



# Fasteners & Metals Testing Program

Summary Report Cycle 105, 1st Quarter - 2014

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	<b>CAUTION</b> - 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	<b>STOP</b> - immediate review of data and/or testing procedure is required (all tests except Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data are excluded. For Chemical Analyses see an additional Memo.
M	EXCLUDED	<b>PROCEED</b> - lab was unable to report data for at least one sample. However, a lab receiving two or more M flags for a test may need to stop and review its testing procedures.

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

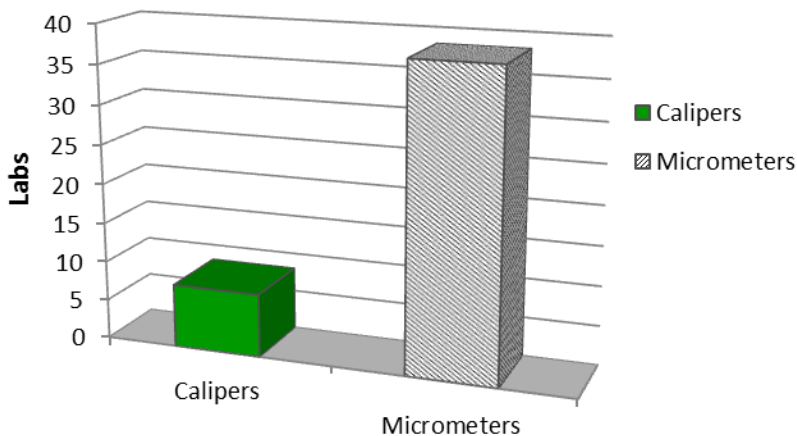
## Interlaboratory Testing Program for Metals

## Analysis 101

## Dimensional – OD of Plain Plug Gage – inch

In the 1<sup>st</sup> quarter of 2014, CTS conducted the Test #101 - Round Dimensional. For this test all participants received two samples I17 and I18 with nominal diameters; 0.3751 in and 0.3753 in. Each sample is an English size 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. 46 laboratories that subscribed for this test reported testing results.

## Instruments



**37** participants used *Micrometers*.  
**8** participants used *Calipers*.  
**1** participant used Other  
 "Other" measurements are currently listed with *Micrometers*.

Testing results for both methods are presented in two tables on the following page. Please use your WebCode listed below the analyses to locate your results.

## Analysis of the results

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

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

Where the assigned value  $X_{ref}$  is determined in a reference laboratory,  $U_{ref}$  is the expanded uncertainty of  $X_{ref}$ , and  $U_{lab}$  is the **Expanded Uncertainty** of a participant's result  $X_{lab}$ .  $E_n$  was not calculated for Labs who failed to report their Expanded Uncertainty.

Absolute values of  $E_n$  less than **1.0** 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 (20-23°C or 68-77°F).

$X_{ref}$  and  $U_{ref}$  were determined by the gage pin manufacturer. The manufacturer is ISO 9001:2000 and ISO 9002 Certified company. All master gages used in checking the plug gages are calibrated with standards traceable to NIST.

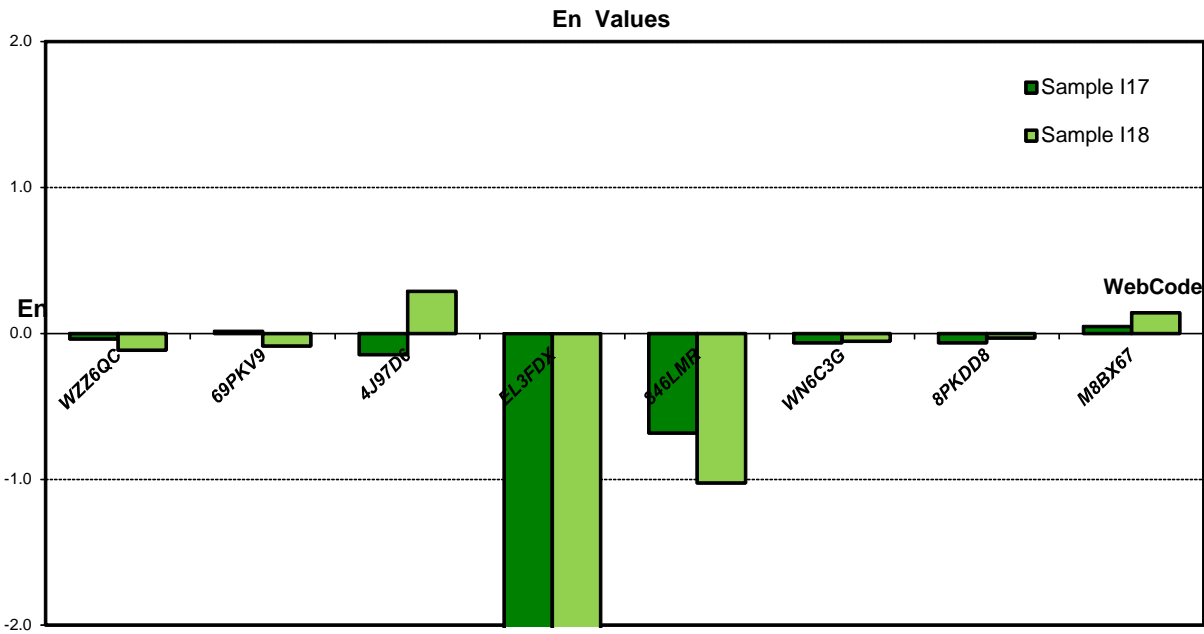
CTS Interlaboratory Testing Program

Analysis 101

Dimensional – OD of Plain Plug Gage – inch

*Calipers*

WebCode	Sample I17						Sample I18					
	$X_{lab}$	$U_{lab}$	$X_{ref}$	$U_{ref}$	$E_n$	Flag	$X_{lab}$	$U_{lab}$	$X_{ref}$	$U_{ref}$	$E_n$	Flag
WZZ6QC	0.37500	0.00260	0.3751	0.00004	-0.04		0.37500	0.00260	0.3753	0.00004	-0.12	
69PKV9	0.37512	0.00118	0.3751	0.00004	0.02		0.37520	0.00118	0.3753	0.00004	-0.09	
4J97D6	0.37500	0.00069	0.3751	0.00004	-0.14		0.37550	0.00069	0.3753	0.00004	0.29	
EL3FDX	0.37340	0.00050	0.3751	0.00004	-3.39	X	0.37330	0.00050	0.3753	0.00004	-3.99	X
846LMR	0.37490	0.00029	0.3751	0.00004	-0.68		0.37500	0.00029	0.3753	0.00004	-1.02	X
WN6C3G	0.37504	0.00094	0.3751	0.00004	-0.06		0.37525	0.00094	0.3753	0.00004	-0.05	
8PKDD8	0.37504	0.00094	0.3751	0.00004	-0.06		0.37527	0.00094	0.3753	0.00004	-0.03	
M8BX67	0.37520	0.00210	0.3751	0.00004	0.05		0.37560	0.00210	0.3753	0.00004	0.14	



## Interlaboratory Testing Program for Metals

Analysis 101, Dimensional – OD of Plain Plug Gage – inch  
*Micrometers*

WebCode	<i>Sample I17</i>						<i>Sample I18</i>					
	$X_{lab}$	$U_{lab}$	$X_{ref}$	$U_{ref}$	$E_n$	<i>Flag</i>	$X_{lab}$	$U_{lab}$	$X_{ref}$	$U_{ref}$	$E_n$	<i>Flag</i>
46UAL4	0.37500	0.00020	0.3751	0.00004	-0.49		0.37520	0.00020	0.3753	0.00004	-0.49	
6HVYQ3	0.37508	0.00011	0.3751	0.00004	-0.17		0.37531	0.00011	0.3753	0.00004	0.09	
6YYTG6	0.37502	0.00015	0.3751	0.00004	-0.52		0.37522	0.00015	0.3753	0.00004	-0.52	
7AEJXT	0.37500	0.00015	0.3751	0.00004	-0.64		0.37520	0.00015	0.3753	0.00004	-0.64	
9BL4UC	0.37485	0.00040	0.3751	0.00004	-0.62		0.37504	0.00040	0.3753	0.00004	-0.65	
9VRP87	0.37495	0.00016	0.3751	0.00004	-0.90		0.37511	0.00016	0.3753	0.00004	-1.17	X
A8YVWW	0.37501	0.00008	0.3751	0.00004	-1.01	X	0.37522	0.00008	0.3753	0.00004	-0.87	
ALLH7H	0.37504	0.00017	0.3751	0.00004	-0.36		0.37522	0.00017	0.3753	0.00004	-0.47	
APZUMB	0.37489	0.00030	0.3751	0.00004	-0.69		0.37505	0.00030	0.3753	0.00004	-0.83	
AUXJJ7	0.37509	0.00012	0.3751	0.00004	-0.04		0.37532	0.00012	0.3753	0.00004	0.12	
BAKNXC	0.37508	0.00007	0.3751	0.00004	-0.26		0.37528	0.00007	0.3753	0.00004	-0.30	
DLKMKV	0.37505	0.00015	0.3751	0.00004	-0.32		0.37525	0.00015	0.3753	0.00004	-0.32	
EUE7KM	0.37509	0.00030	0.3751	0.00004	-0.03		0.37526	0.00030	0.3753	0.00004	-0.13	
FC8RWK	0.37506	0.00040	0.3751	0.00004	-0.10		0.37523	0.00040	0.3753	0.00004	-0.17	
GKZ2MP	0.37504	0.00008	0.3751	0.00004	-0.68		0.37524	0.00008	0.3753	0.00004	-0.72	
GQRFYW	0.37500	0.00100	0.3751	0.00004	-0.10		0.37520	0.00100	0.3753	0.00004	-0.10	
GZ94Z4	0.37503	0.00014	0.3751	0.00004	-0.48		0.37524	0.00014	0.3753	0.00004	-0.41	
HRC638	0.37504	0.00300	0.3751	0.00004	-0.02		0.37520	0.00300	0.3753	0.00004	-0.03	
JRU8HV	0.37506	0.00015	0.3751	0.00004	-0.26		0.37526	0.00015	0.3753	0.00004	-0.26	
L9XWVQ	0.37500	DNRU*	0.3751	0.00004	n/a		0.37520	DNRU*	0.3753	0.00004	n/a	
LJMW6F	0.37508	0.00339	0.3751	0.00004	-0.01		0.37523	0.00339	0.3753	0.00004	-0.02	
LWW49Y	0.37501	0.00040	0.3751	0.00004	-0.22		0.37516	0.00040	0.3753	0.00004	-0.35	
MZYRC8	0.37498	0.00030	0.3751	0.00004	-0.40		0.37520	0.00030	0.3753	0.00004	-0.33	
NPJLKB	0.37504	0.00045	0.3751	0.00004	-0.13		0.37522	0.00045	0.3753	0.00004	-0.18	
NVU6W4	0.37507	0.00030	0.3751	0.00004	-0.10		0.37527	0.00030	0.3753	0.00004	-0.10	
PJH6Q3	0.37450	0.00130	0.3751	0.00004	-0.46		0.37500	0.00130	0.3753	0.00004	-0.23	
PZM6PB	0.37500	0.00015	0.3751	0.00004	-0.64		0.37520	0.00015	0.3753	0.00004	-0.64	
QHZHYPY	0.37505	0.00023	0.3751	0.00004	-0.22		0.37530	0.00023	0.3753	0.00004	0.00	
R2T9F7	0.37511	0.00003	0.3751	0.00004	0.22		0.37529	0.00003	0.3753	0.00004	-0.18	
RR78ZW	0.37500	0.00000	0.3751	0.00004	-2.49	X	0.37520	0.00000	0.3753	0.00004	-2.49	X
RZQJWG	0.37570	0.00060	0.3751	0.00004	1.00		0.37590	0.00060	0.3753	0.00004	1.00	X
T3ZHNA	0.37502	0.00070	0.3751	0.00004	-0.11		0.37524	0.00070	0.3753	0.00004	-0.09	
V884T4	0.37508	0.00016	0.3751	0.00004	-0.13		0.37528	0.00016	0.3753	0.00004	-0.15	
W79367	0.37500	0.00050	0.3751	0.00004	-0.20		0.37497	0.00050	0.3753	0.00004	-0.66	
WJFDPR	0.37520	0.00050	0.3751	0.00004	0.20		0.37530	0.00050	0.3753	0.00004	0.00	
Y3LD8R	0.37500	0.00080	0.3751	0.00004	-0.12		0.37515	0.00080	0.3753	0.00004	-0.19	
ZBACPV	0.37480	0.00003	0.3751	0.00004	-6.07	X	0.37508	0.00003	0.3753	0.00004	-4.45	X
ZREHGE	0.37450	0.00047	0.3751	0.00004	-1.27	X	0.37500	0.00047	0.3753	0.00004	-0.64	

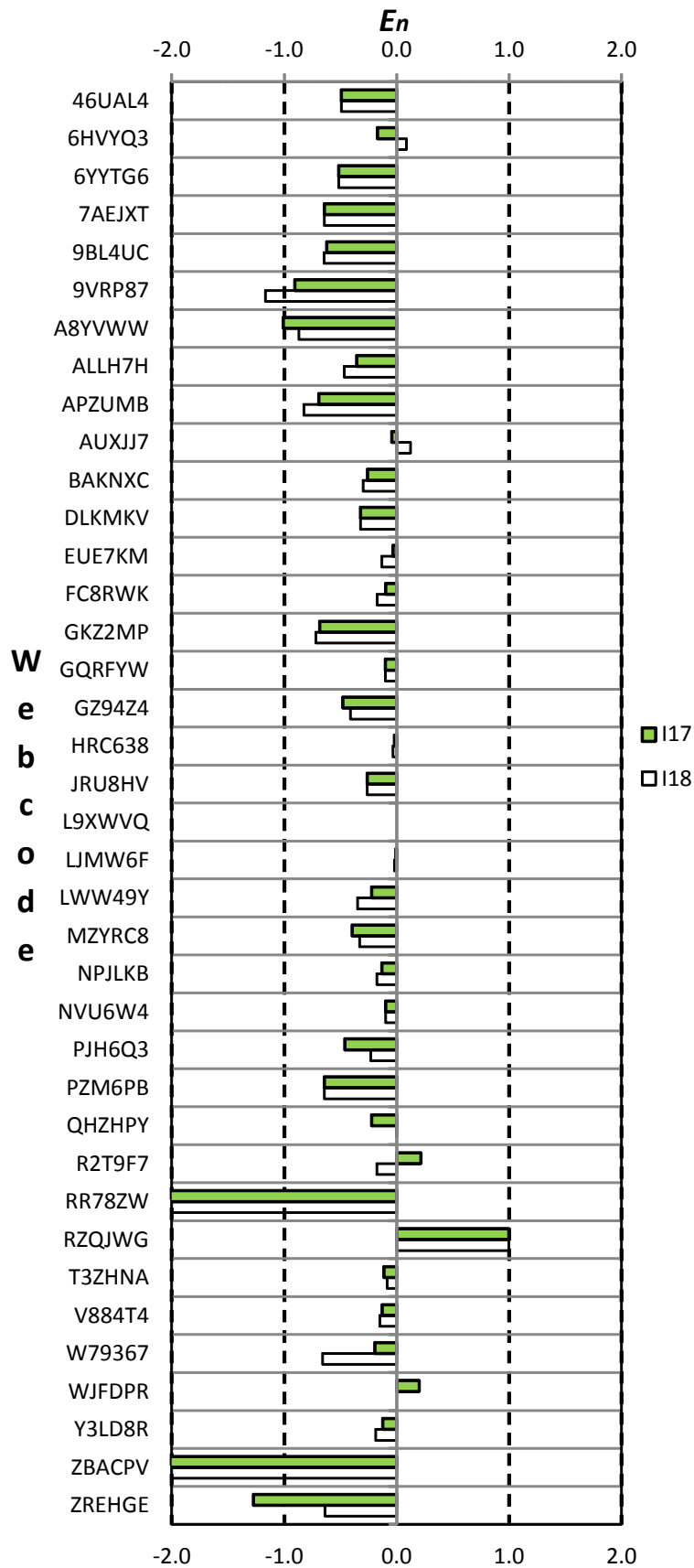
\*DNRU - Did Not Report Uncertainty

\*DNRU - Did Not Report Uncertainty

# Interlaboratory Testing Program for Metals

## Analysis 101

Dimensional - OD of Plain Plug Gage - inch



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 105

Tensile Strength (Flat Aluminum) - ksi  
ASTM B557

WebCode	Data Flag	Sample R17			Sample R18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37PZ7K		49.59	0.00	0.01	50.01	0.01	0.05	ZZ
4BC78Y		49.60	0.02	0.04	50.00	0.01	0.02	ZZ
769QZG		49.60	0.02	0.04	50.00	0.01	0.02	ZZ
APZUMB		50.00	0.42	1.04	50.00	0.01	0.02	ZZ
AUXJJ7		49.31	-0.27	-0.68	50.04	0.04	0.15	ZZ
AYMV3L	X	96.50	46.91	117.69	99.49	49.50	167.20	ZZ
BVXGYQ	X	48.90	-0.68	-1.72	47.50	-2.49	-8.43	ZZ
DEPCZX		49.20	-0.38	-0.97	49.90	-0.09	-0.32	ZZ
GF8UB7		49.70	0.12	0.29	50.10	0.11	0.36	ZZ
HTPG3X		49.55	-0.03	-0.09	49.97	-0.03	-0.09	ZZ
KJE329		49.20	-0.38	-0.97	49.80	-0.19	-0.66	ZZ
KR97XP		49.60	0.02	0.04	50.20	0.21	0.69	ZZ
KUWN6G		49.50	-0.08	-0.21	50.00	0.01	0.02	ZZ
P7EAP9		49.10	-0.48	-1.22	49.60	-0.39	-1.33	ZZ
PTLQTP		48.80	-0.78	-1.97	49.30	-0.69	-2.35	ZZ
Q82VNU		49.60	0.02	0.04	50.30	0.31	1.03	ZZ
QE34ZN		49.90	0.32	0.79	50.00	0.01	0.02	ZZ
QGRTH4		49.78	0.19	0.48	50.12	0.13	0.44	ZZ
QKBWCD		50.30	0.72	1.79	50.60	0.61	2.05	ZZ
QNQXCK		50.40	0.82	2.05	50.70	0.71	2.38	ZZ
RQ6HEL		50.00	0.42	1.04	50.20	0.21	0.69	ZZ
RV68A7		49.30	-0.28	-0.71	49.70	-0.29	-0.99	ZZ
TTX9D4		49.20	-0.38	-0.97	49.70	-0.29	-0.99	ZZ
UUG62P	X	48.44	-1.15	-2.88	51.22	1.23	4.15	ZZ
WQU4D8		49.49	-0.10	-0.24	49.92	-0.07	-0.24	ZZ
X9EVPW		49.30	-0.28	-0.71	49.70	-0.29	-0.99	ZZ
Y7BAZP	X	49.50	-0.08	-0.21	63.20	13.21	44.61	ZZ
ZE299A		50.30	0.72	1.79	50.20	0.21	0.69	ZZ
ZUMLFW		49.30	-0.28	-0.71	49.80	-0.19	-0.66	ZZ

Summary Statistics

	Sample R17		Sample R18	
Grand Means	49.58	ksi	49.99	ksi
Stnd Dev Btwn Labs	0.40	ksi	0.30	ksi

Samples R17 , R18 : 6061-T6

Statistics based on 25 of 29 reporting participants



Cycle 105  
1st Q, 2014

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

**AYMV3L**   X   Extreme Data.

**BVXGYQ**   X   Data for sample R18 are low.

**UUG62P**   X   Data for sample R17 are low and data for sample R18 are high.

**Y7BAZP**   X   Data for sample R18 are high.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 105

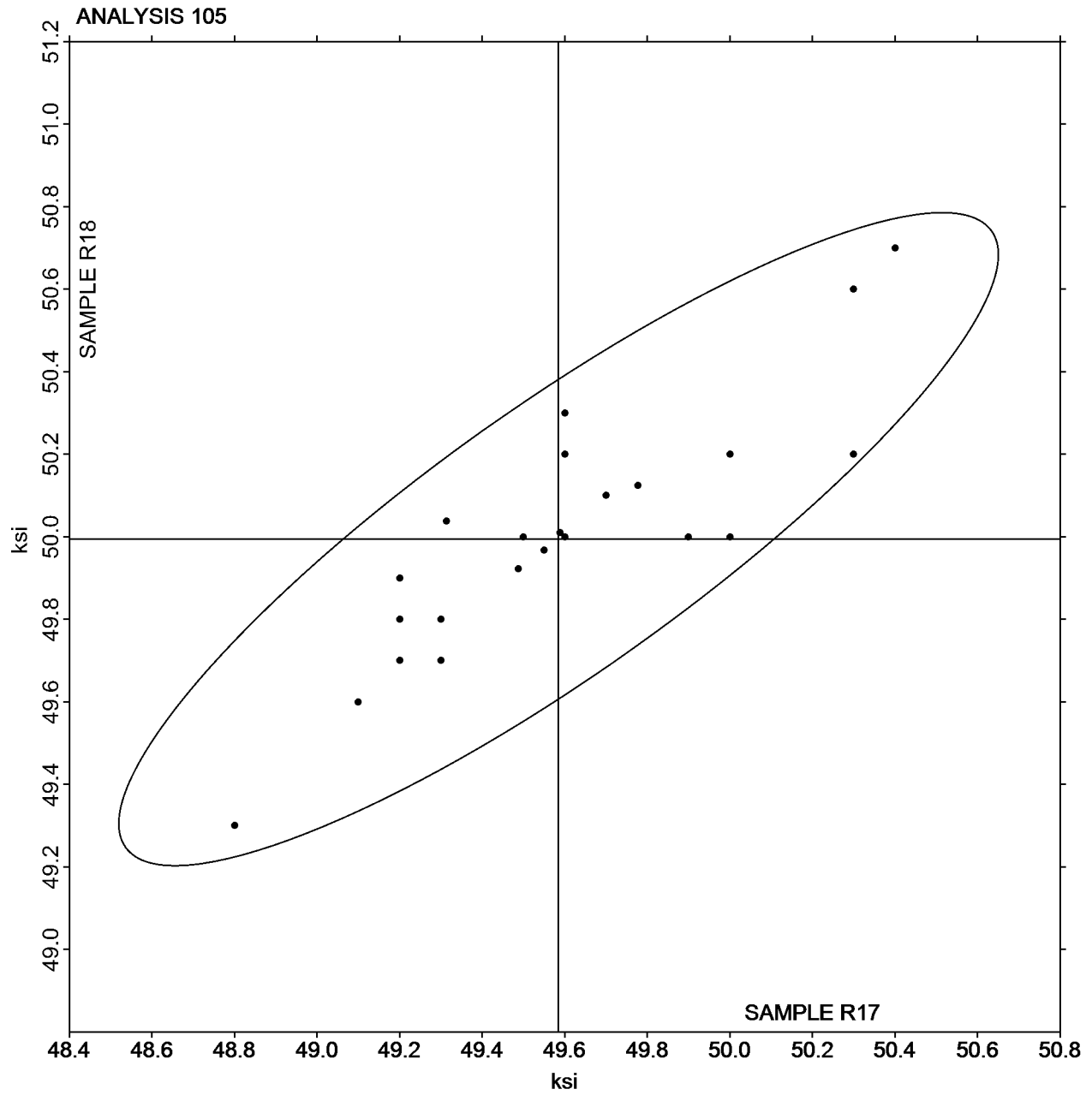
Tensile Strength (Flat Aluminum) - ksi  
ASTM B557

**SAMPLE R17**

**49.58 ksi**

**SAMPLE R18**

**49.99 ksi**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 106

Yield Strength (Flat Aluminum) - ksi  
ASTM B557

WebCode	Data Flag	Sample R17			Sample R18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37PZ7K		43.50	0.17	0.37	43.48	0.06	0.14	ZZ
4BC78Y		43.40	0.07	0.16	42.90	-0.53	-1.31	ZZ
769QZG		43.20	-0.13	-0.28	43.30	-0.13	-0.31	ZZ
APZUMB		43.90	0.57	1.24	43.50	0.07	0.18	ZZ
AUXJJ7		43.08	-0.25	-0.55	43.08	-0.35	-0.87	ZZ
AYMV3L	X	84.62	41.29	89.65	87.71	44.29	110.37	ZZ
BVXGYQ	X	42.90	-0.43	-0.93	41.30	-2.13	-5.30	ZZ
DEPCZX	*	42.30	-1.03	-2.23	43.20	-0.23	-0.56	ZZ
GF8UB7		43.50	0.17	0.37	43.60	0.17	0.43	ZZ
HTPG3X		43.42	0.10	0.21	43.41	-0.02	-0.04	ZZ
KJE329		43.10	-0.23	-0.50	43.30	-0.13	-0.31	ZZ
KR97XP		43.00	-0.33	-0.71	43.60	0.17	0.43	ZZ
KUWN6G		43.30	-0.03	-0.06	43.40	-0.03	-0.07	ZZ
P7EAP9	X	41.00	-2.33	-5.06	40.90	-2.53	-6.30	ZZ
PTLQTP		42.70	-0.63	-1.36	43.00	-0.43	-1.06	ZZ
Q82VNU		43.80	0.47	1.02	44.20	0.77	1.93	ZZ
QE34ZN		43.10	-0.23	-0.50	43.40	-0.03	-0.07	ZZ
QGRTH4		43.75	0.42	0.92	43.67	0.25	0.62	ZZ
QKBWCD		44.30	0.97	2.11	44.30	0.87	2.18	ZZ
QNQXCK		44.00	0.67	1.46	44.10	0.67	1.68	ZZ
RQ6HEL	*	43.00	-0.33	-0.71	42.50	-0.93	-2.31	ZZ
RV68A7		42.70	-0.63	-1.36	43.20	-0.23	-0.56	ZZ
TTX9D4		43.00	-0.33	-0.71	43.20	-0.23	-0.56	ZZ
UUG62P	X	42.16	-1.17	-2.54	44.43	1.01	2.51	ZZ
WQU4D8		43.34	0.01	0.02	43.58	0.16	0.39	ZZ
X9EVPW		43.30	-0.03	-0.06	43.30	-0.13	-0.31	ZZ
Y7BAZP	X	43.20	-0.13	-0.28	55.10	11.67	29.09	ZZ
ZE299A		43.90	0.57	1.24	43.70	0.27	0.68	ZZ
ZUMLFW		43.30	-0.03	-0.06	43.30	-0.13	-0.31	ZZ

Summary Statistics

	Sample R17		Sample R18	
Grand Means	43.33	ksi	43.43	ksi
Stnd Dev Btwn Labs	0.46	ksi	0.40	ksi

Samples R17 , R18 : 6061-T6

Statistics based on 24 of 29 reporting participants

Cycle 105  
1st Q, 2014

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

**AYMV3L**   X   Data for both samples are high. Possible Systematic error.

**BVXGYQ**   X   Data for sample R18 are low. Inconsistent in testing between samples.

**P7EAP9**   X   Data for both samples are low. Possible Systematic error.

**UUG62P**   X   Inconsistent in testing between samples.

**Y7BAZP**   X   Data for sample R18 are high. Inconsistent in testing between samples.

Cycle 105  
1st Q, 2014

# Interlaboratory Testing Program for Metals

## Analysis 106

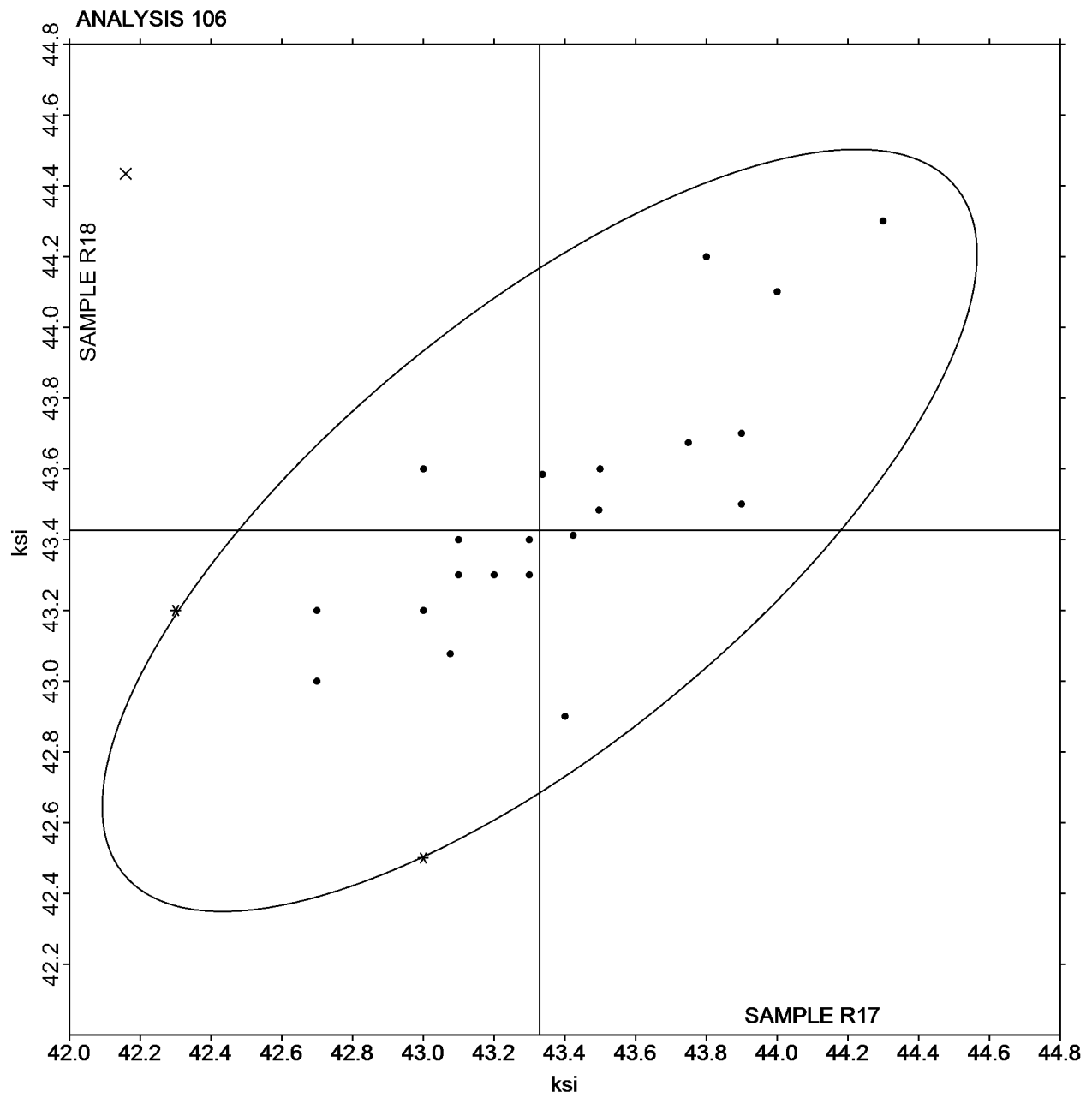
Yield Strength (Flat Aluminum) - ksi  
ASTM B557

**SAMPLE R17**

**43.33 ksi**

**SAMPLE R18**

**43.43 ksi**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 107

Elongation (Flat Aluminum) - Percent  
ASTM B557

WebCode	Data Flag	Sample R17			Sample R18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37PZ7K		14.17	-0.02	-0.02	15.13	0.57	0.50	ZZ
4BC78Y		14.00	-0.19	-0.15	15.00	0.44	0.39	ZZ
769QZG		17.00	2.81	2.17	16.00	1.44	1.26	ZZ
APZUMB		13.00	-1.19	-0.92	15.00	0.44	0.39	ZZ
AUXJJ7		15.20	1.01	0.78	15.80	1.24	1.09	ZZ
AYMV3L	X	28.00	13.81	10.68	31.00	16.44	14.34	ZZ
BVXGYQ		14.50	0.31	0.24	15.00	0.44	0.39	ZZ
DEPCZX		15.25	1.06	0.82	15.75	1.19	1.04	ZZ
GF8UB7		14.50	0.31	0.24	14.50	-0.06	-0.05	ZZ
HTPG3X		15.00	0.81	0.63	15.00	0.44	0.39	ZZ
KJE329		13.40	-0.79	-0.61	14.10	-0.46	-0.40	ZZ
KR97XP		14.00	-0.19	-0.15	13.50	-1.06	-0.92	ZZ
KUWN6G		12.70	-1.49	-1.15	13.50	-1.06	-0.92	ZZ
P7EAP9		14.00	-0.19	-0.15	14.50	-0.06	-0.05	ZZ
PTLQTP		14.20	0.01	0.01	15.60	1.04	0.91	ZZ
Q82VNU	*	11.30	-2.89	-2.24	11.10	-3.46	-3.01	ZZ
QE34ZN		13.00	-1.19	-0.92	13.20	-1.36	-1.18	ZZ
QGRTH4		12.84	-1.35	-1.05	13.98	-0.58	-0.50	ZZ
QKBWCD		12.80	-1.39	-1.08	13.60	-0.96	-0.83	ZZ
QNQXCK		14.50	0.31	0.24	14.50	-0.06	-0.05	ZZ
RQ6HEL		17.50	3.31	2.56	17.00	2.44	2.13	ZZ
RV68A7		14.10	-0.09	-0.07	14.20	-0.36	-0.31	ZZ
TTX9D4		13.80	-0.39	-0.30	14.30	-0.26	-0.22	ZZ
UUG62P		15.50	1.31	1.01	16.30	1.74	1.52	ZZ
WQU4D8		13.10	-1.09	-0.84	14.30	-0.26	-0.22	ZZ
X9EVPW		14.10	-0.09	-0.07	14.60	0.04	0.04	ZZ
Y7BAZP		15.00	0.81	0.63	14.50	-0.06	-0.05	ZZ
ZE299A		15.30	1.11	0.86	14.20	-0.36	-0.31	ZZ
ZUMLFW		13.60	-0.59	-0.46	13.40	-1.16	-1.01	ZZ

Summary Statistics

	Sample R17		Sample R18	
Grand Means	14.19	Percent	14.56	Percent
Stnd Dev Btwn Labs	1.29	Percent	1.15	Percent

Samples R17 , R18 : 6061-T6

Statistics based on 28 of 29 reporting participants

**Comments on assigned Data Flags for Analysis #107**

WebCode   Flag   Analyst Comment

AYMV3L   X   Data for both samples are high. Possible Systematic error.

Cycle 105  
1st Q, 2014

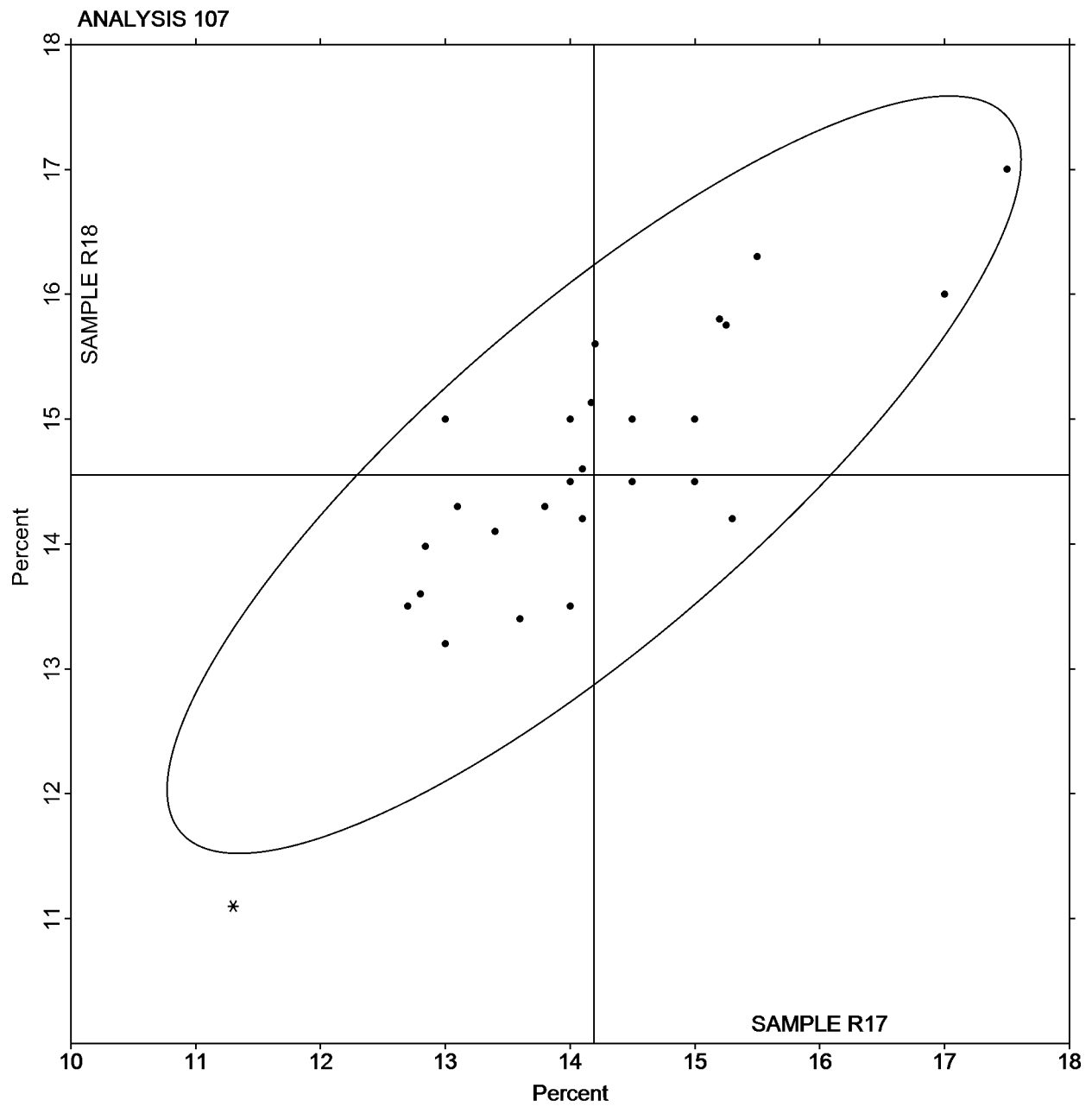
### Interlaboratory Testing Program for Metals

#### Analysis 107

Elongation (Flat Aluminum) - Percent  
ASTM B557

**SAMPLE R17**  
**14.19 Percent**

**SAMPLE R18**  
**14.56 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 110  
Tensile Strength (Pre-Machined Round Steel) - ksi  
ASTM E8

WebCode	Data Flag	Sample A17			Sample A18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		75.90	0.62	0.73	71.90	0.30	0.36	ZZ
2DQY2F	X	50.00	-25.28	-29.77	48.40	-23.20	-28.24	ZZ
2WBA22		75.50	0.22	0.26	72.10	0.50	0.61	ZZ
7UYRM8		76.30	1.02	1.20	72.30	0.70	0.85	ZZ
8RAHBK		75.77	0.49	0.57	72.11	0.51	0.62	ZZ
92F723		75.50	0.22	0.26	72.00	0.40	0.49	ZZ
92VYPD		75.50	0.22	0.26	72.60	1.00	1.22	ZZ
A8YVWW		74.38	-0.91	-1.07	71.21	-0.39	-0.47	ZZ
ALLH7H		74.42	-0.86	-1.02	70.65	-0.95	-1.16	ZZ
CLNU8W		73.33	-1.95	-2.30	69.75	-1.85	-2.25	ZZ
D3CC8D		75.60	0.32	0.37	71.90	0.30	0.36	ZZ
FCWBYU		75.80	0.52	0.61	72.30	0.70	0.85	ZZ
HGFY7N		75.60	0.32	0.37	71.70	0.10	0.12	ZZ
HNYJUF		75.00	-0.28	-0.33	71.10	-0.50	-0.61	ZZ
JB6Q66	*	76.71	1.42	1.68	73.74	2.14	2.60	ZZ
K8D2CC		75.68	0.40	0.47	71.45	-0.15	-0.18	ZZ
KYV7YG		75.50	0.22	0.26	71.70	0.10	0.12	ZZ
M76GZ8		75.10	-0.18	-0.22	70.90	-0.70	-0.85	ZZ
NYGPW7		75.30	0.02	0.02	71.90	0.30	0.36	ZZ
QG6LYY		74.59	-0.69	-0.82	71.15	-0.45	-0.55	ZZ
QYJ2Z7		75.00	-0.28	-0.33	71.40	-0.20	-0.24	ZZ
R32CYV		74.50	-0.78	-0.92	71.48	-0.12	-0.15	ZZ
T3GMBE		74.90	-0.38	-0.45	71.10	-0.50	-0.61	ZZ
TDJVVH		73.60	-1.68	-1.98	70.20	-1.40	-1.71	ZZ
UY8ED9		76.41	1.12	1.32	72.43	0.83	1.01	ZZ
V3TYU4		75.00	-0.28	-0.33	71.00	-0.60	-0.73	ZZ
VDB3D2		76.29	1.01	1.19	72.62	1.02	1.24	ZZ
VVWB9X		74.00	-1.28	-1.51	70.70	-0.90	-1.10	ZZ
W4NRQZ		75.13	-0.15	-0.18	71.36	-0.24	-0.29	ZZ
W79367	X	70.50	-4.78	-5.63	72.00	0.40	0.49	ZZ
W7CRPQ	*	77.48	2.20	2.59	73.24	1.64	2.00	ZZ
W8GNMY		74.41	-0.88	-1.03	70.63	-0.97	-1.18	ZZ
WP4JGF		76.00	0.72	0.84	72.10	0.50	0.61	ZZ
Y3LD8R		74.80	-0.48	-0.57	71.20	-0.40	-0.49	ZZ
Y9LJD2		76.30	1.02	1.20	72.50	0.90	1.09	ZZ
YQHZAJ		75.20	-0.08	-0.10	71.10	-0.50	-0.61	ZZ
ZV2KLJ		75.00	-0.28	-0.33	71.20	-0.40	-0.49	ZZ
ZX6DFH		75.30	0.02	0.02	71.80	0.20	0.24	ZZ
ZZB3EM		74.70	-0.58	-0.69	70.70	-0.90	-1.10	ZZ

Summary Statistics

	Sample A17		Sample A18	
Grand Means	75.28	ksi	71.60	ksi
Stnd Dev Btwn Labs	0.85	ksi	0.82	ksi

Samples A17 , A18 : AISI 4340

Statistics based on 37 of 39 reporting participants



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 110  
Tensile Strength (Pre-Machined Round Steel) - ksi  
ASTM E8

**Comments on assigned Data Flags for Analysis #110**

WebCode   Flag   Analyst Comment

**2DQY2F**   X   Data for both samples are low. Possible Systematic error.

**W79367**   X   Data for sample A17 are low. Inconsistent in testing between samples.

Cycle 105  
1st Q, 2014

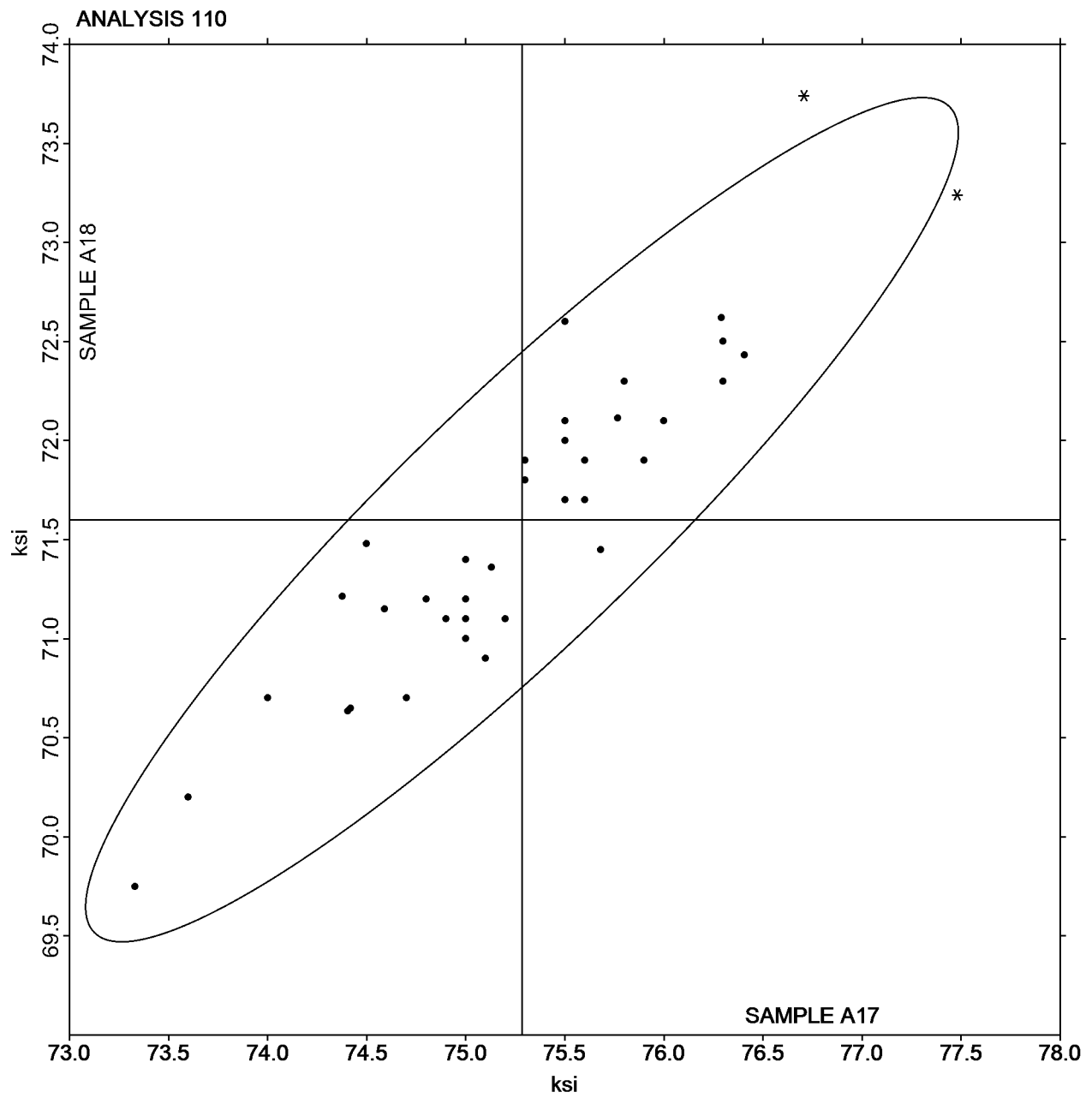
Interlaboratory Testing Program for Metals  
Analysis 110  
Tensile Strength (Pre-Machined Round Steel) - ksi  
ASTM E8

**SAMPLE A17**

**75.28 ksi**

**SAMPLE A18**

**71.60 ksi**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 111

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

WebCode	Data Flag	Sample A17			Sample A18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		57.90	6.00	1.80	54.00	3.56	0.99	ZZ
2DQY2F	X	76.00	24.10	7.22	72.50	22.06	6.12	ZZ
2WBA22		54.50	2.60	0.78	56.50	6.06	1.68	ZZ
7UYRM8		50.30	-1.60	-0.48	49.20	-1.24	-0.34	ZZ
8RAHBK		54.19	2.28	0.68	52.63	2.19	0.61	ZZ
92F723		55.50	3.60	1.08	52.00	1.56	0.43	ZZ
92VYPD		50.70	-1.20	-0.36	49.50	-0.94	-0.26	ZZ
A8YVWW		50.07	-1.84	-0.55	46.28	-4.16	-1.15	ZZ
ALLH7H		49.39	-2.52	-0.76	46.05	-4.39	-1.22	ZZ
CLNU8W		46.34	-5.56	-1.67	44.92	-5.52	-1.53	ZZ
D3CC8D		50.50	-1.40	-0.42	49.50	-0.94	-0.26	ZZ
FCWBYU		49.70	-2.20	-0.66	47.50	-2.94	-0.82	ZZ
HGFY7N		54.60	2.70	0.81	51.60	1.16	0.32	ZZ
HNYJUF		57.50	5.60	1.68	54.90	4.46	1.24	ZZ
JB6Q66		50.27	-1.64	-0.49	48.24	-2.20	-0.61	ZZ
K8D2CC		49.42	-2.48	-0.74	49.24	-1.20	-0.33	ZZ
KYV7YG		56.80	4.90	1.47	58.10	7.66	2.12	ZZ
M76GZ8		55.90	4.00	1.20	57.60	7.16	1.99	ZZ
NYGPW7		50.20	-1.70	-0.51	50.90	0.46	0.13	ZZ
QG6LYY	*	48.75	-3.15	-0.95	54.00	3.56	0.99	ZZ
QYJ2Z7		50.30	-1.60	-0.48	48.10	-2.34	-0.65	ZZ
R32CYV		55.17	3.27	0.98	51.91	1.47	0.41	ZZ
T3GMBE		54.70	2.80	0.84	53.20	2.76	0.77	ZZ
TDJWVH		51.70	-0.20	-0.06	48.80	-1.64	-0.46	ZZ
UY8ED9		55.90	3.99	1.20	51.10	0.66	0.18	ZZ
V3TYU4		47.70	-4.20	-1.26	46.60	-3.84	-1.07	ZZ
VDB3D2		50.75	-1.15	-0.35	49.69	-0.75	-0.21	ZZ
VVWB9X		48.60	-3.30	-0.99	47.60	-2.84	-0.79	ZZ
W4NRQZ		55.99	4.08	1.22	56.57	6.12	1.70	ZZ
W79367	X	60.50	8.60	2.58	48.60	-1.84	-0.51	ZZ
W7CRPQ		53.15	1.25	0.37	49.17	-1.27	-0.35	ZZ
W8GNMY		48.59	-3.32	-0.99	45.40	-5.04	-1.40	ZZ
WP4JGF		56.90	5.00	1.50	54.20	3.76	1.04	ZZ
Y3LD8R		47.00	-4.90	-1.47	48.00	-2.44	-0.68	ZZ
Y9LJD2		48.00	-3.90	-1.17	46.10	-4.34	-1.20	ZZ
YQHZAJ		52.30	0.40	0.12	48.60	-1.84	-0.51	ZZ
ZX6DFH		51.40	-0.50	-0.15	52.00	1.56	0.43	ZZ
ZZB3EM		47.90	-4.00	-1.20	46.20	-4.24	-1.18	ZZ

Summary Statistics

	Sample A17		Sample A18	
Grand Means	51.90	ksi	50.44	ksi
Stnd Dev Btwn Labs	3.34	ksi	3.61	ksi

Samples A17 , A18 : AISI 4340

Statistics based on 36 of 38 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 111  
Yield Strength (Pre-Machined Round Steel) - ksi  
ASTM E8

**Comments on assigned Data Flags for Analysis #111**

WebCode   Flag   Analyst Comment

**2DQY2F**   X   Data for both samples are high. Possible Systematic error.

**W79367**   X   Inconsistent in testing between samples.

Interlaboratory Testing Program for Metals

Analysis 111

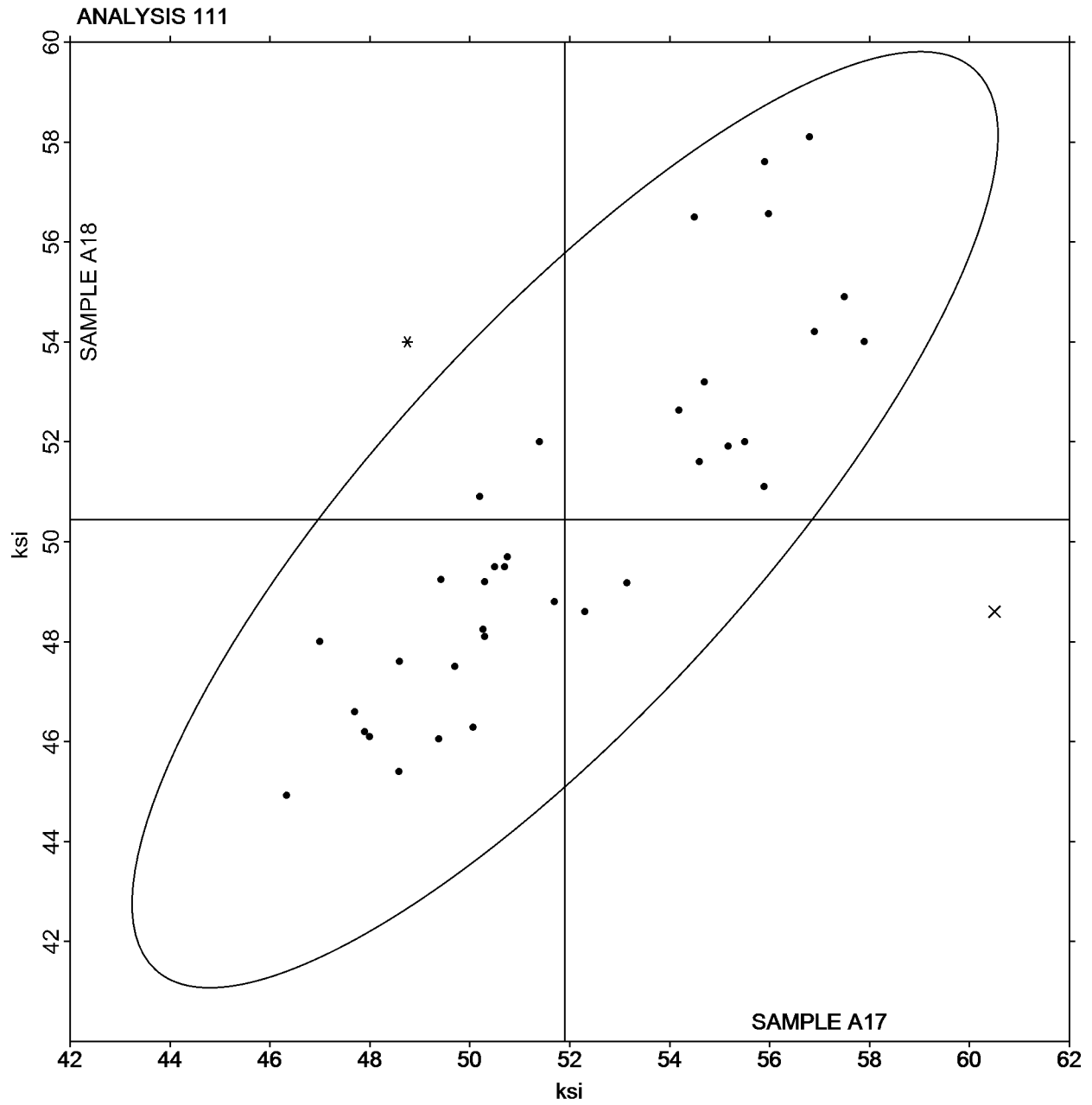
Yield Strength (Pre-Machined Round Steel) - ksi  
ASTM E8

**SAMPLE A17**

**51.90 ksi**

**SAMPLE A18**

**50.44 ksi**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 112

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

WebCode	Data Flag	Sample A17			Sample A18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		31.00	-1.08	-1.13	32.50	-0.69	-0.75	ZZ
2DQY2F		32.90	0.82	0.85	35.10	1.91	2.06	ZZ
2WBA22		31.60	-0.48	-0.51	32.90	-0.29	-0.31	ZZ
7UYRM8		30.30	-1.78	-1.86	31.90	-1.29	-1.39	ZZ
8RAHBK		30.70	-1.38	-1.45	32.50	-0.69	-0.75	ZZ
92F723		31.80	-0.28	-0.30	33.20	0.01	0.01	ZZ
92VYPD		32.20	0.12	0.12	33.00	-0.19	-0.21	ZZ
A8YVWW		33.17	1.09	1.13	33.36	0.17	0.18	ZZ
ALLH7H	*	33.88	1.80	1.88	32.88	-0.31	-0.33	ZZ
CLNU8W		32.20	0.12	0.12	32.80	-0.39	-0.42	ZZ
D3CC8D		33.00	0.92	0.96	34.00	0.81	0.87	ZZ
FCWBYU		32.00	-0.08	-0.09	32.50	-0.69	-0.75	ZZ
HGFY7N		31.60	-0.48	-0.51	33.00	-0.19	-0.21	ZZ
HNYJUF		32.20	0.12	0.12	32.60	-0.59	-0.64	ZZ
JB6Q66	X	26.55	-5.53	-5.78	27.20	-5.99	-6.47	ZZ
K8D2CC		32.80	0.72	0.75	33.60	0.41	0.44	ZZ
KYV7YG		32.00	-0.08	-0.09	33.00	-0.19	-0.21	ZZ
M76GZ8		33.10	1.02	1.06	34.40	1.21	1.31	ZZ
NYGPW7		31.60	-0.48	-0.51	32.00	-1.19	-1.28	ZZ
QG6LYY		32.80	0.72	0.75	33.70	0.51	0.55	ZZ
QYJ2Z7		33.00	0.92	0.96	35.00	1.81	1.95	ZZ
R32CYV		32.00	-0.08	-0.09	32.50	-0.69	-0.75	ZZ
T3GMBE		31.20	-0.88	-0.92	33.50	0.31	0.33	ZZ
TDJWVH		31.83	-0.25	-0.26	34.39	1.20	1.29	ZZ
UY8ED9		32.50	0.42	0.43	33.50	0.31	0.33	ZZ
V3TYU4		32.00	-0.08	-0.09	33.00	-0.19	-0.21	ZZ
VDB3D2		31.60	-0.48	-0.51	32.80	-0.39	-0.42	ZZ
VVWB9X		30.30	-1.78	-1.86	31.80	-1.39	-1.50	ZZ
W4NRQZ		33.50	1.42	1.48	34.40	1.21	1.31	ZZ
W79367		34.00	1.92	2.00	34.00	0.81	0.87	ZZ
W7CRPQ		31.50	-0.58	-0.61	32.50	-0.69	-0.75	ZZ
W8GNMY		30.70	-1.38	-1.45	32.70	-0.49	-0.53	ZZ
WP4JGF		31.50	-0.58	-0.61	33.00	-0.19	-0.21	ZZ
Y3LD8R		33.10	1.02	1.06	34.20	1.01	1.09	ZZ
Y9LJD2		31.80	-0.28	-0.30	32.40	-0.79	-0.85	ZZ
YQHZAJ		31.10	-0.98	-1.03	32.70	-0.49	-0.53	ZZ
ZV2KLJ		33.50	1.42	1.48	34.40	1.21	1.31	ZZ
ZX6DFH		31.00	-1.08	-1.13	31.00	-2.19	-2.36	ZZ
ZZB3EM		32.20	0.12	0.12	34.50	1.31	1.41	ZZ

Summary Statistics

	Sample A17		Sample A18	
Grand Means	32.08	Percent	33.19	Percent
Stnd Dev Btwn Labs	0.96	Percent	0.93	Percent

Samples A17 , A18 : AISI 4340

Statistics based on 38 of 39 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 112  
Elongation - (Pre-Machined Round Steel) - Percent Increase  
ASTM E8

**Comments on assigned Data Flags for Analysis #112**

WebCode   Flag   Analyst Comment

**JB6Q66**   X   Data for both samples are low.

Cycle 105  
1st Q, 2014

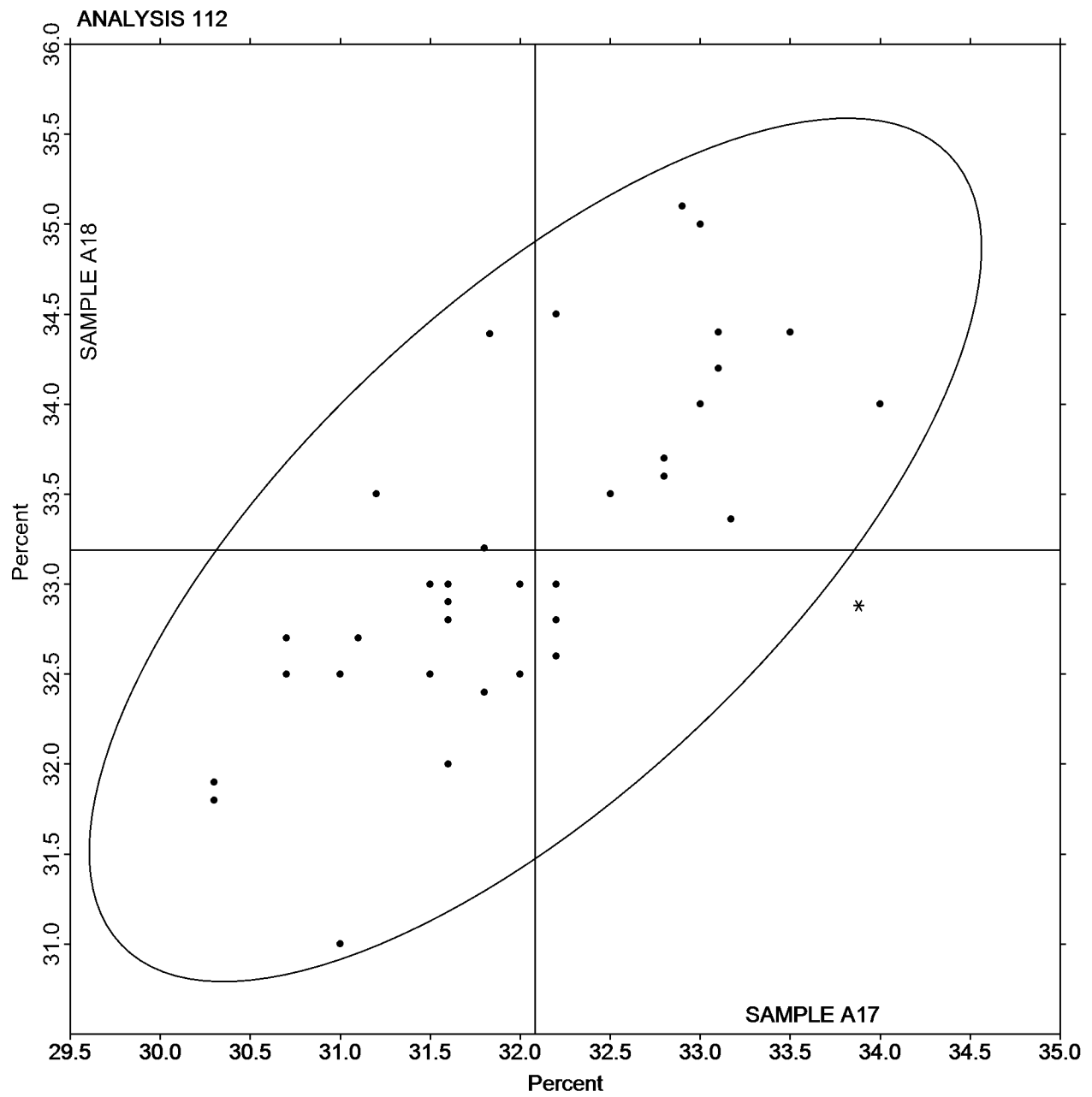
### Interlaboratory Testing Program for Metals

#### Analysis 112

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

**SAMPLE A17**  
**32.08 Percent**

**SAMPLE A18**  
**33.19 Percent**





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 113  
Reduction of Area (Pre-Machined Round Steel) - Percent  
ASTM E8

WebCode	Data Flag	Sample A17			Sample A18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		65.40	0.20	0.25	64.60	-1.09	-1.33	ZZ
2DQY2F	*	62.90	-2.30	-2.80	64.20	-1.49	-1.81	ZZ
2WBA22		65.80	0.60	0.74	65.90	0.21	0.25	ZZ
7UYRM8		65.10	-0.10	-0.12	65.70	0.01	0.01	ZZ
8RAHBK		64.80	-0.40	-0.48	66.10	0.41	0.50	ZZ
92F723		64.00	-1.20	-1.46	65.00	-0.69	-0.84	ZZ
92VYPD		65.40	0.20	0.25	65.70	0.01	0.01	ZZ
A8YVWW		65.52	0.32	0.40	65.12	-0.57	-0.70	ZZ
ALLH7H		65.92	0.72	0.88	64.99	-0.70	-0.85	ZZ
CLNU8W		65.30	0.10	0.13	65.60	-0.09	-0.11	ZZ
D3CC8D		66.36	1.16	1.42	66.36	0.67	0.81	ZZ
FCWBYU		65.00	-0.20	-0.24	66.50	0.81	0.98	ZZ
HGFY7N		65.60	0.40	0.49	66.70	1.01	1.22	ZZ
HNYJUF		65.60	0.40	0.49	66.50	0.81	0.98	ZZ
JB6Q66	X	65.57	0.37	0.46	62.00	-3.69	-4.49	ZZ
K8D2CC		64.72	-0.48	-0.58	65.80	0.11	0.13	ZZ
KYV7YG		65.00	-0.20	-0.24	65.00	-0.69	-0.84	ZZ
M76GZ8		64.80	-0.40	-0.48	65.20	-0.49	-0.60	ZZ
NYGPW7		64.00	-1.20	-1.46	65.60	-0.09	-0.11	ZZ
QG6LYY		65.50	0.30	0.37	64.90	-0.79	-0.96	ZZ
R32CYV		66.00	0.80	0.98	64.30	-1.39	-1.69	ZZ
T3GMBE		65.70	0.50	0.62	66.50	0.81	0.98	ZZ
TDJWVH		64.10	-1.10	-1.34	64.75	-0.94	-1.15	ZZ
UY8ED9		65.30	0.10	0.13	66.00	0.31	0.37	ZZ
V3TYU4		64.00	-1.20	-1.46	66.00	0.31	0.37	ZZ
VDB3D2		67.20	2.00	2.45	66.40	0.71	0.86	ZZ
VVWB9X		66.30	1.10	1.35	66.70	1.01	1.22	ZZ
W4NRQZ		66.00	0.80	0.98	67.00	1.31	1.59	ZZ
W79367		66.00	0.80	0.98	66.00	0.31	0.37	ZZ
W7CRPQ		64.00	-1.20	-1.46	65.60	-0.09	-0.11	ZZ
W8GNMY		64.80	-0.40	-0.48	67.20	1.51	1.83	ZZ
WP4JGF		65.40	0.20	0.25	65.00	-0.69	-0.84	ZZ
Y3LD8R		65.60	0.40	0.49	65.60	-0.09	-0.11	ZZ
Y9LJD2		65.00	-0.20	-0.24	65.40	-0.29	-0.36	ZZ
YQHZAJ		64.40	-0.80	-0.97	63.70	-1.99	-2.42	ZZ
ZV2KLJ		65.30	0.10	0.13	66.30	0.61	0.74	ZZ
ZX6DFH		65.30	0.10	0.13	66.70	1.01	1.22	ZZ
ZZB3EM		65.10	-0.10	-0.12	66.00	0.31	0.37	ZZ

**Summary Statistics**

	Sample A17		Sample A18	
Grand Means	65.20	Percent	65.69	Percent
Stnd Dev Btwn Labs	0.82	Percent	0.82	Percent

Samples A17 , A18 : AISI 4340

Statistics based on 37 of 38 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 113  
Reduction of Area (Pre-Machined Round Steel) - Percent  
ASTM E8

**Comments on assigned Data Flags for Analysis #113**

WebCode   Flag   Analyst Comment

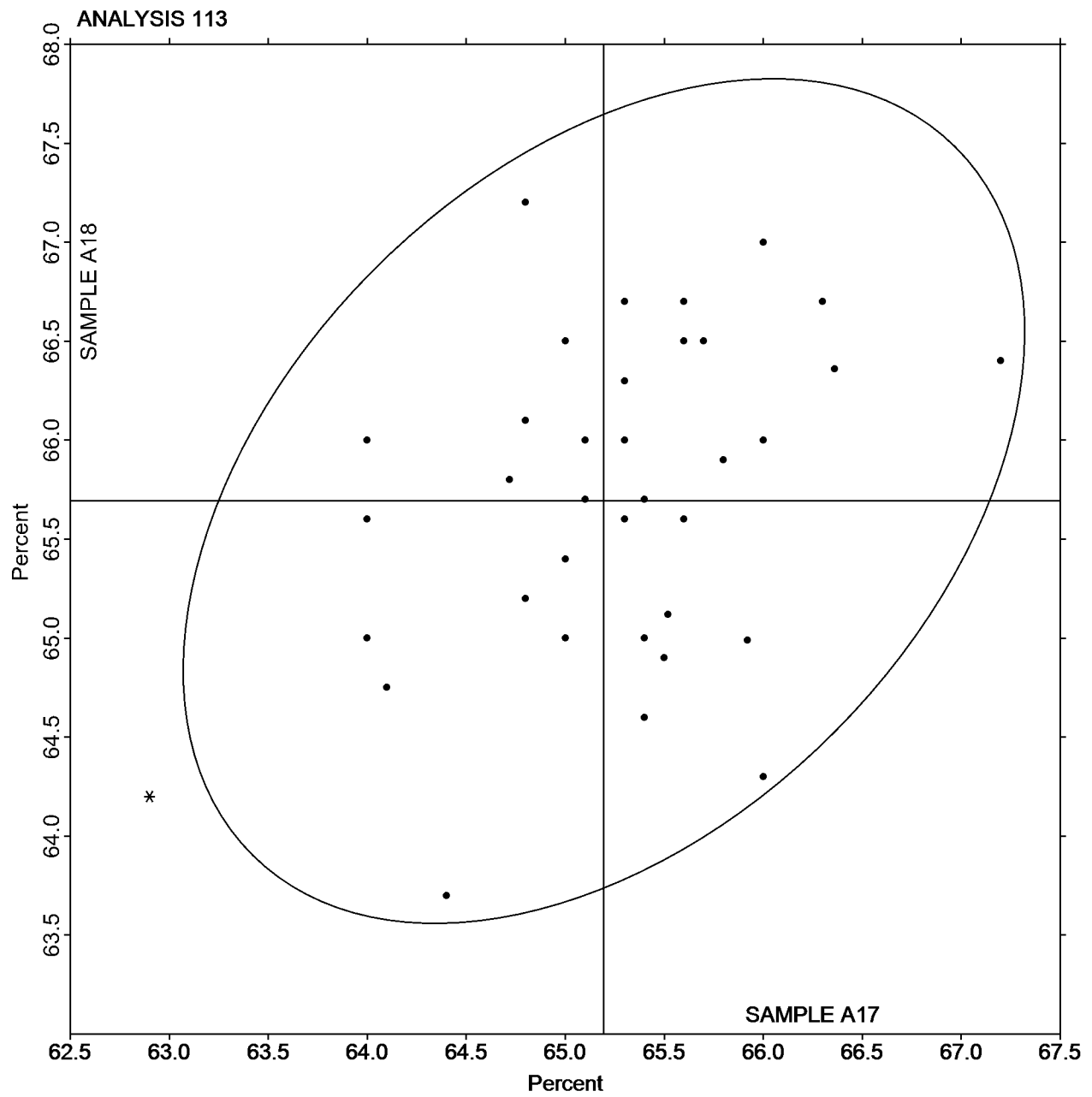
**JB6Q66**   X   Data for sample A18 are low.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 113  
Reduction of Area (Pre-Machined Round Steel) - Percent  
ASTM E8

**SAMPLE A17**  
**65.20 Percent**

**SAMPLE A18**  
**65.69 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 119 - Group 1  
Rockwell Hardness (B Scale) - HRB  
ASTM E18

\*For Analysis 119 sample N18 was split into two groups. The grand mean for N18 was 93.52 HRB for group 1 and 101.45 HRB for group 2. The analysis was run separately for each group.

WebCode	Data Flag	Sample N17			Sample N18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z8AK		90.16	-0.31	-0.41	93.38	-0.14	-0.23	WI
2VQJL3		90.70	0.23	0.31	93.72	0.20	0.31	CL
2ZPTZA		90.20	-0.27	-0.35	93.70	0.18	0.28	WI
4AK683		91.88	1.41	1.86	94.06	0.54	0.85	WI
4Y3MBP		90.12	-0.35	-0.46	93.30	-0.22	-0.36	WI
667F8C		89.58	-0.89	-1.17	93.30	-0.22	-0.36	UN
673WGM		90.10	-0.37	-0.48	92.90	-0.62	-1.00	WI
7AEJXT		89.40	-1.07	-1.41	93.22	-0.30	-0.49	UN
7NXFQA		90.76	0.29	0.38	93.72	0.20	0.31	CL
8KT4CL		89.98	-0.49	-0.64	93.36	-0.16	-0.26	NA
9PKNY3		90.52	0.05	0.07	93.76	0.24	0.38	WI
9QA2DE		91.22	0.75	0.99	94.26	0.74	1.17	WI
BGZ8HC		91.12	0.65	0.86	94.54	1.02	1.62	BU
BM92L2		90.50	0.03	0.04	93.80	0.28	0.44	WI
BNGWQK		90.50	0.03	0.04	94.50	0.98	1.56	MI
D39U2Y		90.56	0.09	0.12	93.58	0.06	0.09	WI
D6LAMD		90.14	-0.33	-0.43	92.40	-1.12	-1.79	NA
DC2EE8		91.62	1.15	1.52	93.60	0.08	0.12	WI
F3JXKN		90.68	0.21	0.28	93.62	0.10	0.15	MA
FC8RWK		91.10	0.63	0.83	94.00	0.48	0.76	MI
FPCPMJ		90.01	-0.46	-0.61	92.78	-0.74	-1.18	CL
FV6MGG		90.00	-0.47	-0.62	93.00	-0.52	-0.84	MI
JRB2VV		89.92	-0.55	-0.72	93.30	-0.22	-0.36	WI
KG92Y3		90.00	-0.47	-0.62	93.10	-0.42	-0.68	WI
KYV7YG		89.16	-1.31	-1.72	92.44	-1.08	-1.73	WI
LYLZNV		89.90	-0.57	-0.75	92.98	-0.54	-0.87	BU
M9Q6DT		90.08	-0.39	-0.51	93.44	-0.08	-0.14	WI
MHP88N		90.38	-0.09	-0.12	93.78	0.26	0.41	WI
MNYZAU		91.02	0.55	0.73	93.76	0.24	0.38	WI
MXMTJ6		92.02	1.55	2.04	94.66	1.14	1.81	EM
REELPT		89.32	-1.15	-1.51	92.44	-1.08	-1.73	WI
T6M4EC	*	92.48	2.01	2.65	95.20	1.68	2.67	WI
VDB3D2		90.08	-0.39	-0.51	93.14	-0.38	-0.61	WI
YQHZAJ		91.14	0.67	0.88	93.34	-0.18	-0.29	WI
ZV2KLJ		90.04	-0.43	-0.56	93.28	-0.24	-0.39	WI

Summary Statistics

	Sample N17		Sample N18	
Grand Means	90.47	HRB	93.52	HRB
Stnd Dev Btwn Labs	0.76	HRB	0.63	HRB

Samples N17 , N18 : Steel

Statistics based on 35 of 35 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 119 - Group 1  
Rockwell Hardness (B Scale) - HRB  
ASTM E18

**Comments on assigned Data Flags for Analysis #119**

WebCode   Flag   Analyst Comment

No data flags were assigned for this Analysis.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 119 - Group 1

Rockwell Hardness (B Scale) - HRB

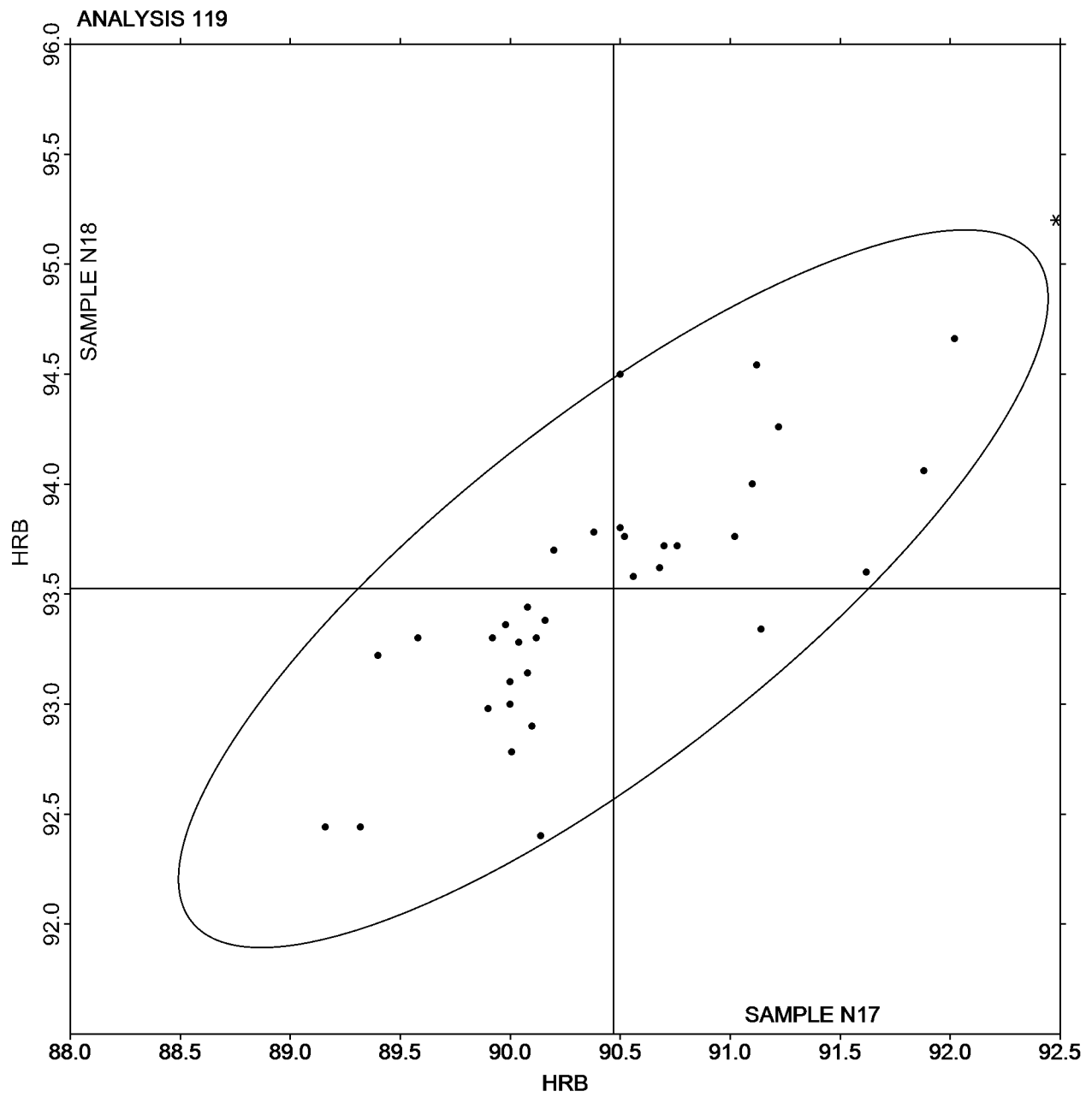
ASTM E18

**SAMPLE N17**

**90.47 HRB**

**SAMPLE N18**

**93.52 HRB**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 119 - Group 2  
Rockwell Hardness (B Scale) - HRB  
ASTM E18

\*For Analysis 119 sample N18 was split into two groups. The grand mean for N18 was 93.52 HRB for group 1 and 101.45 HRB for group 2. The analysis was run separately for each group.

WebCode	Data Flag	Sample N17			Sample N18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
297TRM		89.94	-0.53	-0.74	100.40	-1.05	-1.37	EM
2WMT3Z		90.72	0.25	0.35	101.86	0.41	0.53	MI
39G6VB		89.38	-1.09	-1.54	99.90	-1.55	-2.02	WI
3UNCLV	*	92.40	1.93	2.72	102.80	1.35	1.76	WI
4TMPHX		89.88	-0.59	-0.83	101.48	0.03	0.04	WI
7D98QE		91.28	0.81	1.14	101.86	0.41	0.53	NA
8B6QCA		90.40	-0.07	-0.10	101.70	0.25	0.32	NA
8FN6FN		89.62	-0.85	-1.20	101.00	-0.45	-0.59	WI
9UF7LU		90.38	-0.09	-0.13	101.52	0.07	0.09	WI
A8CLLA		89.74	-0.73	-1.03	101.20	-0.25	-0.33	CL
AA6BCG		89.58	-0.89	-1.25	100.28	-1.17	-1.53	CL
BQC7M9		89.60	-0.87	-1.23	100.48	-0.97	-1.27	WI
BQQWAX		89.36	-1.11	-1.56	100.52	-0.93	-1.21	UN
CRAUJ4		91.20	0.73	1.03	101.70	0.25	0.32	SC
EBAUHD		90.80	0.33	0.46	100.60	-0.85	-1.11	WI
F23CM2		91.20	0.73	1.03	102.06	0.61	0.79	UN
FCWBYU		89.48	-0.99	-1.40	100.36	-1.09	-1.42	CL
GU6Z9J		90.72	0.25	0.35	101.32	-0.13	-0.17	WI
GZ94Z4		90.58	0.11	0.15	101.44	-0.01	-0.01	UN
H28XMK		90.36	-0.11	-0.16	101.86	0.41	0.53	WI
KA AVJM		90.80	0.33	0.46	101.20	-0.25	-0.33	WI
KPYQF6		90.76	0.29	0.41	102.06	0.61	0.79	XX
P7EAP9	X	89.00	-1.47	-2.07	103.00	1.55	2.02	NA
Q82VNU		90.66	0.19	0.27	102.10	0.65	0.85	WI
QG6LYY		91.38	0.91	1.28	102.48	1.03	1.34	NA
QURLXE		90.06	-0.41	-0.58	101.28	-0.17	-0.22	XX
QW648B		90.24	-0.23	-0.32	100.94	-0.51	-0.67	WI
TLXVAU		90.04	-0.43	-0.61	101.14	-0.31	-0.41	UN
UXJ3QA		90.12	-0.35	-0.49	101.32	-0.13	-0.17	WI
VB4YAJ		90.60	0.13	0.18	101.48	0.03	0.04	NA
WP4JGF		90.30	-0.17	-0.24	101.70	0.25	0.32	LE
XM74HJ		90.74	0.27	0.38	102.82	1.37	1.79	UN
XXBVJY		90.12	-0.35	-0.49	101.46	0.01	0.01	CL
XZ2KYQ		90.80	0.33	0.46	100.60	-0.85	-1.11	XX
Y9L32J		92.20	1.73	2.44	103.22	1.77	2.31	UN
YWC8FU		90.68	0.21	0.29	101.90	0.45	0.59	FU
ZZB3EM		90.82	0.35	0.49	102.20	0.75	0.98	WI

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 119 - Group 2  
Rockwell Hardness (B Scale) - HRB  
ASTM E18

Summary Statistics

	<u>Sample N17</u>		<u>Sample N18</u>	
Grand Means	90.47	HRB	101.45	HRB
Stnd Dev Btwn Labs	0.71	HRB	0.77	HRB

Samples N17 , N18 : Steel

Statistics based on 36 of 37 reporting participants

**Comments on assigned Data Flags for Analysis #119**

WebCode   Flag   Analyst Comment

**P7EAP9**   X   Inconsistent in testing between samples.



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 119 - Group 2

Rockwell Hardness (B Scale) - HRB

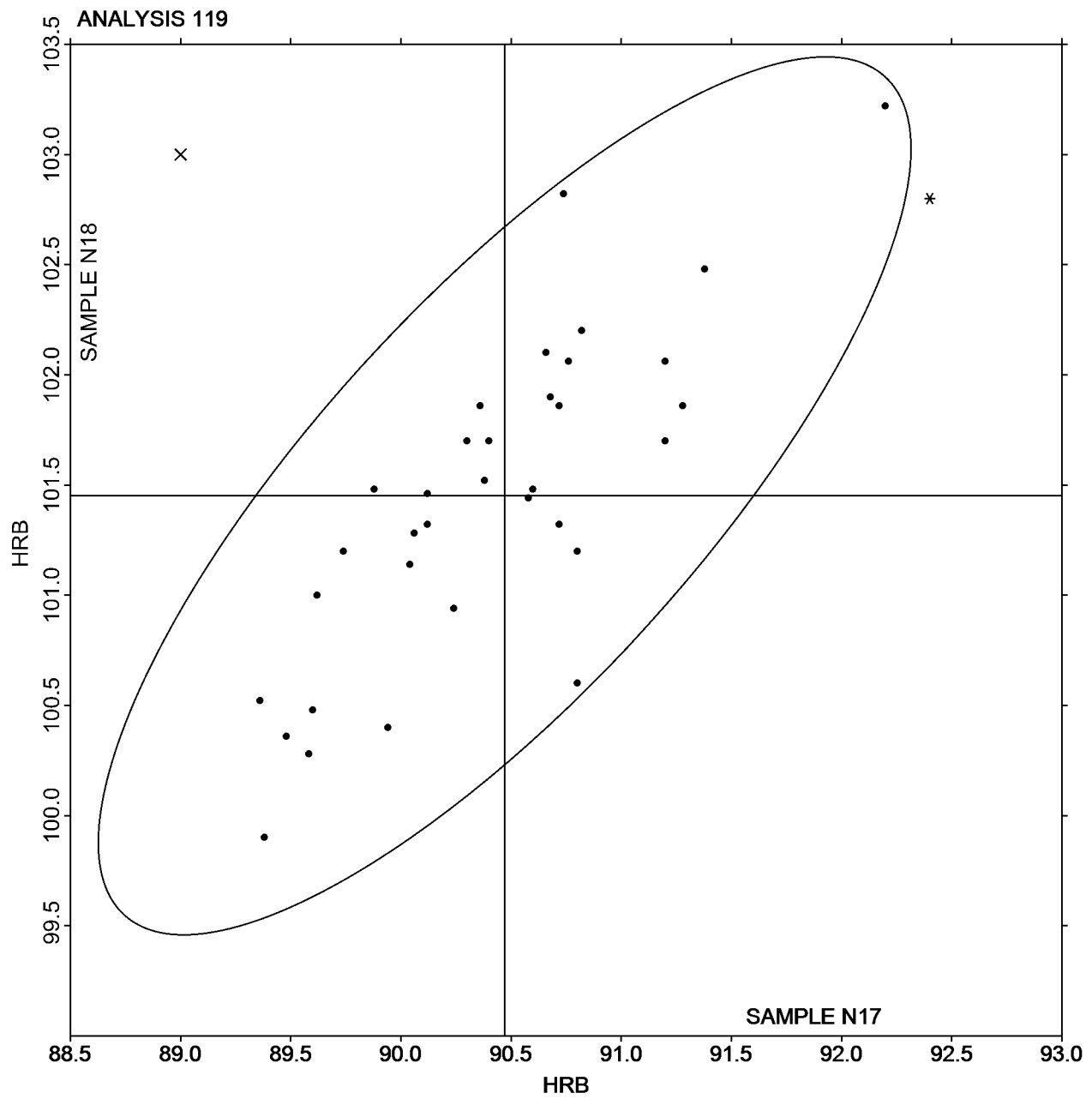
ASTM E18

**SAMPLE N17**

**90.47 HRB**

**SAMPLE N18**

**101.45 HRB**



Cycle 105  
1st Q, 2014

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

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2WBA22		403.60	-18.14	-1.20	465.80	-7.26	-0.44	BU
33REHN		436.10	14.36	0.95	485.78	12.72	0.78	CL
3WF2EP		426.80	5.06	0.34	476.60	3.54	0.22	CM
46UAL4		394.28	-27.46	-1.82	458.74	-14.32	-0.87	WI
4J97D6		420.44	-1.30	-0.09	464.56	-8.50	-0.52	BU
4NQ3MN		420.40	-1.34	-0.09	484.60	11.54	0.71	SH
6HVYQ3		417.30	-4.44	-0.29	467.96	-5.10	-0.31	WT
6NJ3V6		411.40	-10.34	-0.68	470.60	-2.46	-0.15	WT
6N283J		414.40	-7.34	-0.49	472.00	-1.06	-0.06	WT
6T7YVP		436.44	14.70	0.97	498.26	25.20	1.54	XX
73VXLK		413.60	-8.14	-0.54	477.40	4.34	0.27	BU
7B8ZPB		434.00	12.26	0.81	464.66	-8.40	-0.51	BU
7DD2RE		411.00	-10.74	-0.71	459.20	-13.86	-0.85	WT
7RZ8ZZ	X	443.94	22.20	1.47	528.96	55.90	3.42	WT
7UYRM8	X	468.60	46.86	3.10	496.40	23.34	1.43	XX
A727DU		430.20	8.46	0.56	489.60	16.54	1.01	AT
A8CLLA		414.02	-7.72	-0.51	464.06	-9.00	-0.55	BU
APZUMB		418.00	-3.74	-0.25	467.80	-5.26	-0.32	LE
AW3FW8		425.00	3.26	0.22	477.80	4.74	0.29	FU
BCPN86		425.24	3.50	0.23	481.30	8.24	0.50	BU
CNCTXT		416.40	-5.34	-0.35	483.80	10.74	0.66	ST
CRAUJ4		438.60	16.86	1.12	482.00	8.94	0.55	WT
D2E282		406.40	-15.34	-1.02	462.00	-11.06	-0.68	LE
D9EE4D		426.40	4.66	0.31	465.40	-7.66	-0.47	CM
DEPCZX		399.60	-22.14	-1.47	464.40	-8.66	-0.53	WT
DG8YWR		434.40	12.66	0.84	484.40	11.34	0.69	CM
ENNRZM		411.20	-10.54	-0.70	459.20	-13.86	-0.85	LE
EUE7KM		414.40	-7.34	-0.49	452.60	-20.46	-1.25	WT
F9B64W		415.60	-6.14	-0.41	472.40	-0.66	-0.04	WI
FCWBYU		420.20	-1.54	-0.10	471.80	-1.26	-0.08	CM
FW3HY7		439.44	17.70	1.17	488.44	15.38	0.94	XX
HTTRP9		419.08	-2.66	-0.18	478.68	5.62	0.34	BU
HWUZBR		418.50	-3.24	-0.21	475.80	2.74	0.17	BU
JB9MXU		430.26	8.52	0.56	476.54	3.48	0.21	WT
JPQJ74		434.20	12.46	0.83	483.80	10.74	0.66	LE
JQJ9GK		441.60	19.86	1.32	484.40	11.34	0.69	AK
JRB2VV	*	390.80	-30.94	-2.05	426.40	-46.66	-2.85	BU
K4JKAN		425.40	3.66	0.24	486.40	13.34	0.82	CL
KG92Y3		419.28	-2.46	-0.16	456.58	-16.48	-1.01	WT
KR97XP		435.80	14.06	0.93	494.60	21.54	1.32	WI
KYV7YG		401.80	-19.94	-1.32	439.60	-33.46	-2.04	WT
L6EVUB		415.40	-6.34	-0.42	463.60	-9.46	-0.58	CM
L9XWVQ		450.60	28.86	1.91	491.40	18.34	1.12	LE
LW3WZZ		415.40	-6.34	-0.42	456.40	-16.66	-1.02	AN
M76GZ8		407.60	-14.14	-0.94	462.40	-10.66	-0.65	LE
M8BX67	*	444.20	22.46	1.49	518.60	45.54	2.78	WT
MB2NFH		416.10	-5.64	-0.37	466.90	-6.16	-0.38	LE
MU6VCX		429.00	7.26	0.48	491.80	18.74	1.15	BU
N3L6WH		421.20	-0.54	-0.04	481.40	8.34	0.51	LE

Cycle 105  
1st Q, 2014

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

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
N6HX9Z		429.80	8.06	0.53	471.00	-2.06	-0.13	MI
N7BUTN		427.80	6.06	0.40	483.48	10.42	0.64	LE
NAVEGA		408.20	-13.54	-0.90	470.60	-2.46	-0.15	LE
NJQBRT		432.00	10.26	0.68	463.20	-9.86	-0.60	LE
NVZFPU		428.38	6.64	0.44	480.00	6.94	0.42	LE
P7NZBA		432.40	10.66	0.71	477.60	4.54	0.28	CL
PZM6PB		394.20	-27.54	-1.82	457.20	-15.86	-0.97	LE
Q82VNU		421.00	-0.74	-0.05	468.00	-5.06	-0.31	WT
QGPBBP	*	379.80	-41.94	-2.78	434.80	-38.26	-2.34	BU
QJWLC2		444.40	22.66	1.50	510.40	37.34	2.28	WI
QKBWCD		411.40	-10.34	-0.68	462.60	-10.46	-0.64	WT
RNND CN		435.80	14.06	0.93	496.80	23.74	1.45	LE
RR78ZW		446.40	24.66	1.63	489.20	16.14	0.99	ST
T2WNKP		451.86	30.12	1.99	499.50	26.44	1.62	BU
T7E6E9		429.20	7.46	0.49	479.80	6.74	0.41	LE
TEED7U		397.80	-23.94	-1.59	457.40	-15.66	-0.96	LE
V2WJKR		415.80	-5.94	-0.39	467.60	-5.46	-0.33	FU
V3TYU4		448.20	26.46	1.75	492.40	19.34	1.18	WZ
V884T4		405.20	-16.54	-1.10	451.00	-22.06	-1.35	CL
VB4YAJ		421.20	-0.54	-0.04	465.20	-7.86	-0.48	BU
VVWB9X		438.26	16.52	1.09	493.18	20.12	1.23	MI
VZAJNP		422.60	0.86	0.06	481.40	8.34	0.51	LE
WA94F2		440.00	18.26	1.21	474.80	1.74	0.11	BU
X6GK6B		399.40	-22.34	-1.48	447.60	-25.46	-1.56	ST
Y9LJD2		418.00	-3.74	-0.25	456.80	-16.26	-0.99	LE
YQHZAJ		405.96	-15.78	-1.04	461.92	-11.14	-0.68	BU
YTR46U		447.84	26.10	1.73	492.38	19.32	1.18	WT
ZGZG8Z		417.88	-3.86	-0.26	468.16	-4.90	-0.30	LE
ZV2KLJ		410.30	-11.44	-0.76	449.84	-23.22	-1.42	BU

Summary Statistics

	Sample S17		Sample S18	
Grand Means	421.74	HK 500 gf	473.06	HK 500 gf
Stnd Dev Btwn Labs	15.10	HK 500 gf	16.37	HK 500 gf

Samples S17 , S18 : Steel

Statistics based on 76 of 78 reporting participants

Cycle 105  
1st Q, 2014

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

**7RZ8ZZ**   X   Data for sample S18 are high. Inconsistent in testing between samples.

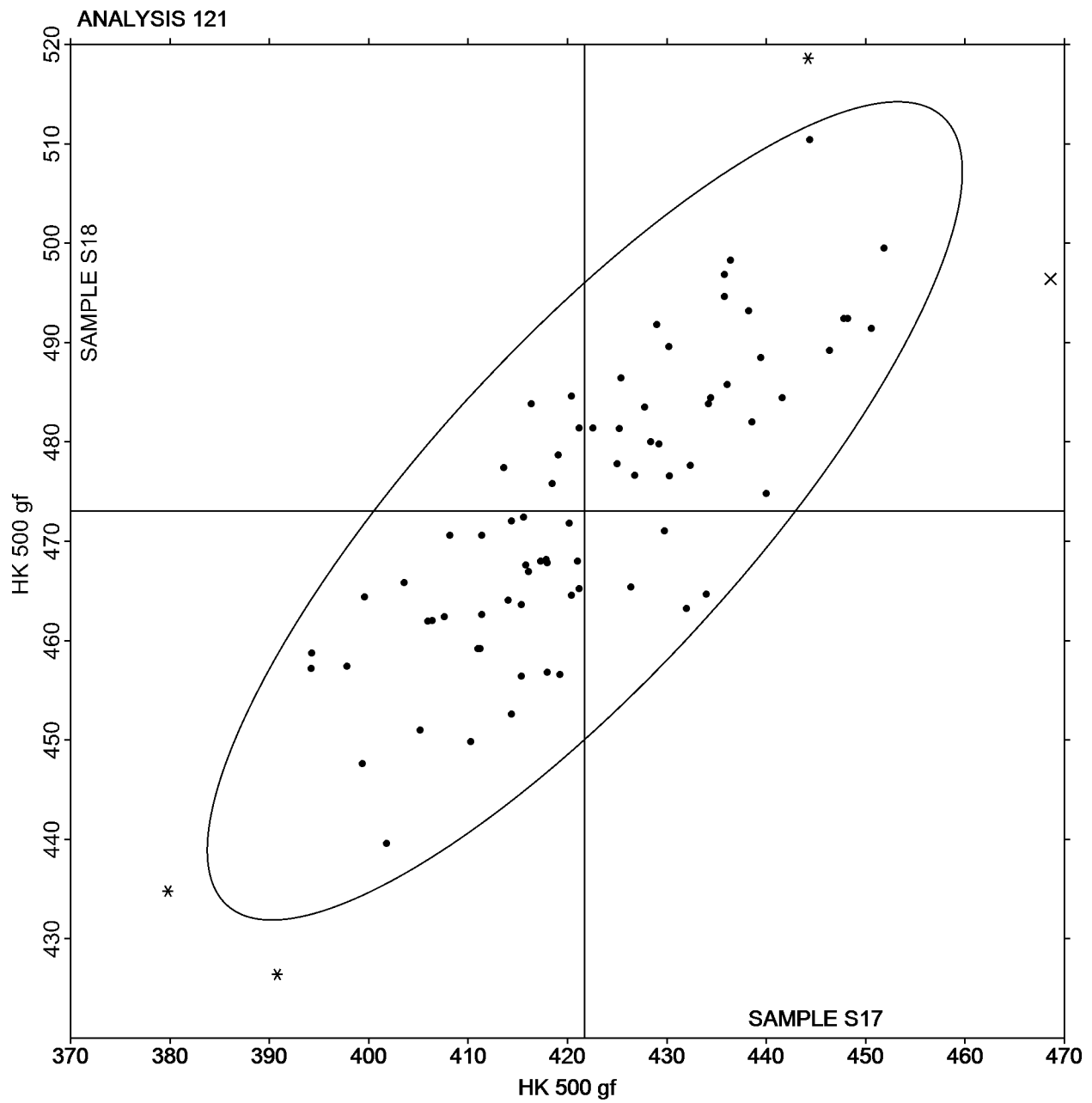
**7UYRM8**   X   Data for sample S17 are high. Inconsistent in testing between samples.

**Q82VNU**   Data appeared to be transposed between samples. Corrected by CTS.flag comment.

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

**SAMPLE S17**  
421.74 HK 500 gf

**SAMPLE S18**  
473.06 HK 500 gf



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 122  
Microhardness - Knoop Hardness Number (200 gf)  
ASTM E384

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2WBA22		410.80	-18.19	-0.91	487.60	5.02	0.21	BU
33REHN		433.00	4.01	0.20	502.96	20.38	0.85	CL
3WF2EP		445.80	16.81	0.84	490.20	7.62	0.32	CM
46UAL4		397.44	-31.55	-1.58	458.32	-24.26	-1.02	WI
4J97D6		418.46	-10.53	-0.53	473.02	-9.56	-0.40	BU
6HVYQ3		445.44	16.45	0.82	497.92	15.34	0.64	WT
6NJ3V6		420.60	-8.39	-0.42	476.80	-5.78	-0.24	WT
6T7YVP	*	463.28	34.29	1.72	542.08	59.50	2.50	XX
7RZ8ZZ	*	452.12	23.13	1.16	533.94	51.36	2.15	WT
7UYRM8	*	479.60	50.61	2.53	531.60	49.02	2.06	XX
A727DU		452.20	23.21	1.16	511.20	28.62	1.20	AT
A8CLA		427.80	-1.19	-0.06	479.70	-2.88	-0.12	BU
APZUMB		425.00	-3.99	-0.20	487.20	4.62	0.19	LE
AW3FW8		426.60	-2.39	-0.12	476.40	-6.18	-0.26	FU
BCPN86		437.84	8.85	0.44	511.04	28.46	1.19	BU
D2E282		404.40	-24.59	-1.23	477.40	-5.18	-0.22	LE
D9EE4D		451.20	22.21	1.11	523.20	40.62	1.70	CM
DEPCZX		412.40	-16.59	-0.83	467.60	-14.98	-0.63	WT
DG8YWR		433.60	4.61	0.23	484.60	2.02	0.08	CM
ENNRZM		408.60	-20.39	-1.02	458.40	-24.18	-1.01	LE
EUE7KM		426.00	-2.99	-0.15	481.00	-1.58	-0.07	WT
F9B64W		391.80	-37.19	-1.86	437.60	-44.98	-1.89	WI
HWUZBR		438.40	9.41	0.47	488.60	6.02	0.25	BU
JPQJ74		431.40	2.41	0.12	491.80	9.22	0.39	LE
JRB2VV	*	386.40	-42.59	-2.13	420.20	-62.38	-2.62	BU
K4JKAN		431.00	2.01	0.10	496.40	13.82	0.58	CL
KR97XP		452.40	23.41	1.17	496.40	13.82	0.58	WI
KYV7YG		396.60	-32.39	-1.62	447.60	-34.98	-1.47	WT
L6EVUB		423.00	-5.99	-0.30	485.60	3.02	0.13	CM
L9XWVQ		459.40	30.41	1.52	523.60	41.02	1.72	LE
LW3WZZ		417.40	-11.59	-0.58	468.00	-14.58	-0.61	AN
M76GZ8		408.20	-20.79	-1.04	464.20	-18.38	-0.77	LE
M8BX67		460.60	31.61	1.58	523.40	40.82	1.71	WI
MB2NFH		415.26	-13.73	-0.69	472.16	-10.42	-0.44	LE
N3L6WH	*	460.80	31.81	1.59	485.80	3.22	0.14	LE
N6HX9Z		430.40	1.41	0.07	482.20	-0.38	-0.02	MI
N7BUTN		444.02	15.03	0.75	484.58	2.00	0.08	LE
N88FAL		441.20	12.21	0.61	499.40	16.82	0.71	BU
NAVEGA		419.20	-9.79	-0.49	475.60	-6.98	-0.29	LE
NJQBRT		443.00	14.01	0.70	486.20	3.62	0.15	LE
NLRBRQ		427.40	-1.59	-0.08	486.00	3.42	0.14	ST
NVZFPV		434.86	5.87	0.29	483.38	0.80	0.03	LE
Q82VNU		423.40	-5.59	-0.28	472.00	-10.58	-0.44	WT
T2WNKP		422.48	-6.51	-0.33	473.94	-8.64	-0.36	XX
T7E6E9		434.80	5.81	0.29	487.40	4.82	0.20	LE
TEED7U		402.00	-26.99	-1.35	444.00	-38.58	-1.62	LE
UHPY7C		429.80	0.81	0.04	472.00	-10.58	-0.44	AT
V2WJKR		416.60	-12.39	-0.62	467.74	-14.84	-0.62	FU
V3TYU4		407.40	-21.59	-1.08	446.00	-36.58	-1.53	WZ

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 122  
Microhardness - Knoop Hardness Number (200 gf)  
ASTM E384

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V884T4		419.80	-9.19	-0.46	462.80	-19.78	-0.83	CL
VVWB9X		438.38	9.39	0.47	495.16	12.58	0.53	MI
WA94F2		444.00	15.01	0.75	486.20	3.62	0.15	BU
X6GK6B		421.40	-7.59	-0.38	465.20	-17.38	-0.73	ST
Y9LJD2		425.60	-3.39	-0.17	474.60	-7.98	-0.33	LE
YQHZAJ		410.48	-18.51	-0.93	456.44	-26.14	-1.10	BU
YTR46U	*	466.28	37.29	1.87	492.36	9.78	0.41	WT
ZV2KLJ		404.84	-24.15	-1.21	460.40	-22.18	-0.93	BU

Summary Statistics

	Sample S17		Sample S18	
Grand Means	428.99	HK 200 gf	482.58	HK 200 gf
Stnd Dev Btwn Labs	19.99	HK 200 gf	23.84	HK 200 gf

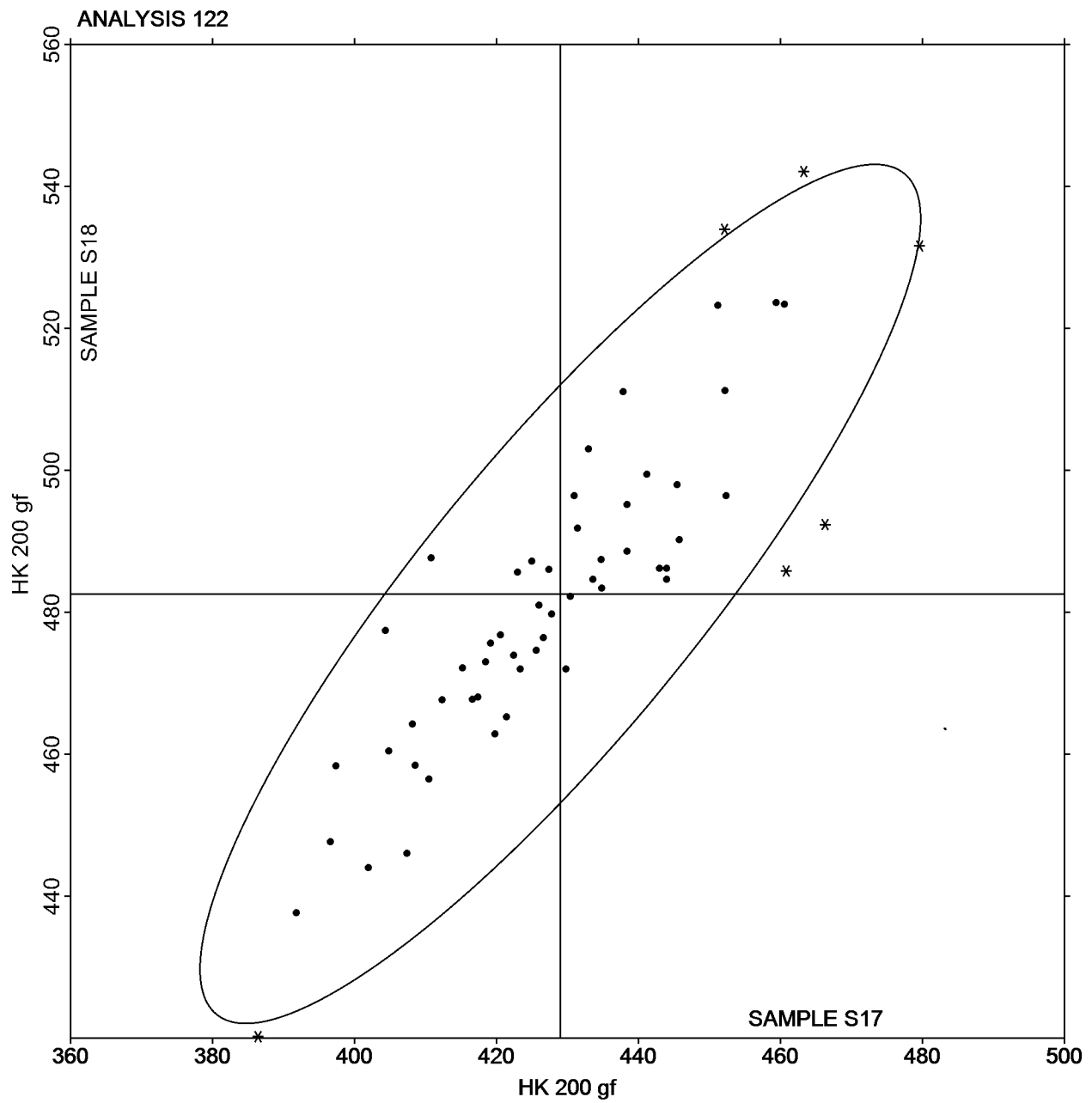
Samples S17, S18 : Steel

Statistics based on 57 of 57 reporting participants

Interlaboratory Testing Program for Metals  
Analysis 122  
Microhardness - Knoop Hardness Number (200 gf)  
ASTM E384

**SAMPLE S17**  
428.99 HK 200 gf

**SAMPLE S18**  
482.58 HK 200 gf





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 123  
Microhardness - Vickers Hardness Number (500 gf)  
ASTM E384

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2QL2Q3		397.60	-3.45	-0.27	458.20	1.02	0.07	XX
2UX4HZ		401.60	0.55	0.04	457.60	0.42	0.03	LE
2VU73F		396.20	-4.85	-0.38	454.80	-2.38	-0.15	WT
2WBA22		382.40	-18.65	-1.45	444.60	-12.58	-0.82	BU
2WMT3Z		417.10	16.05	1.24	477.52	20.34	1.32	MI
33REHN		408.32	7.27	0.56	464.92	7.74	0.50	CL
3UNCLV		404.84	3.79	0.29	478.64	21.46	1.40	FU
3WF2EP		408.60	7.55	0.59	464.00	6.82	0.44	CM
4BC78Y		404.20	3.15	0.24	459.40	2.22	0.14	CL
4NQ3MN		395.60	-5.45	-0.42	461.00	3.82	0.25	XX
4UPZKR		405.28	4.23	0.33	463.74	6.56	0.43	MA
4Y3MBP		400.80	-0.25	-0.02	445.20	-11.98	-0.78	CM
69PKV9		399.60	-1.45	-0.11	458.40	1.22	0.08	MI
6A6JEZ	*	433.60	32.55	2.52	495.00	37.82	2.46	WT
6FPARZ		393.40	-7.65	-0.59	436.40	-20.78	-1.35	ST
6HVYQ3		395.12	-5.93	-0.46	445.14	-12.04	-0.78	WT
6NJ3V6		391.60	-9.45	-0.73	439.00	-18.18	-1.18	WT
6YYTG6	*	434.36	33.31	2.58	497.22	40.04	2.61	CL
7B8ZPB		391.62	-9.43	-0.73	446.56	-10.62	-0.69	BU
7C2RUU		422.60	21.55	1.67	477.78	20.60	1.34	MI
7RZ8ZZ		411.88	10.83	0.84	454.88	-2.30	-0.15	WT
7UYRM8		401.40	0.35	0.03	472.00	14.82	0.96	XX
8KT4CL	*	387.80	-13.25	-1.03	464.44	7.26	0.47	SH
98ME4C		415.40	14.35	1.11	476.00	18.82	1.22	WT
9VRP87		410.20	9.15	0.71	468.80	11.62	0.76	CL
A2Q4CK	X	402.80	1.75	0.14	488.60	31.42	2.04	MA
APZUMB		391.60	-9.45	-0.73	450.60	-6.58	-0.43	LE
AW3FW8		406.80	5.75	0.45	453.60	-3.58	-0.23	FU
B7GERV		412.74	11.69	0.91	480.46	23.28	1.52	LE
BAKNXC		408.00	6.95	0.54	473.80	16.62	1.08	XX
BCPN86		399.96	-1.09	-0.08	458.58	1.40	0.09	BU
BVXGYQ		390.20	-10.85	-0.84	459.40	2.22	0.14	SH
CHQAKZ		399.20	-1.85	-0.14	455.40	-1.78	-0.12	XX
CRAUJ4		405.00	3.95	0.31	456.60	-0.58	-0.04	WT
D2E282		374.80	-26.25	-2.03	431.60	-25.58	-1.66	LE
D6LAMD	*	392.00	-9.05	-0.70	427.00	-30.18	-1.96	FU
D92RY6	X	412.40	11.35	0.88	524.40	67.22	4.37	XX
DEPCZX		390.00	-11.05	-0.86	444.20	-12.98	-0.84	CM
DG8YWR		408.00	6.95	0.54	463.20	6.02	0.39	CM
DLKMKV	X	434.08	33.03	2.56	509.94	52.76	3.43	CL
DVDPDP		385.40	-15.65	-1.21	448.00	-9.18	-0.60	LE
EEP87U		408.86	7.81	0.61	457.38	0.20	0.01	FU
ENNRZM		375.40	-25.65	-1.99	425.20	-31.98	-2.08	LE
EUE7KM		386.00	-15.05	-1.17	442.40	-14.78	-0.96	WT
EYGEF7		414.66	13.61	1.06	464.56	7.38	0.48	ST
FC8RWK		415.80	14.75	1.14	477.00	19.82	1.29	AK
FCWBYU		409.40	8.35	0.65	458.80	1.62	0.11	CM
FRMW2T		395.80	-5.25	-0.41	459.00	1.82	0.12	AK
FWHHHV		407.20	6.15	0.48	455.20	-1.98	-0.13	BU

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 123  
Microhardness - Vickers Hardness Number (500 gf)  
ASTM E384

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
GQRFYW		402.34	1.29	0.10	457.42	0.24	0.02	BU
GYVJ4M		392.40	-8.65	-0.67	445.20	-11.98	-0.78	MI
JPQJ74		406.00	4.95	0.38	466.00	8.82	0.57	LE
JRB2VV	*	368.80	-32.25	-2.50	418.40	-38.78	-2.52	BU
K4JKAN		403.20	2.15	0.17	469.20	12.02	0.78	CL
KG92Y3		386.12	-14.93	-1.16	445.08	-12.10	-0.79	WT
KR97XP		418.20	17.15	1.33	467.40	10.22	0.67	WI
KUWN6G		396.98	-4.07	-0.32	462.32	5.14	0.33	CL
L6EVUB		370.20	-30.85	-2.39	427.80	-29.38	-1.91	CM
LJMW6F		420.80	19.75	1.53	467.40	10.22	0.67	WI
LVNGLY		391.40	-9.65	-0.75	451.00	-6.18	-0.40	CM
M76GZ8		376.20	-24.85	-1.93	423.80	-33.38	-2.17	LE
M8BX67	*	419.80	18.75	1.45	494.00	36.82	2.40	WT
MB2NFB		396.54	-4.51	-0.35	441.56	-15.62	-1.02	LE
MU6VCX		417.00	15.95	1.24	472.60	15.42	1.00	BU
N3L6WH		403.40	2.35	0.18	460.80	3.62	0.24	LE
N7BUTN		402.54	1.49	0.12	455.26	-1.92	-0.12	LE
N88FAL		381.60	-19.45	-1.51	435.20	-21.98	-1.43	BU
N8UMVB		402.40	1.35	0.10	453.60	-3.58	-0.23	BU
NAVEGA		397.00	-4.05	-0.31	455.60	-1.58	-0.10	LE
NBHW8X		408.84	7.79	0.60	459.44	2.26	0.15	ST
NDX7XM	X	379.80	-21.25	-1.65	404.80	-52.38	-3.41	LE
NEPDXR	*	401.40	0.35	0.03	478.20	21.02	1.37	SH
NJQBRT		399.00	-2.05	-0.16	461.20	4.02	0.26	LE
NPJLKB		418.20	17.15	1.33	472.20	15.02	0.98	MI
NVZFPV		404.46	3.41	0.26	456.00	-1.18	-0.08	LE
P7NZBA		407.20	6.15	0.48	452.00	-5.18	-0.34	CL
P8JLZV		402.20	1.15	0.09	453.80	-3.38	-0.22	LE
Q82VNU		403.00	1.95	0.15	458.40	1.22	0.08	WT
QGPBBP		390.40	-10.65	-0.83	439.40	-17.78	-1.16	BU
QHZHPY		406.40	5.35	0.41	466.00	8.82	0.57	FU
QJWLC2		417.20	16.15	1.25	470.00	12.82	0.83	WT
RNNDGN		417.00	15.95	1.24	473.80	16.62	1.08	LE
RY8UY4		412.20	11.15	0.86	476.80	19.62	1.28	MI
T2WNKP	X	449.98	48.93	3.79	502.42	45.24	2.94	BU
T6M4EC		401.40	0.35	0.03	455.00	-2.18	-0.14	EM
T7E6E9		407.40	6.35	0.49	461.60	4.42	0.29	LE
TEE38P		407.20	6.15	0.48	470.00	12.82	0.83	XX
TEED7U		397.20	-3.85	-0.30	448.80	-8.38	-0.55	LE
UPB9WF		400.80	-0.25	-0.02	459.20	2.02	0.13	WZ
UX9XJD		409.38	8.33	0.65	465.70	8.52	0.55	MA
V884T4		387.60	-13.45	-1.04	438.60	-18.58	-1.21	CL
VL8VRM		394.00	-7.05	-0.55	450.80	-6.38	-0.42	FU
VMXH4K		385.00	-16.05	-1.24	446.80	-10.38	-0.68	BU
VVWB9X		406.18	5.13	0.40	458.20	1.02	0.07	MI
WA94F2		405.60	4.55	0.35	460.60	3.42	0.22	BU
WN6C3G	*	412.34	11.29	0.88	447.86	-9.32	-0.61	BU
WNTNT3		401.94	0.89	0.07	452.58	-4.60	-0.30	MA
X6GK6B		380.40	-20.65	-1.60	435.40	-21.78	-1.42	ST

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 123  
Microhardness - Vickers Hardness Number (500 gf)  
ASTM E384

WebCode	Data Flag	Sample S17			Sample S18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XAL6PG		400.32	-0.73	-0.06	460.46	3.28	0.21	MI
XV4M8T		411.00	9.95	0.77	476.80	19.62	1.28	LE
XW43HQ		422.18	21.13	1.64	469.82	12.64	0.82	LE
Y7BAZP		395.20	-5.85	-0.45	458.00	0.82	0.05	LE
Y9LJD2		407.40	6.35	0.49	456.20	-0.98	-0.06	LE
YJHGA9		406.80	5.75	0.45	467.40	10.22	0.67	XX
YQHZAJ		407.48	6.43	0.50	457.82	0.64	0.04	BU
YTR46U		401.54	0.49	0.04	471.56	14.38	0.94	WT
YY6QC7	X	444.00	42.95	3.33	467.40	10.22	0.67	MI
YYJPAG		386.20	-14.85	-1.15	428.00	-29.18	-1.90	LE
ZV2KLJ		370.20	-30.85	-2.39	424.20	-32.98	-2.15	ST
ZX6DFH		375.80	-25.25	-1.96	435.20	-21.98	-1.43	BU

Summary Statistics

	Sample S17		Sample S18	
Grand Means	401.05	HV 500 gf	457.18	HV 500 gf
Stnd Dev Btwn Labs	12.90	HV 500 gf	15.37	HV 500 gf

Samples S17 , S18 : Steel

Statistics based on 104 of 110 reporting participants

**Comments on assigned Data Flags for Analysis #123**

WebCode   Flag   Analyst Comment

**A2Q4CK**   X   Inconsistent in testing between samples.

**D92RY6**   X   Data for sample S18 are high. Inconsistent within the determinations of sample S18.

**DLKMKV**   X   Data for sample S18 are high.

**NDX7XM**   X   Data for sample S18 are low.

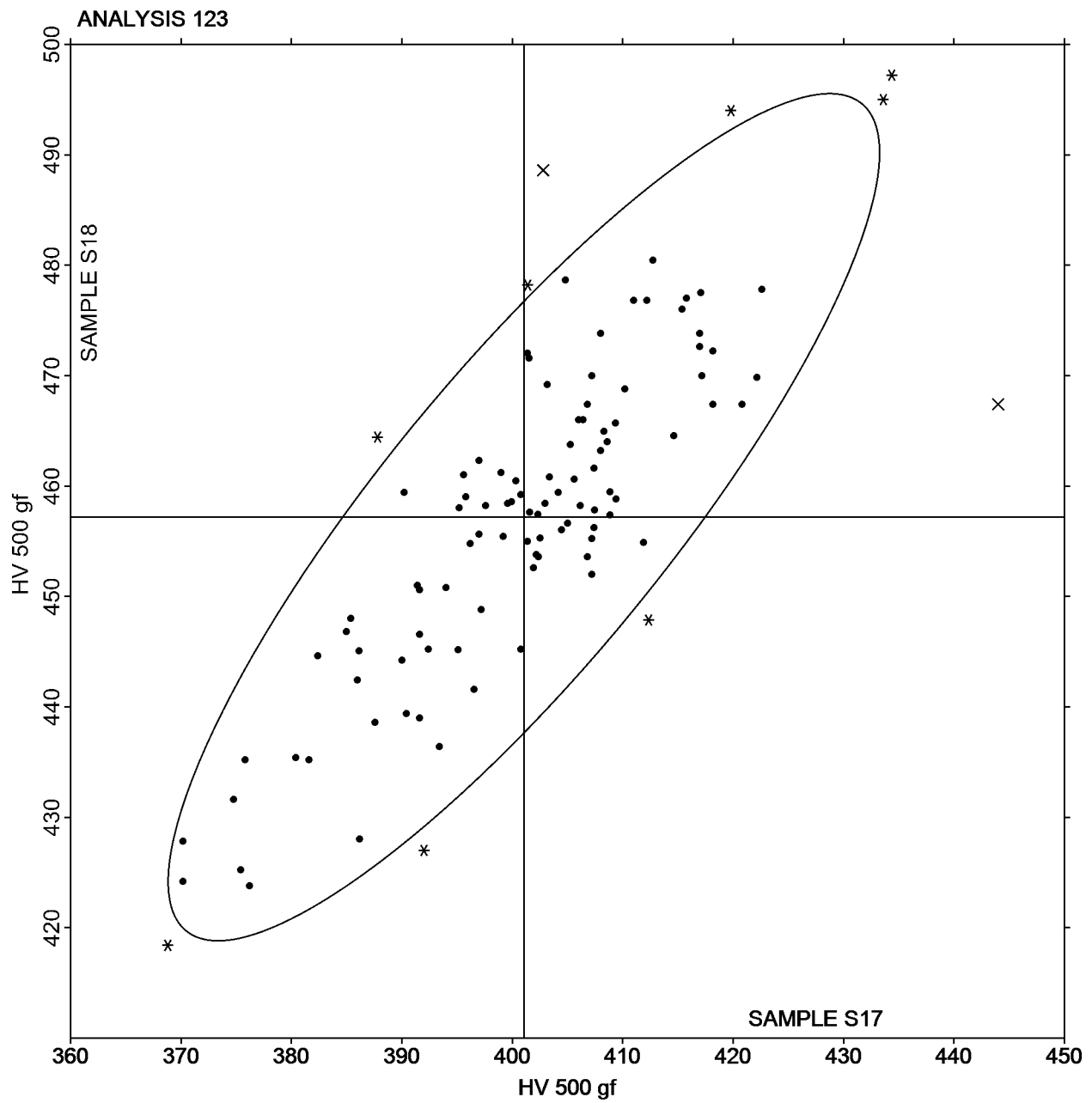
**T2WNKP**   X   Data for both samples are high.

**YY6QC7**   X   Data for sample S17 are high.

Interlaboratory Testing Program for Metals  
Analysis 123  
Microhardness - Vickers Hardness Number (500 gf)  
ASTM E384

**SAMPLE S17**  
401.05 HV 500 gf

**SAMPLE S18**  
457.18 HV 500 gf



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 135  
Brinell Hardness - HBW  
ASTM E10

WebCode	Data Flag	Sample D17			Sample D18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		365.40	-9.39	-1.11	444.00	-2.89	-0.35	RI
297TRM		373.00	-1.79	-0.21	439.60	-7.29	-0.88	EM
2DQY2F		374.60	-0.19	-0.02	443.60	-3.29	-0.40	TI
2WBA22		373.80	-0.99	-0.12	444.40	-2.49	-0.30	QT
33REHN		374.60	-0.19	-0.02	438.00	-8.89	-1.07	DE
4387WQ		373.00	-1.79	-0.21	444.00	-2.89	-0.35	ST
44H2AH		382.80	8.01	0.95	457.60	10.71	1.29	TI
4AK683		377.38	2.59	0.31	445.66	-1.23	-0.15	EM
4BC78Y		367.60	-7.19	-0.85	435.00	-11.89	-1.44	NA
4NQ3MN		386.80	12.01	1.42	454.00	7.11	0.86	RI
69PKV9		368.40	-6.39	-0.76	437.40	-9.49	-1.15	ER
73A8GG	*	399.77	24.98	2.96	470.52	23.63	2.85	LE
769QZG	X	368.00	-6.79	-0.80	423.60	-23.29	-2.81	RI
8B6QCA	*	388.00	13.21	1.57	444.00	-2.89	-0.35	TI
A2Q4CK		365.40	-9.39	-1.11	439.00	-7.89	-0.95	MA
APHL3P		367.80	-6.99	-0.83	444.00	-2.89	-0.35	KI
APZUMB		364.60	-10.19	-1.21	443.00	-3.89	-0.47	WO
AUXJJ7		375.60	0.81	0.10	451.00	4.11	0.50	AV
B7GERV		377.60	2.81	0.33	450.40	3.51	0.42	KI
BNGWQK		379.80	5.01	0.59	449.40	2.51	0.30	DE
BQQWAX		369.80	-4.99	-0.59	444.00	-2.89	-0.35	TM
BVXGYQ		367.60	-7.19	-0.85	443.60	-3.29	-0.40	LS
CRAUJ4		375.00	0.21	0.02	444.00	-2.89	-0.35	TI
D2BEJB		386.80	12.01	1.42	459.20	12.31	1.49	NA
D9EE4D		388.60	13.81	1.64	465.40	18.51	2.23	DE
DEPCZX		375.00	0.21	0.02	448.80	1.91	0.23	WI
EBAUHD		383.00	8.21	0.97	451.00	4.11	0.50	RS
EFTNWR		385.40	10.61	1.26	444.00	-2.89	-0.35	DE
EL3FDX		370.60	-4.19	-0.50	445.40	-1.49	-0.18	TI
EUDPNW		388.00	13.21	1.57	448.00	1.11	0.13	RI
EUE7KM		366.20	-8.59	-1.02	445.80	-1.09	-0.13	KI
FCWBYU		373.80	-0.99	-0.12	444.20	-2.69	-0.33	DE
GF8UB7		372.20	-2.59	-0.31	449.80	2.91	0.35	WI
GHQBKT		380.80	6.01	0.71	450.60	3.71	0.45	AL
JB6Q66		366.40	-8.39	-0.99	433.20	-13.69	-1.65	WI
JPQJ74		377.40	2.61	0.31	452.20	5.31	0.64	NA
JT3VN8		382.40	7.61	0.90	457.80	10.91	1.32	KI
JT9VRM		372.40	-2.39	-0.28	440.40	-6.49	-0.78	TI
JVT44L		380.80	6.01	0.71	452.40	5.51	0.66	TI
K4JKAN		379.30	4.51	0.53	453.60	6.71	0.81	DE
KG92Y3		373.80	-0.99	-0.12	446.80	-0.09	-0.01	WI
KGQR9M	X	321.60	-53.19	-6.30	417.00	-29.89	-3.61	RI
KR97XP		375.00	0.21	0.02	448.60	1.71	0.21	WI
KV7RJ2		387.20	12.41	1.47	459.80	12.91	1.56	WI
L6EVUB		367.00	-7.79	-0.92	443.00	-3.89	-0.47	DE
LXAQQD		375.00	0.21	0.02	444.00	-2.89	-0.35	DE
M8BX67		370.00	-4.79	-0.57	449.80	2.91	0.35	KI
M9Q6DT		363.00	-11.79	-1.40	444.00	-2.89	-0.35	WI
MXMTJ6		366.00	-8.79	-1.04	446.80	-0.09	-0.01	EM

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 135  
Brinell Hardness - HBW  
ASTM E10

WebCode	Data Flag	Sample D17			Sample D18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
N88FAL		383.80	9.01	1.07	444.80	-2.09	-0.25	SA
N9FXAC		379.60	4.81	0.57	461.80	14.91	1.80	TI
NEPDXR		363.00	-11.79	-1.40	444.00	-2.89	-0.35	RI
NJQBRT		371.26	-3.53	-0.42	444.40	-2.49	-0.30	WI
PYD6MN		373.20	-1.59	-0.19	442.80	-4.09	-0.49	DE
Q4HDDG		372.80	-1.99	-0.24	444.00	-2.89	-0.35	ST
QG6LYY	*	378.20	3.41	0.40	463.00	16.11	1.94	TI
QKBWCD		375.00	0.21	0.02	438.00	-8.89	-1.07	WI
RNND CN		374.60	-0.19	-0.02	446.00	-0.89	-0.11	DE
T6M4EC		375.00	0.21	0.02	451.20	4.31	0.52	WO
UZLWHZ		379.20	4.41	0.52	455.20	8.31	1.00	TI
V3TYU4		388.00	13.21	1.57	461.00	14.11	1.70	XX
VDB3D2		366.00	-8.79	-1.04	436.00	-10.89	-1.32	DE
VVWB9X	*	352.00	-22.79	-2.70	429.00	-17.89	-2.16	SD
WP4JGF		375.00	0.21	0.02	444.00	-2.89	-0.35	NS
X6GK6B		363.00	-11.79	-1.40	429.00	-17.89	-2.16	NA
XZ2KYQ	X	354.40	-20.39	-2.42	408.20	-38.69	-4.67	XX
Y7HA8K		379.00	4.21	0.50	452.80	5.91	0.71	AV
Y9LJD2		363.00	-11.79	-1.40	444.00	-2.89	-0.35	PI
YTR46U		374.20	-0.59	-0.07	445.12	-1.77	-0.21	WI
YZCKU4		380.00	5.21	0.62	448.60	1.71	0.21	DE
ZEQ7ZH		385.40	10.61	1.26	458.80	11.91	1.44	TI
ZV2KLJ		367.20	-7.59	-0.90	439.20	-7.69	-0.93	DE
ZWXZVV		356.00	-18.79	-2.23	427.20	-19.69	-2.38	WI
ZZB3EM		381.20	6.41	0.76	448.80	1.91	0.23	TI

Summary Statistics

	Sample D17		Sample D18	
Grand Means	374.79	HBW	446.89	HBW
Stnd Dev Btwn Labs	8.44	HBW	8.28	HBW

Samples D17 , D18 : Steel

Statistics based on 71 of 74 reporting participants

Samples D17 , D18 are hardness test blocks made from steel. The blocks are heat treated to hardness levels specified by CTS.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 135  
Brinell Hardness - HBW  
ASTM E10

**Comments on assigned Data Flags for Analysis #135**

WebCode   Flag   Analyst Comment

**769QZG**   X   Data for sample D18 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

**KGQR9M**   X   Data for both samples are low. Possible Systematic error.

**XZ2KYQ**   X   Data for sample D18 are low. Inconsistent in testing between samples.

Cycle 105  
1st Q, 2014

### Interlaboratory Testing Program for Metals

#### Analysis 135

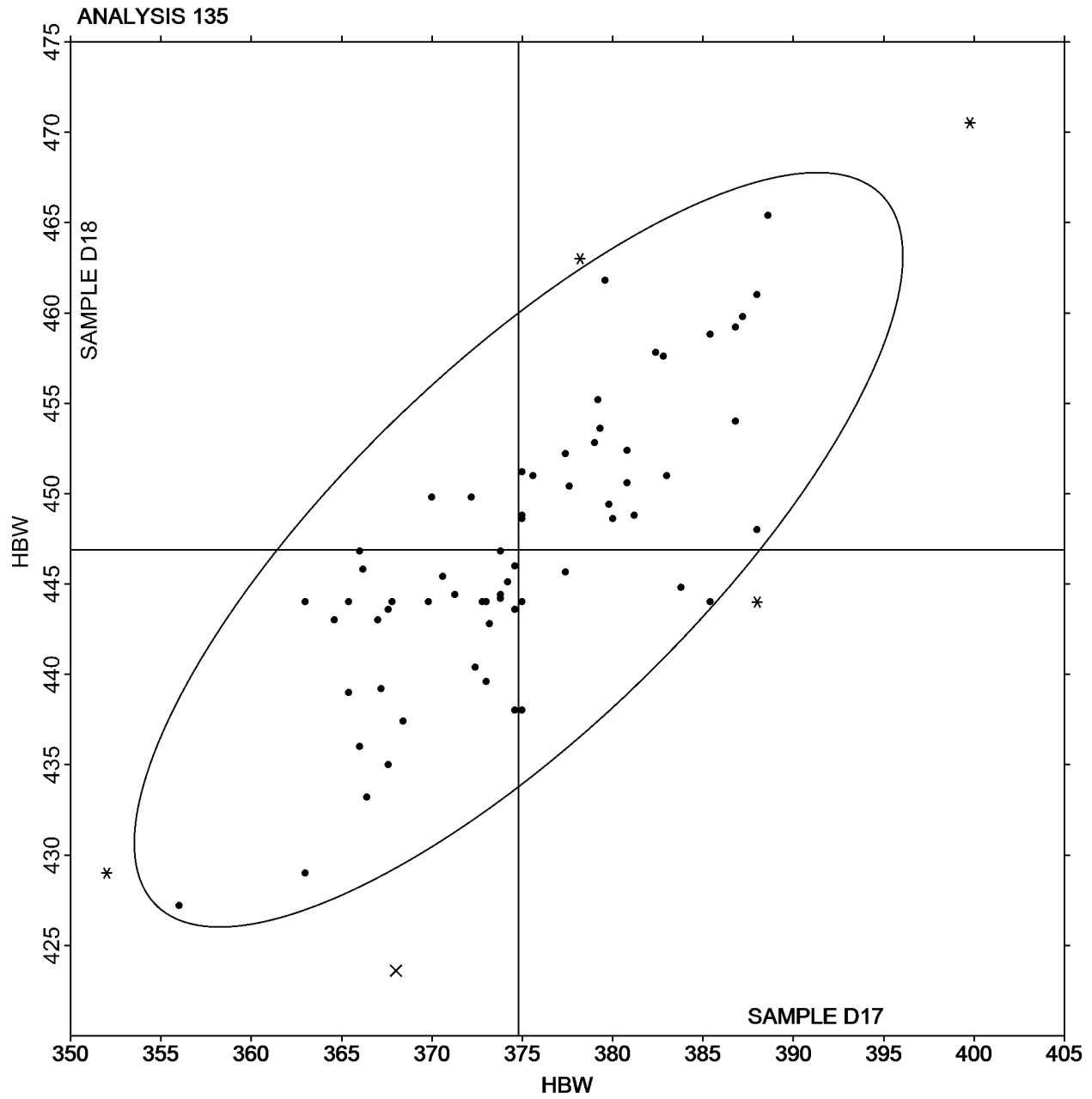
Brinell Hardness - HBW  
ASTM E10

**SAMPLE D17**

**374.79 HBW**

**SAMPLE D18**

**446.89 HBW**





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 140  
Tensile Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		75.40	0.22	0.33	71.70	0.23	0.37	ZZ
2DQY2F	X	48.90	-26.28	-39.01	48.10	-23.37	-37.67	ZZ
3WF2EP		74.50	-0.68	-1.01	70.80	-0.67	-1.08	ZZ
4BC78Y		74.80	-0.38	-0.56	71.10	-0.37	-0.60	ZZ
4NQ3MN		75.28	0.10	0.14	70.92	-0.55	-0.88	ZZ
62LE6L		73.97	-1.21	-1.79	70.92	-0.55	-0.88	ZZ
69PKV9		75.28	0.10	0.14	71.79	0.32	0.52	ZZ
6HH7CM		75.80	0.62	0.92	71.40	-0.07	-0.11	ZZ
6NJ3V6		75.00	-0.18	-0.27	71.10	-0.37	-0.60	ZZ
6NZ83J		74.50	-0.68	-1.01	71.10	-0.37	-0.60	ZZ
73A8GG	X	72.61	-2.57	-3.81	70.10	-1.37	-2.21	ZZ
769QZG		76.00	0.82	1.22	72.00	0.53	0.85	ZZ
7D98QE	X	72.83	-2.35	-3.49	67.84	-3.63	-5.85	ZZ
7U3JRP		74.00	-1.18	-1.75	70.90	-0.57	-0.92	ZZ
97NR9E	X	76.24	1.06	1.57	73.59	2.11	3.41	ZZ
A2Q4CK	*	73.97	-1.21	-1.79	71.50	0.03	0.06	ZZ
AHB BCH	X	74.90	-0.28	-0.41	74.90	3.43	5.53	ZZ
APZUMB		75.00	-0.18	-0.27	71.30	-0.17	-0.27	ZZ
AUXJJ7		75.13	-0.05	-0.07	70.49	-0.98	-1.58	ZZ
AXBL62	X	78.20	3.02	4.48	72.77	1.30	2.10	ZZ
BGZ8HC		76.50	1.32	1.96	72.10	0.63	1.02	ZZ
BM92L2	X	76.90	1.72	2.56	66.30	-5.17	-8.33	ZZ
BNGWQK		74.00	-1.18	-1.75	70.60	-0.87	-1.40	ZZ
BQQWAX		76.00	0.82	1.22	71.79	0.32	0.52	ZZ
BVXGYQ		75.50	0.32	0.48	72.30	0.83	1.34	ZZ
D2E282		75.90	0.72	1.07	71.87	0.40	0.64	ZZ
D92RY6		75.28	0.10	0.14	71.65	0.18	0.29	ZZ
D9EE4D		74.50	-0.68	-1.01	70.80	-0.67	-1.08	ZZ
DEPCZX		75.00	-0.18	-0.27	70.80	-0.67	-1.08	ZZ
EBAUHD		73.84	-1.34	-1.99	70.56	-0.91	-1.46	ZZ
EE3JB8	X	71.70	-3.48	-5.16	68.90	-2.57	-4.14	ZZ
EL3FDX		76.10	0.92	1.37	72.40	0.93	1.50	ZZ
ENND6		75.26	0.08	0.11	72.28	0.81	1.30	ZZ
ENNRZM		75.90	0.72	1.07	72.20	0.73	1.18	ZZ
EUE7KM		74.50	-0.68	-1.01	70.40	-1.07	-1.73	ZZ
F9B64W		74.90	-0.28	-0.41	71.40	-0.07	-0.11	ZZ
FW3HY7		74.70	-0.48	-0.71	71.50	0.03	0.05	ZZ
GGC7PF		74.50	-0.68	-1.01	70.80	-0.67	-1.08	ZZ
GHQBKT	*	73.82	-1.35	-2.01	69.91	-1.56	-2.52	ZZ
H23EXW		75.41	0.23	0.34	72.21	0.74	1.19	ZZ
HRC638		75.60	0.42	0.63	72.10	0.63	1.02	ZZ
JJEPWZ	X	74.30	-0.88	-1.30	68.70	-2.77	-4.47	ZZ
JT3VN8		74.90	-0.28	-0.41	71.70	0.23	0.37	ZZ
JT9VRM	X	72.90	-2.28	-3.38	69.00	-2.47	-3.98	ZZ
KKU9GX		75.04	-0.14	-0.20	70.90	-0.57	-0.93	ZZ
KR97XP		75.40	0.22	0.33	71.60	0.13	0.21	ZZ
KTXUGZ		74.80	-0.38	-0.56	71.70	0.23	0.37	ZZ
KYV7YG		75.30	0.12	0.18	72.00	0.53	0.85	ZZ
L6EVUB		75.00	-0.18	-0.27	71.00	-0.47	-0.76	ZZ

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 140  
Tensile Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
LLVMBG		75.90	0.72	1.07	71.60	0.13	0.21	ZZ
LXAQQD		74.60	-0.58	-0.86	70.10	-1.37	-2.21	ZZ
M8BX67		75.04	-0.14	-0.21	71.34	-0.13	-0.21	ZZ
MB2NFH		75.76	0.58	0.86	71.94	0.47	0.76	ZZ
MXMTJ6		74.70	-0.48	-0.72	70.63	-0.84	-1.35	ZZ
N3L6WH		75.50	0.32	0.48	71.60	0.13	0.21	ZZ
N88FAL		75.40	0.22	0.33	71.60	0.13	0.21	ZZ
NDX7XM		75.20	0.02	0.03	72.10	0.63	1.02	ZZ
NJQBRT		74.83	-0.35	-0.52	71.27	-0.20	-0.32	ZZ
Q4HDDG		76.01	0.83	1.24	72.23	0.76	1.23	ZZ
Q82VNU		74.70	-0.48	-0.71	71.80	0.33	0.53	ZZ
QKBWCD		75.20	0.02	0.03	71.60	0.13	0.21	ZZ
QNQXCK		75.20	0.02	0.03	71.50	0.03	0.05	ZZ
QURLXE		74.35	-0.83	-1.23	71.19	-0.28	-0.45	ZZ
QYJ2Z7		74.20	-0.98	-1.45	71.40	-0.07	-0.11	ZZ
R2T464		75.42	0.24	0.36	72.08	0.61	0.99	ZZ
R32CYV		74.93	-0.25	-0.37	71.34	-0.13	-0.21	ZZ
RQVNDY		75.71	0.53	0.79	71.94	0.47	0.76	ZZ
RYN97D		75.91	0.73	1.09	71.69	0.22	0.36	ZZ
T6CU9Y		75.60	0.42	0.63	71.10	-0.37	-0.60	ZZ
TEE38P	X	76.15	0.97	1.44	70.20	-1.27	-2.05	ZZ
UZLWHZ		75.00	-0.18	-0.27	71.70	0.23	0.37	ZZ
V3TYU4		75.50	0.32	0.48	71.50	0.03	0.05	ZZ
VAGCZ3		75.20	0.02	0.03	72.20	0.73	1.18	ZZ
VDB3D2		76.81	1.63	2.42	72.52	1.05	1.69	ZZ
W7TGYB		75.32	0.14	0.21	71.52	0.05	0.08	ZZ
WWK4KR	X	79.19	4.01	5.95	74.11	2.64	4.26	ZZ
X6GK6B		75.30	0.12	0.18	71.57	0.10	0.16	ZZ
XAL6PG		74.70	-0.48	-0.71	70.30	-1.17	-1.89	ZZ
Y7HA8K		76.44	1.26	1.87	72.81	1.34	2.16	ZZ
YKJACM		76.40	1.22	1.81	72.00	0.53	0.85	ZZ
YQHZAJ		74.90	-0.28	-0.41	71.00	-0.47	-0.76	ZZ
Z2KHYT		75.00	-0.18	-0.27	70.90	-0.57	-0.92	ZZ
ZVFGZJ		76.68	1.50	2.23	72.76	1.29	2.08	ZZ
ZX6DFH		75.20	0.02	0.03	71.40	-0.07	-0.11	ZZ

Summary Statistics

	Sample P17		Sample P18	
Grand Means	75.18	ksi	71.47	ksi
Stnd Dev Btwn Labs	0.67	ksi	0.62	ksi

Samples P17 , P18 : AISI 4340

Statistics based on 72 of 84 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 140  
Tensile Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

**Comments on assigned Data Flags for Analysis #140**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>2DQY2F</b>	X	Data for both samples are low. Possible Systematic error.
<b>73A8GG</b>	X	Data for sample P17 are low. Inconsistent in testing between samples.
<b>7D98QE</b>	X	Data for both samples are low. Possible Systematic error.
<b>97NR9E</b>	X	Data for sample P18 are high. Inconsistent in testing between samples.
<b>AHBBCH</b>	X	Data for sample P18 are high. Inconsistent in testing between samples.
<b>AXBL62</b>	X	Data for sample P17 are high. Inconsistent in testing between samples.
<b>BM92L2</b>	X	Data for sample P18 are low. Inconsistent in testing between samples.
<b>EE3JB8</b>	X	Data for both samples are low. Possible Systematic error.
<b>JJEPWZ</b>	X	Data for sample P18 are low. Inconsistent in testing between samples.
<b>JT9VRM</b>	X	Data for both samples are low. Possible Systematic error.
<b>TEE38P</b>	X	Inconsistent in testing between samples.
<b>WWK4KR</b>	X	Data for both samples are high. Possible Systematic error.

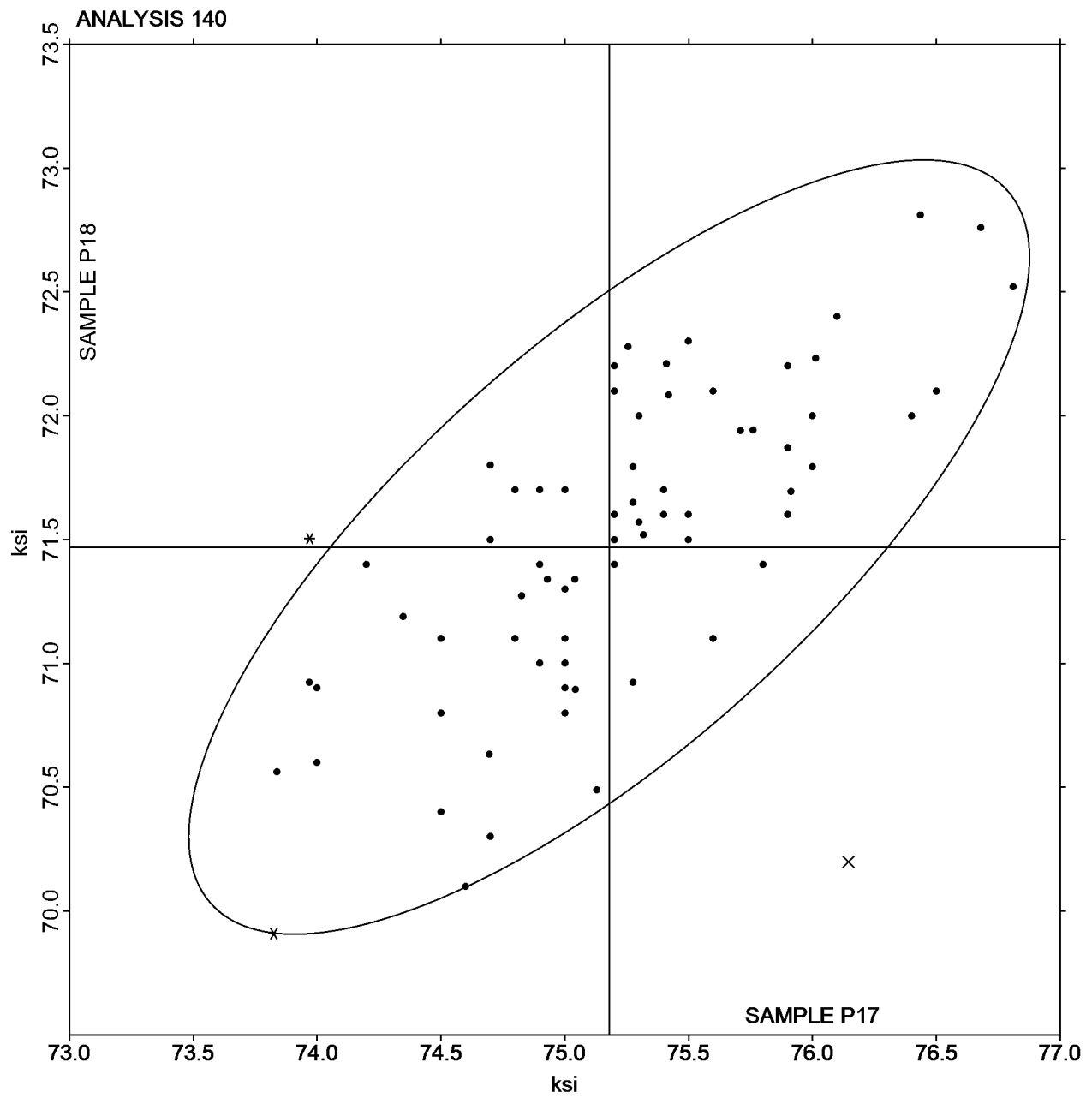
Interlaboratory Testing Program for Metals  
Analysis 140  
Tensile Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

**SAMPLE P17**

**75.18 ksi**

**SAMPLE P18**

**71.47 ksi**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 141  
Yield Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		57.00	6.62	1.99	52.90	4.24	1.31	ZZ
297TRM		49.02	-1.36	-0.41	46.12	-2.54	-0.79	ZZ
2DQY2F	X	76.30	25.92	7.79	72.50	23.84	7.38	ZZ
3WF2EP		47.70	-2.68	-0.81	46.20	-2.46	-0.76	ZZ
4BC78Y	*	41.80	-8.58	-2.58	42.70	-5.96	-1.85	ZZ
4NQ3MN		50.18	-0.20	-0.06	49.89	1.23	0.38	ZZ
62LE6L		52.21	1.83	0.55	49.89	1.23	0.38	ZZ
69PKV9		49.60	-0.78	-0.23	49.60	0.94	0.29	ZZ
6HH7CM		51.60	1.22	0.37	45.90	-2.76	-0.86	ZZ
6NJ3V6	*	52.80	2.42	0.73	55.80	7.14	2.21	ZZ
6NZ83J		45.80	-4.58	-1.38	46.60	-2.06	-0.64	ZZ
73A8GG		44.17	-6.21	-1.87	44.46	-4.20	-1.30	ZZ
769QZG		50.00	-0.38	-0.12	46.50	-2.16	-0.67	ZZ
7D98QE		46.01	-4.37	-1.32	43.16	-5.51	-1.71	ZZ
7U3JRP		50.50	0.12	0.04	49.80	1.14	0.35	ZZ
97NR9E		51.75	1.37	0.41	46.55	-2.12	-0.66	ZZ
A2Q4CK		47.14	-3.24	-0.98	46.85	-1.82	-0.56	ZZ
AHB BCH		49.10	-1.28	-0.39	50.20	1.54	0.48	ZZ
APZUMB	X	60.40	10.02	3.01	53.50	4.84	1.50	ZZ
AUXJJ7		47.28	-3.10	-0.93	45.83	-2.83	-0.88	ZZ
AXBL62		48.82	-1.56	-0.47	46.70	-1.96	-0.61	ZZ
BGZ8HC		50.20	-0.18	-0.05	47.80	-0.86	-0.27	ZZ
BM92L2		52.30	1.92	0.58	49.80	1.14	0.35	ZZ
BNGWQK		47.90	-2.48	-0.75	45.40	-3.26	-1.01	ZZ
BQQWAX		49.17	-1.21	-0.37	44.53	-4.14	-1.28	ZZ
BVXGYQ		47.70	-2.68	-0.81	49.40	0.74	0.23	ZZ
D2E282		52.45	2.06	0.62	50.94	2.28	0.71	ZZ
D92RY6		49.89	-0.49	-0.15	49.46	0.79	0.25	ZZ
D9EE4D		47.70	-2.68	-0.81	47.70	-0.96	-0.30	ZZ
DEPCZX		54.40	4.02	1.21	53.30	4.64	1.44	ZZ
EBAUHD		47.91	-2.48	-0.74	49.20	0.53	0.17	ZZ
EE3JB8		45.30	-5.08	-1.53	42.50	-6.16	-1.91	ZZ
EL3FDX		48.90	-1.48	-0.45	46.90	-1.76	-0.55	ZZ
ENND6		46.01	-4.37	-1.32	46.42	-2.24	-0.69	ZZ
ENNRZM		50.40	0.02	0.01	48.90	0.24	0.07	ZZ
EUE7KM		53.30	2.92	0.88	48.30	-0.36	-0.11	ZZ
F9B64W	X	47.70	-2.68	-0.81	53.90	5.24	1.62	ZZ
FW3HY7		46.70	-3.68	-1.11	45.80	-2.86	-0.89	ZZ
GGC7PF		47.00	-3.38	-1.02	45.10	-3.56	-1.10	ZZ
GHQBKT		48.44	-1.94	-0.58	47.14	-1.53	-0.47	ZZ
H23EXW		46.95	-3.43	-1.03	43.82	-4.84	-1.50	ZZ
HRC638		50.50	0.12	0.04	48.10	-0.56	-0.17	ZZ
JJEPWZ		47.70	-2.68	-0.81	46.80	-1.86	-0.58	ZZ
JT3VN8		47.70	-2.68	-0.81	47.20	-1.46	-0.45	ZZ
JT9VRM		47.80	-2.58	-0.78	45.60	-3.06	-0.95	ZZ
KKU9GX		51.18	0.80	0.24	49.41	0.75	0.23	ZZ
KR97XP		57.30	6.92	2.08	54.00	5.34	1.65	ZZ
KTXUGZ		55.20	4.82	1.45	50.90	2.24	0.69	ZZ
KYV7YG		56.60	6.22	1.87	55.20	6.54	2.02	ZZ

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 141

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

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
L6EVUB		48.60	-1.78	-0.54	46.70	-1.96	-0.61	ZZ
LLVMBG		52.00	1.62	0.49	48.70	0.04	0.01	ZZ
LXAQQD		49.30	-1.08	-0.33	46.10	-2.56	-0.79	ZZ
M8BX67		47.39	-2.99	-0.90	46.74	-1.92	-0.60	ZZ
MB2NFH		48.89	-1.50	-0.45	47.07	-1.60	-0.49	ZZ
MXMTJ6		49.60	-0.78	-0.23	48.01	-0.66	-0.20	ZZ
N3L6WH		50.10	-0.28	-0.08	47.00	-1.66	-0.52	ZZ
N88FAL		46.30	-4.08	-1.23	45.60	-3.06	-0.95	ZZ
NDX7XM	*	50.90	0.52	0.16	53.60	4.94	1.53	ZZ
NJQBRT		48.76	-1.62	-0.49	47.53	-1.13	-0.35	ZZ
Q4HDDG		53.56	3.18	0.96	52.10	3.43	1.06	ZZ
Q82VNU		52.60	2.22	0.67	51.10	2.44	0.75	ZZ
QKBWCD		52.10	1.72	0.52	48.30	-0.36	-0.11	ZZ
QNQXCK		50.70	0.32	0.10	51.20	2.54	0.79	ZZ
QURLXE		50.82	0.44	0.13	47.93	-0.73	-0.23	ZZ
QYJ2Z7		49.40	-0.98	-0.30	47.10	-1.56	-0.48	ZZ
R2T464		49.46	-0.92	-0.28	46.27	-2.40	-0.74	ZZ
R32CYV		51.86	1.48	0.44	50.44	1.78	0.55	ZZ
RYN97D		55.19	4.80	1.44	52.07	3.40	1.05	ZZ
T6CU9Y	*	52.00	1.62	0.49	54.60	5.94	1.84	ZZ
TEE38P		52.65	2.27	0.68	47.14	-1.53	-0.47	ZZ
UZLWHZ		47.40	-2.98	-0.90	46.10	-2.56	-0.79	ZZ
V3TYU4		48.60	-1.78	-0.54	48.00	-0.66	-0.21	ZZ
VAGCZ3		54.00	3.62	1.09	50.30	1.64	0.51	ZZ
VDB3D2		56.00	5.62	1.69	54.20	5.54	1.71	ZZ
W7TGYB		56.42	6.04	1.82	53.52	4.86	1.50	ZZ
WWK4KR		50.78	0.40	0.12	47.65	-1.01	-0.31	ZZ
X6GK6B		56.65	6.27	1.88	55.49	6.83	2.11	ZZ
XAL6PG		52.20	1.82	0.55	51.20	2.54	0.79	ZZ
Y7HA8K		47.57	-2.81	-0.84	47.14	-1.53	-0.47	ZZ
YKJACM	X	69.30	18.92	5.69	47.60	-1.06	-0.33	ZZ
YQHZAJ		51.90	1.52	0.46	50.20	1.54	0.48	ZZ
Z2KHYT		52.90	2.52	0.76	48.40	-0.26	-0.08	ZZ
ZVFGZJ	*	59.30	8.92	2.68	58.57	9.91	3.07	ZZ
ZX6DFH		55.60	5.22	1.57	51.80	3.14	0.97	ZZ

Summary Statistics

	Sample P17		Sample P18	
Grand Means	50.38	ksi	48.66	ksi
Stnd Dev Btwn Labs	3.33	ksi	3.23	ksi

Samples P17 , P18 : AISI 4340

Statistics based on 80 of 84 reporting participants

Cycle 105  
1st Q, 2014

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

**2DQY2F**   X   Data for both samples are high. Possible Systematic error.

**APZUMB**   X   Data for sample P17 are high. Inconsistent in testing between samples.

**F9B64W**   X   Inconsistent in testing between samples.

**YKJACM**   X   Data for sample P17 are high. Inconsistent in testing between samples.

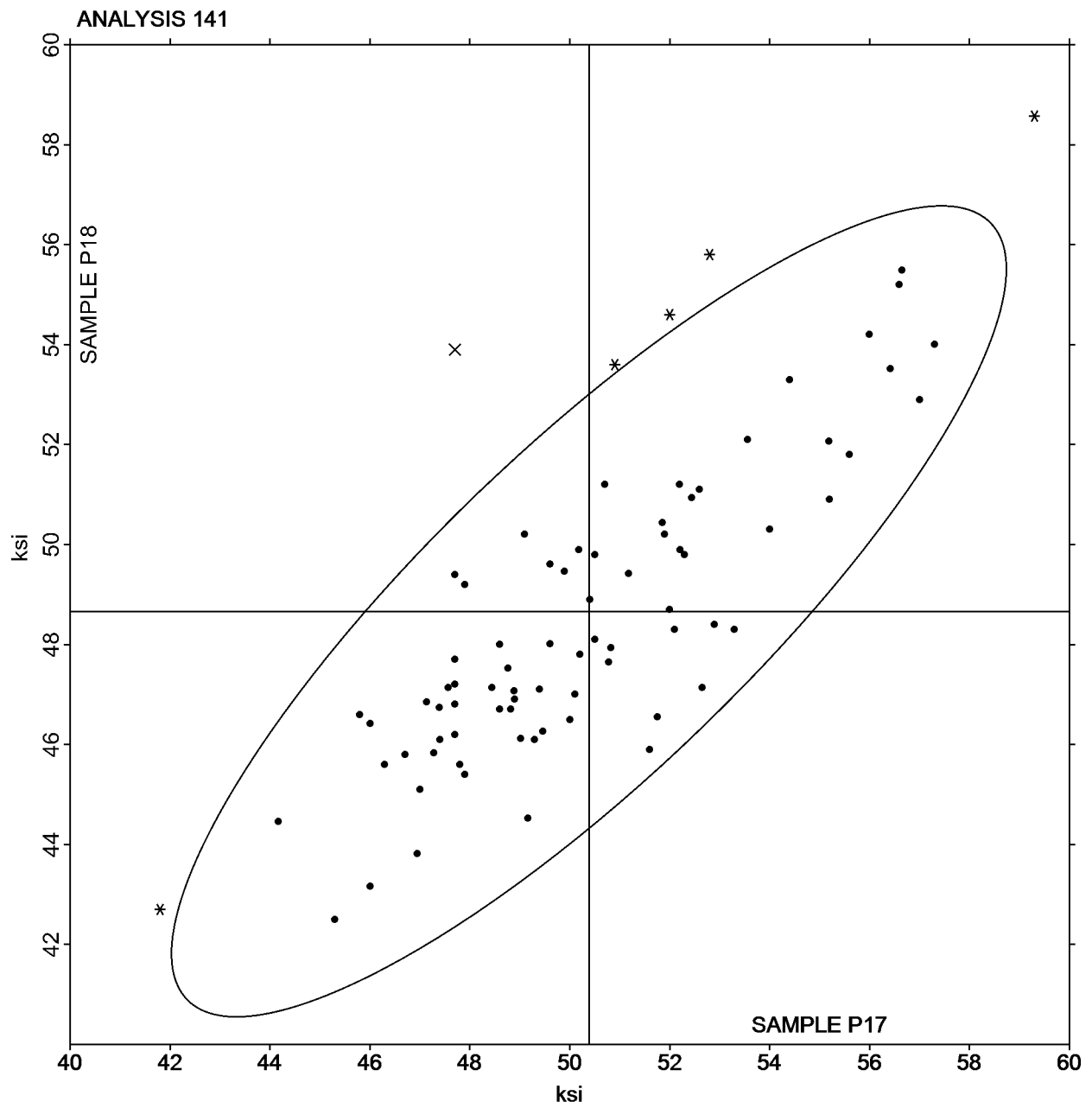
Interlaboratory Testing Program for Metals  
Analysis 141  
Yield Strength (Lab-Machined Round Steel) - ksi  
ASTM E8

**SAMPLE P17**

**50.38 ksi**

**SAMPLE P18**

**48.66 ksi**





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 142

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

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX	X	39.00	5.57	2.61	36.50	1.91	0.79	ZZ
297TRM		30.00	-3.43	-1.61	32.00	-2.59	-1.07	ZZ
2DQY2F		33.00	-0.43	-0.20	33.60	-0.99	-0.41	ZZ
3WF2EP		35.40	1.97	0.92	35.90	1.31	0.54	ZZ
4BC78Y		33.30	-0.13	-0.06	34.70	0.11	0.05	ZZ
4NQ3MN		35.90	2.47	1.16	35.20	0.61	0.25	ZZ
62LE6L		35.00	1.57	0.74	38.00	3.41	1.41	ZZ
69PKV9		35.00	1.57	0.74	35.00	0.41	0.17	ZZ
6HH7CM		35.50	2.07	0.97	35.50	0.91	0.38	ZZ
6NJ3V6		33.70	0.27	0.12	34.10	-0.49	-0.20	ZZ
6NZ83J	*	35.00	1.57	0.74	39.30	4.71	1.95	ZZ
73A8GG		34.40	0.97	0.45	34.60	0.01	0.00	ZZ
769QZG		31.00	-2.43	-1.14	32.00	-2.59	-1.07	ZZ
7D98QE		35.70	2.27	1.06	37.80	3.21	1.33	ZZ
7U3JRP		35.20	1.77	0.83	37.20	2.61	1.08	ZZ
97NR9E		33.25	-0.18	-0.09	34.50	-0.09	-0.04	ZZ
A2Q4CK	X	30.00	-3.43	-1.61	39.00	4.41	1.83	ZZ
AHB BCH		31.00	-2.43	-1.14	32.60	-1.99	-0.82	ZZ
APZUMB		33.00	-0.43	-0.20	34.00	-0.59	-0.24	ZZ
AUXJJ7		35.40	1.97	0.92	37.30	2.71	1.12	ZZ
AXBL62		31.90	-1.53	-0.72	33.75	-0.84	-0.35	ZZ
BGZ8HC		32.80	-0.63	-0.30	34.10	-0.49	-0.20	ZZ
BM92L2		31.20	-2.23	-1.05	33.40	-1.19	-0.49	ZZ
BNGWQK		35.30	1.87	0.88	36.60	2.01	0.83	ZZ
BQQWAX		34.00	0.57	0.27	36.00	1.41	0.58	ZZ
BVXGYQ		32.00	-1.43	-0.67	33.00	-1.59	-0.66	ZZ
D2E282		32.10	-1.33	-0.63	32.70	-1.89	-0.78	ZZ
D92RY6		36.00	2.57	1.20	39.00	4.41	1.83	ZZ
D9EE4D		35.10	1.67	0.78	35.40	0.81	0.34	ZZ
DEPCZX		35.50	2.07	0.97	36.50	1.91	0.79	ZZ
EBAUHD		33.25	-0.18	-0.09	34.50	-0.09	-0.04	ZZ
EE3JB8	*	34.40	0.97	0.45	31.70	-2.89	-1.20	ZZ
EL3FDX		34.50	1.07	0.50	32.50	-2.09	-0.86	ZZ
ENND6		29.70	-3.73	-1.75	29.70	-4.89	-2.02	ZZ
ENNRZM		30.00	-3.43	-1.61	30.50	-4.09	-1.69	ZZ
EUE7KM		31.70	-1.73	-0.81	33.50	-1.09	-0.45	ZZ
F9B64W		31.90	-1.53	-0.72	32.50	-2.09	-0.86	ZZ
FW3HY7		32.20	-1.23	-0.58	32.90	-1.69	-0.70	ZZ
GGC7PF		35.30	1.87	0.88	36.40	1.81	0.75	ZZ
GHQBKT		32.20	-1.23	-0.58	33.00	-1.59	-0.66	ZZ
H23EXW		34.00	0.57	0.27	36.00	1.41	0.58	ZZ
HRC638		30.90	-2.53	-1.19	30.00	-4.59	-1.90	ZZ
JJEPWZ	*	28.10	-5.33	-2.50	30.80	-3.79	-1.57	ZZ
JT3VN8		36.30	2.87	1.35	35.00	0.41	0.17	ZZ
JT9VRM		36.80	3.37	1.58	37.40	2.81	1.16	ZZ
KKU9GX		32.90	-0.53	-0.25	34.10	-0.49	-0.20	ZZ
KR97XP		31.50	-1.93	-0.91	33.50	-1.09	-0.45	ZZ
KTXUGZ		32.20	-1.23	-0.58	32.90	-1.69	-0.70	ZZ
KYV7YG		33.00	-0.43	-0.20	34.00	-0.59	-0.24	ZZ

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 142

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

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
L6EVUB		34.50	1.07	0.50	36.00	1.41	0.58	ZZ
LLVMBG		33.10	-0.33	-0.16	36.50	1.91	0.79	ZZ
LXAQQD		36.50	3.07	1.44	35.80	1.21	0.50	ZZ
M8BX67	*	30.00	-3.43	-1.61	34.00	-0.59	-0.24	ZZ
MB2NFH		31.80	-1.63	-0.77	31.50	-3.09	-1.28	ZZ
MXMTJ6		35.00	1.57	0.74	37.00	2.41	1.00	ZZ
N3L6WH		34.80	1.37	0.64	39.00	4.41	1.83	ZZ
N88FAL		34.10	0.67	0.31	36.20	1.61	0.67	ZZ
NDX7XM		31.20	-2.23	-1.05	33.20	-1.39	-0.57	ZZ
NJQBRT		37.90	4.47	2.10	38.20	3.61	1.50	ZZ
Q4HDDG		31.27	-2.16	-1.02	32.00	-2.59	-1.07	ZZ
Q82VNU		29.31	-4.13	-1.94	29.73	-4.86	-2.01	ZZ
QKBWCD		31.00	-2.43	-1.14	32.50	-2.09	-0.86	ZZ
QNQXCK		32.00	-1.43	-0.67	35.50	0.91	0.38	ZZ
QURLXE		35.10	1.67	0.78	38.70	4.11	1.70	ZZ
QYJ2Z7		36.00	2.57	1.20	36.00	1.41	0.58	ZZ
R2T464		35.20	1.77	0.83	36.00	1.41	0.58	ZZ
R32CYV		36.00	2.57	1.20	36.00	1.41	0.58	ZZ
RYN97D		33.90	0.47	0.22	34.30	-0.29	-0.12	ZZ
T6CU9Y		33.00	-0.43	-0.20	34.50	-0.09	-0.04	ZZ
TEE38P	X	42.00	8.57	4.02	41.00	6.41	2.66	ZZ
UZLWHZ		35.70	2.27	1.06	37.10	2.51	1.04	ZZ
V3TYU4		29.00	-4.43	-2.08	30.00	-4.59	-1.90	ZZ
VAGCZ3		32.00	-1.43	-0.67	32.70	-1.89	-0.78	ZZ
VDB3D2		31.00	-2.43	-1.14	32.30	-2.29	-0.95	ZZ
W7TGYB		34.20	0.77	0.36	36.10	1.51	0.63	ZZ
WWK4KR		33.45	0.02	0.01	32.75	-1.84	-0.76	ZZ
X6GK6B		31.90	-1.53	-0.72	31.40	-3.19	-1.32	ZZ
XAL6PG		37.40	3.97	1.86	40.30	5.71	2.37	ZZ
Y7HA8K		34.00	0.57	0.27	36.00	1.41	0.58	ZZ
YKJACM		36.00	2.57	1.20	36.00	1.41	0.58	ZZ
YQHZAJ		32.40	-1.03	-0.49	33.20	-1.39	-0.57	ZZ
Z2KHYT		36.30	2.87	1.35	38.80	4.21	1.74	ZZ
ZVFGZJ		31.60	-1.83	-0.86	32.70	-1.89	-0.78	ZZ
ZX6DFH		34.00	0.57	0.27	35.00	0.41	0.17	ZZ

Summary Statistics

	Sample P17		Sample P18	
Grand Means	33.43	Percent	34.59	Percent
Stnd Dev Btwn Labs	2.13	Percent	2.41	Percent

Samples P17 , P18 : AISI 4340

Statistics based on 81 of 84 reporting participants

Cycle 105  
1st Q, 2014

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

**27Y3DX**   X   Inconsistent in testing between samples.

**A2Q4CK**   X   Inconsistent in testing between samples.

**TEE38P**   X   Data for sample P17 are high. Inconsistent in testing between samples.

Cycle 105  
1st Q, 2014

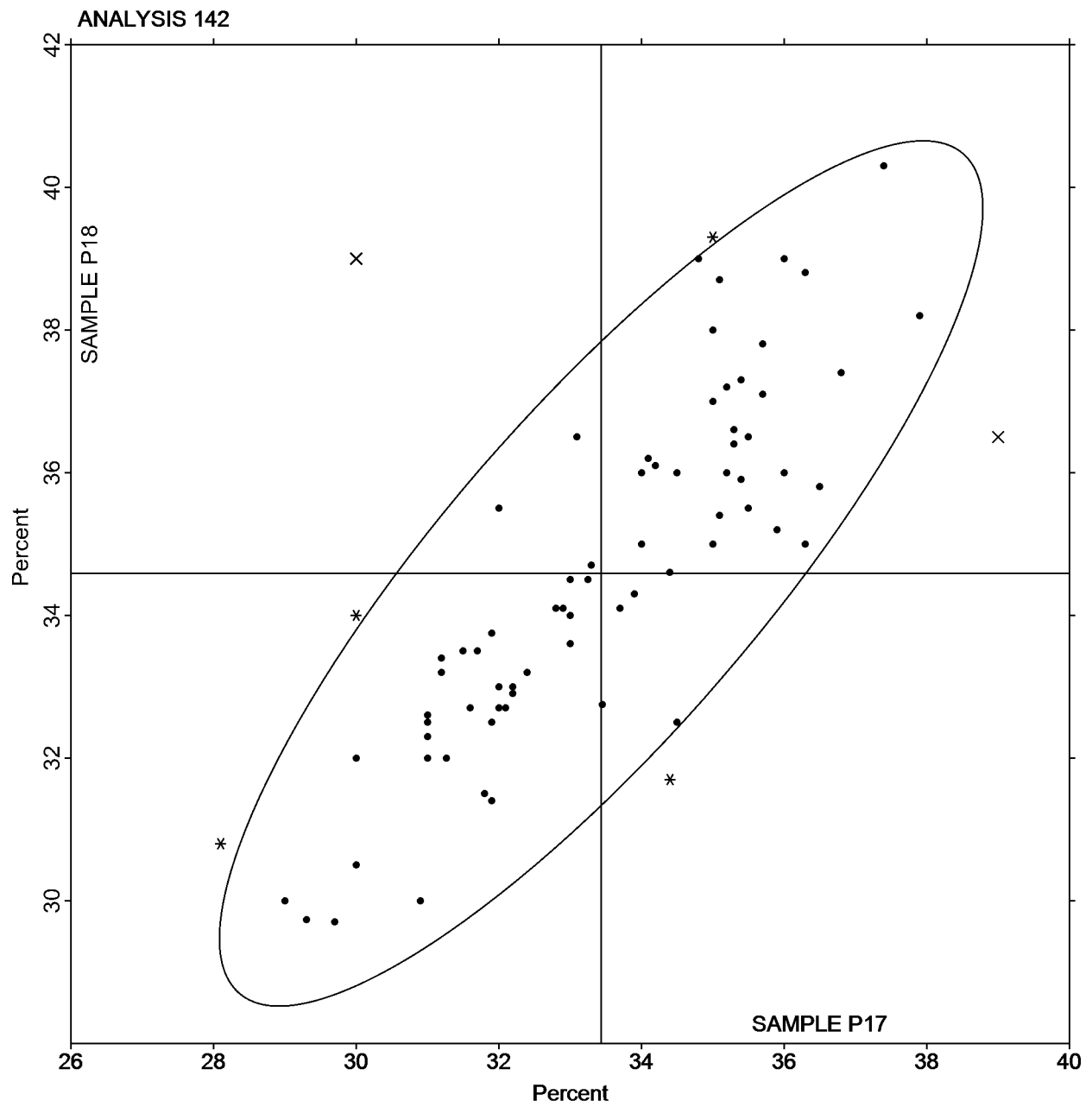
### Interlaboratory Testing Program for Metals

#### Analysis 142

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

**SAMPLE P17**  
**33.43 Percent**

**SAMPLE P18**  
**34.59 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 143  
Reduction of Area (Lab-Machined Round Steel) - Percent  
ASTM E8

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		63.40	-1.61	-1.64	66.50	0.66	0.54	ZZ
297TRM		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
2DQY2F		63.90	-1.11	-1.13	64.00	-1.84	-1.53	ZZ
3WF2EP		65.90	0.89	0.91	64.50	-1.34	-1.11	ZZ
4BC78Y		66.90	1.89	1.94	66.90	1.06	0.88	ZZ
4NQ3MN	*	66.00	0.99	1.02	64.00	-1.84	-1.53	ZZ
62LE6L		66.00	0.99	1.02	65.00	-0.84	-0.70	ZZ
69PKV9		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
6HH7CM		64.60	-0.41	-0.42	65.00	-0.84	-0.70	ZZ
6NJ3V6		64.90	-0.11	-0.11	66.00	0.16	0.13	ZZ
6NZ83J		66.80	1.79	1.83	67.20	1.36	1.12	ZZ
73A8GG	*	63.73	-1.28	-1.31	67.13	1.29	1.07	ZZ
769QZG		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
7D98QE	*	67.74	2.73	2.80	67.28	1.44	1.19	ZZ
7U3JRP		64.20	-0.81	-0.82	65.10	-0.74	-0.61	ZZ
97NR9E		65.19	0.18	0.19	65.41	-0.43	-0.36	ZZ
A2Q4CK	X	69.00	3.99	4.08	71.00	5.16	4.27	ZZ
AHB BCH	X	58.80	-6.21	-6.35	61.70	-4.14	-3.43	ZZ
APZUMB		65.00	-0.01	-0.01	65.60	-0.24	-0.20	ZZ
AUXJJ7		66.20	1.19	1.22	67.80	1.96	1.62	ZZ
AXBL62		64.33	-0.68	-0.69	65.84	0.00	0.00	ZZ
BM92L2		63.50	-1.51	-1.54	64.30	-1.54	-1.28	ZZ
BNGWQK		65.60	0.59	0.61	66.80	0.96	0.79	ZZ
BQQWAX		64.00	-1.01	-1.03	64.00	-1.84	-1.53	ZZ
BVXGYQ		65.00	-0.01	-0.01	65.80	-0.04	-0.04	ZZ
D2E282		64.00	-1.01	-1.03	64.70	-1.14	-0.95	ZZ
D92RY6		65.00	-0.01	-0.01	68.00	2.16	1.79	ZZ
D9EE4D		65.50	0.49	0.50	65.90	0.06	0.05	ZZ
DEPCZX		64.70	-0.31	-0.31	65.70	-0.14	-0.12	ZZ
EBAUHD		67.10	2.09	2.14	67.75	1.91	1.58	ZZ
EE3JB8	X	62.10	-2.91	-2.97	61.50	-4.34	-3.60	ZZ
EL3FDX		64.30	-0.71	-0.72	65.40	-0.44	-0.37	ZZ
ENND6		64.38	-0.63	-0.64	64.24	-1.60	-1.33	ZZ
ENNRZM		64.20	-0.81	-0.82	65.60	-0.24	-0.20	ZZ
EUE7KM		65.10	0.09	0.10	67.80	1.96	1.62	ZZ
F9B64W		65.40	0.39	0.40	66.10	0.26	0.21	ZZ
FW3HY7		63.40	-1.61	-1.64	65.00	-0.84	-0.70	ZZ
GGC7PF		64.90	-0.11	-0.11	66.70	0.86	0.71	ZZ
GHQBKT		65.90	0.89	0.91	66.90	1.06	0.88	ZZ
H23EXW		64.72	-0.29	-0.29	65.38	-0.46	-0.38	ZZ
HRC638	X	60.90	-4.11	-4.20	65.30	-0.54	-0.45	ZZ
JJEPWZ		65.50	0.49	0.50	68.20	2.36	1.95	ZZ
JT3VN8		64.50	-0.51	-0.52	66.00	0.16	0.13	ZZ
JT9VRM		66.10	1.09	1.12	67.40	1.56	1.29	ZZ
KKU9GX		66.00	0.99	1.02	68.00	2.16	1.79	ZZ
KR97XP		64.90	-0.11	-0.11	66.00	0.16	0.13	ZZ
KTXUGZ		64.40	-0.61	-0.62	65.00	-0.84	-0.70	ZZ
KYV7YG		65.00	-0.01	-0.01	65.00	-0.84	-0.70	ZZ
L6EVUB		65.00	-0.01	-0.01	67.00	1.16	0.96	ZZ

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 143  
Reduction of Area (Lab-Machined Round Steel) - Percent  
ASTM E8

WebCode	Data Flag	Sample P17			Sample P18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
LLVMBG	X	70.00	4.99	5.11	67.10	1.26	1.04	ZZ
LXAQQD		65.10	0.09	0.10	66.00	0.16	0.13	ZZ
M8BX67		65.20	0.19	0.20	66.20	0.36	0.30	ZZ
MB2NFH		64.20	-0.81	-0.82	64.50	-1.34	-1.11	ZZ
MXMTJ6		66.00	0.99	1.02	67.00	1.16	0.96	ZZ
N3L6WH		63.00	-2.01	-2.05	63.60	-2.24	-1.86	ZZ
N88FAL		65.40	0.39	0.40	66.80	0.96	0.79	ZZ
NDX7XM		65.00	-0.01	-0.01	65.00	-0.84	-0.70	ZZ
NJQBRT		63.00	-2.01	-2.05	63.00	-2.84	-2.35	ZZ
Q4HDDG		64.71	-0.30	-0.30	64.94	-0.90	-0.75	ZZ
Q82VNU		65.66	0.65	0.67	66.13	0.29	0.24	ZZ
QKBWCD		65.30	0.29	0.30	65.70	-0.14	-0.12	ZZ
QNQXCK		65.10	0.09	0.10	66.20	0.36	0.30	ZZ
QURLXE	*	62.72	-2.29	-2.34	65.23	-0.61	-0.51	ZZ
R2T464		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
R32CYV		65.70	0.69	0.71	65.60	-0.24	-0.20	ZZ
RYN97D		64.50	-0.51	-0.52	65.50	-0.34	-0.28	ZZ
T6CU9Y		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
TEE38P		66.00	0.99	1.02	65.00	-0.84	-0.70	ZZ
V3TYU4		65.00	-0.01	-0.01	66.00	0.16	0.13	ZZ
VAGCZ3		64.30	-0.71	-0.72	65.60	-0.24	-0.20	ZZ
VDB3D2	X	65.60	0.59	0.61	31.00	-34.84	-28.85	ZZ
W7TGYB		66.10	1.09	1.12	66.50	0.66	0.54	ZZ
WWK4KR	X	62.13	-2.88	-2.94	66.41	0.57	0.47	ZZ
X6GK6B		64.40	-0.61	-0.62	65.80	-0.04	-0.04	ZZ
XAL6PG		65.70	0.69	0.71	67.20	1.36	1.12	ZZ
Y7HA8K		64.00	-1.01	-1.03	63.00	-2.84	-2.35	ZZ
YKJACM		66.00	0.99	1.02	66.00	0.16	0.13	ZZ
YQHZAJ		64.90	-0.11	-0.11	63.80	-2.04	-1.69	ZZ
Z2KHYT		67.00	1.99	2.04	68.50	2.66	2.20	ZZ
ZVFGZJ		64.30	-0.71	-0.72	65.00	-0.84	-0.70	ZZ
ZX6DFH		64.30	-0.71	-0.72	66.60	0.76	0.63	ZZ

**Summary Statistics**

	Sample P17		Sample P18	
Grand Means	65.01	Percent	65.84	Percent
Stnd Dev Btwn Labs	0.98	Percent	1.21	Percent

Samples P17 , P18 : AISI 4340

Statistics based on 74 of 81 reporting participants

Cycle 105  
1st Q, 2014

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**

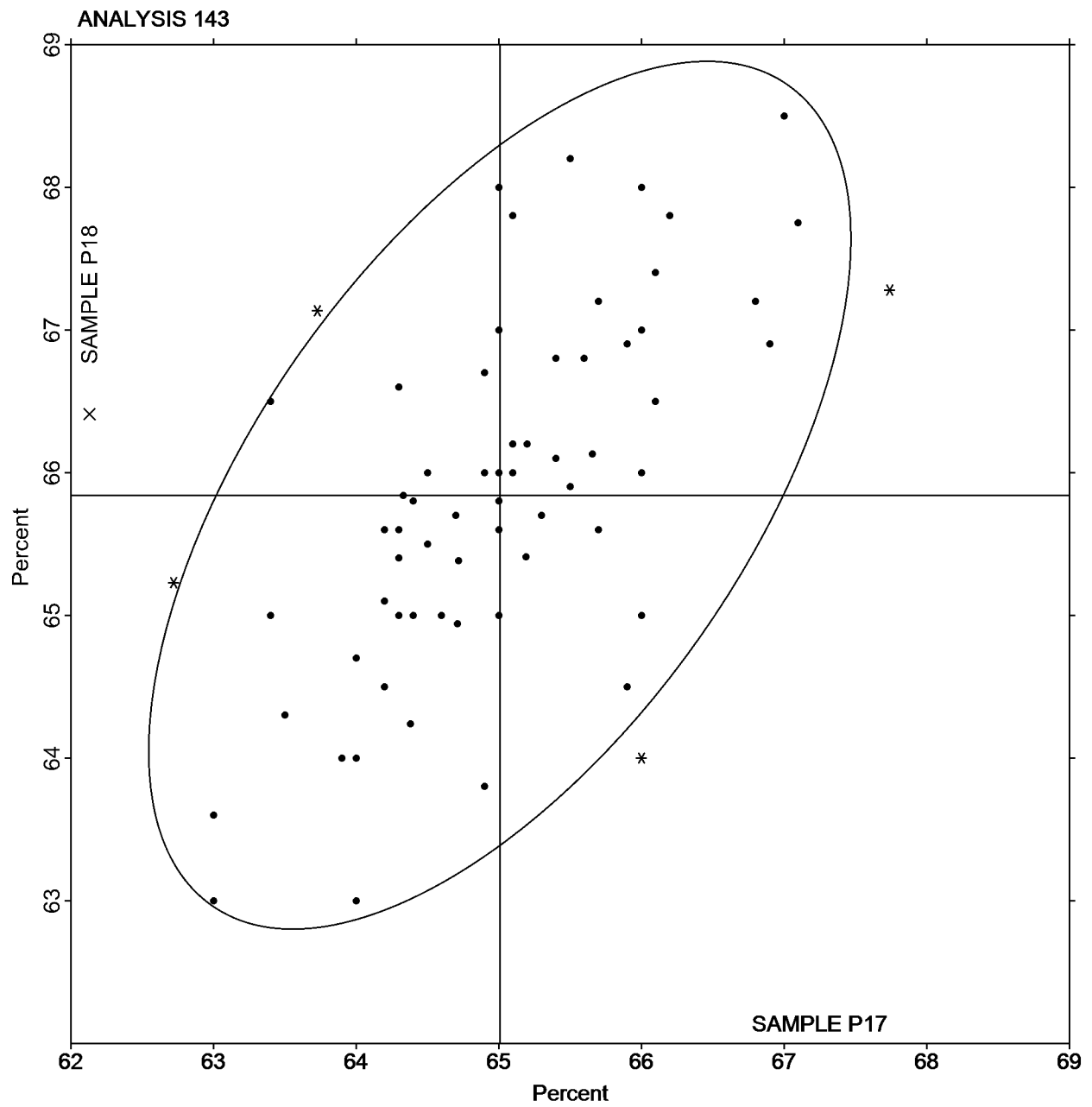
<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>A2Q4CK</b>	X	Data for both samples are high.
<b>AHBBCH</b>	X	Data for both samples are low.
<b>EE3JB8</b>	X	Data for both samples are low.
<b>HRC638</b>	X	Data for sample P17 are low.
<b>LLVMBG</b>	X	Data for sample P17 are high.
<b>VDB3D2</b>	X	Data for sample P18 are low.
<b>WWK4KR</b>	X	Data for sample P17 are low.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 143  
Reduction of Area (Lab-Machined Round Steel) - Percent  
ASTM E8

**SAMPLE P17**  
**65.01 Percent**

**SAMPLE P18**  
**65.84 Percent**





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 170

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.1623	-0.0079	-1.41	0.1997	-0.0053	-0.69	OE
29K2UW		0.1690	-0.0012	-0.22	0.2045	-0.0005	-0.06	CO
2DQY2F		0.1743	0.0041	0.74	0.2100	0.0050	0.65	OE
2QL2Q3		0.1633	-0.0069	-1.23	0.1930	-0.0120	-1.56	CI
2VU73F	*	0.1863	0.0161	2.88	0.2257	0.0207	2.69	OE
2WBA22		0.1817	0.0114	2.05	0.2193	0.0143	1.87	OE
3GFEFH		0.1735	0.0032	0.58	0.2042	-0.0008	-0.10	OE
3T49EA		0.1657	-0.0046	-0.82	0.2007	-0.0043	-0.56	OE
3YBCAW		0.1687	-0.0016	-0.28	0.1933	-0.0117	-1.52	OE
4BC78Y		0.1681	-0.0021	-0.38	0.1982	-0.0068	-0.89	DR
4NQ3MN		0.1713	0.0011	0.20	0.2080	0.0030	0.39	OE
4RK8QT		0.1600	-0.0102	-1.83	0.1867	-0.0183	-2.39	OE
62LE6L		0.1720	0.0018	0.32	0.1977	-0.0073	-0.95	OE
673WGM		0.1640	-0.0062	-1.12	0.2073	0.0023	0.31	OE
69PKV9		0.1773	0.0071	1.27	0.2127	0.0077	1.00	OE
6ZDBNG		0.1717	0.0014	0.26	0.2093	0.0043	0.57	OE
7KF9BM		0.1671	-0.0032	-0.57	0.2025	-0.0025	-0.32	OE
7RZ8ZZ		0.1558	-0.0144	-2.58	0.2028	-0.0022	-0.28	OE
7UYRM8		0.1667	-0.0036	-0.64	0.1973	-0.0077	-1.00	OE
82EU6T		0.1633	-0.0069	-1.23	0.1913	-0.0137	-1.78	CO
87QDT3		0.1707	0.0004	0.08	0.2063	0.0013	0.17	OE
8BGDN4		0.1657	-0.0046	-0.82	0.2020	-0.0030	-0.39	OE
8HQ4DA		0.1703	0.0001	0.02	0.2030	-0.0020	-0.26	OE
8UU7GX		0.1610	-0.0092	-1.65	0.1930	-0.0120	-1.56	OE
94J6R2		0.1760	0.0058	1.03	0.2063	0.0013	0.17	OE
97NR9E		0.1653	-0.0049	-0.88	0.2017	-0.0033	-0.43	OE
9PKNY3		0.1600	-0.0102	-1.83	0.2000	-0.0050	-0.65	GD
A2Q4CK		0.1771	0.0069	1.24	0.2073	0.0023	0.30	OE
A8YVWW		0.1721	0.0019	0.34	0.2064	0.0014	0.18	DR
AHBBCH		0.1697	-0.0006	-0.10	0.2077	0.0027	0.35	OE
ALLH7H		0.1737	0.0035	0.62	0.2037	-0.0013	-0.16	DR
AXBL62	X	0.1493	-0.0209	-3.74	0.1797	-0.0253	-3.30	OE
B7GERV		0.1643	-0.0059	-1.06	0.1953	-0.0097	-1.26	OE
BM92L2		0.1747	0.0044	0.80	0.2010	-0.0040	-0.52	OE
BQQWAX		0.1680	-0.0022	-0.40	0.2020	-0.0030	-0.39	CI
BVXGYQ		0.1697	-0.0006	-0.10	0.2080	0.0030	0.39	OE
BVZP7V		0.1753	0.0051	0.91	0.2133	0.0083	1.09	OE
CEUWAF		0.1763	0.0060	1.08	0.2101	0.0051	0.67	OE
CHQAKZ		0.1640	-0.0062	-1.12	0.1940	-0.0110	-1.43	CI
CQ6R2J		0.1733	0.0031	0.56	0.2167	0.0117	1.52	OE
CRAUJ4		0.1593	-0.0109	-1.95	0.1993	-0.0057	-0.74	GD
D2E282		0.1667	-0.0036	-0.64	0.1993	-0.0057	-0.74	CI
D3CC8D	*	0.1747	0.0044	0.80	0.1953	-0.0097	-1.26	OE
D92RY6		0.1713	0.0011	0.20	0.2093	0.0043	0.57	OE
DEPCZX		0.1717	0.0014	0.26	0.2020	-0.0030	-0.39	OE
DGQ267		0.1847	0.0144	2.59	0.2077	0.0027	0.35	OE
DL6U2Q		0.1680	-0.0022	-0.40	0.2023	-0.0027	-0.35	CI
DQKBLG		0.1621	-0.0081	-1.45	0.1892	-0.0158	-2.06	OE
EEXB6Q		0.1674	-0.0029	-0.51	0.2076	0.0026	0.34	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 170

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
EFTNWR		0.1737	0.0034	0.62	0.2107	0.0057	0.74	OE
EMCH33		0.1720	0.0018	0.32	0.2060	0.0010	0.13	CI
ENNRZM	X	0.1210	-0.0492	-8.82	0.1997	-0.0053	-0.69	CO
EUW8F6		0.1590	-0.0112	-2.01	0.1943	-0.0107	-1.39	AE
FCWBYU		0.1683	-0.0019	-0.34	0.2033	-0.0017	-0.22	OE
FGN24X		0.1711	0.0009	0.16	0.2082	0.0032	0.42	OE
FJAB9C		0.1683	-0.0019	-0.34	0.2020	-0.0030	-0.39	OE
FV6MGG		0.1807	0.0104	1.87	0.2193	0.0143	1.87	OE
GDG9KH		0.1663	-0.0039	-0.70	0.2050	0.0000	0.00	OE
GHQBKT		0.1717	0.0014	0.26	0.2073	0.0023	0.31	CI
GRWFBN		0.1709	0.0006	0.11	0.2018	-0.0032	-0.41	OE
H2HUV7		0.1712	0.0010	0.18	0.2077	0.0027	0.35	OE
HNYJUF		0.1680	-0.0022	-0.40	0.2067	0.0017	0.22	OE
JKFVQW		0.1716	0.0014	0.25	0.2082	0.0032	0.42	OE
JWNPT9		0.1732	0.0029	0.52	0.2032	-0.0018	-0.23	OE
K8D2CC		0.1800	0.0098	1.75	0.2167	0.0117	1.52	OE
K9C9PM		0.1673	-0.0029	-0.52	0.2030	-0.0020	-0.26	CI
KCBG48		0.1725	0.0023	0.41	0.2149	0.0099	1.29	OE
KG92Y3		0.1730	0.0028	0.50	0.2107	0.0057	0.74	OE
KXWCNR		0.1690	-0.0012	-0.22	0.1982	-0.0068	-0.88	CI
KYV7YG		0.1657	-0.0046	-0.82	0.2010	-0.0040	-0.52	OE
LHZRU3		0.1673	-0.0029	-0.52	0.2040	-0.0010	-0.13	CO
LLB2KC	X	0.1467	-0.0236	-4.22	0.1710	-0.0340	-4.43	OE
LYLZNW	*	0.1850	0.0148	2.65	0.2180	0.0130	1.70	OE
M76GZ8		0.1600	-0.0102	-1.83	0.1900	-0.0150	-1.95	OE
MB2NFH		0.1763	0.0061	1.09	0.2137	0.0087	1.13	DR
MJWNUA		0.1707	0.0004	0.08	0.2007	-0.0043	-0.56	CO
MXMTJ6		0.1673	-0.0029	-0.52	0.1980	-0.0070	-0.91	OE
MXPUTQ		0.1703	0.0001	0.02	0.1970	-0.0080	-1.04	CO
N3L6WH		0.1648	-0.0054	-0.97	0.2058	0.0008	0.10	AE
N8UMVB		0.1680	-0.0022	-0.40	0.2033	-0.0017	-0.22	OE
N9F2VZ		0.1663	-0.0039	-0.70	0.2033	-0.0017	-0.22	OE
NCZJYJ		0.1662	-0.0041	-0.73	0.1991	-0.0059	-0.77	CI
NEPDXR		0.1576	-0.0126	-2.26	0.2178	0.0128	1.67	OE
NHRNWU		0.1697	-0.0006	-0.10	0.2013	-0.0037	-0.48	OE
NNEVJM		0.1710	0.0008	0.14	0.2163	0.0113	1.48	GD
NVU6W4		0.1710	0.0008	0.14	0.2077	0.0027	0.35	GD
P8JLZV		0.1733	0.0031	0.56	0.2077	0.0027	0.35	OE
PFZFFK		0.1680	-0.0022	-0.40	0.2053	0.0003	0.04	CO
PYD6MN		0.1736	0.0034	0.60	0.2045	-0.0005	-0.06	OE
PZM6PB		0.1707	0.0004	0.08	0.2020	-0.0030	-0.39	OE
QHZHPY		0.1760	0.0058	1.03	0.2017	-0.0033	-0.43	OE
RJ6EN9		0.1762	0.0059	1.06	0.2034	-0.0016	-0.20	XX
RNNDN	*	0.1653	-0.0049	-0.88	0.2117	0.0067	0.87	CI
RRKM3C		0.1767	0.0064	1.15	0.2147	0.0097	1.26	OE
RYN97D		0.1687	-0.0016	-0.28	0.2047	-0.0003	-0.04	CI
T6M4EC		0.1637	-0.0066	-1.17	0.1963	-0.0087	-1.13	CI
TEE38P		0.1763	0.0061	1.09	0.2153	0.0103	1.35	OE
TEED7U	X	0.1603	-0.0099	-1.77	0.2310	0.0260	3.39	CO

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 170

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ULPZD2		0.1733	0.0031	0.56	0.2000	-0.0050	-0.65	OE
UPB9WF		0.1797	0.0094	1.69	0.2137	0.0087	1.13	OE
UXYR2V		0.1780	0.0078	1.39	0.1960	-0.0090	-1.17	XX
UY8ED9		0.1700	-0.0002	-0.04	0.2063	0.0013	0.17	OE
V2AU2Q		0.1685	-0.0017	-0.31	0.2073	0.0023	0.29	OE
V884T4		0.1730	0.0028	0.50	0.2063	0.0013	0.17	OE
VAGCZ3	*	0.1787	0.0084	1.51	0.2267	0.0217	2.82	OE
VQGAVL		0.1680	-0.0023	-0.40	0.2002	-0.0048	-0.62	OE
VVWB9X		0.1710	0.0008	0.14	0.1977	-0.0073	-0.95	OE
W8GNMY		0.1750	0.0048	0.85	0.2130	0.0080	1.04	CI
WP4JGF		0.1673	-0.0029	-0.52	0.2067	0.0017	0.22	OE
XM74HJ		0.1797	0.0094	1.69	0.2223	0.0173	2.26	OE
XTWDTG		0.1633	-0.0069	-1.23	0.1990	-0.0060	-0.78	XX
XWYTJY		0.1690	-0.0012	-0.22	0.2043	-0.0007	-0.09	CO
XZ2KYQ		0.1837	0.0134	2.41	0.2210	0.0160	2.08	OE
Y787B8		0.1763	0.0061	1.09	0.2167	0.0117	1.52	GD
Y7BAZP		0.1703	0.0001	0.02	0.2063	0.0013	0.17	OE
Y7HA8K		0.1663	-0.0039	-0.70	0.2040	-0.0010	-0.13	DR
Y9L32J		0.1573	-0.0129	-2.31	0.1887	-0.0163	-2.13	OE
YWCBQW		0.1683	-0.0019	-0.34	0.2050	0.0000	0.00	CI
ZPBJU8		0.1703	0.0001	0.02	0.2097	0.0047	0.61	OE
ZQXEHT		0.1720	0.0018	0.32	0.1850	-0.0200	-2.60	OE
ZV2KLJ		0.1657	-0.0046	-0.82	0.2067	0.0017	0.22	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.1702	Percent	0.2050	Percent
Std Dev Btwn Labs	0.0056	Percent	0.0077	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 112 of 121 reporting participants

Cycle 105  
1st Q, 2014

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

**AXBL62**   X   Data for both samples are low.

**ENNRZM**   X   Data for sample L17 are low. Inconsistent within the determinations of sample L17.

**LLB2KC**   X   Data for both samples are low. Inconsistent within the determinations of sample L17.

**TEED7U**   X   Data for sample L18 are high.

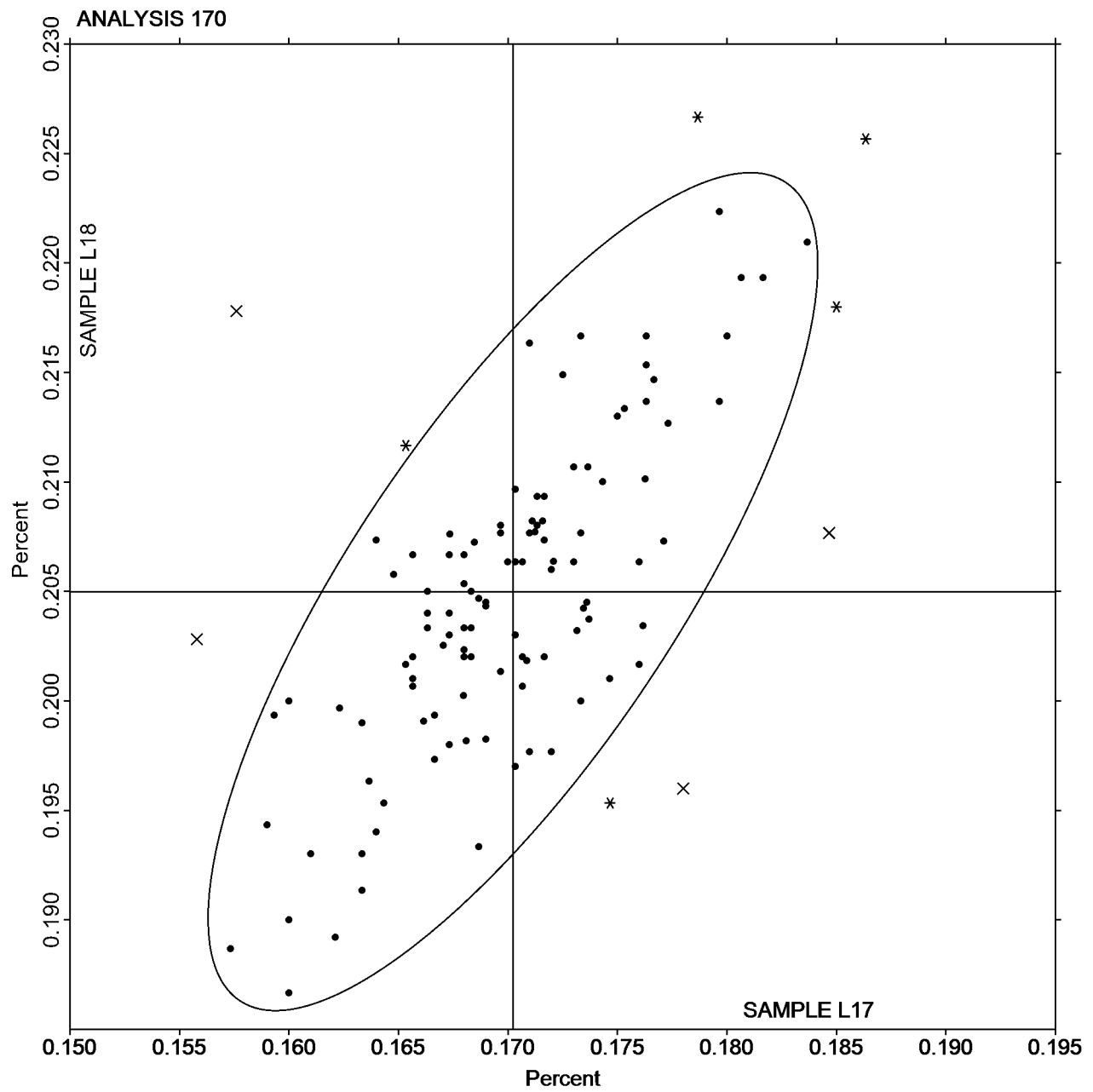
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 170

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

**SAMPLE L17**  
**0.1702 Percent**

**SAMPLE L18**  
**0.2050 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 171

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.8260	0.0089	0.84	0.9400	0.0166	1.29	OE
29K2UW		0.8196	0.0025	0.23	0.9199	-0.0034	-0.27	OE
2DQY2F		0.8157	-0.0014	-0.13	0.9217	-0.0017	-0.13	OE
2QL2Q3		0.8263	0.0093	0.87	0.9373	0.0140	1.09	IC
2VU73F		0.8177	0.0006	0.05	0.9323	0.0090	0.70	OE
2WBA22		0.8207	0.0036	0.34	0.9250	0.0016	0.13	OE
3GFEFH		0.8185	0.0014	0.13	0.9164	-0.0070	-0.54	OE
3T49EA		0.8217	0.0046	0.43	0.9333	0.0100	0.77	OE
3YBCAW	*	0.8400	0.0229	2.15	0.9557	0.0323	2.51	OE
4BC78Y		0.8139	-0.0032	-0.30	0.9155	-0.0078	-0.61	DR
4NQ3MN		0.8073	-0.0097	-0.92	0.9113	-0.0120	-0.94	OE
4RK8QT		0.8233	0.0063	0.59	0.9333	0.0100	0.77	OE
62LE6L		0.8050	-0.0121	-1.14	0.9190	-0.0044	-0.34	OE
673WGM		0.8367	0.0196	1.84	0.9467	0.0233	1.81	OE
69PKV9		0.8127	-0.0044	-0.41	0.9193	-0.0040	-0.31	OE
6ZDBNG		0.8327	0.0156	1.46	0.9343	0.0110	0.85	OE
7KF9BM		0.8153	-0.0018	-0.17	0.9188	-0.0045	-0.35	OE
7RZ8ZZ		0.8317	0.0146	1.37	0.9425	0.0191	1.49	OE
7UYRM8		0.8200	0.0029	0.27	0.9233	0.0000	0.00	OE
82EU6T		0.8226	0.0056	0.52	0.9275	0.0041	0.32	OE
87QDT3		0.8157	-0.0014	-0.13	0.9213	-0.0020	-0.16	OE
8BGDN4		0.8053	-0.0117	-1.10	0.8987	-0.0247	-1.92	OE
8HQ4DA		0.8143	-0.0027	-0.26	0.9200	-0.0034	-0.26	OE
8UU7GX		0.8057	-0.0114	-1.07	0.9187	-0.0047	-0.37	OE
94J6R2		0.8421	0.0250	2.35	0.9497	0.0264	2.05	OE
97NR9E	*	0.8127	-0.0044	-0.41	0.9037	-0.0197	-1.53	OE
9PKNY3	*	0.8467	0.0296	2.78	0.9500	0.0266	2.07	GD
A2Q4CK	*	0.8185	0.0014	0.13	0.9400	0.0167	1.30	OE
A8YVWW		0.8078	-0.0092	-0.87	0.9059	-0.0175	-1.36	DR
AHBBCH	X	0.7553	-0.0617	-5.80	0.8677	-0.0557	-4.33	OE
ALLH7H		0.8232	0.0061	0.57	0.9298	0.0064	0.50	DR
AXBL62		0.8117	-0.0054	-0.51	0.9210	-0.0024	-0.18	OE
B7GERV	X	0.8327	0.0156	1.46	0.9090	-0.0144	-1.12	OE
BM92L2		0.8060	-0.0111	-1.04	0.9113	-0.0120	-0.94	OE
BQQWAX		0.8197	0.0026	0.24	0.9267	0.0033	0.26	DR
BVXGYQ		0.8053	-0.0117	-1.10	0.9220	-0.0014	-0.11	OE
BVZP7V		0.8163	-0.0007	-0.07	0.9197	-0.0037	-0.29	XX
CEUWAF		0.8070	-0.0101	-0.95	0.9054	-0.0180	-1.40	OE
CHQAKZ		0.8193	0.0023	0.21	0.9277	0.0043	0.33	OE
CQ6R2J		0.8173	0.0003	0.02	0.9320	0.0086	0.67	OE
CRAUJ4	X	0.8707	0.0536	5.03	0.8983	-0.0250	-1.95	GD
D2E282		0.8300	0.0129	1.21	0.9110	-0.0124	-0.96	IC
D3CC8D		0.8400	0.0229	2.15	0.9000	-0.0234	-1.82	OE
D92RY6		0.8280	0.0109	1.03	0.9403	0.0170	1.32	OE
DEPCZX	*	0.7890	-0.0281	-2.64	0.8920	-0.0314	-2.44	OE
DGQ267	*	0.8197	0.0026	0.24	0.9093	-0.0140	-1.09	OE
DL6U2Q		0.8210	0.0039	0.37	0.9240	0.0006	0.05	IC
DQKBLG		0.8170	0.0000	0.00	0.9133	-0.0101	-0.78	OE
EEXB6Q		0.8320	0.0150	1.40	0.9435	0.0202	1.57	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 171

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
EFTNWR		0.8073	-0.0097	-0.92	0.9103	-0.0130	-1.01	OE
EMCH33		0.8180	0.0009	0.09	0.9257	0.0023	0.18	OE
ENNRZM		0.8306	0.0135	1.27	0.9350	0.0116	0.90	DR
EUW8F6		0.8193	0.0023	0.21	0.9303	0.0070	0.54	AE
FCWBYU		0.8133	-0.0037	-0.35	0.9210	-0.0024	-0.18	OE
FGN24X		0.8118	-0.0053	-0.50	0.9149	-0.0085	-0.66	OE
FJAB9C	*	0.7917	-0.0254	-2.39	0.9030	-0.0204	-1.58	OE
FV6MGG		0.8203	0.0033	0.31	0.9290	0.0056	0.44	OE
GDG9KH		0.7950	-0.0221	-2.07	0.9053	-0.0180	-1.40	OE
GHQBKT		0.8177	0.0006	0.05	0.9337	0.0103	0.80	OE
GRWFBN		0.8073	-0.0097	-0.92	0.9037	-0.0197	-1.53	OE
H2HUV7		0.8129	-0.0042	-0.40	0.9194	-0.0040	-0.31	OE
HNYJUF		0.8133	-0.0037	-0.35	0.9130	-0.0104	-0.81	OE
JKFVQW		0.8189	0.0018	0.17	0.9252	0.0019	0.15	OE
JWNPT9		0.8173	0.0002	0.02	0.9199	-0.0035	-0.27	OE
K8D2CC		0.8367	0.0196	1.84	0.9533	0.0300	2.33	OE
K9C9PM		0.8038	-0.0133	-1.25	0.9158	-0.0075	-0.59	OE
KCBG48		0.8209	0.0038	0.36	0.9332	0.0099	0.77	OE
KG92Y3		0.8193	0.0023	0.21	0.9337	0.0103	0.80	OE
KXWCNR	X	1.005	0.1876	17.62	0.9567	0.0333	2.59	WD
KYV7YG		0.8143	-0.0027	-0.26	0.9180	-0.0054	-0.42	OE
LHZRU3		0.8300	0.0129	1.21	0.9343	0.0110	0.85	OE
LLB2KC	X	0.4013	-0.4157	-39.06	0.5467	-0.3767	-29.28	OE
LYLZNW		0.8087	-0.0084	-0.79	0.9093	-0.0140	-1.09	OE
M76GZ8		0.8100	-0.0071	-0.67	0.9200	-0.0034	-0.26	OE
MB2NFH		0.8183	0.0013	0.12	0.9213	-0.0020	-0.16	DR
MJWNUA		0.8093	-0.0077	-0.73	0.9237	0.0003	0.02	OE
MXMTJ6		0.8157	-0.0014	-0.13	0.9140	-0.0094	-0.73	OE
MXPUTQ		0.8140	-0.0031	-0.29	0.9167	-0.0067	-0.52	IC
N3L6WH		0.8223	0.0053	0.49	0.9327	0.0094	0.73	AE
N8UMVB		0.8130	-0.0041	-0.38	0.9200	-0.0034	-0.26	OE
N9F2VZ		0.8080	-0.0091	-0.85	0.9173	-0.0060	-0.47	OE
NCZJYJ		0.8109	-0.0061	-0.58	0.9279	0.0045	0.35	OE
NEPDXR		0.8161	-0.0010	-0.09	0.9235	0.0001	0.01	OE
NHRNWU		0.8133	-0.0037	-0.35	0.9190	-0.0044	-0.34	OE
NNEVJM	*	0.7897	-0.0274	-2.58	0.8930	-0.0304	-2.36	GD
NVU6W4		0.8117	-0.0054	-0.51	0.9280	0.0046	0.36	GD
P8JLZV		0.8180	0.0009	0.09	0.9267	0.0033	0.26	OE
PFZFFK		0.8297	0.0126	1.18	0.9403	0.0170	1.32	OE
PYD6MN		0.8155	-0.0015	-0.15	0.9171	-0.0062	-0.48	OE
PZM6PB		0.8333	0.0163	1.53	0.9467	0.0233	1.81	OE
QHZHPY		0.8200	0.0029	0.27	0.9190	-0.0044	-0.34	OE
RJ6EN9		0.8159	-0.0012	-0.11	0.9159	-0.0075	-0.58	XX
RNNDCN		0.8213	0.0043	0.40	0.9187	-0.0047	-0.37	GD
RRKM3C		0.8287	0.0116	1.09	0.9277	0.0043	0.33	OE
RYN97D		0.8193	0.0023	0.21	0.9263	0.0030	0.23	OE
T6M4EC		0.8170	-0.0001	-0.01	0.9247	0.0013	0.10	OE
TEE38P		0.8107	-0.0064	-0.60	0.9263	0.0030	0.23	OE
TEED7U		0.8117	-0.0054	-0.51	0.9130	-0.0104	-0.81	GD

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 171

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ULPZD2		0.8120	-0.0051	-0.48	0.9093	-0.0140	-1.09	OE
UPB9WF		0.8287	0.0116	1.09	0.9393	0.0160	1.24	OE
UXYR2V		0.8280	0.0109	1.03	0.9290	0.0056	0.44	XX
UY8ED9		0.8203	0.0033	0.31	0.9217	-0.0017	-0.13	OE
V2AU2Q		0.8162	-0.0009	-0.08	0.9227	-0.0007	-0.05	OE
V884T4		0.8343	0.0173	1.62	0.9477	0.0243	1.89	OE
VAGCZ3		0.8033	-0.0137	-1.29	0.9367	0.0133	1.03	OE
VQGAVL		0.7958	-0.0212	-2.00	0.9020	-0.0213	-1.66	OE
VVWB9X		0.8007	-0.0164	-1.54	0.8983	-0.0250	-1.95	OE
W8GNMY		0.8140	-0.0031	-0.29	0.9120	-0.0114	-0.88	OE
WP4JGF		0.8283	0.0113	1.06	0.9073	-0.0160	-1.25	OE
XM74HJ	X	0.8333	0.0163	1.53	0.9660	0.0426	3.31	OE
XTWDTG		0.8013	-0.0157	-1.48	0.9047	-0.0187	-1.45	AE
XWYTJY		0.8161	-0.0010	-0.10	0.9169	-0.0065	-0.50	OE
XZ2KYQ		0.8129	-0.0042	-0.39	0.9207	-0.0027	-0.21	OE
Y787B8		0.8110	-0.0061	-0.57	0.9187	-0.0047	-0.37	GD
Y7BAZP		0.8193	0.0023	0.21	0.9223	-0.0010	-0.08	OE
Y7HA8K		0.8407	0.0236	2.22	0.9420	0.0186	1.45	DR
Y9L32J		0.8383	0.0213	2.00	0.9430	0.0196	1.53	OE
YWCBQW		0.8230	0.0059	0.56	0.9343	0.0110	0.85	OE
ZPBJU8		0.8123	-0.0047	-0.45	0.9177	-0.0057	-0.44	OE
ZQXEHT		0.8033	-0.0137	-1.29	0.9167	-0.0067	-0.52	OE
ZV2KLJ		0.8173	0.0003	0.02	0.9287	0.0053	0.41	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.8171	Percent	0.9234	Percent
Stnd Dev Btwn Labs	0.0106	Percent	0.0129	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 111 of 121 reporting participants



Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>AHBBCH</b>	X	Data for both samples are low. Inconsistent within the determinations of sample L17.
<b>B7GERV</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L17.
<b>CRAUJ4</b>	X	Data for sample L17 are high.
<b>KXWCNR</b>	X	Data for sample L17 are high. Inconsistent within the determinations of both samples.
<b>LLB2KC</b>	X	Data for both samples are low.
<b>XM74HJ</b>	X	Data for sample L18 are high.

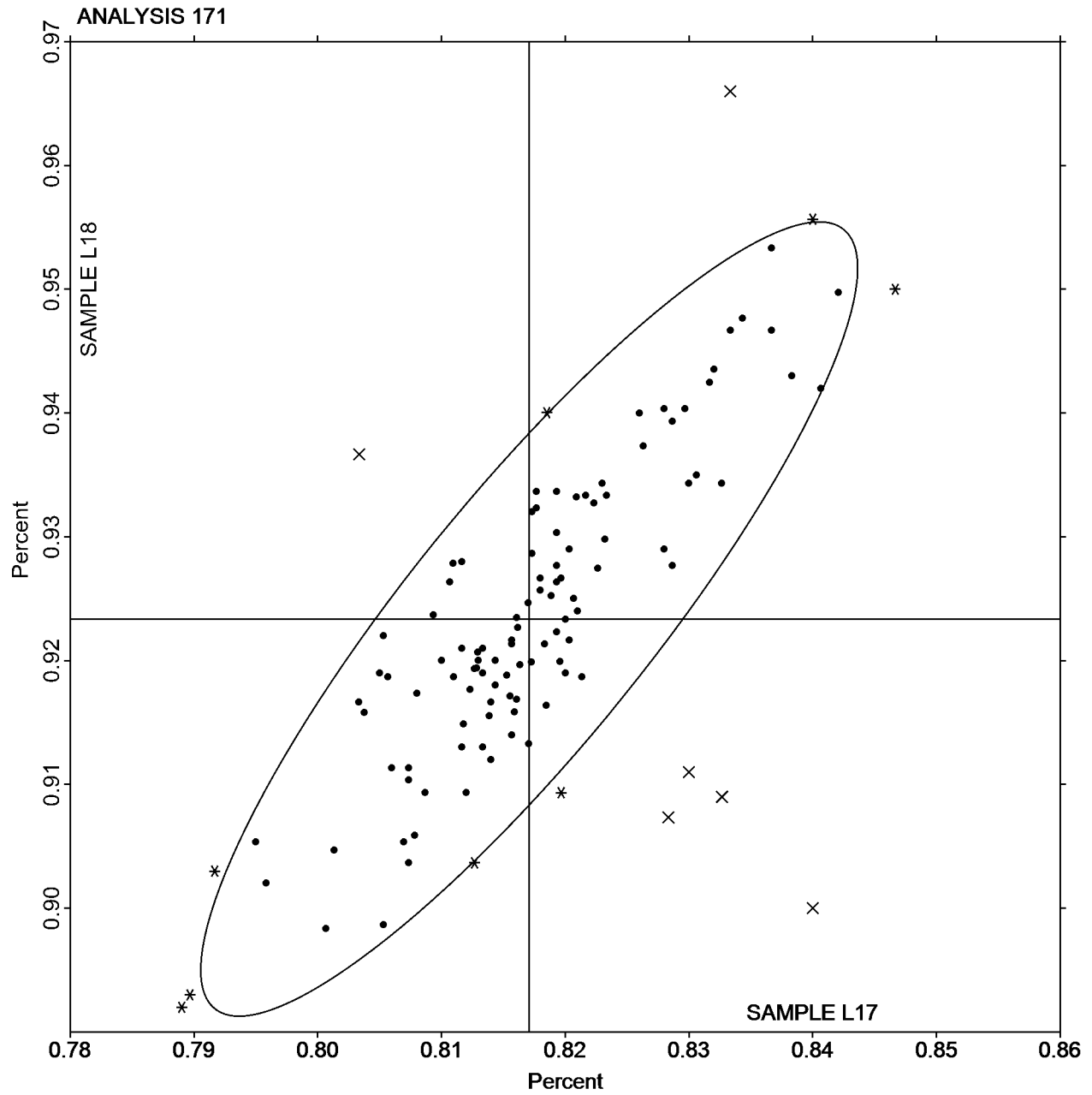
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 171

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

**SAMPLE L17**  
**0.8171 Percent**

**SAMPLE L18**  
**0.9234 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 172

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX	*	0.0187	-0.0009	-0.82	0.00920	0.00177	2.32	OE
29K2UW		0.0200	0.0003	0.31	0.00770	0.00027	0.35	OE
2DQY2F		0.0203	0.0007	0.64	0.00900	0.00157	2.05	OE
2QL2Q3		0.0200	0.0004	0.34	0.00687	-0.00056	-0.74	IC
2VU73F	X	0.0124	-0.0073	-6.50	0.00523	-0.00220	-2.88	OE
2WBA22		0.0199	0.0003	0.25	0.00770	0.00027	0.35	OE
3GFEFH		0.0197	0.0001	0.07	0.00663	-0.00080	-1.04	OE
3T49EA		0.0217	0.0020	1.84	0.00900	0.00157	2.05	OE
3YBCAW		0.0180	-0.0016	-1.45	0.00700	-0.00043	-0.56	OE
4NQ3MN		0.0181	-0.0016	-1.39	0.00660	-0.00083	-1.09	OE
4RK8QT		0.0194	-0.0002	-0.20	0.00737	-0.00006	-0.08	OE
62LE6L		0.0197	0.0001	0.10	0.00707	-0.00036	-0.48	OE
673WGM		0.0200	0.0004	0.34	0.00767	0.00024	0.31	XX
69PKV9		0.0196	0.0000	0.01	0.00733	-0.00010	-0.13	OE
6ZDBNG		0.0198	0.0002	0.19	0.00663	-0.00080	-1.04	OE
7KF9BM		0.0195	-0.0002	-0.14	0.00677	-0.00066	-0.87	OE
7RZ8ZZ		0.0193	-0.0003	-0.26	0.00718	-0.00025	-0.32	OE
82EU6T		0.0194	-0.0002	-0.17	0.00717	-0.00026	-0.34	OE
87QDT3		0.0194	-0.0002	-0.17	0.00757	0.00014	0.18	OE
8BGDN4		0.0170	-0.0026	-2.35	0.00900	0.00157	2.05	OE
8HQ4DA		0.0185	-0.0011	-0.97	0.00643	-0.00100	-1.30	OE
8UU7GX	X	0.0150	-0.0046	-4.14	0.0110	0.00357	4.67	OE
94J6R2		0.0200	0.0003	0.31	0.00710	-0.00033	-0.43	OE
97NR9E		0.0169	-0.0027	-2.44	0.00657	-0.00086	-1.13	OE
9PKNY3		0.0197	0.0000	0.04	0.00733	-0.00010	-0.13	GD
A2Q4CK		0.0204	0.0008	0.70	0.00793	0.00050	0.66	OE
AHBBCH	*	0.0177	-0.0020	-1.75	0.00857	0.00114	1.49	OE
AXBL62		0.0198	0.0002	0.19	0.00733	-0.00010	-0.13	OE
B7GERV	X	0.0238	0.0041	3.72	0.0127	0.00530	6.94	OE
BM92L2	X	0.0238	0.0042	3.78	0.00723	-0.00020	-0.26	OE
BQQWAX		0.0210	0.0014	1.24	0.00800	0.00057	0.75	DR
BVXGYQ		0.0200	0.0003	0.31	0.00699	-0.00044	-0.58	OE
BVZP7V	X	0.0233	0.0036	3.27	0.0105	0.00304	3.97	XX
CEUWAF		0.0194	-0.0002	-0.19	0.00664	-0.00079	-1.03	OE
CHQAKZ		0.0203	0.0007	0.64	0.00690	-0.00053	-0.69	OE
CQ6R2J		0.0190	-0.0006	-0.55	0.00763	0.00020	0.27	OE
CRAUJ4	X	0.0213	0.0017	1.54	0.0100	0.00257	3.36	GD
D2E282	*	0.0167	-0.0030	-2.64	0.00600	-0.00143	-1.87	IC
D3CC8D		0.0193	-0.0003	-0.26	0.00833	0.00090	1.18	OE
D92RY6	*	0.0224	0.0028	2.49	0.00740	-0.00003	-0.04	OE
DEPCZX		0.0187	-0.0009	-0.79	0.00717	-0.00026	-0.34	OE
DGQ267		0.0193	-0.0003	-0.26	0.00800	0.00057	0.75	OE
DL6U2Q		0.0193	-0.0003	-0.26	0.00707	-0.00036	-0.48	IC
DQKBLG		0.0197	0.0000	0.04	0.00730	-0.00013	-0.17	OE
EEXB6Q		0.0202	0.0006	0.55	0.00763	0.00020	0.27	OE
EFTNWR		0.0193	-0.0003	-0.26	0.00700	-0.00043	-0.56	OE
EMCH33		0.0193	-0.0003	-0.28	0.00850	0.00107	1.40	OE
ENNRZM		0.0188	-0.0008	-0.73	0.00773	0.00030	0.40	DR
EUW8F6	X	0.0180	-0.0016	-1.45	0.0107	0.00330	4.32	AE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 172

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
FCWBYU		0.0193	-0.0004	-0.31	0.00770	0.00027	0.35	OE
FGN24X		0.0193	-0.0004	-0.32	0.00769	0.00026	0.34	OE
FJAB9C	X	0.0161	-0.0036	-3.18	0.00360	-0.00383	-5.01	OE
FV6MGG		0.0193	-0.0003	-0.26	0.00733	-0.00010	-0.13	OE
GDG9KH		0.0187	-0.0009	-0.82	0.00653	-0.00090	-1.17	OE
GHQBKT		0.0198	0.0002	0.19	0.00767	0.00024	0.31	OE
GRWFBN		0.0209	0.0012	1.12	0.00780	0.00037	0.48	OE
H2HUV7		0.0197	0.0000	0.04	0.00780	0.00037	0.48	OE
HNYJUF		0.0194	-0.0002	-0.20	0.00860	0.00117	1.53	OE
JKFVQW		0.0200	0.0004	0.37	0.00770	0.00027	0.35	OE
JWNPT9		0.0205	0.0009	0.78	0.00759	0.00016	0.21	OE
K8D2CC		0.0213	0.0017	1.54	0.00767	0.00024	0.31	OE
K9C9PM		0.0211	0.0015	1.34	0.00818	0.00075	0.98	OE
KCBG48		0.0172	-0.0024	-2.17	0.00603	-0.00140	-1.83	OE
KG92Y3		0.0204	0.0008	0.73	0.00813	0.00070	0.92	OE
KXWCNR	X	0.00567	-0.0140	-12.50	0.00367	-0.00376	-4.93	WD
KYV7YG		0.0181	-0.0015	-1.36	0.00777	0.00034	0.44	OE
LHZRU3		0.0190	-0.0006	-0.55	0.00633	-0.00110	-1.44	OE
LLB2KC	X	0.0267	0.0070	6.32	0.0120	0.00457	5.98	OE
LYLZNW		0.0203	0.0007	0.64	0.00800	0.00057	0.75	OE
M76GZ8		0.0200	0.0004	0.34	0.00600	-0.00143	-1.87	OE
MB2NFH		0.0205	0.0009	0.82	0.00870	0.00127	1.66	DR
MJWNUA		0.0200	0.0004	0.34	0.00800	0.00057	0.75	OE
MXMTJ6		0.0202	0.0005	0.49	0.00757	0.00014	0.18	OE
MXPUTQ		0.0193	-0.0004	-0.31	0.00780	0.00037	0.48	IC
N3L6WH		0.0212	0.0015	1.39	0.00723	-0.00020	-0.26	AE
N8UMVB		0.0200	0.0004	0.34	0.00800	0.00057	0.75	OE
N9F2VZ		0.0203	0.0007	0.64	0.00633	-0.00110	-1.44	OE
NCZJYJ		0.0188	-0.0008	-0.73	0.00693	-0.00050	-0.65	OE
NEPDXR		0.0203	0.0007	0.61	0.00883	0.00140	1.84	OE
NHRNWU		0.0185	-0.0011	-1.00	0.00643	-0.00100	-1.30	OE
NNEVJM	X	0.0190	-0.0006	-0.55	0.00467	-0.00276	-3.62	GD
NVU6W4	X	0.0180	-0.0016	-1.45	0.0117	0.00424	5.55	GD
P8JLZV		0.0217	0.0020	1.84	0.00843	0.00100	1.31	OE
PFZFFK		0.0206	0.0010	0.91	0.00737	-0.00006	-0.08	OE
PYD6MN	*	0.0171	-0.0025	-2.26	0.00597	-0.00146	-1.92	OE
PZM6PB		0.0190	-0.0006	-0.55	0.00800	0.00057	0.75	OE
QHZHPY		0.0208	0.0012	1.06	0.00923	0.00180	2.36	OE
RJ6EN9		0.0193	-0.0003	-0.26	0.00743	0.00000	0.00	XX
RNND CN		0.0217	0.0020	1.84	0.00733	-0.00010	-0.13	GD
RRKM3C		0.0183	-0.0013	-1.15	0.00800	0.00057	0.75	OE
RYN97D		0.0199	0.0002	0.22	0.00707	-0.00036	-0.48	OE
T6M4EC		0.0193	-0.0003	-0.26	0.00670	-0.00073	-0.96	OE
TEE38P		0.0205	0.0008	0.76	0.00677	-0.00066	-0.87	OE
TEED7U	*	0.0170	-0.0026	-2.35	0.00800	0.00057	0.75	GD
ULPZD2		0.0190	-0.0006	-0.55	0.00667	-0.00076	-1.00	OE
UPB9WF	X	0.1850	0.1654	148.20	0.00733	-0.00010	-0.13	OE
UXYR2V		0.0194	-0.0002	-0.20	0.00620	-0.00123	-1.61	XX
UY8ED9		0.0186	-0.0011	-0.94	0.00673	-0.00070	-0.91	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 172

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V2AU2Q		0.0188	-0.0009	-0.77	0.00644	-0.00099	-1.30	OE
V884T4	X	0.0243	0.0047	4.23	0.00970	0.00227	2.97	OE
VAGCZ3	*	0.0183	-0.0013	-1.15	0.00890	0.00147	1.92	OE
VQGAVL		0.0206	0.0010	0.91	0.00718	-0.00025	-0.33	OE
VVWB9X	X	0.0230	0.0034	3.03	0.0100	0.00257	3.36	OE
W8GNMY		0.0210	0.0014	1.27	0.00660	-0.00083	-1.09	IC
WP4JGF		0.0206	0.0009	0.85	0.00770	0.00027	0.35	OE
XM74HJ		0.0187	-0.0010	-0.85	0.00700	-0.00043	-0.56	XX
XTWDTG		0.0187	-0.0010	-0.85	0.00657	-0.00086	-1.13	AE
XWYTJY		0.0196	0.0000	0.01	0.00787	0.00044	0.57	OE
XZ2KYQ		0.0209	0.0013	1.17	0.00876	0.00133	1.74	OE
Y787B8	*	0.0229	0.0032	2.91	0.00853	0.00110	1.44	GD
Y7BAZP		0.0193	-0.0003	-0.26	0.00733	-0.00010	-0.13	OE
Y7HA8K	X	0.0160	-0.0036	-3.24	0.00600	-0.00143	-1.87	DR
Y9L32J		0.0203	0.0007	0.64	0.00700	-0.00043	-0.56	OE
YWCBQW		0.0196	-0.0001	-0.05	0.00703	-0.00040	-0.52	OE
ZPBJU8		0.0200	0.0004	0.34	0.00733	-0.00010	-0.13	OE
ZQXEHT	X	0.0120	-0.0076	-6.83	0.00767	0.00024	0.31	OE
ZV2KLJ		0.0189	-0.0008	-0.67	0.00707	-0.00036	-0.48	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.0196	Percent	0.00743	Percent
Stnd Dev Btwn Labs	0.0011	Percent	0.00076	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 99 of 117 reporting participants

Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>2VU73F</b>	X	Data for both samples are low.
<b>8UU7GX</b>	X	Data for sample L17 are low and data for sample L18 are high.
<b>B7GERV</b>	X	Data for both samples are high. Inconsistent within the determinations of sample L18.
<b>BM92L2</b>	X	Data for sample L17 are high. Inconsistent within the determinations of sample L18.
<b>BVZP7V</b>	X	Data for both samples are high. Inconsistent within the determinations of both samples.
<b>CRAUJ4</b>	X	Data for sample L18 are high.
<b>EUW8F6</b>	X	Data for sample L18 are high.
<b>FJAB9C</b>	X	Data for both samples are low.
<b>KXWCNR</b>	X	Data for both samples are low. Inconsistent within the determinations of both samples.
<b>LLB2KC</b>	X	Data for both samples are high.
<b>NNEVJM</b>	X	Data for sample L18 are low.
<b>NVU6W4</b>	X	Data for sample L18 are high.
<b>UPB9WF</b>	X	Data for sample L17 are high.
<b>V884T4</b>	X	Data for both samples are high. Inconsistent within the determinations of both samples.
<b>VVWB9X</b>	X	Data for both samples are high.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 172

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

**Y7HA8K** X Data for sample L17 are low.

**ZQXEHT** X Data for sample L17 are low.

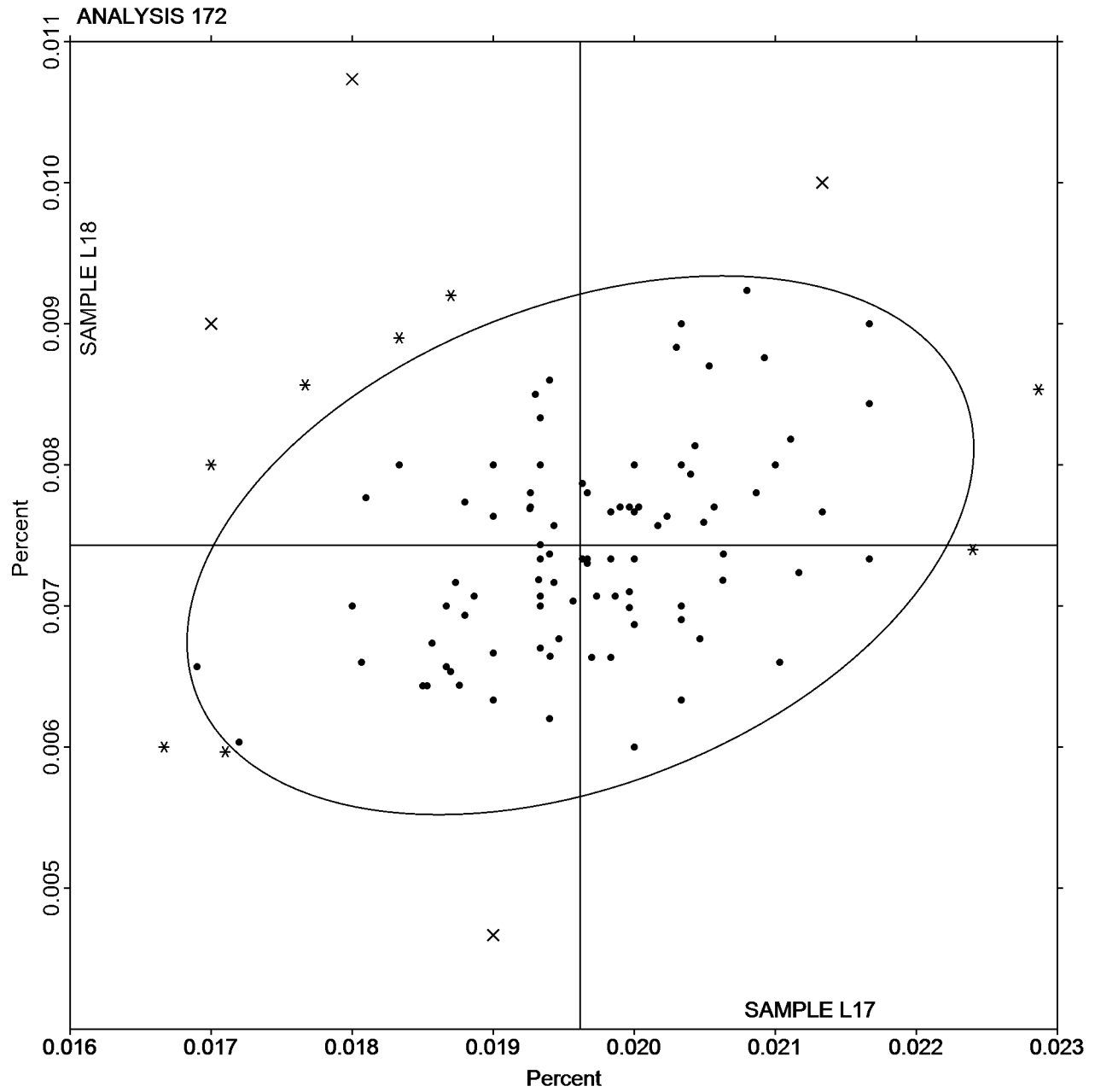
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 172

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

**SAMPLE L17**  
**0.0196 Percent**

**SAMPLE L18**  
**0.00743 Percent**





Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 173

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.0306	0.0017	0.86	0.0307	0.0040	1.92	OE
29K2UW		0.0305	0.0015	0.79	0.0266	-0.0001	-0.06	CO
2DQY2F	X	0.0350	0.0060	3.13	0.0337	0.0070	3.37	OE
2QL2Q3		0.0300	0.0010	0.53	0.0253	-0.0014	-0.65	CI
2VU73F	X	0.0109	-0.0180	-9.37	0.0104	-0.0163	-7.84	OE
2WBA22		0.0313	0.0023	1.19	0.0278	0.0011	0.55	OE
3GFEFH		0.0306	0.0016	0.84	0.0269	0.0002	0.10	OE
3T49EA		0.0297	0.0007	0.36	0.0283	0.0016	0.79	OE
3YBCAW		0.0260	-0.0030	-1.54	0.0247	-0.0020	-0.97	OE
4NQ3MN		0.0285	-0.0004	-0.23	0.0248	-0.0019	-0.89	OE
4RK8QT		0.0320	0.0030	1.57	0.0292	0.0025	1.21	OE
62LE6L		0.0283	-0.0007	-0.35	0.0259	-0.0008	-0.40	OE
673WGM		0.0287	-0.0003	-0.16	0.0250	-0.0017	-0.81	OE
69PKV9		0.0273	-0.0016	-0.85	0.0264	-0.0003	-0.14	OE
6ZDBNG		0.0299	0.0009	0.46	0.0294	0.0027	1.31	OE
7KF9BM		0.0282	-0.0007	-0.38	0.0265	-0.0002	-0.11	OE
7RZ8ZZ		0.0302	0.0012	0.65	0.0303	0.0036	1.74	OE
82EU6T		0.0269	-0.0020	-1.06	0.0226	-0.0041	-1.97	CO
87QDT3		0.0268	-0.0022	-1.13	0.0255	-0.0012	-0.57	OE
8BGDN4		0.0260	-0.0030	-1.54	0.0257	-0.0010	-0.49	OE
8HQ4DA		0.0304	0.0014	0.72	0.0268	0.0001	0.05	OE
8UU7GX		0.0240	-0.0050	-2.58	0.0277	0.0010	0.47	OE
94J6R2		0.0300	0.0010	0.53	0.0273	0.0006	0.31	CO
97NR9E		0.0271	-0.0019	-0.99	0.0272	0.0005	0.26	OE
9PKNY3		0.0260	-0.0030	-1.54	0.0247	-0.0020	-0.97	GD
A2Q4CK		0.0318	0.0028	1.45	0.0266	-0.0001	-0.03	OE
A8YVWW		0.0282	-0.0008	-0.40	0.0273	0.0006	0.28	DR
AHBBCH	X	0.0140	-0.0150	-7.78	0.0137	-0.0130	-6.28	OE
ALLH7H	*	0.0241	-0.0049	-2.53	0.0227	-0.0040	-1.91	DR
AXBL62		0.0305	0.0015	0.79	0.0284	0.0017	0.83	OE
B7GERV		0.0334	0.0044	2.28	0.0305	0.0038	1.82	OE
BM92L2		0.0274	-0.0016	-0.83	0.0241	-0.0026	-1.25	OE
BQQWAX		0.0280	-0.0010	-0.51	0.0250	-0.0017	-0.81	CI
BVXGYQ		0.0284	-0.0006	-0.32	0.0268	0.0001	0.05	OE
BVZP7V		0.0293	0.0003	0.17	0.0289	0.0022	1.07	XX
CEUWAF		0.0298	0.0008	0.44	0.0286	0.0020	0.94	OE
CHQAKZ		0.0300	0.0010	0.53	0.0253	-0.0014	-0.65	CI
CQ6R2J		0.0293	0.0004	0.19	0.0257	-0.0010	-0.49	OE
CRAUJ4		0.0257	-0.0033	-1.72	0.0247	-0.0020	-0.97	GD
D2E282		0.0297	0.0007	0.36	0.0250	-0.0017	-0.81	CI
D3CC8D		0.0330	0.0040	2.09	0.0293	0.0026	1.28	OE
D92RY6	*	0.0340	0.0050	2.61	0.0326	0.0059	2.84	OE
DEPCZX		0.0301	0.0012	0.60	0.0292	0.0025	1.21	OE
DGQ267		0.0290	0.0000	0.01	0.0240	-0.0027	-1.30	OE
DL6U2Q		0.0276	-0.0013	-0.70	0.0253	-0.0014	-0.67	CI
DQKBLG		0.0297	0.0007	0.36	0.0262	-0.0005	-0.25	OE
EEXB6Q		0.0301	0.0011	0.57	0.0294	0.0027	1.29	OE
EFTNWR		0.0310	0.0020	1.05	0.0263	-0.0004	-0.17	OE
EMCH33		0.0282	-0.0008	-0.40	0.0251	-0.0016	-0.77	CI

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 173

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ENNRZM		0.0285	-0.0005	-0.26	0.0269	0.0002	0.09	CO
EUW8F6		0.0337	0.0047	2.44	0.0307	0.0040	1.95	AE
FCWBYU		0.0294	0.0005	0.24	0.0261	-0.0006	-0.27	OE
FGN24X		0.0273	-0.0017	-0.86	0.0251	-0.0016	-0.76	OE
FJAB9C	X	0.0224	-0.0066	-3.43	0.0218	-0.0049	-2.37	OE
FV6MGG		0.0280	-0.0010	-0.51	0.0250	-0.0017	-0.81	OE
GDG9KH		0.0287	-0.0003	-0.16	0.0251	-0.0016	-0.75	OE
GHQBKT		0.0311	0.0022	1.12	0.0276	0.0009	0.44	CI
GRWFBN		0.0306	0.0016	0.84	0.0290	0.0023	1.10	OE
H2HUV7		0.0269	-0.0021	-1.09	0.0252	-0.0015	-0.72	OE
HNYJUF		0.0304	0.0014	0.72	0.0279	0.0012	0.60	OE
JKFVQW		0.0287	-0.0003	-0.14	0.0269	0.0002	0.10	OE
JWNPT9		0.0297	0.0008	0.39	0.0265	-0.0002	-0.09	OE
K8D2CC		0.0297	0.0007	0.36	0.0260	-0.0007	-0.33	OE
K9C9PM		0.0275	-0.0014	-0.75	0.0255	-0.0012	-0.57	CI
KCBG48		0.0287	-0.0003	-0.16	0.0276	0.0009	0.46	OE
KG92Y3		0.0281	-0.0009	-0.45	0.0260	-0.0007	-0.33	OE
KXWCNR	X	0.0371	0.0082	4.24	0.0311	0.0044	2.12	CI
KYV7YG		0.0282	-0.0008	-0.42	0.0279	0.0012	0.57	OE
LHZRU3		0.0270	-0.0020	-1.03	0.0263	-0.0004	-0.17	CO
LLB2KC	X	0.0397	0.0107	5.55	0.0363	0.0096	4.65	OE
LYLZNW		0.0300	0.0010	0.53	0.0277	0.0010	0.47	OE
M76GZ8		0.0300	0.0010	0.53	0.0300	0.0033	1.60	OE
MB2NFH		0.0292	0.0002	0.10	0.0279	0.0012	0.57	DR
MJWNUA		0.0273	-0.0016	-0.85	0.0237	-0.0030	-1.46	CO
MXMTJ6		0.0282	-0.0008	-0.40	0.0267	0.0000	0.01	OE
MXPUTQ		0.0316	0.0026	1.35	0.0262	-0.0005	-0.24	CO
N3L6WH		0.0264	-0.0026	-1.34	0.0247	-0.0020	-0.96	AE
N8UMVB		0.0280	-0.0010	-0.51	0.0250	-0.0017	-0.81	OE
N9F2VZ		0.0270	-0.0020	-1.03	0.0240	-0.0027	-1.30	OE
NCZJYJ		0.0269	-0.0021	-1.09	0.0230	-0.0037	-1.80	CI
NEPDXR		0.0269	-0.0020	-1.06	0.0247	-0.0020	-0.94	OE
NHRNWU		0.0305	0.0015	0.79	0.0267	0.0000	-0.01	OE
NNEVJM		0.0280	-0.0010	-0.51	0.0257	-0.0010	-0.49	GD
NVU6W4		0.0320	0.0030	1.57	0.0300	0.0033	1.60	GD
P8JLZV		0.0273	-0.0016	-0.85	0.0267	0.0000	-0.01	OE
PFZFFK		0.0302	0.0012	0.62	0.0270	0.0003	0.17	CO
PYD6MN		0.0290	0.0000	0.00	0.0283	0.0016	0.78	OE
PZM6PB	X	0.0170	-0.0120	-6.22	0.0157	-0.0110	-5.32	OE
QHZHPY		0.0291	0.0001	0.07	0.0274	0.0007	0.36	OE
RJ6EN9		0.0268	-0.0021	-1.11	0.0255	-0.0012	-0.59	GD
RNNDN		0.0265	-0.0025	-1.30	0.0224	-0.0043	-2.08	CI
RRKM3C		0.0277	-0.0013	-0.68	0.0250	-0.0017	-0.81	OE
RYN97D		0.0276	-0.0014	-0.71	0.0249	-0.0018	-0.85	CI
T6M4EC		0.0281	-0.0008	-0.44	0.0248	-0.0019	-0.91	CI
TEE38P		0.0322	0.0033	1.69	0.0285	0.0018	0.87	OE
TEED7U		0.0270	-0.0020	-1.03	0.0260	-0.0007	-0.33	GD
ULPZD2		0.0270	-0.0020	-1.03	0.0253	-0.0014	-0.65	CI
UPB9WF		0.0318	0.0028	1.47	0.0302	0.0035	1.69	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 173

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UXYR2V		0.0280	-0.0010	-0.51	0.0260	-0.0007	-0.33	OE
UY8ED9		0.0299	0.0009	0.46	0.0272	0.0005	0.23	OE
V2AU2Q		0.0286	-0.0004	-0.20	0.0276	0.0009	0.43	OE
V884T4	X	0.0353	0.0063	3.27	0.0312	0.0045	2.19	OE
VAGCZ3	X	0.0230	-0.0060	-3.10	0.0240	-0.0027	-1.30	OE
VQGAVL		0.0284	-0.0006	-0.30	0.0272	0.0005	0.24	OE
VVWB9X	*	0.0337	0.0047	2.44	0.0313	0.0046	2.24	OE
W8GNMY		0.0271	-0.0019	-0.99	0.0241	-0.0026	-1.26	CI
WP4JGF		0.0270	-0.0019	-1.01	0.0253	-0.0014	-0.69	OE
XM74HJ		0.0313	0.0024	1.23	0.0307	0.0040	1.92	OE
XTWDTG		0.0260	-0.0030	-1.54	0.0230	-0.0037	-1.78	AE
XWYTJY		0.0299	0.0009	0.48	0.0271	0.0004	0.18	CO
XZ2KYQ		0.0270	-0.0020	-1.04	0.0271	0.0004	0.21	OE
Y787B8		0.0297	0.0007	0.38	0.0278	0.0011	0.55	GD
Y7BAZP		0.0270	-0.0020	-1.03	0.0270	0.0003	0.15	OE
Y7HA8K		0.0280	-0.0010	-0.51	0.0247	-0.0020	-0.97	DR
Y9L32J		0.0313	0.0024	1.23	0.0307	0.0040	1.92	OE
YWCBQW		0.0291	0.0002	0.08	0.0253	-0.0014	-0.65	CI
ZPBJU8		0.0300	0.0010	0.53	0.0273	0.0006	0.31	OE
ZQXEHT		0.0267	-0.0023	-1.20	0.0297	0.0030	1.44	OE
ZV2KLJ		0.0297	0.0007	0.36	0.0292	0.0025	1.20	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.0290	Percent	0.0267	Percent
Stnd Dev Btwn Labs	0.0019	Percent	0.0021	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 108 of 119 reporting participants

Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>2DQY2F</b>	X	Data for both samples are high. Possible Systematic error.
<b>2VU73F</b>	X	Data for both samples are low. Possible Systematic error.
<b>AHBBCH</b>	X	Data for both samples are low. Possible Systematic error.
<b>FJAB9C</b>	X	Data for sample L17 are low. Inconsistent in testing between samples.
<b>KXWCNR</b>	X	Data for sample L17 are high. Inconsistent in testing between samples.
<b>LLB2KC</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>PZM6PB</b>	X	Data for both samples are low. Possible Systematic error.
<b>V884T4</b>	X	Data for sample L17 are high. Inconsistent in testing between samples.
<b>VAGCZ3</b>	X	Data for sample L17 are low. Inconsistent in testing between samples.

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 173

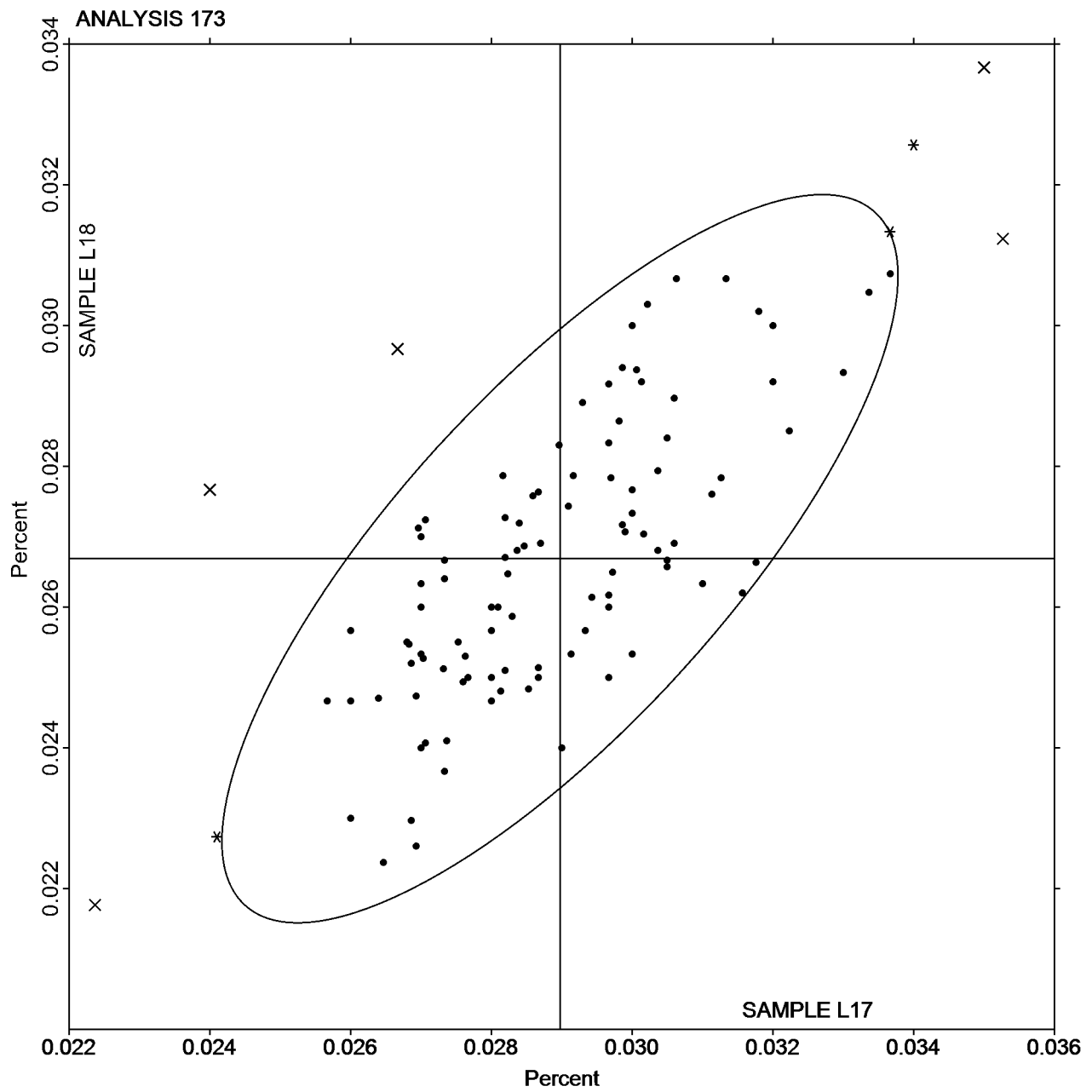
Chemical Analysis Element #4 - Carbon & Low Alloy Steel - Percent  
SULFUR (S)

**SAMPLE L17**

**0.0290 Percent**

**SAMPLE L18**

**0.0267 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 174

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.2807	-0.0029	-0.48	0.2480	-0.0022	-0.39	OE
29K2UW		0.2858	0.0022	0.36	0.2500	-0.0002	-0.03	OE
2DQY2F		0.2800	-0.0036	-0.59	0.2460	-0.0042	-0.74	OE
2LJXAV	X	0.2733	-0.0103	-1.67	0.2160	-0.0342	-6.07	GR
2QL2Q3		0.2857	0.0021	0.34	0.2510	0.0008	0.14	IC
2VU73F		0.2747	-0.0089	-1.46	0.2407	-0.0095	-1.69	OE
2WBA22		0.2773	-0.0063	-1.02	0.2493	-0.0009	-0.15	OE
3GFEFH		0.2854	0.0018	0.30	0.2489	-0.0013	-0.22	OE
3T49EA		0.2860	0.0024	0.39	0.2550	0.0048	0.85	OE
3YBCAW		0.2910	0.0074	1.21	0.2607	0.0105	1.86	OE
4BC78Y		0.2821	-0.0015	-0.25	0.2516	0.0014	0.26	DR
4NQ3MN		0.2860	0.0024	0.39	0.2527	0.0025	0.44	OE
4RK8QT		0.2917	0.0081	1.32	0.2543	0.0041	0.74	OE
62LE6L		0.2690	-0.0146	-2.38	0.2363	-0.0139	-2.46	OE
673WGM		0.2820	-0.0016	-0.26	0.2540	0.0038	0.68	OE
69PKV9		0.2893	0.0057	0.94	0.2560	0.0058	1.03	OE
6ZDBNG		0.2880	0.0044	0.72	0.2527	0.0025	0.44	OE
7KF9BM		0.2839	0.0003	0.05	0.2508	0.0006	0.10	OE
7RZ8ZZ		0.2747	-0.0089	-1.45	0.2429	-0.0073	-1.30	OE
7UYRM8		0.2793	-0.0043	-0.70	0.2493	-0.0009	-0.15	OE
82EU6T		0.2829	-0.0007	-0.11	0.2501	-0.0001	-0.02	OE
87QDT3		0.2863	0.0027	0.45	0.2503	0.0001	0.02	OE
8BGDN4		0.2900	0.0064	1.04	0.2567	0.0065	1.15	OE
8HQ4DA		0.2810	-0.0026	-0.42	0.2463	-0.0039	-0.69	OE
8UU7GX		0.2770	-0.0066	-1.08	0.2587	0.0085	1.51	OE
94J6R2		0.2874	0.0038	0.62	0.2529	0.0027	0.48	OE
97NR9E		0.2850	0.0014	0.23	0.2473	-0.0029	-0.51	OE
9PKNY3		0.2900	0.0064	1.04	0.2533	0.0031	0.56	GD
A2Q4CK		0.2870	0.0034	0.56	0.2540	0.0038	0.68	OE
A8YVWW		0.2864	0.0028	0.46	0.2533	0.0031	0.56	DR
AHB BCH	*	0.2960	0.0124	2.02	0.2657	0.0155	2.75	OE
ALLH7H		0.2826	-0.0010	-0.16	0.2477	-0.0025	-0.45	DR
AXBL62		0.2920	0.0084	1.37	0.2500	-0.0002	-0.03	OE
B7GERV	X	0.2570	-0.0266	-4.34	0.2240	-0.0262	-4.65	OE
BM92L2		0.2947	0.0111	1.81	0.2567	0.0065	1.15	OE
BQQWAX		0.2863	0.0027	0.45	0.2527	0.0025	0.44	DR
BVXGYQ		0.2840	0.0004	0.07	0.2477	-0.0025	-0.45	OE
BVZP7V		0.2844	0.0008	0.13	0.2510	0.0008	0.14	XX
CEUWAF		0.2830	-0.0006	-0.09	0.2508	0.0006	0.11	OE
CHQAKZ		0.2807	-0.0029	-0.48	0.2483	-0.0019	-0.33	OE
CQ6R2J		0.2800	-0.0036	-0.59	0.2493	-0.0009	-0.15	OE
CRAUJ4		0.2817	-0.0019	-0.32	0.2600	0.0098	1.74	GD
D2E282		0.2820	-0.0016	-0.26	0.2480	-0.0022	-0.39	IC
D3CC8D		0.2883	0.0047	0.77	0.2540	0.0038	0.68	OE
D92RY6		0.2983	0.0147	2.40	0.2630	0.0128	2.27	OE
DEPCZX	*	0.2667	-0.0169	-2.76	0.2367	-0.0135	-2.40	OE
DGQ267	X	0.2650	-0.0186	-3.03	0.2600	0.0098	1.74	OE
DL6U2Q		0.2847	0.0011	0.17	0.2520	0.0018	0.32	IC
DQKBLG		0.2857	0.0021	0.34	0.2485	-0.0017	-0.30	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 174

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
EEXB6Q		0.2775	-0.0061	-1.00	0.2448	-0.0054	-0.96	OE
EFTNWR		0.2730	-0.0106	-1.73	0.2417	-0.0085	-1.51	OE
EMCH33		0.2850	0.0014	0.23	0.2503	0.0001	0.02	OE
ENNRZM		0.2892	0.0056	0.91	0.2519	0.0017	0.30	DR
EUW8F6		0.2763	-0.0073	-1.19	0.2437	-0.0065	-1.16	AE
FCWBYU		0.2860	0.0024	0.39	0.2533	0.0031	0.56	OE
FGN24X	X	0.2783	-0.0053	-0.87	0.2545	0.0043	0.76	OE
FJAB9C	*	0.2677	-0.0159	-2.60	0.2373	-0.0129	-2.28	OE
FV6MGG		0.2837	0.0001	0.01	0.2523	0.0021	0.38	OE
GDG9KH		0.2707	-0.0129	-2.11	0.2480	-0.0022	-0.39	OE
GHQBKT	*	0.2877	0.0041	0.66	0.2593	0.0091	1.62	OE
GRWFBN		0.2826	-0.0010	-0.16	0.2456	-0.0046	-0.82	OE
H2HUV7		0.2865	0.0029	0.47	0.2511	0.0009	0.17	OE
HNYJUF		0.2803	-0.0033	-0.53	0.2470	-0.0032	-0.57	OE
JKFVQW		0.2780	-0.0056	-0.92	0.2480	-0.0022	-0.39	OE
JWNPT9		0.2874	0.0038	0.63	0.2515	0.0013	0.23	OE
K8D2CC		0.2900	0.0064	1.04	0.2600	0.0098	1.74	OE
K9C9PM		0.2851	0.0015	0.25	0.2544	0.0042	0.75	OE
KCBG48		0.2861	0.0025	0.41	0.2527	0.0025	0.45	OE
KG92Y3		0.2773	-0.0063	-1.02	0.2443	-0.0059	-1.04	OE
KXWCNR	X	0.5200	0.2364	38.56	0.3550	0.1048	18.61	WD
KYV7YG		0.2803	-0.0033	-0.53	0.2480	-0.0022	-0.39	OE
LHZRU3		0.2807	-0.0029	-0.48	0.2440	-0.0062	-1.10	OE
LLB2KC		0.2713	-0.0123	-2.00	0.2373	-0.0129	-2.28	OE
LYLZNW		0.2963	0.0127	2.08	0.2593	0.0091	1.62	OE
M76GZ8		0.2800	-0.0036	-0.59	0.2500	-0.0002	-0.03	OE
MB2NFH		0.2900	0.0064	1.04	0.2547	0.0045	0.79	DR
MJWNUA		0.2810	-0.0026	-0.42	0.2470	-0.0032	-0.57	OE
MXMTJ6		0.2838	0.0002	0.04	0.2525	0.0023	0.41	OE
MXPUTQ		0.2853	0.0017	0.28	0.2530	0.0028	0.50	IC
N3L6WH		0.2871	0.0035	0.58	0.2518	0.0016	0.29	AE
N8UMVB		0.2827	-0.0009	-0.15	0.2493	-0.0009	-0.15	OE
N9F2VZ		0.2897	0.0061	0.99	0.2570	0.0068	1.21	OE
NCZJYJ		0.2883	0.0047	0.77	0.2577	0.0075	1.33	OE
NEPDXR		0.2825	-0.0011	-0.18	0.2464	-0.0038	-0.67	OE
NHRNWU		0.2803	-0.0033	-0.53	0.2460	-0.0042	-0.74	OE
NNEVJM		0.2893	0.0057	0.94	0.2520	0.0018	0.32	GD
NVU6W4	X	0.3157	0.0321	5.23	0.2720	0.0218	3.87	GD
P8JLZV		0.2810	-0.0026	-0.42	0.2493	-0.0009	-0.15	OE
PFZFFK		0.2853	0.0017	0.28	0.2487	-0.0015	-0.27	OE
PYD6MN	X	0.2649	-0.0187	-3.06	0.2304	-0.0198	-3.52	OE
PZM6PB		0.2767	-0.0069	-1.13	0.2430	-0.0072	-1.28	OE
QHZHPY		0.2793	-0.0043	-0.70	0.2460	-0.0042	-0.74	OE
RJ6EN9		0.2852	0.0016	0.26	0.2534	0.0032	0.56	XX
RNND CN	X	0.2850	0.0014	0.23	0.2657	0.0155	2.75	GD
RRKM3C		0.2757	-0.0079	-1.29	0.2430	-0.0072	-1.28	OE
RYN97D		0.2887	0.0051	0.83	0.2540	0.0038	0.68	OE
T6M4EC		0.2767	-0.0069	-1.13	0.2440	-0.0062	-1.10	OE
TEE38P		0.2860	0.0024	0.39	0.2573	0.0071	1.27	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 174

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ULPZD2		0.2840	0.0004	0.07	0.2483	-0.0019	-0.33	OE
UPB9WF		0.2917	0.0081	1.32	0.2573	0.0071	1.27	OE
UXYR2V		0.2850	0.0014	0.23	0.2500	-0.0002	-0.03	XX
UY8ED9		0.2883	0.0047	0.77	0.2553	0.0051	0.91	OE
V2AU2Q		0.2908	0.0072	1.17	0.2566	0.0064	1.14	OE
V884T4	X	0.3197	0.0361	5.88	0.2787	0.0285	5.06	OE
VAGCZ3	*	0.2747	-0.0089	-1.46	0.2473	-0.0029	-0.51	OE
VQGAVL		0.2740	-0.0096	-1.57	0.2417	-0.0085	-1.50	OE
VVWB9X		0.2723	-0.0113	-1.84	0.2397	-0.0105	-1.87	OE
W8GNMY		0.2867	0.0031	0.50	0.2503	0.0001	0.02	GR
WP4JGF		0.2903	0.0067	1.10	0.2580	0.0078	1.39	OE
XM74HJ	X	0.2623	-0.0213	-3.47	0.2333	-0.0169	-2.99	OE
XTWDTG		0.2860	0.0024	0.39	0.2517	0.0015	0.26	AE
XWYTJY		0.2832	-0.0004	-0.07	0.2481	-0.0021	-0.37	OE
XZ2KYQ		0.2869	0.0033	0.54	0.2546	0.0044	0.79	OE
Y787B8		0.2707	-0.0129	-2.11	0.2410	-0.0092	-1.63	GD
Y7BAZP		0.2827	-0.0009	-0.15	0.2463	-0.0039	-0.69	OE
Y7HA8K		0.2867	0.0031	0.50	0.2540	0.0038	0.68	DR
Y9L32J		0.2897	0.0061	0.99	0.2527	0.0025	0.44	OE
YWCBQW		0.2743	-0.0093	-1.51	0.2423	-0.0079	-1.40	OE
ZPBJU8		0.2813	-0.0023	-0.37	0.2467	-0.0035	-0.63	OE
ZQXEHT		0.2893	0.0057	0.94	0.2430	-0.0072	-1.28	OE
ZV2KLJ		0.2937	0.0101	1.64	0.2577	0.0075	1.33	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.2836	Percent	0.2502	Percent
Std Dev Btwn Labs	0.0061	Percent	0.0056	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 106 of 121 reporting participants



Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>2LJXAV</b>	X	Data for sample L18 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample L18.
<b>B7GERV</b>	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>DGQ267</b>	X	Data for sample L17 are low. Inconsistent in testing between samples.
<b>FGN24X</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L18.
<b>KXWCNR</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>NVU6W4</b>	X	Data for both samples are high. Possible Systematic error.
<b>PYD6MN</b>	X	Data for both samples are low. Possible Systematic error.
<b>RNND CN</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L18.
<b>V884T4</b>	X	Data for both samples are high. Possible Systematic error.
<b>XM74HJ</b>	X	Data for both samples are low. Possible Systematic error.

Cycle 105  
1st Q, 2014

### Interlaboratory Testing Program for Metals

#### Analysis 174

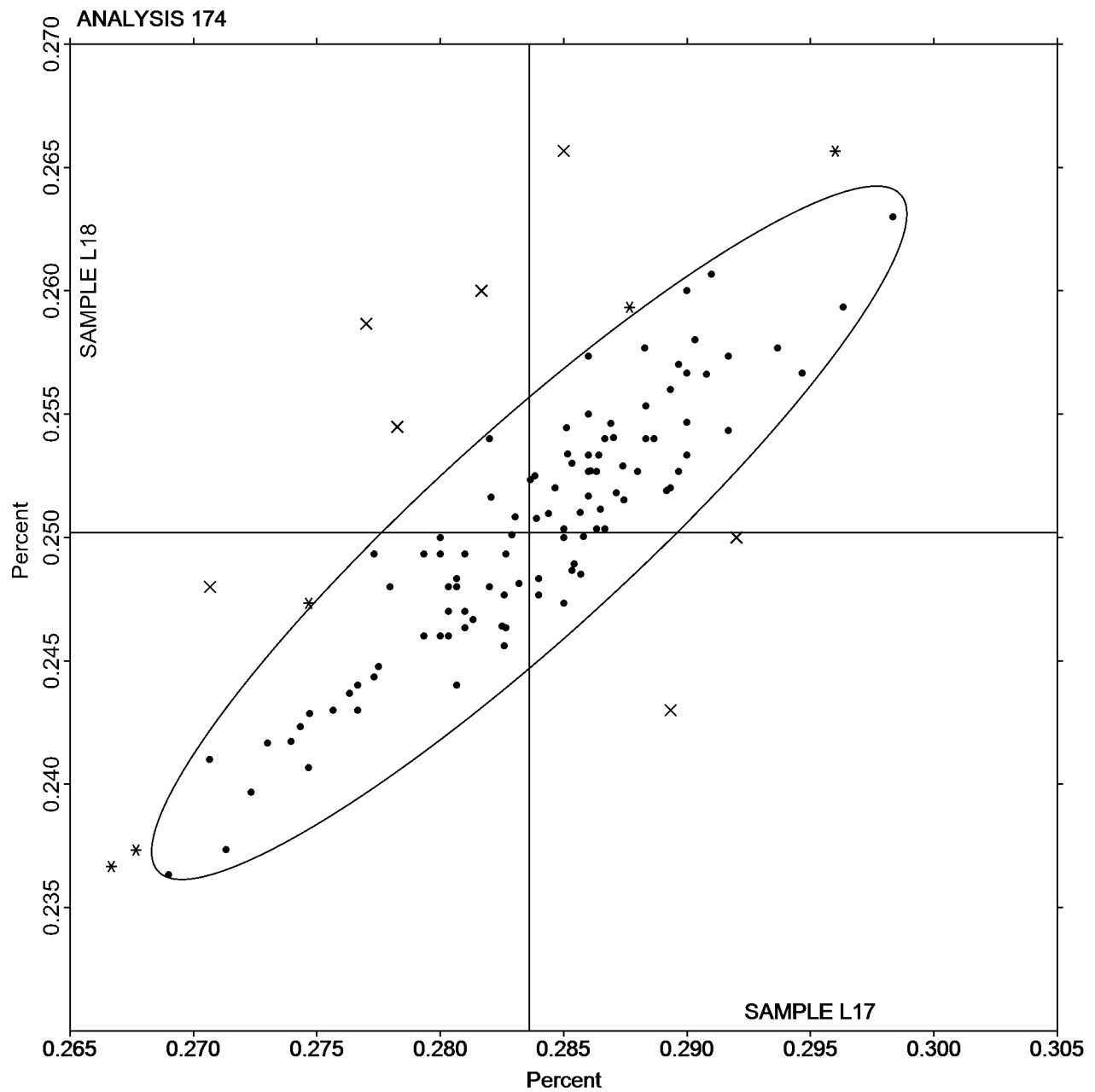
Chemical Analysis Element #5 - Carbon & Low Alloy Steel - Percent  
SILICON (Si)

**SAMPLE L17**

**0.2836 Percent**

**SAMPLE L18**

**0.2502 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 175

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX	X	0.2743	-0.0010	-0.11	0.1750	0.0261	6.53	OE
29K2UW	*	0.2662	-0.0091	-1.07	0.1529	0.0040	1.01	OE
2DQY2F		0.2800	0.0047	0.56	0.1543	0.0054	1.36	OE
2QL2Q3		0.2783	0.0030	0.36	0.1483	-0.0006	-0.15	IC
2VU73F		0.2927	0.0174	2.06	0.1553	0.0064	1.61	OE
2WBA22		0.2830	0.0077	0.91	0.1553	0.0064	1.61	OE
3GFEFH		0.2821	0.0068	0.80	0.1467	-0.0022	-0.56	OE
3T49EA		0.2737	-0.0016	-0.19	0.1473	-0.0016	-0.40	OE
3YBCAW		0.2670	-0.0083	-0.98	0.1473	-0.0016	-0.40	OE
4BC78Y		0.2822	0.0069	0.82	0.1515	0.0026	0.66	DR
4NQ3MN		0.2667	-0.0086	-1.02	0.1450	-0.0039	-0.98	OE
4RK8QT		0.2663	-0.0090	-1.06	0.1447	-0.0042	-1.06	OE
62LE6L		0.2897	0.0144	1.70	0.1543	0.0054	1.36	OE
673WGM		0.2803	0.0050	0.60	0.1477	-0.0012	-0.31	OE
69PKV9		0.2863	0.0110	1.31	0.1547	0.0058	1.44	OE
6ZDBNG	X	0.2500	-0.0253	-3.00	0.1353	-0.0136	-3.40	OE
7RZ8ZZ		0.2890	0.0137	1.62	0.1540	0.0051	1.28	OE
7UYRM8		0.2710	-0.0043	-0.51	0.1513	0.0024	0.61	OE
82EU6T		0.2737	-0.0016	-0.19	0.1496	0.0007	0.16	OE
87QDT3		0.2727	-0.0026	-0.31	0.1463	-0.0026	-0.65	OE
8BGDN4	X	0.2443	-0.0310	-3.67	0.1477	-0.0012	-0.31	OE
8HQ4DA		0.2777	0.0024	0.28	0.1480	-0.0009	-0.23	OE
94J6R2		0.2548	-0.0205	-2.42	0.1406	-0.0083	-2.08	OE
9PKNY3		0.2800	0.0047	0.56	0.1500	0.0011	0.27	GD
A2Q4CK		0.2754	0.0001	0.02	0.1445	-0.0044	-1.10	OE
A8YVWW		0.2695	-0.0058	-0.68	0.1482	-0.0007	-0.18	DR
AHBBCH	*	0.2617	-0.0136	-1.61	0.1510	0.0021	0.52	OE
ALLH7H		0.2697	-0.0056	-0.66	0.1478	-0.0011	-0.29	DR
AXBL62		0.2807	0.0054	0.64	0.1470	-0.0019	-0.48	OE
B7GERV		0.2750	-0.0003	-0.03	0.1483	-0.0006	-0.15	OE
BM92L2		0.2687	-0.0066	-0.78	0.1510	0.0021	0.52	OE
BQQWAX		0.2790	0.0037	0.44	0.1500	0.0011	0.27	DR
BVXGYQ		0.2760	0.0007	0.08	0.1513	0.0024	0.61	OE
BVZP7V		0.2735	-0.0018	-0.21	0.1537	0.0048	1.19	OE
CEUWAF	*	0.2957	0.0204	2.42	0.1576	0.0087	2.17	OE
CHQAKZ		0.2777	0.0024	0.28	0.1457	-0.0032	-0.81	OE
CQ6R2J		0.2667	-0.0086	-1.02	0.1470	-0.0019	-0.48	OE
CRAUJ4		0.2703	-0.0050	-0.59	0.1530	0.0041	1.02	GD
D2E282		0.2767	0.0014	0.16	0.1493	0.0004	0.10	IC
D92RY6		0.2837	0.0084	0.99	0.1527	0.0038	0.94	OE
DEPCZX		0.2593	-0.0160	-1.89	0.1397	-0.0092	-2.31	OE
DGQ267		0.2783	0.0030	0.36	0.1490	0.0001	0.02	OE
DL6U2Q		0.2757	0.0004	0.04	0.1513	0.0024	0.61	IC
DQKBLG		0.2728	-0.0025	-0.29	0.1445	-0.0044	-1.10	OE
EEXB6Q		0.2800	0.0047	0.55	0.1507	0.0018	0.46	OE
EFTNWR		0.2800	0.0047	0.56	0.1500	0.0011	0.27	OE
EMCH33		0.2760	0.0007	0.08	0.1453	-0.0036	-0.90	OE
ENNRZM		0.2830	0.0077	0.91	0.1464	-0.0025	-0.62	DR
EUW8F6		0.2813	0.0060	0.72	0.1503	0.0014	0.36	AE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 175

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
FCWBYU		0.2750	-0.0003	-0.03	0.1423	-0.0066	-1.65	OE
FGN24X		0.2757	0.0004	0.05	0.1490	0.0001	0.03	OE
FJAB9C	*	0.2553	-0.0200	-2.36	0.1450	-0.0039	-0.98	OE
FV6MGG		0.2650	-0.0103	-1.22	0.1450	-0.0039	-0.98	OE
GDG9KH		0.2737	-0.0016	-0.19	0.1507	0.0018	0.44	OE
GHQBKT		0.2733	-0.0020	-0.23	0.1503	0.0014	0.36	OE
GRWFBN		0.2762	0.0009	0.11	0.1467	-0.0022	-0.55	OE
H2HUV7		0.2775	0.0022	0.27	0.1505	0.0016	0.39	OE
HNYJUF	X	0.3087	0.0334	3.95	0.1493	0.0004	0.10	OE
JKFVQW		0.2737	-0.0016	-0.18	0.1496	0.0007	0.17	OE
JWNPT9		0.2843	0.0090	1.07	0.1514	0.0024	0.61	OE
K8D2CC		0.2600	-0.0153	-1.81	0.1400	-0.0089	-2.23	OE
K9C9PM		0.2850	0.0097	1.15	0.1555	0.0066	1.64	OE
KCBG48		0.2840	0.0087	1.03	0.1538	0.0049	1.23	OE
KG92Y3		0.2863	0.0110	1.31	0.1550	0.0061	1.52	OE
KXWCNR	X	0.2607	-0.0146	-1.73	0.1060	-0.0429	-10.74	WD
KYV7YG		0.2770	0.0017	0.20	0.1507	0.0018	0.44	OE
LHZRU3		0.2787	0.0034	0.40	0.1500	0.0011	0.27	OE
LLB2KC		0.2877	0.0124	1.46	0.1570	0.0081	2.02	OE
LYLZNW		0.2747	-0.0006	-0.07	0.1480	-0.0009	-0.23	OE
M76GZ8		0.2700	-0.0053	-0.63	0.1467	-0.0022	-0.56	OE
MB2NFH	X	0.2770	0.0017	0.20	0.1313	-0.0176	-4.40	DR
MJWNUA		0.2580	-0.0173	-2.05	0.1463	-0.0026	-0.65	OE
MXMTJ6		0.2748	-0.0005	-0.05	0.1485	-0.0004	-0.11	OE
MXPUTQ		0.2763	0.0010	0.12	0.1443	-0.0046	-1.15	IC
N3L6WH		0.2806	0.0053	0.62	0.1502	0.0013	0.32	AE
N8UMVB		0.2750	-0.0003	-0.03	0.1453	-0.0036	-0.90	OE
N9F2VZ	X	0.2450	-0.0303	-3.59	0.1477	-0.0012	-0.31	OE
NCZJYJ		0.2798	0.0045	0.53	0.1514	0.0025	0.61	OE
NEPDXR		0.2768	0.0015	0.18	0.1464	-0.0025	-0.62	OE
NHRNWU		0.2773	0.0020	0.24	0.1473	-0.0016	-0.40	OE
NNEVJM	X	0.2700	-0.0053	-0.63	0.1377	-0.0112	-2.81	GD
NVU6W4		0.2847	0.0094	1.11	0.1523	0.0034	0.86	GD
P8JLZV		0.2727	-0.0026	-0.31	0.1500	0.0011	0.27	OE
PFZFFK		0.2713	-0.0040	-0.47	0.1523	0.0034	0.86	OE
PYD6MN		0.2692	-0.0061	-0.72	0.1444	-0.0045	-1.13	OE
PZM6PB	*	0.2543	-0.0210	-2.48	0.1407	-0.0082	-2.06	OE
QHZHPY		0.2687	-0.0066	-0.78	0.1487	-0.0002	-0.06	OE
RJ6EN9		0.2833	0.0080	0.95	0.1515	0.0026	0.66	XX
RNNDCN	X	0.2910	0.0157	1.86	0.1653	0.0164	4.11	GD
RRKM3C		0.2723	-0.0030	-0.35	0.1507	0.0018	0.44	OE
RYN97D		0.2770	0.0017	0.20	0.1487	-0.0002	-0.06	OE
T6M4EC		0.2790	0.0037	0.44	0.1483	-0.0006	-0.15	OE
TEE38P		0.2730	-0.0023	-0.27	0.1473	-0.0016	-0.40	OE
ULPZD2		0.2737	-0.0016	-0.19	0.1437	-0.0052	-1.31	OE
UPB9WF	*	0.2913	0.0160	1.90	0.1607	0.0118	2.94	OE
UXYR2V	X	0.2750	-0.0003	-0.03	0.1600	0.0111	2.77	XX
UY8ED9		0.2667	-0.0086	-1.02	0.1463	-0.0026	-0.65	OE
V2AU2Q		0.2721	-0.0032	-0.38	0.1518	0.0029	0.73	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 175

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V884T4	X	0.2987	0.0234	2.77	0.1713	0.0224	5.61	OE
VAGCZ3		0.2707	-0.0046	-0.55	0.1580	0.0091	2.27	OE
VQGAVL		0.2665	-0.0088	-1.05	0.1448	-0.0041	-1.02	OE
VVWB9X	*	0.2957	0.0204	2.41	0.1537	0.0048	1.19	OE
W8GNMY		0.2807	0.0054	0.64	0.1490	0.0001	0.02	OE
WP4JGF	*	0.2770	0.0017	0.20	0.1420	-0.0069	-1.73	OE
XM74HJ		0.2680	-0.0073	-0.86	0.1440	-0.0049	-1.23	OE
XTWDTG		0.2670	-0.0083	-0.98	0.1460	-0.0029	-0.73	AE
XWYTJY		0.2671	-0.0082	-0.97	0.1510	0.0021	0.51	OE
XZ2KYQ		0.2773	0.0020	0.24	0.1506	0.0017	0.42	OE
Y787B8		0.2680	-0.0073	-0.86	0.1463	-0.0026	-0.65	GD
Y7BAZP		0.2730	-0.0023	-0.27	0.1487	-0.0002	-0.06	OE
Y7HA8K		0.2567	-0.0186	-2.21	0.1407	-0.0082	-2.06	DR
Y9L32J		0.2877	0.0124	1.46	0.1520	0.0031	0.77	OE
YWCBQW		0.2747	-0.0006	-0.07	0.1453	-0.0036	-0.90	OE
ZPBJU8		0.2800	0.0047	0.56	0.1500	0.0011	0.27	OE
ZV2KLJ	X	0.2713	-0.0040	-0.47	0.1340	-0.0149	-3.73	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.2753	Percent	0.1489	Percent
Stnd Dev Btwn Labs	0.0084	Percent	0.0040	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 102 of 115 reporting participants

Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
27Y3DX	X	Data for sample L18 are high. Inconsistent within the determinations of sample L18.
6ZDBNG	X	Data for both samples are low.
8BGDN4	X	Data for sample L17 are low.
HNYJUF	X	Data for sample L17 are high.
KXWCNR	X	Data for sample L18 are low. Inconsistent within the determinations of both samples.
MB2NFH	X	Data for sample L18 are low.
N9F2VZ	X	Data for sample L17 are low.
NNEVJM	X	Data for sample L18 are low.
RNND CN	X	Data for sample L18 are high.
UXYR2V	X	Data for sample L18 are high.
V884T4	X	Data for both samples are high.
ZV2KLJ	X	Data for sample L18 are low.

Cycle 105  
1st Q, 2014

### Interlaboratory Testing Program for Metals

### Analysis 175

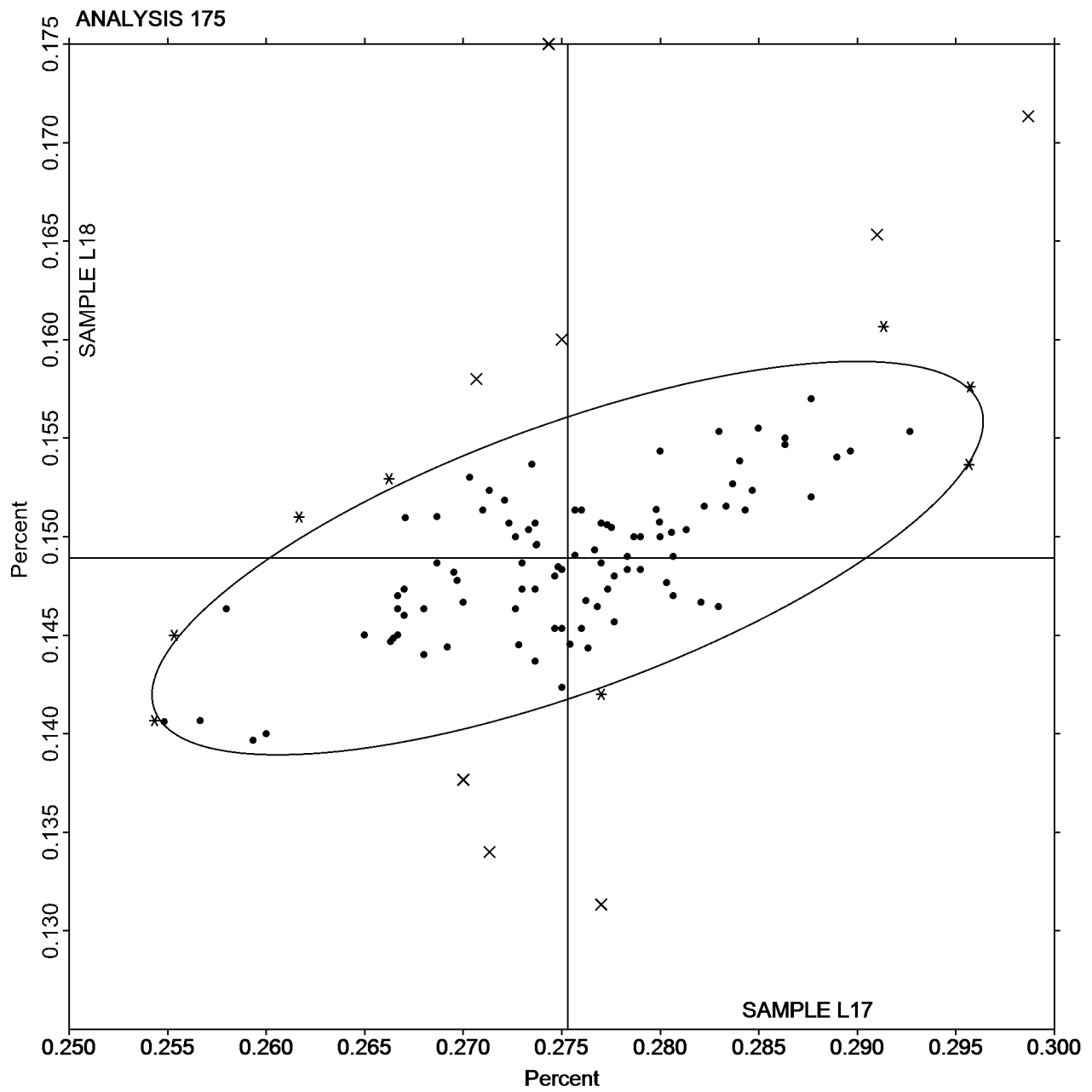
Chemical Analysis Element #6 - Carbon & Low Alloy Steel - Percent  
COPPER (Cu)

**SAMPLE L17**

**0.2753 Percent**

**SAMPLE L18**

**0.1489 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 176

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.0917	0.0053	1.57	0.0743	0.0061	2.01	OE
29K2UW		0.0858	-0.0006	-0.17	0.0678	-0.0004	-0.13	OE
2DQY2F		0.0833	-0.0030	-0.89	0.0653	-0.0029	-0.95	OE
2QL2Q3		0.0867	0.0003	0.10	0.0670	-0.0012	-0.40	IC
2VU73F		0.0895	0.0031	0.92	0.0731	0.0049	1.60	OE
2WBA22	X	0.0890	0.0027	0.78	0.0763	0.0081	2.67	OE
3GFEFH		0.0898	0.0034	1.01	0.0707	0.0025	0.81	OE
3T49EA		0.0870	0.0007	0.19	0.0680	-0.0002	-0.08	OE
3YBCAW		0.0930	0.0067	1.97	0.0750	0.0068	2.23	OE
4BC78Y		0.0866	0.0003	0.08	0.0681	-0.0001	-0.04	DR
4NQ3MN		0.0903	0.0040	1.18	0.0723	0.0041	1.35	OE
62LE6L		0.0880	0.0017	0.49	0.0700	0.0018	0.58	OE
673WGM	X	0.0833	-0.0030	-0.89	0.1477	0.0794	26.14	OE
69PKV9		0.0867	0.0003	0.10	0.0690	0.0008	0.25	OE
6ZDBNG		0.0837	-0.0027	-0.79	0.0660	-0.0022	-0.73	OE
7RZ8ZZ		0.0785	-0.0079	-2.33	0.0624	-0.0059	-1.93	OE
7UYRM8		0.0897	0.0033	0.98	0.0720	0.0038	1.24	OE
82EU6T		0.0867	0.0004	0.11	0.0684	0.0002	0.07	OE
87QDT3		0.0850	-0.0013	-0.40	0.0680	-0.0002	-0.08	OE
8BGDN4		0.0800	-0.0063	-1.87	0.0600	-0.0082	-2.71	OE
8HQ4DA		0.0857	-0.0007	-0.20	0.0677	-0.0006	-0.19	OE
8UU7GX		0.0850	-0.0013	-0.40	0.0733	0.0051	1.68	OE
94J6R2		0.0842	-0.0021	-0.62	0.0640	-0.0042	-1.38	OE
9PKNY3		0.0877	0.0013	0.39	0.0710	0.0028	0.91	GD
A2Q4CK	*	0.0810	-0.0053	-1.58	0.0666	-0.0017	-0.55	OE
A8YVWW		0.0814	-0.0049	-1.46	0.0639	-0.0043	-1.41	DR
AHB BCH	X	0.0703	-0.0160	-4.73	0.0533	-0.0149	-4.90	OE
ALLH7H		0.0820	-0.0044	-1.29	0.0640	-0.0043	-1.40	DR
AXBL62		0.0887	0.0023	0.69	0.0680	-0.0002	-0.08	OE
B7GERV	X	0.1006	0.0142	4.20	0.0783	0.0101	3.31	OE
BM92L2	*	0.0777	-0.0087	-2.56	0.0597	-0.0086	-2.82	OE
BQQWAX		0.0807	-0.0057	-1.68	0.0620	-0.0062	-2.05	DR
BVXGYQ		0.0833	-0.0030	-0.90	0.0674	-0.0008	-0.26	OE
BVZP7V		0.0857	-0.0007	-0.20	0.0687	0.0004	0.14	XX
CEUWAF		0.0897	0.0034	0.99	0.0713	0.0031	1.01	OE
CHQAKZ		0.0877	0.0013	0.39	0.0693	0.0011	0.36	OE
CQ6R2J		0.0867	0.0003	0.10	0.0680	-0.0002	-0.08	OE
CRAUJ4	X	0.0767	-0.0097	-2.86	0.0580	-0.0102	-3.37	GD
D2E282		0.0900	0.0037	1.08	0.0717	0.0034	1.13	IC
D3CC8D		0.0823	-0.0040	-1.18	0.0653	-0.0029	-0.95	OE
D92RY6		0.0920	0.0057	1.67	0.0727	0.0044	1.46	OE
DEPCZX	X	0.0707	-0.0157	-4.63	0.0550	-0.0132	-4.35	OE
DGQ267		0.0943	0.0080	2.36	0.0743	0.0061	2.01	OE
DL6U2Q		0.0870	0.0007	0.19	0.0690	0.0008	0.25	IC
DQKBLG		0.0836	-0.0027	-0.80	0.0654	-0.0029	-0.94	OE
EEXB6Q		0.0889	0.0026	0.77	0.0708	0.0026	0.85	OE
EFTNWR		0.0900	0.0037	1.08	0.0700	0.0018	0.58	OE
EMCH33		0.0870	0.0007	0.19	0.0693	0.0011	0.36	OE
ENNRZM		0.0886	0.0022	0.66	0.0696	0.0014	0.46	DR



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 176

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
EUW8F6		0.0851	-0.0012	-0.37	0.0672	-0.0011	-0.35	AE
FCWBYU		0.0860	-0.0003	-0.10	0.0653	-0.0029	-0.95	OE
FGN24X		0.0852	-0.0012	-0.35	0.0691	0.0009	0.30	OE
FJAB9C	*	0.0810	-0.0053	-1.58	0.0610	-0.0072	-2.38	OE
FV6MGG		0.0910	0.0047	1.38	0.0710	0.0028	0.91	OE
GDG9KH		0.0810	-0.0053	-1.58	0.0640	-0.0042	-1.39	OE
GHQBKT		0.0877	0.0013	0.39	0.0697	0.0014	0.47	OE
GRWFBN		0.0883	0.0020	0.58	0.0702	0.0020	0.66	OE
H2HUV7		0.0879	0.0016	0.46	0.0699	0.0017	0.55	OE
HNYJUF		0.0886	0.0022	0.66	0.0705	0.0023	0.75	OE
JKFVQW		0.0852	-0.0011	-0.34	0.0675	-0.0007	-0.24	OE
JWNPT9		0.0868	0.0005	0.15	0.0697	0.0015	0.49	OE
K8D2CC		0.0800	-0.0063	-1.87	0.0633	-0.0049	-1.61	OE
K9C9PM		0.0871	0.0007	0.22	0.0688	0.0006	0.18	OE
KCBG48		0.0836	-0.0028	-0.82	0.0659	-0.0023	-0.77	OE
KG92Y3		0.0877	0.0013	0.39	0.0700	0.0018	0.58	OE
KXWCNR	X	0.0650	-0.0213	-6.31	0.0697	0.0014	0.47	WD
KYV7YG		0.0813	-0.0050	-1.48	0.0643	-0.0039	-1.28	OE
LHZRU3		0.0840	-0.0023	-0.69	0.0660	-0.0022	-0.73	OE
LLB2KC	X	0.3657	0.2793	82.52	0.2707	0.2024	66.62	OE
LYLZNW		0.0823	-0.0040	-1.18	0.0640	-0.0042	-1.39	OE
M76GZ8		0.0900	0.0037	1.08	0.0700	0.0018	0.58	OE
MB2NFH		0.0880	0.0017	0.49	0.0697	0.0014	0.47	DR
MJWNUA	X	0.1047	0.0183	5.41	0.0723	0.0041	1.35	OE
MXMTJ6		0.0858	-0.0006	-0.17	0.0678	-0.0005	-0.15	OE
MXPUTQ		0.0847	-0.0017	-0.50	0.0667	-0.0016	-0.51	IC
N3L6WH		0.0850	-0.0013	-0.39	0.0676	-0.0006	-0.20	AE
N8UMVB		0.0847	-0.0017	-0.50	0.0673	-0.0009	-0.29	OE
N9F2VZ		0.0863	0.0000	0.00	0.0667	-0.0016	-0.51	OE
NCZJYJ		0.0872	0.0009	0.26	0.0694	0.0012	0.40	OE
NEPDXR		0.0895	0.0032	0.94	0.0714	0.0031	1.03	OE
NHRNWU		0.0853	-0.0010	-0.30	0.0677	-0.0006	-0.19	OE
NNEVJM		0.0800	-0.0063	-1.87	0.0633	-0.0049	-1.61	GD
NVU6W4		0.0807	-0.0057	-1.68	0.0630	-0.0052	-1.72	GD
P8JLZV	*	0.0903	0.0040	1.18	0.0690	0.0008	0.25	OE
PFZFFK		0.0840	-0.0023	-0.69	0.0663	-0.0019	-0.62	OE
PYD6MN		0.0830	-0.0033	-0.99	0.0669	-0.0013	-0.44	OE
PZM6PB	*	0.0950	0.0087	2.56	0.0770	0.0088	2.89	OE
QHZHPY		0.0910	0.0047	1.38	0.0723	0.0041	1.35	OE
RJ6EN9		0.0870	0.0006	0.18	0.0688	0.0005	0.18	XX
RNND CN		0.0847	-0.0017	-0.50	0.0657	-0.0026	-0.84	GD
RRKM3C		0.0870	0.0007	0.19	0.0690	0.0008	0.25	OE
RYN97D		0.0876	0.0012	0.36	0.0681	-0.0001	-0.03	OE
T6M4EC		0.0868	0.0004	0.12	0.0685	0.0002	0.08	OE
TEE38P		0.0853	-0.0010	-0.30	0.0677	-0.0006	-0.19	OE
ULPZD2		0.0910	0.0047	1.38	0.0710	0.0028	0.91	OE
UPB9WF		0.0837	-0.0027	-0.79	0.0653	-0.0029	-0.95	OE
UXYR2V		0.0890	0.0027	0.78	0.0700	0.0018	0.58	XX
UY8ED9		0.0873	0.0010	0.29	0.0680	-0.0002	-0.08	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 176

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V2AU2Q		0.0843	-0.0021	-0.61	0.0664	-0.0019	-0.62	OE
V884T4	*	0.0890	0.0027	0.78	0.0730	0.0048	1.57	OE
VAGCZ3	X	0.1087	0.0223	6.59	0.0927	0.0244	8.04	OE
VQGAVL		0.0885	0.0021	0.63	0.0705	0.0023	0.76	OE
VVWB9X		0.0847	-0.0017	-0.50	0.0673	-0.0009	-0.29	OE
W8GNMY		0.0880	0.0017	0.49	0.0697	0.0014	0.47	IC
WP4JGF	*	0.0797	-0.0067	-1.97	0.0647	-0.0036	-1.17	OE
XM74HJ		0.0853	-0.0010	-0.30	0.0683	0.0001	0.03	OE
XTWDTG		0.0847	-0.0017	-0.50	0.0630	-0.0052	-1.72	AE
XWYTJY		0.0847	-0.0016	-0.49	0.0673	-0.0009	-0.29	OE
XZ2KYQ		0.0875	0.0012	0.35	0.0691	0.0009	0.29	OE
Y787B8		0.0893	0.0030	0.88	0.0713	0.0031	1.02	GD
Y7BAZP		0.0853	-0.0010	-0.30	0.0673	-0.0009	-0.29	OE
Y7HA8K		0.0830	-0.0033	-0.99	0.0660	-0.0022	-0.73	DR
Y9L32J		0.0880	0.0017	0.49	0.0683	0.0001	0.03	OE
YWCBQW		0.0893	0.0030	0.88	0.0710	0.0028	0.91	OE
ZPBJU8		0.0900	0.0037	1.08	0.0700	0.0018	0.58	OE
ZQXEHT		0.0863	0.0000	0.00	0.0657	-0.0026	-0.84	OE
ZV2KLJ		0.0897	0.0033	0.98	0.0710	0.0028	0.91	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.0863	Percent	0.0682	Percent
Stnd Dev Btwn Labs	0.0034	Percent	0.0030	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 104 of 117 reporting participants

Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>2WBA22</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of sample L17.
<b>673WGM</b>	X	Data for sample L18 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample L18.
<b>AHBBCH</b>	X	Data for both samples are low. Possible Systematic error.
<b>B7GERV</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L17.
<b>CRAUJ4</b>	X	Data for both samples are low. Possible Systematic error.
<b>DEPCZX</b>	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>KXWCNR</b>	X	Data for sample L17 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
<b>LLB2KC</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L17.
<b>MJWNUA</b>	X	Data for sample L17 are high. Inconsistent in testing between samples.
<b>VAGCZ3</b>	X	Data for both samples are high. Possible Systematic error.

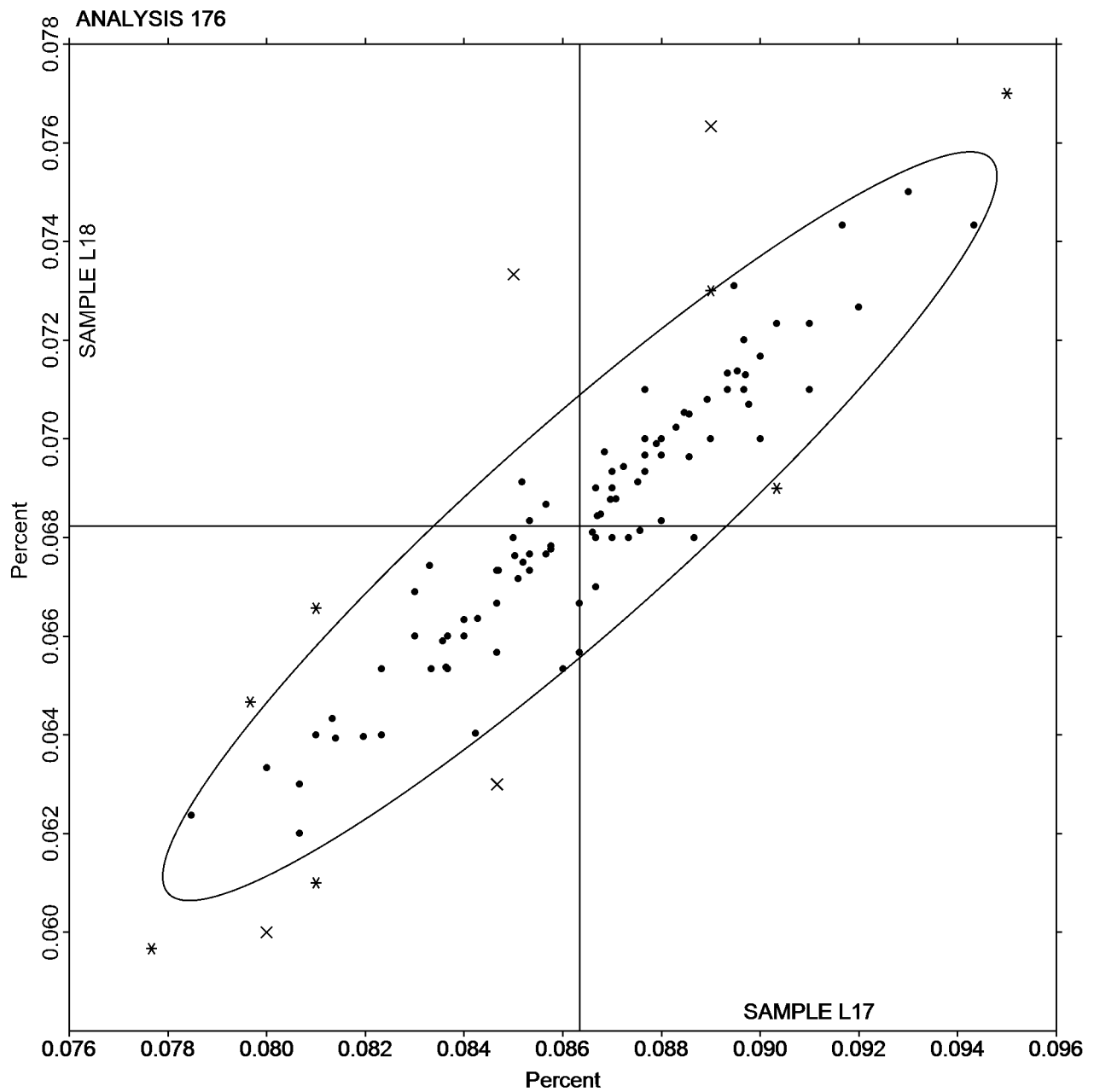
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 176

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

**SAMPLE L17**  
**0.0863 Percent**

**SAMPLE L18**  
**0.0682 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 177

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.1203	0.0090	2.42	0.1063	0.0079	2.37	OE
29K2UW		0.1151	0.0038	1.02	0.1014	0.0030	0.90	OE
2DQY2F		0.1073	-0.0040	-1.08	0.0950	-0.0034	-1.03	OE
2QL2Q3		0.1137	0.0023	0.63	0.1000	0.0016	0.47	IC
2VU73F		0.1120	0.0007	0.18	0.0986	0.0001	0.04	OE
2WBA22		0.1120	0.0007	0.18	0.0977	-0.0008	-0.23	OE
3GFEFH		0.1112	-0.0001	-0.03	0.0979	-0.0005	-0.16	OE
3T49EA		0.1127	0.0013	0.36	0.0990	0.0006	0.17	OE
3YBCAW	X	0.1220	0.0107	2.87	0.1097	0.0112	3.36	OE
4BC78Y		0.1120	0.0007	0.19	0.0994	0.0010	0.30	DR
4NQ3MN		0.1143	0.0030	0.81	0.1003	0.0019	0.57	OE
4RK8QT	X	0.1100	-0.0013	-0.36	0.1443	0.0459	13.74	OE
62LE6L		0.1130	0.0017	0.45	0.1000	0.0016	0.47	OE
673WGM		0.1037	-0.0077	-2.06	0.0917	-0.0068	-2.02	OE
69PKV9		0.1120	0.0007	0.18	0.0993	0.0009	0.27	OE
6ZDBNG		0.1143	0.0030	0.81	0.0990	0.0006	0.17	OE
7RZ8ZZ		0.1176	0.0063	1.69	0.1038	0.0054	1.62	OE
7UYRM8		0.1057	-0.0057	-1.52	0.0950	-0.0034	-1.03	OE
82EU6T		0.1126	0.0013	0.34	0.0996	0.0012	0.35	OE
87QDT3		0.1120	0.0007	0.18	0.1000	0.0016	0.47	OE
8BGDN4	X	0.1200	0.0087	2.33	0.1100	0.0116	3.46	OE
8HQ4DA		0.1117	0.0003	0.09	0.0990	0.0006	0.17	OE
8UU7GX		0.1063	-0.0050	-1.34	0.0970	-0.0014	-0.43	OE
94J6R2		0.1088	-0.0025	-0.68	0.0954	-0.0030	-0.91	OE
9PKNY3		0.1200	0.0087	2.33	0.1000	0.0016	0.47	GD
A2Q4CK		0.1114	0.0000	0.01	0.1008	0.0023	0.70	OE
A8YVWW		0.1091	-0.0022	-0.60	0.0947	-0.0038	-1.13	DR
AHB BCH	X	0.0740	-0.0373	-10.05	0.0627	-0.0358	-10.70	OE
ALLH7H		0.1090	-0.0023	-0.62	0.0949	-0.0035	-1.06	DR
AXBL62		0.1087	-0.0027	-0.72	0.0950	-0.0034	-1.03	OE
B7GERV	X	0.1123	0.0010	0.27	0.0933	-0.0052	-1.54	OE
BM92L2		0.1070	-0.0043	-1.17	0.0940	-0.0044	-1.32	OE
BQQWAX		0.1160	0.0047	1.26	0.1040	0.0056	1.67	DR
BVXGYQ		0.1113	0.0000	0.00	0.0994	0.0009	0.28	OE
BVZP7V		0.1177	0.0063	1.71	0.1050	0.0066	1.97	OE
CEUWAF		0.1105	-0.0008	-0.22	0.0978	-0.0006	-0.18	OE
CHQAKZ		0.1113	0.0000	0.00	0.0977	-0.0008	-0.23	OE
CQ6R2J		0.1150	0.0037	0.99	0.1027	0.0042	1.27	OE
CRAUJ4		0.1173	0.0060	1.62	0.0990	0.0006	0.17	GD
D2E282		0.1133	0.0020	0.54	0.0973	-0.0011	-0.33	IC
D3CC8D		0.1107	-0.0007	-0.18	0.0970	-0.0014	-0.43	OE
D92RY6		0.1140	0.0027	0.72	0.1010	0.0026	0.77	OE
DEPCZX	*	0.1020	-0.0093	-2.51	0.0897	-0.0088	-2.62	OE
DGQ267		0.1107	-0.0007	-0.18	0.0970	-0.0014	-0.43	OE
DL6U2Q		0.1100	-0.0013	-0.36	0.0963	-0.0021	-0.63	IC
DQKBLG		0.1145	0.0032	0.86	0.1002	0.0017	0.52	OE
EEXB6Q		0.1134	0.0021	0.57	0.1003	0.0018	0.55	OE
EFTNWR		0.1100	-0.0013	-0.36	0.1000	0.0016	0.47	OE
EMCH33		0.1063	-0.0050	-1.34	0.0953	-0.0031	-0.93	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 177

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ENNRZM		0.1146	0.0032	0.87	0.1011	0.0027	0.80	DR
EUW8F6		0.1107	-0.0007	-0.18	0.0975	-0.0009	-0.27	AE
FCWBYU		0.1120	0.0007	0.18	0.0987	0.0002	0.07	OE
FGN24X		0.1108	-0.0005	-0.13	0.0976	-0.0008	-0.23	OE
FJAB9C		0.1107	-0.0007	-0.18	0.0960	-0.0024	-0.73	OE
FV6MGG	X	0.1117	0.0003	0.09	0.0890	-0.0094	-2.82	OE
GDG9KH		0.1080	-0.0033	-0.90	0.0963	-0.0021	-0.63	OE
GHQBKT		0.1130	0.0017	0.45	0.1007	0.0022	0.67	OE
GRWFBN		0.1075	-0.0038	-1.02	0.0941	-0.0043	-1.28	OE
H2HUV7		0.1124	0.0011	0.29	0.0995	0.0010	0.31	OE
HNYJUF		0.1097	-0.0017	-0.45	0.0894	-0.0090	-2.69	OE
JKFVQW		0.1116	0.0003	0.08	0.0989	0.0005	0.15	OE
JWNPT9		0.1091	-0.0022	-0.59	0.0961	-0.0024	-0.71	OE
K8D2CC		0.1100	-0.0013	-0.36	0.1000	0.0016	0.47	OE
K9C9PM		0.1083	-0.0030	-0.82	0.0959	-0.0025	-0.75	OE
KCBG48		0.1146	0.0033	0.88	0.1013	0.0029	0.86	OE
KG92Y3		0.1160	0.0047	1.26	0.1020	0.0036	1.07	OE
KXWCNR	X	0.1740	0.0627	16.87	0.1587	0.0602	18.03	WD
KYV7YG		0.1123	0.0010	0.27	0.0960	-0.0024	-0.73	OE
LHZRU3		0.1140	0.0027	0.72	0.1010	0.0026	0.77	OE
LLB2KC		0.1037	-0.0077	-2.06	0.0927	-0.0058	-1.72	OE
LYLZNW		0.1170	0.0057	1.53	0.1023	0.0039	1.17	OE
M76GZ8		0.1100	-0.0013	-0.36	0.1000	0.0016	0.47	OE
MB2NFH		0.1160	0.0047	1.26	0.1020	0.0036	1.07	DR
MJWNUA		0.1120	0.0007	0.18	0.0987	0.0002	0.07	OE
MXMTJ6		0.1128	0.0014	0.39	0.1003	0.0018	0.55	OE
MXPUTQ		0.1160	0.0047	1.26	0.1007	0.0022	0.67	IC
N3L6WH		0.1114	0.0001	0.02	0.0983	-0.0002	-0.05	AE
N8UMVB	*	0.1120	0.0007	0.18	0.0953	-0.0031	-0.93	OE
N9F2VZ		0.1087	-0.0027	-0.72	0.0960	-0.0024	-0.73	OE
NCZJYJ	*	0.1080	-0.0034	-0.91	0.0988	0.0004	0.12	OE
NEPDXR		0.1137	0.0023	0.63	0.1012	0.0028	0.83	OE
NHRNWU		0.1117	0.0003	0.09	0.0987	0.0002	0.07	OE
NNEVJM		0.1083	-0.0030	-0.81	0.0950	-0.0034	-1.03	GD
NVU6W4	*	0.1217	0.0103	2.78	0.1070	0.0086	2.57	GD
P8JLZV		0.1080	-0.0033	-0.90	0.0960	-0.0024	-0.73	OE
PFZFFK		0.1107	-0.0007	-0.18	0.0970	-0.0014	-0.43	OE
PYD6MN		0.1051	-0.0063	-1.69	0.0933	-0.0052	-1.54	OE
PZM6PB	*	0.1080	-0.0033	-0.90	0.0993	0.0009	0.27	OE
QHZHPY		0.1083	-0.0030	-0.81	0.0963	-0.0021	-0.63	OE
RJ6EN9		0.1094	-0.0019	-0.51	0.0982	-0.0003	-0.08	XX
RNND CN	X	0.1270	0.0157	4.22	0.1093	0.0109	3.27	GD
RRKM3C	X	0.1143	0.0030	0.81	0.1130	0.0146	4.36	OE
RYN97D		0.1117	0.0003	0.09	0.0973	-0.0011	-0.33	OE
T6M4EC		0.1107	-0.0007	-0.18	0.0978	-0.0006	-0.18	OE
TEE38P		0.1073	-0.0040	-1.08	0.0953	-0.0031	-0.93	OE
ULPZD2		0.1130	0.0017	0.45	0.0990	0.0006	0.17	OE
UPB9WF		0.1133	0.0020	0.54	0.1010	0.0026	0.77	OE
UXYR2V		0.1150	0.0037	0.99	0.1000	0.0016	0.47	XX

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 177

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

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UY8ED9		0.1073	-0.0040	-1.08	0.0947	-0.0038	-1.13	OE
V2AU2Q		0.1128	0.0015	0.39	0.0991	0.0007	0.21	OE
V884T4		0.1087	-0.0027	-0.72	0.0967	-0.0018	-0.53	OE
VAGCZ3		0.1153	0.0040	1.08	0.1047	0.0062	1.87	OE
VQGAVL		0.1030	-0.0083	-2.24	0.0922	-0.0062	-1.85	OE
VVWB9X		0.1170	0.0057	1.53	0.1033	0.0049	1.47	OE
W8GNMY		0.1100	-0.0013	-0.36	0.0970	-0.0014	-0.43	IC
WP4JGF		0.1077	-0.0037	-0.99	0.0953	-0.0031	-0.93	OE
XM74HJ	*	0.1183	0.0070	1.89	0.1070	0.0086	2.57	OE
XTWDTG	*	0.1183	0.0070	1.89	0.1020	0.0036	1.07	AE
XWYTJY		0.1147	0.0033	0.90	0.1013	0.0028	0.85	OE
XZ2KYQ		0.1094	-0.0020	-0.53	0.0960	-0.0024	-0.72	OE
Y787B8		0.1110	-0.0003	-0.09	0.0973	-0.0011	-0.33	GD
Y7BAZP		0.1110	-0.0003	-0.09	0.0990	0.0006	0.17	OE
Y7HA8K		0.1090	-0.0023	-0.63	0.0950	-0.0034	-1.03	DR
Y9L32J	*	0.1017	-0.0097	-2.60	0.0887	-0.0098	-2.92	OE
YWCBQW		0.1100	-0.0013	-0.36	0.0970	-0.0014	-0.43	OE
ZPBJU8		0.1100	-0.0013	-0.36	0.1000	0.0016	0.47	OE
ZQXEHT		0.1097	-0.0017	-0.45	0.1030	0.0046	1.37	OE
ZV2KLJ		0.1150	0.0037	0.99	0.1027	0.0042	1.27	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.1113	Percent	0.0984	Percent
Stnd Dev Btwn Labs	0.0037	Percent	0.0033	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 105 of 118 reporting participants

Cycle 105  
1st Q, 2014

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**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>3YBCAW</b>	X	Data for both samples are high. Possible Systematic error.
<b>4RK8QT</b>	X	Data for sample L18 are high. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
<b>8BGDN4</b>	X	Data for sample L18 are high. Inconsistent in testing between samples.
<b>AHBBCH</b>	X	Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample L17.
<b>B7GERV</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
<b>FV6MGG</b>	X	Data for sample L18 are low. Inconsistent in testing between samples.
<b>KXWCNR</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>RNNDCN</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples.
<b>RRKM3C</b>	X	Data for sample L18 are high. Inconsistent in testing between samples.



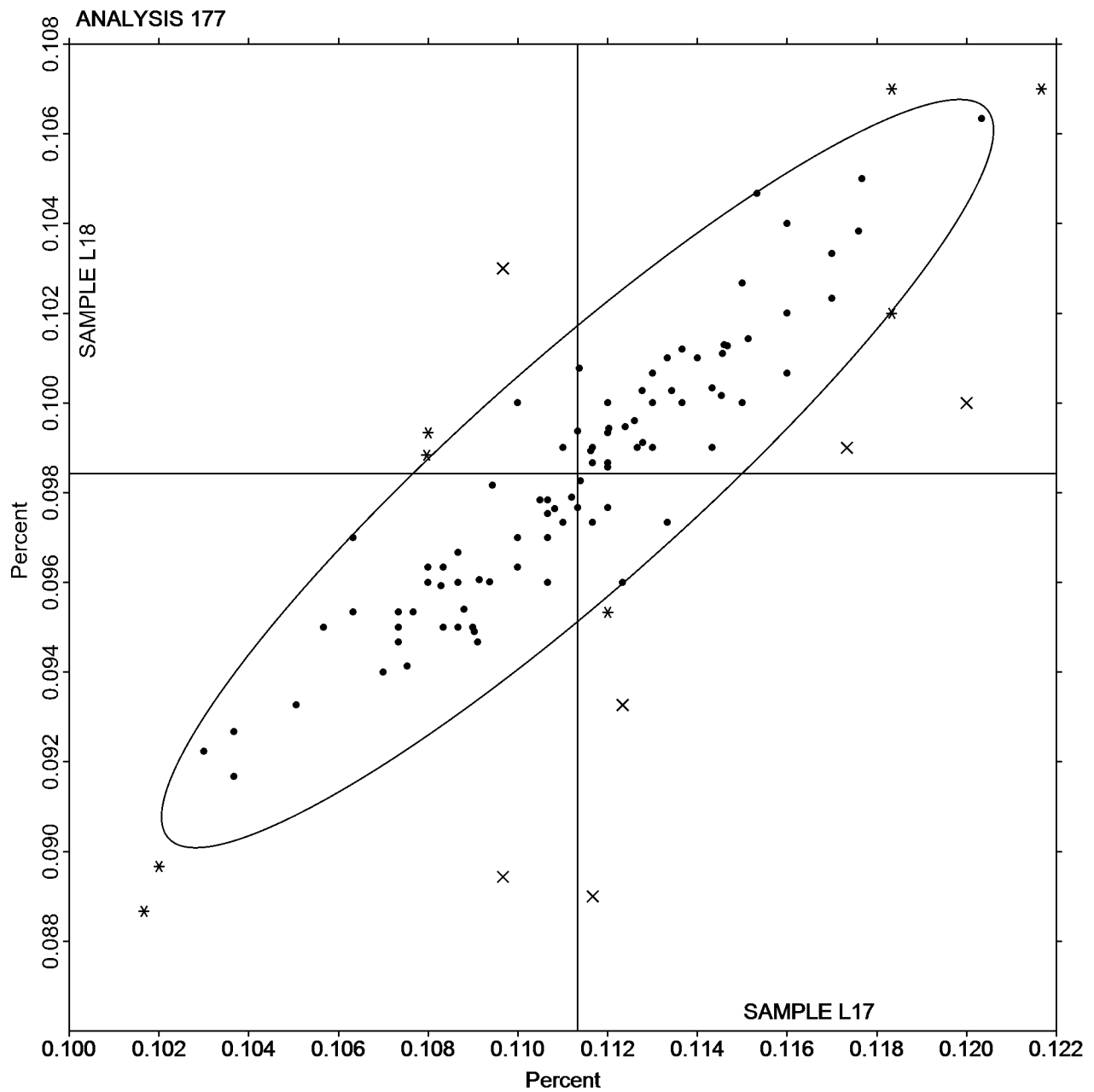
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 177

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

**SAMPLE L17**  
**0.1113 Percent**

**SAMPLE L18**  
**0.0984 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent  
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX		0.0253	0.0016	0.86	0.0234	0.0016	0.78	OE
29K2UW		0.0233	-0.0004	-0.20	0.0217	-0.0002	-0.08	OE
2DQY2F		0.0223	-0.0014	-0.71	0.0200	-0.0019	-0.94	OE
2QL2Q3		0.0230	-0.0007	-0.36	0.0210	-0.0009	-0.44	IC
2VU73F		0.0236	-0.0001	-0.05	0.0222	0.0003	0.15	OE
2WBA22		0.0230	-0.0007	-0.34	0.0214	-0.0004	-0.22	OE
3GFEFH		0.0232	-0.0005	-0.27	0.0211	-0.0008	-0.39	OE
3YBCAW		0.0267	0.0030	1.56	0.0247	0.0028	1.40	OE
4BC78Y		0.0230	-0.0007	-0.36	0.0212	-0.0007	-0.35	DR
4NQ3MN	*	0.0282	0.0045	2.34	0.0270	0.0051	2.55	OE
4RK8QT		0.0237	0.0000	-0.01	0.0223	0.0005	0.23	OE
62LE6L		0.0226	-0.0011	-0.57	0.0207	-0.0012	-0.59	OE
673WGM	X	0.0200	-0.0037	-1.93	0.00900	-0.0129	-6.45	OE
69PKV9		0.0250	0.0013	0.69	0.0227	0.0008	0.40	OE
6ZDBNG		0.0229	-0.0008	-0.43	0.0209	-0.0009	-0.47	OE
7RZ8ZZ	X	0.0166	-0.0071	-3.72	0.0137	-0.0082	-4.11	OE
7UYRM8		0.0253	0.0016	0.86	0.0230	0.0011	0.57	OE
82EU6T		0.0243	0.0006	0.30	0.0225	0.0006	0.32	OE
87QDT3		0.0243	0.0006	0.30	0.0221	0.0002	0.12	OE
8BGDN4	X	0.0170	-0.0067	-3.50	0.0157	-0.0062	-3.11	OE
8HQ4DA		0.0228	-0.0009	-0.48	0.0206	-0.0013	-0.64	OE
94J6R2		0.0282	0.0045	2.36	0.0263	0.0044	2.20	OE
9PKNY3	*	0.0250	0.0013	0.69	0.0220	0.0001	0.07	GD
A2Q4CK		0.0228	-0.0009	-0.45	0.0212	-0.0007	-0.35	OE
AHBBCH		0.0253	0.0016	0.86	0.0250	0.0031	1.57	OE
AXBL62		0.0242	0.0005	0.25	0.0218	-0.0001	-0.05	OE
B7GERV	X	0.0289	0.0052	2.71	0.0241	0.0023	1.13	OE
BM92L2	X	0.0301	0.0064	3.37	0.0284	0.0065	3.26	OE
BQQWAX	X	0.0333	0.0096	5.05	0.0313	0.0095	4.74	DR
BVXGYQ	*	0.0249	0.0012	0.63	0.0241	0.0022	1.12	OE
BVZP7V		0.0207	-0.0030	-1.57	0.0190	-0.0029	-1.45	OE
CEUWAF		0.0224	-0.0013	-0.69	0.0202	-0.0017	-0.85	OE
CHQAKZ		0.0223	-0.0014	-0.71	0.0213	-0.0005	-0.27	OE
CQ6R2J		0.0233	-0.0004	-0.19	0.0213	-0.0005	-0.27	OE
CRAUJ4		0.0273	0.0036	1.91	0.0250	0.0031	1.57	GD
D2E282		0.0260	0.0023	1.21	0.0240	0.0021	1.07	IC
D3CC8D	X	0.0280	0.0043	2.26	0.0277	0.0058	2.90	OE
D92RY6		0.0234	-0.0003	-0.15	0.0214	-0.0004	-0.22	OE
DEPCZX		0.0252	0.0015	0.77	0.0229	0.0010	0.52	OE
DGQ267		0.0227	-0.0010	-0.54	0.0210	-0.0009	-0.44	OE
DL6U2Q		0.0228	-0.0009	-0.48	0.0209	-0.0010	-0.49	IC
DQKBLG	*	0.0290	0.0053	2.80	0.0274	0.0055	2.77	OE
EEXB6Q		0.0240	0.0003	0.14	0.0221	0.0003	0.13	OE
EFTNWR		0.0230	-0.0007	-0.36	0.0213	-0.0005	-0.27	OE
EMCH33	*	0.0196	-0.0041	-2.14	0.0183	-0.0036	-1.79	OE
ENNRZM		0.0251	0.0014	0.74	0.0234	0.0015	0.77	DR
EUW8F6		0.0220	-0.0017	-0.90	0.0202	-0.0017	-0.85	AE
FCWBYU		0.0234	-0.0003	-0.15	0.0215	-0.0003	-0.17	OE
FGN24X		0.0237	0.0000	0.00	0.0216	-0.0002	-0.11	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent  
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
FJAB9C		0.0277	0.0040	2.08	0.0270	0.0051	2.57	OE
FV6MGG		0.0227	-0.0010	-0.54	0.0210	-0.0009	-0.44	OE
GDG9KH	*	0.0270	0.0033	1.73	0.0260	0.0041	2.07	OE
GHQBKT		0.0241	0.0004	0.21	0.0225	0.0006	0.32	OE
GRWFBN		0.0200	-0.0037	-1.95	0.0178	-0.0041	-2.06	OE
H2HUV7		0.0231	-0.0006	-0.33	0.0212	-0.0007	-0.35	OE
HNYJUF		0.0276	0.0039	2.03	0.0262	0.0043	2.15	OE
JKFVQW		0.0241	0.0004	0.20	0.0225	0.0006	0.30	OE
JWNPT9		0.0234	-0.0003	-0.14	0.0215	-0.0004	-0.18	OE
K8D2CC		0.0200	-0.0037	-1.93	0.0200	-0.0019	-0.94	OE
K9C9PM		0.0223	-0.0014	-0.74	0.0207	-0.0012	-0.60	OE
KCBG48		0.0267	0.0030	1.58	0.0246	0.0028	1.38	OE
KG92Y3		0.0215	-0.0022	-1.16	0.0194	-0.0025	-1.25	OE
KXWCNR	X	0.0240	0.0003	0.16	0.0150	-0.0069	-3.44	WD
KYV7YG		0.0240	0.0003	0.16	0.0230	0.0011	0.57	OE
LHZRU3	X	0.0360	0.0123	6.45	0.0280	0.0061	3.07	OE
LYLZNW	X	0.0190	-0.0047	-2.46	0.0160	-0.0059	-2.94	OE
M76GZ8		0.0230	-0.0007	-0.36	0.0210	-0.0009	-0.44	OE
MB2NFH		0.0248	0.0011	0.60	0.0228	0.0010	0.48	DR
MJWNUA		0.0220	-0.0017	-0.88	0.0203	-0.0015	-0.77	OE
MXMTJ6		0.0243	0.0006	0.30	0.0226	0.0007	0.37	OE
MXPUTQ		0.0231	-0.0006	-0.31	0.0214	-0.0005	-0.23	IC
N3L6WH		0.0238	0.0001	0.08	0.0225	0.0007	0.33	AE
N8UMVB		0.0240	0.0003	0.16	0.0227	0.0008	0.40	OE
N9F2VZ		0.0243	0.0006	0.34	0.0227	0.0008	0.40	OE
NCZJYJ		0.0229	-0.0008	-0.43	0.0213	-0.0005	-0.27	OE
NEPDXR	*	0.0190	-0.0047	-2.47	0.0165	-0.0053	-2.67	OE
NHRNWU		0.0228	-0.0009	-0.47	0.0204	-0.0014	-0.72	OE
NNEVJM		0.0230	-0.0007	-0.36	0.0220	0.0001	0.07	GD
NVU6W4		0.0220	-0.0017	-0.88	0.0200	-0.0019	-0.94	GD
P8JLZV		0.0223	-0.0014	-0.71	0.0203	-0.0015	-0.77	OE
PFZFFK		0.0241	0.0004	0.21	0.0221	0.0002	0.12	OE
PYD6MN		0.0233	-0.0004	-0.20	0.0214	-0.0005	-0.23	OE
PZM6PB		0.0240	0.0003	0.16	0.0223	0.0005	0.23	OE
QHZHPY		0.0277	0.0040	2.10	0.0258	0.0040	1.99	OE
RJ6EN9		0.0228	-0.0009	-0.45	0.0219	0.0000	0.00	XX
RNND CN		0.0233	-0.0004	-0.19	0.0217	-0.0002	-0.10	GD
RRKM3C		0.0220	-0.0017	-0.88	0.0203	-0.0015	-0.77	OE
RYN97D		0.0227	-0.0010	-0.52	0.0204	-0.0015	-0.74	OE
T6M4EC		0.0241	0.0004	0.21	0.0223	0.0004	0.22	OE
TEE38P		0.0221	-0.0016	-0.83	0.0207	-0.0012	-0.59	OE
ULPZD2	*	0.0220	-0.0017	-0.88	0.0190	-0.0029	-1.44	OE
UPB9WF		0.0254	0.0017	0.91	0.0236	0.0017	0.87	OE
UXYR2V		0.0242	0.0005	0.27	0.0222	0.0003	0.17	XX
UY8ED9		0.0233	-0.0004	-0.19	0.0220	0.0001	0.07	OE
V2AU2Q		0.0236	-0.0001	-0.07	0.0218	-0.0001	-0.04	OE
V884T4		0.0250	0.0013	0.70	0.0213	-0.0005	-0.27	OE
VAGCZ3	*	0.0270	0.0033	1.73	0.0260	0.0041	2.07	OE
VQGAVL		0.0197	-0.0040	-2.09	0.0175	-0.0044	-2.21	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent  
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VVWB9X		0.0260	0.0023	1.21	0.0240	0.0021	1.07	OE
W8GNMY		0.0233	-0.0004	-0.22	0.0208	-0.0011	-0.54	IC
WP4JGF		0.0243	0.0006	0.34	0.0223	0.0004	0.20	OE
XM74HJ	X	0.0297	0.0060	3.13	0.0297	0.0078	3.91	OE
XTWDTG		0.0230	-0.0007	-0.36	0.0213	-0.0005	-0.27	AE
XWYTJY		0.0233	-0.0004	-0.22	0.0213	-0.0005	-0.27	OE
XZ2KYQ		0.0248	0.0011	0.59	0.0229	0.0011	0.54	OE
Y787B8		0.0216	-0.0021	-1.11	0.0198	-0.0021	-1.05	GD
Y7BAZP		0.0203	-0.0034	-1.76	0.0183	-0.0035	-1.77	OE
Y7HA8K		0.0280	0.0043	2.26	0.0260	0.0041	2.07	DR
Y9L32J		0.0230	-0.0007	-0.36	0.0210	-0.0009	-0.44	OE
YWCBQW		0.0226	-0.0011	-0.57	0.0208	-0.0010	-0.52	OE
ZPBJU8		0.0233	-0.0004	-0.19	0.0220	0.0001	0.07	OE
ZQXEHT		0.0220	-0.0017	-0.88	0.0253	0.0035	1.74	OE
ZV2KLJ		0.0221	-0.0016	-0.85	0.0201	-0.0018	-0.90	OE

Summary Statistics

	Sample L17		Sample L18	
Grand Means	0.0237	Percent	0.0219	Percent
Stnd Dev Btwn Labs	0.0019	Percent	0.0020	Percent

Samples L17 , L18 : AISI 1018, A36

Statistics based on 97 of 113 reporting participants

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 178  
Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent  
MOLYBDENUM (Mo)

**Comments on assigned Data Flags for Analysis #178**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>673WGM</b>	X	Data for sample L18 are low. Inconsistent in testing between samples.
<b>7RZ8ZZ</b>	X	Data for both samples are low. Possible Systematic error.
<b>8BGDN4</b>	X	Data for both samples are low. Possible Systematic error.
<b>B7GERV</b>	X	Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
<b>BM92L2</b>	X	Data for both samples are high. Possible Systematic error.
<b>BQQWAX</b>	X	Data for both samples are high. Possible Systematic error.
<b>D3CC8D</b>	X	Data for sample L18 are high. Inconsistent in testing between samples.
<b>KXWCNR</b>	X	Data for sample L18 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
<b>LHZRU3</b>	X	Data for both samples are high. Possible Systematic error.
<b>LYLZNW</b>	X	Data for sample L18 are low. Inconsistent in testing between samples.
<b>XM74HJ</b>	X	Data for both samples are high. Possible Systematic error.

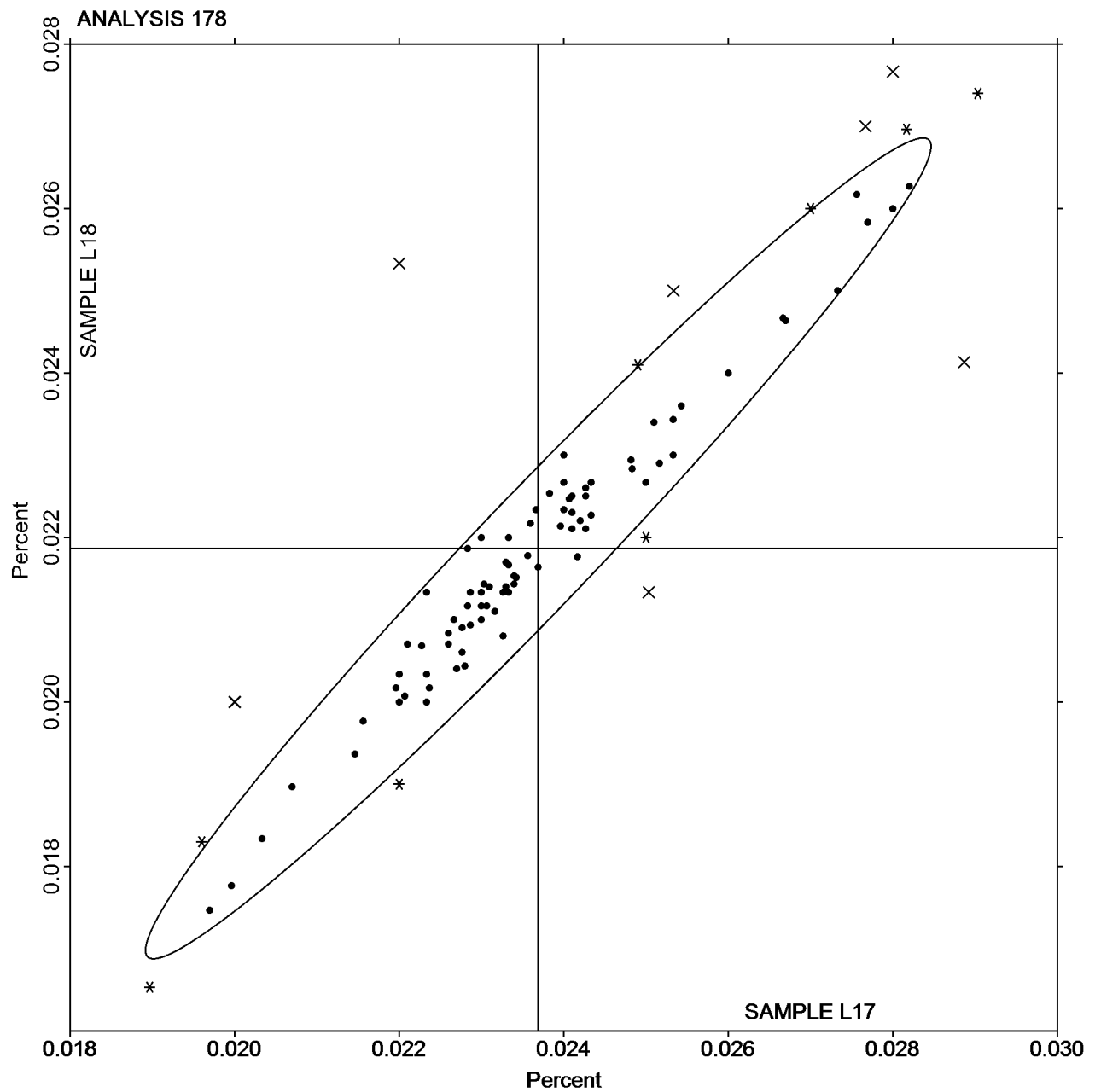
Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 178

Chemical Analysis Element #9 - Carbon & Low Alloy Steel - Percent  
MOLYBDENUM (Mo)

**SAMPLE L17**  
**0.0237 Percent**

**SAMPLE L18**  
**0.0219 Percent**



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
27Y3DX	X	0.00553	0.00295	3.16	0.00667	0.00483	5.72	OE
29K2UW		0.00313	0.00055	0.59	0.00223	0.00040	0.47	OE
2DQY2F		0.00100	-0.00158	-1.69	0.00100	-0.00083	-0.99	OE
2QL2Q3		0.00220	-0.00038	-0.41	0.00197	0.00013	0.16	IC
2VU73F		0.00417	0.00159	1.70	0.00237	0.00053	0.63	OE
2WBA22		0.00183	-0.00075	-0.80	0.00110	-0.00073	-0.87	OE
3GFEFH		0.00280	0.00022	0.24	0.00203	0.00020	0.24	OE
3T49EA		0.00200	-0.00058	-0.62	0.00100	-0.00083	-0.99	XX
3YBCAW	X	0.00900	0.00642	6.88	0.00900	0.00717	8.49	OE
4NQ3MN		0.00130	-0.00128	-1.37	0.00057	-0.00127	-1.50	OE
62LE6L		0.00247	-0.00011	-0.12	0.00110	-0.00073	-0.87	OE
673WGM		0.00200	-0.00058	-0.62	0.00100	-0.00083	-0.99	OE
69PKV9		0.00280	0.00022	0.24	0.00207	0.00023	0.28	OE
6ZDBNG		0.00217	-0.00041	-0.44	0.00123	-0.00060	-0.71	OE
7RZ8ZZ	X	0.00971	0.00713	7.64	0.00906	0.00723	8.56	OE
7UYRM8		0.00333	0.00075	0.81	0.00200	0.00017	0.20	OE
82EU6T		0.00133	-0.00125	-1.34	0.00043	-0.00140	-1.66	OE
87QDT3		0.00290	0.00032	0.34	0.00197	0.00013	0.16	OE
8BGDN4	X	0.00683	0.00425	4.56	0.00600	0.00417	4.93	OE
8HQ4DA		0.00253	-0.00005	-0.05	0.00237	0.00053	0.63	OE
94J6R2		0.00300	0.00042	0.45	0.00233	0.00050	0.59	OE
9PKNY3		0.00200	-0.00058	-0.62	0.00100	-0.00083	-0.99	GD
A2Q4CK		0.00120	-0.00138	-1.48	0.00067	-0.00117	-1.38	OE
B7GERV		0.00233	-0.00025	-0.26	0.00197	0.00013	0.16	OE
BM92L2	X	0.00353	0.00095	1.02	0.00617	0.00433	5.13	OE
BVXGYQ		0.00209	-0.00049	-0.52	0.00170	-0.00013	-0.15	IC
BVZP7V	M	0.00333	0.00075	0.81	No Data Reported			XX
CEUWAF	M	0.00050	-0.00208	-2.23	No Data Reported			OE
CHQAKZ		0.00220	-0.00038	-0.41	0.00170	-0.00013	-0.16	OE
CQ6R2J		0.00303	0.00045	0.49	0.00217	0.00033	0.39	OE
CRAUJ4		0.00200	-0.00058	-0.62	0.00133	-0.00050	-0.59	GD
D92RY6		0.00343	0.00085	0.91	0.00157	-0.00027	-0.32	OE
DEPCZX	X	0.0150	0.01242	13.30	0.00537	0.00353	4.18	OE
DGQ267		0.00300	0.00042	0.45	0.00200	0.00017	0.20	OE
DL6U2Q		0.00240	-0.00018	-0.19	0.00223	0.00040	0.47	IC
DQKBLG		0.00140	-0.00118	-1.26	0.00100	-0.00083	-0.99	OE
EEXB6Q		0.00343	0.00085	0.91	0.00240	0.00057	0.67	OE
EFTNWR		0.00200	-0.00058	-0.62	0.00167	-0.00017	-0.20	OE
EMCH33		0.00297	0.00039	0.41	0.00170	-0.00013	-0.16	OE
ENNRZM	*	0.00493	0.00235	2.52	0.00393	0.00210	2.49	DR
EUW8F6	*	0.00517	0.00259	2.77	0.00403	0.00220	2.61	AE
FGN24X	*	0.00379	0.00121	1.30	0.00374	0.00191	2.26	OE
FJAB9C		0.00233	-0.00025	-0.26	0.00100	-0.00083	-0.99	OE
FV6MGG	M	0.00133	-0.00125	-1.34	No Data Reported			OE
GDG9KH		0.00200	-0.00058	-0.62	0.00233	0.00050	0.59	OE
GHQBKT		0.00307	0.00049	0.52	0.00193	0.00010	0.12	OE
GRWFBN		0.00213	-0.00045	-0.48	0.00143	-0.00040	-0.47	OE
H2HUV7		0.00323	0.00065	0.70	0.00197	0.00013	0.16	OE
HNYJUF	X	0.00633	0.00375	4.02	0.00563	0.00380	4.50	OE

Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals  
Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

WebCode	Data Flag	Sample L17			Sample L18			Instr Code
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
JKFVQW		0.00277	0.00019	0.20	0.00200	0.00017	0.20	OE
JWNPT9		0.00293	0.00035	0.38	0.00200	0.00017	0.20	OE
K8D2CC		0.00300	0.00042	0.45	0.00200	0.00017	0.20	OE
K9C9PM		0.00351	0.00093	1.00	0.00293	0.00110	1.30	OE
KCBG48	X	0.00590	0.00332	3.56	0.00463	0.00280	3.32	OE
KG92Y3		0.00110	-0.00148	-1.59	0.00025	-0.00158	-1.87	OE
KXWCNR	M	0.00300	0.00042	0.45	No Data Reported			WD
KYV7YG		0.00200	-0.00058	-0.62	0.00200	0.00017	0.20	OE
LHZRU3	*	0.00500	0.00242	2.59	0.00400	0.00217	2.57	OE
LYLZNW		0.00100	-0.00158	-1.69	0.00100	-0.00083	-0.99	OE
MB2NFH		0.00370	0.00112	1.20	0.00327	0.00143	1.70	DR
MXMTJ6		0.00240	-0.00018	-0.19	0.00140	-0.00043	-0.51	OE
N3L6WH	M	0.00100	-0.00158	-1.69	No Data Reported			AE
N8UMVB		0.00300	0.00042	0.45	0.00200	0.00017	0.20	OE
N9F2VZ	X	0.00500	0.00242	2.59	0.00500	0.00317	3.75	OE
NCZJYJ		0.00203	-0.00055	-0.59	0.00100	-0.00083	-0.99	OE
NHRNWU		0.00237	-0.00021	-0.23	0.00230	0.00047	0.55	OE
NVU6W4	M	0.00100	-0.00158	-1.69	No Data Reported			GD
P8JLZV		0.00437	0.00179	1.91	0.00287	0.00103	1.22	OE
PFZFFK		0.00350	0.00092	0.99	0.00263	0.00080	0.95	OE
PYD6MN		0.00130	-0.00128	-1.37	0.00130	-0.00053	-0.63	OE
PZM6PB	X	0.00733	0.00475	5.09	0.00680	0.00497	5.88	OE
QHZZPY		0.00363	0.00105	1.13	0.00320	0.00137	1.62	OE
RJ6EN9		0.00350	0.00092	0.99	0.00257	0.00073	0.87	XX
RRKM3C		0.00133	-0.00125	-1.34	0.00100	-0.00083	-0.99	OE
RYN97D		0.00137	-0.00121	-1.30	0.00090	-0.00093	-1.10	OE
T6M4EC		0.00230	-0.00028	-0.30	0.00160	-0.00023	-0.28	OE
TEE38P		0.00243	-0.00015	-0.16	0.00180	-0.00003	-0.04	OE
ULPZD2		0.00200	-0.00058	-0.62	0.00167	-0.00017	-0.20	OE
UY8ED9		0.00213	-0.00045	-0.48	0.00100	-0.00083	-0.99	OE
V2AU2Q		0.00185	-0.00073	-0.78	0.00083	-0.00100	-1.19	OE
V884T4		0.00100	-0.00158	-1.69	0.00100	-0.00083	-0.99	OE
VQGAVL		0.00317	0.00059	0.63	0.00310	0.00127	1.50	OE
W8GNMY		0.00280	0.00022	0.24	0.00170	-0.00013	-0.16	OE
XM74HJ	X	0.00900	0.00642	6.88	0.00800	0.00617	7.30	OE
XTWDTG		0.00253	-0.00005	-0.05	0.00094	-0.00089	-1.06	AE
XWYTJY		0.00320	0.00062	0.66	0.00230	0.00047	0.55	OE
XZ2KYQ		0.00212	-0.00046	-0.49	0.00111	-0.00072	-0.85	OE
Y787B8		0.00247	-0.00011	-0.12	0.00153	-0.00030	-0.35	GD
Y7BAZP		0.00400	0.00142	1.52	0.00300	0.00117	1.38	OE
Y7HA8K		0.00200	-0.00058	-0.62	0.00100	-0.00083	-0.99	DR
YWCBQW		0.00227	-0.00031	-0.34	0.00150	-0.00033	-0.39	OE
ZPBJU8	M	0.00067	-0.00191	-2.05	No Data Reported			OE
ZV2KLJ		0.00230	-0.00028	-0.30	0.00253	0.00070	0.83	OE



Cycle 105  
1st Q, 2014

Interlaboratory Testing Program for Metals

Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

Summary Statistics

	<u>Sample L17</u>		<u>Sample L18</u>	
Grand Means	0.00258	Percent	0.00183	Percent
Std Dev Btwn Labs	0.00093	Percent	0.00084	Percent

Samples L17, L18: AISI 1018, A36

Statistics based on 75 of 93 reporting participants

Cycle 105  
1st Q, 2014

## Interlaboratory Testing Program for Metals

### Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

#### **Comments on assigned Data Flags for Analysis #179**

<u>WebCode</u>	<u>Flag</u>	<u>Analyst Comment</u>
<b>27Y3DX</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L18.
<b>3YBCAW</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L18.
<b>7RZ8ZZ</b>	X	Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample L17.
<b>8BGDN4</b>	X	Data for both samples are high. Possible Systematic error.
<b>BM92L2</b>	X	Data for sample L18 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample L18.
<b>BVZP7V</b>	M	Laboratory did not submit data for sample L18. Inconsistent within the determinations of sample L17.
<b>CEUWAF</b>	M	Laboratory did not submit data for sample L18.
<b>DEPCZX</b>	X	Data for both samples are high. Possible Systematic error.
<b>FV6MGG</b>	M	Laboratory did not submit data for sample L18. Inconsistent within the determinations of sample L17.
<b>HNYJUF</b>	X	Data for both samples are high. Possible Systematic error.
<b>KCBG48</b>	X	Data for both samples are high. Possible Systematic error.
<b>KXWCNR</b>	M	Laboratory did not submit data for sample L18.
<b>N3L6WH</b>	M	Laboratory did not submit data for sample L18.
<b>N9F2VZ</b>	X	Data for sample L18 are high. Inconsistent in testing between samples.
<b>NVU6W4</b>	M	Laboratory did not submit data for sample L18.

Cycle 105  
1st Q, 2014

## Interlaboratory Testing Program for Metals

### Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

<b>PZM6PB</b>	X	Data for both samples are high. Possible Systematic error.
<b>XM74HJ</b>	X	Data for both samples are high. Possible Systematic error.
<b>ZPBJU8</b>	M	Laboratory did not submit data for sample L18. Inconsistent within the determinations of sample L17.

Cycle 105  
1st Q, 2014

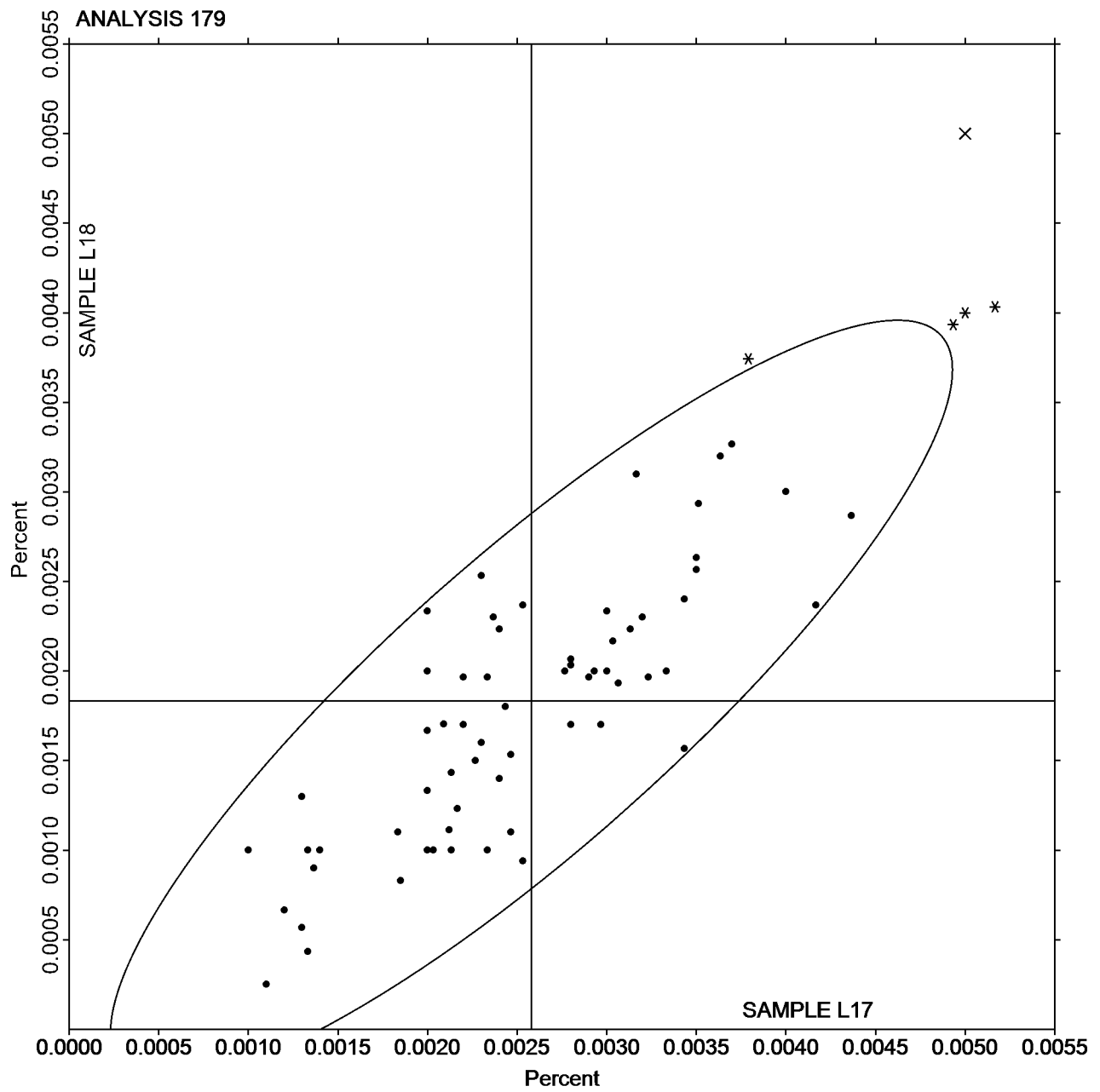
### Interlaboratory Testing Program for Metals

#### Analysis 179

Chemical Analysis Element #10 - Carbon & Low Alloy Steel - Percent  
ALUMINUM (Al)

**SAMPLE L17**  
**0.00258 Percent**

**SAMPLE L18**  
**0.00183 Percent**



## Instrument and Method Code List - Cycle 105

### Instrument and Method information as provided by laboratories

#### 101: Dimensional: Outside Diameter of Plain Plug Gage - ISO GUM

<u>Instrument code</u>	<u>Description</u>
MA	Mitutoyo 0-1" Not Digital Micrometer
MI	Mitutoyo 0-1" Digital Micrometer
MT	Mitutoyo Digital Caliper
SR	Starret 0-1" Not Digital Micrometer
ST	Starret 0-1" Digital Micrometer
XX	Instrument manufacturer not specified by lab

#### 105: Tensile Strength: Lab-Machined Flat Aluminum - ASTM B557

<u>Instrument code</u>	<u>Description</u>
ZZ	Instruments No Longer Tracked

#### 110: Tensile Strength: Pre-Machined Round Steel - ASTM E8

<u>Instrument code</u>	<u>Description</u>
ZZ	Instruments No Longer Tracked

#### 119: Rockwell Hardness: B Scale - ASTM E18

<u>Instrument code</u>	<u>Description</u>
CL	Clark
EM	EMCO
FU	Future-Tech
LE	Leco
MI	Mitutoyo
NA	New Age Industries
SC	Sun-Tec Corporation
UN	United Testing Systems
WI	Wilson / Instron Instruments
XX	Instrument manufacturer not specified by lab

**121: Microhardness: Knoop Indenters (500 gf) - ASTM E384**

<u>Instrument code</u>	<u>Description</u>
AK	Akashi
AN	Antonik
AT	ATS
BU	Buehler, Ltd.
CL	Clark
CM	Clemex
FU	Future-Tech
LE	Leco
MI	Mitutoyo
SH	Shimadzu
ST	Struers
WI	Wilson-Wolpert/Instron
WT	Wilson-Wolpert-Tukon
WZ	Zwick
XX	Instrument manufacturer not specified by lab

**122: Microhardness: Knoop Indenters (200 gf) - ASTM E384**

<u>Instrument code</u>	<u>Description</u>
AN	Antonik
AT	ATS
BU	Buehler, Ltd.
CL	Clark
CM	Clemex
FU	Future-Tech
LE	Leco
MI	Mitutoyo
ST	Struers
WI	Wilson-Wolpert/Instron
WT	Wilson-Wolpert-Tukon
WZ	Zwick
XX	Instrument manufacturer not specified by lab

**123: Microhardness: Vickers Indenters (500 gf) - ASTM E384**

<u>Instrument code</u>	<u>Description</u>
AK	Akashi
BU	Buehler, Ltd.
CL	Clark
CM	Clemex
EM	EMCO TEST M1C-100
FU	Future-Tech
LE	Leco
MA	Matsuzawa
MI	Mitutoyo
SH	Shimadzu
ST	Struers
WI	Wilson-Wolpert/Instron
WT	Wilson-Wolpert-Tukon
WZ	Zwick
XX	Instrument manufacturer not specified by lab

**135: Brinell Hardness - ASTM E10**

<u>Instrument code</u>	<u>Description</u>
AL	Amsler
AV	Avery
DE	Detroit Testing
EM	EMCO
ER	Ernst
KI	King Tester
LE	Leco
LS	Louis Small
MA	Matsuzawa
NA	New Age Industries
NS	Nakai Seiki Works
PI	Pittsburgh
QT	Qualitest HBE-3000A
RI	Riehle
RS	Reicherter/C.Stiefelmayer Briro
SA	Satec HVL 60
SD	Service Diamond
ST	Steel City
TI	Tinius Olsen
TM	Time TH600
WI	Wilson / Instron Instruments
WO	Wolpert Tester
XX	Instrument manufacturer not specified by lab

**140: Tensile Strength: Lab-Machined Round Steel - ASTM E8**

<u>Instrument code</u>	<u>Description</u>
ZZ	Instruments No Longer Tracked



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

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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

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

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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

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

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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

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

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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 - MOLYBDENUM (Mo)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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

**179: Carbon & Low Alloy Steel, Element #10 - ALUMINUM (Al)**

<u>Method Code</u>	<u>Description</u>
AE	Spectrometry - Atomic Emission (AES)
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