

Fasteners & Metals Testing Program

Summary Report # 88 - 4th Q 2009

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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 are excluded. For Chemical Analyses see an expansion on our website.
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 X81			Sample X82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
26G32U		168.07	3.19	1.89	167.07	0.93	0.60	XX
2TLHRV		163.17	-1.71	-1.02	163.63	-2.51	-1.62	SA
2Z8CPR		163.67	-1.21	-0.72	164.60	-1.54	-1.00	TO
383KXQ		165.77	0.89	0.52	168.30	2.16	1.40	UN
39EFKH		163.60	-1.28	-0.76	166.13	-0.01	0.00	XX
3CPJUE		163.00	-1.88	-1.11	164.07	-2.07	-1.34	TO
3JUFT7		163.20	-1.68	-1.00	163.87	-2.27	-1.47	SA
3V334Q		164.45	-0.43	-0.25	164.40	-1.75	-1.13	TO
3W8E6R		163.50	-1.38	-0.82	163.90	-2.24	-1.45	TO
4LBP2P		164.27	-0.61	-0.36	165.13	-1.01	-0.65	IN
6AN4XE	X	12.80	-152.08	-90.03	12.83	-153.31	-99.33	BA
6TLQUK	X	178.30	13.42	7.94	183.27	17.13	11.10	TO
7C2BNK		163.87	-1.01	-0.60	166.11	-0.03	-0.02	TO
7D24V7		164.42	-0.46	-0.27	166.21	0.07	0.05	SA
7WFLXY	*	161.10	-3.78	-2.24	165.57	-0.57	-0.37	BA
89LUG2		162.97	-1.91	-1.13	164.80	-1.34	-0.87	XX
8CHPJN		168.73	3.85	2.28	168.54	2.39	1.55	TO
8RYDCK		163.87	-1.01	-0.60	165.03	-1.11	-0.72	TO
9TXJKW		168.00	3.12	1.85	166.33	0.19	0.12	SA
A2DG89		165.50	0.62	0.37	164.57	-1.57	-1.02	TO
A3E9HM	*	166.88	2.00	1.18	170.41	4.27	2.77	UN
ANQ3CL		163.23	-1.65	-0.98	165.47	-0.67	-0.44	SH
BD2GXU		165.00	0.12	0.07	166.47	0.33	0.21	TO
BGQKAZ		165.33	0.45	0.27	167.33	1.19	0.77	SA
BHU3TH		161.30	-3.58	-2.12	165.20	-0.94	-0.61	BA
BKMQTR		167.33	2.45	1.45	168.00	1.86	1.20	TO
BNLLFR		163.27	-1.61	-0.96	163.47	-2.67	-1.73	SH
BVWDG8		164.86	-0.02	-0.01	165.73	-0.41	-0.27	SA
BZMKJT		167.03	2.15	1.27	167.67	1.53	0.99	TO
C8DJ77		167.07	2.19	1.29	167.97	1.83	1.18	TO
CLB93H		165.57	0.69	0.41	166.37	0.23	0.15	TO
CXW346		162.62	-2.26	-1.34	164.60	-1.54	-1.00	BA
DBQGB8		165.67	0.79	0.46	166.30	0.16	0.10	TO
DFXCMU		165.33	0.45	0.27	166.04	-0.10	-0.06	HT
DJ6JHU		164.71	-0.17	-0.10	164.99	-1.15	-0.75	SH
DRV6AZ		164.33	-0.55	-0.32	167.23	1.09	0.71	IN
DW3TKF		163.67	-1.21	-0.72	164.13	-2.01	-1.30	TO
EVCTJP		163.33	-1.55	-0.92	165.10	-1.04	-0.67	SA
F6BK4F		163.87	-1.01	-0.60	166.84	0.70	0.45	HT
FJE8WQ		164.70	-0.18	-0.11	164.93	-1.21	-0.78	XX
GHT69N		163.73	-1.15	-0.68	166.56	0.42	0.27	BA
H6ZFKX		166.13	1.25	0.74	164.80	-1.34	-0.87	SA
HKMZYW		162.67	-2.21	-1.31	164.27	-1.87	-1.21	SA
HV2X7Z		165.13	0.25	0.15	167.60	1.46	0.95	SA
J2Y92Q		164.10	-0.78	-0.46	164.60	-1.54	-1.00	TO

Interlaboratory Testing Program for Metals

Analysis 115

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ASTM F606

WebCode	Data Flag	Sample X81			Sample X82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
JYG3J9		163.89	-0.99	-0.59	165.44	-0.70	-0.45	IN
K3RZLG		163.07	-1.81	-1.07	166.80	0.66	0.43	IN
KAWPDM		165.44	0.56	0.33	167.18	1.04	0.67	FI
KBULUG		167.57	2.69	1.59	168.26	2.12	1.37	BA
KPURDT		165.03	0.15	0.09	167.63	1.49	0.97	TO
L8WQ2L		163.90	-0.98	-0.58	163.77	-2.37	-1.54	SA
LAJCNH		162.53	-2.35	-1.39	164.03	-2.11	-1.37	SA
LDBBPD		164.82	-0.06	-0.04	166.48	0.34	0.22	FI
LKPAVJ		165.00	0.12	0.07	165.00	-1.14	-0.74	TO
LQWJEY		164.96	0.08	0.05	165.50	-0.64	-0.42	SA
M7T79X		167.40	2.52	1.49	165.67	-0.47	-0.31	MT
M8JDE3		165.63	0.75	0.45	165.97	-0.17	-0.11	TO
MNTAYF		163.93	-0.95	-0.56	165.97	-0.17	-0.11	MT
N3VZPE		165.81	0.92	0.55	166.88	0.74	0.48	BA
NBRUPX		165.55	0.67	0.40	165.59	-0.55	-0.36	TO
NN4AH4		166.72	1.84	1.09	167.20	1.06	0.68	XX
NN4EQK		162.40	-2.48	-1.47	165.07	-1.07	-0.70	TO
NPD4WV		166.40	1.52	0.90	167.07	0.93	0.60	TO
NYYBBT		165.60	0.72	0.43	166.07	-0.07	-0.05	TO
P4ZAF4		164.13	-0.75	-0.44	166.90	0.76	0.49	TO
PMDCX4		165.20	0.32	0.19	167.48	1.34	0.87	BA
Q2TDA6		164.80	-0.08	-0.05	169.00	2.86	1.85	SA
QB9K9T		168.83	3.95	2.34	168.31	2.17	1.40	TO
QT6BPB		164.30	-0.58	-0.34	167.63	1.49	0.97	RI
R4WEXA		165.90	1.02	0.60	165.94	-0.20	-0.13	TO
RAH2EE		165.87	0.99	0.58	166.73	0.59	0.38	TO
T3D4AZ		165.17	0.28	0.17	167.31	1.17	0.76	SA
T8TG83		165.07	0.19	0.11	167.33	1.19	0.77	TO
T9U9JG		165.17	0.29	0.17	163.73	-2.41	-1.56	IN
TF29DQ	X	174.40	9.52	5.63	170.77	4.63	3.00	TO
TTUH9C		167.60	2.72	1.61	168.73	2.59	1.68	BT
UMZLXY		162.13	-2.75	-1.63	162.50	-3.64	-2.36	TO
VQAUC2	X	141.49	-23.40	-13.85	141.79	-24.35	-15.78	GA
VW6BEV		163.37	-1.51	-0.90	166.47	0.33	0.21	BA
WE7J3M	X	158.96	-5.92	-3.50	152.53	-13.61	-8.82	FI
XGA4HC		164.63	-0.25	-0.15	165.83	-0.31	-0.20	TO
XZ3FGR		164.30	-0.58	-0.34	167.97	1.83	1.18	SA
YY7CBN		168.00	3.12	1.85	167.83	1.69	1.09	TO
YZ34JA		165.87	0.99	0.58	167.07	0.93	0.60	TO
Z7HUXV		166.71	1.83	1.08	168.12	1.97	1.28	SH
ZGJF7E		167.23	2.35	1.39	168.17	2.03	1.31	BA
ZYZ73M		162.33	-2.55	-1.51	164.57	-1.57	-1.02	SA

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi

ASTM F606

Summary Statistics

	Sample X81	Sample X82
Grand Means	164.881 ksi	166.140 ksi
Stnd Dev Btwn Labs	1.689 ksi	1.543 ksi
Statistics based on 82 of 87 reporting participants		

Samples X81 , X82 : Fastener size 3/8-16x2.25**Comments on assigned Data Flags for Test #115**

6AN4XE (X) - Data were reported as load values, instead of tensile strength.

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

TF29DQ (X) - Data for both samples are high. Possible systematic error.

VQAUC2 (X) - Data for both samples are low. Possible systematic error.

WE7J3M (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q81			Sample Q82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24ECLK		167.43	0.91	0.57	167.31	0.90	0.60	SA
3RVCC6		167.67	1.15	0.72	167.33	0.93	0.62	TO
4BG4GD		165.67	-0.85	-0.54	166.17	-0.24	-0.16	TO
4DP893		167.07	0.55	0.34	167.63	1.23	0.82	TO
4KYQ7F		165.27	-1.25	-0.79	166.10	-0.31	-0.20	IN
77GQQR		168.00	1.48	0.93	166.00	-0.41	-0.27	TO
7JNYR4		165.47	-1.05	-0.66	166.20	-0.21	-0.14	TO
89LXQJ		167.90	1.38	0.87	166.37	-0.04	-0.03	SA
8RRPBR		165.47	-1.05	-0.66	166.77	0.36	0.24	TO
9JGL3X		164.70	-1.82	-1.14	165.63	-0.77	-0.52	XX
AP3YF6		168.03	1.51	0.95	166.63	0.23	0.15	BA
ATLFWJ		166.03	-0.49	-0.31	164.83	-1.57	-1.05	IN
B2XCDG		166.20	-0.32	-0.20	166.03	-0.37	-0.25	TO
BJTLWQ		165.47	-1.05	-0.66	167.43	1.03	0.68	IN
C4CXFH		167.10	0.58	0.36	166.88	0.47	0.32	BA
C7BGXH		166.00	-0.52	-0.33	167.27	0.86	0.57	IN
DEMZXJ		167.12	0.60	0.38	165.53	-0.88	-0.59	HT
DMKZPD		167.00	0.48	0.30	166.47	0.06	0.04	TO
DQHJLJ		165.70	-0.82	-0.52	164.97	-1.44	-0.96	SA
EDMDTR		168.70	2.18	1.37	166.53	0.13	0.08	TO
EEWABQ		166.80	0.28	0.18	167.93	1.53	1.02	TO
ER6KQ7	X	170.87	4.35	2.73	173.20	6.79	4.53	TO
EXJLGP		167.60	1.08	0.68	167.23	0.83	0.55	SH
FFND8D		166.82	0.30	0.19	166.28	-0.13	-0.08	TO
FZWWKL		164.09	-2.43	-1.53	166.00	-0.41	-0.27	SA
GCDTLU		168.00	1.48	0.93	167.67	1.26	0.84	SA
GPFH33		167.83	1.31	0.83	167.67	1.26	0.84	TO
H224NX		165.97	-0.55	-0.35	167.97	1.56	1.04	SA
HAQFRH		166.00	-0.52	-0.33	167.10	0.69	0.46	SA
HDYVRF	*	165.67	-0.85	-0.54	169.00	2.59	1.73	TO
HJCYCX		164.83	-1.69	-1.06	163.57	-2.84	-1.89	SA
HN8H8L		164.20	-2.32	-1.46	165.67	-0.74	-0.49	SA
HRLUQ3		168.10	1.58	0.99	167.43	1.03	0.68	MT
JDVQV7		167.80	1.28	0.80	167.90	1.49	0.99	XX
JKY6Q2	X	154.47	-12.05	-7.57	160.70	-5.70	-3.80	FI
JTTV7M		169.00	2.48	1.56	167.07	0.66	0.44	SA
K6H74U		164.95	-1.57	-0.99	165.41	-1.00	-0.66	WZ
KDNKQ9	X	1,883.14	1,716.62	1,078.78	1,895.08	1,728.67	1,152.31	TO
KGQYGQ		167.57	1.05	0.66	167.20	0.79	0.53	TO
KZFQDB		168.10	1.58	0.99	167.96	1.55	1.03	TO
L3CYEX		169.38	2.86	1.80	168.55	2.14	1.43	TO
L7FLDW		163.83	-2.69	-1.69	163.18	-3.22	-2.15	BA
LREG2X		165.47	-1.05	-0.66	163.20	-3.21	-2.14	SA
MDFE7G		165.67	-0.85	-0.54	164.33	-2.07	-1.38	TO
MQBEA7		166.83	0.31	0.20	168.30	1.89	1.26	UN

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

WebCode	Data Flag	Sample Q81			Sample Q82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
NTCERV		167.30	0.78	0.49	167.17	0.76	0.51	SA
PA7GME		165.97	-0.55	-0.35	163.46	-2.95	-1.96	MT
PG8E8G		166.97	0.45	0.28	165.30	-1.11	-0.74	TO
PQWYU3		165.43	-1.09	-0.68	164.57	-1.84	-1.23	BA
PUYW6V		164.93	-1.59	-1.00	164.20	-2.21	-1.47	SA
PX4JZC		168.00	1.48	0.93	168.33	1.93	1.28	TO
Q69KA8		169.41	2.89	1.81	170.02	3.61	2.41	UN
Q7G9EH		168.47	1.95	1.22	168.27	1.86	1.24	TO
RB43NH		170.00	3.48	2.19	169.06	2.65	1.77	MT
RC9RL7	X	141.90	-24.62	-15.47	142.86	-23.54	-15.69	GA
RD3BRF	*	164.53	-1.99	-1.25	162.17	-4.24	-2.83	RI
REJLMQ		164.37	-2.15	-1.35	164.43	-1.97	-1.32	TO
RERFRJ	X	171.95	5.43	3.41	173.07	6.66	4.44	TO
RK9UDC		165.60	-0.92	-0.58	166.90	0.49	0.33	SA
T4DDPK		163.43	-3.09	-1.94	165.37	-1.04	-0.69	SA
T9L2YD		165.80	-0.72	-0.45	165.50	-0.91	-0.60	TO
TFKFUP		167.03	0.51	0.32	166.36	-0.04	-0.03	SH
TQQ46Z		167.66	1.14	0.72	166.37	-0.04	-0.02	SH
TRQHUY		167.74	1.22	0.77	167.79	1.38	0.92	XX
U2PV3X		165.09	-1.43	-0.90	166.84	0.44	0.29	IN
UCEYPB		166.63	0.11	0.07	166.73	0.33	0.22	DY
V6J86N	X	185.20	18.68	11.74	184.09	17.68	11.78	XX
VQ6N49		166.47	-0.05	-0.03	165.42	-0.99	-0.66	SA
VTBHEY		168.40	1.88	1.18	167.21	0.80	0.53	SH
VYBQVZ		165.30	-1.22	-0.77	165.23	-1.17	-0.78	TO
VZHBBM		168.62	2.10	1.32	167.85	1.44	0.96	TO
W8K8RL		163.67	-2.85	-1.79	165.83	-0.57	-0.38	TO
WRP6A9		168.33	1.81	1.14	168.00	1.59	1.06	SA
WUR8WP		166.10	-0.42	-0.26	168.27	1.86	1.24	SA
X7ZCKW		167.36	0.84	0.52	165.18	-1.22	-0.82	SA
XRP62R		168.20	1.68	1.06	165.63	-0.77	-0.52	TO
XXVBPP		168.82	2.30	1.44	167.35	0.95	0.63	TO
YARJ4L	X	12.97	-153.55	-96.50	12.97	-153.44	-102.28	BA
YEZYDA		165.10	-1.42	-0.89	166.37	-0.04	-0.03	XX
YJFAQE		164.95	-1.57	-0.98	166.17	-0.23	-0.16	SA
YLF47P		166.97	0.45	0.28	165.13	-1.28	-0.85	TO
YT8AFA		166.63	0.11	0.07	164.83	-1.57	-1.05	SA
YXMQXE	*	163.27	-3.25	-2.04	166.60	0.19	0.13	IN
ZL2YMG		163.00	-3.52	-2.21	164.70	-1.71	-1.14	TO

Summary Statistics

	Sample Q81	Sample Q82
Grand Means	166.520 ksi	166.410 ksi
Std Dev Btwn Labs	1.591 ksi	1.500 ksi

Statistics based on 77 of 84 reporting participants

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi

ASTM F606

Samples Q81 , Q82 : Fastener size 3/8-16x2.25**Comments on assigned Data Flags for Test #116**

ER6KQ7 (X) - Inconsistent in testing between samples, data for Sample Q82 are high.

JKY6Q2 (X) - Data for both samples are low.

KDNKQ9 (X) - Data were reported as load values, instead of tensile strength.

RC9RL7 (X) - Data for both samples are low. Possible systematic error.

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

V6J86N (X) - Data for both samples are high. Possible systematic error.

YARJ4L (X) - Data were reported as load values, instead of tensile strength.

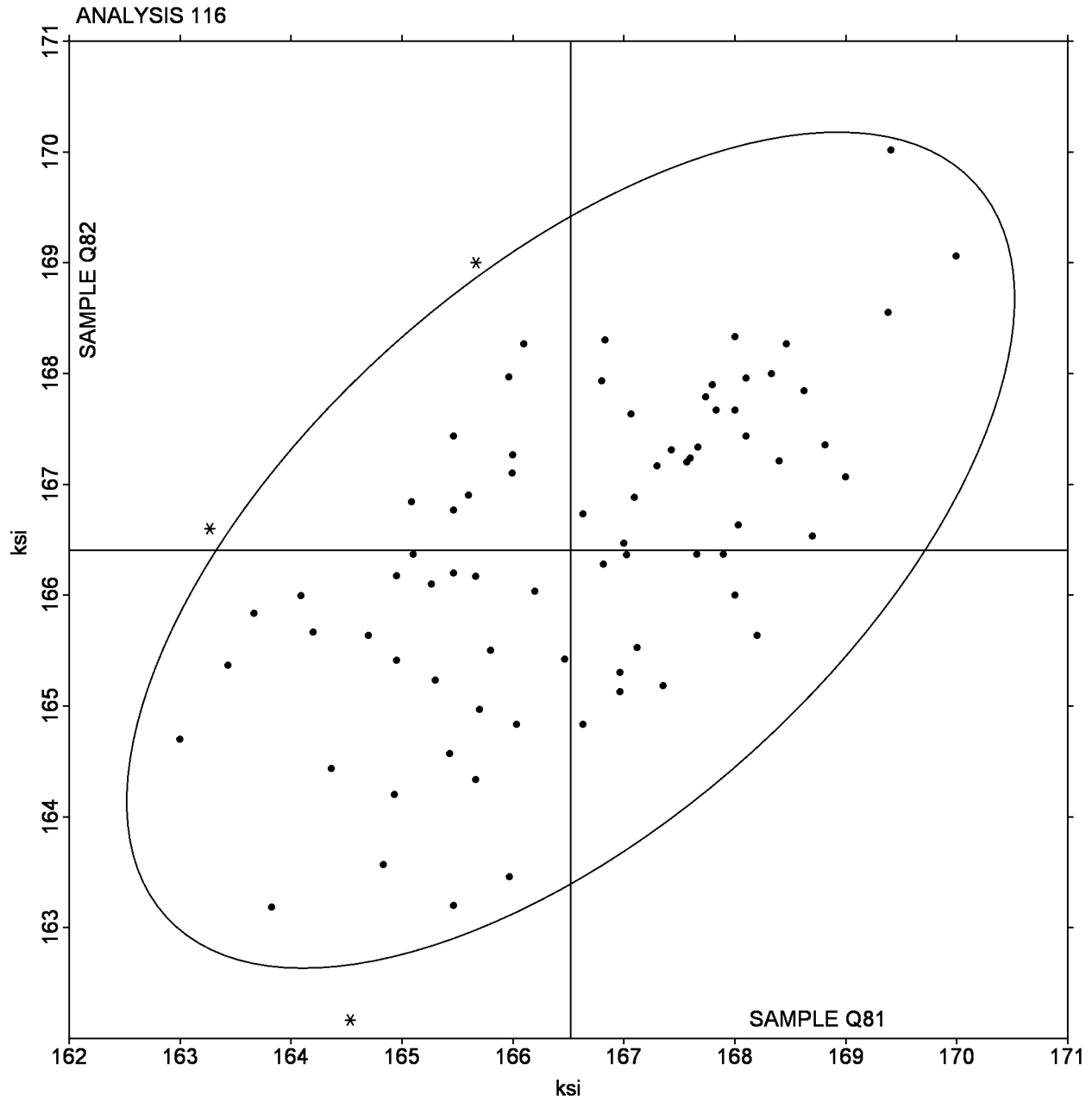
Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

SAMPLE Q81 = 166.520 ksi

SAMPLE Q82 = 166.410 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 G81			Sample G82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2GCT37		37.84	0.66	1.22	37.87	0.86	1.54	XX
2KTJBG	X	35.88	-1.31	-2.43	34.69	-2.32	-4.15	WI
32GJ2L		37.53	0.35	0.65	37.11	0.11	0.19	WI
3NRAWM		37.81	0.63	1.17	38.18	1.17	2.09	WO
3TC49D		37.43	0.25	0.47	37.19	0.18	0.33	UN
468H9M		37.25	0.07	0.13	37.08	0.07	0.12	MI
47L79A		37.77	0.59	1.09	37.51	0.50	0.90	UN
4ED88R		37.16	-0.02	-0.04	36.88	-0.12	-0.22	WI
4LKTC3		37.18	-0.01	-0.01	37.11	0.10	0.18	UN
646LDD		37.89	0.71	1.33	37.02	0.01	0.02	WI
6AVEMC		36.49	-0.69	-1.28	36.09	-0.92	-1.64	NA
6BQN82	*	36.75	-0.43	-0.80	37.53	0.52	0.93	BU
73ZLDB		37.50	0.32	0.59	37.44	0.43	0.77	WI
7CNCKH		37.57	0.39	0.72	37.37	0.36	0.65	WI
7ENQ92		37.22	0.04	0.07	36.86	-0.15	-0.27	UN
7ENTTY		37.56	0.38	0.70	37.60	0.59	1.06	UN
7KDB6P		37.26	0.08	0.14	37.49	0.48	0.86	BU
7MXY8W	*	35.71	-1.47	-2.74	36.00	-1.01	-1.80	WI
7VECLM		36.78	-0.40	-0.74	36.50	-0.51	-0.90	WI
7WFGPG		36.86	-0.32	-0.60	36.89	-0.12	-0.21	UN
8GWW3L		37.74	0.56	1.05	37.71	0.71	1.27	MI
8HNZTA		37.74	0.56	1.04	37.35	0.34	0.62	WO
8RFWUW	X	36.13	-1.06	-1.96	37.43	0.42	0.75	WI
9BXWZK	*	37.46	0.28	0.51	38.31	1.31	2.34	WI
9LYPTP		37.18	-0.01	-0.01	37.24	0.23	0.42	UN
AAMVTY		37.73	0.54	1.01	37.23	0.23	0.40	WI
AFMWRK		36.99	-0.19	-0.35	37.36	0.36	0.64	WI
AGAQWZ		36.72	-0.46	-0.86	36.66	-0.34	-0.61	XX
B9WWJJ		36.66	-0.52	-0.96	36.73	-0.28	-0.50	FT
BEKLB9		37.67	0.49	0.91	37.37	0.36	0.65	WI
BLVLTJ		36.93	-0.26	-0.47	37.14	0.14	0.25	BU
BTBWYJ	*	38.58	1.39	2.59	38.27	1.26	2.26	UN
BVWZUQ	X	35.32	-1.86	-3.46	35.30	-1.71	-3.05	TG
CCQW7X		36.73	-0.45	-0.83	36.14	-0.86	-1.54	WI
CDBQB2		36.34	-0.84	-1.57	36.29	-0.71	-1.27	WI
CHRQR9		37.26	0.08	0.14	36.81	-0.19	-0.35	WI
D7XFCE		36.88	-0.31	-0.57	36.71	-0.29	-0.52	WI
DFXR72		37.25	0.07	0.13	37.19	0.18	0.33	WO
E6YPJ6		37.58	0.40	0.74	37.10	0.09	0.17	UN
E8KML2		36.50	-0.68	-1.26	36.16	-0.85	-1.52	CL
E9X8EB		36.69	-0.49	-0.90	36.74	-0.26	-0.47	WI
EEP96Q		37.78	0.59	1.10	37.18	0.18	0.31	WI
EKLEUY	X	35.83	-1.36	-2.52	36.95	-0.06	-0.10	WI
EYATKZ		37.38	0.19	0.36	37.13	0.12	0.21	AV
FFYWJM		36.34	-0.84	-1.55	36.28	-0.73	-1.31	UN

Interlaboratory Testing Program for Metals

Analysis 125

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

WebCode	Data Flag	Sample G81			Sample G82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
FLYB94	X	34.15	-3.03	-5.63	33.69	-3.32	-5.94	XX
FUEZYP		37.09	-0.09	-0.17	37.12	0.11	0.20	UN
FZVQXC		37.09	-0.09	-0.17	37.22	0.21	0.38	UN
G4EUTE		37.51	0.33	0.62	37.60	0.59	1.06	AK
G8F9NE	X	33.38	-3.80	-7.06	33.03	-3.98	-7.12	CL
GNR9Q2		37.51	0.33	0.62	37.25	0.24	0.44	WI
GXN46D	*	38.02	0.84	1.56	36.96	-0.04	-0.08	AF
HA3PCX		37.31	0.13	0.25	36.63	-0.38	-0.68	SP
HEWQBQ		37.55	0.37	0.69	37.09	0.08	0.15	WI
HJF7EB		36.74	-0.44	-0.81	36.21	-0.79	-1.42	UN
HVEQ74		37.25	0.07	0.13	37.12	0.11	0.20	CL
J8HMCA		37.16	-0.02	-0.04	37.38	0.37	0.66	UN
JPTCWF		36.38	-0.81	-1.50	36.76	-0.24	-0.43	NA
JU8MBK		37.80	0.62	1.15	37.06	0.05	0.09	WI
K3KEGE		37.02	-0.16	-0.30	36.51	-0.49	-0.88	WI
KD7LJ3		36.79	-0.39	-0.73	36.82	-0.19	-0.33	WI
KFBUFV		37.14	-0.04	-0.08	36.94	-0.07	-0.12	BU
KFWYXE		36.16	-1.02	-1.89	36.23	-0.78	-1.40	WI
KGEMWM		37.51	0.33	0.62	37.11	0.10	0.18	XX
KKDHHN		37.51	0.33	0.62	37.24	0.24	0.43	WI
KZJTZG		36.70	-0.48	-0.89	36.88	-0.13	-0.23	FR
L8J4TX		37.06	-0.12	-0.22	36.75	-0.26	-0.46	WI
LG42M		36.88	-0.30	-0.56	36.95	-0.06	-0.10	GR
LJUZUA		37.98	0.80	1.49	37.62	0.61	1.10	RS
LKMXBF		36.44	-0.74	-1.38	36.40	-0.61	-1.08	UN
LRG3YY		36.39	-0.79	-1.47	35.66	-1.34	-2.40	WI
MQPYMN		36.60	-0.58	-1.08	36.34	-0.67	-1.20	ML
N6A633		36.94	-0.24	-0.44	36.68	-0.33	-0.59	KF
NBANP9		37.00	-0.18	-0.34	36.38	-0.63	-1.13	MI
PN3YDC		36.43	-0.76	-1.40	36.69	-0.31	-0.56	WI
QCUB4E	X	33.88	-3.30	-6.13	33.95	-3.06	-5.47	NA
QGMZBQ		36.70	-0.48	-0.89	36.64	-0.36	-0.65	WI
QHJBQT		36.36	-0.82	-1.52	36.06	-0.94	-1.69	WI
QMRYN2		36.30	-0.88	-1.64	36.70	-0.31	-0.55	UN
REJC2L		37.25	0.07	0.13	37.48	0.47	0.84	BU
RQLXW7		37.19	0.01	0.02	37.30	0.29	0.53	CL
RXBLLA	*	37.19	0.01	0.02	37.93	0.93	1.66	WI
U3FK6L		37.18	-0.01	-0.01	37.03	0.03	0.05	NA
UDTPYA		36.79	-0.39	-0.73	36.22	-0.79	-1.41	IN
UPHVJR		38.01	0.83	1.55	37.01	0.00	0.00	NA
UQDU3D		37.80	0.62	1.15	37.18	0.18	0.31	RS
V74WWA		37.78	0.59	1.10	37.32	0.31	0.56	LE
V8TM4L		37.20	0.02	0.04	37.42	0.41	0.74	UN
VTZWHP		37.64	0.46	0.85	37.51	0.50	0.90	UN
VWBKPU		37.14	-0.04	-0.07	37.34	0.34	0.61	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 G81			Sample G82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VYRWZR		38.06	0.88	1.63	37.78	0.77	1.38	WI
W8PX2V		37.60	0.42	0.78	37.36	0.36	0.64	UN
WC9V9K		37.23	0.04	0.08	36.23	-0.77	-1.39	WI
WTDQV6		36.28	-0.91	-1.68	36.48	-0.52	-0.94	UN
WYVXHW		36.56	-0.62	-1.15	36.19	-0.82	-1.46	CL
XAKTZ2		38.00	0.82	1.52	37.97	0.96	1.72	WI
XG7LC2		37.84	0.66	1.22	37.97	0.96	1.72	WI
XGJNYW		37.53	0.35	0.65	36.84	-0.17	-0.30	WI
XHNVMA		36.87	-0.31	-0.58	37.10	0.09	0.17	UN
YNJX6R		36.70	-0.48	-0.89	36.18	-0.83	-1.49	WI
ZGHPRJ		37.26	0.08	0.14	37.31	0.31	0.55	MI
ZH4T9Y		36.40	-0.78	-1.45	35.76	-1.25	-2.24	WI
ZPRXG8		36.85	-0.33	-0.61	36.31	-0.69	-1.24	WI
ZRLAHX		38.04	0.86	1.59	37.68	0.67	1.20	BU
ZTL22Y		37.91	0.73	1.35	37.64	0.64	1.14	EM
ZZF2PK		37.63	0.44	0.83	37.26	0.26	0.46	LE

Summary Statistics

	Sample G81	Sample G82
Grand Means	37.180 HRC	37.010 HRC
Std Dev Btwn Labs	0.538 HRC	0.559 HRC

Statistics based on 99 of 106 reporting participants

Samples G81 , G82 : Fastener size 1/2-20x2.5, 1/2-20x2.75

Comments on assigned Data Flags for Test #125

2KTJBG (X) - Inconsistent in testing between samples, data for Sample G82 are low.

8RFWUW (X) - Inconsistent in testing between samples and inconsistent within the determinations for Sample G81.

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

EKLEUY (X) - Inconsistent in testing between samples and inconsistent within the determinations for Sample G81.

FLYB94 (X) - Data for both samples are low. Possible systematic error.

G8F9NE (X) - Data for both samples are low and inconsistent within the determinations for both samples.

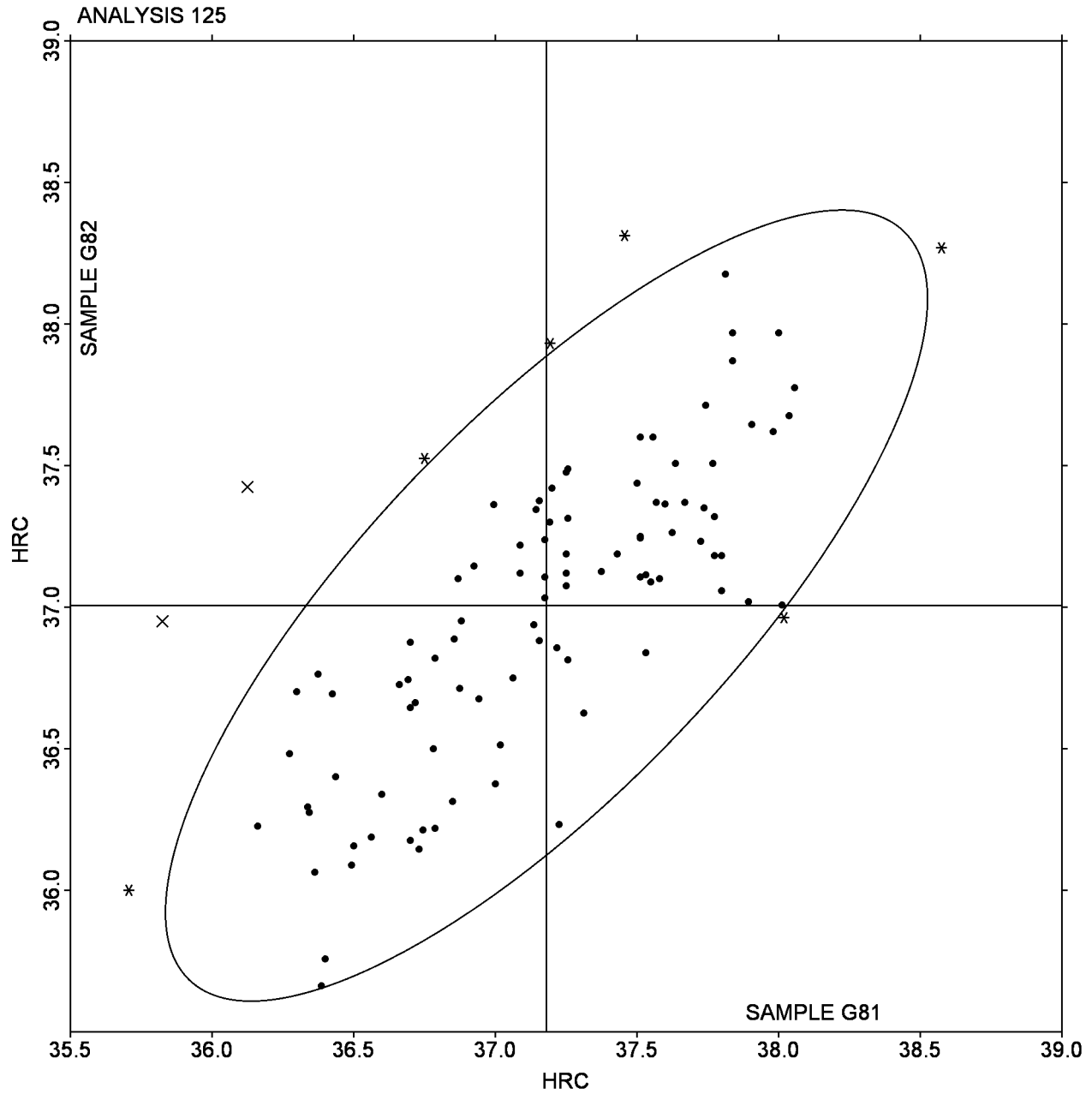
QCUB4E (X) - Data for both samples are low and inconsistent within the determinations for both samples.

Interlaboratory Testing Program for Metals

Analysis 125

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

SAMPLE G81 = 37.180 HRC SAMPLE G82 = 37.010 HRC



Interlaboratory Testing Program for Metals

Analysis 126

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

WebCode	Data Flag	Sample V81			Sample V82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
393GP9		374.00	3.13	0.40	373.75	0.21	0.03	AK
7UDHEN		368.25	-2.62	-0.33	376.63	3.08	0.38	LE
8KYNJY		374.24	3.36	0.43	373.12	-0.43	-0.05	LE
B4UMRH		362.31	-8.56	-1.08	363.63	-9.92	-1.23	LE
CJLUKZ		375.69	4.82	0.61	381.25	7.71	0.96	AR
FZRFB2		357.94	-12.93	-1.64	358.00	-15.54	-1.93	WO
GCL8F6		367.31	-3.56	-0.45	374.13	0.58	0.07	GN
JFCVVF		373.56	2.69	0.34	368.13	-5.42	-0.67	WO
JQLMTV		387.75	16.88	2.13	390.75	17.21	2.13	XX
MVRDPQ		367.13	-3.75	-0.47	372.13	-1.42	-0.18	SH
NMNQ6E		378.69	7.82	0.99	380.19	6.64	0.82	XX
X6U7LX		374.06	3.19	0.40	379.06	5.52	0.68	WO
X797JX		371.81	0.94	0.12	370.00	-3.54	-0.44	AK
ZZBKEF		359.48	-11.40	-1.44	368.86	-4.69	-0.58	MI

Summary Statistics

	Sample V81	Sample V82
Grand Means	370.872 HV	373.540 HV
Stnd Dev Btwn Labs	7.906 HV	8.067 HV

Statistics based on 14 of 14 reporting participants

Samples V81 , V82 : Fastener size 1/2-20x2.5

Analysis Notes for Test #126

No "X" flags were assigned for this analysis.

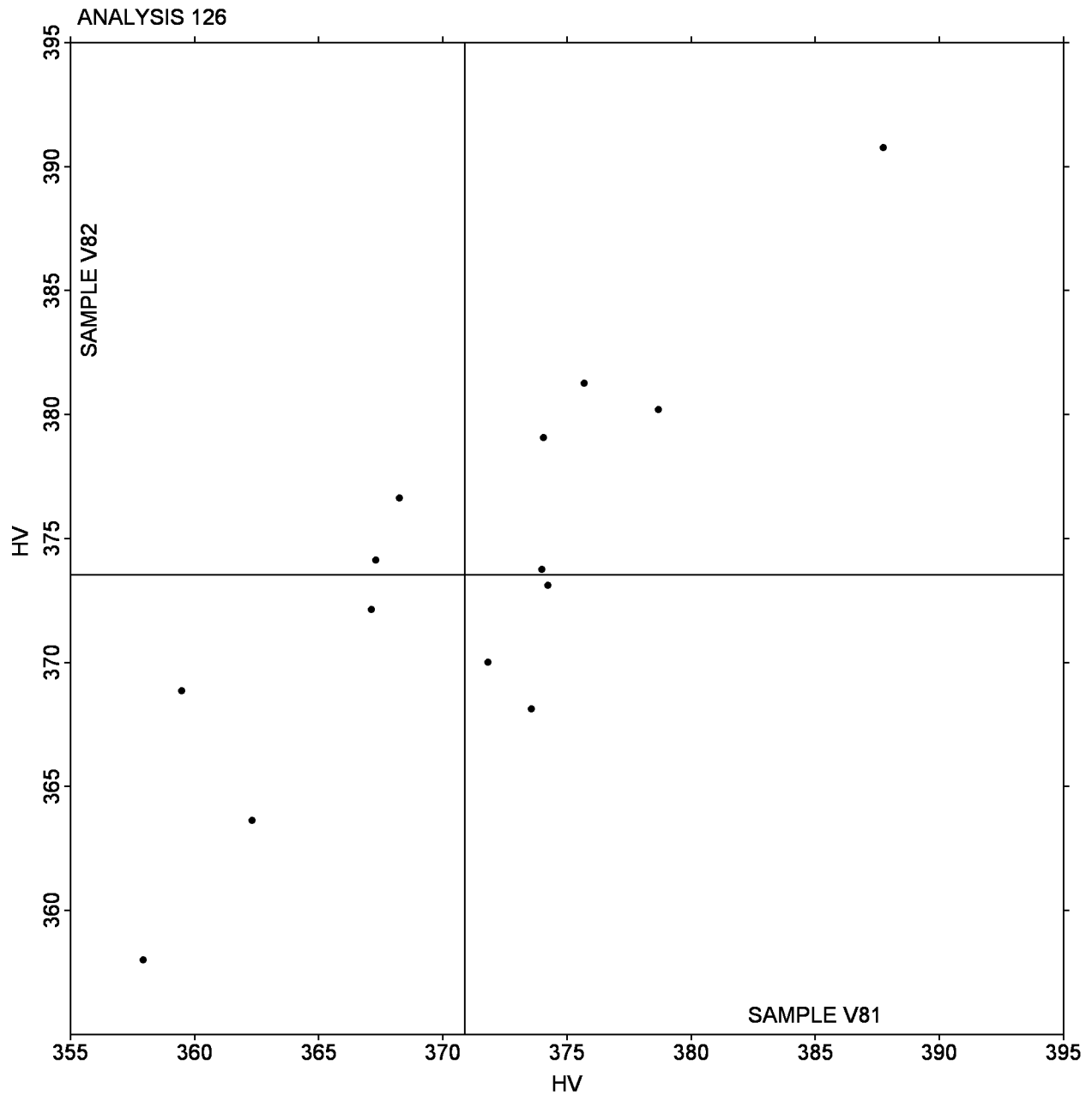
Interlaboratory Testing Program for Metals

Analysis 126

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

SAMPLE V81 = 370.872 HV

SAMPLE V82 = 373.540 HV



Interlaboratory Testing Program for Metals

Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample B81			Sample B82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22DY4R		1,118.00	6.85	0.65	1,119.00	2.28	0.27	WZ
4BZ3EC		1,118.67	7.51	0.72	1,114.00	-2.72	-0.32	TO
62VR3K		1,108.33	-2.82	-0.27	1,118.67	1.95	0.23	TO
7UEXXN		1,113.67	2.51	0.24	1,112.33	-4.39	-0.51	TO
8FBUWZ		1,108.67	-2.49	-0.24	1,104.33	-12.39	-1.45	MR
8KNM8R		1,112.33	1.18	0.11	1,114.67	-2.05	-0.24	SA
9DUDJM	*	1,121.33	10.18	0.97	1,139.67	22.95	2.69	TO
A2UFHK		1,090.67	-20.49	-1.95	1,121.33	4.61	0.54	XX
AKJYRK		1,126.67	15.51	1.48	1,105.00	-11.72	-1.38	UN
AXEXEC2		1,100.67	-10.49	-1.00	1,121.67	4.95	0.58	SH
B927TW		1,113.97	2.81	0.27	1,115.73	-0.99	-0.12	TO
C2M3UF		1,124.00	12.85	1.22	1,134.33	17.61	2.07	UN
C7PXY3		1,127.33	16.18	1.54	1,123.33	6.61	0.78	SA
DTHXTG		1,098.33	-12.82	-1.22	1,125.33	8.61	1.01	WZ
FFYZNC		1,102.67	-8.49	-0.81	1,103.67	-13.05	-1.53	LO
KD368X		1,118.67	7.51	0.72	1,116.67	-0.05	-0.01	SA
KFCJ26		1,108.56	-2.60	-0.25	1,115.64	-1.08	-0.13	RO
KY9RDH		1,105.47	-5.69	-0.54	1,114.33	-2.39	-0.28	ST
LC98HB		1,125.67	14.51	1.38	1,108.67	-8.05	-0.95	MF
MMGWDK		1,108.67	-2.49	-0.24	1,111.00	-5.72	-0.67	HP
NC99WL		1,099.00	-12.15	-1.16	1,120.67	3.95	0.46	TO
RZ7633		1,116.67	5.51	0.52	1,122.33	5.61	0.66	TO
UBPLBY		1,119.67	8.51	0.81	1,121.67	4.95	0.58	XX
VZZL9P		1,089.33	-21.82	-2.08	1,110.33	-6.39	-0.75	IN
WN3ZLQ		1,108.00	-3.15	-0.30	1,112.33	-4.39	-0.51	WB
YHFJ CJ		1,105.00	-6.15	-0.59	1,108.00	-8.72	-1.02	TO

Summary Statistics

	Sample B81	Sample B82
Grand Means	1,111.154 MPa	1,116.720 MPa
Std Dev Btwn Labs	10.502 MPa	8.519 MPa

Statistics based on 26 of 26 reporting participants

Samples B81 , B82 : Fastener size M10 x 1.5 x 70

Analysis Notes for Test #127

No "X" flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

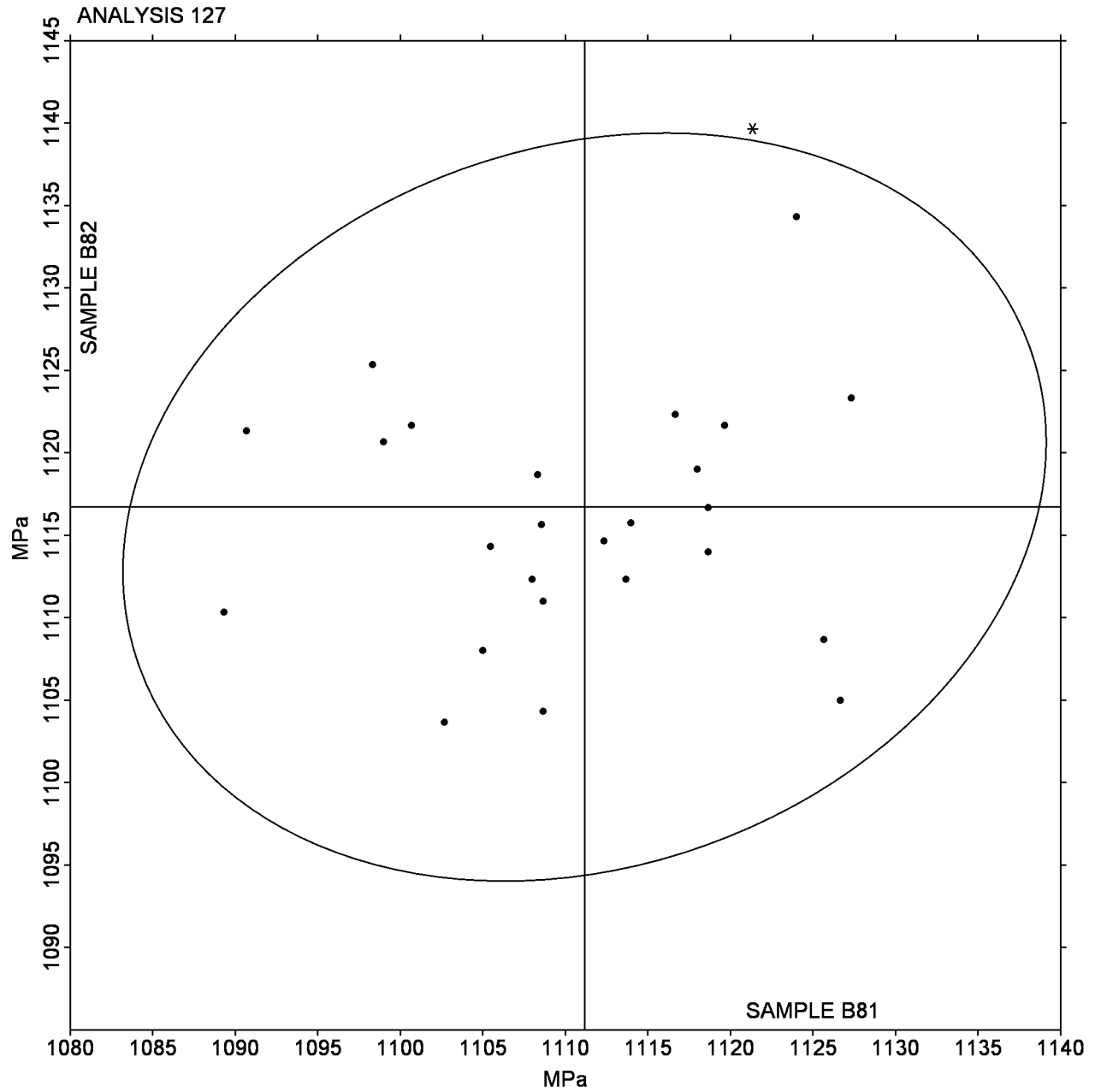
Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa

ASTM F606M

SAMPLE B81 = 1,111.154 MPa

SAMPLE B82 = 1,116.720 MPa



Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa

ASTM F606M

WebCode	Data Flag	Sample T81			Sample T82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3K2C6G		1,109.00	-3.24	-0.41	1,096.33	-15.09	-1.30	IN
3UR7K7		1,112.27	0.03	0.00	1,105.10	-6.32	-0.54	MT
7GGL2P		1,114.33	2.09	0.26	1,094.33	-17.09	-1.47	XX
7GXTY7		1,126.33	14.09	1.76	1,128.00	16.58	1.43	IN
8B8B8V		1,117.07	4.83	0.60	1,124.93	13.50	1.16	XX
A9CKZ8		1,112.00	-0.24	-0.03	1,115.00	3.58	0.31	TO
DHUGWV		1,114.77	2.53	0.32	1,119.90	8.48	0.73	SH
DKQEJG		1,107.33	-4.91	-0.61	1,102.67	-8.76	-0.75	TO
JMZR76		1,102.00	-10.24	-1.28	1,100.00	-11.42	-0.98	WO
LWKAYA		1,113.33	1.09	0.14	1,120.33	8.91	0.77	TO
LZJBGC		1,124.67	12.43	1.55	1,121.67	10.24	0.88	IN
MAEC8E		1,106.67	-5.57	-0.70	1,126.00	14.58	1.26	SA
MGURHH		1,118.33	6.09	0.76	1,104.33	-7.09	-0.61	TO
NPEC42		1,116.67	4.43	0.55	1,123.00	11.58	1.00	TO
RBXE6X		1,103.90	-8.34	-1.04	1,102.17	-9.26	-0.80	ST
ULLNGN		1,125.00	12.76	1.59	1,129.00	17.58	1.51	SA
UYEFEU		1,113.33	1.09	0.14	1,099.33	-12.09	-1.04	WB
VAUUPZ		1,095.47	-16.77	-2.10	1,106.03	-5.39	-0.46	GA
VJKBKV		1,103.69	-8.55	-1.07	1,108.33	-3.09	-0.27	RO
W2NLH6		1,108.67	-3.57	-0.45	1,102.00	-9.42	-0.81	LO

Summary Statistics

	Sample T81	Sample T82
Grand Means	1,112.241 MPa	1,111.420 MPa
Std Dev Btwn Labs	8.001 MPa	11.603 MPa
Statistics based on 20 of 20 reporting participants		

Samples T81 , T82 : Fastener size M10 x 1.5 x 70

Analysis Notes for Test #128

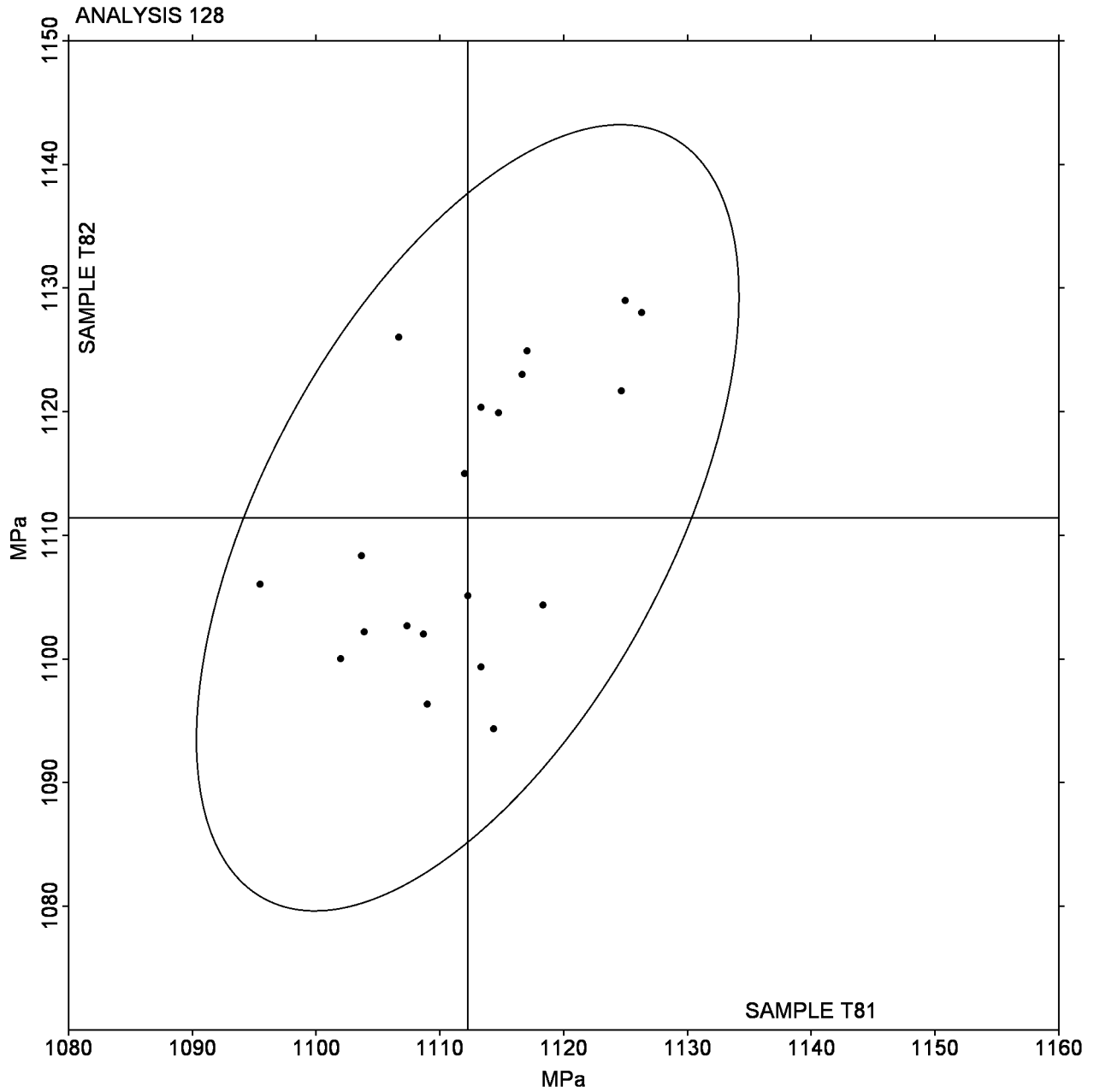
No "X" flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

Analysis 128

Fastener Axial Tensile Metric - MPa
ASTM F606M

SAMPLE T81 = 1,112.241 MPa SAMPLe T82 = 1,111.420 MPa



Interlaboratory Testing Program for Metals

Analysis 129

Fastener Double Shear - lb

NASM 1312-13

WebCode	Data Flag	Sample Z81			Sample Z82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3FPBXR		21,278.00	-316.63	-0.75	21,300.33	-321.75	-0.76	XX
4H7EA9		21,438.00	-156.63	-0.37	21,318.00	-304.08	-0.72	TO
96GBCZ		21,133.33	-461.29	-1.09	21,100.00	-522.08	-1.24	TO
9MZLGT		21,166.67	-427.96	-1.01	21,300.00	-322.08	-0.76	RI
DYTQJ9		21,440.00	-154.63	-0.37	21,560.00	-62.08	-0.15	XX
EBZ6TK		21,670.67	76.04	0.18	21,509.33	-112.75	-0.27	SA
GNXYXQ		21,500.67	-93.96	-0.22	21,491.00	-131.08	-0.31	TO
H7K4KG		22,081.33	486.71	1.15	22,204.33	582.25	1.38	TO
HF38D3		21,326.67	-267.96	-0.64	21,350.33	-271.75	-0.64	TO
L4VMCM		21,850.00	255.37	0.61	21,825.00	202.92	0.48	RI
L7M6PM		22,076.33	481.71	1.14	21,977.33	355.25	0.84	XX
LMY7NT		22,240.00	645.37	1.53	22,423.33	801.25	1.90	SA
P3YDZY		22,300.00	705.37	1.67	21,933.33	311.25	0.74	TO
RXLFBH		21,751.33	156.71	0.37	21,960.67	338.59	0.80	SA
VLPKQC		22,040.00	445.37	1.06	21,860.00	237.92	0.56	SA
WH4C6B		21,600.00	5.37	0.01	22,080.00	457.92	1.09	TO
Z62E9E		21,527.93	-66.70	-0.16	21,683.51	61.43	0.15	WZ
ZT8JCZ		20,807.67	-786.96	-1.87	20,813.67	-808.41	-1.92	TO
ZWVCN9		21,069.33	-525.29	-1.25	21,129.33	-492.75	-1.17	SA

Summary Statistics

	Sample Z81		Sample Z82	
Grand Means	21,594.628	1b	21,622.080	1b
Std Dev Btw Labs	421.761	1b	422.046	1b

Statistics based on 19 of 19 reporting participants

Samples Z81 , Z82 : Fastener size 3/8-16x2.25

Analysis Notes for Test #129

No "X" flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

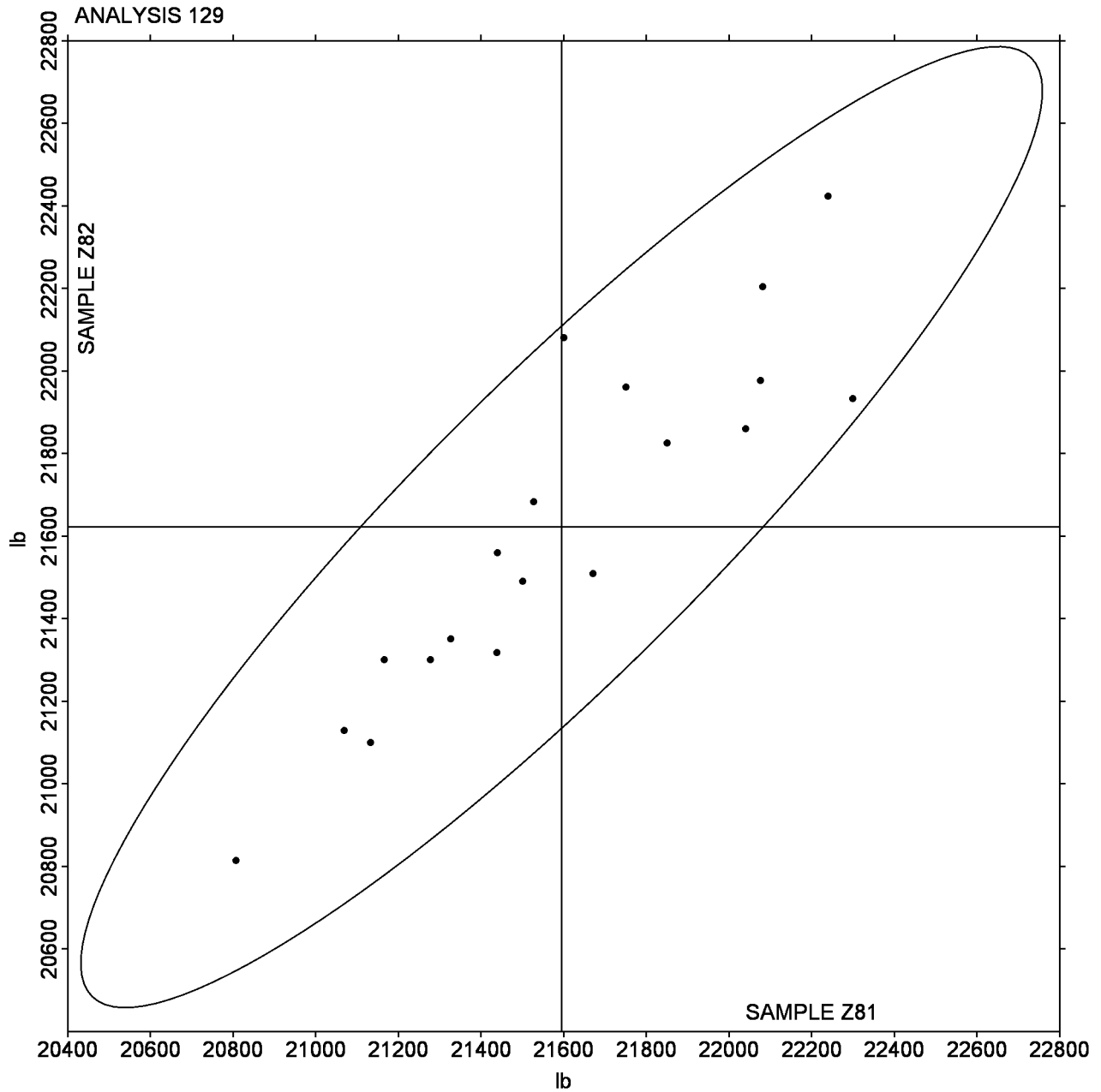
Analysis 129

Fastener Double Shear - lb

NASM 1312-13

SAMPLE Z81 = 21,594.628 lb

SAMPLE Z82 = 21,622.080 lb



Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LQPTW		99.50	-2.72	-1.44	71.00	-1.22	-1.02	ZZ
2YMRN2		103.10	0.88	0.47	72.10	-0.12	-0.10	ZZ
32BHDE	*	101.67	-0.54	-0.29	69.47	-2.75	-2.28	ZZ
3D36KT		102.00	-0.22	-0.11	72.30	0.08	0.06	ZZ
3HJD78		100.60	-1.62	-0.86	71.40	-0.82	-0.68	ZZ
3HKAQ4	X	107.00	4.78	2.53	71.00	-1.22	-1.02	ZZ
3R23LE		102.70	0.48	0.26	72.70	0.48	0.39	ZZ
492JTN		104.00	1.78	0.94	74.80	2.58	2.14	ZZ
4MQL7V		101.80	-0.42	-0.22	72.80	0.58	0.48	ZZ
4MV8QH		103.15	0.93	0.49	72.79	0.57	0.47	ZZ
4W88UK		103.00	0.78	0.41	71.10	-1.12	-0.93	ZZ
64LYFV		99.20	-3.02	-1.60	71.70	-0.52	-0.43	ZZ
6BLTK2	*	98.80	-3.42	-1.81	68.80	-3.42	-2.84	ZZ
6GVFNL	*	107.30	5.08	2.69	73.80	1.58	1.31	ZZ
6U4PFM		103.00	0.78	0.41	73.50	1.28	1.06	ZZ
6WUVVD		100.50	-1.72	-0.91	72.60	0.38	0.31	ZZ
7H8FEE		98.63	-3.59	-1.90	71.61	-0.62	-0.51	ZZ
83T2NL		102.30	0.08	0.04	71.60	-0.62	-0.52	ZZ
8BVHXX	*	105.23	3.01	1.60	71.27	-0.95	-0.79	ZZ
8DPMVY		103.60	1.38	0.73	72.90	0.68	0.56	ZZ
8KD6NZ		100.38	-1.84	-0.97	70.49	-1.74	-1.44	ZZ
8R9RX9		103.00	0.78	0.41	73.40	1.18	0.98	ZZ
92ED28		101.67	-0.54	-0.29	71.94	-0.28	-0.24	ZZ
96T7JZ		101.09	-1.12	-0.60	72.23	0.01	0.00	ZZ
98UCVK		101.65	-0.57	-0.30	70.00	-2.22	-1.84	ZZ
9Q24UT		101.10	-1.12	-0.59	71.60	-0.62	-0.52	ZZ
AAZKTN		103.84	1.62	0.86	72.84	0.62	0.51	ZZ
AVUG6V		101.93	-0.28	-0.15	73.13	0.90	0.75	ZZ
B2LVTV		103.26	1.04	0.55	71.97	-0.26	-0.21	ZZ
B63VWW		103.56	1.34	0.71	73.64	1.41	1.17	ZZ
BG9PPD		102.50	0.28	0.15	73.10	0.88	0.73	ZZ
BHHKBR		104.50	2.28	1.21	73.08	0.86	0.71	ZZ
BLAHF4		104.00	1.78	0.94	72.20	-0.02	-0.02	ZZ
BRBR9P	X	96.30	-5.92	-3.13	66.90	-5.32	-4.42	ZZ
C98JLB		101.35	-0.86	-0.46	74.12	1.89	1.57	ZZ
CFH29Q		98.30	-3.92	-2.07	70.20	-2.02	-1.68	ZZ
DMU23L		100.01	-2.20	-1.17	72.42	0.19	0.16	ZZ
DNUW8B		101.50	-0.72	-0.38	71.50	-0.72	-0.60	ZZ
DTWFGV		98.42	-3.80	-2.01	70.63	-1.59	-1.32	ZZ
E7HLAW		102.70	0.49	0.26	73.46	1.24	1.03	ZZ
ELM3WW	X	90.90	-11.32	-5.99	72.70	0.48	0.39	ZZ
EMND6R	*	107.00	4.78	2.53	73.40	1.18	0.98	ZZ
EUFRHL		103.00	0.78	0.41	73.80	1.58	1.31	ZZ
FAQVGJ		100.57	-1.65	-0.87	72.03	-0.20	-0.16	ZZ
FYZCLZ		104.20	1.98	1.05	74.30	2.08	1.72	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
G6PF2A		102.51	0.29	0.15	71.49	-0.73	-0.61	ZZ
GKJFYG	*	106.00	3.78	2.00	72.10	-0.12	-0.10	ZZ
GMQ3T9		104.70	2.48	1.32	74.70	2.48	2.05	ZZ
GUPPQL		101.10	-1.12	-0.59	71.90	-0.32	-0.27	ZZ
GV9MQL		103.23	1.01	0.54	72.62	0.40	0.33	ZZ
HKYZHJ	*	100.20	-2.02	-1.07	69.20	-3.02	-2.51	ZZ
HMVRVW		102.11	-0.11	-0.06	73.24	1.02	0.85	ZZ
HTB9TT		102.28	0.07	0.03	71.79	-0.43	-0.36	ZZ
J7VURT		103.30	1.08	0.57	73.00	0.78	0.64	ZZ
JABENG		101.90	-0.32	-0.17	72.50	0.28	0.23	ZZ
JBMTTN		101.50	-0.72	-0.38	73.70	1.48	1.22	ZZ
JJDVZL		103.37	1.15	0.61	73.13	0.91	0.75	ZZ
JYQ8PR		104.30	2.08	1.10	73.00	0.78	0.64	ZZ
K23TFC		102.72	0.50	0.26	72.65	0.43	0.35	ZZ
K6JHV2		105.90	3.68	1.95	73.80	1.58	1.31	ZZ
KQAK23		100.51	-1.70	-0.90	72.37	0.15	0.12	ZZ
L2R6XP		101.76	-0.46	-0.24	72.48	0.25	0.21	ZZ
LA3J6F		101.10	-1.12	-0.59	71.80	-0.42	-0.35	ZZ
LCYGRZ		103.51	1.30	0.69	72.95	0.73	0.61	ZZ
LKCVPG		105.30	3.08	1.63	74.00	1.78	1.47	ZZ
LPBLHU		100.30	-1.92	-1.01	71.90	-0.32	-0.27	ZZ
MTKH4G		102.68	0.46	0.25	71.95	-0.27	-0.23	ZZ
N6N4RE		106.30	4.08	2.16	73.20	0.98	0.81	ZZ
N84D8K		102.14	-0.08	-0.04	72.06	-0.17	-0.14	ZZ
N9J3YH		100.30	-1.92	-1.01	71.40	-0.82	-0.68	ZZ
NH662Q		103.00	0.78	0.41	71.20	-1.02	-0.85	ZZ
NLXJXL		101.88	-0.34	-0.18	70.33	-1.89	-1.57	ZZ
PGHFKP		102.00	-0.22	-0.11	74.00	1.78	1.47	ZZ
QBWJRL		100.70	-1.52	-0.80	70.50	-1.72	-1.43	ZZ
R9YTYC		103.70	1.48	0.79	73.20	0.98	0.81	ZZ
RLB2W6		102.40	0.18	0.10	72.08	-0.14	-0.12	ZZ
RMQVY3		101.00	-1.22	-0.64	71.00	-1.22	-1.02	ZZ
TQV9L4		102.30	0.08	0.04	70.10	-2.12	-1.76	ZZ
TRF268		102.50	0.28	0.15	73.00	0.78	0.64	ZZ
TWNPH9		103.20	0.98	0.52	72.60	0.38	0.31	ZZ
UGU8EV		100.10	-2.12	-1.12	72.10	-0.12	-0.10	ZZ
UJKDVL	X	104.36	2.14	1.14	88.74	16.52	13.70	ZZ
UPNNLT		102.30	0.08	0.04	71.30	-0.92	-0.77	ZZ
VYTAPT		101.50	-0.72	-0.38	72.10	-0.12	-0.10	ZZ
WED47N		100.90	-1.32	-0.70	71.30	-0.92	-0.77	ZZ
WGQG6J	*	97.50	-4.72	-2.50	69.71	-2.51	-2.08	ZZ
WMUBDT	X	143.00	40.78	21.60	70.90	-1.32	-1.10	ZZ
WXJXNN		100.41	-1.81	-0.96	72.52	0.30	0.25	ZZ
X6HEWD		101.00	-1.22	-0.64	71.50	-0.72	-0.60	ZZ
XGTG7W		104.30	2.08	1.10	72.80	0.58	0.48	ZZ

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XTR4PE		102.69	0.47	0.25	73.74	1.51	1.26	ZZ
XU37CD		102.63	0.41	0.22	72.30	0.08	0.06	ZZ
YB3J27		103.00	0.78	0.41	73.00	0.78	0.64	ZZ
YTVZT9	X	78.00	-24.22	-12.82	71.00	-1.22	-1.02	ZZ
Z8L88B		100.53	-1.69	-0.89	71.32	-0.91	-0.75	ZZ
Z8MRM7		100.90	-1.32	-0.70	72.40	0.18	0.15	ZZ
ZC7PQL		101.80	-0.41	-0.22	71.61	-0.62	-0.51	ZZ
ZCHG9G		104.90	2.68	1.42	72.40	0.18	0.15	ZZ
ZFNATM		100.37	-1.85	-0.98	72.08	-0.14	-0.12	ZZ

Summary Statistics

	Sample F81	Sample F82
Grand Means	102.216 ksi	72.220 ksi
Std Dev Btwn Labs	1.888 ksi	1.206 ksi

Statistics based on 93 of 99 reporting participants

Samples F81 , F82 : AISI 4130 steel

Comments on assigned Data Flags for Test #130

- 3HKAQ4 (X) - Inconsistent in testing between samples.
 BRBR9P (X) - Data for both samples are low. Possible systematic error.
 ELM3WW (X) - Low data for Sample F81.
 UJKDVL (X) - High data for Sample F82.
 WMUBDT (X) - High data for Sample F81.
 YTVZT9 (X) - Low data for Sample F81.

Interlaboratory Testing Program for Metals

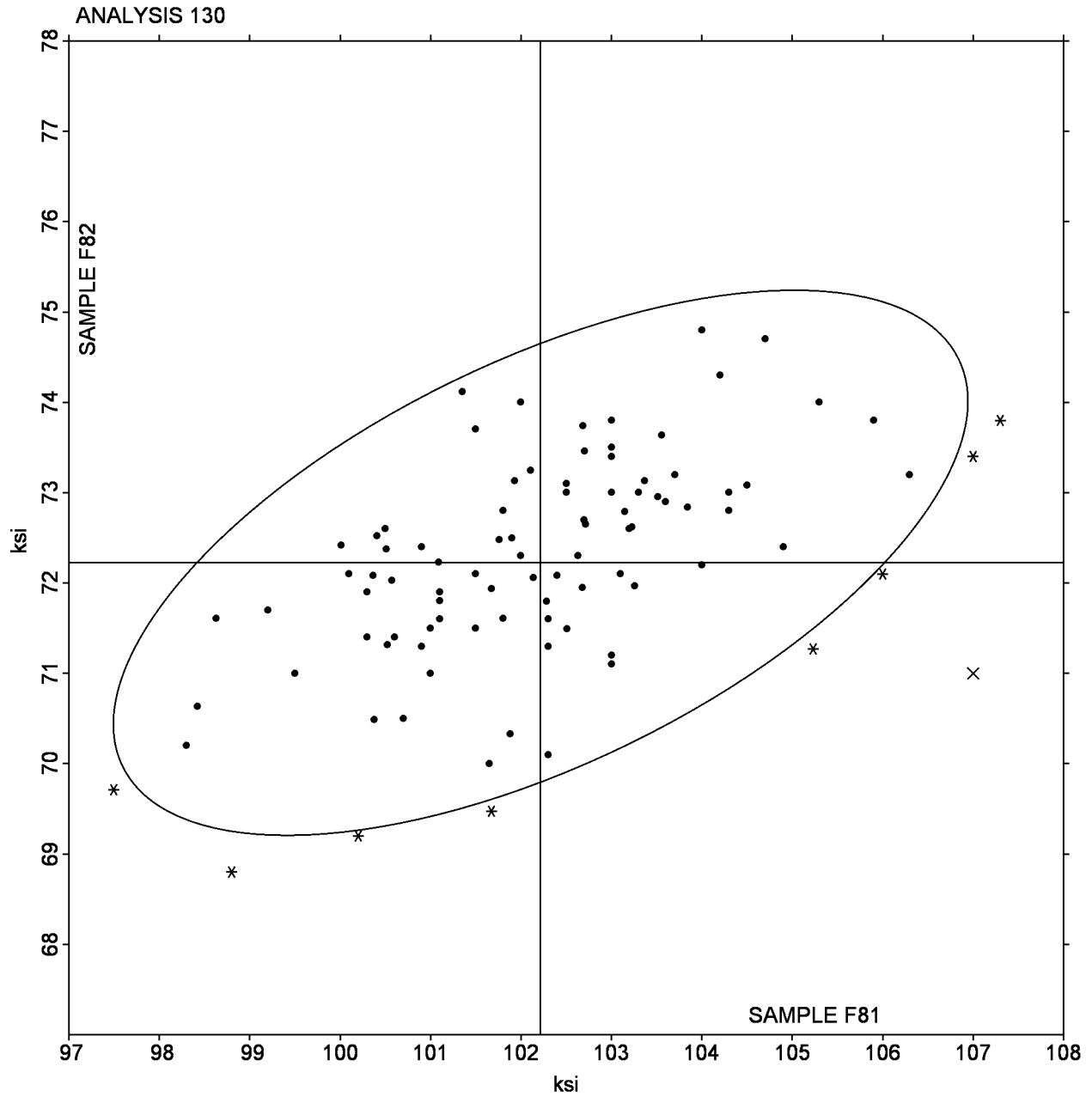
Analysis 130

Tensile Strength (Flat Steel) - ksi

ASTM E8

SAMPLE F81 = 102.216 ksi

SAMPLE F82 = 72.220 ksi



Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
26TXAE		88.60	3.74	1.08	44.30	0.60	0.38	ZZ
2GJC93		89.90	5.04	1.46	43.30	-0.40	-0.25	ZZ
2YQRVC		87.46	2.60	0.75	43.86	0.16	0.10	ZZ
3329EZ		88.91	4.05	1.17	42.86	-0.84	-0.53	ZZ
3KFNL9	*	81.90	-2.96	-0.86	47.40	3.70	2.33	ZZ
3PFMHL		83.11	-1.75	-0.51	43.37	-0.34	-0.21	ZZ
3WEC2B		86.82	1.96	0.57	44.96	1.26	0.79	ZZ
467A44		84.51	-0.35	-0.10	42.50	-1.21	-0.76	ZZ
48EPPU		85.60	0.74	0.21	44.21	0.51	0.32	ZZ
4PL6L3		82.57	-2.29	-0.66	42.89	-0.81	-0.51	ZZ
4RE7EW	*	78.60	-6.26	-1.81	40.00	-3.70	-2.33	ZZ
4YUKL9		88.60	3.74	1.08	45.10	1.40	0.88	ZZ
6ABRX3		81.20	-3.66	-1.06	43.90	0.20	0.12	ZZ
6MNH2A		83.00	-1.86	-0.54	44.30	0.60	0.38	ZZ
6RWG3W		84.10	-0.76	-0.22	45.10	1.40	0.88	ZZ
73T37T		84.20	-0.66	-0.19	43.00	-0.70	-0.44	ZZ
7RH9RZ	*	93.50	8.64	2.50	44.80	1.10	0.69	ZZ
7UMBXB		84.50	-0.36	-0.10	44.40	0.70	0.44	ZZ
84H94C		92.70	7.84	2.27	46.00	2.30	1.45	ZZ
8QXPCA		86.80	1.94	0.56	45.20	1.50	0.94	ZZ
8Z3XQ8		86.80	1.94	0.56	43.10	-0.60	-0.38	ZZ
94H6W2		80.35	-4.51	-1.31	41.05	-2.66	-1.67	ZZ
9J39PM		89.60	4.74	1.37	45.10	1.40	0.88	ZZ
9NGJ3Q		83.59	-1.28	-0.37	44.34	0.64	0.40	ZZ
9PQ29U		83.60	-1.26	-0.37	45.40	1.70	1.07	ZZ
9R88T4		86.00	1.14	0.33	42.50	-1.20	-0.76	ZZ
A9DR98	X	24.33	-60.53	-17.53	45.69	1.98	1.25	ZZ
ARJDKF		80.70	-4.16	-1.21	42.40	-1.30	-0.82	ZZ
BEEGAC	*	75.96	-8.90	-2.58	40.99	-2.71	-1.71	ZZ
BW7M3A		85.90	1.04	0.30	42.80	-0.90	-0.57	ZZ
CADTVN		83.70	-1.16	-0.34	42.70	-1.00	-0.63	ZZ
CH8XQC		79.60	-5.26	-1.52	42.50	-1.20	-0.76	ZZ
CWRU8F		88.96	4.09	1.19	44.86	1.15	0.73	ZZ
D4KBW6		80.93	-3.93	-1.14	40.32	-3.38	-2.13	ZZ
DJ3BBM		79.76	-5.10	-1.48	43.95	0.24	0.15	ZZ
DYDFHU		85.80	0.94	0.27	42.70	-1.00	-0.63	ZZ
E268MJ		87.49	2.63	0.76	45.09	1.39	0.88	ZZ
E3GK8E		84.30	-0.56	-0.16	42.25	-1.45	-0.91	ZZ
E3N8ND		83.50	-1.36	-0.39	45.00	1.30	0.82	ZZ
EYABJC		81.50	-3.36	-0.97	44.30	0.60	0.38	ZZ
F3BCDC		92.20	7.34	2.13	46.80	3.10	1.95	ZZ
FF74GV		85.60	0.74	0.21	44.60	0.90	0.57	ZZ
FJ4MLG		84.85	-0.01	0.00	45.25	1.55	0.98	ZZ
FJAXEZ		87.90	3.04	0.88	44.10	0.40	0.25	ZZ
FWNUBH		88.50	3.64	1.05	43.00	-0.70	-0.44	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
G8T2WK		86.19	1.33	0.38	47.59	3.89	2.45	ZZ
GEY2R4		84.89	0.03	0.01	43.86	0.16	0.10	ZZ
GF8QXE		84.50	-0.36	-0.10	42.50	-1.20	-0.76	ZZ
GGJ44G	X	62.60	-22.26	-6.45	37.00	-6.70	-4.22	ZZ
GHHNBV		84.12	-0.74	-0.21	44.96	1.26	0.79	ZZ
GVVPGF		83.10	-1.76	-0.51	42.00	-1.70	-1.07	ZZ
GZCW3U		82.50	-2.36	-0.68	42.00	-1.70	-1.07	ZZ
HD964M		87.20	2.34	0.68	41.00	-2.70	-1.70	ZZ
HK2X4U		85.04	0.18	0.05	44.05	0.35	0.22	ZZ
HK6LF7		80.74	-4.12	-1.19	44.33	0.63	0.40	ZZ
J27Q64		82.89	-1.97	-0.57	44.65	0.95	0.60	ZZ
J7ZM3T		84.90	0.04	0.01	43.90	0.20	0.12	ZZ
JE7ET4		83.90	-0.96	-0.28	42.90	-0.80	-0.50	ZZ
KENFHR		84.27	-0.59	-0.17	45.25	1.55	0.98	ZZ
KFC7C6	X	116.60	31.74	9.19	43.20	-0.50	-0.32	ZZ
KLECR8		89.50	4.64	1.34	43.30	-0.40	-0.25	ZZ
LF2G64		88.90	4.04	1.17	41.60	-2.10	-1.32	ZZ
LZTGJF		83.90	-0.96	-0.28	41.70	-2.00	-1.26	ZZ
M9V3YT		87.10	2.24	0.65	44.10	0.40	0.25	ZZ
MQXPJZ		89.00	4.14	1.20	42.80	-0.90	-0.57	ZZ
MU6CLQ		82.64	-2.22	-0.64	42.19	-1.51	-0.95	ZZ
P7A26H		90.90	6.04	1.75	45.80	2.10	1.32	ZZ
PBAH4C		85.70	0.84	0.24	40.40	-3.30	-2.08	ZZ
PE9FFH	X	83.72	-1.14	-0.33	62.98	19.27	12.13	ZZ
PXFDCE		84.90	0.04	0.01	44.20	0.50	0.31	ZZ
PZLCQZ		84.60	-0.26	-0.08	42.90	-0.80	-0.50	ZZ
QMY4ZC		88.30	3.44	1.00	45.60	1.90	1.19	ZZ
R8LP4U		84.14	-0.72	-0.21	41.99	-1.71	-1.08	ZZ
REEJZL		78.50	-6.36	-1.84	41.50	-2.20	-1.39	ZZ
RV8QFD		85.78	0.92	0.27	42.98	-0.72	-0.45	ZZ
RWBQUQ		82.10	-2.76	-0.80	43.10	-0.60	-0.38	ZZ
TL7GQT		83.80	-1.06	-0.31	44.08	0.38	0.24	ZZ
TP4KEL		80.35	-4.51	-1.31	45.54	1.84	1.16	ZZ
TRWGZ2		82.52	-2.34	-0.68	44.28	0.58	0.36	ZZ
TTYEYG	X	69.00	-15.86	-4.59	40.00	-3.70	-2.33	ZZ
U46WQK		92.16	7.30	2.11	45.96	2.26	1.42	ZZ
U87JFM	X	75.06	-9.80	-2.84	56.70	13.00	8.18	ZZ
U87YPL		83.40	-1.46	-0.42	42.35	-1.35	-0.85	ZZ
ULT8QT		80.00	-4.86	-1.41	43.50	-0.20	-0.13	ZZ
UYPLDF		83.02	-1.84	-0.53	43.79	0.09	0.05	ZZ
VPFZHD		78.61	-6.25	-1.81	43.64	-0.06	-0.04	ZZ
VPXCG7		85.50	0.64	0.18	45.10	1.40	0.88	ZZ
VRD4X9		90.50	5.64	1.63	42.70	-1.00	-0.63	ZZ
VU8Q3B		87.50	2.64	0.76	44.10	0.40	0.25	ZZ
WPJNWB		88.50	3.64	1.05	42.30	-1.40	-0.88	ZZ

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WQZCJ6		82.00	-2.86	-0.83	45.50	1.80	1.13	ZZ
WTC24T		85.10	0.24	0.07	43.00	-0.70	-0.44	ZZ
WXQVK7		80.80	-4.06	-1.18	41.30	-2.40	-1.51	ZZ
XFZ6AP	*	85.76	0.90	0.26	47.70	4.00	2.52	ZZ
XKG694		81.50	-3.36	-0.97	42.80	-0.90	-0.57	ZZ
YBNGR8		83.20	-1.66	-0.48	44.60	0.90	0.57	ZZ
ZBXW66	X	96.89	12.03	3.48	49.26	5.56	3.50	ZZ
ZNRZ37		84.34	-0.52	-0.15	44.94	1.24	0.78	ZZ

Summary Statistics

	Sample F81	Sample F82
Grand Means	84.862 ksi	43.700 ksi
Std Dev Btwn Labs	3.453 ksi	1.589 ksi

Statistics based on 91 of 98 reporting participants

Samples F81 , F82 : AISI 4130 steel

Comments on assigned Data Flags for Test #131

- A9DR98 (X) - Low data for Sample F81.
GGJ44G (X) - Data for both samples are low.
KFC7C6 (X) - High data for Sample F81.
PE9FFH (X) - High data for Sample F82.
TTYEYG (X) - Low data for Sample F81.
U87JFM (X) - Low data for Sample F81. High data for Sample F82.
ZBXW66 (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

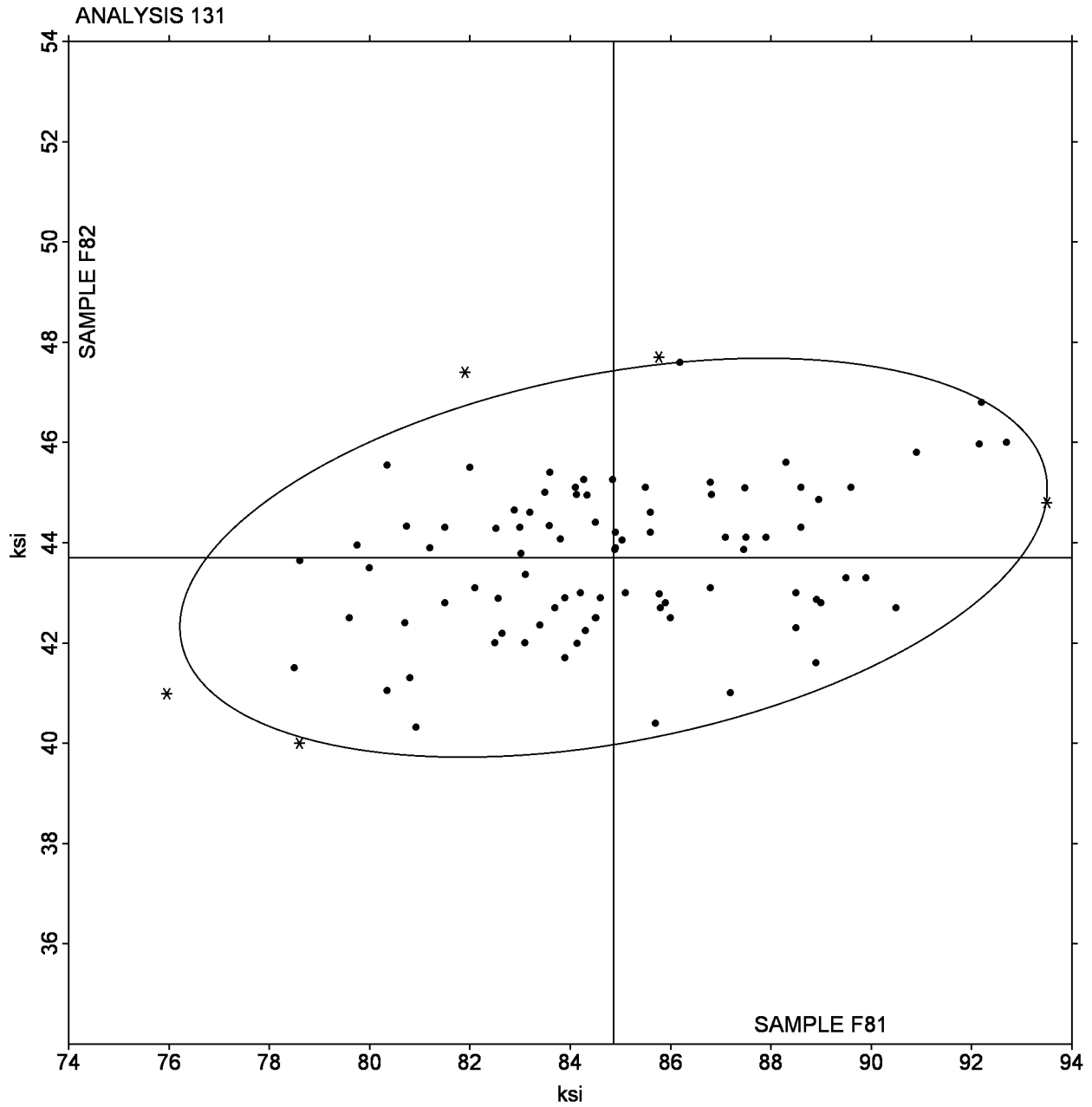
Analysis 131

Yield Strength (Flat Steel) - ksi

ASTM E8

SAMPLE F81 = 84.862 ksi

SAMPLE F82 = 43.700 ksi



Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
29CFJ4		15.00	0.05	0.03	30.80	2.65	1.34	ZZ
2AA7WT		12.81	-2.14	-1.36	27.75	-0.40	-0.20	ZZ
2CW8WU		14.91	-0.04	-0.03	27.81	-0.34	-0.17	ZZ
3RLUHC		12.48	-2.47	-1.57	27.06	-1.09	-0.55	ZZ
469DWZ	X	5.87	-9.08	-5.78	27.70	-0.45	-0.23	ZZ
4RN86C		18.00	3.05	1.94	28.00	-0.15	-0.07	ZZ
4WDKFT		14.50	-0.45	-0.29	27.50	-0.65	-0.33	ZZ
4ZTWEV		15.80	0.85	0.54	27.40	-0.75	-0.38	ZZ
62XDW7		15.00	0.05	0.03	29.00	0.85	0.43	ZZ
67DNAA		12.60	-2.35	-1.50	23.90	-4.25	-2.15	ZZ
68BP32		18.20	3.25	2.07	29.10	0.95	0.48	ZZ
69BWVX		16.23	1.28	0.81	28.90	0.75	0.38	ZZ
6JTJT7		15.70	0.75	0.48	28.50	0.35	0.18	ZZ
6PWFT6		15.30	0.35	0.22	26.90	-1.25	-0.63	ZZ
6WYLJU		13.50	-1.45	-0.93	28.00	-0.15	-0.07	ZZ
77BEUX		16.00	1.05	0.67	28.00	-0.15	-0.07	ZZ
77CL3X		15.80	0.85	0.54	30.20	2.05	1.04	ZZ
7HQ8KH		15.50	0.55	0.35	30.70	2.55	1.29	ZZ
7J6PGU		17.60	2.65	1.68	30.00	1.85	0.94	ZZ
7MH2C6		16.40	1.45	0.92	31.60	3.45	1.75	ZZ
7YAP4X		14.50	-0.45	-0.29	30.30	2.15	1.09	ZZ
8V9WX7		16.10	1.15	0.73	30.10	1.95	0.99	ZZ
9K944T		14.77	-0.18	-0.12	27.97	-0.18	-0.09	ZZ
9WALV7		17.00	2.05	1.30	30.00	1.85	0.94	ZZ
A2J36V		13.20	-1.75	-1.12	25.50	-2.65	-1.34	ZZ
ADXZAY		17.10	2.15	1.37	26.70	-1.45	-0.73	ZZ
ADZNMW		16.00	1.05	0.67	30.00	1.85	0.94	ZZ
B36NXY		14.00	-0.95	-0.61	29.00	0.85	0.43	ZZ
BCWMQD		14.79	-0.16	-0.10	28.28	0.13	0.07	ZZ
BLTEPH		17.00	2.05	1.30	28.00	-0.15	-0.07	ZZ
BMJK79	X	27.10	12.15	7.73	48.50	20.35	10.30	ZZ
BP8XNR		14.20	-0.75	-0.48	27.70	-0.45	-0.23	ZZ
BXAYF7		15.10	0.15	0.09	31.30	3.15	1.60	ZZ
BZ62PZ		13.60	-1.35	-0.86	26.70	-1.45	-0.73	ZZ
C6TYM2		16.00	1.05	0.67	29.00	0.85	0.43	ZZ
C86C9W		16.40	1.45	0.92	27.20	-0.95	-0.48	ZZ
C9VXXU	X	11.24	-3.71	-2.36	21.27	-6.88	-3.48	ZZ
CC3MTW		12.50	-2.45	-1.56	24.50	-3.65	-1.84	ZZ
CTDAKQ		15.10	0.15	0.09	29.00	0.85	0.43	ZZ
DDDDJX	X	43.80	28.85	18.36	64.20	36.05	18.24	ZZ
DFA8X3		14.40	-0.55	-0.35	30.10	1.95	0.99	ZZ
DU8DVC		12.40	-2.55	-1.63	26.60	-1.55	-0.78	ZZ
EGK9FT	*	12.00	-2.95	-1.88	29.00	0.85	0.43	ZZ
EMP9T4		16.00	1.05	0.67	30.00	1.85	0.94	ZZ
F23BWT		15.70	0.75	0.48	28.00	-0.15	-0.07	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
FUG299		16.80	1.85	1.18	29.50	1.35	0.69	ZZ
G47JAH		14.00	-0.95	-0.61	31.00	2.85	1.44	ZZ
G7W4CL		16.20	1.25	0.79	29.40	1.25	0.63	ZZ
G8BEJR		16.80	1.85	1.18	30.60	2.45	1.24	ZZ
GJDUPN		13.98	-0.97	-0.62	28.38	0.23	0.12	ZZ
GUTKC8		16.50	1.55	0.98	29.00	0.85	0.43	ZZ
H4VVZU		16.00	1.05	0.67	28.50	0.35	0.18	ZZ
HB2C7V		16.00	1.05	0.67	29.00	0.85	0.43	ZZ
JLA34H	X	15.00	0.05	0.03	21.00	-7.15	-3.61	ZZ
JPDWY8		13.00	-1.95	-1.24	25.50	-2.65	-1.34	ZZ
KETPYH		14.20	-0.75	-0.48	28.20	0.05	0.03	ZZ
KFBVCE		13.50	-1.45	-0.93	27.50	-0.65	-0.33	ZZ
KGLAN8		14.20	-0.75	-0.48	29.00	0.85	0.43	ZZ
KWWDD3		16.10	1.15	0.73	28.50	0.35	0.18	ZZ
L68DJ4	X	15.60	0.65	0.41	34.30	6.15	3.11	ZZ
L69N6U		11.80	-3.15	-2.01	23.80	-4.35	-2.20	ZZ
L7HX7R		16.70	1.75	1.11	31.80	3.65	1.85	ZZ
LDJMV4		13.50	-1.45	-0.93	25.50	-2.65	-1.34	ZZ
LHWVBV		14.10	-0.85	-0.54	27.60	-0.55	-0.28	ZZ
LQWNMG		14.50	-0.45	-0.29	28.50	0.35	0.18	ZZ
M8YRNX		16.20	1.25	0.79	28.20	0.05	0.03	ZZ
MGUF89		16.00	1.05	0.67	28.50	0.35	0.18	ZZ
MY2LQ6		14.80	-0.15	-0.10	28.00	-0.15	-0.07	ZZ
MZ9Z2R		12.50	-2.45	-1.56	23.50	-4.65	-2.35	ZZ
NJ96JK		13.75	-1.20	-0.77	24.65	-3.50	-1.77	ZZ
NWXJXT		16.30	1.35	0.86	27.00	-1.15	-0.58	ZZ
P3HJTC		18.20	3.25	2.07	31.40	3.25	1.65	ZZ
PAQFKC		14.40	-0.55	-0.35	27.40	-0.75	-0.38	ZZ
PGBNTM		11.90	-3.05	-1.94	28.00	-0.15	-0.07	ZZ
PJGA9M		13.00	-1.95	-1.24	30.00	1.85	0.94	ZZ
PPBJUD		14.10	-0.85	-0.54	25.10	-3.05	-1.54	ZZ
PQ2VX		14.19	-0.76	-0.49	26.02	-2.13	-1.08	ZZ
QKLQQX	X	21.00	6.05	3.85	29.00	0.85	0.43	ZZ
QPEF7P		13.19	-1.76	-1.12	27.00	-1.15	-0.58	ZZ
QY39F9		13.70	-1.25	-0.80	30.10	1.95	0.99	ZZ
RDWKG4		13.20	-1.75	-1.12	25.60	-2.55	-1.29	ZZ
RH3YKD		15.80	0.85	0.54	27.60	-0.55	-0.28	ZZ
RUKXVW	*	12.50	-2.45	-1.56	23.00	-5.15	-2.60	ZZ
T6J7VE		14.50	-0.45	-0.29	25.00	-3.15	-1.59	ZZ
T9AR2T		13.30	-1.65	-1.05	26.90	-1.25	-0.63	ZZ
U49K3W		16.00	1.05	0.67	26.50	-1.65	-0.83	ZZ
UDQ8TY		14.51	-0.44	-0.28	29.17	1.02	0.52	ZZ
UE63HH		16.10	1.15	0.73	31.60	3.45	1.75	ZZ
V3848K		14.50	-0.45	-0.29	27.60	-0.55	-0.28	ZZ
VFR6JX		13.00	-1.95	-1.24	24.40	-3.75	-1.89	ZZ

Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

WebCode	Data Flag	Sample F81			Sample F82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WHT7K		16.50	1.55	0.98	28.00	-0.15	-0.07	ZZ
WKNWQ2		15.90	0.95	0.60	28.70	0.55	0.28	ZZ
WR6LAU		14.60	-0.35	-0.22	27.60	-0.55	-0.28	ZZ
WWELMM		17.50	2.55	1.62	28.00	-0.15	-0.07	ZZ
X7HEAK	X	23.50	8.55	5.44	26.36	-1.79	-0.90	ZZ
X7HJL8		16.00	1.05	0.67	30.00	1.85	0.94	ZZ
YCQBYW		15.00	0.05	0.03	30.50	2.35	1.19	ZZ
ZFWMLX		17.60	2.65	1.68	30.70	2.55	1.29	ZZ

Summary Statistics

	Sample F81	Sample F82
Grand Means	14.953 Percent	28.150 Percent
Std Dev Btwn Labs	1.571 Percent	1.977 Percent

Statistics based on 90 of 98 reporting participants

Samples F81 , F82 : AISI 4130 steel

Comments on assigned Data Flags for Test #132

- 469DWZ (X) - Low data for Sample F81.
- BMJK79 (X) - Data for both samples are high.
- C9VXXU (X) - Low data for Sample F82.
- DDDDJX (X) - Data for both samples are high.
- JLA34H (X) - Low data for Sample F82.
- L68DJ4 (X) - High data for Sample F82.
- QKLQX (X) - High data for Sample F81.
- X7HEAK (X) - High data for Sample F81.

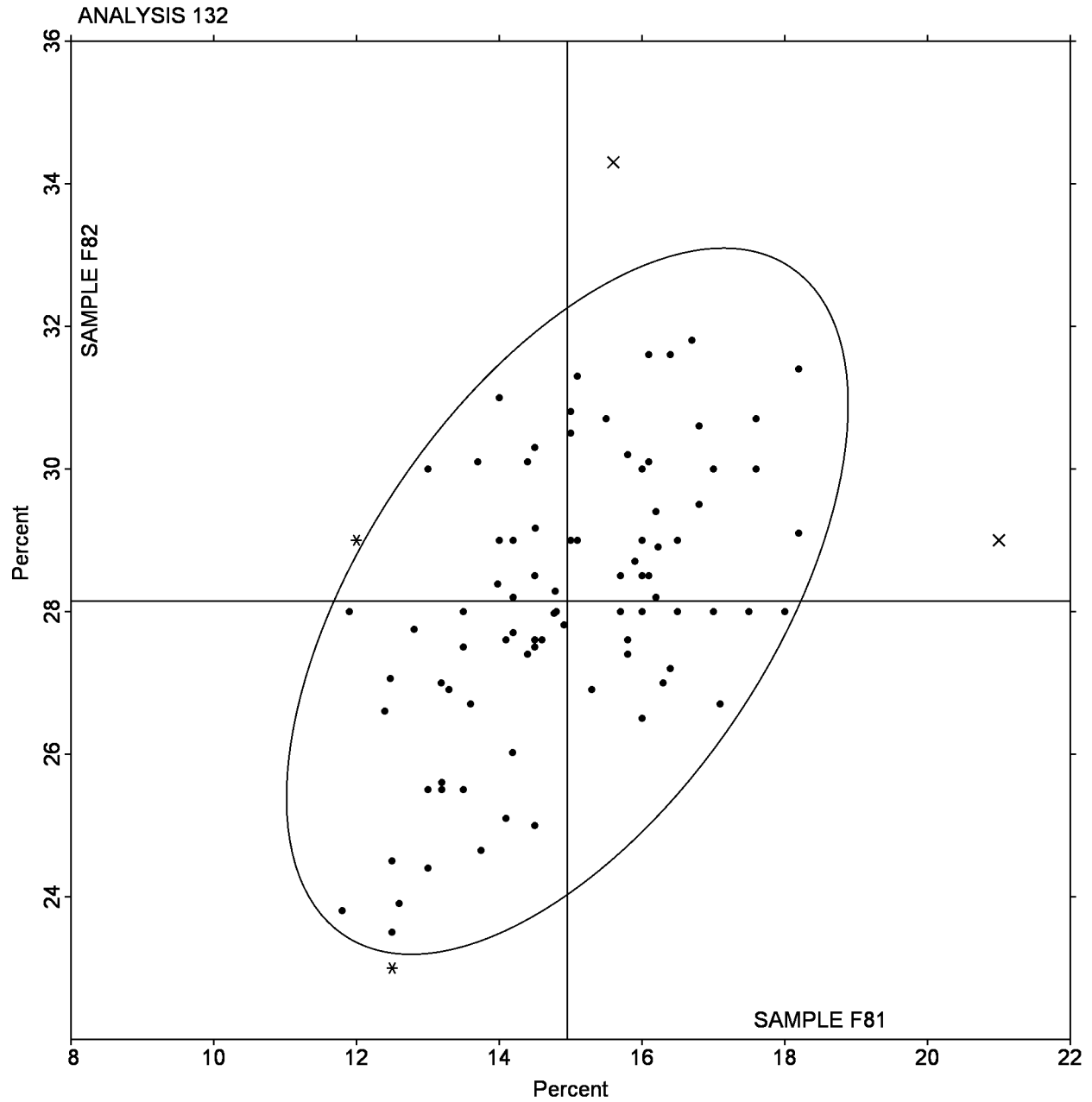
Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase

ASTM E8

SAMPLE F81 = 14.953 Percent SAMPLe F82 = 28.150 Percent



Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E81			Sample E82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24MKFD		49.74	0.00	0.01	54.04	0.17	0.47	WI
27GKGH		49.98	0.24	0.64	53.96	0.09	0.24	WI
29P4PW		50.60	0.86	2.25	54.42	0.55	1.52	WI
2AWUUL		49.68	-0.06	-0.14	53.94	0.07	0.19	IN
2HKHYH	X	47.14	-2.60	-6.77	51.82	-2.05	-5.71	EM
2PQ2PW	X	48.86	-0.88	-2.28	53.82	-0.05	-0.15	WI
3BYECV		49.40	-0.34	-0.87	53.50	-0.37	-1.04	WI
468KW7		49.60	-0.14	-0.35	54.02	0.15	0.41	WI
4G6K84		49.28	-0.46	-1.19	53.32	-0.55	-1.54	MI
4PR9KD		49.38	-0.36	-0.93	53.68	-0.19	-0.53	WI
4WWHXF		49.36	-0.38	-0.98	53.74	-0.13	-0.37	WI
4Y98KN		49.70	-0.04	-0.09	54.18	0.31	0.86	UN
6G3CK6		49.70	-0.04	-0.09	53.82	-0.05	-0.15	UN
6TXHFN		49.84	0.10	0.27	53.84	-0.03	-0.09	NA
6Y888P		49.90	0.16	0.43	54.22	0.35	0.97	BU
7CTZAT	*	50.86	1.12	2.93	54.92	1.05	2.92	NA
7KQ6A4		49.52	-0.22	-0.56	53.96	0.09	0.24	WI
7ZNAV8		49.66	-0.08	-0.20	53.60	-0.27	-0.76	BU
8W9RPP		49.80	0.06	0.17	53.86	-0.01	-0.03	CL
9BGZKR		50.00	0.26	0.69	54.26	0.39	1.08	AN
9HJG8C		49.46	-0.28	-0.72	53.54	-0.33	-0.92	CL
9LFFNB		50.36	0.62	1.63	54.22	0.35	0.97	FU
A4C29L		49.32	-0.42	-1.08	53.86	-0.01	-0.03	WI
ALN2A4		50.24	0.50	1.32	54.22	0.35	0.97	BU
BVB46P		49.66	-0.08	-0.20	53.80	-0.07	-0.20	NA
BY8QMR		49.88	0.15	0.38	54.30	0.42	1.18	WI
BYLVXH		49.66	-0.08	-0.20	53.94	0.07	0.19	LE
CCBE6D		49.44	-0.30	-0.77	53.72	-0.15	-0.42	UN
CKXFA4		50.10	0.36	0.95	54.26	0.39	1.08	WI
DGVXPG		49.36	-0.38	-0.98	53.52	-0.35	-0.98	BU
DP6YTA		49.76	0.02	0.06	53.82	-0.05	-0.15	WI
DPFB6E		49.98	0.24	0.64	54.28	0.41	1.14	NA
DQHNX8		49.80	0.06	0.17	54.04	0.17	0.47	XX
ED9N2Y		49.40	-0.34	-0.87	53.82	-0.05	-0.15	XX
EELFV2		50.22	0.49	1.27	54.44	0.57	1.59	WI
EG9HGB		49.60	-0.14	-0.35	53.80	-0.07	-0.20	WI
FCNGVH		49.58	-0.16	-0.40	53.80	-0.07	-0.20	WI
FFKKJB		50.20	0.46	1.21	54.00	0.13	0.36	WI
FG2AT3		49.64	-0.10	-0.25	53.68	-0.19	-0.53	AK
HEQP3K		49.50	-0.24	-0.61	53.54	-0.33	-0.92	CL
JBNET		49.78	0.04	0.12	53.70	-0.17	-0.48	WI
JCKFQ8		50.48	0.74	1.94	54.38	0.51	1.41	XX
JH4QVV		49.80	0.06	0.17	54.10	0.23	0.63	CL
KJ8TV8		49.34	-0.40	-1.03	53.50	-0.37	-1.04	BU
KRYUVC		49.74	0.00	0.01	53.80	-0.07	-0.20	IN

Interlaboratory Testing Program for Metals

Analysis 120

Rockwell Hardness (C Scale) - Rockwell Hardness Number

ASTM E18

WebCode	Data Flag	Sample E81			Sample E82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
LHT8ZH		49.70	-0.04	-0.09	53.76	-0.11	-0.31	WI
LQGLGM	X	47.94	-1.80	-4.68	53.72	-0.15	-0.42	WI
MGFY7N		49.00	-0.74	-1.92	53.20	-0.67	-1.87	WI
MMKFU		49.16	-0.58	-1.50	53.36	-0.51	-1.43	BU
MRHQYU		49.60	-0.14	-0.35	53.64	-0.23	-0.65	CL
MZTHDD		49.66	-0.08	-0.20	53.62	-0.25	-0.70	NA
PBCKY4		49.80	0.06	0.17	53.92	0.05	0.13	WI
PHX9K7	X	51.00	1.26	3.30	56.00	2.13	5.92	WI
PN8UXN		50.08	0.34	0.90	54.20	0.33	0.91	XX
QYCHQR		49.98	0.24	0.64	54.16	0.29	0.80	NA
RE6LXN		49.82	0.08	0.22	54.14	0.27	0.75	EM
RHYWK3		49.32	-0.42	-1.08	53.46	-0.41	-1.15	WI
RT3XNZ		49.98	0.24	0.64	53.94	0.07	0.19	MA
T8YDPZ		50.42	0.68	1.78	54.36	0.49	1.36	CL
TV2WXQ		49.90	0.16	0.43	54.20	0.33	0.91	WI
TYVGHV		49.44	-0.30	-0.77	53.34	-0.53	-1.48	WI
UP3V33		49.76	0.02	0.06	53.96	0.09	0.24	WI
UWMKBX		49.50	-0.24	-0.61	53.76	-0.11	-0.31	WI
V3Y92R		49.30	-0.44	-1.13	53.60	-0.27	-0.76	MI
VDXHUM		49.68	-0.06	-0.14	53.46	-0.41	-1.15	WI
VPJR4N		50.46	0.72	1.89	54.34	0.47	1.30	EM
VRVK73	X	49.06	-0.68	-1.76	53.96	0.09	0.24	WO
WDD39J		50.02	0.28	0.74	54.18	0.31	0.86	UN
WEN6JW	*	49.20	-0.54	-1.40	53.00	-0.87	-2.43	WI
WHDAPZ		49.64	-0.10	-0.25	54.00	0.13	0.36	MI
XK62KQ		49.92	0.18	0.48	54.14	0.27	0.75	NA
XXEKGX		49.60	-0.14	-0.35	53.42	-0.45	-1.26	WI
Y39CHZ		49.36	-0.38	-0.98	53.48	-0.39	-1.09	WI
Z4C864		50.14	0.40	1.06	54.14	0.27	0.75	LE
ZG3RU8		49.86	0.12	0.33	53.82	-0.05	-0.15	FI
ZQ89E6	X	48.40	-1.34	-3.48	53.10	-0.77	-2.15	CL
ZXAULD	*	48.60	-1.14	-2.96	52.96	-0.91	-2.54	UN

Summary Statistics

	Sample E81	Sample E82
Grand Means	49.735 HRC	53.870 HRC
Stnd Dev Btwn Labs	0.384 HRC	0.359 HRC

Statistics based on 71 of 77 reporting participants

Samples E81 , E82 : steel (use C scale)

Interlaboratory Testing Program for Metals**Analysis 120****Rockwell Hardness (C Scale) - Rockwell Hardness Number****ASTM E18**

Comments on assigned Data Flags for Test #120

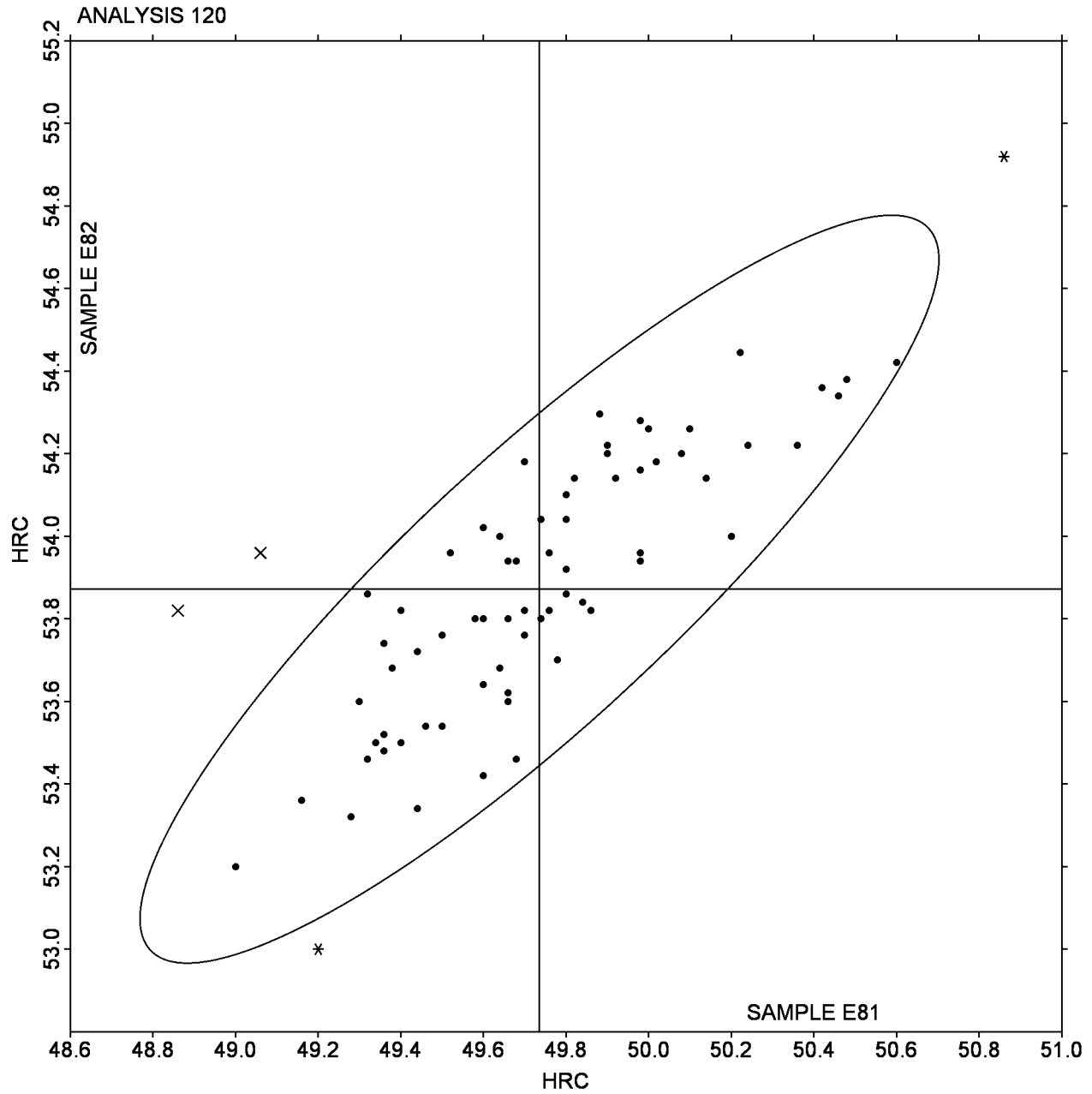
- 2HKHYH (X) - Data for both samples are low and inconsistent within the determinations for Sample E82.
- 2PQ2PW (X) - Inconsistent in testing between samples.
- LQGLGM (X) - Low data for Sample E81 and inconsistent within the determinations for both samples.
- PHX9K7 (X) - Data for both samples are high. Possible systematic error.
- VRVK73 (X) - Inconsistent in testing between samples and inconsistent within the determinations for Sample E81.
- ZQ89E6 (X) - Inconsistent in testing between samples, data for Sample E81 are low.

Interlaboratory Testing Program for Metals

Analysis 120

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

SAMPLE E81 = 49.735 HRC SAMPLE E82 = 53.870 HRC



Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E81			Sample E82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NDYRG		68.70	0.08	0.15	72.56	0.26	0.53	XX
3TZNJB		68.38	-0.24	-0.47	71.94	-0.36	-0.74	WI
3ZJUGH		68.16	-0.46	-0.90	71.94	-0.36	-0.74	NA
4YJTV6		67.64	-0.98	-1.91	71.88	-0.42	-0.86	NA
76KJG8		68.74	0.12	0.23	71.94	-0.36	-0.74	WI
7B9CLF		69.10	0.48	0.93	72.24	-0.06	-0.13	WI
9KBU8N		68.74	0.12	0.23	72.48	0.18	0.36	NA
AG9XW8		69.56	0.94	1.82	73.28	0.98	2.00	XX
BQMBCN		68.26	-0.36	-0.70	71.88	-0.42	-0.86	UN
CPQPCP		69.74	1.12	2.17	73.30	1.00	2.04	AN
CT44KB		69.18	0.56	1.09	72.32	0.02	0.04	XX
DXJB49		69.10	0.48	0.93	72.80	0.50	1.02	NA
EM8HP7		68.68	0.06	0.11	72.66	0.36	0.73	UN
F879DJ		68.40	-0.22	-0.43	71.60	-0.70	-1.43	WI
FN3K6M		69.10	0.48	0.93	72.50	0.20	0.40	WI
GGJZVZ		69.10	0.48	0.93	72.80	0.50	1.02	WI
GLFP9Q		68.07	-0.56	-1.08	71.60	-0.70	-1.42	FT
GPXRDB	X	67.06	-1.56	-3.04	71.80	-0.50	-1.02	UN
GU8BYX		68.28	-0.34	-0.66	72.06	-0.24	-0.49	CL
KFB939		69.22	0.60	1.16	72.86	0.56	1.14	WI
KLJZGJ		69.36	0.74	1.44	72.76	0.46	0.94	LE
KU2R76		68.64	0.02	0.04	72.24	-0.06	-0.13	WI
L3REDA		67.56	-1.06	-2.06	71.44	-0.86	-1.76	CL
LZGGZR		68.30	-0.32	-0.63	72.60	0.30	0.61	WI
NDHMC3		67.72	-0.90	-1.75	72.10	-0.20	-0.41	WI
NDMPAT		68.28	-0.34	-0.66	72.02	-0.28	-0.57	WI
NEPXEK		68.24	-0.38	-0.74	72.02	-0.28	-0.57	AN
NQBTDH		68.58	-0.04	-0.08	72.20	-0.10	-0.21	WI
NZM9KY		68.44	-0.18	-0.35	72.24	-0.06	-0.13	CL
PJP4DG		67.90	-0.72	-1.40	71.30	-1.00	-2.04	WI
PVMMZ8		68.10	-0.52	-1.01	72.06	-0.24	-0.49	CL
Q4R3YR		68.80	0.18	0.35	72.54	0.24	0.49	WI
QBL44J		68.98	0.36	0.70	72.70	0.40	0.81	MI
QH4LDK		67.94	-0.68	-1.33	71.80	-0.50	-1.02	WI
QV72DW	X	69.10	0.48	0.93	73.94	1.64	3.34	WI
RM4UTG	*	69.16	0.54	1.05	73.62	1.32	2.69	WI
RXUXDA		68.52	-0.10	-0.20	72.04	-0.26	-0.53	FT
TENXL9		69.20	0.58	1.12	72.36	0.06	0.12	WI
TJBKKY		68.76	0.14	0.27	72.78	0.48	0.98	WI
U2FBRN		68.20	-0.42	-0.82	72.10	-0.20	-0.41	WI
UZHFVR		68.32	-0.30	-0.59	71.74	-0.56	-1.15	LE
V6XTLC		68.86	0.24	0.46	72.66	0.36	0.73	WI
VJUJC3		68.54	-0.08	-0.16	71.82	-0.48	-0.98	UN
W4WDTC		69.06	0.44	0.85	72.28	-0.02	-0.04	XX
WAQPPG		68.32	-0.30	-0.59	71.92	-0.38	-0.78	WI

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

WebCode	Data Flag	Sample E81			Sample E82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YKHXNA		68.42	-0.20	-0.39	71.94	-0.36	-0.74	WI
YKZGFF		68.66	0.04	0.07	72.34	0.04	0.08	WI
Z9KZ9U		68.32	-0.30	-0.59	72.52	0.22	0.45	XX
ZL7DAK		69.66	1.04	2.02	72.86	0.56	1.14	WI
ZMK83K		68.86	0.24	0.46	72.84	0.54	1.10	BU

Summary Statistics

	Sample E81		Sample E82	
Grand Means	68.622	HR30N	72.300	HR30N
Stnd Dev Btwn Labs	0.514	HR30N	0.490	HR30N

Statistics based on 48 of 50 reporting participants

Samples E81 , E82 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

GPXRDB (X) - Low data for Sample E81 and inconsistent within the determinations for Sample E81.

QV72DW (X) - Inconsistent in testing between samples, data for Sample E82 are high.

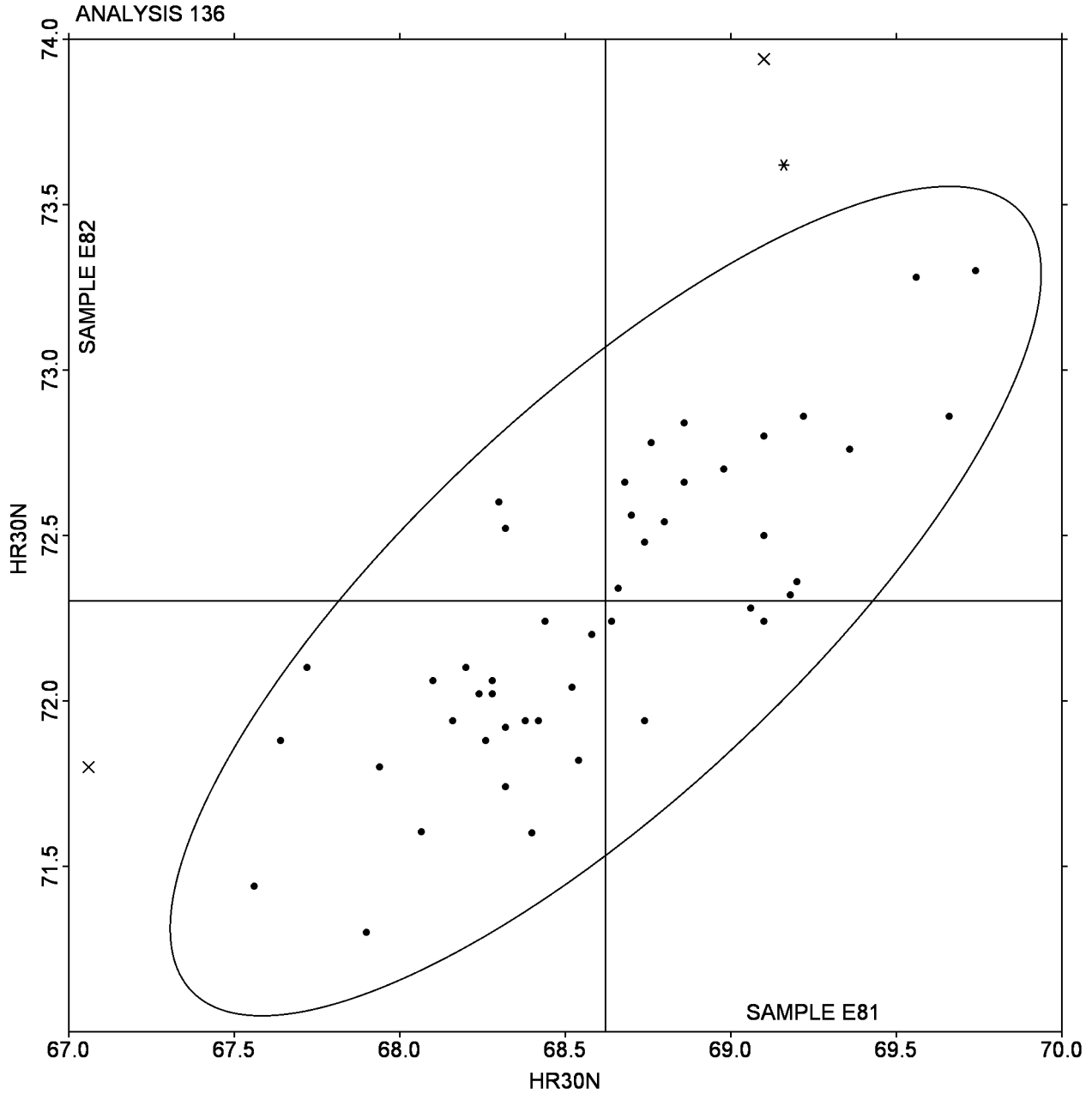
Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

ASTM E18

SAMPLE E81 = 68.622 HR30N SAMPLe E82 = 72.300 HR30N



Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C81			Sample C82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2EHWCY		0.01	0.00	-1.44	0.03	0.00	-0.65	LC
2QEZH		0.01	0.00	-0.41	0.03	0.00	-0.49	BL
2UE6CL		0.01	0.00	0.07	0.03	0.00	-0.10	NE
3D4Z97		0.02	0.00	1.24	0.04	0.01	1.32	RE
78TAQQ	X	0.13	0.12	36.63	0.33	0.30	57.69	XX
7A6YBE		0.02	0.00	1.35	0.04	0.01	1.64	RE
7FNAAP		0.02	0.00	0.36	0.03	0.00	0.30	XX
9HGV9B		0.02	0.00	0.27	0.03	0.00	0.06	BU
9RBDAL		0.01	0.00	-0.18	0.03	0.00	0.46	BR
9YW6ZK	X	0.03	0.01	4.27	0.04	0.01	2.45	WT
AHCB7M		0.01	0.00	0.10	0.03	0.00	0.01	ZU
BPRD2F		0.02	0.00	1.22	0.03	0.00	0.50	XX
DTCZ9E	*	0.01	-0.01	-1.85	0.02	-0.02	-2.96	VE
DYTR8R		0.01	0.00	-0.24	0.03	0.00	-0.48	NI
EVZVLY		0.01	-0.01	-1.78	0.02	-0.01	-1.80	OL
GCRFKA		0.02	0.00	0.44	0.04	0.00	0.97	XX
GMJLEM		0.02	0.01	1.92	0.04	0.01	1.36	OL
GYCK2E		0.02	0.00	1.43	0.04	0.01	1.82	RE
GYVYEB		0.01	0.00	0.07	0.03	0.00	-0.55	ZA
JBWBJZ		0.02	0.00	1.29	0.03	0.00	0.57	XX
JG68EG		0.02	0.00	0.49	0.03	0.00	0.67	BR
JMHRAT		0.01	0.00	0.15	0.03	0.00	-0.01	RE
KRPTGH		0.01	0.00	-0.02	0.03	0.00	0.34	OL
L93DC6	*	0.01	0.00	-1.17	0.03	0.00	0.58	FU
LBYNR8		0.01	0.00	0.12	0.03	0.00	-0.81	LI
LMNLFZ		0.01	0.00	-0.55	0.03	0.00	0.04	OL
M7H4BQ		0.01	0.00	-0.13	0.03	0.00	-0.10	LE
NHY4T6		0.01	-0.01	-1.93	0.03	0.00	-0.96	OB
NLAMNL		0.02	0.00	0.56	0.03	0.00	0.54	NI
PA76VW		0.01	0.00	-0.95	0.03	0.00	-0.42	NP
PAR8T4		0.01	0.00	-0.36	0.03	0.00	-0.22	OL
PBPHP9		0.01	0.00	-0.28	0.03	0.00	-0.44	LE
PYTA9P		0.02	0.00	0.61	0.03	0.00	0.10	NI
QDLXKU	X	0.06	0.04	12.94	0.19	0.16	30.37	BU
QE4XRQ		0.01	0.00	0.01	0.03	0.00	-0.09	WT
QE6QRJ		0.01	0.00	-0.35	0.03	0.00	-0.11	OG
QKRDQ7		0.02	0.00	0.42	0.03	0.00	-0.17	NI
QZRR3R		0.02	0.00	0.44	0.03	0.00	0.81	WT
R7MPN3	X	0.03	0.02	5.50	0.05	0.02	3.03	CM
RQT9KP		0.02	0.00	0.46	0.03	0.00	-0.41	NI
TQKH7T		0.02	0.00	0.44	0.04	0.01	1.28	BU
UDTFXH		0.01	0.00	0.19	0.03	0.00	0.30	OL
WAJGQ2		0.01	0.00	-0.12	0.03	0.00	-0.32	ZA
Y234WF	*	0.00	-0.01	-2.97	0.01	-0.02	-3.04	XX
ZHPGQ8	X	0.03	0.02	5.37	0.04	0.01	2.22	XX

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C81			Sample C82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZJX63J		0.02	0.00	1.08	0.03	0.00	0.47	LE

Summary Statistics

	Sample C81	Sample C82
Grand Means	0.014 inch	0.030 inch
Std Dev Btwn Labs	0.003 inch	0.005 inch
Statistics based on 41 of 46 reporting participants		

Samples C81 , C82 : AISI 8620

Comments on assigned Data Flags for Test #145

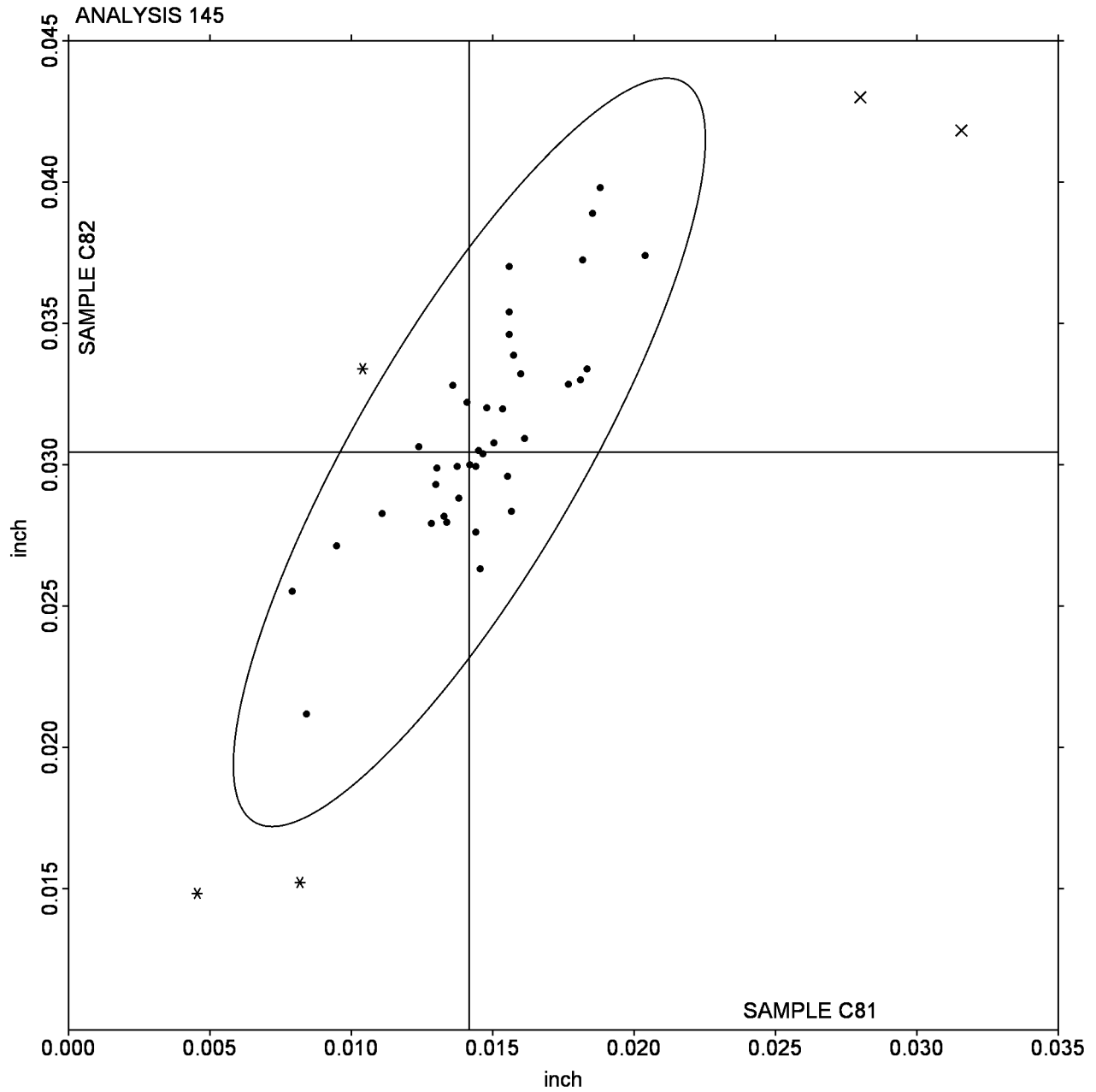
- 78TAQQ (X) - It appears that the data were off by a factor of 10.
- 9YW6ZK (X) - High data for Sample C81.
- QDLXKU (X) - Data for both samples are high.
- R7MPN3 (X) - Data for both samples are high.
- ZHPGQ8 (X) - High data for Sample C81.

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth
SAE J423, SAE J78

SAMPLE C81 = 0.014 inch SAMPLE C82 = 0.030 inch



Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C81			Sample C82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3DTZHQ	X	0.02	0.00	3.62	0.03	0.00	-0.69	LI
3U2FY7		0.01	0.00	0.30	0.03	0.00	-0.42	WZ
6AEPCR		0.01	0.00	0.13	0.03	0.00	0.95	LE
6RXA3P		0.01	0.00	-0.87	0.03	0.00	-1.31	CM
7FHJZF		0.01	0.00	0.54	0.03	0.00	2.14	BU
8AL3DR		0.01	0.00	-0.87	0.03	0.00	-0.97	WT
8FD8DN		0.01	0.00	0.54	0.03	0.00	0.41	LE
8XL3EL		0.01	0.00	-0.87	0.03	0.00	-1.49	WT
9CTXAM		0.01	0.00	-1.15	0.03	0.00	-0.62	CM
9FYAHA		0.01	0.00	-1.15	0.03	0.00	-1.31	WT
9M4AR6		0.01	0.00	0.53	0.03	0.00	1.75	SH
9MHC7J	X	0.02	0.00	3.34	0.03	0.01	4.91	LE
AEVWQT		0.01	0.00	0.37	0.03	0.00	0.15	BU
BQXDKF	X	0.01	0.00	0.82	0.02	0.00	-4.25	BU
CGGBFE		0.01	0.00	0.75	0.03	0.00	0.80	LE
DKEJ99	X	0.02	0.00	3.97	0.03	0.00	3.53	BU
DNNT88		0.01	0.00	-1.46	0.03	0.00	-1.58	NA
DQHQLQ		0.01	0.00	1.30	0.03	0.00	0.12	MI
DVXLLG		0.01	0.00	0.54	0.03	0.00	0.76	CL
EEF33M		0.01	0.00	0.30	0.03	0.00	-0.42	MA
FEDRZG		0.01	0.00	0.76	0.03	0.00	1.52	XX
FLYCU3		0.01	0.00	-1.35	0.03	0.00	-1.24	BU
JW8F6V		0.01	0.00	0.10	0.03	0.00	-0.68	SH
JY6TYT		0.01	0.00	-0.08	0.03	0.00	0.14	WT
KRPAJ3		0.01	0.00	0.08	0.03	0.00	-0.08	FU
KX2LWY		0.01	0.00	-0.31	0.03	0.00	1.10	WT
LPQJN6		0.01	0.00	1.10	0.03	0.00	0.24	WT
NERWX7		0.01	0.00	0.95	0.03	0.00	1.16	MI
NGH3FJ		0.01	0.00	-1.03	0.03	0.00	0.13	XX
P78TYW		0.01	0.00	0.97	0.03	0.00	0.80	LE
PAN2LB		0.01	0.00	2.40	0.03	0.00	1.14	LC
PXPJCV		0.01	0.00	-1.18	0.03	0.00	-0.06	BU
QCPLN2		0.01	0.00	1.10	0.03	0.00	1.80	FU
T24W6M		0.01	0.00	-0.31	0.03	0.00	-0.80	SH
TD2APZ		0.01	0.00	-0.59	0.03	0.00	-0.62	ST
TJL4AG		0.01	0.00	-1.15	0.03	0.00	-0.28	WT
U96692		0.01	0.00	-0.25	0.03	0.00	0.05	BU
U9VU7F		0.01	0.00	1.94	0.03	0.00	0.59	BU
U9W7T6	X	0.02	0.01	7.55	0.03	0.00	0.93	BU
UN2TK7		0.01	0.00	0.54	0.03	0.00	0.93	BU
UQH4EC		0.01	0.00	1.96	0.03	0.00	0.19	XX
UQQJTH		0.01	0.00	0.64	0.03	0.00	0.33	CL
UUF76R		0.01	0.00	0.26	0.03	0.00	-1.14	BU
WBH76C		0.01	0.00	-0.59	0.03	0.00	-0.97	SH
WED2LQ		0.01	0.00	-1.43	0.03	0.00	-0.62	WT

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth

SAE J423, SAE J78

WebCode	Data Flag	Sample C81			Sample C82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WNAM3P	X	0.01	0.00	-0.31	0.02	-0.01	-9.43	BU
XBXQ9L		0.01	0.00	-1.15	0.03	0.00	-1.66	BU
XTAKVL		0.01	0.00	-1.12	0.03	0.00	0.67	LE
YMQMV7		0.01	0.00	-1.43	0.03	0.00	-1.66	AT
ZJGGRY		0.01	0.00	0.26	0.03	0.00	0.07	BU

Summary Statistics

	Sample C81	Sample C82
Grand Means	0.013 inch	0.030 inch
Stnd Dev Btwn Labs	0.001 inch	0.001 inch

Statistics based on 44 of 50 reporting participants

Samples C81 , C82 : AISI 8620

Comments on assigned Data Flags for Test #146

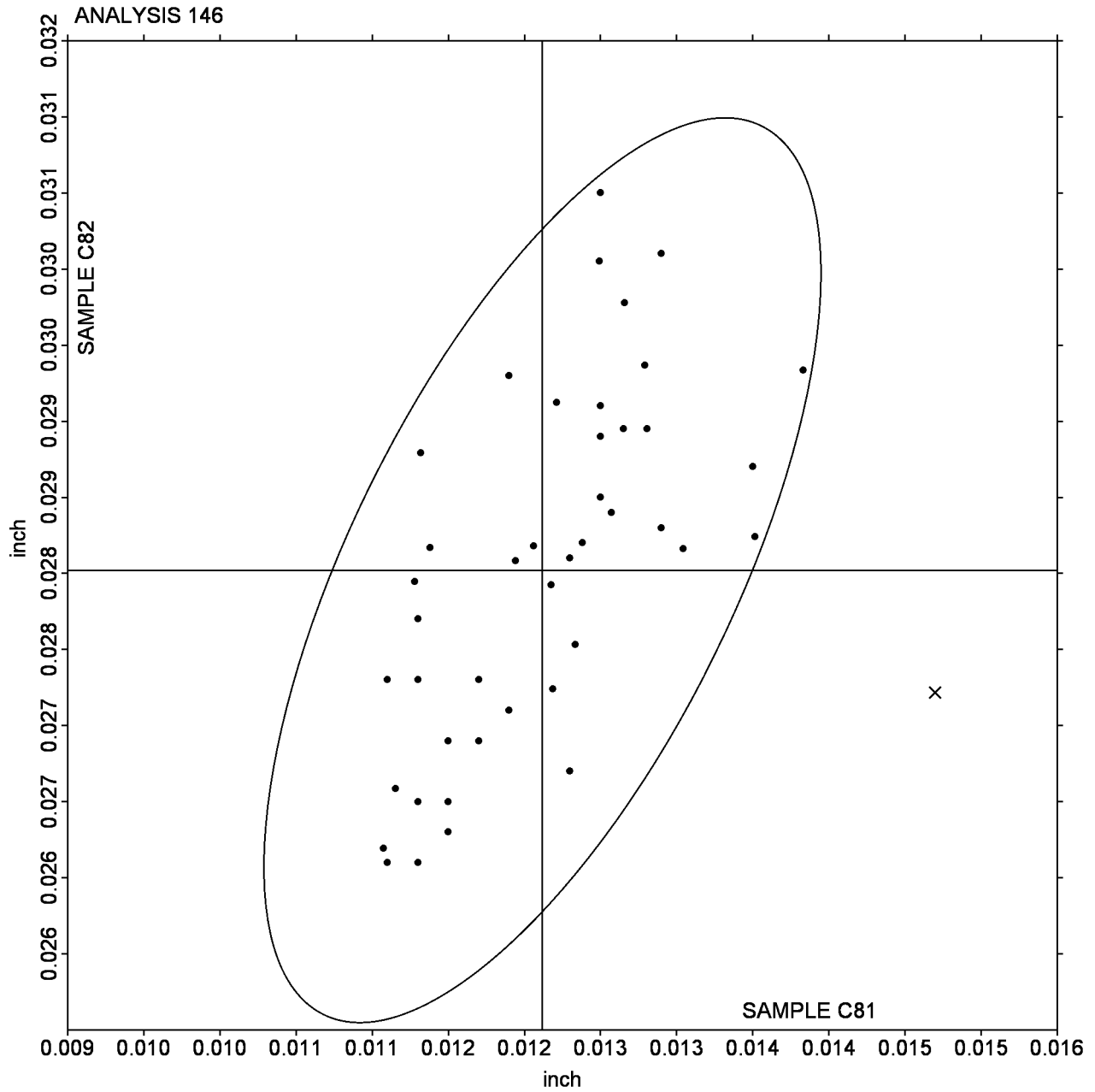
- 3DTZHQ (X) - High data for Sample C81.
- 9MHC7J (X) - Data for both samples are high.
- BQXDKF (X) - Low data for Sample C82.
- DKEJ99 (X) - Data for both samples are high.
- U9W7T6 (X) - High data for Sample C81.
- WNAM3P (X) - Low data for Sample C82.

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth
SAE J423, SAE J78

SAMPLE C81 = 0.013 inch SAMPLE C82 = 0.030 inch



Interlaboratory Testing Program for Metals

Analysis 160

Chemical Analysis Element #1: Copper-based Alloy - Percent
COPPER (Cu)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2YWZZG		82.73	0.65	1.71	81.73	0.47	1.08	OE
3KA3L2		81.76	-0.32	-0.85	80.87	-0.39	-0.88	GD
47973K	X	84.29	2.21	5.82	83.54	2.28	5.18	EL
6VUJRC		81.97	-0.12	-0.30	81.00	-0.26	-0.59	OE
6YDRK6	*	81.05	-1.04	-2.72	80.32	-0.94	-2.13	OE
9KAE3X		82.21	0.13	0.34	80.97	-0.29	-0.65	OE
AMF7VN		82.03	-0.05	-0.13	81.46	0.20	0.45	OE
EFXGVC		82.40	0.32	0.85	81.47	0.21	0.47	OE
GDBKXN		82.37	0.29	0.77	81.33	0.07	0.16	WC
GLX6HE		82.36	0.28	0.74	82.03	0.77	1.74	ED
HX39CV	X	85.40	3.32	8.73	84.10	2.84	6.45	OE
JPC2BU		81.64	-0.44	-1.16	80.99	-0.27	-0.61	BD
KFCLNM		82.77	0.68	1.80	81.87	0.61	1.38	OE
LFJ3LD	*	82.37	0.28	0.75	82.33	1.07	2.44	IC
LJT4LX		82.57	0.48	1.27	81.58	0.32	0.73	OE
LN4EHY		81.74	-0.34	-0.90	81.19	-0.07	-0.16	OE
LT8647		82.26	0.18	0.47	81.27	0.01	0.02	XX
PK83WX		81.80	-0.28	-0.74	81.50	0.24	0.55	AA
RK3WRE		82.17	0.08	0.22	81.00	-0.26	-0.59	OE
TFLTEG		82.24	0.16	0.42	81.23	-0.03	-0.07	IC
TH9ZCE	X	83.51	1.43	3.76	83.82	2.56	5.81	EL
THL2A2		81.96	-0.13	-0.33	80.97	-0.29	-0.65	OE
UU4JPA		81.89	-0.19	-0.50	81.18	-0.08	-0.17	WD
V4MF9M		82.02	-0.06	-0.15	80.98	-0.28	-0.64	XX
WGR9KE		82.14	0.06	0.15	81.09	-0.17	-0.38	BD
WW33P9		81.62	-0.46	-1.21	80.64	-0.62	-1.40	EL
YGXPX3		81.85	-0.24	-0.62	80.94	-0.32	-0.72	GR
ZY6WCW		82.13	0.05	0.13	81.53	0.27	0.62	XR

Summary Statistics

	Sample K81	Sample K82
Grand Means	82.082 Percent	81.260 Percent
Std Dev Btwn Labs	0.380 Percent	0.441 Percent

Statistics based on 25 of 28 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #160

47973K (X) - Data for both samples are high and inconsistent within the determinations for both samples.

HX39CV (X) - Data for both samples are high.

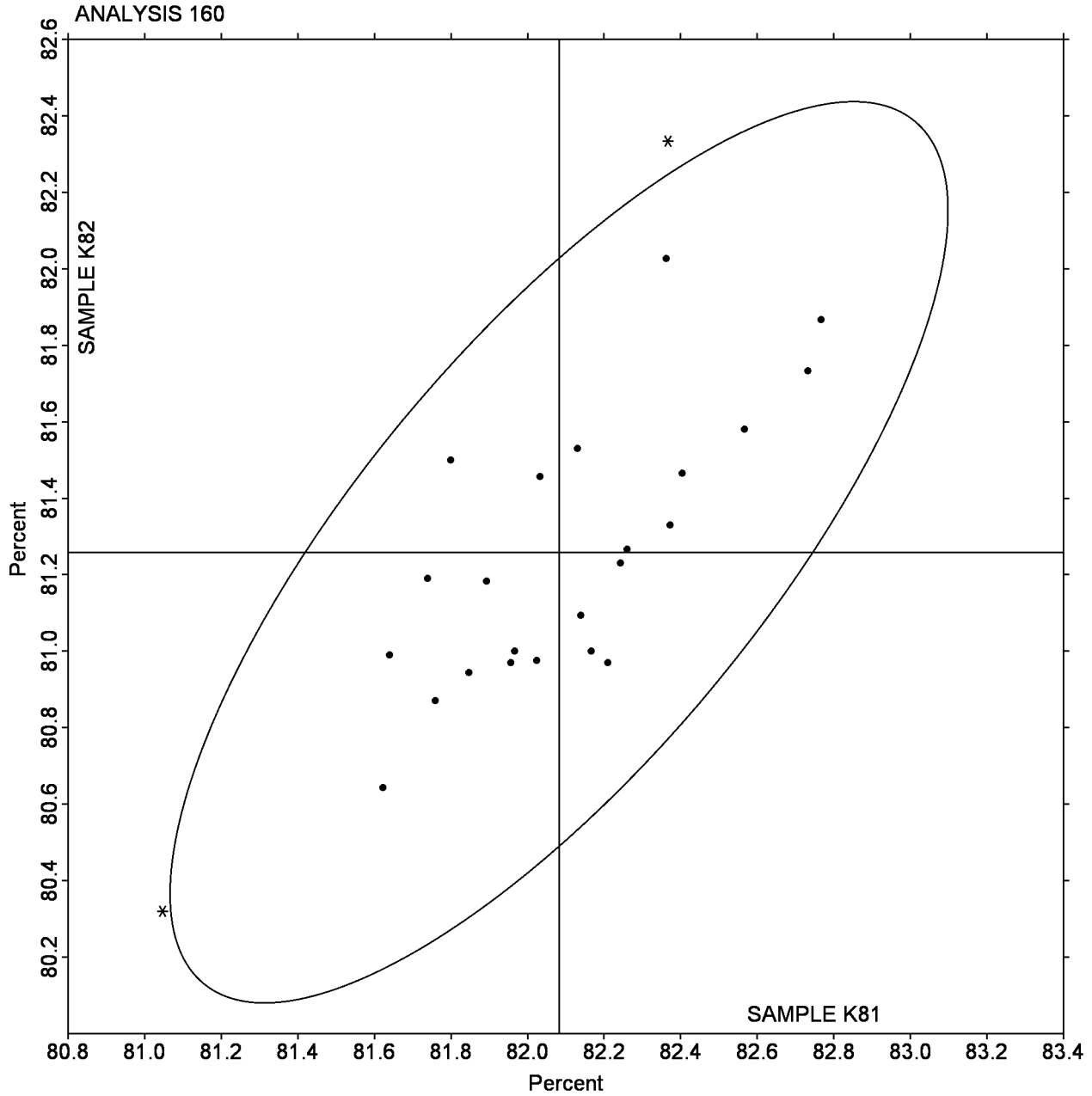
TH9ZCE (X) - Data for both samples are high

Interlaboratory Testing Program for Metals

Analysis 160

Chemical Analysis Element #1: Copper-based Alloy - Percent
COPPER (Cu)

SAMPLE K81 = 82.082 Percent SAMPLE K82 = 81.260 Percent



Interlaboratory Testing Program for Metals

Analysis 161

Chemical Analysis Element #2: Copper-based Alloy - Percent
IRON (Fe)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2H44PM		0.0200	-0.0035	-0.69	0.1367	-0.0074	-0.44	AA
2PUUQV	*	0.0190	-0.0045	-0.89	0.0933	-0.0508	-3.01	XR
34LAUU		0.0223	-0.0012	-0.23	0.1410	-0.0031	-0.18	OE
3ZD8KQ		0.0190	-0.0045	-0.89	0.1453	0.0012	0.07	XX
73HC33	*	0.0366	0.0131	2.59	0.1383	-0.0058	-0.34	OE
9BGQXY		0.0243	0.0008	0.16	0.1380	-0.0061	-0.36	OE
9LBNAR		0.0270	0.0035	0.69	0.1500	0.0059	0.35	IC
9R9Y9Y		0.0218	-0.0017	-0.33	0.1339	-0.0102	-0.61	OE
A4EDLH		0.0263	0.0028	0.56	0.1443	0.0002	0.01	OE
D2JWZY	X	0.0194	-0.0041	-0.80	0.0149	-0.1292	-7.67	IC
DMGWWG		0.0297	0.0062	1.22	0.1693	0.0252	1.50	GD
E8XBTW		0.0130	-0.0105	-2.07	0.1453	0.0012	0.07	OE
FHPVBR	X	0.0790	0.0555	10.95	0.1343	-0.0098	-0.58	AA
FKM4WF		0.0222	-0.0013	-0.26	0.1467	0.0026	0.15	DR
FLQQ99		0.0179	-0.0056	-1.11	0.1200	-0.0241	-1.43	OE
HAT2PJ		0.0200	-0.0035	-0.69	0.1333	-0.0108	-0.64	IC
HMKU9T		0.0264	0.0029	0.57	0.1497	0.0056	0.33	OE
HYGA62		0.0279	0.0044	0.87	0.1730	0.0289	1.72	OE
JXV2EL		0.0248	0.0013	0.25	0.1446	0.0005	0.03	IC
KCVN7L		0.0187	-0.0048	-0.95	0.1767	0.0326	1.93	OE
L828DR		0.0224	-0.0011	-0.21	0.1653	0.0212	1.26	OE
LNTDWZ		0.0230	-0.0005	-0.10	0.1390	-0.0051	-0.30	OE
RGBYM3	M				0.1800	0.0359	2.13	OE
YBBTF7		0.0236	0.0001	0.02	0.1520	0.0079	0.47	IC
YPKAZ9		0.0210	-0.0025	-0.49	0.1410	-0.0031	-0.18	OE
ZDKEAJ		0.0235	0.0000	0.00	0.1508	0.0067	0.40	XX
ZRF2B6		0.0229	-0.0006	-0.12	0.1353	-0.0088	-0.52	WD
ZWH4RF		0.0341	0.0106	2.08	0.1398	-0.0043	-0.26	IC

Summary Statistics

	Sample K81	Sample K82
Grand Means	0.02350 Percent	0.14410 Percent
Std Dev Btwn Labs	0.00507 Percent	0.01685 Percent

Statistics based on 25 of 28 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #161

D2JWZY (X) - It appears that the data for Sample K82 were off by a factor of 0.1.

FHPVBR (X) - High data for Sample K81.

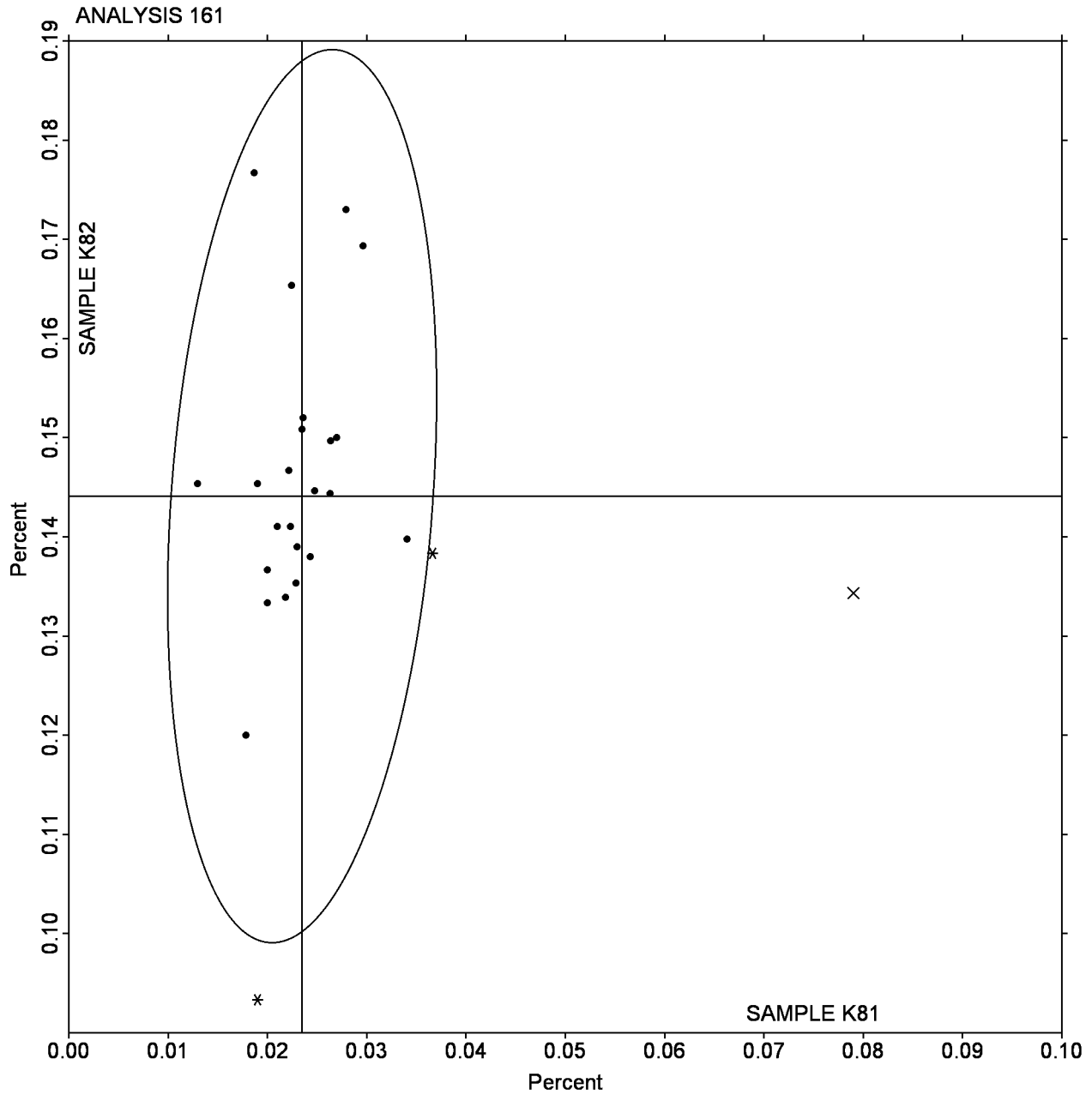
RGBYM3 (M) - Laboratory did not submit data for Sample K81.

Interlaboratory Testing Program for Metals

Analysis 161

Chemical Analysis Element #2: Copper-based Alloy - Percent
IRON (Fe)

SAMPLE K81 = 0.02350 Percent SAMPLE K82 = 0.14410 Percent



Interlaboratory Testing Program for Metals

Analysis 162

Chemical Analysis Element #3: Copper-based Alloy - Percent
LEAD (Pb)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
26DYFH		7.343	-0.267	-0.86	7.603	-0.367	-1.20	XX
37TMK9		7.436	-0.175	-0.56	7.863	-0.107	-0.35	OE
62YDTY		7.582	-0.029	-0.09	8.061	0.091	0.30	IC
6XTTRT		8.049	0.439	1.41	8.090	0.120	0.39	XR
8RTJY4		7.559	-0.052	-0.17	7.978	0.008	0.03	IC
9JXWMX		7.450	-0.161	-0.52	8.057	0.087	0.28	OE
BATAHW	X	0.705	-6.905	-22.14	0.873	-7.097	-23.23	AA
BZH3C4		7.430	-0.181	-0.58	7.967	-0.003	-0.01	OE
CPQFNW		7.150	-0.461	-1.48	7.627	-0.343	-1.12	OE
DQJNC8		7.258	-0.353	-1.13	7.657	-0.313	-1.03	OE
DUX3KT		7.930	0.319	1.02	8.373	0.403	1.32	OE
EHRFC9		7.873	0.263	0.84	8.577	0.607	1.99	OE
KNAC8C	*	7.900	0.289	0.93	7.667	-0.303	-0.99	ED
L2RVCK		7.470	-0.141	-0.45	8.083	0.113	0.37	OE
LJZXX		7.852	0.241	0.77	8.382	0.412	1.35	XX
LVDVNM		7.780	0.169	0.54	8.130	0.160	0.52	OE
MRX2PN		7.387	-0.224	-0.72	7.753	-0.217	-0.71	OE
PTZ2DC		7.760	0.149	0.48	8.133	0.163	0.53	IC
QQFL8V		7.857	0.246	0.79	7.753	-0.217	-0.71	OE
T3Y82F	*	6.640	-0.971	-3.11	7.113	-0.857	-2.80	OE
T6JHL9		7.830	0.219	0.70	8.273	0.303	0.99	IC
TUMYD2		7.727	0.116	0.37	7.980	0.010	0.03	GD
V9ZEQ3		7.597	-0.014	-0.04	7.942	-0.028	-0.09	OE
Y2JTVG		8.007	0.396	1.27	8.287	0.317	1.04	IC
Y8MFAV		7.760	0.149	0.48	8.157	0.187	0.61	OE
YRKHVR		7.451	-0.159	-0.51	7.882	-0.088	-0.29	OE
ZNFPF6		7.800	0.189	0.61	7.830	-0.140	-0.46	WD

Summary Statistics

	Sample K81		Sample K82	
Grand Means	7.6107	Percent	7.9700	Percent
Std Dev Btwn Labs	0.3119	Percent	0.3055	Percent

Statistics based on 26 of 27 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #162

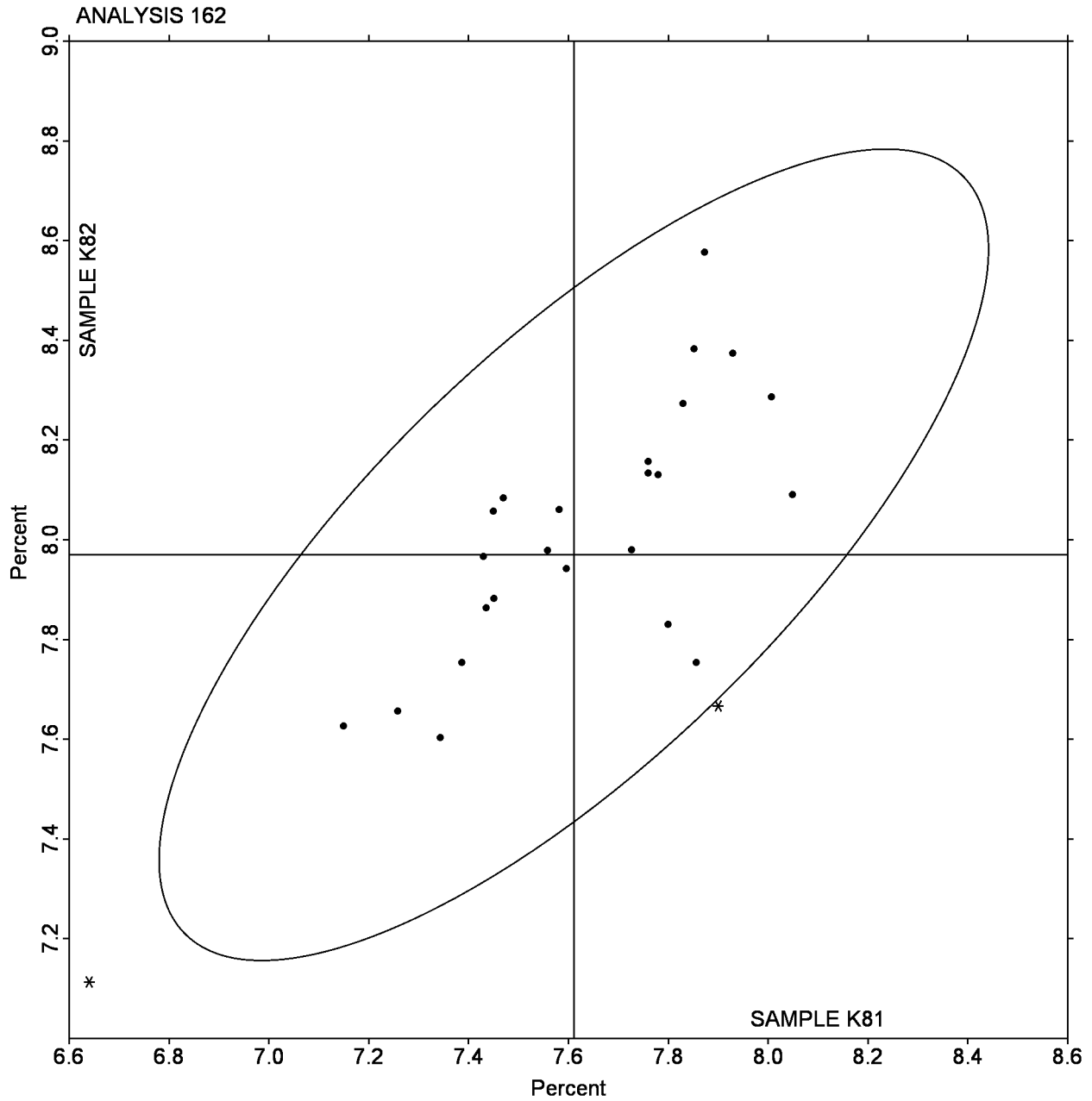
BATAHW (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 162

Chemical Analysis Element #3: Copper-based Alloy - Percent
LEAD (Pb)

SAMPLE K81 = 7.6107 Percent SAMPLE K82 = 7.9700 Percent



Interlaboratory Testing Program for Metals

Analysis 163

Chemical Analysis Element #4: Copper-based Alloy - Percent
SULFUR (S)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2B8XXC		0.0228	0.0056	1.31	0.0390	0.0071	1.06	OE
3DPK46		0.0124	-0.0049	-1.15	0.0279	-0.0040	-0.60	CI
3FTT44		0.0204	0.0032	0.75	0.0401	0.0082	1.22	IC
6W728B		0.0120	-0.0052	-1.23	0.0263	-0.0055	-0.82	CI
73KUAD		0.0174	0.0002	0.04	0.0307	-0.0012	-0.18	XX
7B98AR		0.0186	0.0014	0.33	0.0339	0.0020	0.30	OE
9HUUJG		0.0193	0.0020	0.48	0.0380	0.0061	0.91	OE
CEC7TY		0.0173	0.0000	0.01	0.0325	0.0006	0.09	OE
FEKPG7	*	0.0263	0.0091	2.14	0.0330	0.0011	0.17	OE
FTRZLT		0.0200	0.0028	0.65	0.0350	0.0031	0.47	OE
JPLQ2D		0.0141	-0.0031	-0.74	0.0339	0.0020	0.30	DR
K2AGJR		0.0173	0.0001	0.02	0.0300	-0.0019	-0.28	OE
KGL3QL		0.0140	-0.0032	-0.76	0.0300	-0.0019	-0.28	OE
NGUCBH		0.0160	-0.0012	-0.29	0.0307	-0.0012	-0.18	OE
NTTFVW		0.0176	0.0004	0.09	0.0311	-0.0008	-0.11	OE
PADQTJ		0.0193	0.0021	0.49	0.0350	0.0031	0.47	OE
QFC6ZK	*	0.0091	-0.0081	-1.92	0.0131	-0.0187	-2.79	IC
TNJ4LC		0.0152	-0.0020	-0.47	0.0339	0.0020	0.30	CI
UKDWRZ		0.0240	0.0068	1.59	0.0450	0.0131	1.95	GD
VLAMTY		0.0190	0.0018	0.42	0.0340	0.0021	0.32	OE
XLTV8L		0.0107	-0.0066	-1.55	0.0190	-0.0129	-1.91	XX
ZB6XCQ		0.0163	-0.0009	-0.21	0.0290	-0.0029	-0.43	OE

Summary Statistics

	Sample K81		Sample K82	
Grand Means	0.01724	Percent	0.03190	Percent
Stnd Dev Btwn Labs	0.00424	Percent	0.00672	Percent
Statistics based on 22 of 22 reporting participants				

Samples K81 , K82 : CDA 932, two different heats

Analysis Notes for Test #163

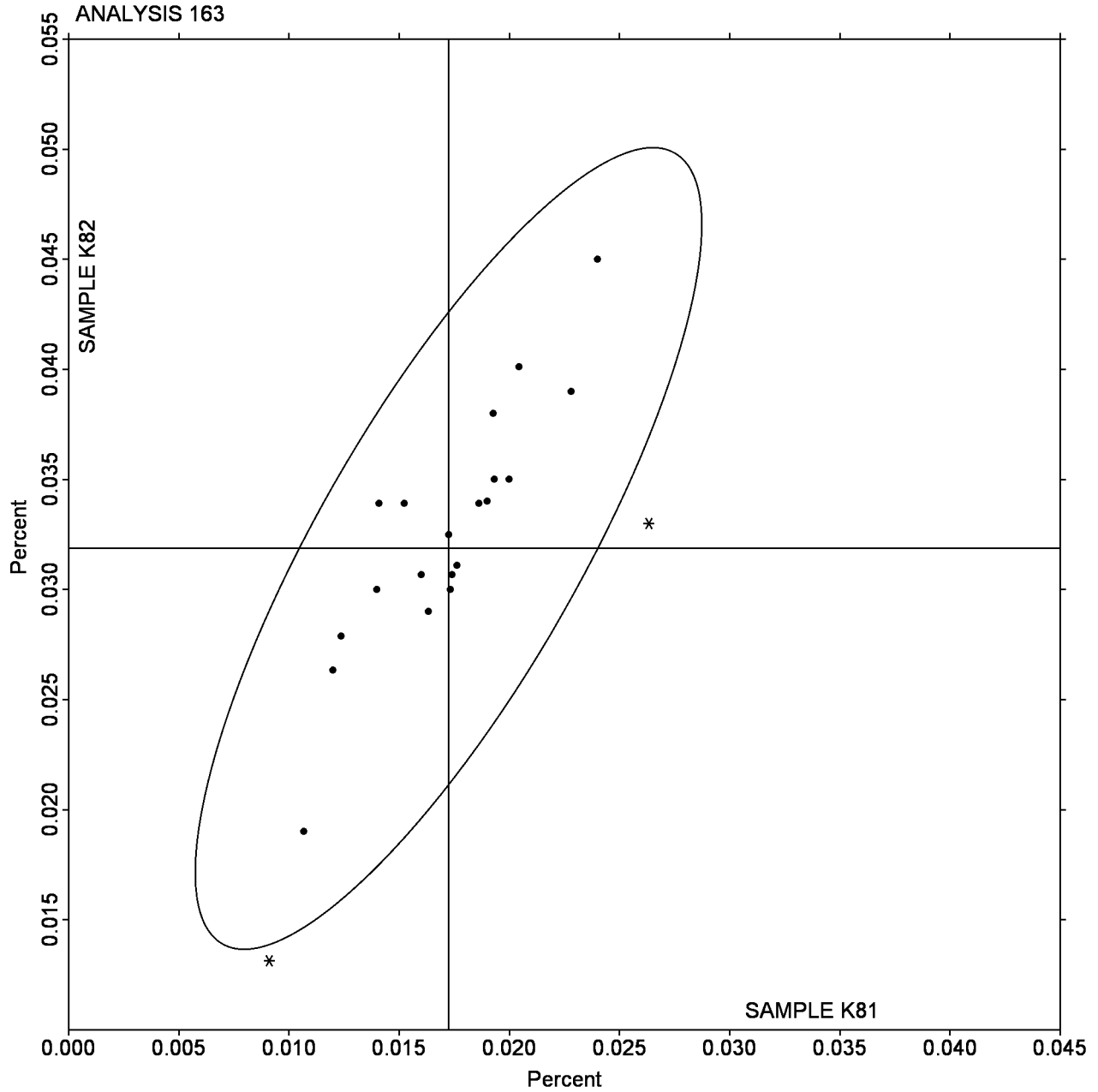
No overall flags were assigned for this analysis.

Interlaboratory Testing Program for Metals

Analysis 163

Chemical Analysis Element #4: Copper-based Alloy - Percent
SULFUR (S)

SAMPLE K81 = 0.01724 Percent SAMPLE K82 = 0.03190 Percent



Interlaboratory Testing Program for Metals

Analysis 164

Chemical Analysis Element #5: Copper-based Alloy - Percent
ZINC (Zn)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J84G8	X	2.075	-1.111	-10.18	2.169	-1.651	-11.88	AA
2JTH87		3.105	-0.081	-0.75	3.793	-0.027	-0.19	IC
4ANNA4		3.153	-0.033	-0.30	3.820	0.000	0.00	OE
4UC6G4		3.257	0.070	0.65	3.833	0.014	0.10	OE
4ZYHGB		3.238	0.052	0.47	3.856	0.037	0.26	OE
8JYUDE		3.207	0.020	0.19	3.828	0.009	0.06	OE
9F9JTU		3.170	-0.016	-0.15	3.727	-0.093	-0.67	IC
A4V9QJ		3.115	-0.072	-0.66	3.881	0.061	0.44	GD
BDEQVG		3.179	-0.007	-0.07	3.743	-0.077	-0.55	OE
BMT9RM	X	0.215	-2.971	-27.22	0.906	-2.914	-20.97	XR
CHRG73		3.053	-0.133	-1.22	3.663	-0.157	-1.13	OE
CVZWXL		3.310	0.124	1.13	4.023	0.204	1.47	ED
D2CVPY		3.263	0.077	0.71	3.963	0.144	1.03	OE
EZMGZR		3.191	0.005	0.04	3.884	0.065	0.47	WD
F6BXYH		3.257	0.071	0.65	3.858	0.039	0.28	OE
FA6DH6		3.076	-0.111	-1.01	3.637	-0.182	-1.31	XX
FM69AT		3.173	-0.013	-0.12	3.763	-0.056	-0.40	OE
HPLU2K		3.210	0.024	0.22	3.900	0.080	0.58	IC
JRLGVZ	*	3.487	0.300	2.75	4.190	0.370	2.67	XX
N64H2A		3.237	0.051	0.47	3.919	0.099	0.72	OE
NRMUFX		3.093	-0.093	-0.85	3.687	-0.133	-0.96	OE
Q3XMVP		3.111	-0.075	-0.69	3.670	-0.150	-1.08	IC
QE23EL		2.939	-0.247	-2.26	3.574	-0.245	-1.77	IC
RQUYZK		3.340	0.154	1.41	3.950	0.131	0.94	OE
UUX7WV		3.150	-0.036	-0.33	3.787	-0.033	-0.24	OE
WW2TQ3		3.087	-0.100	-0.91	3.633	-0.186	-1.34	OE
YXBDRB		3.254	0.067	0.62	3.905	0.086	0.62	OE

Summary Statistics

	Sample K81	Sample K82
Grand Means	3.1862 Percent	3.8200 Percent
Std Dev Btwn Labs	0.1091 Percent	0.1389 Percent

Statistics based on 25 of 27 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #164

2J84G8 (X) - Data for both samples are low.

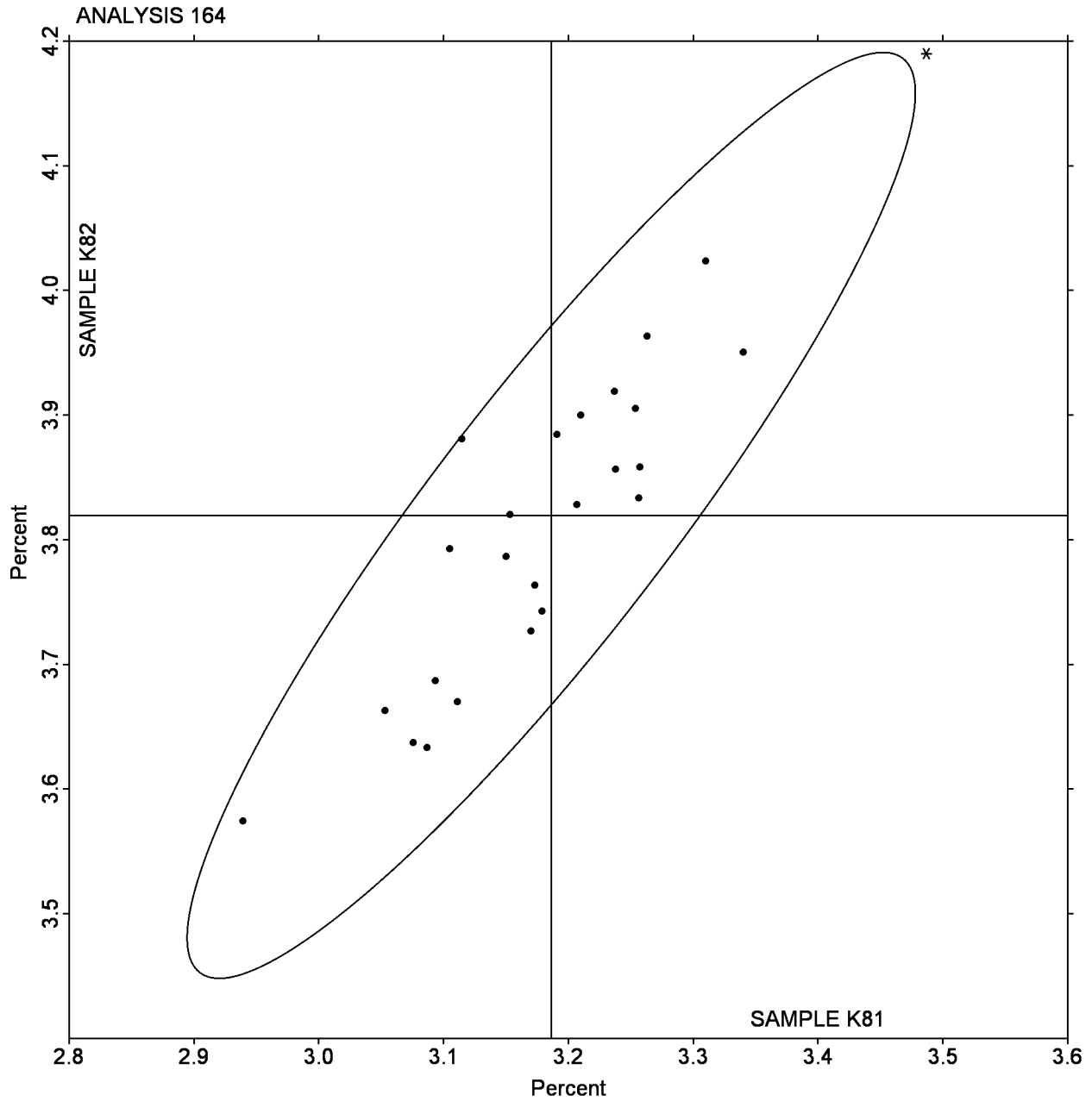
BMT9RM (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 164

Chemical Analysis Element #5: Copper-based Alloy - Percent
ZINC (Zn)

SAMPLE K81 = 3.1862 Percent SAMPLe K82 = 3.8200 Percent



Interlaboratory Testing Program for Metals

Analysis 165

Chemical Analysis Element #6: Copper-based Alloy - Percent
NICKEL (Ni)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24NKB7		0.422	-0.001	-0.08	0.336	-0.002	-0.14	OE
2GKVAK		0.380	-0.043	-2.23	0.310	-0.029	-1.81	OE
3BX2V7		0.448	0.025	1.28	0.353	0.014	0.89	AA
6RNGPG		0.428	0.004	0.21	0.340	0.001	0.07	OE
6TQJZR		0.408	-0.015	-0.78	0.328	-0.010	-0.65	IC
98F8KU		0.430	0.007	0.33	0.340	0.001	0.09	IC
9YH8W9		0.423	0.000	-0.02	0.332	-0.006	-0.39	IC
A3P3VP	*	0.443	0.020	1.00	0.368	0.029	1.86	OE
AYY6VW		0.435	0.012	0.61	0.352	0.014	0.87	OE
B3BDGA	X	0.172	-0.251	-12.92	0.135	-0.203	-12.86	XX
BVTGNF		0.425	0.002	0.09	0.342	0.003	0.20	OE
DVXYBB		0.437	0.013	0.68	0.353	0.015	0.93	OE
E4GE9V		0.424	0.001	0.03	0.336	-0.003	-0.18	OE
FP3EAK		0.401	-0.023	-1.17	0.316	-0.022	-1.41	OE
H9NCJU		0.436	0.013	0.64	0.345	0.007	0.43	OE
J3R83V	*	0.372	-0.051	-2.63	0.310	-0.029	-1.81	OE
KMM2Z6		0.430	0.007	0.33	0.343	0.005	0.30	AA
KVDR2D	X	0.259	-0.165	-8.47	0.210	-0.129	-8.14	XR
L9GU4Z		0.442	0.019	0.95	0.358	0.019	1.23	XX
MX9NGB		0.427	0.003	0.16	0.343	0.005	0.30	ED
RLY7TK		0.457	0.034	1.74	0.366	0.028	1.76	OE
RZEXGV		0.428	0.004	0.21	0.340	0.001	0.07	OE
U892LX		0.409	-0.014	-0.73	0.322	-0.017	-1.05	OE
VEYK4Y		0.416	-0.008	-0.40	0.299	-0.040	-2.52	GD
VHNBPH		0.405	-0.019	-0.97	0.320	-0.019	-1.17	IC
VYM2FE		0.425	0.001	0.06	0.336	-0.002	-0.14	OE
XN7229		0.435	0.012	0.61	0.350	0.011	0.70	WD
ZQXFF4		0.417	-0.007	-0.35	0.323	-0.015	-0.96	IC

Summary Statistics

	Sample K81	Sample K82
Grand Means	0.4235 Percent	0.3390 Percent
Std Dev Btwn Labs	0.0195 Percent	0.0158 Percent

Statistics based on 25 of 28 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #165

B3BDGA (X) - Data for both samples are low.

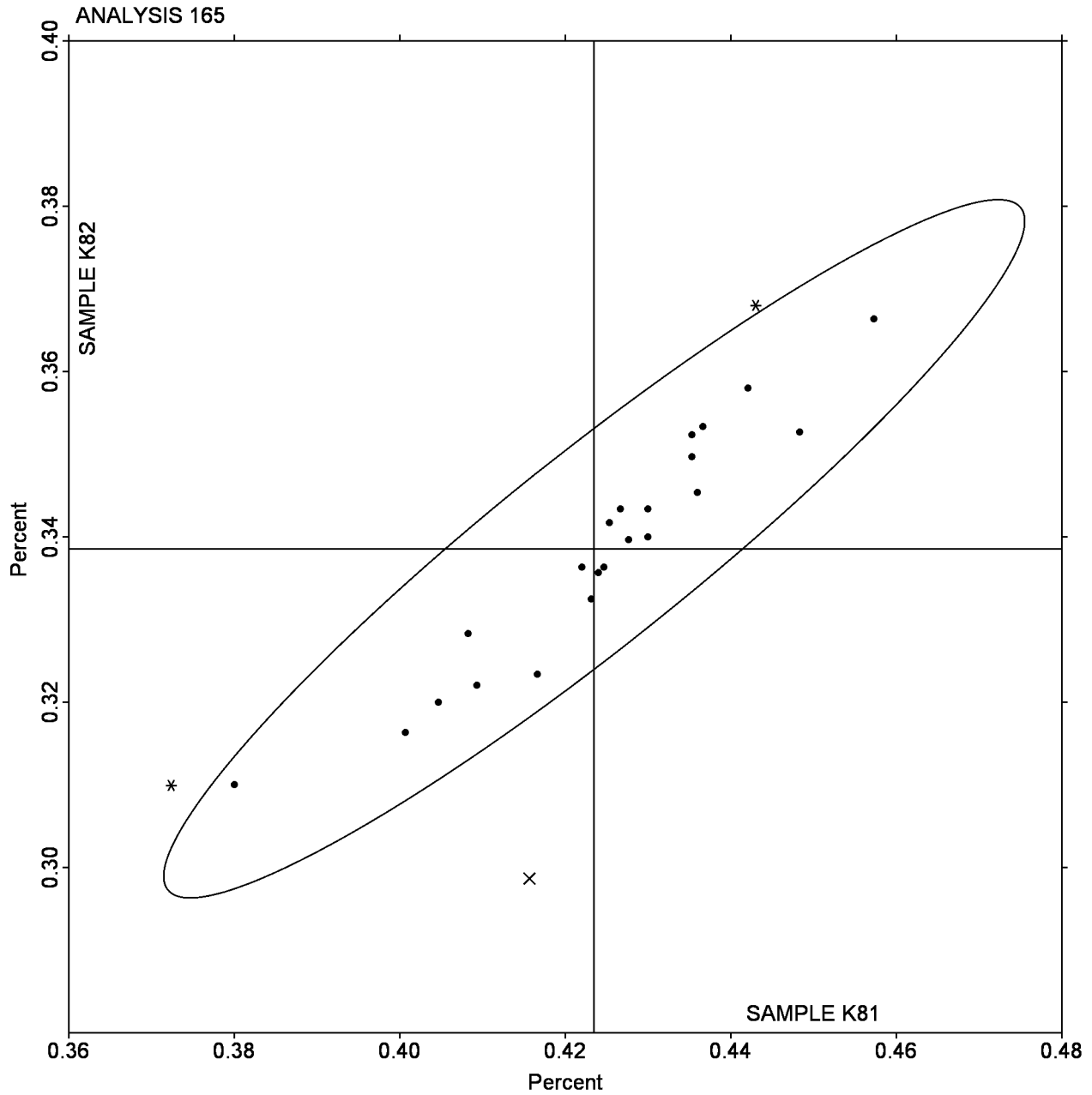
KVDR2D (X) - Data for both samples are low.

Interlaboratory Testing Program for Metals

Analysis 165

Chemical Analysis Element #6: Copper-based Alloy - Percent
NICKEL (Ni)

SAMPLE K81 = 0.4235 Percent SAMPLe K82 = 0.3390 Percent



Interlaboratory Testing Program for Metals

Analysis 166

Chemical Analysis Element #7: Copper-based Alloy - Percent
ANTIMONY (Sb)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
6Q4Y9T		0.098	-0.001	-0.05	0.094	0.003	0.26	ED
822BZZ		0.112	0.013	0.81	0.103	0.012	0.89	WD
9ZLFQD		0.092	-0.007	-0.44	0.094	0.003	0.24	OE
AYHXNU	X	0.213	0.114	7.02	0.163	0.072	5.48	IC
B9QUGR		0.078	-0.021	-1.30	0.073	-0.018	-1.35	OE
BLPWCR		0.079	-0.020	-1.24	0.071	-0.020	-1.53	IC
CGUWVH		0.109	0.010	0.60	0.100	0.009	0.72	GD
D9H4CX	X	0.251	0.152	9.36	0.221	0.130	9.84	OE
DHEUG8		0.070	-0.029	-1.75	0.062	-0.029	-2.21	XX
G4VXD9		0.107	0.008	0.48	0.095	0.004	0.29	OE
GD4MWX		0.104	0.005	0.33	0.095	0.004	0.29	OE
GNQXQ6		0.110	0.011	0.68	0.100	0.009	0.69	OE
H83P7Y		0.123	0.024	1.48	0.102	0.011	0.87	IC
JHTAX3		0.099	0.001	0.03	0.090	-0.001	-0.06	XX
JX4E6A		0.091	-0.008	-0.46	0.087	-0.004	-0.32	OE
KRPLKF		0.116	0.017	1.03	0.103	0.012	0.94	OE
QTP9M9		0.081	-0.018	-1.12	0.072	-0.019	-1.45	OE
QYH6P7		0.101	0.002	0.14	0.093	0.002	0.13	IC
RXBG9L		0.113	0.014	0.85	0.101	0.010	0.74	IC
TPFWN7		0.105	0.006	0.38	0.089	-0.002	-0.14	OE
W6PPCD	*	0.060	-0.039	-2.37	0.068	-0.023	-1.70	AA
WQF9RB		0.103	0.004	0.25	0.106	0.015	1.17	OE
XZFUZUB		0.114	0.015	0.93	0.102	0.011	0.84	OE
YTDR4E		0.111	0.012	0.74	0.100	0.009	0.69	OE

Summary Statistics

	Sample K81		Sample K82	
Grand Means	0.0989	Percent	0.0910	Percent
Stnd Dev Btwn Labs	0.0163	Percent	0.0132	Percent

Statistics based on 22 of 24 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #166

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

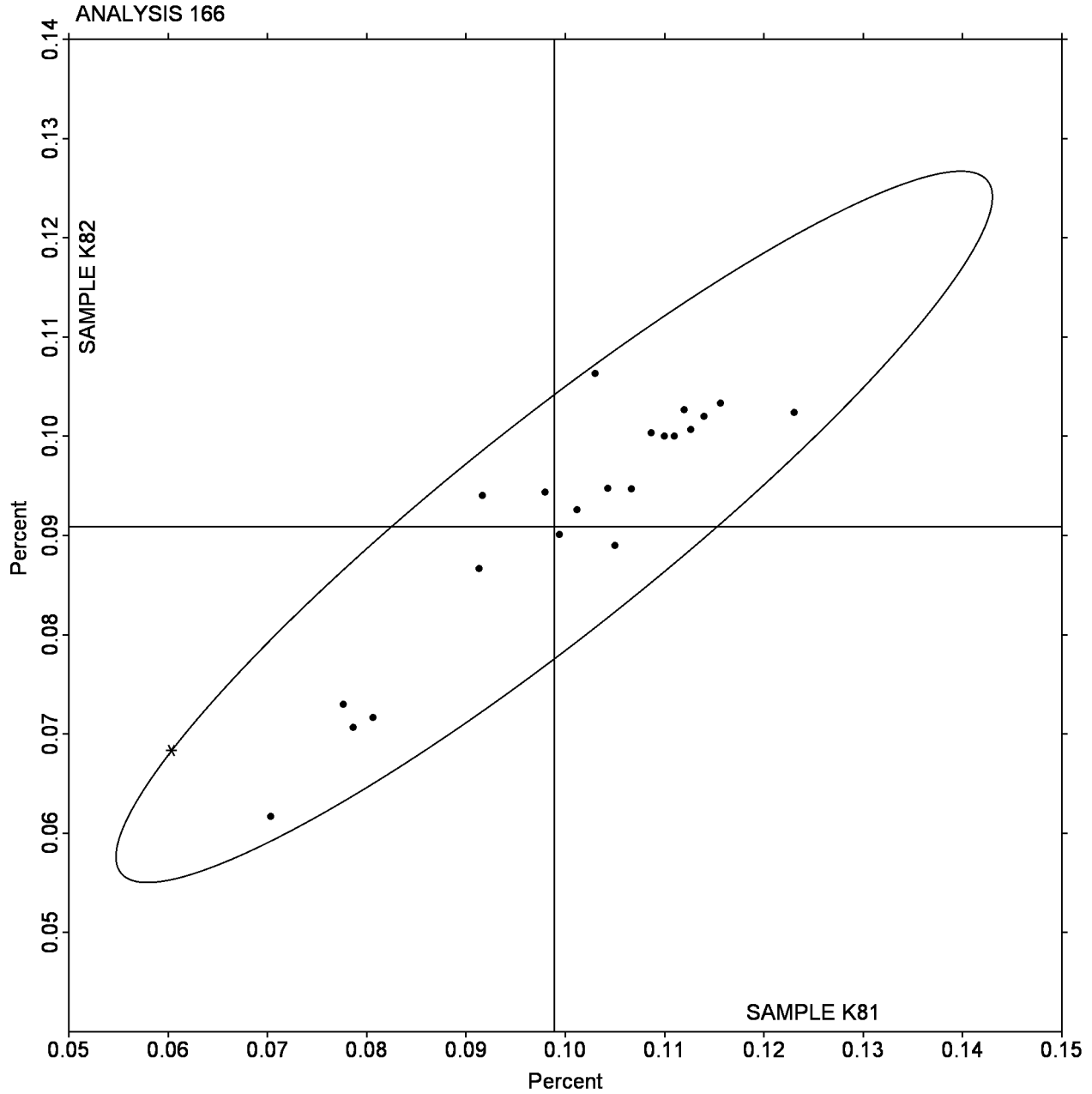
D9H4CX (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

Analysis 166

Chemical Analysis Element #7: Copper-based Alloy - Percent
ANTIMONY (Sb)

SAMPLE K81 = 0.0989 Percent SAMPLE K82 = 0.0910 Percent



Interlaboratory Testing Program for Metals

Analysis 167

Chemical Analysis Element #8: Copper-based Alloy - Percent
TIN (Sn)

WebCode	Data Flag	Sample K81			Sample K82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ANJ2M		6.440	0.015	0.13	6.433	0.031	0.22	OE
9MDALZ		6.393	-0.031	-0.26	6.370	-0.032	-0.22	OE
AFVQUQ		6.203	-0.221	-1.83	6.197	-0.205	-1.42	OE
BC8237		6.650	0.225	1.86	6.620	0.218	1.51	XX
C6NL3L		6.437	0.012	0.10	6.481	0.079	0.55	WD
E4KXE8		6.275	-0.150	-1.24	6.257	-0.145	-1.01	XX
FRRMU8		6.493	0.069	0.57	6.503	0.101	0.70	OE
GKUWNA	X	6.340	-0.085	-0.70	5.630	-0.772	-5.35	OE
GZPQJW		6.237	-0.188	-1.55	6.173	-0.229	-1.58	OE
HJHPKL	*	6.300	-0.125	-1.03	6.077	-0.325	-2.25	IC
J46CNR		6.403	-0.021	-0.18	6.383	-0.019	-0.13	OE
KWWBLC		6.415	-0.010	-0.08	6.313	-0.089	-0.62	IC
KZGP8L		6.333	-0.091	-0.76	6.400	-0.002	-0.01	AA
LPEVFR		6.559	0.134	1.11	6.580	0.178	1.23	IC
MGEE68		6.643	0.218	1.80	6.618	0.216	1.50	GD
MHMX6G		6.490	0.065	0.54	6.410	0.008	0.06	IC
P6V6QH		6.473	0.049	0.40	6.413	0.011	0.08	OE
QPPXQ9	X	5.737	-0.688	-5.68	5.722	-0.680	-4.71	XR
TPNLLH	X	0.011	-6.414	-52.98	0.011	-6.391	-44.29	GR
TVVMMR		6.430	0.005	0.04	6.463	0.061	0.43	XX
U7E2FR		6.251	-0.173	-1.43	6.215	-0.187	-1.30	OE
UGXFHU		6.407	-0.018	-0.15	6.480	0.078	0.54	ED
WK8PRX		6.343	-0.081	-0.67	6.309	-0.093	-0.64	OE
WKU7V7		6.529	0.104	0.86	6.492	0.090	0.63	OE
YK3PHD		6.440	0.015	0.13	6.547	0.145	1.00	OE
YMQEA2		6.590	0.165	1.36	6.547	0.145	1.00	OE
Z79RMH		6.460	0.035	0.29	6.367	-0.035	-0.24	IC

Summary Statistics

	Sample K81	Sample K82
Grand Means	6.4248 Percent	6.4020 Percent
Std Dev Btwn Labs	0.1211 Percent	0.1443 Percent

Statistics based on 24 of 27 reporting participants

Samples K81 , K82 : CDA 932, two different heats

Comments on assigned Data Flags for Test #167

GKUWNA (X) - Low data for Sample K82.

QPPXQ9 (X) - Data for both samples are low.

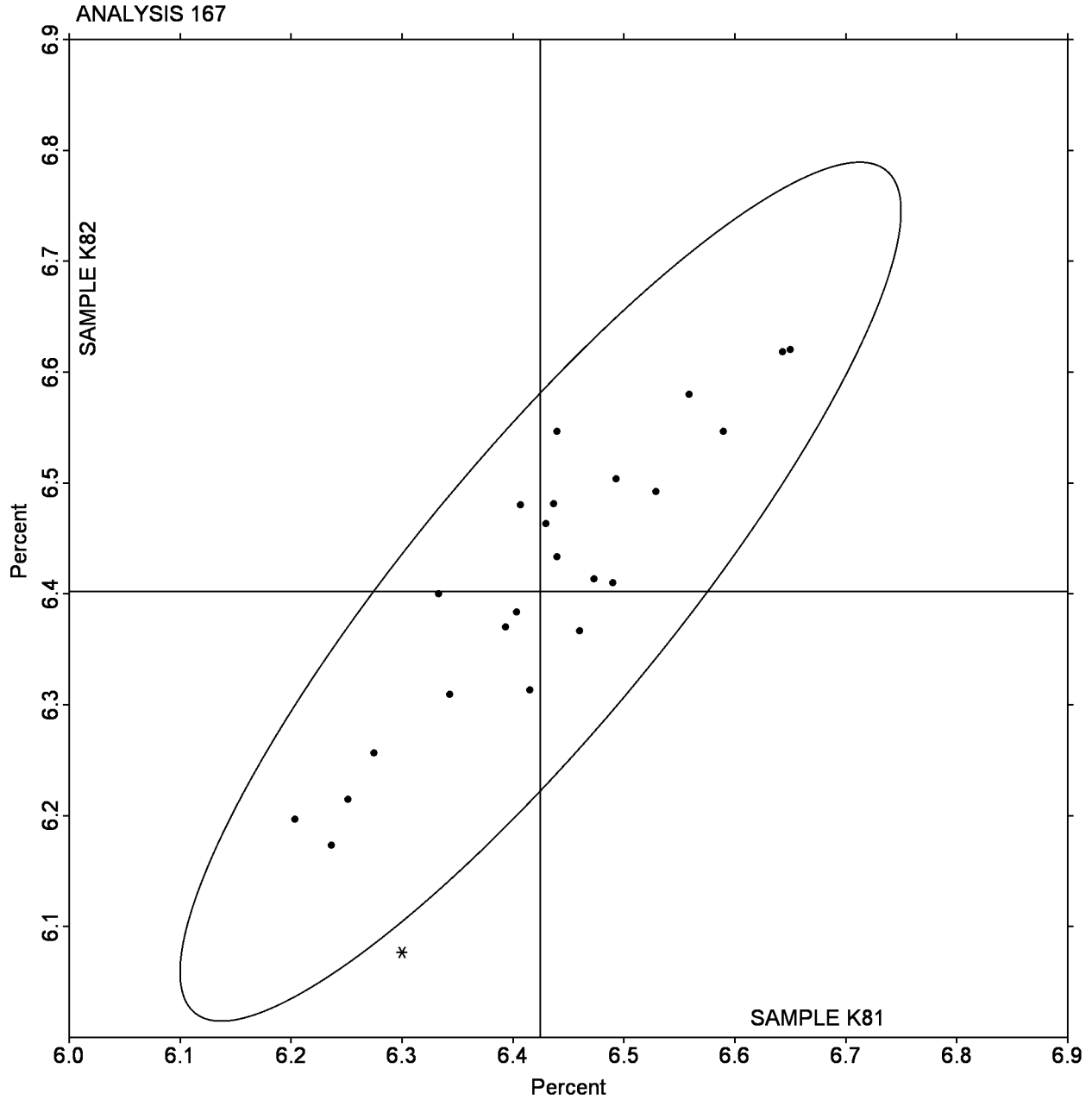
TPNLLH (X) - Extreme data.

Interlaboratory Testing Program for Metals

Analysis 167

Chemical Analysis Element #8: Copper-based Alloy - Percent
TIN (Sn)

SAMPLE K81 = 6.4248 Percent SAMPLe K82 = 6.4020 Percent



Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
223QKX		0.055	0.002	1.12	0.049	0.002	0.74	CO
2KAVQY		0.054	0.001	0.64	0.050	0.003	1.19	OE
2TTPCW		0.053	0.000	-0.17	0.048	0.000	0.00	CI
378N8P		0.052	-0.001	-0.49	0.046	-0.002	-0.72	IR
44W4YD	X	0.065	0.012	6.02	0.059	0.012	5.31	OE
48ZVWZ	X	0.050	-0.003	-1.46	0.040	-0.008	-3.48	OE
6N4A68		0.053	0.000	-0.01	0.047	-0.001	-0.53	CI
6WQB2H		0.055	0.002	0.96	0.049	0.001	0.50	OE
777J8X	X	0.039	-0.014	-6.96	0.036	-0.011	-5.14	CO
8HGQLH		0.050	-0.003	-1.32	0.045	-0.003	-1.45	OE
A8UG62		0.049	-0.004	-1.79	0.045	-0.002	-1.07	OE
AKPKWZ		0.052	-0.001	-0.33	0.047	-0.001	-0.47	CI
BBTRRK	*	0.051	-0.002	-0.98	0.043	-0.005	-2.13	GD
BVJUHT		0.054	0.001	0.53	0.051	0.003	1.41	CO
C29BPH	*	0.056	0.003	1.29	0.053	0.006	2.55	OE
CWA2FH		0.052	-0.001	-0.36	0.046	-0.002	-0.71	CO
DYG48D		0.054	0.001	0.35	0.049	0.002	0.80	OE
EPMVR8		0.050	-0.004	-1.70	0.045	-0.003	-1.19	OE
F7HB96		0.051	-0.002	-0.82	0.045	-0.003	-1.22	DR
F9DQWM	X	0.060	0.007	3.23	0.049	0.002	0.70	OE
FAN6DP		0.054	0.001	0.48	0.048	0.000	0.14	IR
FPEBGC		0.053	0.000	0.15	0.049	0.001	0.59	OE
FT9GCF		0.055	0.002	0.96	0.048	0.001	0.29	CO
FYLPKW	X	0.050	-0.003	-1.46	0.040	-0.008	-3.48	OE
GE4VRH		0.054	0.001	0.48	0.049	0.001	0.59	OE
J7B874		0.052	-0.001	-0.65	0.047	0.000	-0.16	CI
JATXHA		0.051	-0.002	-0.98	0.047	-0.001	-0.47	CO
KCW6G4		0.054	0.001	0.48	0.048	0.000	-0.01	CO
KPBHAD		0.051	-0.002	-0.98	0.047	-0.001	-0.47	OE
L4CYUR		0.055	0.002	1.12	0.050	0.002	0.89	OE
LWXUCR		0.055	0.002	0.98	0.049	0.001	0.64	CI
MQ99VC		0.052	-0.001	-0.51	0.047	-0.001	-0.45	GD
MY2YGY	X	0.061	0.008	3.87	0.055	0.007	3.31	OE
N2DWVU		0.053	0.000	-0.10	0.047	-0.001	-0.27	OE
NWTC8R		0.054	0.001	0.32	0.047	-0.001	-0.31	OE
PAKXRE		0.054	0.001	0.64	0.050	0.002	0.95	OE
PP8M4A		0.053	0.000	0.04	0.048	0.000	0.20	OE
QBFAB9		0.053	0.000	0.15	0.048	0.000	0.14	CI
QXHBL3		0.049	-0.004	-1.95	0.044	-0.003	-1.52	OE
RKZP8T		0.052	-0.001	-0.65	0.047	-0.001	-0.54	GD
TKY2H3		0.056	0.003	1.29	0.052	0.004	1.95	OE
UFZTLD		0.056	0.003	1.61	0.050	0.002	1.10	CI
UTVBVH		0.052	-0.001	-0.33	0.046	-0.001	-0.56	CI
W83NXT		0.055	0.002	1.01	0.050	0.002	1.07	OE
WG3UGN	X	0.069	0.016	7.59	0.060	0.012	5.42	OE

Interlaboratory Testing Program for Metals

Analysis 180

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WW3U44		0.054	0.001	0.32	0.048	0.000	0.14	CI
XQVEJQ		0.052	-0.001	-0.41	0.047	0.000	-0.19	DR
Y33FYG		0.050	-0.003	-1.32	0.044	-0.004	-1.73	OE
YBKTBM	*	0.058	0.005	2.58	0.051	0.003	1.35	OE
YKCXZ2		0.055	0.002	0.80	0.050	0.002	1.00	OE
YNFXLY		0.053	0.000	-0.17	0.046	-0.001	-0.62	CI
Z3P6YG		0.049	-0.004	-2.11	0.044	-0.003	-1.52	OE
Z964WF		0.053	0.000	-0.17	0.048	0.000	0.06	CI
Z9TCEK	X	0.035	-0.018	-8.74	0.031	-0.017	-7.71	XX

Summary Statistics

	Sample M81		Sample M82	
Grand Means	0.0530	Percent	0.0480	Percent
Std Dev Btwn Labs	0.0021	Percent	0.0022	Percent

Statistics based on 46 of 54 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #180

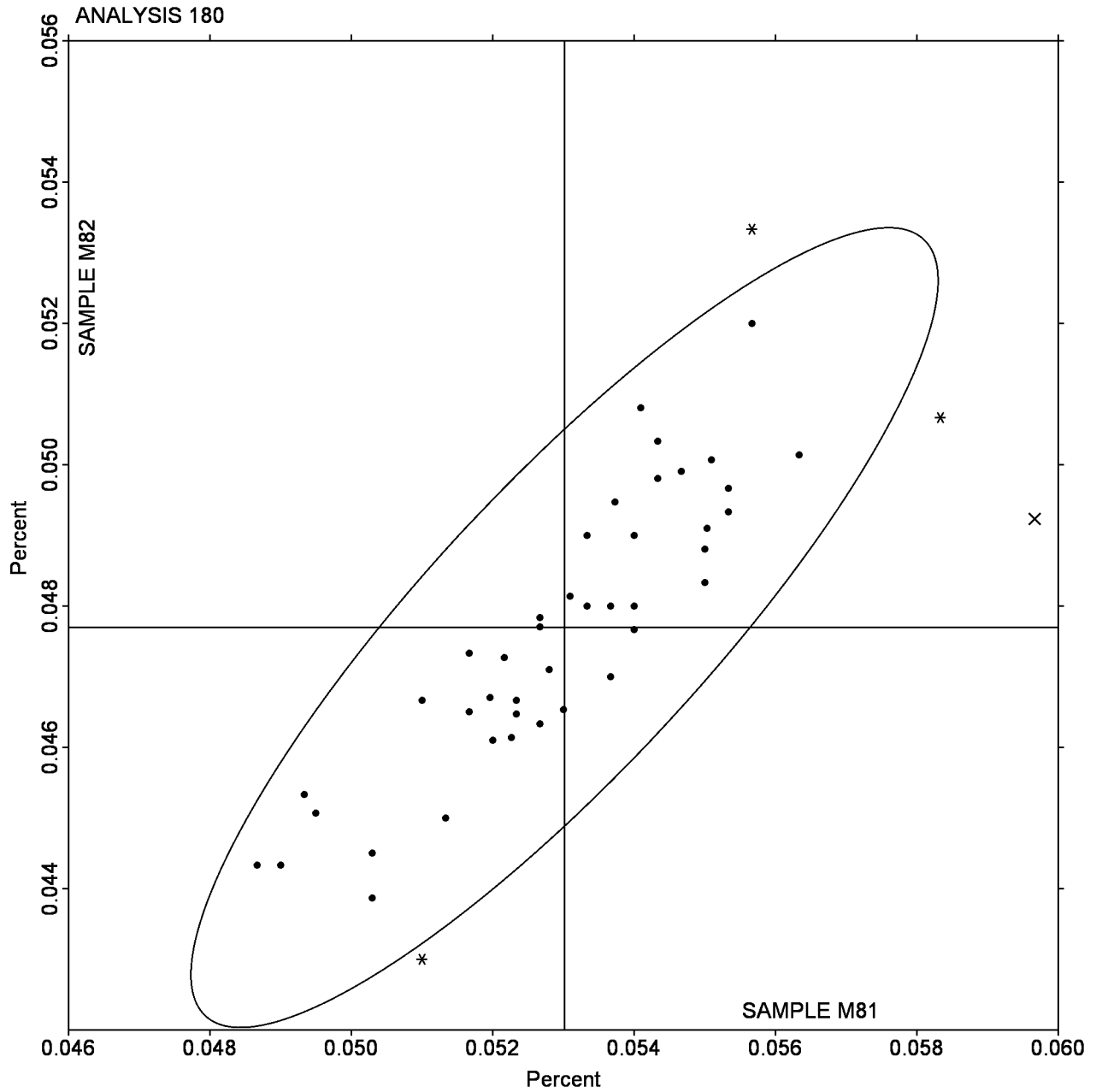
- 44W4YD (X) - Data for both samples are high. Possible systematic error.
 48ZWVZ (X) - Inconsistent in testing between samples, data for Sample M82 are low.
 777J8X (X) - Data for both samples are low and inconsistent within the determinations for Sample M81.
 F9DQWM (X) - High data for Sample M81 and inconsistent within the determinations for Sample M81.
 FYLPKW (X) - Low data for Sample M82 and inconsistent within the determinations for Sample M81.
 MY2YGY (X) - Data for both samples are high. Possible systematic error.
 WG3UGN (X) - Data for both samples are high. Possible systematic error.
 Z9TCEK (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 M81 = 0.0530 Percent SAMPLE M82 = 0.0480 Percent



Interlaboratory Testing Program for Metals

Analysis 181

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2GCCN3		1.670	-0.003	-0.14	1.527	-0.011	-0.51	OE
2NDEYT		1.702	0.029	1.32	1.561	0.023	1.08	OE
3W7YWF		1.683	0.010	0.47	1.550	0.012	0.57	OE
46UAL2		1.690	0.017	0.79	1.544	0.006	0.30	WD
4E8ZMJ		1.699	0.026	1.18	1.565	0.027	1.25	OE
4WWLLP		1.695	0.022	1.02	1.566	0.028	1.30	OE
63N7BQ		1.704	0.031	1.41	1.551	0.013	0.62	DR
6E8U2P		1.707	0.034	1.55	1.573	0.036	1.66	OE
6KYQLU		1.675	0.002	0.07	1.531	-0.006	-0.29	DR
6LD4CA		1.656	-0.017	-0.79	1.517	-0.020	-0.94	WD
7AZ4TM	X	1.660	-0.013	-0.62	1.363	-0.175	-8.12	OE
7FMCW7		1.657	-0.016	-0.76	1.520	-0.018	-0.82	OE
847Q46		1.675	0.002	0.09	1.536	-0.002	-0.08	WD
982AQF		1.666	-0.007	-0.31	1.525	-0.013	-0.60	WD
9RKHDJ		1.683	0.010	0.47	1.557	0.019	0.88	OE
BQG343		1.643	-0.030	-1.37	1.537	-0.001	-0.05	OE
CMHMAP		1.680	0.007	0.32	1.560	0.022	1.04	OE
DWKV4A		1.643	-0.030	-1.37	1.530	-0.008	-0.35	IC
ECUYH2		1.663	-0.010	-0.45	1.533	-0.004	-0.20	OE
EKZVWE		1.693	0.020	0.93	1.557	0.019	0.88	IC
FLGK77		1.627	-0.046	-2.14	1.487	-0.051	-2.36	GD
G99T2H		1.670	-0.003	-0.14	1.533	-0.004	-0.20	OE
GBMM64	X	1.743	0.070	3.23	1.560	0.022	1.04	XX
GKZWCH		1.672	-0.001	-0.06	1.536	-0.001	-0.06	GD
GQZ3L7		1.637	-0.036	-1.65	1.492	-0.046	-2.13	OE
HY9PZZ		1.667	-0.006	-0.29	1.532	-0.005	-0.25	OE
HZH3FG		1.673	0.000	0.01	1.540	0.002	0.11	XR
J6V2QE		1.690	0.017	0.78	1.577	0.039	1.81	DR
KB37FY		1.657	-0.016	-0.75	1.523	-0.015	-0.69	OE
KWMZ96		1.648	-0.025	-1.17	1.519	-0.019	-0.86	DR
KXU77M		1.709	0.036	1.64	1.544	0.007	0.31	GD
LZDEBZ		1.677	0.004	0.17	1.483	-0.054	-2.52	OE
MEXPKU		1.684	0.011	0.49	1.544	0.006	0.30	WD
MHJYX9		1.674	0.001	0.06	1.534	-0.004	-0.17	DR
N7GHDP		1.662	-0.011	-0.49	1.545	0.008	0.36	OE
NCF6U6		1.664	-0.009	-0.40	1.518	-0.020	-0.91	WD
NKC3D2		1.680	0.007	0.32	1.544	0.006	0.28	OE
NW7DZY	*	1.621	-0.052	-2.41	1.478	-0.059	-2.75	OE
PKXTJQ		1.640	-0.033	-1.52	1.506	-0.031	-1.45	OE
Q9PRVL	*	1.713	0.040	1.85	1.547	0.009	0.42	OE
QBLUT8		1.672	-0.001	-0.05	1.541	0.003	0.14	OE
QFLNEH		1.683	0.010	0.47	1.547	0.009	0.42	OE
RHYU96		1.680	0.007	0.32	1.540	0.002	0.11	OE
RJUGK9		1.691	0.018	0.84	1.571	0.034	1.56	OE
TGLN7Z		1.643	-0.030	-1.40	1.501	-0.036	-1.68	OE

Interlaboratory Testing Program for Metals

Analysis 181

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
TX8V96		1.708	0.035	1.61	1.558	0.021	0.96	OE
VK3HKP	X	1.837	0.164	7.53	1.580	0.042	1.96	OE
WZFLVT		1.674	0.001	0.03	1.551	0.013	0.60	OE
XAXRVF		1.685	0.012	0.53	1.540	0.002	0.11	OE
Y8UN6B		1.670	-0.003	-0.14	1.523	-0.014	-0.66	XR
YDP6N2	X	1.595	-0.078	-3.59	1.461	-0.077	-3.55	OE
YH6F27		1.654	-0.019	-0.86	1.523	-0.015	-0.69	OE
YT963L	*	1.662	-0.011	-0.49	1.560	0.022	1.02	DR
Z3TBFY		1.686	0.013	0.58	1.551	0.013	0.62	OE

Summary Statistics

	Sample M81		Sample M82	
Grand Means	1.6731	Percent	1.5380	Percent
Std Dev Btwn Labs	0.0217	Percent	0.0216	Percent

Statistics based on 49 of 54 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #181

7AZ4TM (X) - Inconsistent in testing between samples, data for Sample M82 are low.

GBMM64 (X) - Inconsistent in testing between samples, data for Sample M81 are high.

VK3HKP (X) - High data for Sample M81 and inconsistent within the determinations for both samples.

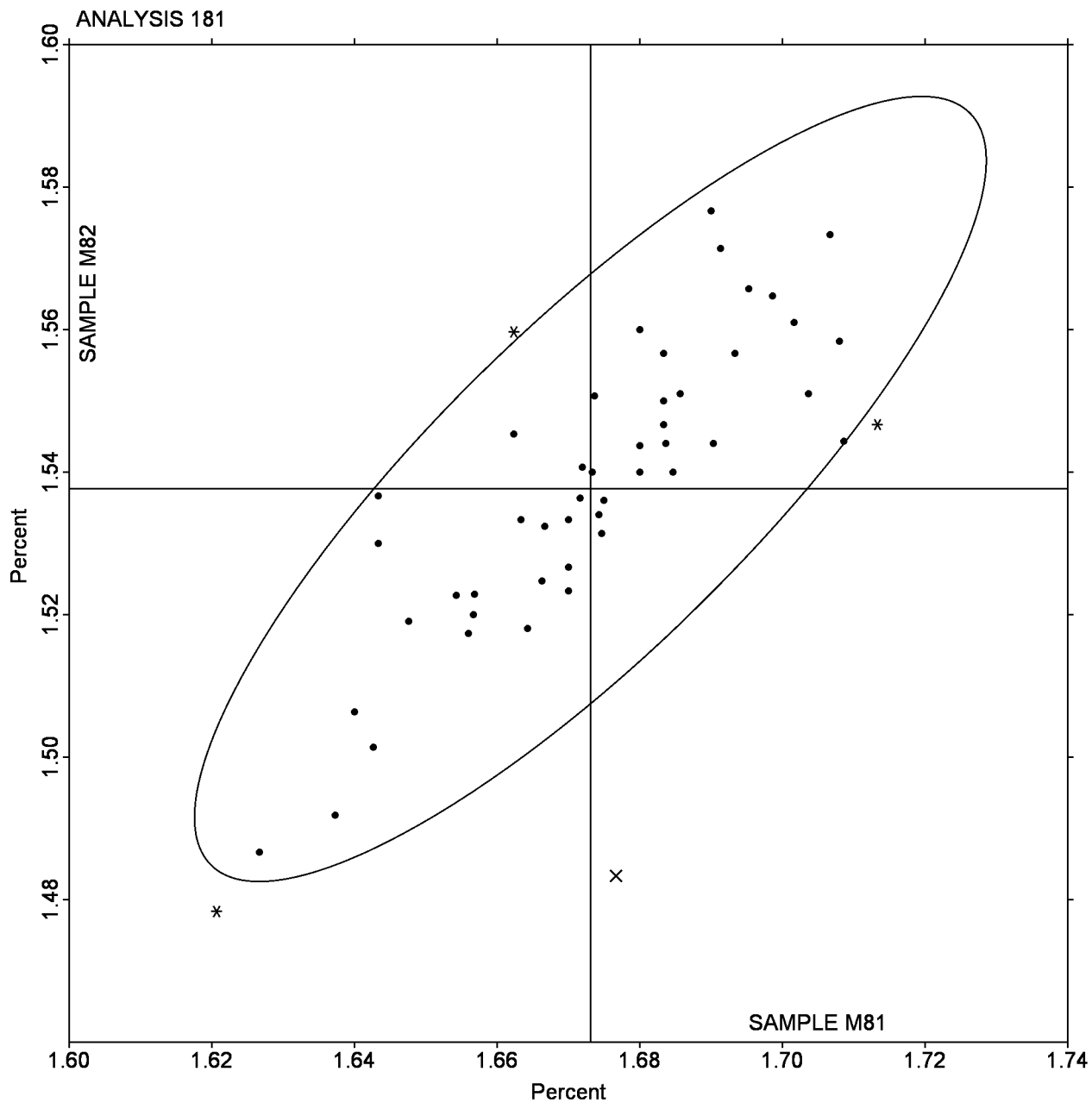
YDP6N2 (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 181

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

SAMPLE M81 = 1.6731 Percent SAMPLE M82 = 1.5380 Percent



Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2XDZ3U		0.0277	0.0004	0.25	0.0310	-0.0011	-0.54	OE
3QTHZW		0.0293	0.0020	1.19	0.0335	0.0014	0.70	GD
4RL9MH		0.0277	0.0004	0.25	0.0333	0.0013	0.63	OE
4WW9ZB		0.0237	-0.0036	-2.11	0.0283	-0.0037	-1.88	OE
4ZGMRU		0.0263	-0.0009	-0.54	0.0330	0.0010	0.48	OE
6ECBB9		0.0293	0.0021	1.23	0.0337	0.0016	0.80	OE
6TEENU		0.0264	-0.0009	-0.52	0.0313	-0.0008	-0.39	OE
6Y9YH4		0.0271	-0.0001	-0.07	0.0315	-0.0006	-0.29	OE
7368XX		0.0247	-0.0025	-1.50	0.0295	-0.0026	-1.31	OE
87UNEB		0.0264	-0.0009	-0.52	0.0321	0.0001	0.03	OE
8D9WYE		0.0273	0.0001	0.05	0.0310	-0.0011	-0.54	DR
97R9NW		0.0285	0.0013	0.74	0.0335	0.0015	0.74	WD
9NRQMK		0.0280	0.0008	0.44	0.0319	-0.0001	-0.07	OE
ADKYCC		0.0302	0.0030	1.74	0.0346	0.0025	1.27	GD
CCYHGN		0.0287	0.0014	0.83	0.0320	-0.0001	-0.04	DR
CDXNRE		0.0267	-0.0006	-0.34	0.0321	0.0000	0.00	OE
CLFK2Z		0.0262	-0.0010	-0.62	0.0318	-0.0003	-0.15	OE
D9Z9RB		0.0273	0.0001	0.05	0.0327	0.0006	0.30	WD
DU376C		0.0266	-0.0007	-0.40	0.0303	-0.0018	-0.89	DR
DVXUYN		0.0289	0.0016	0.95	0.0343	0.0022	1.10	OE
EBJWW3		0.0280	0.0008	0.44	0.0333	0.0013	0.63	OE
EPML73		0.0273	0.0000	0.01	0.0323	0.0002	0.10	OE
GCV86K		0.0305	0.0033	1.93	0.0302	-0.0019	-0.94	OE
HAB67W		0.0251	-0.0021	-1.27	0.0295	-0.0026	-1.31	WD
HF3VJZ	X	0.0417	0.0145	8.51	0.0488	0.0167	8.43	OE
HYXRFG		0.0297	0.0024	1.42	0.0360	0.0039	1.98	OE
JNM49B		0.0267	-0.0006	-0.34	0.0320	-0.0001	-0.04	IC
JUTAW9		0.0260	-0.0012	-0.74	0.0314	-0.0007	-0.34	OE
KR3CD9	*	0.0270	-0.0002	-0.15	0.0290	-0.0031	-1.55	OE
LEET9W		0.0257	-0.0016	-0.93	0.0357	0.0036	1.81	OE
M44DJ3		0.0250	-0.0022	-1.32	0.0300	-0.0021	-1.04	XR
MGMJBQ		0.0270	-0.0002	-0.13	0.0321	0.0000	0.01	WD
NC4WWL		0.0270	-0.0002	-0.15	0.0310	-0.0011	-0.54	GD
NXXENB		0.0267	-0.0006	-0.34	0.0313	-0.0007	-0.37	OE
QDAU2J		0.0277	0.0004	0.25	0.0323	0.0003	0.13	XR
QNJW4V	*	0.0320	0.0048	2.80	0.0363	0.0043	2.15	XX
RANRM4		0.0240	-0.0032	-1.91	0.0300	-0.0021	-1.04	OE
RU4YJJ		0.0283	0.0011	0.64	0.0327	0.0006	0.30	OE
RY7HAN		0.0272	0.0000	-0.01	0.0329	0.0009	0.43	OE
T2D6WU		0.0272	0.0000	-0.03	0.0316	-0.0005	-0.24	OE
UTHGKN	*	0.0227	-0.0046	-2.70	0.0267	-0.0054	-2.72	OE
UTTKV2		0.0283	0.0011	0.64	0.0343	0.0023	1.14	OE
UVHVLU		0.0276	0.0004	0.23	0.0318	-0.0003	-0.14	OE
VGDYZ7	*	0.0297	0.0024	1.42	0.0370	0.0049	2.48	OE
W4GVRR		0.0281	0.0009	0.50	0.0327	0.0007	0.33	OE

Interlaboratory Testing Program for Metals

Analysis 182

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WK4F7Q		0.0270	-0.0002	-0.15	0.0333	0.0013	0.63	IC
WRUGCX		0.0274	0.0002	0.09	0.0344	0.0024	1.19	OE
WX8CBT		0.0260	-0.0012	-0.72	0.0309	-0.0011	-0.57	OE
YC247Y		0.0273	0.0001	0.05	0.0323	0.0003	0.13	DR
Z2PAWD		0.0261	-0.0011	-0.66	0.0299	-0.0022	-1.11	OE
Z6UHCW	*	0.0290	0.0018	1.03	0.0310	-0.0011	-0.54	DR

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.02725 Percent	0.03210 Percent
Stnd Dev Btwn Labs	0.00170 Percent	0.00198 Percent

Statistics based on 48 of 51 reporting participants

Samples M81 , M82 : AISI 347 two different heats

Comments on assigned Data Flags for Test #182

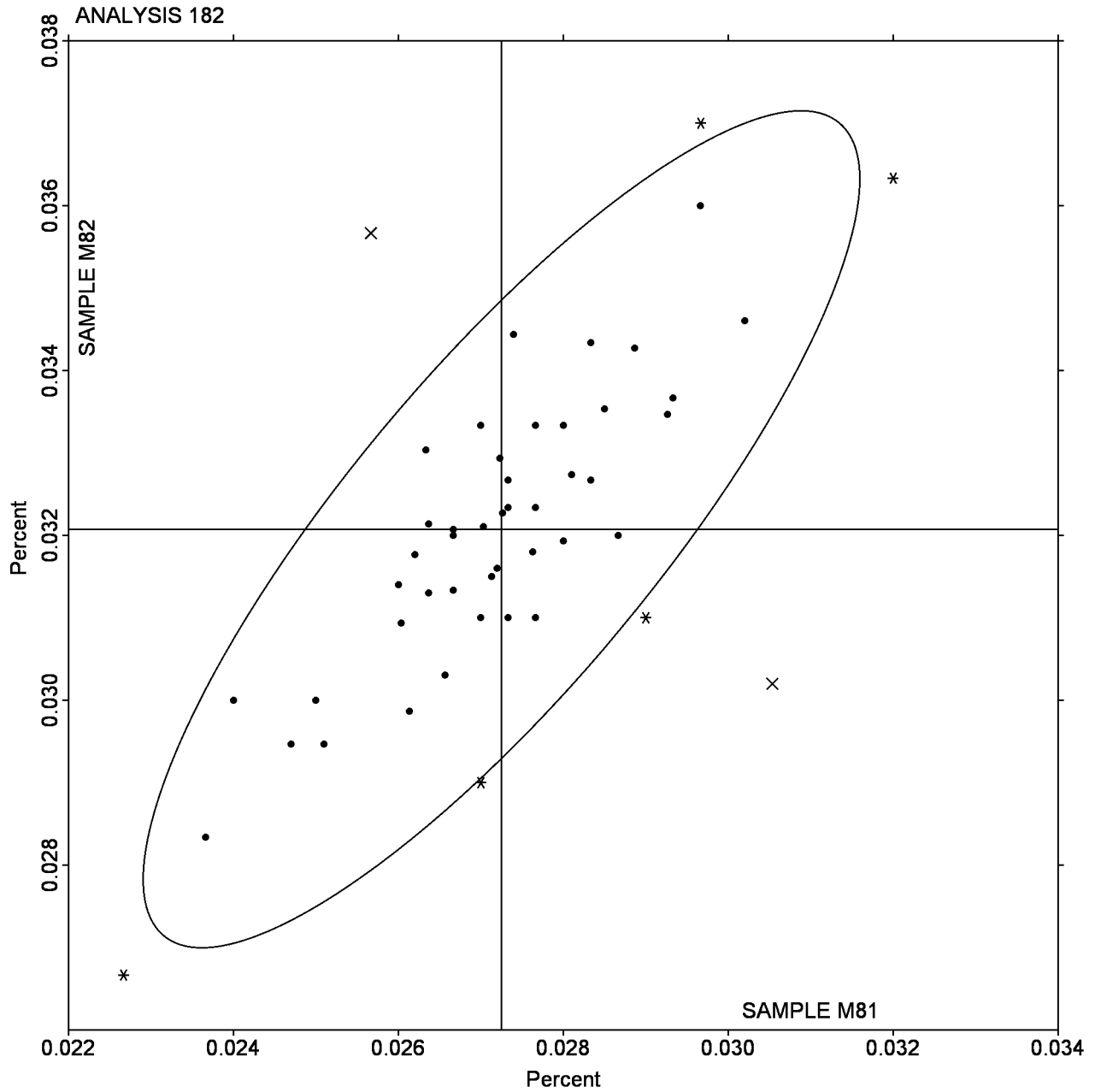
HF3VJZ (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

Analysis 182

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

SAMPLE M81 = 0.02725 Percent SAMPLE M82 = 0.03210 Percent



Interlaboratory Testing Program for Metals

Analysis 183

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
4MJTXL		0.143	0.000	-0.04	0.155	-0.001	-0.12	OE
682CDW		0.141	-0.002	-0.26	0.149	-0.007	-1.07	OE
6YZRH8		0.136	-0.006	-1.10	0.151	-0.004	-0.71	OE
7N4X8N		0.147	0.004	0.65	0.158	0.003	0.43	IC
8RTFQM		0.143	0.000	-0.03	0.154	-0.001	-0.17	OE
8WMH88		0.144	0.001	0.14	0.157	0.001	0.21	WD
A6K9HF		0.147	0.004	0.65	0.160	0.005	0.75	XR
AGXACF		0.143	0.000	0.03	0.155	0.000	-0.06	DR
AZYWEY		0.147	0.004	0.71	0.162	0.007	1.13	OE
BCTMJ3		0.143	0.001	0.09	0.158	0.002	0.37	WD
BLMRPB		0.135	-0.007	-1.27	0.148	-0.008	-1.26	OE
BUNW6Y		0.150	0.008	1.28	0.164	0.008	1.35	XR
C6NRW2		0.153	0.011	1.79	0.163	0.008	1.29	OE
CAXDWE		0.143	0.000	0.03	0.157	0.001	0.21	OE
EJ7QJE		0.136	-0.007	-1.16	0.151	-0.004	-0.66	OE
EMFDTC		0.140	-0.003	-0.54	0.151	-0.004	-0.66	DR
EWJRA4		0.148	0.005	0.79	0.161	0.005	0.85	OE
EY43AQ	X	0.187	0.044	7.45	0.200	0.045	7.26	OE
G6TCUY		0.141	-0.001	-0.25	0.155	0.000	-0.01	OE
GRJ39P		0.148	0.006	0.94	0.160	0.005	0.81	OE
K3PAGL		0.142	0.000	-0.08	0.156	0.001	0.10	WD
K8MP9F		0.153	0.010	1.67	0.162	0.007	1.08	OE
K8RAR3		0.150	0.007	1.22	0.162	0.007	1.08	OE
KFTQV2		0.158	0.015	2.52	0.170	0.015	2.43	GD
KXFXHY		0.142	0.000	-0.08	0.154	-0.002	-0.28	OE
L9VQGE		0.140	-0.003	-0.48	0.152	-0.003	-0.50	OE
M4GF4B		0.135	-0.008	-1.33	0.153	-0.002	-0.39	OE
M6M3Y2		0.139	-0.004	-0.65	0.147	-0.008	-1.31	IC
N9ZBQX		0.148	0.005	0.82	0.162	0.007	1.13	OE
P7XALZ		0.144	0.001	0.20	0.158	0.002	0.37	WD
QKWDPQ		0.140	-0.002	-0.42	0.150	-0.005	-0.82	WD
RTVAM8		0.143	0.000	0.01	0.155	0.000	-0.01	OE
TA9M94		0.143	0.000	-0.03	0.155	0.000	-0.06	DR
TLDN69		0.143	0.000	0.03	0.154	-0.001	-0.17	OE
TYWDQ7		0.143	0.000	-0.03	0.156	0.000	0.05	OE
U2HEL7		0.145	0.002	0.31	0.159	0.004	0.59	GD
UDTBLV		0.147	0.004	0.66	0.156	0.001	0.09	DR
URHJQU		0.148	0.006	0.94	0.162	0.006	1.02	OE
UWT6P8		0.141	-0.002	-0.37	0.155	-0.001	-0.12	OE
VAD3YG		0.143	0.001	0.09	0.156	0.001	0.10	DR
VC3ZB2		0.144	0.002	0.26	0.157	0.002	0.25	DR
WMXBGM		0.133	-0.010	-1.67	0.148	-0.007	-1.20	OE
Y2YCDT		0.135	-0.008	-1.38	0.145	-0.010	-1.69	OE
Y7473V		0.137	-0.006	-0.99	0.151	-0.004	-0.66	OE
Y8PFWX	*	0.133	-0.009	-1.61	0.140	-0.015	-2.50	OE

Interlaboratory Testing Program for Metals

Analysis 183

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
Y92WQA		0.151	0.009	1.45	0.162	0.007	1.08	GD
YQTY7J	*	0.126	-0.017	-2.91	0.137	-0.018	-2.99	OE
Z4Q2LY	*	0.140	-0.003	-0.48	0.160	0.005	0.75	DR
ZGLNAD		0.142	-0.001	-0.14	0.155	0.000	-0.06	OE

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.1428 Percent	0.1550 Percent
Stnd Dev Btwn Labs	0.0059 Percent	0.0061 Percent

Statistics based on 48 of 49 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #183

EY43AQ (X) - Data for both samples are high. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23BFQ9	X	0.730	0.106	7.39	0.543	0.076	6.77	OE
26KL86		0.641	0.016	1.11	0.475	0.008	0.75	WD
2F8CDU		0.612	-0.013	-0.92	0.460	-0.007	-0.61	IC
2KAT4H		0.610	-0.015	-1.04	0.464	-0.003	-0.29	OE
2MFMVN		0.630	0.005	0.36	0.463	-0.004	-0.32	IC
3ACA4Z		0.618	-0.007	-0.50	0.467	0.000	0.01	OE
4DGHHJ		0.616	-0.009	-0.64	0.456	-0.011	-0.97	DR
6A2R3L		0.619	-0.006	-0.39	0.456	-0.011	-0.97	OE
6A3WVW		0.635	0.010	0.71	0.456	-0.011	-0.97	GD
6F7D8J	*	0.590	-0.035	-2.44	0.434	-0.033	-2.90	OE
6H2XMG	X	0.540	-0.085	-5.94	0.405	-0.062	-5.55	OE
6WNMNK		0.620	-0.005	-0.34	0.460	-0.007	-0.61	XR
78RK CJ		0.622	-0.003	-0.20	0.460	-0.007	-0.58	WD
7HJMC9		0.643	0.018	1.27	0.473	0.006	0.54	OE
7ZN8BA		0.613	-0.012	-0.83	0.446	-0.021	-1.83	WD
8LB26V	X	0.688	0.063	4.40	0.700	0.233	20.75	OE
8UX6TV		0.638	0.013	0.92	0.475	0.008	0.69	OE
9A84JE		0.618	-0.007	-0.48	0.467	0.000	0.01	OE
B428WK		0.616	-0.009	-0.64	0.460	-0.007	-0.58	OE
BK44YP		0.626	0.002	0.11	0.469	0.002	0.19	OE
C97U49		0.632	0.007	0.52	0.473	0.006	0.54	OE
DNFN3G		0.637	0.012	0.85	0.473	0.006	0.57	OE
DQW9DD		0.634	0.009	0.64	0.467	0.000	0.01	DR
EAZQ6L		0.648	0.023	1.60	0.477	0.010	0.90	OE
FAT2X2		0.628	0.003	0.24	0.472	0.005	0.49	OE
FDQLKX		0.632	0.007	0.48	0.473	0.006	0.57	WD
G93N6U	*	0.611	-0.014	-0.99	0.482	0.015	1.32	GD
HMNN2U		0.599	-0.026	-1.81	0.445	-0.022	-1.95	XR
JY76LJ		0.633	0.008	0.59	0.468	0.001	0.13	OE
K38EVB		0.625	0.000	0.03	0.471	0.004	0.37	OE
KEB9P3		0.651	0.026	1.83	0.486	0.019	1.70	XX
KJCEGE		0.630	0.005	0.36	0.477	0.010	0.87	DR
KXYVUX		0.621	-0.004	-0.27	0.463	-0.004	-0.32	OE
KYCMME		0.633	0.008	0.59	0.470	0.003	0.28	OE
N9FH7N		0.623	-0.002	-0.15	0.475	0.008	0.75	DR
PMEH34		0.623	-0.002	-0.13	0.479	0.012	1.05	OE
PZKY3Y		0.607	-0.018	-1.23	0.443	-0.024	-2.17	OE
QNZNWZ		0.643	0.018	1.27	0.464	-0.003	-0.26	OE
TZX7YX		0.629	0.004	0.29	0.466	-0.001	-0.11	DR
UUG3D3		0.631	0.006	0.45	0.465	-0.002	-0.17	OE
VAZ2BR		0.631	0.006	0.43	0.473	0.006	0.54	OE
VH7X3C		0.627	0.002	0.17	0.467	0.000	0.01	OE
VH8CE7		0.615	-0.010	-0.69	0.466	-0.001	-0.05	OE
W26EYL		0.627	0.002	0.15	0.480	0.013	1.20	OE
W3RYPZ		0.646	0.021	1.46	0.478	0.012	1.03	DR

Interlaboratory Testing Program for Metals

Analysis 184

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WTYE29		0.597	-0.028	-1.97	0.447	-0.020	-1.80	OE
XCK2X9	X	0.569	-0.056	-3.93	0.431	-0.036	-3.20	OE
XUCM76		0.623	-0.002	-0.11	0.461	-0.006	-0.50	OE
XZHZK3		0.593	-0.032	-2.21	0.460	-0.007	-0.61	OE
Y66MVE		0.657	0.032	2.23	0.483	0.016	1.47	OE
YN6ZN9		0.613	-0.012	-0.81	0.466	-0.001	-0.08	OE
ZF3MB7		0.623	-0.002	-0.11	0.483	0.016	1.41	OE
ZMYTCL	X	0.585	-0.040	-2.79	0.506	0.039	3.46	GD
ZRNART		0.628	0.003	0.20	0.481	0.014	1.26	OE

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.6248 Percent	0.4670 Percent
Std Dev Btwn Labs	0.0143 Percent	0.0112 Percent

Statistics based on 49 of 54 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #184

23BFQ9 (X) - Data for both samples are high.

6H2XMG (X) - Data for both samples are low.

8LB26V (X) - Data for both samples are high and inconsistent within the determinations for Sample M82.

XCK2X9 (X) - Data for both samples are low.

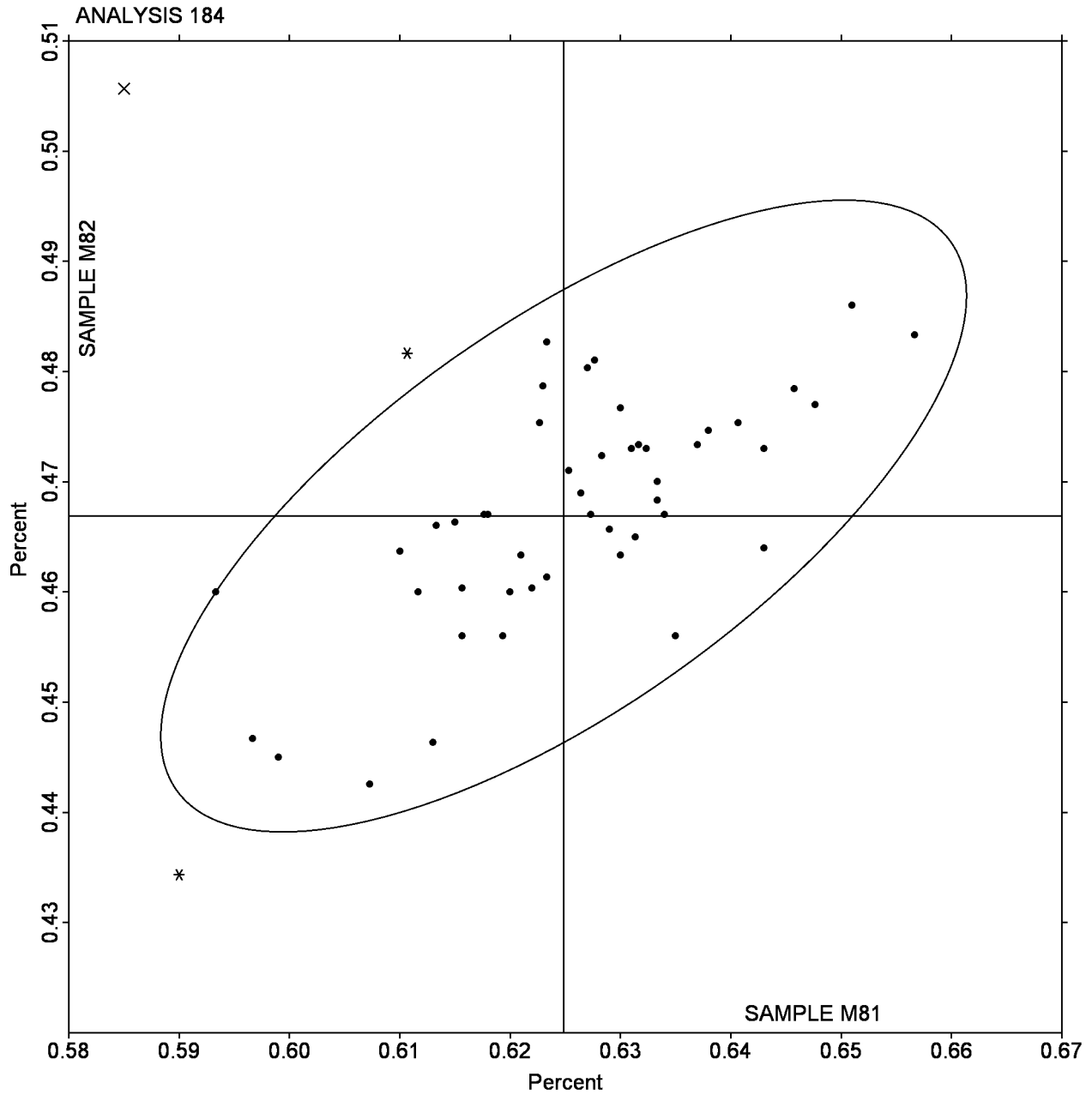
ZMYTCL (X) - Low data for Sample M81. High data for Sample M82.

Interlaboratory Testing Program for Metals

Analysis 184

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

SAMPLE M81 = 0.6248 Percent SAMPLE M82 = 0.4670 Percent



Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
28PG68		0.273	0.005	0.85	0.456	0.001	0.08	XX
2GAH8H		0.268	0.000	0.02	0.457	0.002	0.22	OE
2WHZVN		0.266	-0.002	-0.25	0.454	-0.001	-0.09	OE
3G442D		0.266	-0.002	-0.36	0.456	0.001	0.12	WD
3JD4DN		0.273	0.005	0.85	0.447	-0.008	-0.82	DR
3K8TR2		0.268	0.000	0.08	0.451	-0.004	-0.40	OE
67VBLH	X	0.251	-0.017	-2.73	0.369	-0.086	-9.03	OE
7TKKJP		0.272	0.004	0.63	0.454	-0.001	-0.13	OE
9UXW9X	X	0.219	-0.049	-8.07	0.439	-0.016	-1.70	OE
A8DEGR		0.261	-0.007	-1.08	0.471	0.016	1.66	GD
BHFU7W		0.266	-0.002	-0.31	0.451	-0.004	-0.40	WD
C894UZ		0.281	0.013	2.11	0.455	0.000	-0.02	DR
C9M7KQ	*	0.272	0.004	0.74	0.431	-0.024	-2.54	OE
CG74RC		0.269	0.001	0.13	0.473	0.018	1.87	OE
CJF6WJ	*	0.255	-0.013	-2.07	0.437	-0.018	-1.91	IC
CJPDKA	X	0.297	0.029	4.76	0.576	0.121	12.66	XX
EQLFV8		0.260	-0.008	-1.30	0.451	-0.004	-0.44	OE
F4QVEH	*	0.249	-0.019	-3.06	0.452	-0.003	-0.26	OE
FT4B4K		0.270	0.002	0.35	0.438	-0.017	-1.80	OE
FYWE8B		0.270	0.002	0.35	0.450	-0.005	-0.51	XR
G4BBQJ		0.273	0.005	0.90	0.460	0.005	0.54	DR
GEGN6W		0.267	-0.001	-0.14	0.457	0.002	0.19	OE
GQPC6V		0.271	0.003	0.57	0.463	0.008	0.82	XR
H8C4L9		0.269	0.001	0.24	0.461	0.006	0.64	WD
JHRZYX		0.267	-0.001	-0.09	0.453	-0.002	-0.16	OE
JJ93XJ		0.265	-0.003	-0.42	0.477	0.022	2.32	OE
JUDWJX		0.258	-0.010	-1.70	0.455	0.000	-0.03	OE
KACMLK	X	0.291	0.023	3.88	0.460	0.005	0.54	OE
L7CTA2		0.270	0.002	0.35	0.452	-0.003	-0.33	DR
LUWCAB		0.273	0.005	0.85	0.467	0.012	1.27	OE
N3ELNW		0.268	0.000	0.02	0.459	0.004	0.43	OE
N924TC		0.267	-0.001	-0.13	0.452	-0.002	-0.26	OE
QK64G2		0.268	0.000	0.02	0.465	0.010	1.03	OE
R9M8EJ	*	0.262	-0.006	-0.91	0.430	-0.025	-2.64	GD
RANMEM		0.268	0.000	-0.03	0.451	-0.004	-0.40	WD
RBHVJC	X	0.237	-0.031	-5.15	0.323	-0.132	-13.78	OE
RUQ3U8		0.270	0.003	0.42	0.452	-0.003	-0.32	DR
RXW7G9		0.277	0.009	1.45	0.460	0.005	0.54	OE
TD2CCG	X	0.314	0.046	7.63	0.545	0.090	9.39	OE
TMW3GQ		0.270	0.002	0.41	0.458	0.003	0.36	OE
TRHDWE		0.272	0.004	0.74	0.453	-0.002	-0.23	WD
TVXU4X		0.268	0.000	0.08	0.456	0.001	0.08	DR
UMFZZP	X	0.254	-0.014	-2.29	0.414	-0.041	-4.28	OE
URKRX2		0.271	0.003	0.46	0.462	0.007	0.71	OE
VXJD4L		0.273	0.005	0.79	0.465	0.010	1.06	OE

Interlaboratory Testing Program for Metals

Analysis 185

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VXY36B	X	0.280	0.012	2.00	0.490	0.035	3.68	OE
W9ENA8		0.266	-0.002	-0.36	0.453	-0.002	-0.20	OE
YQZHFN	X	0.240	-0.028	-4.60	0.445	-0.010	-1.00	GD
YU8AQV		0.256	-0.012	-2.02	0.458	0.003	0.33	OE
ZKXZ6N		0.261	-0.007	-1.13	0.458	0.003	0.33	OE
ZLUKP2		0.270	0.002	0.35	0.444	-0.011	-1.10	OE
ZNR2PP		0.278	0.010	1.62	0.459	0.004	0.40	IC

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.2679 Percent	0.4550 Percent
Std Dev Btwn Labs	0.0061 Percent	0.0095 Percent

Statistics based on 43 of 52 reporting participants

Samples M81 , M82 : AISI 347, two different heats**Comments on assigned Data Flags for Test #185**

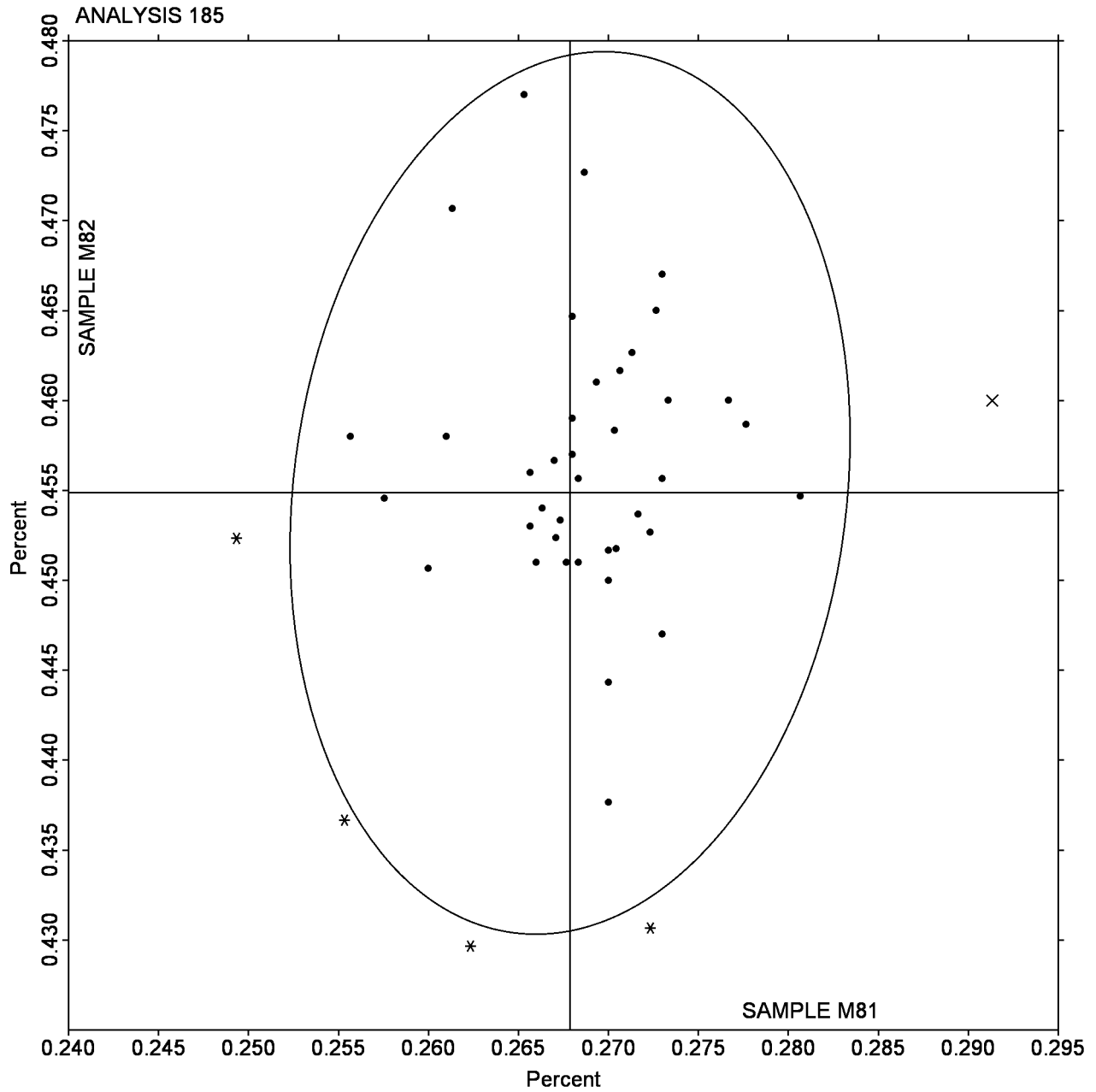
- 67VBLH (X) - Data for both samples are low.
 9UXW9X (X) - Low data for Sample M81.
 CJPDKA (X) - Data for both samples are high.
 KACMLK (X) - High data for Sample M81.
 RBHVJC (X) - Data for both samples are low.
 TD2CCG (X) - Data for both samples are high.
 UMFZZP (X) - Low data for Sample M82.
 VXY36B (X) - High data for Sample M82 and inconsistent within the determinations for Sample M82.
 YQZHFN (X) - Low data for Sample M81.

Interlaboratory Testing Program for Metals

Analysis 185

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

SAMPLE M81 = 0.2679 Percent SAMPLE M82 = 0.4550 Percent



Interlaboratory Testing Program for Metals

Analysis 186

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2YWWR Y		9.403	-0.034	-0.43	8.967	-0.042	-0.57	OE
32ZG4K	X	9.630	0.193	2.45	9.300	0.290	3.91	OE
36F2WR	X	8.999	-0.439	-5.58	8.810	-0.200	-2.69	OE
36GNPY		9.487	0.049	0.63	9.047	0.037	0.50	OE
38RMZZ	X	9.324	-0.114	-1.44	9.355	0.345	4.65	OE
3C8XD6	*	9.243	-0.195	-2.47	8.807	-0.203	-2.73	OE
3LKVK9	X	10.167	0.730	9.28	9.753	0.743	10.01	OE
3MAP7A		9.437	-0.001	-0.01	8.987	-0.023	-0.31	DR
4JC37Z		9.550	0.113	1.43	9.107	0.097	1.31	OE
6ZFWDY		9.633	0.196	2.49	9.160	0.150	2.03	OE
7KAHXN		9.370	-0.067	-0.85	8.939	-0.071	-0.95	WD
9B9VXA		9.533	0.096	1.22	9.043	0.034	0.45	OE
9CJY67		9.430	-0.007	-0.09	9.027	0.017	0.23	WD
A2PFMP		9.500	0.063	0.80	9.083	0.074	0.99	DR
A4E4KR		9.446	0.009	0.12	8.951	-0.059	-0.79	GD
AANPHH		9.477	0.039	0.50	9.090	0.080	1.08	OE
C8V37C		9.506	0.069	0.87	9.041	0.031	0.42	OE
D2JNHL		9.490	0.053	0.67	8.966	-0.043	-0.58	DR
DVDHUM		9.469	0.032	0.41	9.078	0.068	0.92	OE
DXK6KU		9.370	-0.067	-0.85	8.913	-0.096	-1.30	OE
DYZGLV		9.514	0.076	0.97	9.113	0.103	1.39	OE
F9QE62		9.382	-0.055	-0.70	8.958	-0.052	-0.69	WD
G9QCTP		9.446	0.009	0.11	9.015	0.005	0.07	WD
GT8LN4		9.430	-0.007	-0.09	9.063	0.054	0.72	OE
HUZEAJ		9.370	-0.068	-0.86	8.954	-0.055	-0.74	OE
J88AYK		9.483	0.046	0.59	9.117	0.107	1.44	OE
KBCHD4		9.408	-0.029	-0.37	8.978	-0.032	-0.43	DR
KPWZ9T	X	9.183	-0.254	-3.23	8.897	-0.113	-1.52	OE
KZLEXH		9.387	-0.051	-0.64	8.950	-0.060	-0.80	XR
L9QDTH		9.387	-0.050	-0.63	8.961	-0.049	-0.66	OE
MBYBW4		9.406	-0.032	-0.40	8.974	-0.036	-0.48	WD
MLBFNF		9.421	-0.016	-0.20	8.953	-0.056	-0.76	OE
MRLR3L		9.427	-0.010	-0.13	8.998	-0.011	-0.15	WD
MV29A6	*	9.443	0.006	0.08	9.127	0.117	1.58	ED
NLAZVE		9.430	-0.007	-0.09	8.983	-0.026	-0.35	OE
P3UBB8		9.592	0.154	1.96	8.960	-0.050	-0.67	OE
P9MEEX		9.440	0.003	0.04	8.957	-0.053	-0.71	XX
PTHBBE		9.410	-0.027	-0.35	9.010	0.000	0.01	OE
Q6X6C4		9.423	-0.015	-0.18	9.012	0.002	0.03	OE
QLGNGX		9.373	-0.064	-0.81	8.923	-0.086	-1.16	OE
RDJM8X	*	9.650	0.213	2.71	9.150	0.140	1.89	OE
RPM7D4		9.520	0.083	1.05	9.080	0.070	0.95	IC
RU78LW		9.323	-0.114	-1.45	8.897	-0.113	-1.52	IC
T2P4AR		9.426	-0.011	-0.14	8.972	-0.037	-0.50	OE
TVP2P7		9.483	0.046	0.58	9.031	0.021	0.29	WC

Interlaboratory Testing Program for Metals

Analysis 186

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UU3YYX		9.482	0.045	0.57	9.044	0.035	0.47	DR
UWMN3M		9.391	-0.047	-0.59	8.941	-0.069	-0.92	OE
V73GNV		9.440	0.003	0.04	9.010	0.000	0.01	XR
V8GE8R	*	9.203	-0.234	-2.97	8.860	-0.150	-2.01	GD
VGDWDP		9.470	0.033	0.42	9.050	0.040	0.54	OE
W6L872		9.450	0.013	0.16	9.050	0.040	0.54	OE
WCAFPF		9.342	-0.095	-1.21	8.999	-0.011	-0.14	GD
XGB3M7		9.464	0.026	0.34	9.044	0.034	0.46	OE
Y7X278		9.417	-0.021	-0.26	9.080	0.070	0.95	OE

Summary Statistics

	Sample M81		Sample M82	
Grand Means	9.4372	Percent	9.0100	Percent
Std Dev Btwn Labs	0.0787	Percent	0.0743	Percent

Statistics based on 48 of 54 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #186

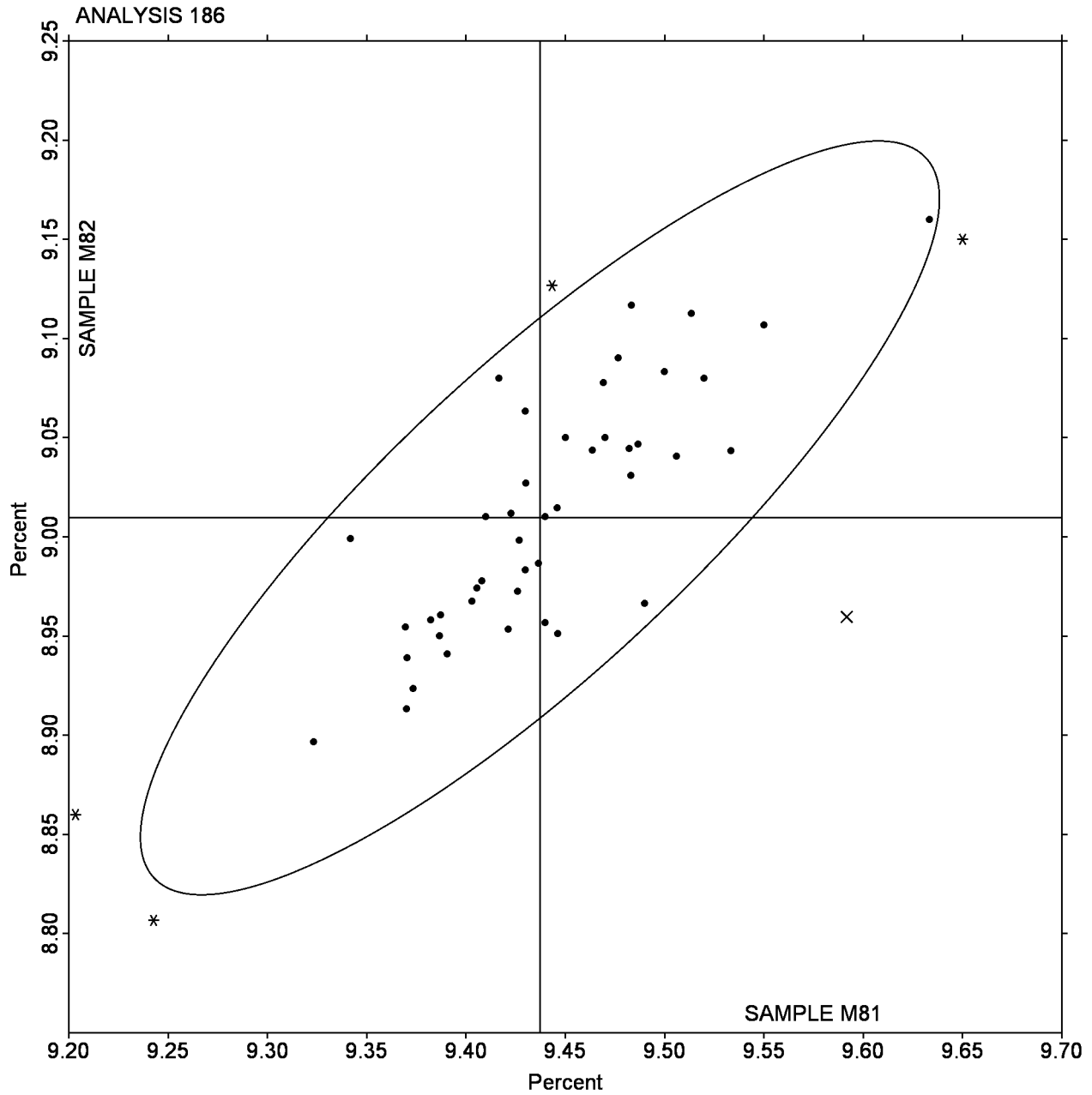
- 32ZG4K (X) - High data for Sample M82.
- 36F2WR (X) - Low data for Sample M81.
- 38RMZZ (X) - High data for Sample M82.
- 3LKVK9 (X) - Data for both samples are high.
- KPWZ9T (X) - Low data for Sample M81.

Interlaboratory Testing Program for Metals

Analysis 186

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

SAMPLE M81 = 9.4372 Percent SAMPLE M82 = 9.0100 Percent



Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BWVQ7	*	17.31	-0.28	-2.79	16.98	-0.30	-3.20	OE
2E27EU		17.52	-0.06	-0.65	17.22	-0.05	-0.57	WD
44GHRY		17.70	0.11	1.16	17.46	0.18	1.88	GD
4DPCLP		17.64	0.06	0.58	17.39	0.11	1.14	OE
62TZXX		17.80	0.22	2.24	17.45	0.17	1.78	OE
634XBF		17.59	0.00	0.04	17.26	-0.02	-0.20	TI
6A8AJT		17.59	0.01	0.06	17.26	-0.02	-0.22	WD
6ZNDRY	X	18.10	0.51	5.20	17.38	0.10	1.07	OE
77EZLW		17.57	-0.01	-0.09	17.29	0.01	0.12	XR
7DHCRM		17.56	-0.02	-0.23	17.29	0.01	0.08	OE
7FTGVH		17.36	-0.22	-2.25	17.14	-0.14	-1.47	XX
83NPMH		17.54	-0.04	-0.39	17.25	-0.03	-0.31	OE
84R7BU		17.68	0.09	0.95	17.37	0.09	0.96	OE
8U7CLX		17.59	0.01	0.08	17.31	0.03	0.29	OE
8XXTER		17.54	-0.05	-0.46	17.22	-0.06	-0.60	DR
97AQWP	*	17.43	-0.15	-1.53	17.30	0.02	0.26	OE
A9EMWJ		17.63	0.04	0.45	17.31	0.03	0.36	OE
ACF7VH		17.64	0.06	0.58	17.32	0.04	0.44	WD
APLQKA		17.65	0.06	0.65	17.26	-0.02	-0.20	OE
B7KLGZ	X	16.83	-0.75	-7.59	16.54	-0.74	-7.81	OE
BV3Q3F		17.63	0.05	0.48	17.31	0.03	0.36	DR
CALZQB	X	17.85	0.27	2.74	17.67	0.39	4.17	OE
CLLYPH	X	17.73	0.15	1.49	17.68	0.40	4.21	OE
CQGYU6		17.68	0.10	1.01	17.26	-0.02	-0.23	OE
CYD7XP		17.61	0.02	0.24	17.23	-0.05	-0.51	OE
FTG9R6		17.74	0.16	1.63	17.44	0.16	1.74	OE
GXLLC2		17.44	-0.14	-1.44	17.18	-0.10	-1.02	WD
HDHAA7		17.61	0.03	0.28	17.42	0.14	1.49	OE
HE9ZV7		17.43	-0.15	-1.51	17.17	-0.11	-1.19	GD
K8LXTK		17.40	-0.18	-1.84	17.11	-0.17	-1.75	OE
KC4GEV		17.64	0.05	0.55	17.31	0.03	0.36	WD
KCQANT		17.55	-0.03	-0.29	17.19	-0.09	-0.90	GD
KLWPCT		17.50	-0.09	-0.87	17.22	-0.06	-0.64	OE
L8FKQ3		17.49	-0.09	-0.93	17.18	-0.10	-1.05	OE
LCPMVL	X	18.01	0.43	4.36	17.56	0.28	2.94	OE
NJAGEZ		17.55	-0.03	-0.32	17.30	0.02	0.23	DR
P8RFYT		17.57	-0.01	-0.09	17.28	0.00	-0.02	OE
QB2J3U		17.70	0.12	1.19	17.36	0.08	0.86	OE
R8TCYL		17.67	0.09	0.92	17.31	0.03	0.29	DR
RC8MCP		17.50	-0.08	-0.82	17.18	-0.10	-1.01	OE
TGC6R4	*	17.57	-0.01	-0.12	17.42	0.14	1.49	IC
TKZLB2		17.76	0.17	1.76	17.38	0.10	1.07	OE
TPW98B		17.60	0.02	0.21	17.33	0.05	0.54	OE
UG9NJW		17.48	-0.10	-1.03	17.16	-0.12	-1.29	TI
UMG7MX		17.65	0.07	0.73	17.31	0.03	0.32	DR

Interlaboratory Testing Program for Metals

Analysis 187

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V2UTDE		17.65	0.07	0.68	17.32	0.04	0.44	OE
VMMMRA	X	17.95	0.37	3.72	17.64	0.36	3.82	OE
VWB2N7		17.55	-0.03	-0.29	17.22	-0.06	-0.66	OE
W4B6J3		17.61	0.03	0.28	17.35	0.07	0.75	OE
WWRE3U		17.60	0.01	0.15	17.29	0.01	0.15	XR
XTYA4U		17.53	-0.05	-0.49	17.14	-0.14	-1.47	ED
XYCA23		17.58	0.00	-0.02	17.26	-0.02	-0.16	WC
Z93LP4		17.64	0.06	0.58	17.35	0.07	0.79	OE
ZC8389		17.61	0.03	0.28	17.28	0.00	-0.02	WD
ZX2ZJ8		17.65	0.07	0.69	17.32	0.05	0.48	OE

Summary Statistics

	Sample M81	Sample M82
Grand Means	17.582 Percent	17.280 Percent
Std Dev Btwn Labs	0.099 Percent	0.095 Percent

Statistics based on 49 of 55 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #187

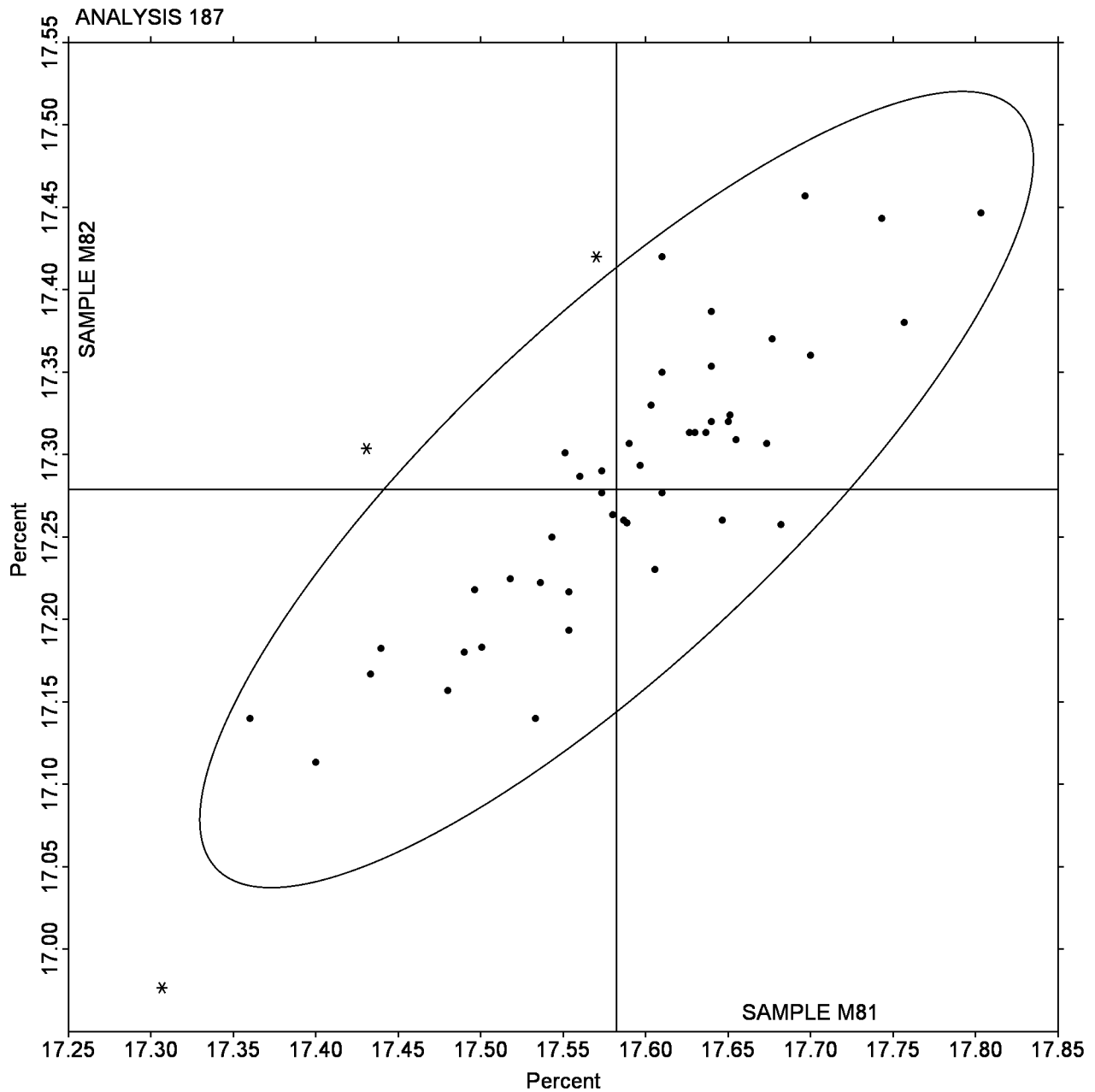
- 6ZNDRY (X) - Inconsistent in testing between samples, data for Sample M81 are high.
 B7KLGZ (X) - Data for both samples are low. Possible systematic error.
 CALZQB (X) - Data for both samples are high. Possible systematic error.
 CLLYPH (X) - Inconsistent in testing between samples, data for Sample M82 are high.
 LCPMVL (X) - Data for both samples are high. Possible systematic error.
 VMMMRA (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 M81 = 17.582 Percent SAMPLe M82 = 17.280 Percent



Interlaboratory Testing Program for Metals

Analysis 188

Chemical Analysis Element #9 - Corrosion Resistant Steel - Percent

MOLYBDENUM (Mo)

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
44JK3M		0.290	-0.002	-0.32	0.415	0.002	0.17	WD
4XUMEE		0.290	-0.002	-0.27	0.408	-0.005	-0.43	OE
64VKWW		0.293	0.001	0.12	0.410	-0.003	-0.25	OE
67Z6MH		0.290	-0.002	-0.27	0.407	-0.006	-0.55	OE
6KU7YJ	*	0.291	-0.001	-0.18	0.388	-0.025	-2.25	XX
6VXG82	X	0.340	0.048	6.33	0.460	0.047	4.23	OE
7922NQ		0.291	-0.001	-0.08	0.415	0.002	0.21	OE
8ZTUFU		0.287	-0.005	-0.71	0.420	0.007	0.64	OE
928DDY		0.280	-0.012	-1.64	0.386	-0.027	-2.40	OE
9FW2B4		0.296	0.004	0.47	0.422	0.009	0.83	OE
9XGEHM		0.299	0.007	0.92	0.422	0.010	0.85	OE
APYWHF	*	0.282	-0.010	-1.33	0.424	0.011	1.00	GD
BLM94G		0.294	0.002	0.30	0.422	0.010	0.85	DR
BUHNX8		0.291	-0.001	-0.14	0.415	0.002	0.20	OE
CAX9NX		0.296	0.004	0.56	0.418	0.005	0.43	OE
DCRCDC		0.295	0.003	0.39	0.411	-0.001	-0.13	DR
DLZ4JZ		0.309	0.017	2.28	0.427	0.014	1.24	OE
EKHT9Q		0.293	0.001	0.17	0.416	0.003	0.25	OE
F4UPMA		0.294	0.002	0.30	0.411	-0.002	-0.19	OE
FMUP4A		0.278	-0.014	-1.86	0.401	-0.012	-1.06	OE
FN982D		0.297	0.005	0.61	0.438	0.025	2.23	OE
FTD8NB		0.293	0.001	0.17	0.430	0.017	1.54	DR
G7GCNH		0.291	-0.001	-0.08	0.421	0.008	0.70	DR
J4L2L8		0.286	-0.006	-0.76	0.406	-0.007	-0.61	IC
JBMMWL	*	0.313	0.021	2.81	0.420	0.007	0.64	OE
JC2CFL		0.296	0.004	0.52	0.410	-0.003	-0.28	OE
JP76RB		0.281	-0.011	-1.42	0.390	-0.023	-2.07	OE
KX7AUZ		0.278	-0.014	-1.86	0.391	-0.022	-1.95	OE
MLTUUY		0.290	-0.002	-0.23	0.423	0.010	0.88	OE
MWCKYG		0.290	-0.002	-0.32	0.416	0.003	0.28	OE
MWT8KY		0.300	0.008	1.05	0.427	0.015	1.30	OE
PDRATF	*	0.308	0.016	2.10	0.410	-0.002	-0.22	GD
PFQPQQ		0.291	-0.001	-0.10	0.411	-0.002	-0.16	WD
QVN7P2		0.279	-0.013	-1.77	0.391	-0.022	-1.98	DR
RR9PHH		0.292	0.000	0.04	0.411	-0.002	-0.16	WD
T9EE3L		0.274	-0.018	-2.38	0.390	-0.023	-2.07	OE
TTVDVP		0.288	-0.004	-0.49	0.413	0.000	-0.01	WD
TVBJY6		0.293	0.001	0.17	0.416	0.003	0.28	GD
V8QKU3		0.291	-0.001	-0.10	0.408	-0.004	-0.40	OE
VP6EPC		0.290	-0.002	-0.23	0.415	0.002	0.20	OE
WELEE2		0.293	0.001	0.12	0.416	0.003	0.28	WD
WL9Z2D		0.291	-0.001	-0.14	0.413	0.000	0.02	OE
WPA4TZ		0.297	0.005	0.61	0.415	0.002	0.20	IC
X3J6YH		0.291	-0.001	-0.17	0.421	0.008	0.69	OE
XG4W87		0.290	-0.002	-0.23	0.415	0.002	0.20	XR

Interlaboratory Testing Program for Metals

Analysis 188

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

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XUCJHN		0.298	0.006	0.83	0.413	0.000	0.02	OE
YQ9V47		0.300	0.008	1.05	0.427	0.014	1.27	OE
YX4ULE		0.297	0.005	0.61	0.412	-0.001	-0.07	DR
Z7PD4R		0.300	0.008	1.05	0.420	0.007	0.64	XR
Z8RJ46		0.289	-0.003	-0.40	0.407	-0.006	-0.52	OE
ZECX9J		0.294	0.002	0.21	0.410	-0.002	-0.22	OE

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.2921 Percent	0.4130 Percent
Std Dev Btwn Labs	0.0076 Percent	0.0112 Percent
Statistics based on 50 of 51 reporting participants		

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #188

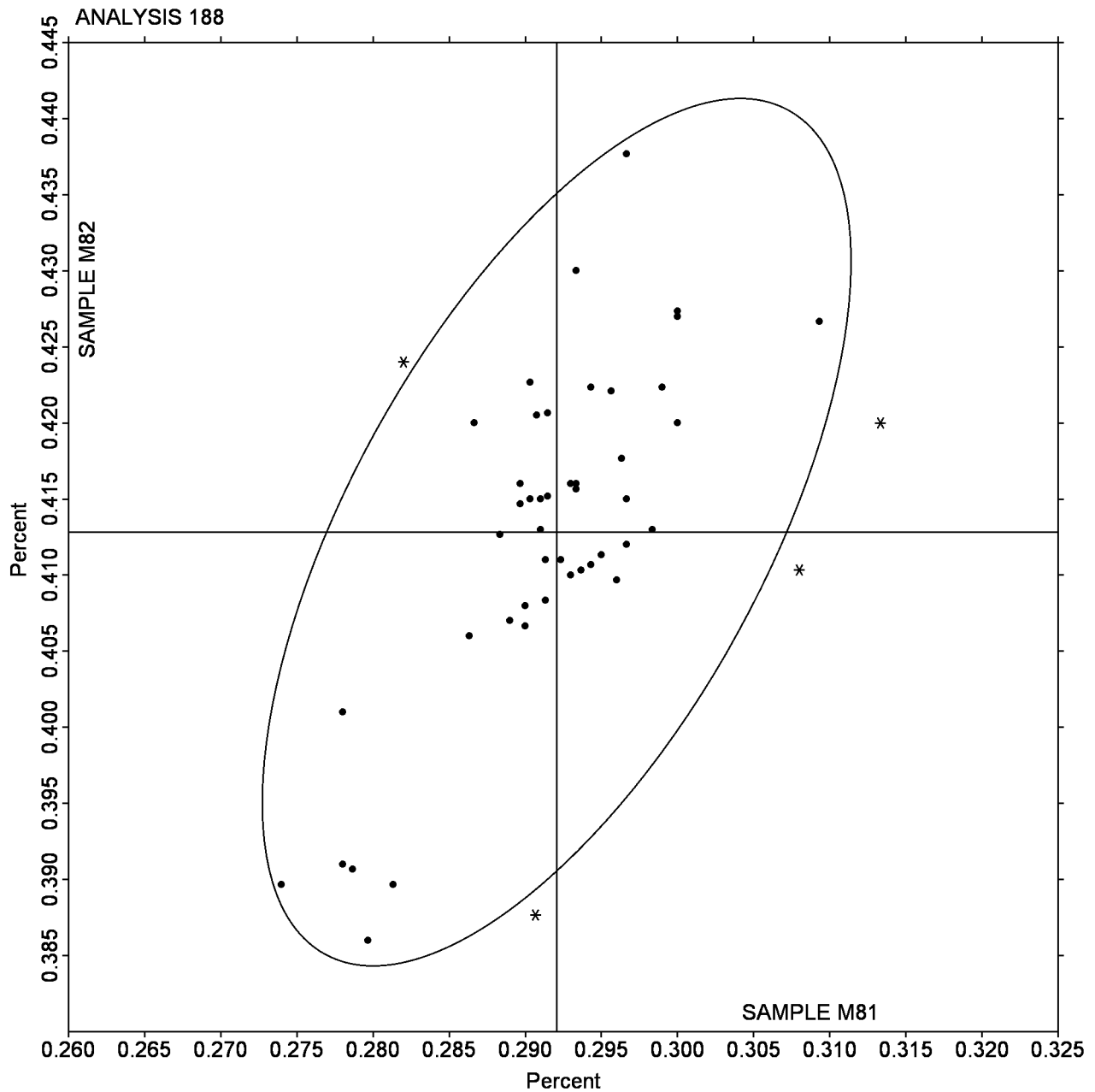
6VXG82 (X) - Data for both samples are high.

Interlaboratory Testing Program for Metals

Analysis 188

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

SAMPLE M81 = 0.2921 Percent SAMPLe M82 = 0.4130 Percent



Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
NIOBIUM(Nb)

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
297TXW		0.645	-0.004	-0.17	0.635	0.002	0.12	GD
2FZFGB		0.640	-0.009	-0.41	0.629	-0.004	-0.20	OE
2LYN86		0.653	0.004	0.20	0.631	-0.002	-0.09	OE
2PV9DA	X	0.208	-0.441	-20.86	0.199	-0.434	-20.52	OE
788TGF		0.665	0.017	0.80	0.651	0.018	0.87	OE
7CECBN	*	0.664	0.016	0.74	0.626	-0.007	-0.31	OE
7TC9ZR		0.650	0.002	0.08	0.630	-0.003	-0.14	OE
7ZECBH	X	0.179	-0.469	-22.20	0.170	-0.463	-21.91	OE
89XJXE		0.661	0.013	0.61	0.648	0.015	0.70	OE
8G92EK		0.630	-0.018	-0.87	0.613	-0.020	-0.92	OE
8GU8XQ		0.653	0.005	0.22	0.630	-0.003	-0.14	WD
8X32PY		0.614	-0.034	-1.63	0.604	-0.029	-1.35	OE
8ZCP6B		0.663	0.014	0.68	0.639	0.006	0.31	OE
AGVDWN		0.677	0.028	1.34	0.663	0.030	1.44	IC
AZBB8V		0.657	0.008	0.39	0.650	0.017	0.81	OE
B372HR		0.644	-0.004	-0.21	0.629	-0.004	-0.18	OE
BALCKE		0.650	0.002	0.08	0.621	-0.012	-0.56	OE
BFGEBD		0.612	-0.037	-1.74	0.584	-0.049	-2.30	XX
BHFHCU	X	0.747	0.098	4.65	0.727	0.094	4.44	OE
CF8KN6		0.652	0.003	0.16	0.626	-0.007	-0.34	WD
E4FMY4		0.604	-0.044	-2.10	0.600	-0.033	-1.56	OE
E7QFD3		0.647	-0.002	-0.08	0.629	-0.004	-0.20	WD
EWJQF8		0.640	-0.008	-0.39	0.618	-0.015	-0.69	OE
F3HZFR		0.677	0.028	1.34	0.667	0.034	1.60	OE
JL8UWB		0.660	0.012	0.55	0.663	0.030	1.44	OE
KUBYZ7		0.628	-0.020	-0.95	0.613	-0.020	-0.92	IC
L3ZZXV		0.625	-0.024	-1.13	0.603	-0.030	-1.44	OE
LCHYR7		0.635	-0.014	-0.65	0.616	-0.017	-0.80	XR
LJ8N24		0.676	0.028	1.31	0.662	0.029	1.38	GD
M4TTAD		0.652	0.003	0.15	0.637	0.004	0.18	DR
M7TJYT		0.638	-0.010	-0.47	0.622	-0.011	-0.50	OE
MGVY34		0.663	0.015	0.71	0.653	0.020	0.97	DR
MKKLXJ	X	0.547	-0.102	-4.81	0.513	-0.120	-5.66	OE
MQPVE8		0.696	0.047	2.24	0.678	0.045	2.12	OE
MQQQ2J		0.619	-0.029	-1.39	0.612	-0.021	-0.97	OE
PVGQFV		0.632	-0.016	-0.77	0.622	-0.011	-0.53	OE
QK6D37	*	0.685	0.037	1.74	0.686	0.053	2.51	ED
QQXMWJ		0.638	-0.010	-0.47	0.630	-0.003	-0.15	WD
QUD443		0.638	-0.010	-0.47	0.621	-0.012	-0.56	DR
QYUY28		0.604	-0.044	-2.08	0.602	-0.031	-1.45	OE
U4TKFF		0.674	0.026	1.23	0.657	0.024	1.14	OE
UKYQNP		0.643	-0.005	-0.24	0.631	-0.002	-0.09	OE
V9BWEV		0.671	0.022	1.06	0.653	0.020	0.95	DR
VDQZ6H		0.651	0.003	0.13	0.631	-0.002	-0.07	DR
WTMJQZ		0.615	-0.034	-1.59	0.608	-0.025	-1.16	OE

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
NIOBIUM(Nb)

WebCode	Data Flag	Sample M81			Sample M82			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XQ7VGK		0.662	0.014	0.66	0.643	0.010	0.46	WD
YGTDDT		0.661	0.013	0.60	0.629	-0.004	-0.20	DR
YW4FWF		0.650	0.002	0.08	0.643	0.010	0.49	OE
ZAATPZ		0.630	-0.018	-0.87	0.623	-0.010	-0.45	OE
ZX7C84		0.660	0.012	0.55	0.639	0.006	0.27	XR
ZZVCDR		0.670	0.022	1.03	0.643	0.010	0.49	OE

Summary Statistics

	Sample M81	Sample M82
Grand Means	0.6483 Percent	0.6330 Percent
Stnd Dev Btwn Labs	0.0211 Percent	0.0211 Percent

Statistics based on 47 of 51 reporting participants

Samples M81 , M82 : AISI 347, two different heats

Comments on assigned Data Flags for Test #189

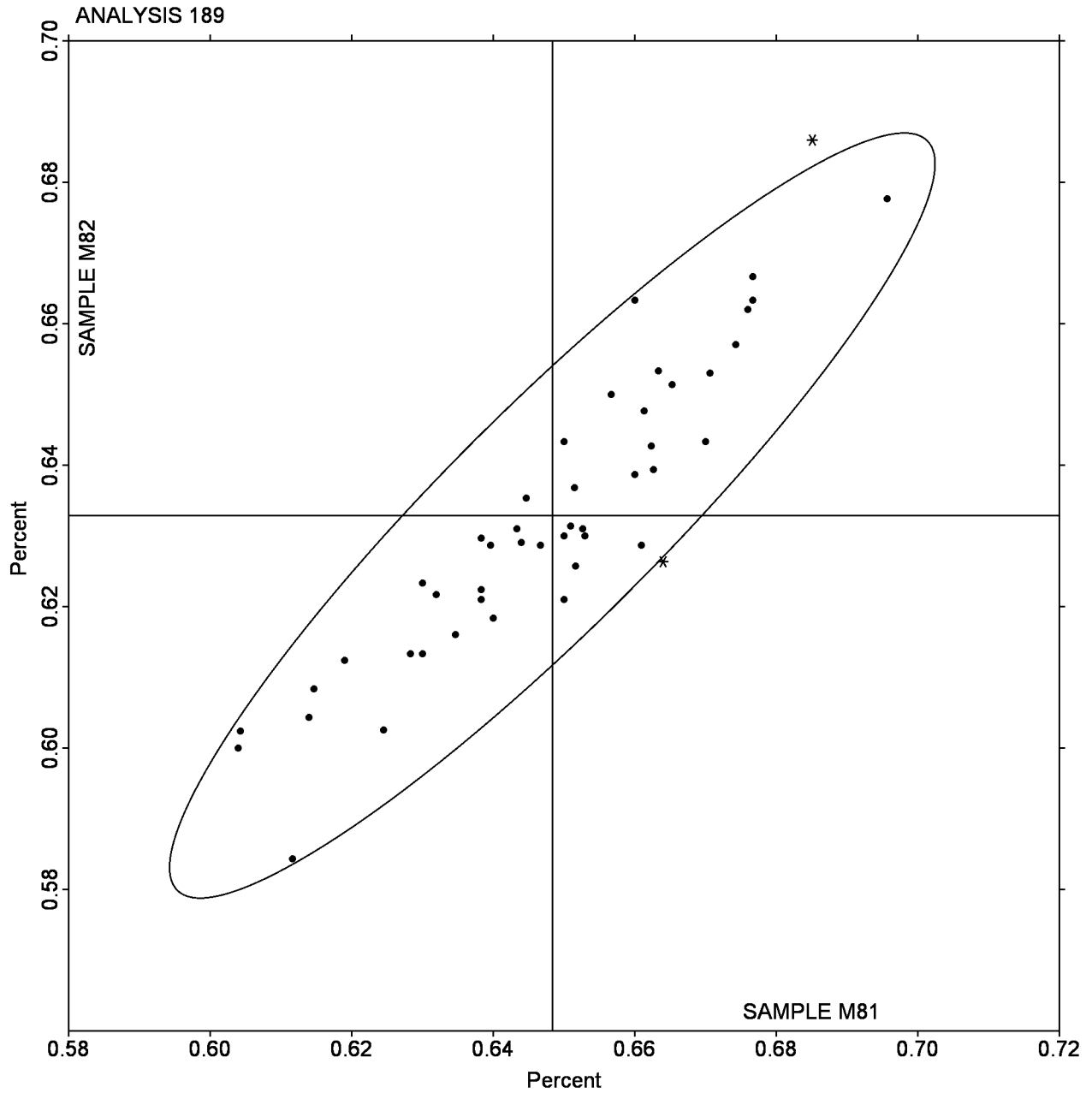
- 2PV9DA (X) - Data for both samples are low.
 7ZECBH (X) - Data for both samples are low.
 BHFHCU (X) - Data for both samples are high. Possible systematic error.
 MKKLXJ (X) - Data for both samples are low. Possible systematic error.

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
NIOBIUM(Nb)

SAMPLE M81 = 0.6483 Percent SAMPLe M82 = 0.6330 Percent



Instrument and Method Code List - Report# 88

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

116 **Fastener Axial Tensile**

Instrument code and description

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

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

120 **Rockwell Hardness: C Scale**

Instrument code and description

XX Instrument manufacturer not specified by lab

125 **Rockwell Hardness: Externally Threaded Fasteners**

Instrument code and description

AF AFFRI
AK Akashi
AV Avery
BU Buehler
CL Clark
EM EMCO
FR Frank Well
FT Future-Tech
GR Greenslade & Co.
IN Indentec
KF Karl Frank GmbH
LE Leco
MI Mitutoyo
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 lab

126 **Vickers Hardness: Externally Threaded Fasteners**

Instrument code and description

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

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

Instrument code and description

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

128 **Fastener Axial Tensile - Metric**

Instrument code and description

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

129 **Fastener Double Shear**

Instrument code and description

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

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

Instrument code and description

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

Instrument code and description

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

160 **Copper-based Alloy, Element #1**

Method code and description

AA	Atomic Absorption Spectrophotometry
BD	By Difference
ED	X-ray Fluorescence, Energy Dispersive
EL	Electrochemistry
GD	Glow Discharge Spectroscopy
GR	Gravimetric
IC	ICP Spectrometry
OE	Optical Emission Spectrometry
WC	Wet Chemistry (not specified)
WD	X-ray Fluorescence, Wavelength Dispersive
XR	X-ray Fluorescence (ED or WD not specified)
XX	Method not specified by lab

Method code and description

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