



Fasteners & Metals Testing Program

Summary Report Cycle 106, 2nd Quarter - 2014

Collaborative Testing Services, Inc.

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| <u>Analysis</u> | <u>Test Group</u> |
|-----------------|-------------------|
|-----------------|-------------------|

| Tensile Tests | |
|---------------|--|
|---------------|--|

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

| Fasteners Tests | |
|-----------------|--|
|-----------------|--|

| | |
|-----|--|
| 115 | Fastener Wedge Tensile (10 degree) |
| 116 | Fastener Axial Tensile |
| 125 | Fasteners Hardness |
| 126 | Vickers Hardness |
| 127 | Fastener Wedge Tensile (10 deg) Metric |
| 128 | Fastener Axial Tensile - Metric |
| 129 | Fastener Double Shear |

| Hardness / Metallography Tests | |
|--------------------------------|--|
|--------------------------------|--|

| | |
|-----|---|
| 118 | Rockwell Hardness: C & B Scales (HRC) |
| 120 | Rockwell Hardness (C Scale) |
| 136 | Rockwell Superficial Hardness (30N Scale) |
| 145 | Total Case Depth |
| 146 | Effective Case Depth |
| 147 | Grain Size (Stainless Steel) |

| Chemical Analyses | |
|-------------------|--|
|-------------------|--|

| | |
|-----------|--|
| 150 - 157 | Chemical Analysis: Nickel-based Alloy |
| 180 - 189 | Chemical Analysis: Corrosion Resistant Steel |
| 190 - 197 | Chemical Analysis: Aluminum Alloy |

ABOUT THE FASTENERS & METALS PROGRAM

Collaborative Testing Services operates and maintains the program for Fasteners and Metals as part of a series of Proficiency and Interlaboratory Testing Programs offered by CTS in cooperation with various associations for a wide range of industries. Personnel from the National Institute of Standards and Technology (formerly the National Bureau of Standards), Industrial Fasteners Institute (IFI), and the Naval Shipyard Laboratories provide technical guidance and advice to this program.

The purpose of the program is to give participating laboratories a means to compare periodically the level and uniformity of their testing with that of other laboratories in the industry. It also provides a realistic assessment of the state of fasteners and metals testing proficiency.

In each report, there is a summary of the statistics for the analysis and a graphical representation of the data for each test. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations. Refer to the KEY TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 50 countries, currently participate in the CTS programs.

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Key for Fasteners & Metals Program Web Summary Report

- WebCode** - Assigned laboratory identification number(temporary)used to ensure lab confidentiality while permitting a lab to locate its data in the report published on the CTS website.

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

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

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

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

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

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

Data Flags

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

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

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

| WebCode | Data Flag | Sample X19 | | | Sample X20 | | | Instr Code |
|---------|-----------|------------|-----------------------|---------|------------|-----------------------|---------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 169.87 | 1.24 | 0.82 | 164.00 | -0.07 | -0.05 | TO |
| 2BCYL4 | | 170.63 | 2.01 | 1.32 | 163.80 | -0.27 | -0.19 | TO |
| 2ZUKJ2 | | 166.16 | -2.46 | -1.63 | 163.29 | -0.78 | -0.56 | BA |
| 38MBWA | X | 12.97 | -155.66 | -102.67 | 12.83 | -151.23 | -107.81 | BA |
| 3B4JHN | | 168.00 | -0.62 | -0.41 | 166.65 | 2.58 | 1.84 | UN |
| 3NWKXH | | 167.01 | -1.62 | -1.07 | 164.02 | -0.05 | -0.03 | XX |
| 4HPFUP | | 167.27 | -1.36 | -0.90 | 162.80 | -1.27 | -0.90 | TO |
| 4UETZZ | X | 165.53 | -3.09 | -2.04 | 158.87 | -5.20 | -3.71 | SA |
| 4VCEVZ | | 168.27 | -0.36 | -0.24 | 163.09 | -0.98 | -0.70 | BA |
| 6FN4B2 | | 171.93 | 3.31 | 2.18 | 165.10 | 1.03 | 0.74 | SA |
| 6PVCLT | | 169.38 | 0.75 | 0.49 | 164.86 | 0.80 | 0.57 | XX |
| 78727Y | | 167.77 | -0.86 | -0.57 | 162.43 | -1.63 | -1.17 | XX |
| 7FL6JX | | 169.91 | 1.29 | 0.85 | 165.40 | 1.33 | 0.95 | TO |
| 8AF8VY | | 169.61 | 0.98 | 0.65 | 164.12 | 0.06 | 0.04 | TO |
| 8QHD22 | | 168.51 | -0.12 | -0.08 | 163.54 | -0.53 | -0.38 | SH |
| 8R93ZG | | 169.85 | 1.23 | 0.81 | 164.36 | 0.29 | 0.21 | XX |
| 8T82ZM | * | 167.67 | -0.96 | -0.63 | 167.33 | 3.27 | 2.33 | TO |
| 8VTL8C | | 169.22 | 0.59 | 0.39 | 164.13 | 0.06 | 0.04 | GA |
| 96WY2K | | 170.08 | 1.45 | 0.96 | 164.98 | 0.91 | 0.65 | SA |
| 9GQNA6 | | 170.55 | 1.92 | 1.27 | 164.65 | 0.58 | 0.41 | XX |
| A6Y2CB | | 169.63 | 1.00 | 0.66 | 164.93 | 0.86 | 0.61 | TO |
| AWNAAW9 | | 167.73 | -0.89 | -0.59 | 162.60 | -1.47 | -1.05 | TO |
| BWQCE2 | | 167.60 | -1.03 | -0.68 | 163.33 | -0.73 | -0.52 | TO |
| C7WB7B | | 169.14 | 0.51 | 0.34 | 165.38 | 1.32 | 0.94 | IN |
| CB82XJ | | 167.81 | -0.82 | -0.54 | 163.54 | -0.52 | -0.37 | IN |
| CEBB7K | | 165.25 | -3.37 | -2.23 | 163.62 | -0.44 | -0.32 | IN |
| CUAJNF | | 169.30 | 0.67 | 0.44 | 163.50 | -0.57 | -0.40 | TO |
| CUNHMC | | 167.23 | -1.40 | -0.92 | 163.17 | -0.90 | -0.64 | SH |
| CUUBMR | | 168.20 | -0.43 | -0.28 | 162.03 | -2.03 | -1.45 | SH |
| CXZJDN | | 168.07 | -0.56 | -0.37 | 165.20 | 1.13 | 0.81 | BA |
| F2Q9AW | | 171.43 | 2.81 | 1.85 | 164.00 | -0.07 | -0.05 | MT |
| FFWK6J | | 168.17 | -0.46 | -0.30 | 164.50 | 0.43 | 0.31 | TO |
| FJ8Q8J | | 169.46 | 0.83 | 0.55 | 163.23 | -0.84 | -0.60 | TO |
| FRT4NC | | 170.67 | 2.04 | 1.34 | 164.01 | -0.06 | -0.04 | TO |
| GA6PKQ | | 169.03 | 0.41 | 0.27 | 163.77 | -0.30 | -0.21 | SA |
| GAP9QX | | 168.47 | -0.15 | -0.10 | 165.47 | 1.40 | 1.00 | IN |
| H24GAB | | 170.13 | 1.51 | 0.99 | 165.83 | 1.77 | 1.26 | IN |
| H6Z36K | | 169.15 | 0.52 | 0.35 | 164.95 | 0.88 | 0.63 | SA |
| HAL283 | | 169.00 | 0.37 | 0.25 | 164.33 | 0.27 | 0.19 | TO |
| HCGM26 | | 169.03 | 0.40 | 0.27 | 163.87 | -0.20 | -0.14 | RI |
| HHFTBF | | 169.86 | 1.23 | 0.81 | 166.76 | 2.70 | 1.92 | TO |
| HQRKJY | | 168.17 | -0.46 | -0.30 | 164.40 | 0.33 | 0.24 | TO |
| HTJGAE | | 165.40 | -3.23 | -2.13 | 161.40 | -2.67 | -1.90 | XX |
| J89HA6 | | 169.97 | 1.34 | 0.88 | 162.07 | -2.00 | -1.43 | SA |
| JMQR92 | | 170.63 | 2.01 | 1.32 | 164.97 | 0.91 | 0.65 | TO |
| JQ39A7 | | 169.03 | 0.40 | 0.26 | 165.59 | 1.52 | 1.08 | SA |
| JRQX6H | | 168.07 | -0.56 | -0.37 | 162.67 | -1.40 | -1.00 | IN |
| JT8YGK | * | 164.63 | -3.99 | -2.63 | 162.23 | -1.83 | -1.31 | SA |
| KDQ6LM | | 167.73 | -0.89 | -0.59 | 163.50 | -0.57 | -0.40 | XX |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

| WebCode | Data Flag | Sample X19 | | | Sample X20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| KZKQ76 | | 166.50 | -2.13 | -1.40 | 160.57 | -3.50 | -2.50 | SA |
| L3QH6W | | 168.75 | 0.12 | 0.08 | 164.39 | 0.32 | 0.23 | BA |
| L6WDV8 | | 168.30 | -0.33 | -0.22 | 163.17 | -0.90 | -0.64 | SA |
| MMYVMC | X | 177.00 | 8.37 | 5.52 | 169.07 | 5.00 | 3.56 | XX |
| NFJFYJ | | 168.10 | -0.53 | -0.35 | 166.37 | 2.30 | 1.64 | TO |
| NJTMXR | | 169.50 | 0.87 | 0.58 | 163.75 | -0.32 | -0.23 | FI |
| NKL8KG | | 167.50 | -1.13 | -0.74 | 163.47 | -0.60 | -0.43 | TO |
| NPHHHW | | 166.77 | -1.85 | -1.22 | 162.44 | -1.63 | -1.16 | SA |
| P4PAR8 | | 171.74 | 3.11 | 2.05 | 165.74 | 1.67 | 1.19 | SA |
| QDN287 | | 168.15 | -0.48 | -0.32 | 163.94 | -0.13 | -0.09 | SA |
| QM6CCK | | 169.72 | 1.09 | 0.72 | 165.03 | 0.96 | 0.69 | IN |
| QZN4UZ | | 168.87 | 0.24 | 0.16 | 166.07 | 2.00 | 1.42 | TO |
| RDT46A | | 166.53 | -2.09 | -1.38 | 161.83 | -2.23 | -1.59 | SA |
| RJX664 | | 167.23 | -1.39 | -0.92 | 165.10 | 1.03 | 0.74 | TO |
| RYA6PG | | 168.53 | -0.10 | -0.07 | 165.02 | 0.96 | 0.68 | XX |
| T6A3RE | | 169.23 | 0.61 | 0.40 | 162.99 | -1.08 | -0.77 | UN |
| TQQUXE | | 170.00 | 1.37 | 0.90 | 163.97 | -0.10 | -0.07 | TO |
| TXNDC4 | | 168.26 | -0.37 | -0.25 | 164.26 | 0.19 | 0.14 | CH |
| U2NYM7 | X | 169.93 | 1.31 | 0.86 | 169.37 | 5.30 | 3.78 | SH |
| U6D8D9 | | 169.80 | 1.17 | 0.77 | 165.47 | 1.40 | 1.00 | IN |
| U72QYT | | 168.17 | -0.46 | -0.30 | 160.83 | -3.23 | -2.31 | BA |
| V7XRWW | | 169.37 | 0.74 | 0.49 | 166.93 | 2.87 | 2.04 | SA |
| VJJWCF | | 169.45 | 0.83 | 0.54 | 166.41 | 2.34 | 1.67 | UT |
| W3NNJT | | 167.97 | -0.66 | -0.44 | 163.40 | -0.67 | -0.48 | MT |
| X2U7A6 | | 170.90 | 2.27 | 1.50 | 163.90 | -0.17 | -0.12 | TO |
| X6EH3L | | 166.27 | -2.36 | -1.56 | 162.73 | -1.33 | -0.95 | SA |
| XMB2L2 | | 167.10 | -1.53 | -1.01 | 163.97 | -0.10 | -0.07 | TO |
| XPE8CN | | 166.77 | -1.86 | -1.23 | 162.80 | -1.27 | -0.90 | TO |
| XZE4LX | | 168.40 | -0.23 | -0.15 | 162.47 | -1.60 | -1.14 | TO |
| YG4NLH | | 169.14 | 0.52 | 0.34 | 163.71 | -0.36 | -0.25 | FI |
| YLDJB8 | | 166.10 | -2.53 | -1.67 | 163.10 | -0.97 | -0.69 | SA |
| Z2LHPA | | 171.57 | 2.94 | 1.94 | 166.00 | 1.93 | 1.38 | BA |

Summary Statistics

| | Sample X19 | | Sample X20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 168.63 | ksi | 164.07 | ksi |
| Stnd Dev Btwn Labs | 1.52 | ksi | 1.40 | ksi |

Samples X19 , X20 : Fastener sizes: 3/8-16 x 2, 3/8-16 x 2 3/4

Statistics based on 77 of 81 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

Comments on assigned Data Flags for Analysis #115

| <u>WebCode</u> | <u>Flag</u> | <u>Analyst Comment</u> |
|----------------|-------------|---------------------------------|
| 38MBWA | X | Extreme data. |
| 4UETZZ | X | Data for sample X20 are low. |
| MMYVMC | X | Data for both samples are high. |
| U2NYM7 | X | Data for sample X20 are high. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 115

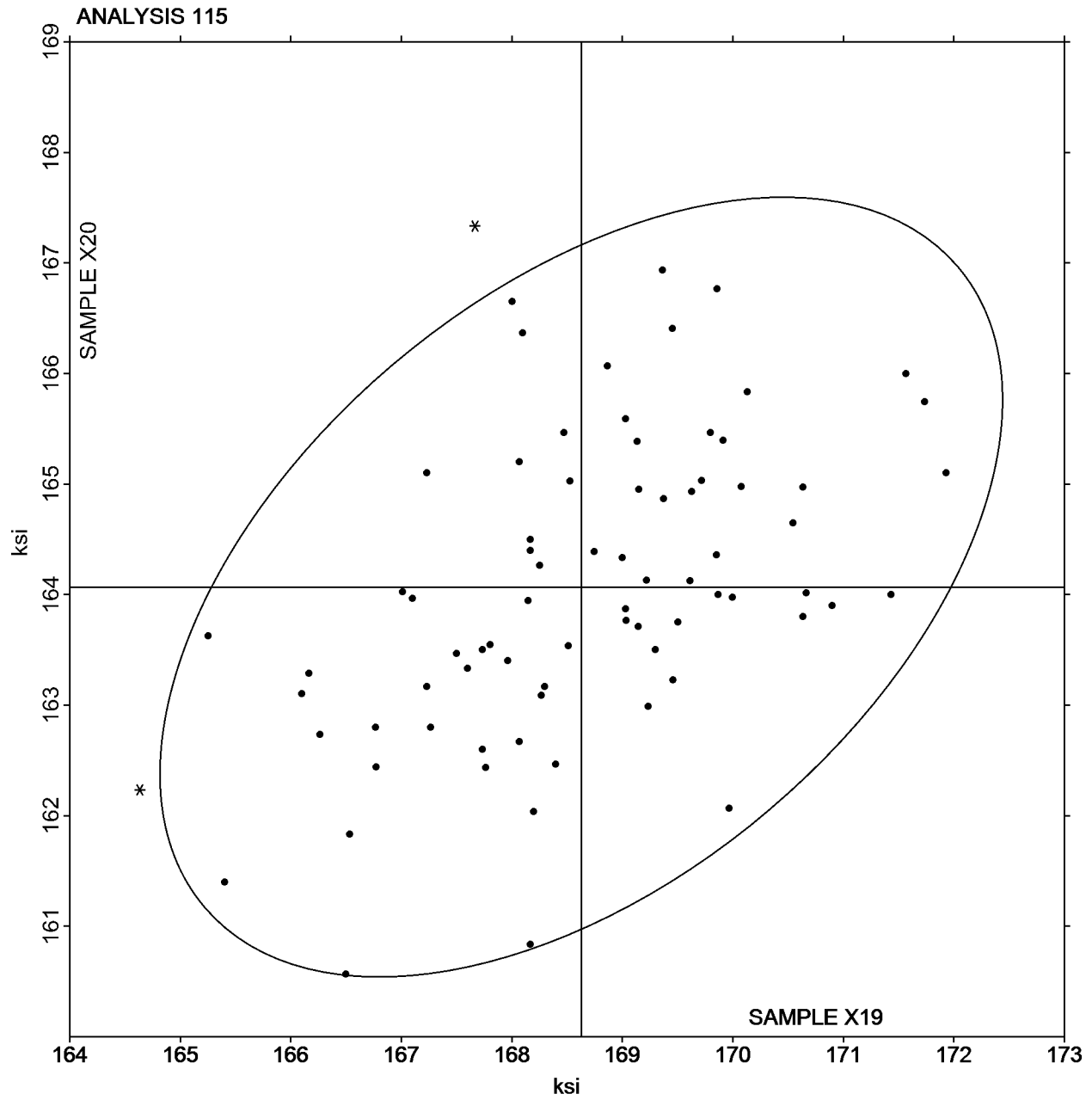
Fastener Wedge Tensile (10 deg) - ksi
ASTM F606

SAMPLE X19

168.63 ksi

SAMPLE X20

164.07 ksi



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

| WebCode | Data Flag | Sample Q19 | | | Sample Q20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 170.57 | -0.54 | -0.31 | 169.27 | -0.65 | -0.41 | TO |
| 2U3WD4 | X | 193.20 | 22.09 | 12.63 | 187.40 | 17.49 | 11.01 | UN |
| 2Z9NQ9 | | 172.23 | 1.12 | 0.64 | 168.70 | -1.21 | -0.76 | UT |
| 38MBWA | X | 13.27 | -157.84 | -90.21 | 12.97 | -156.95 | -98.79 | BA |
| 3B4JHN | | 168.44 | -2.67 | -1.53 | 169.94 | 0.02 | 0.02 | UN |
| 3E4ANM | | 171.99 | 0.88 | 0.50 | 171.97 | 2.06 | 1.30 | XX |
| 3NWKXH | | 173.12 | 2.01 | 1.15 | 170.41 | 0.50 | 0.31 | XX |
| 4HPFUP | | 169.13 | -1.98 | -1.13 | 171.00 | 1.09 | 0.68 | TO |
| 4VCEVZ | | 169.23 | -1.88 | -1.07 | 168.43 | -1.48 | -0.93 | BA |
| 6B2XAM | | 169.73 | -1.38 | -0.79 | 170.63 | 0.72 | 0.45 | TO |
| 6FN4B2 | | 172.67 | 1.56 | 0.89 | 172.07 | 2.15 | 1.36 | SA |
| 6PFT4G | | 171.20 | 0.09 | 0.05 | 170.77 | 0.85 | 0.54 | TO |
| 6PVCLT | | 172.24 | 1.13 | 0.65 | 168.52 | -1.40 | -0.88 | XX |
| 6W3Z4G | | 171.39 | 0.28 | 0.16 | 168.63 | -1.28 | -0.81 | IN |
| 78727Y | | 168.63 | -2.48 | -1.42 | 168.87 | -1.05 | -0.66 | XX |
| 7FL6JX | | 171.63 | 0.53 | 0.30 | 171.85 | 1.94 | 1.22 | TO |
| 7YY47N | X | 152.37 | -18.74 | -10.71 | 150.50 | -19.41 | -12.22 | TO |
| 87BVH7 | | 170.33 | -0.78 | -0.44 | 170.00 | 0.09 | 0.05 | XX |
| 8QHD22 | | 170.15 | -0.96 | -0.55 | 168.22 | -1.69 | -1.07 | SH |
| 8R93ZG | | 171.30 | 0.19 | 0.11 | 171.88 | 1.96 | 1.23 | XX |
| 8VTL8C | | 172.30 | 1.19 | 0.68 | 169.69 | -0.23 | -0.14 | GA |
| 96WY2K | | 170.05 | -1.06 | -0.61 | 169.91 | 0.00 | 0.00 | SA |
| 9GQNA6 | | 171.24 | 0.13 | 0.08 | 170.24 | 0.33 | 0.21 | XX |
| AWNAW9 | | 174.57 | 3.46 | 1.98 | 170.90 | 0.99 | 0.62 | TO |
| BWQCE2 | | 169.03 | -2.08 | -1.19 | 168.77 | -1.15 | -0.72 | TO |
| C7WB7B | | 170.98 | -0.13 | -0.07 | 170.63 | 0.72 | 0.45 | IN |
| CB82XJ | | 170.90 | -0.21 | -0.12 | 168.22 | -1.69 | -1.07 | IN |
| CEBB7K | | 172.82 | 1.71 | 0.98 | 169.07 | -0.84 | -0.53 | IN |
| CMMT2K | * | 174.13 | 3.02 | 1.73 | 174.87 | 4.96 | 3.12 | IN |
| CUAJNF | | 168.40 | -2.71 | -1.55 | 170.17 | 0.25 | 0.16 | TO |
| CUNHMC | | 170.76 | -0.35 | -0.20 | 168.25 | -1.67 | -1.05 | SH |
| CUUBMR | | 169.13 | -1.98 | -1.13 | 167.60 | -2.31 | -1.46 | SH |
| DAQ7AP | | 171.97 | 0.86 | 0.49 | 172.80 | 2.89 | 1.82 | TO |
| DHLAWY | | 171.11 | 0.00 | 0.00 | 172.34 | 2.43 | 1.53 | SH |
| F2Q9AW | | 172.13 | 1.02 | 0.59 | 169.67 | -0.25 | -0.16 | MT |
| FD7GCC | | 173.33 | 2.22 | 1.27 | 171.00 | 1.09 | 0.68 | TR |
| FJ8Q8J | | 171.18 | 0.07 | 0.04 | 171.18 | 1.27 | 0.80 | TO |
| FRT4NC | | 170.86 | -0.25 | -0.14 | 171.07 | 1.16 | 0.73 | TO |
| FT4B4K | | 170.08 | -1.03 | -0.59 | 170.27 | 0.36 | 0.23 | XX |
| GA6PKQ | | 171.53 | 0.42 | 0.24 | 169.40 | -0.51 | -0.32 | SA |
| GAP9QX | * | 175.42 | 4.31 | 2.47 | 170.59 | 0.67 | 0.42 | IN |
| GPLGUR | | 171.57 | 0.46 | 0.26 | 172.07 | 2.15 | 1.36 | SA |
| H24GAB | | 172.60 | 1.49 | 0.85 | 172.73 | 2.82 | 1.78 | IN |
| HHFTBF | | 169.18 | -1.93 | -1.10 | 171.11 | 1.20 | 0.75 | TO |
| HRV4H3 | | 172.77 | 1.66 | 0.95 | 170.57 | 0.65 | 0.41 | IN |
| HTJGAE | | 169.23 | -1.88 | -1.07 | 169.70 | -0.21 | -0.13 | XX |
| J3WVVN | | 174.58 | 3.47 | 1.98 | 172.13 | 2.22 | 1.40 | TO |
| JMQR92 | | 172.22 | 1.11 | 0.63 | 170.38 | 0.46 | 0.29 | TO |
| JQ39A7 | | 170.75 | -0.36 | -0.21 | 170.32 | 0.41 | 0.26 | SA |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

Fastener Axial Tensile - ksi
ASTM F606

| WebCode | Data Flag | Sample Q19 | | | Sample Q20 | | | Instr Code |
|---------|-----------|------------|-----------------------|----------|------------|-----------------------|----------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| JRQX6H | X | 168.47 | -2.64 | -1.51 | 164.47 | -5.45 | -3.43 | IN |
| JT8YGK | | 170.97 | -0.14 | -0.08 | 166.87 | -3.05 | -1.92 | SA |
| KDQ6LM | | 168.67 | -2.44 | -1.40 | 168.37 | -1.55 | -0.97 | XX |
| KL448K | | 171.37 | 0.26 | 0.15 | 170.91 | 0.99 | 0.63 | SH |
| L3QH6W | | 172.46 | 1.35 | 0.77 | 167.56 | -2.36 | -1.48 | BA |
| L6WDV8 | | 169.43 | -1.68 | -0.96 | 166.13 | -3.78 | -2.38 | SA |
| LGY6Q2 | | 170.93 | -0.18 | -0.10 | 167.40 | -2.51 | -1.58 | TO |
| NJTMXR | | 168.44 | -2.67 | -1.53 | 169.02 | -0.89 | -0.56 | FI |
| NPHHHW | | 172.07 | 0.96 | 0.55 | 170.96 | 1.04 | 0.66 | SA |
| P4PAR8 | | 172.68 | 1.57 | 0.90 | 169.62 | -0.29 | -0.18 | SA |
| QGYZWZ | | 170.17 | -0.94 | -0.54 | 170.52 | 0.61 | 0.38 | TO |
| QL3DPJ | | 170.87 | -0.24 | -0.14 | 168.50 | -1.41 | -0.89 | XX |
| QM6CCK | | 172.09 | 0.98 | 0.56 | 169.33 | -0.58 | -0.37 | IN |
| QZN4UZ | | 173.73 | 2.62 | 1.50 | 170.90 | 0.99 | 0.62 | TO |
| RDT46A | | 166.83 | -4.28 | -2.44 | 168.07 | -1.85 | -1.16 | SA |
| RJTCUJ | X | 8,588 | 8,416.60 | 4,810.33 | 8,796 | 8,626.36 | 5,430.07 | XX |
| T6A3RE | | 169.19 | -1.92 | -1.10 | 168.56 | -1.36 | -0.85 | UN |
| TQQWJD | | 172.22 | 1.11 | 0.63 | 171.12 | 1.20 | 0.76 | MT |
| TXNDC4 | | 169.63 | -1.48 | -0.84 | 170.59 | 0.68 | 0.43 | CH |
| U2NYM7 | | 171.57 | 0.46 | 0.26 | 168.57 | -1.35 | -0.85 | XX |
| U2WWAH | | 174.09 | 2.98 | 1.70 | 171.46 | 1.55 | 0.98 | RI |
| U6ACA3 | X | 135.53 | -35.58 | -20.33 | 134.87 | -35.05 | -22.06 | TO |
| U72QYT | | 168.37 | -2.74 | -1.57 | 168.80 | -1.11 | -0.70 | BA |
| UAG88X | | 172.69 | 1.58 | 0.90 | 170.41 | 0.50 | 0.31 | TO |
| V7XRWW | | 173.90 | 2.79 | 1.60 | 170.60 | 0.69 | 0.43 | SA |
| VJJWCF | X | 166.84 | -4.27 | -2.44 | 163.99 | -5.92 | -3.73 | UT |
| W3NNJT | | 169.40 | -1.71 | -0.98 | 169.20 | -0.71 | -0.45 | MT |
| WEKY6Z | | 170.23 | -0.88 | -0.50 | 170.53 | 0.62 | 0.39 | SA |
| WGCHL | X | 170.67 | -0.44 | -0.25 | 181.33 | 11.42 | 7.19 | XX |
| WX2K6X | | 170.99 | -0.12 | -0.07 | 171.30 | 1.38 | 0.87 | TO |
| X2U7A6 | | 168.30 | -2.81 | -1.61 | 168.87 | -1.05 | -0.66 | TO |
| X8KBBL | | 172.26 | 1.15 | 0.66 | 168.10 | -1.81 | -1.14 | UT |
| XZE4LX | | 171.53 | 0.42 | 0.24 | 167.37 | -2.55 | -1.60 | TO |
| YCBZBQ | X | 185.61 | 14.50 | 8.29 | 183.16 | 13.25 | 8.34 | IN |
| YG4NLH | | 169.26 | -1.85 | -1.06 | 168.38 | -1.53 | -0.96 | FI |
| YLDJB8 | | 169.63 | -1.48 | -0.84 | 167.27 | -2.65 | -1.67 | SA |
| Z2LHPA | | 172.63 | 1.52 | 0.87 | 171.27 | 1.35 | 0.85 | BA |

Summary Statistics

| | Sample Q19 | | Sample Q20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 171.11 | ksi | 169.91 | ksi |
| Stnd Dev Btwn Labs | 1.75 | ksi | 1.59 | ksi |

Samples Q19 , Q20 : Fastener sizes: 3/8-16 x 2, 3/8-16 x 2

Statistics based on 77 of 86 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 116
Fastener Axial Tensile - ksi
ASTM F606

Comments on assigned Data Flags for Analysis #116

| <u>WebCode</u> | <u>Flag</u> | <u>Analyst Comment</u> |
|----------------|-------------|---|
| 2U3WD4 | X | Data for both samples are high. |
| 38MBWA | X | Extreme data. |
| 7YY47N | X | Data for both samples are low. |
| JRQX6H | X | Data for sample Q20 are low. |
| RJTCUJ | X | Extreme data. |
| U6ACA3 | X | Data for both samples are low. |
| VJJWCF | X | Data for sample Q20 are low. |
| WGCHL | X | Data for sample Q20 are high. Inconsistent within the determinations of sample Q20. |
| YCBZBQ | X | Data for both samples are high. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 116

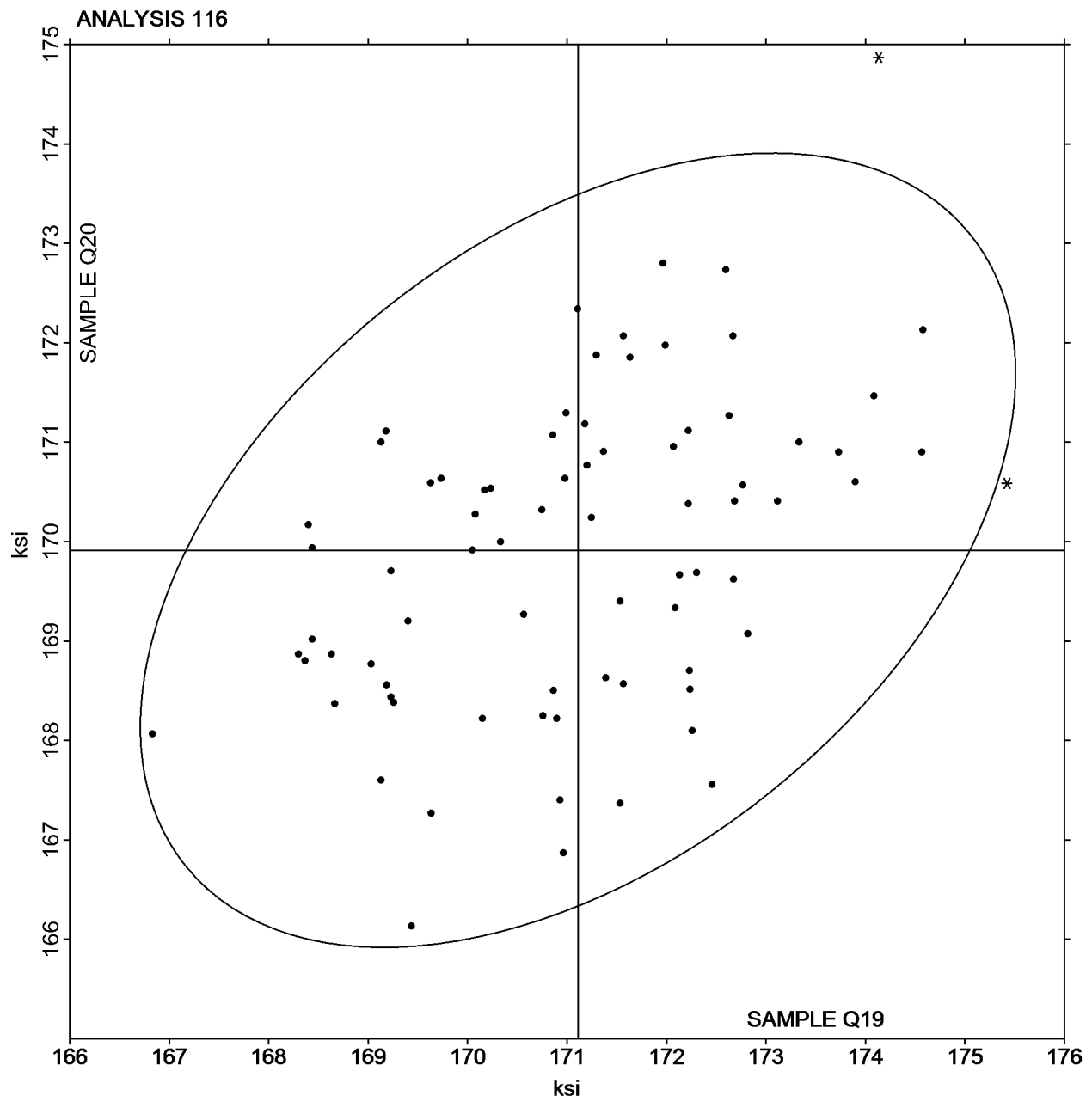
Fastener Axial Tensile - ksi
ASTM F606

SAMPLE Q19

171.11 ksi

SAMPLE Q20

169.91 ksi



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2QH7UL | | 52.48 | 0.39 | 1.01 | 56.60 | 0.28 | 0.64 | WI |
| 38MBWA | | 51.38 | -0.71 | -1.84 | 55.80 | -0.52 | -1.19 | WI |
| 39TBXP | | 51.96 | -0.13 | -0.33 | 55.98 | -0.34 | -0.78 | UN |
| 3LJM8Y | | 52.16 | 0.07 | 0.18 | 56.44 | 0.12 | 0.27 | WI |
| 3PHWJM | | 51.44 | -0.65 | -1.68 | 56.00 | -0.32 | -0.73 | WI |
| 3YFYBL | | 51.94 | -0.15 | -0.39 | 56.18 | -0.14 | -0.32 | WI |
| 44XVXG | | 52.30 | 0.21 | 0.55 | 56.60 | 0.28 | 0.64 | UN |
| 4E46UR | | 51.90 | -0.19 | -0.49 | 55.84 | -0.48 | -1.10 | LE |
| 6FN4B2 | | 52.20 | 0.11 | 0.29 | 56.38 | 0.06 | 0.14 | WI |
| 6PFT4G | | 51.98 | -0.11 | -0.28 | 56.28 | -0.04 | -0.09 | WI |
| 6V82RU | * | 51.42 | -0.67 | -1.74 | 56.30 | -0.02 | -0.05 | NA |
| 78727Y | | 51.96 | -0.13 | -0.33 | 56.48 | 0.16 | 0.36 | XX |
| 7FARFH | | 52.46 | 0.37 | 0.96 | 56.58 | 0.26 | 0.59 | MI |
| 87YV3N | | 52.08 | -0.01 | -0.02 | 56.16 | -0.16 | -0.37 | WI |
| 8D3W3J | | 52.32 | 0.23 | 0.60 | 56.38 | 0.06 | 0.14 | WI |
| 8R93ZG | | 52.48 | 0.39 | 1.01 | 57.00 | 0.68 | 1.55 | NA |
| 8T82ZM | | 51.68 | -0.41 | -1.06 | 55.92 | -0.40 | -0.91 | UN |
| 8T99LV | | 52.04 | -0.05 | -0.13 | 56.12 | -0.20 | -0.46 | XX |
| 8VJVKA | | 52.18 | 0.09 | 0.24 | 56.56 | 0.24 | 0.55 | WI |
| 8WLLWA | | 51.88 | -0.21 | -0.54 | 55.92 | -0.40 | -0.91 | WI |
| 8X6UFJ | | 51.94 | -0.15 | -0.39 | 55.86 | -0.46 | -1.05 | CL |
| 8YW3EM | X | 51.48 | -0.61 | -1.58 | 56.66 | 0.34 | 0.78 | MI |
| 9A3HDD | | 53.00 | 0.91 | 2.36 | 57.24 | 0.92 | 2.10 | WI |
| 9PRWUL | | 52.44 | 0.35 | 0.91 | 57.12 | 0.80 | 1.82 | WI |
| A6TXEP | | 51.72 | -0.37 | -0.96 | 56.38 | 0.06 | 0.14 | MA |
| AXHYBM | | 52.32 | 0.23 | 0.60 | 56.66 | 0.34 | 0.78 | NA |
| B929DR | | 52.40 | 0.31 | 0.81 | 56.60 | 0.28 | 0.64 | NA |
| BFU436 | | 51.86 | -0.23 | -0.59 | 56.32 | 0.00 | 0.00 | XX |
| C8YGTK | | 52.44 | 0.35 | 0.91 | 56.58 | 0.26 | 0.59 | WI |
| CC82BP | | 51.84 | -0.25 | -0.65 | 56.40 | 0.08 | 0.18 | CL |
| CPPBX8 | | 52.54 | 0.45 | 1.17 | 56.96 | 0.64 | 1.46 | WI |
| CRW3YF | | 51.95 | -0.14 | -0.36 | 56.25 | -0.07 | -0.16 | CL |
| CU7PQ9 | * | 51.30 | -0.79 | -2.05 | 56.16 | -0.16 | -0.37 | CL |
| CUNHMC | | 52.34 | 0.25 | 0.65 | 56.32 | 0.00 | 0.00 | IN |
| CWELFH | | 51.74 | -0.35 | -0.91 | 55.96 | -0.36 | -0.82 | WI |
| DPQ2MA | * | 53.06 | 0.97 | 2.52 | 57.12 | 0.80 | 1.82 | WI |
| ECHKCY | | 52.58 | 0.49 | 1.27 | 57.14 | 0.82 | 1.87 | WI |
| EQRCV6 | | 52.00 | -0.09 | -0.23 | 56.00 | -0.32 | -0.73 | WI |
| F2Q9AW | | 52.36 | 0.27 | 0.70 | 56.80 | 0.48 | 1.09 | UN |
| F9AUEH | | 52.28 | 0.19 | 0.50 | 56.42 | 0.10 | 0.23 | WI |
| FA4KAB | | 52.64 | 0.55 | 1.43 | 56.86 | 0.54 | 1.23 | WI |
| FA6W96 | | 51.98 | -0.11 | -0.28 | 56.50 | 0.18 | 0.41 | WI |
| FNDFQ | | 52.70 | 0.61 | 1.59 | 56.94 | 0.62 | 1.41 | CL |
| FPCEYY | * | 51.90 | -0.19 | -0.49 | 56.86 | 0.54 | 1.23 | MI |
| G4XJ9L | | 51.74 | -0.35 | -0.91 | 56.04 | -0.28 | -0.64 | WI |
| GAPQUE | | 51.70 | -0.39 | -1.01 | 56.10 | -0.22 | -0.50 | UN |
| GEY9QL | | 52.16 | 0.07 | 0.18 | 55.74 | -0.58 | -1.32 | WI |
| GNZQ3B | | 51.58 | -0.51 | -1.32 | 56.10 | -0.22 | -0.50 | WI |
| H24GAB | | 52.59 | 0.50 | 1.31 | 56.78 | 0.46 | 1.04 | WI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| H76ULN | | 51.44 | -0.65 | -1.68 | 55.70 | -0.62 | -1.41 | WI |
| H8GLHC | | 52.44 | 0.35 | 0.91 | 56.62 | 0.30 | 0.68 | UN |
| HAL283 | | 51.98 | -0.11 | -0.28 | 55.92 | -0.40 | -0.91 | WI |
| HCGM26 | | 52.26 | 0.17 | 0.44 | 56.02 | -0.30 | -0.68 | WI |
| HRV4H3 | | 52.00 | -0.09 | -0.23 | 56.16 | -0.16 | -0.37 | NA |
| J89HA6 | | 52.04 | -0.05 | -0.13 | 56.52 | 0.20 | 0.46 | WI |
| JEEFAH | X | 55.90 | 3.81 | 9.89 | 52.12 | -4.20 | -9.59 | XX |
| JRQX6H | | 52.40 | 0.31 | 0.81 | 56.90 | 0.58 | 1.32 | WI |
| JT8YGK | | 52.48 | 0.39 | 1.01 | 56.54 | 0.22 | 0.50 | NA |
| JWA3LA | | 51.30 | -0.79 | -2.05 | 55.30 | -1.02 | -2.33 | XX |
| K78PQB | | 52.10 | 0.01 | 0.03 | 56.10 | -0.22 | -0.50 | WI |
| L3P2VX | | 52.40 | 0.31 | 0.81 | 56.28 | -0.04 | -0.09 | LE |
| LGY6Q2 | | 51.80 | -0.29 | -0.75 | 56.36 | 0.04 | 0.09 | UN |
| LYCTUZ | | 51.92 | -0.17 | -0.44 | 56.42 | 0.10 | 0.23 | WI |
| M9BAYN | | 51.72 | -0.37 | -0.96 | 55.70 | -0.62 | -1.41 | WI |
| MKJCYC | | 52.18 | 0.09 | 0.24 | 56.44 | 0.12 | 0.27 | WI |
| MKJTBW | | 52.06 | -0.03 | -0.08 | 56.14 | -0.18 | -0.41 | MI |
| MMAW64 | | 52.26 | 0.17 | 0.44 | 56.64 | 0.32 | 0.73 | CL |
| MMQ2GH | | 51.74 | -0.35 | -0.91 | 56.08 | -0.24 | -0.55 | WI |
| N346LV | * | 51.56 | -0.53 | -1.37 | 55.16 | -1.16 | -2.65 | UN |
| N8BTYW | | 52.52 | 0.43 | 1.12 | 56.32 | 0.00 | 0.00 | WI |
| NFJFYJ | | 52.34 | 0.25 | 0.65 | 56.00 | -0.32 | -0.73 | CL |
| NPHHHW | | 51.80 | -0.29 | -0.75 | 56.00 | -0.32 | -0.73 | UN |
| P4PAR8 | | 51.67 | -0.42 | -1.08 | 55.70 | -0.62 | -1.42 | LE |
| PEQEGM | | 52.00 | -0.09 | -0.23 | 55.80 | -0.52 | -1.19 | WI |
| PZMJ9Y | | 52.42 | 0.33 | 0.86 | 56.50 | 0.18 | 0.41 | UN |
| Q6HXTM | | 52.64 | 0.55 | 1.43 | 56.92 | 0.60 | 1.37 | WI |
| Q6QHRW | | 52.08 | -0.01 | -0.02 | 56.36 | 0.04 | 0.09 | XX |
| QDN287 | | 51.52 | -0.57 | -1.48 | 56.14 | -0.18 | -0.41 | WI |
| QM6CCK | * | 52.96 | 0.87 | 2.26 | 57.40 | 1.08 | 2.46 | UN |
| RJKYRA | | 51.50 | -0.59 | -1.53 | 55.48 | -0.84 | -1.93 | CL |
| RJX664 | | 51.80 | -0.29 | -0.75 | 56.08 | -0.24 | -0.55 | WI |
| RL2BKJ | | 52.00 | -0.09 | -0.23 | 56.00 | -0.32 | -0.73 | WI |
| T6A3RE | | 51.84 | -0.25 | -0.65 | 56.18 | -0.14 | -0.32 | XX |
| TJW6HJ | X | 52.54 | 0.45 | 1.17 | 57.54 | 1.22 | 2.78 | EM |
| TUTX33 | | 51.90 | -0.19 | -0.49 | 56.18 | -0.14 | -0.32 | NA |
| U6D8D9 | | 52.38 | 0.29 | 0.76 | 56.56 | 0.24 | 0.55 | UN |
| U72QYT | | 51.82 | -0.27 | -0.70 | 56.00 | -0.32 | -0.73 | PH |
| U9LVZB | | 52.42 | 0.33 | 0.86 | 56.70 | 0.38 | 0.87 | WI |
| UJZ8FA | | 52.20 | 0.11 | 0.29 | 56.64 | 0.32 | 0.73 | WI |
| UW7EJK | | 52.24 | 0.15 | 0.39 | 56.64 | 0.32 | 0.73 | WI |
| UXH2PD | X | 50.62 | -1.47 | -3.81 | 54.64 | -1.68 | -3.83 | IN |
| V3BGZ7 | | 51.88 | -0.21 | -0.54 | 55.98 | -0.34 | -0.78 | WI |
| V4UH32 | | 52.34 | 0.25 | 0.65 | 56.80 | 0.48 | 1.09 | NA |
| V7XRWW | | 52.26 | 0.17 | 0.44 | 56.46 | 0.14 | 0.32 | CL |
| VLLDDB | | 52.02 | -0.07 | -0.18 | 55.90 | -0.42 | -0.96 | WI |
| VN9QXJ | | 51.90 | -0.19 | -0.49 | 56.20 | -0.12 | -0.27 | WI |
| W3NNJT | | 52.24 | 0.15 | 0.39 | 56.18 | -0.14 | -0.32 | WI |
| W7WHW7 | | 52.90 | 0.81 | 2.10 | 57.24 | 0.92 | 2.10 | TI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 118

Rockwell Hardness: C & B Scales
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| WP23DE | | 52.05 | -0.04 | -0.10 | 56.44 | 0.12 | 0.27 | CL |
| WTL2V3 | | 51.70 | -0.39 | -1.01 | 56.00 | -0.32 | -0.73 | MI |
| WXNUER | X | 51.26 | -0.83 | -2.15 | 52.00 | -4.32 | -9.85 | WI |
| X2U7A6 | | 52.30 | 0.21 | 0.55 | 56.44 | 0.12 | 0.27 | WI |
| XAUGQV | | 51.86 | -0.23 | -0.59 | 56.18 | -0.14 | -0.32 | WI |
| XJJ6MJ | * | 51.06 | -1.03 | -2.67 | 55.12 | -1.20 | -2.74 | WI |
| XKKV8W | | 52.30 | 0.21 | 0.55 | 56.96 | 0.64 | 1.46 | UN |
| XZE4LX | | 52.26 | 0.17 | 0.44 | 56.02 | -0.30 | -0.68 | WI |
| Y6D96G | | 52.54 | 0.45 | 1.17 | 56.66 | 0.34 | 0.78 | MI |
| ZWVGVV | | 52.08 | -0.01 | -0.02 | 56.08 | -0.24 | -0.55 | WI |

Summary Statistics

| | Sample E19 | | Sample E20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 52.09 | HRC | 56.32 | HRC |
| Stnd Dev Btwn Labs | 0.39 | HRC | 0.44 | HRC |

Samples E19 , E20 : Steel

Statistics based on 103 of 108 reporting participants

Comments on assigned Data Flags for Analysis #118

WebCode Flag Analyst Comment

8YW3EM X Inconsistent in testing between samples.

JEEFAH X Data for sample E19 are high and data for sample E20 are low.

TJW6HJ X Data for sample E20 are high. Inconsistent in testing between samples.

UXH2PD X Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample E19.

WXNUER X Data for sample E20 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample E20.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 118

Rockwell Hardness: C & B Scales

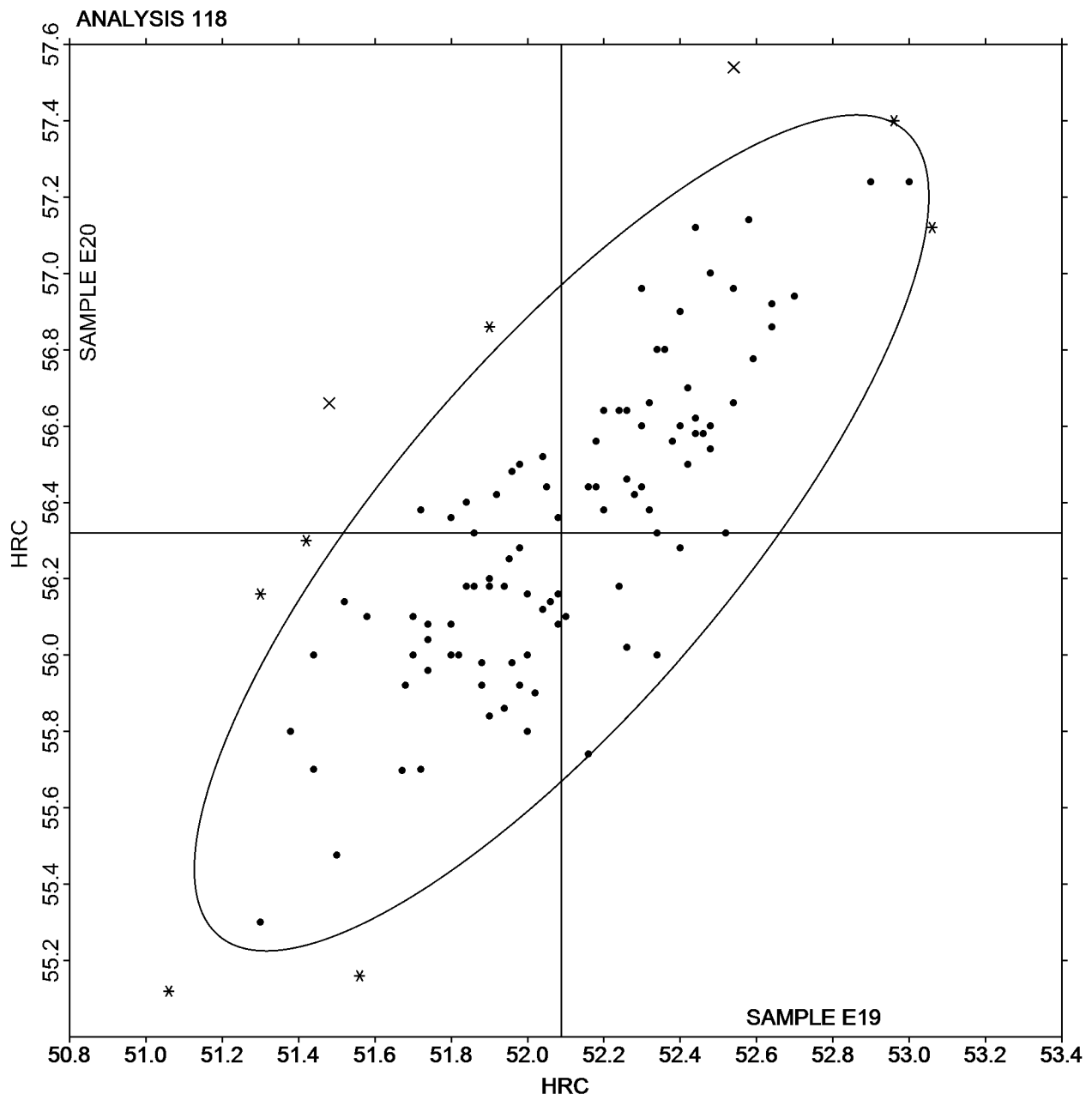
ASTM E18

SAMPLE E19

52.09 HRC

SAMPLE E20

56.32 HRC



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 120

Rockwell Hardness (C Scale) - HRC
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 29YN6D | | 52.72 | 0.47 | 1.02 | 56.76 | 0.34 | 0.71 | WI |
| 2BCYL4 | | 52.58 | 0.33 | 0.72 | 56.48 | 0.06 | 0.13 | WI |
| 2U3WD4 | | 52.84 | 0.59 | 1.28 | 57.00 | 0.58 | 1.20 | LE |
| 2ZUKJ2 | | 52.20 | -0.05 | -0.10 | 56.28 | -0.14 | -0.29 | WI |
| 3FZ8YV | | 52.36 | 0.11 | 0.24 | 56.50 | 0.08 | 0.17 | RO |
| 44HJLV | | 52.60 | 0.35 | 0.76 | 56.64 | 0.22 | 0.46 | EM |
| 66YFYL | | 52.96 | 0.71 | 1.54 | 57.14 | 0.72 | 1.49 | WI |
| 696TQL | | 52.34 | 0.09 | 0.20 | 56.42 | 0.00 | 0.00 | NA |
| 6B2XAM | | 52.12 | -0.13 | -0.28 | 56.24 | -0.18 | -0.37 | UN |
| 6PVCLT | | 52.32 | 0.07 | 0.16 | 56.76 | 0.34 | 0.71 | MA |
| 78C82U | | 52.20 | -0.05 | -0.10 | 56.50 | 0.08 | 0.17 | WI |
| 78ZDJ9 | | 52.86 | 0.61 | 1.33 | 56.88 | 0.46 | 0.95 | MI |
| 7YKQF7 | | 52.22 | -0.03 | -0.06 | 56.50 | 0.08 | 0.17 | NA |
| 7YY47N | | 51.76 | -0.49 | -1.06 | 56.32 | -0.10 | -0.21 | NA |
| 8ET2WP | | 52.57 | 0.32 | 0.70 | 57.07 | 0.65 | 1.34 | UN |
| 8LUQB2 | | 52.66 | 0.41 | 0.89 | 56.74 | 0.32 | 0.66 | WI |
| 96RCVL | | 52.26 | 0.01 | 0.03 | 56.78 | 0.36 | 0.75 | NA |
| 98NPX7 | * | 51.30 | -0.95 | -2.05 | 55.10 | -1.32 | -2.73 | XX |
| 9GQNA6 | | 52.48 | 0.23 | 0.50 | 56.54 | 0.12 | 0.25 | XX |
| 9NNB3Q | | 51.76 | -0.49 | -1.06 | 55.98 | -0.44 | -0.91 | WI |
| 9PXXLJ | X | 50.10 | -2.15 | -4.66 | 54.40 | -2.02 | -4.18 | WI |
| 9XFYCU | | 53.04 | 0.79 | 1.72 | 57.28 | 0.86 | 1.78 | NA |
| A98FMU | | 52.60 | 0.35 | 0.76 | 57.12 | 0.70 | 1.45 | IN |
| BYBALF | | 51.80 | -0.45 | -0.97 | 56.02 | -0.40 | -0.83 | BU |
| CUUBMR | | 51.76 | -0.49 | -1.06 | 55.98 | -0.44 | -0.91 | LE |
| CXZJDN | | 51.62 | -0.63 | -1.36 | 55.54 | -0.88 | -1.82 | WI |
| DC7YA6 | | 52.16 | -0.09 | -0.19 | 56.10 | -0.32 | -0.66 | WI |
| DRWJPC | | 51.56 | -0.69 | -1.49 | 55.68 | -0.74 | -1.53 | NA |
| F6LA9Z | | 52.14 | -0.11 | -0.23 | 56.16 | -0.26 | -0.54 | WI |
| FA2V3T | | 52.06 | -0.19 | -0.41 | 56.16 | -0.26 | -0.54 | WI |
| FD7GCC | | 52.80 | 0.55 | 1.20 | 57.00 | 0.58 | 1.20 | WI |
| FFWK6J | | 51.26 | -0.99 | -2.14 | 55.40 | -1.02 | -2.11 | CL |
| G7NDTG | | 52.34 | 0.09 | 0.20 | 56.58 | 0.16 | 0.33 | WI |
| G97NK2 | | 51.78 | -0.47 | -1.01 | 56.28 | -0.14 | -0.29 | LE |
| GA6PKQ | | 52.10 | -0.15 | -0.32 | 56.28 | -0.14 | -0.29 | WI |
| GMVD2K | | 52.38 | 0.13 | 0.29 | 56.26 | -0.16 | -0.33 | UN |
| HL87KK | | 52.10 | -0.15 | -0.32 | 56.20 | -0.22 | -0.45 | MI |
| J3ZNJN | X | 53.80 | 1.55 | 3.37 | 57.00 | 0.58 | 1.20 | WI |
| JDB8DQ | | 52.66 | 0.41 | 0.89 | 56.60 | 0.18 | 0.37 | FU |
| JMQR92 | | 52.82 | 0.57 | 1.24 | 57.28 | 0.86 | 1.78 | WI |
| K9G2M8 | | 52.38 | 0.13 | 0.29 | 56.50 | 0.08 | 0.17 | UN |
| KPMUJU | | 51.98 | -0.27 | -0.58 | 56.37 | -0.05 | -0.10 | WI |
| KQGVND | | 52.58 | 0.33 | 0.72 | 56.44 | 0.02 | 0.04 | MI |
| LVRXZF | | 51.98 | -0.27 | -0.58 | 56.16 | -0.26 | -0.54 | UN |
| MMYVMC | | 51.98 | -0.27 | -0.58 | 55.90 | -0.52 | -1.08 | XX |
| NKL8KG | | 52.56 | 0.31 | 0.68 | 56.56 | 0.14 | 0.29 | MI |
| PBDP7Q | | 52.36 | 0.11 | 0.24 | 56.58 | 0.16 | 0.33 | EM |
| PLPGLY | | 51.86 | -0.39 | -0.84 | 56.04 | -0.38 | -0.79 | BU |
| PMK4ZN | | 51.72 | -0.53 | -1.14 | 56.34 | -0.08 | -0.16 | WI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 120

Rockwell Hardness (C Scale) - HRC
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| PMVMP8 | | 52.34 | 0.09 | 0.20 | 56.70 | 0.28 | 0.58 | WO |
| PQ788G | | 52.28 | 0.03 | 0.07 | 56.58 | 0.16 | 0.33 | WI |
| Q23Q89 | * | 51.38 | -0.87 | -1.88 | 55.96 | -0.46 | -0.95 | WI |
| Q3LYMA | | 53.28 | 1.03 | 2.24 | 57.62 | 1.20 | 2.49 | WI |
| QRL4V7 | | 52.86 | 0.61 | 1.33 | 56.72 | 0.30 | 0.62 | WI |
| QZN4UZ | X | 50.60 | -1.65 | -3.57 | 55.52 | -0.90 | -1.86 | WI |
| TF8FUC | | 51.62 | -0.63 | -1.36 | 55.84 | -0.58 | -1.20 | WI |
| TTTJCG | | 51.72 | -0.53 | -1.14 | 55.98 | -0.44 | -0.91 | WI |
| TXGKPP | | 52.15 | -0.10 | -0.22 | 56.40 | -0.02 | -0.04 | EM |
| U2NYM7 | | 52.52 | 0.27 | 0.59 | 56.64 | 0.22 | 0.46 | IN |
| UQ7BT8 | | 52.54 | 0.29 | 0.63 | 56.72 | 0.30 | 0.62 | CL |
| V2TZGT | | 52.01 | -0.24 | -0.52 | 55.82 | -0.60 | -1.23 | UN |
| VJ6WLK | | 52.50 | 0.25 | 0.55 | 56.50 | 0.08 | 0.17 | WI |
| WP2N2K | | 51.26 | -0.99 | -2.14 | 55.48 | -0.94 | -1.95 | BU |
| WX2K6X | | 52.80 | 0.55 | 1.20 | 57.12 | 0.70 | 1.45 | NA |
| XWDWQ8 | | 52.62 | 0.37 | 0.81 | 56.48 | 0.06 | 0.13 | NA |
| Z64Z4T | | 52.98 | 0.73 | 1.59 | 57.14 | 0.72 | 1.49 | XX |
| ZGKKTV | | 51.88 | -0.37 | -0.80 | 56.18 | -0.24 | -0.50 | CL |
| ZJPBYB | | 52.02 | -0.23 | -0.49 | 56.48 | 0.06 | 0.13 | WI |
| ZYYUBN | | 52.10 | -0.15 | -0.32 | 55.86 | -0.56 | -1.16 | WI |

Summary Statistics

| | Sample E19 | | Sample E20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 52.25 | HRC | 56.42 | HRC |
| Stnd Dev Btwn Labs | 0.46 | HRC | 0.48 | HRC |

Samples E19 , E20 : Steel

Statistics based on 66 of 69 reporting participants

Comments on assigned Data Flags for Analysis #120

WebCode Flag Analyst Comment

| | | |
|--------|---|---|
| 9PXXLJ | X | Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample E19. |
| J3ZJNJ | X | Data for sample E19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample E19. |
| QZN4UZ | X | Data for sample E19 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 120

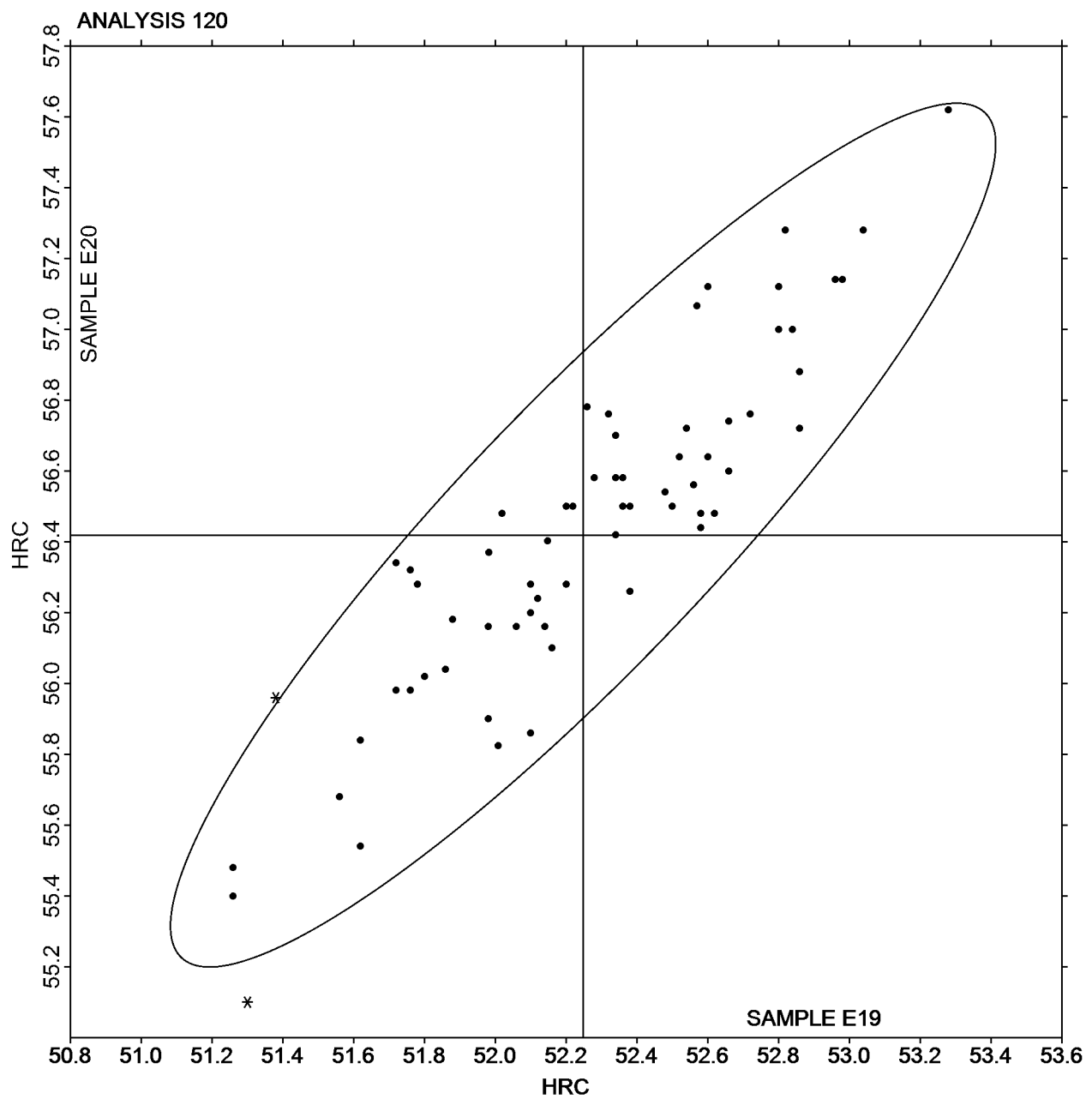
Rockwell Hardness (C Scale) - HRC
ASTM E18

SAMPLE E19

52.25 HRC

SAMPLE E20

56.42 HRC



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 125

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

| WebCode | Data Flag | Sample G19 | | | Sample G20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 36.97 | 0.08 | 0.13 | 35.79 | -0.33 | -0.56 | WI |
| 2MKJGQ | | 35.94 | -0.95 | -1.59 | 35.64 | -0.48 | -0.82 | AN |
| 2RDTKW | | 36.96 | 0.07 | 0.12 | 36.11 | -0.01 | -0.01 | XX |
| 38MBWA | X | 37.33 | 0.43 | 0.72 | 39.61 | 3.49 | 5.92 | WI |
| 3B4JHN | | 36.39 | -0.50 | -0.84 | 35.99 | -0.12 | -0.21 | WI |
| 3NWKXH | | 37.06 | 0.17 | 0.27 | 36.12 | 0.00 | 0.00 | XX |
| 4HPFUP | | 37.69 | 0.80 | 1.34 | 36.96 | 0.84 | 1.43 | WI |
| 4VCEVZ | | 36.88 | -0.01 | -0.02 | 36.26 | 0.14 | 0.25 | UN |
| 6FN4B2 | | 37.29 | 0.40 | 0.67 | 35.91 | -0.21 | -0.35 | WI |
| 6PFT4G | | 37.06 | 0.17 | 0.27 | 36.18 | 0.06 | 0.10 | WI |
| 6PYDR9 | | 36.59 | -0.30 | -0.50 | 35.75 | -0.37 | -0.62 | UN |
| 7EVDVF | | 36.65 | -0.24 | -0.40 | 35.66 | -0.45 | -0.77 | KF |
| 7FL6JX | | 38.34 | 1.45 | 2.42 | 37.22 | 1.10 | 1.87 | UN |
| 7GLGNM | | 37.56 | 0.67 | 1.12 | 37.48 | 1.36 | 2.31 | WI |
| 7RZ6BK | | 38.14 | 1.25 | 2.08 | 37.13 | 1.01 | 1.72 | WI |
| 8AF8VY | | 35.75 | -1.14 | -1.90 | 35.96 | -0.16 | -0.26 | CL |
| 8PQXPR | | 36.11 | -0.78 | -1.30 | 35.73 | -0.39 | -0.66 | WI |
| 8QHD22 | | 37.22 | 0.33 | 0.55 | 36.24 | 0.12 | 0.21 | FT |
| 8R93ZG | X | 26.33 | -10.57 | -17.60 | 28.28 | -7.84 | -13.30 | NA |
| 8T82ZM | | 35.94 | -0.95 | -1.59 | 35.86 | -0.26 | -0.43 | UN |
| 8VTL8C | | 37.52 | 0.63 | 1.05 | 36.89 | 0.77 | 1.31 | EM |
| 96WY2K | * | 37.96 | 1.07 | 1.78 | 37.86 | 1.74 | 2.96 | UN |
| 9VJXXQ | | 37.00 | 0.11 | 0.18 | 36.63 | 0.51 | 0.87 | WO |
| A6Y2CB | | 36.99 | 0.10 | 0.17 | 36.03 | -0.09 | -0.16 | UN |
| AFRRP2 | | 37.03 | 0.13 | 0.22 | 36.13 | 0.01 | 0.02 | WI |
| AWNAAW9 | | 36.79 | -0.10 | -0.17 | 36.12 | 0.00 | 0.00 | MI |
| BMJ23Y | | 36.39 | -0.50 | -0.84 | 35.89 | -0.22 | -0.38 | WI |
| BWQCE2 | * | 36.34 | -0.55 | -0.91 | 36.78 | 0.66 | 1.12 | WI |
| C8YGTK | | 36.83 | -0.07 | -0.11 | 36.34 | 0.22 | 0.37 | WI |
| CB82XJ | | 36.66 | -0.23 | -0.38 | 36.27 | 0.15 | 0.26 | UN |
| CEBB7K | | 36.99 | 0.10 | 0.16 | 36.28 | 0.16 | 0.28 | FT |
| CUAJNF | | 37.07 | 0.18 | 0.29 | 36.42 | 0.30 | 0.51 | UN |
| CUNHMC | | 37.30 | 0.41 | 0.68 | 36.46 | 0.34 | 0.58 | IN |
| EYUX4D | | 37.04 | 0.15 | 0.24 | 36.36 | 0.24 | 0.40 | BU |
| F2Q9AW | | 37.65 | 0.76 | 1.26 | 36.64 | 0.52 | 0.88 | UN |
| FD7GCC | | 37.94 | 1.05 | 1.74 | 36.31 | 0.19 | 0.33 | WI |
| FJ8Q8J | X | 36.85 | -0.04 | -0.07 | 37.71 | 1.59 | 2.70 | WI |
| FRT4NC | | 37.77 | 0.88 | 1.46 | 36.47 | 0.35 | 0.60 | WI |
| FXHYMH | | 37.00 | 0.11 | 0.18 | 35.78 | -0.34 | -0.58 | MI |
| FY9NP3 | | 37.19 | 0.30 | 0.50 | 36.08 | -0.04 | -0.06 | LE |
| G3RMQB | * | 37.36 | 0.47 | 0.77 | 35.26 | -0.86 | -1.46 | MI |
| GA6PKQ | | 36.84 | -0.05 | -0.09 | 35.79 | -0.32 | -0.55 | WI |
| GAPQUE | | 36.91 | 0.02 | 0.03 | 35.50 | -0.62 | -1.05 | UN |
| GPLGUR | | 36.94 | 0.05 | 0.08 | 35.84 | -0.27 | -0.47 | WI |
| H24GAB | | 37.29 | 0.39 | 0.66 | 36.31 | 0.19 | 0.32 | WI |
| HDF4PH | | 36.72 | -0.17 | -0.29 | 35.56 | -0.56 | -0.95 | FR |
| HRHBJY | | 36.50 | -0.39 | -0.65 | 35.83 | -0.29 | -0.49 | UN |
| JMQR92 | | 37.11 | 0.22 | 0.36 | 36.48 | 0.36 | 0.61 | WI |
| JQ39A7 | | 37.61 | 0.72 | 1.19 | 36.16 | 0.04 | 0.06 | WI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 125

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

| WebCode | Data Flag | Sample G19 | | | Sample G20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| JRQX6H | | 36.25 | -0.64 | -1.07 | 36.31 | 0.19 | 0.33 | WI |
| JT8YGK | | 37.68 | 0.79 | 1.32 | 37.15 | 1.03 | 1.75 | NA |
| JWN9NX | | 36.38 | -0.52 | -0.86 | 36.06 | -0.06 | -0.09 | TG |
| KDQ6LM | | 37.19 | 0.30 | 0.50 | 36.71 | 0.59 | 1.01 | XX |
| KL448K | | 37.44 | 0.55 | 0.91 | 36.68 | 0.56 | 0.96 | AK |
| KZKQ76 | | 36.78 | -0.11 | -0.18 | 36.23 | 0.11 | 0.19 | MI |
| L3QH6W | | 37.18 | 0.29 | 0.48 | 36.36 | 0.24 | 0.41 | NA |
| L6WDV8 | | 36.63 | -0.27 | -0.44 | 35.60 | -0.52 | -0.88 | WI |
| LGY6Q2 | | 36.88 | -0.02 | -0.03 | 36.46 | 0.34 | 0.57 | UN |
| M9BAYN | | 37.01 | 0.12 | 0.19 | 36.53 | 0.41 | 0.69 | wi |
| MNP883 | | 37.39 | 0.50 | 0.84 | 36.77 | 0.65 | 1.10 | WI |
| N7JDN9 | | 36.83 | -0.07 | -0.11 | 35.97 | -0.15 | -0.25 | XX |
| NCHC8X | X | 35.88 | -1.02 | -1.69 | 34.13 | -1.99 | -3.38 | XX |
| NFJFYJ | | 36.40 | -0.49 | -0.82 | 35.58 | -0.54 | -0.91 | CL |
| NJTMXR | | 36.61 | -0.28 | -0.47 | 35.71 | -0.41 | -0.70 | XX |
| P4PAR8 | | 35.79 | -1.10 | -1.83 | 35.09 | -1.02 | -1.74 | LE |
| PJZQ6M | | 37.10 | 0.21 | 0.35 | 37.08 | 0.96 | 1.64 | WO |
| QEX8MF | | 37.89 | 1.00 | 1.67 | 36.76 | 0.64 | 1.08 | BU |
| QGYZWZ | | 36.31 | -0.58 | -0.97 | 35.23 | -0.89 | -1.51 | UN |
| QM6CCK | | 36.99 | 0.10 | 0.17 | 36.70 | 0.58 | 0.99 | UN |
| RDT46A | | 36.14 | -0.75 | -1.26 | 35.10 | -1.02 | -1.73 | WI |
| T4XAXC | | 35.51 | -1.38 | -2.30 | 35.33 | -0.79 | -1.35 | NA |
| T6T6P8 | | 36.26 | -0.63 | -1.05 | 35.52 | -0.60 | -1.02 | NA |
| TQQUXE | | 35.79 | -1.10 | -1.83 | 35.40 | -0.72 | -1.22 | WI |
| U2NYM7 | | 37.10 | 0.21 | 0.35 | 36.60 | 0.48 | 0.82 | IN |
| U2WWAH | * | 35.95 | -0.94 | -1.57 | 34.52 | -1.60 | -2.72 | WI |
| U644ZP | | 37.59 | 0.70 | 1.17 | 36.53 | 0.41 | 0.69 | RS |
| U72QYT | | 36.64 | -0.25 | -0.42 | 35.69 | -0.42 | -0.72 | PH |
| UAG88X | | 35.63 | -1.27 | -2.11 | 35.31 | -0.81 | -1.38 | WI |
| V7XRWW | | 37.68 | 0.79 | 1.32 | 36.69 | 0.58 | 0.98 | CL |
| VJJWCF | | 36.66 | -0.23 | -0.39 | 36.07 | -0.05 | -0.08 | FT |
| W3NNJT | | 37.99 | 1.10 | 1.84 | 36.59 | 0.47 | 0.79 | WI |
| WEKY6Z | | 37.17 | 0.28 | 0.46 | 35.72 | -0.40 | -0.68 | UN |
| X2DXB3 | | 35.86 | -1.03 | -1.72 | 34.74 | -1.37 | -2.33 | UN |
| X2U7A6 | | 36.70 | -0.19 | -0.32 | 36.39 | 0.27 | 0.46 | WI |
| X6EH3L | | 36.10 | -0.79 | -1.32 | 35.49 | -0.62 | -1.06 | WI |
| XMB2L2 | | 36.23 | -0.67 | -1.11 | 35.25 | -0.87 | -1.47 | UN |
| XMQCMF | | 36.78 | -0.11 | -0.18 | 35.19 | -0.92 | -1.57 | NA |
| XPE8CN | | 37.31 | 0.42 | 0.70 | 36.34 | 0.22 | 0.37 | BU |
| XZE4LX | | 37.09 | 0.20 | 0.33 | 35.86 | -0.26 | -0.44 | WI |
| YCBZBQ | | 36.45 | -0.44 | -0.73 | 36.26 | 0.14 | 0.23 | WI |
| YG4NLH | | 36.69 | -0.20 | -0.34 | 35.79 | -0.33 | -0.56 | XX |
| YLDJB8 | | 37.13 | 0.23 | 0.39 | 36.10 | -0.02 | -0.03 | UN |
| Z2LHPA | | 37.00 | 0.11 | 0.18 | 36.13 | 0.01 | 0.01 | SP |
| ZMTYH8 | | 36.52 | -0.37 | -0.62 | 36.53 | 0.41 | 0.69 | HT |
| ZYXFQV | | 37.18 | 0.28 | 0.47 | 36.20 | 0.08 | 0.14 | WO |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 125

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

Summary Statistics

| | <u>Sample G19</u> | | <u>Sample G20</u> | |
|-------------------|-------------------|-----|-------------------|-----|
| Grand Means | 36.89 | HRC | 36.12 | HRC |
| Std Dev Btwn Labs | 0.60 | HRC | 0.59 | HRC |

Samples G19 , G20 : Fastener sizes: 1/2-20 x 2 1/2 , 1/2-20 x 1/4

Statistics based on 91 of 95 reporting participants

Comments on assigned Data Flags for Analysis #125

WebCode Flag Analyst Comment

38MBWA X Data for sample G20 are high. Inconsistent in testing between samples.

8R93ZG X Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples.

FJ8Q8J X Inconsistent in testing between samples.

NCHC8X X Data for sample G20 are low. Inconsistent in testing between samples.

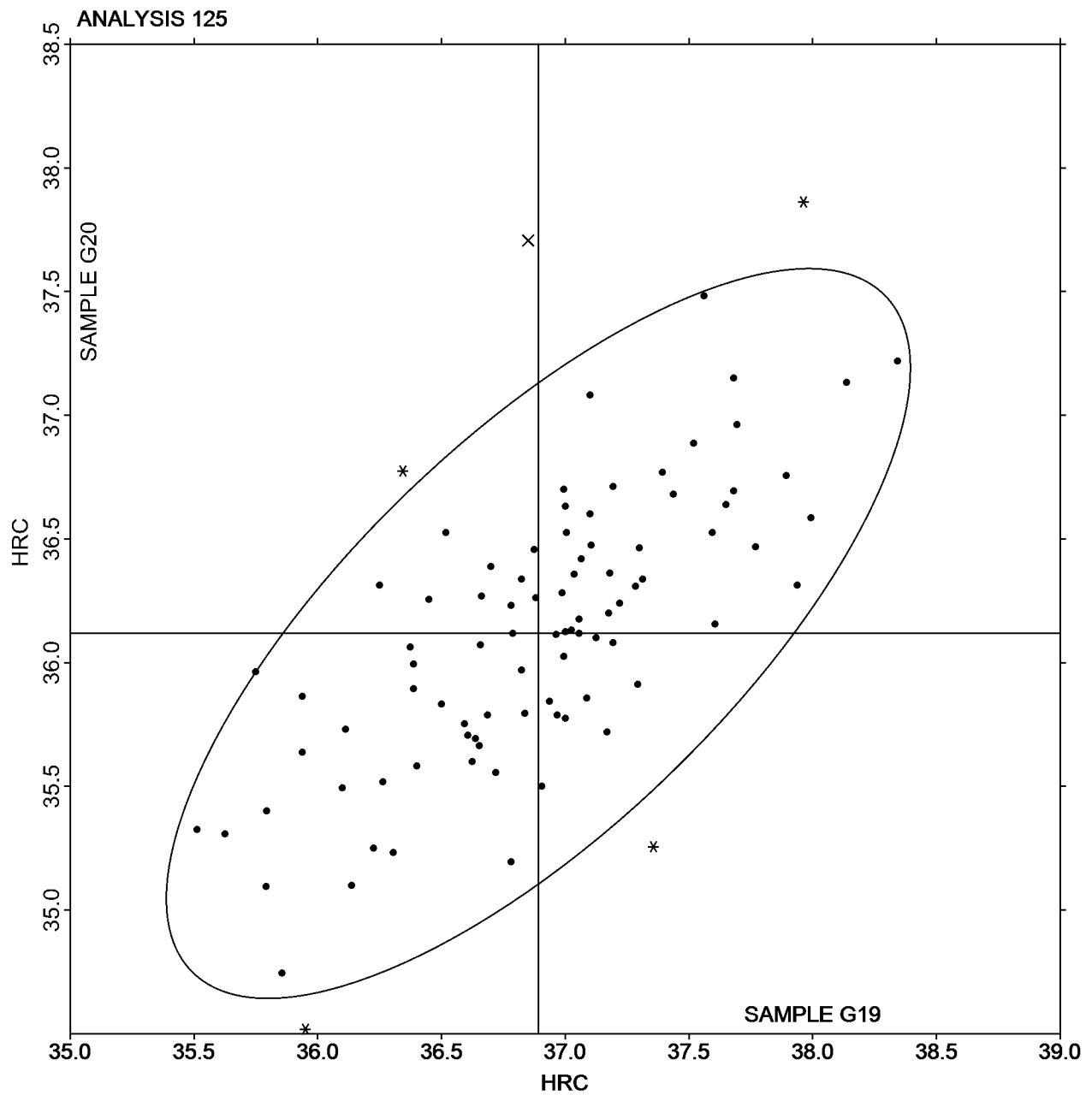
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 125

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

SAMPLE G19
36.89 HRC

SAMPLE G20
36.12 HRC



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 126

Vickers Hardness of Externally Threaded Fasteners - HV
ASTM E384

| WebCode | Data Flag | Sample V19 | | | Sample V20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 360.38 | -3.07 | -0.48 | 358.31 | -2.39 | -0.38 | WO |
| 2TTVL4 | | 363.38 | -0.07 | -0.01 | 361.38 | 0.67 | 0.11 | AR |
| 3FZ8YV | | 363.91 | 0.46 | 0.07 | 360.53 | -0.17 | -0.03 | BU |
| 3LJM8Y | | 375.93 | 12.48 | 1.95 | 376.51 | 15.81 | 2.55 | LE |
| 44HJLV | X | 308.75 | -54.69 | -8.54 | 327.06 | -33.64 | -5.42 | AV |
| 4QNERC | | 365.75 | 2.31 | 0.36 | 359.56 | -1.14 | -0.18 | GN |
| 4VCEVZ | * | 350.25 | -13.19 | -2.06 | 354.63 | -6.08 | -0.98 | LE |
| 8QHD22 | | 365.28 | 1.84 | 0.29 | 362.90 | 2.20 | 0.35 | FU |
| 8VTL8C | | 367.44 | 3.99 | 0.62 | 363.50 | 2.80 | 0.45 | WO |
| BFU436 | | 370.03 | 6.58 | 1.03 | 370.40 | 9.70 | 1.56 | XX |
| FRT4NC | | 372.63 | 9.18 | 1.43 | 368.50 | 7.80 | 1.26 | WO |
| HRHBJY | | 364.34 | 0.90 | 0.14 | 358.61 | -2.09 | -0.34 | CL |
| JWA3LA | | 362.68 | -0.77 | -0.12 | 357.92 | -2.78 | -0.45 | MI |
| KL448K | | 373.41 | 9.96 | 1.56 | 368.61 | 7.91 | 1.27 | AK |
| L3QH6W | | 358.31 | -5.13 | -0.80 | 362.13 | 1.42 | 0.23 | BU |
| NCNW6L | | 364.50 | 1.06 | 0.17 | 363.69 | 2.99 | 0.48 | MI |
| T3Y2UU | | 361.63 | -1.82 | -0.28 | 358.38 | -2.33 | -0.37 | XX |
| TPDGP | | 362.25 | -1.19 | -0.19 | 357.88 | -2.83 | -0.46 | AK |
| TXGKPP | | 354.00 | -9.44 | -1.47 | 356.63 | -4.08 | -0.66 | EM |
| UDHDM4 | | 358.81 | -4.63 | -0.72 | 353.06 | -7.64 | -1.23 | LE |
| UPCAL4 | | 355.39 | -8.06 | -1.26 | 349.59 | -11.11 | -1.79 | FU |
| W3NNJT | | 368.13 | 4.68 | 0.73 | 363.06 | 2.36 | 0.38 | ST |
| X8KBBL | | 356.88 | -6.57 | -1.03 | 354.00 | -6.70 | -1.08 | WO |
| XRVNBU | | 369.94 | 6.49 | 1.01 | 364.31 | 3.61 | 0.58 | SH |
| ZM4KNF | | 357.43 | -6.02 | -0.94 | 352.73 | -7.97 | -1.28 | XX |

Summary Statistics

| | Sample V19 | | Sample V20 | |
|-------------------|------------|----|------------|----|
| Grand Means | 363.44 | HV | 360.70 | HV |
| Std Dev Btwn Labs | 6.41 | HV | 6.21 | HV |

Samples V19 , V20 : Fastener sizes: 1/2-20 x 2 3/4 , 1/2-20 x 1/4

Statistics based on 24 of 25 reporting participants

Comments on assigned Data Flags for Analysis #126

WebCode Flag Analyst Comment

44HJLV X Data for both samples are low. Possible Systematic error.

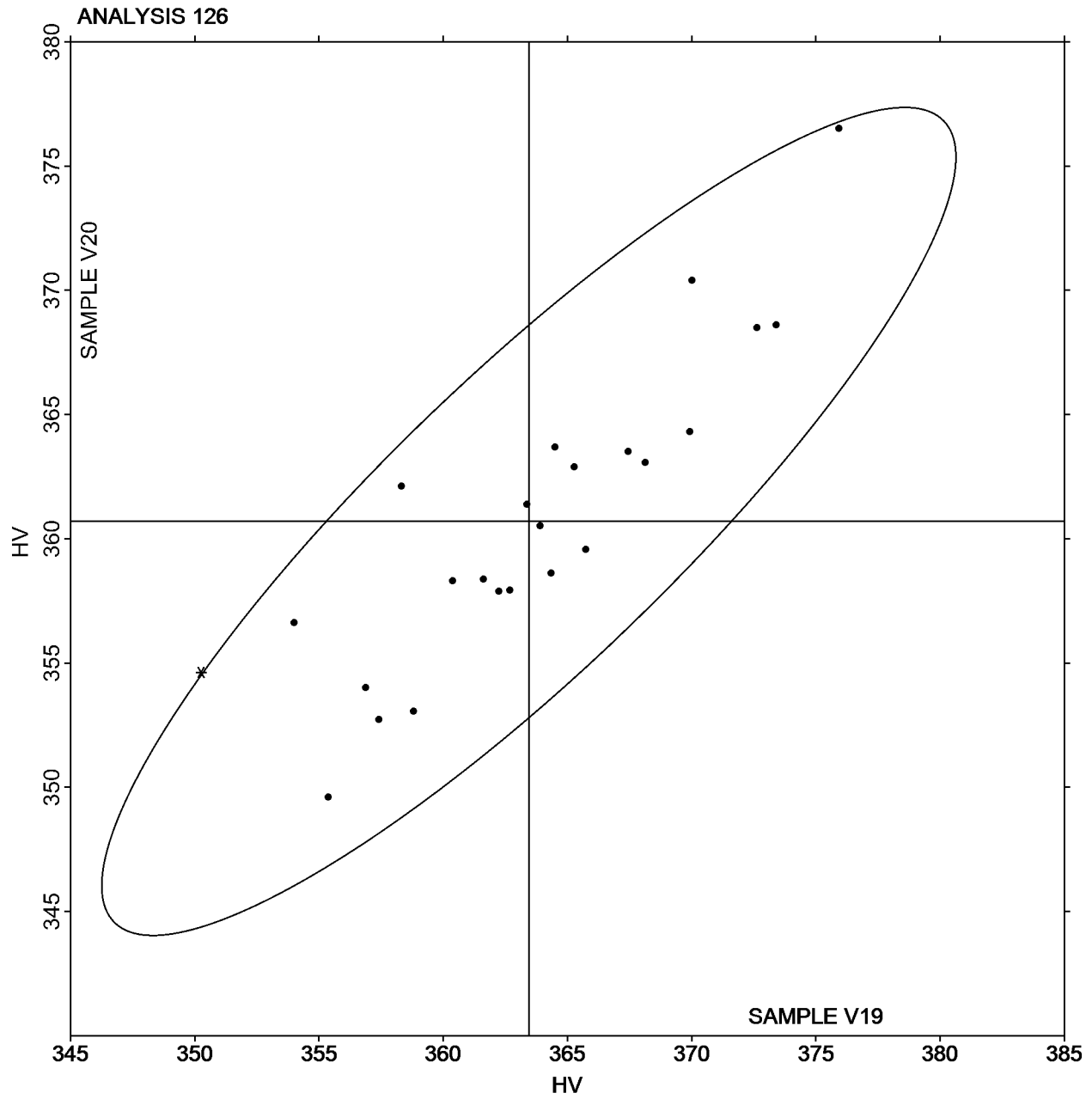
Interlaboratory Testing Program for Metals
Analysis 126
Vickers Hardness of Externally Threaded Fasteners - HV
ASTM E384

SAMPLE V19

363.44 HV

SAMPLE V20

360.70 HV



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 127

Fastener Wedge Tensile (10 deg) Metric - MPa
ASTM F606M

| WebCode | Data Flag | Sample B19 | | | Sample B20 | | | Instr Code |
|---------|-----------|------------|-----------------------|---------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2MKJGQ | | 1,138 | -3 | -0.23 | 1,126 | -5 | -0.31 | UN |
| 4QNERC | | 1,144 | 3 | 0.30 | 1,136 | 5 | 0.32 | WB |
| 7EVDVF | | 1,134 | -7 | -0.59 | 1,119 | -12 | -0.79 | LO |
| 7GLGNM | | 1,126 | -15 | -1.34 | 1,109 | -22 | -1.44 | IN |
| 96RCVL | | 1,161 | 20 | 1.83 | 1,144 | 13 | 0.83 | XX |
| AFRRP2 | | 1,148 | 7 | 0.61 | 1,125 | -7 | -0.42 | SA |
| BMJ23Y | | 1,133 | -8 | -0.68 | 1,127 | -4 | -0.28 | TO |
| BZGXNY | | 1,135 | -6 | -0.50 | 1,126 | -6 | -0.36 | XX |
| C9QPJF | | 1,140 | -1 | -0.08 | 1,122 | -9 | -0.57 | HP |
| F9AUEH | | 1,165 | 24 | 2.15 | 1,164 | 33 | 2.16 | XX |
| FNM3G7 | | 1,155 | 14 | 1.26 | 1,148 | 17 | 1.09 | XX |
| GAPQUE | | 1,132 | -9 | -0.83 | 1,123 | -8 | -0.51 | SA |
| HDF4PH | | 1,132 | -8 | -0.76 | 1,123 | -8 | -0.53 | ST |
| HRHBJY | | 1,152 | 11 | 0.97 | 1,137 | 6 | 0.40 | WZ |
| L3QH6W | | 1,140 | -1 | -0.05 | 1,126 | -5 | -0.31 | BA |
| L6WDV8 | | 1,144 | 3 | 0.28 | 1,143 | 12 | 0.77 | SA |
| NFJFYJ | | 1,140 | -1 | -0.05 | 1,130 | -1 | -0.08 | TO |
| QEX8MF | X | 14.67 | -1,126 | -101.45 | 14.51 | -1,117 | -72.57 | TO |
| T4XAXC | | 1,124 | -17 | -1.55 | 1,111 | -21 | -1.33 | SA |
| T6T6P8 | | 1,136 | -5 | -0.41 | 1,133 | 1 | 0.10 | TO |
| U644ZP | | 1,130 | -10 | -0.94 | 1,112 | -19 | -1.25 | MF |
| UDHDM4 | * | 1,155 | 14 | 1.27 | 1,171 | 40 | 2.61 | TO |
| XZE4LX | | 1,129 | -12 | -1.04 | 1,121 | -10 | -0.66 | TO |
| ZM4KNF | | 1,155 | 14 | 1.27 | 1,151 | 20 | 1.28 | UN |
| ZMTYH8 | | 1,130 | -11 | -1.02 | 1,127 | -5 | -0.30 | WZ |
| ZNXP8A | | 1,142 | 1 | 0.09 | 1,125 | -6 | -0.40 | RO |

Summary Statistics

| | Sample B19 | | Sample B20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 1,141 | MPa | 1,131 | MPa |
| Stnd Dev Btwn Labs | 11 | MPa | 15 | MPa |

Samples B19 , B20 : Fastener sizes: M10 x 1.5 x 70, M10 x 1.5 x 80

Statistics based on 25 of 26 reporting participants

Comments on assigned Data Flags for Analysis #127

WebCode Flag Analyst Comment

QEX8MF X Extreme data.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 127

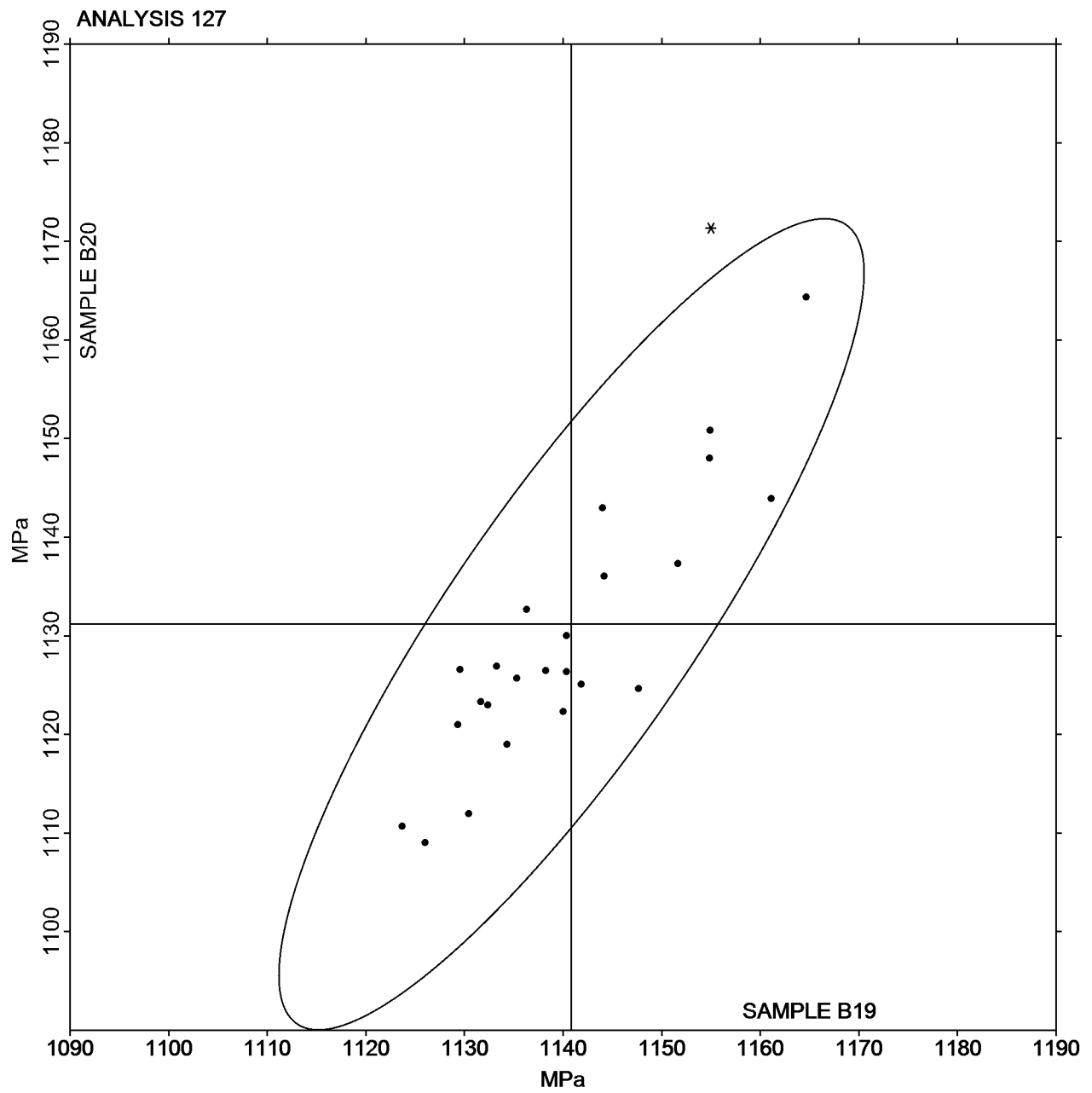
Fastener Wedge Tensile (10 deg) Metric - MPa
ASTM F606M

SAMPLE B19

1,141 MPa

SAMPLE B20

1,131 MPa



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 128
Fastener Axial Tensile Metric - MPa
ASTM F606M

| WebCode | Data Flag | Sample T19 | | | Sample T20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 1,131 | -12 | -0.88 | 1,131 | -2 | -0.16 | XX |
| 4QNERC | | 1,134 | -9 | -0.66 | 1,133 | -1 | -0.04 | WB |
| 8T82ZM | | 1,162 | 18 | 1.30 | 1,148 | 15 | 1.14 | TO |
| F9AUEH | | 1,177 | 34 | 2.40 | 1,156 | 23 | 1.76 | XX |
| FNM3G7 | | 1,151 | 8 | 0.56 | 1,152 | 19 | 1.49 | XX |
| FY9NP3 | | 1,142 | -1 | -0.10 | 1,128 | -5 | -0.39 | TO |
| JWN9NX | | 1,146 | 2 | 0.16 | 1,125 | -8 | -0.62 | LO |
| KGUJ6T | | 1,124 | -19 | -1.37 | 1,120 | -13 | -1.04 | HT |
| L3QH6W | | 1,145 | 1 | 0.09 | 1,125 | -8 | -0.65 | BA |
| PJZQ6M | | 1,128 | -16 | -1.12 | 1,118 | -15 | -1.17 | ST |
| T6T6P8 | | 1,141 | -3 | -0.19 | 1,125 | -9 | -0.67 | TO |
| UDHDM4 | | 1,147 | 3 | 0.23 | 1,150 | 16 | 1.27 | TO |
| ZLEFRH | | 1,148 | 5 | 0.35 | 1,133 | 0 | 0.00 | HT |
| ZNXP8A | | 1,132 | -11 | -0.77 | 1,121 | -12 | -0.93 | RO |

Summary Statistics

| | Sample T19 | | Sample T20 | |
|--------------------|------------|-----|------------|-----|
| Grand Means | 1,143 | MPa | 1,133 | MPa |
| Stnd Dev Btwn Labs | 14 | MPa | 13 | MPa |

Samples T19 , T20 : Fastener sizes: M10 x 1.5 x 70, M10 x 1.5 x 80

Statistics based on 14 of 14 reporting participants

Interlaboratory Testing Program for Metals

Analysis 128

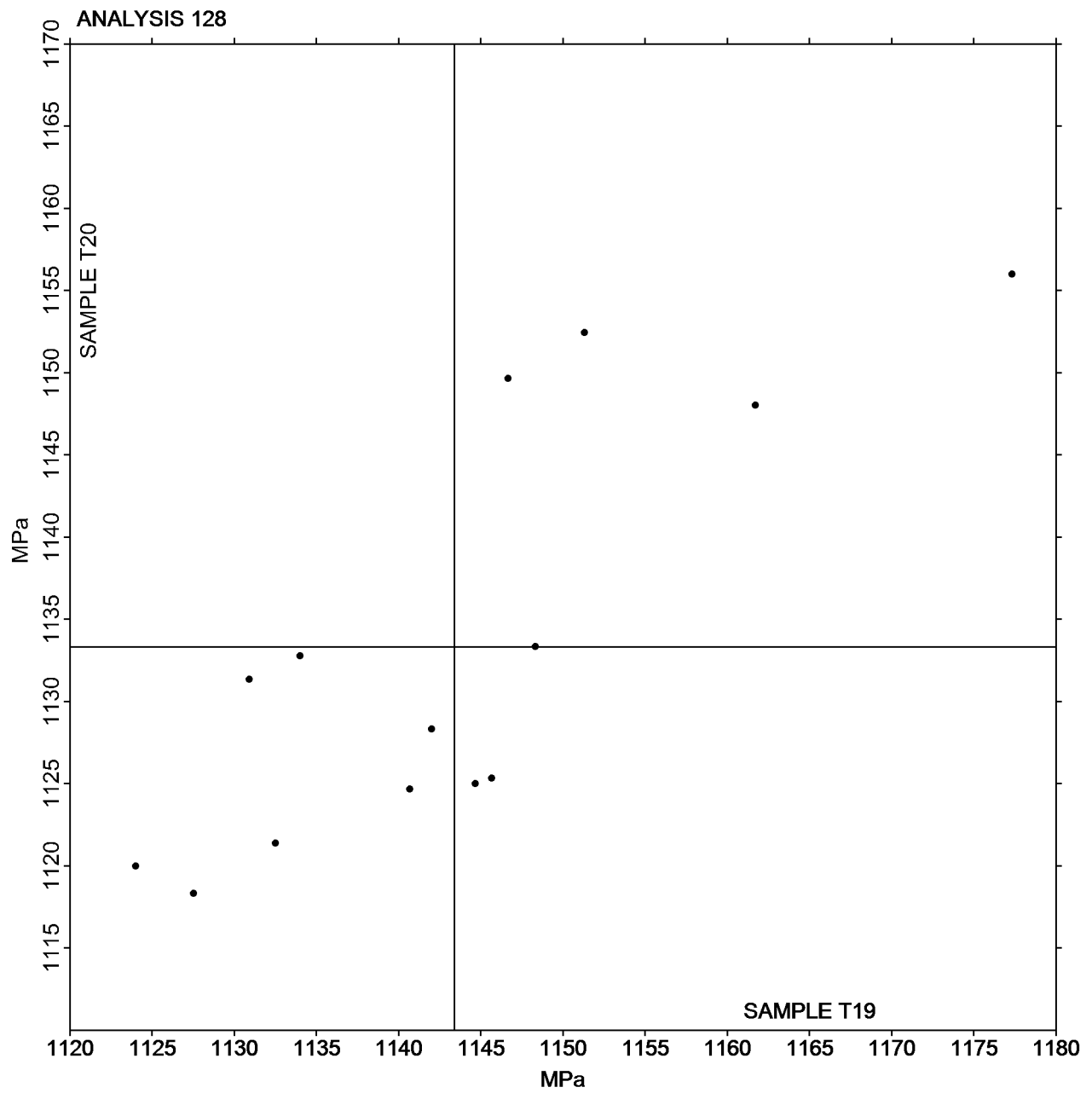
Fastener Axial Tensile Metric - MPa
ASTM F606M

SAMPLE T19

1,143 MPa

SAMPLE T20

1,133 MPa



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 129
Fastener Double Shear - lb
NASM 1312-13

| WebCode | Data Flag | Sample Z19 | | | Sample Z20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 19,078 | -190 | -0.33 | 21,601 | -22 | -0.04 | XX |
| 4HPFUP | | 19,503 | 234 | 0.40 | 21,866 | 244 | 0.40 | TO |
| 6B2XAM | | 19,353 | 84 | 0.14 | 21,802 | 180 | 0.29 | TO |
| 6PFT4G | | 18,733 | -535 | -0.92 | 21,333 | -289 | -0.47 | TO |
| 7FL6JX | | 19,850 | 581 | 1.00 | 21,967 | 344 | 0.56 | TO |
| AWNAW9 | | 18,640 | -628 | -1.08 | 20,853 | -770 | -1.25 | TO |
| B366C3 | | 19,465 | 196 | 0.34 | 21,859 | 236 | 0.38 | XX |
| FD7GCC | | 18,590 | -679 | -1.17 | 21,063 | -559 | -0.91 | TR |
| FJ8Q8J | | 19,183 | -85 | -0.15 | 21,300 | -323 | -0.52 | TO |
| FPZVEU | | 19,709 | 440 | 0.76 | 22,138 | 515 | 0.84 | SH |
| FRT4NC | * | 19,877 | 608 | 1.04 | 22,767 | 1,144 | 1.86 | TR |
| GAPQUE | | 19,261 | -8 | -0.01 | 21,677 | 54 | 0.09 | SA |
| GPLGUR | X | 22,164 | 2,895 | 4.98 | 21,844 | 222 | 0.36 | SA |
| H24GAB | | 19,011 | -258 | -0.44 | 21,363 | -260 | -0.42 | XX |
| HCGM26 | | 19,133 | -135 | -0.23 | 21,467 | -156 | -0.25 | RI |
| JT8YGK | | 18,985 | -283 | -0.49 | 21,381 | -242 | -0.39 | SA |
| L3QH6W | * | 17,804 | -1,465 | -2.52 | 19,810 | -1,812 | -2.94 | BA |
| NPHHHW | | 19,229 | -39 | -0.07 | 21,627 | 4 | 0.01 | SA |
| RJTCUJ | | 19,257 | -12 | -0.02 | 21,864 | 241 | 0.39 | IN |
| U2WWAH | | 18,960 | -308 | -0.53 | 21,307 | -316 | -0.51 | RI |
| U6ACA3 | | 18,969 | -300 | -0.52 | 21,160 | -462 | -0.75 | TO |
| W3NNJT | | 20,282 | 1,013 | 1.74 | 22,502 | 880 | 1.43 | MT |
| WEKY6Z | * | 20,662 | 1,393 | 2.39 | 22,703 | 1,081 | 1.75 | TO |
| YCBZBQ | | 19,287 | 18 | 0.03 | 21,683 | 61 | 0.10 | IN |
| YLDJB8 | | 19,630 | 361 | 0.62 | 21,853 | 230 | 0.37 | SA |

Summary Statistics

| | Sample Z19 | | Sample Z20 | |
|--------------------|------------|----|------------|----|
| Grand Means | 19,269 | lb | 21,623 | lb |
| Stnd Dev Btwn Labs | 582 | lb | 617 | lb |

Samples Z19 , Z20 : Fastener size 3/8-16 x 2 1/4, 3/8-16 x 2 3/4

Statistics based on 24 of 25 reporting participants

Comments on assigned Data Flags for Analysis #129

WebCode Flag Analyst Comment

GPLGUR X Data for sample Z19 are high. Inconsistent in testing between samples.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 129

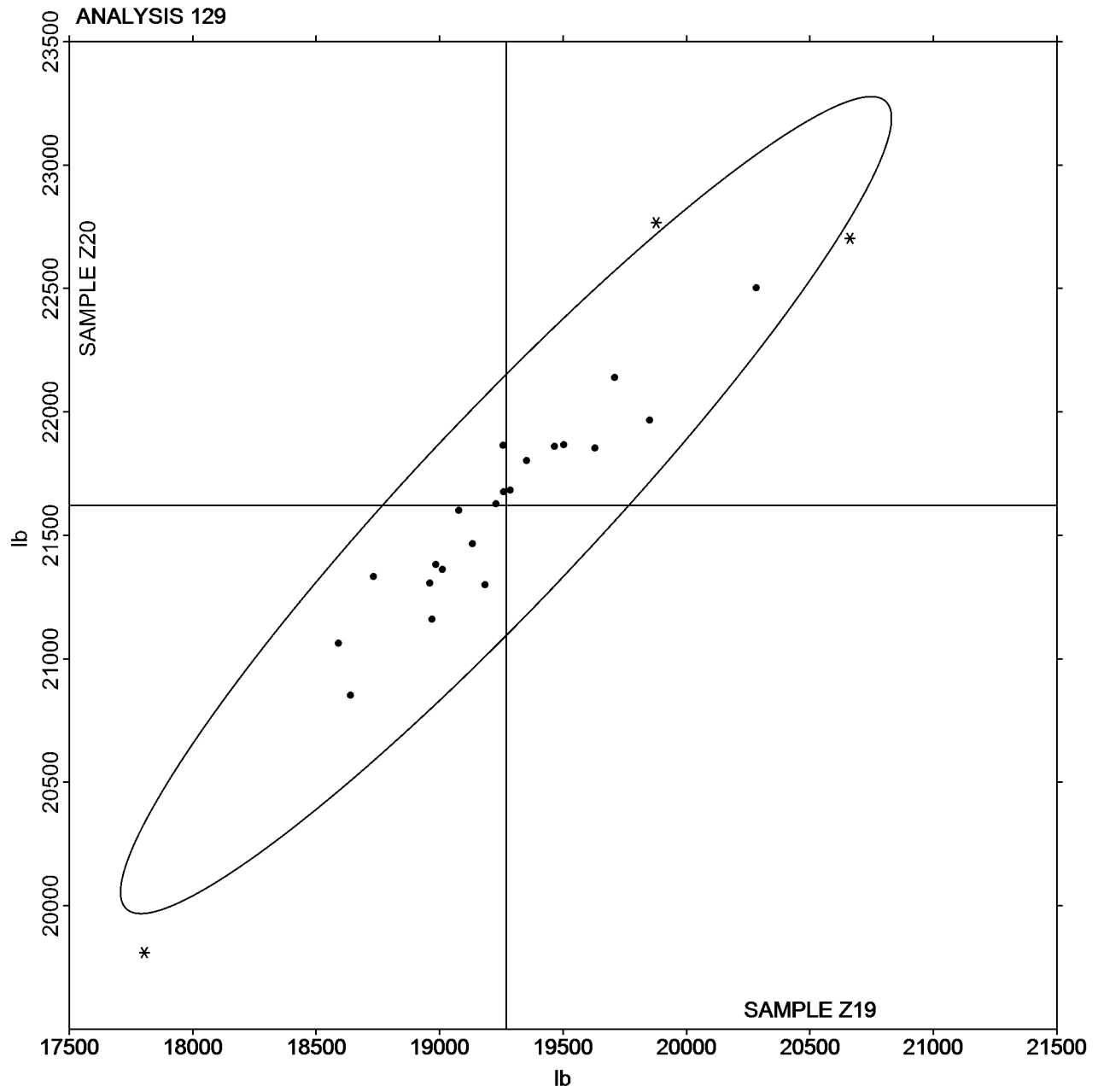
Fastener Double Shear - lb
NASM 1312-13

SAMPLE Z19

19,269 lb

SAMPLE Z20

21,623 lb



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 45.70 | -0.47 | -0.75 | 48.40 | -0.52 | -0.82 | ZZ |
| 3KURW8 | * | 45.54 | -0.63 | -1.00 | 49.31 | 0.39 | 0.61 | ZZ |
| 3YTMGE | | 46.43 | 0.25 | 0.40 | 49.12 | 0.20 | 0.31 | ZZ |
| 479PY2 | | 46.20 | 0.03 | 0.04 | 49.00 | 0.08 | 0.12 | ZZ |
| 6V82RU | | 45.83 | -0.34 | -0.54 | 48.88 | -0.05 | -0.07 | ZZ |
| 6VL4D3 | | 45.80 | -0.37 | -0.59 | 48.10 | -0.82 | -1.30 | ZZ |
| 6W3Z4G | * | 47.90 | 1.73 | 2.74 | 49.80 | 0.88 | 1.38 | ZZ |
| 74T8QF | X | 48.80 | 2.63 | 4.17 | 47.68 | -1.24 | -1.95 | ZZ |
| 78ZDJ9 | | 45.60 | -0.57 | -0.91 | 48.20 | -0.72 | -1.14 | ZZ |
| 79AEDU | X | 43.96 | -2.21 | -3.51 | 46.64 | -2.29 | -3.60 | ZZ |
| 8DV9RJ | | 46.20 | 0.03 | 0.04 | 49.00 | 0.08 | 0.12 | ZZ |
| 8ET2WP | | 46.61 | 0.44 | 0.69 | 49.76 | 0.84 | 1.31 | ZZ |
| 8ET3GN | | 46.00 | -0.17 | -0.27 | 49.50 | 0.58 | 0.90 | ZZ |
| 8R93ZG | | 46.40 | 0.23 | 0.36 | 49.20 | 0.28 | 0.43 | ZZ |
| ADNTFU | | 47.10 | 0.93 | 1.47 | 50.10 | 1.18 | 1.85 | ZZ |
| AUBYJ2 | | 45.60 | -0.57 | -0.91 | 48.20 | -0.72 | -1.14 | ZZ |
| B929DR | | 45.70 | -0.47 | -0.75 | 48.10 | -0.82 | -1.30 | ZZ |
| BRZXWL | X | 48.38 | 2.21 | 3.50 | 49.30 | 0.38 | 0.59 | ZZ |
| C23HRM | | 46.43 | 0.25 | 0.40 | 49.05 | 0.13 | 0.20 | ZZ |
| CTJBNC | | 46.33 | 0.15 | 0.24 | 48.50 | -0.42 | -0.67 | ZZ |
| CU7PQ9 | | 47.30 | 1.13 | 1.79 | 50.10 | 1.18 | 1.85 | ZZ |
| D4BGW2 | X | 43.18 | -2.99 | -4.75 | 45.83 | -3.09 | -4.86 | ZZ |
| D72MB7 | | 46.30 | 0.13 | 0.20 | 48.90 | -0.02 | -0.04 | ZZ |
| DRWJPC | | 46.10 | -0.07 | -0.12 | 49.60 | 0.68 | 1.06 | ZZ |
| DVR7EF | X | 48.80 | 2.63 | 4.17 | 45.50 | -3.42 | -5.38 | ZZ |
| ERXE9H | | 46.05 | -0.12 | -0.20 | 49.01 | 0.08 | 0.13 | ZZ |
| F2Q9AW | * | 47.70 | 1.53 | 2.42 | 50.60 | 1.68 | 2.63 | ZZ |
| F7NM2T | | 46.60 | 0.43 | 0.68 | 49.40 | 0.48 | 0.75 | ZZ |
| FPCEYY | X | 43.77 | -2.40 | -3.81 | 47.61 | -1.32 | -2.07 | ZZ |
| FRT4NC | | 45.83 | -0.34 | -0.55 | 48.57 | -0.35 | -0.56 | ZZ |
| FZVKV9 | | 46.60 | 0.43 | 0.68 | 50.00 | 1.08 | 1.69 | ZZ |
| G4XJ9L | | 46.30 | 0.13 | 0.20 | 48.60 | -0.32 | -0.51 | ZZ |
| G79YJL | | 45.30 | -0.87 | -1.38 | 47.70 | -1.22 | -1.93 | ZZ |
| G97NK2 | | 45.30 | -0.87 | -1.38 | 48.30 | -0.62 | -0.98 | ZZ |
| GB6LEV | | 44.71 | -1.46 | -2.32 | 47.66 | -1.26 | -1.99 | ZZ |
| GGHNV4 | | 47.30 | 1.13 | 1.79 | 50.10 | 1.18 | 1.85 | ZZ |
| HAQ2D4 | | 46.90 | 0.73 | 1.15 | 49.80 | 0.88 | 1.38 | ZZ |
| HHFTBF | | 46.10 | -0.07 | -0.12 | 48.60 | -0.32 | -0.51 | ZZ |
| HJQZSQ | X | 46.48 | 0.30 | 0.48 | 61.43 | 12.50 | 19.66 | ZZ |
| HP8V6L | | 45.54 | -0.63 | -1.00 | 48.01 | -0.92 | -1.44 | ZZ |
| HRAWUW | X | 49.76 | 3.59 | 5.69 | 51.60 | 2.68 | 4.21 | ZZ |
| HWYPVT | | 47.10 | 0.93 | 1.47 | 49.30 | 0.38 | 0.59 | ZZ |
| J3ZNJN | | 46.00 | -0.17 | -0.27 | 48.00 | -0.92 | -1.45 | ZZ |
| J8NNLP | | 45.10 | -1.07 | -1.70 | 48.50 | -0.42 | -0.67 | ZZ |
| J9YL3C | | 46.50 | 0.33 | 0.52 | 49.30 | 0.38 | 0.59 | ZZ |
| JMTXPG | | 45.80 | -0.37 | -0.59 | 48.40 | -0.52 | -0.82 | ZZ |
| JNGRCE | | 45.90 | -0.27 | -0.43 | 48.60 | -0.32 | -0.51 | ZZ |
| K78PQB | | 46.40 | 0.23 | 0.36 | 48.70 | -0.22 | -0.35 | ZZ |
| KDTPZW | * | 46.07 | -0.10 | -0.17 | 49.89 | 0.97 | 1.52 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 130

Tensile Strength (Flat Steel) - ksi
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| KJZED | | 46.08 | -0.09 | -0.15 | 48.98 | 0.06 | 0.09 | ZZ |
| KNWN6P | X | 48.90 | 2.73 | 4.33 | 50.00 | 1.08 | 1.69 | ZZ |
| KYBZGE | | 46.64 | 0.46 | 0.74 | 49.07 | 0.14 | 0.23 | ZZ |
| L39EMN | X | 26.20 | -19.97 | -31.68 | 29.50 | -19.42 | -30.54 | ZZ |
| LGY6Q2 | | 46.20 | 0.03 | 0.04 | 48.80 | -0.12 | -0.20 | ZZ |
| LKQ2PJ | | 46.70 | 0.53 | 0.84 | 49.30 | 0.38 | 0.59 | ZZ |
| LYCTUZ | | 46.30 | 0.13 | 0.20 | 49.20 | 0.28 | 0.43 | ZZ |
| M6WBM3 | | 46.80 | 0.63 | 0.99 | 49.80 | 0.88 | 1.38 | ZZ |
| MB8C9H | | 46.30 | 0.13 | 0.20 | 49.00 | 0.08 | 0.12 | ZZ |
| MFQQA | | 45.59 | -0.59 | -0.93 | 48.02 | -0.90 | -1.42 | ZZ |
| N39NV6 | | 45.50 | -0.67 | -1.07 | 47.95 | -0.97 | -1.53 | ZZ |
| N8BTYW | | 44.70 | -1.47 | -2.34 | 47.70 | -1.22 | -1.93 | ZZ |
| NWZTUC | | 45.54 | -0.63 | -1.00 | 48.33 | -0.59 | -0.93 | ZZ |
| PEQEGM | X | 52.00 | 5.83 | 9.24 | 53.30 | 4.38 | 6.88 | ZZ |
| PMK4ZN | | 47.40 | 1.23 | 1.95 | 49.50 | 0.58 | 0.90 | ZZ |
| PZMJ9Y | | 46.20 | 0.03 | 0.04 | 48.90 | -0.02 | -0.04 | ZZ |
| Q3LYMA | | 46.41 | 0.24 | 0.38 | 49.15 | 0.23 | 0.36 | ZZ |
| Q6QHRW | | 46.11 | -0.07 | -0.10 | 48.69 | -0.23 | -0.37 | ZZ |
| Q9HT9W | * | 45.60 | -0.57 | -0.91 | 49.50 | 0.58 | 0.90 | ZZ |
| QDZVM7 | | 46.30 | 0.13 | 0.20 | 49.10 | 0.18 | 0.28 | ZZ |
| QRL4V7 | | 46.48 | 0.31 | 0.50 | 48.97 | 0.04 | 0.06 | ZZ |
| RC8ULU | | 45.80 | -0.37 | -0.59 | 48.90 | -0.02 | -0.04 | ZZ |
| RCWEM9 | | 45.83 | -0.34 | -0.54 | 48.60 | -0.32 | -0.51 | ZZ |
| RGMPLK | | 45.64 | -0.53 | -0.85 | 48.44 | -0.48 | -0.76 | ZZ |
| RQHCRW | | 46.78 | 0.61 | 0.96 | 48.98 | 0.06 | 0.09 | ZZ |
| TX8VBQ | | 45.00 | -1.17 | -1.86 | 47.70 | -1.22 | -1.93 | ZZ |
| UJZ8FA | * | 44.80 | -1.37 | -2.18 | 47.30 | -1.62 | -2.55 | ZZ |
| UXH2PD | | 46.78 | 0.61 | 0.96 | 49.37 | 0.44 | 0.70 | ZZ |
| V3BGZ7 | | 46.27 | 0.09 | 0.15 | 49.02 | 0.10 | 0.16 | ZZ |
| V4UH32 | | 47.10 | 0.93 | 1.47 | 49.60 | 0.68 | 1.06 | ZZ |
| VKRM7B | | 46.12 | -0.05 | -0.08 | 49.46 | 0.53 | 0.84 | ZZ |
| VLLDDB | | 45.11 | -1.07 | -1.69 | 48.60 | -0.32 | -0.51 | ZZ |
| VN9QXJ | | 46.20 | 0.03 | 0.04 | 49.00 | 0.08 | 0.12 | ZZ |
| VPW47D | | 46.40 | 0.23 | 0.36 | 49.50 | 0.58 | 0.90 | ZZ |
| VTNYJX | | 46.50 | 0.33 | 0.52 | 49.20 | 0.28 | 0.43 | ZZ |
| W927F3 | | 45.88 | -0.29 | -0.46 | 48.72 | -0.20 | -0.32 | ZZ |
| W93WTC | | 46.41 | 0.24 | 0.38 | 49.08 | 0.16 | 0.25 | ZZ |
| WARCU8 | | 46.55 | 0.37 | 0.59 | 49.15 | 0.23 | 0.35 | ZZ |
| WGCHL | | 46.56 | 0.38 | 0.61 | 48.88 | -0.05 | -0.07 | ZZ |
| X962PZ | | 45.88 | -0.29 | -0.46 | 48.78 | -0.14 | -0.23 | ZZ |
| XJJ6MJ | X | 48.90 | 2.73 | 4.33 | 46.00 | -2.92 | -4.60 | ZZ |
| XKF37W | | 46.50 | 0.33 | 0.52 | 49.20 | 0.28 | 0.43 | ZZ |
| XKKV8W | | 46.20 | 0.03 | 0.04 | 49.00 | 0.08 | 0.12 | ZZ |
| XRNVBU | | 47.14 | 0.96 | 1.53 | 49.31 | 0.39 | 0.61 | ZZ |
| XRY7DZ | | 46.11 | -0.07 | -0.10 | 48.44 | -0.48 | -0.76 | ZZ |
| YBXALY | | 45.74 | -0.43 | -0.68 | 49.01 | 0.09 | 0.14 | ZZ |
| YGAGMK | | 46.50 | 0.33 | 0.52 | 48.90 | -0.02 | -0.04 | ZZ |
| YXLEDA | | 45.90 | -0.27 | -0.43 | 48.60 | -0.32 | -0.51 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 130
Tensile Strength (Flat Steel) - ksi
ASTM E8

Summary Statistics

| | <u>Sample F19</u> | | <u>Sample F20</u> | |
|--------------------|-------------------|-----|-------------------|-----|
| Grand Means | 46.17 | ksi | 48.92 | ksi |
| Stnd Dev Btwn Labs | 0.63 | ksi | 0.64 | ksi |

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 85 of 97 reporting participants

Comments on assigned Data Flags for Analysis #130

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| 74T8QF | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| 79AEDU | X | Data for both samples are low. Possible Systematic error. |
| BRZXWL | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| D4BGW2 | X | Data for both samples are low. Possible Systematic error. |
| DVR7EF | X | Data for sample F19 are high and data for sample F20 are low. |
| FPCEYY | X | Data for sample F19 are low. Inconsistent in testing between samples. |
| HJQZNQ | X | Data for sample F20 are high. Inconsistent in testing between samples. |
| HRAWUW | X | Data for both samples are high. Possible Systematic error. |
| KNWN6P | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| L39EMN | X | Data for both samples are low. Possible Systematic error. |
| PEQEGM | X | Data for both samples are high. Possible Systematic error. |
| XJJ6MJ | X | Data for sample F19 are high and data for sample F20 are low. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 130

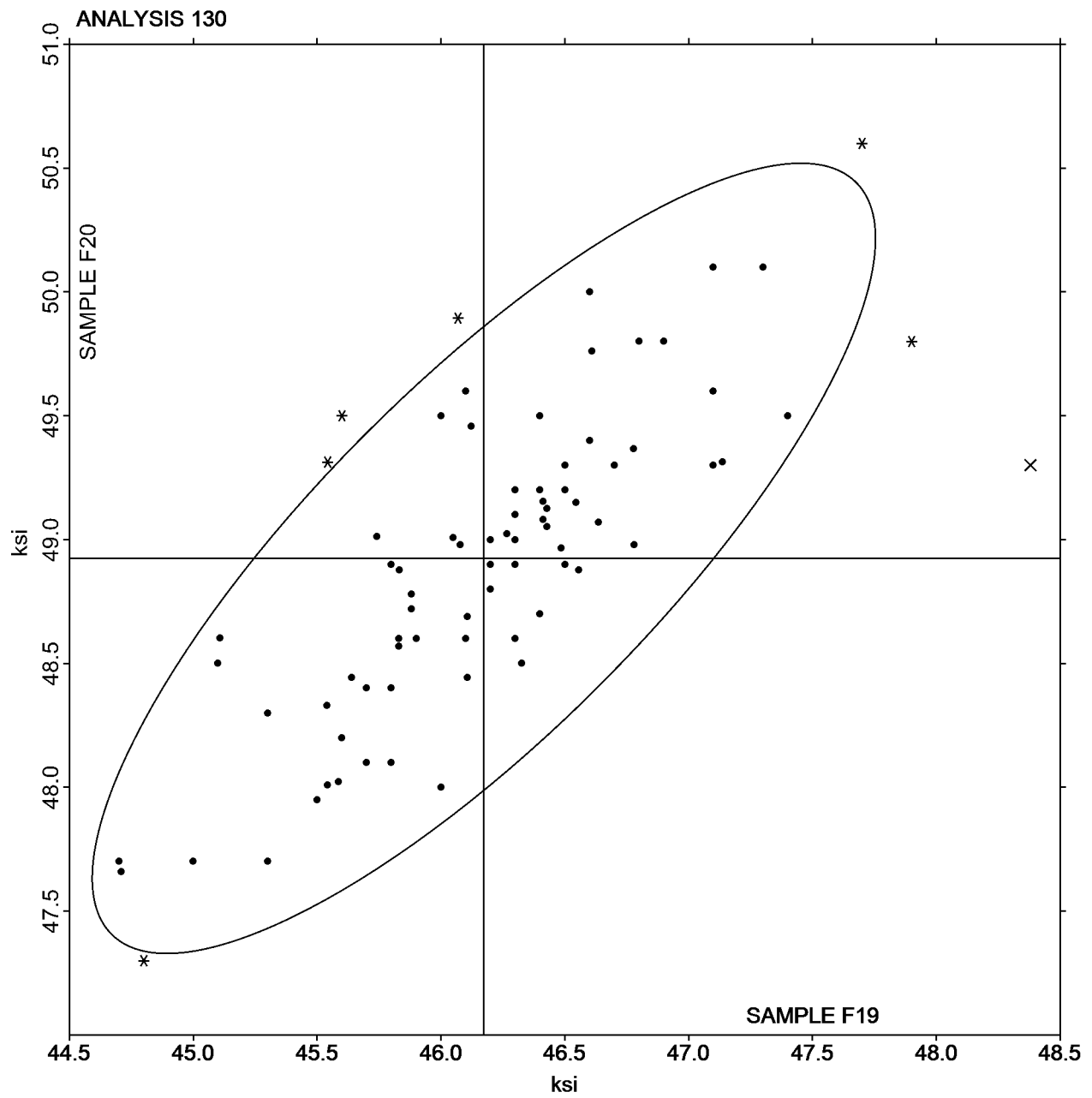
Tensile Strength (Flat Steel) - ksi
ASTM E8

SAMPLE F19

46.17 ksi

SAMPLE F20

48.92 ksi



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 25.40 | -0.66 | -0.71 | 29.50 | 0.39 | 0.41 | ZZ |
| 3KURW8 | | 24.95 | -1.11 | -1.19 | 28.57 | -0.53 | -0.55 | ZZ |
| 3YTMGE | | 25.25 | -0.81 | -0.87 | 28.38 | -0.72 | -0.75 | ZZ |
| 479PY2 | | 27.00 | 0.94 | 1.01 | 29.30 | 0.19 | 0.20 | ZZ |
| 6V82RU | | 25.53 | -0.53 | -0.57 | 29.01 | -0.10 | -0.10 | ZZ |
| 6VL4D3 | | 25.30 | -0.76 | -0.81 | 28.30 | -0.81 | -0.84 | ZZ |
| 6W3Z4G | | 28.20 | 2.14 | 2.29 | 30.80 | 1.69 | 1.76 | ZZ |
| 74T8QF | X | 29.01 | 2.95 | 3.16 | 30.10 | 0.99 | 1.03 | ZZ |
| 78ZDJ9 | | 25.90 | -0.16 | -0.17 | 29.10 | -0.01 | -0.01 | ZZ |
| 79AEDU | | 25.50 | -0.56 | -0.60 | 28.16 | -0.95 | -0.99 | ZZ |
| 8DV9RJ | | 26.20 | 0.14 | 0.15 | 29.50 | 0.39 | 0.41 | ZZ |
| 8ET2WP | | 26.11 | 0.05 | 0.05 | 29.84 | 0.74 | 0.77 | ZZ |
| 8ET3GN | X | 28.00 | 1.94 | 2.08 | 28.50 | -0.61 | -0.63 | ZZ |
| 8R93ZG | | 24.40 | -1.66 | -1.78 | 27.70 | -1.41 | -1.46 | ZZ |
| ADNTFU | | 25.90 | -0.16 | -0.17 | 29.40 | 0.29 | 0.31 | ZZ |
| AUBYJ2 | | 26.00 | -0.06 | -0.06 | 28.30 | -0.81 | -0.84 | ZZ |
| B929DR | | 26.60 | 0.54 | 0.58 | 29.30 | 0.19 | 0.20 | ZZ |
| BRZXWL | X | 33.82 | 7.76 | 8.31 | 34.24 | 5.14 | 5.33 | ZZ |
| C23HRM | | 26.09 | 0.03 | 0.03 | 28.79 | -0.32 | -0.33 | ZZ |
| CTJBNC | | 26.63 | 0.57 | 0.61 | 28.43 | -0.68 | -0.70 | ZZ |
| CU7PQ9 | | 25.70 | -0.36 | -0.39 | 29.70 | 0.59 | 0.62 | ZZ |
| D4BGW2 | X | 23.26 | -2.80 | -2.99 | 25.08 | -4.03 | -4.19 | ZZ |
| D72MB7 | | 26.10 | 0.04 | 0.04 | 29.20 | 0.09 | 0.10 | ZZ |
| DRWJPC | | 27.40 | 1.34 | 1.44 | 30.00 | 0.89 | 0.93 | ZZ |
| DVR7EF | X | 28.40 | 2.34 | 2.51 | 24.90 | -4.21 | -4.37 | ZZ |
| ERXE9H | | 25.95 | -0.11 | -0.12 | 28.57 | -0.53 | -0.55 | ZZ |
| F2Q9AW | | 26.30 | 0.24 | 0.26 | 28.90 | -0.21 | -0.21 | ZZ |
| F7NM2T | | 26.00 | -0.06 | -0.06 | 29.10 | -0.01 | -0.01 | ZZ |
| FPCEYY | X | 22.99 | -3.07 | -3.29 | 25.25 | -3.86 | -4.01 | ZZ |
| FRT4NC | | 25.45 | -0.62 | -0.66 | 29.05 | -0.05 | -0.05 | ZZ |
| FZVKV9 | X | 32.60 | 6.54 | 7.00 | 30.50 | 1.39 | 1.45 | ZZ |
| G4XJ9L | | 25.30 | -0.76 | -0.81 | 28.80 | -0.31 | -0.32 | ZZ |
| G79YJL | | 25.00 | -1.06 | -1.14 | 27.60 | -1.51 | -1.56 | ZZ |
| G97NK2 | | 25.00 | -1.06 | -1.14 | 28.50 | -0.61 | -0.63 | ZZ |
| GB6LEV | | 26.01 | -0.05 | -0.05 | 28.41 | -0.70 | -0.72 | ZZ |
| GGHNV4 | | 25.60 | -0.46 | -0.49 | 28.10 | -1.01 | -1.04 | ZZ |
| HAQ2D4 | | 26.10 | 0.04 | 0.04 | 29.20 | 0.09 | 0.10 | ZZ |
| HHFTBF | | 25.50 | -0.56 | -0.60 | 28.60 | -0.51 | -0.53 | ZZ |
| HJQZNQ | X | 27.97 | 1.91 | 2.05 | 37.94 | 8.83 | 9.18 | ZZ |
| HP8V6L | | 26.98 | 0.92 | 0.98 | 29.01 | -0.10 | -0.10 | ZZ |
| HRAWUW | X | 35.89 | 9.83 | 10.53 | 33.44 | 4.33 | 4.50 | ZZ |
| HWYPVT | | 26.30 | 0.24 | 0.26 | 28.90 | -0.21 | -0.21 | ZZ |
| J3ZNJN | | 26.00 | -0.06 | -0.06 | 28.00 | -1.11 | -1.15 | ZZ |
| J8NNLP | X | 35.70 | 9.64 | 10.32 | 30.20 | 1.09 | 1.14 | ZZ |
| J9YL3C | | 25.30 | -0.76 | -0.81 | 28.60 | -0.51 | -0.53 | ZZ |
| JMTXPG | | 27.30 | 1.24 | 1.33 | 30.20 | 1.09 | 1.14 | ZZ |
| K78PQB | | 27.50 | 1.44 | 1.54 | 30.50 | 1.39 | 1.45 | ZZ |
| KDTPZW | | 27.68 | 1.62 | 1.73 | 30.20 | 1.09 | 1.13 | ZZ |
| KJDZED | | 24.51 | -1.55 | -1.66 | 28.07 | -1.04 | -1.08 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| KNWN6P | X | 30.10 | 4.04 | 4.33 | 32.30 | 3.19 | 3.32 | ZZ |
| KYBZGE | | 25.10 | -0.96 | -1.02 | 27.64 | -1.47 | -1.53 | ZZ |
| L39EMN | X | 46.20 | 20.14 | 21.57 | 49.20 | 20.09 | 20.87 | ZZ |
| LGY6Q2 | | 24.80 | -1.26 | -1.35 | 27.90 | -1.21 | -1.25 | ZZ |
| LKQ2PJ | | 26.30 | 0.24 | 0.26 | 29.50 | 0.39 | 0.41 | ZZ |
| LYCTUZ | | 25.90 | -0.16 | -0.17 | 28.60 | -0.51 | -0.53 | ZZ |
| M6WBM3 | | 26.10 | 0.04 | 0.04 | 28.60 | -0.51 | -0.53 | ZZ |
| MB8C9H | | 25.80 | -0.26 | -0.28 | 29.30 | 0.19 | 0.20 | ZZ |
| MFQQAQ | | 28.20 | 2.14 | 2.29 | 30.36 | 1.25 | 1.30 | ZZ |
| N39NV6 | * | 24.80 | -1.26 | -1.35 | 29.35 | 0.24 | 0.25 | ZZ |
| N8BTYW | | 24.40 | -1.66 | -1.78 | 27.40 | -1.71 | -1.77 | ZZ |
| NWZTUC | | 27.90 | 1.84 | 1.97 | 30.94 | 1.83 | 1.91 | ZZ |
| PEQEGM | X | 40.20 | 14.14 | 15.14 | 37.60 | 8.49 | 8.82 | ZZ |
| PMK4ZN | | 26.50 | 0.44 | 0.47 | 28.20 | -0.91 | -0.94 | ZZ |
| PZMJ9Y | | 26.10 | 0.04 | 0.04 | 29.50 | 0.39 | 0.41 | ZZ |
| Q3LYMA | | 25.24 | -0.82 | -0.88 | 28.95 | -0.16 | -0.16 | ZZ |
| Q6QHRW | * | 25.56 | -0.50 | -0.54 | 30.30 | 1.19 | 1.24 | ZZ |
| Q9HT9W | | 26.00 | -0.06 | -0.06 | 30.10 | 0.99 | 1.03 | ZZ |
| QDZVM7 | | 26.60 | 0.54 | 0.58 | 30.30 | 1.19 | 1.24 | ZZ |
| QRL4V7 | | 26.15 | 0.09 | 0.10 | 29.23 | 0.12 | 0.12 | ZZ |
| RC8ULU | | 25.40 | -0.66 | -0.71 | 28.80 | -0.31 | -0.32 | ZZ |
| RCWEM9 | | 27.21 | 1.15 | 1.23 | 30.57 | 1.46 | 1.52 | ZZ |
| RGMPLK | | 26.40 | 0.34 | 0.37 | 28.89 | -0.22 | -0.22 | ZZ |
| RQHCRW | | 24.86 | -1.20 | -1.29 | 27.17 | -1.94 | -2.01 | ZZ |
| TX8VBQ | * | 24.50 | -1.56 | -1.67 | 26.50 | -2.61 | -2.71 | ZZ |
| UJZ8FA | | 25.00 | -1.06 | -1.14 | 29.00 | -0.11 | -0.11 | ZZ |
| UXH2PD | | 26.49 | 0.43 | 0.46 | 29.63 | 0.52 | 0.54 | ZZ |
| V3BGZ7 | | 25.96 | -0.10 | -0.11 | 29.73 | 0.63 | 0.65 | ZZ |
| V4UH32 | | 25.80 | -0.26 | -0.28 | 28.80 | -0.31 | -0.32 | ZZ |
| VKRM7B | | 25.82 | -0.24 | -0.26 | 28.72 | -0.39 | -0.40 | ZZ |
| VLLDDB | | 26.56 | 0.50 | 0.54 | 29.76 | 0.65 | 0.68 | ZZ |
| VN9QXJ | | 26.30 | 0.24 | 0.26 | 29.40 | 0.29 | 0.31 | ZZ |
| VPW47D | | 25.90 | -0.16 | -0.17 | 29.10 | -0.01 | -0.01 | ZZ |
| VTNYJX | | 25.60 | -0.46 | -0.49 | 28.60 | -0.51 | -0.53 | ZZ |
| W927F3 | | 26.79 | 0.73 | 0.78 | 29.62 | 0.51 | 0.53 | ZZ |
| W93WTC | | 26.06 | 0.00 | 0.00 | 28.44 | -0.66 | -0.69 | ZZ |
| WARCU8 | | 26.63 | 0.57 | 0.61 | 29.13 | 0.03 | 0.03 | ZZ |
| WGCHL | * | 28.28 | 2.22 | 2.38 | 31.47 | 2.37 | 2.46 | ZZ |
| X962PZ | | 27.82 | 1.76 | 1.88 | 31.10 | 1.99 | 2.07 | ZZ |
| XJJ6MJ | X | 30.00 | 3.94 | 4.22 | 26.50 | -2.61 | -2.71 | ZZ |
| XKF37W | | 26.70 | 0.64 | 0.69 | 30.30 | 1.19 | 1.24 | ZZ |
| XKKV8W | | 25.30 | -0.76 | -0.81 | 28.80 | -0.31 | -0.32 | ZZ |
| XRVNBU | * | 28.57 | 2.51 | 2.69 | 31.76 | 2.66 | 2.76 | ZZ |
| XRY7DZ | X | 36.72 | 10.66 | 11.42 | 36.65 | 7.55 | 7.84 | ZZ |
| YBXALY | | 25.03 | -1.03 | -1.10 | 28.03 | -1.07 | -1.11 | ZZ |
| YGAGMK | | 26.10 | 0.04 | 0.04 | 29.00 | -0.11 | -0.11 | ZZ |
| YXLEDA | | 26.40 | 0.34 | 0.36 | 29.50 | 0.39 | 0.41 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

Yield Strength (Flat Steel) - ksi
ASTM E8

Summary Statistics

| | <u>Sample F19</u> | | <u>Sample F20</u> | |
|-------------------|-------------------|-----|-------------------|-----|
| Grand Means | 26.06 | ksi | 29.11 | ksi |
| Std Dev Btwn Labs | 0.93 | ksi | 0.96 | ksi |

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 81 of 96 reporting participants

Interlaboratory Testing Program for Metals
Analysis 131
Yield Strength (Flat Steel) - ksi
ASTM E8

Comments on assigned Data Flags for Analysis #131

| <u>WebCode</u> | <u>Flag</u> | <u>Analyst Comment</u> |
|----------------|-------------|--|
| 74T8QF | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| 8ET3GN | X | Inconsistent in testing between samples. |
| BRZXWL | X | Data for both samples are high. Possible Systematic error. |
| D4BGW2 | X | Data for both samples are low. Possible Systematic error. |
| DVR7EF | X | Data for sample F20 are low. Inconsistent in testing between samples. |
| FPCEYY | X | Data for both samples are low. Possible Systematic error. |
| FZVKV9 | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| HJQZNQ | X | Data for sample F20 are high. Inconsistent in testing between samples. |
| HRAWUW | X | Data for both samples are high. Possible Systematic error. |
| J8NNLP | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| KNWN6P | X | Data for both samples are high. Possible Systematic error. |
| L39EMN | X | Data for both samples are high. Possible Systematic error. |
| PEQEGM | X | Data for both samples are high. Possible Systematic error. |
| XJJ6MJ | X | Data for sample F19 are high. Inconsistent in testing between samples. |
| XRY7DZ | X | Data for both samples are high. Possible Systematic error. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 131

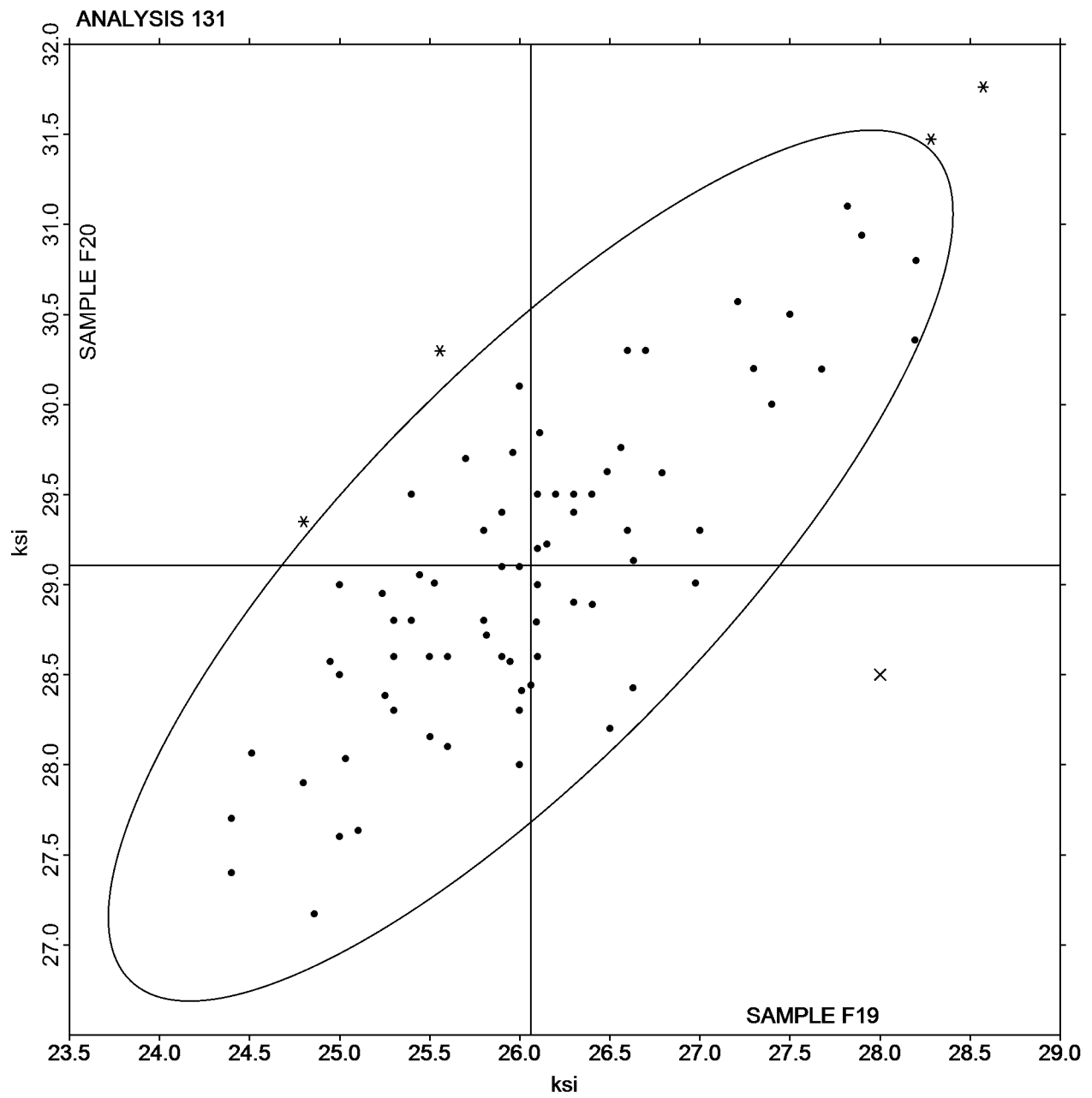
Yield Strength (Flat Steel) - ksi
ASTM E8

SAMPLE F19

26.06 ksi

SAMPLE F20

29.11 ksi



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 42.70 | -0.56 | -0.21 | 39.80 | -1.87 | -0.72 | ZZ |
| 3KURW8 | | 41.80 | -1.46 | -0.56 | 38.70 | -2.97 | -1.15 | ZZ |
| 3YTMGE | | 42.80 | -0.46 | -0.18 | 40.70 | -0.97 | -0.38 | ZZ |
| 479PY2 | | 42.50 | -0.76 | -0.29 | 41.40 | -0.27 | -0.11 | ZZ |
| 6V82RU | * | 48.10 | 4.84 | 1.85 | 43.20 | 1.53 | 0.59 | ZZ |
| 6VL4D3 | | 43.50 | 0.24 | 0.09 | 42.40 | 0.73 | 0.28 | ZZ |
| 6W3Z4G | | 43.40 | 0.14 | 0.05 | 43.30 | 1.63 | 0.63 | ZZ |
| 74T8QF | X | 28.50 | -14.76 | -5.65 | 29.00 | -12.67 | -4.89 | ZZ |
| 78ZDJ9 | | 46.20 | 2.94 | 1.13 | 44.30 | 2.63 | 1.01 | ZZ |
| 79AEDU | X | 30.00 | -13.26 | -5.08 | 29.00 | -12.67 | -4.89 | ZZ |
| 8DV9RJ | | 40.50 | -2.76 | -1.06 | 39.00 | -2.67 | -1.03 | ZZ |
| 8ET2WP | | 43.50 | 0.24 | 0.09 | 40.00 | -1.67 | -0.65 | ZZ |
| 8ET3GN | * | 42.00 | -1.26 | -0.48 | 44.00 | 2.33 | 0.90 | ZZ |
| 8R93ZG | | 45.00 | 1.74 | 0.67 | 44.00 | 2.33 | 0.90 | ZZ |
| ADNTFU | | 43.30 | 0.04 | 0.02 | 42.90 | 1.23 | 0.47 | ZZ |
| AUBYJ2 | X | 52.50 | 9.24 | 3.54 | 51.70 | 10.03 | 3.87 | ZZ |
| B929DR | | 43.00 | -0.26 | -0.10 | 42.50 | 0.83 | 0.32 | ZZ |
| BRZXWL | | 40.35 | -2.91 | -1.11 | 37.78 | -3.89 | -1.50 | ZZ |
| C23HRM | | 42.50 | -0.76 | -0.29 | 41.30 | -0.37 | -0.14 | ZZ |
| CTJBNC | | 40.10 | -3.16 | -1.21 | 38.60 | -3.07 | -1.19 | ZZ |
| CU7PQ9 | | 47.50 | 4.24 | 1.62 | 45.00 | 3.33 | 1.28 | ZZ |
| D4BGW2 | * | 50.60 | 7.34 | 2.81 | 48.40 | 6.73 | 2.60 | ZZ |
| D72MB7 | | 43.20 | -0.06 | -0.02 | 41.60 | -0.07 | -0.03 | ZZ |
| DRWJPC | X | 40.80 | -2.46 | -0.94 | 43.50 | 1.83 | 0.70 | ZZ |
| DVR7EF | * | 44.20 | 0.94 | 0.36 | 45.60 | 3.93 | 1.51 | ZZ |
| ERXE9H | | 40.30 | -2.96 | -1.13 | 37.80 | -3.87 | -1.50 | ZZ |
| F2Q9AW | | 39.50 | -3.76 | -1.44 | 38.50 | -3.17 | -1.23 | ZZ |
| F7NM2T | | 44.00 | 0.74 | 0.28 | 43.00 | 1.33 | 0.51 | ZZ |
| FPCEYY | | 45.30 | 2.04 | 0.78 | 42.90 | 1.23 | 0.47 | ZZ |
| FRT4NC | | 41.00 | -2.26 | -0.87 | 42.00 | 0.33 | 0.13 | ZZ |
| FZVKV9 | | 40.10 | -3.16 | -1.21 | 39.10 | -2.57 | -0.99 | ZZ |
| G4XJ9L | | 41.40 | -1.86 | -0.71 | 40.80 | -0.87 | -0.34 | ZZ |
| G79YJL | | 40.00 | -3.26 | -1.25 | 37.00 | -4.67 | -1.80 | ZZ |
| G97NK2 | | 45.50 | 2.24 | 0.86 | 43.20 | 1.53 | 0.59 | ZZ |
| GB6LEV | | 42.80 | -0.46 | -0.18 | 42.60 | 0.93 | 0.36 | ZZ |
| GGHNV4 | | 41.80 | -1.46 | -0.56 | 39.60 | -2.07 | -0.80 | ZZ |
| HAQ2D4 | | 43.00 | -0.26 | -0.10 | 40.70 | -0.97 | -0.38 | ZZ |
| HHFTBF | | 41.00 | -2.26 | -0.87 | 39.00 | -2.67 | -1.03 | ZZ |
| HJQZNQ | X | 33.00 | -10.26 | -3.93 | 37.00 | -4.67 | -1.80 | ZZ |
| HP8V6L | | 48.60 | 5.34 | 2.05 | 45.40 | 3.73 | 1.44 | ZZ |
| HRAWUW | * | 43.32 | 0.06 | 0.02 | 38.70 | -2.97 | -1.15 | ZZ |
| HWYPVT | | 44.60 | 1.34 | 0.51 | 42.70 | 1.03 | 0.40 | ZZ |
| J3ZNJN | | 44.80 | 1.54 | 0.59 | 44.90 | 3.23 | 1.24 | ZZ |
| J8NNLP | | 41.00 | -2.26 | -0.87 | 41.00 | -0.67 | -0.26 | ZZ |
| J9YL3C | | 39.60 | -3.66 | -1.40 | 38.10 | -3.57 | -1.38 | ZZ |
| JMTXPG | | 44.80 | 1.54 | 0.59 | 43.70 | 2.03 | 0.78 | ZZ |
| K78PQB | | 41.70 | -1.56 | -0.60 | 40.10 | -1.57 | -0.61 | ZZ |
| KDTPZW | | 47.54 | 4.28 | 1.64 | 45.79 | 4.12 | 1.59 | ZZ |
| KJZED | | 42.70 | -0.56 | -0.21 | 42.10 | 0.43 | 0.16 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

| WebCode | Data Flag | Sample F19 | | | Sample F20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| KNWN6P | * | 36.80 | -6.46 | -2.47 | 36.60 | -5.07 | -1.96 | ZZ |
| KYBZGE | | 46.00 | 2.74 | 1.05 | 42.40 | 0.73 | 0.28 | ZZ |
| L39EMN | | 42.80 | -0.46 | -0.18 | 41.90 | 0.23 | 0.09 | ZZ |
| LGY6Q2 | | 41.45 | -1.81 | -0.69 | 40.15 | -1.52 | -0.59 | ZZ |
| LKQ2PJ | | 45.00 | 1.74 | 0.67 | 43.50 | 1.83 | 0.70 | ZZ |
| LYCTUZ | | 39.80 | -3.46 | -1.32 | 38.00 | -3.67 | -1.42 | ZZ |
| M6WBM3 | | 46.40 | 3.14 | 1.20 | 44.30 | 2.63 | 1.01 | ZZ |
| MB8C9H | | 41.00 | -2.26 | -0.87 | 41.50 | -0.17 | -0.07 | ZZ |
| MFQQA | | 46.20 | 2.94 | 1.13 | 44.70 | 3.03 | 1.17 | ZZ |
| N39NV6 | X | 44.55 | 1.29 | 0.49 | 37.00 | -4.67 | -1.80 | ZZ |
| N8BTYW | | 44.00 | 0.74 | 0.28 | 42.50 | 0.83 | 0.32 | ZZ |
| NWZTUC | | 48.00 | 4.74 | 1.82 | 45.00 | 3.33 | 1.28 | ZZ |
| PEQEGM | * | 37.40 | -5.86 | -2.24 | 34.50 | -7.17 | -2.77 | ZZ |
| PMK4ZN | | 44.70 | 1.44 | 0.55 | 41.50 | -0.17 | -0.07 | ZZ |
| PZMJ9Y | | 45.10 | 1.84 | 0.71 | 43.40 | 1.73 | 0.67 | ZZ |
| Q3LYMA | | 42.50 | -0.76 | -0.29 | 40.60 | -1.07 | -0.41 | ZZ |
| Q6QHRW | | 44.60 | 1.34 | 0.51 | 42.20 | 0.53 | 0.20 | ZZ |
| Q9HT9W | | 42.80 | -0.46 | -0.18 | 42.10 | 0.43 | 0.16 | ZZ |
| QDZVM7 | | 40.10 | -3.16 | -1.21 | 39.00 | -2.67 | -1.03 | ZZ |
| QRL4V7 | | 42.10 | -1.16 | -0.44 | 40.40 | -1.27 | -0.49 | ZZ |
| RC8ULU | | 44.10 | 0.84 | 0.32 | 42.50 | 0.83 | 0.32 | ZZ |
| RCWEM9 | | 48.00 | 4.74 | 1.82 | 46.00 | 4.33 | 1.67 | ZZ |
| RGMPLK | | 43.56 | 0.30 | 0.12 | 43.01 | 1.34 | 0.52 | ZZ |
| RQHCRW | X | 46.80 | 3.54 | 1.36 | 50.50 | 8.83 | 3.41 | ZZ |
| TX8VBQ | | 45.00 | 1.74 | 0.67 | 41.70 | 0.03 | 0.01 | ZZ |
| UJZ8FA | | 47.60 | 4.34 | 1.66 | 47.30 | 5.63 | 2.17 | ZZ |
| UXH2PD | | 40.06 | -3.20 | -1.23 | 39.11 | -2.56 | -0.99 | ZZ |
| V3BGZ7 | | 42.00 | -1.26 | -0.48 | 41.00 | -0.67 | -0.26 | ZZ |
| V4UH32 | | 42.70 | -0.56 | -0.21 | 40.20 | -1.47 | -0.57 | ZZ |
| VKRM7B | | 44.70 | 1.44 | 0.55 | 42.30 | 0.63 | 0.24 | ZZ |
| VLLDDB | | 41.83 | -1.43 | -0.55 | 39.56 | -2.11 | -0.82 | ZZ |
| VN9QXJ | | 46.30 | 3.04 | 1.16 | 46.30 | 4.63 | 1.78 | ZZ |
| VPW47D | | 44.20 | 0.94 | 0.36 | 43.40 | 1.73 | 0.67 | ZZ |
| VTNYJX | | 40.50 | -2.76 | -1.06 | 40.00 | -1.67 | -0.65 | ZZ |
| W927F3 | | 44.35 | 1.09 | 0.42 | 40.95 | -0.72 | -0.28 | ZZ |
| W93WTC | | 43.70 | 0.44 | 0.17 | 41.20 | -0.47 | -0.18 | ZZ |
| WARCU8 | | 44.60 | 1.34 | 0.51 | 45.00 | 3.33 | 1.28 | ZZ |
| WGCHL | | 39.89 | -3.37 | -1.29 | 37.93 | -3.74 | -1.45 | ZZ |
| X962PZ | | 48.00 | 4.74 | 1.82 | 46.00 | 4.33 | 1.67 | ZZ |
| XJJ6MJ | X | 37.80 | -5.46 | -2.09 | 42.10 | 0.43 | 0.16 | ZZ |
| XKF37W | | 41.90 | -1.36 | -0.52 | 40.70 | -0.97 | -0.38 | ZZ |
| XKKV8W | | 43.03 | -0.23 | -0.09 | 41.21 | -0.46 | -0.18 | ZZ |
| XRVNBU | | 40.00 | -3.26 | -1.25 | 39.00 | -2.67 | -1.03 | ZZ |
| XRY7DZ | | 42.00 | -1.26 | -0.48 | 40.00 | -1.67 | -0.65 | ZZ |
| YBXALY | | 46.30 | 3.04 | 1.16 | 43.60 | 1.93 | 0.74 | ZZ |
| YGAGMK | | 42.00 | -1.26 | -0.48 | 40.00 | -1.67 | -0.65 | ZZ |
| YXLEDA | | 42.60 | -0.66 | -0.25 | 42.00 | 0.33 | 0.13 | ZZ |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 132
Elongation (Flat Steel) - Percent Increase
ASTM E8

Summary Statistics

| | <u>Sample F19</u> | | <u>Sample F20</u> | |
|--------------------|-------------------|---------|-------------------|---------|
| Grand Means | 43.26 | Percent | 41.67 | Percent |
| Stnd Dev Btwn Labs | 2.61 | Percent | 2.59 | Percent |

Samples F19 , F20 : AISI 1010 - 16G , AISI 1010 - 14G

Statistics based on 88 of 96 reporting participants

Comments on assigned Data Flags for Analysis #132

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| 74T8QF | X | Data for both samples are low. Possible Systematic error. |
| 79AEDU | X | Data for both samples are low. Possible Systematic error. |
| AUBYJ2 | X | Data for both samples are high. Possible Systematic error. |
| DRWJPC | X | Inconsistent in testing between samples. |
| HJQZNQ | X | Data for sample F19 are low. Inconsistent in testing between samples. |
| N39NV6 | X | Inconsistent in testing between samples. |
| RQHCRW | X | Data for sample F20 are high. Inconsistent in testing between samples. |
| XJJ6MJ | X | Inconsistent in testing between samples. |

Cycle 106
2nd Q, 2014

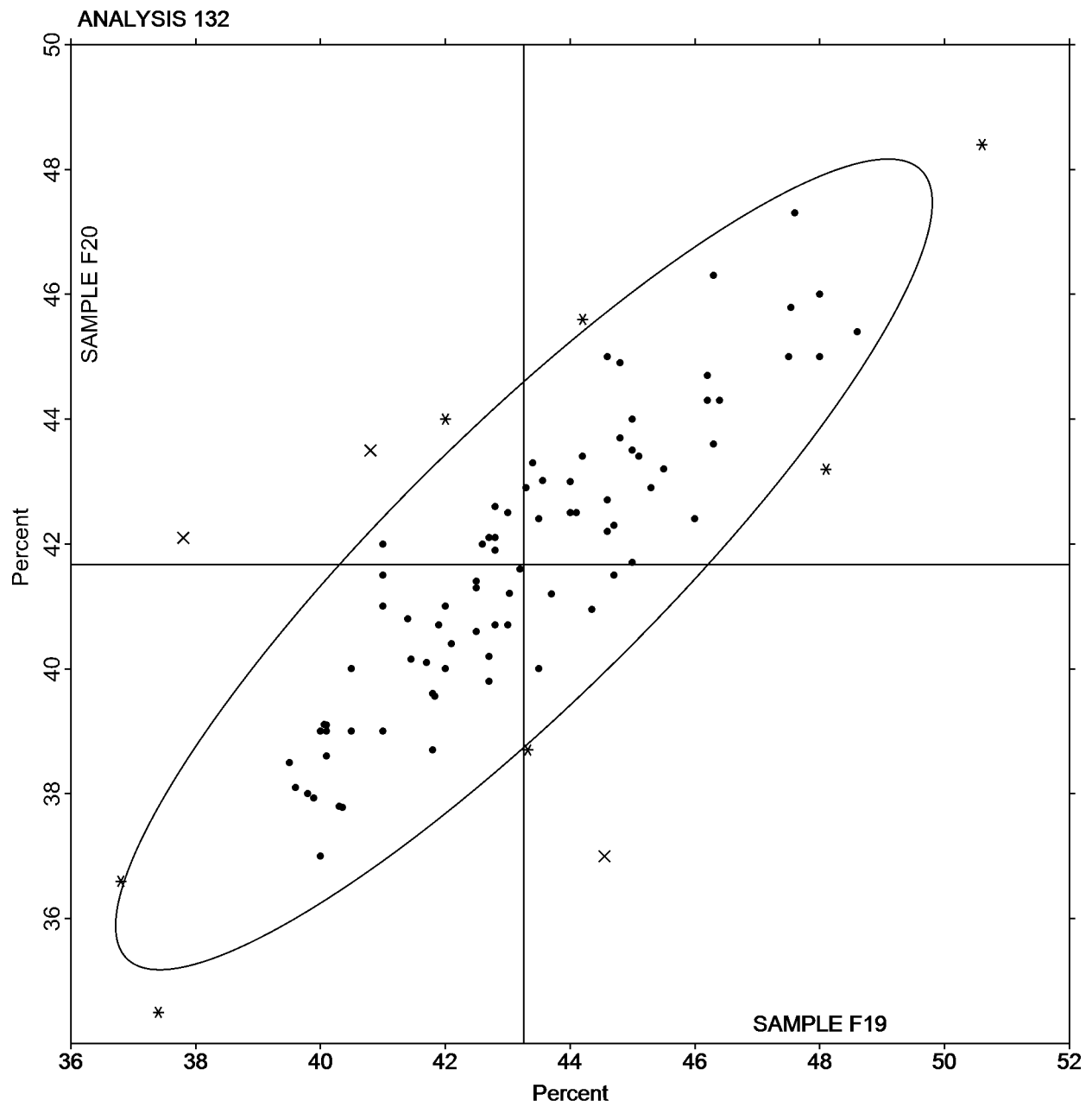
Interlaboratory Testing Program for Metals

Analysis 132

Elongation (Flat Steel) - Percent Increase
ASTM E8

SAMPLE F19
43.26 Percent

SAMPLE F20
41.67 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 136
Rockwell Superficial Hardness (30N Scale)
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2MKJGQ | | 70.86 | 0.30 | 0.52 | 74.68 | 0.29 | 0.51 | AN |
| 3372PX | X | 72.02 | 1.46 | 2.50 | 74.66 | 0.27 | 0.48 | WI |
| 38MBWA | | 70.44 | -0.12 | -0.20 | 74.52 | 0.13 | 0.23 | WI |
| 3YFYBL | | 70.76 | 0.20 | 0.35 | 74.76 | 0.37 | 0.65 | WI |
| 6FN4B2 | | 69.88 | -0.68 | -1.16 | 73.84 | -0.55 | -0.96 | WI |
| 6PFT4G | | 71.38 | 0.82 | 1.41 | 75.24 | 0.85 | 1.50 | WI |
| 78C82U | | 71.38 | 0.82 | 1.41 | 74.88 | 0.49 | 0.86 | WI |
| 78ZDJ9 | | 71.18 | 0.62 | 1.06 | 74.46 | 0.07 | 0.13 | MI |
| 7YY47N | | 70.72 | 0.16 | 0.28 | 74.50 | 0.11 | 0.20 | NA |
| 8T99LV | | 70.36 | -0.20 | -0.34 | 74.28 | -0.11 | -0.19 | XX |
| AFRRP2 | | 71.90 | 1.34 | 2.30 | 75.68 | 1.29 | 2.27 | WI |
| BWQCE2 | | 70.00 | -0.56 | -0.95 | 73.40 | -0.99 | -1.74 | WI |
| CFZMZJ | | 70.32 | -0.24 | -0.41 | 74.62 | 0.23 | 0.41 | WI |
| CUUBMR | | 70.48 | -0.08 | -0.13 | 74.16 | -0.23 | -0.40 | LE |
| CXZJDN | | 70.40 | -0.16 | -0.27 | 74.60 | 0.21 | 0.37 | WI |
| DAQ7AP | | 70.14 | -0.42 | -0.71 | 74.08 | -0.31 | -0.54 | WI |
| DPQ2MA | | 70.42 | -0.14 | -0.23 | 74.24 | -0.15 | -0.26 | WI |
| DUGE8K | | 71.16 | 0.60 | 1.03 | 74.24 | -0.15 | -0.26 | XX |
| F9AUEH | | 70.50 | -0.06 | -0.10 | 74.44 | 0.05 | 0.09 | WI |
| FA4KAB | | 70.74 | 0.18 | 0.31 | 74.34 | -0.05 | -0.09 | WI |
| FFWK6J | | 70.98 | 0.42 | 0.72 | 74.82 | 0.43 | 0.76 | CL |
| FNDFFQ | | 71.12 | 0.56 | 0.96 | 74.40 | 0.01 | 0.02 | CL |
| GA6PKQ | | 70.80 | 0.24 | 0.42 | 75.24 | 0.85 | 1.50 | WI |
| GAPQUE | | 70.78 | 0.22 | 0.38 | 74.76 | 0.37 | 0.65 | UN |
| H76ULN | | 69.22 | -1.34 | -2.29 | 73.40 | -0.99 | -1.74 | WI |
| HHFTBF | | 70.54 | -0.02 | -0.03 | 74.18 | -0.21 | -0.37 | NA |
| JNDG6A | | 70.78 | 0.22 | 0.38 | 74.54 | 0.15 | 0.27 | CL |
| JT8YGK | | 70.36 | -0.20 | -0.34 | 74.12 | -0.27 | -0.47 | NA |
| K78PQB | | 69.54 | -1.02 | -1.74 | 74.06 | -0.33 | -0.58 | WI |
| KDQ6LM | | 70.42 | -0.14 | -0.23 | 74.40 | 0.01 | 0.02 | XX |
| LCGYZT | | 69.90 | -0.66 | -1.12 | 73.84 | -0.55 | -0.96 | WI |
| LGY6Q2 | | 70.58 | 0.02 | 0.04 | 74.48 | 0.09 | 0.16 | UN |
| MMQ2GH | | 69.88 | -0.68 | -1.16 | 73.40 | -0.99 | -1.74 | WI |
| MMYVMC | | 70.78 | 0.22 | 0.38 | 75.22 | 0.83 | 1.46 | XX |
| N8BTYW | | 70.06 | -0.50 | -0.85 | 73.52 | -0.87 | -1.53 | WI |
| NFJFYJ | | 69.56 | -1.00 | -1.71 | 73.36 | -1.03 | -1.81 | CL |
| P4PAR8 | | 69.85 | -0.71 | -1.21 | 73.81 | -0.58 | -1.02 | LE |
| PLPGLY | | 70.86 | 0.30 | 0.52 | 74.30 | -0.09 | -0.16 | BU |
| QDN287 | | 69.50 | -1.06 | -1.81 | 74.02 | -0.37 | -0.65 | WI |
| QM6CCK | | 71.46 | 0.90 | 1.54 | 74.94 | 0.55 | 0.97 | UN |
| R7N3HV | | 71.14 | 0.58 | 1.00 | 75.12 | 0.73 | 1.29 | FT |
| T4XAXC | | 71.32 | 0.76 | 1.30 | 74.94 | 0.55 | 0.97 | NA |
| U6ACA3 | | 70.82 | 0.26 | 0.45 | 75.06 | 0.67 | 1.18 | WI |
| U9LVZB | | 71.76 | 1.20 | 2.06 | 75.50 | 1.11 | 1.95 | WI |
| UJZ8FA | | 70.84 | 0.28 | 0.48 | 74.28 | -0.11 | -0.19 | WI |
| V4UH32 | | 70.72 | 0.16 | 0.28 | 74.58 | 0.19 | 0.34 | NA |
| VN9QXJ | | 70.00 | -0.56 | -0.95 | 74.00 | -0.39 | -0.68 | WI |
| W3NNJT | | 70.94 | 0.38 | 0.65 | 74.50 | 0.11 | 0.20 | WI |
| WX2K6X | | 71.10 | 0.54 | 0.93 | 75.08 | 0.69 | 1.22 | NA |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 136
Rockwell Superficial Hardness (30N Scale)
ASTM E18

| WebCode | Data Flag | Sample E19 | | | Sample E20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| X2U7A6 | | 70.40 | -0.16 | -0.27 | 74.18 | -0.21 | -0.37 | WI |
| XAUGQV | | 69.66 | -0.90 | -1.53 | 73.50 | -0.89 | -1.56 | WI |
| XJJ6MJ | | 70.24 | -0.32 | -0.54 | 74.68 | 0.29 | 0.51 | WI |
| XWDWQ8 | | 70.88 | 0.32 | 0.55 | 74.78 | 0.39 | 0.69 | UN |
| Z64Z4T | | 70.14 | -0.42 | -0.71 | 73.52 | -0.87 | -1.53 | XX |
| ZGKKTV | | 70.14 | -0.42 | -0.71 | 73.50 | -0.89 | -1.56 | CL |

| Summary Statistics | | | | |
|--------------------|------------|-------|------------|-------|
| | Sample E19 | | Sample E20 | |
| Grand Means | 70.56 | HR30N | 74.39 | HR30N |
| Std Dev Btwn Labs | 0.58 | HR30N | 0.57 | HR30N |

Samples E19, E20 : Steel

Statistics based on 54 of 55 reporting participants

Comments on assigned Data Flags for Analysis #136

WebCode Flag Analyst Comment

3372PX X Inconsistent in testing between samples.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 136

Rockwell Superficial Hardness (30N Scale)

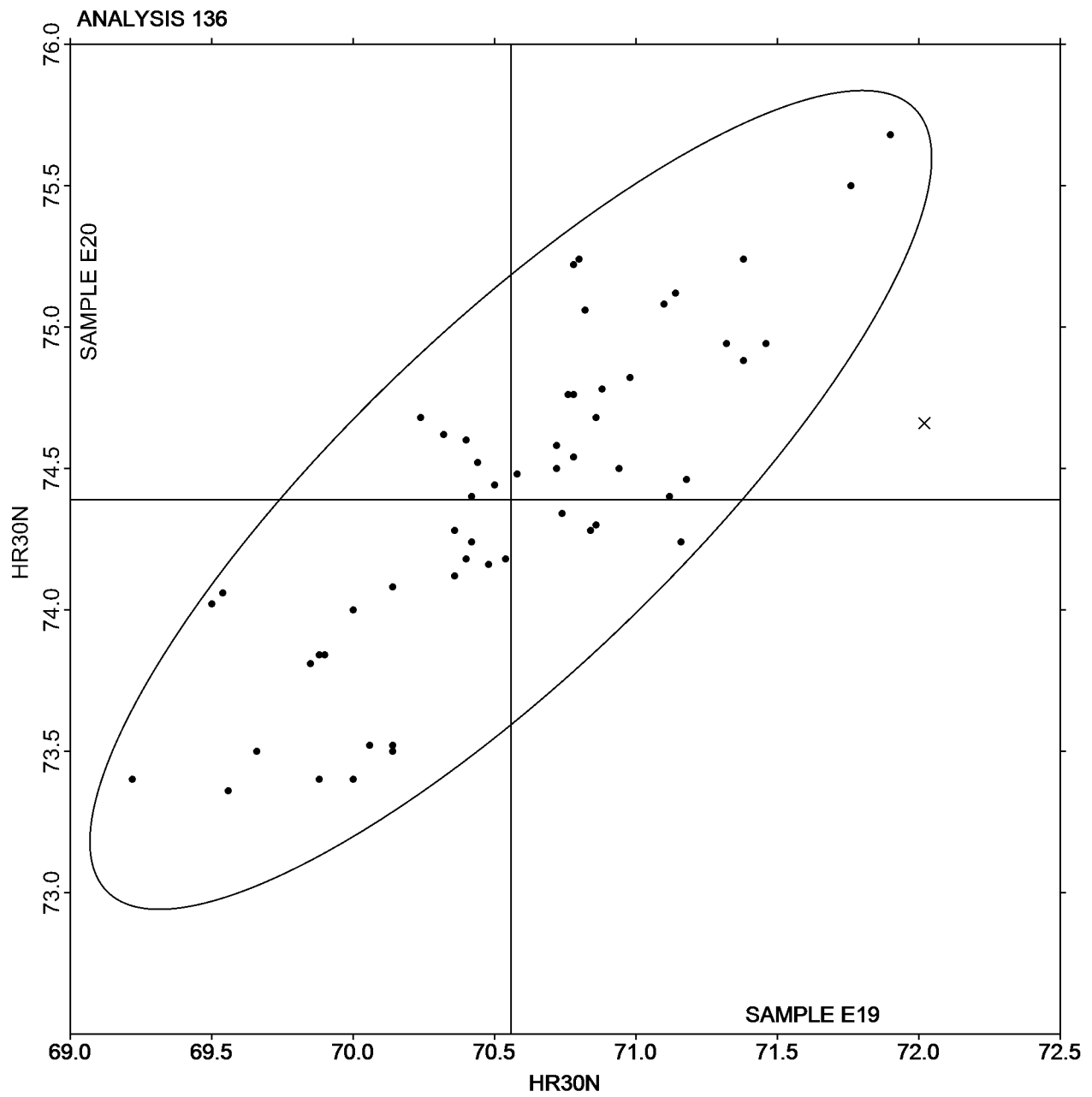
ASTM E18

SAMPLE E19

70.56 HR30N

SAMPLE E20

74.39 HR30N



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

| WebCode | Data Flag | Sample C19 | | | Sample C20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 29YN6D | | 0.0156 | -0.0006 | -0.23 | 0.0262 | -0.0035 | -0.85 | NP |
| 3YFYBL | X | 0.0170 | 0.0008 | 0.31 | 0.0412 | 0.0115 | 2.79 | WT |
| 6FN4B2 | X | 0.00476 | -0.0114 | -4.39 | 0.00966 | -0.0201 | -4.87 | OL |
| 78C82U | X | 0.0198 | 0.0036 | 1.39 | 0.0225 | -0.0072 | -1.76 | WT |
| 8LUQB2 | | 0.0180 | 0.0018 | 0.70 | 0.0330 | 0.0033 | 0.80 | OL |
| 8VTL8C | | 0.0150 | -0.0011 | -0.44 | 0.0320 | 0.0023 | 0.55 | LC |
| 8WLLWA | | 0.0140 | -0.0022 | -0.83 | 0.0283 | -0.0014 | -0.34 | NX |
| 9A3HDD | X | 0.0277 | 0.0115 | 4.40 | 0.0355 | 0.0058 | 1.41 | NE |
| 9PXXLJ | | 0.0217 | 0.0055 | 2.12 | 0.0390 | 0.0093 | 2.25 | NI |
| AFRRP2 | | 0.0129 | -0.0033 | -1.26 | 0.0249 | -0.0048 | -1.16 | LE |
| B9PM8P | X | 0.0286 | 0.0124 | 4.77 | 0.0470 | 0.0173 | 4.20 | BU |
| BYBALF | | 0.0134 | -0.0028 | -1.07 | 0.0254 | -0.0043 | -1.05 | ZA |
| CUNHMC | | 0.0184 | 0.0022 | 0.86 | 0.0328 | 0.0030 | 0.74 | ZI |
| DPQ2MA | | 0.0141 | -0.0021 | -0.80 | 0.0269 | -0.0028 | -0.68 | ZX |
| EQRCV6 | | 0.0194 | 0.0032 | 1.24 | 0.0387 | 0.0090 | 2.18 | OL |
| F2Q9AW | | 0.0175 | 0.0013 | 0.51 | 0.0320 | 0.0023 | 0.55 | OL |
| F4ZK6Z | X | 0.0288 | 0.0126 | 4.85 | 0.0324 | 0.0027 | 0.65 | XX |
| FRT4NC | | 0.0141 | -0.0021 | -0.80 | 0.0282 | -0.0015 | -0.37 | ON |
| G7NDTG | | 0.0119 | -0.0043 | -1.64 | 0.0227 | -0.0070 | -1.69 | XX |
| H24GAB | | 0.0158 | -0.0004 | -0.15 | 0.0300 | 0.0003 | 0.07 | OI |
| H76ULN | * | 0.0206 | 0.0044 | 1.69 | 0.0308 | 0.0011 | 0.27 | RE |
| HHFTBF | | 0.0154 | -0.0008 | -0.30 | 0.0320 | 0.0023 | 0.55 | ZA |
| HL87KK | | 0.0177 | 0.0015 | 0.59 | 0.0328 | 0.0031 | 0.76 | XX |
| HRV4H3 | | 0.0136 | -0.0026 | -1.00 | 0.0280 | -0.0017 | -0.42 | BR |
| J89HA6 | | 0.0152 | -0.0010 | -0.38 | 0.0302 | 0.0005 | 0.12 | ZE |
| JMQR92 | | 0.0127 | -0.0035 | -1.34 | 0.0234 | -0.0063 | -1.53 | XX |
| JT8YGK | | 0.0105 | -0.0057 | -2.19 | 0.0209 | -0.0088 | -2.13 | ZA |
| LNLVKY | | 0.0171 | 0.0009 | 0.34 | 0.0298 | 0.0001 | 0.03 | LI |
| LYCTUZ | | 0.0213 | 0.0051 | 1.98 | 0.0335 | 0.0037 | 0.91 | XX |
| MMYVMC | | 0.0141 | -0.0021 | -0.80 | 0.0231 | -0.0066 | -1.61 | XX |
| MXC7MM | | 0.0164 | 0.0002 | 0.08 | 0.0280 | -0.0017 | -0.42 | NX |
| N8BTYW | | 0.0196 | 0.0035 | 1.33 | 0.0323 | 0.0026 | 0.63 | CM |
| PEQEGM | | 0.0170 | 0.0008 | 0.29 | 0.0305 | 0.0008 | 0.19 | LC |
| PJVCT8 | | 0.0176 | 0.0014 | 0.53 | 0.0302 | 0.0004 | 0.11 | XX |
| Q3QMBL | | 0.0186 | 0.0024 | 0.94 | 0.0351 | 0.0054 | 1.30 | XX |
| QEMC9T | | 0.0148 | -0.0014 | -0.53 | 0.0270 | -0.0027 | -0.66 | LE |
| QZN4UZ | | 0.0170 | 0.0008 | 0.31 | 0.0285 | -0.0012 | -0.29 | CM |
| TJW6HJ | | 0.0175 | 0.0013 | 0.51 | 0.0342 | 0.0045 | 1.09 | ZT |
| U2NYM7 | | 0.0169 | 0.0007 | 0.28 | 0.0343 | 0.0045 | 1.10 | XX |
| V9UUMC | | 0.0174 | 0.0012 | 0.47 | 0.0294 | -0.0004 | -0.09 | NI |
| VN9QXJ | | 0.0162 | 0.0000 | 0.00 | 0.0308 | 0.0011 | 0.27 | NI |
| WXNUER | | 0.0178 | 0.0016 | 0.63 | 0.0297 | 0.0000 | -0.01 | RP |
| XAUGQV | | 0.0134 | -0.0028 | -1.08 | 0.0275 | -0.0022 | -0.54 | OX |
| XJJ6MJ | | 0.0178 | 0.0016 | 0.62 | 0.0296 | -0.0001 | -0.03 | OG |
| XZE4LX | X | 0.0204 | 0.0042 | 1.62 | 0.0254 | -0.0043 | -1.05 | NI |
| Y6RYNL | | 0.0124 | -0.0038 | -1.46 | 0.0232 | -0.0065 | -1.58 | LE |
| ZNXP8A | | 0.0169 | 0.0007 | 0.28 | 0.0339 | 0.0041 | 1.01 | XX |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

Summary Statistics

| | <u>Sample C19</u> | <u>Sample C20</u> |
|--------------------|-------------------|-------------------|
| Grand Means | 0.0162 inches | 0.0297 inches |
| Stnd Dev Btwn Labs | 0.0026 inches | 0.0041 inches |

Samples C19 , C20 : Steel

Statistics based on 40 of 47 reporting participants

Comments on assigned Data Flags for Analysis #145

WebCode Flag Analyst Comment

| | | |
|---------------|---|---|
| 3YFYBL | X | Data for sample C20 are high. Inconsistent within the determinations of sample C20. |
| 6FN4B2 | X | Data for both samples are low. |
| 78C82U | X | Inconsistent in testing between samples. |
| 9A3HDD | X | Data for sample C19 are high. |
| B9PM8P | X | Data for both samples are high. Inconsistent within the determinations of both samples. |
| F4ZK6Z | X | Data for sample C19 are high. Inconsistent within the determinations of both samples. |
| XZE4LX | X | Inconsistent in testing between samples. |

Cycle 106
2nd Q, 2014

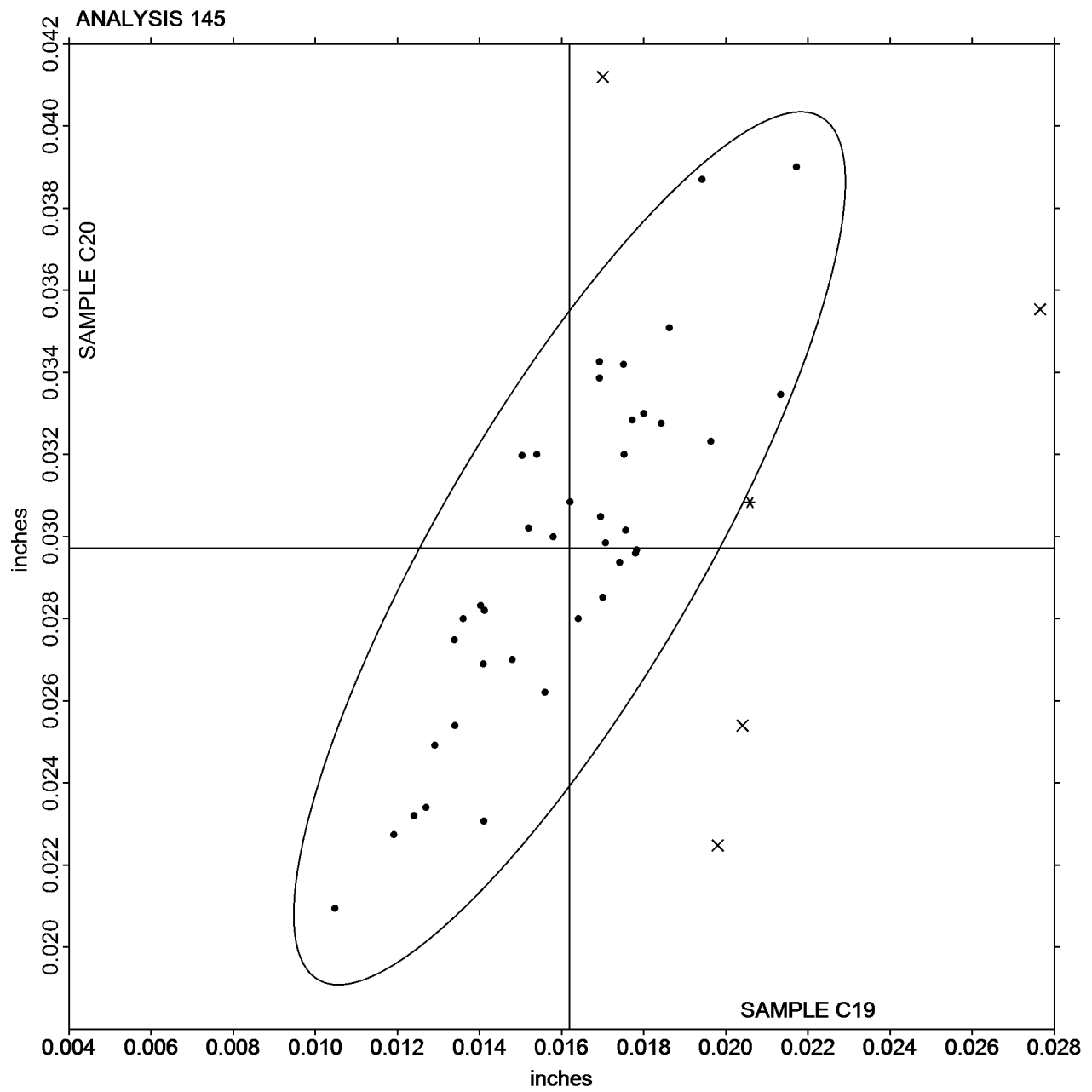
Interlaboratory Testing Program for Metals

Analysis 145

Total Case Depth - inches
SAE J423, SAE J78

SAMPLE C19
0.0162 inches

SAMPLE C20
0.0297 inches



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

| WebCode | Data Flag | Sample C19 | | | Sample C20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 29YN6D | | 0.0142 | -0.0005 | -0.59 | 0.0290 | 0.0006 | 0.32 | LE |
| 2UNXBK | | 0.0147 | 0.0000 | -0.01 | 0.0287 | 0.0003 | 0.18 | LE |
| 3LJM8Y | | 0.0159 | 0.0011 | 1.28 | 0.0289 | 0.0005 | 0.25 | LE |
| 3YFYBL | X | 0.0126 | -0.0021 | -2.38 | 0.0416 | 0.0132 | 7.10 | WT |
| 6B2XAM | | 0.0136 | -0.0011 | -1.26 | 0.0250 | -0.0034 | -1.83 | LE |
| 78C82U | | 0.0154 | 0.0007 | 0.74 | 0.0282 | -0.0002 | -0.11 | WT |
| 8LUQB2 | | 0.0148 | 0.0001 | 0.10 | 0.0289 | 0.0005 | 0.29 | WT |
| 8VTL8C | | 0.0144 | -0.0003 | -0.33 | 0.0307 | 0.0023 | 1.26 | ED |
| 8WLLWA | | 0.0139 | -0.0009 | -0.95 | 0.0266 | -0.0018 | -0.99 | WT |
| 9A3HDD | | 0.0163 | 0.0016 | 1.76 | 0.0296 | 0.0011 | 0.62 | LE |
| 9PXXLJ | | 0.0147 | -0.0001 | -0.09 | 0.0282 | -0.0002 | -0.11 | CM |
| A98FMU | X | 0.0238 | 0.0090 | 10.10 | 0.0398 | 0.0114 | 6.11 | MA |
| AFRRP2 | | 0.0127 | -0.0020 | -2.22 | 0.0253 | -0.0031 | -1.65 | LE |
| B9PM8P | | 0.0150 | 0.0003 | 0.30 | 0.0288 | 0.0004 | 0.21 | BU |
| BMJ23Y | X | 0.0179 | 0.0031 | 3.49 | 0.0311 | 0.0027 | 1.45 | BU |
| BYBALF | | 0.0136 | -0.0011 | -1.26 | 0.0268 | -0.0016 | -0.87 | BU |
| CUNHMC | | 0.0137 | -0.0010 | -1.15 | 0.0262 | -0.0022 | -1.18 | MI |
| DPQ2MA | | 0.0146 | -0.0001 | -0.11 | 0.0284 | 0.0000 | -0.01 | LE |
| DVR7EF | * | 0.0148 | 0.0001 | 0.07 | 0.0324 | 0.0040 | 2.15 | LE |
| EQRCV6 | | 0.0129 | -0.0018 | -2.05 | 0.0262 | -0.0022 | -1.19 | BU |
| F2Q9AW | | 0.0152 | 0.0005 | 0.52 | 0.0286 | 0.0002 | 0.10 | SH |
| F4ZK6Z | | 0.0161 | 0.0013 | 1.51 | 0.0279 | -0.0005 | -0.25 | ST |
| FRT4NC | | 0.0138 | -0.0009 | -1.04 | 0.0282 | -0.0002 | -0.11 | WT |
| G7NDTG | | 0.0149 | 0.0001 | 0.14 | 0.0273 | -0.0011 | -0.59 | XX |
| H24GAB | | 0.0156 | 0.0009 | 0.97 | 0.0288 | 0.0004 | 0.21 | ST |
| H76ULN | | 0.0146 | -0.0001 | -0.10 | 0.0291 | 0.0006 | 0.35 | CL |
| HHFTBF | | 0.0140 | -0.0007 | -0.82 | 0.0306 | 0.0022 | 1.18 | ST |
| HL87KK | | 0.0150 | 0.0003 | 0.34 | 0.0312 | 0.0028 | 1.49 | XX |
| HRV4H3 | | 0.0148 | 0.0001 | 0.07 | 0.0288 | 0.0004 | 0.21 | CL |
| JT8YGK | | 0.0148 | 0.0001 | 0.07 | 0.0280 | -0.0004 | -0.22 | WT |
| KZKQ76 | * | 0.0124 | -0.0023 | -2.60 | 0.0228 | -0.0056 | -3.02 | BU |
| L6WDV8 | | 0.0156 | 0.0009 | 0.97 | 0.0284 | 0.0000 | 0.00 | XX |
| LGY6Q2 | | 0.0160 | 0.0013 | 1.41 | 0.0284 | 0.0000 | 0.00 | LE |
| LNLVKY | | 0.0154 | 0.0007 | 0.74 | 0.0314 | 0.0030 | 1.62 | BU |
| MMYVMC | X | 0.0198 | 0.0051 | 5.65 | 0.0350 | 0.0066 | 3.55 | XX |
| MXC7MM | | 0.0148 | 0.0001 | 0.07 | 0.0282 | -0.0002 | -0.11 | CM |
| N8BTYW | | 0.0144 | -0.0004 | -0.42 | 0.0286 | 0.0002 | 0.11 | CM |
| NJTMXR | | 0.0139 | -0.0008 | -0.89 | 0.0272 | -0.0012 | -0.67 | WZ |
| PEQEGM | | 0.0147 | -0.0001 | -0.08 | 0.0287 | 0.0003 | 0.16 | BU |
| PJVCT8 | | 0.0156 | 0.0009 | 0.97 | 0.0277 | -0.0007 | -0.39 | CM |
| Q3QMBL | | 0.0155 | 0.0008 | 0.87 | 0.0306 | 0.0022 | 1.20 | XX |
| QDN287 | | 0.0146 | -0.0001 | -0.10 | 0.0279 | -0.0005 | -0.29 | NA |
| QEMC9T | | 0.0146 | -0.0001 | -0.15 | 0.0284 | 0.0000 | 0.00 | XX |
| QHN4P8 | | 0.0160 | 0.0013 | 1.44 | 0.0312 | 0.0027 | 1.48 | LE |
| QZN4UZ | | 0.0136 | -0.0011 | -1.26 | 0.0254 | -0.0030 | -1.62 | CM |
| TJW6HJ | | 0.0155 | 0.0007 | 0.83 | 0.0293 | 0.0009 | 0.47 | ST |
| U2NYM7 | | 0.0163 | 0.0016 | 1.77 | 0.0318 | 0.0034 | 1.83 | XX |
| V9UUMC | | 0.0157 | 0.0010 | 1.13 | 0.0285 | 0.0001 | 0.05 | LE |
| VN9QXJ | | 0.0147 | 0.0000 | 0.00 | 0.0281 | -0.0003 | -0.15 | CM |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

| WebCode | Data Flag | Sample C19 | | | Sample C20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| WXNUER | | 0.0149 | 0.0002 | 0.22 | 0.0285 | 0.0001 | 0.06 | BU |
| XAUGQV | | 0.0151 | 0.0003 | 0.39 | 0.0293 | 0.0009 | 0.50 | SH |
| XJJ6MJ | X | 0.0102 | -0.0045 | -5.06 | 0.0208 | -0.0076 | -4.09 | WT |
| XZE4LX | X | 0.0210 | 0.0063 | 6.99 | 0.0269 | -0.0015 | -0.82 | BU |
| Y6RYNL | | 0.0142 | -0.0005 | -0.59 | 0.0254 | -0.0030 | -1.62 | XX |
| YG4NLH | | 0.0139 | -0.0008 | -0.89 | 0.0273 | -0.0011 | -0.58 | MA |
| ZNXP8A | | 0.0150 | 0.0002 | 0.25 | 0.0308 | 0.0024 | 1.28 | LE |

Summary Statistics

| | Sample C19 | | Sample C20 | |
|--------------------|------------|--------|------------|--------|
| Grand Means | 0.0147 | inches | 0.0284 | inches |
| Stnd Dev Btwn Labs | 0.0009 | inches | 0.0019 | inches |

Samples C19 , C20 : Steel

Statistics based on 50 of 56 reporting participants

Comments on assigned Data Flags for Analysis #146

WebCode Flag Analyst Comment

3YFYBL X Data for sample C20 are high. Inconsistent within the determinations of sample C20.

A98FMU X Data for both samples are high. Inconsistent within the determinations of sample C20.

BMJ23Y X Data for sample C19 are high.

MMYVMC X Data for both samples are high.

XJJ6MJ X Data for both samples are low.

XZE4LX X Data for sample C19 are high. Inconsistent within the determinations of sample C19.

Cycle 106
2nd Q, 2014

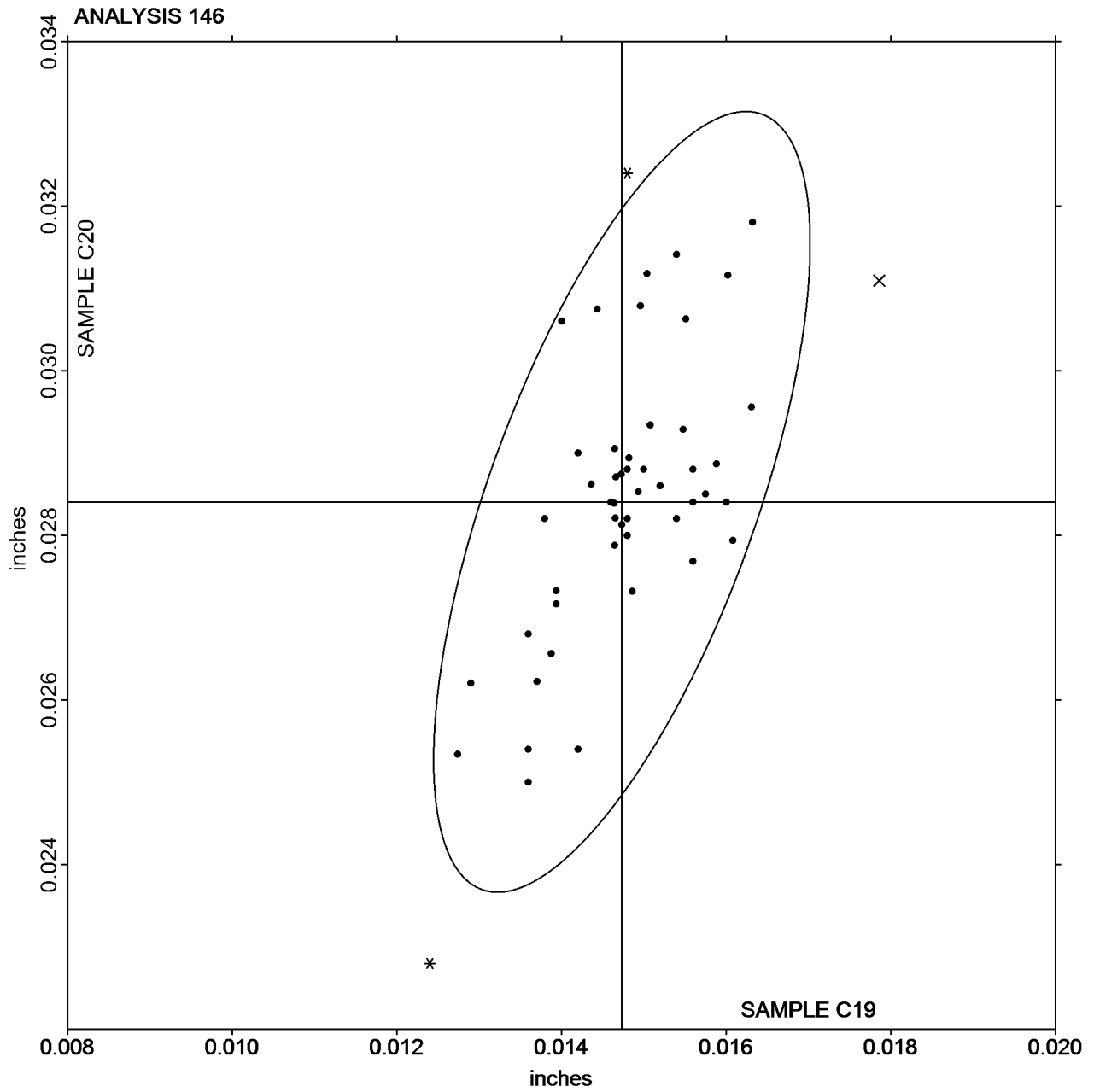
Interlaboratory Testing Program for Metals

Analysis 146

Effective Case Depth - inches
SAE J423, SAE J78

SAMPLE C19
0.0147 inches

SAMPLE C20
0.0284 inches



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 147

Grain Size (Stainless Steel) - ASTM Grain Size Number (G)
ASTM E112, ASTM E1382

| WebCode | Data Flag | Sample Y19 | | | Sample Y20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2AMVTW | | 9.70 | 0.07 | 0.07 | 4.50 | -1.14 | -1.31 | XX |
| 2VT3RA | | 9.12 | -0.51 | -0.49 | 5.30 | -0.34 | -0.39 | XX |
| 2Z9NQ9 | | 8.80 | -0.83 | -0.80 | 5.00 | -0.64 | -0.73 | XX |
| 3YTMGE | | 10.84 | 1.21 | 1.16 | 6.56 | 0.92 | 1.06 | XX |
| 4L7RMZ | | 9.90 | 0.27 | 0.26 | 5.20 | -0.44 | -0.50 | XX |
| 4VCEVZ | | 8.00 | -1.63 | -1.56 | 5.20 | -0.44 | -0.50 | XX |
| 696TQL | | 8.00 | -1.63 | -1.56 | 4.80 | -0.84 | -0.96 | XX |
| 8DV9RJ | | 10.40 | 0.77 | 0.74 | 5.40 | -0.24 | -0.27 | XX |
| 8QUZP3 | | 9.50 | -0.13 | -0.12 | 7.00 | 1.36 | 1.57 | XX |
| 8YW3EM | | 11.12 | 1.49 | 1.43 | 6.20 | 0.56 | 0.65 | XX |
| A6TXEP | | 9.66 | 0.03 | 0.03 | 5.40 | -0.24 | -0.27 | XX |
| ARAKKC | | 10.00 | 0.37 | 0.36 | 7.00 | 1.36 | 1.57 | XX |
| AUBYJ2 | | 10.46 | 0.83 | 0.80 | 5.68 | 0.04 | 0.05 | XX |
| B76F7G | | 8.80 | -0.83 | -0.80 | 6.40 | 0.76 | 0.88 | XX |
| B9PM8P | | 11.54 | 1.91 | 1.83 | 6.34 | 0.70 | 0.81 | XX |
| BCFER9 | | 10.00 | 0.37 | 0.36 | 5.00 | -0.64 | -0.73 | XX |
| DVR7EF | | 10.00 | 0.37 | 0.36 | 5.70 | 0.06 | 0.07 | XX |
| ECHKCY | | 9.20 | -0.43 | -0.41 | 3.90 | -1.74 | -2.00 | XX |
| FA6W96 | | 10.60 | 0.97 | 0.93 | 5.40 | -0.24 | -0.27 | XX |
| G8Y3CT | | 10.24 | 0.61 | 0.59 | 5.20 | -0.44 | -0.50 | XX |
| G8Y6XQ | | 9.50 | -0.13 | -0.12 | 5.50 | -0.14 | -0.16 | XX |
| H76ULN | | 9.20 | -0.43 | -0.41 | 5.40 | -0.24 | -0.27 | XX |
| HHDQBK | | 10.00 | 0.37 | 0.36 | 6.00 | 0.36 | 0.42 | XX |
| HRV4H3 | | 8.30 | -1.33 | -1.27 | 5.10 | -0.54 | -0.62 | XX |
| JEEFAH | | 10.67 | 1.04 | 1.00 | 6.31 | 0.68 | 0.78 | XX |
| JT8YGK | | 7.80 | -1.83 | -1.75 | 5.40 | -0.24 | -0.27 | XX |
| NCNW6L | | 11.00 | 1.37 | 1.32 | 6.60 | 0.96 | 1.11 | XX |
| PEQEGM | | 9.40 | -0.23 | -0.22 | 4.40 | -1.24 | -1.42 | XX |
| Q3LYMA | | 10.46 | 0.83 | 0.80 | 6.32 | 0.68 | 0.79 | XX |
| RC8ULU | | 8.00 | -1.63 | -1.56 | 4.00 | -1.64 | -1.89 | XX |
| TGJNUJ | | 8.80 | -0.83 | -0.80 | 6.80 | 1.16 | 1.34 | XX |
| UXH2PD | | 9.00 | -0.63 | -0.60 | 7.00 | 1.36 | 1.57 | XX |
| W3NNJT | | 9.60 | -0.03 | -0.03 | 5.80 | 0.16 | 0.19 | XX |
| XJJ6MJ | | 11.50 | 1.87 | 1.79 | 7.00 | 1.36 | 1.57 | XX |
| ZHY874 | | 7.90 | -1.73 | -1.66 | 4.50 | -1.14 | -1.31 | XX |

Summary Statistics

| | Sample Y19 | | Sample Y20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 9.63 | ASTM, G | 5.64 | ASTM, G |
| Stnd Dev Btwn Labs | 1.04 | ASTM, G | 0.87 | ASTM, G |

Samples Y19 , Y20 : AISI 316LVM, AISI 304

Statistics based on 35 of 35 reporting participants

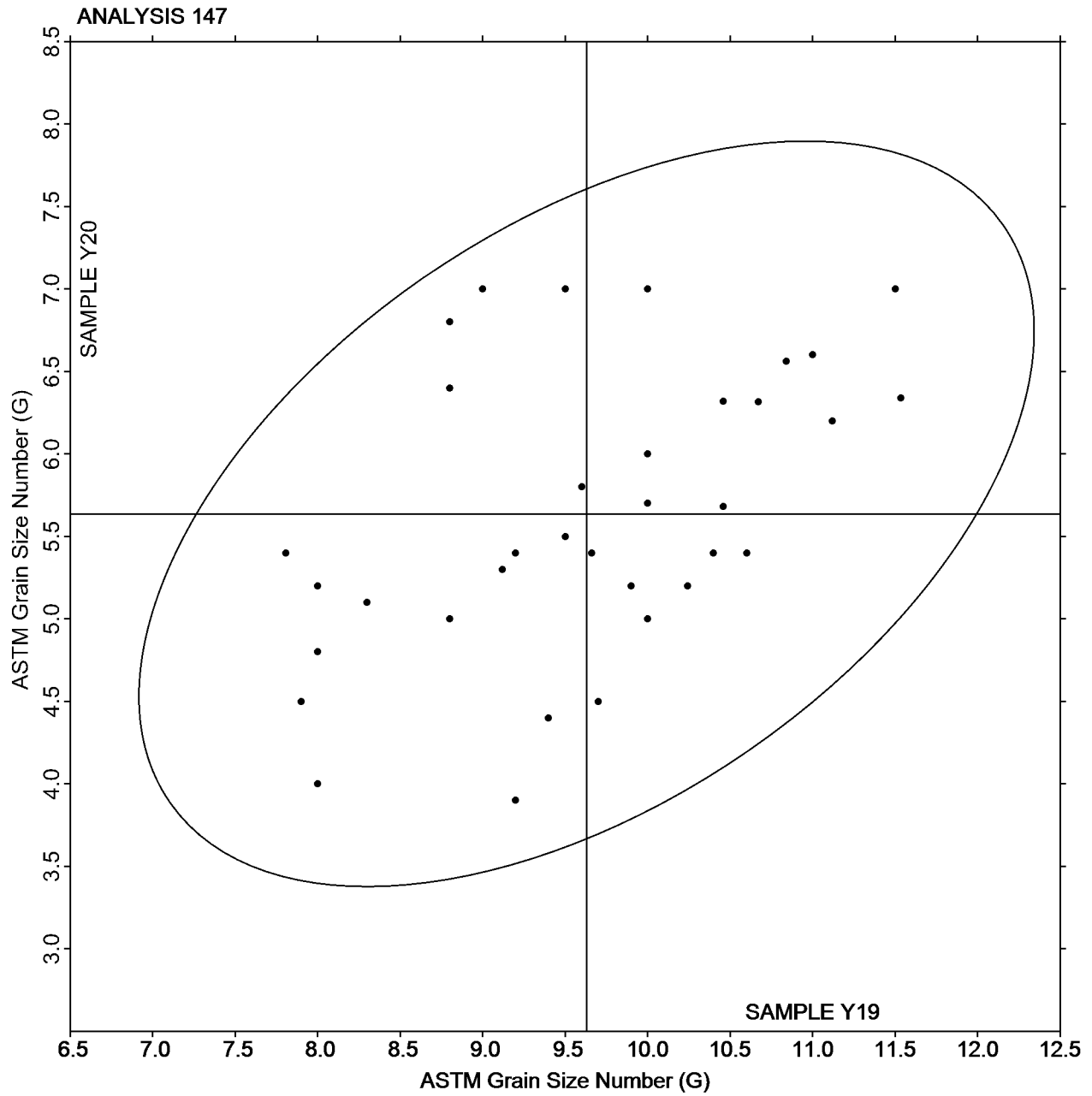
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 147

Grain Size (Stainless Steel) - ASTM Grain Size Number (G)
ASTM E112, ASTM E1382

SAMPLE Y19
9.63 ASTM, G

SAMPLE Y20
5.64 ASTM, G



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 150

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 18.23 | -0.16 | -1.27 | 17.55 | -0.31 | -2.06 | ED |
| 2ZUKJ2 | | 18.35 | -0.04 | -0.31 | 17.81 | -0.05 | -0.34 | OE |
| 3B9E8A | * | 18.64 | 0.25 | 2.02 | 18.28 | 0.43 | 2.82 | OE |
| 43RD8Q | | 18.35 | -0.04 | -0.31 | 17.85 | 0.00 | -0.03 | IC |
| 6NERRC | | 18.53 | 0.14 | 1.10 | 18.06 | 0.21 | 1.37 | WD |
| 6PFT4G | | 18.36 | -0.03 | -0.28 | 17.76 | -0.10 | -0.67 | OE |
| 8WLLWA | | 18.61 | 0.22 | 1.77 | 18.02 | 0.17 | 1.11 | WD |
| 8YDY62 | | 18.41 | 0.02 | 0.12 | 17.90 | 0.04 | 0.26 | OE |
| 9X6W2H | | 18.31 | -0.08 | -0.68 | 17.74 | -0.12 | -0.80 | IC |
| 9XFYCU | | 18.44 | 0.05 | 0.42 | 17.96 | 0.11 | 0.70 | XR |
| ARAKKC | | 18.32 | -0.07 | -0.55 | 17.82 | -0.03 | -0.23 | OE |
| CPPBX8 | | 18.33 | -0.06 | -0.47 | 17.80 | -0.06 | -0.38 | OE |
| CUUBMR | | 18.21 | -0.18 | -1.46 | 17.71 | -0.14 | -0.96 | WD |
| EXFDEA | X | 17.44 | -0.96 | -7.68 | 16.69 | -1.17 | -7.73 | OE |
| F2Q9AW | | 18.33 | -0.06 | -0.49 | 17.86 | 0.01 | 0.04 | IC |
| GEY9QL | | 18.50 | 0.11 | 0.87 | 17.92 | 0.06 | 0.41 | OE |
| H24GAB | | 18.34 | -0.06 | -0.45 | 17.78 | -0.08 | -0.53 | OE |
| HRV4H3 | | 18.37 | -0.02 | -0.20 | 17.95 | 0.10 | 0.63 | DR |
| JKY8EG | | 18.53 | 0.14 | 1.14 | 17.93 | 0.08 | 0.50 | GD |
| NCNW6L | | 18.47 | 0.08 | 0.63 | 17.98 | 0.12 | 0.80 | OE |
| NKL8KG | X | 17.38 | -1.01 | -8.16 | 16.99 | -0.87 | -5.77 | OE |
| PFFQYE | | 18.45 | 0.06 | 0.47 | 17.90 | 0.05 | 0.30 | WD |
| QDN287 | X | 17.79 | -0.60 | -4.86 | 16.86 | -1.00 | -6.61 | OE |
| QZN4UZ | | 18.30 | -0.09 | -0.74 | 17.73 | -0.13 | -0.85 | OE |
| RLK6E3 | | 18.17 | -0.22 | -1.81 | 17.67 | -0.19 | -1.27 | OE |
| TXACHW | | 18.29 | -0.10 | -0.84 | 17.74 | -0.12 | -0.80 | XR |
| U6D8D9 | | 18.55 | 0.16 | 1.30 | 17.85 | -0.01 | -0.05 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 18.39 | Percent | 17.86 | Percent |
| Std Dev Btwn Labs | 0.12 | Percent | 0.15 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 27 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 150
Chemical Analysis Element #1: Nickel-based Alloy - Percent
CHROMIUM (Cr)

Comments on assigned Data Flags for Analysis #150

WebCode Flag Analyst Comment

EXFDEA X Data for both samples are low. Inconsistent within the determinations of sample J19.

NKL8KG X Data for both samples are low.

QDN287 X Data for both samples are low. Inconsistent within the determinations of sample J19.

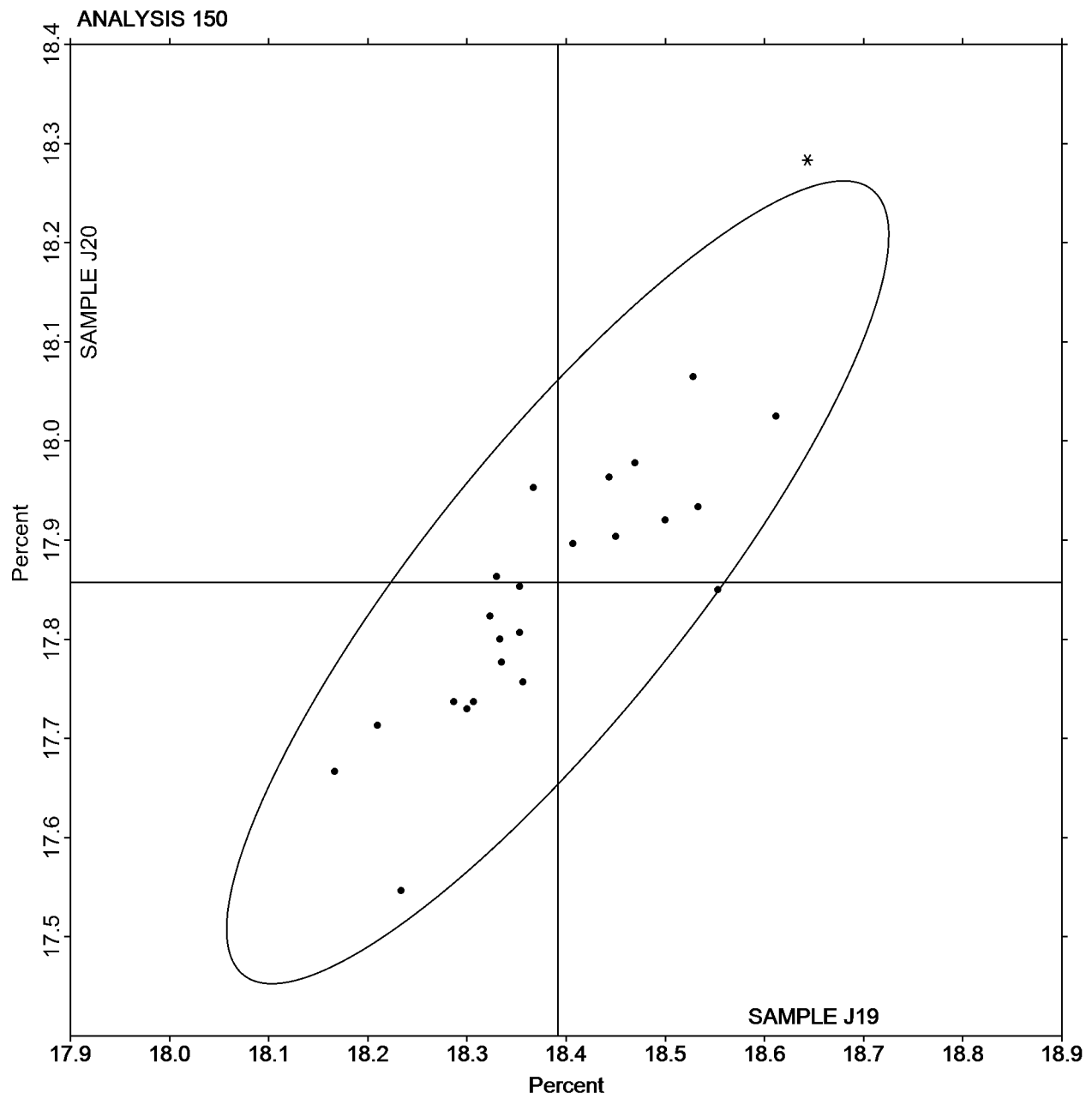
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 150

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

SAMPLE J19
18.39 Percent

SAMPLE J20
17.86 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent
NIOBIUM (Nb)

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 5.064 | -0.034 | -0.46 | 5.156 | -0.012 | -0.12 | ED |
| 2ZUKJ2 | | 4.980 | -0.118 | -1.62 | 4.920 | -0.248 | -2.48 | OE |
| 3B9E8A | | 5.181 | 0.084 | 1.15 | 5.311 | 0.143 | 1.43 | OE |
| 43RD8Q | | 5.113 | 0.016 | 0.22 | 5.170 | 0.002 | 0.02 | IC |
| 6NERRC | | 5.130 | 0.033 | 0.45 | 5.207 | 0.039 | 0.39 | WD |
| 6PFT4G | | 5.103 | 0.006 | 0.08 | 5.193 | 0.025 | 0.25 | XX |
| 8WLLWA | | 5.065 | -0.033 | -0.45 | 5.170 | 0.002 | 0.02 | WD |
| 8YDY62 | * | 4.990 | -0.108 | -1.48 | 5.213 | 0.045 | 0.45 | OE |
| 9X6W2H | | 5.130 | 0.033 | 0.45 | 5.211 | 0.043 | 0.43 | IC |
| 9XFYCU | | 5.100 | 0.002 | 0.03 | 5.190 | 0.022 | 0.22 | XR |
| ARAKKC | | 5.102 | 0.004 | 0.05 | 5.167 | -0.001 | -0.01 | OE |
| CPPBX8 | | 5.200 | 0.102 | 1.41 | 5.200 | 0.032 | 0.32 | OE |
| CUUBMR | | 5.093 | -0.004 | -0.06 | 5.189 | 0.021 | 0.21 | WD |
| EXFDEA | X | 5.693 | 0.596 | 8.21 | 5.660 | 0.492 | 4.92 | OE |
| F2Q9AW | | 5.127 | 0.029 | 0.40 | 5.223 | 0.055 | 0.55 | IC |
| GEY9QL | | 5.282 | 0.184 | 2.54 | 5.350 | 0.182 | 1.82 | OE |
| H24GAB | | 5.113 | 0.015 | 0.21 | 5.215 | 0.047 | 0.47 | OE |
| HRV4H3 | | 5.181 | 0.084 | 1.15 | 5.231 | 0.063 | 0.63 | DR |
| JKY8EG | | 5.060 | -0.038 | -0.52 | 5.177 | 0.009 | 0.09 | GD |
| NCNW6L | | 5.097 | -0.001 | -0.01 | 5.153 | -0.015 | -0.15 | OE |
| NKL8KG | | 4.993 | -0.104 | -1.44 | 4.970 | -0.198 | -1.98 | OE |
| PFFQYE | | 5.105 | 0.007 | 0.10 | 5.195 | 0.027 | 0.27 | WD |
| QDN287 | | 5.083 | -0.014 | -0.20 | 5.170 | 0.002 | 0.02 | OE |
| QZN4UZ | | 5.107 | 0.009 | 0.12 | 5.210 | 0.042 | 0.42 | OE |
| RLK6E3 | * | 5.083 | -0.014 | -0.20 | 4.947 | -0.221 | -2.21 | OE |
| TXACHW | | 5.127 | 0.029 | 0.40 | 5.217 | 0.049 | 0.49 | XR |
| U6D8D9 | | 4.929 | -0.168 | -2.32 | 5.011 | -0.157 | -1.57 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 5.098 | Percent | 5.168 | Percent |
| Std Dev Btwn Labs | 0.073 | Percent | 0.100 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 26 of 27 reporting participants

Comments on assigned Data Flags for Analysis #151

WebCode Flag Analyst Comment

EXFDEA X Data for both samples are high. Inconsistent within the determinations of both samples.

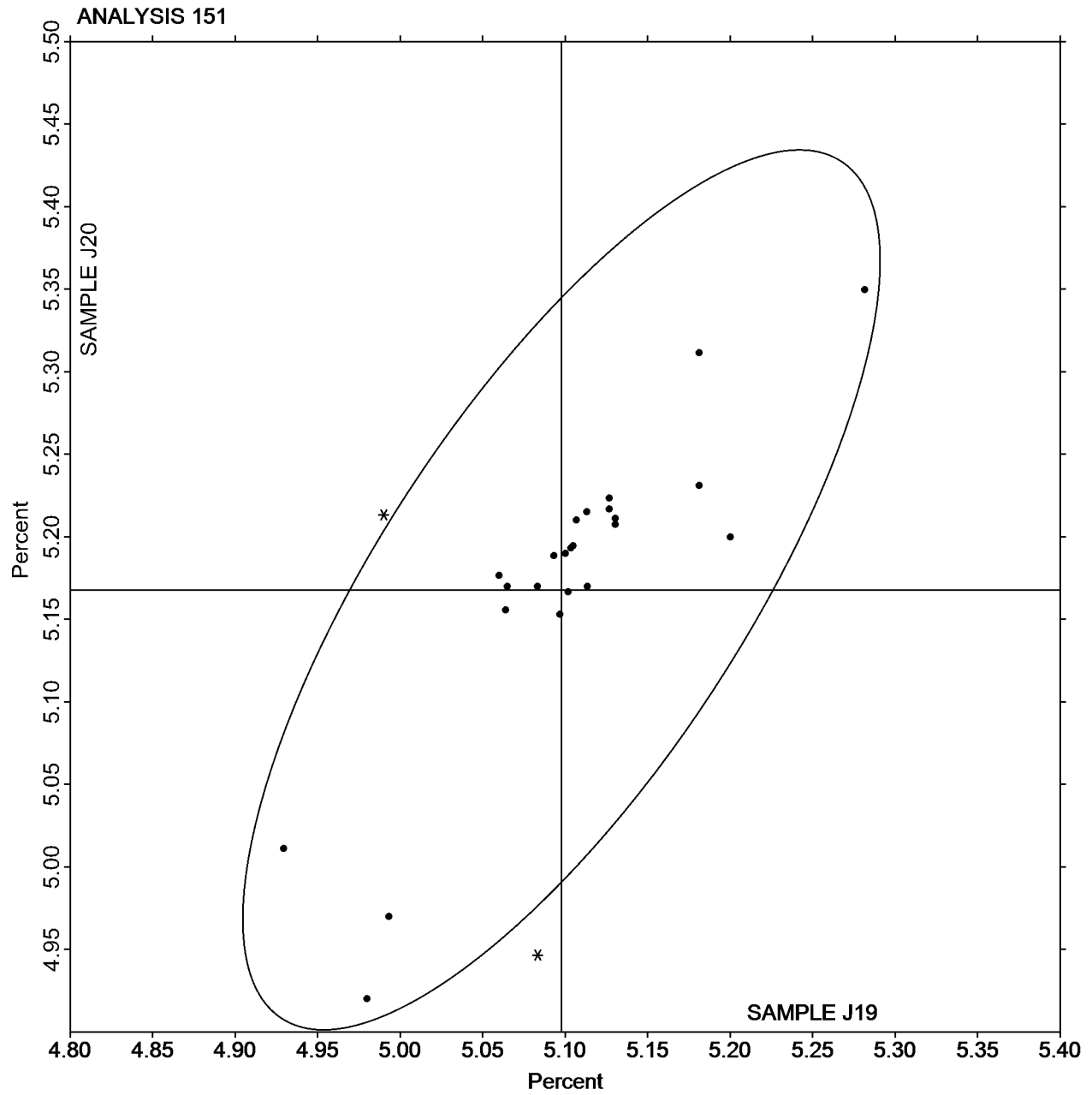
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 151

Chemical Analysis Element #2: Nickel-based Alloy - Percent
NIOBIUM (Nb)

SAMPLE J19
5.098 Percent

SAMPLE J20
5.168 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 152

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 18.20 | 0.05 | 0.20 | 18.74 | 0.16 | 0.64 | ED |
| 2ZUKJ2 | | 18.05 | -0.10 | -0.44 | 18.53 | -0.05 | -0.22 | OE |
| 3B9E8A | X | 17.12 | -1.03 | -4.52 | 17.32 | -1.26 | -5.10 | OE |
| 43RD8Q | | 18.10 | -0.05 | -0.24 | 18.36 | -0.22 | -0.89 | IC |
| 6NERRC | | 18.18 | 0.03 | 0.12 | 18.77 | 0.19 | 0.76 | WD |
| 6PFT4G | | 17.88 | -0.28 | -1.21 | 18.34 | -0.24 | -0.97 | OE |
| 8WLLWA | | 18.23 | 0.07 | 0.33 | 18.65 | 0.06 | 0.26 | WD |
| 8YDY62 | | 18.07 | -0.09 | -0.38 | 18.37 | -0.21 | -0.87 | OE |
| 9X6W2H | | 17.99 | -0.17 | -0.73 | 18.46 | -0.12 | -0.50 | IC |
| 9XFYCU | | 18.25 | 0.10 | 0.42 | 18.66 | 0.08 | 0.32 | BD |
| ARAKKC | | 18.32 | 0.16 | 0.71 | 18.65 | 0.07 | 0.28 | OE |
| CPPBX8 | | 18.07 | -0.09 | -0.38 | 18.63 | 0.05 | 0.20 | OE |
| CUUBMR | | 18.22 | 0.06 | 0.27 | 18.74 | 0.16 | 0.64 | WD |
| EXFDEA | * | 18.91 | 0.76 | 3.32 | 19.33 | 0.74 | 2.99 | OE |
| F2Q9AW | | 17.95 | -0.20 | -0.88 | 18.37 | -0.21 | -0.85 | IC |
| GEY9QL | | 18.19 | 0.04 | 0.17 | 18.51 | -0.07 | -0.29 | OE |
| H24GAB | | 18.06 | -0.10 | -0.43 | 18.43 | -0.15 | -0.62 | OE |
| HRV4H3 | | 18.17 | 0.02 | 0.08 | 18.59 | 0.01 | 0.03 | DR |
| JKY8EG | X | 16.80 | -1.35 | -5.91 | 17.40 | -1.18 | -4.78 | GD |
| NCNW6L | | 18.19 | 0.03 | 0.14 | 18.49 | -0.10 | -0.39 | OE |
| NKL8KG | | 17.88 | -0.27 | -1.18 | 18.23 | -0.35 | -1.42 | OE |
| PFFQYE | | 18.13 | -0.03 | -0.12 | 18.57 | -0.01 | -0.06 | WD |
| QDN287 | | 18.71 | 0.55 | 2.41 | 19.22 | 0.63 | 2.55 | OE |
| QZN4UZ | | 18.00 | -0.15 | -0.66 | 18.45 | -0.13 | -0.53 | OE |
| RLK6E3 | | 18.03 | -0.12 | -0.53 | 18.53 | -0.05 | -0.21 | OE |
| TXACHW | | 18.00 | -0.15 | -0.67 | 18.44 | -0.14 | -0.58 | XR |
| U6D8D9 | | 18.08 | -0.07 | -0.31 | 18.52 | -0.06 | -0.25 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 18.15 | Percent | 18.58 | Percent |
| Stnd Dev Btwn Labs | 0.23 | Percent | 0.25 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 25 of 27 reporting participants

Comments on assigned Data Flags for Analysis #152

WebCode Flag Analyst Comment

3B9E8A X Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample J19.

JKY8EG X Data for both samples are low. Possible Systematic error.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 153

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 3.001 | -0.055 | -1.77 | 2.848 | -0.054 | -1.47 | ED |
| 2ZUKJ2 | | 3.063 | 0.008 | 0.24 | 2.913 | 0.012 | 0.32 | OE |
| 3B9E8A | | 3.077 | 0.021 | 0.68 | 2.884 | -0.018 | -0.48 | OE |
| 43RD8Q | | 3.053 | -0.002 | -0.08 | 2.880 | -0.022 | -0.59 | IC |
| 6NERRC | | 3.070 | 0.014 | 0.45 | 2.914 | 0.012 | 0.33 | WD |
| 6PFT4G | | 3.053 | -0.002 | -0.08 | 2.923 | 0.022 | 0.60 | OE |
| 8WLLWA | | 3.013 | -0.042 | -1.36 | 2.869 | -0.033 | -0.89 | WD |
| 8YDY62 | | 3.043 | -0.012 | -0.40 | 2.880 | -0.022 | -0.59 | OE |
| 9X6W2H | | 3.013 | -0.043 | -1.38 | 2.893 | -0.008 | -0.23 | IC |
| 9XFYCU | | 3.040 | -0.016 | -0.51 | 2.900 | -0.002 | -0.04 | XR |
| ARAKKC | | 3.038 | -0.018 | -0.57 | 2.885 | -0.017 | -0.45 | OE |
| CPPBX8 | | 3.100 | 0.044 | 1.42 | 2.900 | -0.002 | -0.04 | OE |
| CUUBMR | | 3.050 | -0.006 | -0.19 | 2.893 | -0.009 | -0.23 | WD |
| EXFDEA | X | 3.290 | 0.234 | 7.53 | 3.060 | 0.158 | 4.33 | OE |
| F2Q9AW | | 3.060 | 0.004 | 0.13 | 2.918 | 0.016 | 0.45 | IC |
| GEY9QL | | 3.073 | 0.017 | 0.56 | 2.924 | 0.022 | 0.61 | OE |
| H24GAB | | 3.055 | -0.001 | -0.03 | 2.899 | -0.003 | -0.08 | OE |
| HRV4H3 | * | 3.047 | -0.009 | -0.29 | 2.963 | 0.061 | 1.68 | DR |
| JKY8EG | | 3.050 | -0.006 | -0.18 | 2.910 | 0.008 | 0.23 | GD |
| NCNW6L | | 3.048 | -0.008 | -0.26 | 2.892 | -0.009 | -0.25 | OE |
| NKL8KG | | 3.133 | 0.078 | 2.49 | 2.990 | 0.088 | 2.42 | OE |
| PFFQYE | | 3.062 | 0.006 | 0.19 | 2.904 | 0.002 | 0.07 | WD |
| QDN287 | | 3.120 | 0.065 | 2.08 | 2.976 | 0.075 | 2.04 | OE |
| QZN4UZ | | 3.013 | -0.043 | -1.37 | 2.864 | -0.038 | -1.03 | OE |
| RLK6E3 | | 3.027 | -0.029 | -0.93 | 2.817 | -0.085 | -2.32 | OE |
| TXACHW | | 3.077 | 0.021 | 0.67 | 2.913 | 0.012 | 0.32 | XR |
| U6D8D9 | | 3.071 | 0.016 | 0.50 | 2.888 | -0.014 | -0.37 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 3.056 | Percent | 2.902 | Percent |
| Stnd Dev Btwn Labs | 0.031 | Percent | 0.037 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 26 of 27 reporting participants

Comments on assigned Data Flags for Analysis #153

WebCode Flag Analyst Comment

EXFDEA X Data for both samples are high. Inconsistent within the determinations of both samples.

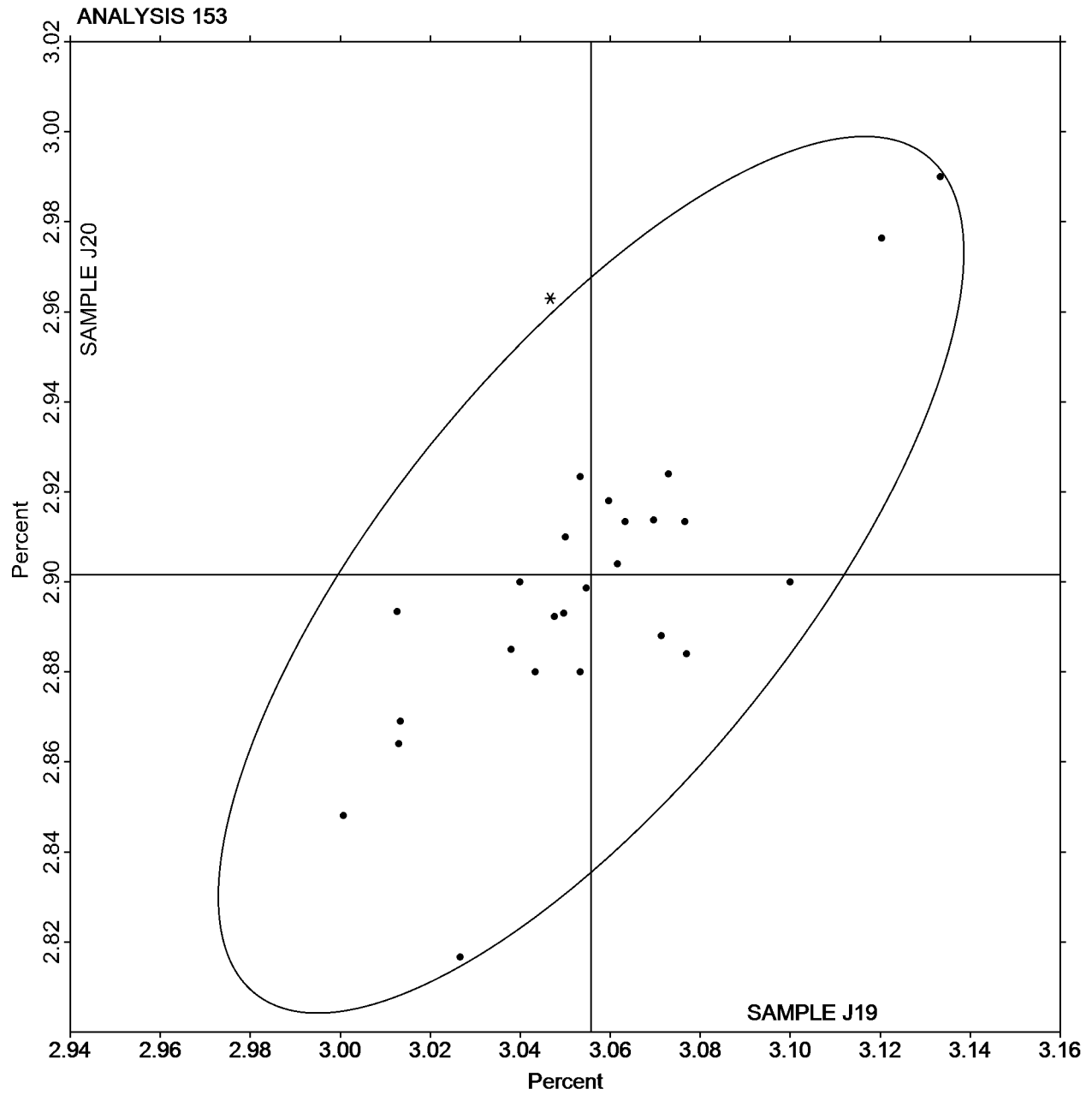
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 153

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

SAMPLE J19
3.056 Percent

SAMPLE J20
2.902 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 154

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2ZUKJ2 | | 0.5300 | -0.0020 | -0.10 | 0.5067 | 0.0006 | 0.03 | OE |
| 3B9E8A | | 0.5503 | 0.0184 | 0.91 | 0.5280 | 0.0219 | 1.11 | OE |
| 43RD8Q | | 0.5207 | -0.0113 | -0.56 | 0.5050 | -0.0011 | -0.06 | IC |
| 6NERRC | | 0.5497 | 0.0177 | 0.88 | 0.5217 | 0.0156 | 0.79 | OE |
| 6PFT4G | | 0.5400 | 0.0080 | 0.40 | 0.5000 | -0.0061 | -0.31 | OE |
| 8WLLWA | | 0.5173 | -0.0146 | -0.72 | 0.5027 | -0.0034 | -0.17 | WD |
| 8YDY62 | | 0.5300 | -0.0020 | -0.10 | 0.5007 | -0.0054 | -0.28 | OE |
| 9X6W2H | | 0.5313 | -0.0006 | -0.03 | 0.5010 | -0.0051 | -0.26 | IC |
| 9XFYCU | | 0.5300 | -0.0020 | -0.10 | 0.5100 | 0.0039 | 0.20 | XR |
| ARAKKC | | 0.5276 | -0.0044 | -0.22 | 0.5026 | -0.0035 | -0.18 | OE |
| CPPBX8 | | 0.5300 | -0.0020 | -0.10 | 0.5133 | 0.0072 | 0.37 | OE |
| CUUBMR | | 0.5497 | 0.0177 | 0.88 | 0.5097 | 0.0036 | 0.18 | WD |
| EXFDEA | | 0.4970 | -0.0350 | -1.73 | 0.4877 | -0.0184 | -0.94 | OE |
| F2Q9AW | | 0.5370 | 0.0050 | 0.25 | 0.4917 | -0.0144 | -0.73 | IC |
| GEY9QL | | 0.4970 | -0.0350 | -1.73 | 0.4707 | -0.0354 | -1.80 | OE |
| H24GAB | | 0.5370 | 0.0050 | 0.25 | 0.4980 | -0.0081 | -0.41 | OE |
| HRV4H3 | | 0.5392 | 0.0073 | 0.36 | 0.5206 | 0.0145 | 0.74 | DR |
| JKY8EG | | 0.4983 | -0.0336 | -1.66 | 0.4763 | -0.0298 | -1.51 | GD |
| NCNW6L | | 0.5363 | 0.0044 | 0.22 | 0.5177 | 0.0116 | 0.59 | OE |
| NKL8KG | * | 0.5967 | 0.0647 | 3.20 | 0.5733 | 0.0672 | 3.42 | OE |
| PFFQYE | | 0.5230 | -0.0090 | -0.44 | 0.4973 | -0.0088 | -0.45 | WD |
| QDN287 | X | 0.5183 | -0.0136 | -0.67 | 0.5843 | 0.0782 | 3.97 | OE |
| QZN4UZ | | 0.5320 | 0.0000 | 0.00 | 0.5010 | -0.0051 | -0.26 | OE |
| RLK6E3 | X | 5.413 | 4.8814 | 241.55 | 5.227 | 4.7206 | 239.77 | OE |
| TXACHW | | 0.5303 | -0.0016 | -0.08 | 0.4937 | -0.0124 | -0.63 | OE |
| U6D8D9 | | 0.5363 | 0.0044 | 0.22 | 0.5170 | 0.0109 | 0.55 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.5320 | Percent | 0.5061 | Percent |
| Stnd Dev Btwn Labs | 0.0202 | Percent | 0.0197 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 26 reporting participants

Comments on assigned Data Flags for Analysis #154

WebCode Flag Analyst Comment

QDN287 X Data for sample J20 are high. Inconsistent in testing between samples.

RLK6E3 X Extreme data.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 155

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2ZUKJ2 | | 0.0530 | 0.0013 | 0.14 | 0.0547 | -0.0019 | -0.24 | OE |
| 3B9E8A | | 0.0610 | 0.0093 | 1.00 | 0.0660 | 0.0094 | 1.18 | OE |
| 6PFT4G | | 0.0300 | -0.0217 | -2.34 | 0.0400 | -0.0166 | -2.07 | XX |
| 8WLLWA | | 0.0387 | -0.0130 | -1.40 | 0.0427 | -0.0139 | -1.73 | WD |
| 8YDY62 | | 0.0611 | 0.0094 | 1.01 | 0.0630 | 0.0065 | 0.81 | OE |
| 9X6W2H | | 0.0525 | 0.0008 | 0.08 | 0.0562 | -0.0003 | -0.04 | IC |
| 9XFYCU | | 0.0487 | -0.0030 | -0.33 | 0.0557 | -0.0009 | -0.11 | OE |
| ARAKKC | | 0.0592 | 0.0075 | 0.80 | 0.0627 | 0.0061 | 0.77 | OE |
| CPPBX8 | X | 0.0933 | 0.0416 | 4.49 | 0.1000 | 0.0434 | 5.42 | OE |
| CUUBMR | | 0.0567 | 0.0050 | 0.54 | 0.0653 | 0.0088 | 1.09 | WD |
| EXFDEA | X | 0.00200 | -0.0497 | -5.35 | 0.00200 | -0.0546 | -6.81 | OE |
| F2Q9AW | | 0.0548 | 0.0031 | 0.33 | 0.0578 | 0.0012 | 0.15 | IC |
| GEY9QL | | 0.0700 | 0.0183 | 1.97 | 0.0730 | 0.0164 | 2.05 | OE |
| H24GAB | | 0.0540 | 0.0023 | 0.25 | 0.0573 | 0.0008 | 0.10 | OE |
| HRV4H3 | | 0.0588 | 0.0071 | 0.76 | 0.0606 | 0.0040 | 0.50 | DR |
| JKY8EG | | 0.0553 | 0.0036 | 0.39 | 0.0620 | 0.0054 | 0.68 | GD |
| NCNW6L | | 0.0410 | -0.0107 | -1.15 | 0.0500 | -0.0066 | -0.82 | OE |
| NKL8KG | * | 0.0580 | 0.0063 | 0.68 | 0.0540 | -0.0026 | -0.32 | OE |
| PFFQYE | | 0.0426 | -0.0091 | -0.98 | 0.0499 | -0.0067 | -0.83 | OE |
| QDN287 | | 0.0406 | -0.0111 | -1.19 | 0.0466 | -0.0100 | -1.24 | OE |
| QZN4UZ | | 0.0491 | -0.0026 | -0.28 | 0.0543 | -0.0022 | -0.28 | OE |
| RLK6E3 | | 0.0497 | -0.0020 | -0.21 | 0.0575 | 0.0009 | 0.12 | OE |
| TXACHW | | 0.0590 | 0.0073 | 0.79 | 0.0650 | 0.0084 | 1.05 | XR |
| U6D8D9 | | 0.0436 | -0.0081 | -0.87 | 0.0500 | -0.0066 | -0.82 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.0517 | Percent | 0.0566 | Percent |
| Stnd Dev Btwn Labs | 0.0093 | Percent | 0.0080 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 22 of 24 reporting participants

Comments on assigned Data Flags for Analysis #155

WebCode Flag Analyst Comment

CPPBX8 X Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample J19.

EXFDEA X Data for both samples are low. Possible Systematic error.

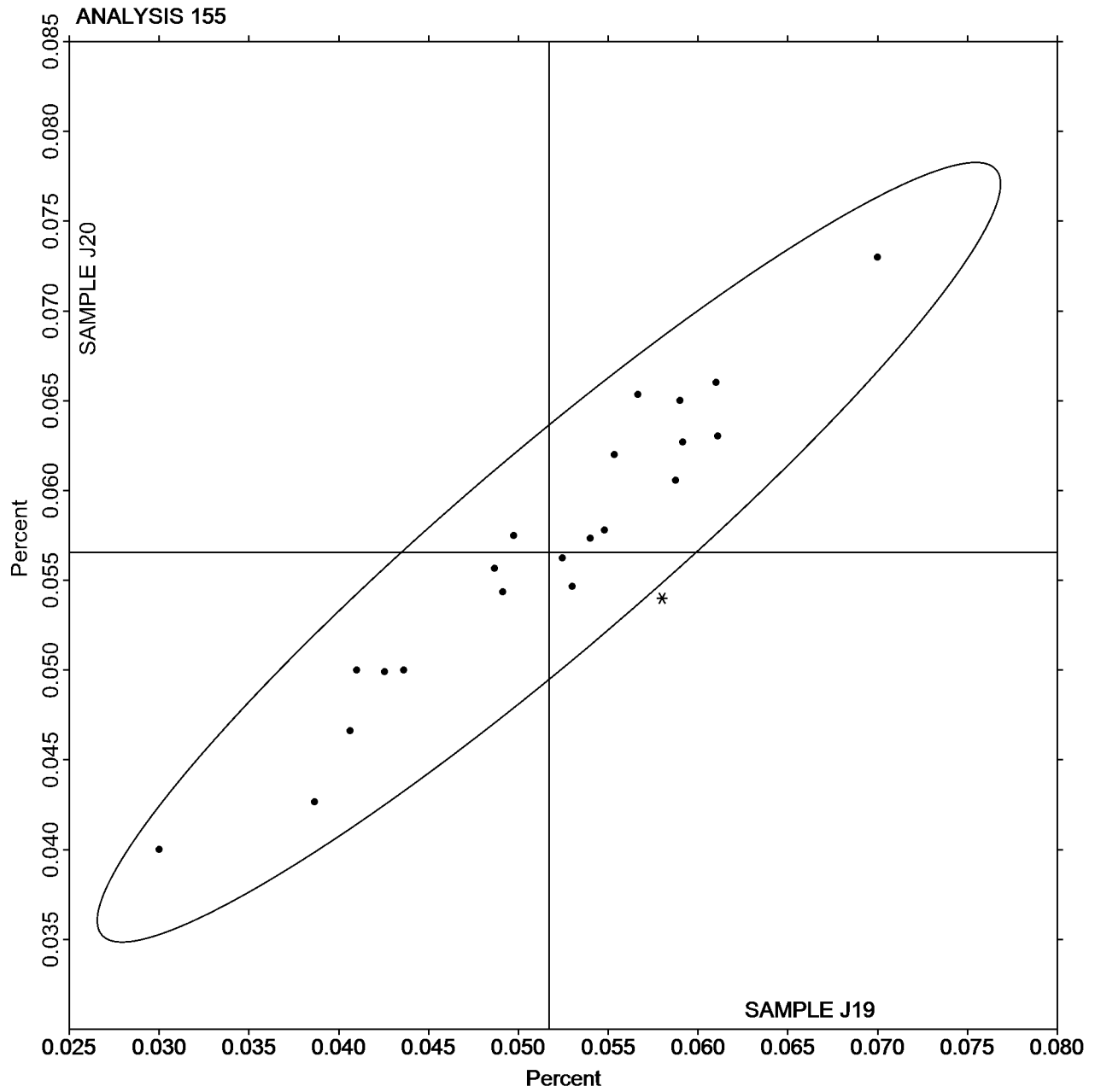
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 155

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

SAMPLE J19
0.0517 Percent

SAMPLE J20
0.0566 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 156

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

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 0.9433 | -0.0052 | -0.40 | 0.9707 | -0.0021 | -0.13 | ED |
| 2ZUKJ2 | | 0.9467 | -0.0019 | -0.15 | 0.9667 | -0.0061 | -0.37 | OE |
| 3B9E8A | | 0.9383 | -0.0102 | -0.79 | 0.9457 | -0.0271 | -1.63 | OE |
| 6NERRC | | 0.9777 | 0.0291 | 2.24 | 0.9873 | 0.0146 | 0.88 | OE |
| 6PFT4G | | 0.9367 | -0.0119 | -0.92 | 0.9467 | -0.0261 | -1.57 | OE |
| 8WLLWA | | 0.9547 | 0.0061 | 0.47 | 0.9743 | 0.0016 | 0.09 | WD |
| 8YDY62 | * | 0.9177 | -0.0309 | -2.38 | 0.9660 | -0.0068 | -0.41 | OE |
| 9X6W2H | | 0.9517 | 0.0031 | 0.24 | 0.9950 | 0.0222 | 1.34 | IC |
| 9XFYCU | | 0.9467 | -0.0019 | -0.15 | 0.9700 | -0.0028 | -0.17 | XR |
| ARAKKC | | 0.9550 | 0.0064 | 0.49 | 0.9827 | 0.0099 | 0.60 | OE |
| CPPBX8 | | 0.9300 | -0.0186 | -1.43 | 0.9567 | -0.0161 | -0.97 | OE |
| CUUBMR | | 0.9390 | -0.0096 | -0.74 | 0.9613 | -0.0114 | -0.69 | WD |
| EXFDEA | | 0.9367 | -0.0119 | -0.92 | 0.9500 | -0.0228 | -1.37 | OE |
| F2Q9AW | | 0.9490 | 0.0004 | 0.03 | 0.9733 | 0.0006 | 0.03 | IC |
| GEY9QL | | 0.9513 | 0.0028 | 0.21 | 0.9720 | -0.0008 | -0.05 | OE |
| H24GAB | | 0.9433 | -0.0052 | -0.40 | 0.9667 | -0.0061 | -0.37 | OE |
| HRV4H3 | | 0.9693 | 0.0207 | 1.59 | 0.9911 | 0.0183 | 1.10 | DR |
| JKY8EG | X | 0.8757 | -0.0729 | -5.61 | 0.9077 | -0.0651 | -3.93 | GD |
| NCNW6L | | 0.9493 | 0.0008 | 0.06 | 0.9717 | -0.0011 | -0.07 | OE |
| NKL8KG | | 0.9500 | 0.0014 | 0.11 | 0.9800 | 0.0072 | 0.44 | OE |
| PFFQYE | | 0.9533 | 0.0048 | 0.37 | 0.9720 | -0.0008 | -0.05 | WD |
| QDN287 | X | 1.068 | 0.1198 | 9.22 | 1.108 | 0.1356 | 8.17 | OE |
| QZN4UZ | | 0.9633 | 0.0148 | 1.14 | 0.9923 | 0.0196 | 1.18 | OE |
| RLK6E3 | * | 0.9690 | 0.0204 | 1.57 | 1.020 | 0.0472 | 2.85 | OE |
| TXACHW | | 0.9487 | 0.0001 | 0.01 | 0.9670 | -0.0058 | -0.35 | XR |
| U6D8D9 | | 0.9453 | -0.0032 | -0.25 | 0.9677 | -0.0051 | -0.31 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.9486 | Percent | 0.9728 | Percent |
| Stnd Dev Btwn Labs | 0.0130 | Percent | 0.0166 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 26 reporting participants

Comments on assigned Data Flags for Analysis #156

WebCode Flag Analyst Comment

JKY8EG X Data for both samples are low.

QDN287 X Data for both samples are high.

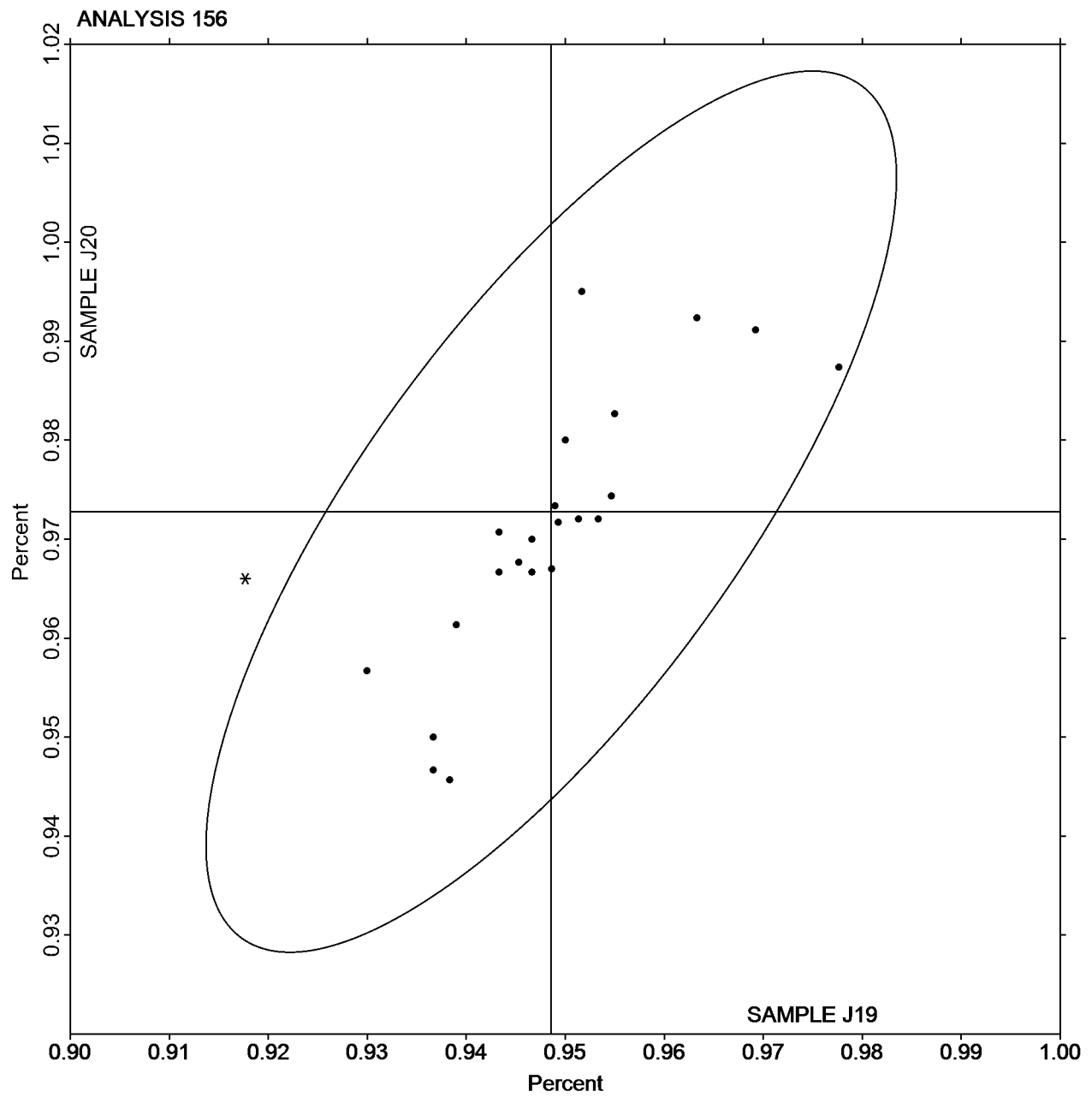
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 156

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

SAMPLE J19
0.9486 Percent

SAMPLE J20
0.9728 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NICKEL (Ni)

| WebCode | Data Flag | Sample J19 | | | Sample J20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2BCYL4 | | 52.94 | -0.53 | -1.30 | 53.02 | -0.71 | -1.72 | ED |
| 2ZUKJ2 | | 53.67 | 0.20 | 0.49 | 53.97 | 0.24 | 0.57 | OE |
| 3B9E8A | | 53.82 | 0.35 | 0.87 | 54.11 | 0.38 | 0.91 | OE |
| 43RD8Q | | 53.37 | -0.10 | -0.25 | 53.63 | -0.10 | -0.23 | IC |
| 6NERRC | | 53.18 | -0.28 | -0.70 | 53.36 | -0.37 | -0.90 | WD |
| 6PFT4G | | 52.87 | -0.60 | -1.48 | 53.17 | -0.56 | -1.36 | OE |
| 8WLLWA | | 52.82 | -0.65 | -1.59 | 53.05 | -0.68 | -1.63 | WD |
| 8YDY62 | | 53.67 | 0.20 | 0.49 | 54.03 | 0.30 | 0.73 | OE |
| 9XFYCU | | 53.40 | -0.07 | -0.16 | 53.56 | -0.17 | -0.40 | XX |
| ARAKKC | | 53.43 | -0.04 | -0.09 | 53.65 | -0.08 | -0.20 | OE |
| CPPBX8 | | 53.30 | -0.17 | -0.41 | 53.53 | -0.20 | -0.47 | OE |
| CUUBMR | | 53.55 | 0.08 | 0.21 | 53.77 | 0.04 | 0.10 | WD |
| EXFDEA | * | 52.87 | -0.59 | -1.46 | 53.49 | -0.24 | -0.57 | OE |
| F2Q9AW | | 53.72 | 0.26 | 0.63 | 53.90 | 0.17 | 0.41 | BD |
| GEY9QL | | 53.33 | -0.13 | -0.33 | 53.78 | 0.05 | 0.13 | BD |
| H24GAB | | 53.55 | 0.08 | 0.20 | 53.72 | -0.01 | -0.04 | OE |
| HRV4H3 | | 53.45 | -0.01 | -0.03 | 53.45 | -0.28 | -0.68 | DR |
| JKY8EG | * | 54.67 | 1.20 | 2.96 | 54.97 | 1.24 | 2.99 | GD |
| NCNW6L | | 53.45 | -0.02 | -0.05 | 53.79 | 0.06 | 0.14 | OE |
| NKL8KG | | 54.11 | 0.65 | 1.60 | 54.19 | 0.46 | 1.12 | OE |
| PFFQYE | | 53.29 | -0.18 | -0.44 | 53.49 | -0.24 | -0.59 | WD |
| QDN287 | | 53.48 | 0.02 | 0.04 | 53.91 | 0.18 | 0.43 | OE |
| RLK6E3 | | 53.67 | 0.20 | 0.49 | 53.97 | 0.24 | 0.57 | OE |
| U6D8D9 | | 53.59 | 0.12 | 0.31 | 54.02 | 0.29 | 0.70 | OE |

Summary Statistics

| | Sample J19 | | Sample J20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 53.47 | Percent | 53.73 | Percent |
| Stnd Dev Btwn Labs | 0.41 | Percent | 0.41 | Percent |

Samples J19 , J20 : Alloy 718, two different heats

Statistics based on 24 of 24 reporting participants

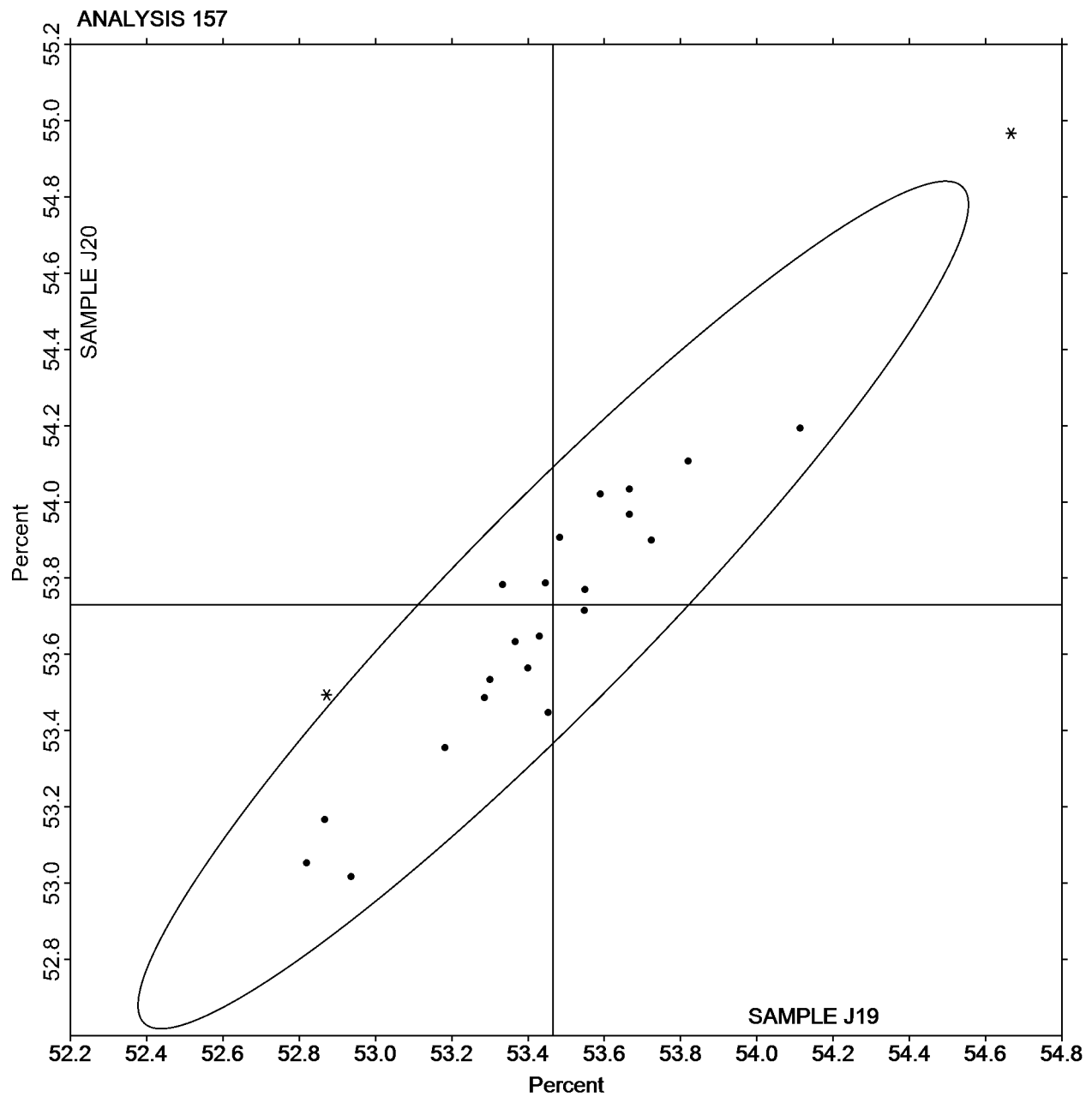
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 157

Chemical Analysis Element #8: Nickel-based Alloy - Percent
NICKEL (Ni)

SAMPLE J19
53.47 Percent

SAMPLE J20
53.73 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 180

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.0477 | 0.0004 | 0.11 | 0.0500 | 0.0002 | 0.06 | OE |
| 29YN6D | | 0.0530 | 0.0058 | 1.54 | 0.0540 | 0.0042 | 1.35 | CI |
| 2ZUKJ2 | | 0.0483 | 0.0011 | 0.29 | 0.0497 | -0.0002 | -0.05 | CI |
| 3B9E8A | | 0.0477 | 0.0004 | 0.11 | 0.0517 | 0.0018 | 0.60 | OE |
| 4QNERC | | 0.0460 | -0.0012 | -0.33 | 0.0483 | -0.0015 | -0.48 | OE |
| 6NERRC | | 0.0447 | -0.0025 | -0.67 | 0.0465 | -0.0034 | -1.09 | CO |
| 6PFT4G | | 0.0447 | -0.0026 | -0.69 | 0.0467 | -0.0032 | -1.02 | OE |
| 6V82RU | | 0.0494 | 0.0021 | 0.57 | 0.0519 | 0.0020 | 0.66 | OE |
| 6W3Z4G | | 0.0450 | -0.0022 | -0.60 | 0.0500 | 0.0002 | 0.06 | OE |
| 8DV9RJ | | 0.0464 | -0.0009 | -0.23 | 0.0492 | -0.0007 | -0.21 | CO |
| 8WLLWA | | 0.0444 | -0.0028 | -0.75 | 0.0475 | -0.0024 | -0.76 | CI |
| 997KWK | | 0.0472 | 0.0000 | -0.01 | 0.0498 | 0.0000 | -0.01 | CI |
| 9F4C4T | | 0.0460 | -0.0012 | -0.33 | 0.0479 | -0.0019 | -0.62 | CI |
| 9PD4W3 | | 0.0479 | 0.0007 | 0.18 | 0.0507 | 0.0009 | 0.30 | CO |
| BRZXWL | | 0.0473 | 0.0001 | 0.03 | 0.0500 | 0.0002 | 0.06 | OE |
| CPPBX8 | X | 0.0500 | 0.0028 | 0.74 | 0.0567 | 0.0068 | 2.22 | OE |
| CTJBNC | | 0.0473 | 0.0001 | 0.03 | 0.0503 | 0.0005 | 0.17 | OE |
| CUNHMC | | 0.0467 | -0.0006 | -0.15 | 0.0510 | 0.0012 | 0.38 | OE |
| CUUBMR | | 0.0457 | -0.0016 | -0.42 | 0.0489 | -0.0009 | -0.29 | OE |
| DCC7WY | | 0.0480 | 0.0008 | 0.20 | 0.0503 | 0.0005 | 0.17 | CI |
| DXLWTL | | 0.0483 | 0.0011 | 0.28 | 0.0497 | -0.0001 | -0.03 | CI |
| EXFDEA | X | 0.0853 | 0.0381 | 10.18 | 0.0787 | 0.0288 | 9.35 | OE |
| F2Q9AW | | 0.0469 | -0.0003 | -0.09 | 0.0496 | -0.0002 | -0.07 | OE |
| FA2V3T | | 0.0530 | 0.0058 | 1.55 | 0.0551 | 0.0053 | 1.71 | OE |
| GEY9QL | | 0.0483 | 0.0011 | 0.29 | 0.0507 | 0.0008 | 0.27 | OE |
| GRPGLB | * | 0.0417 | -0.0056 | -1.49 | 0.0483 | -0.0015 | -0.48 | OE |
| H24GAB | | 0.0453 | -0.0019 | -0.51 | 0.0477 | -0.0022 | -0.70 | CI |
| JKY8EG | | 0.0476 | 0.0004 | 0.11 | 0.0499 | 0.0001 | 0.03 | GD |
| JMQR92 | X | 0.0520 | 0.0048 | 1.27 | 0.0583 | 0.0085 | 2.76 | GD |
| JRUUZV | | 0.0460 | -0.0013 | -0.34 | 0.0499 | 0.0000 | 0.01 | CO |
| JWN9NX | * | 0.0517 | 0.0044 | 1.18 | 0.0557 | 0.0058 | 1.89 | OE |
| KJDZED | | 0.0470 | -0.0002 | -0.05 | 0.0492 | -0.0007 | -0.21 | CI |
| LNLVKY | | 0.0483 | 0.0011 | 0.29 | 0.0495 | -0.0004 | -0.12 | CO |
| MNP883 | * | 0.0580 | 0.0108 | 2.88 | 0.0570 | 0.0072 | 2.33 | OE |
| NCHC8X | | 0.0503 | 0.0031 | 0.83 | 0.0517 | 0.0018 | 0.60 | OE |
| NCNW6L | | 0.0453 | -0.0019 | -0.51 | 0.0480 | -0.0018 | -0.59 | OE |
| NKL8KG | * | 0.0580 | 0.0108 | 2.88 | 0.0587 | 0.0088 | 2.87 | OE |
| PBPCT7 | X | 0.0273 | -0.0199 | -5.32 | 0.0283 | -0.0215 | -6.96 | OE |
| PMK4ZN | | 0.0447 | -0.0026 | -0.69 | 0.0470 | -0.0028 | -0.91 | OE |
| Q6QHRW | | 0.0440 | -0.0033 | -0.87 | 0.0480 | -0.0019 | -0.60 | GD |
| QDN287 | | 0.0498 | 0.0026 | 0.69 | 0.0508 | 0.0010 | 0.32 | OE |
| QTR9RV | | 0.0460 | -0.0012 | -0.33 | 0.0483 | -0.0016 | -0.50 | DR |
| RJX664 | X | 0.0493 | 0.0021 | 0.56 | 0.0570 | 0.0072 | 2.33 | CO |
| TXACHW | | 0.0433 | -0.0039 | -1.04 | 0.0457 | -0.0042 | -1.35 | CI |
| U6D8D9 | | 0.0484 | 0.0012 | 0.31 | 0.0507 | 0.0008 | 0.27 | OE |
| UELRR3 | | 0.0420 | -0.0052 | -1.40 | 0.0450 | -0.0048 | -1.56 | CI |
| VN9QXJ | * | 0.0364 | -0.0109 | -2.91 | 0.0417 | -0.0081 | -2.63 | OE |
| W4HDK2 | | 0.0420 | -0.0052 | -1.40 | 0.0453 | -0.0045 | -1.45 | CI |
| W6LN7X | | 0.0470 | -0.0003 | -0.07 | 0.0496 | -0.0002 | -0.07 | CI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 180

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| W7WHW7 | | 0.0463 | -0.0009 | -0.24 | 0.0507 | 0.0008 | 0.27 | OE |
| WXNUER | | 0.0520 | 0.0048 | 1.27 | 0.0557 | 0.0058 | 1.89 | OE |
| X2U7A6 | | 0.0500 | 0.0028 | 0.74 | 0.0500 | 0.0002 | 0.06 | OE |
| ZNXP8A | | 0.0463 | -0.0009 | -0.24 | 0.0483 | -0.0015 | -0.48 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.0472 | Percent | 0.0498 | Percent |
| Stnd Dev Btwn Labs | 0.0037 | Percent | 0.0031 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 48 of 53 reporting participants

Comments on assigned Data Flags for Analysis #180

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| CPPBX8 | X | Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| EXFDEA | X | Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample M19. |
| JMQR92 | X | Data for sample M20 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| PBPCT7 | X | Data for both samples are low. Possible Systematic error. |
| RJX664 | X | Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 181

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 1.449 | -0.017 | -0.72 | 1.431 | -0.016 | -0.64 | OE |
| 29YN6D | | 1.443 | -0.023 | -0.97 | 1.423 | -0.024 | -0.97 | IC |
| 2ZUKJ2 | | 1.420 | -0.046 | -1.96 | 1.393 | -0.054 | -2.19 | OE |
| 3B9E8A | | 1.428 | -0.038 | -1.62 | 1.402 | -0.045 | -1.85 | OE |
| 4QNERC | | 1.427 | -0.039 | -1.68 | 1.410 | -0.037 | -1.51 | OE |
| 6NERRC | | 1.457 | -0.009 | -0.38 | 1.437 | -0.010 | -0.40 | WD |
| 6PFT4G | | 1.453 | -0.013 | -0.54 | 1.437 | -0.010 | -0.43 | OE |
| 6V82RU | | 1.476 | 0.010 | 0.42 | 1.462 | 0.015 | 0.62 | OE |
| 6W3Z4G | | 1.463 | -0.003 | -0.11 | 1.437 | -0.010 | -0.43 | OE |
| 8DV9RJ | | 1.482 | 0.016 | 0.69 | 1.447 | 0.000 | -0.02 | IC |
| 8WLLWA | | 1.471 | 0.005 | 0.22 | 1.440 | -0.007 | -0.29 | WD |
| 997KWK | | 1.479 | 0.013 | 0.56 | 1.465 | 0.018 | 0.74 | OE |
| 9F4C4T | | 1.443 | -0.023 | -1.00 | 1.424 | -0.023 | -0.93 | WD |
| 9PD4W3 | | 1.489 | 0.023 | 1.00 | 1.474 | 0.027 | 1.11 | OE |
| 9X6W2H | | 1.457 | -0.009 | -0.37 | 1.446 | -0.001 | -0.03 | IC |
| BJD6DJ | | 1.465 | -0.001 | -0.05 | 1.440 | -0.007 | -0.29 | OE |
| BRZXWL | | 1.456 | -0.010 | -0.44 | 1.438 | -0.009 | -0.37 | OE |
| CPPBX8 | * | 1.500 | 0.034 | 1.46 | 1.500 | 0.053 | 2.15 | OE |
| CTJBNC | | 1.450 | -0.016 | -0.68 | 1.433 | -0.014 | -0.56 | WD |
| CUNHMC | | 1.488 | 0.022 | 0.94 | 1.474 | 0.027 | 1.09 | OE |
| CUUBMR | | 1.457 | -0.009 | -0.38 | 1.442 | -0.005 | -0.21 | WD |
| DCC7WY | | 1.482 | 0.016 | 0.69 | 1.466 | 0.019 | 0.78 | DR |
| DWVTZE | | 1.467 | 0.001 | 0.03 | 1.443 | -0.004 | -0.15 | OE |
| DXLWTL | | 1.443 | -0.023 | -0.99 | 1.424 | -0.024 | -0.96 | XR |
| EXFDEA | X | 0.4007 | -1.065 | -45.56 | 0.3693 | -1.078 | -43.87 | OE |
| F2Q9AW | | 1.463 | -0.003 | -0.11 | 1.463 | 0.016 | 0.66 | OE |
| FA2V3T | | 1.506 | 0.040 | 1.73 | 1.490 | 0.043 | 1.75 | OE |
| GEY9QL | | 1.475 | 0.009 | 0.37 | 1.443 | -0.004 | -0.17 | OE |
| GRPGLB | | 1.492 | 0.026 | 1.13 | 1.485 | 0.038 | 1.56 | OE |
| H24GAB | | 1.453 | -0.013 | -0.57 | 1.432 | -0.015 | -0.60 | OE |
| JKY8EG | | 1.483 | 0.017 | 0.74 | 1.463 | 0.016 | 0.66 | GD |
| JMQR92 | X | 1.427 | -0.039 | -1.68 | 1.377 | -0.070 | -2.87 | GD |
| JRUUZV | * | 1.527 | 0.061 | 2.60 | 1.497 | 0.050 | 2.02 | OE |
| JWN9NX | | 1.439 | -0.027 | -1.17 | 1.427 | -0.020 | -0.82 | OE |
| KJDZED | | 1.464 | -0.002 | -0.10 | 1.447 | 0.000 | 0.01 | WD |
| LNLVKY | | 1.463 | -0.003 | -0.11 | 1.442 | -0.005 | -0.19 | GD |
| MNP883 | | 1.496 | 0.030 | 1.29 | 1.476 | 0.029 | 1.16 | OE |
| NCHC8X | | 1.430 | -0.036 | -1.54 | 1.420 | -0.027 | -1.10 | OE |
| NCNW6L | | 1.468 | 0.002 | 0.10 | 1.448 | 0.001 | 0.05 | OE |
| NKL8KG | | 1.467 | 0.001 | 0.03 | 1.440 | -0.007 | -0.29 | OE |
| PBPCT7 | X | 1.540 | 0.074 | 3.17 | 1.493 | 0.046 | 1.88 | OE |
| PMK4ZN | | 1.480 | 0.014 | 0.60 | 1.463 | 0.016 | 0.66 | OE |
| Q6QHRW | | 1.490 | 0.024 | 1.02 | 1.470 | 0.023 | 0.95 | GD |
| QDN287 | * | 1.536 | 0.070 | 3.01 | 1.518 | 0.071 | 2.90 | OE |
| QTR9RV | | 1.461 | -0.005 | -0.21 | 1.445 | -0.002 | -0.09 | DR |
| QZN4UZ | | 1.459 | -0.007 | -0.30 | 1.445 | -0.002 | -0.09 | OE |
| RJX664 | | 1.460 | -0.006 | -0.25 | 1.423 | -0.024 | -0.97 | IC |
| TXACHW | | 1.460 | -0.006 | -0.25 | 1.443 | -0.004 | -0.15 | XR |
| U6D8D9 | | 1.456 | -0.010 | -0.44 | 1.435 | -0.012 | -0.51 | OE |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 181

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| UELRR3 | | 1.429 | -0.037 | -1.59 | 1.408 | -0.039 | -1.58 | WD |
| VN9QXJ | | 1.470 | 0.004 | 0.17 | 1.462 | 0.015 | 0.61 | OE |
| W4HDK2 | | 1.460 | -0.006 | -0.24 | 1.441 | -0.006 | -0.25 | WD |
| W6LN7X | | 1.454 | -0.012 | -0.50 | 1.439 | -0.008 | -0.34 | WD |
| W7WHW7 | | 1.458 | -0.008 | -0.34 | 1.446 | -0.001 | -0.03 | OE |
| WXNUER | | 1.497 | 0.031 | 1.33 | 1.469 | 0.022 | 0.89 | OE |
| X2U7A6 | | 1.467 | 0.001 | 0.03 | 1.430 | -0.017 | -0.70 | OE |
| ZNXP8A | | 1.453 | -0.013 | -0.54 | 1.440 | -0.007 | -0.29 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 1.466 | Percent | 1.447 | Percent |
| Stnd Dev Btwn Labs | 0.023 | Percent | 0.025 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 54 of 57 reporting participants

Comments on assigned Data Flags for Analysis #181

WebCode Flag Analyst Comment

EXFDEA X Extreme data.

JMQR92 X Data for sample M20 are low. Inconsistent in testing between samples.

PBPCT7 X Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

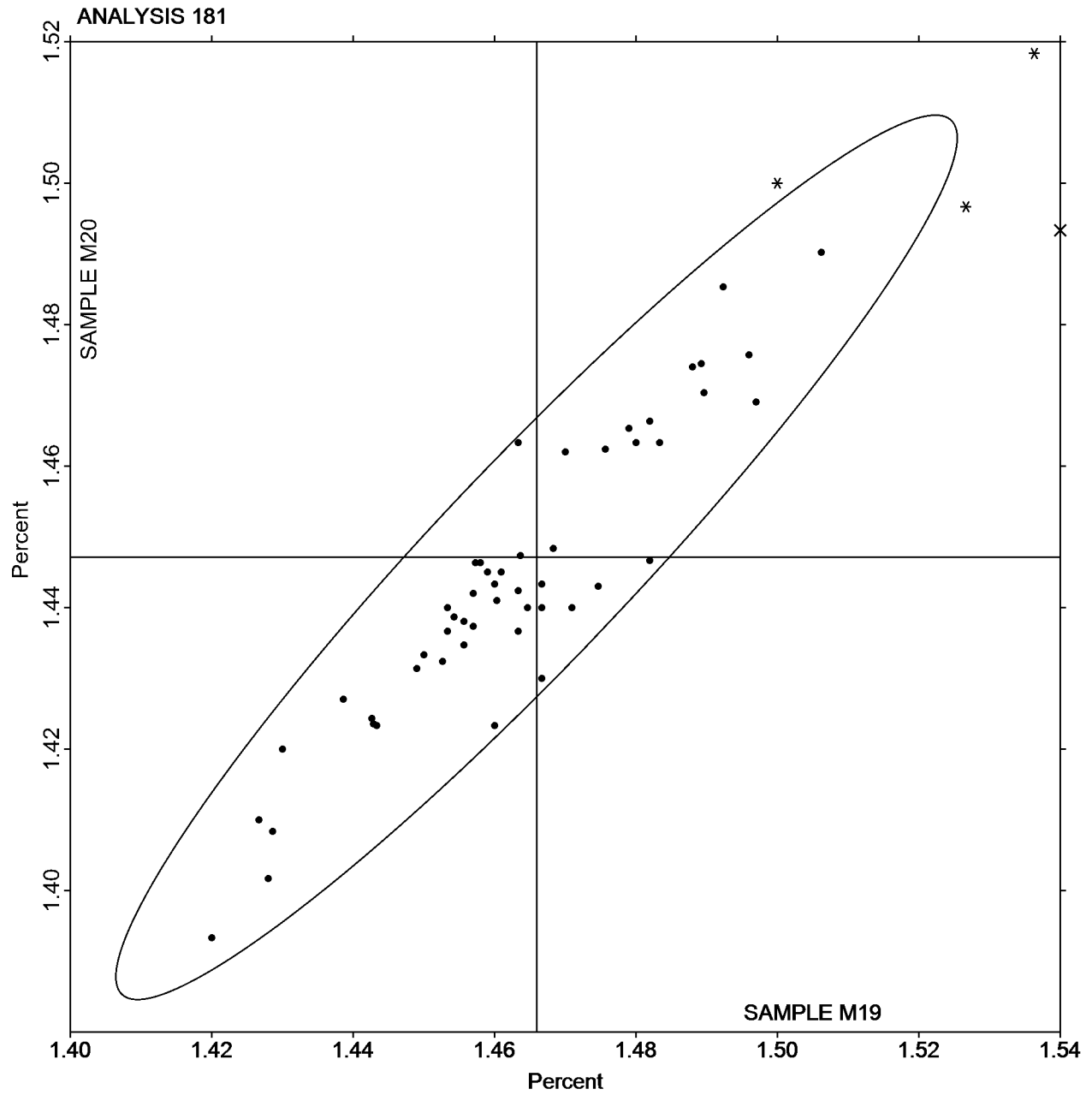
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 181

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

SAMPLE M19
1.466 Percent

SAMPLE M20
1.447 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 182

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.0297 | -0.0010 | -0.70 | 0.0267 | -0.0020 | -1.51 | OE |
| 29YN6D | | 0.0310 | 0.0003 | 0.19 | 0.0290 | 0.0003 | 0.22 | IC |
| 2ZUKJ2 | | 0.0310 | 0.0003 | 0.19 | 0.0300 | 0.0013 | 0.96 | OE |
| 3B9E8A | | 0.0320 | 0.0013 | 0.86 | 0.0307 | 0.0020 | 1.46 | OE |
| 4QNERC | | 0.0333 | 0.0026 | 1.76 | 0.0310 | 0.0023 | 1.71 | OE |
| 6PFT4G | | 0.0297 | -0.0010 | -0.70 | 0.0277 | -0.0010 | -0.77 | OE |
| 6V82RU | | 0.0313 | 0.0006 | 0.39 | 0.0292 | 0.0005 | 0.35 | OE |
| 6W3Z4G | | 0.0303 | -0.0004 | -0.25 | 0.0280 | -0.0007 | -0.52 | OE |
| 8DV9RJ | X | 0.0396 | 0.0089 | 5.94 | 0.0369 | 0.0082 | 6.11 | IC |
| 8WLLWA | | 0.0337 | 0.0030 | 1.98 | 0.0307 | 0.0020 | 1.46 | WD |
| 997KWK | | 0.0304 | -0.0003 | -0.23 | 0.0288 | 0.0001 | 0.05 | OE |
| 9F4C4T | | 0.0336 | 0.0029 | 1.94 | 0.0300 | 0.0013 | 0.94 | WD |
| 9PD4W3 | | 0.0305 | -0.0002 | -0.16 | 0.0294 | 0.0007 | 0.52 | OE |
| 9X6W2H | | 0.0296 | -0.0011 | -0.74 | 0.0277 | -0.0010 | -0.77 | IC |
| BRZXWL | X | 0.0360 | 0.0053 | 3.54 | 0.0353 | 0.0066 | 4.92 | OE |
| CPPBX8 | * | 0.0323 | 0.0016 | 1.09 | 0.0283 | -0.0004 | -0.27 | OE |
| CTJBNC | | 0.0300 | -0.0007 | -0.48 | 0.0280 | -0.0007 | -0.52 | WD |
| CUNHMC | | 0.0299 | -0.0008 | -0.57 | 0.0276 | -0.0011 | -0.82 | OE |
| CUUBMR | | 0.0312 | 0.0005 | 0.31 | 0.0288 | 0.0001 | 0.05 | WD |
| DCC7WY | | 0.0310 | 0.0003 | 0.19 | 0.0290 | 0.0003 | 0.22 | DR |
| DXLWTL | | 0.0307 | 0.0000 | -0.03 | 0.0283 | -0.0004 | -0.27 | XR |
| EXFDEA | X | 0.1530 | 0.1223 | 81.96 | 0.1580 | 0.1293 | 95.96 | OE |
| F2Q9AW | | 0.0316 | 0.0009 | 0.62 | 0.0308 | 0.0021 | 1.53 | OE |
| FA2V3T | | 0.0280 | -0.0027 | -1.83 | 0.0264 | -0.0023 | -1.68 | OE |
| GEY9QL | | 0.0287 | -0.0020 | -1.37 | 0.0263 | -0.0024 | -1.78 | OE |
| GRPGLB | | 0.0293 | -0.0014 | -0.92 | 0.0277 | -0.0010 | -0.77 | OE |
| H24GAB | X | 0.0283 | -0.0024 | -1.59 | 0.0300 | 0.0013 | 0.96 | OE |
| JKY8EG | | 0.0316 | 0.0009 | 0.62 | 0.0290 | 0.0003 | 0.20 | GD |
| JMQR92 | X | 0.0253 | -0.0054 | -3.60 | 0.0233 | -0.0054 | -3.98 | GD |
| JRUUZV | | 0.0285 | -0.0023 | -1.51 | 0.0280 | -0.0007 | -0.51 | WC |
| JWN9NX | * | 0.0269 | -0.0038 | -2.58 | 0.0255 | -0.0032 | -2.35 | OE |
| KJDZED | | 0.0316 | 0.0009 | 0.60 | 0.0290 | 0.0003 | 0.22 | WD |
| LNLVKY | X | 0.0300 | -0.0007 | -0.48 | 0.0454 | 0.0167 | 12.37 | GD |
| MNP883 | | 0.0300 | -0.0007 | -0.48 | 0.0280 | -0.0007 | -0.52 | OE |
| NCHC8X | | 0.0330 | 0.0023 | 1.53 | 0.0317 | 0.0030 | 2.20 | OE |
| NCNW6L | | 0.0307 | 0.0000 | -0.03 | 0.0287 | 0.0000 | -0.02 | OE |
| NKL8KG | | 0.0303 | -0.0004 | -0.25 | 0.0283 | -0.0004 | -0.27 | OE |
| PBPCT7 | | 0.0303 | -0.0004 | -0.25 | 0.0280 | -0.0007 | -0.52 | OE |
| PMK4ZN | | 0.0297 | -0.0010 | -0.70 | 0.0280 | -0.0007 | -0.52 | OE |
| Q6QHRW | | 0.0290 | -0.0017 | -1.15 | 0.0281 | -0.0006 | -0.47 | GD |
| QDN287 | | 0.0329 | 0.0022 | 1.44 | 0.0311 | 0.0024 | 1.81 | OE |
| QTR9RV | | 0.0307 | 0.0000 | -0.01 | 0.0280 | -0.0007 | -0.54 | DR |
| QZN4UZ | | 0.0295 | -0.0012 | -0.79 | 0.0276 | -0.0011 | -0.84 | OE |
| RJX664 | | 0.0317 | 0.0010 | 0.64 | 0.0293 | 0.0006 | 0.47 | IC |
| TXACHW | | 0.0290 | -0.0017 | -1.15 | 0.0273 | -0.0014 | -1.01 | XR |
| U6D8D9 | | 0.0323 | 0.0016 | 1.07 | 0.0297 | 0.0010 | 0.72 | OE |
| UELRR3 | | 0.0310 | 0.0003 | 0.19 | 0.0300 | 0.0013 | 0.96 | WD |
| VN9QXJ | | 0.0328 | 0.0021 | 1.42 | 0.0305 | 0.0018 | 1.34 | OE |
| W4HDK2 | | 0.0300 | -0.0007 | -0.48 | 0.0280 | -0.0007 | -0.52 | WD |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 182

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| W6LN7X | | 0.0290 | -0.0017 | -1.15 | 0.0275 | -0.0012 | -0.87 | WD |
| W7WHW7 | | 0.0310 | 0.0003 | 0.19 | 0.0293 | 0.0006 | 0.47 | OE |
| WXNUER | | 0.0320 | 0.0013 | 0.84 | 0.0285 | -0.0002 | -0.17 | OE |
| X2U7A6 | X | 0.0310 | 0.0003 | 0.19 | 0.0240 | -0.0047 | -3.49 | OE |
| ZNXP8A | | 0.0313 | 0.0006 | 0.42 | 0.0300 | 0.0013 | 0.96 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.0307 | Percent | 0.0287 | Percent |
| Stnd Dev Btwn Labs | 0.0015 | Percent | 0.0013 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 47 of 54 reporting participants

Comments on assigned Data Flags for Analysis #182

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| 8DV9RJ | X | Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples. |
| BRZXWL | X | Data for both samples are high. Possible Systematic error. |
| EXFDEA | X | Extreme data. |
| H24GAB | X | Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| JMQR92 | X | Data for both samples are low. Possible Systematic error. |
| LNLVKY | X | Data for sample M20 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| X2U7A6 | X | Data for sample M20 are low. Inconsistent in testing between samples. |

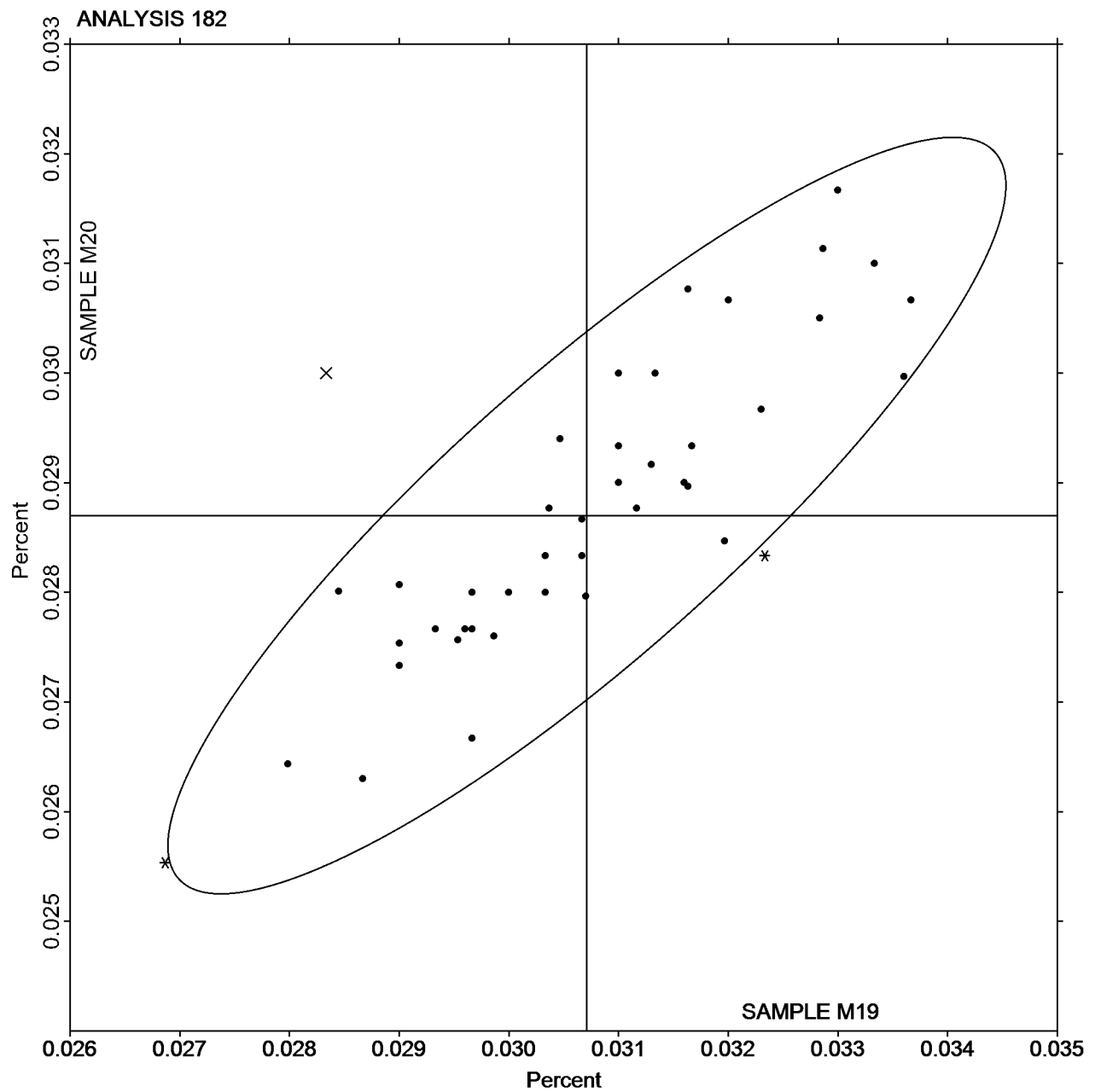
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 182

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

SAMPLE M19
0.0307 Percent

SAMPLE M20
0.0287 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.0303 | 0.0016 | 0.91 | 0.0327 | 0.0005 | 0.26 | OE |
| 29YN6D | | 0.0303 | 0.0016 | 0.91 | 0.0343 | 0.0022 | 1.12 | CI |
| 2ZUKJ2 | | 0.0290 | 0.0003 | 0.17 | 0.0310 | -0.0012 | -0.61 | CI |
| 3B9E8A | | 0.0310 | 0.0023 | 1.28 | 0.0327 | 0.0005 | 0.26 | OE |
| 4QNERC | | 0.0300 | 0.0013 | 0.72 | 0.0333 | 0.0012 | 0.60 | OE |
| 6NERRC | | 0.0268 | -0.0019 | -1.03 | 0.0298 | -0.0024 | -1.24 | CO |
| 6PFT4G | | 0.0273 | -0.0014 | -0.75 | 0.0300 | -0.0022 | -1.13 | OE |
| 6V82RU | | 0.0285 | -0.0002 | -0.09 | 0.0327 | 0.0006 | 0.29 | OE |
| 6W3Z4G | | 0.0280 | -0.0007 | -0.38 | 0.0310 | -0.0012 | -0.61 | OE |
| 8DV9RJ | | 0.0278 | -0.0009 | -0.47 | 0.0309 | -0.0013 | -0.66 | CO |
| 8WLLWA | | 0.0301 | 0.0014 | 0.76 | 0.0342 | 0.0021 | 1.07 | CI |
| 997KWK | | 0.0274 | -0.0013 | -0.71 | 0.0304 | -0.0018 | -0.93 | CI |
| 9F4C4T | | 0.0279 | -0.0008 | -0.44 | 0.0308 | -0.0014 | -0.73 | CI |
| 9PD4W3 | | 0.0272 | -0.0015 | -0.84 | 0.0317 | -0.0004 | -0.23 | CO |
| BRZXWL | | 0.0257 | -0.0030 | -1.67 | 0.0290 | -0.0032 | -1.65 | OE |
| CPPBX8 | | 0.0293 | 0.0006 | 0.36 | 0.0330 | 0.0008 | 0.43 | OE |
| CTJBNC | X | 0.0361 | 0.0074 | 4.11 | 0.0382 | 0.0061 | 3.16 | WD |
| CUNHMC | * | 0.0270 | -0.0017 | -0.95 | 0.0336 | 0.0014 | 0.74 | OE |
| CUUBMR | X | 0.0198 | -0.0089 | -4.93 | 0.0230 | -0.0092 | -4.78 | WD |
| DCC7WY | | 0.0250 | -0.0037 | -2.04 | 0.0290 | -0.0032 | -1.65 | CI |
| DXLWTL | | 0.0283 | -0.0004 | -0.22 | 0.0305 | -0.0017 | -0.87 | CI |
| EXFDEA | X | 0.0146 | -0.0141 | -7.77 | 0.1370 | 0.1048 | 54.61 | OE |
| F2Q9AW | | 0.0316 | 0.0029 | 1.61 | 0.0335 | 0.0013 | 0.69 | CI |
| FA2V3T | | 0.0259 | -0.0028 | -1.55 | 0.0288 | -0.0034 | -1.78 | OE |
| GEY9QL | | 0.0275 | -0.0012 | -0.68 | 0.0320 | -0.0001 | -0.07 | OE |
| GRPGLB | | 0.0297 | 0.0010 | 0.54 | 0.0340 | 0.0018 | 0.95 | OE |
| H24GAB | | 0.0293 | 0.0006 | 0.36 | 0.0320 | -0.0002 | -0.09 | CI |
| JKY8EG | | 0.0285 | -0.0002 | -0.09 | 0.0313 | -0.0009 | -0.46 | GD |
| JMQR92 | X | 0.00933 | -0.0194 | -10.70 | 0.0117 | -0.0205 | -10.69 | GD |
| JRUUZV | | 0.0293 | 0.0006 | 0.32 | 0.0321 | -0.0001 | -0.04 | CO |
| JWN9NX | | 0.0287 | 0.0000 | 0.01 | 0.0324 | 0.0003 | 0.13 | OE |
| KJDZED | | 0.0289 | 0.0002 | 0.10 | 0.0317 | -0.0005 | -0.25 | CI |
| LNLVKY | | 0.0269 | -0.0018 | -1.01 | 0.0303 | -0.0019 | -0.98 | CO |
| MNP883 | | 0.0273 | -0.0014 | -0.75 | 0.0320 | -0.0002 | -0.09 | OE |
| NCHC8X | X | 0.0197 | -0.0090 | -4.99 | 0.0203 | -0.0118 | -6.17 | OE |
| NCNW6L | | 0.0293 | 0.0006 | 0.36 | 0.0347 | 0.0025 | 1.30 | OE |
| NKL8KG | | 0.0270 | -0.0017 | -0.93 | 0.0303 | -0.0018 | -0.96 | OE |
| PBPCT7 | | 0.0303 | 0.0016 | 0.91 | 0.0337 | 0.0015 | 0.78 | OE |
| PMK4ZN | | 0.0303 | 0.0016 | 0.91 | 0.0317 | -0.0005 | -0.27 | OE |
| Q6QHRW | | 0.0316 | 0.0029 | 1.63 | 0.0341 | 0.0020 | 1.02 | GD |
| QDN287 | X | 0.0338 | 0.0051 | 2.84 | 0.0414 | 0.0093 | 4.82 | OE |
| QTR9RV | | 0.0330 | 0.0043 | 2.36 | 0.0364 | 0.0042 | 2.20 | DR |
| RJX664 | | 0.0290 | 0.0003 | 0.17 | 0.0330 | 0.0008 | 0.43 | CO |
| TXACHW | X | 0.0367 | 0.0080 | 4.43 | 0.0419 | 0.0097 | 5.05 | CI |
| U6D8D9 | | 0.0310 | 0.0023 | 1.28 | 0.0361 | 0.0039 | 2.03 | OE |
| UELRR3 | | 0.0261 | -0.0026 | -1.41 | 0.0287 | -0.0034 | -1.79 | CI |
| VN9QXJ | | 0.0304 | 0.0017 | 0.93 | 0.0354 | 0.0032 | 1.68 | OE |
| W4HDK2 | | 0.0261 | -0.0026 | -1.41 | 0.0290 | -0.0031 | -1.64 | CI |
| W6LN7X | | 0.0282 | -0.0005 | -0.25 | 0.0330 | 0.0008 | 0.43 | CI |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| W7WHW7 | | 0.0293 | 0.0006 | 0.36 | 0.0333 | 0.0012 | 0.60 | OE |
| WXNUER | | 0.0311 | 0.0024 | 1.33 | 0.0335 | 0.0014 | 0.71 | OE |
| X2U7A6 | | 0.0300 | 0.0013 | 0.72 | 0.0333 | 0.0012 | 0.60 | OE |
| ZNXP8A | * | 0.0263 | -0.0024 | -1.30 | 0.0330 | 0.0008 | 0.43 | OE |

| Summary Statistics | | | | |
|--------------------|------------|---------|------------|---------|
| | Sample M19 | | Sample M20 | |
| Grand Means | 0.0287 | Percent | 0.0322 | Percent |
| Stnd Dev Btwn Labs | 0.0018 | Percent | 0.0019 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 46 of 53 reporting participants

Comments on assigned Data Flags for Analysis #183

WebCode Flag Analyst Comment

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

CUUBMR X Data for both samples are low. Possible Systematic error.

EXFDEA X Data for sample M19 are low and data for sample M20 are high.

JMQR92 X Data for both samples are low. Possible Systematic error.

NCHC8X X Data for both samples are low. Possible Systematic error.

QDN287 X Data for both samples are high. Possible Systematic error.

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

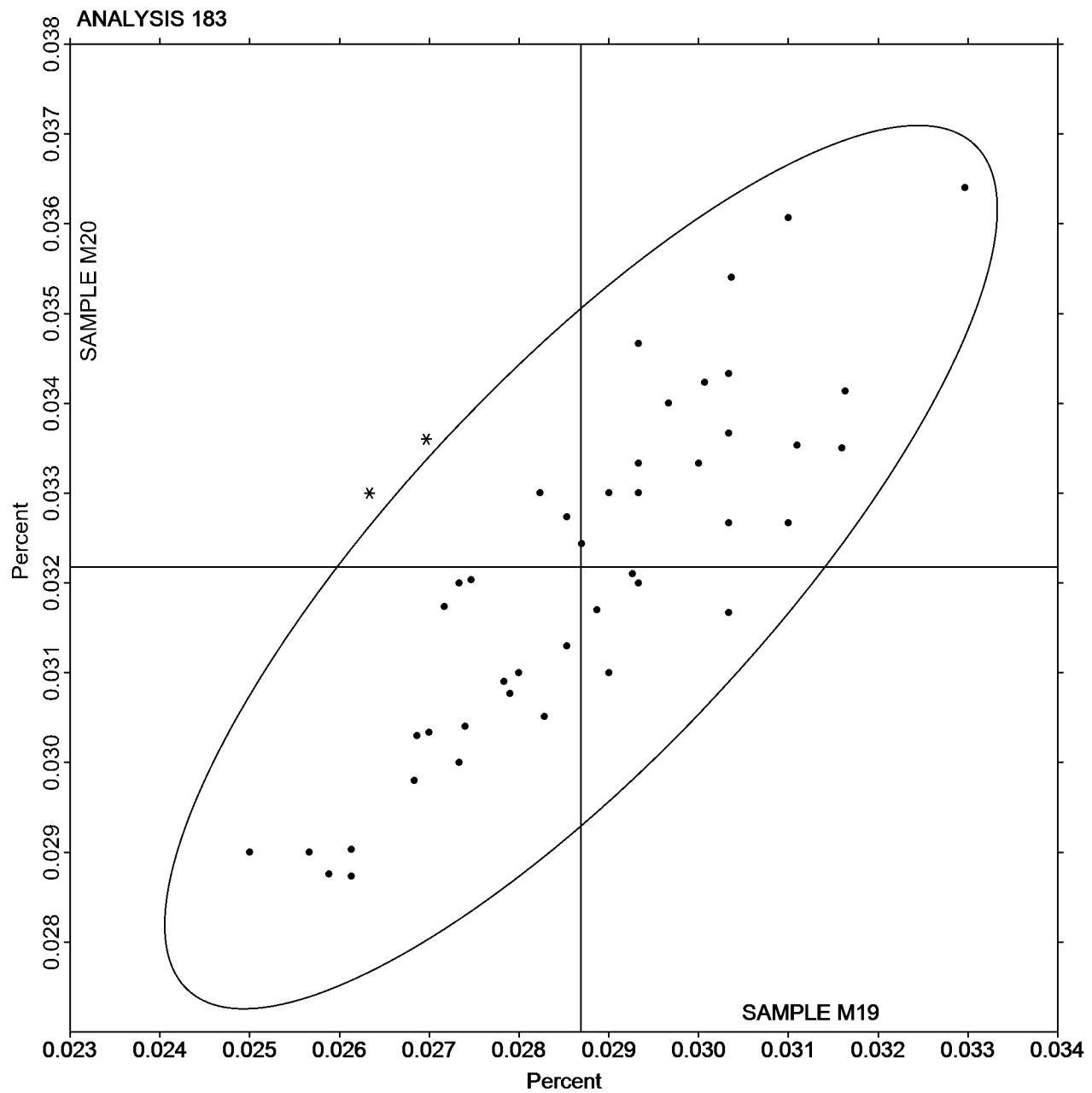
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 183

Chemical Analysis Element #4 - Corrosion Resistant Steel - Percent
SULFUR (S)

SAMPLE M19
0.0287 Percent

SAMPLE M20
0.0322 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 184

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.4323 | 0.0224 | 1.78 | 0.4513 | 0.0162 | 1.19 | OE |
| 29YN6D | | 0.4210 | 0.0111 | 0.88 | 0.4427 | 0.0075 | 0.55 | IC |
| 2ZUKJ2 | | 0.4167 | 0.0067 | 0.54 | 0.4400 | 0.0048 | 0.36 | OE |
| 3B9E8A | | 0.4097 | -0.0003 | -0.02 | 0.4300 | -0.0052 | -0.38 | OE |
| 4QNERC | | 0.4120 | 0.0021 | 0.17 | 0.4370 | 0.0018 | 0.14 | OE |
| 6NERRC | | 0.4003 | -0.0096 | -0.76 | 0.4230 | -0.0122 | -0.89 | OE |
| 6PFT4G | | 0.3900 | -0.0199 | -1.59 | 0.4133 | -0.0218 | -1.61 | OE |
| 6V82RU | | 0.4127 | 0.0027 | 0.22 | 0.4410 | 0.0058 | 0.43 | OE |
| 6W3Z4G | | 0.3900 | -0.0199 | -1.59 | 0.4333 | -0.0018 | -0.13 | OE |
| 8DV9RJ | | 0.4087 | -0.0013 | -0.10 | 0.4227 | -0.0125 | -0.92 | IC |
| 8WLLWA | * | 0.3720 | -0.0379 | -3.02 | 0.3930 | -0.0422 | -3.10 | WD |
| 997KWK | | 0.4173 | 0.0074 | 0.59 | 0.4330 | -0.0022 | -0.16 | OE |
| 9F4C4T | | 0.4230 | 0.0131 | 1.04 | 0.4507 | 0.0155 | 1.14 | WD |
| 9PD4W3 | | 0.4092 | -0.0007 | -0.06 | 0.4344 | -0.0008 | -0.06 | OE |
| 9X6W2H | | 0.4037 | -0.0063 | -0.50 | 0.4360 | 0.0008 | 0.06 | IC |
| BJD6DJ | | 0.3993 | -0.0107 | -0.85 | 0.4245 | -0.0106 | -0.78 | OE |
| BRZXWL | | 0.4147 | 0.0047 | 0.38 | 0.4317 | -0.0035 | -0.26 | OE |
| CPPBX8 | | 0.4067 | -0.0033 | -0.26 | 0.4333 | -0.0018 | -0.13 | OE |
| CTJBNC | | 0.4100 | 0.0001 | 0.01 | 0.4300 | -0.0052 | -0.38 | WD |
| CUNHMC | | 0.4197 | 0.0097 | 0.77 | 0.4493 | 0.0142 | 1.04 | OE |
| CUUBMR | | 0.4113 | 0.0014 | 0.11 | 0.4367 | 0.0015 | 0.11 | WD |
| DCC7WY | | 0.4173 | 0.0074 | 0.59 | 0.4450 | 0.0098 | 0.72 | DR |
| DWVTZE | | 0.3983 | -0.0116 | -0.92 | 0.4247 | -0.0105 | -0.77 | OE |
| DXLWTL | | 0.4310 | 0.0211 | 1.68 | 0.4620 | 0.0268 | 1.98 | OE |
| EXFDEA | X | 0.3510 | -0.0589 | -4.69 | 0.4140 | -0.0212 | -1.56 | OE |
| F2Q9AW | | 0.4193 | 0.0094 | 0.75 | 0.4427 | 0.0075 | 0.55 | IC |
| FA2V3T | * | 0.4421 | 0.0322 | 2.56 | 0.4727 | 0.0375 | 2.76 | OE |
| GEY9QL | | 0.3897 | -0.0203 | -1.61 | 0.4077 | -0.0275 | -2.02 | OE |
| GRPGLB | | 0.4150 | 0.0051 | 0.40 | 0.4413 | 0.0062 | 0.45 | OE |
| H24GAB | | 0.4110 | 0.0011 | 0.09 | 0.4330 | -0.0022 | -0.16 | OE |
| JKY8EG | | 0.4043 | -0.0056 | -0.44 | 0.4340 | -0.0012 | -0.09 | GD |
| JMQR92 | | 0.3867 | -0.0233 | -1.85 | 0.4110 | -0.0242 | -1.78 | GD |
| JRUUZV | X | 0.4590 | 0.0491 | 3.90 | 0.4475 | 0.0123 | 0.91 | GR |
| JWN9NX | | 0.4260 | 0.0161 | 1.28 | 0.4513 | 0.0162 | 1.19 | OE |
| KJDZED | | 0.4050 | -0.0049 | -0.39 | 0.4323 | -0.0028 | -0.21 | WD |
| LNLVKY | | 0.4010 | -0.0089 | -0.71 | 0.4223 | -0.0128 | -0.94 | GD |
| MNP883 | | 0.4013 | -0.0086 | -0.68 | 0.4297 | -0.0055 | -0.40 | OE |
| NCHC8X | | 0.4000 | -0.0099 | -0.79 | 0.4267 | -0.0085 | -0.62 | OE |
| NCNW6L | | 0.4227 | 0.0127 | 1.01 | 0.4517 | 0.0165 | 1.22 | OE |
| NKL8KG | X | 0.4533 | 0.0434 | 3.45 | 0.4700 | 0.0348 | 2.56 | OE |
| PBPCT7 | | 0.4053 | -0.0046 | -0.37 | 0.4273 | -0.0078 | -0.58 | OE |
| PMK4ZN | | 0.4293 | 0.0194 | 1.54 | 0.4537 | 0.0185 | 1.36 | OE |
| Q6QHRW | | 0.4153 | 0.0054 | 0.43 | 0.4386 | 0.0034 | 0.25 | GD |
| QDN287 | | 0.4068 | -0.0031 | -0.25 | 0.4302 | -0.0049 | -0.36 | OE |
| QTR9RV | | 0.4223 | 0.0124 | 0.99 | 0.4503 | 0.0152 | 1.12 | DR |
| QZN4UZ | | 0.4007 | -0.0093 | -0.74 | 0.4347 | -0.0005 | -0.04 | OE |
| RJX664 | X | 0.3463 | -0.0636 | -5.06 | 0.3790 | -0.0562 | -4.13 | WD |
| TXACHW | | 0.4027 | -0.0073 | -0.58 | 0.4293 | -0.0058 | -0.43 | XR |
| U6D8D9 | | 0.4257 | 0.0157 | 1.25 | 0.4500 | 0.0148 | 1.09 | OE |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 184

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| UELRR3 | | 0.3950 | -0.0149 | -1.19 | 0.4253 | -0.0098 | -0.72 | WD |
| VN9QXJ | | 0.4047 | -0.0053 | -0.42 | 0.4377 | 0.0025 | 0.18 | OE |
| W4HDK2 | | 0.4063 | -0.0036 | -0.29 | 0.4333 | -0.0018 | -0.13 | WD |
| W6LN7X | | 0.3977 | -0.0123 | -0.98 | 0.4290 | -0.0062 | -0.45 | WD |
| W7WHW7 | | 0.4150 | 0.0051 | 0.40 | 0.4447 | 0.0095 | 0.70 | OE |
| WXNUER | | 0.4120 | 0.0021 | 0.17 | 0.4300 | -0.0052 | -0.38 | OE |
| X2U7A6 | | 0.4033 | -0.0066 | -0.52 | 0.4300 | -0.0052 | -0.38 | OE |
| ZNXP8A | | 0.4130 | 0.0031 | 0.24 | 0.4423 | 0.0072 | 0.53 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.4099 | Percent | 0.4352 | Percent |
| Stnd Dev Btwn Labs | 0.0126 | Percent | 0.0136 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 57 reporting participants

Comments on assigned Data Flags for Analysis #184

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| EXFDEA | X | Data for sample M19 are low. Inconsistent in testing between samples. |
| JRUUZV | X | Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| NKL8KG | X | Data for sample M19 are high. Inconsistent in testing between samples. Inconsistent within the determinations of sample M19. |
| RJX664 | X | Data for both samples are low. Possible Systematic error. |

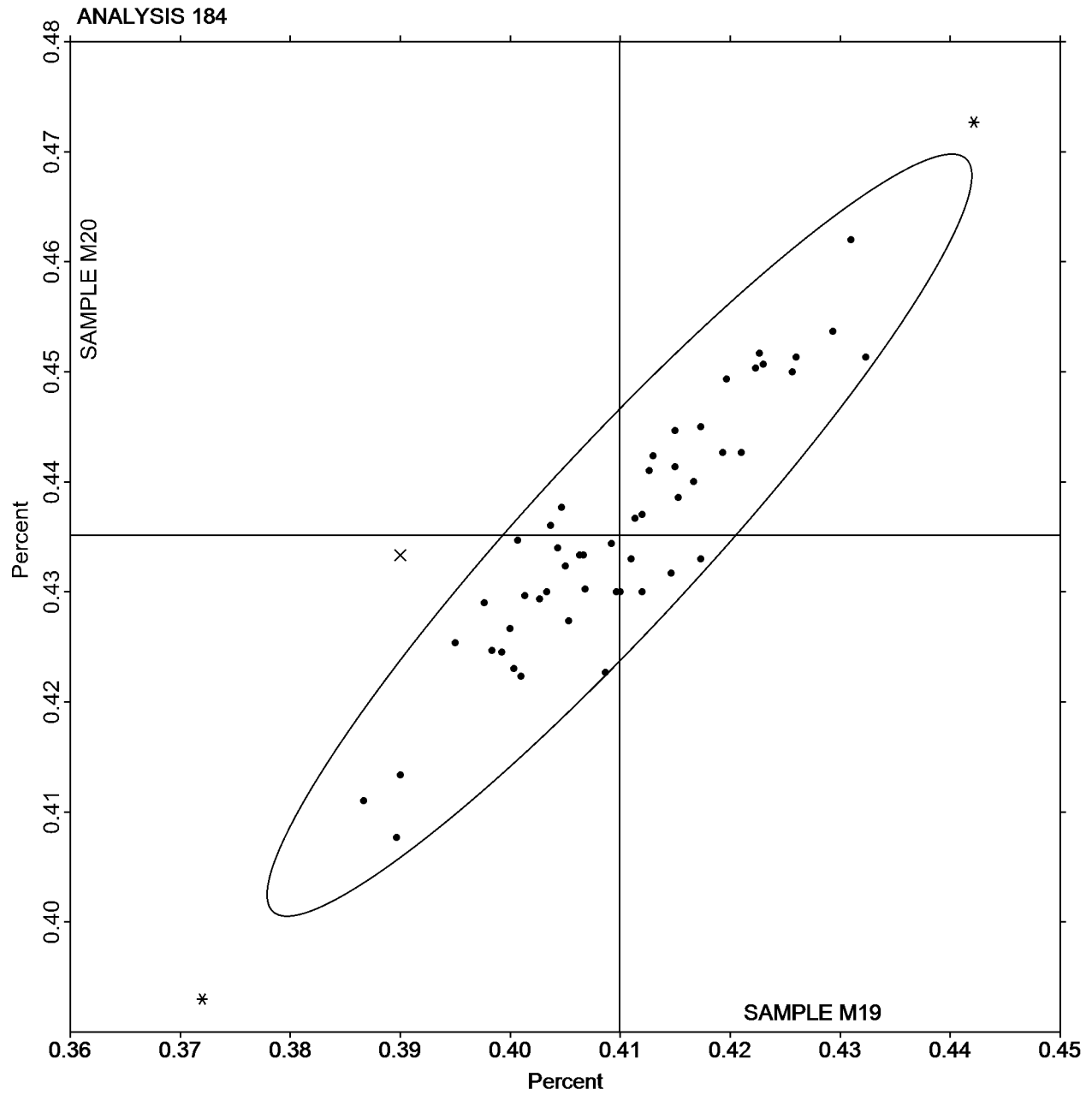
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 184

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

SAMPLE M19
0.4099 Percent

SAMPLE M20
0.4352 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 185

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.4580 | -0.0113 | -0.79 | 0.4910 | -0.0059 | -0.44 | OE |
| 29YN6D | | 0.4540 | -0.0153 | -1.07 | 0.4873 | -0.0095 | -0.71 | IC |
| 2ZUKJ2 | | 0.4567 | -0.0127 | -0.89 | 0.4867 | -0.0102 | -0.76 | OE |
| 3B9E8A | * | 0.4357 | -0.0337 | -2.36 | 0.4593 | -0.0375 | -2.78 | OE |
| 4QNERC | | 0.4877 | 0.0183 | 1.28 | 0.5127 | 0.0158 | 1.17 | OE |
| 6NERRC | | 0.4527 | -0.0167 | -1.17 | 0.4773 | -0.0195 | -1.45 | OE |
| 6PFT4G | | 0.4600 | -0.0093 | -0.65 | 0.4833 | -0.0135 | -1.00 | OE |
| 6V82RU | | 0.4697 | 0.0003 | 0.02 | 0.5000 | 0.0031 | 0.23 | OE |
| 6W3Z4G | | 0.4800 | 0.0107 | 0.75 | 0.5133 | 0.0165 | 1.22 | OE |
| 8DV9RJ | * | 0.4810 | 0.0117 | 0.82 | 0.4947 | -0.0022 | -0.16 | IC |
| 8WLLWA | | 0.4660 | -0.0033 | -0.23 | 0.4910 | -0.0059 | -0.44 | WD |
| 997KWK | | 0.4700 | 0.0007 | 0.05 | 0.4987 | 0.0018 | 0.13 | OE |
| 9F4C4T | | 0.4700 | 0.0007 | 0.05 | 0.4933 | -0.0035 | -0.26 | WD |
| 9PD4W3 | X | 0.4891 | 0.0197 | 1.38 | 0.5375 | 0.0406 | 3.01 | OE |
| 9X6W2H | | 0.4597 | -0.0097 | -0.68 | 0.4913 | -0.0055 | -0.41 | IC |
| BJD6DJ | | 0.4586 | -0.0107 | -0.75 | 0.4924 | -0.0045 | -0.33 | OE |
| BRZXWL | | 0.4500 | -0.0193 | -1.35 | 0.4953 | -0.0015 | -0.11 | OE |
| CPPBX8 | X | 0.4700 | 0.0007 | 0.05 | 0.5167 | 0.0198 | 1.47 | OE |
| CTJBNC | | 0.4667 | -0.0027 | -0.19 | 0.4900 | -0.0069 | -0.51 | WD |
| CUNHMC | | 0.4740 | 0.0047 | 0.33 | 0.5030 | 0.0061 | 0.45 | OE |
| CUUBMR | | 0.4593 | -0.0100 | -0.70 | 0.4897 | -0.0072 | -0.53 | WD |
| DCC7WY | | 0.4633 | -0.0060 | -0.42 | 0.4887 | -0.0082 | -0.61 | DR |
| DWVTZE | | 0.4640 | -0.0053 | -0.37 | 0.4927 | -0.0042 | -0.31 | OE |
| DXLWTL | | 0.4666 | -0.0028 | -0.19 | 0.4998 | 0.0029 | 0.22 | XR |
| EXFDEA | X | 0.00700 | -0.4623 | -32.35 | 0.00233 | -0.4945 | -36.67 | OE |
| F2Q9AW | | 0.4470 | -0.0223 | -1.56 | 0.4797 | -0.0172 | -1.28 | OE |
| FA2V3T | | 0.4454 | -0.0239 | -1.67 | 0.4729 | -0.0240 | -1.78 | OE |
| GEY9QL | X | 0.4303 | -0.0390 | -2.73 | 0.4507 | -0.0462 | -3.43 | OE |
| GRPGLB | | 0.4477 | -0.0217 | -1.52 | 0.4817 | -0.0152 | -1.13 | OE |
| H24GAB | | 0.4980 | 0.0287 | 2.01 | 0.5247 | 0.0278 | 2.06 | OE |
| JKY8EG | | 0.4667 | -0.0027 | -0.19 | 0.4970 | 0.0001 | 0.01 | GD |
| JMQR92 | * | 0.5037 | 0.0343 | 2.40 | 0.5190 | 0.0221 | 1.64 | GD |
| JRUUZV | X | 0.5473 | 0.0780 | 5.46 | 0.5707 | 0.0738 | 5.47 | OE |
| JWN9NX | | 0.4820 | 0.0127 | 0.89 | 0.5147 | 0.0178 | 1.32 | OE |
| KJDZED | | 0.4633 | -0.0060 | -0.42 | 0.4910 | -0.0059 | -0.44 | WD |
| LNLVKY | | 0.4703 | 0.0010 | 0.07 | 0.4940 | -0.0029 | -0.21 | GD |
| MNP883 | | 0.4647 | -0.0047 | -0.33 | 0.4943 | -0.0025 | -0.19 | OE |
| NCHC8X | | 0.4733 | 0.0040 | 0.28 | 0.5033 | 0.0065 | 0.48 | OE |
| NCNW6L | | 0.4733 | 0.0040 | 0.28 | 0.5017 | 0.0048 | 0.36 | OE |
| NKL8KG | | 0.4637 | -0.0057 | -0.40 | 0.4873 | -0.0095 | -0.71 | OE |
| PBPCT7 | | 0.4750 | 0.0057 | 0.40 | 0.5033 | 0.0065 | 0.48 | OE |
| PMK4ZN | | 0.4680 | -0.0013 | -0.09 | 0.4943 | -0.0025 | -0.19 | OE |
| Q6QHRW | | 0.4800 | 0.0107 | 0.75 | 0.4983 | 0.0015 | 0.11 | GD |
| QDN287 | * | 0.5117 | 0.0423 | 2.96 | 0.5373 | 0.0405 | 3.00 | OE |
| QTR9RV | | 0.4693 | 0.0000 | 0.00 | 0.5010 | 0.0041 | 0.31 | DR |
| QZN4UZ | | 0.4593 | -0.0100 | -0.70 | 0.4860 | -0.0109 | -0.81 | OE |
| RJX664 | | 0.4743 | 0.0050 | 0.35 | 0.5037 | 0.0068 | 0.50 | IC |
| TXACHW | | 0.4803 | 0.0110 | 0.77 | 0.5103 | 0.0135 | 1.00 | XR |
| U6D8D9 | | 0.4840 | 0.0147 | 1.03 | 0.5117 | 0.0148 | 1.10 | OE |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 185

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| UELRR3 | | 0.4637 | -0.0057 | -0.40 | 0.4923 | -0.0045 | -0.34 | WD |
| VN9QXJ | X | 0.4550 | -0.0143 | -1.00 | 0.4543 | -0.0425 | -3.15 | OE |
| W4HDK2 | | 0.4663 | -0.0030 | -0.21 | 0.4940 | -0.0029 | -0.21 | WD |
| W6LN7X | | 0.4640 | -0.0053 | -0.37 | 0.4960 | -0.0009 | -0.06 | WD |
| W7WHW7 | | 0.4700 | 0.0007 | 0.05 | 0.5003 | 0.0035 | 0.26 | OE |
| WXNUER | | 0.4850 | 0.0157 | 1.10 | 0.5107 | 0.0138 | 1.02 | OE |
| X2U7A6 | | 0.4733 | 0.0040 | 0.28 | 0.4900 | -0.0069 | -0.51 | OE |
| ZNXP8A | | 0.4897 | 0.0203 | 1.42 | 0.5170 | 0.0201 | 1.49 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.4693 | Percent | 0.4969 | Percent |
| Std Dev Btwn Labs | 0.0143 | Percent | 0.0135 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 50 of 57 reporting participants

Comments on assigned Data Flags for Analysis #185

WebCode Flag Analyst Comment

| | | |
|--------|---|--|
| 9PD4W3 | X | Data for sample M20 are high. Inconsistent in testing between samples. |
| CPPBX8 | X | Inconsistent in testing between samples. Inconsistent within the determinations of sample M20. |
| EXFDEA | X | Data for both samples are low. Possible Systematic error. |
| GEY9QL | X | Data for both samples are low. Possible Systematic error. |
| JRUUZV | X | Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of sample M20. |
| VN9QXJ | X | Data for sample M20 are low. Inconsistent in testing between samples. |

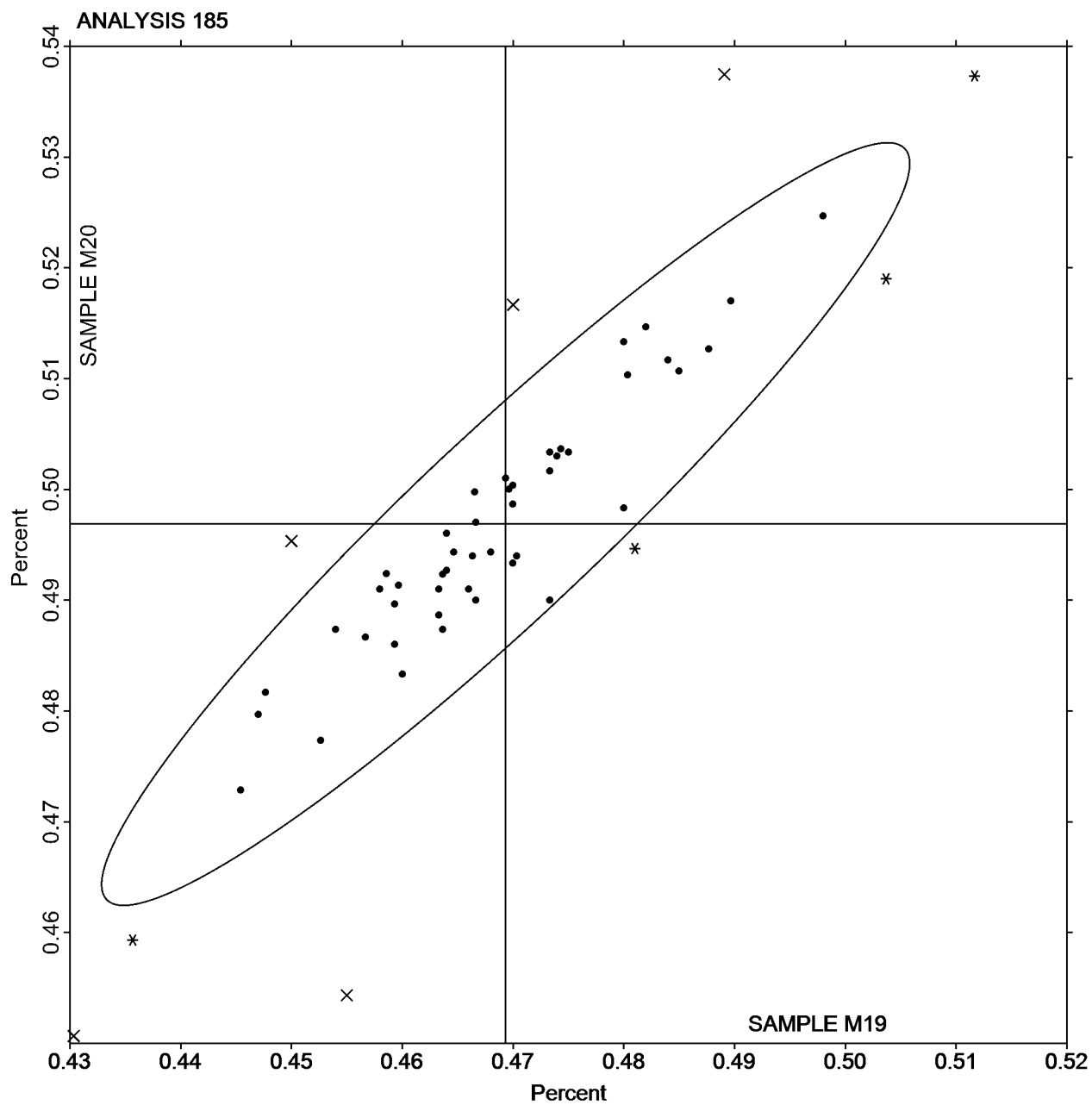
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 185

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

SAMPLE M19
0.4693 Percent

SAMPLE M20
0.4969 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 186

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 10.08 | 0.07 | 0.73 | 10.07 | 0.04 | 0.47 | OE |
| 29YN6D | | 9.850 | -0.16 | -1.70 | 9.953 | -0.07 | -0.78 | IC |
| 2ZUKJ2 | | 9.947 | -0.06 | -0.68 | 9.930 | -0.10 | -1.03 | OE |
| 3B9E8A | | 9.882 | -0.13 | -1.36 | 9.864 | -0.16 | -1.73 | OE |
| 4QNERC | | 10.06 | 0.05 | 0.48 | 10.06 | 0.04 | 0.40 | OE |
| 6NERRC | | 9.951 | -0.06 | -0.63 | 10.01 | -0.02 | -0.18 | WD |
| 6PFT4G | | 9.933 | -0.08 | -0.82 | 9.923 | -0.10 | -1.10 | OE |
| 6V82RU | | 9.915 | -0.10 | -1.01 | 9.927 | -0.10 | -1.06 | OE |
| 6W3Z4G | | 10.02 | 0.01 | 0.13 | 10.02 | 0.00 | -0.03 | OE |
| 8DV9RJ | | 10.08 | 0.07 | 0.76 | 10.06 | 0.03 | 0.34 | IC |
| 8WLLWA | | 10.08 | 0.06 | 0.68 | 10.07 | 0.04 | 0.46 | WD |
| 997KWK | | 9.997 | -0.01 | -0.15 | 10.04 | 0.02 | 0.19 | OE |
| 9F4C4T | | 9.960 | -0.05 | -0.54 | 9.987 | -0.04 | -0.42 | WD |
| 9PD4W3 | | 9.809 | -0.20 | -2.13 | 9.985 | -0.04 | -0.44 | OE |
| 9X6W2H | | 10.03 | 0.02 | 0.24 | 10.08 | 0.05 | 0.54 | IC |
| BJD6DJ | X | 9.593 | -0.42 | -4.41 | 9.663 | -0.36 | -3.88 | OE |
| BRZXWL | | 9.912 | -0.10 | -1.05 | 9.954 | -0.07 | -0.77 | OE |
| CPPBX8 | | 10.03 | 0.02 | 0.24 | 10.00 | -0.03 | -0.28 | OE |
| CTJBNC | | 9.990 | -0.02 | -0.22 | 10.03 | 0.00 | 0.04 | XX |
| CUNHMC | | 9.943 | -0.07 | -0.71 | 9.990 | -0.04 | -0.39 | OE |
| CUUBMR | | 9.974 | -0.04 | -0.39 | 10.01 | -0.02 | -0.17 | WD |
| DCC7WY | | 9.977 | -0.03 | -0.36 | 10.01 | -0.01 | -0.14 | DR |
| DWVTZE | X | 9.650 | -0.36 | -3.81 | 9.750 | -0.28 | -2.95 | OE |
| DXLWTL | | 9.947 | -0.06 | -0.67 | 9.981 | -0.05 | -0.48 | XR |
| EXFDEA | X | 9.607 | -0.40 | -4.27 | 9.277 | -0.75 | -8.02 | OE |
| F2Q9AW | | 9.953 | -0.06 | -0.61 | 10.06 | 0.04 | 0.40 | IC |
| FA2V3T | * | 9.745 | -0.27 | -2.81 | 9.758 | -0.27 | -2.86 | OE |
| GEY9QL | | 10.18 | 0.17 | 1.78 | 10.01 | -0.01 | -0.14 | OE |
| GRPGLB | | 9.826 | -0.18 | -1.95 | 9.870 | -0.16 | -1.67 | OE |
| H24GAB | | 10.04 | 0.03 | 0.33 | 10.06 | 0.04 | 0.38 | OE |
| JKY8EG | | 10.20 | 0.19 | 2.00 | 10.20 | 0.17 | 1.86 | GD |
| JMQR92 | * | 10.17 | 0.16 | 1.65 | 10.07 | 0.04 | 0.47 | GD |
| JRUUZV | | 10.08 | 0.07 | 0.70 | 10.04 | 0.02 | 0.19 | OE |
| JWN9NX | | 10.11 | 0.10 | 1.01 | 10.14 | 0.11 | 1.22 | OE |
| KJDZED | | 10.02 | 0.01 | 0.10 | 10.04 | 0.01 | 0.11 | WD |
| LNLVKY | | 10.07 | 0.06 | 0.66 | 10.09 | 0.06 | 0.65 | GD |
| MNP883 | | 10.17 | 0.16 | 1.64 | 10.21 | 0.18 | 1.92 | OE |
| NCHC8X | | 10.04 | 0.03 | 0.34 | 10.11 | 0.09 | 0.93 | OE |
| NCNW6L | | 10.01 | 0.00 | -0.03 | 10.02 | -0.01 | -0.11 | OE |
| NKL8KG | | 9.927 | -0.08 | -0.89 | 9.873 | -0.15 | -1.63 | OE |
| PBPCT7 | | 10.04 | 0.03 | 0.34 | 10.03 | 0.00 | 0.01 | OE |
| PMK4ZN | * | 10.06 | 0.05 | 0.55 | 10.20 | 0.17 | 1.83 | OE |
| Q6QHRW | | 10.19 | 0.18 | 1.93 | 10.15 | 0.13 | 1.36 | GD |
| QDN287 | X | 10.33 | 0.32 | 3.37 | 10.41 | 0.38 | 4.07 | OE |
| QTR9RV | | 9.946 | -0.06 | -0.68 | 9.930 | -0.10 | -1.03 | DR |
| QZN4UZ | | 10.03 | 0.02 | 0.17 | 10.07 | 0.04 | 0.43 | OE |
| RJX664 | | 9.927 | -0.08 | -0.89 | 9.963 | -0.06 | -0.67 | WD |
| TXACHW | | 10.00 | -0.01 | -0.08 | 10.02 | 0.00 | -0.03 | XR |
| U6D8D9 | * | 10.28 | 0.27 | 2.81 | 10.28 | 0.25 | 2.72 | OE |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 186

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| UELRR3 | | 10.03 | 0.02 | 0.18 | 10.06 | 0.03 | 0.31 | WD |
| VN9QXJ | * | 10.03 | 0.02 | 0.20 | 9.913 | -0.11 | -1.21 | OE |
| W4HDK2 | | 10.02 | 0.01 | 0.11 | 10.04 | 0.01 | 0.14 | WD |
| W6LN7X | | 9.953 | -0.06 | -0.61 | 9.997 | -0.03 | -0.31 | WD |
| W7WHW7 | | 10.01 | 0.00 | -0.01 | 10.06 | 0.03 | 0.36 | OE |
| WXNUER | | 10.05 | 0.04 | 0.38 | 9.973 | -0.05 | -0.56 | OE |
| X2U7A6 | | 10.07 | 0.06 | 0.59 | 10.07 | 0.04 | 0.43 | OE |
| ZMJZQV | | 9.967 | -0.04 | -0.46 | 9.991 | -0.04 | -0.38 | WC |
| ZNXP8A | | 10.05 | 0.04 | 0.38 | 10.11 | 0.08 | 0.86 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 10.01 | Percent | 10.03 | Percent |
| Std Dev Btwn Labs | 0.09 | Percent | 0.09 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 58 reporting participants

Comments on assigned Data Flags for Analysis #186

WebCode Flag Analyst Comment

| | | |
|---------------|---|---|
| BJD6DJ | X | Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample M19. |
| DWVTZE | X | Data for both samples are low. Possible Systematic error. |
| EXFDEA | X | Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of sample M19. |
| QDN287 | X | Data for both samples are high. Possible Systematic error. |

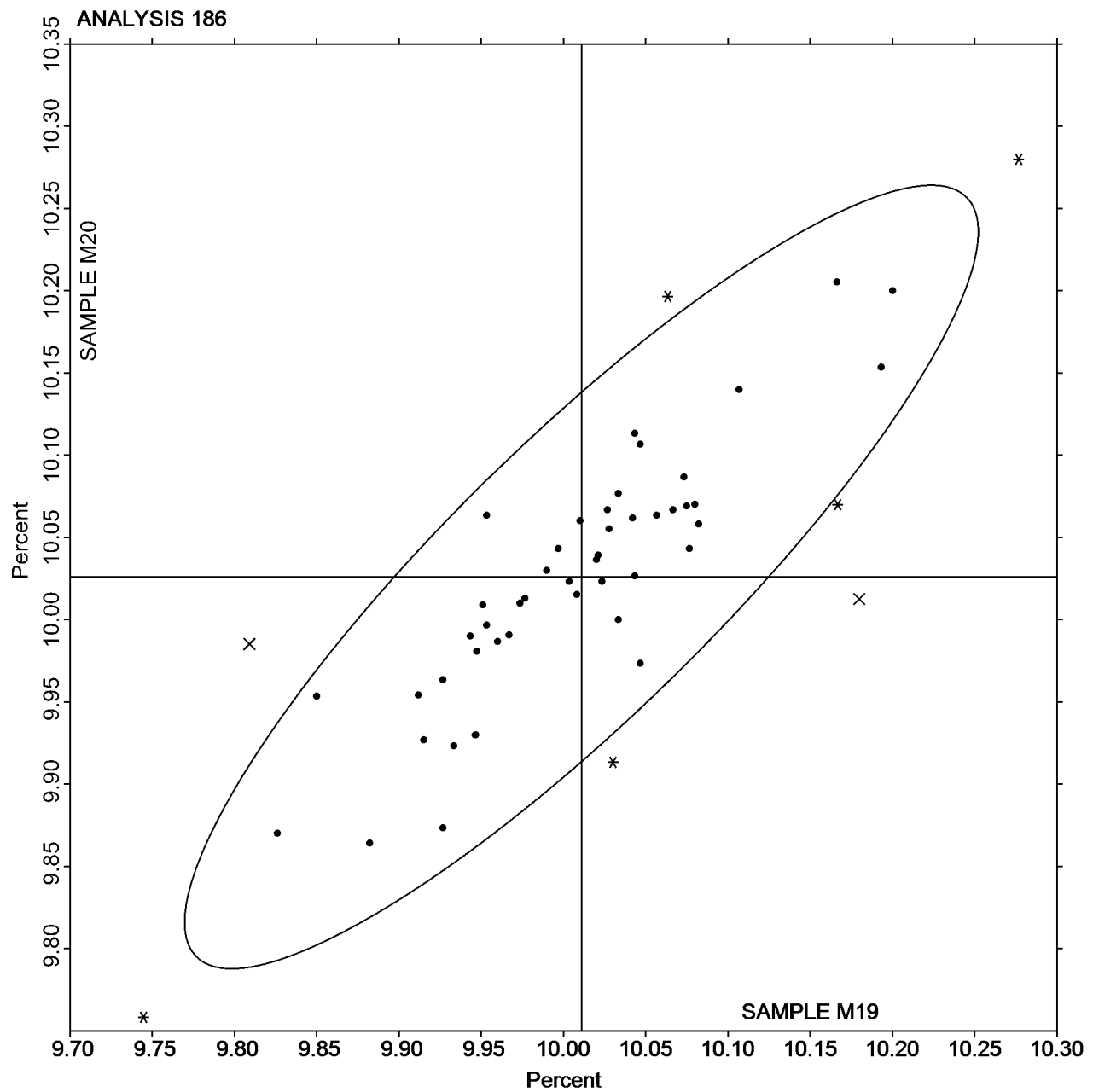
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 186

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

SAMPLE M19
10.01 Percent

SAMPLE M20
10.03 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 187

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|---------|------------|-----------------------|---------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 16.81 | -0.03 | -0.47 | 16.70 | 0.04 | 0.51 | OE |
| 29YN6D | | 16.80 | -0.04 | -0.56 | 16.61 | -0.05 | -0.80 | TI |
| 2ZUKJ2 | | 16.88 | 0.04 | 0.56 | 16.71 | 0.05 | 0.70 | OE |
| 3B9E8A | | 16.84 | 0.00 | -0.03 | 16.72 | 0.06 | 0.85 | OE |
| 4QNERC | * | 16.99 | 0.14 | 2.12 | 16.84 | 0.17 | 2.50 | OE |
| 6NERRC | | 16.88 | 0.04 | 0.53 | 16.70 | 0.03 | 0.50 | WD |
| 6PFT4G | | 16.85 | 0.00 | 0.07 | 16.65 | -0.01 | -0.22 | OE |
| 6V82RU | | 16.98 | 0.14 | 2.07 | 16.75 | 0.08 | 1.19 | OE |
| 6W3Z4G | | 16.82 | -0.02 | -0.27 | 16.60 | -0.07 | -0.99 | OE |
| 8DV9RJ | X | 17.09 | 0.24 | 3.58 | 16.77 | 0.11 | 1.58 | IC |
| 8WLLWA | | 16.87 | 0.03 | 0.38 | 16.59 | -0.08 | -1.10 | WD |
| 997KWK | | 16.80 | -0.04 | -0.61 | 16.65 | -0.01 | -0.22 | OE |
| 9F4C4T | | 16.80 | -0.05 | -0.66 | 16.62 | -0.04 | -0.65 | WD |
| 9PD4W3 | | 16.79 | -0.05 | -0.69 | 16.66 | 0.00 | -0.05 | OE |
| 9X6W2H | | 16.89 | 0.05 | 0.75 | 16.61 | -0.06 | -0.85 | IC |
| BJD6DJ | | 16.86 | 0.01 | 0.22 | 16.73 | 0.07 | 0.99 | OE |
| BRZXWL | | 16.88 | 0.03 | 0.50 | 16.70 | 0.04 | 0.55 | OE |
| CPPBX8 | * | 16.83 | -0.01 | -0.12 | 16.80 | 0.14 | 1.96 | OE |
| CTJBNC | | 16.81 | -0.03 | -0.47 | 16.58 | -0.08 | -1.24 | WD |
| CUNHMC | | 16.85 | 0.00 | 0.07 | 16.64 | -0.02 | -0.36 | OE |
| CUUBMR | | 16.81 | -0.03 | -0.47 | 16.65 | -0.01 | -0.22 | WD |
| DCC7WY | | 16.92 | 0.08 | 1.21 | 16.70 | 0.04 | 0.54 | DR |
| DWVTZE | | 16.81 | -0.04 | -0.51 | 16.75 | 0.09 | 1.24 | OE |
| DXLWTL | | 16.78 | -0.06 | -0.94 | 16.64 | -0.03 | -0.37 | XR |
| EXFDEA | X | 8.690 | -8.15 | -119.32 | 8.090 | -8.57 | -124.70 | OE |
| F2Q9AW | | 16.78 | -0.06 | -0.86 | 16.58 | -0.08 | -1.19 | OE |
| FA2V3T | | 16.83 | -0.01 | -0.12 | 16.67 | 0.01 | 0.13 | OE |
| GEY9QL | | 16.89 | 0.04 | 0.66 | 16.48 | -0.18 | -2.64 | OE |
| GRPGLB | | 16.80 | -0.04 | -0.61 | 16.63 | -0.03 | -0.49 | OE |
| H24GAB | | 16.86 | 0.01 | 0.19 | 16.65 | -0.02 | -0.28 | OE |
| JKY8EG | | 16.77 | -0.08 | -1.10 | 16.67 | 0.00 | 0.02 | GD |
| JMQR92 | X | 17.43 | 0.59 | 8.66 | 17.83 | 1.17 | 16.99 | GD |
| JRUUZV | | 16.68 | -0.16 | -2.37 | 16.54 | -0.13 | -1.87 | OE |
| JWN9NX | X | 16.54 | -0.30 | -4.42 | 16.37 | -0.30 | -4.34 | OE |
| KJDZED | | 16.86 | 0.01 | 0.22 | 16.67 | 0.01 | 0.12 | WD |
| LNLVKY | | 16.91 | 0.06 | 0.95 | 16.73 | 0.07 | 0.95 | GD |
| MNP883 | | 16.99 | 0.15 | 2.21 | 16.80 | 0.13 | 1.92 | OE |
| NCHC8X | | 16.87 | 0.03 | 0.46 | 16.65 | -0.02 | -0.27 | OE |
| NCNW6L | | 16.81 | -0.03 | -0.41 | 16.63 | -0.03 | -0.48 | OE |
| NKL8KG | | 16.95 | 0.10 | 1.53 | 16.78 | 0.11 | 1.62 | OE |
| PBPCT7 | | 16.78 | -0.06 | -0.90 | 16.61 | -0.06 | -0.85 | OE |
| PMK4ZN | X | 16.71 | -0.13 | -1.93 | 16.38 | -0.28 | -4.10 | OE |
| Q6QHRW | | 16.90 | 0.06 | 0.85 | 16.75 | 0.09 | 1.29 | GD |
| QDN287 | X | 16.66 | -0.19 | -2.71 | 16.35 | -0.31 | -4.58 | OE |
| QTR9RV | | 16.84 | 0.00 | 0.02 | 16.64 | -0.02 | -0.31 | DR |
| QZN4UZ | | 16.87 | 0.03 | 0.41 | 16.62 | -0.05 | -0.70 | OE |
| RJX664 | | 16.86 | 0.01 | 0.22 | 16.67 | 0.00 | 0.02 | WD |
| TXACHW | | 16.97 | 0.13 | 1.88 | 16.78 | 0.12 | 1.67 | XR |
| U6D8D9 | | 16.94 | 0.10 | 1.44 | 16.64 | -0.02 | -0.36 | OE |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 187

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| UELRR3 | | 16.77 | -0.07 | -1.03 | 16.60 | -0.07 | -0.95 | WD |
| VN9QXJ | * | 16.72 | -0.13 | -1.83 | 16.69 | 0.02 | 0.32 | OE |
| W4HDK2 | | 16.81 | -0.03 | -0.49 | 16.60 | -0.07 | -0.95 | WD |
| W6LN7X | | 16.83 | -0.02 | -0.25 | 16.64 | -0.03 | -0.40 | WD |
| W7WHW7 | | 16.79 | -0.05 | -0.76 | 16.59 | -0.07 | -1.04 | OE |
| WXNUER | | 16.83 | -0.02 | -0.22 | 16.58 | -0.08 | -1.19 | OE |
| X2U7A6 | | 16.90 | 0.06 | 0.90 | 16.75 | 0.09 | 1.24 | OE |
| ZMJZQV | | 16.73 | -0.11 | -1.59 | 16.59 | -0.08 | -1.15 | WC |
| ZNXP8A | | 16.74 | -0.10 | -1.44 | 16.58 | -0.09 | -1.28 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 16.84 | Percent | 16.66 | Percent |
| Stnd Dev Btwn Labs | 0.07 | Percent | 0.07 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 51 of 58 reporting participants

Comments on assigned Data Flags for Analysis #187

WebCode Flag Analyst Comment

8DV9RJ X Data for sample M19 are high.

EXFDEA X Extreme data.

JMQR92 X Data for both samples are high. Inconsistent within the determinations of sample M20.

JWN9NX X Data for both samples are low.

PMK4ZN X Data for sample M20 are low.

QDN287 X Data for sample M20 are low.

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 188

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | * | 2.023 | -0.015 | -0.54 | 2.052 | 0.017 | 0.65 | OE |
| 29YN6D | | 2.017 | -0.021 | -0.77 | 2.027 | -0.008 | -0.33 | IC |
| 2ZUKJ2 | | 2.027 | -0.011 | -0.39 | 2.023 | -0.012 | -0.46 | OE |
| 3B9E8A | | 2.025 | -0.012 | -0.46 | 2.022 | -0.013 | -0.53 | OE |
| 4QNERC | | 2.007 | -0.031 | -1.14 | 2.001 | -0.034 | -1.33 | OE |
| 6NERRC | | 2.053 | 0.016 | 0.59 | 2.048 | 0.013 | 0.50 | WD |
| 6PFT4G | | 2.013 | -0.024 | -0.89 | 2.017 | -0.018 | -0.73 | OE |
| 6V82RU | | 2.019 | -0.019 | -0.69 | 2.014 | -0.021 | -0.84 | OE |
| 6W3Z4G | | 2.030 | -0.007 | -0.27 | 2.030 | -0.005 | -0.20 | OE |
| 8DV9RJ | * | 2.065 | 0.027 | 1.02 | 2.036 | 0.001 | 0.02 | IC |
| 8WLLWA | | 2.041 | 0.004 | 0.15 | 2.027 | -0.008 | -0.33 | WD |
| 997KWK | | 2.042 | 0.005 | 0.18 | 2.043 | 0.008 | 0.31 | OE |
| 9F4C4T | | 2.034 | -0.004 | -0.13 | 2.035 | 0.000 | -0.02 | WD |
| 9PD4W3 | | 2.034 | -0.003 | -0.13 | 2.040 | 0.005 | 0.21 | OE |
| 9X6W2H | | 2.030 | -0.007 | -0.26 | 2.032 | -0.003 | -0.12 | IC |
| BJD6DJ | | 2.033 | -0.004 | -0.14 | 2.023 | -0.012 | -0.46 | OE |
| BRZXWL | | 2.049 | 0.011 | 0.43 | 2.046 | 0.011 | 0.43 | OE |
| CPPBX8 | | 2.000 | -0.037 | -1.39 | 2.000 | -0.035 | -1.38 | OE |
| CTJBNC | | 2.040 | 0.003 | 0.10 | 2.040 | 0.005 | 0.19 | WD |
| CUNHMC | | 2.043 | 0.006 | 0.23 | 2.057 | 0.022 | 0.85 | OE |
| CUUBMR | | 2.034 | -0.004 | -0.13 | 2.035 | 0.000 | 0.01 | WD |
| DCC7WY | | 2.014 | -0.023 | -0.85 | 2.020 | -0.015 | -0.61 | DR |
| DWVTZE | | 2.027 | -0.011 | -0.39 | 2.023 | -0.012 | -0.46 | OE |
| DXLWTL | | 2.018 | -0.020 | -0.74 | 2.029 | -0.006 | -0.24 | XR |
| EXFDEA | X | 2.537 | 0.499 | 18.63 | 2.870 | 0.835 | 32.92 | OE |
| F2Q9AW | | 2.043 | 0.006 | 0.23 | 2.040 | 0.005 | 0.19 | OE |
| GEY9QL | | 2.011 | -0.026 | -0.97 | 2.021 | -0.014 | -0.57 | OE |
| GRPGLB | | 2.064 | 0.027 | 1.01 | 2.067 | 0.032 | 1.26 | OE |
| H24GAB | | 2.032 | -0.005 | -0.18 | 2.041 | 0.006 | 0.25 | OE |
| JKY8EG | X | 1.483 | -0.554 | -20.66 | 1.463 | -0.572 | -22.54 | GD |
| JMQR92 | X | 1.787 | -0.251 | -9.35 | 1.783 | -0.252 | -9.93 | GD |
| JRUUZV | | 2.047 | 0.009 | 0.35 | 2.040 | 0.005 | 0.19 | OE |
| JWN9NX | | 2.096 | 0.059 | 2.19 | 2.099 | 0.064 | 2.51 | OE |
| KJDZED | | 2.032 | -0.006 | -0.21 | 2.031 | -0.004 | -0.16 | WD |
| LNLVKY | | 2.086 | 0.049 | 1.83 | 2.075 | 0.040 | 1.59 | GD |
| MNP883 | | 2.084 | 0.046 | 1.73 | 2.078 | 0.043 | 1.71 | OE |
| NCHC8X | | 2.030 | -0.007 | -0.27 | 2.037 | 0.002 | 0.06 | OE |
| NCNW6L | | 2.012 | -0.025 | -0.94 | 2.006 | -0.029 | -1.15 | OE |
| NKL8KG | | 2.017 | -0.021 | -0.77 | 1.977 | -0.058 | -2.30 | OE |
| PBPCT7 | | 2.043 | 0.006 | 0.23 | 2.037 | 0.002 | 0.06 | OE |
| PMK4ZN | | 2.043 | 0.006 | 0.23 | 2.017 | -0.018 | -0.73 | OE |
| Q6QHRW | | 2.079 | 0.042 | 1.57 | 2.070 | 0.035 | 1.36 | GD |
| QDN287 | * | 1.954 | -0.083 | -3.09 | 1.957 | -0.078 | -3.08 | OE |
| QTR9RV | | 1.991 | -0.047 | -1.74 | 1.979 | -0.056 | -2.21 | DR |
| QZN4UZ | | 2.030 | -0.007 | -0.26 | 2.032 | -0.003 | -0.13 | OE |
| RJX664 | | 2.030 | -0.007 | -0.27 | 2.030 | -0.005 | -0.20 | WD |
| TXACHW | | 2.040 | 0.003 | 0.10 | 2.037 | 0.002 | 0.06 | XR |
| U6D8D9 | | 2.075 | 0.038 | 1.42 | 2.049 | 0.014 | 0.56 | OE |
| UELRR3 | | 2.003 | -0.034 | -1.26 | 2.005 | -0.030 | -1.20 | WD |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 188

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

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| VN9QXJ | | 2.101 | 0.064 | 2.38 | 2.094 | 0.059 | 2.34 | OE |
| W4HDK2 | | 2.030 | -0.007 | -0.26 | 2.029 | -0.006 | -0.24 | WD |
| W6LN7X | | 2.033 | -0.004 | -0.16 | 2.035 | 0.000 | -0.02 | WD |
| W7WHW7 | | 2.067 | 0.030 | 1.12 | 2.067 | 0.032 | 1.25 | OE |
| WXNUER | | 2.060 | 0.023 | 0.85 | 2.034 | -0.001 | -0.05 | OE |
| X2U7A6 | | 2.037 | -0.001 | -0.02 | 2.030 | -0.005 | -0.20 | OE |
| ZNXP8A | | 2.063 | 0.026 | 0.97 | 2.070 | 0.035 | 1.38 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 2.037 | Percent | 2.035 | Percent |
| Stnd Dev Btwn Labs | 0.027 | Percent | 0.025 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 52 of 56 reporting participants

Comments on assigned Data Flags for Analysis #188

WebCode Flag Analyst Comment

| | | |
|---------------|---|--|
| EXFDEA | X | Data for both samples are high. Possible Systematic error. Inconsistent within the determinations of both samples. |
| JKY8EG | X | Data for both samples are low. Possible Systematic error. |
| JMQR92 | X | Data for both samples are low. Possible Systematic error. Inconsistent within the determinations of both samples. |

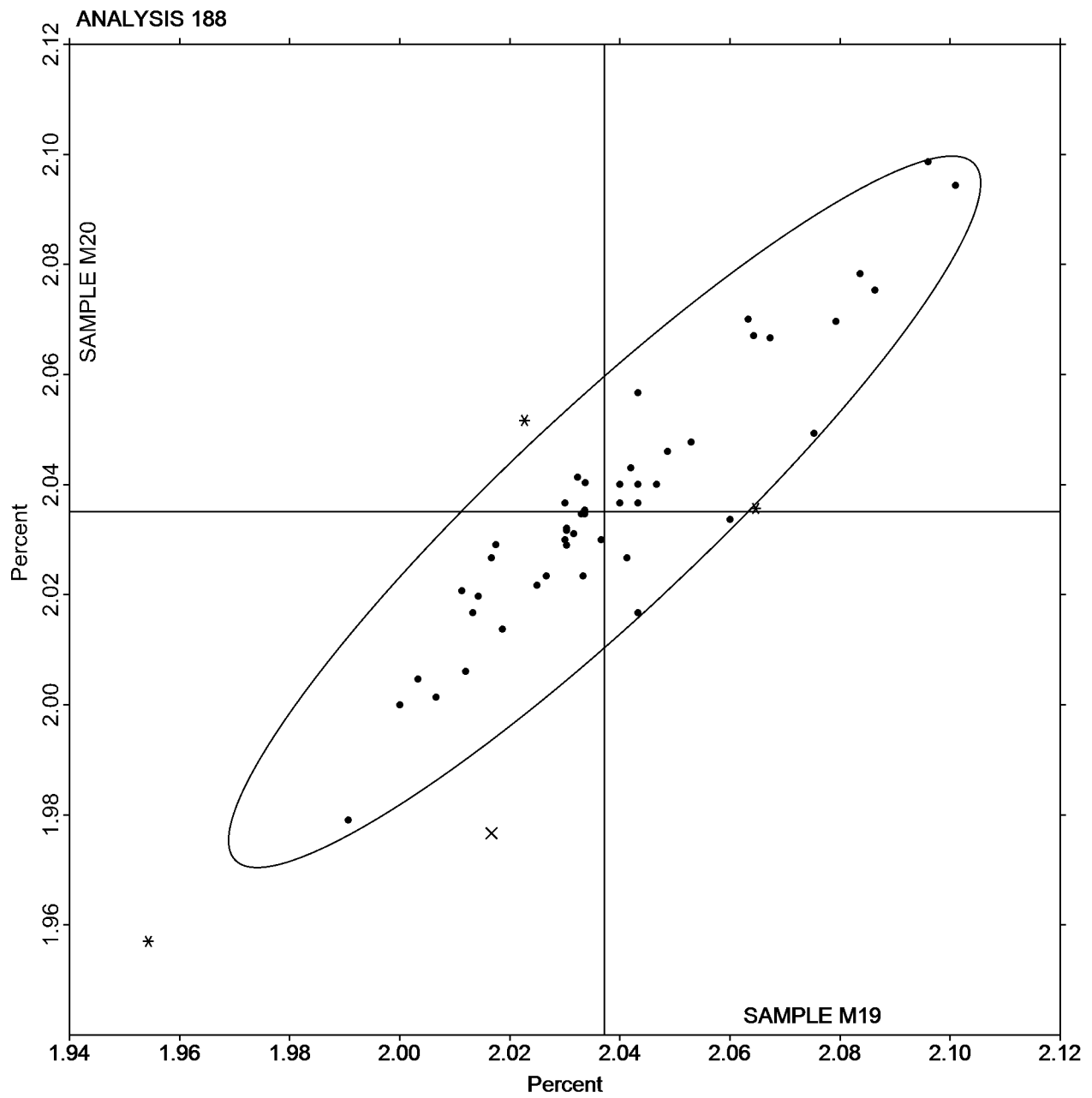
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 188

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

SAMPLE M19
2.037 Percent

SAMPLE M20
2.035 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|--------|------------|-----------------------|--------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 23XTJF | | 0.2483 | 0.0053 | 0.89 | 0.1830 | 0.0017 | 0.46 | OE |
| 29YN6D | | 0.2323 | -0.0107 | -1.81 | 0.1750 | -0.0063 | -1.73 | IC |
| 2ZUKJ2 | * | 0.2600 | 0.0169 | 2.86 | 0.1900 | 0.0087 | 2.38 | OE |
| 3B9E8A | X | 0.2607 | 0.0176 | 2.97 | 0.1733 | -0.0080 | -2.19 | OE |
| 4QNERC | | 0.2353 | -0.0077 | -1.30 | 0.1730 | -0.0083 | -2.28 | OE |
| 6NERRC | | 0.2357 | -0.0074 | -1.25 | 0.1777 | -0.0036 | -1.00 | OE |
| 6PFT4G | | 0.2400 | -0.0031 | -0.52 | 0.1800 | -0.0013 | -0.36 | OE |
| 6V82RU | | 0.2553 | 0.0123 | 2.07 | 0.1863 | 0.0050 | 1.38 | OE |
| 6W3Z4G | | 0.2400 | -0.0031 | -0.52 | 0.1800 | -0.0013 | -0.36 | OE |
| 8DV9RJ | | 0.2480 | 0.0049 | 0.83 | 0.1837 | 0.0024 | 0.65 | IC |
| 8WLLWA | | 0.2523 | 0.0093 | 1.57 | 0.1863 | 0.0050 | 1.38 | WD |
| 997KWK | | 0.2397 | -0.0034 | -0.57 | 0.1800 | -0.0013 | -0.36 | OE |
| 9F4C4T | | 0.2463 | 0.0033 | 0.55 | 0.1823 | 0.0010 | 0.28 | WD |
| 9PD4W3 | | 0.2392 | -0.0039 | -0.66 | 0.1790 | -0.0023 | -0.63 | OE |
| 9X6W2H | | 0.2437 | 0.0006 | 0.10 | 0.1837 | 0.0024 | 0.65 | IC |
| BJD6DJ | | 0.2400 | -0.0031 | -0.52 | 0.1800 | -0.0013 | -0.36 | OE |
| BRZXWL | * | 0.2293 | -0.0137 | -2.32 | 0.1777 | -0.0036 | -1.00 | OE |
| CPPBX8 | | 0.2467 | 0.0036 | 0.61 | 0.1800 | -0.0013 | -0.36 | OE |
| CTJBNC | | 0.2450 | 0.0019 | 0.33 | 0.1843 | 0.0030 | 0.83 | WD |
| CUNHMC | | 0.2430 | -0.0001 | -0.01 | 0.1803 | -0.0010 | -0.27 | OE |
| CUUBMR | | 0.2403 | -0.0027 | -0.46 | 0.1800 | -0.0013 | -0.36 | WD |
| DCC7WY | | 0.2410 | -0.0021 | -0.35 | 0.1790 | -0.0023 | -0.63 | DR |
| DWVTZE | | 0.2423 | -0.0007 | -0.12 | 0.1783 | -0.0030 | -0.81 | OE |
| DXLWTL | | 0.2422 | -0.0009 | -0.15 | 0.1795 | -0.0018 | -0.49 | XR |
| EXFDEA | X | 0.0430 | -0.2001 | -33.77 | 0.0273 | -0.1540 | -42.20 | OE |
| F2Q9AW | | 0.2390 | -0.0041 | -0.69 | 0.1837 | 0.0024 | 0.65 | OE |
| FA2V3T | X | 0.2134 | -0.0297 | -5.01 | 0.1590 | -0.0223 | -6.12 | OE |
| GEY9QL | | 0.2483 | 0.0053 | 0.89 | 0.1810 | -0.0003 | -0.08 | OE |
| GRPGLB | | 0.2453 | 0.0023 | 0.38 | 0.1817 | 0.0004 | 0.10 | OE |
| H24GAB | | 0.2500 | 0.0069 | 1.17 | 0.1860 | 0.0047 | 1.29 | OE |
| JKY8EG | | 0.2400 | -0.0031 | -0.52 | 0.1803 | -0.0010 | -0.27 | GD |
| JMQR92 | X | 0.2190 | -0.0241 | -4.06 | 0.1670 | -0.0143 | -3.92 | GD |
| JRUUZV | X | 0.2607 | 0.0176 | 2.97 | 0.2047 | 0.0234 | 6.40 | OE |
| KJDZED | | 0.2440 | 0.0009 | 0.16 | 0.1820 | 0.0007 | 0.19 | WD |
| LNLVKY | | 0.2430 | -0.0001 | -0.01 | 0.1853 | 0.0040 | 1.10 | GD |
| MNP883 | | 0.2500 | 0.0069 | 1.17 | 0.1840 | 0.0027 | 0.74 | OE |
| NCHC8X | | 0.2400 | -0.0031 | -0.52 | 0.1767 | -0.0046 | -1.27 | OE |
| NCNW6L | | 0.2503 | 0.0073 | 1.23 | 0.1853 | 0.0040 | 1.10 | OE |
| NKL8KG | * | 0.2390 | -0.0041 | -0.69 | 0.1723 | -0.0090 | -2.46 | OE |
| PBPCT7 | | 0.2393 | -0.0037 | -0.63 | 0.1770 | -0.0043 | -1.18 | OE |
| PMK4ZN | X | 0.2473 | 0.0043 | 0.72 | 0.1920 | 0.0107 | 2.93 | OE |
| Q6QHRW | X | 0.2300 | -0.0131 | -2.20 | 0.1830 | 0.0017 | 0.46 | GD |
| QDN287 | | 0.2412 | -0.0019 | -0.31 | 0.1837 | 0.0024 | 0.67 | OE |
| QTR9RV | | 0.2443 | 0.0013 | 0.22 | 0.1817 | 0.0004 | 0.10 | DR |
| QZN4UZ | | 0.2390 | -0.0041 | -0.69 | 0.1837 | 0.0024 | 0.65 | OE |
| RJX664 | | 0.2477 | 0.0046 | 0.78 | 0.1823 | 0.0010 | 0.28 | IC |
| TXACHW | | 0.2430 | -0.0001 | -0.01 | 0.1813 | 0.0000 | 0.01 | XR |
| U6D8D9 | | 0.2387 | -0.0044 | -0.74 | 0.1787 | -0.0026 | -0.72 | OE |
| UELRR3 | | 0.2400 | -0.0031 | -0.52 | 0.1790 | -0.0023 | -0.63 | WD |

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

| WebCode | Data Flag | Sample M19 | | | Sample M20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| VN9QXJ | | 0.2434 | 0.0003 | 0.06 | 0.1840 | 0.0027 | 0.74 | OE |
| W4HDK2 | | 0.2430 | -0.0001 | -0.01 | 0.1790 | -0.0023 | -0.63 | WD |
| W6LN7X | | 0.2510 | 0.0079 | 1.33 | 0.1841 | 0.0028 | 0.76 | WD |
| W7WHW7 | | 0.2370 | -0.0061 | -1.02 | 0.1787 | -0.0026 | -0.72 | OE |
| WXNUER | * | 0.2320 | -0.0111 | -1.87 | 0.1807 | -0.0006 | -0.18 | OE |
| X2U7A6 | * | 0.2500 | 0.0069 | 1.17 | 0.1900 | 0.0087 | 2.38 | XX |
| ZNXP8A | | 0.2453 | 0.0023 | 0.38 | 0.1827 | 0.0014 | 0.37 | OE |

Summary Statistics

| | Sample M19 | | Sample M20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.2431 | Percent | 0.1813 | Percent |
| Std Dev Btwn Labs | 0.0059 | Percent | 0.0036 | Percent |

Samples M19 , M20 : AISI 316, two different heats

Statistics based on 49 of 56 reporting participants

Comments on assigned Data Flags for Analysis #189

WebCode Flag Analyst Comment

3B9E8A X Data for sample M19 are high.

EXFDEA X Extreme data.

FA2V3T X Data for both samples are low.

JMQR92 X Data for both samples are low.

JRUUZV X Data for both samples are high. Inconsistent within the determinations of sample M19.

PMK4ZN X Data for sample M20 are high.

Q6QHRW X Inconsistent in testing between samples. Inconsistent within the determinations of sample M20.

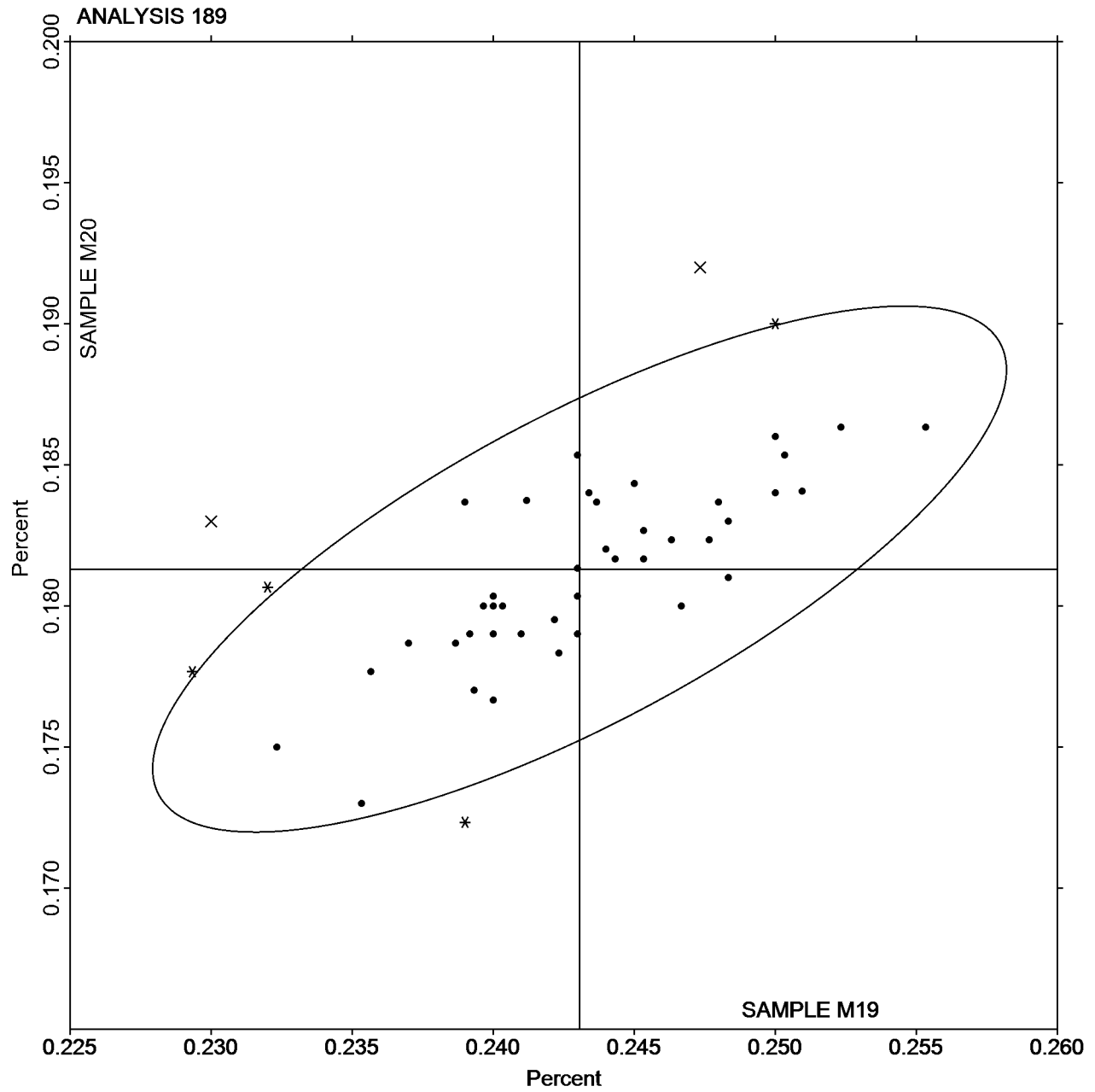
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 189

Chemical Analysis Element #10 - Corrosion Resistant Steel - Percent
COBOLT (Co)

SAMPLE M19
0.2431 Percent

SAMPLE M20
0.1813 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 190

Chemical Analysis Element #1: Aluminum - Percent
TITANIUM (Ti)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.00173 | -0.0158 | -2.04 | 0.00163 | -0.0149 | -2.04 | DR |
| 6PFT4G | | 0.0177 | 0.0001 | 0.02 | 0.0160 | -0.0005 | -0.07 | OE |
| 6W3Z4G | | 0.0160 | -0.0015 | -0.20 | 0.0153 | -0.0012 | -0.16 | OE |
| 78ZDJ9 | | 0.0177 | 0.0001 | 0.02 | 0.0163 | -0.0002 | -0.03 | OE |
| 88NVRZ | | 0.0183 | 0.0008 | 0.10 | 0.0160 | -0.0005 | -0.07 | GD |
| 8DV9RJ | | 0.0169 | -0.0006 | -0.08 | 0.0158 | -0.0007 | -0.09 | IC |
| 8L83LY | | 0.0167 | -0.0009 | -0.11 | 0.0162 | -0.0003 | -0.04 | OE |
| 8QNB9D | | 0.0162 | -0.0013 | -0.17 | 0.0155 | -0.0010 | -0.14 | OE |
| CDZC86 | | 0.0178 | 0.0003 | 0.04 | 0.0164 | -0.0001 | -0.02 | OE |
| DDZ8FM | | 0.0180 | 0.0005 | 0.06 | 0.0170 | 0.0005 | 0.06 | OE |
| E7VVQ4 | * | 0.0423 | 0.0248 | 3.20 | 0.0397 | 0.0232 | 3.18 | GD |
| F2EM4P | | 0.0179 | 0.0004 | 0.05 | 0.0166 | 0.0001 | 0.01 | OE |
| HEBT3C | | 0.0177 | 0.0001 | 0.02 | 0.0167 | 0.0002 | 0.02 | OE |
| PBPCT7 | | 0.0123 | -0.0052 | -0.67 | 0.0113 | -0.0052 | -0.71 | OE |
| UPCAL4 | | 0.0162 | -0.0013 | -0.17 | 0.0151 | -0.0014 | -0.20 | IC |
| X8KBBL | * | 0.0171 | -0.0005 | -0.06 | 0.0187 | 0.0022 | 0.30 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.0175 | Percent | 0.0165 | Percent |
| Stnd Dev Btwn Labs | 0.0077 | Percent | 0.0073 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

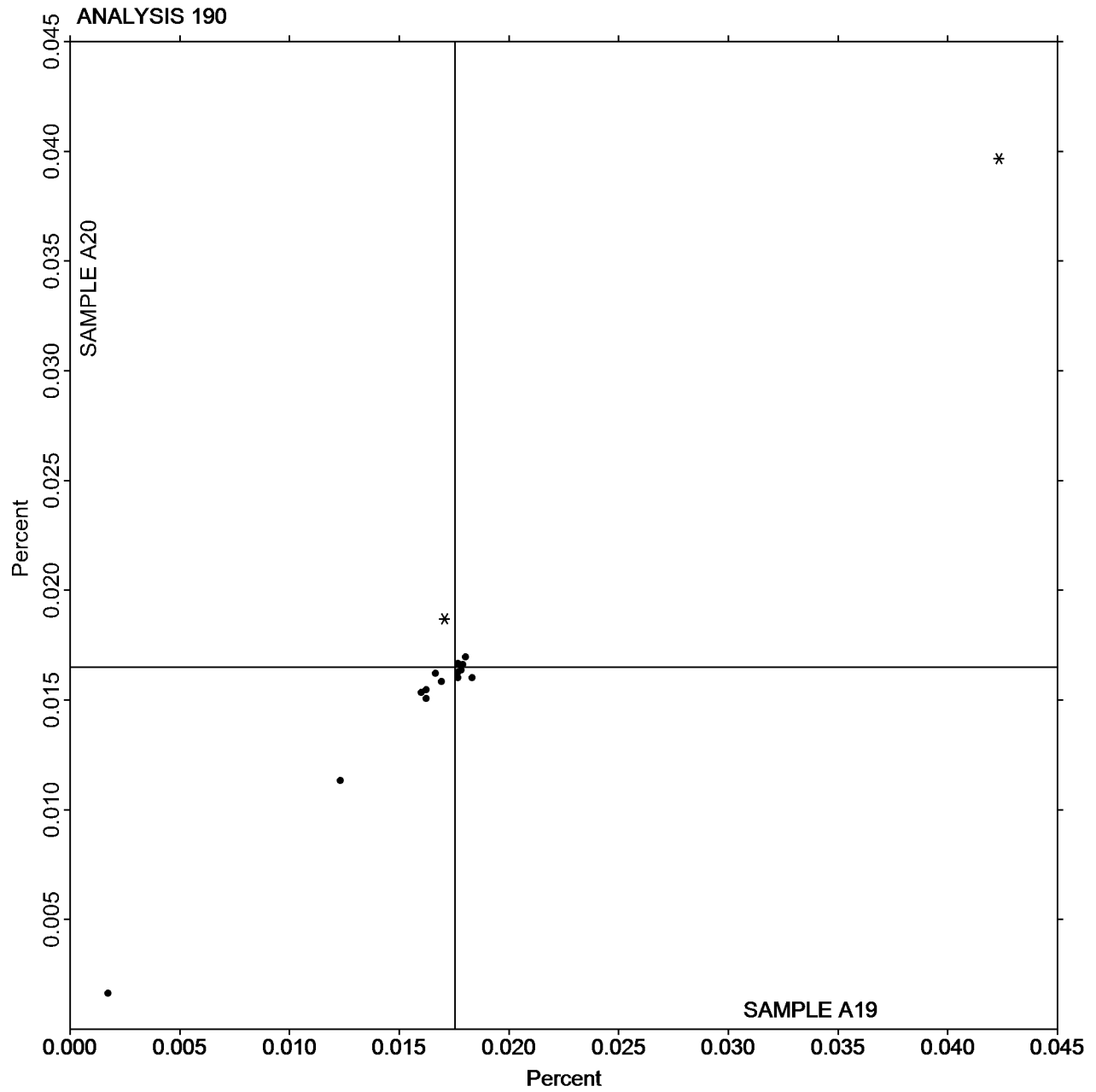
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 190

Chemical Analysis Element #1: Aluminum - Percent
TITANIUM (Ti)

SAMPLE A19
0.0175 Percent

SAMPLE A20
0.0165 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 191

Chemical Analysis Element #2: Aluminum - Percent
COPPER (Cu)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.3096 | 0.0040 | 0.16 | 0.2662 | 0.0015 | 0.06 | DR |
| 6PFT4G | | 0.3100 | 0.0045 | 0.18 | 0.2700 | 0.0053 | 0.22 | OE |
| 6W3Z4G | | 0.3100 | 0.0045 | 0.18 | 0.2700 | 0.0053 | 0.22 | OE |
| 78ZDJ9 | | 0.3030 | -0.0025 | -0.10 | 0.2721 | 0.0074 | 0.30 | OE |
| 88NVRZ | | 0.2963 | -0.0092 | -0.36 | 0.2727 | 0.0080 | 0.33 | GD |
| 8DV9RJ | | 0.3050 | -0.0005 | -0.02 | 0.2590 | -0.0057 | -0.23 | IC |
| 8L83LY | | 0.2977 | -0.0079 | -0.31 | 0.2597 | -0.0051 | -0.21 | OE |
| 8QNB9D | | 0.3304 | 0.0248 | 0.98 | 0.2852 | 0.0205 | 0.84 | OE |
| CDZC86 | | 0.3116 | 0.0061 | 0.24 | 0.2736 | 0.0089 | 0.36 | OE |
| DDZ8FM | * | 0.2275 | -0.0780 | -3.09 | 0.1980 | -0.0667 | -2.74 | OE |
| E7VVQ4 | | 0.3250 | 0.0195 | 0.77 | 0.2823 | 0.0176 | 0.72 | GD |
| F2EM4P | | 0.3087 | 0.0031 | 0.12 | 0.2673 | 0.0026 | 0.11 | OE |
| HEBT3C | | 0.3010 | -0.0045 | -0.18 | 0.2610 | -0.0037 | -0.15 | OE |
| PBPCT7 | | 0.3483 | 0.0428 | 1.70 | 0.3110 | 0.0463 | 1.90 | OE |
| UPCAL4 | | 0.2889 | -0.0166 | -0.66 | 0.2574 | -0.0073 | -0.30 | IC |
| X8KBBL | * | 0.3153 | 0.0098 | 0.39 | 0.2300 | -0.0347 | -1.42 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.3055 | Percent | 0.2647 | Percent |
| Stnd Dev Btwn Labs | 0.0252 | Percent | 0.0244 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

Cycle 106
2nd Q, 2014

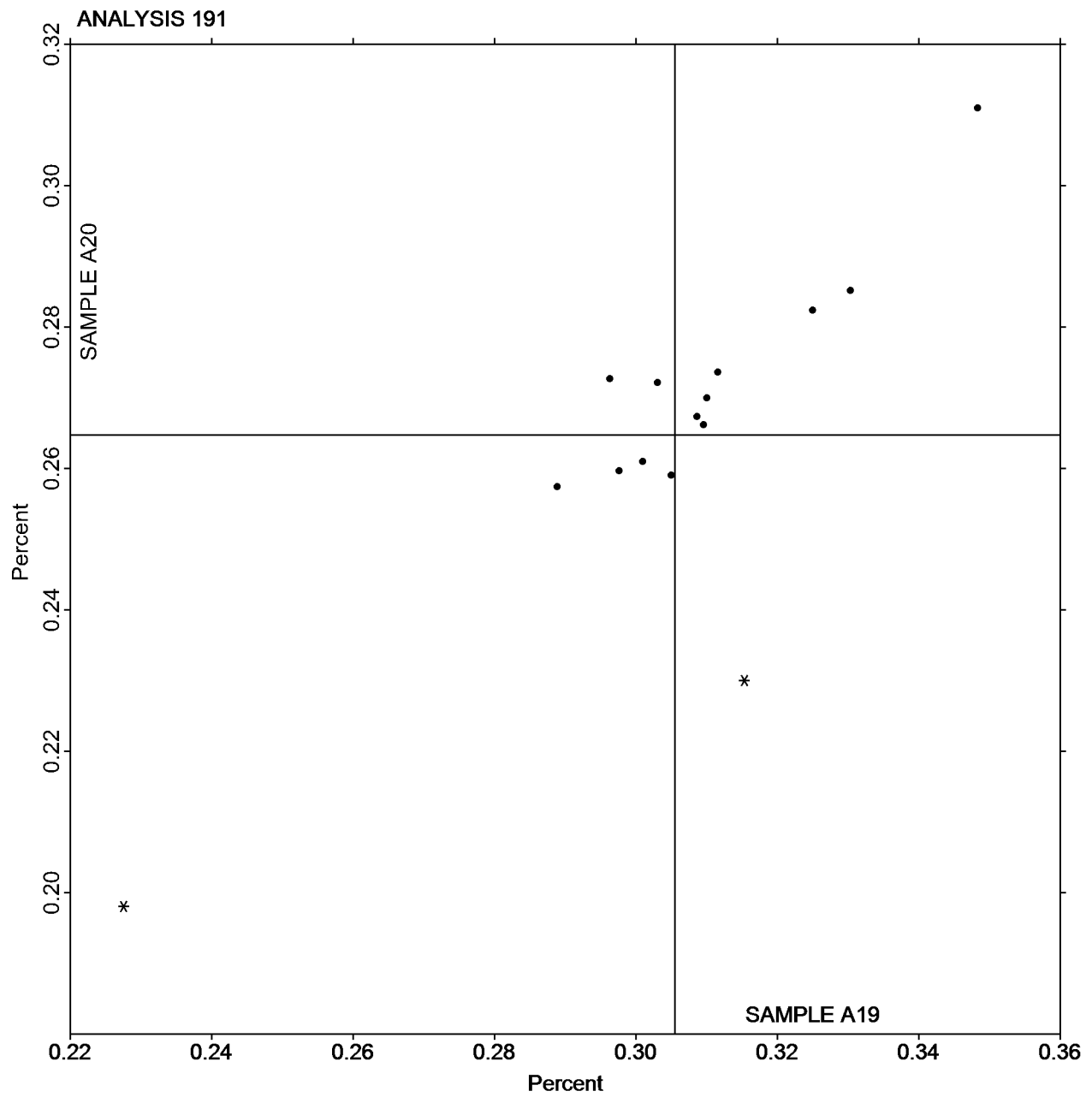
Interlaboratory Testing Program for Metals

Analysis 191

Chemical Analysis Element #2: Aluminum - Percent
COPPER (Cu)

SAMPLE A19
0.3055 Percent

SAMPLE A20
0.2647 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 192

Chemical Analysis Element #3: Aluminum - Percent
IRON (Fe)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.5330 | -0.0059 | -0.17 | 0.3054 | -0.0036 | -0.20 | DR |
| 6PFT4G | | 0.5567 | 0.0178 | 0.52 | 0.3200 | 0.0110 | 0.60 | OE |
| 6W3Z4G | | 0.5300 | -0.0089 | -0.26 | 0.3100 | 0.0010 | 0.05 | OE |
| 78ZDJ9 | | 0.5155 | -0.0234 | -0.68 | 0.3123 | 0.0033 | 0.18 | OE |
| 88NVRZ | | 0.6090 | 0.0701 | 2.04 | 0.3100 | 0.0010 | 0.05 | GD |
| 8DV9RJ | | 0.5187 | -0.0202 | -0.59 | 0.3060 | -0.0030 | -0.17 | IC |
| 8L83LY | | 0.5527 | 0.0138 | 0.40 | 0.3157 | 0.0067 | 0.37 | OE |
| 8QNB9D | | 0.5462 | 0.0073 | 0.21 | 0.3165 | 0.0075 | 0.41 | OE |
| CDZC86 | | 0.5077 | -0.0312 | -0.91 | 0.2987 | -0.0103 | -0.57 | OE |
| DDZ8FM | | 0.5893 | 0.0504 | 1.47 | 0.3286 | 0.0196 | 1.08 | OE |
| E7VVQ4 | | 0.5457 | 0.0068 | 0.20 | 0.3327 | 0.0237 | 1.30 | GD |
| F2EM4P | | 0.5467 | 0.0078 | 0.23 | 0.3137 | 0.0047 | 0.26 | OE |
| HEBT3C | | 0.5153 | -0.0236 | -0.69 | 0.3043 | -0.0047 | -0.26 | OE |
| PBPCT7 | | 0.4643 | -0.0746 | -2.17 | 0.3097 | 0.0007 | 0.04 | OE |
| X8KBBL | * | 0.5530 | 0.0141 | 0.41 | 0.2517 | -0.0573 | -3.15 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.5389 | Percent | 0.3090 | Percent |
| Std Dev Btwn Labs | 0.0343 | Percent | 0.0182 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 192

Chemical Analysis Element #3: Aluminum - Percent

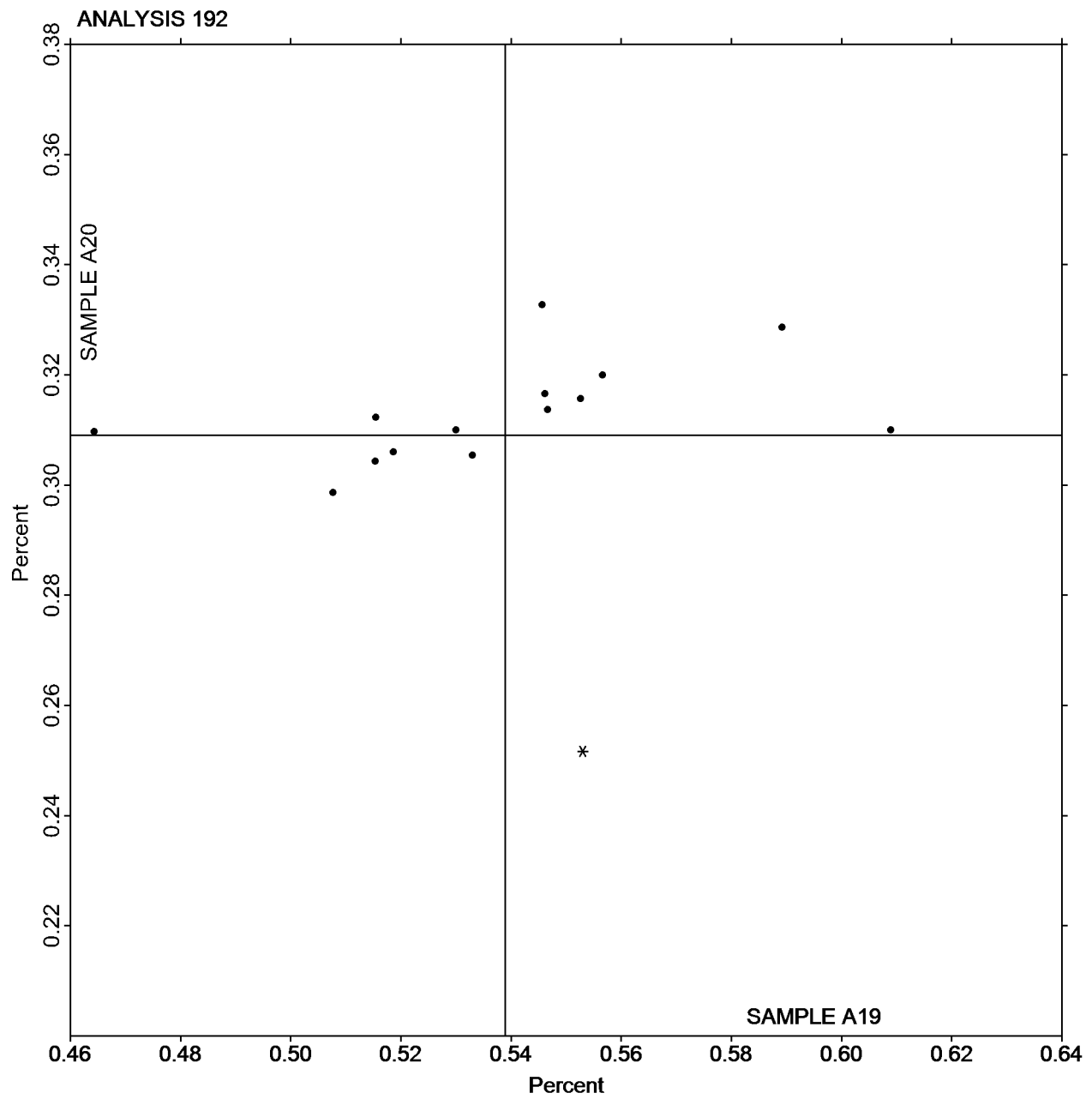
IRON (Fe)

SAMPLE A19

0.5389 Percent

SAMPLE A20

0.3090 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 193

Chemical Analysis Element #4: Aluminum - Percent
SILICON (Si)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.6100 | 0.0035 | 0.11 | 0.7013 | -0.0008 | -0.02 | DR |
| 6PFT4G | | 0.6167 | 0.0101 | 0.31 | 0.7200 | 0.0178 | 0.46 | OE |
| 6W3Z4G | | 0.6100 | 0.0035 | 0.11 | 0.7100 | 0.0078 | 0.20 | OE |
| 78ZDJ9 | | 0.6102 | 0.0037 | 0.11 | 0.7047 | 0.0025 | 0.06 | OE |
| 88NVRZ | | 0.6293 | 0.0228 | 0.69 | 0.7287 | 0.0265 | 0.68 | GD |
| 8DV9RJ | | 0.6280 | 0.0215 | 0.65 | 0.7380 | 0.0358 | 0.92 | IC |
| 8L83LY | | 0.6210 | 0.0145 | 0.44 | 0.7187 | 0.0165 | 0.42 | OE |
| 8QNB9D | | 0.6220 | 0.0154 | 0.47 | 0.7061 | 0.0040 | 0.10 | OE |
| CDZC86 | | 0.5994 | -0.0071 | -0.22 | 0.6985 | -0.0037 | -0.09 | OE |
| DDZ8FM | * | 0.4912 | -0.1153 | -3.49 | 0.5670 | -0.1351 | -3.46 | OE |
| E7VVQ4 | | 0.6067 | 0.0001 | 0.00 | 0.6967 | -0.0055 | -0.14 | GD |
| F2EM4P | | 0.6040 | -0.0025 | -0.08 | 0.7043 | 0.0022 | 0.06 | OE |
| HEBT3C | | 0.6207 | 0.0141 | 0.43 | 0.7167 | 0.0145 | 0.37 | OE |
| PBPCT7 | | 0.6167 | 0.0101 | 0.31 | 0.7067 | 0.0045 | 0.12 | OE |
| X8KBBL | | 0.6120 | 0.0055 | 0.17 | 0.7150 | 0.0128 | 0.33 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.6065 | Percent | 0.7022 | Percent |
| Std Dev Btwn Labs | 0.0330 | Percent | 0.0391 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

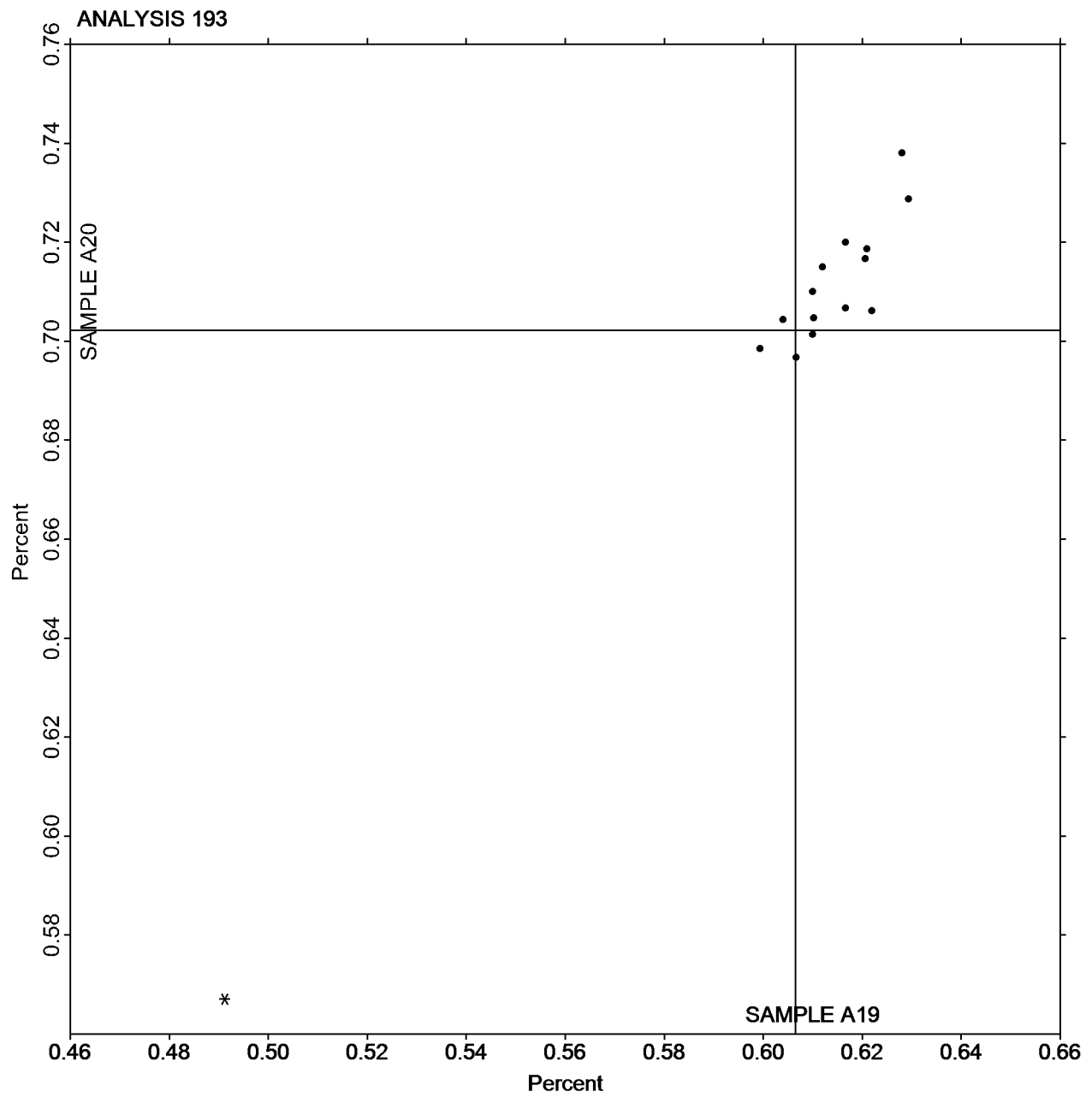
Interlaboratory Testing Program for Metals

Analysis 193

Chemical Analysis Element #4: Aluminum - Percent
SILICON (Si)

SAMPLE A19
0.6065 Percent

SAMPLE A20
0.7022 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 194

Chemical Analysis Element #5: Aluminum - Percent
MANGANESE (Mn)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.1089 | -0.0002 | -0.07 | 0.1047 | 0.0006 | 0.16 | DR |
| 6PFT4G | | 0.1090 | -0.0001 | -0.03 | 0.1040 | -0.0001 | -0.04 | OE |
| 6W3Z4G | | 0.1100 | 0.0009 | 0.30 | 0.1000 | -0.0041 | -1.16 | OE |
| 78ZDJ9 | | 0.1045 | -0.0046 | -1.51 | 0.0998 | -0.0044 | -1.22 | OE |
| 88NVRZ | | 0.1097 | 0.0006 | 0.19 | 0.1053 | 0.0012 | 0.34 | GD |
| 8DV9RJ | | 0.1090 | -0.0001 | -0.03 | 0.1040 | -0.0001 | -0.04 | IC |
| 8L83LY | | 0.1060 | -0.0031 | -1.01 | 0.1000 | -0.0041 | -1.16 | OE |
| 8QNB9D | | 0.1064 | -0.0026 | -0.86 | 0.1009 | -0.0032 | -0.91 | OE |
| CDZC86 | | 0.1059 | -0.0032 | -1.05 | 0.1022 | -0.0020 | -0.55 | OE |
| DDZ8FM | | 0.1083 | -0.0007 | -0.24 | 0.1013 | -0.0029 | -0.80 | OE |
| E7VVQ4 | | 0.1177 | 0.0086 | 2.80 | 0.1130 | 0.0089 | 2.49 | GD |
| F2EM4P | | 0.1097 | 0.0006 | 0.19 | 0.1043 | 0.0002 | 0.06 | OE |
| HEBT3C | | 0.1113 | 0.0023 | 0.74 | 0.1067 | 0.0025 | 0.71 | OE |
| PBPCT7 | | 0.1110 | 0.0019 | 0.63 | 0.1090 | 0.0049 | 1.37 | OE |
| UPCAL4 | | 0.1110 | 0.0019 | 0.62 | 0.1059 | 0.0018 | 0.51 | IC |
| X8KBBL | | 0.1070 | -0.0021 | -0.68 | 0.1050 | 0.0009 | 0.24 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|--------------------|------------|---------|------------|---------|
| Grand Means | 0.1091 | Percent | 0.1041 | Percent |
| Stnd Dev Btwn Labs | 0.0031 | Percent | 0.0036 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 16 of 16 reporting participants

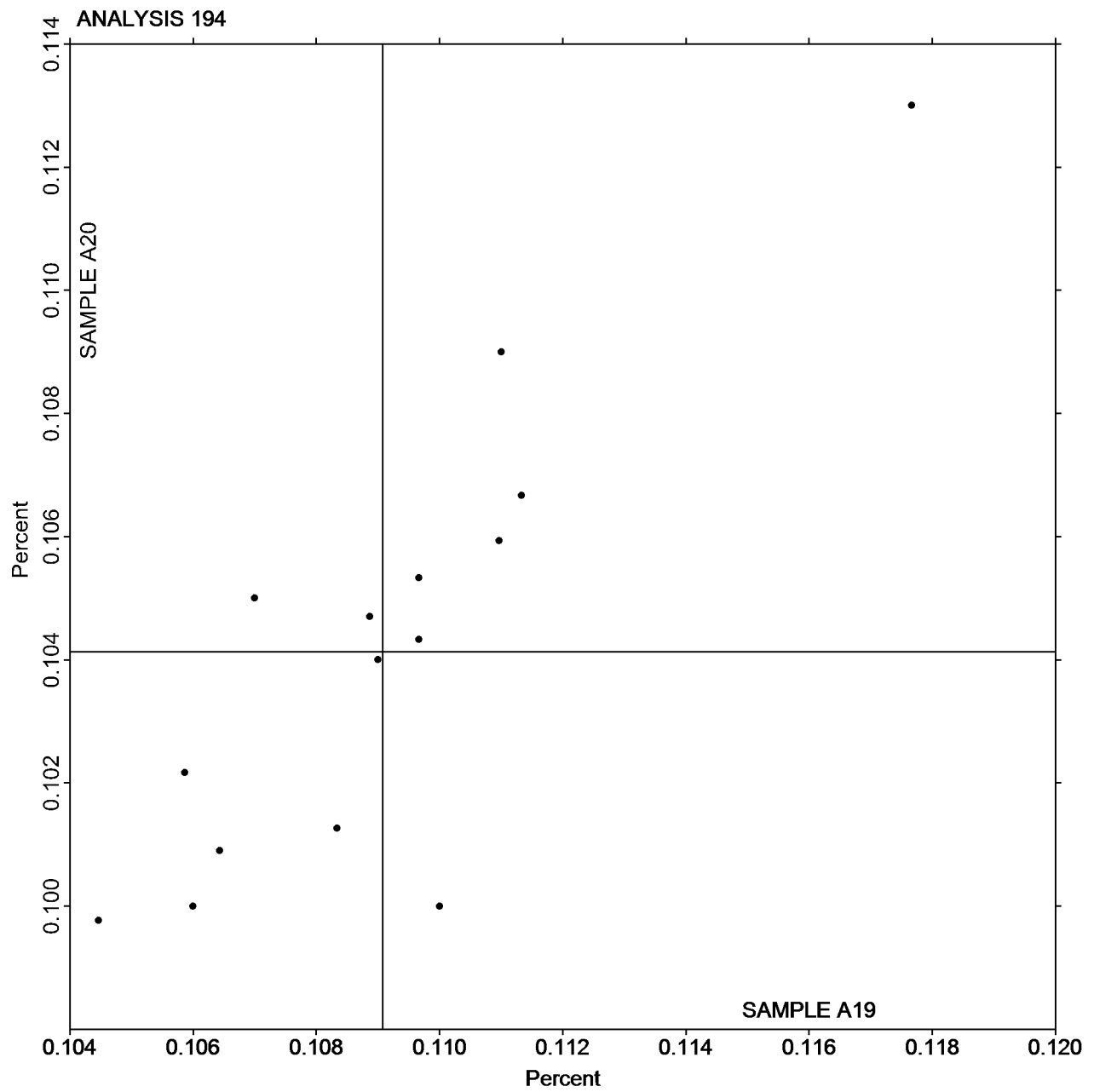
Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 194

Chemical Analysis Element #5: Aluminum - Percent
MANGANESE (Mn)

SAMPLE A19
0.1091 Percent

SAMPLE A20
0.1041 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 195

Chemical Analysis Element #6: Aluminum - Percent
MAGNESIUM (Mg)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.8507 | 0.0252 | 0.42 | 0.8749 | 0.0078 | 0.12 | DR |
| 6PFT4G | | 0.8300 | 0.0045 | 0.07 | 0.8733 | 0.0062 | 0.09 | OE |
| 6W3Z4G | | 0.8433 | 0.0178 | 0.29 | 0.8767 | 0.0095 | 0.15 | OE |
| 78ZDJ9 | | 0.8497 | 0.0241 | 0.40 | 0.8884 | 0.0213 | 0.33 | OE |
| 88NVRZ | | 0.8457 | 0.0201 | 0.33 | 0.9010 | 0.0338 | 0.52 | GD |
| 8DV9RJ | | 0.8480 | 0.0225 | 0.37 | 0.8990 | 0.0318 | 0.49 | IC |
| 8L83LY | | 0.7673 | -0.0582 | -0.96 | 0.8050 | -0.0622 | -0.96 | OE |
| 8QNB9D | | 0.8726 | 0.0471 | 0.78 | 0.9226 | 0.0554 | 0.85 | OE |
| CDZC86 | | 0.8286 | 0.0031 | 0.05 | 0.8647 | -0.0025 | -0.04 | OE |
| DDZ8FM | | 0.8354 | 0.0099 | 0.16 | 0.8791 | 0.0119 | 0.18 | OE |
| E7VVQ4 | | 0.8560 | 0.0305 | 0.50 | 0.9047 | 0.0375 | 0.58 | GD |
| F2EM4P | | 0.8283 | 0.0028 | 0.05 | 0.8687 | 0.0015 | 0.02 | OE |
| HEBT3C | | 0.8597 | 0.0341 | 0.56 | 0.9033 | 0.0362 | 0.56 | OE |
| PBPCT7 | | 0.8433 | 0.0178 | 0.29 | 0.8933 | 0.0262 | 0.40 | OE |
| X8KBBL | * | 0.6240 | -0.2015 | -3.33 | 0.6530 | -0.2142 | -3.29 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.8255 | Percent | 0.8672 | Percent |
| Std Dev Btwn Labs | 0.0605 | Percent | 0.0650 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals

Analysis 195

Chemical Analysis Element #6: Aluminum - Percent

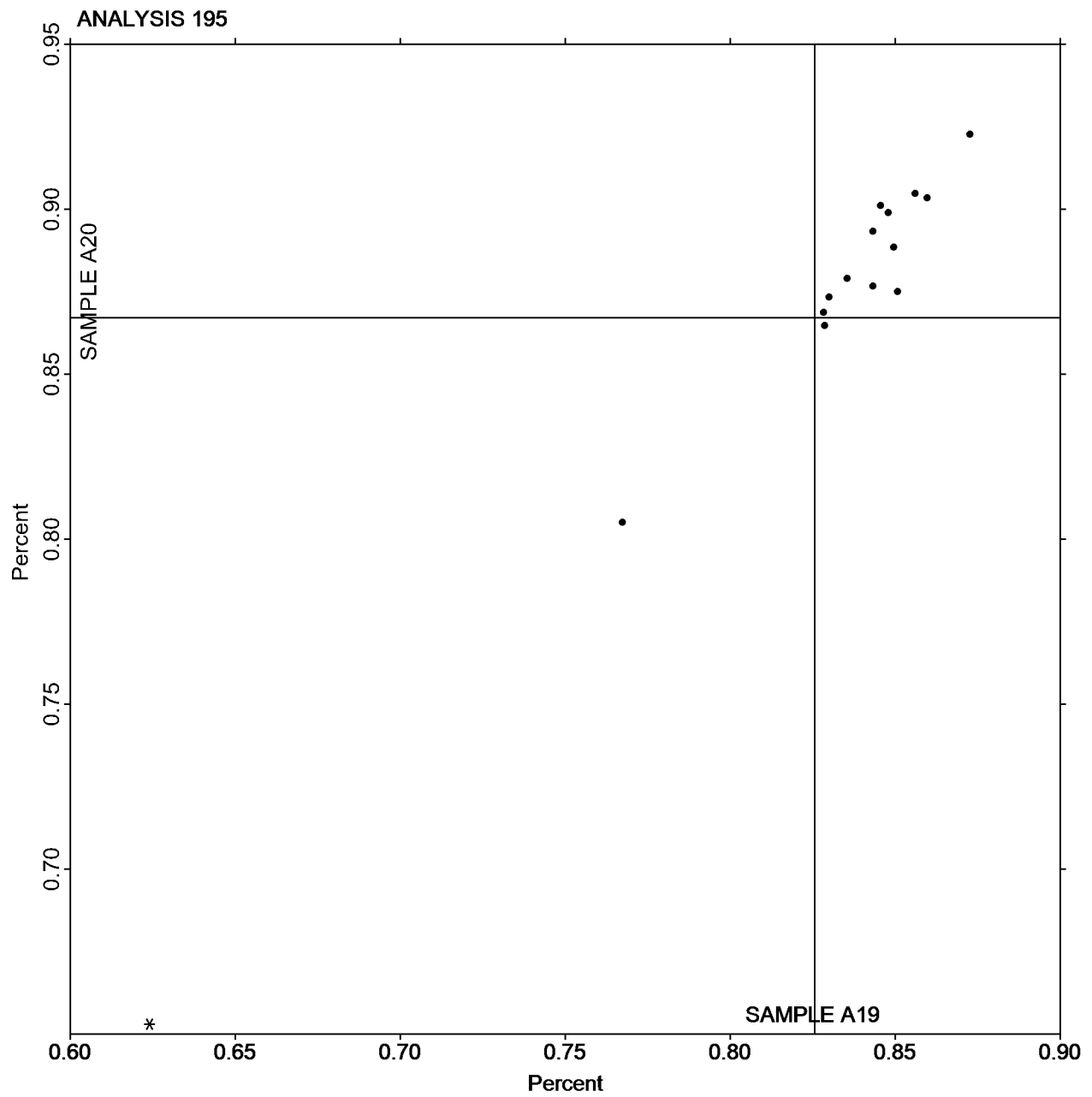
MAGNESIUM (Mg)

SAMPLE A19

0.8255 Percent

SAMPLE A20

0.8672 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 196

Chemical Analysis Element #7: Aluminum - Percent
CHROMIUM (Cr)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.1073 | 0.0094 | 1.42 | 0.1095 | 0.0088 | 1.14 | DR |
| 6PFT4G | | 0.1000 | 0.0021 | 0.32 | 0.1000 | -0.0007 | -0.09 | OE |
| 6W3Z4G | | 0.1020 | 0.0041 | 0.62 | 0.1067 | 0.0059 | 0.77 | OE |
| 78ZDJ9 | | 0.1036 | 0.0057 | 0.86 | 0.1072 | 0.0065 | 0.84 | OE |
| 88NVRZ | | 0.0970 | -0.0009 | -0.14 | 0.0997 | -0.0011 | -0.14 | GD |
| 8DV9RJ | | 0.0950 | -0.0029 | -0.44 | 0.0987 | -0.0021 | -0.27 | IC |
| 8L83LY | * | 0.0970 | -0.0009 | -0.14 | 0.0879 | -0.0128 | -1.66 | OE |
| 8QNB9D | | 0.0998 | 0.0019 | 0.29 | 0.1029 | 0.0021 | 0.28 | OE |
| CDZC86 | | 0.0997 | 0.0018 | 0.28 | 0.1045 | 0.0037 | 0.49 | OE |
| DDZ8FM | | 0.0975 | -0.0004 | -0.06 | 0.1019 | 0.0012 | 0.16 | OE |
| E7VVQ4 | | 0.1063 | 0.0084 | 1.27 | 0.1120 | 0.0113 | 1.46 | GD |
| F2EM4P | | 0.0933 | -0.0046 | -0.69 | 0.0982 | -0.0025 | -0.33 | OE |
| HEBT3C | | 0.0987 | 0.0008 | 0.12 | 0.1037 | 0.0029 | 0.38 | OE |
| PBPCT7 | | 0.0913 | -0.0066 | -0.99 | 0.0950 | -0.0057 | -0.74 | OE |
| X8KBBL | | 0.0800 | -0.0179 | -2.70 | 0.0830 | -0.0177 | -2.30 | OE |

Summary Statistics

| | <u>Sample A19</u> | | <u>Sample A20</u> | |
|-------------------|-------------------|---------|-------------------|---------|
| Grand Means | 0.0979 | Percent | 0.1007 | Percent |
| Std Dev Btwn Labs | 0.0066 | Percent | 0.0077 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 15 of 15 reporting participants

Cycle 106
2nd Q, 2014

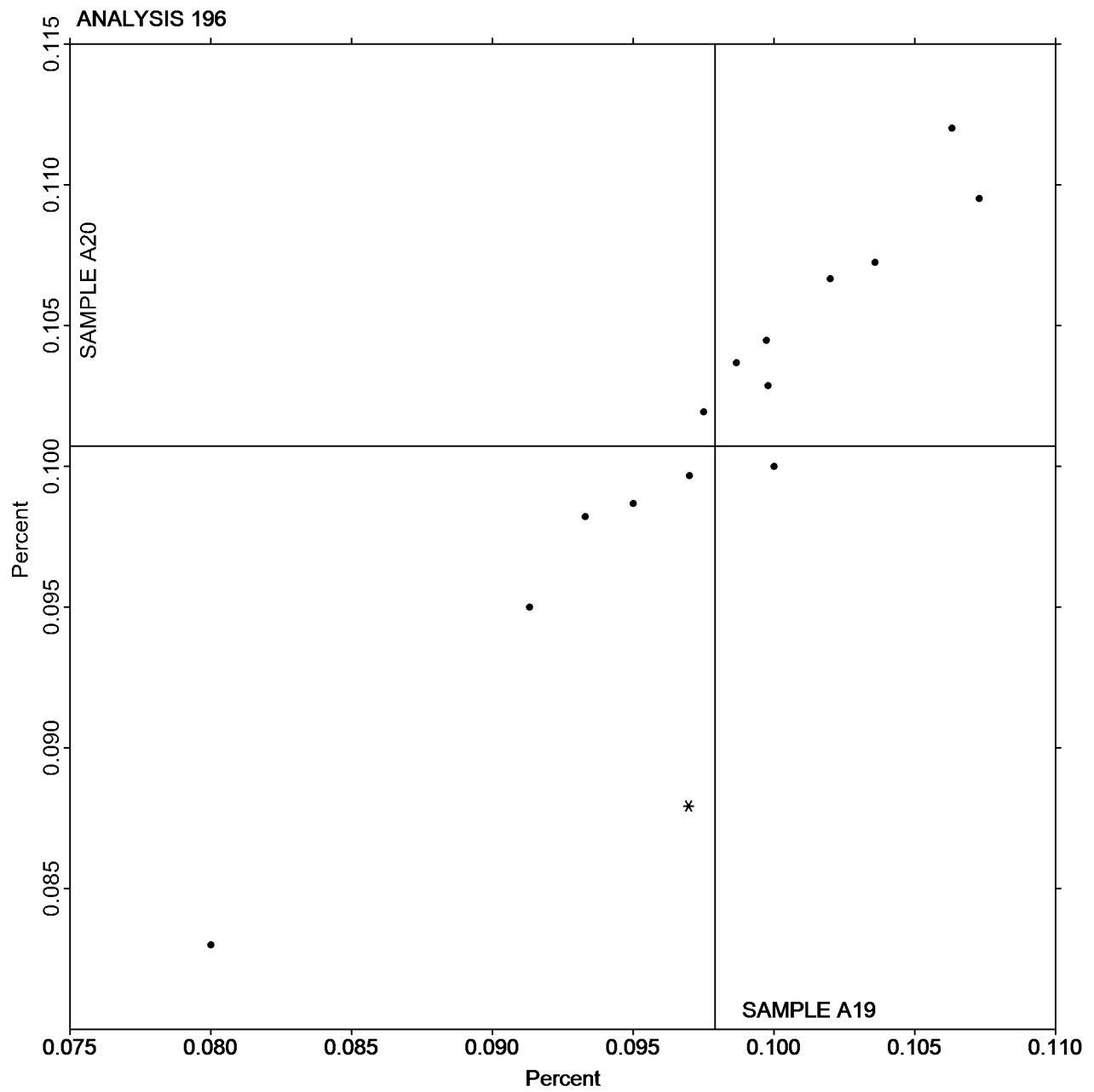
Interlaboratory Testing Program for Metals

Analysis 196

Chemical Analysis Element #7: Aluminum - Percent
CHROMIUM (Cr)

SAMPLE A19
0.0979 Percent

SAMPLE A20
0.1007 Percent



Cycle 106
2nd Q, 2014

Interlaboratory Testing Program for Metals
Analysis 197

Chemical Analysis Element #8: Aluminum - Percent
VANADIUM (V)

| WebCode | Data Flag | Sample A19 | | | Sample A20 | | | Instr Code |
|---------|-----------|------------|-----------------------|-------|------------|-----------------------|-------|------------|
| | | Lab Mean | Diff. from Grand Mean | CPV | Lab Mean | Diff. from Grand Mean | CPV | |
| 2Z9NQ9 | | 0.00893 | -0.0013 | -0.58 | 0.0115 | -0.0010 | -0.55 | DR |
| 6W3Z4G | | 0.00900 | -0.0013 | -0.55 | 0.0110 | -0.0015 | -0.84 | OE |
| 78ZDJ9 | | 0.00873 | -0.0015 | -0.66 | 0.0109 | -0.0016 | -0.88 | OE |
| 88NVRZ | | 0.0113 | 0.0011 | 0.47 | 0.0130 | 0.0005 | 0.26 | GD |
| 8DV9RJ | | 0.00913 | -0.0011 | -0.49 | 0.0117 | -0.0009 | -0.48 | IC |
| 8QNB9D | | 0.0101 | -0.0001 | -0.05 | 0.0124 | -0.0001 | -0.05 | OE |
| CDZC86 | | 0.00907 | -0.0012 | -0.52 | 0.0112 | -0.0013 | -0.71 | OE |
| DDZ8FM | | 0.0114 | 0.0011 | 0.49 | 0.0145 | 0.0019 | 1.06 | OE |
| E7VVQ4 | * | 0.0177 | 0.0074 | 3.24 | 0.0180 | 0.0055 | 3.00 | GD |
| F2EM4P | | 0.00960 | -0.0007 | -0.29 | 0.0121 | -0.0005 | -0.26 | XX |
| HEBT3C | | 0.00967 | -0.0006 | -0.26 | 0.0127 | 0.0002 | 0.11 | OE |
| PBPCT7 | | 0.00947 | -0.0008 | -0.34 | 0.0120 | -0.0005 | -0.29 | OE |
| UPCAL4 | | 0.00923 | -0.0010 | -0.45 | 0.0118 | -0.0007 | -0.38 | IC |
| X8KBBL | | 0.0102 | 0.0000 | -0.01 | 0.0126 | 0.0000 | 0.02 | OE |

Summary Statistics

| | Sample A19 | | Sample A20 | |
|-------------------|------------|---------|------------|---------|
| Grand Means | 0.0103 | Percent | 0.0125 | Percent |
| Std Dev Btwn Labs | 0.0023 | Percent | 0.0018 | Percent |

Samples A19 , A20 : AA6061, two different heats

Statistics based on 14 of 14 reporting participants

Cycle 106
2nd Q, 2014

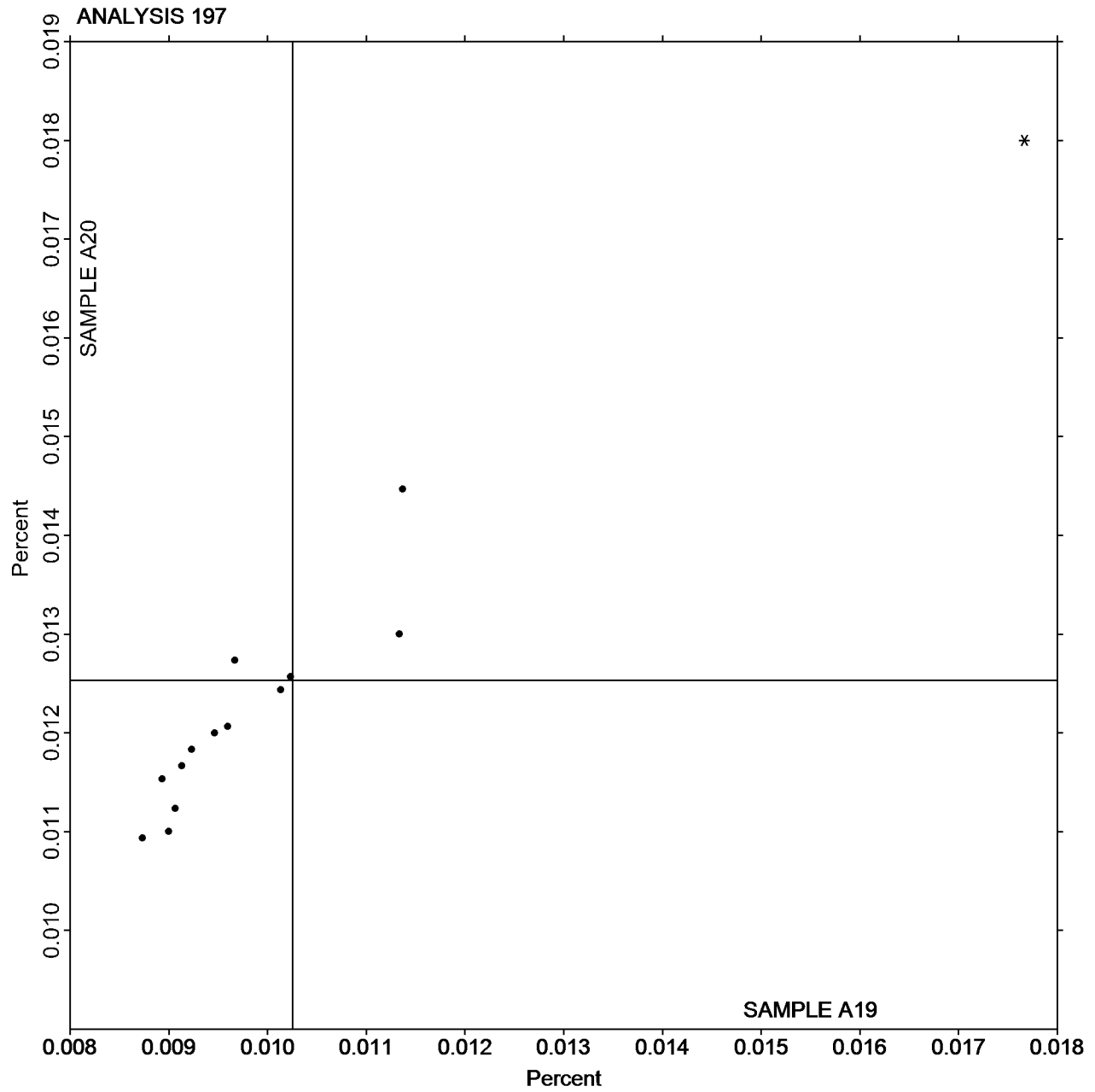
Interlaboratory Testing Program for Metals

Analysis 197

Chemical Analysis Element #8: Aluminum - Percent
VANADIUM (V)

SAMPLE A19
0.0103 Percent

SAMPLE A20
0.0125 Percent



Instrument and Method Code List - Cycle 106

Instrument and Method information as provided by laboratories

115: Fastener Wedge Tensile (10 degree) - ASTM F606

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BA | Baldwin |
| CH | Chun Yen Testing Machines |
| FI | Fuel Instruments & Engineers |
| GA | Galdabini |
| IN | Instron |
| MT | MTS / Sintech |
| RI | Riehle Test System |
| SA | Satec |
| SH | Shimadzu |
| TO | Tinius Olsen |
| UN | United Testing Systems |
| UT | UNIVERSAL TESTING MACHINE |
| XX | Instrument manufacturer not specified by lab |

116: Fastener Axial Tensile - ASTM F606

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BA | Baldwin |
| CH | Chun Yen Testing Machines |
| FI | Fuel Instruments & Engineers |
| GA | Galdabini |
| IN | Instron |
| MT | MTS / Sintech |
| RI | Riehle Test System |
| SA | Satec |
| SH | Shimadzu |
| TO | Tinius Olsen |
| TR | Tinius Olsen with retrofit |
| UN | United Testing Systems |
| UT | UNIVERSAL TESTING MACHINE |
| XX | Instrument manufacturer not specified by lab |

118: Rockwell Hardness: C & B Scales - ASTM E18

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| CL | Clark |
| EM | EMCO |
| IN | Indentec |
| LE | Leco |
| MA | Matsuzawa |
| MI | Mitutoyo |
| NA | New Age Industries |
| PH | Phase II |
| TI | Tinius Olsen |
| UN | United Testing Systems |
| WI | Wilson / Instron Instruments |
| XX | Instrument manufacturer not specified by lab |

120: Rockwell Hardness: C Scale - ASTM E18

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BU | Buehler |
| CL | Clark |
| EM | EMCO |
| FU | Future-Tech |
| IN | Indentec |
| LE | Leco |
| MA | Matsuzawa |
| MI | Mitutoyo |
| NA | New Age Industries |
| RO | Rockwell Tester |
| UN | United Testing Systems |
| WI | Wilson / Instron Instruments |
| WO | Wolpert Tester |
| XX | Instrument manufacturer not specified by lab |

125: Rockwell Hardness: Externally Threaded Fasteners - ASTM F606/F606M AND ASTM E18

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| AK | Akashi |
| AN | Antonik |
| BU | Buehler |
| CL | Clark |
| EM | EMCO |
| FR | Frank Well |
| FT | Future-Tech |
| HT | Hoytom |
| IN | Indentec |
| KF | Karl Frank GmbH |
| LE | Leco |
| MI | Mitutoyo |
| NA | New Age Industries |
| PH | Phase II |
| RS | Reicherter/C.Stiefelmayer Briro |
| SP | Service Physical Tester |
| TG | Time Group |
| UN | United Testing Systems |
| WI | Wilson / Instron Instruments |
| WO | Wolpert Tester |
| XX | Instrument manufacturer not specified by lab |

126: Vickers Hardness: Externally Threaded Fasteners - ASTM E384

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| AK | Akashi |
| AR | Vickers Armstrongs hardness tester |
| AV | Avery Denison |
| BU | Buehler, Ltd. |
| CL | Clark |
| EM | EMCO |
| FU | Future-Tech |
| GN | Albert Gnehm |
| LE | Leco |
| MI | Mitutoyo |
| SH | Shimadzu |
| ST | Struers |
| WO | Wolpert Tester |
| XX | Instrument manufacturer not specified by lab |

127: Fastener Wedge Tensile (10 degree) - Metric - ASTM F606M

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BA | Baldwin |
| HP | Hegewald & Peschke |
| IN | Instron |
| LO | Losenhausen |
| MF | MFL Systeme |
| RO | Roell & Korthaus |
| SA | Satec |
| ST | Schenck-Trebel |
| TO | Tinius Olsen |
| UN | United Testing Systems |
| WB | Walter + Bai |
| WZ | Zwick |
| XX | Instrument manufacturer not specified by lab |

128: Fastener Axial Tensile - Metric - ASTM F606M

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BA | Baldwin |
| HT | Hung Ta Instrument |
| LO | Losenhausen |
| RO | Roell & Korthaus |
| ST | Schenck-Trebel |
| TO | Tinius Olsen |
| WB | Walter + Bai |
| XX | Instrument manufacturer not specified by lab |

129: Fastener Double Shear - NASM 1312-13

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BA | Baldwin |
| IN | Instron |
| MT | MTS / Sintech |
| RI | Riehle Test System |
| SA | Satec |
| SH | Shimadzu |
| TO | Tinius Olsen |
| TR | Tinius Olsen with retrofit |
| XX | Instrument manufacturer not specified by lab |

130: Tensile Strength: Lab-Machined Flat Steel - ASTM E8

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

136: Rockwell Superficial Hardness (30N Scale) - ASTM E18

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

145: Total Case Depth - SAE J423, SAE J78

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|-------------------------------|
| BR | Brinell Glass |
| BU | Buehler, Ltd. |
| CM | Clemex |
| LC | Leica |
| LE | Leco |
| LI | Leitz |
| NE | Nikon Eclipse |
| NI | Nikon Epiphot |
| NP | Neophot 21 |
| NX | Nikon (model not specified) |
| OG | Olympus PMG |
| OI | Olympus IX70 |
| OL | Olympus PME |
| ON | Olympus (model not specified) |
| OX | Olympus GX71 |
| RE | Reichert-Jung MeF3 |
| RP | Reichert-Jung Polyvar |

145: Total Case Depth - SAE J423, SAE J78

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| WT | Wilson-Tukon |
| XX | Instrument manufacturer not specified by lab |
| ZA | Zeiss Axiovert |
| ZE | Zeiss Jenaplan |
| ZI | Zeiss Imager |
| ZT | Zeiss Axiotech |
| ZX | Zeiss (model not specified) |

146: Effective Case Depth - SAE J423, SAE J78

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BU | Buehler, Ltd. |
| CL | Clark |
| CM | Clemex |
| ED | Emco Durascan |
| LE | Leco |
| MA | Matsuzawa |
| MI | Mitutoyo |
| NA | New Age |
| SH | Shimadzu |
| ST | Struers |
| WT | Wilson-Tukon |
| WZ | Zwick |
| XX | Instrument manufacturer not specified by lab |

147: Grain Size (Stainless Steel) - ASTM E112, ASTM E1382

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| XX | Instrument manufacturer not specified by lab |

150: Nickel-based Alloy, Element #1 - CHROMIUM (Cr)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

151: Nickel-based Alloy, Element #2 - NIOBIUM (Nb)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |
| XX | Please Indicate Method Used for Current Element |

152: Nickel-based Alloy, Element #3 - IRON (Fe)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BD | By Difference |
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

153: Nickel-based Alloy, Element #4 - MOLYBDENUM (Mo)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

154: Nickel-based Alloy, Element #5 - ALUMINUM (Al)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |

155: Nickel-based Alloy, Element #6 - SILICON (Si)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |
| XX | Please Indicate Method Used for Current Element |

156: Nickel-based Alloy, Element #7 - TITANIUM (Ti)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

157: Nickel-based Alloy, Element #8 - NICKEL (Ni)

| <u>Instrument code</u> | <u>Description</u> |
|------------------------|--|
| BD | By Difference |
| DR | Spectrometry - Direct Reading OE (DROES) |
| ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| 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 |

180: Corrosion Resistant Steel, Element #1 - CARBON (C)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| CI | Combustion / IR |
| CO | Combustion |
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| OE | Spectrometry - Optical Emission (OES) |

181: Corrosion Resistant Steel, Element #2 - MANGANESE (Mn)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |

182: Corrosion Resistant Steel, Element #3 - PHOSPHORUS (P)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WC | Wet Chemistry |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

183: Corrosion Resistant Steel, Element #4 - SULFUR (S)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| CI | Combustion / IR |
| CO | Combustion |
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| OE | Spectrometry - Optical Emission (OES) |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |

184: Corrosion Resistant Steel, Element #5 - SILICON (Si)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |

185: Corrosion Resistant Steel, Element #6 - COPPER (Cu)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |

186: Corrosion Resistant Steel, Element #7 - NICKEL (Ni)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| WC | Wet Chemistry |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |
| XX | Please Indicate Method Used for Current Element |

187: Corrosion Resistant Steel, Element #8 - CHROMIUM (Cr)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |
| TI | Titrimetry |
| WC | Wet Chemistry |
| WD | X-Ray Fluorescence - Wavelength Dispersive (WDX) |
| XR | X-Ray Fluorescence - ED or WD not specified |

188: Corrosion Resistant Steel, Element #9 - MOLYBDENUM (Mo)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |

189: Corrosion Resistant Steel, Element #10 - COBALT (Co)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|--|
| 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) |
| XR | X-Ray Fluorescence - ED or WD not specified |
| XX | Please Indicate Method Used for Current Element |

190: Aluminum, Element #1 - TITANIUM (Ti)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

191: Aluminum, Element #2 - COPPER (Cu)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

192: Aluminum, Element #3 - IRON (Fe)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

193: Aluminum, Element #4 - SILICON (Si)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

194: Aluminum, Element #5 - MANGANESE (Mn)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

195: Aluminum, Element #6 - MAGNESIUM (Mg)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

196: Aluminum, Element #7 - CHROMIUM (Cr)

| <u>Method Code</u> | <u>Description</u> |
|--------------------|---|
| DR | Spectrometry - Direct Reading OE (DROES) |
| GD | Spectrometry - Glow Discharge (GDS) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) |
| OE | Spectrometry - Optical Emission (OES) |

197: Aluminum, Element #8 - VANADIUM (V)

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