Fasteners & Metals Testing Program

Summary Report Cycle 109, 1st Quarter - 2015

Collaborative Testing Services, Inc.

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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 website.

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

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

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

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

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

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

Data Flags

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

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

Cycle 109
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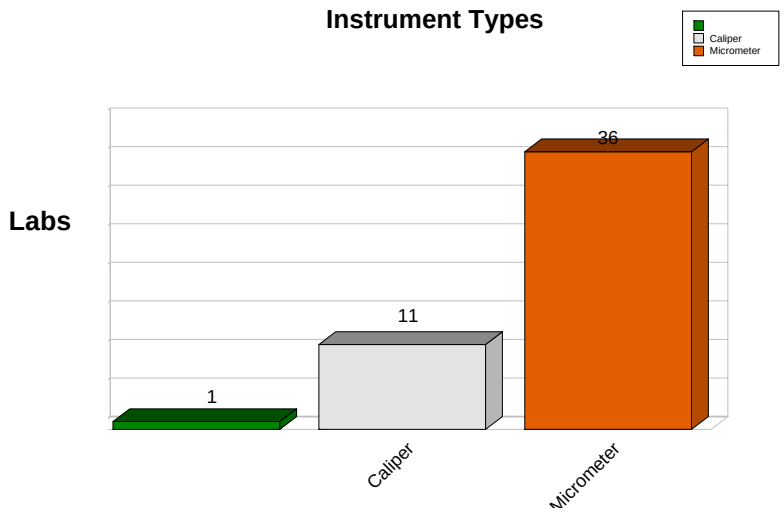
Interlaboratory Testing Program for Metals

Analysis 101

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

During Cycle 109, CTS conducted the Analysis #101 - Round Dimensional. For this test all participants received two samples I25 and I26 with nominal diameters; 0.3749 in. and 0.3751 in. Each sample is an English Class X gage pin with 0.00002 in roundness limit made from 52100 bearing steel, hardened to 60-62 Rockwell C. Laboratories were asked to determine the outside diameter of the pins. 48 laboratories that subscribed for this test reported testing results. The graph below shows a breakdown of the types of instruments used.



Analysis of the Results

The most convenient and common method of judging the quality of measurement results is by calculating the performance statistic, En, calculated as:

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Where the assigned value, Xref, is determined in a reference laboratory, Uref is the expanded uncertainty of Xref, and Ulab is the **Expanded Uncertainty** of a participant's result, Xlab. En is not calculated for Labs who did not report their Expanded Uncertainty.

Absolute values of En less than **1.00** should be obtained for the measurements to be acceptable.

The following graph and the table represent the results reported by participants. All tests were conducted at room temperature (20-23C or 68-77F).

Xref and Uref were determined by the gage pin manufacturer. The manufacturer is ISO 9001:2000 Certified and an ISO 17025 Accredited company. All master gages used in checking the plug gages are calibrated with standards traceable to NIST.

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Interlaboratory Testing Program for Metals

Analysis 101

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xref1 = 0.3749 in.

Xref2 = 0.3751 in.

WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Sample I25 Lab Mean (Xlab)	Sample I25 Performance Statistic (En1)	Sample I26 Lab Mean (Xlab)	Sample I26 Performance Statistic (En2)	Instrument
4UD4NG		0.00004	0.00030	0.37480	-0.33	0.37504	-0.20	Micrometer
64J7MM		0.00004	0.00016	0.37492	0.13	0.37507	-0.18	Micrometer
6A62NQ	X	0.00004	0.00010	0.37475	-1.39	0.37499	-1.02	Micrometer
6LUAVR		0.00004	0.00016	0.37485	-0.30	0.37500	-0.61	Micrometer
7B9AUN	N/A	0.00004	Not Reported	0.37478	0.00	0.37490	0.00	Micrometer
7KM3JQ		0.00004	0.00100	0.37460	-0.30	0.37500	-0.10	Caliper
7MN8R6	X	0.00004	0.00039	0.37417	-1.84	0.37441	-1.74	Caliper
7UMW9A		0.00004	0.00030	0.37470	-0.66	0.37490	-0.66	Micrometer
8R276J		0.00004	0.00020	0.37484	-0.30	0.37502	-0.39	Micrometer
B3PD96		0.00004	0.00040	0.37490	0.00	0.37505	-0.12	Micrometer
BBFYD3		0.00004	0.00041	0.37480	-0.24	0.37500	-0.24	Micrometer
BRPX78		0.00004	0.00260	0.37420	-0.27	0.37450	-0.23	Caliper
CF8PY6		0.00004	0.00059	0.37456	-0.57	0.37470	-0.68	Micrometer
CK3G82		0.00004	0.00050	0.37450	-0.80	0.37500	-0.20	Caliper
DPM36E		0.00004	0.00198	0.37489	-0.01	0.37502	-0.04	Micrometer
DQ6UKQ		0.00004	0.00210	0.37420	-0.33	0.37500	-0.05	Caliper
DTC3VV		0.00004	0.00094	0.37489	-0.01	0.37506	-0.04	Micrometer
EB3XJ4		0.00004	0.00023	0.37484	-0.25	0.37504	-0.26	Micrometer
EGR83A		0.00004	0.03937	0.37482	0.00	0.37503	0.00	Micrometer
F4EFWE		0.00004	0.00381	0.37500	0.03	0.37515	0.01	Micrometer
F4KPU8	X	0.00004	0.00012	0.37472	-1.42	0.37483	-2.13	Other
FFV6VK		0.00004	0.00030	0.37475	-0.50	0.37497	-0.43	Micrometer
GBQ3ZF		0.00004	0.00008	0.37490	0.00	0.37510	0.00	Micrometer
GG92T3		0.00004	0.00118	0.37472	-0.15	0.37480	-0.25	Caliper
GHHAVV		0.00004	0.00015	0.37488	-0.13	0.37500	-0.64	Micrometer
GHWUBY		0.00004	0.00012	0.37481	-0.71	0.37501	-0.74	Micrometer
GUBM3E	X	0.00004	0.00004	0.37484	-1.07	0.37504	-1.13	Micrometer
GWWJDQ		0.00004	0.00094	0.37463	-0.29	0.37474	-0.38	Caliper
HWXJB6		0.00004	0.00011	0.37489	-0.09	0.37507	-0.26	Micrometer
K6XZHD	X	0.00004	0.00030	0.37614	4.10	0.37554	1.45	Micrometer
KN9XWH		0.00004	0.03937	0.37483	0.00	0.37502	0.00	Micrometer
LPMGNR	X	0.00004	0.00005	0.37480	-1.56	0.37500	-1.56	Micrometer

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 101

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xref1 = 0.3749 in.

Xref2 = 0.3751 in.

WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Sample I25 Lab Mean (Xlab)	Sample I25 Performance Statistic (En1)	Sample I26 Lab Mean (Xlab)	Sample I26 Performance Statistic (En2)	Instrument
LZ494P		0.00004	0.00176	0.37488	-0.01	0.37496	-0.08	Caliper
MA3DMP	X	0.00004	0.00018	0.37470	-1.07	0.37483	-1.47	Micrometer
MA489F		0.00004	0.00007	0.37489	-0.13	0.37504	-0.79	Micrometer
Q84B7Q		0.00004	0.00008	0.37483	-0.83	0.37503	-0.77	Micrometer
QNRPF2	X	0.00004	0.00016	0.37475	-0.93	0.37493	-1.05	Micrometer
RCFK8K		0.00004	0.00013	0.37483	-0.52	0.37499	-0.77	Micrometer
RGPZC3		0.00004	0.00070	0.37467	-0.33	0.37477	-0.47	Micrometer
RRNH6Q		0.00004	0.00160	0.37500	0.06	0.37500	-0.06	Caliper
T6QMGB		0.00004	0.00016	0.37481	-0.55	0.37498	-0.76	Micrometer
TXLWX6		0.00004	0.00030	0.37500	0.33	0.37500	-0.33	Caliper
UGFUXC	X	0.00004	0.00008	0.37480	-1.09	0.37504	-0.68	Micrometer
UP8ALF		0.00004	0.00669	0.37500	0.01	0.37500	-0.01	Caliper
W8JKJY		0.00004	0.00091	0.37484	-0.06	0.37508	-0.02	Micrometer
W8NBF9		0.00004	0.00019	0.37488	-0.10	0.37512	0.10	Micrometer
Z8GV4K		0.00004	0.00050	0.37470	-0.40	0.37480	-0.60	Micrometer
ZM4KTL		0.00004	0.00040	0.37479	-0.27	0.37497	-0.32	Micrometer

Summary Statistics

		Sample I25		Sample I26	
Reference Uncertainty = 0.00004 in.	Reference Diameters:	0.3749	inch	0.3751	inch

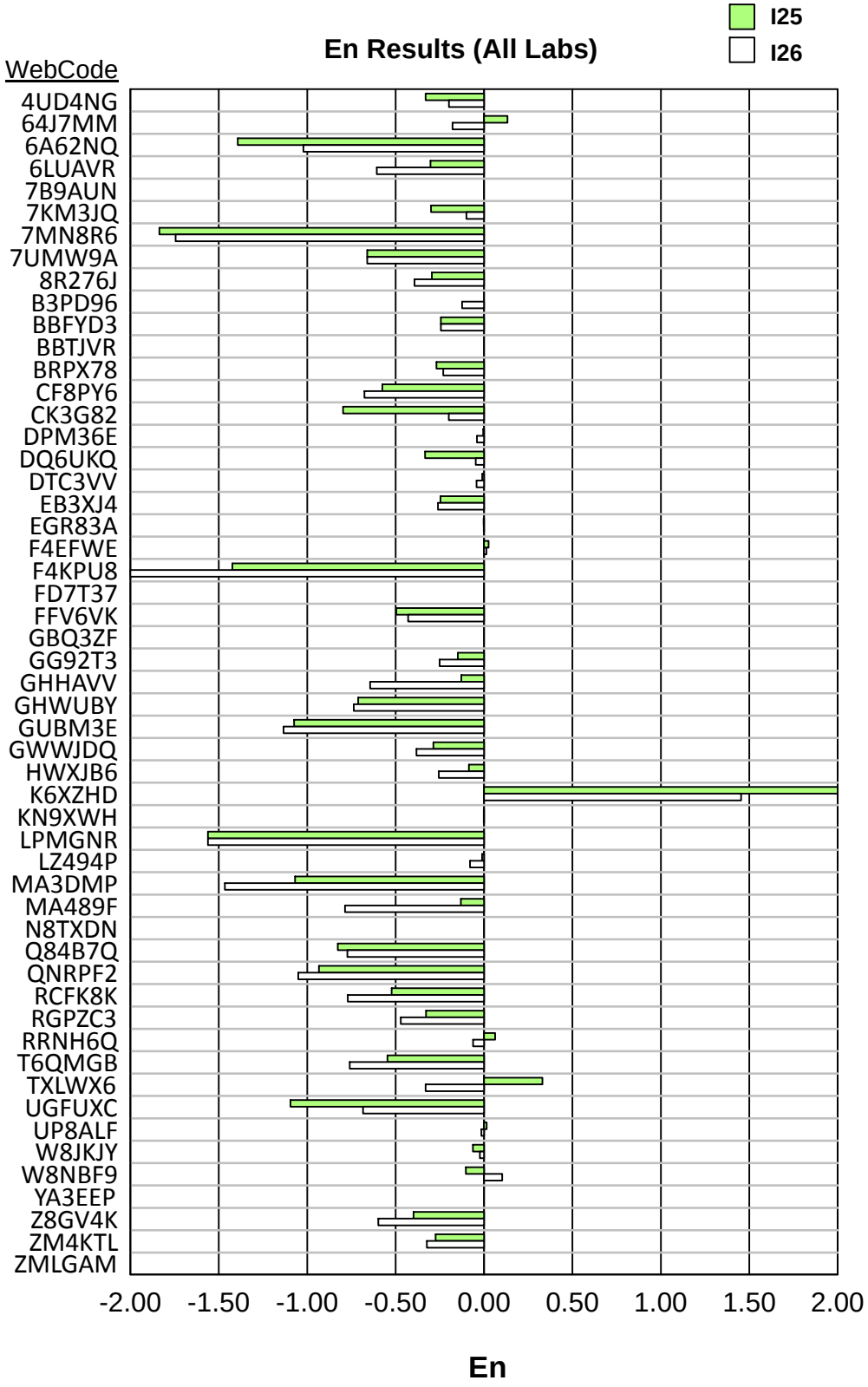
Samples I25 , I26 : 52100 steel

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 101

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM



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Interlaboratory Testing Program for Metals

Analysis 105

Tensile Strength (Flat Aluminum) - ksi
ASTM B557

WebCode	Data Flag	Sample R25 Lab Mean	Sample R25 Diff. from Grand Mean	Sample R25 CPV	Sample R26 Lab Mean	Sample R26 Diff. from Grand Mean	Sample R26 CPV	Instr Code
26MRNH		46.10	-0.54	-1.06	49.60	-0.38	-0.78	ZZ
2YX4YE		46.60	-0.04	-0.08	50.00	0.02	0.04	ZZ
3N94EL		46.60	-0.04	-0.08	50.20	0.22	0.45	ZZ
4UD4NG		46.80	0.16	0.31	50.10	0.12	0.25	ZZ
4UDVP6	X	47.40	0.76	1.48	52.50	2.52	5.17	ZZ
7KM3JQ		47.70	1.06	2.06	50.90	0.92	1.89	ZZ
886Z4J		46.40	-0.24	-0.47	49.50	-0.48	-0.99	ZZ
8LDHBE	*	45.23	-1.41	-2.75	48.81	-1.17	-2.41	ZZ
92ZC7B		46.59	-0.06	-0.11	50.23	0.25	0.51	ZZ
B3LTK2		46.50	-0.14	-0.28	50.40	0.42	0.86	ZZ
BY7DWV	X	44.50	-2.14	-4.18	49.60	-0.38	-0.78	ZZ
CENV7H		46.30	-0.34	-0.67	50.00	0.02	0.04	ZZ
FW38L6		46.82	0.18	0.35	50.36	0.38	0.78	ZZ
GHWUBY		46.60	-0.04	-0.08	50.04	0.06	0.12	ZZ
J9E6J4		46.40	-0.24	-0.47	49.30	-0.68	-1.40	ZZ
JKB74K		46.60	-0.04	-0.08	50.00	0.02	0.04	ZZ
JKVP9R		46.90	0.26	0.50	49.40	-0.58	-1.19	ZZ
NVD38X		46.70	0.06	0.11	50.10	0.12	0.25	ZZ
PRHEGH	X	48.90	2.26	4.40	51.30	1.32	2.71	ZZ
PZP9FG		47.10	0.46	0.89	50.30	0.32	0.66	ZZ
Q6XYEG		46.30	-0.34	-0.67	50.40	0.42	0.86	ZZ
QDMT6J		47.00	0.36	0.70	50.30	0.32	0.66	ZZ
REJG8F		47.30	0.66	1.28	50.20	0.22	0.45	ZZ
RZ4C6T		46.50	-0.14	-0.28	49.90	-0.08	-0.17	ZZ
THCX8M		46.55	-0.09	-0.18	50.19	0.21	0.44	ZZ
TUAQJJ		46.10	-0.54	-1.06	49.63	-0.35	-0.72	ZZ
UP8ALF		46.20	-0.44	-0.86	49.30	-0.68	-1.40	ZZ
VC6AGH		47.30	0.66	1.28	50.30	0.32	0.66	ZZ
WXYDXG		45.90	-0.74	-1.45	49.50	-0.48	-0.99	ZZ
XJAW7W		47.13	0.49	0.95	50.88	0.90	1.85	ZZ
Y78TFZ		47.60	0.96	1.87	50.30	0.32	0.66	ZZ
ZZAG6W		46.80	0.16	0.31	49.30	-0.68	-1.40	ZZ

Summary Statistics

	Sample R25		Sample R26	
Grand Means	46.64	ksi	49.98	ksi
Stnd Dev Btwn Labs	0.51	ksi	0.49	ksi

Samples R25 , R26 : 6061-T6

Statistics based on 29 of 32 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 105

Tensile Strength (Flat Aluminum) - ksi
ASTM B557

Comments on assigned Data Flags for Analysis #105

WebCode	Flag	Analyst Comment
4UDVP6	X	Data for sample R26 are high.
BY7DWV	X	Data for sample R25 are low.
PRHEGH	X	Data for both samples are high.

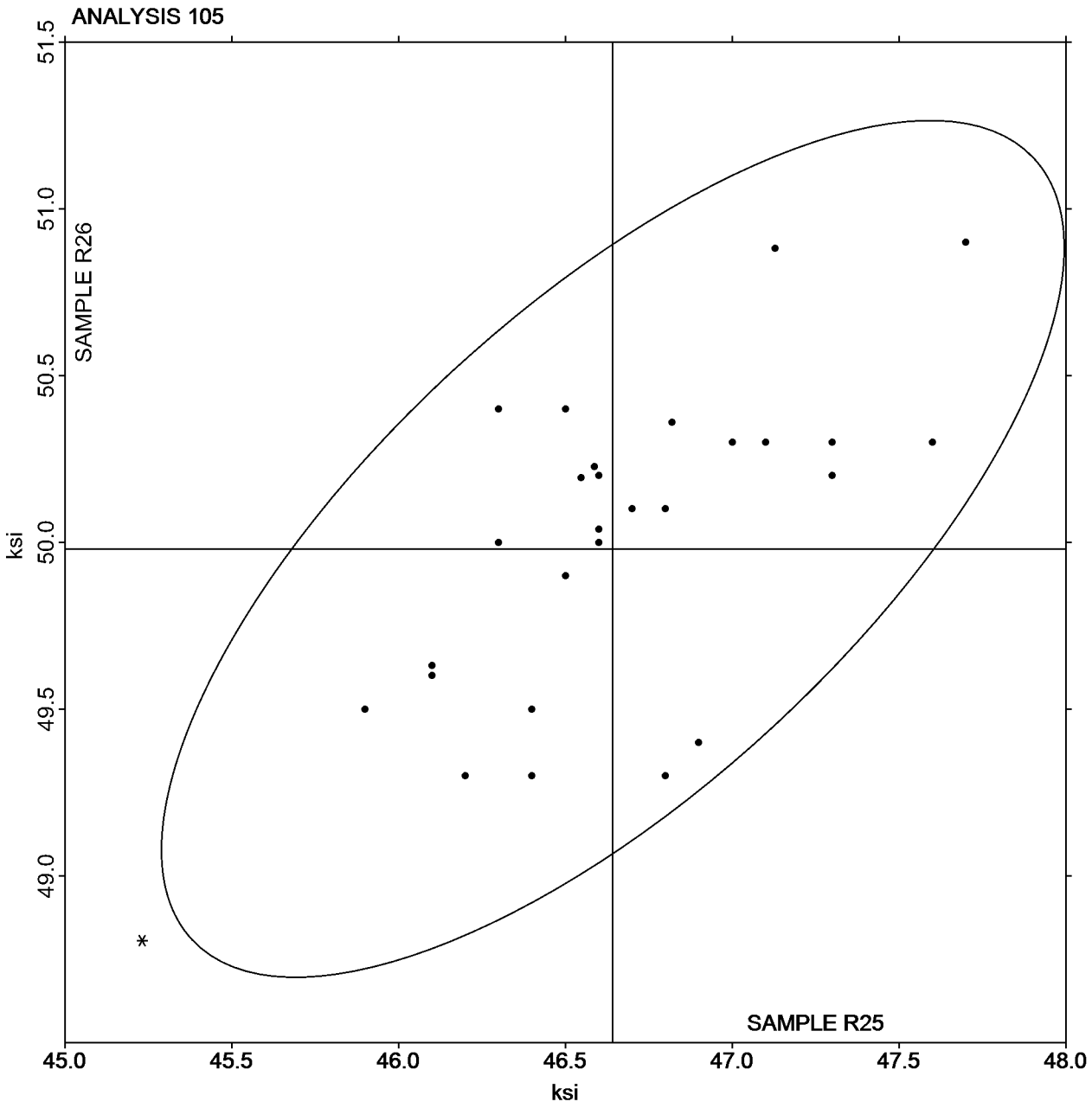
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 105

Tensile Strength (Flat Aluminum) - ksi
ASTM B557

SAMPLE R25	SAMPLE R26
46.64 ksi	49.98 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 106

Yield Strength (Flat Aluminum) - ksi
ASTM B557

		Sample R25			Sample R26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
26MRNH		40.40	-0.35	-0.53	42.10	-0.21	-0.33	ZZ
2YX4YE		40.80	0.05	0.07	42.40	0.09	0.14	ZZ
3N94EL		41.00	0.25	0.37	42.60	0.29	0.45	ZZ
4UD4NG		40.80	0.05	0.07	42.00	-0.31	-0.49	ZZ
4UDVP6		41.30	0.55	0.82	43.20	0.89	1.40	ZZ
7KM3JQ		41.80	1.05	1.57	43.00	0.69	1.08	ZZ
886Z4J		40.60	-0.15	-0.23	42.70	0.39	0.61	ZZ
8LDHBE	X	2.060	-38.69	-58.14	44.10	1.79	2.81	ZZ
92ZC7B		40.81	0.06	0.09	42.77	0.46	0.72	ZZ
B3LTK2	*	38.50	-2.25	-3.38	41.20	-1.11	-1.74	ZZ
BY7DWV	X	38.70	-2.05	-3.08	37.50	-4.81	-7.54	ZZ
CENV7H		40.40	-0.35	-0.53	42.70	0.39	0.61	ZZ
FW38L6		40.89	0.14	0.21	42.64	0.33	0.52	ZZ
GHWUBY		40.78	0.03	0.05	42.70	0.39	0.61	ZZ
J9E6J4		40.30	-0.45	-0.68	41.60	-0.71	-1.11	ZZ
JKB74K		40.80	0.05	0.07	42.40	0.09	0.14	ZZ
JKVP9R		40.83	0.08	0.12	42.17	-0.14	-0.22	ZZ
NVD38X		39.90	-0.85	-1.28	41.70	-0.61	-0.96	ZZ
PRHEGH	*	42.30	1.55	2.33	42.20	-0.11	-0.17	ZZ
PZP9FG		41.30	0.55	0.82	42.90	0.59	0.93	ZZ
Q6XYEG		40.50	-0.25	-0.38	43.50	1.19	1.87	ZZ
QDMT6J		41.00	0.25	0.37	42.90	0.59	0.93	ZZ
REJG8F		41.30	0.55	0.82	42.80	0.49	0.77	ZZ
RZ4C6T		41.00	0.25	0.37	42.60	0.29	0.45	ZZ
THCX8M	X	42.06	1.31	1.97	45.23	2.92	4.58	ZZ
TUAQJJ		40.50	-0.25	-0.38	42.20	-0.11	-0.17	ZZ
UP8ALF		40.30	-0.45	-0.68	41.70	-0.61	-0.96	ZZ
VC6AGH		41.20	0.45	0.67	41.80	-0.51	-0.80	ZZ
WXYDXG		40.10	-0.65	-0.98	41.70	-0.61	-0.96	ZZ
XJAW7W	X	40.30	-0.45	-0.68	50.88	8.57	13.44	ZZ
Y78TFZ	*	40.60	-0.15	-0.23	40.60	-1.71	-2.68	ZZ
ZZAG6W		41.05	0.30	0.45	41.90	-0.41	-0.65	ZZ

Summary Statistics

	Sample R25		Sample R26	
Grand Means	40.75	ksi	42.31	ksi
Stnd Dev Btwn Labs	0.67	ksi	0.64	ksi

Samples R25 , R26 : 6061-T6

Statistics based on 28 of 32 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 106

Yield Strength (Flat Aluminum) - ksi
ASTM B557

Comments on assigned Data Flags for Analysis #106

WebCode	Flag	Analyst Comment
8LDHBE	X	Data for sample R25 are low and data for sample R26 are high.
BY7DWV	X	Data for both samples are low.
THCX8M	X	Data for sample R26 are high.
XJAW7W	X	Data for sample R26 are high.

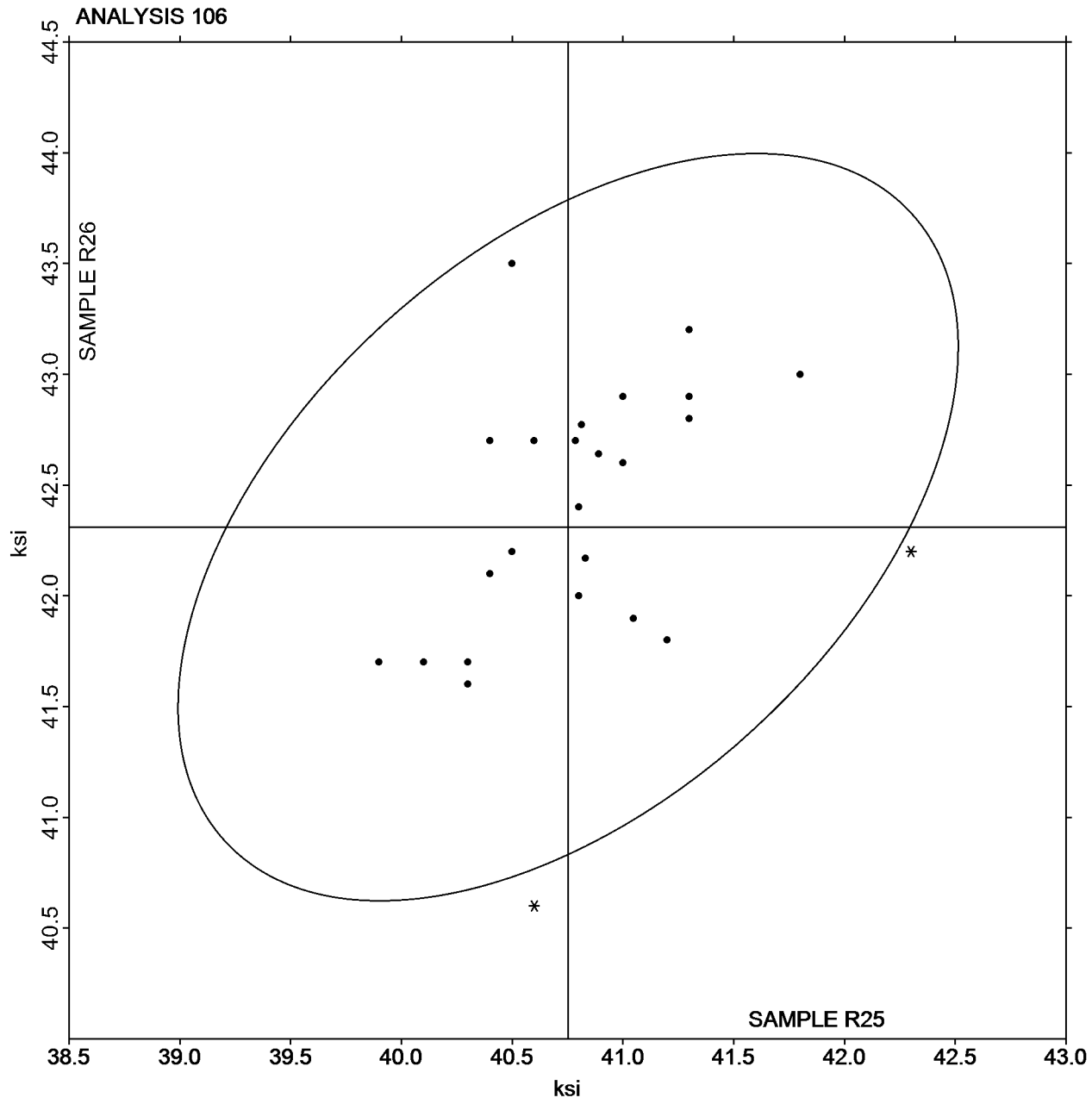
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 106

Yield Strength (Flat Aluminum) - ksi
ASTM B557

SAMPLE R25	SAMPLE R26
40.75 ksi	42.31 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 107

Elongation (Flat Aluminum) - Percent
ASTM B557

		Sample R25			Sample R26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
26MRNH		12.00	0.22	0.28	14.00	-0.27	-0.24	ZZ
2YX4YE		11.10	-0.68	-0.88	13.30	-0.97	-0.85	ZZ
3N94EL	*	9.650	-2.13	-2.76	11.40	-2.87	-2.52	ZZ
4UD4NG		11.50	-0.28	-0.37	13.00	-1.27	-1.12	ZZ
4UDVP6		12.50	0.72	0.93	14.00	-0.27	-0.24	ZZ
7KM3JQ		11.40	-0.38	-0.50	14.90	0.63	0.56	ZZ
886Z4J		13.10	1.32	1.71	15.00	0.73	0.64	ZZ
8LDHBE		12.00	0.22	0.28	14.00	-0.27	-0.24	ZZ
92ZC7B		11.46	-0.32	-0.42	14.47	0.20	0.18	ZZ
B3LTK2		11.50	-0.28	-0.37	15.50	1.23	1.08	ZZ
BY7DWV		11.10	-0.68	-0.88	14.10	-0.17	-0.15	ZZ
CENV7H		12.40	0.62	0.80	14.70	0.43	0.38	ZZ
FW38L6		11.90	0.12	0.15	14.50	0.23	0.20	ZZ
GHWUBY		12.20	0.42	0.54	15.40	1.13	1.00	ZZ
J9E6J4	X	16.00	4.22	5.46	18.60	4.33	3.81	ZZ
JKB74K		10.90	-0.88	-1.14	13.20	-1.07	-0.94	ZZ
JKVP9R		11.10	-0.68	-0.88	13.40	-0.87	-0.76	ZZ
NVD38X		12.40	0.62	0.80	15.40	1.13	1.00	ZZ
PRHEGH		11.50	-0.28	-0.37	14.50	0.23	0.20	ZZ
PZP9FG		10.50	-1.28	-1.66	12.50	-1.77	-1.56	ZZ
Q6XYEG		12.30	0.52	0.67	13.80	-0.47	-0.41	ZZ
QDMT6J		11.80	0.02	0.02	14.00	-0.27	-0.24	ZZ
REJG8F		11.50	-0.28	-0.37	13.00	-1.27	-1.12	ZZ
RZ4C6T		13.10	1.32	1.71	15.10	0.83	0.73	ZZ
THCX8M	X	21.31	9.53	12.34	24.50	10.23	9.00	ZZ
TUAQJJ		11.73	-0.05	-0.07	13.80	-0.47	-0.41	ZZ
UP8ALF		11.60	-0.18	-0.24	14.20	-0.07	-0.06	ZZ
VC6AGH		13.30	1.52	1.96	15.30	1.03	0.91	ZZ
WXYDXG		12.00	0.22	0.28	16.00	1.73	1.52	ZZ
XJAW7W	*	12.00	0.22	0.28	17.10	2.83	2.49	ZZ
Y78TFZ		12.50	0.72	0.93	15.00	0.73	0.64	ZZ
ZZAG6W		11.45	-0.33	-0.43	13.48	-0.79	-0.69	ZZ

Summary Statistics

	Sample R25		Sample R26	
Grand Means	11.78	Percent	14.27	Percent
Stnd Dev Btwn Labs	0.77	Percent	1.14	Percent

Samples R25 , R26 : 6061-T6

Statistics based on 30 of 32 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 107

Elongation (Flat Aluminum) - Percent
ASTM B557

Comments on assigned Data Flags for Analysis #107

WebCode	Flag	Analyst Comment
J9E6J4	X	Data for both samples are high.
THCX8M	X	Data for both samples are high.

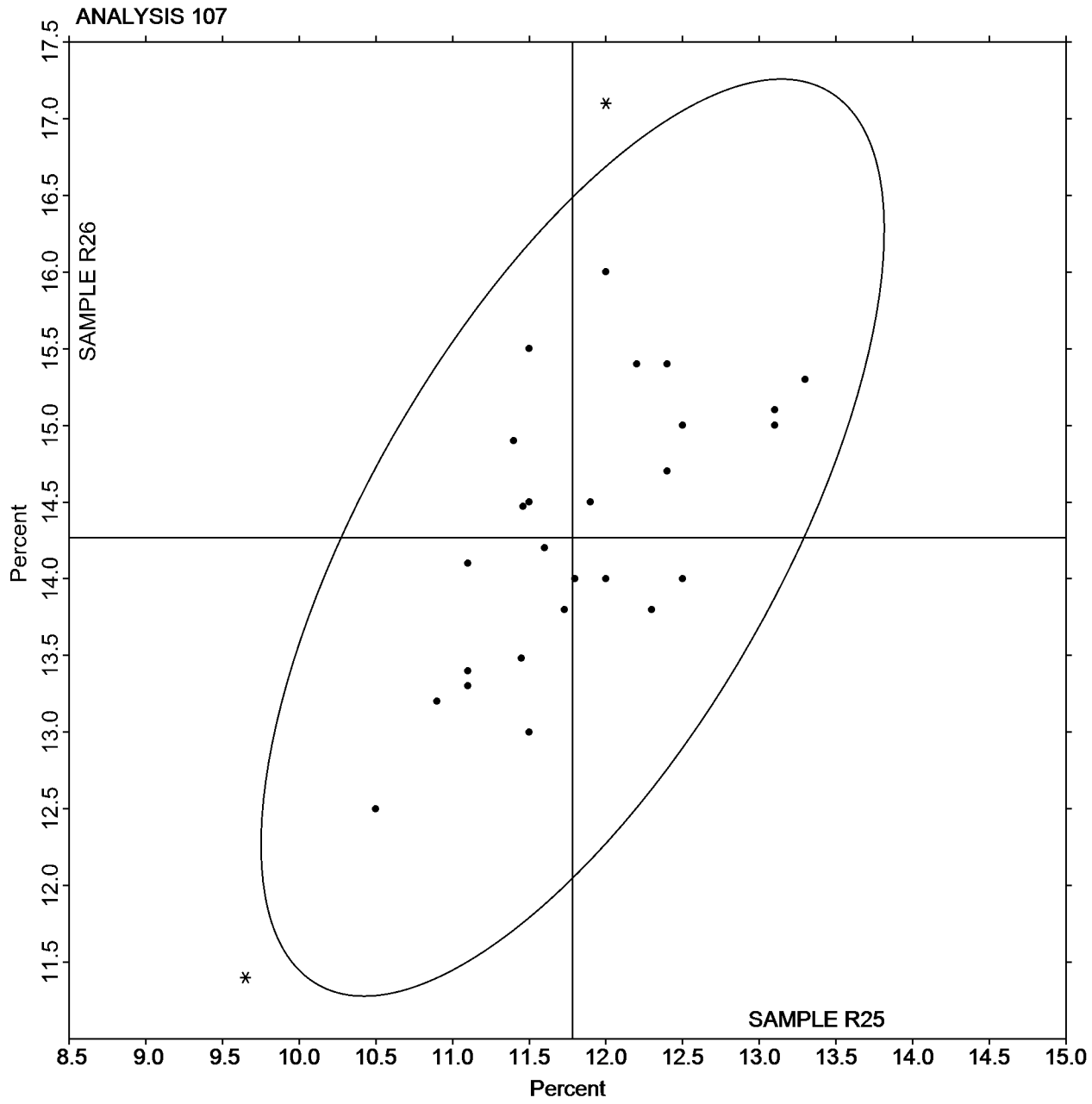
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 107

Elongation (Flat Aluminum) - Percent
ASTM B557

SAMPLE R25	SAMPLE R26
11.78 Percent	14.27 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 110

Tensile Strength (Pre-Machined Round Steel) - ksi
ASTM E8

		Sample A25			Sample A26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		71.70	0.07	0.12	72.10	-0.41	-0.69	ZZ
4RUWH3		71.90	0.27	0.47	73.10	0.59	1.01	ZZ
4UDVRQ		72.20	0.57	0.98	72.90	0.39	0.67	ZZ
4W3B9D		71.10	-0.53	-0.91	71.40	-1.11	-1.88	ZZ
7J66YE		71.59	-0.04	-0.06	72.32	-0.19	-0.32	ZZ
7M4MUK		71.90	0.27	0.47	72.50	-0.01	-0.01	ZZ
846P6X	X	72.54	0.91	1.57	71.83	-0.68	-1.15	ZZ
922AHR		71.50	-0.13	-0.22	72.60	0.09	0.16	ZZ
9BMLKW		71.70	0.07	0.12	72.70	0.19	0.33	ZZ
DJ6GPG		72.74	1.11	1.91	73.66	1.15	1.96	ZZ
EWLXUP		71.60	-0.03	-0.05	72.80	0.29	0.50	ZZ
F7URPH	X	72.90	1.27	2.19	72.60	0.09	0.16	ZZ
FBYN9H		71.80	0.17	0.30	72.90	0.39	0.67	ZZ
FW38L6		71.81	0.18	0.31	72.74	0.23	0.40	ZZ
GM7UPB		70.50	-1.13	-1.94	71.50	-1.01	-1.71	ZZ
HJ6CYL		71.50	-0.13	-0.22	72.30	-0.21	-0.35	ZZ
J7YLQM		72.10	0.47	0.81	73.10	0.59	1.01	ZZ
LDRF2P		71.07	-0.56	-0.96	71.94	-0.57	-0.97	ZZ
LPMGNR		72.50	0.87	1.50	73.00	0.49	0.84	ZZ
LVPTGH		71.20	-0.43	-0.74	72.60	0.09	0.16	ZZ
LZ494P		71.07	-0.56	-0.97	71.71	-0.80	-1.36	ZZ
MA3DMP		70.98	-0.65	-1.11	71.61	-0.90	-1.53	ZZ
NKW7B7		72.66	1.04	1.78	73.53	1.03	1.75	ZZ
Q8LEJH	X	74.26	2.63	4.52	71.94	-0.57	-0.97	ZZ
QARTCH		71.30	-0.33	-0.56	72.20	-0.31	-0.52	ZZ
QKRHZ7		71.86	0.23	0.40	73.05	0.54	0.93	ZZ
RCFK8K		71.20	-0.43	-0.74	72.16	-0.35	-0.60	ZZ
RDPUVC		71.60	-0.03	-0.05	73.00	0.49	0.84	ZZ
RGPZC3		71.36	-0.27	-0.46	72.37	-0.14	-0.23	ZZ
RRTZ4P		71.27	-0.35	-0.61	72.13	-0.38	-0.65	ZZ
RVHQYY		71.40	-0.23	-0.39	72.50	-0.01	-0.01	ZZ
UPXBHY		71.01	-0.62	-1.06	72.14	-0.37	-0.62	ZZ
VNHCXA		71.00	-0.63	-1.08	72.20	-0.31	-0.52	ZZ
VP3EEU		71.58	-0.05	-0.09	72.64	0.13	0.22	ZZ
WTMEHG		71.50	-0.13	-0.22	72.00	-0.51	-0.86	ZZ
X46FDG		71.60	-0.03	-0.05	71.80	-0.71	-1.20	ZZ
XJAW7W	X	66.86	-4.77	-8.20	66.39	-6.11	-10.41	ZZ
XKKWAH		72.52	0.89	1.53	73.24	0.74	1.26	ZZ
Y6ADDB	X	68.70	-2.93	-5.03	70.90	-1.61	-2.74	ZZ
Y78TFZ	*	73.50	1.87	3.22	74.00	1.49	2.54	ZZ
Y94D9X		71.61	-0.02	-0.03	72.37	-0.14	-0.23	ZZ
YMU2M7		71.50	-0.13	-0.22	72.20	-0.31	-0.52	ZZ
YN47ZU		71.65	0.02	0.04	72.66	0.16	0.27	ZZ
ZNXBUU		70.92	-0.70	-1.21	72.08	-0.42	-0.72	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 110

Tensile Strength (Pre-Machined Round Steel) - ksi
ASTM E8

Summary Statistics

	Sample A25		Sample A26	
Grand Means	71.63	ksi	72.51	ksi
Stnd Dev Btwn Labs	0.58	ksi	0.59	ksi

Samples A25 , A26 : AISI 4340

Statistics based on 39 of 44 reporting participants

Comments on assigned Data Flags for Analysis #110

WebCode	Flag	Analyst Comment
846P6X	X	Inconsistent in testing between samples.
F7URPH	X	Inconsistent in testing between samples.
Q8LEJH	X	Data for sample A25 are high. Inconsistent in testing between samples.
XJAW7W	X	Data for both samples are low. Possible Systematic error.
Y6ADDB	X	Data for both samples are low. Possible Systematic error.

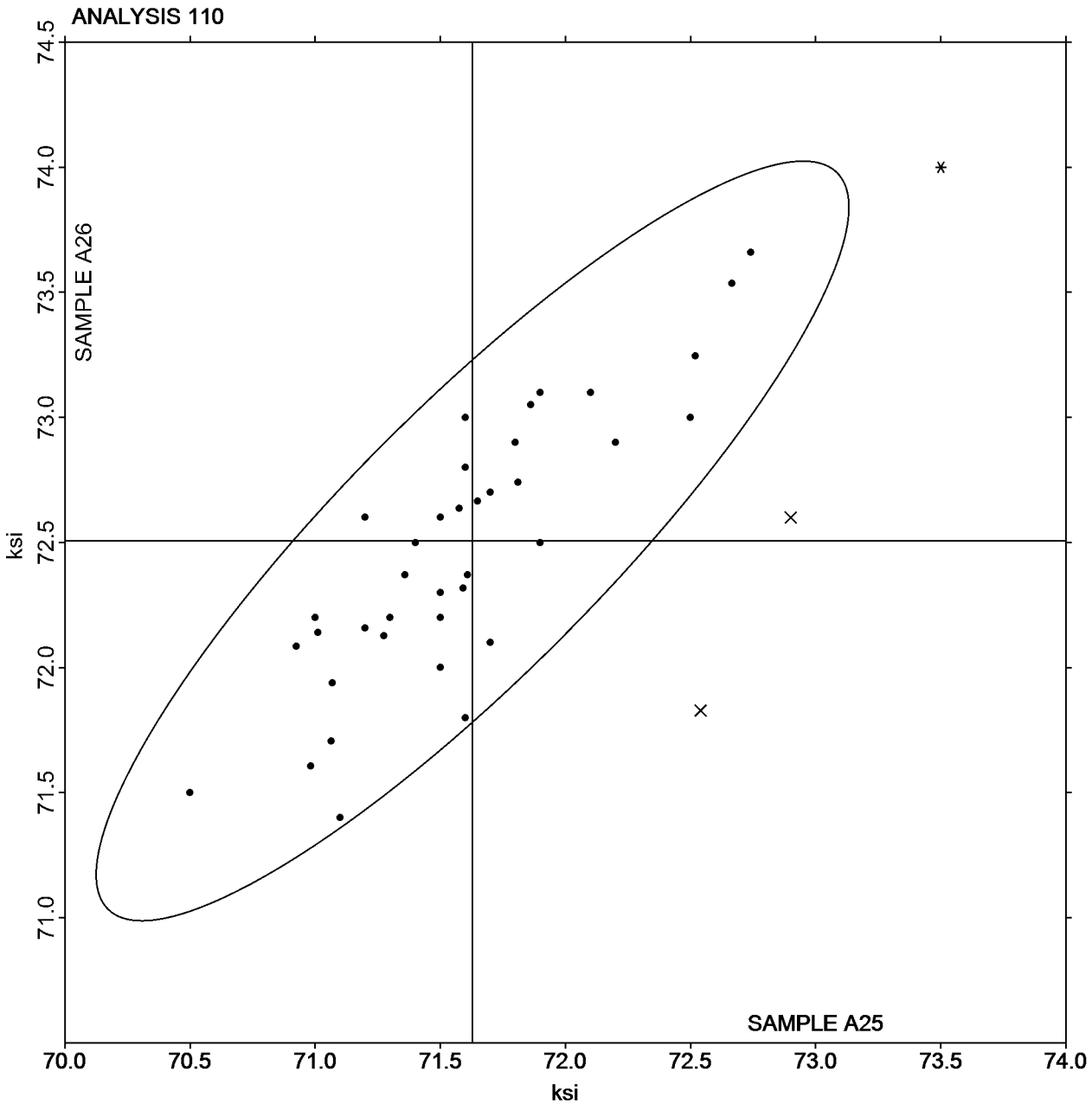
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 110

Tensile Strength (Pre-Machined Round Steel) - ksi
ASTM E8

SAMPLE A25	SAMPLE A26
71.63 ksi	72.51 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 111

Yield Strength (Pre-Machined Round Steel) - ksi
ASTM E8

		Sample A25			Sample A26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		54.70	6.33	2.01	57.10	7.47	2.20	ZZ
4RUWH3		44.90	-3.47	-1.10	46.50	-3.13	-0.92	ZZ
4UDVRQ		48.19	-0.18	-0.06	47.82	-1.81	-0.53	ZZ
4W3B9D		46.20	-2.17	-0.69	46.80	-2.83	-0.83	ZZ
7J66YE	*	52.65	4.27	1.36	49.75	0.12	0.04	ZZ
7M4MUK		46.90	-1.47	-0.47	48.80	-0.83	-0.24	ZZ
846P6X	X	54.05	5.67	1.80	48.50	-1.13	-0.33	ZZ
922AHR		43.30	-5.07	-1.61	45.60	-4.03	-1.19	ZZ
9BMLKW		50.70	2.33	0.74	49.90	0.27	0.08	ZZ
DJ6GPG		47.05	-1.32	-0.42	47.49	-2.14	-0.63	ZZ
EWLXUP		53.10	4.73	1.50	56.00	6.37	1.88	ZZ
F7URPH		47.70	-0.67	-0.21	48.70	-0.93	-0.27	ZZ
FBYN9H		51.10	2.73	0.87	52.90	3.27	0.96	ZZ
FW38L6		44.35	-4.02	-1.28	45.81	-3.82	-1.13	ZZ
GM7UPB		50.00	1.63	0.52	52.20	2.57	0.76	ZZ
HJ6CYL		53.00	4.63	1.47	55.40	5.77	1.70	ZZ
J7YLQM		47.40	-0.97	-0.31	49.50	-0.13	-0.04	ZZ
LDRF2P		45.69	-2.69	-0.85	47.28	-2.35	-0.69	ZZ
LPMGNR		49.60	1.23	0.39	50.50	0.87	0.26	ZZ
LVPTGH		50.40	2.03	0.64	55.10	5.47	1.61	ZZ
LZ494P		45.47	-2.90	-0.92	46.83	-2.80	-0.82	ZZ
MA3DMP		46.48	-1.89	-0.60	47.11	-2.52	-0.74	ZZ
NKW7B7		47.14	-1.24	-0.39	47.28	-2.35	-0.69	ZZ
QARTCH		52.50	4.13	1.31	52.90	3.27	0.96	ZZ
QKRHZ7	X	44.26	-4.11	-1.31	58.01	8.38	2.47	ZZ
RCFK8K		46.34	-2.03	-0.65	47.25	-2.38	-0.70	ZZ
RDPUVC		54.60	6.23	1.98	55.10	5.47	1.61	ZZ
RGPZC3	*	44.25	-4.12	-1.31	50.38	0.75	0.22	ZZ
RRTZ4P		46.08	-2.29	-0.73	48.57	-1.06	-0.31	ZZ
RVHQYY		44.90	-3.47	-1.10	45.90	-3.73	-1.10	ZZ
UPXBHY		48.27	-0.10	-0.03	49.80	0.17	0.05	ZZ
VNHCXA		48.20	-0.17	-0.06	49.10	-0.53	-0.16	ZZ
VP3EEU		50.15	1.78	0.57	49.66	0.03	0.01	ZZ
WTMEHG		46.60	-1.77	-0.56	46.70	-2.93	-0.86	ZZ
X46FDG		49.00	0.63	0.20	49.20	-0.43	-0.13	ZZ
XJAW7W		43.32	-5.06	-1.61	41.51	-8.12	-2.39	ZZ
XKKWAH		50.91	2.53	0.80	53.08	3.46	1.02	ZZ
Y6ADDB		44.60	-3.77	-1.20	46.70	-2.93	-0.86	ZZ
Y94D9X		51.00	2.63	0.83	52.77	3.14	0.93	ZZ
YMU2M7		50.20	1.83	0.58	54.10	4.47	1.32	ZZ
YN47ZU		52.21	3.84	1.22	49.46	-0.17	-0.05	ZZ
ZNXBUU		45.83	-2.54	-0.81	48.59	-1.04	-0.31	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 111

Yield Strength (Pre-Machined Round Steel) - ksi
ASTM E8

Summary Statistics

	Sample A25		Sample A26	
Grand Means	48.37	ksi	49.63	ksi
Stnd Dev Btwn Labs	3.15	ksi	3.39	ksi

Samples A25 , A26 : AISI 4340

Statistics based on 40 of 42 reporting participants

Comments on assigned Data Flags for Analysis #111

WebCode	Flag	Analyst Comment
846P6X	X	Inconsistent in testing between samples.
QKRHZ7	X	Inconsistent in testing between samples.

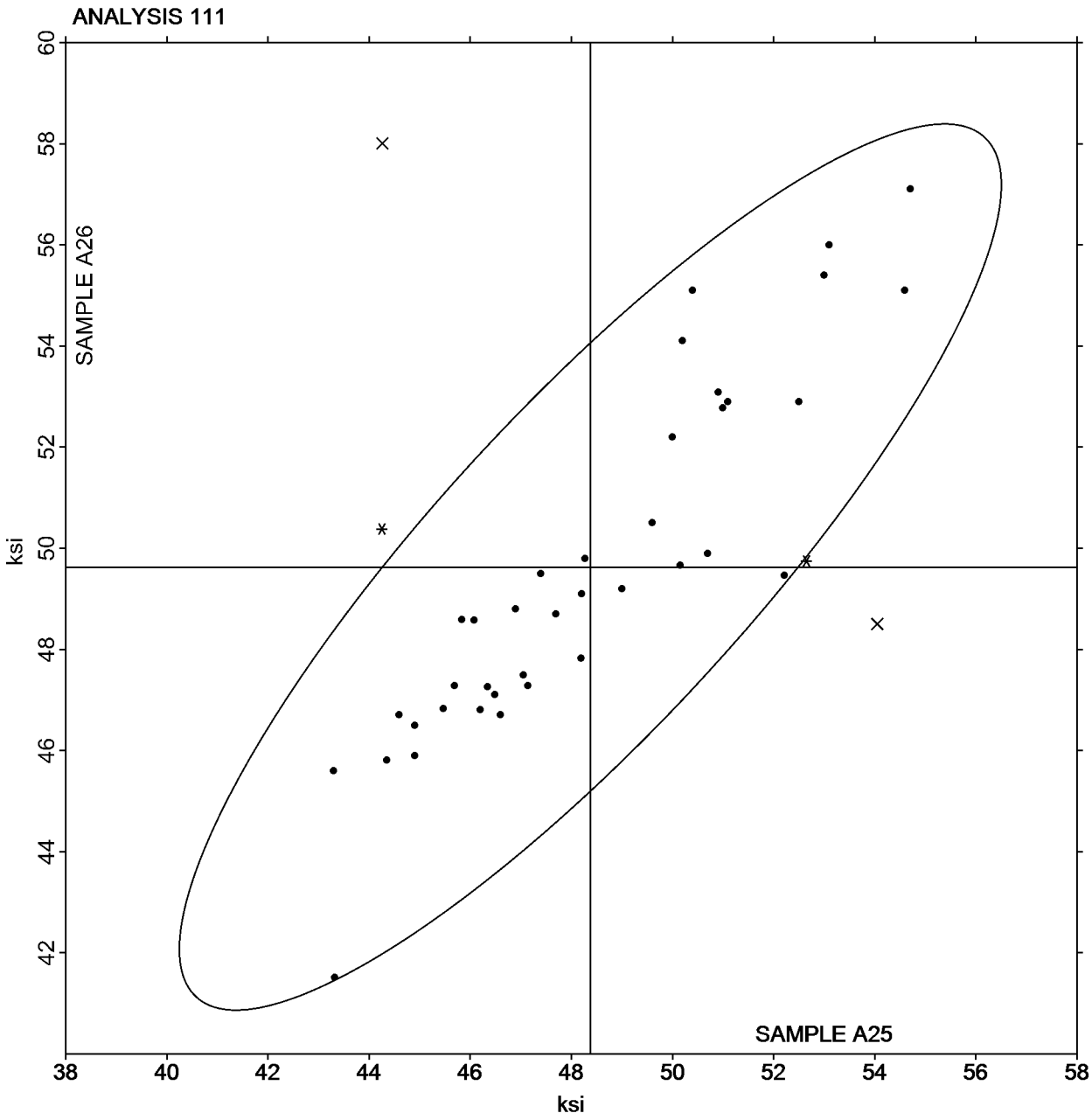
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 111

Yield Strength (Pre-Machined Round Steel) - ksi
ASTM E8

SAMPLE A25	SAMPLE A26
48.37 ksi	49.63 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 112

Elongation - (Pre-Machined Round Steel) - Percent Increase
ASTM E8

		Sample A25			Sample A26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		35.10	1.25	1.50	33.50	0.06	0.04	ZZ
4RUWH3		33.90	0.05	0.06	33.50	0.06	0.04	ZZ
4UDVRQ		33.00	-0.85	-1.03	35.00	1.56	1.23	ZZ
4W3B9D		35.00	1.15	1.38	32.80	-0.64	-0.51	ZZ
7J66YE	*	35.90	2.05	2.47	36.40	2.96	2.33	ZZ
7M4MUK		32.00	-1.85	-2.24	33.00	-0.44	-0.35	ZZ
846P6X		33.10	-0.75	-0.91	34.10	0.66	0.52	ZZ
922AHR		33.00	-0.85	-1.03	32.00	-1.44	-1.14	ZZ
9BMLKW		34.00	0.15	0.18	33.00	-0.44	-0.35	ZZ
DJ6GPG		33.80	-0.05	-0.06	32.60	-0.84	-0.67	ZZ
EWLXUP		33.40	-0.45	-0.55	32.20	-1.24	-0.98	ZZ
F7URPH		34.60	0.75	0.90	32.50	-0.94	-0.74	ZZ
FBYN9H		33.00	-0.85	-1.03	31.00	-2.44	-1.93	ZZ
FW38L6		34.30	0.45	0.54	33.00	-0.44	-0.35	ZZ
GM7UPB		35.00	1.15	1.38	35.50	2.06	1.62	ZZ
HJ6CYL		34.00	0.15	0.18	34.00	0.56	0.44	ZZ
J7YLQM		33.10	-0.75	-0.91	32.20	-1.24	-0.98	ZZ
LDRF2P		33.90	0.05	0.06	33.60	0.16	0.12	ZZ
LPMGNR	X	37.00	3.15	3.80	38.00	4.56	3.59	ZZ
LVPTGH		33.90	0.05	0.06	33.60	0.16	0.12	ZZ
LZ494P		34.05	0.20	0.24	33.83	0.39	0.30	ZZ
MA3DMP		33.71	-0.14	-0.17	33.58	0.14	0.11	ZZ
NKW7B7		32.80	-1.05	-1.27	34.50	1.06	0.83	ZZ
QARTCH		34.40	0.55	0.66	33.40	-0.04	-0.03	ZZ
QKRHZ7		32.15	-1.70	-2.06	33.62	0.18	0.14	ZZ
RCFK8K		33.66	-0.19	-0.23	33.28	-0.16	-0.13	ZZ
RDPUVC		33.90	0.05	0.06	32.60	-0.84	-0.67	ZZ
RGPZC3	*	34.60	0.75	0.90	30.25	-3.19	-2.52	ZZ
RRTZ4P		34.59	0.74	0.89	34.00	0.56	0.44	ZZ
RVHQYY		33.00	-0.85	-1.03	34.20	0.76	0.60	ZZ
UPXBHY		34.20	0.35	0.42	33.60	0.16	0.12	ZZ
VNHCXA		34.00	0.15	0.18	33.50	0.06	0.04	ZZ
VP3EEU		33.70	-0.15	-0.19	32.20	-1.24	-0.98	ZZ
WTMEHG		35.00	1.15	1.38	36.00	2.56	2.02	ZZ
X46FDG		34.60	0.75	0.90	34.00	0.56	0.44	ZZ
XJAW7W		34.50	0.65	0.78	36.20	2.76	2.17	ZZ
XKKWAH		33.50	-0.35	-0.43	32.00	-1.44	-1.14	ZZ
Y6ADDB		33.90	0.05	0.06	33.20	-0.24	-0.19	ZZ
Y78TFZ		34.50	0.65	0.78	34.00	0.56	0.44	ZZ
Y94D9X		32.50	-1.35	-1.63	33.00	-0.44	-0.35	ZZ
YMU2M7		34.00	0.15	0.18	33.80	0.36	0.28	ZZ
YN47ZU		33.70	-0.15	-0.19	34.60	1.16	0.91	ZZ
ZNXBUU		32.90	-0.95	-1.15	31.80	-1.64	-1.30	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 112

Elongation - (Pre-Machined Round Steel) - Percent Increase
ASTM E8

Summary Statistics

	Sample A25		Sample A26	
Grand Means	33.85	Percent	33.44	Percent
Stnd Dev Btwn Labs	0.83	Percent	1.27	Percent

Samples A25 , A26 : AISI 4340

Statistics based on 42 of 43 reporting participants

Comments on assigned Data Flags for Analysis #112

WebCode	Flag	Analyst Comment
LPMGNR	X	Data for both samples are high.

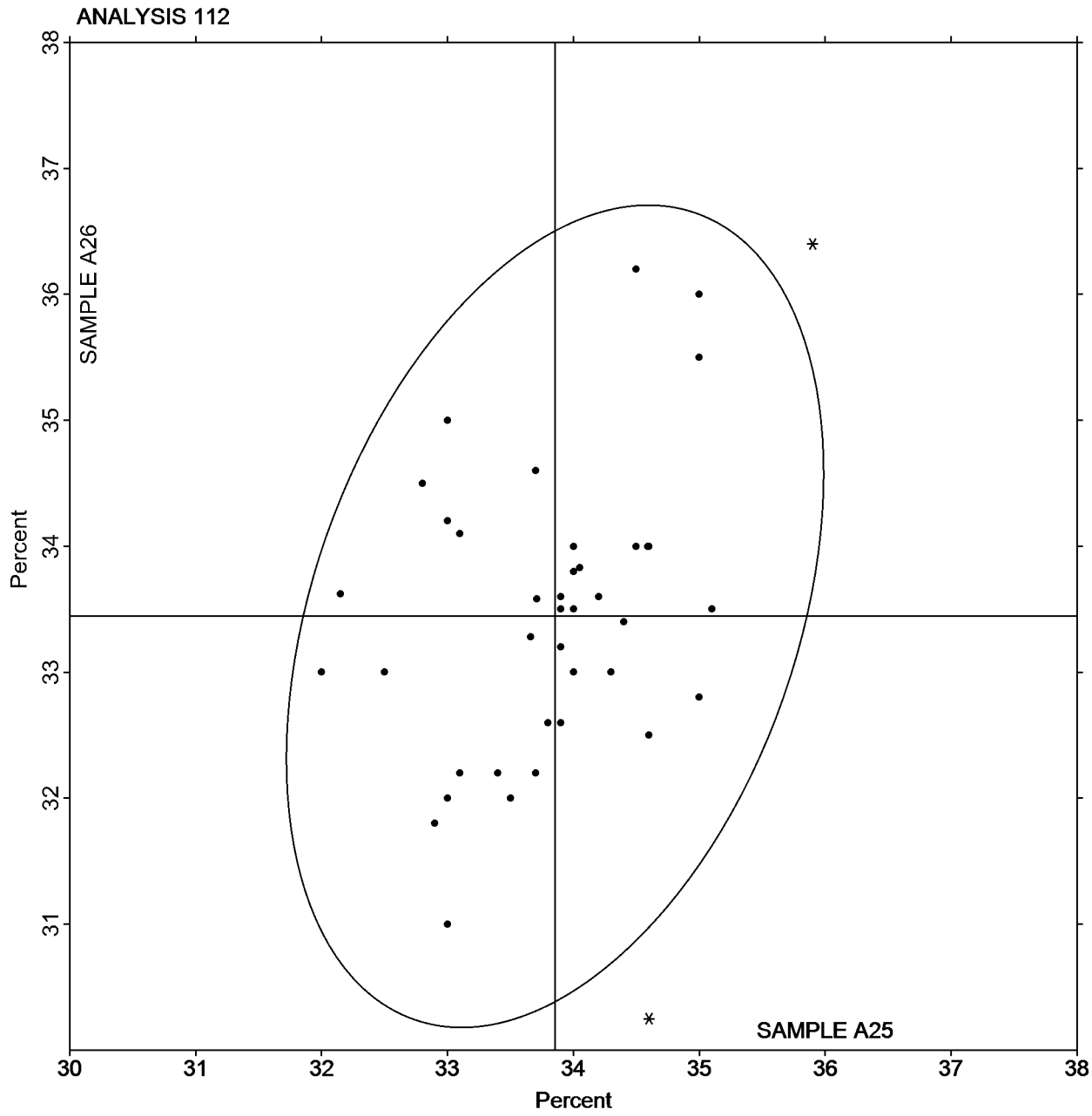
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 112

Elongation - (Pre-Machined Round Steel) - Percent Increase
ASTM E8

SAMPLE A25	SAMPLE A26
33.85 Percent	33.44 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 113

Reduction of Area (Pre-Machined Round Steel) - Percent
ASTM E8

		Sample A25			Sample A26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		66.30	-0.65	-0.72	64.30	-1.29	-1.69	ZZ
4RUWH3		66.80	-0.15	-0.16	65.30	-0.29	-0.38	ZZ
4UDVRQ		66.00	-0.95	-1.05	66.00	0.41	0.54	ZZ
4W3B9D		67.90	0.95	1.05	66.10	0.51	0.67	ZZ
7J66YE		67.40	0.45	0.50	65.90	0.31	0.41	ZZ
7M4MUK		66.00	-0.95	-1.05	65.00	-0.59	-0.77	ZZ
846P6X		65.10	-1.85	-2.05	65.40	-0.19	-0.24	ZZ
922AHR		67.10	0.15	0.17	65.50	-0.09	-0.11	ZZ
9BMLKW	*	68.00	1.05	1.17	64.20	-1.39	-1.82	ZZ
DJ6GPG	*	68.50	1.55	1.72	67.50	1.91	2.51	ZZ
EWLXUP		67.40	0.45	0.50	65.40	-0.19	-0.24	ZZ
F7URPH		66.10	-0.85	-0.94	66.40	0.81	1.07	ZZ
FBYN9H		67.40	0.45	0.50	65.70	0.11	0.15	ZZ
FW38L6		67.60	0.65	0.72	65.40	-0.19	-0.24	ZZ
GM7UPB		67.00	0.05	0.06	66.70	1.11	1.46	ZZ
HJ6CYL		67.10	0.15	0.17	65.90	0.31	0.41	ZZ
J7YLQM		66.50	-0.45	-0.50	64.20	-1.39	-1.82	ZZ
LDRF2P		68.00	1.05	1.17	66.00	0.41	0.54	ZZ
LPMGNR		68.00	1.05	1.17	67.00	1.41	1.86	ZZ
LVPTGH		67.40	0.45	0.50	64.80	-0.79	-1.03	ZZ
LZ494P		67.17	0.22	0.25	66.58	0.99	1.30	ZZ
MA3DMP		66.54	-0.41	-0.45	65.36	-0.23	-0.30	ZZ
NKW7B7	*	64.40	-2.55	-2.82	64.10	-1.49	-1.95	ZZ
QARTCH		68.00	1.05	1.17	66.30	0.71	0.94	ZZ
QKRHZ7	X	62.21	-4.74	-5.25	65.68	0.09	0.12	ZZ
RCFK8K		66.59	-0.36	-0.40	65.01	-0.58	-0.76	ZZ
RDPUVC		68.10	1.15	1.28	65.20	-0.39	-0.51	ZZ
RGPZC3		67.96	1.01	1.12	66.36	0.77	1.02	ZZ
RRTZ4P		66.66	-0.29	-0.32	65.01	-0.58	-0.76	ZZ
RVHQYY		67.20	0.25	0.28	65.40	-0.19	-0.24	ZZ
UPXBHY		65.40	-1.55	-1.71	65.40	-0.19	-0.24	ZZ
VNHCXA		67.60	0.65	0.72	64.50	-1.09	-1.43	ZZ
VP3EEU		66.90	-0.05	-0.05	65.60	0.01	0.02	ZZ
WTMEHG		67.00	0.05	0.06	66.00	0.41	0.54	ZZ
X46FDG		67.30	0.35	0.39	65.90	0.31	0.41	ZZ
XJAW7W		67.50	0.55	0.61	66.80	1.21	1.59	ZZ
XKKWAH		67.00	0.05	0.06	66.00	0.41	0.54	ZZ
Y6ADDB		67.60	0.65	0.72	65.30	-0.29	-0.38	ZZ
Y78TFZ		66.40	-0.55	-0.61	65.30	-0.29	-0.38	ZZ
Y94D9X		66.60	-0.35	-0.39	65.40	-0.19	-0.24	ZZ
YMU2M7		65.10	-1.85	-2.05	65.20	-0.39	-0.51	ZZ
YN47ZU		66.00	-0.95	-1.05	65.80	0.21	0.28	ZZ
ZNXBUU		67.20	0.25	0.28	65.40	-0.19	-0.24	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 113

Reduction of Area (Pre-Machined Round Steel) - Percent
ASTM E8

Summary Statistics

	Sample A25		Sample A26	
Grand Means	66.95	Percent	65.59	Percent
Stnd Dev Btwn Labs	0.90	Percent	0.76	Percent

Samples A25 , A26 : AISI 4340

Statistics based on 42 of 43 reporting participants

Comments on assigned Data Flags for Analysis #113

WebCode	Flag	Analyst Comment
QKRHZ7	X	Data for sample A25 are low.

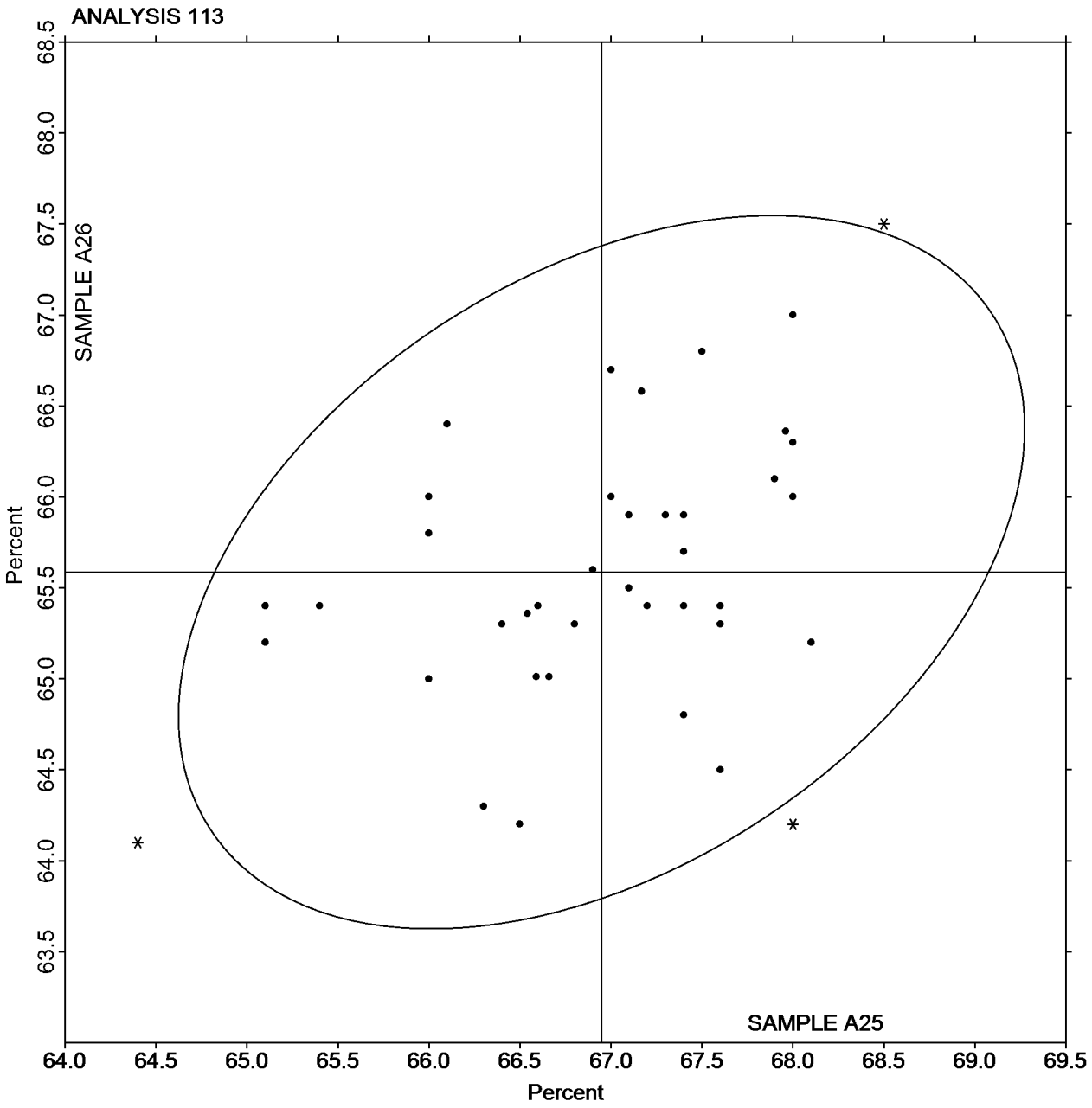
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 113

Reduction of Area (Pre-Machined Round Steel) - Percent
ASTM E8

SAMPLE A25	SAMPLE A26
66.95 Percent	65.59 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 119

Rockwell Hardness (B Scale) - HRB
ASTM E18

		Sample N25			Sample N26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
24PFRP		90.18	0.03	0.06	94.10	0.04	0.08	ZZ
2DQ3JL	X	82.96	-7.19	-13.51	83.04	-11.02	-20.49	ZZ
2LA47Q		90.70	0.55	1.03	94.74	0.68	1.27	ZZ
2RXNBR		90.02	-0.13	-0.25	93.85	-0.21	-0.38	ZZ
2T8Q2W		90.06	-0.09	-0.17	94.10	0.04	0.08	ZZ
2YCUPA		89.46	-0.69	-1.30	93.84	-0.22	-0.40	ZZ
2YUJBB		90.52	0.37	0.69	94.82	0.76	1.42	ZZ
3CH6WW		90.46	0.31	0.58	94.46	0.40	0.75	ZZ
3FZBKJ		90.98	0.83	1.56	94.92	0.86	1.61	ZZ
474RPH		90.30	0.15	0.28	94.32	0.26	0.49	ZZ
4MX6A6		90.38	0.23	0.43	94.32	0.26	0.49	ZZ
4UDVP6	*	90.00	-0.15	-0.28	95.00	0.94	1.75	ZZ
4UDXFA		89.82	-0.33	-0.62	94.06	0.00	0.01	ZZ
4YRE2K		90.30	0.15	0.28	94.34	0.28	0.53	ZZ
6BRYHB	*	91.38	1.23	2.31	95.74	1.68	3.13	ZZ
6LYLL9		89.90	-0.25	-0.47	93.90	-0.16	-0.29	ZZ
6MU3X7	X	88.22	-1.93	-3.63	92.28	-1.78	-3.30	ZZ
7CR2ZR		90.04	-0.11	-0.21	93.84	-0.22	-0.40	ZZ
7M4MUK		90.00	-0.15	-0.28	94.00	-0.06	-0.11	ZZ
922AHR		89.80	-0.35	-0.66	94.04	-0.02	-0.03	ZZ
9BMLKW		89.30	-0.85	-1.60	93.24	-0.82	-1.52	ZZ
AQVRC8		89.08	-1.07	-2.01	92.72	-1.34	-2.49	ZZ
B99RLA		90.88	0.73	1.37	94.10	0.04	0.08	ZZ
BPKAT3		90.16	0.01	0.02	94.06	0.00	0.01	ZZ
CPCLWF		89.98	-0.17	-0.32	94.02	-0.04	-0.07	ZZ
CZFMKL		90.30	0.15	0.28	94.62	0.56	1.05	ZZ
D2VQDB		90.92	0.77	1.45	94.72	0.66	1.23	ZZ
D4NF3Y		90.38	0.23	0.43	94.14	0.08	0.15	ZZ
DHP436		90.18	0.03	0.06	93.74	-0.32	-0.59	ZZ
DJ6GPG		89.88	-0.27	-0.51	94.32	0.26	0.49	ZZ
DNXHTG		90.56	0.41	0.77	94.40	0.34	0.64	ZZ
DPM36E		89.70	-0.45	-0.85	94.20	0.14	0.27	ZZ
DXLGJL		89.76	-0.39	-0.73	93.54	-0.52	-0.96	ZZ
ECZ2H7		89.82	-0.33	-0.62	93.80	-0.26	-0.48	ZZ
ELQMN4		89.30	-0.85	-1.60	93.34	-0.72	-1.33	ZZ
F46L6L		90.40	0.25	0.47	93.80	-0.26	-0.48	ZZ
F7URPH		89.80	-0.35	-0.66	93.58	-0.48	-0.89	ZZ
FBGQN7		90.48	0.33	0.62	94.48	0.42	0.79	ZZ
FMEGYD		89.10	-1.05	-1.97	93.30	-0.76	-1.41	ZZ
FNMHUK		90.96	0.81	1.52	94.82	0.76	1.42	ZZ
G9N2YH		90.20	0.05	0.09	94.10	0.04	0.08	ZZ
GCLL2G		89.98	-0.17	-0.32	94.44	0.38	0.71	ZZ
GNJEHK		89.73	-0.42	-0.79	93.57	-0.49	-0.91	ZZ
GUVCE8		90.12	-0.03	-0.06	93.22	-0.84	-1.56	ZZ
HG2B8C		89.98	-0.17	-0.32	94.42	0.36	0.68	ZZ
J3B3HA		90.50	0.35	0.66	94.20	0.14	0.27	ZZ
J4PHUP		90.70	0.55	1.03	94.60	0.54	1.01	ZZ
J7YLQM	*	89.28	-0.87	-1.64	92.60	-1.46	-2.71	ZZ
JEAMA3		89.34	-0.81	-1.52	93.66	-0.40	-0.74	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 119

Rockwell Hardness (B Scale) - HRB
ASTM E18

WebCode	Data Flag	Sample N25 Lab Mean	Sample N25 Diff. from Grand Mean	Sample N25 CPV	Sample N26 Lab Mean	Sample N26 Diff. from Grand Mean	Sample N26 CPV	Instr Code
K2FQNU		90.72	0.57	1.07	94.12	0.06	0.12	ZZ
KQF3MK		89.92	-0.23	-0.43	94.20	0.14	0.27	ZZ
MA489F		90.46	0.31	0.58	94.10	0.04	0.08	ZZ
MKZBDA		90.80	0.65	1.22	94.18	0.12	0.23	ZZ
Q2YDT6		89.54	-0.61	-1.15	93.62	-0.44	-0.81	ZZ
Q8LEJH		89.42	-0.73	-1.38	93.70	-0.35	-0.66	ZZ
QARTCH	*	89.56	-0.59	-1.11	92.56	-1.50	-2.78	ZZ
R3UJM6		89.76	-0.39	-0.73	93.60	-0.46	-0.85	ZZ
RBXMKM		90.84	0.69	1.30	94.22	0.16	0.30	ZZ
RJTMYF		90.26	0.11	0.21	94.32	0.26	0.49	ZZ
RRNP4C		89.48	-0.67	-1.26	93.86	-0.20	-0.37	ZZ
RZ4C6T		89.52	-0.63	-1.18	93.64	-0.42	-0.78	ZZ
TD76AB		90.20	0.05	0.09	93.70	-0.36	-0.66	ZZ
THCX8M	*	91.48	1.33	2.50	94.54	0.48	0.90	ZZ
V64NKN		90.22	0.07	0.13	94.52	0.46	0.86	ZZ
VNHCXA		90.76	0.61	1.15	94.18	0.12	0.23	ZZ
VYZTT2		90.14	-0.01	-0.02	93.84	-0.22	-0.40	ZZ
WXGEUQ		89.66	-0.49	-0.92	93.94	-0.12	-0.22	ZZ
X2EAU6		90.72	0.57	1.07	94.24	0.18	0.33	ZZ
X4VVA7		89.98	-0.17	-0.32	94.00	-0.06	-0.11	ZZ
XK6JM7	X	91.30	1.15	2.16	89.54	-4.52	-8.40	ZZ
YLFPT8		90.20	0.05	0.09	94.36	0.30	0.56	ZZ
YMU2M7		90.34	0.19	0.36	94.30	0.24	0.45	ZZ
YN9EHV		89.26	-0.89	-1.67	93.34	-0.72	-1.33	ZZ
Z8DFPY		90.48	0.33	0.62	94.18	0.12	0.23	ZZ
ZGHJKV		90.37	0.22	0.41	94.83	0.78	1.45	ZZ
ZM4KTL	*	90.70	0.55	1.03	93.50	-0.56	-1.04	ZZ
ZPPDEN		91.10	0.95	1.78	94.38	0.32	0.60	ZZ
ZUMVVN		90.32	0.17	0.32	94.16	0.10	0.19	ZZ

Summary Statistics

	Sample N25		Sample N26	
Grand Means	90.15	HRB	94.06	HRB
Stnd Dev Btwn Labs	0.53	HRB	0.54	HRB

Samples N25 , N26 : Steel

Statistics based on 75 of 78 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 119

Rockwell Hardness (B Scale) - HRB
ASTM E18

Comments on assigned Data Flags for Analysis #119

WebCode	Flag	Analyst Comment
2DQ3JL	X	Data for both samples are low.
6MU3X7	X	Data for both samples are low. Inconsistent within the determinations of both samples.
XK6JM7	X	Data for sample N26 are low.

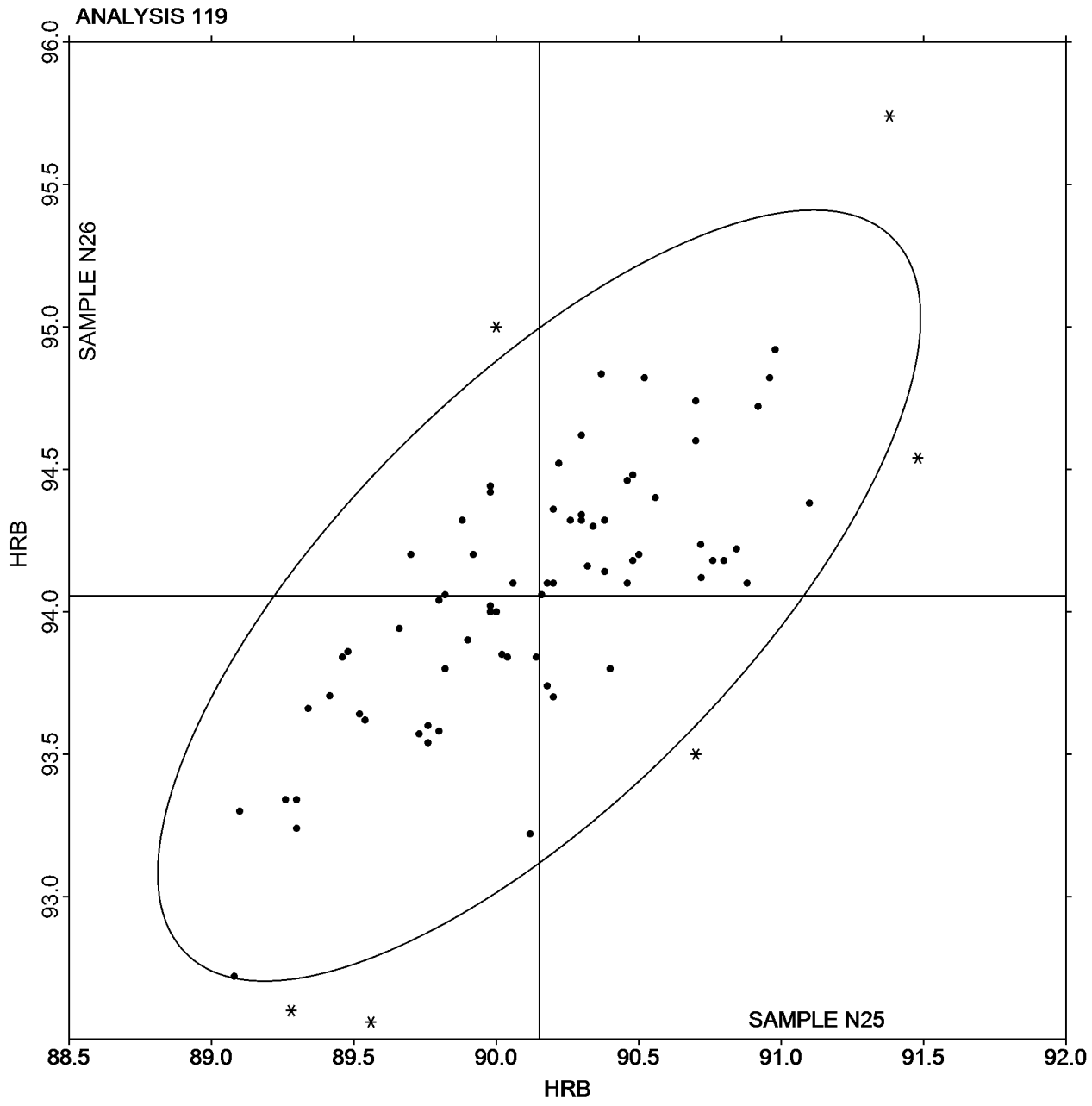
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 119

Rockwell Hardness (B Scale) - HRB
ASTM E18

SAMPLE N25	SAMPLE N26
90.15 HRB	94.06 HRB



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 121

Microhardness - Knoop Hardness Number (500 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2DQ3JL		463.20	2.92	0.30	501.80	9.14	0.87	ZZ
2HUFYZ		463.20	2.92	0.30	490.60	-2.06	-0.20	ZZ
3CH6WW		456.80	-3.48	-0.36	488.40	-4.26	-0.41	ZZ
3QXBYJ	X	124.82	-335.46	-34.53	120.16	-372.51	-35.64	ZZ
4NNDCU		454.20	-6.08	-0.63	495.40	2.74	0.26	ZZ
4UD4NG		451.80	-8.48	-0.87	483.20	-9.46	-0.91	ZZ
64J7MM		464.86	4.58	0.47	480.28	-12.38	-1.18	ZZ
6AHYC9	X	506.00	45.72	4.71	506.60	13.94	1.33	ZZ
6BRYHB		457.04	-3.24	-0.33	491.44	-1.22	-0.12	ZZ
76LGPF		457.38	-2.90	-0.30	479.20	-13.46	-1.29	ZZ
7KM3JQ		465.20	4.92	0.51	485.20	-7.46	-0.71	ZZ
8R276J		456.62	-3.66	-0.38	493.98	1.32	0.13	ZZ
8UM47V		455.68	-4.60	-0.47	494.12	1.46	0.14	ZZ
922AHR		447.20	-13.08	-1.35	487.80	-4.86	-0.47	ZZ
96YQQF		467.40	7.12	0.73	498.20	5.54	0.53	ZZ
9VCR3V		445.24	-15.04	-1.55	477.12	-15.54	-1.49	ZZ
A6UVKE		441.48	-18.80	-1.94	478.80	-13.86	-1.33	ZZ
A9EVN2		462.60	2.32	0.24	488.60	-4.06	-0.39	ZZ
AELY2V		455.76	-4.52	-0.47	500.64	7.98	0.76	ZZ
BMDUHP		450.36	-9.92	-1.02	497.14	4.48	0.43	ZZ
BMV497		456.60	-3.68	-0.38	481.20	-11.46	-1.10	ZZ
CK3G82		454.58	-5.70	-0.59	502.02	9.36	0.90	ZZ
DQ6UKQ	X	498.40	38.12	3.92	532.00	39.34	3.76	ZZ
EWLXUP		455.20	-5.08	-0.52	487.00	-5.66	-0.54	ZZ
F4EHJX		470.00	9.72	1.00	485.20	-7.46	-0.71	ZZ
F7URPH		462.66	2.38	0.24	484.78	-7.88	-0.75	ZZ
F9XM9L	X	466.80	6.52	0.67	446.60	-46.06	-4.41	ZZ
FMEGYD		459.08	-1.20	-0.12	486.70	-5.96	-0.57	ZZ
FW38L6		466.60	6.32	0.65	498.80	6.14	0.59	ZZ
G7PPE6	*	481.52	21.24	2.19	518.12	25.46	2.44	ZZ
G8JB9V		449.00	-11.28	-1.16	484.80	-7.86	-0.75	ZZ
G8KB7A		457.80	-2.48	-0.26	498.40	5.74	0.55	ZZ
H4XXYR		455.00	-5.28	-0.54	492.60	-0.06	-0.01	ZZ
HWXJB6		450.18	-10.10	-1.04	482.40	-10.26	-0.98	ZZ
J3B3HA		452.80	-7.48	-0.77	483.80	-8.86	-0.85	ZZ
J6NEW7		442.60	-17.68	-1.82	468.40	-24.26	-2.32	ZZ
J7YLQM		468.40	8.12	0.84	500.40	7.74	0.74	ZZ
JKB74K		460.00	-0.28	-0.03	495.60	2.94	0.28	ZZ
KGQETH		445.40	-14.88	-1.53	488.40	-4.26	-0.41	ZZ
KH6RKL		453.60	-6.68	-0.69	481.40	-11.26	-1.08	ZZ
KQF3MK		462.56	2.28	0.23	485.32	-7.34	-0.70	ZZ
LKKW6Z		452.40	-7.88	-0.81	492.40	-0.26	-0.03	ZZ
LVPTGH		469.60	9.32	0.96	500.80	8.14	0.78	ZZ
LW2JE2		459.40	-0.88	-0.09	501.20	8.54	0.82	ZZ
LXE6BH		453.20	-7.08	-0.73	494.00	1.34	0.13	ZZ
LZ4BUT		459.36	-0.92	-0.10	498.14	5.48	0.52	ZZ
MV2Y3L		454.20	-6.08	-0.63	486.40	-6.26	-0.60	ZZ
NB8K22		458.40	-1.88	-0.19	486.00	-6.66	-0.64	ZZ
NHV8XT		464.22	3.94	0.41	484.42	-8.24	-0.79	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 121

Microhardness - Knoop Hardness Number (500 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
NMMA4D		450.08	-10.20	-1.05	487.88	-4.78	-0.46	ZZ
NU7NWB		476.40	16.12	1.66	508.40	15.74	1.51	ZZ
P946EW	X	518.60	58.32	6.00	495.00	2.34	0.22	ZZ
PVE6MU		467.40	7.12	0.73	495.40	2.74	0.26	ZZ
PZP9FG		464.00	3.72	0.38	495.20	2.54	0.24	ZZ
Q3NX63		464.60	4.32	0.44	499.60	6.94	0.66	ZZ
Q3UYKB		459.00	-1.28	-0.13	498.80	6.14	0.59	ZZ
QDMT6J		459.66	-0.62	-0.06	484.86	-7.80	-0.75	ZZ
QKRHZ7	*	490.80	30.52	3.14	518.00	25.34	2.42	ZZ
R6DL3P		462.00	1.72	0.18	497.60	4.94	0.47	ZZ
RANMH2		467.58	7.30	0.75	486.82	-5.84	-0.56	ZZ
REJG8F		471.60	11.32	1.16	496.60	3.94	0.38	ZZ
RVHQYY		448.40	-11.88	-1.22	475.40	-17.26	-1.65	ZZ
RZMZN9		449.00	-11.28	-1.16	488.40	-4.26	-0.41	ZZ
TXLWX6	*	483.80	23.52	2.42	516.80	24.14	2.31	ZZ
U33CB4		462.40	2.12	0.22	497.22	4.56	0.44	ZZ
U6MBJ7		457.20	-3.08	-0.32	481.20	-11.46	-1.10	ZZ
VC6AGH		463.60	3.32	0.34	485.60	-7.06	-0.68	ZZ
VNV2RL		479.38	19.10	1.97	506.88	14.22	1.36	ZZ
WGWK89		456.00	-4.28	-0.44	490.40	-2.26	-0.22	ZZ
WQF4EL		471.60	11.32	1.16	495.00	2.34	0.22	ZZ
WTMEHG		463.00	2.72	0.28	512.80	20.14	1.93	ZZ
WYBWXD		462.80	2.52	0.26	512.40	19.74	1.89	ZZ
X4VVA7		448.52	-11.76	-1.21	481.92	-10.74	-1.03	ZZ
X4Y929		478.70	18.42	1.90	511.46	18.80	1.80	ZZ
XJAW7W		461.20	0.92	0.09	483.80	-8.86	-0.85	ZZ
Y6ADDB		458.64	-1.64	-0.17	492.00	-0.66	-0.06	ZZ
YK6KG6	X	515.20	54.92	5.65	551.00	58.34	5.58	ZZ
YN49ND	X	421.80	-38.48	-3.96	454.04	-38.62	-3.70	ZZ
ZN3JBU		455.40	-4.88	-0.50	492.60	-0.06	-0.01	ZZ
ZPPDEN		477.60	17.32	1.78	510.80	18.14	1.74	ZZ

Summary Statistics

	Sample S25		Sample S26	
Grand Means	460.28	HK 500 gf	492.66	HK 500 gf
Stnd Dev Btwn Labs	9.71	HK 500 gf	10.45	HK 500 gf

Samples S25 , S26 : Steel

Statistics based on 73 of 80 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals
Analysis 121
Microhardness - Knoop Hardness Number (500 gf)
ASTM E384

Comments on assigned Data Flags for Analysis #121

WebCode	Flag	Analyst Comment
3QXBYJ	X	Data for both samples are low.
6AHYC9	X	Data for sample S25 are high. Inconsistent within the determinations of sample S25.
DQ6UKQ	X	Data for both samples are high.
F9XM9L	X	Data for sample S26 are low. Inconsistent within the determinations of sample S26.
P946EW	X	Data for sample S25 are high.
YK6KG6	X	Data for both samples are high.
YN49ND	X	Data for both samples are low.

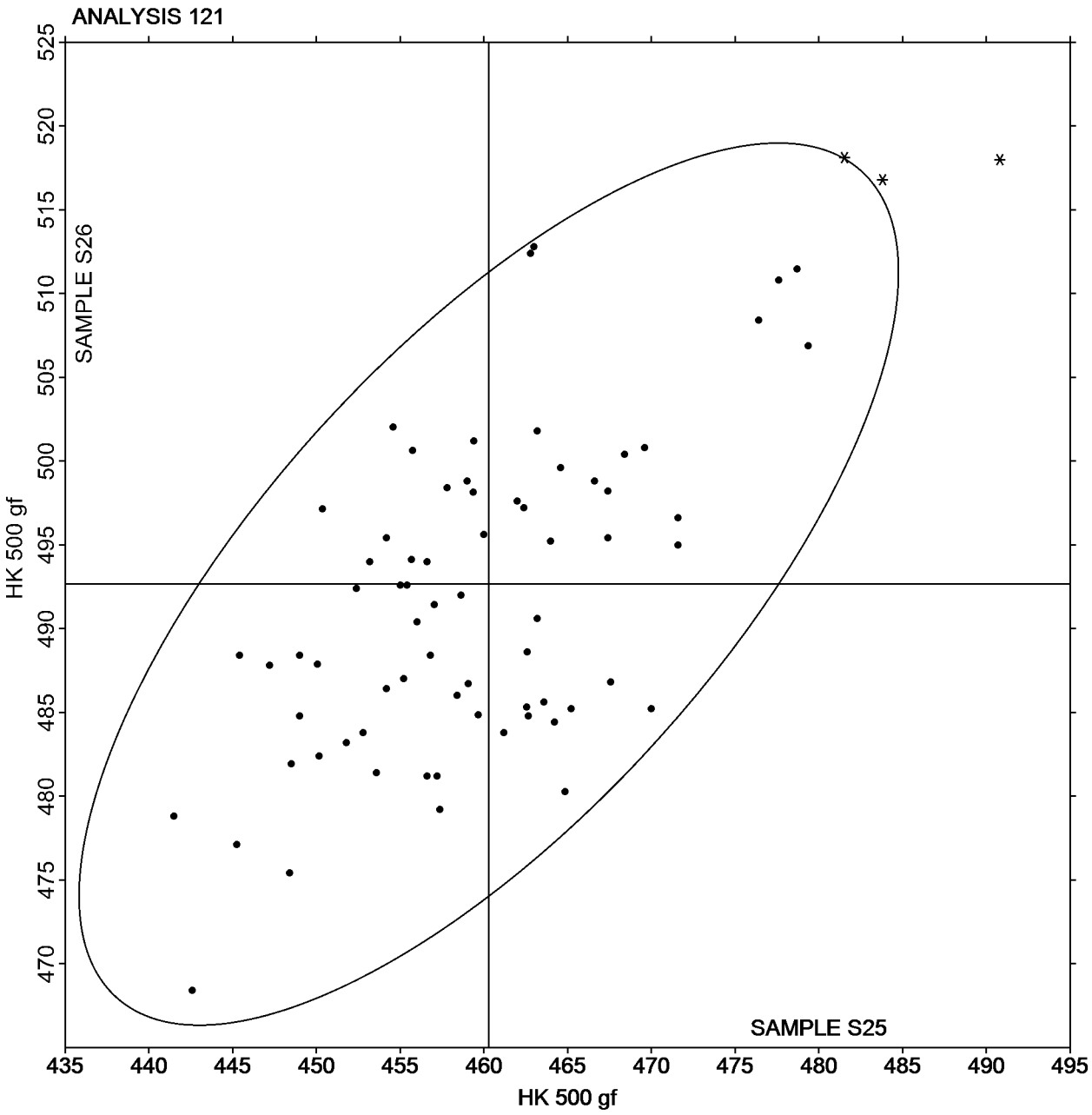
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 121

Microhardness - Knoop Hardness Number (500 gf)
ASTM E384

SAMPLE S25	SAMPLE S26
460.28 HK 500 gf	492.66 HK 500 gf



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 122

Microhardness - Knoop Hardness Number (200 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		475.20	3.98	0.26	503.20	-1.40	-0.10	ZZ
4UD4NG		468.00	-3.22	-0.21	503.80	-0.80	-0.05	ZZ
64J7MM		477.50	6.28	0.40	497.26	-7.34	-0.50	ZZ
6AHYC9	X	530.20	58.98	3.79	521.00	16.40	1.12	ZZ
6BRYHB		467.50	-3.72	-0.24	490.82	-13.78	-0.94	ZZ
76LGPF		464.58	-6.64	-0.43	489.18	-15.42	-1.06	ZZ
7KM3JQ		481.00	9.78	0.63	522.40	17.80	1.22	ZZ
8R276J		459.96	-11.26	-0.72	498.08	-6.52	-0.45	ZZ
96YQQF		481.60	10.38	0.67	505.00	0.40	0.03	ZZ
9VCR3V		454.82	-16.40	-1.05	492.52	-12.08	-0.83	ZZ
A9EVN2		473.20	1.98	0.13	506.20	1.60	0.11	ZZ
AELY2V		461.92	-9.30	-0.60	502.34	-2.26	-0.15	ZZ
CK3G82		477.58	6.36	0.41	497.88	-6.72	-0.46	ZZ
DQ6UKQ	*	518.80	47.58	3.05	544.60	40.00	2.74	ZZ
EWLXUP		465.60	-5.62	-0.36	488.40	-16.20	-1.11	ZZ
F4EHJX		484.00	12.78	0.82	513.40	8.80	0.60	ZZ
F7URPH		477.48	6.26	0.40	491.40	-13.20	-0.90	ZZ
FW38L6		469.60	-1.62	-0.10	508.00	3.40	0.23	ZZ
G8KB7A		472.60	1.38	0.09	504.40	-0.20	-0.01	ZZ
H4XXYR		466.00	-5.22	-0.33	504.40	-0.20	-0.01	ZZ
HWXJB6		490.60	19.38	1.24	508.36	3.76	0.26	ZZ
J3B3HA		460.40	-10.82	-0.69	491.60	-13.00	-0.89	ZZ
J6NEW7		447.60	-23.62	-1.52	471.80	-32.80	-2.25	ZZ
J7YLQM		465.40	-5.82	-0.37	508.00	3.40	0.23	ZZ
JKB74K		460.40	-10.82	-0.69	505.80	1.20	0.08	ZZ
KGQETH		469.00	-2.22	-0.14	518.20	13.60	0.93	ZZ
KH6RKL		458.40	-12.82	-0.82	499.00	-5.60	-0.38	ZZ
KQF3MK		460.58	-10.64	-0.68	514.82	10.22	0.70	ZZ
LW2JE2		468.20	-3.02	-0.19	510.60	6.00	0.41	ZZ
LZ4BUT		475.36	4.14	0.27	508.68	4.08	0.28	ZZ
MA489F		453.80	-17.42	-1.12	485.80	-18.80	-1.29	ZZ
NMMA4D		456.88	-14.34	-0.92	495.30	-9.30	-0.64	ZZ
Q3NX63		459.40	-11.82	-0.76	502.60	-2.00	-0.14	ZZ
Q3UYKB		473.40	2.18	0.14	511.80	7.20	0.49	ZZ
QDMT6J		471.90	0.68	0.04	498.84	-5.76	-0.39	ZZ
QKRHZ7	*	517.00	45.78	2.94	546.80	42.20	2.89	ZZ
R6DL3P		487.60	16.38	1.05	520.20	15.60	1.07	ZZ
RANMH2	X	634.06	162.84	10.45	686.34	181.74	12.46	ZZ
REJG8F		485.20	13.98	0.90	502.40	-2.20	-0.15	ZZ
RVHQYY		437.40	-33.82	-2.17	470.60	-34.00	-2.33	ZZ
RZMZN9		454.40	-16.82	-1.08	496.00	-8.60	-0.59	ZZ
TXLWX6		489.20	17.98	1.15	519.20	14.60	1.00	ZZ
VC6AGH		469.00	-2.22	-0.14	509.40	4.80	0.33	ZZ
VNV2RL		475.56	4.34	0.28	516.70	12.10	0.83	ZZ
WGWK89		462.40	-8.82	-0.57	502.00	-2.60	-0.18	ZZ
X4VVA7		489.32	18.10	1.16	519.06	14.46	0.99	ZZ
Y6ADDB		461.30	-9.92	-0.64	503.58	-1.02	-0.07	ZZ
ZN3JBU		456.00	-15.22	-0.98	491.00	-13.60	-0.93	ZZ
ZPPDEN		494.60	23.38	1.50	524.80	20.20	1.38	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 122

Microhardness - Knoop Hardness Number (200 gf)
ASTM E384

Summary Statistics

	Sample S25		Sample S26	
Grand Means	471.22	HK 200 gf	504.60	HK 200 gf
Stnd Dev Btwn Labs	15.58	HK 200 gf	14.59	HK 200 gf

Samples S25 , S26 : Steel

Statistics based on 47 of 49 reporting participants

Comments on assigned Data Flags for Analysis #122

WebCode	Flag	Analyst Comment
6AHYC9	X	Data for sample S25 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample S25.
RANMH2	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample S26.

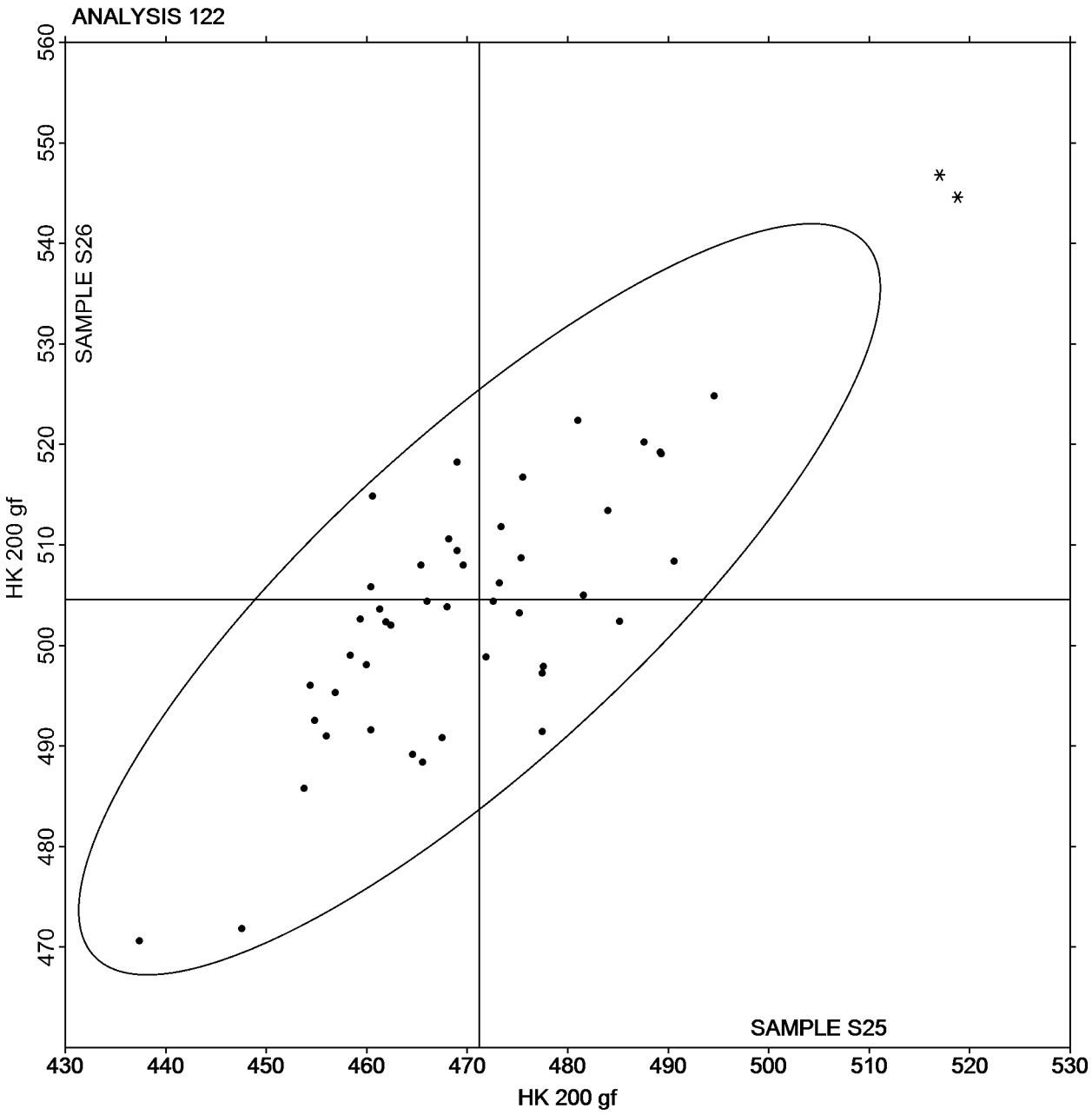
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 122

Microhardness - Knoop Hardness Number (200 gf)
ASTM E384

SAMPLE S25	SAMPLE S26
471.22 HK 200 gf	504.60 HK 200 gf



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 123

Microhardness - Vickers Hardness Number (500 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
27YDDJ	X	395.80	-45.44	-5.12	470.60	-4.16	-0.56	ZZ
2DQ3JL		436.40	-4.84	-0.54	477.60	2.84	0.38	ZZ
2HUFYZ		425.40	-15.84	-1.78	458.60	-16.16	-2.16	ZZ
2LA47Q		453.54	12.30	1.39	485.42	10.66	1.43	ZZ
2RXNBR		436.40	-4.84	-0.54	469.00	-5.76	-0.77	ZZ
2YX4YE		433.74	-7.50	-0.84	472.16	-2.60	-0.35	ZZ
3QXBYJ	X	45.80	-395.44	-44.53	44.11	-430.66	-57.60	ZZ
4NNDCU		428.20	-13.04	-1.47	467.80	-6.96	-0.93	ZZ
4UD4NG		438.40	-2.84	-0.32	474.20	-0.56	-0.08	ZZ
64J7MM		441.98	0.74	0.08	472.76	-2.00	-0.27	ZZ
6AM2EA		442.60	1.36	0.15	475.60	0.84	0.11	ZZ
6BRYHB		436.12	-5.12	-0.58	470.16	-4.60	-0.62	ZZ
6MC94N		446.00	4.76	0.54	480.80	6.04	0.81	ZZ
76LGPF		436.00	-5.24	-0.59	464.40	-10.36	-1.39	ZZ
7KM3JQ	*	446.20	4.96	0.56	464.60	-10.16	-1.36	ZZ
7U8DNC		443.54	2.30	0.26	474.74	-0.02	0.00	ZZ
864T3E	X	444.00	2.76	0.31	494.20	19.44	2.60	ZZ
8L6UFD		448.42	7.18	0.81	477.58	2.82	0.38	ZZ
8UM47V		444.02	2.78	0.31	470.24	-4.52	-0.60	ZZ
922AHR		433.80	-7.44	-0.84	482.00	7.24	0.97	ZZ
96YQQF		445.60	4.36	0.49	474.40	-0.36	-0.05	ZZ
A7CNR4		445.40	4.16	0.47	484.20	9.44	1.26	ZZ
A9EVN2		444.20	2.96	0.33	476.80	2.04	0.27	ZZ
ACZ9X6		443.00	1.76	0.20	477.80	3.04	0.41	ZZ
AELY2V		449.52	8.28	0.93	479.74	4.98	0.67	ZZ
B3LTK2		440.20	-1.04	-0.12	474.60	-0.16	-0.02	ZZ
BMDUHP		435.20	-6.04	-0.68	474.14	-0.62	-0.08	ZZ
BMV497		437.80	-3.44	-0.39	466.00	-8.76	-1.17	ZZ
CJM938		446.60	5.36	0.60	471.20	-3.56	-0.48	ZZ
DHP436	*	462.98	21.74	2.45	482.56	7.80	1.04	ZZ
DPM36E		444.76	3.52	0.40	476.50	1.74	0.23	ZZ
DQ6UKQ	X	477.60	36.36	4.10	499.40	24.64	3.30	ZZ
DTC3VV		437.60	-3.64	-0.41	471.00	-3.76	-0.50	ZZ
DXLGJL		439.00	-2.24	-0.25	469.60	-5.16	-0.69	ZZ
E6W3Y4		460.80	19.56	2.20	485.60	10.84	1.45	ZZ
EB3XJ4		455.20	13.96	1.57	486.00	11.24	1.50	ZZ
ELQMN4	*	424.40	-16.84	-1.90	453.20	-21.56	-2.88	ZZ
EWLXUP		439.80	-1.44	-0.16	475.60	0.84	0.11	ZZ
F4EHJX		439.60	-1.64	-0.18	463.60	-11.16	-1.49	ZZ
F7URPH		444.60	3.36	0.38	475.60	0.84	0.11	ZZ
FBYN9H		440.00	-1.24	-0.14	471.40	-3.36	-0.45	ZZ
FMEGYD		421.14	-20.10	-2.26	465.70	-9.06	-1.21	ZZ
FR8MBU		444.40	3.16	0.36	477.60	2.84	0.38	ZZ
FW38L6		449.40	8.16	0.92	475.80	1.04	0.14	ZZ
G8KB7A		451.40	10.16	1.14	483.00	8.24	1.10	ZZ
GG92T3		454.40	13.16	1.48	485.40	10.64	1.42	ZZ
GHHAVV		434.00	-7.24	-0.81	461.80	-12.96	-1.73	ZZ
H72MLU		422.80	-18.44	-2.08	464.20	-10.56	-1.41	ZZ
HV2ZA4		439.48	-1.76	-0.20	468.14	-6.62	-0.89	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 123

Microhardness - Vickers Hardness Number (500 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
HWXJB6		435.56	-5.68	-0.64	463.20	-11.56	-1.55	ZZ
J3B3HA		434.80	-6.44	-0.72	463.00	-11.76	-1.57	ZZ
J6NEW7	X	417.20	-24.04	-2.71	446.80	-27.96	-3.74	ZZ
J7YLQM		445.40	4.16	0.47	471.80	-2.96	-0.40	ZZ
JKB74K		451.40	10.16	1.14	479.20	4.44	0.59	ZZ
JUHPJA		424.08	-17.16	-1.93	462.42	-12.34	-1.65	ZZ
JW9W2L		444.20	2.96	0.33	480.80	6.04	0.81	ZZ
KGQETH		424.20	-17.04	-1.92	469.00	-5.76	-0.77	ZZ
KH6RKL		436.80	-4.44	-0.50	470.60	-4.16	-0.56	ZZ
KQF3MK		436.74	-4.50	-0.51	477.86	3.10	0.41	ZZ
LKKW6Z		429.80	-11.44	-1.29	473.80	-0.96	-0.13	ZZ
LVPTGH		428.40	-12.84	-1.45	465.40	-9.36	-1.25	ZZ
LW2JE2		438.20	-3.04	-0.34	477.60	2.84	0.38	ZZ
LXW3HN		450.00	8.76	0.99	484.40	9.64	1.29	ZZ
LY4HRE	*	435.00	-6.24	-0.70	483.80	9.04	1.21	ZZ
LZ494P		456.60	15.36	1.73	482.00	7.24	0.97	ZZ
LZ4BUT		444.34	3.10	0.35	479.40	4.64	0.62	ZZ
LZX4HK		427.66	-13.58	-1.53	466.96	-7.80	-1.04	ZZ
M6NWTR	X	427.60	-13.64	-1.54	446.80	-27.96	-3.74	ZZ
MA489F	*	429.80	-11.44	-1.29	479.80	5.04	0.67	ZZ
MPV9RT		444.80	3.56	0.40	478.20	3.44	0.46	ZZ
NB8K22		431.40	-9.84	-1.11	465.40	-9.36	-1.25	ZZ
NMMA4D		428.76	-12.48	-1.40	467.52	-7.24	-0.97	ZZ
NMRMUV		440.04	-1.20	-0.13	478.66	3.90	0.52	ZZ
P6J3K6		448.20	6.96	0.78	477.20	2.44	0.33	ZZ
PVE6MU		440.60	-0.64	-0.07	476.40	1.64	0.22	ZZ
Q3NX63		445.00	3.76	0.42	477.60	2.84	0.38	ZZ
Q3UYKB		435.40	-5.84	-0.66	466.40	-8.36	-1.12	ZZ
Q43FCF		434.60	-6.64	-0.75	475.40	0.64	0.09	ZZ
QDMT6J		439.16	-2.08	-0.23	478.14	3.38	0.45	ZZ
QKRHZ7	X	455.40	14.16	1.60	514.80	40.04	5.35	ZZ
QNRPF2		449.00	7.76	0.87	481.60	6.84	0.91	ZZ
REJG8F		449.20	7.96	0.90	479.20	4.44	0.59	ZZ
RGQRDQ		443.00	1.76	0.20	474.80	0.04	0.00	ZZ
T6QMGB		442.46	1.22	0.14	463.66	-11.10	-1.48	ZZ
TXLWX6	*	462.20	20.96	2.36	493.00	18.24	2.44	ZZ
UGFUXC		438.80	-2.44	-0.27	477.88	3.12	0.42	ZZ
VC6AGH		444.40	3.16	0.36	482.40	7.64	1.02	ZZ
VGUHWH		438.40	-2.84	-0.32	478.00	3.24	0.43	ZZ
VNV2RL		453.46	12.22	1.38	488.90	14.14	1.89	ZZ
VYYYAV		433.40	-7.84	-0.88	475.60	0.84	0.11	ZZ
W8JKJY		443.40	2.16	0.24	483.80	9.04	1.21	ZZ
WGWK89		439.20	-2.04	-0.23	474.00	-0.76	-0.10	ZZ
WJ3YXM		452.20	10.96	1.23	481.40	6.64	0.89	ZZ
WQF4EL		450.80	9.56	1.08	480.20	5.44	0.73	ZZ
WT8BRV		438.00	-3.24	-0.36	464.80	-9.96	-1.33	ZZ
WTMEHG	X	462.00	20.76	2.34	470.20	-4.56	-0.61	ZZ
WXYDXG		443.20	1.96	0.22	474.60	-0.16	-0.02	ZZ
WYBWXD		428.20	-13.04	-1.47	465.40	-9.36	-1.25	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 123

Microhardness - Vickers Hardness Number (500 gf)
ASTM E384

		Sample S25			Sample S26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XJAW7W		438.80	-2.44	-0.27	472.80	-1.96	-0.26	ZZ
XJX23G		452.80	11.56	1.30	484.20	9.44	1.26	ZZ
XK6JM7		438.18	-3.06	-0.34	484.22	9.46	1.26	ZZ
Y6ADDB		440.42	-0.82	-0.09	465.48	-9.28	-1.24	ZZ
ZFMYR6		448.60	7.36	0.83	483.00	8.24	1.10	ZZ
ZM4KTL		452.40	11.16	1.26	480.80	6.04	0.81	ZZ
ZN3JBU		438.60	-2.64	-0.30	473.20	-1.56	-0.21	ZZ
ZPPDEN		457.00	15.76	1.78	483.00	8.24	1.10	ZZ

Summary Statistics

	Sample S25		Sample S26	
Grand Means	441.24	HV 500 gf	474.76	HV 500 gf
Stnd Dev Btwn Labs	8.88	HV 500 gf	7.48	HV 500 gf

Samples S25 , S26 : Steel

Statistics based on 98 of 106 reporting participants

Comments on assigned Data Flags for Analysis #123

WebCode	Flag	Analyst Comment
27YDDJ	X	Data for sample S25 are low. Inconsistent within the determinations of sample S25.
3QXBYJ	X	Data for both samples are low.
864T3E	X	Inconsistent in testing between samples.
DQ6UKQ	X	Data for both samples are high. Inconsistent within the determinations of sample S26.
J6NEW7	X	Data for sample S26 are low.
M6NWTR	X	Data for sample S26 are low.
QKRHZ7	X	Data for sample S26 are high. Inconsistent within the determinations of sample S25.
WTMEHG	X	Inconsistent in testing between samples.

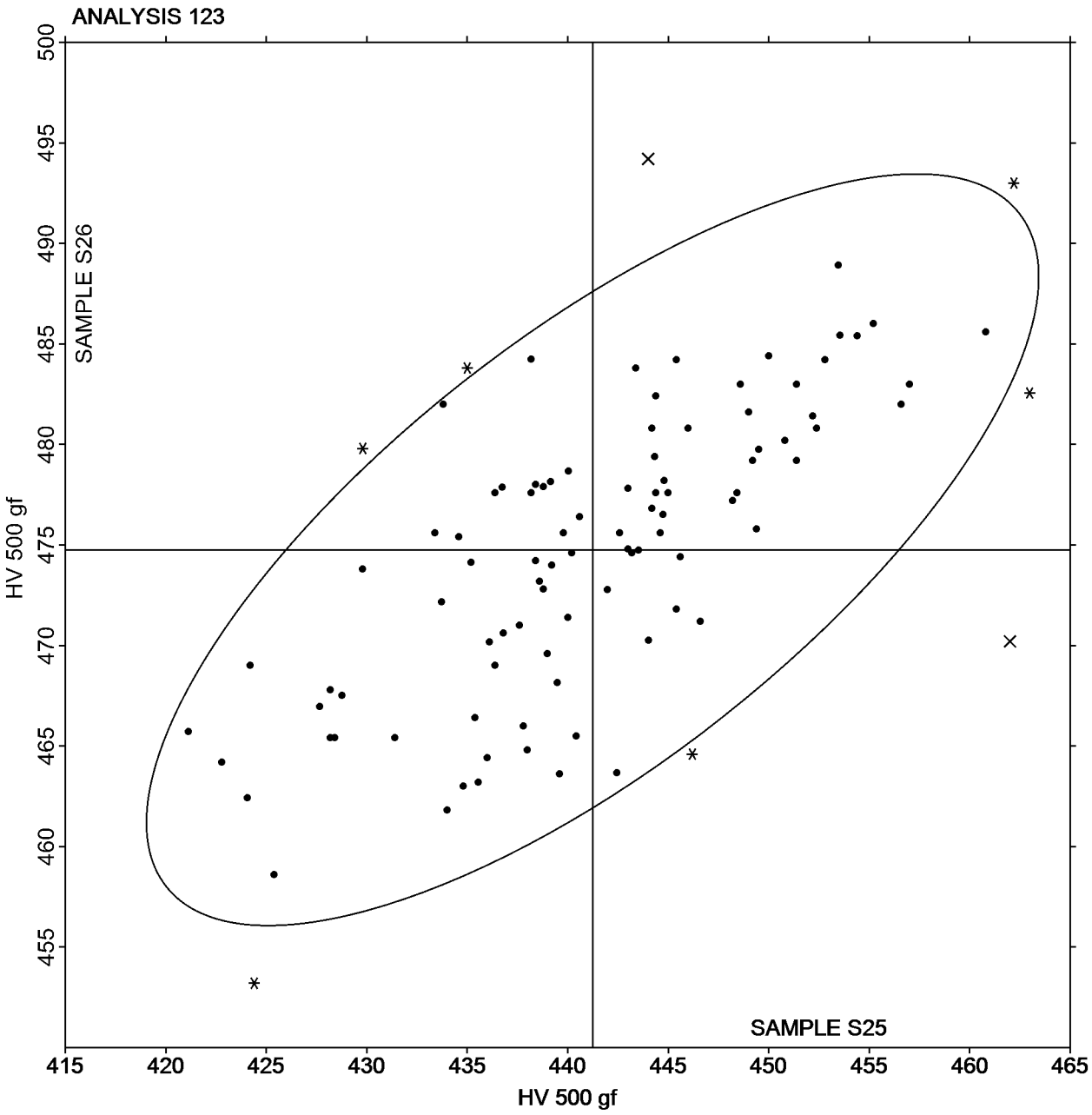
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 123

Microhardness - Vickers Hardness Number (500 gf)
ASTM E384

SAMPLE S25	SAMPLE S26
441.24 HV 500 gf	474.76 HV 500 gf



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 135

Brinell Hardness - HBW
ASTM E10

		Sample D25			Sample D26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
26MRNH		368.80	-0.52	-0.08	398.00	0.55	0.07	ZZ
2DQ3JL		381.20	11.88	1.78	408.60	11.15	1.44	ZZ
2LA47Q	X	383.40	14.08	2.11	392.56	-4.89	-0.63	ZZ
2RXNBR	X	381.67	12.35	1.85	395.00	-2.45	-0.32	ZZ
474RPH	X	389.60	20.28	3.04	364.80	-32.65	-4.20	ZZ
4THCN4		364.20	-5.12	-0.77	388.80	-8.65	-1.11	ZZ
4UD4NG		363.80	-5.52	-0.83	394.00	-3.45	-0.44	ZZ
6J7KPT		378.80	9.48	1.42	406.00	8.55	1.10	ZZ
6MU3X7		371.20	1.88	0.28	395.60	-1.85	-0.24	ZZ
6V4FUF		358.80	-10.52	-1.58	385.00	-12.45	-1.60	ZZ
78CLHM	X	402.60	33.28	4.98	376.60	-20.85	-2.68	ZZ
7KM3JQ		371.20	1.88	0.28	401.20	3.75	0.48	ZZ
846P6X		376.60	7.28	1.09	400.80	3.35	0.43	ZZ
87ADM9		375.00	5.68	0.85	401.00	3.55	0.46	ZZ
922AHR		373.60	4.28	0.64	402.80	5.35	0.69	ZZ
9F2294		363.00	-6.32	-0.95	390.60	-6.85	-0.88	ZZ
A6UVKE		363.80	-5.52	-0.83	391.40	-6.05	-0.78	ZZ
B3LTK2		369.60	0.28	0.04	399.20	1.75	0.22	ZZ
BMV497		365.20	-4.12	-0.62	399.80	2.35	0.30	ZZ
BY7DWV		375.00	5.68	0.85	401.00	3.55	0.46	ZZ
CETD3L		365.00	-4.32	-0.65	395.20	-2.25	-0.29	ZZ
CG6TWL		372.00	2.68	0.40	400.00	2.55	0.33	ZZ
DJ6GPG	X	338.60	-30.72	-4.60	374.20	-23.25	-2.99	ZZ
DQ6UKQ		373.80	4.48	0.67	403.40	5.95	0.77	ZZ
E4KCPY	*	375.00	5.68	0.85	390.00	-7.45	-0.96	ZZ
EWLXUP		366.00	-3.32	-0.50	400.20	2.75	0.35	ZZ
F4EHJX		363.68	-5.64	-0.84	389.26	-8.19	-1.05	ZZ
F7URPH		366.40	-2.92	-0.44	396.80	-0.65	-0.08	ZZ
FMEGYD		372.80	3.48	0.52	401.00	3.55	0.46	ZZ
FUC3XZ		363.00	-6.32	-0.95	401.00	3.55	0.46	ZZ
G2EELA	*	372.80	3.48	0.52	388.00	-9.45	-1.22	ZZ
GCLNQL		367.20	-2.12	-0.32	394.00	-3.45	-0.44	ZZ
GG92T3		376.80	7.48	1.12	405.00	7.55	0.97	ZZ
GHWUBY		369.60	0.28	0.04	401.00	3.55	0.46	ZZ
GX6LD4		369.80	0.48	0.07	398.00	0.55	0.07	ZZ
HJ6CYL		365.40	-3.92	-0.59	403.80	6.35	0.82	ZZ
J3B3HA		379.00	9.68	1.45	404.20	6.75	0.87	ZZ
J4PHUP	*	355.00	-14.32	-2.14	377.80	-19.65	-2.53	ZZ
KGQETH		369.84	0.52	0.08	391.34	-6.11	-0.79	ZZ
KH6RKL		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ
L6PEAB		371.40	2.08	0.31	397.40	-0.05	-0.01	ZZ
LAJEN7		381.80	12.48	1.87	410.60	13.15	1.69	ZZ
LKKW6Z		371.40	2.08	0.31	397.60	0.15	0.02	ZZ
LW2JE2		368.40	-0.92	-0.14	401.00	3.55	0.46	ZZ
LY4HRE		367.80	-1.52	-0.23	401.00	3.55	0.46	ZZ
M8V77H		365.20	-4.12	-0.62	393.80	-3.65	-0.47	ZZ
MAYX94		370.40	1.08	0.16	398.40	0.95	0.12	ZZ
NPUR39		363.00	-6.32	-0.95	398.40	0.95	0.12	ZZ
P4PFN8		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 135

Brinell Hardness - HBW
ASTM E10

WebCode	Data Flag	Sample D25 Lab Mean	Sample D25 Diff. from Grand Mean	Sample D25 CPV	Sample D26 Lab Mean	Sample D26 Diff. from Grand Mean	Sample D26 CPV	Instr Code
PHUJL9		364.20	-5.12	-0.77	393.20	-4.25	-0.55	ZZ
PUYXAY	*	375.00	5.68	0.85	415.00	17.55	2.26	ZZ
PZP9FG		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ
Q3UYKB		355.60	-13.72	-2.05	385.80	-11.65	-1.50	ZZ
QEMWUN		368.00	-1.32	-0.20	398.00	0.55	0.07	ZZ
QNRPF2		371.00	1.68	0.25	404.00	6.55	0.84	ZZ
REJG8F		374.40	5.08	0.76	403.60	6.15	0.79	ZZ
RJTMYF	*	388.00	18.68	2.80	415.00	17.55	2.26	ZZ
TG92WJ		369.60	0.28	0.04	401.40	3.95	0.51	ZZ
U994K2		374.00	4.68	0.70	402.00	4.55	0.59	ZZ
UPXBHY	X	285.00	-84.32	-12.63	415.00	17.55	2.26	ZZ
VC6AGH		363.00	-6.32	-0.95	387.00	-10.45	-1.35	ZZ
W3AK4M		363.00	-6.32	-0.95	395.80	-1.65	-0.21	ZZ
WQF4EL		370.94	1.62	0.24	396.80	-0.65	-0.08	ZZ
WQXAGW		375.00	5.68	0.85	403.80	6.35	0.82	ZZ
WTMEHG		375.00	5.68	0.85	401.00	3.55	0.46	ZZ
X4VTMM	*	388.00	18.68	2.80	417.80	20.35	2.62	ZZ
XG8XXN	X	283.00	-86.32	-12.93	405.00	7.55	0.97	ZZ
XJAW7W		362.60	-6.72	-1.01	386.40	-11.05	-1.42	ZZ
XK6JM7		375.00	5.68	0.85	410.00	12.55	1.62	ZZ
Y6ADDB		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ
Y94D9X	X	350.20	-19.12	-2.86	362.80	-34.65	-4.46	ZZ
YDZXGN		361.40	-7.92	-1.19	391.80	-5.65	-0.73	ZZ
YJBYND		368.20	-1.12	-0.17	394.40	-3.05	-0.39	ZZ
YMU2M7		362.20	-7.12	-1.07	389.20	-8.25	-1.06	ZZ
YPXYUT		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ
YRWEZV		370.60	1.28	0.19	393.40	-4.05	-0.52	ZZ
ZN3JBU		363.00	-6.32	-0.95	388.00	-9.45	-1.22	ZZ
ZPPDEN		380.00	10.68	1.60	407.60	10.15	1.31	ZZ
ZUMVVN		366.80	-2.52	-0.38	396.20	-1.25	-0.16	ZZ

Summary Statistics

	Sample D25		Sample D26	
Grand Means	369.32	HBW	397.45	HBW
Stnd Dev Btwn Labs	6.68	HBW	7.77	HBW

Samples D25 , D26 : Steel

Statistics based on 71 of 79 reporting participants

Samples D25 , D26 are hardness test blocks made from steel. The blocks are heat treated to hardness levels specified by CTS.

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 135

Brinell Hardness - HBW
ASTM E10

Comments on assigned Data Flags for Analysis #135

WebCode	Flag	Analyst Comment
2LA47Q	X	Inconsistent in testing between samples.
2RXNBR	X	Inconsistent in testing between samples.
474RPH	X	Data for sample D25 are high and data for sample D26 are low.
78CLHM	X	Data for sample D25 are high. Inconsistent within the determinations of sample D25.
DJ6GPG	X	Data for both samples are low.
UPXBHY	X	Data for sample D25 are low.
XG8XXN	X	Data for sample D25 are low. Inconsistent within the determinations of both samples.
Y94D9X	X	Data for both samples are low. Inconsistent within the determinations of sample D25.

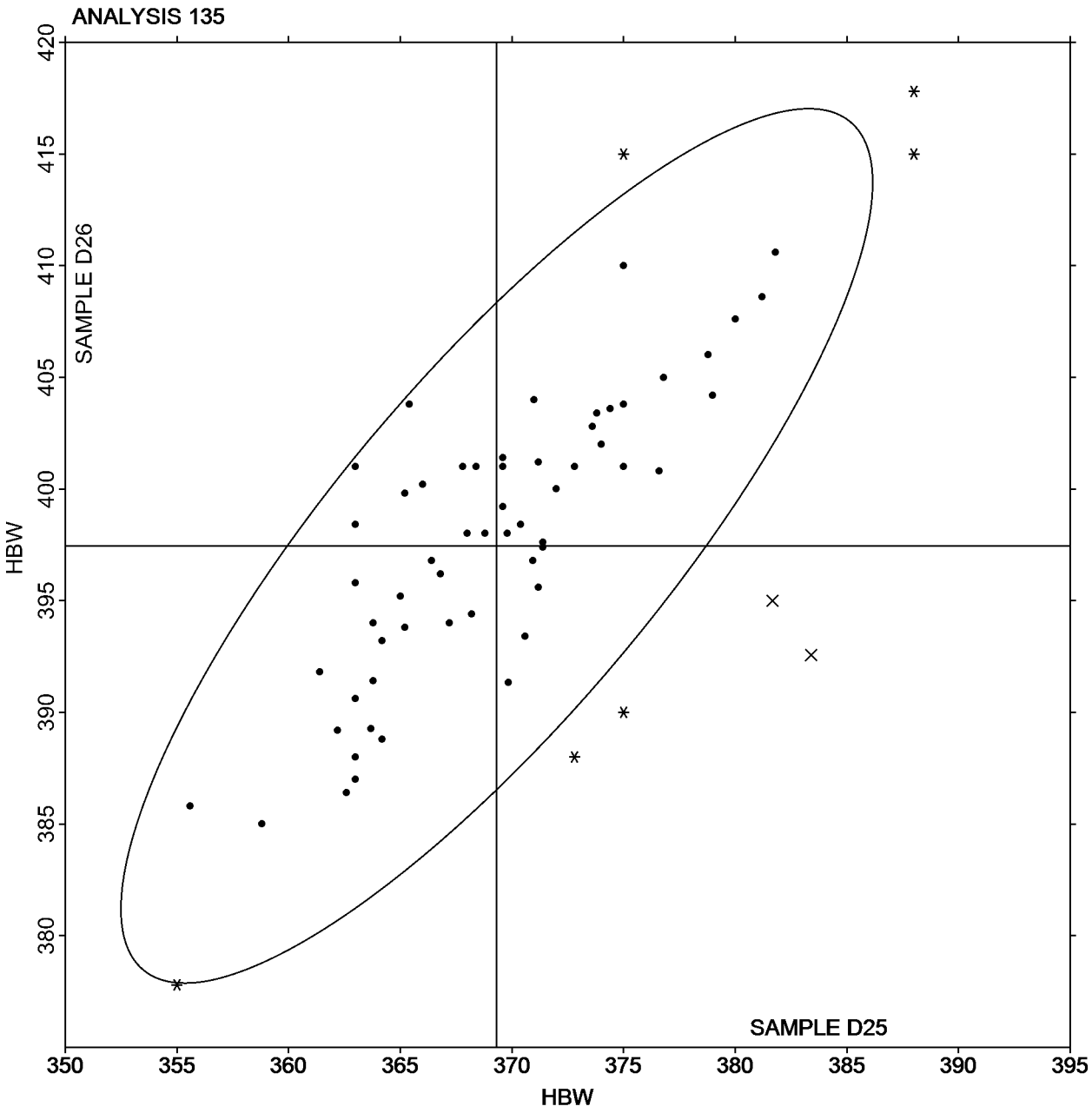
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 135

Brinell Hardness - HBW
ASTM E10

SAMPLE D25	SAMPLE D26
369.32 HBW	397.45 HBW



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 140

Tensile Strength (Lab-Machined Round Steel) - ksi
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2DQ3JL		71.04	-0.34	-0.46	72.52	0.53	0.64	ZZ
2NEPXW		70.89	-0.49	-0.67	71.82	-0.17	-0.21	ZZ
2W6A4V	X	73.97	2.58	3.51	73.97	1.98	2.40	ZZ
39Y4X4		71.52	0.13	0.18	71.16	-0.84	-1.02	ZZ
474RPH		71.36	-0.03	-0.03	71.21	-0.78	-0.95	ZZ
4JRU7P		71.50	0.12	0.16	71.60	-0.39	-0.48	ZZ
4THCN4		72.40	1.02	1.38	73.00	1.01	1.22	ZZ
4UD4NG		71.20	-0.18	-0.25	70.90	-1.09	-1.33	ZZ
4UM8YU		72.30	0.92	1.24	73.40	1.41	1.71	ZZ
68UEGC		71.20	-0.18	-0.25	72.36	0.36	0.44	ZZ
6AHYC9		72.30	0.92	1.24	73.70	1.71	2.07	ZZ
6J7KPT		71.00	-0.38	-0.52	73.00	1.01	1.22	ZZ
6MU3X7		70.30	-1.08	-1.47	71.30	-0.69	-0.84	ZZ
6VZW7D		71.90	0.52	0.70	71.70	-0.29	-0.36	ZZ
76LGPF		71.99	0.61	0.82	71.35	-0.64	-0.78	ZZ
78CLHM		71.00	-0.38	-0.52	70.50	-1.49	-1.81	ZZ
9BMLKW		72.00	0.62	0.84	71.40	-0.59	-0.72	ZZ
A6UVKE	X	71.70	0.32	0.43	65.00	-6.99	-8.49	ZZ
B3LTK2		71.10	-0.28	-0.39	72.30	0.31	0.37	ZZ
BPKAT3		72.20	0.82	1.11	71.80	-0.19	-0.24	ZZ
CAXFGB		69.91	-1.48	-2.01	72.08	0.09	0.11	ZZ
D4NF3Y		72.52	1.13	1.54	73.24	1.25	1.52	ZZ
DJ6GPG		73.13	1.75	2.37	72.72	0.73	0.88	ZZ
DQ6UKQ		71.00	-0.38	-0.52	71.80	-0.19	-0.24	ZZ
E3PQYT		72.33	0.95	1.28	73.41	1.42	1.72	ZZ
F6B36C		70.80	-0.58	-0.80	71.90	-0.09	-0.11	ZZ
FBD8Z3		71.90	0.52	0.70	72.10	0.11	0.13	ZZ
FBYN9H		72.20	0.82	1.11	71.60	-0.39	-0.48	ZZ
FPH3LP		71.46	0.08	0.10	73.13	1.14	1.38	ZZ
FUC3XZ		70.60	-0.78	-1.07	70.60	-1.39	-1.69	ZZ
G2EELA		72.53	1.14	1.56	71.93	-0.07	-0.08	ZZ
GCLL2G	X	66.00	-5.38	-7.32	66.50	-5.49	-6.67	ZZ
GG92T3		71.65	0.26	0.36	71.79	-0.20	-0.24	ZZ
GHWUBY		71.72	0.34	0.46	71.10	-0.90	-1.09	ZZ
GM7UPB		70.80	-0.58	-0.80	71.50	-0.49	-0.60	ZZ
GY22PZ		71.77	0.38	0.52	71.53	-0.46	-0.56	ZZ
H33EU6		70.84	-0.55	-0.74	72.06	0.06	0.07	ZZ
H4XXYR		70.60	-0.78	-1.07	71.50	-0.49	-0.60	ZZ
HJ6CYL		72.00	0.62	0.84	71.90	-0.09	-0.11	ZZ
HL94VF		71.00	-0.38	-0.52	71.90	-0.09	-0.11	ZZ
HPA6WX		71.30	-0.08	-0.12	72.90	0.91	1.10	ZZ
J2KQ94		71.68	0.29	0.40	72.90	0.90	1.09	ZZ
J7YLQM		71.90	0.52	0.70	72.70	0.71	0.86	ZZ
J9E6J4		70.40	-0.98	-1.34	72.70	0.71	0.86	ZZ
JKB74K		71.40	0.02	0.02	73.40	1.41	1.71	ZZ
K2FQNU		72.30	0.92	1.24	73.20	1.21	1.46	ZZ
KGQETH	X	74.62	3.24	4.40	75.52	3.53	4.28	ZZ
KH6RKL		72.00	0.62	0.84	71.50	-0.49	-0.60	ZZ
L6PEAB		71.10	-0.28	-0.39	72.00	0.01	0.01	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 140

Tensile Strength (Lab-Machined Round Steel) - ksi
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
LAJEN7		70.70	-0.68	-0.93	72.10	0.11	0.13	ZZ
LKKW6Z		71.21	-0.17	-0.23	70.49	-1.51	-1.83	ZZ
LVPTGH		72.00	0.62	0.84	71.60	-0.39	-0.48	ZZ
M8V77H		71.65	0.26	0.36	72.08	0.09	0.11	ZZ
MPV9RT		72.23	0.84	1.15	71.94	-0.06	-0.07	ZZ
MVG88F	X	73.97	2.59	3.52	74.01	2.01	2.44	ZZ
NFNUBY		70.03	-1.36	-1.85	71.18	-0.81	-0.99	ZZ
NHQRJ7		70.49	-0.90	-1.22	71.79	-0.20	-0.24	ZZ
PRHEGH		71.90	0.52	0.70	72.30	0.31	0.37	ZZ
PUYXAY		70.74	-0.64	-0.88	72.16	0.17	0.20	ZZ
PWALYQ		71.10	-0.28	-0.39	72.40	0.41	0.49	ZZ
PZP9FG		70.60	-0.78	-1.07	70.90	-1.09	-1.33	ZZ
Q3UYKB		71.00	-0.38	-0.52	71.00	-0.99	-1.21	ZZ
QARTCH		71.00	-0.38	-0.52	72.00	0.01	0.01	ZZ
QEMWUN		70.30	-1.08	-1.47	70.30	-1.69	-2.06	ZZ
REJG8F		71.20	-0.18	-0.25	72.30	0.31	0.37	ZZ
RG3J79		72.30	0.92	1.24	72.90	0.91	1.10	ZZ
T32D9U		71.25	-0.13	-0.18	72.40	0.41	0.49	ZZ
T6AJTB		71.73	0.35	0.47	72.67	0.68	0.82	ZZ
TLBBQ7	*	70.30	-1.08	-1.47	73.50	1.51	1.83	ZZ
TN8T28		71.80	0.42	0.56	71.90	-0.09	-0.11	ZZ
UP8ALF		71.10	-0.28	-0.39	71.30	-0.69	-0.84	ZZ
UUMX6R		71.08	-0.30	-0.41	72.10	0.10	0.13	ZZ
VC6AGH		71.00	-0.38	-0.52	70.80	-1.19	-1.45	ZZ
VFY3JL		71.31	-0.07	-0.10	70.75	-1.25	-1.52	ZZ
VNHCXA		71.40	0.02	0.02	70.80	-1.19	-1.45	ZZ
VVQ4UX		70.40	-0.98	-1.34	71.97	-0.02	-0.03	ZZ
WTMEHG		71.50	0.12	0.16	72.50	0.51	0.61	ZZ
WXYDXG		71.90	0.52	0.70	71.50	-0.49	-0.60	ZZ
X2EAU6		71.00	-0.38	-0.52	73.00	1.01	1.22	ZZ
X4Y929		70.40	-0.98	-1.34	71.40	-0.59	-0.72	ZZ
Y94D9X		70.20	-1.18	-1.61	72.00	0.01	0.01	ZZ
YDZVRJ		72.97	1.59	2.15	72.99	1.00	1.21	ZZ
YJBYND		70.70	-0.68	-0.93	71.50	-0.49	-0.60	ZZ
ZN3JBU	*	73.34	1.96	2.66	72.71	0.72	0.87	ZZ
ZPPDEN		71.82	0.44	0.59	73.58	1.58	1.92	ZZ
ZUMVVN		70.49	-0.90	-1.22	70.63	-1.36	-1.65	ZZ

Summary Statistics

	Sample P25		Sample P26	
Grand Means	71.38	ksi	71.99	ksi
Stnd Dev Btwn Labs	0.74	ksi	0.82	ksi

Samples P25 , P26 : AISI 4340

Statistics based on 81 of 86 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 140

Tensile Strength (Lab-Machined Round Steel) - ksi
ASTM E8

Comments on assigned Data Flags for Analysis #140

WebCode	Flag	Analyst Comment
2W6A4V	X	Data for sample P25 are high.
A6UVKE	X	Data for sample P26 are low.
GCLL2G	X	Data for both samples are low.
KGQETH	X	Data for both samples are high.
MVG88F	X	Data for sample P25 are high.

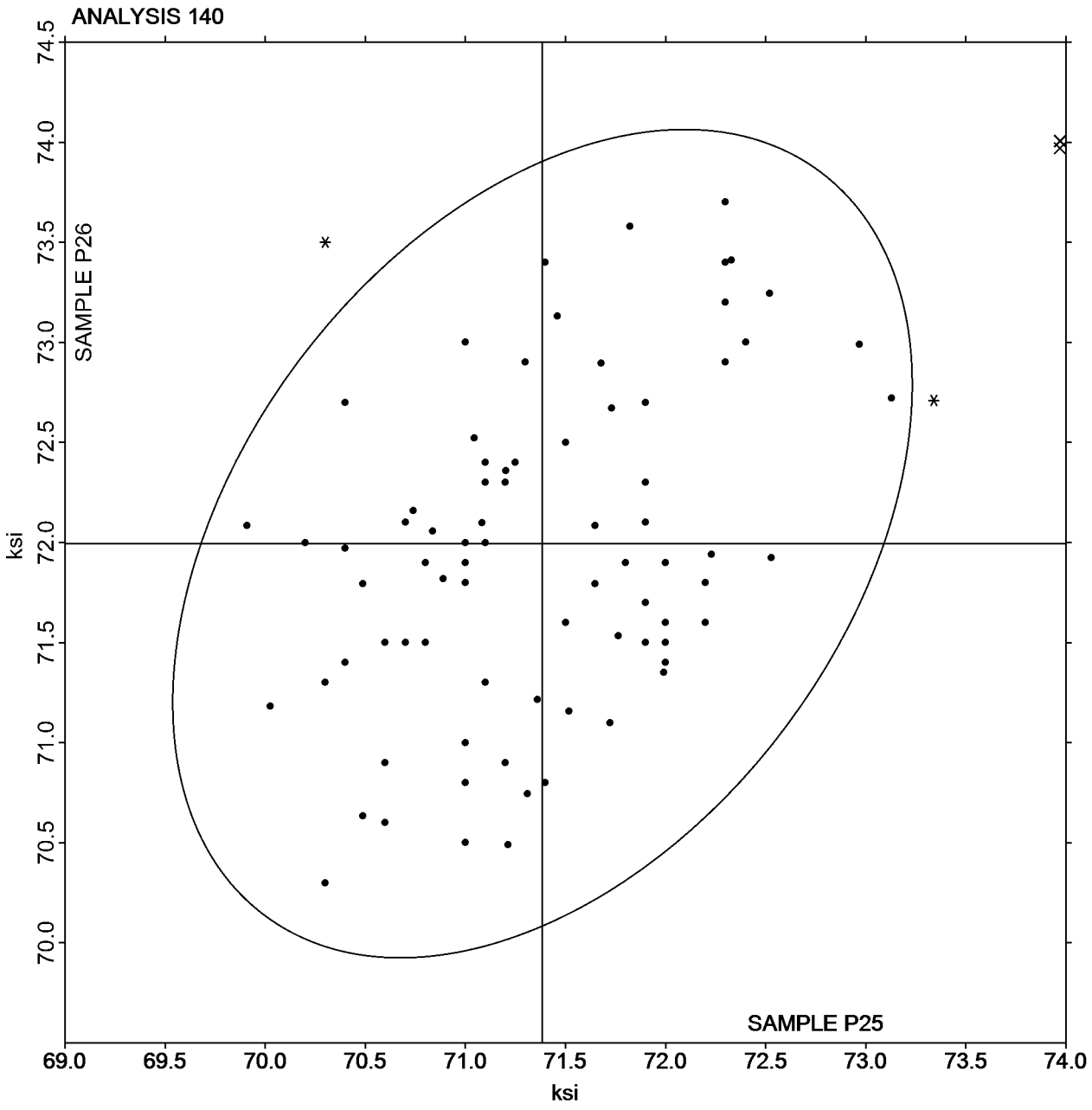
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 140

Tensile Strength (Lab-Machined Round Steel) - ksi
ASTM E8

SAMPLE P25	SAMPLE P26
71.38 ksi	71.99 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 141

Yield Strength (Lab-Machined Round Steel) - ksi
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2DQ3JL		47.89	-0.06	-0.02	48.67	0.05	0.01	ZZ
2W6A4V		51.78	3.84	1.32	49.60	0.98	0.31	ZZ
39Y4X4		44.53	-3.42	-1.17	43.37	-5.25	-1.67	ZZ
474RPH		44.67	-3.27	-1.12	44.38	-4.24	-1.34	ZZ
4JRU7P		48.50	0.56	0.19	52.10	3.48	1.10	ZZ
4THCN4		50.10	2.16	0.74	49.90	1.28	0.41	ZZ
4UD4NG		50.30	2.36	0.81	50.40	1.78	0.56	ZZ
4UM8YU		48.60	0.66	0.23	48.80	0.18	0.06	ZZ
68UEGC		44.96	-2.98	-1.02	47.73	-0.89	-0.28	ZZ
6AHYC9		51.30	3.36	1.15	52.10	3.48	1.10	ZZ
6J7KPT		43.20	-4.74	-1.63	46.90	-1.72	-0.55	ZZ
6MU3X7		44.90	-3.04	-1.05	45.10	-3.52	-1.12	ZZ
6VZW7D		47.50	-0.44	-0.15	46.50	-2.12	-0.67	ZZ
76LGPF		49.19	1.24	0.43	48.48	-0.14	-0.05	ZZ
78CLHM		46.00	-1.94	-0.67	46.00	-2.62	-0.83	ZZ
9BMLKW		48.30	0.36	0.12	50.80	2.18	0.69	ZZ
A6UVKE	*	47.30	-0.64	-0.22	43.70	-4.92	-1.56	ZZ
B3LTK2		47.90	-0.04	-0.01	48.10	-0.52	-0.17	ZZ
BPKAT3		49.60	1.66	0.57	50.10	1.48	0.47	ZZ
CAXFGB		48.59	0.65	0.22	51.34	2.72	0.86	ZZ
D4NF3Y		47.86	-0.08	-0.03	48.30	-0.32	-0.10	ZZ
DJ6GPG		52.88	4.94	1.70	51.43	2.81	0.89	ZZ
E3PQYT		49.41	1.47	0.50	48.60	-0.02	-0.01	ZZ
F6B36C		45.10	-2.84	-0.98	45.50	-3.12	-0.99	ZZ
FBD8Z3		45.60	-2.34	-0.80	48.60	-0.02	-0.01	ZZ
FBYN9H		49.60	1.66	0.57	51.70	3.08	0.98	ZZ
FPH3LP		44.22	-3.72	-1.28	45.58	-3.04	-0.96	ZZ
FUC3XZ	*	48.30	0.36	0.12	44.10	-4.52	-1.43	ZZ
G2EELA		48.87	0.92	0.32	48.30	-0.32	-0.10	ZZ
GCLL2G		43.10	-4.84	-1.66	42.00	-6.62	-2.10	ZZ
GG92T3		50.33	2.39	0.82	48.88	0.26	0.08	ZZ
GHWUBY		49.18	1.24	0.43	47.33	-1.29	-0.41	ZZ
GM7UPB		47.40	-0.54	-0.19	48.50	-0.12	-0.04	ZZ
GY22PZ	X	51.26	3.31	1.14	45.80	-2.82	-0.89	ZZ
H33EU6		46.25	-1.69	-0.58	48.15	-0.47	-0.15	ZZ
H4XXYR		45.00	-2.94	-1.01	46.60	-2.02	-0.64	ZZ
HJ6CYL		49.40	1.46	0.50	48.80	0.18	0.06	ZZ
HL94VF		45.30	-2.64	-0.91	46.20	-2.42	-0.77	ZZ
HPA6WX		44.00	-3.94	-1.35	45.20	-3.42	-1.08	ZZ
J2KQ94		48.40	0.46	0.16	49.04	0.42	0.13	ZZ
J7YLQM		48.60	0.66	0.23	48.10	-0.52	-0.17	ZZ
J9E6J4		45.00	-2.94	-1.01	45.80	-2.82	-0.89	ZZ
JKB74K		46.50	-1.44	-0.50	48.10	-0.52	-0.17	ZZ
K2FQNU		47.10	-0.84	-0.29	49.40	0.78	0.25	ZZ
KGQETH		48.83	0.89	0.31	51.87	3.25	1.03	ZZ
KH6RKL		50.00	2.06	0.71	50.50	1.88	0.60	ZZ
L6PEAB		44.90	-3.04	-1.05	45.20	-3.42	-1.08	ZZ
LAJEN7	*	40.80	-7.14	-2.45	39.50	-9.12	-2.89	ZZ
LKKW6Z		47.86	-0.08	-0.03	48.73	0.11	0.04	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 141

Yield Strength (Lab-Machined Round Steel) - ksi
ASTM E8

WebCode	Data Flag	Sample P25 Lab Mean	Sample P25 Diff. from Grand Mean	Sample P25 CPV	Sample P26 Lab Mean	Sample P26 Diff. from Grand Mean	Sample P26 CPV	Instr Code
LVPTGH		54.20	6.26	2.15	53.60	4.98	1.58	ZZ
M8V77H		46.12	-1.82	-0.63	47.43	-1.19	-0.38	ZZ
MPV9RT		50.62	2.68	0.92	51.63	3.01	0.95	ZZ
MVG88F		53.50	5.56	1.91	54.75	6.13	1.94	ZZ
NFNUBY		46.92	-1.02	-0.35	48.48	-0.14	-0.04	ZZ
NHQRJ7		46.27	-1.67	-0.58	47.57	-1.05	-0.33	ZZ
PRHEGH		51.40	3.46	1.19	54.30	5.68	1.80	ZZ
PUYXAY	*	45.91	-2.03	-0.70	42.44	-6.18	-1.96	ZZ
PWALYQ		46.80	-1.14	-0.39	48.40	-0.22	-0.07	ZZ
PZP9FG		50.00	2.06	0.71	50.70	2.08	0.66	ZZ
Q3UYKB		44.60	-3.34	-1.15	44.30	-4.32	-1.37	ZZ
QARTCH		53.80	5.86	2.01	52.00	3.38	1.07	ZZ
QEMWUN		46.20	-1.74	-0.60	48.00	-0.62	-0.20	ZZ
REJG8F	*	54.60	6.66	2.29	52.90	4.28	1.36	ZZ
RG3J79		54.80	6.86	2.36	56.10	7.48	2.37	ZZ
T32D9U		47.29	-0.65	-0.22	49.63	1.01	0.32	ZZ
T6AJTB		54.12	6.18	2.12	53.77	5.15	1.63	ZZ
TLBBQ7		44.80	-3.14	-1.08	46.90	-1.72	-0.55	ZZ
TN8T28		50.00	2.06	0.71	52.20	3.58	1.13	ZZ
UP8ALF		52.60	4.66	1.60	52.90	4.28	1.36	ZZ
UUMX6R		48.70	0.76	0.26	49.47	0.85	0.27	ZZ
VC6AGH		47.40	-0.54	-0.19	45.90	-2.72	-0.86	ZZ
VFY3JL		44.09	-3.86	-1.32	43.20	-5.42	-1.72	ZZ
VNHCXA		49.10	1.16	0.40	53.80	5.18	1.64	ZZ
VVQ4UX		44.93	-3.01	-1.03	49.32	0.70	0.22	ZZ
WTMEHG		46.10	-1.84	-0.63	46.80	-1.82	-0.58	ZZ
WXYDXG		49.90	1.96	0.67	50.50	1.88	0.60	ZZ
X2EAU6		48.60	0.66	0.23	51.40	2.78	0.88	ZZ
X4Y929		45.10	-2.84	-0.98	46.00	-2.62	-0.83	ZZ
Y94D9X		48.64	0.70	0.24	51.24	2.62	0.83	ZZ
YDZVRJ		47.05	-0.89	-0.31	48.55	-0.07	-0.02	ZZ
YJBYND		44.60	-3.34	-1.15	46.00	-2.62	-0.83	ZZ
ZN3JBU		49.98	2.04	0.70	51.28	2.66	0.84	ZZ
ZPPDEN		49.28	1.34	0.46	51.68	3.06	0.97	ZZ
ZUMVVN		46.27	-1.67	-0.58	48.30	-0.32	-0.10	ZZ

Summary Statistics

	Sample P25		Sample P26	
Grand Means	47.94	ksi	48.62	ksi
Stnd Dev Btwn Labs	2.91	ksi	3.16	ksi

Samples P25 , P26 : AISI 4340

Statistics based on 83 of 84 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 141

Yield Strength (Lab-Machined Round Steel) - ksi
ASTM E8

Comments on assigned Data Flags for Analysis #141

WebCode	Flag	Analyst Comment
GY22PZ	X	Inconsistent in testing between samples.

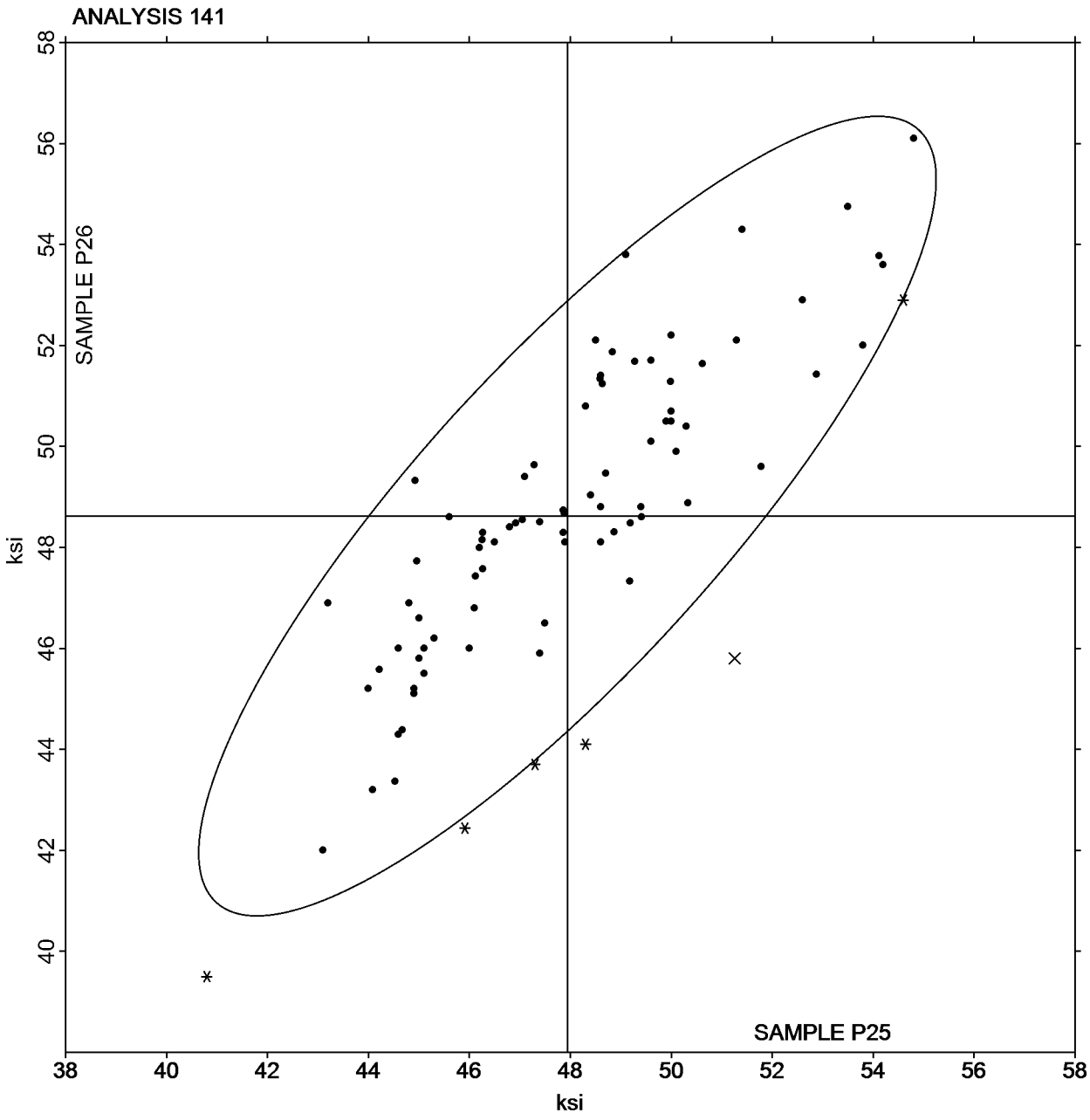
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 141

Yield Strength (Lab-Machined Round Steel) - ksi
ASTM E8

SAMPLE P25	SAMPLE P26
47.94 ksi	48.62 ksi



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 142

Elongation - (Lab-Machined Round Steel) - Percent Increase
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2DQ3JL		36.70	1.91	0.98	35.35	0.88	0.48	ZZ
2NEPXW		36.80	2.01	1.03	36.84	2.37	1.29	ZZ
2W6A4V		32.00	-2.79	-1.43	33.00	-1.47	-0.81	ZZ
39Y4X4		33.40	-1.39	-0.71	35.20	0.73	0.40	ZZ
474RPH	X	39.00	4.21	2.16	33.50	-0.97	-0.53	ZZ
4JRU7P		36.10	1.31	0.67	34.60	0.13	0.07	ZZ
4THCN4		34.80	0.01	0.01	37.00	2.53	1.38	ZZ
4UD4NG		34.00	-0.79	-0.40	33.50	-0.97	-0.53	ZZ
4UM8YU	*	30.00	-4.79	-2.46	32.30	-2.17	-1.19	ZZ
68UEGC		37.70	2.91	1.50	35.70	1.23	0.67	ZZ
6AHYC9		33.50	-1.29	-0.66	33.40	-1.07	-0.59	ZZ
6J7KPT		37.10	2.31	1.19	35.00	0.53	0.29	ZZ
6MU3X7		37.80	3.01	1.55	36.30	1.83	1.00	ZZ
6VZW7D		34.60	-0.19	-0.10	34.40	-0.07	-0.04	ZZ
76LGPF		31.60	-3.19	-1.64	32.90	-1.57	-0.86	ZZ
78CLHM		33.00	-1.79	-0.92	33.00	-1.47	-0.81	ZZ
9BMLKW		34.50	-0.29	-0.15	37.00	2.53	1.38	ZZ
A6UVKE		33.93	-0.86	-0.44	34.54	0.06	0.03	ZZ
B3LTK2		34.70	-0.09	-0.04	34.00	-0.47	-0.26	ZZ
BPKAT3		33.20	-1.59	-0.81	33.90	-0.57	-0.31	ZZ
CAXFGB		31.90	-2.89	-1.48	34.40	-0.07	-0.04	ZZ
D4NF3Y		32.00	-2.79	-1.43	32.00	-2.47	-1.35	ZZ
DJ6GPG		33.10	-1.69	-0.87	32.40	-2.07	-1.13	ZZ
DQ6UKQ		34.30	-0.49	-0.25	33.30	-1.17	-0.64	ZZ
E3PQYT		36.40	1.61	0.83	35.50	1.03	0.56	ZZ
F6B36C		36.20	1.41	0.73	37.20	2.73	1.49	ZZ
FBD8Z3		36.00	1.21	0.62	34.50	0.03	0.01	ZZ
FBYN9H		36.00	1.21	0.62	36.00	1.53	0.84	ZZ
FPH3LP		35.50	0.71	0.37	34.50	0.03	0.01	ZZ
FUC3XZ		37.00	2.21	1.14	37.00	2.53	1.38	ZZ
G2EELA		34.00	-0.79	-0.40	33.60	-0.87	-0.48	ZZ
GCLL2G	X	52.00	17.21	8.83	58.00	23.53	12.87	ZZ
GG92T3		36.00	1.21	0.62	38.00	3.53	1.93	ZZ
GHWUBY		36.50	1.71	0.88	36.50	2.03	1.11	ZZ
GM7UPB		36.00	1.21	0.62	35.00	0.53	0.29	ZZ
GY22PZ		35.70	0.91	0.47	34.30	-0.17	-0.10	ZZ
H33EU6		35.30	0.51	0.26	34.60	0.13	0.07	ZZ
H4XXYR		39.40	4.61	2.37	38.30	3.83	2.09	ZZ
HJ6CYL		33.00	-1.79	-0.92	31.00	-3.47	-1.90	ZZ
HL94VF		35.20	0.41	0.21	34.29	-0.18	-0.10	ZZ
HPA6WX	*	37.70	2.91	1.50	34.00	-0.47	-0.26	ZZ
J2KQ94		34.70	-0.09	-0.04	33.50	-0.97	-0.53	ZZ
J7YLQM		33.00	-1.79	-0.92	32.30	-2.17	-1.19	ZZ
J9E6J4	X	40.30	5.51	2.83	35.70	1.23	0.67	ZZ
JKB74K	*	30.00	-4.79	-2.46	29.80	-4.67	-2.56	ZZ
K2FQNU		34.40	-0.39	-0.20	34.10	-0.37	-0.20	ZZ
KGQETH		38.60	3.81	1.96	37.10	2.63	1.44	ZZ
KH6RKL		33.00	-1.79	-0.92	33.00	-1.47	-0.81	ZZ
L6PEAB		35.08	0.29	0.15	34.98	0.51	0.28	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 142

Elongation - (Lab-Machined Round Steel) - Percent Increase
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
LAJEN7		35.60	0.81	0.42	34.30	-0.17	-0.10	ZZ
LKKW6Z		36.00	1.21	0.62	36.20	1.73	0.94	ZZ
LVPTGH		33.20	-1.59	-0.81	34.60	0.13	0.07	ZZ
M8V77H		34.00	-0.79	-0.40	34.00	-0.47	-0.26	ZZ
MPV9RT		36.80	2.01	1.03	36.60	2.13	1.16	ZZ
MVG88F	X	37.00	2.21	1.14	31.50	-2.97	-1.63	ZZ
NFNUBY		34.50	-0.29	-0.15	31.90	-2.57	-1.41	ZZ
NHQRJ7		36.00	1.21	0.62	37.00	2.53	1.38	ZZ
PRHEGH	X	32.00	-2.79	-1.43	36.00	1.53	0.84	ZZ
PUYXAY		38.00	3.21	1.65	38.00	3.53	1.93	ZZ
PWALYQ		34.90	0.11	0.06	33.50	-0.97	-0.53	ZZ
PZP9FG		34.00	-0.79	-0.40	34.00	-0.47	-0.26	ZZ
Q3UYKB		35.50	0.71	0.37	35.00	0.53	0.29	ZZ
QARTCH		34.50	-0.29	-0.15	33.80	-0.67	-0.37	ZZ
QEMWUN		36.60	1.81	0.93	36.40	1.93	1.05	ZZ
REJG8F		35.50	0.71	0.37	34.00	-0.47	-0.26	ZZ
RG3J79		32.20	-2.59	-1.33	31.90	-2.57	-1.41	ZZ
T32D9U		33.00	-1.79	-0.92	32.00	-2.47	-1.35	ZZ
T6AJTB		36.20	1.41	0.73	35.00	0.53	0.29	ZZ
TLBBQ7		31.60	-3.19	-1.64	31.80	-2.67	-1.46	ZZ
TN8T28	X	67.40	32.61	16.74	66.90	32.43	17.74	ZZ
UP8ALF		34.00	-0.79	-0.40	33.80	-0.67	-0.37	ZZ
UUMX6R		34.20	-0.59	-0.30	34.30	-0.17	-0.10	ZZ
VC6AGH		37.00	2.21	1.14	38.00	3.53	1.93	ZZ
VFY3JL		33.45	-1.34	-0.69	32.70	-1.77	-0.97	ZZ
VNHCXA		32.50	-2.29	-1.17	33.00	-1.47	-0.81	ZZ
VVQ4UX		36.10	1.31	0.67	35.90	1.43	0.78	ZZ
WTMEHG		33.00	-1.79	-0.92	32.00	-2.47	-1.35	ZZ
WXYDXG		32.00	-2.79	-1.43	32.50	-1.97	-1.08	ZZ
X2EAU6		34.00	-0.79	-0.40	32.00	-2.47	-1.35	ZZ
X4Y929	X	15.50	-19.29	-9.90	14.50	-19.97	-10.93	ZZ
Y94D9X		35.50	0.71	0.37	36.50	2.03	1.11	ZZ
YDZVRJ	X	31.00	-3.79	-1.94	37.00	2.53	1.38	ZZ
YJBYND		34.70	-0.09	-0.04	34.00	-0.47	-0.26	ZZ
ZN3JBU		33.70	-1.09	-0.56	33.40	-1.07	-0.59	ZZ
ZPPDEN	*	38.70	3.91	2.01	34.77	0.30	0.16	ZZ
ZUMVVN		35.00	0.21	0.11	37.00	2.53	1.38	ZZ

Summary Statistics

	Sample P25		Sample P26	
Grand Means	34.79	Percent	34.47	Percent
Stnd Dev Btwn Labs	1.95	Percent	1.83	Percent

Samples P25 , P26 : AISI 4340

Statistics based on 78 of 86 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 142

Elongation - (Lab-Machined Round Steel) - Percent Increase
ASTM E8

Comments on assigned Data Flags for Analysis #142

WebCode	Flag	Analyst Comment
474RPH	X	Inconsistent in testing between samples.
GCLL2G	X	Data for both samples are high. Possible Systematic error.
J9E6J4	X	Data for sample P25 are high. Inconsistent in testing between samples.
MVG88F	X	Inconsistent in testing between samples.
PRHEGH	X	Inconsistent in testing between samples.
TN8T28	X	Data for both samples are high. Possible Systematic error.
X4Y929	X	Data for both samples are low. Possible Systematic error.
YDZVRJ	X	Inconsistent in testing between samples.

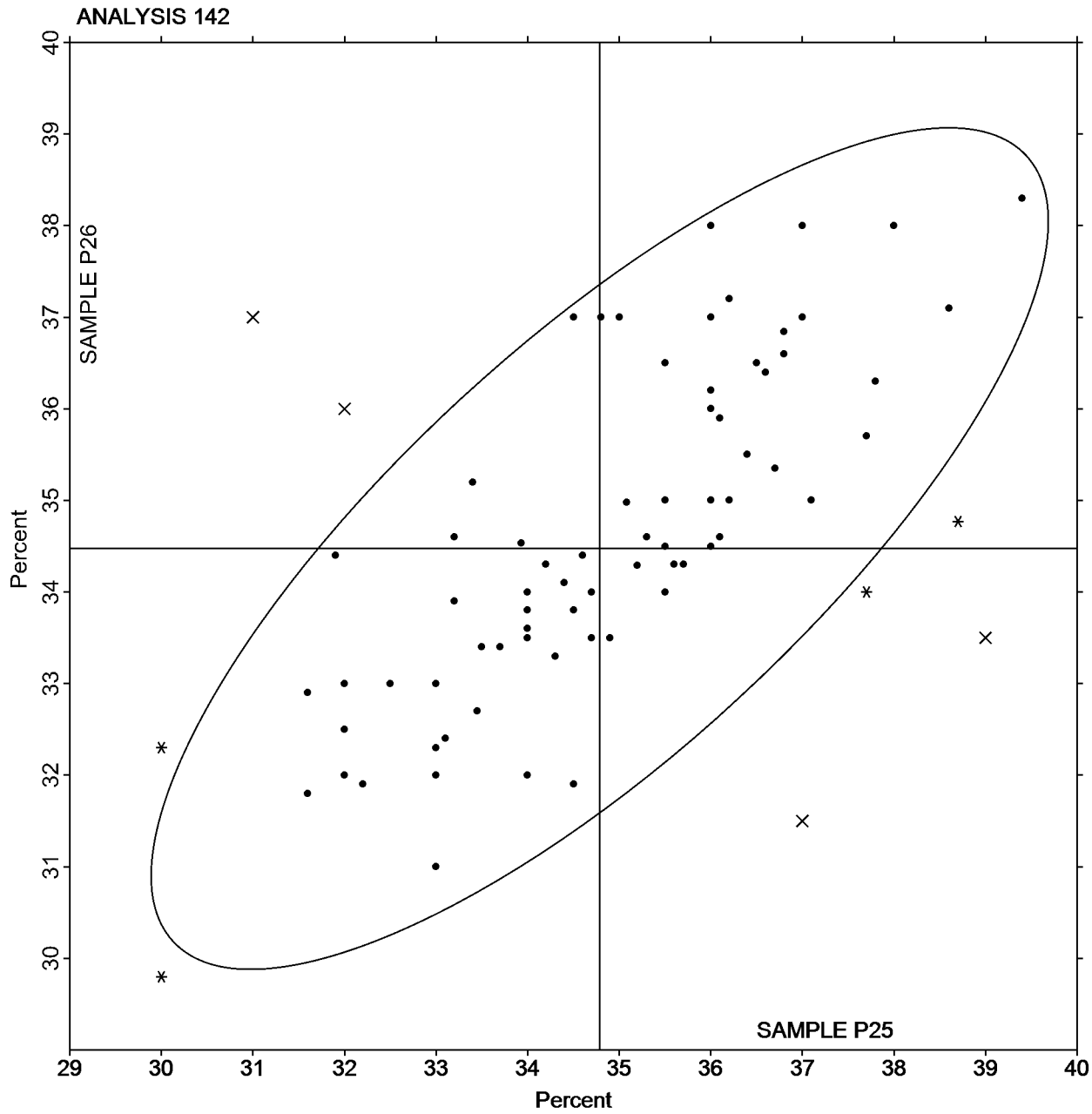
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 142

Elongation - (Lab-Machined Round Steel) - Percent Increase
ASTM E8

SAMPLE P25	SAMPLE P26
34.79 Percent	34.47 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 143

Reduction of Area (Lab-Machined Round Steel) - Percent
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2DQ3JL		66.75	-0.48	-0.51	65.97	-0.03	-0.03	ZZ
2NEPXW		67.80	0.57	0.62	65.66	-0.34	-0.32	ZZ
2W6A4V	X	40.69	-26.54	-28.54	40.33	-25.67	-24.16	ZZ
39Y4X4	X	82.40	15.17	16.32	81.60	15.60	14.68	ZZ
474RPH	X	67.00	-0.23	-0.24	73.00	7.00	6.59	ZZ
4JRU7P		68.30	1.07	1.16	67.90	1.90	1.79	ZZ
4THCN4	X	67.10	-0.13	-0.13	62.40	-3.60	-3.39	ZZ
4UD4NG		67.30	0.07	0.08	65.90	-0.10	-0.10	ZZ
4UM8YU	X	62.40	-4.83	-5.19	64.10	-1.90	-1.79	ZZ
68UEGC		68.10	0.87	0.94	66.00	0.00	0.00	ZZ
6AHYC9		66.90	-0.33	-0.35	64.50	-1.50	-1.42	ZZ
6MU3X7		67.60	0.37	0.40	66.60	0.60	0.56	ZZ
6VZW7D		67.30	0.07	0.08	67.10	1.10	1.03	ZZ
76LGPF		67.30	0.07	0.08	67.20	1.20	1.13	ZZ
78CLHM		67.00	-0.23	-0.24	67.00	1.00	0.94	ZZ
9BMLKW	X	72.50	5.27	5.67	72.50	6.50	6.11	ZZ
A6UVKE	X	60.67	-6.55	-7.05	70.56	4.56	4.29	ZZ
B3LTK2	*	68.50	1.27	1.37	64.40	-1.60	-1.51	ZZ
BPKAT3		66.10	-1.13	-1.21	66.00	0.00	0.00	ZZ
CAXFGB	X	60.10	-7.13	-7.66	66.50	0.50	0.47	ZZ
D4NF3Y		66.00	-1.23	-1.32	65.00	-1.00	-0.94	ZZ
DJ6GPG		67.80	0.57	0.62	65.30	-0.70	-0.66	ZZ
DQ6UKQ		65.60	-1.63	-1.75	63.60	-2.40	-2.26	ZZ
E3PQYT		67.00	-0.23	-0.24	66.00	0.00	0.00	ZZ
F6B36C		67.70	0.47	0.51	66.00	0.00	0.00	ZZ
FBD8Z3		67.00	-0.23	-0.24	66.90	0.90	0.84	ZZ
FBYN9H		67.80	0.57	0.62	66.60	0.60	0.56	ZZ
FPH3LP		67.00	-0.23	-0.24	67.00	1.00	0.94	ZZ
FUC3XZ		66.60	-0.63	-0.67	66.20	0.20	0.19	ZZ
G2EELA		67.12	-0.11	-0.11	65.51	-0.49	-0.46	ZZ
GCLL2G	*	69.00	1.77	1.91	69.00	3.00	2.82	ZZ
GG92T3		67.00	-0.23	-0.24	66.00	0.00	0.00	ZZ
GHWUBY		68.90	1.67	1.80	68.40	2.40	2.26	ZZ
GM7UPB		67.80	0.57	0.62	66.40	0.40	0.37	ZZ
GY22PZ	*	68.70	1.47	1.59	68.70	2.70	2.54	ZZ
H33EU6		67.40	0.17	0.19	66.20	0.20	0.19	ZZ
H4XXYR		67.90	0.67	0.73	66.00	0.00	0.00	ZZ
HJ6CYL		65.00	-2.23	-2.39	64.80	-1.20	-1.13	ZZ
HL94VF		67.00	-0.23	-0.24	66.00	0.00	0.00	ZZ
HPA6WX		68.10	0.87	0.94	65.70	-0.30	-0.29	ZZ
J2KQ94		67.00	-0.23	-0.24	64.50	-1.50	-1.42	ZZ
J7YLQM		66.30	-0.93	-1.00	64.50	-1.50	-1.42	ZZ
J9E6J4		68.78	1.55	1.67	65.81	-0.19	-0.18	ZZ
JKB74K		66.90	-0.33	-0.35	64.80	-1.20	-1.13	ZZ
K2FQNU		67.30	0.07	0.08	65.70	-0.30	-0.29	ZZ
KGQETH	*	64.80	-2.43	-2.61	64.50	-1.50	-1.42	ZZ
KH6RKL		66.00	-1.23	-1.32	66.00	0.00	0.00	ZZ
L6PEAB		68.00	0.77	0.83	66.00	0.00	0.00	ZZ
LAJEN7	X	66.80	-0.43	-0.46	70.70	4.70	4.42	ZZ

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 143

Reduction of Area (Lab-Machined Round Steel) - Percent
ASTM E8

		Sample P25			Sample P26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
LKKW6Z		68.00	0.77	0.83	67.00	1.00	0.94	ZZ
LVPTGH		65.60	-1.63	-1.75	65.90	-0.10	-0.10	ZZ
M8V77H		67.00	-0.23	-0.24	66.00	0.00	0.00	ZZ
MPV9RT		67.50	0.27	0.30	66.10	0.10	0.09	ZZ
MVG88F	X	62.00	-5.23	-5.62	62.00	-4.00	-3.77	ZZ
NFNUBY		68.42	1.19	1.29	65.66	-0.34	-0.32	ZZ
NHQRJ7		67.00	-0.23	-0.24	65.00	-1.00	-0.94	ZZ
PRHEGH		68.50	1.27	1.37	66.80	0.80	0.75	ZZ
PWALYQ		67.60	0.37	0.40	66.40	0.40	0.37	ZZ
PZP9FG		67.90	0.67	0.73	66.80	0.80	0.75	ZZ
Q3UYKB		67.00	-0.23	-0.24	66.00	0.00	0.00	ZZ
QARTCH		68.00	0.77	0.83	66.40	0.40	0.37	ZZ
QEMWUN		67.00	-0.23	-0.24	66.80	0.80	0.75	ZZ
REJG8F	X	66.70	-0.53	-0.57	62.20	-3.80	-3.58	ZZ
RG3J79		66.70	-0.53	-0.57	65.90	-0.10	-0.10	ZZ
T32D9U		66.60	-0.63	-0.67	64.40	-1.60	-1.51	ZZ
T6AJTB		66.70	-0.53	-0.57	65.50	-0.50	-0.47	ZZ
TLBBQ7	X	58.60	-8.63	-9.28	63.50	-2.50	-2.36	ZZ
TN8T28	X	33.10	-34.13	-36.71	33.10	-32.90	-30.97	ZZ
UP8ALF		67.10	-0.13	-0.13	66.40	0.40	0.37	ZZ
UUMX6R		66.90	-0.33	-0.35	65.70	-0.30	-0.29	ZZ
VC6AGH		67.20	-0.03	-0.03	67.00	1.00	0.94	ZZ
VFY3JL		66.81	-0.42	-0.45	64.87	-1.13	-1.07	ZZ
VNHCXA		65.80	-1.43	-1.53	66.50	0.50	0.47	ZZ
VVQ4UX		67.70	0.47	0.51	65.20	-0.80	-0.76	ZZ
WTMEHG		65.00	-2.23	-2.39	65.00	-1.00	-0.94	ZZ
WXYDXG		66.80	-0.43	-0.46	66.40	0.40	0.37	ZZ
X2EAU6		66.00	-1.23	-1.32	64.00	-2.00	-1.89	ZZ
X4Y929		66.80	-0.43	-0.46	66.10	0.10	0.09	ZZ
Y94D9X		67.80	0.57	0.62	65.70	-0.30	-0.29	ZZ
YDZVRJ		68.64	1.41	1.52	68.22	2.22	2.09	ZZ
YJBYND		67.90	0.67	0.73	65.10	-0.90	-0.85	ZZ
ZN3JBU	X	64.00	-3.23	-3.47	64.50	-1.50	-1.42	ZZ
ZPPDEN		68.35	1.12	1.21	65.04	-0.96	-0.91	ZZ
ZUMVVN		67.00	-0.23	-0.24	67.00	1.00	0.94	ZZ

Summary Statistics

	Sample P25		Sample P26	
Grand Means	67.23	Percent	66.00	Percent
Stnd Dev Btwn Labs	0.93	Percent	1.06	Percent

Samples P25 , P26 : AISI 4340

Statistics based on 70 of 84 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 143

Reduction of Area (Lab-Machined Round Steel) - Percent
ASTM E8

Comments on assigned Data Flags for Analysis #143

WebCode	Flag	Analyst Comment
2W6A4V	X	Data for both samples are low.
39Y4X4	X	Data for both samples are high.
474RPH	X	Data for sample P26 are high.
4THCN4	X	Data for sample P26 are low.
4UM8YU	X	Data for sample P25 are low.
9BMLKW	X	Data for both samples are high.
A6UVKE	X	Data for sample P25 are low and data for sample P26 are high.
CAXFGB	X	Data for sample P25 are low.
LAJEN7	X	Data for sample P26 are high.
MVG88F	X	Data for both samples are low.
REJG8F	X	Data for sample P26 are low.
TLBBQ7	X	Data for sample P25 are low.
TN8T28	X	Data for both samples are low.
ZN3JBU	X	Data for sample P25 are low.

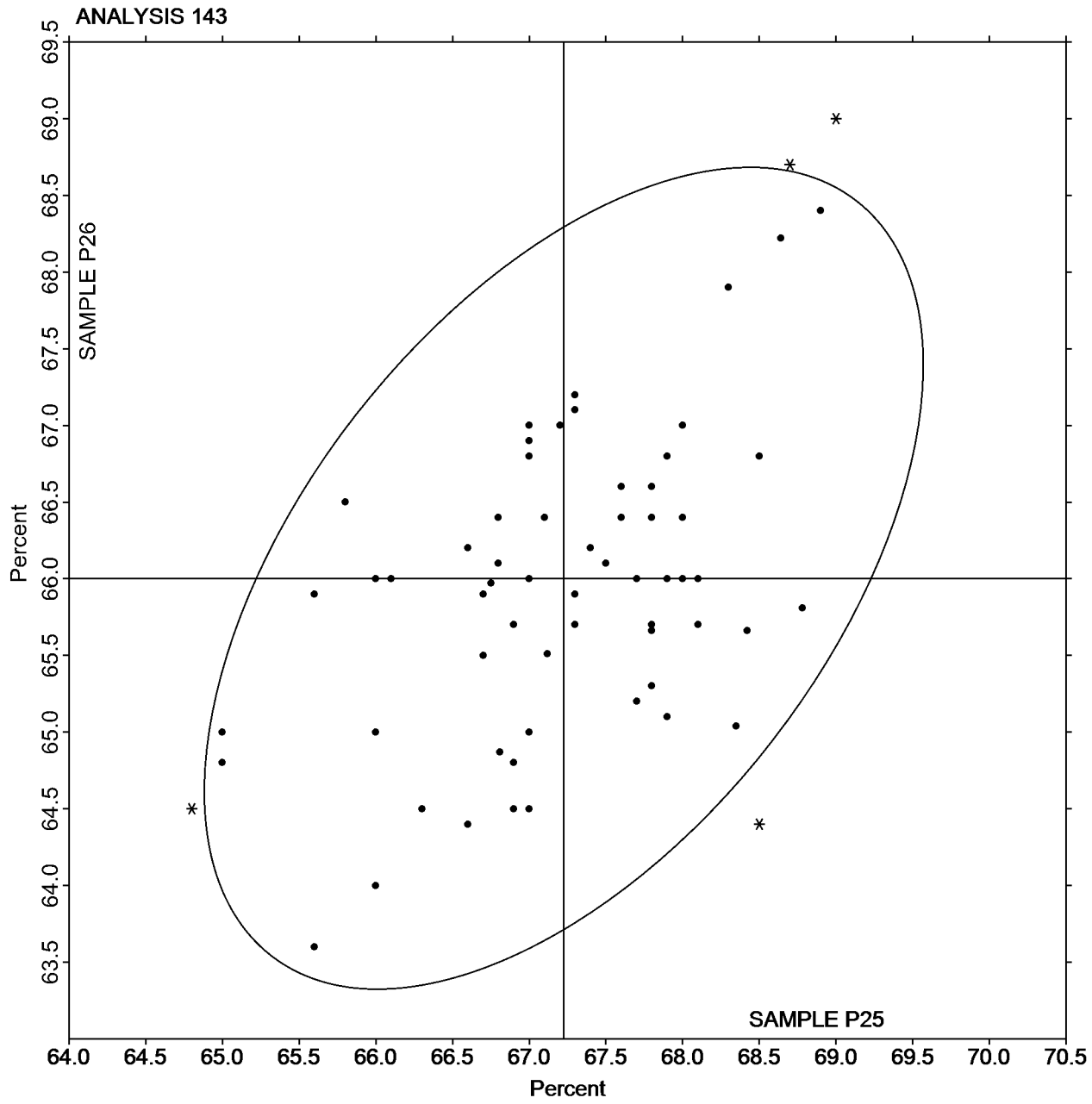
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 143

Reduction of Area (Lab-Machined Round Steel) - Percent
ASTM E8

SAMPLE P25	SAMPLE P26
67.23 Percent	66.00 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 170

Chemical Analysis Element #1 - Carbon & Low Alloy Steel - Percent CARBON (C)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		0.1913	-0.0049	-0.79	0.1857	-0.0039	-0.70	OE
2RXNBR		0.1987	0.0024	0.40	0.1900	0.0004	0.07	CI
2W6A4V		0.1963	0.0001	0.02	0.1903	0.0007	0.13	OE
2XFECD	X	0.1647	-0.0316	-5.12	0.1597	-0.0299	-5.32	OE
39Y4X4		0.1967	0.0004	0.07	0.1930	0.0034	0.60	GD
3B79ML		0.2067	0.0104	1.70	0.1973	0.0077	1.38	OE
3FZBKJ	*	0.1830	-0.0132	-2.15	0.1750	-0.0146	-2.60	CI
3GT3TJ		0.1990	0.0028	0.45	0.1920	0.0024	0.43	CI
3Z6X2H		0.1933	-0.0029	-0.47	0.1860	-0.0036	-0.64	OE
474RPH		0.1977	0.0014	0.23	0.1900	0.0004	0.07	CI
64J7MM		0.2000	0.0038	0.61	0.1870	-0.0026	-0.46	OE
66RG7J	X	0.1837	-0.0126	-2.04	0.1723	-0.0173	-3.07	OE
6AM2EA		0.2043	0.0081	1.32	0.1957	0.0061	1.08	CI
6LYLL9		0.1900	-0.0062	-1.01	0.1867	-0.0029	-0.52	GD
74EBEZ	X	0.2183	0.0221	3.59	0.2063	0.0167	2.98	GD
76LGPF		0.1933	-0.0029	-0.47	0.1883	-0.0013	-0.23	DR
78CLHM		0.2020	0.0058	0.94	0.1943	0.0047	0.84	GD
7H822W		0.1955	-0.0008	-0.12	0.1893	-0.0003	-0.06	CI
7KDGCA	*	0.2143	0.0181	2.94	0.2027	0.0131	2.32	OE
7MN8R6		0.1990	0.0028	0.45	0.1953	0.0057	1.02	GD
7VWNGP	X	0.1923	-0.0040	-0.64	0.2000	0.0104	1.86	CI
864T3E		0.1963	0.0001	0.02	0.1883	-0.0013	-0.23	OE
922AHR		0.1953	-0.0009	-0.15	0.1940	0.0044	0.78	OE
A6UVKE		0.1937	-0.0025	-0.41	0.1874	-0.0022	-0.39	OE
A787U6		0.1988	0.0026	0.42	0.1895	-0.0001	-0.02	OE
A7CNR4	X	0.2203	0.0241	3.91	0.2137	0.0241	4.28	OE
B3LTK2		0.1973	0.0010	0.17	0.1957	0.0061	1.08	DR
B6CAFV		0.2027	0.0064	1.05	0.1947	0.0051	0.90	XX
B99RLA		0.1853	-0.0109	-1.77	0.1800	-0.0096	-1.71	OE
BMPN7D		0.2013	0.0051	0.82	0.1926	0.0030	0.54	OE
BPKAT3		0.1977	0.0014	0.23	0.1883	-0.0013	-0.23	OE
BTCLH8		0.1997	0.0035	0.56	0.1879	-0.0017	-0.31	OE
CG6TWL		0.1953	-0.0009	-0.15	0.1860	-0.0036	-0.64	OE
CUQ4LC		0.1997	0.0034	0.56	0.1903	0.0007	0.13	OE
DVAQ4Q		0.1961	-0.0002	-0.02	0.1896	0.0000	-0.01	OE
E3QQT2		0.1927	-0.0036	-0.58	0.1863	-0.0033	-0.58	CI
EB3XJ4		0.1970	0.0008	0.13	0.1903	0.0007	0.13	OE
ECZ2H7		0.1943	-0.0019	-0.31	0.1903	0.0007	0.13	OE
EH2E4G	X	0.2217	0.0254	4.13	0.2180	0.0284	5.05	OE
EWLXUP		0.2027	0.0064	1.05	0.1953	0.0057	1.02	OE
F46L6L		0.1960	-0.0002	-0.04	0.1907	0.0011	0.19	OE
F7URPH		0.1890	-0.0072	-1.17	0.1803	-0.0093	-1.65	OE
FFD7LT	*	0.1810	-0.0152	-2.47	0.1760	-0.0136	-2.42	CO
FMEGYD		0.1993	0.0031	0.50	0.1943	0.0047	0.84	OE
FR8MBU		0.1907	-0.0056	-0.90	0.1850	-0.0046	-0.82	OE
GG92T3		0.2013	0.0051	0.83	0.1970	0.0074	1.32	CI
GHHAVV		0.1900	-0.0062	-1.01	0.1867	-0.0029	-0.52	OE
GHVWZ3		0.1993	0.0031	0.50	0.1920	0.0024	0.43	CO
H3X6WD	X	0.2159	0.0197	3.19	0.1992	0.0096	1.71	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 170

Chemical Analysis Element #1 - Carbon & Low Alloy Steel - Percent CARBON (C)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
H8TYP9		0.1990	0.0028	0.45	0.1927	0.0031	0.55	CO
HJ6CYL		0.1830	-0.0132	-2.15	0.1813	-0.0083	-1.47	OE
HVWQ9Q		0.1883	-0.0079	-1.28	0.1830	-0.0066	-1.17	OE
J2KQ94		0.1963	0.0001	0.02	0.1890	-0.0006	-0.11	CI
J4PHUP		0.1867	-0.0095	-1.54	0.1794	-0.0102	-1.82	OE
JW9W2L		0.1983	0.0021	0.34	0.1907	0.0011	0.19	CI
K374XZ		0.2016	0.0054	0.87	0.1960	0.0064	1.14	OE
KUHYGL		0.1977	0.0014	0.23	0.1893	-0.0003	-0.05	OE
LHZXXX		0.1937	-0.0026	-0.42	0.1843	-0.0053	-0.94	CI
LKKW6Z		0.1957	-0.0006	-0.09	0.1920	0.0024	0.43	OE
LMEERV		0.1850	-0.0112	-1.82	0.1800	-0.0096	-1.71	CI
LVPTGH		0.2027	0.0064	1.05	0.1967	0.0071	1.26	CO
LY4HRE	X	0.1904	-0.0059	-0.95	0.1696	-0.0200	-3.56	OE
M8V77H		0.1980	0.0018	0.29	0.1903	0.0007	0.13	CI
MA3DMP		0.2004	0.0041	0.67	0.1943	0.0047	0.83	DR
MALAYP		0.1961	-0.0001	-0.02	0.1852	-0.0044	-0.78	OE
MLETFF		0.1852	-0.0111	-1.80	0.1841	-0.0055	-0.97	DR
MUQ4E9	X	0.1760	-0.0202	-3.28	0.1720	-0.0176	-3.13	OE
MVG88F		0.1830	-0.0132	-2.15	0.1767	-0.0129	-2.30	OE
NHQRJ7		0.1950	-0.0012	-0.20	0.1890	-0.0006	-0.11	OE
NKW7B7		0.1927	-0.0036	-0.58	0.1900	0.0004	0.07	OE
NMMA4D		0.2017	0.0054	0.88	0.1957	0.0061	1.08	OE
NPUR39		0.1940	-0.0022	-0.36	0.1913	0.0017	0.31	OE
PGAXFB		0.1923	-0.0039	-0.63	0.1867	-0.0029	-0.52	OE
PLPCDH		0.2000	0.0038	0.61	0.1937	0.0041	0.72	OE
PUYXAY	X	0.1717	-0.0246	-3.99	0.1677	-0.0219	-3.90	OE
PVE6MU	*	0.2103	0.0141	2.29	0.1987	0.0091	1.61	GD
PWANPV		0.1927	-0.0036	-0.58	0.1813	-0.0083	-1.47	CO
QMW4PW		0.1882	-0.0080	-1.30	0.1826	-0.0070	-1.25	OE
QNRPF2		0.1957	-0.0006	-0.09	0.1849	-0.0047	-0.84	OE
R2AXJT	*	0.2043	0.0081	1.32	0.1910	0.0014	0.24	OE
RCFK8K		0.2008	0.0046	0.74	0.1945	0.0049	0.87	DR
RCRB2W		0.1823	-0.0139	-2.26	0.1778	-0.0118	-2.09	OE
RDPUVC	*	0.2077	0.0114	1.86	0.2037	0.0141	2.50	OE
RKLFUX		0.1921	-0.0041	-0.67	0.1853	-0.0043	-0.77	OE
RQ9BPB		0.1957	-0.0006	-0.09	0.1880	-0.0016	-0.28	CO
RTWYV9		0.1927	-0.0036	-0.58	0.1850	-0.0046	-0.82	OE
RVHQYY		0.2010	0.0048	0.77	0.1953	0.0057	1.02	OE
RZ4C6T		0.2053	0.0091	1.48	0.1953	0.0057	1.02	OE
TN8T28		0.1953	-0.0009	-0.15	0.1873	-0.0023	-0.40	CO
TV4GPY		0.1900	-0.0062	-1.01	0.1900	0.0004	0.07	OE
U66LW6		0.1960	-0.0002	-0.04	0.1933	0.0037	0.66	CO
UP8ALF		0.1927	-0.0035	-0.57	0.1841	-0.0055	-0.97	CO
UXLYKN		0.1960	-0.0002	-0.04	0.1903	0.0007	0.13	CI
V48EJK		0.1977	0.0015	0.24	0.1902	0.0006	0.11	OE
VC6AGH		0.2070	0.0108	1.75	0.1990	0.0094	1.67	OE
VFY3JL		0.1910	-0.0052	-0.85	0.1837	-0.0059	-1.06	OE
VNHCXA		0.1890	-0.0072	-1.17	0.1833	-0.0063	-1.12	OE
WQF4EL		0.2087	0.0124	2.02	0.1967	0.0071	1.26	CI

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 170

Chemical Analysis Element #1 - Carbon & Low Alloy Steel - Percent CARBON (C)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
WXYDXG		0.1937	-0.0026	-0.42	0.1910	0.0014	0.25	OE
XEK6CL		0.1973	0.0011	0.18	0.1923	0.0027	0.49	CO
XG8XXN		0.1967	0.0005	0.08	0.1844	-0.0052	-0.93	CO
XK6JM7	X	0.1970	0.0008	0.13	0.2027	0.0131	2.32	OE
XP4QCA		0.1962	-0.0001	-0.01	0.1906	0.0010	0.18	CI
Y6ADDB		0.1980	0.0018	0.29	0.1940	0.0044	0.78	OE
Y78TFZ		0.2030	0.0068	1.10	0.1947	0.0051	0.90	OE
YMU2M7		0.1963	0.0001	0.02	0.1903	0.0007	0.13	CI
YN47ZU		0.1950	-0.0012	-0.20	0.1900	0.0004	0.07	OE
YRWEZV		0.1917	-0.0046	-0.74	0.1853	-0.0043	-0.76	XX
YWR9XW	X	0.1640	-0.0322	-5.23	0.1540	-0.0356	-6.33	OE
ZBG6AF		0.1977	0.0015	0.24	0.1898	0.0002	0.03	OE
ZN3JBU		0.2020	0.0058	0.94	0.1990	0.0094	1.67	CI
ZNGYEA		0.1952	-0.0011	-0.17	0.1883	-0.0013	-0.23	OE
ZNXBUU		0.2007	0.0044	0.72	0.1933	0.0037	0.66	OE
ZUMVVN		0.1997	0.0034	0.56	0.1963	0.0067	1.20	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.1962	Percent	0.1896	Percent
Stnd Dev Btwn Labs	0.0062	Percent	0.0056	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 102 of 114 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 170

Chemical Analysis Element #1 - Carbon & Low Alloy Steel - Percent CARBON (C)

Comments on assigned Data Flags for Analysis #170

WebCode	Flag	Analyst Comment
2XFECD	X	Data for both samples are low. Possible Systematic error.
66RG7J	X	Data for sample L26 are low. Inconsistent in testing between samples.
74EBEZ	X	Data for both samples are high. Possible Systematic error.
7VWNGP	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
A7CNR4	X	Data for both samples are high. Possible Systematic error.
EH2E4G	X	Data for both samples are high. Possible Systematic error.
H3X6WD	X	Data for sample L25 are high. Inconsistent in testing between samples.
LY4HRE	X	Data for sample L26 are low. Inconsistent in testing between samples.
MUQ4E9	X	Data for both samples are low. Possible Systematic error.
PUYXAY	X	Data for both samples are low. Possible Systematic error.
XK6JM7	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L26.
YWR9XW	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample L25.

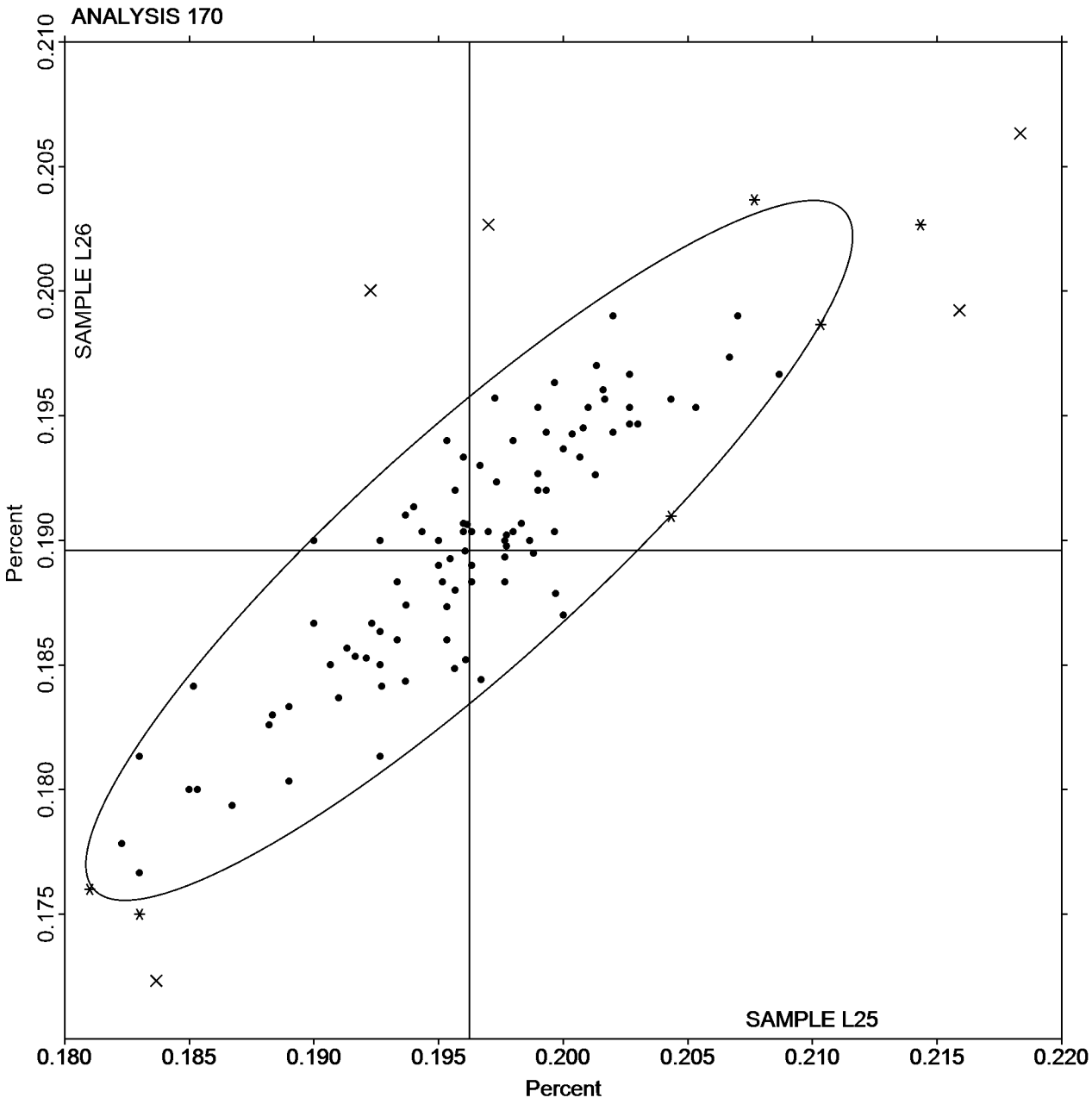
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 170

Chemical Analysis Element #1 - Carbon & Low Alloy Steel - Percent
CARBON (C)

SAMPLE L25	SAMPLE L26
0.1962 Percent	0.1896 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 171

Chemical Analysis Element #2 - Carbon & Low Alloy Steel - Percent
MANGANESE (Mn)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		0.6340	0.0115	1.47	0.5520	0.0085	1.05	OE
2RXNBR		0.6306	0.0081	1.04	0.5505	0.0069	0.86	OE
2W6A4V	X	0.2257	-0.3968	-50.71	0.2563	-0.2872	-35.48	OE
2XFECD	*	0.6190	-0.0035	-0.44	0.5513	0.0078	0.97	OE
39Y4X4		0.6343	0.0119	1.52	0.5387	-0.0049	-0.60	GD
3B79ML		0.6103	-0.0121	-1.55	0.5357	-0.0079	-0.97	OE
3FZBKJ		0.6172	-0.0053	-0.67	0.5389	-0.0046	-0.57	OE
3GT3TJ		0.6127	-0.0098	-1.25	0.5323	-0.0112	-1.38	IC
3Z6X2H		0.6237	0.0012	0.15	0.5443	0.0008	0.10	OE
46B3ZV		0.6137	-0.0088	-1.12	0.5417	-0.0019	-0.23	WD
474RPH		0.6203	-0.0021	-0.27	0.5430	-0.0005	-0.06	DR
64J7MM		0.6237	0.0012	0.15	0.5477	0.0041	0.51	OE
66RG7J		0.6043	-0.0181	-2.32	0.5247	-0.0189	-2.33	OE
6AM2EA		0.6187	-0.0038	-0.49	0.5330	-0.0105	-1.30	IC
6LYLL9		0.6300	0.0075	0.96	0.5500	0.0065	0.80	GD
74EBEZ		0.6167	-0.0058	-0.74	0.5413	-0.0022	-0.27	GD
76LGPF	X	0.6347	0.0122	1.56	0.5423	-0.0012	-0.15	DR
78CLHM		0.6373	0.0149	1.90	0.5430	-0.0005	-0.06	GD
7H822W		0.6325	0.0100	1.28	0.5520	0.0085	1.05	IR
7KDGCA	*	0.6150	-0.0075	-0.95	0.5457	0.0021	0.26	OE
7MN8R6		0.6100	-0.0125	-1.59	0.5360	-0.0075	-0.93	GD
7VWNGP		0.6343	0.0119	1.52	0.5520	0.0085	1.05	OE
864T3E		0.6197	-0.0028	-0.36	0.5407	-0.0029	-0.35	OE
922AHR		0.6270	0.0045	0.58	0.5457	0.0021	0.26	OE
A6UVKE		0.6170	-0.0055	-0.70	0.5384	-0.0051	-0.63	OE
A787U6		0.6368	0.0144	1.84	0.5604	0.0169	2.09	OE
A7CNR4		0.6293	0.0069	0.88	0.5500	0.0065	0.80	OE
B3LTK2		0.6260	0.0035	0.45	0.5509	0.0074	0.92	DR
B6CAFV		0.6277	0.0052	0.67	0.5413	-0.0022	-0.27	XX
B99RLA		0.6197	-0.0028	-0.36	0.5387	-0.0049	-0.60	OE
BMPN7D		0.6169	-0.0056	-0.71	0.5407	-0.0028	-0.34	OE
BPKAT3		0.6143	-0.0081	-1.04	0.5340	-0.0095	-1.18	OE
BTCLH8		0.6363	0.0138	1.77	0.5572	0.0136	1.69	OE
CG6TWL		0.6257	0.0032	0.41	0.5453	0.0018	0.22	OE
CUQ4LC	X	0.6600	0.0375	4.80	0.5667	0.0231	2.86	OE
DVAQ4Q		0.6278	0.0053	0.68	0.5485	0.0050	0.61	OE
E3QQT2		0.6169	-0.0056	-0.71	0.5367	-0.0068	-0.84	IC
EB3XJ4		0.6273	0.0049	0.62	0.5493	0.0058	0.72	OE
ECZ2H7		0.6137	-0.0088	-1.12	0.5360	-0.0075	-0.93	OE
EH2E4G	X	0.6580	0.0355	4.54	0.5803	0.0368	4.55	OE
EWLXUP		0.6187	-0.0038	-0.49	0.5377	-0.0059	-0.72	OE
F46L6L	*	0.6400	0.0175	2.24	0.5667	0.0231	2.86	OE
F7URPH		0.6200	-0.0025	-0.31	0.5397	-0.0039	-0.48	OE
FFD7LT		0.6273	0.0049	0.62	0.5447	0.0011	0.14	OE
FMEGYD		0.6187	-0.0038	-0.49	0.5413	-0.0022	-0.27	OE
FR8MBU		0.6270	0.0045	0.58	0.5520	0.0085	1.05	OE
GG92T3		0.6243	0.0019	0.24	0.5370	-0.0065	-0.81	OE
GHHAVV		0.6200	-0.0025	-0.31	0.5367	-0.0069	-0.85	OE
GHVWZ3		0.6160	-0.0065	-0.83	0.5373	-0.0062	-0.76	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 171

Chemical Analysis Element #2 - Carbon & Low Alloy Steel - Percent
MANGANESE (Mn)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
H3X6WD	X	0.6606	0.0381	4.87	0.5791	0.0355	4.39	OE
H8TYP9		0.6234	0.0009	0.12	0.5424	-0.0011	-0.13	OE
HJ6CYL		0.6207	-0.0018	-0.23	0.5447	0.0011	0.14	OE
HVWQ9Q		0.6300	0.0075	0.96	0.5480	0.0045	0.55	OE
J2KQ94		0.6183	-0.0041	-0.53	0.5310	-0.0125	-1.55	WD
J4PHUP		0.6052	-0.0172	-2.20	0.5275	-0.0160	-1.98	OE
JW9W2L		0.6153	-0.0071	-0.91	0.5350	-0.0085	-1.05	OE
K374XZ		0.6180	-0.0045	-0.57	0.5380	-0.0055	-0.68	OE
KUHYGL		0.6290	0.0065	0.84	0.5447	0.0011	0.14	OE
LHZXXX		0.6277	0.0052	0.67	0.5457	0.0021	0.26	IC
LKKW6Z		0.6250	0.0025	0.32	0.5453	0.0018	0.22	OE
LMEERV		0.6340	0.0115	1.47	0.5610	0.0175	2.16	XX
LVPTGH		0.6100	-0.0125	-1.59	0.5300	-0.0135	-1.67	OE
LY4HRE		0.6307	0.0082	1.05	0.5509	0.0074	0.92	OE
M8V77H		0.6250	0.0025	0.32	0.5443	0.0008	0.10	OE
MA3DMP		0.6198	-0.0027	-0.34	0.5476	0.0040	0.50	DR
MALAYP		0.6186	-0.0039	-0.50	0.5380	-0.0055	-0.68	OE
MLETFF		0.6383	0.0159	2.03	0.5553	0.0118	1.46	DR
MUQ4E9	*	0.6453	0.0229	2.92	0.5680	0.0245	3.02	OE
MVG88F		0.6227	0.0002	0.03	0.5493	0.0058	0.72	OE
NHQRJ7		0.6310	0.0085	1.09	0.5530	0.0095	1.17	OE
NKW7B7		0.6203	-0.0021	-0.27	0.5397	-0.0039	-0.48	OE
NMMA4D		0.6163	-0.0061	-0.78	0.5397	-0.0039	-0.48	OE
NPUR39		0.6143	-0.0081	-1.04	0.5353	-0.0082	-1.01	OE
PGAXFB		0.6123	-0.0101	-1.29	0.5340	-0.0095	-1.18	OE
PLPCDH	X	0.5800	-0.0425	-5.43	0.5100	-0.0335	-4.14	OE
PUYXAY		0.6093	-0.0131	-1.68	0.5327	-0.0109	-1.34	OE
PVE6MU		0.6147	-0.0078	-1.00	0.5333	-0.0102	-1.26	GD
PWANPV		0.6186	-0.0038	-0.49	0.5450	0.0015	0.18	OE
QMW4PW		0.6307	0.0082	1.05	0.5472	0.0037	0.46	OE
QNRPF2		0.6221	-0.0004	-0.05	0.5402	-0.0033	-0.41	OE
R2AXG8		0.6220	-0.0005	-0.06	0.5423	-0.0012	-0.15	WD
R2AXJT	X	0.5984	-0.0241	-3.08	0.5276	-0.0160	-1.97	OE
RCFK8K	*	0.6199	-0.0026	-0.33	0.5509	0.0074	0.91	DR
RCRB2W		0.6178	-0.0046	-0.59	0.5399	-0.0036	-0.44	OE
RDPUVC		0.6210	-0.0015	-0.19	0.5433	-0.0002	-0.02	OE
RKLFUX		0.6200	-0.0025	-0.31	0.5409	-0.0026	-0.32	OE
RQ9BPB		0.6240	0.0015	0.20	0.5410	-0.0025	-0.31	OE
RTWYV9	X	0.6473	0.0249	3.18	0.5530	0.0095	1.17	OE
RVHQYY		0.6230	0.0005	0.07	0.5447	0.0011	0.14	OE
RZ4C6T		0.6333	0.0109	1.39	0.5513	0.0078	0.97	OE
TN8T28	X	0.5967	-0.0258	-3.30	0.5167	-0.0269	-3.32	IC
TV4GPY		0.6193	-0.0031	-0.40	0.5383	-0.0052	-0.64	OE
U66LW6		0.6277	0.0052	0.67	0.5470	0.0035	0.43	IC
UP8ALF		0.6200	-0.0025	-0.31	0.5390	-0.0045	-0.56	OE
UXLYKN		0.6213	-0.0011	-0.14	0.5420	-0.0015	-0.19	OE
V48EJK		0.6258	0.0034	0.43	0.5450	0.0015	0.19	OE
VC6AGH	*	0.6433	0.0209	2.67	0.5617	0.0181	2.24	OE
VFY3JL		0.6160	-0.0065	-0.83	0.5330	-0.0105	-1.30	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 171

Chemical Analysis Element #2 - Carbon & Low Alloy Steel - Percent
MANGANESE (Mn)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
VNHCXA		0.6257	0.0032	0.41	0.5427	-0.0009	-0.11	OE
WQF4EL		0.6233	0.0009	0.11	0.5263	-0.0172	-2.12	GD
WXYDXG		0.6230	0.0005	0.07	0.5390	-0.0045	-0.56	OE
XEK6CL		0.6190	-0.0035	-0.44	0.5467	0.0031	0.39	OE
XG8XXN		0.6200	-0.0025	-0.31	0.5500	0.0065	0.80	OE
XK6JM7	X	0.6293	0.0069	0.88	0.5297	-0.0139	-1.71	OE
XP4QCA		0.6189	-0.0036	-0.46	0.5394	-0.0042	-0.51	CI
Y6ADDB		0.6143	-0.0081	-1.04	0.5407	-0.0029	-0.35	OE
Y78TFZ		0.6187	-0.0038	-0.49	0.5387	-0.0049	-0.60	OE
YMU2M7		0.6180	-0.0045	-0.57	0.5337	-0.0099	-1.22	OE
YN47ZU		0.6263	0.0039	0.49	0.5463	0.0028	0.35	OE
YRWEZV		0.6223	-0.0001	-0.02	0.5483	0.0048	0.59	XX
YWR9XW		0.6350	0.0125	1.60	0.5597	0.0161	1.99	OE
ZBG6AF		0.6274	0.0049	0.63	0.5463	0.0028	0.35	OE
ZN3JBU		0.6110	-0.0115	-1.47	0.5320	-0.0115	-1.42	IC
ZNGYEA		0.6311	0.0087	1.11	0.5516	0.0081	1.00	OE
ZNXBUU		0.6180	-0.0045	-0.57	0.5360	-0.0075	-0.93	OE
ZUMVVN		0.6230	0.0005	0.07	0.5457	0.0021	0.26	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.6225	Percent	0.5435	Percent
Stnd Dev Btwn Labs	0.0078	Percent	0.0081	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 103 of 116 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 171

Chemical Analysis Element #2 - Carbon & Low Alloy Steel - Percent MANGANESE (Mn)

Comments on assigned Data Flags for Analysis #171

WebCode	Flag	Analyst Comment
2W6A4V	X	Data for both samples are low. Possible Systematic error.
76LGPF	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
CUQ4LC	X	Data for both samples are high. Possible Systematic error.
EH2E4G	X	Data for both samples are high. Possible Systematic error.
H3X6WD	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L26.
PLPCDH	X	Data for both samples are low. Possible Systematic error.
R2AXJT	X	Data for sample L25 are low. Inconsistent in testing between samples.
RTWYV9	X	Data for sample L25 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
TN8T28	X	Data for both samples are low. Possible Systematic error.
XK6JM7	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L26.

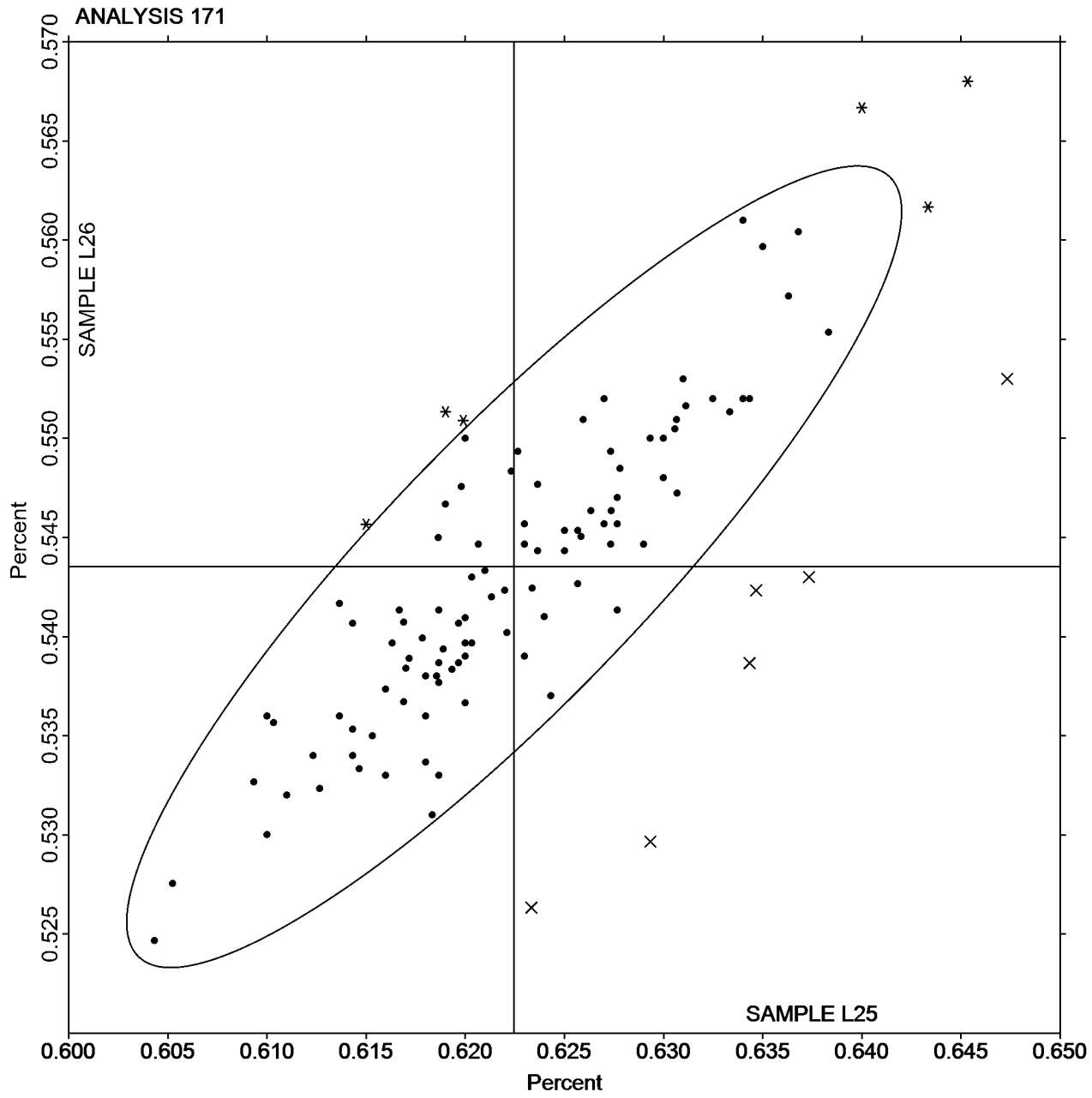
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 171

Chemical Analysis Element #2 - Carbon & Low Alloy Steel - Percent
MANGANESE (Mn)

SAMPLE L25	SAMPLE L26
0.6225 Percent	0.5435 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 172

Chemical Analysis Element #3 - Carbon & Low Alloy Steel - Percent
PHOSPHORUS (P)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ	*	0.00573	-0.00168	-1.47	0.00703	-0.00122	-1.00	OE
2RXNBR		0.00613	-0.00128	-1.12	0.00703	-0.00122	-1.00	OE
2W6A4V		0.00600	-0.00141	-1.23	0.00633	-0.00192	-1.58	OE
2XFECD		0.00700	-0.00041	-0.36	0.00733	-0.00092	-0.76	OE
39Y4X4		0.00933	0.00192	1.68	0.0100	0.00174	1.43	GD
3B79ML		0.00667	-0.00074	-0.65	0.00740	-0.00086	-0.70	OE
3FZBKJ		0.00779	0.00038	0.33	0.00866	0.00040	0.33	OE
3GT3TJ	X	0.00750	0.00009	0.08	0.0129	0.00468	3.84	IC
3Z6X2H		0.00610	-0.00131	-1.15	0.00690	-0.00136	-1.11	OE
46B3ZV	X	0.0700	0.06259	54.69	0.00800	-0.00026	-0.21	WD
474RPH		0.00800	0.00059	0.51	0.00800	-0.00026	-0.21	DR
64J7MM		0.00953	0.00212	1.85	0.0105	0.00221	1.82	OE
66RG7J		0.00977	0.00236	2.06	0.00987	0.00161	1.32	OE
6AM2EA		0.00650	-0.00091	-0.80	0.00723	-0.00102	-0.84	IC
6LYLL9		0.00800	0.00059	0.51	0.00900	0.00074	0.61	GD
74EBEZ		0.0105	0.00309	2.70	0.0105	0.00221	1.82	GD
76LGPF		0.00797	0.00056	0.49	0.00897	0.00071	0.58	DR
78CLHM		0.0100	0.00259	2.26	0.0110	0.00274	2.26	GD
7H822W		0.00633	-0.00108	-0.94	0.00707	-0.00119	-0.98	OE
7KDGCA	X	0.00700	-0.00041	-0.36	0.0100	0.00174	1.43	OE
7MN8R6		0.00567	-0.00174	-1.52	0.00633	-0.00192	-1.58	GD
7VWNGP		0.00710	-0.00031	-0.27	0.00800	-0.00026	-0.21	OE
864T3E		0.00833	0.00092	0.81	0.00900	0.00074	0.61	OE
922AHR		0.00773	0.00032	0.28	0.00857	0.00031	0.26	OE
A6UVKE		0.00720	-0.00021	-0.18	0.00820	-0.00006	-0.05	OE
A787U6		0.00808	0.00067	0.58	0.00917	0.00092	0.75	OE
A7CNR4		0.00950	0.00209	1.83	0.0104	0.00218	1.79	OE
B6CAFV	*	0.00870	0.00129	1.13	0.0102	0.00194	1.60	XX
B99RLA		0.00877	0.00136	1.18	0.00930	0.00104	0.86	OE
BMPN7D		0.00733	-0.00008	-0.07	0.00855	0.00029	0.24	OE
BPKAT3		0.00757	0.00016	0.14	0.00843	0.00018	0.15	OE
BTCLH8		0.00662	-0.00079	-0.69	0.00787	-0.00039	-0.32	OE
CG6TWL		0.00800	0.00059	0.51	0.00857	0.00031	0.26	OE
CUQ4LC	X	0.00600	-0.00141	-1.23	0.00567	-0.00259	-2.13	OE
DVAQ4Q		0.00734	-0.00007	-0.06	0.00790	-0.00036	-0.29	OE
E3QQT2		0.00560	-0.00181	-1.58	0.00677	-0.00149	-1.22	IC
EB3XJ4		0.00910	0.00169	1.48	0.00977	0.00151	1.24	OE
ECZ2H7		0.00800	0.00059	0.51	0.00867	0.00041	0.34	OE
EH2E4G	X	0.0107	0.00326	2.84	0.0137	0.00541	4.45	OE
EWLXUP		0.00723	-0.00018	-0.16	0.00797	-0.00029	-0.24	OE
F46L6L		0.00700	-0.00041	-0.36	0.00767	-0.00059	-0.48	OE
F7URPH		0.00690	-0.00051	-0.45	0.00747	-0.00079	-0.65	OE
FFD7LT		0.00753	0.00012	0.11	0.00820	-0.00006	-0.05	OE
FMEGYD		0.00750	0.00009	0.08	0.00823	-0.00002	-0.02	OE
FR8MBU		0.00650	-0.00091	-0.80	0.00743	-0.00082	-0.68	OE
GG92T3		0.00720	-0.00021	-0.18	0.00853	0.00028	0.23	OE
GHHAVV	*	0.00967	0.00226	1.97	0.0110	0.00274	2.26	OE
H8TYP9		0.00710	-0.00031	-0.27	0.00778	-0.00047	-0.39	OE
HJ6CYL		0.00847	0.00106	0.92	0.00917	0.00091	0.75	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 172

Chemical Analysis Element #3 - Carbon & Low Alloy Steel - Percent
PHOSPHORUS (P)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
HVWQ9Q		0.00850	0.00109	0.95	0.00940	0.00114	0.94	OE
J2KQ94		0.00777	0.00036	0.31	0.00860	0.00034	0.28	WD
J4PHUP		0.00859	0.00118	1.03	0.00937	0.00111	0.92	OE
JW9W2L		0.00583	-0.00158	-1.38	0.00643	-0.00182	-1.50	OE
K374XZ		0.00690	-0.00051	-0.45	0.00773	-0.00052	-0.43	OE
KUHYGL		0.00757	0.00016	0.14	0.00873	0.00048	0.39	OE
LHZXXX		0.00723	-0.00018	-0.16	0.00830	0.00004	0.04	IC
LKKW6Z		0.00653	-0.00088	-0.77	0.00730	-0.00096	-0.78	OE
LMEERV		0.00700	-0.00041	-0.36	0.00800	-0.00026	-0.21	XX
LVPTGH		0.00710	-0.00031	-0.27	0.00790	-0.00036	-0.29	OE
LY4HRE		0.00823	0.00082	0.72	0.00893	0.00068	0.56	OE
M8V77H		0.00760	0.00019	0.17	0.00840	0.00014	0.12	OE
MALAYP		0.00757	0.00016	0.14	0.00840	0.00014	0.12	OE
MLETFF		0.00817	0.00076	0.66	0.00903	0.00078	0.64	DR
MUQ4E9		0.00700	-0.00041	-0.36	0.00800	-0.00026	-0.21	OE
MVG88F		0.00557	-0.00184	-1.61	0.00623	-0.00202	-1.66	OE
NHQRJ7		0.00700	-0.00041	-0.36	0.00733	-0.00092	-0.76	OE
NKW7B7		0.00653	-0.00088	-0.77	0.00727	-0.00099	-0.81	OE
NMMA4D		0.00580	-0.00161	-1.41	0.00663	-0.00162	-1.33	OE
NPUR39		0.00600	-0.00141	-1.23	0.00700	-0.00126	-1.03	OE
PGAXFB		0.00600	-0.00141	-1.23	0.00700	-0.00126	-1.03	OE
PLPCDH		0.00933	0.00192	1.68	0.0113	0.00308	2.53	OE
PUYXAY	*	0.00520	-0.00221	-1.93	0.00550	-0.00276	-2.26	OE
PVE6MU		0.00697	-0.00044	-0.39	0.00757	-0.00069	-0.57	GD
PWANPV		0.00797	0.00056	0.49	0.00867	0.00041	0.34	OE
QMW4PW		0.00717	-0.00024	-0.21	0.00790	-0.00036	-0.29	OE
QNRPF2		0.00888	0.00147	1.28	0.00961	0.00135	1.11	OE
R2AXG8		0.00687	-0.00054	-0.48	0.00783	-0.00042	-0.35	WD
R2AXJT		0.00597	-0.00144	-1.26	0.00690	-0.00136	-1.11	OE
RCRB2W		0.00780	0.00039	0.34	0.00867	0.00041	0.34	OE
RDPUVC	*	0.0109	0.00346	3.02	0.0117	0.00348	2.86	OE
RKLFUX		0.00743	0.00002	0.02	0.00810	-0.00016	-0.13	OE
RQ9BPB		0.00797	0.00056	0.49	0.00893	0.00068	0.56	OE
RTWYV9	X	0.0117	0.00426	3.72	0.0110	0.00274	2.26	OE
RVHQYY	*	0.00807	0.00066	0.57	0.00960	0.00134	1.11	OE
RZ4C6T	*	0.0100	0.00259	2.26	0.0107	0.00241	1.98	OE
TN8T28	X	0.00700	-0.00041	-0.36	0.0147	0.00641	5.27	IC
TV4GPY		0.00667	-0.00074	-0.65	0.00700	-0.00126	-1.03	OE
U66LW6		0.00780	0.00039	0.34	0.00863	0.00038	0.31	IC
UP8ALF		0.00730	-0.00011	-0.10	0.00757	-0.00069	-0.57	OE
UXLYKN		0.00713	-0.00028	-0.24	0.00847	0.00021	0.17	OE
V48EJK		0.00660	-0.00081	-0.71	0.00723	-0.00102	-0.84	OE
VC6AGH		0.00667	-0.00074	-0.65	0.00800	-0.00026	-0.21	OE
VFY3JL		0.00727	-0.00014	-0.13	0.00810	-0.00016	-0.13	OE
VNHCXA		0.00817	0.00076	0.66	0.00873	0.00048	0.39	OE
WQF4EL	X	0.00500	-0.00241	-2.11	0.0100	0.00174	1.43	GD
WXYDXG		0.00707	-0.00034	-0.30	0.00830	0.00004	0.04	OE
XEK6CL		0.00633	-0.00108	-0.94	0.00700	-0.00126	-1.03	OE
XG8XXN		0.00860	0.00119	1.04	0.00957	0.00131	1.08	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 172

Chemical Analysis Element #3 - Carbon & Low Alloy Steel - Percent
PHOSPHORUS (P)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XK6JM7	X	0.00470	-0.00271	-2.37	0.00617	-0.00209	-1.72	OE
XP4QCA		0.00713	-0.00028	-0.24	0.00797	-0.00029	-0.24	OE
Y6ADDB		0.00733	-0.00008	-0.07	0.00800	-0.00026	-0.21	OE
Y78TFZ		0.00937	0.00196	1.71	0.0105	0.00228	1.87	OE
YMU2M7		0.00673	-0.00068	-0.59	0.00793	-0.00032	-0.26	OE
YN47ZU		0.00663	-0.00078	-0.68	0.00740	-0.00086	-0.70	OE
YRWEZV	*	0.0104	0.00299	2.61	0.0118	0.00351	2.89	XX
YWR9XW		0.00600	-0.00141	-1.23	0.00700	-0.00126	-1.03	OE
ZBG6AF		0.00657	-0.00084	-0.74	0.00730	-0.00096	-0.78	OE
ZN3JBU	X	0.0110	0.00359	3.14	0.0113	0.00308	2.53	IC
ZNGYEA		0.00657	-0.00084	-0.74	0.00730	-0.00096	-0.78	OE
ZNXBUU		0.00670	-0.00071	-0.62	0.00747	-0.00079	-0.65	OE
ZUMVVN		0.00737	-0.00004	-0.04	0.00820	-0.00006	-0.05	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.00741	Percent	0.00826	Percent
Stnd Dev Btwn Labs	0.00114	Percent	0.00122	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 97 of 111 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 172

Chemical Analysis Element #3 - Carbon & Low Alloy Steel - Percent PHOSPHORUS (P)

Comments on assigned Data Flags for Analysis #172

WebCode	Flag	Analyst Comment
3GT3TJ	X	Data for sample L26 are high. Inconsistent in testing between samples.
46B3ZV	X	Data for sample L25 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
7KDGCA	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
CUQ4LC	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
EH2E4G	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L26.
RTWYV9	X	Data for sample L25 are high. Inconsistent in testing between samples.
TN8T28	X	Data for sample L26 are high. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
WQF4EL	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
XK6JM7	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
ZN3JBU	X	Data for sample L25 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.

Cycle 109
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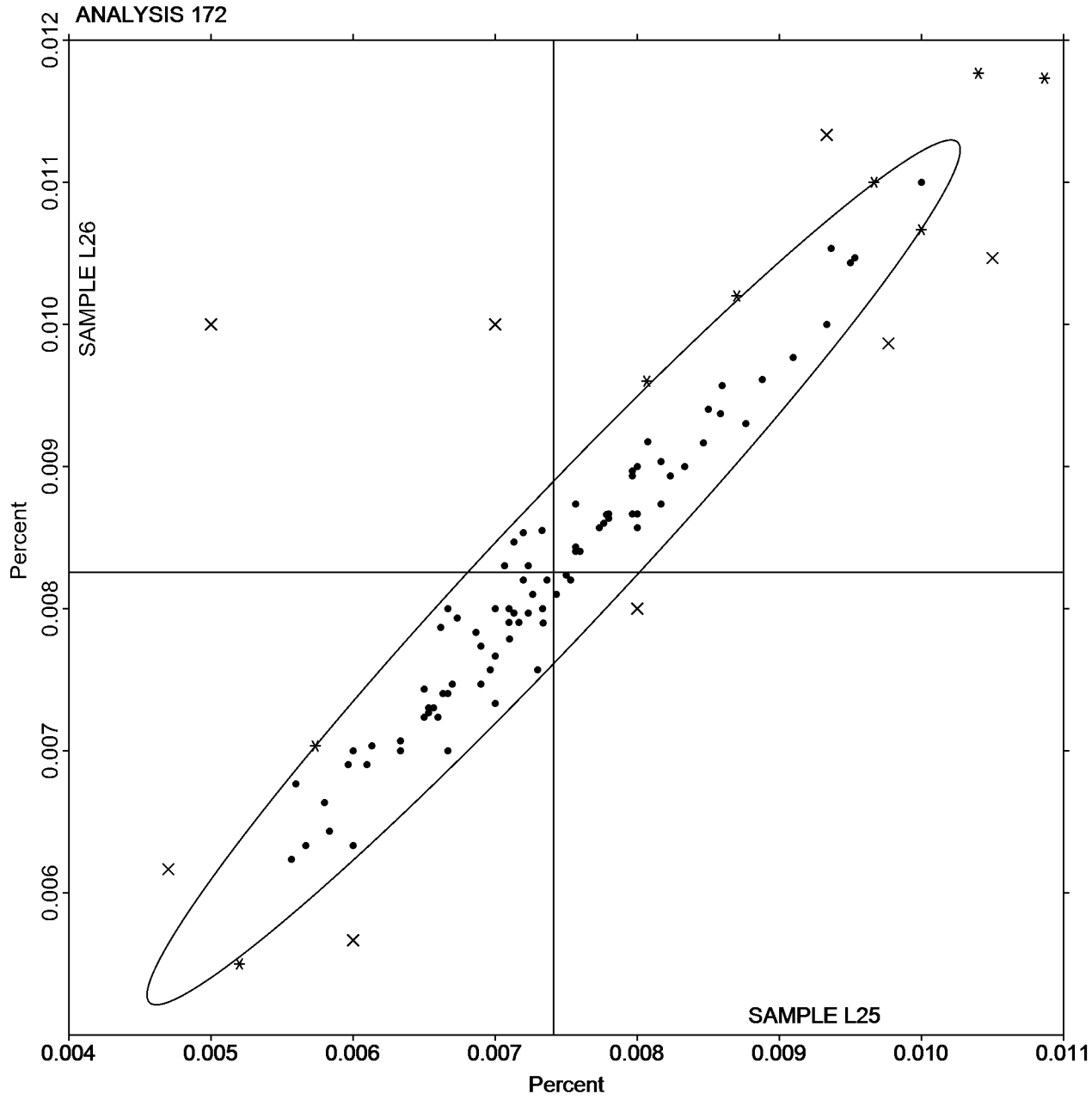
Interlaboratory Testing Program for Metals

Analysis 172

Chemical Analysis Element #3 - Carbon & Low Alloy Steel - Percent
PHOSPHORUS (P)

SAMPLE L25	SAMPLE L26
0.00741 Percent	0.00826 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 173

Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent
SULFUR (S)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		0.0133	-0.0011	-0.85	0.0173	-0.0011	-0.91	OE
2RXNBR		0.0132	-0.0013	-0.95	0.0169	-0.0015	-1.27	CI
2W6A4V		0.0123	-0.0021	-1.61	0.0163	-0.0021	-1.74	OE
2XFECD	*	0.0167	0.0022	1.67	0.0183	-0.0001	-0.08	OE
39Y4X4		0.0130	-0.0015	-1.10	0.0203	0.0019	1.58	GD
3B79ML		0.0137	-0.0008	-0.60	0.0167	-0.0018	-1.46	OE
3FZBKJ		0.0124	-0.0021	-1.56	0.0162	-0.0022	-1.82	CI
3GT3TJ		0.0130	-0.0015	-1.10	0.0171	-0.0013	-1.10	CI
3Z6X2H		0.0137	-0.0008	-0.57	0.0175	-0.0009	-0.74	OE
474RPH		0.0150	0.0005	0.41	0.0180	-0.0004	-0.35	CI
64J7MM	X	0.0203	0.0059	4.44	0.0233	0.0049	4.07	OE
66RG7J		0.0149	0.0004	0.31	0.0170	-0.0014	-1.16	OE
6AM2EA		0.0120	-0.0025	-1.86	0.0160	-0.0024	-2.02	CI
6LYLL9		0.0137	-0.0008	-0.60	0.0170	-0.0014	-1.19	GD
74EBEZ		0.0143	-0.0002	-0.12	0.0176	-0.0008	-0.66	GD
76LGPF		0.0144	0.0000	-0.02	0.0182	-0.0002	-0.16	DR
78CLHM	X	0.2320	0.2175	164.48	0.2757	0.2572	213.63	GD
7H822W		0.0142	-0.0003	-0.20	0.0180	-0.0004	-0.35	OE
7KDGCA		0.0130	-0.0015	-1.10	0.0170	-0.0014	-1.19	OE
7MN8R6		0.0120	-0.0025	-1.86	0.0170	-0.0014	-1.19	GD
7VWNGP		0.0134	-0.0010	-0.79	0.0182	-0.0002	-0.20	CI
864T3E		0.0140	-0.0005	-0.35	0.0180	-0.0004	-0.35	OE
922AHR		0.0141	-0.0004	-0.30	0.0183	-0.0001	-0.08	OE
A6UVKE	*	0.0172	0.0027	2.07	0.0216	0.0032	2.63	OE
A787U6		0.0163	0.0019	1.42	0.0208	0.0024	1.98	OE
A7CNR4	X	0.0179	0.0035	2.63	0.0232	0.0048	3.96	OE
B6CAFV		0.0165	0.0020	1.54	0.0207	0.0022	1.86	XX
B99RLA		0.0173	0.0029	2.17	0.0203	0.0019	1.58	OE
BMPN7D		0.0170	0.0025	1.89	0.0202	0.0018	1.50	OE
BPKAT3		0.0145	0.0001	0.06	0.0185	0.0001	0.06	OE
BTCLH8	*	0.0180	0.0035	2.65	0.0203	0.0019	1.55	OE
CG6TWL		0.0155	0.0010	0.79	0.0195	0.0010	0.86	OE
CUQ4LC		0.0150	0.0005	0.41	0.0183	-0.0001	-0.08	OE
DVAQ4Q		0.0144	0.0000	-0.01	0.0180	-0.0005	-0.38	OE
E3QQT2	*	0.0130	-0.0015	-1.10	0.0157	-0.0028	-2.29	CI
EB3XJ4		0.0165	0.0021	1.57	0.0213	0.0029	2.41	OE
ECZ2H7		0.0160	0.0015	1.17	0.0190	0.0006	0.48	OE
EH2E4G	X	0.00540	-0.0091	-6.85	0.00790	-0.0105	-8.74	OE
EWLXUP		0.0143	-0.0002	-0.15	0.0187	0.0002	0.20	OE
F46L6L		0.0140	-0.0005	-0.35	0.0173	-0.0011	-0.91	OE
F7URPH		0.0161	0.0016	1.24	0.0187	0.0002	0.20	OE
FFD7LT		0.0139	-0.0006	-0.45	0.0184	0.0000	0.01	CO
FMEGYD		0.0144	0.0000	-0.02	0.0199	0.0015	1.25	OE
FR8MBU		0.0143	-0.0001	-0.09	0.0180	-0.0004	-0.35	OE
GG92T3		0.0133	-0.0011	-0.85	0.0177	-0.0008	-0.63	CI
GHHAVV	X	0.00367	-0.0108	-8.16	0.00400	-0.0144	-11.98	OE
H8TYP9	*	0.0115	-0.0030	-2.24	0.0172	-0.0012	-1.02	CO
HJ6CYL		0.0170	0.0026	1.95	0.0214	0.0029	2.44	OE
HVWQ9Q	X	0.00907	-0.0054	-4.08	0.00950	-0.0089	-7.41	OE

Cycle 109
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Interlaboratory Testing Program for Metals

Analysis 173

Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent
SULFUR (S)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
J2KQ94		0.0138	-0.0006	-0.47	0.0175	-0.0010	-0.80	CI
J4PHUP		0.0144	-0.0001	-0.05	0.0184	0.0000	-0.02	OE
JW9W2L		0.0148	0.0003	0.26	0.0188	0.0004	0.34	CI
K374XZ		0.0140	-0.0005	-0.35	0.0183	-0.0002	-0.13	OE
KUHYGL		0.0156	0.0011	0.86	0.0193	0.0009	0.72	OE
LHZXXX		0.0153	0.0009	0.66	0.0189	0.0004	0.37	CI
LKKW6Z		0.0132	-0.0013	-0.98	0.0177	-0.0007	-0.58	OE
LMEERV		0.0141	-0.0004	-0.27	0.0180	-0.0004	-0.35	XX
LVPTGH		0.0139	-0.0006	-0.42	0.0184	0.0000	-0.02	CO
LY4HRE		0.0130	-0.0015	-1.10	0.0170	-0.0015	-1.21	OE
M8V77H		0.0129	-0.0015	-1.15	0.0183	-0.0001	-0.11	CI
MA3DMP	*	0.0168	0.0024	1.80	0.0189	0.0004	0.37	DR
MALAYP		0.0139	-0.0005	-0.40	0.0179	-0.0006	-0.47	OE
MLETFF		0.0160	0.0016	1.19	0.0190	0.0006	0.50	DR
MUQ4E9		0.0157	0.0012	0.91	0.0197	0.0012	1.03	OE
MVG88F		0.0136	-0.0009	-0.67	0.0177	-0.0008	-0.63	OE
NHQRJ7		0.0147	0.0002	0.16	0.0177	-0.0008	-0.63	OE
NKW7B7		0.0143	-0.0001	-0.09	0.0187	0.0003	0.23	OE
NMMA4D		0.0144	-0.0001	-0.07	0.0184	0.0000	-0.02	OE
NPUR39		0.0143	-0.0001	-0.09	0.0190	0.0006	0.48	OE
PGAXFB		0.0153	0.0009	0.66	0.0190	0.0006	0.48	OE
PLPCDH		0.0170	0.0025	1.92	0.0210	0.0026	2.14	OE
PUYXAY		0.0139	-0.0006	-0.42	0.0183	-0.0001	-0.08	OE
PVE6MU		0.0142	-0.0003	-0.20	0.0172	-0.0012	-1.02	GD
PWANPV		0.0139	-0.0006	-0.45	0.0183	-0.0001	-0.11	CO
QMW4PW		0.0146	0.0001	0.08	0.0181	-0.0003	-0.27	OE
QNRPF2		0.0153	0.0008	0.62	0.0197	0.0013	1.08	OE
R2AXJT		0.0122	-0.0023	-1.73	0.0166	-0.0018	-1.49	OE
RCFK8K		0.0169	0.0025	1.87	0.0195	0.0011	0.89	DR
RCRB2W		0.0154	0.0010	0.74	0.0202	0.0018	1.47	OE
RDPUVC		0.0133	-0.0011	-0.85	0.0171	-0.0014	-1.13	OE
RKLFUX		0.0141	-0.0004	-0.27	0.0180	-0.0004	-0.35	OE
RQ9BPB		0.0149	0.0005	0.36	0.0188	0.0004	0.34	CO
RTWYV9		0.0150	0.0005	0.41	0.0197	0.0012	1.03	OE
RVHQYY		0.0146	0.0001	0.08	0.0194	0.0010	0.84	OE
RZ4C6T		0.0143	-0.0001	-0.09	0.0197	0.0012	1.03	OE
TN8T28		0.0134	-0.0011	-0.80	0.0182	-0.0002	-0.19	CO
TV4GPY		0.0137	-0.0008	-0.60	0.0190	0.0006	0.48	OE
U66LW6		0.0132	-0.0012	-0.93	0.0185	0.0000	0.03	CO
UP8ALF		0.0143	-0.0002	-0.15	0.0181	-0.0003	-0.29	CO
UXLYKN		0.0127	-0.0018	-1.33	0.0174	-0.0010	-0.83	CI
V48EJK		0.0149	0.0005	0.36	0.0187	0.0002	0.20	OE
VC6AGH	X	0.0160	0.0015	1.17	0.0227	0.0042	3.52	OE
VFY3JL		0.0164	0.0019	1.44	0.0205	0.0021	1.72	OE
VNHCXA		0.0146	0.0002	0.13	0.0192	0.0007	0.61	OE
WQF4EL		0.0144	-0.0001	-0.04	0.0178	-0.0007	-0.55	CI
WXYDXG		0.0133	-0.0012	-0.90	0.0184	0.0000	-0.02	OE
XEK6CL		0.0143	-0.0001	-0.09	0.0177	-0.0008	-0.63	CO
XG8XXN		0.0139	-0.0006	-0.45	0.0171	-0.0013	-1.07	CO

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Interlaboratory Testing Program for Metals

Analysis 173

Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent
SULFUR (S)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XK6JM7	X	0.00313	-0.0113	-8.56	0.00873	-0.0097	-8.05	OE
XP4QCA		0.0141	-0.0004	-0.27	0.0181	-0.0003	-0.24	OE
Y6ADDB		0.0153	0.0009	0.66	0.0197	0.0012	1.03	OE
Y78TFZ		0.0151	0.0006	0.48	0.0188	0.0003	0.28	OE
YMU2M7		0.0133	-0.0011	-0.85	0.0184	0.0000	-0.02	CI
YN47ZU		0.0141	-0.0004	-0.27	0.0191	0.0007	0.56	OE
YRWEZV		0.0168	0.0023	1.77	0.0192	0.0007	0.61	XX
YWR9XW		0.0133	-0.0011	-0.85	0.0173	-0.0011	-0.91	OE
ZBG6AF		0.0148	0.0004	0.28	0.0186	0.0002	0.17	OE
ZN3JBU		0.0133	-0.0011	-0.85	0.0177	-0.0008	-0.63	CI
ZNGYEA		0.0133	-0.0012	-0.88	0.0192	0.0008	0.67	OE
ZNXBUU		0.0150	0.0005	0.41	0.0194	0.0009	0.78	OE
ZUMVVN		0.0140	-0.0005	-0.35	0.0172	-0.0012	-0.99	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.0145	Percent	0.0184	Percent
Stnd Dev Btwn Labs	0.0013	Percent	0.0012	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 102 of 111 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 173

Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent SULFUR (S)

Comments on assigned Data Flags for Analysis #173

WebCode	Flag	Analyst Comment
64J7MM	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L25.
78CLHM	X	Data for both samples are high. Possible Systematic error.
A7CNR4	X	Data for sample L26 are high. Inconsistent in testing between samples.
EH2E4G	X	Data for both samples are low. Possible Systematic error.
GHHAVV	X	Data for both samples are low. Possible Systematic error.
HVWQ9Q	X	Data for both samples are low. Possible Systematic error.
VC6AGH	X	Data for sample L26 are high. Inconsistent in testing between samples.
XK6JM7	X	Data for both samples are low. Possible Systematic error.

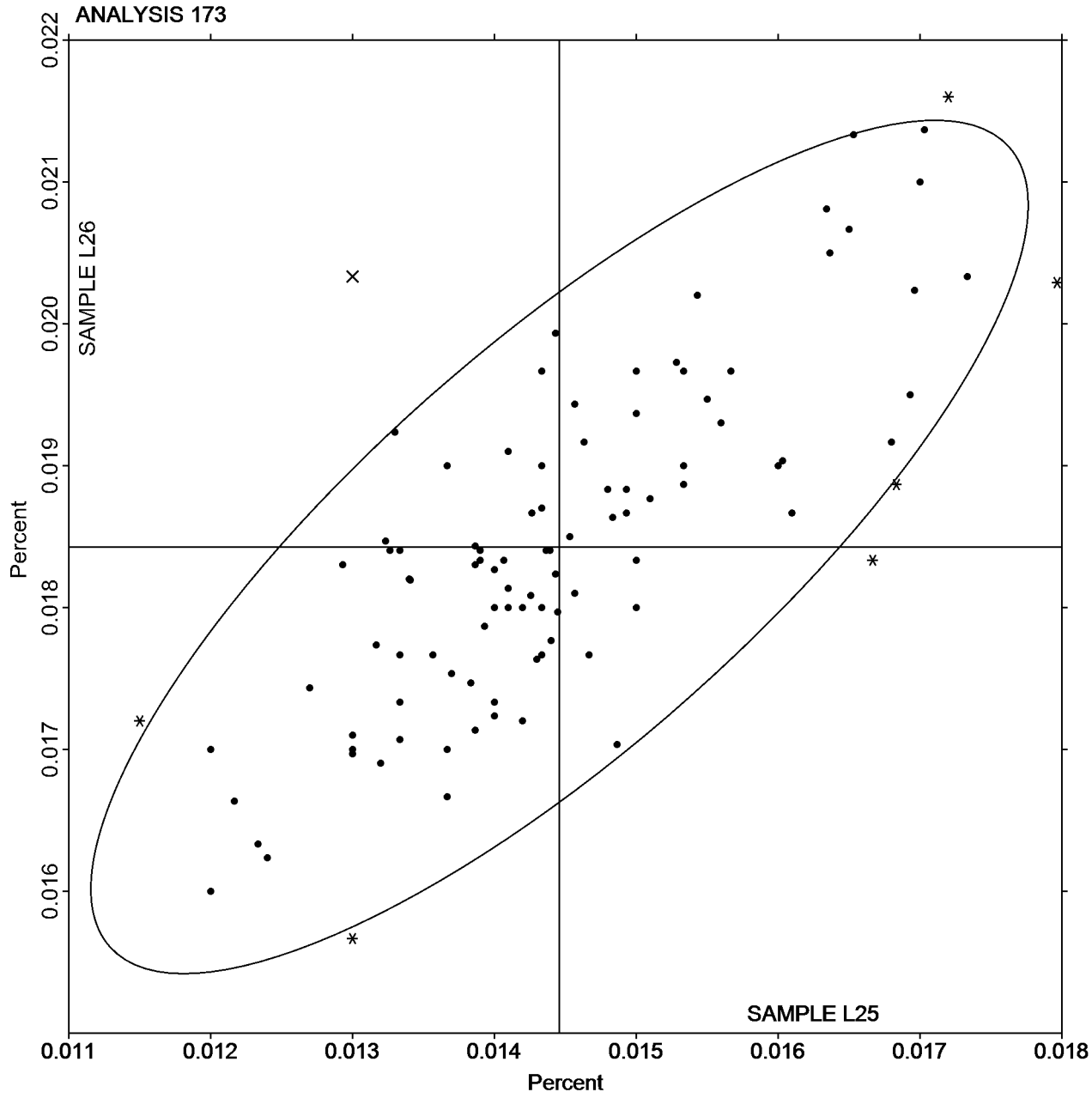
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 173

Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent
SULFUR (S)

SAMPLE L25	SAMPLE L26
0.0145 Percent	0.0184 Percent



Cycle 109
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Interlaboratory Testing Program for Metals

Analysis 174

Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent SILICON (Si)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		0.2210	-0.0045	-0.88	0.2537	-0.0068	-1.20	OE
2RXNBR		0.2224	-0.0032	-0.61	0.2540	-0.0065	-1.14	OE
2W6A4V		0.2257	0.0001	0.02	0.2567	-0.0038	-0.67	OE
2XFECD		0.2270	0.0015	0.28	0.2580	-0.0024	-0.43	OE
39Y4X4		0.2280	0.0025	0.48	0.2643	0.0039	0.69	GD
3B79ML		0.2163	-0.0092	-1.78	0.2497	-0.0108	-1.90	OE
3FZBKJ		0.2223	-0.0032	-0.62	0.2546	-0.0059	-1.04	OE
3GT3TJ	X	0.2090	-0.0165	-3.19	0.2537	-0.0068	-1.20	IC
3Z6X2H		0.2330	0.0075	1.44	0.2680	0.0076	1.34	OE
46B3ZV		0.2293	0.0038	0.73	0.2630	0.0026	0.45	WD
474RPH		0.2270	0.0015	0.28	0.2630	0.0026	0.45	DR
64J7MM	X	0.2660	0.0405	7.82	0.3017	0.0412	7.28	OE
66RG7J	X	0.1997	-0.0259	-5.00	0.2307	-0.0298	-5.26	OE
6AM2EA		0.2263	0.0008	0.15	0.2587	-0.0018	-0.31	GR
6LYLL9		0.2300	0.0045	0.86	0.2600	-0.0004	-0.08	GD
74EBEZ		0.2237	-0.0019	-0.36	0.2573	-0.0031	-0.55	GD
76LGPF		0.2253	-0.0002	-0.04	0.2607	0.0002	0.04	DR
78CLHM		0.2313	0.0058	1.12	0.2757	0.0152	2.69	GD
7H822W	*	0.2400	0.0145	2.79	0.2767	0.0163	2.88	IC
7KDGCA	*	0.2380	0.0125	2.41	0.2750	0.0146	2.57	OE
7MN8R6	X	0.1977	-0.0279	-5.38	0.2310	-0.0294	-5.20	GD
7VWNGP		0.2240	-0.0015	-0.30	0.2600	-0.0004	-0.08	OE
864T3E		0.2263	0.0008	0.15	0.2630	0.0026	0.45	OE
922AHR		0.2243	-0.0012	-0.23	0.2597	-0.0008	-0.14	OE
A6UVKE		0.2352	0.0097	1.87	0.2675	0.0071	1.25	OE
A787U6		0.2339	0.0083	1.61	0.2679	0.0074	1.31	OE
A7CNR4		0.2340	0.0085	1.63	0.2710	0.0106	1.87	OE
B3LTK2		0.2245	-0.0010	-0.20	0.2590	-0.0014	-0.25	DR
B6CAFV		0.2303	0.0048	0.93	0.2647	0.0042	0.75	XX
B99RLA	*	0.2123	-0.0132	-2.55	0.2440	-0.0164	-2.90	OE
BMPN7D		0.2262	0.0007	0.13	0.2651	0.0046	0.82	OE
BPKAT3		0.2313	0.0058	1.12	0.2640	0.0036	0.63	OE
BTCLH8		0.2153	-0.0102	-1.98	0.2477	-0.0128	-2.25	OE
CG6TWL		0.2257	0.0001	0.02	0.2583	-0.0021	-0.37	OE
CUQ4LC		0.2300	0.0045	0.86	0.2667	0.0062	1.10	OE
DVAQ4Q		0.2266	0.0010	0.20	0.2633	0.0029	0.50	OE
E3QQT2		0.2283	0.0027	0.53	0.2629	0.0024	0.43	IC
EB3XJ4		0.2277	0.0021	0.41	0.2613	0.0009	0.16	OE
ECZ2H7		0.2317	0.0061	1.18	0.2673	0.0069	1.22	OE
EH2E4G		0.2317	0.0061	1.18	0.2683	0.0079	1.40	OE
EWLXUP		0.2247	-0.0009	-0.17	0.2560	-0.0044	-0.78	OE
F46L6L		0.2280	0.0025	0.48	0.2657	0.0052	0.92	OE
F7URPH		0.2280	0.0025	0.48	0.2650	0.0046	0.81	OE
FFD7LT	X	0.2293	0.0038	0.73	0.2557	-0.0048	-0.84	OE
FMEGYD		0.2207	-0.0049	-0.94	0.2520	-0.0084	-1.49	OE
FR8MBU		0.2240	-0.0015	-0.30	0.2603	-0.0001	-0.02	OE
GG92T3		0.2277	0.0021	0.41	0.2593	-0.0011	-0.19	OE
GHHAVV		0.2267	0.0011	0.22	0.2600	-0.0004	-0.08	OE
GHVWZ3		0.2327	0.0071	1.38	0.2693	0.0089	1.57	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 174

Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent SILICON (Si)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
H3X6WD		0.2177	-0.0079	-1.52	0.2488	-0.0116	-2.05	OE
H8TYP9		0.2254	-0.0001	-0.03	0.2598	-0.0006	-0.11	OE
HJ6CYL		0.2260	0.0005	0.09	0.2627	0.0022	0.39	OE
HVWQ9Q		0.2310	0.0055	1.06	0.2670	0.0066	1.16	OE
J2KQ94		0.2247	-0.0009	-0.17	0.2593	-0.0011	-0.19	WD
J4PHUP		0.2221	-0.0034	-0.66	0.2551	-0.0053	-0.93	OE
JW9W2L		0.2290	0.0034	0.66	0.2657	0.0052	0.92	OE
K374XZ		0.2236	-0.0019	-0.37	0.2581	-0.0023	-0.41	OE
KUHYGL		0.2260	0.0005	0.09	0.2610	0.0006	0.10	OE
LHZXXX		0.2227	-0.0029	-0.55	0.2577	-0.0028	-0.49	IC
LKKW6Z		0.2193	-0.0062	-1.20	0.2563	-0.0041	-0.72	OE
LMEERV		0.2200	-0.0055	-1.07	0.2570	-0.0034	-0.61	XX
LVPTGH		0.2217	-0.0039	-0.75	0.2603	-0.0001	-0.02	OE
LY4HRE		0.2207	-0.0048	-0.93	0.2577	-0.0027	-0.48	OE
M8V77H		0.2260	0.0005	0.09	0.2607	0.0002	0.04	OE
MA3DMP		0.2212	-0.0044	-0.84	0.2564	-0.0040	-0.71	DR
MALAYP		0.2318	0.0062	1.20	0.2622	0.0018	0.31	OE
MLETFF		0.2271	0.0015	0.30	0.2627	0.0022	0.39	DR
MUQ4E9		0.2160	-0.0095	-1.84	0.2537	-0.0068	-1.20	OE
MVG88F	*	0.2280	0.0025	0.48	0.2560	-0.0044	-0.78	OE
NHQRJ7		0.2190	-0.0065	-1.26	0.2560	-0.0044	-0.78	OE
NKW7B7		0.2273	0.0018	0.35	0.2590	-0.0014	-0.25	OE
NMMA4D		0.2237	-0.0019	-0.36	0.2587	-0.0018	-0.31	OE
NPUR39		0.2230	-0.0025	-0.49	0.2583	-0.0021	-0.37	OE
PGAXFB		0.2217	-0.0039	-0.75	0.2583	-0.0021	-0.37	OE
PLPCDH		0.2147	-0.0109	-2.10	0.2523	-0.0081	-1.43	OE
PUYXAY	X	0.2063	-0.0192	-3.71	0.2377	-0.0228	-4.02	OE
PWANPV		0.2206	-0.0050	-0.96	0.2570	-0.0035	-0.61	OE
QMW4PW		0.2244	-0.0012	-0.23	0.2575	-0.0029	-0.52	OE
QNRPF2		0.2311	0.0056	1.07	0.2633	0.0028	0.50	OE
R2AXG8		0.2277	0.0021	0.41	0.2644	0.0040	0.70	WD
R2AXJT		0.2234	-0.0021	-0.41	0.2499	-0.0106	-1.87	OE
RCFK8K		0.2206	-0.0049	-0.95	0.2558	-0.0047	-0.82	DR
RCRB2W		0.2212	-0.0044	-0.84	0.2566	-0.0038	-0.67	OE
RDPUVC		0.2207	-0.0049	-0.94	0.2570	-0.0034	-0.61	OE
RKLFUX		0.2313	0.0058	1.11	0.2658	0.0054	0.95	OE
RQ9BPB		0.2240	-0.0015	-0.30	0.2597	-0.0008	-0.14	OE
RTWYV9	*	0.2377	0.0121	2.34	0.2753	0.0149	2.63	OE
RVHQYY		0.2267	0.0011	0.22	0.2620	0.0016	0.28	OE
RZ4C6T	X	0.2250	-0.0005	-0.10	0.0197	-0.2408	-42.52	OE
TN8T28	X	0.1367	-0.0889	-17.17	0.2333	-0.0271	-4.79	IC
TV4GPY		0.2230	-0.0025	-0.49	0.2550	-0.0054	-0.96	OE
U66LW6		0.2273	0.0018	0.35	0.2577	-0.0028	-0.49	IC
UP8ALF		0.2249	-0.0006	-0.12	0.2604	0.0000	-0.01	OE
UXLYKN		0.2257	0.0001	0.02	0.2593	-0.0011	-0.19	OE
V48EJK		0.2194	-0.0061	-1.18	0.2571	-0.0033	-0.58	OE
VC6AGH		0.2207	-0.0049	-0.94	0.2563	-0.0041	-0.72	OE
VFY3JL		0.2260	0.0005	0.09	0.2660	0.0056	0.98	OE
VNHCXA		0.2233	-0.0022	-0.43	0.2670	0.0066	1.16	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 174

Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent SILICON (Si)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
WQF4EL	X	0.2247	-0.0009	-0.17	0.2440	-0.0164	-2.90	GD
WXYDXG		0.2303	0.0048	0.93	0.2597	-0.0008	-0.14	OE
XEK6CL		0.2283	0.0028	0.54	0.2630	0.0026	0.45	OE
XG8XXN		0.2180	-0.0075	-1.46	0.2533	-0.0071	-1.25	OE
XK6JM7	X	0.1993	-0.0262	-5.06	0.2397	-0.0208	-3.67	OE
XP4QCA		0.2222	-0.0033	-0.64	0.2580	-0.0024	-0.43	OE
Y6ADDB		0.2220	-0.0035	-0.68	0.2607	0.0002	0.04	OE
Y78TFZ		0.2240	-0.0015	-0.30	0.2583	-0.0021	-0.37	OE
YMU2M7		0.2183	-0.0072	-1.39	0.2563	-0.0041	-0.72	OE
YN47ZU		0.2270	0.0015	0.28	0.2627	0.0022	0.39	OE
YRWEZV		0.2190	-0.0065	-1.26	0.2580	-0.0024	-0.43	XX
YWR9XW		0.2253	-0.0002	-0.04	0.2647	0.0042	0.75	OE
ZBG6AF		0.2213	-0.0042	-0.82	0.2551	-0.0053	-0.94	OE
ZN3JBU		0.2320	0.0065	1.25	0.2693	0.0089	1.57	IC
ZNGYEA		0.2346	0.0091	1.76	0.2724	0.0120	2.11	OE
ZNXBUU		0.2290	0.0035	0.67	0.2643	0.0039	0.69	OE
ZUMVVN		0.2247	-0.0009	-0.17	0.2587	-0.0018	-0.31	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.2255	Percent	0.2604	Percent
Stnd Dev Btwn Labs	0.0052	Percent	0.0057	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 102 of 115 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 174

Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent SILICON (Si)

Comments on assigned Data Flags for Analysis #174

WebCode	Flag	Analyst Comment
3GT3TJ	X	Data for sample L25 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
64J7MM	X	Data for both samples are high. Possible Systematic error.
66RG7J	X	Data for both samples are low. Possible Systematic error.
7MN8R6	X	Data for both samples are low. Possible Systematic error.
FFD7LT	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
PUYXAY	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample L26.
RZ4C6T	X	Data for sample L26 are low. Inconsistent in testing between samples.
TN8T28	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample L26.
WQF4EL	X	Data for sample L26 are low. Inconsistent in testing between samples.
XK6JM7	X	Data for both samples are low. Possible Systematic error.

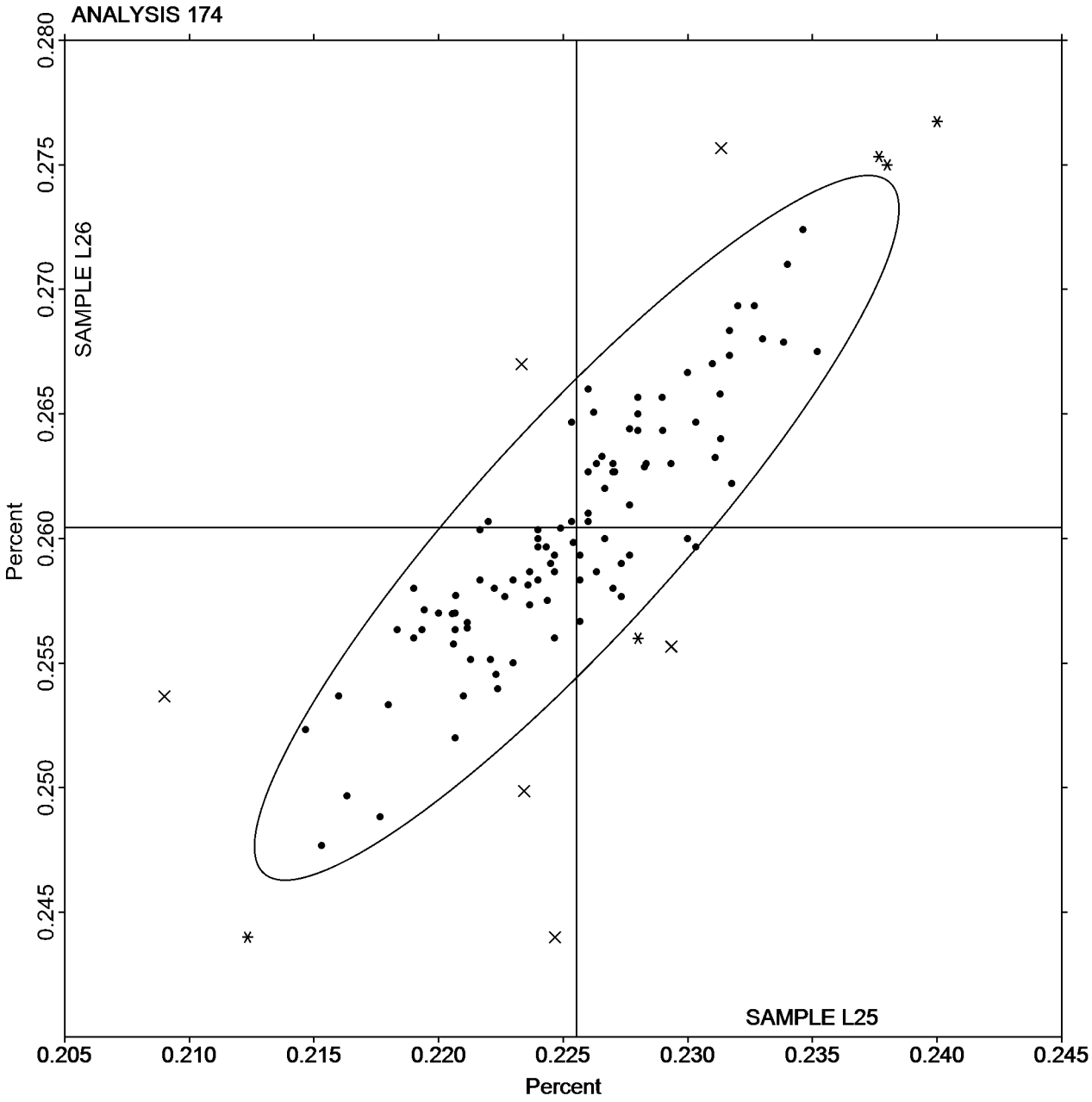
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 174

Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent
SILICON (Si)

SAMPLE L25	SAMPLE L26
0.2255 Percent	0.2604 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 175

Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent
COPPER (Cu)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2RXNBR		0.2093	-0.0117	-1.57	0.1609	-0.0097	-1.40	OE
2W6A4V		0.2177	-0.0033	-0.44	0.1737	0.0030	0.43	OE
2XFECD	M	No Data Reported			0.1870	0.0164	2.35	OE
39Y4X4		0.2267	0.0057	0.77	0.1727	0.0020	0.29	GD
3B79ML	*	0.2040	-0.0170	-2.29	0.1593	-0.0113	-1.62	OE
3FZBKJ		0.2165	-0.0045	-0.60	0.1619	-0.0087	-1.25	OE
3GT3TJ		0.2190	-0.0020	-0.26	0.1687	-0.0020	-0.28	IC
3Z6X2H		0.2200	-0.0010	-0.13	0.1683	-0.0023	-0.33	OE
46B3ZV		0.2173	-0.0036	-0.49	0.1683	-0.0023	-0.33	WD
474RPH		0.2270	0.0060	0.82	0.1770	0.0064	0.91	DR
64J7MM	X	0.2510	0.0300	4.05	0.2053	0.0347	4.98	OE
66RG7J	M	No Data Reported			0.1687	-0.0020	-0.28	OE
6AM2EA		0.2157	-0.0053	-0.71	0.1650	-0.0056	-0.81	IC
6LYLL9	X	0.1800	-0.0410	-5.52	0.2300	0.0594	8.52	GD
74EBEZ		0.2180	-0.0030	-0.40	0.1723	0.0017	0.24	GD
76LGPF		0.2203	-0.0006	-0.08	0.1723	0.0017	0.24	DR
78CLHM		0.2363	0.0154	2.07	0.1853	0.0147	2.11	GD
7H822W		0.2266	0.0057	0.77	0.1746	0.0040	0.57	OE
7KDGCA		0.2053	-0.0156	-2.11	0.1640	-0.0066	-0.95	OE
7MN8R6		0.2223	0.0014	0.19	0.1683	-0.0023	-0.33	GD
7VWNGP		0.2140	-0.0070	-0.94	0.1630	-0.0076	-1.10	OE
864T3E		0.2090	-0.0120	-1.61	0.1617	-0.0090	-1.29	OE
922AHR		0.2270	0.0060	0.82	0.1733	0.0027	0.39	OE
A6UVKE		0.2160	-0.0050	-0.67	0.1632	-0.0074	-1.07	OE
A787U6	*	0.2389	0.0180	2.43	0.1893	0.0186	2.68	OE
A7CNR4		0.2257	0.0047	0.64	0.1780	0.0074	1.06	OE
B3LTK2		0.2248	0.0039	0.52	0.1710	0.0004	0.06	DR
B6CAFV		0.2150	-0.0060	-0.80	0.1757	0.0050	0.72	XX
B99RLA		0.2107	-0.0103	-1.39	0.1610	-0.0096	-1.39	OE
BMPN7D	X	0.2542	0.0332	4.49	0.1959	0.0253	3.63	OE
BPKAT3		0.2190	-0.0020	-0.26	0.1713	0.0007	0.10	OE
BTCLH8	X	0.1865	-0.0344	-4.64	0.1325	-0.0381	-5.48	OE
CG6TWL		0.2347	0.0137	1.85	0.1867	0.0160	2.30	OE
CUQ4LC		0.2333	0.0124	1.67	0.1800	0.0094	1.34	OE
DVAQ4Q		0.2231	0.0022	0.29	0.1718	0.0011	0.16	OE
E3QQT2		0.2215	0.0005	0.07	0.1705	-0.0002	-0.03	IC
EB3XJ4		0.2197	-0.0013	-0.17	0.1723	0.0017	0.24	OE
ECZ2H7		0.2253	0.0044	0.59	0.1757	0.0050	0.72	OE
EH2E4G	X	0.1960	-0.0250	-3.37	0.1517	-0.0190	-2.73	OE
EWLXUP	*	0.2237	0.0027	0.37	0.1667	-0.0040	-0.57	OE
F46L6L		0.2123	-0.0086	-1.16	0.1593	-0.0113	-1.62	OE
F7URPH		0.2337	0.0127	1.72	0.1823	0.0117	1.68	OE
FFD7LT		0.2257	0.0047	0.64	0.1723	0.0017	0.24	OE
FMEGYD		0.2225	0.0015	0.21	0.1704	-0.0002	-0.03	OE
FR8MBU		0.2140	-0.0070	-0.94	0.1650	-0.0056	-0.81	OE
GG92T3		0.2190	-0.0020	-0.26	0.1720	0.0014	0.19	OE
GHHAVV	*	0.2133	-0.0076	-1.03	0.1700	-0.0006	-0.09	OE
GHVWZ3		0.2160	-0.0050	-0.67	0.1643	-0.0063	-0.91	OE
H8TYP9		0.2232	0.0023	0.31	0.1725	0.0019	0.27	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 175

Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent
COPPER (Cu)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
HJ6CYL		0.2297	0.0087	1.18	0.1797	0.0090	1.30	OE
HVWQ9Q		0.2227	0.0017	0.23	0.1767	0.0060	0.86	OE
J2KQ94		0.2213	0.0004	0.05	0.1717	0.0010	0.15	WD
J4PHUP		0.2274	0.0065	0.87	0.1772	0.0065	0.93	OE
JW9W2L	X	0.2270	0.0060	0.82	0.0177	-0.1529	-21.96	OE
K374XZ		0.2174	-0.0036	-0.48	0.1667	-0.0040	-0.57	OE
KUHYGL		0.2190	-0.0020	-0.26	0.1720	0.0014	0.19	OE
LHZXXX		0.2183	-0.0026	-0.35	0.1690	-0.0016	-0.24	IC
LKKW6Z		0.2207	-0.0003	-0.04	0.1700	-0.0006	-0.09	OE
LMEERV		0.2170	-0.0040	-0.53	0.1550	-0.0156	-2.25	GD
LVPTGH		0.2183	-0.0026	-0.35	0.1793	0.0087	1.25	OE
LY4HRE		0.2218	0.0008	0.11	0.1691	-0.0015	-0.22	OE
M8V77H		0.2253	0.0044	0.59	0.1733	0.0027	0.39	OE
MALAYP		0.2257	0.0047	0.64	0.1793	0.0087	1.24	OE
MLETFF		0.2142	-0.0068	-0.91	0.1659	-0.0047	-0.68	DR
MUQ4E9	M	No Data Reported			0.1977	0.0270	3.88	OE
MVG88F	*	0.2213	0.0004	0.05	0.1640	-0.0066	-0.95	OE
NHQRJ7		0.2203	-0.0006	-0.08	0.1710	0.0004	0.05	OE
NKW7B7		0.2220	0.0010	0.14	0.1723	0.0017	0.24	OE
NMMA4D		0.2380	0.0170	2.30	0.1847	0.0140	2.01	OE
NPUR39		0.2043	-0.0166	-2.24	0.1560	-0.0146	-2.10	OE
PGAXFB		0.2070	-0.0140	-1.88	0.1580	-0.0126	-1.82	OE
PLPCDH	X	0.1997	-0.0213	-2.87	0.1583	-0.0123	-1.77	OE
PUYXAY		0.2110	-0.0100	-1.34	0.1637	-0.0070	-1.00	OE
PWANPV		0.2185	-0.0025	-0.33	0.1666	-0.0040	-0.58	OE
QMW4PW		0.2107	-0.0103	-1.39	0.1613	-0.0094	-1.35	OE
QNRPF2		0.2275	0.0066	0.89	0.1749	0.0043	0.61	OE
R2AXG8		0.2192	-0.0018	-0.24	0.1689	-0.0017	-0.25	WD
R2AXJT		0.2333	0.0124	1.67	0.1832	0.0125	1.80	OE
RCRB2W		0.2192	-0.0017	-0.23	0.1700	-0.0006	-0.09	OE
RDPUVC		0.2157	-0.0053	-0.71	0.1683	-0.0023	-0.33	OE
RKLFUX		0.2346	0.0136	1.84	0.1850	0.0143	2.06	OE
RQ9BPB		0.2257	0.0047	0.64	0.1770	0.0064	0.91	OE
RTWYV9		0.2197	-0.0013	-0.17	0.1693	-0.0013	-0.19	OE
RVHQYY		0.2233	0.0024	0.32	0.1720	0.0014	0.19	OE
RZ4C6T	*	0.2027	-0.0183	-2.47	0.1563	-0.0143	-2.06	OE
TN8T28		0.2200	-0.0010	-0.13	0.1700	-0.0006	-0.09	IC
TV4GPY		0.2130	-0.0080	-1.07	0.1600	-0.0106	-1.53	OE
U66LW6		0.2270	0.0060	0.82	0.1747	0.0040	0.58	IC
UP8ALF		0.2182	-0.0028	-0.37	0.1670	-0.0036	-0.52	OE
UXLYKN		0.2263	0.0054	0.73	0.1730	0.0024	0.34	OE
V48EJK		0.2206	-0.0004	-0.05	0.1681	-0.0025	-0.36	OE
VC6AGH		0.2173	-0.0036	-0.49	0.1657	-0.0050	-0.72	OE
VFY3JL		0.2207	-0.0003	-0.04	0.1720	0.0014	0.19	OE
VNHCXA		0.2347	0.0137	1.85	0.1833	0.0127	1.82	OE
WQF4EL		0.2400	0.0190	2.57	0.1710	0.0004	0.05	GD
WXYDXG		0.2233	0.0024	0.32	0.1727	0.0020	0.29	OE
XEK6CL	X	0.2423	0.0214	2.88	0.1950	0.0244	3.50	OE
XG8XXN		0.2167	-0.0043	-0.58	0.1863	0.0157	2.25	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 175

Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent
COPPER (Cu)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XK6JM7	*	0.2147	-0.0063	-0.85	0.1720	0.0014	0.19	OE
XP4QCA		0.2176	-0.0033	-0.45	0.1682	-0.0024	-0.35	OE
Y6ADDB		0.2257	0.0047	0.64	0.1743	0.0037	0.53	OE
Y78TFZ		0.2340	0.0130	1.76	0.1833	0.0127	1.82	OE
YMU2M7		0.2233	0.0024	0.32	0.1707	0.0000	0.00	OE
YN47ZU		0.2230	0.0020	0.28	0.1707	0.0000	0.00	OE
YRWEZV		0.2183	-0.0026	-0.35	0.1673	-0.0033	-0.48	XX
YWR9XW	M	No Data Reported			0.1777	0.0070	1.01	OE
ZBG6AF		0.2183	-0.0026	-0.35	0.1684	-0.0023	-0.33	OE
ZN3JBU		0.2243	0.0034	0.46	0.1720	0.0014	0.19	IC
ZNGYEA		0.2132	-0.0077	-1.04	0.1632	-0.0074	-1.06	OE
ZNXBUU		0.2147	-0.0063	-0.85	0.1637	-0.0070	-1.00	OE
ZUMVVN		0.2200	-0.0010	-0.13	0.1643	-0.0063	-0.91	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.2210	Percent	0.1706	Percent
Stnd Dev Btwn Labs	0.0074	Percent	0.0070	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 93 of 111 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 175

Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent COPPER (Cu)

Comments on assigned Data Flags for Analysis #175

WebCode	Flag	Analyst Comment
2XFECD	M	Laboratory did not submit data for sample L25.
64J7MM	X	Data for both samples are high. Possible Systematic error.
66RG7J	M	Laboratory did not submit data for sample L25.
6LYLL9	X	Data for sample L25 are low and data for sample L26 are high.
BMPN7D	X	Data for both samples are high. Possible Systematic error.
BTCLH8	X	Data for both samples are low. Possible Systematic error.
EH2E4G	X	Data for sample L25 are low. Inconsistent in testing between samples.
JW9W2L	X	Data for sample L26 are low. Inconsistent in testing between samples.
MUQ4E9	M	Data appeared to have a typo for Sample L26. Corrected by CTS.Laboratory did not submit data for sample L25.
PLPCDH	X	Data for sample L25 are low. Inconsistent in testing between samples.
XEK6CL	X	Data for both samples are high. Possible Systematic error.
YWR9XW	M	Laboratory did not submit data for sample L25.

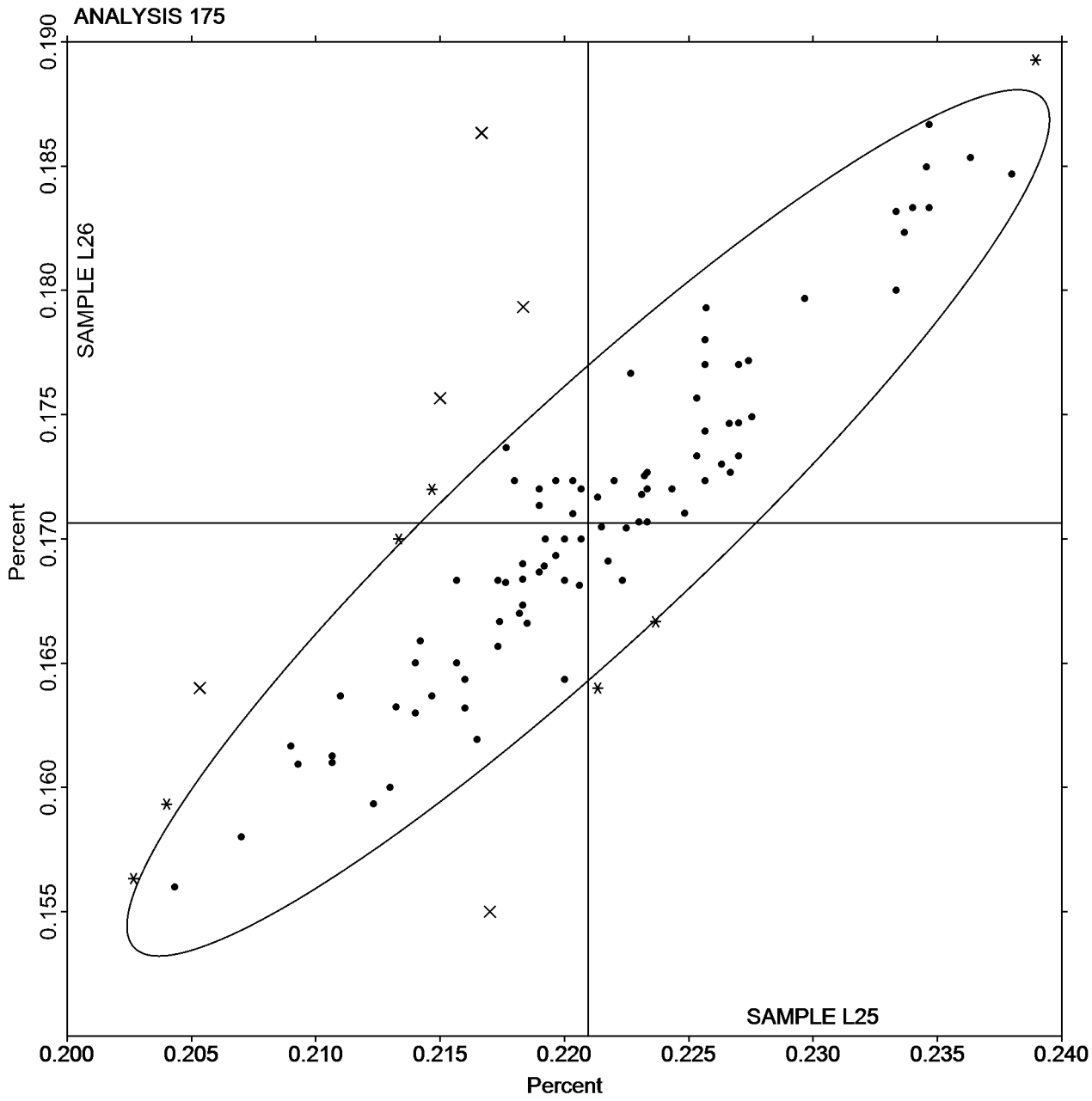
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 175

Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent
COPPER (Cu)

SAMPLE L25	SAMPLE L26
0.2210 Percent	0.1706 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 176

Chemical Analysis Element #7 - Carbon & Low Alloy Steel - Percent NICKEL (Ni)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2HUFYZ		3.344	-0.011	-0.21	3.518	-0.009	-0.17	OE
2RXNBR	*	3.229	-0.126	-2.36	3.451	-0.076	-1.50	OE
2W6A4V		3.341	-0.014	-0.26	3.510	-0.017	-0.33	OE
39Y4X4	X	3.431	0.076	1.42	3.690	0.163	3.21	GD
3B79ML		3.349	-0.007	-0.12	3.542	0.015	0.29	OE
3FZBKJ		3.397	0.042	0.78	3.517	-0.010	-0.21	OE
3GT3TJ		3.352	-0.003	-0.05	3.519	-0.008	-0.17	IC
46B3ZV		3.333	-0.022	-0.41	3.503	-0.024	-0.47	WD
474RPH		3.410	0.055	1.03	3.567	0.040	0.79	DR
64J7MM	X	3.547	0.191	3.58	3.707	0.180	3.54	OE
6AM2EA		3.450	0.095	1.77	3.617	0.090	1.77	IC
6LYLL9	X	3.263	-0.092	-1.72	3.353	-0.174	-3.43	GD
74EBEZ	*	3.330	-0.025	-0.47	3.567	0.040	0.78	GD
76LGPF		3.380	0.024	0.46	3.535	0.008	0.16	DR
78CLHM	X	3.677	0.321	6.02	3.933	0.406	8.02	GD
7H822W		3.369	0.014	0.26	3.549	0.022	0.43	IC
7KDGCA	*	3.358	0.002	0.05	3.466	-0.061	-1.21	OE
7MN8R6	X	3.560	0.205	3.83	3.760	0.233	4.60	GD
7VWNGP	*	3.477	0.122	2.28	3.665	0.138	2.73	OE
864T3E		3.313	-0.043	-0.80	3.488	-0.039	-0.77	OE
922AHR		3.356	0.001	0.01	3.534	0.007	0.14	OE
A6UVKE		3.331	-0.024	-0.45	3.512	-0.015	-0.29	OE
A787U6		3.375	0.020	0.37	3.543	0.016	0.31	OE
A7CNR4		3.393	0.037	0.70	3.555	0.028	0.55	OE
B3LTK2		3.349	-0.007	-0.12	3.501	-0.026	-0.51	DR
B6CAFV		3.325	-0.030	-0.56	3.463	-0.064	-1.26	XX
B99RLA		3.334	-0.021	-0.40	3.516	-0.011	-0.22	OE
BMPN7D		3.438	0.083	1.55	3.592	0.065	1.29	OE
BTCLH8		3.396	0.040	0.76	3.559	0.032	0.63	OE
CG6TWL		3.391	0.036	0.68	3.549	0.022	0.44	OE
CUQ4LC	*	3.500	0.145	2.71	3.637	0.110	2.16	OE
DVAQ4Q	*	3.488	0.133	2.48	3.663	0.136	2.68	OE
E3QQT2		3.398	0.043	0.81	3.566	0.039	0.77	IC
EB3XJ4	X	3.195	-0.160	-2.99	3.345	-0.182	-3.60	OE
ECZ2H7		3.376	0.020	0.38	3.536	0.009	0.18	OE
EH2E4G	X	3.569	0.214	4.01	3.731	0.204	4.02	OE
EWLXUP		3.406	0.051	0.96	3.595	0.068	1.33	OE
F46L6L	X	2.991	-0.364	-6.82	3.141	-0.386	-7.62	OE
F7URPH		3.276	-0.079	-1.48	3.459	-0.068	-1.34	OE
FFD7LT		3.331	-0.025	-0.46	3.500	-0.027	-0.53	OE
FMEGYD	*	3.213	-0.142	-2.66	3.407	-0.120	-2.36	OE
FR8MBU		3.367	0.011	0.21	3.517	-0.010	-0.21	OE
GG92T3		3.372	0.016	0.31	3.518	-0.009	-0.17	OE
GHHAVV		3.370	0.015	0.28	3.567	0.040	0.78	OE
GHVWZ3		3.365	0.010	0.19	3.543	0.016	0.31	WD
H8TYP9		3.339	-0.016	-0.30	3.524	-0.003	-0.06	OE
HJ6CYL		3.360	0.005	0.10	3.514	-0.013	-0.25	OE
HVWQ9Q		3.347	-0.009	-0.16	3.547	0.020	0.39	OE
J2KQ94		3.350	-0.006	-0.10	3.524	-0.003	-0.05	WD

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Interlaboratory Testing Program for Metals

Analysis 176

Chemical Analysis Element #7 - Carbon & Low Alloy Steel - Percent NICKEL (Ni)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
J4PHUP		3.337	-0.018	-0.34	3.507	-0.020	-0.40	OE
JW9W2L		3.343	-0.012	-0.22	3.533	0.006	0.12	OE
K374XZ		3.434	0.079	1.47	3.605	0.077	1.53	OE
KUHYGL		3.374	0.019	0.36	3.539	0.012	0.24	OE
LHZXXX		3.409	0.054	1.01	3.577	0.050	0.99	IC
LKKW6Z		3.389	0.034	0.63	3.588	0.061	1.20	OE
LMEERV		3.370	0.015	0.28	3.470	-0.057	-1.13	XX
LVPTGH		3.367	0.011	0.21	3.550	0.023	0.45	OE
LY4HRE		3.341	-0.014	-0.27	3.551	0.024	0.48	OE
M8V77H		3.412	0.056	1.06	3.565	0.038	0.76	OE
MALAYP		3.386	0.031	0.58	3.538	0.011	0.23	OE
MLETFF		3.405	0.050	0.93	3.581	0.054	1.07	DR
MVG88F		3.377	0.021	0.40	3.503	-0.024	-0.47	OE
NKW7B7		3.279	-0.076	-1.43	3.450	-0.077	-1.52	OE
NMMA4D		3.357	0.001	0.03	3.513	-0.014	-0.27	OE
NPUR39	*	3.305	-0.050	-0.93	3.540	0.013	0.25	OE
PGAXFB		3.410	0.055	1.03	3.561	0.034	0.67	OE
PLPCDH		3.380	0.025	0.46	3.540	0.013	0.26	OE
PUYXAY		3.283	-0.072	-1.35	3.450	-0.077	-1.52	OE
PWANPV		3.333	-0.022	-0.42	3.512	-0.015	-0.31	OE
QMW4PW		3.314	-0.042	-0.78	3.499	-0.028	-0.56	OE
QNRPF2		3.336	-0.020	-0.37	3.524	-0.003	-0.06	OE
R2AXG8		3.338	-0.018	-0.33	3.507	-0.020	-0.40	WD
R2AXJT	X	3.800	0.445	8.33	4.074	0.547	10.79	OE
RCRB2W		3.335	-0.021	-0.38	3.519	-0.008	-0.15	OE
RDPUVC		3.373	0.018	0.34	3.543	0.016	0.32	OE
RKLFUX		3.382	0.027	0.50	3.542	0.015	0.29	OE
RQ9BPB		3.320	-0.035	-0.66	3.493	-0.034	-0.67	OE
RTWYV9		3.262	-0.094	-1.75	3.454	-0.073	-1.44	OE
RVHQYY		3.327	-0.029	-0.53	3.497	-0.030	-0.60	OE
RZ4C6T		3.410	0.055	1.03	3.589	0.062	1.22	OE
TN8T28		3.320	-0.035	-0.66	3.400	-0.127	-2.51	IC
TV4GPY		3.383	0.028	0.52	3.524	-0.003	-0.05	OE
U66LW6		3.361	0.005	0.10	3.541	0.014	0.27	IC
UP8ALF		3.332	-0.023	-0.43	3.481	-0.046	-0.90	OE
UXLYKN		3.359	0.003	0.06	3.529	0.002	0.03	OE
V48EJK		3.426	0.071	1.32	3.594	0.067	1.33	OE
VC6AGH		3.313	-0.042	-0.78	3.500	-0.027	-0.53	OE
VFY3JL		3.433	0.078	1.46	3.597	0.070	1.37	OE
VNHCXA	*	3.270	-0.085	-1.59	3.413	-0.114	-2.24	OE
WQF4EL		3.263	-0.092	-1.72	3.453	-0.074	-1.45	GD
WXYDXG		3.330	-0.025	-0.47	3.537	0.010	0.19	OE
XEK6CL		3.316	-0.039	-0.73	3.502	-0.025	-0.50	OE
XG8XXN		3.223	-0.132	-2.47	3.410	-0.117	-2.31	OE
XK6JM7	X	3.330	-0.025	-0.47	3.633	0.106	2.10	OE
XP4QCA		3.346	-0.009	-0.18	3.531	0.004	0.08	OE
Y6ADDB		3.282	-0.073	-1.36	3.393	-0.134	-2.65	OE
Y78TFZ		3.287	-0.069	-1.28	3.427	-0.100	-1.98	OE
YMU2M7		3.341	-0.015	-0.27	3.499	-0.028	-0.56	OE

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Interlaboratory Testing Program for Metals

Analysis 176

Chemical Analysis Element #7 - Carbon & Low Alloy Steel - Percent
NICKEL (Ni)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
YN47ZU		3.283	-0.072	-1.35	3.439	-0.088	-1.74	0E
YRWEZV		3.297	-0.059	-1.10	3.516	-0.011	-0.22	XX
ZBG6AF		3.432	0.076	1.43	3.606	0.079	1.56	0E
ZN3JBU		3.343	-0.012	-0.22	3.500	-0.027	-0.53	IC
ZNXBUU		3.352	-0.004	-0.07	3.528	0.001	0.02	0E
ZUMVVN		3.341	-0.014	-0.27	3.511	-0.016	-0.32	0E

Summary Statistics

	Sample L25		Sample L26	
Grand Means	3.355	Percent	3.527	Percent
Stnd Dev Btwn Labs	0.053	Percent	0.051	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 91 of 104 reporting participants

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Interlaboratory Testing Program for Metals

Analysis 176

Chemical Analysis Element #7 - Carbon & Low Alloy Steel - Percent NICKEL (Ni)

Comments on assigned Data Flags for Analysis #176

WebCode	Flag	Analyst Comment
39Y4X4	X	Data for sample L26 are high. Inconsistent in testing between samples.
64J7MM	X	Data for both samples are high. Possible Systematic error.
6LYLL9	X	Data for sample L26 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample L26.
78CLHM	X	Data for both samples are high. Possible Systematic error.
7MN8R6	X	Data for both samples are high. Possible Systematic error.
EB3XJ4	X	Data for both samples are low. Possible Systematic error.
EH2E4G	X	Data for both samples are high. Possible Systematic error.
F46L6L	X	Data for both samples are low. Possible Systematic error.
R2AXJT	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L25.
XK6JM7	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.

Cycle 109
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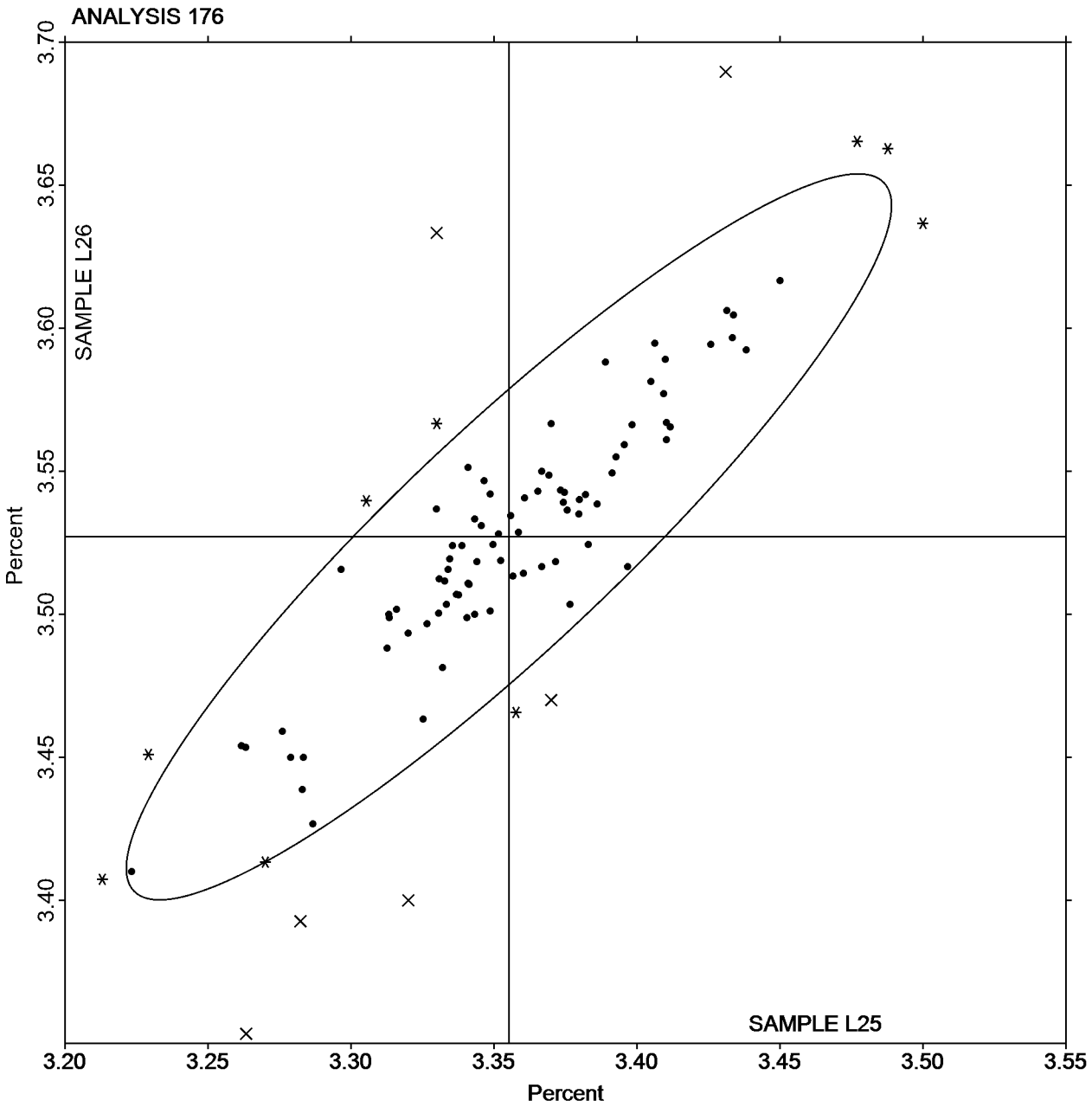
Interlaboratory Testing Program for Metals

Analysis 176

Chemical Analysis Element #7 - Carbon & Low Alloy Steel - Percent
NICKEL (Ni)

SAMPLE L25	SAMPLE L26
3.355 Percent	3.527 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 177

Chemical Analysis Element #8 - Carbon & Low Alloy Steel - Percent
CHROMIUM (Cr)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2RXNBR		0.1426	0.0004	0.11	0.1445	0.0010	0.33	OE
2W6A4V		0.1417	-0.0006	-0.18	0.1420	-0.0014	-0.46	OE
2XFECD	X	0.1540	0.0118	3.68	0.1550	0.0116	3.68	OE
39Y4X4	X	0.1460	0.0038	1.18	0.1423	-0.0011	-0.35	GD
3B79ML		0.1430	0.0008	0.24	0.1440	0.0006	0.18	OE
3FZBKJ		0.1382	-0.0040	-1.26	0.1387	-0.0048	-1.51	OE
3GT3TJ		0.1423	0.0001	0.03	0.1430	-0.0004	-0.14	IC
3Z6X2H		0.1413	-0.0009	-0.29	0.1427	-0.0008	-0.24	OE
46B3ZV		0.1403	-0.0019	-0.60	0.1433	-0.0001	-0.03	WD
474RPH		0.1380	-0.0042	-1.33	0.1390	-0.0044	-1.41	DR
64J7MM		0.1370	-0.0052	-1.64	0.1377	-0.0058	-1.84	OE
66RG7J		0.1350	-0.0072	-2.27	0.1373	-0.0061	-1.94	OE
6AM2EA		0.1423	0.0001	0.03	0.1433	-0.0001	-0.03	IC
6LYLL9	*	0.1500	0.0078	2.43	0.1500	0.0066	2.09	GD
74EBEZ		0.1440	0.0018	0.55	0.1460	0.0026	0.82	GD
76LGPF		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	DR
78CLHM		0.1480	0.0058	1.80	0.1473	0.0039	1.24	GD
7H822W		0.1427	0.0004	0.13	0.1436	0.0002	0.06	IC
7KDGCA	X	0.1233	-0.0189	-5.92	0.1267	-0.0168	-5.34	OE
7MN8R6		0.1360	-0.0062	-1.96	0.1373	-0.0061	-1.94	GD
7VWNGP		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	OE
864T3E		0.1430	0.0008	0.24	0.1443	0.0009	0.29	OE
922AHR		0.1430	0.0008	0.24	0.1450	0.0016	0.50	OE
A6UVKE		0.1450	0.0028	0.86	0.1460	0.0026	0.82	OE
A787U6	X	0.1778	0.0355	11.13	0.1301	-0.0133	-4.25	OE
A7CNR4		0.1443	0.0021	0.65	0.1453	0.0019	0.60	OE
B3LTK2		0.1404	-0.0018	-0.57	0.1403	-0.0032	-1.01	DR
B6CAFV		0.1443	0.0021	0.65	0.1453	0.0019	0.60	XX
B99RLA		0.1383	-0.0039	-1.23	0.1393	-0.0041	-1.31	OE
BMPN7D		0.1406	-0.0017	-0.53	0.1419	-0.0015	-0.49	OE
BPKAT3		0.1390	-0.0032	-1.02	0.1397	-0.0038	-1.20	OE
BTCLH8	X	0.1709	0.0287	8.97	0.1736	0.0301	9.60	OE
CG6TWL		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	OE
CUQ4LC	*	0.1460	0.0038	1.18	0.1447	0.0012	0.39	OE
DVAQ4Q		0.1365	-0.0058	-1.81	0.1382	-0.0053	-1.67	OE
E3QQT2		0.1471	0.0049	1.53	0.1489	0.0055	1.75	IC
EB3XJ4		0.1417	-0.0006	-0.18	0.1427	-0.0008	-0.24	OE
ECZ2H7	*	0.1503	0.0081	2.53	0.1513	0.0079	2.52	OE
EH2E4G	X	0.1820	0.0398	12.45	0.1847	0.0412	13.14	OE
EWLXUP		0.1397	-0.0026	-0.81	0.1417	-0.0018	-0.56	OE
F46L6L		0.1360	-0.0062	-1.96	0.1370	-0.0064	-2.05	OE
F7URPH		0.1470	0.0048	1.49	0.1483	0.0049	1.56	OE
FFD7LT		0.1437	0.0014	0.45	0.1443	0.0009	0.29	OE
FMEGYD		0.1480	0.0058	1.80	0.1493	0.0059	1.88	OE
FR8MBU		0.1390	-0.0032	-1.02	0.1417	-0.0018	-0.56	OE
GG92T3		0.1377	-0.0046	-1.43	0.1353	-0.0081	-2.58	OE
GHHAVV		0.1400	-0.0022	-0.70	0.1400	-0.0034	-1.09	OE
GHVWZ3		0.1423	0.0001	0.03	0.1430	-0.0004	-0.14	OE
H8TYP9		0.1413	-0.0009	-0.29	0.1428	-0.0006	-0.20	XX

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 177

Chemical Analysis Element #8 - Carbon & Low Alloy Steel - Percent CHROMIUM (Cr)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
HJ6CYL		0.1430	0.0008	0.24	0.1443	0.0009	0.29	OE
HVWQ9Q		0.1413	-0.0009	-0.29	0.1427	-0.0008	-0.24	XX
J2KQ94		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	WD
J4PHUP	*	0.1414	-0.0008	-0.26	0.1403	-0.0032	-1.01	OE
JW9W2L		0.1440	0.0018	0.55	0.1447	0.0012	0.39	OE
K374XZ		0.1389	-0.0033	-1.05	0.1400	-0.0034	-1.08	OE
KUHYGL		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	OE
LHZXXX		0.1440	0.0018	0.55	0.1467	0.0032	1.03	IC
LKKW6Z		0.1427	0.0004	0.13	0.1450	0.0016	0.50	OE
LMEERV		0.1450	0.0028	0.86	0.1480	0.0046	1.45	XX
LVPTGH		0.1410	-0.0012	-0.39	0.1423	-0.0011	-0.35	OE
LY4HRE		0.1454	0.0031	0.98	0.1462	0.0028	0.89	OE
M8V77H		0.1433	0.0011	0.34	0.1440	0.0006	0.18	OE
MA3DMP		0.1437	0.0015	0.47	0.1455	0.0020	0.65	DR
MALAYP		0.1409	-0.0013	-0.41	0.1408	-0.0026	-0.84	OE
MLETFF		0.1390	-0.0032	-1.01	0.1401	-0.0033	-1.05	DR
MUQ4E9		0.1360	-0.0062	-1.96	0.1390	-0.0044	-1.41	OE
MVG88F		0.1430	0.0008	0.24	0.1463	0.0029	0.92	OE
NHQRJ7		0.1413	-0.0009	-0.29	0.1390	-0.0044	-1.41	OE
NKW7B7		0.1420	-0.0002	-0.08	0.1480	0.0046	1.45	OE
NMMA4D		0.1397	-0.0026	-0.81	0.1420	-0.0014	-0.46	OE
NPUR39		0.1390	-0.0032	-1.02	0.1403	-0.0031	-0.99	OE
PGAXFB		0.1370	-0.0052	-1.64	0.1383	-0.0051	-1.63	OE
PLPCDH		0.1413	-0.0009	-0.29	0.1433	-0.0001	-0.03	OE
PUYXAY		0.1437	0.0014	0.45	0.1453	0.0019	0.60	OE
PWANPV		0.1412	-0.0011	-0.34	0.1431	-0.0004	-0.12	OE
QMW4PW		0.1428	0.0006	0.18	0.1438	0.0004	0.12	OE
QNRPF2		0.1434	0.0011	0.35	0.1432	-0.0002	-0.07	OE
R2AXG8		0.1413	-0.0009	-0.29	0.1434	-0.0001	-0.02	WD
R2AXJT		0.1402	-0.0020	-0.64	0.1408	-0.0027	-0.85	OE
RCFK8K		0.1442	0.0020	0.62	0.1469	0.0035	1.10	DR
RCRB2W		0.1455	0.0033	1.03	0.1474	0.0039	1.25	OE
RDPUVC		0.1417	-0.0006	-0.18	0.1440	0.0006	0.18	OE
RKLFUX		0.1392	-0.0030	-0.95	0.1402	-0.0032	-1.03	OE
RQ9BPB		0.1430	0.0008	0.24	0.1433	-0.0001	-0.03	OE
RTWYV9	X	0.1530	0.0108	3.37	0.1503	0.0069	2.20	OE
RVHQYY		0.1497	0.0074	2.32	0.1497	0.0062	1.99	OE
RZ4C6T		0.1467	0.0044	1.38	0.1463	0.0029	0.92	OE
TN8T28	X	0.1367	-0.0056	-1.75	0.1500	0.0066	2.09	IC
U66LW6		0.1450	0.0028	0.86	0.1443	0.0009	0.29	IC
UP8ALF		0.1468	0.0046	1.43	0.1477	0.0043	1.37	OE
UXLYKN		0.1443	0.0021	0.65	0.1460	0.0026	0.82	OE
V48EJK		0.1426	0.0004	0.11	0.1441	0.0007	0.22	OE
VC6AGH	*	0.1397	-0.0026	-0.81	0.1433	-0.0001	-0.03	OE
VFY3JL		0.1447	0.0024	0.76	0.1517	0.0082	2.62	OE
VNHCXA		0.1480	0.0058	1.80	0.1497	0.0062	1.99	OE
WQF4EL	X	0.1487	0.0064	2.01	0.1580	0.0146	4.64	GD
WXYDXG		0.1420	-0.0002	-0.08	0.1430	-0.0004	-0.14	OE
XEK6CL		0.1380	-0.0042	-1.33	0.1390	-0.0044	-1.41	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 177

Chemical Analysis Element #8 - Carbon & Low Alloy Steel - Percent
CHROMIUM (Cr)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XG8XXN		0.1480	0.0058	1.80	0.1503	0.0069	2.20	OE
XK6JM7	*	0.1433	0.0011	0.34	0.1417	-0.0018	-0.56	OE
XP4QCA		0.1417	-0.0005	-0.17	0.1430	-0.0004	-0.13	OE
Y6ADDB		0.1430	0.0008	0.24	0.1447	0.0012	0.39	OE
Y78TFZ		0.1363	-0.0059	-1.85	0.1383	-0.0051	-1.63	OE
YMU2M7		0.1420	-0.0002	-0.08	0.1440	0.0006	0.18	OE
YN47ZU		0.1427	0.0004	0.13	0.1440	0.0006	0.18	OE
YRWEZV		0.1443	0.0021	0.65	0.1450	0.0016	0.50	XX
YWR9XW		0.1436	0.0013	0.41	0.1447	0.0012	0.39	OE
ZBG6AF		0.1447	0.0024	0.76	0.1459	0.0025	0.80	OE
ZN3JBU		0.1440	0.0018	0.55	0.1440	0.0006	0.18	IC
ZNGYEA		0.1403	-0.0019	-0.61	0.1414	-0.0020	-0.65	OE
ZNXBUU		0.1393	-0.0029	-0.91	0.1400	-0.0034	-1.09	OE
ZUMVVN		0.1413	-0.0009	-0.29	0.1427	-0.0008	-0.24	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.1422	Percent	0.1434	Percent
Stnd Dev Btwn Labs	0.0032	Percent	0.0031	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 99 of 112 reporting participants

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 177

Chemical Analysis Element #8 - Carbon & Low Alloy Steel - Percent CHROMIUM (Cr)

Comments on assigned Data Flags for Analysis #177

WebCode	Flag	Analyst Comment
2XFECD	X	Data for both samples are high. Possible Systematic error.
39Y4X4	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L26.
7KDGCA	X	Data for both samples are low. Possible Systematic error.
A787U6	X	Data for sample L25 are high and data for sample L26 are low.
BTCLH8	X	Data for both samples are high. Possible Systematic error.
EH2E4G	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L26.
RTWYV9	X	Data for sample L25 are high. Inconsistent in testing between samples.
TN8T28	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
WQF4EL	X	Data for sample L26 are high. Inconsistent in testing between samples.

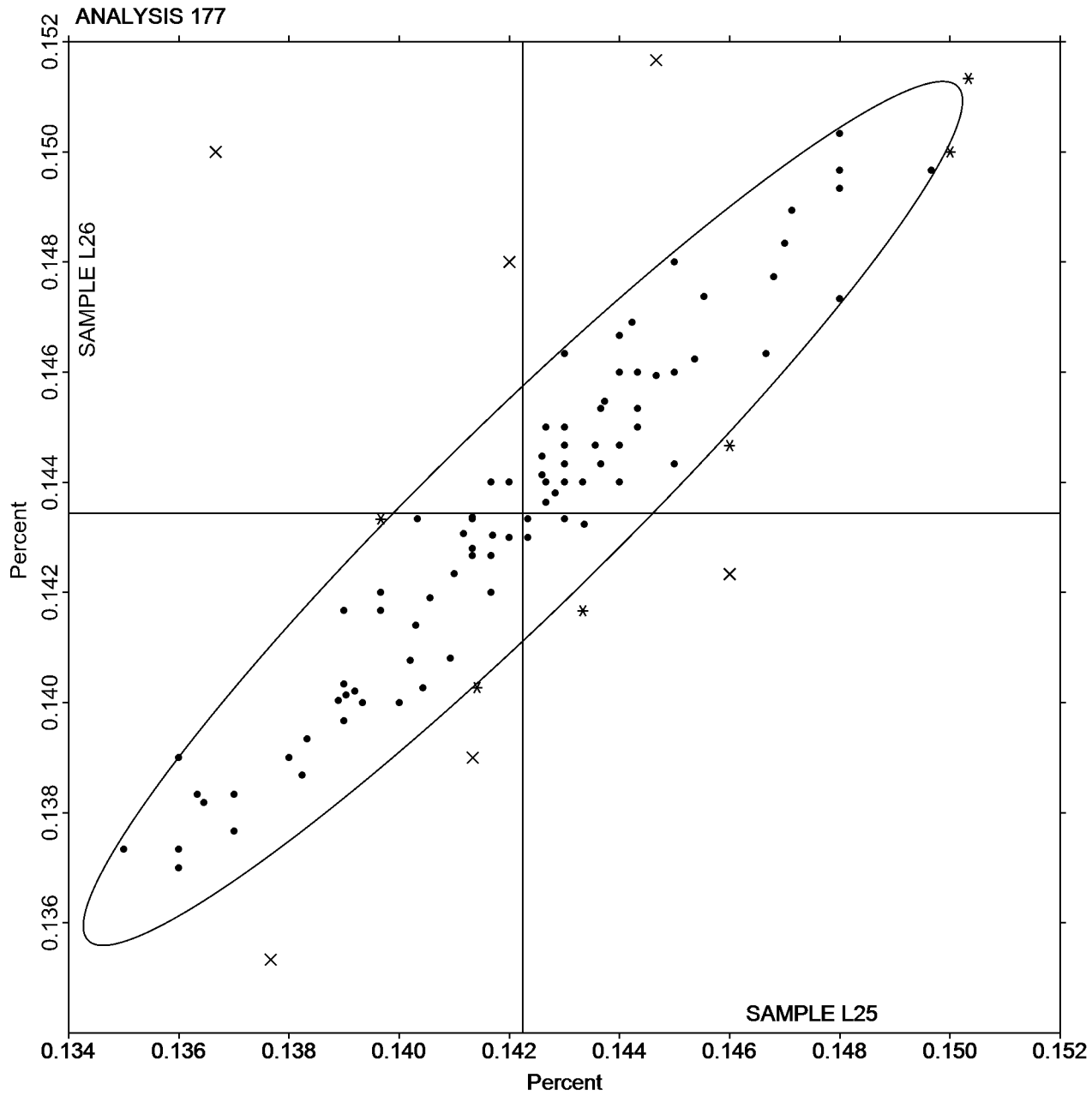
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 177

Chemical Analysis Element #8 - Carbon & Low Alloy Steel - Percent
CHROMIUM (Cr)

SAMPLE L25	SAMPLE L26
0.1422 Percent	0.1434 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent
ALUMINUM (Al)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2RXNBR		0.0360	-0.0001	-0.04	0.0214	-0.0002	-0.11	OE
2W6A4V	*	0.0303	-0.0057	-2.70	0.0170	-0.0046	-2.68	OE
2XFECD		0.0377	0.0016	0.75	0.0230	0.0014	0.85	OE
39Y4X4		0.0350	-0.0011	-0.51	0.0207	-0.0009	-0.53	GD
3B79ML		0.0330	-0.0031	-1.44	0.0200	-0.0016	-0.92	OE
3FZBKJ		0.0335	-0.0026	-1.23	0.0189	-0.0027	-1.59	OE
3GT3TJ		0.0357	-0.0004	-0.18	0.0228	0.0012	0.73	IC
3Z6X2H	*	0.0415	0.0054	2.53	0.0252	0.0037	2.16	OE
46B3ZV		0.0333	-0.0028	-1.30	0.0190	-0.0025	-1.48	OE
474RPH		0.0363	0.0003	0.12	0.0230	0.0014	0.85	DR
64J7MM	X	0.0237	-0.0124	-5.83	0.00857	-0.0130	-7.63	OE
66RG7J		0.0363	0.0002	0.11	0.0231	0.0016	0.92	OE
6AM2EA		0.0370	0.0009	0.43	0.0240	0.0024	1.43	IC
6LYLL9		0.0360	-0.0001	-0.04	0.0210	-0.0006	-0.33	GD
74EBEZ		0.0363	0.0002	0.11	0.0208	-0.0007	-0.43	GD
76LGPF		0.0338	-0.0022	-1.05	0.0211	-0.0005	-0.27	DR
78CLHM		0.0370	0.0009	0.43	0.0200	-0.0016	-0.92	GD
7KDGCA		0.0360	-0.0001	-0.04	0.0227	0.0011	0.65	OE
7MN8R6		0.0330	-0.0031	-1.44	0.0207	-0.0009	-0.53	GD
7VWNGP		0.0366	0.0005	0.23	0.0220	0.0004	0.26	OE
864T3E		0.0370	0.0009	0.43	0.0213	-0.0002	-0.13	OE
922AHR		0.0350	-0.0010	-0.49	0.0208	-0.0008	-0.45	OE
A6UVKE		0.0378	0.0017	0.81	0.0230	0.0014	0.85	OE
A787U6		0.0380	0.0019	0.88	0.0227	0.0011	0.65	OE
B3LTK2		0.0363	0.0002	0.11	0.0210	-0.0005	-0.31	DR
B6CAFV		0.0346	-0.0014	-0.68	0.0208	-0.0008	-0.45	XX
B99RLA		0.0333	-0.0027	-1.29	0.0200	-0.0016	-0.92	OE
BMPN7D		0.0374	0.0013	0.61	0.0216	0.0000	0.02	OE
BPKAT3		0.0363	0.0003	0.12	0.0207	-0.0009	-0.53	OE
CG6TWL		0.0370	0.0009	0.42	0.0220	0.0004	0.26	OE
CUQ4LC		0.0380	0.0019	0.90	0.0223	0.0008	0.45	OE
DVAQ4Q		0.0361	0.0000	-0.01	0.0228	0.0012	0.73	OE
E3QQT2		0.0349	-0.0012	-0.55	0.0200	-0.0015	-0.90	IC
EB3XJ4		0.0385	0.0024	1.12	0.0243	0.0027	1.61	OE
ECZ2H7		0.0357	-0.0004	-0.19	0.0200	-0.0016	-0.92	OE
EH2E4G	X	0.0430	0.0069	3.25	0.0253	0.0038	2.22	OE
EWLXUP		0.0344	-0.0017	-0.80	0.0201	-0.0015	-0.86	OE
F46L6L		0.0340	-0.0021	-0.97	0.0200	-0.0016	-0.92	OE
F7URPH		0.0383	0.0022	1.03	0.0245	0.0029	1.73	OE
FFD7LT		0.0359	-0.0001	-0.06	0.0222	0.0006	0.36	OE
FMEGYD		0.0333	-0.0028	-1.32	0.0196	-0.0019	-1.13	OE
FR8MBU		0.0350	-0.0011	-0.51	0.0207	-0.0009	-0.53	OE
GG92T3		0.0353	-0.0007	-0.35	0.0213	-0.0002	-0.13	OE
GHHAVV	*	0.0400	0.0039	1.84	0.0260	0.0044	2.61	OE
GHVWZ3		0.0320	-0.0041	-1.91	0.0247	0.0031	1.82	OE
H8TYP9		0.0349	-0.0012	-0.55	0.0199	-0.0017	-1.00	OE
HJ6CYL		0.0409	0.0048	2.25	0.0200	-0.0016	-0.92	OE
HVWQ9Q	*	0.0414	0.0053	2.48	0.0254	0.0039	2.27	OE
J2KQ94		0.0358	-0.0003	-0.13	0.0206	-0.0010	-0.56	IC

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent
ALUMINUM (Al)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
J4PHUP		0.0320	-0.0041	-1.93	0.0187	-0.0029	-1.68	OE
JW9W2L		0.0357	-0.0004	-0.18	0.0209	-0.0006	-0.37	OE
K374XZ		0.0341	-0.0020	-0.94	0.0199	-0.0017	-1.00	OE
KUHYGL		0.0370	0.0010	0.45	0.0212	-0.0004	-0.23	OE
LHZXXX		0.0356	-0.0005	-0.24	0.0208	-0.0007	-0.43	IC
LKKW6Z		0.0346	-0.0014	-0.68	0.0197	-0.0018	-1.07	OE
LMEERV		0.0360	-0.0001	-0.04	0.0230	0.0014	0.85	XX
LVPTGH		0.0353	-0.0007	-0.35	0.0217	0.0001	0.06	OE
LY4HRE		0.0344	-0.0017	-0.80	0.0210	-0.0006	-0.35	OE
M8V77H		0.0354	-0.0007	-0.33	0.0210	-0.0006	-0.33	OE
MA3DMP		0.0346	-0.0014	-0.68	0.0213	-0.0003	-0.15	DR
MALAYP		0.0360	-0.0001	-0.04	0.0207	-0.0009	-0.53	OE
MLETFF		0.0352	-0.0008	-0.40	0.0210	-0.0005	-0.31	DR
MUQ4E9	*	0.0400	0.0039	1.84	0.0260	0.0044	2.61	OE
MVG88F		0.0383	0.0022	1.04	0.0223	0.0008	0.45	OE
NHQRJ7		0.0347	-0.0014	-0.66	0.0210	-0.0006	-0.33	OE
NKW7B7		0.0354	-0.0007	-0.33	0.0212	-0.0003	-0.19	OE
NMMA4D		0.0367	0.0007	0.31	0.0212	-0.0004	-0.21	OE
NPUR39		0.0360	-0.0001	-0.04	0.0220	0.0004	0.26	OE
PGAXFB		0.0380	0.0019	0.90	0.0230	0.0014	0.85	OE
PLPCDH		0.0353	-0.0007	-0.35	0.0217	0.0001	0.06	OE
PUYXAY		0.0378	0.0018	0.83	0.0208	-0.0008	-0.45	OE
PWANPV		0.0342	-0.0019	-0.88	0.0211	-0.0005	-0.27	OE
QMW4PW		0.0399	0.0039	1.81	0.0238	0.0023	1.34	OE
QNRPF2		0.0399	0.0039	1.81	0.0243	0.0028	1.62	OE
R2AXG8		0.0330	-0.0031	-1.44	0.0190	-0.0026	-1.52	OE
R2AXJT	X	0.0295	-0.0065	-3.07	0.0154	-0.0062	-3.62	OE
RCFK8K		0.0352	-0.0009	-0.41	0.0217	0.0001	0.08	DR
RCRB2W		0.0375	0.0014	0.65	0.0217	0.0001	0.06	OE
RDPUVC		0.0361	0.0000	0.01	0.0210	-0.0006	-0.35	OE
RKLFUX		0.0390	0.0029	1.36	0.0237	0.0022	1.28	OE
RQ9BPB		0.0350	-0.0011	-0.51	0.0210	-0.0006	-0.33	OE
RTWYV9	X	0.0407	0.0046	2.16	0.0270	0.0054	3.20	OE
RVHQYY		0.0389	0.0028	1.33	0.0222	0.0007	0.40	OE
RZ4C6T		0.0400	0.0039	1.84	0.0237	0.0021	1.24	OE
TN8T28		0.0313	-0.0047	-2.23	0.0193	-0.0022	-1.31	IC
TV4GPY		0.0340	-0.0021	-0.97	0.0210	-0.0006	-0.33	OE
U66LW6		0.0353	-0.0008	-0.38	0.0210	-0.0006	-0.33	IC
UP8ALF		0.0375	0.0015	0.68	0.0208	-0.0007	-0.43	OE
UXLYKN		0.0373	0.0012	0.56	0.0224	0.0008	0.47	OE
V48EJK		0.0362	0.0001	0.04	0.0220	0.0005	0.28	OE
VC6AGH	*	0.0347	-0.0014	-0.66	0.0180	-0.0036	-2.09	OE
VFY3JL	X	0.0317	-0.0043	-2.04	0.0161	-0.0055	-3.23	OE
VNHCXA		0.0361	0.0000	0.01	0.0213	-0.0002	-0.13	OE
WQF4EL		0.0363	0.0003	0.12	0.0183	-0.0032	-1.90	GD
WXYDXG	*	0.0389	0.0029	1.34	0.0255	0.0039	2.31	OE
XEK6CL		0.0337	-0.0024	-1.13	0.0200	-0.0016	-0.92	OE
XG8XXN		0.0357	-0.0004	-0.19	0.0220	0.0004	0.26	OE
XK6JM7		0.0329	-0.0031	-1.48	0.0198	-0.0018	-1.03	OE

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent ALUMINUM (Al)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
XP4QCA		0.0366	0.0005	0.23	0.0218	0.0002	0.12	OE
Y6ADDB		0.0363	0.0003	0.12	0.0230	0.0014	0.85	OE
Y78TFZ	*	0.0408	0.0047	2.20	0.0232	0.0016	0.94	OE
YMU2M7		0.0360	-0.0001	-0.05	0.0200	-0.0016	-0.94	OE
YN47ZU		0.0337	-0.0024	-1.12	0.0189	-0.0027	-1.56	OE
YRWEZV		0.0407	0.0046	2.16	0.0245	0.0029	1.73	XX
YWR9XW		0.0377	0.0016	0.75	0.0230	0.0014	0.85	OE
ZBG6AF		0.0358	-0.0003	-0.15	0.0216	0.0000	0.02	OE
ZN3JBU		0.0333	-0.0027	-1.29	0.0233	0.0018	1.04	IC
ZNGYEA		0.0357	-0.0003	-0.16	0.0218	0.0002	0.12	OE
ZNXBUU		0.0358	-0.0003	-0.13	0.0215	-0.0001	-0.06	OE
ZUMVVN		0.0360	-0.0001	-0.04	0.0220	0.0004	0.26	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.0361	Percent	0.0216	Percent
Stnd Dev Btwn Labs	0.0021	Percent	0.0017	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 101 of 110 reporting participants

Comments on assigned Data Flags for Analysis #178

WebCode	Flag	Analyst Comment
64J7MM	X	Data for both samples are low.
EH2E4G	X	Data for sample L25 are high.
R2AXJT	X	Data for both samples are low.
RTWYV9	X	Data for sample L26 are high. Inconsistent within the determinations of sample L26.
VFY3JL	X	Data for sample L26 are low.

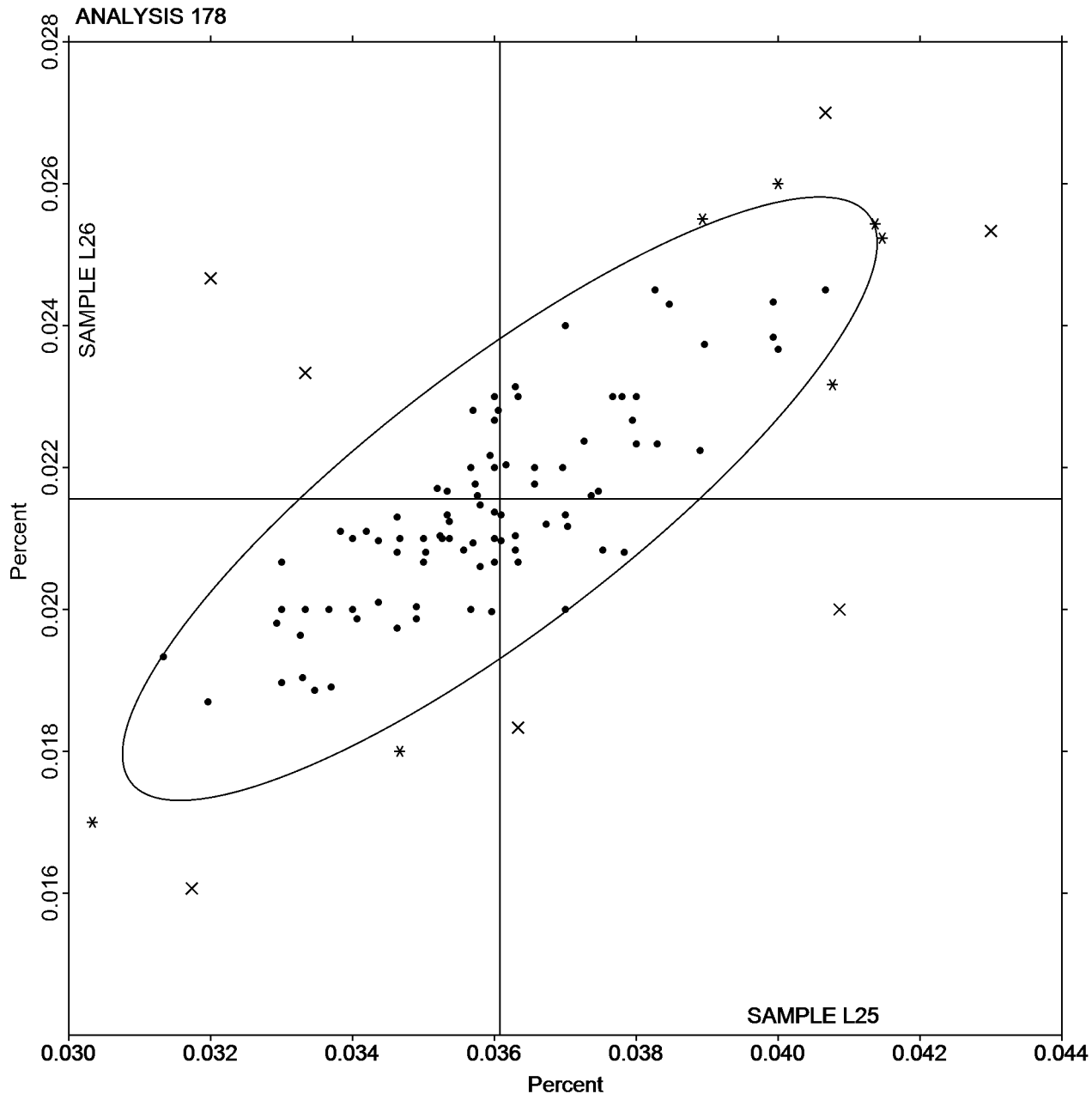
Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent
ALUMINUM (Al)

SAMPLE L25	SAMPLE L26
0.0361 Percent	0.0216 Percent



Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent
COBALT (Co)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
2RXNBR		0.00923	-0.0023	-1.04	0.00817	-0.0024	-1.08	OE
39Y4X4	*	0.0143	0.0028	1.28	0.0123	0.0018	0.80	GD
3B79ML		0.0110	-0.0005	-0.24	0.00953	-0.0010	-0.47	OE
3FZBKJ		0.0114	-0.0001	-0.05	0.0105	-0.0001	-0.05	OE
3GT3TJ	*	0.00987	-0.0017	-0.76	0.0102	-0.0004	-0.18	IC
46B3ZV	X	0.0218	0.0102	4.67	0.0209	0.0103	4.69	OE
474RPH		0.0100	-0.0015	-0.69	0.0100	-0.0006	-0.25	DR
64J7MM	*	0.00600	-0.0055	-2.52	0.00500	-0.0056	-2.52	OE
6AM2EA		0.0110	-0.0005	-0.24	0.0100	-0.0006	-0.25	IC
6LYLL9	*	0.0170	0.0055	2.50	0.0167	0.0061	2.77	GD
76LGPF		0.0149	0.0033	1.52	0.0136	0.0031	1.39	DR
78CLHM	X	0.00433	-0.0072	-3.28	0.00233	-0.0082	-3.73	GD
7KDGCA	X	0.0213	0.0098	4.47	0.0207	0.0101	4.58	OE
7VWNGP		0.0137	0.0021	0.98	0.0128	0.0022	1.00	OE
864T3E		0.0120	0.0005	0.22	0.0110	0.0004	0.20	OE
922AHR		0.0123	0.0008	0.37	0.0113	0.0007	0.32	OE
A6UVKE		0.0135	0.0020	0.90	0.0125	0.0019	0.88	OE
A787U6		0.00998	-0.0015	-0.70	0.00960	-0.0010	-0.43	OE
B6CAFV	*	0.0173	0.0057	2.62	0.0164	0.0058	2.65	XX
B99RLA		0.0107	-0.0009	-0.39	0.00937	-0.0012	-0.54	OE
BPKAT3		0.0127	0.0011	0.52	0.0118	0.0012	0.55	OE
CG6TWL		0.0133	0.0018	0.81	0.0123	0.0018	0.80	OE
DVAQ4Q		0.0117	0.0002	0.09	0.0109	0.0003	0.16	OE
E3QQT2		0.00883	-0.0027	-1.23	0.00787	-0.0027	-1.22	IC
EB3XJ4		0.0149	0.0034	1.54	0.0139	0.0034	1.53	OE
ECZ2H7		0.0120	0.0005	0.22	0.0110	0.0004	0.20	OE
EH2E4G		0.0123	0.0008	0.37	0.0113	0.0008	0.35	OE
EWLXUP		0.0118	0.0003	0.13	0.0108	0.0003	0.12	OE
F46L6L		0.0120	0.0005	0.22	0.0110	0.0004	0.20	OE
FFD7LT		0.0127	0.0012	0.54	0.0120	0.0014	0.64	OE
FR8MBU	X	0.0220	0.0105	4.78	0.0220	0.0114	5.18	OE
GG92T3		0.0130	0.0015	0.67	0.0120	0.0014	0.65	OE
GHHAVV		0.0100	-0.0015	-0.69	0.0100	-0.0006	-0.25	XX
GHVWZ3		0.0120	0.0005	0.22	0.0110	0.0004	0.20	OE
H8TYP9		0.0133	0.0017	0.79	0.0123	0.0018	0.80	OE
HJ6CYL		0.0117	0.0001	0.06	0.0109	0.0003	0.14	OE
HVWQ9Q		0.0113	-0.0002	-0.10	0.0102	-0.0003	-0.15	OE
J4PHUP		0.0138	0.0023	1.04	0.0129	0.0023	1.05	OE
JW9W2L		0.0127	0.0012	0.54	0.0116	0.0010	0.46	OE
K374XZ		0.0121	0.0006	0.28	0.0112	0.0007	0.31	OE
KUHYGL		0.0111	-0.0004	-0.18	0.00993	-0.0006	-0.28	OE
LKKW6Z		0.0149	0.0033	1.52	0.0140	0.0034	1.56	OE
LMEERV		0.0130	0.0015	0.67	0.0130	0.0024	1.11	XX
LVPTGH		0.0110	-0.0005	-0.24	0.0100	-0.0006	-0.25	OE
LY4HRE		0.0110	-0.0006	-0.25	0.0101	-0.0005	-0.21	OE
M8V77H		0.0128	0.0012	0.57	0.0118	0.0013	0.58	OE
MLETFF		0.0115	-0.0001	-0.03	0.0104	-0.0001	-0.06	DR
MVG88F		0.0109	-0.0007	-0.30	0.00953	-0.0010	-0.47	OE
NKW7B7		0.00997	-0.0016	-0.71	0.00963	-0.0009	-0.42	OE

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Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent
COBALT (Co)

		Sample L25			Sample L26			
WebCode	Data Flag	Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	Instr Code
NMMA4D	*	0.00553	-0.0060	-2.73	0.00450	-0.0061	-2.75	OE
NPUR39		0.00933	-0.0022	-1.00	0.00860	-0.0020	-0.89	OE
PGAXFB		0.0100	-0.0015	-0.68	0.00907	-0.0015	-0.68	XX
PLPCDH		0.00767	-0.0039	-1.76	0.00700	-0.0036	-1.61	OE
PUYXAY	*	0.00647	-0.0051	-2.31	0.00497	-0.0056	-2.53	OE
QMW4PW		0.0109	-0.0006	-0.27	0.00990	-0.0007	-0.30	OE
QNRPF2		0.00926	-0.0023	-1.03	0.00749	-0.0031	-1.39	OE
R2AXG8	X	0.0225	0.0109	4.99	0.0219	0.0113	5.14	OE
RCRB2W		0.0127	0.0012	0.55	0.0120	0.0014	0.64	OE
RDPUVC		0.0127	0.0011	0.52	0.0113	0.0007	0.34	OE
RTWYV9	X	0.0170	0.0055	2.50	0.0140	0.0034	1.56	OE
RVHQYY		0.0107	-0.0008	-0.36	0.0104	-0.0002	-0.07	OE
TV4GPY		0.0100	-0.0015	-0.69	0.00900	-0.0016	-0.71	OE
U66LW6		0.0120	0.0004	0.20	0.0108	0.0003	0.12	IC
UP8ALF	*	0.0157	0.0042	1.90	0.0139	0.0033	1.51	OE
UXLYKN		0.0150	0.0035	1.58	0.0140	0.0034	1.56	OE
VC6AGH		0.0100	-0.0015	-0.69	0.00900	-0.0016	-0.71	OE
VFY3JL		0.0102	-0.0013	-0.60	0.00890	-0.0017	-0.75	OE
VNHCXA		0.0112	-0.0003	-0.15	0.0107	0.0002	0.08	OE
WQF4EL	X	0.0190	0.0075	3.41	0.0167	0.0061	2.77	GD
WXYDXG		0.0110	-0.0006	-0.25	0.00973	-0.0008	-0.37	OE
XEK6CL		0.0130	0.0015	0.67	0.0120	0.0014	0.65	OE
XG8XXN	X	0.0197	0.0081	3.71	0.0173	0.0068	3.07	OE
XK6JM7		0.0113	-0.0002	-0.10	0.00977	-0.0008	-0.36	OE
XP4QCA		0.0105	-0.0011	-0.48	0.00943	-0.0011	-0.51	OE
Y78TFZ	X	0.0286	0.0170	7.77	0.0283	0.0178	8.05	OE
YMU2M7		0.0107	-0.0009	-0.39	0.0106	0.0000	0.00	WD
YN47ZU		0.00987	-0.0017	-0.76	0.00880	-0.0018	-0.80	OE
YRWEZV		0.0137	0.0022	1.01	0.0120	0.0015	0.67	XX
ZN3JBU		0.00967	-0.0019	-0.85	0.00800	-0.0026	-1.16	IC
ZNGYEA		0.00950	-0.0020	-0.92	0.00847	-0.0021	-0.95	OE
ZNXBUU		0.0104	-0.0011	-0.51	0.00917	-0.0014	-0.63	OE
ZUMVVN		0.0100	-0.0015	-0.69	0.00900	-0.0016	-0.71	OE

Summary Statistics

	Sample L25		Sample L26	
Grand Means	0.0115	Percent	0.0106	Percent
Stnd Dev Btwn Labs	0.0022	Percent	0.0022	Percent

Samples L25 , L26 : AISI 4820

Statistics based on 73 of 82 reporting participants

Cycle 109
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Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent COBALT (Co)

Comments on assigned Data Flags for Analysis #179

WebCode	Flag	Analyst Comment
46B3ZV	X	Data for both samples are high. Possible Systematic error.
78CLHM	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample L25.
7KDGCA	X	Data for both samples are high. Possible Systematic error.
FR8MBU	X	Data for both samples are high. Possible Systematic error.
R2AXG8	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L25.
RTWYV9	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L25.
WQF4EL	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L25.
XG8XXN	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L26.
Y78TFZ	X	Data for both samples are high. Possible Systematic error.

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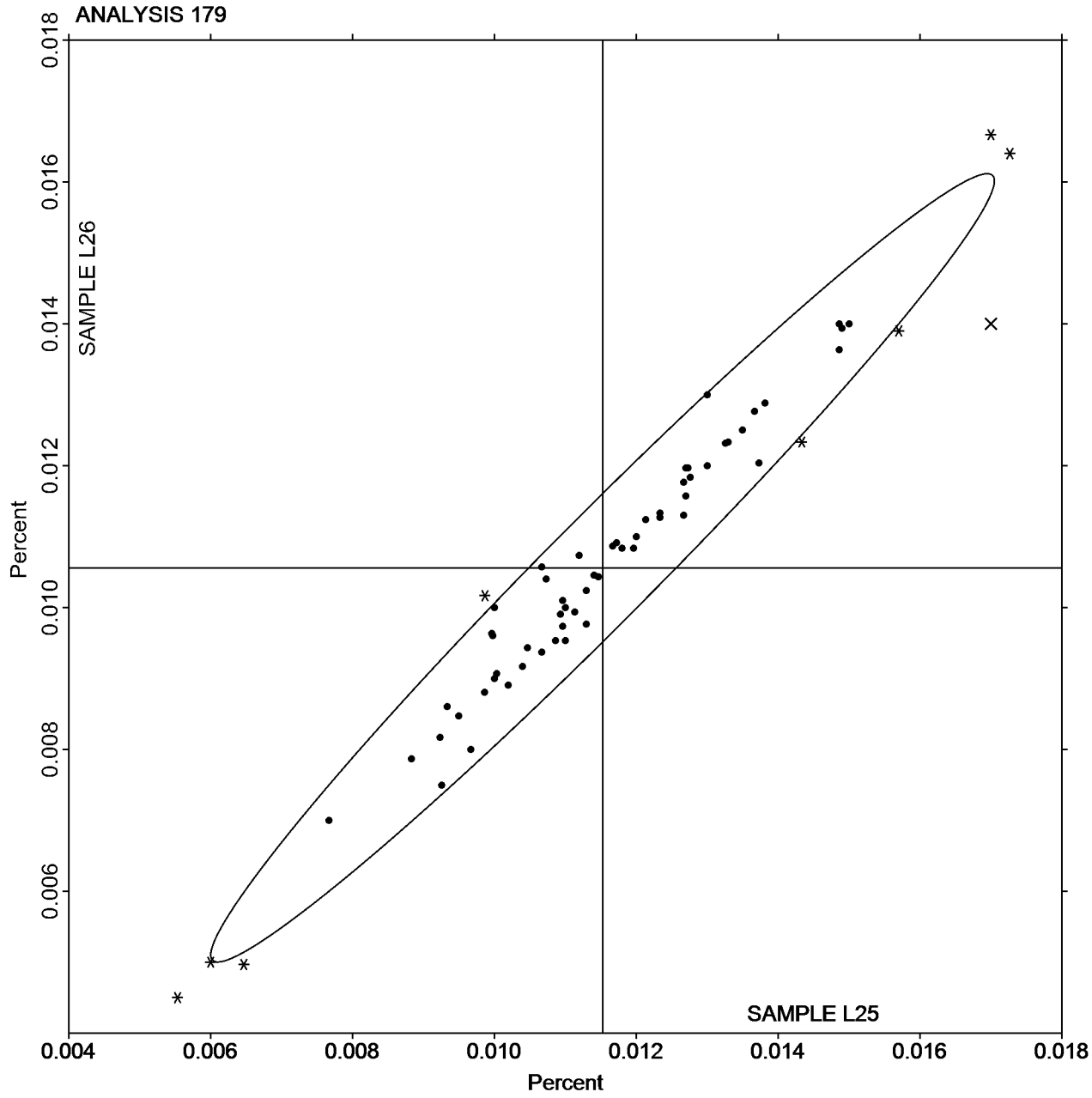
Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent
COBALT (Co)

SAMPLE L25	SAMPLE L26
0.0115 Percent	0.0106 Percent



Cycle 109
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Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent COBALT (Co)

Instrument and Method Code List - Cycle 109

Instrument and Method information as provided by laboratories

Instruments are no longer tracked for analyses 105-148

170: Carbon & Low Alloy Steel, Element #1 - CARBON (C)

Method Code	Description
CI	Combustion / IR
CO	Combustion
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element

171: Carbon & Low Alloy Steel, Element #2 - MANGANESE (Mn)

Method Code	Description
CI	Combustion / IR
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)
IR	IR (Absorbstion / Detection)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element

172: Carbon & Low Alloy Steel, Element #3 - PHOSPHORUS (P)

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

Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent COBALT (Co)

173: Carbon & Low Alloy Steel, Element #4 - SULFUR (S)

Method Code	Description
CI	Combustion / IR
CO	Combustion
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element

174: Carbon & Low Alloy Steel, Element #5 - SILICON (Si)

Method Code	Description
DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)
GR	Gravimetry
IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element

175: Carbon & Low Alloy Steel, Element #6 - COPPER (Cu)

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

Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent COBALT (Co)

176: Carbon & Low Alloy Steel, Element #7 - NICKEL (Ni)

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

177: Carbon & Low Alloy Steel, Element #8 - CHROMIUM (Cr)

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

178: Carbon & Low Alloy Steel, Element #9 - ALUMINUM (Al)

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

Cycle 109
1st Q, 2015

Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent COBALT (Co)

179: Carbon & Low Alloy Steel, Element #10 - COBALT (Co)

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