (X) - Inconsistent in testing between samples, data for Sample M86 are high.

D2YBZ9 (X) - Data for both samples are high and inconsistent within the determinations for both samples.

DK6EEY (X) - Low data for Sample M86 and inconsistent within the determinations for both samples.

J8VTD2 (X) - Data for both samples are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

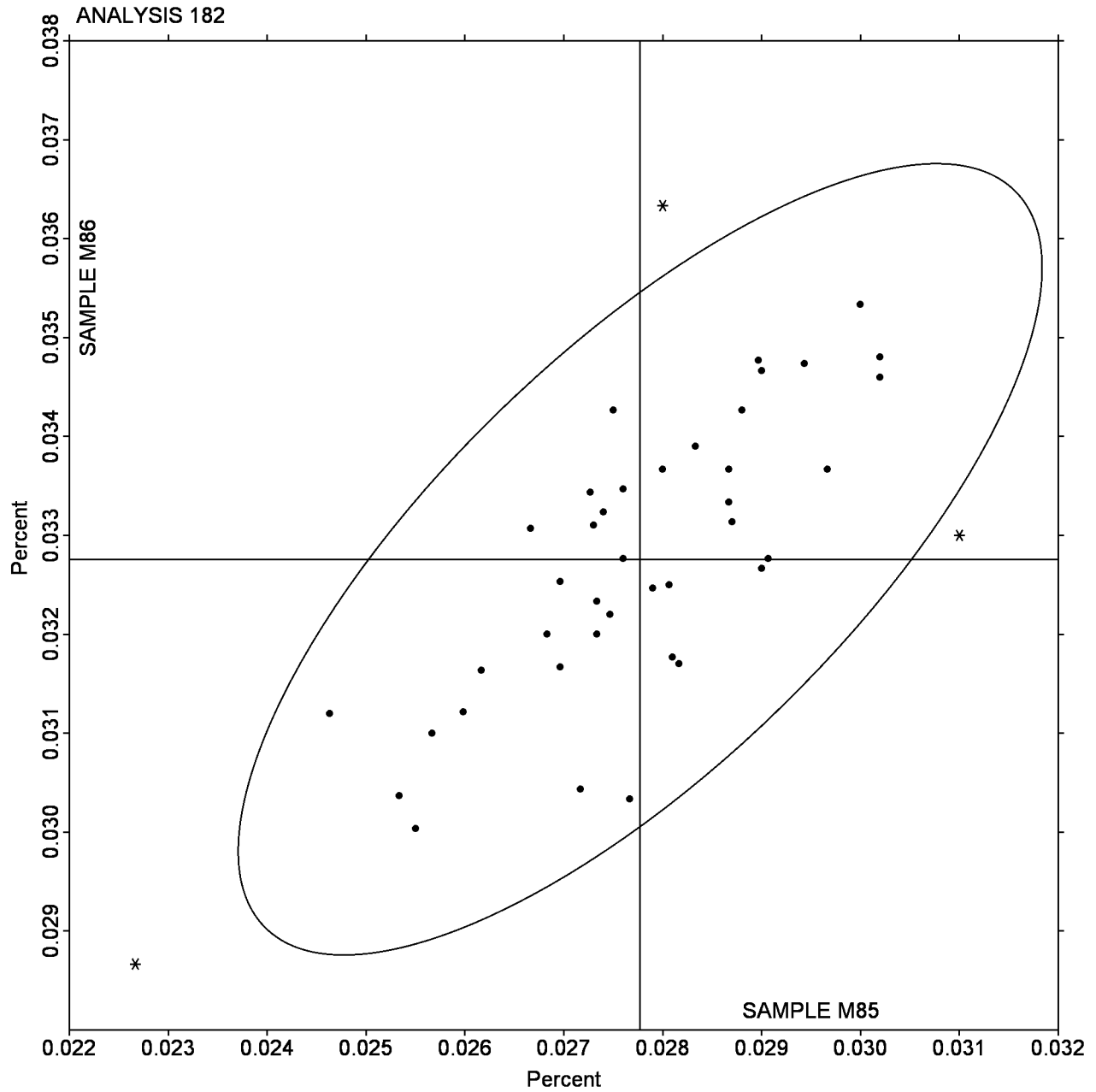
UK8TLP (X) - Inconsistent in testing between samples, data for Sample M85 are high.

Interlaboratory Testing Program for Metals

Analysis 182

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

SAMPLE M85 = 0.02777 Percent SAMPLE M86 = 0.03276 Percent



Interlaboratory Testing Program for Metals

Analysis 183

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LV79L		0.344	0.018	2.11	0.205	0.008	1.45	OE
2TLRRN		0.318	-0.008	-0.92	0.190	-0.007	-1.24	OE
46RJML		0.337	0.011	1.30	0.197	0.000	0.07	OE
4YFVB4		0.328	0.002	0.28	0.198	0.001	0.19	OE
4YUVZD		0.332	0.006	0.71	0.199	0.002	0.43	OE
98UCR2		0.327	0.001	0.09	0.198	0.001	0.13	OE
AACUGM		0.318	-0.008	-0.96	0.192	-0.005	-0.88	OE
AKYEWZ		0.334	0.008	0.95	0.200	0.003	0.49	WD
B3J9GN		0.335	0.009	1.06	0.193	-0.004	-0.70	OE
B4XYZL		0.322	-0.004	-0.49	0.191	-0.006	-1.00	OE
BAKKDK		0.320	-0.006	-0.73	0.193	-0.004	-0.76	WD
BFGKBZ		0.326	0.000	0.05	0.189	-0.008	-1.36	DR
BN3WY8		0.323	-0.003	-0.30	0.202	0.005	0.91	OE
CBJZQV		0.331	0.005	0.60	0.197	0.000	0.01	DR
D3Z9LP	X	0.356	0.030	3.47	0.223	0.026	4.69	OE
DCLQ6J		0.325	-0.001	-0.14	0.196	-0.001	-0.17	WD
DX6VPK		0.321	-0.005	-0.57	0.196	-0.001	-0.23	OE
EDHCLE		0.327	0.001	0.09	0.190	-0.007	-1.24	OE
FJTQD4		0.332	0.006	0.75	0.199	0.002	0.43	OE
G7LHBZ		0.323	-0.003	-0.34	0.204	0.007	1.27	OE
HGUQ7W		0.319	-0.007	-0.77	0.190	-0.007	-1.24	OE
HW2FWW	X	0.291	-0.035	-4.03	0.190	-0.007	-1.24	CM
JFLEHZ		0.321	-0.005	-0.57	0.195	-0.002	-0.40	XR
JJV8YJ		0.335	0.009	1.10	0.205	0.008	1.39	OE
K4ACRZ		0.337	0.011	1.25	0.202	0.005	0.96	DR
KU2VN9	X	0.103	-0.223	-26.05	0.092	-0.105	-18.79	OE
KV4CPC		0.305	-0.021	-2.40	0.186	-0.011	-2.02	DR
L32VFT		0.315	-0.011	-1.23	0.194	-0.003	-0.52	OE
L4NPM4		0.326	0.000	0.05	0.197	0.000	0.07	DR
LQKWYL	X	0.380	0.054	6.31	0.190	-0.007	-1.24	OE
N4K9TB		0.322	-0.004	-0.42	0.204	0.007	1.33	OE
QF88J4	X	0.210	-0.116	-13.48	0.198	0.001	0.13	GD
RMUC9C		0.330	0.004	0.44	0.200	0.003	0.49	WD
RMXP3X		0.340	0.014	1.68	0.200	0.003	0.49	OE
T38NDV		0.328	0.002	0.19	0.196	-0.001	-0.23	OE
TQPUZP		0.336	0.010	1.18	0.205	0.008	1.51	XR
UCNMMX		0.306	-0.020	-2.36	0.185	-0.012	-2.14	OE
UDZVNZ		0.328	0.002	0.25	0.199	0.002	0.31	WD
WZ3B37	*	0.320	-0.006	-0.69	0.207	0.010	1.75	OE
X4ZKU8	X	0.286	-0.040	-4.69	0.188	-0.009	-1.60	OE
XNGW9V		0.323	-0.003	-0.34	0.193	-0.004	-0.70	OE
XRKQ78		0.331	0.005	0.60	0.197	0.000	0.07	OE
Y498GJ		0.329	0.003	0.32	0.206	0.009	1.63	OE
ZF6HVC		0.325	-0.001	-0.10	0.197	0.000	0.07	WD
ZMZ3MY		0.311	-0.015	-1.71	0.193	-0.004	-0.65	DR

Interlaboratory Testing Program for Metals

Analysis 183

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	

Summary Statistics

	Sample M85	Sample M86
Grand Means	0.3259 Percent	0.1969 Percent
Stnd Dev Btwn Labs	0.0086 Percent	0.0056 Percent
Statistics based on 39 of 45 reporting participants		

Samples M85 , M86 : AISI 316, 316L**Comments on assigned Data Flags for Test #183**

D3Z9LP (X) - Data for both samples are high.

HW2FWW (X) - Low data for Sample M85.

KU2VN9 (X) - Data for both samples are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

LQKWYL (X) - High data for Sample M85.

QF88J4 (X) - Low data for Sample M85.

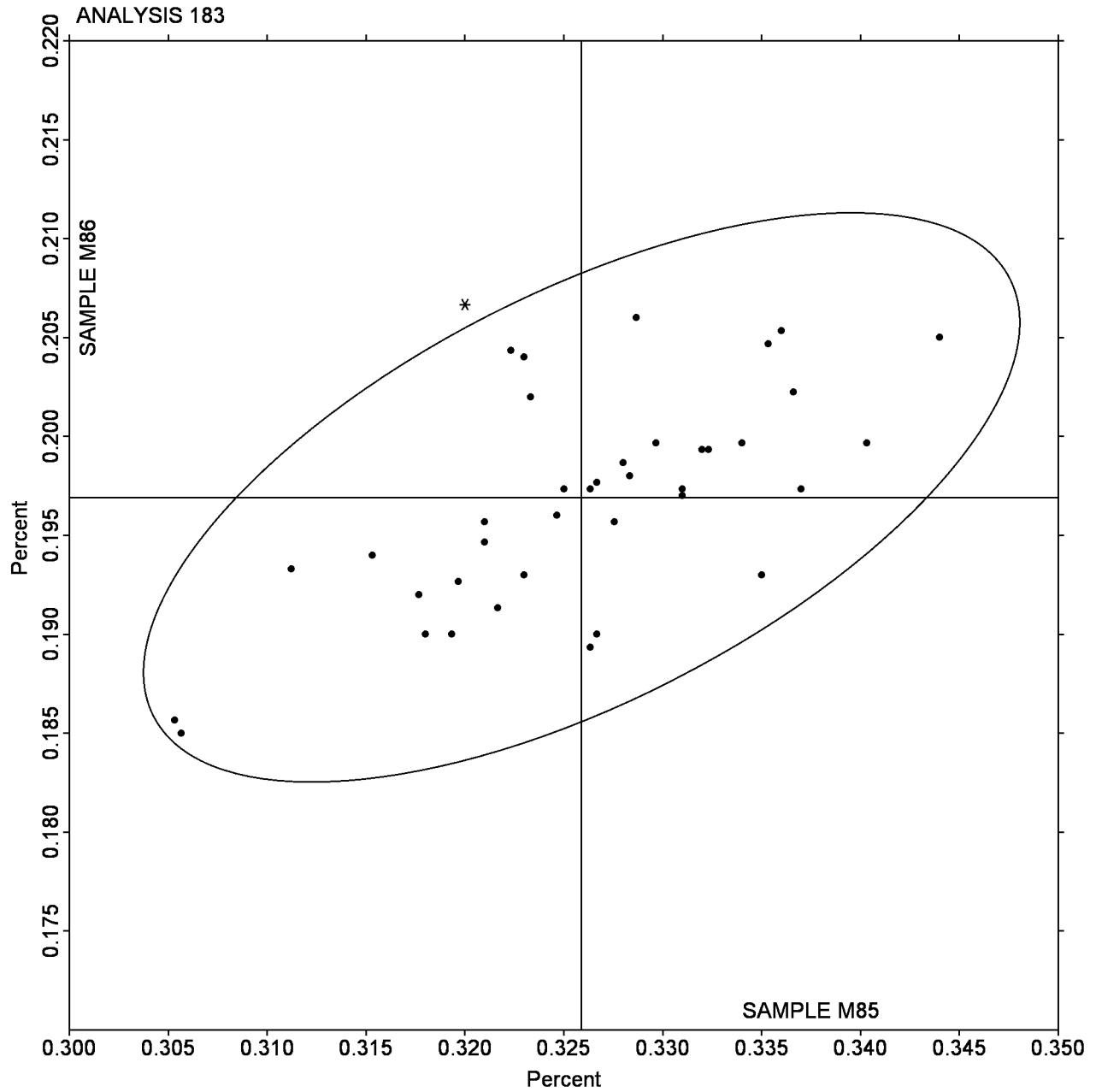
X4ZKU8 (X) - Low data for Sample M85.

Interlaboratory Testing Program for Metals

Analysis 183

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

SAMPLE M85 = 0.3259 Percent SAMPLE M86 = 0.1969 Percent



Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2VW3RJ		0.291	0.019	1.18	0.487	0.001	0.08	OE
42WPPK		0.300	0.028	1.78	0.523	0.037	2.40	OE
4UY23C		0.271	-0.001	-0.07	0.507	0.021	1.33	OE
6FMVUC		0.253	-0.019	-1.25	0.465	-0.021	-1.38	XR
6FVFEZ		0.260	-0.012	-0.78	0.487	0.001	0.04	OE
6K96WN		0.259	-0.013	-0.84	0.482	-0.004	-0.24	OE
6VZJCY		0.292	0.020	1.25	0.495	0.009	0.57	OE
6Y6P7K		0.264	-0.008	-0.52	0.472	-0.014	-0.91	OE
94Q9QJ		0.281	0.009	0.54	0.505	0.019	1.22	OE
B297VP	*	0.222	-0.050	-3.21	0.456	-0.030	-1.94	OE
CVVEUT		0.276	0.004	0.25	0.500	0.014	0.88	OE
DNLK9K		0.284	0.012	0.74	0.502	0.016	1.01	OE
E4Q4TB		0.267	-0.005	-0.33	0.455	-0.031	-1.99	DR
EBE9X4		0.269	-0.003	-0.20	0.488	0.002	0.14	OE
ERMYJG		0.253	-0.019	-1.20	0.483	-0.003	-0.18	DR
EZGVTK		0.255	-0.018	-1.12	0.474	-0.012	-0.77	DR
FJTGCE		0.251	-0.021	-1.33	0.463	-0.023	-1.51	WD
FK23TK		0.303	0.031	1.97	0.492	0.006	0.38	OE
FMLENW		0.274	0.002	0.10	0.477	-0.009	-0.59	OE
GWHCPW		0.251	-0.021	-1.33	0.479	-0.007	-0.44	CM
GZRU99		0.280	0.008	0.50	0.496	0.010	0.62	OE
JBULAY		0.293	0.021	1.35	0.488	0.002	0.10	OE
K4PRNP		0.272	0.000	-0.03	0.463	-0.023	-1.47	OE
KFBLPB		0.301	0.029	1.82	0.497	0.011	0.73	GD
KVTJVQ		0.279	0.007	0.46	0.502	0.016	1.01	OE
KWQ9JX		0.277	0.004	0.28	0.486	0.000	0.00	DR
L4XZWU		0.271	-0.001	-0.07	0.477	-0.009	-0.59	OE
LMZYHH		0.278	0.006	0.35	0.495	0.009	0.55	OE
M7HL8A		0.271	-0.001	-0.10	0.487	0.001	0.08	WD
MBDX4E		0.280	0.008	0.50	0.492	0.006	0.36	DR
MY4VM4		0.264	-0.008	-0.52	0.480	-0.006	-0.42	OE
NGT7GB		0.266	-0.006	-0.41	0.484	-0.002	-0.16	GD
P2TP3V		0.283	0.011	0.71	0.497	0.011	0.68	OE
P9JRY9		0.271	-0.001	-0.07	0.488	0.002	0.12	OE
PTV264		0.259	-0.013	-0.84	0.483	-0.003	-0.18	OE
Q7WV6T		0.253	-0.019	-1.20	0.470	-0.016	-1.04	XR
QTF4QD		0.263	-0.009	-0.61	0.468	-0.018	-1.17	OE
R39HF3		0.271	-0.001	-0.08	0.511	0.025	1.59	OE
RCG6H4		0.266	-0.006	-0.41	0.461	-0.025	-1.62	XX
RHH686		0.275	0.003	0.18	0.467	-0.019	-1.23	OE
TJVBRF		0.286	0.014	0.91	0.492	0.006	0.38	OE
TWL3UU		0.265	-0.007	-0.46	0.478	-0.008	-0.50	OE
VW3QBF		0.269	-0.003	-0.18	0.500	0.014	0.88	WD
VWAN8Y	X	0.170	-0.102	-6.53	0.140	-0.346	-22.35	OE
VZVGFK		0.273	0.001	0.08	0.497	0.011	0.68	DR

Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WV6MBD		0.255	-0.017	-1.12	0.482	-0.004	-0.29	DR
Y7TZCZ		0.271	-0.001	-0.07	0.481	-0.005	-0.35	OE
YFMCJF		0.301	0.029	1.84	0.505	0.019	1.22	DR
YV2ED9		0.293	0.021	1.31	0.519	0.033	2.15	OE
Z4DNMM	X	0.330	0.058	3.72	0.489	0.003	0.17	OE
ZJ3E9D		0.276	0.004	0.27	0.483	-0.003	-0.22	OE

Summary Statistics

	Sample M85	Sample M86
Grand Means	0.2722 Percent	0.4861 Percent
Stnd Dev Btwn Labs	0.0156 Percent	0.0155 Percent

Statistics based on 49 of 51 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #184

VWAN8Y (X) - Data for both samples are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

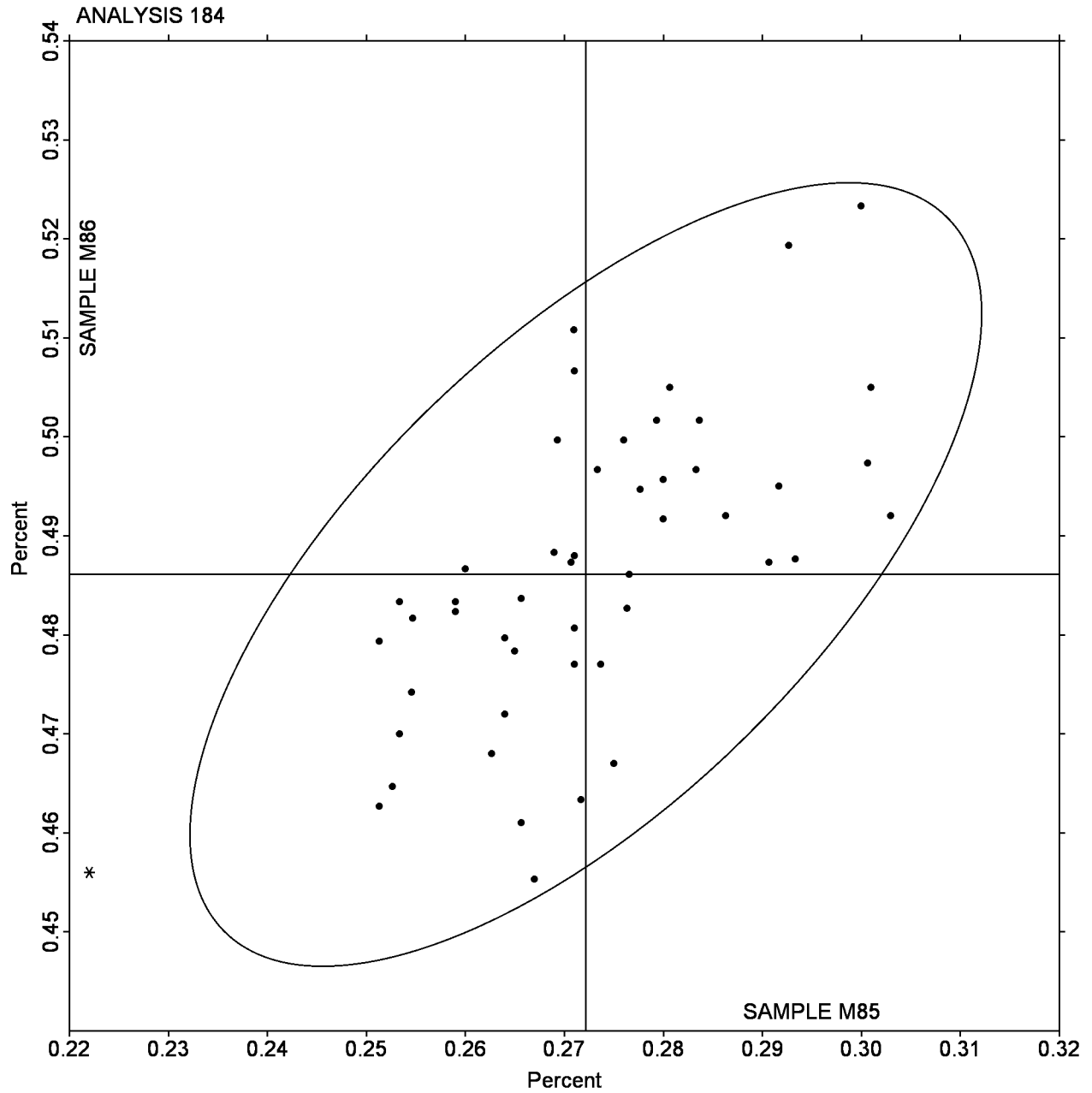
Z4DNMM (X) - High data for Sample M85. and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 184

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

SAMPLE M85 = 0.2722 Percent SAMPLE M86 = 0.4861 Percent



Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3WNVMA		0.366	-0.014	-1.38	0.381	-0.010	-1.11	OE
3WWG83	X	0.448	0.068	6.85	0.460	0.069	7.36	OE
68ZWYJ		0.398	0.019	1.87	0.414	0.023	2.48	OE
6XXAXT		0.380	0.000	-0.02	0.391	-0.001	-0.05	OE
847ML3	*	0.355	-0.025	-2.49	0.382	-0.009	-1.00	OE
8X32KL		0.378	-0.002	-0.18	0.388	-0.003	-0.29	WD
99FKWM		0.395	0.015	1.54	0.402	0.011	1.15	OE
9KPDQM		0.380	0.001	0.06	0.380	-0.011	-1.14	DR
AKQMJY		0.379	0.000	-0.04	0.386	-0.005	-0.54	OE
AQ7GRN		0.385	0.005	0.53	0.384	-0.007	-0.79	GD
AQPQXN		0.370	-0.009	-0.94	0.385	-0.006	-0.68	DR
B4FNUK		0.375	-0.005	-0.51	0.386	-0.005	-0.54	WD
BDCAL7		0.373	-0.007	-0.68	0.386	-0.005	-0.57	DR
BE8XZV		0.397	0.017	1.70	0.413	0.022	2.38	OE
CHYXHG		0.391	0.012	1.16	0.394	0.003	0.32	OE
DWZX2W		0.385	0.005	0.53	0.396	0.005	0.53	DR
EA6226		0.396	0.016	1.63	0.401	0.010	1.10	GD
EL4UPN		0.380	0.000	0.02	0.393	0.002	0.24	WD
ET64WF		0.377	-0.003	-0.28	0.386	-0.005	-0.50	WD
FCXZGG	X	0.342	-0.037	-3.76	0.356	-0.035	-3.70	XX
G7DTDL		0.360	-0.019	-1.95	0.385	-0.006	-0.64	OE
GC7WKY		0.366	-0.014	-1.38	0.373	-0.018	-1.89	DR
GRKNHH		0.386	0.006	0.63	0.395	0.004	0.42	OE
HMMGH7		0.370	-0.009	-0.95	0.380	-0.011	-1.18	OE
J2BNN8		0.367	-0.012	-1.25	0.375	-0.016	-1.68	OE
J3FHZX		0.380	0.000	0.02	0.390	-0.001	-0.11	XR
JXCBXZ		0.380	0.000	0.02	0.390	-0.001	-0.11	OE
KL8QV8	X	0.045	-0.335	-33.65	0.020	-0.371	-39.58	OE
KZPXU7		0.380	0.000	-0.01	0.388	-0.003	-0.29	OE
LA2UPC		0.398	0.019	1.87	0.406	0.015	1.60	OE
LE3NBK		0.382	0.002	0.22	0.400	0.009	0.92	OE
LFPZGX		0.376	-0.004	-0.41	0.388	-0.003	-0.36	WD
MX7Y9U	*	0.398	0.018	1.83	0.395	0.004	0.39	OE
NLJJY		0.387	0.007	0.73	0.395	0.004	0.46	OE
Q99UC8		0.386	0.006	0.59	0.396	0.005	0.56	OE
Q9JADF		0.383	0.003	0.29	0.394	0.003	0.35	OE
QEHFPR		0.383	0.003	0.29	0.405	0.014	1.52	OE
QRE79C		0.384	0.004	0.39	0.399	0.008	0.85	OE
QYPBEW		0.391	0.012	1.16	0.402	0.011	1.13	OE
RCGWLC		0.381	0.002	0.16	0.392	0.001	0.14	OE
RHVN8N		0.382	0.003	0.26	0.395	0.004	0.42	XR
RLWXRK		0.383	0.003	0.29	0.398	0.007	0.78	OE
RTWLZA		0.371	-0.009	-0.91	0.387	-0.004	-0.43	OE
U6ARTP		0.364	-0.016	-1.56	0.370	-0.021	-2.22	DR
ULFDJJ	X	0.341	-0.038	-3.86	0.396	0.005	0.49	CM

Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UU8WKM		0.374	-0.006	-0.58	0.381	-0.010	-1.04	OE
WR86A6		0.370	-0.010	-0.98	0.392	0.001	0.14	OE
WVQWHR		0.381	0.002	0.16	0.389	-0.002	-0.25	DR
XNTGE6		0.372	-0.008	-0.78	0.385	-0.006	-0.68	OE
XTEU2F		0.379	0.000	-0.04	0.396	0.005	0.53	OE
XV8CAF		0.386	0.006	0.63	0.402	0.011	1.13	OE
YDWZV2		0.376	-0.003	-0.34	0.387	-0.004	-0.47	OE
ZL22EL		0.371	-0.009	-0.91	0.382	-0.009	-0.96	OE

Summary Statistics

	Sample M85	Sample M86
Grand Means	0.3798 Percent	0.3910 Percent
Stnd Dev Btwn Labs	0.0100 Percent	0.0094 Percent

Statistics based on 49 of 53 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #185

3WWG83 (X) - Data for both samples are high. Possible systematic error.

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

KL8QV8 (X) - Data for both samples are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

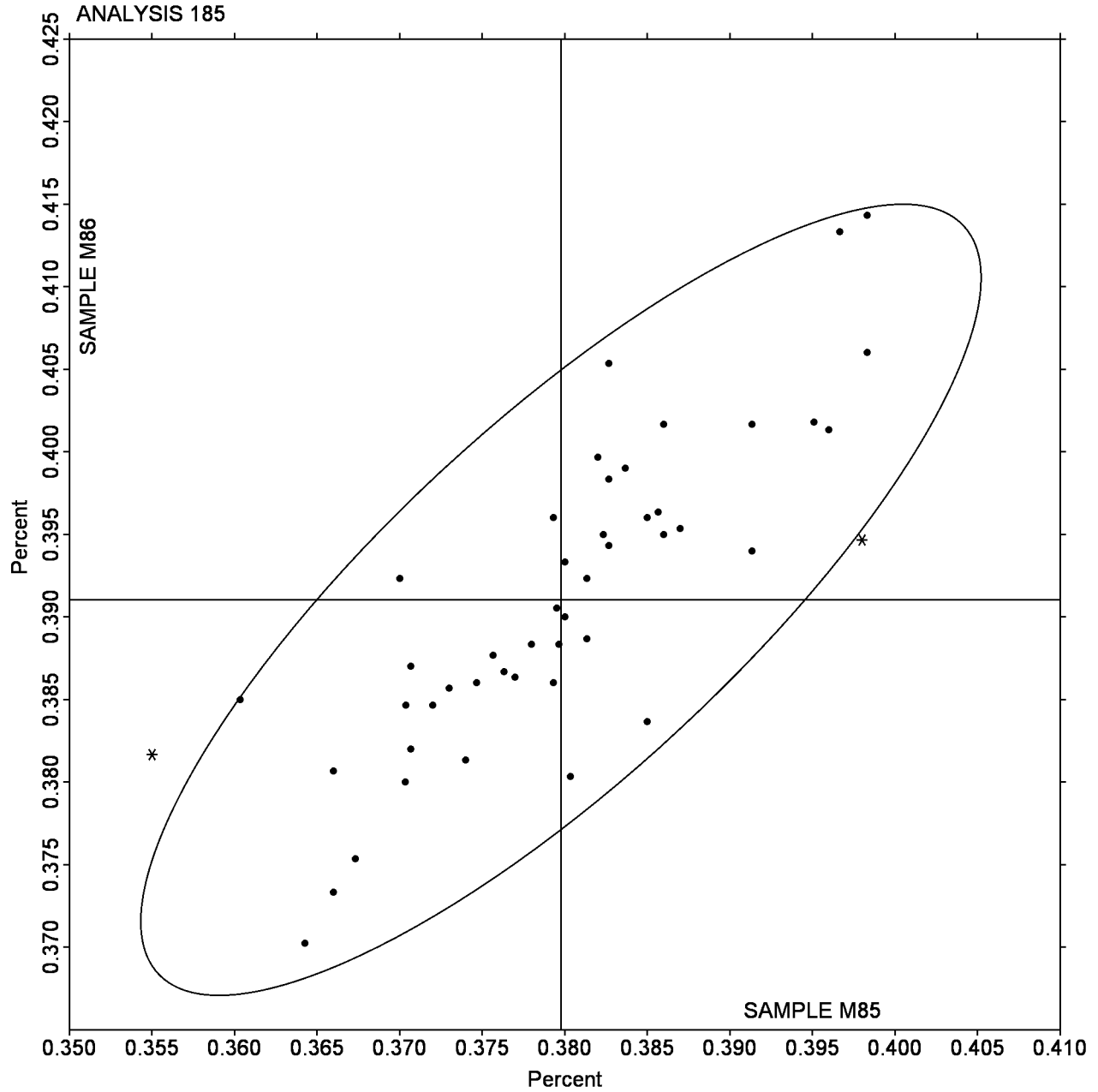
ULFDJJ (X) - Inconsistent in testing between samples, data for Sample M85 are low.

Interlaboratory Testing Program for Metals

Analysis 185

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

SAMPLE M85 = 0.3798 Percent SAMPLE M86 = 0.3910 Percent



Interlaboratory Testing Program for Metals

Analysis 186

Chemical Analysis Element #7 - Corrosion Resistant Steel - Percent

NICKEL (Ni)

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22VDDW	X	10.81	0.38	3.96	10.56	0.52	7.29	GD
2RBLAY		10.30	-0.13	-1.33	10.08	0.04	0.50	OE
2UGFZC	*	10.20	-0.22	-2.33	10.00	-0.05	-0.67	OE
4WM8BU		10.33	-0.09	-0.98	10.00	-0.04	-0.62	OE
8Q9E28		10.43	0.00	0.02	9.99	-0.05	-0.74	DR
8YNZBB		10.32	-0.11	-1.13	10.07	0.02	0.33	DR
9RCTPY		10.32	-0.11	-1.12	9.93	-0.11	-1.56	OE
9T7TUH		10.43	0.01	0.09	10.06	0.02	0.22	OE
ANJW6Q		10.54	0.11	1.16	10.06	0.02	0.22	OE
AXDD4F		10.54	0.11	1.16	10.09	0.04	0.60	OE
B6E4NB	X	10.38	-0.05	-0.50	9.57	-0.47	-6.66	OE
B8AADN		10.42	-0.01	-0.08	10.10	0.06	0.83	OE
C8UMV7		10.45	0.02	0.23	10.03	-0.01	-0.15	XR
DKGT7T	X	10.82	0.40	4.10	10.20	0.15	2.14	OE
EDEWAG	X	10.10	-0.32	-3.37	9.79	-0.26	-3.62	XX
EPFP46		10.43	0.00	0.02	10.04	0.00	-0.01	OE
EPNT7P		10.41	-0.01	-0.14	10.08	0.04	0.52	OE
ERMQZJ		10.36	-0.07	-0.71	9.92	-0.12	-1.69	DR
EWLD28		10.50	0.08	0.78	10.06	0.01	0.17	OE
FV7A8D		10.46	0.04	0.40	10.09	0.04	0.60	OE
G6MKUC		10.44	0.02	0.19	10.02	-0.02	-0.35	WD
G7ADZM		10.51	0.09	0.88	10.16	0.12	1.63	OE
GPN8VV		10.37	-0.06	-0.60	10.23	0.19	2.66	CM
GRU4HP		10.51	0.08	0.85	10.10	0.06	0.83	OE
H27K4N		10.42	0.00	-0.05	10.01	-0.03	-0.48	OE
H7LVGT		10.45	0.03	0.30	10.04	0.00	-0.01	OE
HGB8Y7		10.52	0.09	0.96	10.07	0.03	0.40	OE
JQ8FYA	X	55.58	45.15	468.64	55.11	45.07	633.21	OE
JRGKEJ		10.21	-0.21	-2.20	9.87	-0.17	-2.43	OE
KEEXVZ		10.46	0.03	0.35	10.07	0.03	0.40	WD
L4Z84A		10.45	0.03	0.26	10.05	0.01	0.08	WD
LZQR4C		10.53	0.11	1.11	10.01	-0.03	-0.43	WD
M7NVE3		10.50	0.08	0.79	10.11	0.07	0.92	OE
MPXV8B		10.55	0.13	1.30	10.13	0.09	1.20	OE
MUABQU		10.53	0.11	1.09	10.03	-0.01	-0.20	OE
NET7A7		10.50	0.08	0.78	10.07	0.02	0.31	WC
NG9XJL		10.45	0.02	0.23	10.03	-0.02	-0.25	OE
PYFR6Y		10.40	-0.02	-0.22	10.00	-0.04	-0.60	DR
T7XYWF		10.45	0.03	0.26	10.16	0.11	1.58	DR
U328HP		10.48	0.06	0.57	10.08	0.03	0.45	WD
VBYDTN	*	10.18	-0.24	-2.51	9.99	-0.05	-0.76	GD
VG4C8		10.36	-0.06	-0.67	9.92	-0.12	-1.70	OE
W28LET		10.40	-0.02	-0.26	10.13	0.08	1.16	OE
WF6KF4		10.54	0.11	1.16	10.08	0.04	0.55	OE
WXNZHU		10.52	0.10	1.02	10.09	0.05	0.64	OE

Interlaboratory Testing Program for Metals

Analysis 186

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WZ8ZDH		10.25	-0.17	-1.81	9.90	-0.15	-2.07	OE
X9B28U		10.38	-0.04	-0.47	10.03	-0.01	-0.15	OE
XCED63		10.44	0.02	0.19	10.01	-0.03	-0.45	WD
XHX68G		10.38	-0.04	-0.47	10.00	-0.04	-0.62	XR
XNKZ4E		10.34	-0.08	-0.88	10.03	-0.01	-0.20	OE
YM8AK8	*	10.61	0.18	1.89	10.25	0.21	2.89	OE
Z2GFZD		10.35	-0.07	-0.74	9.94	-0.11	-1.51	DR
ZUDNEU		10.43	0.01	0.05	10.09	0.05	0.64	ED

Summary Statistics

	Sample M85	Sample M86
Grand Means	10.425 Percent	10.044 Percent
Stnd Dev Btwn Labs	0.096 Percent	0.071 Percent

Statistics based on 47 of 53 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #186

22VDDW (X) - Data for both samples are high.

B6E4NB (X) - Low data for Sample M86 and inconsistent within the determinations for both samples.

DKGT7T (X) - High data for Sample M85.

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

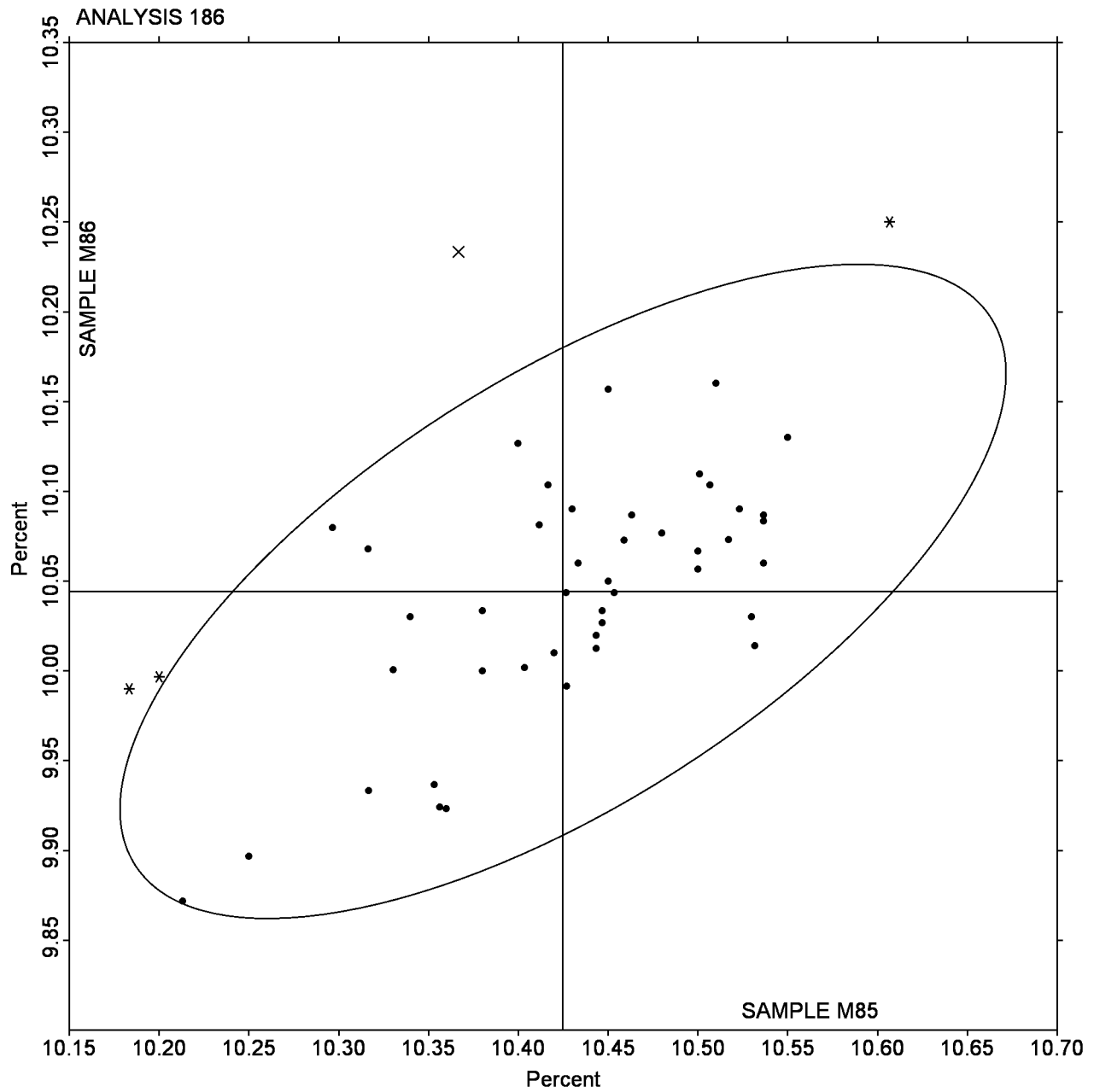
JQ8FYA (X) - Extreme data. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

Interlaboratory Testing Program for Metals

Analysis 186

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

SAMPLE M85 = 10.425 Percent SAMPLe M86 = 10.044 Percent



Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Q33G		17.60	0.10	1.14	16.40	0.06	0.57	GD
46MY44		17.58	0.08	0.91	16.31	-0.04	-0.41	DR
4APVQX		17.57	0.07	0.80	16.42	0.07	0.74	WD
4DKDJB		17.61	0.11	1.29	16.47	0.12	1.21	XR
4YLJUM		17.55	0.05	0.57	16.38	0.04	0.37	OE
6NATCQ	X	18.13	0.63	7.22	16.98	0.63	6.38	OE
6ZVE8L		17.38	-0.12	-1.32	16.21	-0.14	-1.43	WD
7YXFCH		17.46	-0.04	-0.46	16.36	0.02	0.17	OE
7ZTXL9		17.49	0.00	-0.04	16.40	0.06	0.57	DR
8MDEAP		17.33	-0.17	-1.94	16.48	0.13	1.31	ED
8ZRZXK		17.46	-0.04	-0.46	16.32	-0.02	-0.24	WC
9GLP8Q	X	17.80	0.31	3.49	16.93	0.58	5.84	IC
A7VZGB	*	17.27	-0.23	-2.62	16.17	-0.18	-1.82	OE
B7DR8U		17.35	-0.14	-1.63	16.18	-0.17	-1.68	OE
BERFCH		17.58	0.08	0.90	16.42	0.07	0.71	OE
D6UTU9		17.49	-0.01	-0.09	16.35	0.00	-0.02	OE
DLCXYM		17.39	-0.11	-1.21	16.21	-0.14	-1.38	OE
DQREJD		17.47	-0.02	-0.26	16.31	-0.04	-0.39	DR
DYHBAD		17.53	0.04	0.42	16.45	0.11	1.07	OE
ER66GL		17.27	-0.23	-2.62	16.59	0.24	2.45	OE
FAJYTV		17.49	-0.01	-0.11	16.22	-0.13	-1.31	OE
FUCZ4J		17.40	-0.10	-1.10	16.37	0.02	0.23	OE
GFD6AU		17.40	-0.10	-1.10	16.13	-0.21	-2.15	CM
GM6NCX		17.48	-0.02	-0.23	16.36	0.01	0.13	OE
GZKWNW		17.51	0.01	0.10	16.20	-0.15	-1.51	DR
HHZGUE		17.40	-0.10	-1.09	16.31	-0.04	-0.36	OE
J6699B		17.63	0.13	1.52	16.46	0.12	1.17	OE
J9GLY6		17.58	0.08	0.95	16.39	0.05	0.47	OE
JF2UB8	X	16.75	-0.75	-8.54	16.99	0.65	6.52	OE
JTGHV7		17.58	0.08	0.89	16.51	0.17	1.69	OE
KMCLTQ		17.63	0.13	1.52	16.55	0.21	2.08	OE
KQ8WTC	X	17.13	-0.36	-4.14	16.07	-0.28	-2.82	GD
LKEHFH		17.46	-0.04	-0.46	16.37	0.02	0.21	OE
LNKJYZ		17.52	0.03	0.30	16.42	0.08	0.77	OE
LQKDCN		17.54	0.04	0.49	16.41	0.06	0.60	OE
LUNGD6	X	17.84	0.35	3.95	16.72	0.37	3.73	OE
P6QDGG		17.58	0.08	0.91	16.52	0.17	1.71	OE
Q4MRTB		17.52	0.02	0.23	16.33	-0.01	-0.14	OE
R3CX44		17.53	0.04	0.42	16.27	-0.08	-0.81	XX
T9QVTE		17.32	-0.18	-2.05	16.25	-0.10	-0.98	OE
TGNX6L		17.45	-0.04	-0.49	16.30	-0.04	-0.44	OE
UZVKCC		17.47	-0.02	-0.27	16.22	-0.13	-1.31	OE
VK6AK7		17.46	-0.04	-0.46	16.34	-0.01	-0.10	XR
VMQ9JM		17.62	0.13	1.44	16.48	0.14	1.37	OE
VNWBYM		17.47	-0.02	-0.27	16.32	-0.03	-0.27	WD

Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VRZ39M		17.51	0.01	0.11	16.33	-0.01	-0.14	OE
W6QH2Z		17.40	-0.09	-1.08	16.35	0.00	-0.02	WD
WT8HER		17.48	-0.02	-0.20	16.29	-0.06	-0.57	DR
WTUFLK		17.48	-0.01	-0.15	16.34	0.00	-0.04	XR
X3N8BW		17.51	0.01	0.11	16.34	0.00	-0.04	WD
X6GLW8	*	17.72	0.22	2.55	16.52	0.17	1.74	OE
X9QHZ3		17.51	0.01	0.11	16.40	0.05	0.51	OE
XJMHPY		17.52	0.03	0.29	16.35	0.01	0.05	DR
YZR8DK		17.42	-0.07	-0.84	16.29	-0.06	-0.59	WD

Summary Statistics

	Sample M85	Sample M86
Grand Means	17.497 Percent	16.347 Percent
Stnd Dev Btwn Labs	0.088 Percent	0.099 Percent

Statistics based on 47 of 54 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #187

6NATCQ (X) - Data for both samples are high. Possible systematic error.

9GLP8Q (X) - Data for both samples are high. Possible systematic error.

JF2UB8 (X) - Low data for Sample M85. High data for Sample M86. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

KQ8WTC (X) - Data for both samples are low. Possible systematic error.

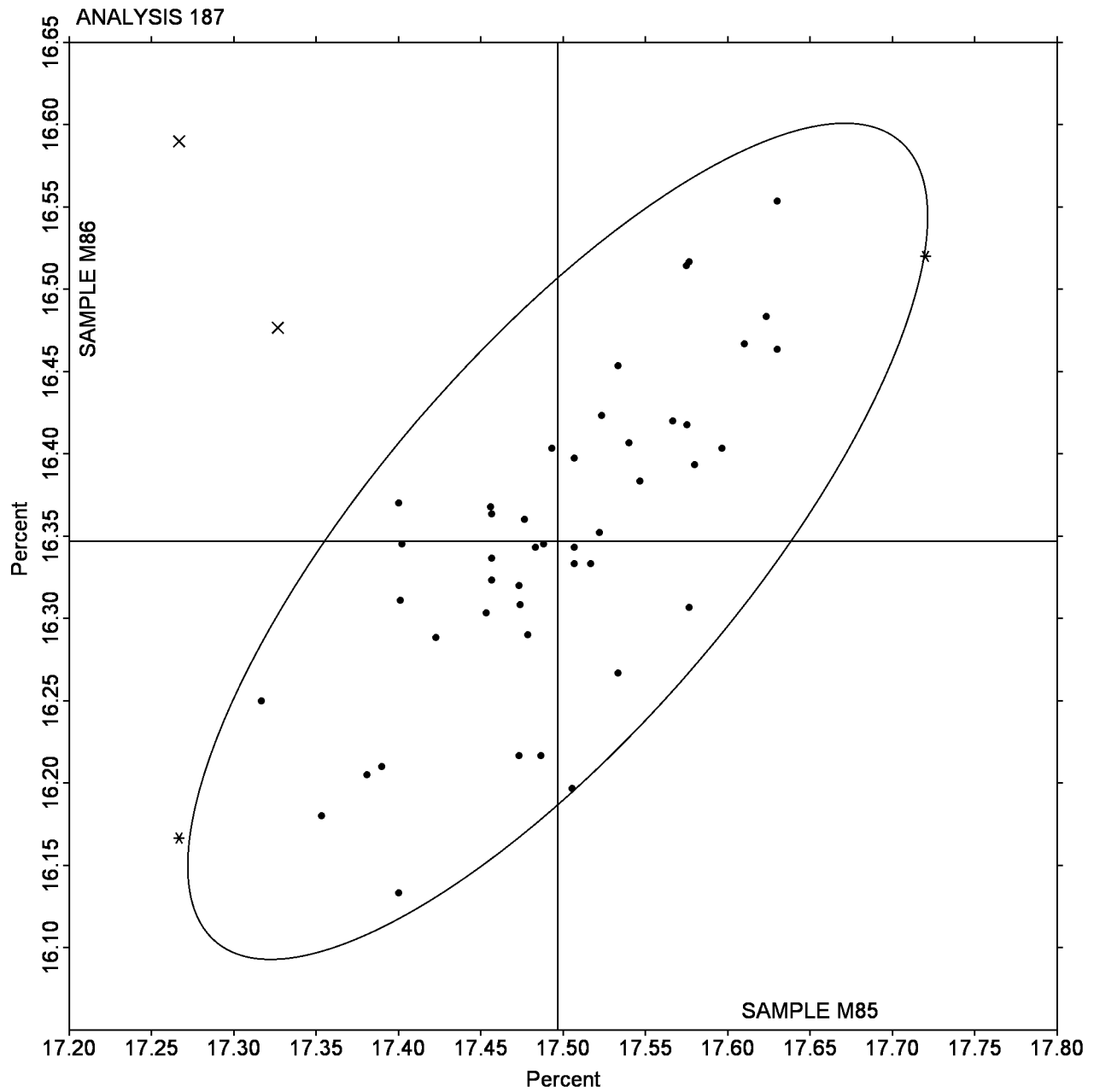
LUNGD6 (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 187

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

SAMPLE M85 = 17.497 Percent SAMPLE M86 = 16.347 Percent



Interlaboratory Testing Program for Metals

Analysis 188

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2KFBKM		2.012	-0.023	-0.91	2.028	-0.010	-0.37	OE
3J7K9Q		2.033	-0.002	-0.07	2.030	-0.008	-0.31	OE
6Z86RX		2.027	-0.008	-0.33	2.037	-0.001	-0.05	OE
7WTDKZ		2.026	-0.009	-0.36	2.028	-0.010	-0.40	OE
8BUARR		2.011	-0.024	-0.96	2.029	-0.009	-0.33	XR
8QUTPK		2.010	-0.025	-1.00	2.025	-0.013	-0.49	DR
9JANF3		2.050	0.015	0.58	2.060	0.022	0.85	OE
9MPNK2		2.063	0.028	1.10	2.047	0.009	0.34	OE
A2T9ZZ		2.047	0.012	0.45	2.049	0.011	0.41	WD
A682JD		2.080	0.045	1.76	2.070	0.032	1.24	DR
AEKQXC		2.045	0.010	0.39	2.032	-0.006	-0.24	DR
ALATBE		2.065	0.030	1.16	2.094	0.056	2.15	OE
BYF4KM		2.022	-0.013	-0.50	2.030	-0.008	-0.29	OE
CBLGC9		2.025	-0.010	-0.40	2.029	-0.009	-0.35	OE
CEJ3NJ		1.998	-0.037	-1.45	1.999	-0.039	-1.50	OE
DJVDLX		1.990	-0.045	-1.77	1.997	-0.041	-1.59	OE
E4KG7B	X	3.257	1.222	47.80	3.310	1.272	49.10	OE
E6JU86	X	1.940	-0.095	-3.72	1.967	-0.071	-2.75	XX
EA64KF		2.080	0.045	1.74	2.054	0.016	0.62	DR
ER4CK2		2.075	0.040	1.56	2.095	0.057	2.20	GD
ETNV4D		2.080	0.045	1.76	2.073	0.035	1.37	OE
FLJRJR		2.050	0.015	0.58	2.050	0.012	0.46	OE
G8HYKA		2.007	-0.028	-1.11	2.000	-0.038	-1.47	OE
GEXTJC		2.011	-0.024	-0.94	2.027	-0.011	-0.42	OE
HQX7NN		2.033	-0.002	-0.07	2.033	-0.005	-0.18	OE
HRGW82		2.024	-0.011	-0.45	2.034	-0.004	-0.17	OE
JBTV4H		1.978	-0.057	-2.24	1.984	-0.054	-2.07	OE
JV3AYW		2.000	-0.035	-1.38	2.000	-0.038	-1.47	XR
K8PFAJ		2.040	0.005	0.19	2.067	0.029	1.11	OE
LLPJEM		2.035	0.000	-0.01	2.023	-0.015	-0.59	OE
M49VM8		2.049	0.014	0.56	2.034	-0.004	-0.15	DR
MVT2BX	X	1.893	-0.142	-5.55	1.883	-0.155	-5.97	OE
N68KZP	X	2.194	0.159	6.20	2.183	0.145	5.60	OE
NTBGVV		2.031	-0.004	-0.18	2.024	-0.014	-0.53	WD
QALVL8		2.080	0.045	1.76	2.063	0.025	0.98	OE
RKDW8H	X	2.203	0.168	6.58	2.020	-0.018	-0.69	CM
RT98NT		2.034	-0.001	-0.03	2.032	-0.006	-0.23	WD
T38Z7D	*	2.031	-0.004	-0.16	1.996	-0.042	-1.62	OE
TEVZLU		2.037	0.002	0.06	2.037	-0.001	-0.05	OE
TLW3GY		2.044	0.009	0.35	2.045	0.007	0.26	WD
TV2HFY		2.022	-0.013	-0.51	2.027	-0.011	-0.42	WD
UM79Q8		2.045	0.010	0.37	2.057	0.019	0.72	OE
URR3DD		2.040	0.005	0.19	2.064	0.026	1.00	DR
VFFDWN		2.025	-0.010	-0.41	2.032	-0.006	-0.24	WD
VK77TH		2.034	-0.001	-0.03	2.066	0.028	1.09	DR

Interlaboratory Testing Program for Metals

Analysis 188

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

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WKK7BY	X	2.009	-0.026	-1.02	1.909	-0.129	-4.98	GD
WV2U4A		2.082	0.047	1.85	2.060	0.022	0.86	OE
XDL7RG		2.033	-0.002	-0.07	2.037	-0.001	-0.05	XX
XPYY3G		2.041	0.006	0.23	2.031	-0.007	-0.27	OE
XV67PT		2.000	-0.035	-1.36	2.013	-0.025	-0.98	OE
Y6TQX3		2.064	0.029	1.13	2.094	0.056	2.15	OE
YLYE7P		2.008	-0.027	-1.06	2.013	-0.025	-0.98	OE

Summary Statistics

	Sample M85	Sample M86
Grand Means	2.0351 Percent	2.0380 Percent
Stnd Dev Btwn Labs	0.0256 Percent	0.0259 Percent

Statistics based on 46 of 52 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #188

E4KG7B (X) - Data for both samples are high. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

E6JU86 (X) - Data for both samples are low. Possible systematic error.

MVT2BX (X) - Data for both samples are low and inconsistent within the determinations for both samples.

N68KZP (X) - Data for both samples are high. Possible systematic error.

RKDW8H (X) - Inconsistent in testing between samples, data for Sample M85 are high.

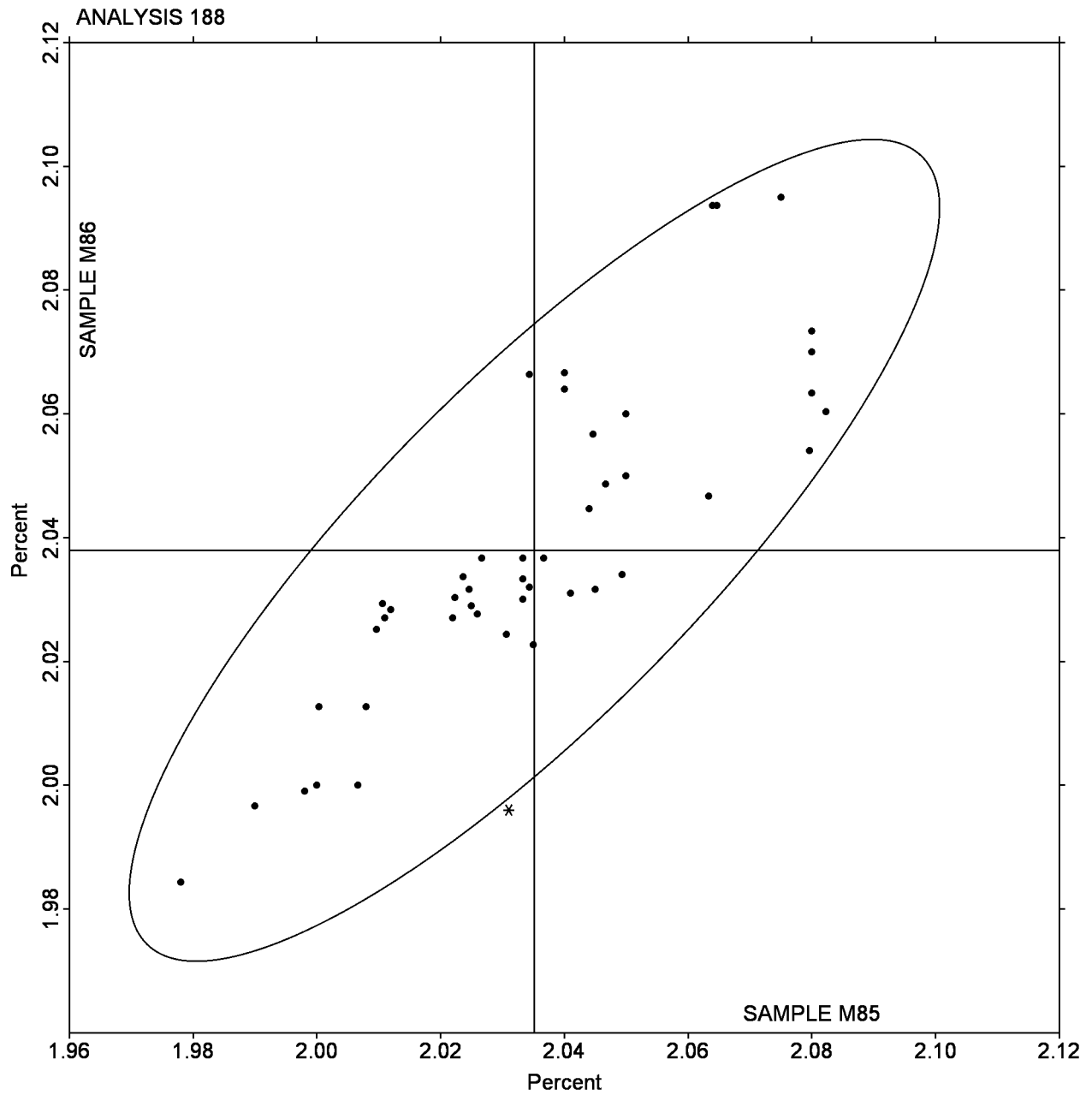
WKK7BY (X) - Low data for Sample M86 and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 188

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

SAMPLE M85 = 2.0351 Percent SAMPLE M86 = 2.0380 Percent



Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent

VANADIUM(V)

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HXYZY		0.073	-0.009	-1.97	0.056	-0.004	-1.04	OE
36DWBX		0.083	0.001	0.15	0.059	-0.001	-0.24	WD
3YCF6Y		0.085	0.002	0.50	0.061	0.001	0.29	OE
42WM78		0.081	-0.001	-0.27	0.060	0.000	0.03	DR
4KQE9Q		0.088	0.005	1.07	0.067	0.007	1.90	OE
66E7VU		0.079	-0.004	-0.76	0.058	-0.001	-0.38	CM
6JQPCA		0.081	-0.001	-0.27	0.059	-0.001	-0.24	OE
77LGVP		0.090	0.008	1.66	0.066	0.006	1.59	OE
7EBDTJ	X	0.025	-0.058	-12.26	0.018	-0.042	-11.11	OE
8EAALA		0.084	0.001	0.22	0.058	-0.002	-0.42	WD
ABUUMX		0.078	-0.005	-1.05	0.062	0.002	0.47	OE
APTRPB		0.080	-0.003	-0.63	0.059	-0.001	-0.24	OE
AX2TWK	*	0.095	0.012	2.55	0.070	0.010	2.79	OE
C6ZNZA		0.092	0.009	1.94	0.062	0.002	0.65	OE
DEZJPW		0.077	-0.006	-1.19	0.059	-0.001	-0.24	OE
EJK4VR		0.086	0.004	0.78	0.062	0.002	0.47	OE
FC9QXR		0.079	-0.004	-0.77	0.057	-0.003	-0.86	OE
FFXFLX		0.088	0.005	1.07	0.064	0.004	1.10	OE
GVUZ4X		0.080	-0.003	-0.56	0.056	-0.004	-1.04	XR
HTXUYZ		0.075	-0.007	-1.54	0.055	-0.005	-1.31	OE
JG4AFU		0.081	-0.002	-0.35	0.058	-0.002	-0.51	DR
JGM43M		0.087	0.004	0.92	0.065	0.005	1.36	OE
JLR8DV		0.081	-0.001	-0.27	0.057	-0.003	-0.69	OE
KXEDNH		0.082	0.000	-0.05	0.059	-0.001	-0.17	IC
L23GJH		0.090	0.007	1.56	0.060	0.000	0.03	OE
L7ALWF		0.085	0.003	0.57	0.063	0.003	0.74	OE
LQB9C8		0.082	-0.001	-0.20	0.060	0.000	0.03	WD
LRBKHV		0.075	-0.008	-1.69	0.054	-0.006	-1.58	XX
M67DY4		0.087	0.004	0.92	0.066	0.006	1.54	OE
PD6UH4	*	0.081	-0.002	-0.35	0.052	-0.008	-2.02	DR
QFU2D8		0.088	0.005	1.14	0.066	0.006	1.54	OE
QPV4FW		0.084	0.001	0.29	0.059	-0.001	-0.24	OE
R2GXWW		0.084	0.002	0.36	0.066	0.006	1.54	OE
R42V6V		0.090	0.007	1.56	0.052	-0.008	-2.20	OE
R4MWXC	X	0.064	-0.019	-4.01	0.062	0.002	0.47	OE
R6HUQX		0.082	-0.001	-0.24	0.058	-0.002	-0.46	DR
TC8ABU		0.087	0.004	0.85	0.061	0.001	0.29	OE
TDAQ9C		0.083	0.000	0.08	0.054	-0.006	-1.58	OE
TREWA3		0.076	-0.007	-1.47	0.059	-0.001	-0.24	IC
TT83X3		0.080	-0.003	-0.58	0.058	-0.002	-0.43	DR
UFVAPM		0.081	-0.002	-0.35	0.057	-0.003	-0.86	WD
VMKGDT		0.079	-0.004	-0.77	0.059	-0.001	-0.33	OE
WF2LVP		0.083	0.000	0.08	0.058	-0.002	-0.51	DR
WP8F4W		0.090	0.007	1.53	0.064	0.004	1.01	OE
WPKX2P		0.083	0.000	0.01	0.060	0.000	-0.06	OE

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
VANADIUM(V)

WebCode	Data Flag	Sample M85			Sample M86			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XVL3GR		0.078	-0.004	-0.91	0.060	0.000	0.03	OE
Z7CUJA		0.078	-0.004	-0.88	0.056	-0.004	-1.13	OE
ZDNMCX		0.082	-0.001	-0.20	0.058	-0.002	-0.60	OE
ZXRUQP		0.078	-0.004	-0.91	0.060	0.000	0.03	OE

Summary Statistics

	Sample M85		Sample M86	
Grand Means	0.0826	Percent	0.0599	Percent
Std Dev Btwn Labs	0.0047	Percent	0.0037	Percent

Statistics based on 46 of 49 reporting participants

Samples M85 , M86 : AISI 316, 316L

Comments on assigned Data Flags for Test #189

7EBDTJ (X) - Data for both samples are low. Laboratory possibly reported data for the Ni-bases alloy instead of the Corrosion resistant steel.

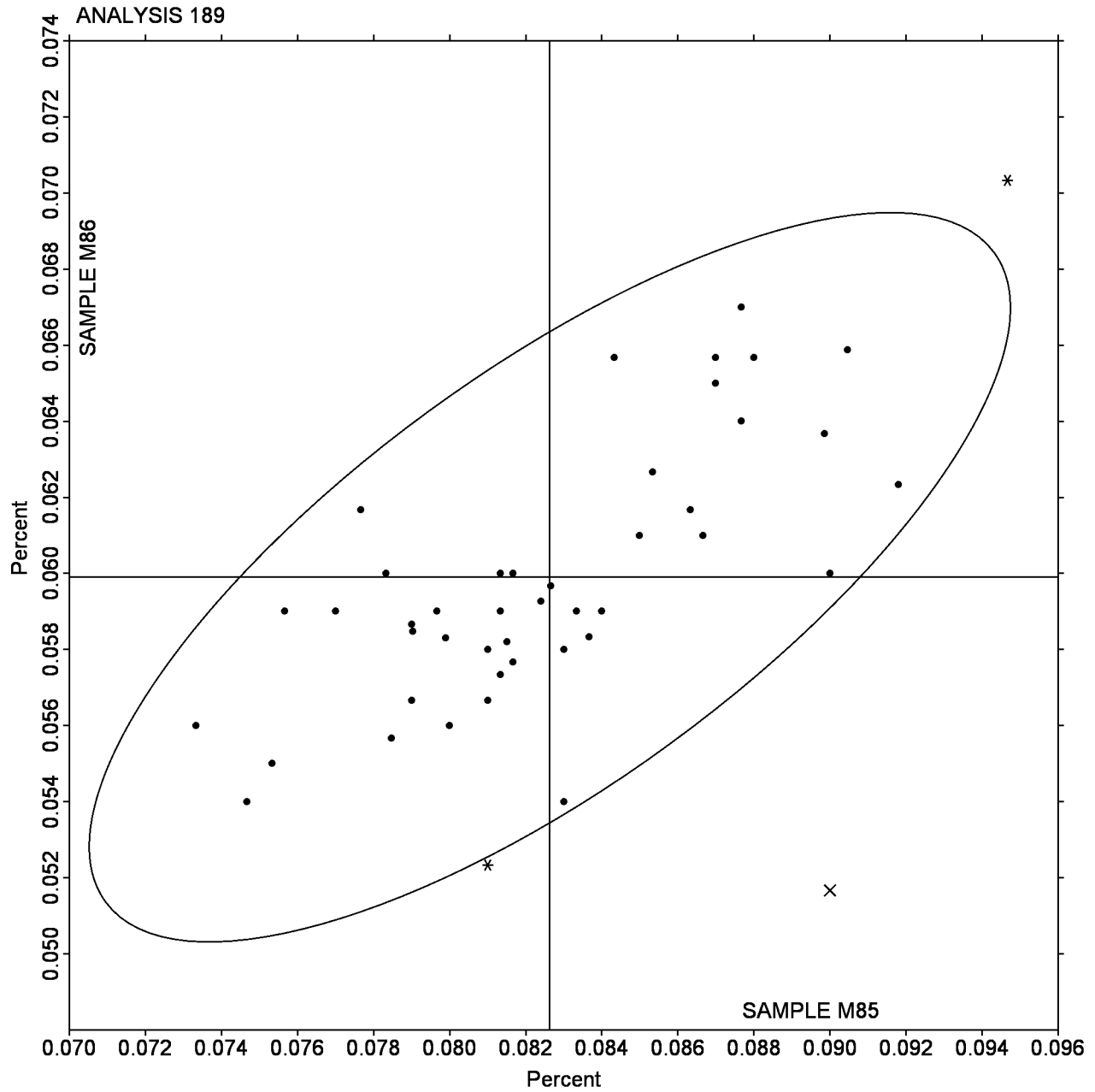
R4MWXC (X) - Inconsistent in testing between samples, data for Sample M85 are low.

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
VANADIUM(V)

SAMPLE M85 = 0.0826 Percent SAMPLe M86 = 0.0599 Percent



Instrument and Method Code List - Report# 90

Instrument information as provided by laboratories

Analysis Analysis Name

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

Instrument code and description

BA	Baldwin	BT	B.T.T. Corporation
CH	Chun Yen Testing Machines	FI	Fuel Instruments & Engineers
GA	Galdabini	IN	Instron
MT	MTS / Sintech	RI	Riehle Test System
SA	Satec	SH	Shimadzu
TO	Tinius Olsen	UN	United Testing Systems
XX	Instrument manufacturer not specified by la		

116 **Fastener Axial Tensile**

Instrument code and description

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

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

Instrument code and description

AV	Avery	BU	Buehler
CL	Clark	EM	EMCO
IN	Indentec	LE	Leco
MA	Matsuzawa	MI	Mitutoyo
MS	Misawaseiki	NA	New Age Industries
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

125 **Rockwell Hardness: Externally Threaded Fasteners**

Instrument code and description

AF	AFFRI	AK	Akashi
BU	Buehler	CL	Clark
EM	EMCO	FR	Frank Well
FT	Future-Tech	GR	Greenslade & Co.
HT	Hoytom	IN	Indentec
KF	Karl Frank GmbH	LE	Leco
MI	Mitutoyo	ML	MetLab
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
AV	Avery Denison	BU	Buehler, Ltd.
FU	Future-Tech	GN	Albert Gnehm
LE	Leco	SH	Shimadzu
ST	Struers	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
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		

128 **Fastener Axial Tensile - Metric**

Instrument code and description

GA	Galdabini	IN	Instron
LO	Losenhausen	RO	Roell & Korthaus
SH	Shimadzu	ST	Schenck-Trebel
TO	Tinius Olsen	UN	United Testing Systems
WB	Walter + Bai	WO	Wolpert
XX	Instrument manufacturer not specified by la		

129 **Fastener Double Shear**

Instrument code and description

AV	Avery Denison	MT	MTS / Sintech
RI	Riehle Test System	SA	Satec
TO	Tinius Olsen	XX	Instrument manufacturer not specified by la

130 Tensile Strength: Lab-Machined Flat Steel

Instrument code and description

ZZ Instruments No Longer Tracked

136 Rockwell Superficial Hardness (30N Scale)

Instrument code and description

AN	Antonik	BU	Buehler
CL	Clark	DE	Detroit Testing
FT	Future-Tech	IN	Indentec
LE	Leco	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

BR	Brinell Glass	BU	Buehler, Ltd.
LC	Leica	LE	Leco
LI	Leitz	NE	Nikon Eclipse
NI	Nikon Epiphoto	OB	Olympus BH2-UMA
OG	Olympus PMG	OL	Olympus PME
ON	Olympus (model not specified)	OZ	Olympus SZH
RE	Reichert-Jung MeF3	SF	Swift
WT	Wilson-Tukon	XX	Instrument manufacturer not specified by la
ZA	Zeiss Axiovert	ZE	Zeiss Jenaplan
ZU	Zeiss Universal	ZX	Zeiss (model not specified)

146 Effective Case Depth

Instrument code and description

AT	ATS	BU	Buehler, Ltd.
CL	Clark	CM	Clemex
FU	Future-Tech	LC	Leica
LE	Leco	LI	Leitz
MA	Matsuzawa	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
IC	ICP Spectrometry	OE	Optical Emission Spectrometry
WD	X-ray Fluorescence, Wavelength Dispersive	XR	X-ray Fluorescence (ED or WD not specifie
XX	Method not specified by lab		

180 Corrosion Resistant Steel, Element #1

Method code and description

CI	Combustion/IR
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Method code and description

CO Combustion

GD Glow Discharge Spectroscopy

XX Method not specified by lab

DR Direct Reading Optical Emission Spectrometry

OE Optical Emission Spectrometry