Results of Proficiency Test
Fuel Oil
June 2017

CONTENTS

Appendices:

1   INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency test for Fuel Oil
every year. During the annual proficiency testing program of 2016/2017, it was decided to
continue the round robin for the analyses of Fuel Oil twice per year. The scope for this
interlaboratory study is according to the latest applicable version of the specifications ISO
8217 and ASTM D396.
In the round robin with regular Fuel Oil 170 laboratories in 65 different countries registered for
participation. In the round robin for Metals in Fuel Oil 100 laboratories in 48 different countries
registered for participation. See appendix 2 for the number of participants per country for both
rounds.
In this report, the test results of the June 2017 interlaboratory study on Fuel Oil are presented
and discussed. This report is also electronically available through the iis website
www.iisnl.com.

2   SET-UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser
of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were
subcontracted to an ISO/IEC 17025 accredited laboratory. Depending on the registration it
was decided to send one bottle of 1L Fuel Oil (labelled #17105) and/or one bottle of 0.1L Fuel
Oil (labelled #17106) specifically prepared for metal determinations.
Participants were requested to report rounded and unrounded test results. The unrounded test
results were preferably used for statistical evaluation.

2.1   ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in
agreement with ISO/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation
Council (Raad voor Accreditatie). This PT falls under the accredited scope.
This ensures strict adherence to protocols for sample preparation and statistical evaluation
and 100% confidentiality of participant's data. Feedback from the participants on the reported
data is encouraged and customer's satisfaction is measured on regular basis by means of
questionnaires.

2.2   PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for
proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation,
Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4). This protocol is
electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3   CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4   SAMPLES

For this proficiency test a regular Fuel Oil and a Fuel Oil positive on metals were prepared. Approximately 200 litre Fuel Oil was obtained from a supplier in Germany. After heating to 60°C and homogenisation of this batch 200 amber glass bottles of 1L were filled and labelled #17105. The homogeneity of these subsamples was checked by determination of Density at 15°C in accordance with ISO12185 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3
Sample #17105-1	982.7
Sample #17105-2	982.7
Sample #17105-3	982.7
Sample #17105-4	982.7
Sample #17105-5	982.7
Sample #17105-6	982.7
Sample #17105-7	982.7
Sample #17105-8	982.7

Table 1: homogeneity test results of subsamples #17105

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density at 15°C in kg/m^3
r (observed)	0.00
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.45

Table 2: evaluation of the repeatability of test results of subsamples #17105

The calculated repeatability for Density was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples of #17105 was assumed.

For the preparation of the subsamples for the PT on Fuel Oil Metals approx. 18 litre of a batch of Fuel Oil obtained from a local supplier was spiked with Calcium (approx. 19 mg/kg), Phosphorus (approx. 15 mg/kg) and Zinc (approx. 17 mg/kg). After heating to 60°C and homogenisation of the batch 128 plastic PE bottles of 0.1L were filled and labelled #17106. The homogeneity of the subsamples was checked by determination of Phosphorus and Silicon in accordance with IP501 on 8 stratified randomly selected samples.

	Phosphorus in mg/kg	Silicon in mg/kg
Sample #17106-1	17.1	11.7
Sample #17106-2	17.2	11.9
Sample #17106-3	16.8	11.7
Sample #17106-4	17.2	11.9
Sample #17106-5	16.7	11.5
Sample #17106-6	17.4	11.8
Sample #17106-7	17.1	11.5
Sample #17106-8	17.0	11.6

Table 3: homogeneity test results of subsamples #17106

From above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Phosphorus in mg/kg	Silicon in mg/kg
r (observed)	0.6	0.4
reference test method	IP501:05	IP470:05
0.3 * R (ref. test method)	1.8	2.2

Table 4: evaluation of the repeatabilities of subsamples #17106

The calculated repeatabilities for Phosphorus and Silicon were in agreement with 0.3 times the corresponding reproducibilities of the reference test methods. Therefore, homogeneity of the subsamples of #17106 was assumed.

Depending on the registration of the participant; one bottle of 1L, labelled #17105 and/or one bottle of 0.1L, labelled #17106 were sent to the participating laboratories on May 31, 2017. An SDS was added to the sample package.

2.5   STABILITY OF THE SAMPLES

The stability of Fuel Oil, packed in the amber glass and plastic PE bottles was checked. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were requested to determine one to all of the following parameters:

On sample #17105: Acid Number (total), API Gravity, Ash Content, Asphaltenes, Calculated Carbon Aromaticity Index (CCAI), Carbon Residue – Micro Method, Conradson Carbon Residue, Density at 15°C, Flash Point PMcc, Heat of Combustion (Gross and Net), Kinematic Viscosity (at 50°C and 100°C), Viscosity Stabinger (at 50°C and 100°C), Nitrogen, Pour Point (Lower, Upper and Automated), Sediment by Extraction, Total Sediment (by Hot filtration, Accelerated and Potential), Total Sulphur, Water by Distillation, Water and Sediment, Distillation (IBP, 5% - 50% recovered and FBP) and Total Carbon, Hydrogen and Nitrogen (CHN-analyzer).

On sample #17106: Aluminium, Silicon, Sum of Aluminium and Silicon, Iron, Nickel, Sodium, Vanadium, Calcium, Phosphorus and Zinc content.

It was explicitly requested to treat the sample as if it was a routine sample. Therefore, each laboratory is advised to perform only those analyses that normally are done in daily routine (but the laboratories are allowed to do all analyses). Furthermore, it was requested to report the test results using the indicated units on the report form and not to round the test results more, but report as much significant figures as possible. It was also requested not to report 'less than' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

To get comparable test results, a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the reference test methods that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4).

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the results of the statistical evaluation should be used with due care.

According to ISO 5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirements based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM, ISO or EN reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other targets values were used. In some cases, a reproducibility based on former iis proficiency tests could be used.

When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate whether the reported test result is fit-for-use.
The z-scores were calculated according to:

$z_{(target)}$ = (test result - average of PT) / target standard deviation

The $z_{(target)}$ scores are listed in the test result tables in appendix 1.

Absolute values for z<2 are very common and absolute values for z>3 are very rare.
The usual interpretation of z-scores is as follows:

$\lvert z \rvert < 1$	good
$1 < \lvert z \rvert < 2$	satisfactory
$2 < \lvert z \rvert < 3$	questionable
$3 < \lvert z \rvert$	unsatisfactory

4 EVALUATION

In this proficiency test major problems were encountered with the dispatch of the samples. Several laboratories in Egypt, India, Indonesia, Iran, Malaysia, Saudi Arabia and Sudan received the samples late or not at all. For the main round (sample #17105) three participants did not report any test results and five participants reported the test results after the final reporting date. For the metals round (sample #17106) ten participants did not report any test results. Three of these ten reported that the equipment was down. Nine participants reported the test results after the final reporting date. Not all laboratories were able to report all analyses requested.
Finally over the main and metal PTs, 169 participants reported in total 3119 numerical test results. Observed were 102 statistically outlying test results, which is 3.3% of the numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as "not OK" or "suspect". The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section, the reported test results are discussed per sample and per test. The test methods, which are used by the different laboratories, are taken into account for explaining the observed differences when possible and applicable. These test methods are also listed in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 3.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D189) and an added designation for the year that the test method was adopted or revised (e.g. D189:06). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D189:06(2014)). In the test results tables of appendix 1 only the test method number and year of adoption or revision (e.g. D189:06) are used.

Sample #17105

Acid Number: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D664-A:11ae1(2017).

API Gravity: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1298:12b(2017).

Ash: This determination was very problematic at an ash content of 0.024 %M/M. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with requirements of ISO6245:01.

Asphaltenes: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of IP143:04(2016).

Calculated Carbon Aromaticity Index: This determination was not problematic. No statistical outliers and no calculation errors were observed. The calculated reproducibility is in agreement with the requirements of ISO8217:12.

Carbon Residue Micro Method: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO10370:14.

Conradson Carbon Residue: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D189:06(2014).
Remarkebly, three participants reported to use ASTM D4530 which is the micro method thata was evaluated seperately.

Density at 15°C: This determination was problematic for a number of participants. Six statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO12185:96.

Flash Point PMcc: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO2719-B:16.

HOC Gross: This determination of the Gross Heat of Combustion was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D240:17.

HOC Net: This determination of the Net Heat of Combustion was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D240:17.

Kin. Visc. At 50°C: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO3104:94.

Kin. Visc. At 100°C: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3104:94.

Vis Stab.at 50°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:16e3.

Vis Stab.at 100°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:16e3.

Nitrogen: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5762:12(2017). When the test results of ASTM D5762 volumetric and gravimetric test methods were evaluated separately, the calculated reproducibility of the volumetric test results was much smaller than the calculated reproducibility of the gravimetric test results. This finding is the same as found in the two Fuel Oil PTs of 2016 (iis16F01&iis16F03). The calculated reproducibility of the Volumetric test method is in agreement with the requirements of ASTM D5762:12(2017).

Pour Point Lower: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ISO3016:94. Rounding to 3 degrees acc. ISO3016:94 may (partly) explain the large variation.

Pour Point Upper: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with ISO3016:94. Rounding to 3 degrees acc. ISO3016:94 may (partly) explain the large variation.

Pour Point Automated: This determination was problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not in agreement with ASTM D5950:14. The large variation may (partly) be explained by possible problems with the detector sensitivity or by not following the test method properly (see Note 8 in ASTM D5950:14). Rounding to 3 degrees may also (partly) explain the large variation.

Sediment by Extraction: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D473:07(2017).

Total Sediment (Hot filtration): This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP375:11.

Total Sediment (Accelerated): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870 (see appendix X1).

Total Sediment (Potential): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870 (see appendix X1).

Total Sulphur: This determination may be problematic dependent on the test method used. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO 8754:03 but not with the more strict requirements of ASTM D4294:16e1.

Water by distillation: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO3733:99 or ASTM D95:13e1.

Water and Sediment: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D1796:11(2016).

Vacuum Distillation: This determination may be problematic for 50% recovered and FBP. In total ten statistical outliers were observed over eight parameters. Four other test results were excluded as the other reported test results of this participant were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement for IBP, 5%, 10%, 20%, 30% and 40% recovered with the requirements of ASTM D1160:15. The calculated reproducibilities for 50% recovered and FBP are not in agreement with the requirements of ASTM D1160:15.

CHN-Analyzer: This determination was not problematic for Carbon, Hydrogen and Nitrogen. One statistical outlier was observed for Carbon and two statistical outliers for Hydrogen. The calculated reproducibilities after rejection of the statistical outliers are all in agreement with the respective requirements of ASTM D5291-ABC:16.

Sample #17106:

Aluminium: This determination may be problematic for a number of participants. Six statistical outliers were observed and one other test result was excluded as 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the reproducibility of IP470:05 and IP501:05.

Silicon: This determination may be problematic depending on the test method used. Two statistical outliers were observed and two other test results were excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the reproducibility of IP470:05 but not in agreement with the more strict requirements of IP501:05.

Total Al/Si: This determination may be problematic depending on the test method used. Three statistical outliers were observed and three other test results were excluded. One test result because about 50% of the other metal tests results were marked as statistical outliers and the other two because of a statistical outlier in the Al determination. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the reproducibility of IP470:05 but not in agreement with the more strict requirements of IP501:05.

Iron: This determination may be problematic depending on the test method used. Two statistical outliers were observed and two other test results were excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibility of IP470:05, but not in agreement with the more strict requirements of IP501:05.

Nickel: This determination may not problematic. Nine! statistical outliers were observed and one other test result was excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibilities of IP470:05 and IP501:05.

Sodium: This determination was not problematic. Four statistical outliers were observed and two other test results were excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibilities of IP470:05 and IP501:05.

Vanadium: This determination was not problematic. Five statistical outliers were observed and one other test result was excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in good agreement with the reproducibilities of IP470:05 and IP501:05.

Calcium: This determination was problematic for a number of laboratories. Six statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of IP470:05 and IP501:05.
              The average recovery of Calcium (theoretical increment of 19.4 mg Calcium/kg) may be sufficient: "< 135%" (the actual blank Calcium content is unknown).

Zinc: This determination may be problematic dependent on the test method used. Six statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the reproducibilities of IP470:05 but not in agreement with the more strict requirements of IP501:05.
              The average recovery of Zinc (theoretical increment of 16.9 mg Zinc/kg) may be good: "< 108%" (the actual blank Zinc content is unknown).

Phosphorus: This determination was problematic for a number of participants. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the reproducibility of IP501:05 but not in agreement with the more strict requirements of IP500:03.
              The average recovery of Phosphorus (theoretical increment of 14.6 mg Phosphorus/kg) may be good: "< 117%" (the actual blank Phosphorus content is unknown).

Finally it should be noted that proper attention for homogenisation is crucial for a material such as Fuel Oil. Due to the nature of the material it is very susceptible to problems when not handled correctly. Practically most test methods for the determination of metals in Fuel Oil have similar statements regarding homogenization. Recommended is the use of a quality control fuel oil with known amounts of metals like Al, Fe, Si and V. This control standard may be of use to detect deviations in metals with respect to the preparation steps.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility (2.8 * sd) as declared by the relevant reference test methods and the reproducibility (R (lit)) as found for the group of participating laboratories. The average test results of the evaluated parameters, calculated reproducibilities and reproducibilities, derived from reference test methods (in casu ASTM, EN, ISO and IP reference methods) are compared in the next table.

Parameters	unit	n	average	2.8 * sd	R (lit)
Acid Number	mg KOH/g	85	0.29	0.14	0.18
API Gravity		91	12.3	0.3	0.5
Ash Content	%M/M	111	0.024	0.010	0.005
Asphaltenes	%M/M	75	4.25	1.28	0.85
Calc. Carbon Aromaticity Index		71	845.2	1.6	2.4
Carbon Residue, Micro Method	%M/M	102	11.2	1.1	1.2
Conradson Carbon Residue	%M/M	43	11.4	1.3	1.8
Density at 15°C	kg/m^3	148	983.0	1.4	1.5
Flash Point PMcc	°C	134	117.7	6.5	6
Heat of Combustion, Gross	MJ/kg	72	43.09	0.30	0.40
Heat of Combustion, Net	MJ/kg	60	40.78	0.35	0.40
Kinematic Viscosity at 50°C	mm^2/s	126	342.9	24.2	25.4
Kinematic Viscosity at 100°C	mm^2/s	99	31.63	1.21	1.59
Stabinger Viscosity at 50°C	mm^2/s	12	347.5	23.5	35.8
Stabinger Viscosity at 100°C	mm^2/s	11	31.58	0.61	2.27
Nitrogen Content	mg/kg	24	3104	917	826
Pour Point, Lower	°C	64	0.8	9.7	6.6
Pour Point, Upper	°C	101	2.2	9.6	6.6
Pour Point (automated), Δ3°C	°C	24	-0.3	9.2	6.1
Sediment by Extraction	%M/M	83	0.019	0.025	0.038
Total Sediment (Hot Filtration)	%M/M	71	0.019	0.014	0.040
Total Sediment (Accelerated)	%M/M	61	0.021	0.019	0.043
Total Sediment (Potential)	%M/M	59	0.019	0.014	0.041
Total Sulphur Content	%M/M	154	1.07	0.08	0.10
Water by Distillation	%V/V	88	0.04	0.07	0.2
Water and Sediment	%V/V	37	0.06	0.09	0.1
Distillation at 10 mmHg calculated to 760 mmHg					
Initial Boiling Point	°C	30	216.2	26.8	49
5% recovered	°C	30	262.6	17.8	22.1
10% recovered	°C	29	299.4	20.4	20.7
20% recovered	°C	31	368.5	20.5	20.0
30% recovered	°C	31	428.5	18.0	19.0
40% recovered	°C	30	483.0	18.1	18.5
50% recovered	°C	11	536.0	20.4	18.4

Parameters	unit	n	average	2.8 * sd	R (lit)
Final Boiling Point	°C	23	522.6	43.1	27
CHN analyser					
Total Carbon	%M/M	26	87.6	2.0	2.4
Total Hydrogen	%M/M	24	10.7	0.5	0.8
Total Nitrogen	%M/M	21	0.36	0.18	0.45

Table 5: summary of test results on Fuel Oil sample #17105

Parameters	unit	n	average	2.8 * sd	R (lit)
Aluminium as Al	mg/kg	73	10.7	3.7	3.9
Silicon as Si	mg/kg	73	11.7	6.6	7.2
Total Aluminium+Silicon	mg/kg	67	22.5	8.3	8.2
Iron as Fe	mg/kg	74	19.9	7.7	11.3
Nickel as Ni	mg/kg	72	18.3	5.1	11.5
Sodium as Na	mg/kg	75	10.3	4.0	5.3
Vanadium as V	mg/kg	79	39.5	11.8	20.5
Calcium as Ca	mg/kg	69	26.1	5.7	6.8
Phosphorus as P	mg/kg	58	17.0	4.6	6.1
Zinc as Zn	mg/kg	69	18.3	4.6	5.1

Table 6: summary of test results on Fuel Oil sample #17106

Without further statistical calculations it can be concluded that for a number tests there is a good compliance of the group of participating laboratories with the relevant reference test method. The problematic tests have been discussed in paragraph 4.1.

4.3   COMPARISON OF THE PROFICIENCY TEST OF JUNE 2017 WITH PREVIOUS PTS

	June 2017	December 2016	January 2016	January 2015	January 2014
Number of reporting labs	169	83	226	207	200
Number of results reported	3119	1936	4787	4048	3835
Statistical outliers	102	72	115	130	112
Percentage outliers	3.3%	3.7%	2.4%	3.2%	2.9%

Table 7: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared against the requirements of the respective reference methods. The conclusions are given the following table:

Determination	June 2017	December 2016	January 2016	January 2015	January 2014
Acid Number	+	++	+	++	+
API Gravity	++	++	++	++	++
Ash Content	--	--	-	--	--
Asphaltenes	-	--	+/-	-	+
Calc. Carbon Aromaticity Index	+	+	+	+	+
Carbon Residue, Micro Method	+/-	+	+	++	+/-
Conradson Carbon Residue	+	+/-	+	+	+
Density at 15 °C	+/-	+	+/-	+/-	+
Flash Point PMcc	+/-	+/-	-	-	+/-
Heat of Combustion Gross	+	++	-	--	+
Heat of Combustion Net	+	++	-	--	+
Kinematic Viscosity at 50°C	+/-	++	+	++	+
Kinematic Viscosity at 100°C	+	-	+/-	-	-
Stabinger Viscosity at 50°C	+	+	n.e.	n.e.	n.e.
Stabinger Viscosity at 100°C	++	++	n.e.	n.e.	n.e.
Nitrogen	-	-	-	--	-
Pour Point Lower	-	-	-	-	-
Pour Point Upper	-	-	-	-	-
Pour Point (automated), Δ3°C	-	--	-	--	-
Sediments by Extraction	+	++	++	++	+
Total Sediment (Hot Filtration)	++	++	++	++	+
Total Sediment (Accelerated)	++	++	++	++	++
Total Sediment (Potential)	++	++	++	++	++
Total Sulphur	+	+/-	+	--	+/-
Water by Distillation	++	++	++	++	++
Water and Sediment	+/-	++	+	+/-	+
Distillation at 10mmHg to AET	+/-	-	+/-	+/-	+/-
Total Carbon	+	+	+	+	+
Total Hydrogen	+	+	+	++	+
Total Nitrogen	++	+/-	-	--	-
Aluminium as Al	+/-	n.e.	n.e.	+/-	-
Silicon as Si	+	n.e.	n.e.	+	-
Total Aluminium/Silicon	+/-	n.e.	n.e.	+	-
Iron as Fe	+	+	+	++	-
Nickel as Ni	++	+	+	++	+
Sodium as Na	+	+/-	+/-	+	-
Vanadium as V	++	+	+	++	++
Calcium as Ca	+	+/-	-	--	-
Phosphorus as P	+	+	+	++	+
Zinc as Zn	+	+	-	-	+/-
Bromine Number	n.e.	+	-	+/-	n.e.
p-Value	n.e.	+/-	++	+/-	n.e.
Compatibility	n.e.	+/-	n.e.	n.e.	n.e.

Table 8: comparison determinations against the reference test method

The performance of the determinations against the requirements of the respective reference method is listed in the above table. The following performance categories were used:

++:   group performed much better than the reference test method
+ :   group performed better than the reference test method
+/-:   group performance equals the reference test method
- :   group performed worse than the reference test method
-- :   group performed much worse than the reference test method
n.e.:   not evaluated

APPENDIX 1

Determination of Acid Number (total) on sample #17105; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D664-A	0.24		-0.80	870	D664-A	0.30		0.12
90		-----		-----	886		-----		-----
92		-----		-----	902	D664-A	0.278		-0.22
120	D664-A	0.19		-1.57	904	D664-A	0.28		-0.19
131		-----		-----	912		-----		-----
140	D664-A	0.08	R(0.01)	-3.26	913	D664-A	0.322		0.46
150	D664-A	0.25		-0.65	922	D664-A	0.338		0.71
158		-----		-----	962		-----		-----
159	D664-A	0.29		-0.03	963	D664	0.30		0.12
168		-----		-----	971	D664-A	0.31		0.28
169		-----		-----	974	D664-A	0.33		0.58
171	D664-A	0.29		-0.03	982		-----		-----
175		-----		-----	997		-----		-----
194	D664-A	0.34		0.74	1006		-----		-----
212	D664-A	0.32		0.43	1011	D664-A	0.280		-0.19
221		-----		-----	1059	ISO6619	0.28		-0.19
224	D974	0.023	C,R(0.01)	-4.14	1065	D664-A	0.273		-0.29
225	D664-A	0.27		-0.34	1082		-----		-----
237	D664-A	0.19		-1.57	1095	D664-A	0.274		-0.28
238	D664-A	0.149		-2.20	1099		-----		-----
252		-----		-----	1109	D664-A	0.29		-0.03
253		-----		-----	1126		-----		-----
254		-----		-----	1134	D664-A	0.25		-0.65
273	D974	0.44	C	2.27	1135	D664-A	0.2635		-0.44
311	D664-A	0.31		0.28	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D664-A	0.26		-0.49	1177		-----		-----
331	D664Mod.	0.325		0.51	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233	D664-A	0.38		1.35
337		-----		-----	1254	D664-A	0.325		0.51
342	D664-A	0.32		0.43	1259	D664-A	0.313		0.32
343		-----		-----	1275		-----		-----
349		-----		-----	1299	D664-A	0.290		-0.03
351		-----		-----	1345	D664-A	0.301		0.14
371		-----		-----	1356	D664-A	0.325		0.51
391	D664-A	0.287		-0.08	1367	IP177	0.37		1.20
398	D664-A	0.291		-0.02	1389	D664-A	0.29		-0.03
399		-----		-----	1402	IP177	0.262		-0.46
440		-----		-----	1404	D664-A	0.295		0.05
444		-----		-----	1412	D664-A	0.28		-0.19
445	D664-A	0.311		0.29	1428		-----		-----
447	D664-A	0.305		0.20	1431		-----		-----
463	D664-A	0.434		2.18	1459		-----		-----
511		-----		-----	1488		-----		-----
541		-----		-----	1510		-----		-----
562		-----		-----	1539	D664-A	0.30		0.12
575	D664-A	0.35		0.89	1556	D664-A	0.24		-0.80
603		-----		-----	1569	D664-A	0.27		-0.34
604		-----		-----	1584		-----		-----
605	D664-A	0.29		-0.03	1586	D664-A	0.276		-0.25
608	D664-A	0.135		-2.41	1613	D664-A	0.157		-2.08
621		-----		-----	1622	D664-A	0.3241		0.49
631		-----		-----	1631		-----		-----
663	D664-A	0.313		0.32	1643	D664-A	0.327		0.54
671		-----		-----	1710	D664-A	0.276		-0.25
750	D664-A	0.23		-0.95	1720	D664-A	0.33	C	0.58
753	D664-A	0.26		-0.49	1724	D664-A	0.331		0.60
759		-----		-----	1728		-----		-----
824	D664-A	0.30	C	0.12	1740	D664-A	0.23		-0.95
825		-----		-----	1741	ISO6619	0.270		-0.34
851		-----		-----	1796	D664-A	0.2853		-0.10
855	D664-A	0.31		0.28	1807		-----		-----
857	D664-A	0.30		0.12	1832		-----		-----
858	D664-A	0.32		0.43	1833		-----		-----
859	D664-A	0.30		0.12	1849		-----		-----
862	D664-A	0.253		-0.60	1857	D664-A	0.30		0.12
863	D664-A	0.28		-0.19	1862	D664-A	0.278		-0.22
864	D664-A	0.30		0.12	1881		-----		-----
865	D664-A	0.311		0.29	1906		-----		-----
866	D664-A	0.28		-0.19	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D664-A	0.287		-0.08
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	D664-A	0.29		-0.03
1964		-----		-----	6051		-----		-----
1967	D664-A	0.285		-0.11	6057	D664-A	0.344		0.80
1971		-----		-----	6075		-----		-----
1986	D664-A	0.29		-0.03	6092		-----		-----
1995	D664-A	0.3965	C	1.61	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	D664-A	0.300		0.12
6021	D664-A	0.295		0.05	6122		-----		-----

normality	not OK
n	85
outliers	2
mean (n)	0.2921
st.dev. (n)	0.04928
R(calc.)	0.1380
R(D664-A:11ae1)	0.1822

Lab 224 first reported: 0.0445

Lab 273 first reported: 0.942

Lab 824 first reported: 0.033

Lab 1720 first reported: 0.65

Lab 1995 first reported: 0.4965
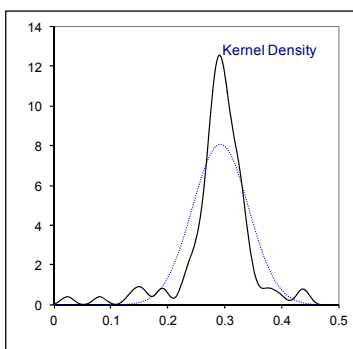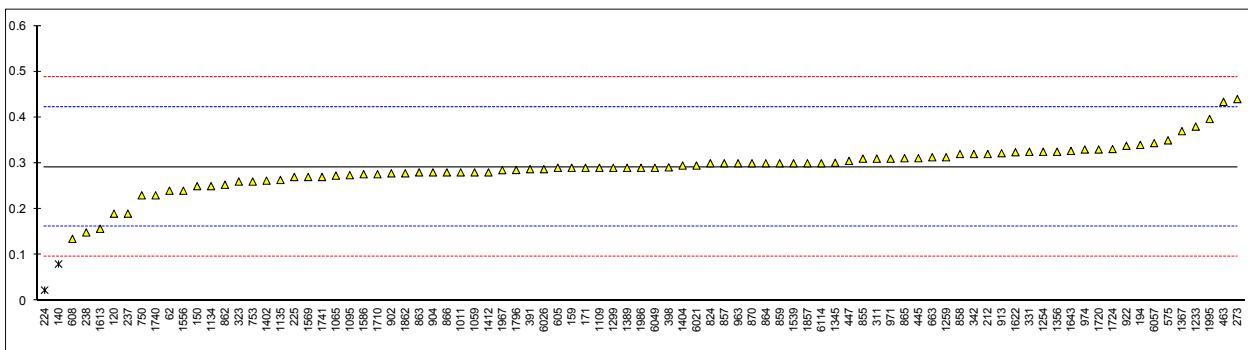
Determination of API Gravity on sample #17105

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	12.3		-0.25	870	D1298	12.33		-0.09
90	D4052	12.39		0.25	886		-----		-----
92	D4052	12.41		0.36	902	D4052	12.32		-0.14
120	ISO12185	12.3		-0.25	904	D4052	12.3		-0.25
131	D4052	12.35		0.03	912	D1298	12.32		-0.14
140	D4052	12.3		-0.25	913	D1298	12.37		0.14
150		-----		-----	922	D1298	12.37		0.14
158		-----		-----	962	D1298	12.34		-0.03
159	D4052	12.4		0.31	963	D1298	12.36		0.08
168	D287	12.2		-0.81	971	ISO12185	12.41		0.36
169	D1298	12.0		-1.93	974	Calc.	12.42		0.42
171	D4052	12.3		-0.25	982	D1298	12.35		0.03
175	D4052	12.33		-0.09	997	D1250	12.05		-1.65
194	D4052	12.3		-0.25	1006		-----		-----
212	ISO12185	12.31		-0.20	1011		-----		-----
221		-----		-----	1059	D4052	12.62		1.54
224	D1298	11.62	C,R(0.01)	-4.06	1065		-----		-----
225		12.45		0.59	1082		-----		-----
237	D4052	12.29		-0.31	1095		-----		-----
238	D4052	12.32		-0.14	1099		-----		-----
252		-----		-----	1109	D287	12.30		-0.25
253	D4052	12.42		0.42	1126		-----		-----
254		-----		-----	1134	D1298	12.35		0.03
273	D4052	12.2	C	-0.81	1135	D4052	12.41		0.36
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D1298	12.3		-0.25	1177		-----		-----
331	ISO12185	12.35		0.03	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254	ISO12185	12.35		0.03
342		-----		-----	1259	ISO12185	12.15		-1.09
343	D4052	12.38		0.19	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345	D1298	12.41		0.36
371	D1298	12.38		0.19	1356		-----		-----
391	D1298	12.39		0.25	1367		-----		-----
398	D1298	12.44		0.53	1389		-----		-----
399	D1298	12.4		0.31	1402	D4052	12.30		-0.25
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D4052	12.41		0.36
445		-----		-----	1428		-----		-----
447	D1250	12.52		0.98	1431	ISO12185	12.28		-0.37
463	D1298	12.36		0.08	1459		-----		-----
511		-----		-----	1488	Calc.	11.65	C,R(0.01)	-3.89
541	D4052	12.24		-0.59	1510		-----		-----
562	D1298	12.5		0.87	1539		-----		-----
575	D1298	12.6		1.43	1556		-----		-----
603		-----		-----	1569		-----		-----
604	D4052	12.18		-0.93	1584	ISO12185	12.345		0.00
605	D4052	12.25		-0.53	1586	D1298	12.38		0.19
608		-----		-----	1613	D4052	12.33		-0.09
621		-----		-----	1622	D4052	12.4		0.31
631	D1298	12.08		-1.49	1631		-----		-----
663		-----		-----	1643		-----		-----
671	D287	12.4	C	0.31	1710		-----		-----
750	D1298	12.4		0.31	1720		-----		-----
753	D1298	12.33		-0.09	1724	D1298	12.5		0.87
759	D1298	12.375		0.17	1728	D287	12.530		1.03
824	D4052	12.38		0.19	1740		-----		-----
825	D4052	12.39		0.25	1741		-----		-----
851		-----		-----	1796	D1250	12.276		-0.39
855	D1298	12.34		-0.03	1807		-----		-----
857		-----		-----	1832		-----		-----
858	D1298	12.35		0.03	1833		-----		-----
859	D1298	12.32		-0.14	1849		-----		-----
862	D287	12.28		-0.37	1857	D1298	12.287		-0.33
863	ISO12185	12.42		0.42	1862	D1250	12.35		0.03
864	ISO12185	12.4		0.31	1881	D4052	12.35		0.03
865	ISO12185	12.37		0.14	1906		-----		-----
866	ISO12185	12.32		-0.14	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	D1250	12.29		-0.31
1938		-----		-----	6026	D1298	12.33		-0.09
1943		-----		-----	6028	D1298	12.49		0.81
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	D4052	12.405		0.33
1964		-----		-----	6051	D1250	12.35		0.03
1967	D1298	12.375		0.17	6057	ISO12185	12.41		0.36
1971		-----		-----	6075		-----		-----
1986	D4052	12.30		-0.25	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004	D1298	12.30		-0.25	6112		-----		-----
6016	D4052	12.2		-0.81	6114	D4052	12.329		-0.09
6021	ISO12185	12.360		0.08	6122		-----		-----

normality	not OK
n	91
outliers	2
mean (n)	12.345
st.dev. (n)	0.0972
R(calc.)	0.272
R(D1298:12b)	0.5

Lab 224 first reported: 12.06

Lab 273 first reported: 11.7

Lab 671 first reported: 14.46

Lab 1488 first reported: 11.73
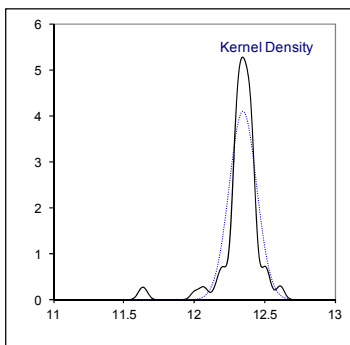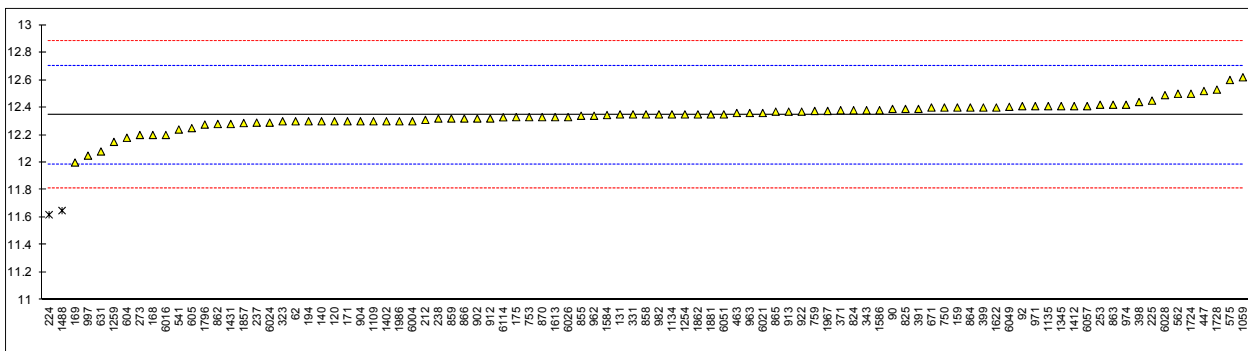
Determination of Ash Content on sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D482	0.032		4.41	870	ISO6245	0.029		2.73
90	D482	0.0278		2.06	886		-----		-----
92	D482	0.030		3.29	902	ISO6245	0.027		1.61
120	D482	0.021		-1.75	904	D482	0.022		-1.19
131		-----		-----	912	D482	0.0295		3.01
140	ISO6245	0.017		-3.99	913	ISO6245	0.0292		2.85
150	D482	0.026		1.05	922	D482	0.0206		-1.97
158		-----		-----	962	ISO6245	0.01977		-2.43
159	D482	0.022		-1.19	963	ISO6245	0.025		0.49
168		-----		-----	971	D482	0.0245		0.21
169	D482	0.02068		-1.92	974	D482	0.025		0.49
171	ISO6245	0.018		-3.43	982	D482	0.021		-1.75
175	D482	0.023		-0.63	997		-----		-----
194	ISO6245	0.0242		0.05	1006		-----		-----
212	ISO6245	0.02		-2.31	1011	ISO6245	0.025		0.49
221	D482	0.0278		2.06	1059		-----		-----
224	D482	0.0276		1.95	1065	D482	0.023625		-0.28
225	D482	0.023		-0.63	1082		-----		-----
237	D482	0.023	C	-0.63	1095	ISO6245	0.023		-0.63
238		-----		-----	1099		-----		-----
252	D482	0.0249		0.44	1109	D482	0.0232		-0.51
253	D482	0.025		0.49	1126		-----		-----
254	D482	0.024		-0.07	1134		-----		-----
273		-----		-----	1135	ISO6245	0.02655		1.36
311		-----		-----	1161		-----		-----
313		-----		-----	1167	ISO6245	0.02393		-0.10
323	ISO6245	0.018		-3.43	1177		-----		-----
331	ISO6245	0.0250		0.49	1191	ISO6245	0.0248		0.38
333		-----		-----	1213	D482	0.0225		-0.91
334		-----		-----	1229		-----		-----
336		-----		-----	1233	ISO6245	0.025		0.49
337		-----		-----	1254	D482	0.0215		-1.47
342	ISO6245	0.025		0.49	1259	ISO6245	0.0269		1.56
343	ISO6245	0.021		-1.75	1275	IP4	0.022		-1.19
349		-----		-----	1299	D482	<0.001	C, f-?	<-12.79
351	ISO6245	0.0234		-0.40	1345	D482	0.0274		1.84
371	ISO6245	0.0222		-1.07	1356	ISO6245	0.031		3.85
391		-----		-----	1367	IP4	0.024		-0.07
398		-----		-----	1389	D482	0.022		-1.19
399		-----		-----	1402	IP4	0.027		1.61
440		-----		-----	1404	ISO6245	0.020		-2.31
444	D482	0.0168		-4.10	1412	D482	0.027		1.61
445	IP4	0.015		-5.11	1428	ISO6245	0.028		2.17
447	IP4	0.010	R(0.05)	-7.91	1431	D482	0.02452		0.23
463	ISO6245	0.0225		-0.91	1459		-----		-----
511		-----		-----	1488	ISO6245	0.0224	C	-0.96
541	D482	0.0223		-1.02	1510		-----		-----
562	D482	0.031		3.85	1539	ISO6245	0.025		0.49
575		-----		-----	1556	ISO6245	0.0249		0.44
603		-----		-----	1569	ISO6245	0.024		-0.07
604		-----		-----	1584		-----		-----
605	D482	0.023		-0.63	1586	ISO6245	0.020		-2.31
608		-----		-----	1613	D482	0.022		-1.19
621		-----		-----	1622		-----		-----
631	D482	0.0291		2.79	1631		-----		-----
663	D482	0.0228		-0.74	1643	D482	0.0258		0.94
671	D482	0.016		-4.55	1710	ISO6245	0.021		-1.75
750		-----		-----	1720		-----		-----
753	D482	0.026		1.05	1724	D482	0.022		-1.19
759		-----		-----	1728	ISO6245	0.024		-0.07
824	ISO6245	0.025		0.49	1740	ISO6245	0.026		1.05
825	D482	0.025		0.49	1741	ISO6245	0.020		-2.31
851	ISO6245	0.025		0.49	1796	ISO6245	0.02723		1.74
855	ISO6245	0.026		1.05	1807	ISO6245	0.0394	R(0.01)	8.56
857	ISO6245	0.0259		1.00	1832	ISO6245	0.0220		-1.19
858	D482	0.027		1.61	1833		-----		-----
859	D482	0.025		0.49	1849	ISO6245	0.026		1.05
862	ISO6245	0.0234		-0.40	1857	D482	0.028		2.17
863	D482	0.0235		-0.35	1862	ISO6245	0.0282		2.29
864	D482	0.025		0.49	1881	D482	0.0164		-4.32
865	ISO6245	0.026		1.05	1906		-----		-----
866	D482	0.025		0.49	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	ISO6245	0.0284		2.40
1938		-----		-----	6026	D482	0.0263		1.22
1943		-----		-----	6028		-----		-----
1956	ISO6245	0.022		-1.19	6039		-----		-----
1962		-----		-----	6049	ISO6245	0.0236		-0.29
1964		-----		-----	6051		-----		-----
1967	D482	0.0246		0.27	6057	ISO6245	0.03		3.29
1971		-----		-----	6075	ISO6245	0.0183		-3.26
1986	ISO6245	0.026		1.05	6092	ISO6245	0.028		2.17
1995	D482	0.02		-2.31	6109	D482	4.780	R(0.01)	2663.29
6004		-----		-----	6112		-----		-----
6016	D482	0.029579		3.06	6114	D482	0.0241		-0.01
6021	D482	0.0268		1.50	6122	ISO6245	0.0150		-5.11

normality	OK
n	111
outliers	3
mean (n)	0.0241
st.dev. (n)	0.00349
R(calc.)	0.0098
R(ISO6245:01)	0.005

Lab 237 first reported: 0.002

Lab 1299 first reported: 0.00019/ possibly a false negative test result?

Lab 1488 first reported: 0.0022
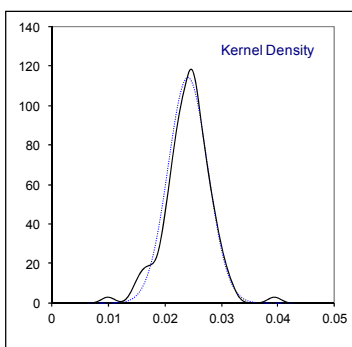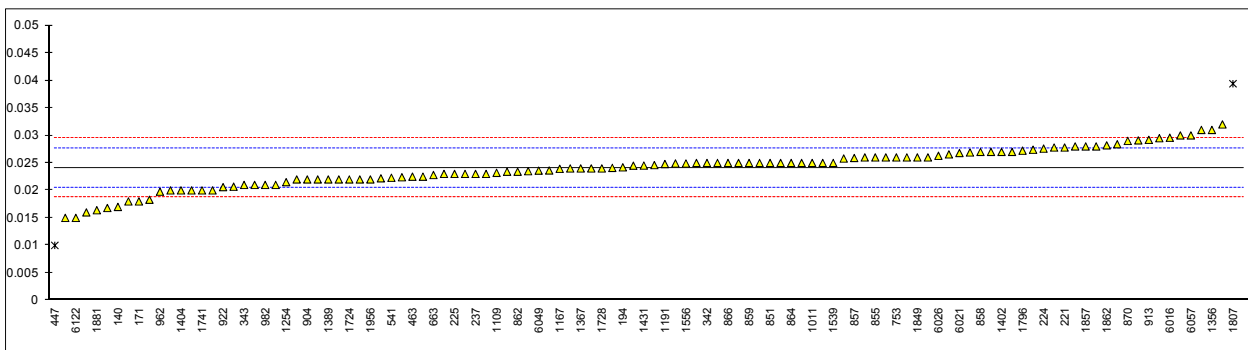
Determination of Asphaltenes on sample #17105; results in %M/M

lab	method	value	mark	z(targ)
62	IP143	4.6		1.16
90	IP143	4.46		0.70
92		-----		-----
120		-----		-----
131	D6560	4.184		-0.21
140	IP143	3.7		-1.80
150	IP143	4.0		-0.81
158		-----		-----
159		-----		-----
168	D3279	3.3		-3.12
169		-----		-----
171	IP143	4.3		0.17
175		-----		-----
194		-----		-----
212		-----		-----
221	D6560	4.4		0.50
224		-----		-----
225	D6560	3.2		-3.45
237		-----		-----
238		-----		-----
252		-----		-----
253		-----		-----
254		-----		-----
273		-----		-----
311	IP143	4.4		0.50
313		-----		-----
323	IP143	3.9		-1.14
331		-----		-----
333		-----		-----
334		-----		-----
336		-----		-----
337		-----		-----
342	IP143	4.459		0.70
343	IP143	4.61		1.20
349		-----		-----
351		-----		-----
371	IP143	4.49		0.80
391	IP143	3.6		-2.13
398		-----		-----
399		-----		-----
440		-----		-----
444		-----		-----
445	IP143	4.34		0.31
447	IP143	4.275		0.09
463		-----		-----
511		-----		-----
541		-----		-----
562		-----		-----
575		-----		-----
603		-----		-----
604		-----		-----
605	IP143	4.67		1.39
608	IP143	4.69		1.46
621		-----		-----
631	D6560	4.04		-0.68
663	IP143	3.40		-2.79
671		-----		-----
750	IP143	3.4		-2.79
753	IP143	3.60		-2.13
759		-----		-----
824		-----		-----
825		-----		-----
851		-----		-----
855	IP143	4.20		-0.15
857	IP143	4.19		-0.19
858	IP143	4.2		-0.15
859	IP143	4.2		-0.15
862	IP143	4.12		-0.42
863	IP143	4.26		0.04
864	IP143	4.1		-0.48
865	IP143	4.10		-0.48
866	IP143	4.1		-0.48
870	IP143	3.90		-1.14
886		-----		-----
902		-----		-----
904		-----		-----
912		-----		-----
913		-----		-----
922		-----		-----
962	IP143	3.87		-1.24
963	IP143	4.02		-0.75
971	IP143	4.81		1.86
974	IP143	4.82		1.89
982		-----		-----
997		-----		-----
1006		-----		-----
1011	IP143	3.7		-1.80
1059		-----		-----
1065	IP143	4.40		0.50
1082	IP143	4.54		0.97
1095		-----		-----
1099		-----		-----
1109		-----		-----
1126		-----		-----
1134	IP143	4.1387		-0.36
1135		-----		-----
1161		-----		-----
1167		-----		-----
1177		-----		-----
1191	IP143	4.59		1.13
1213	D6560	4.915		2.20
1229		-----		-----
1233		-----		-----
1254		-----		-----
1259	D6560	4.223		-0.08
1275		-----		-----
1299	IP143	4.90		2.15
1345	IP143	4.321		0.24
1356	D6560	5.3		3.47
1367		-----		-----
1389	IP143	5.01		2.52
1402	IP143	3.4		-2.79
1404	IP143	3.87		-1.24
1412	D6560	4.29		0.14
1428		-----		-----
1431	D6560	4.24		-0.02
1459		-----		-----
1488		-----		-----
1510	IP143	4.1		-0.48
1539		-----		-----
1556	IP143	4.27		0.08
1569	IP143	4.4		0.50
1584		-----		-----
1586	IP143	4.37		0.41
1613	IP143	3.2		-3.45
1622	IP143	5.2	C	3.14
1631		-----		-----
1643	D6560	4.75		1.66
1710		-----	W	-----
1720		-----		-----
1724		-----		-----
1728	IP143	4.229		-0.06
1740	IP143	3.9		-1.14
1741		-----		-----
1796		-----		-----
1807		-----		-----
1832		-----		-----
1833	IP143	4.2		-0.15
1849		-----		-----
1857	IP143	4.75		1.66
1862	IP143	4.64		1.30
1881	IP143	3.97	C	-0.91
1906		-----		-----
1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	IP143	4.405		0.52
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	IP143	4.39		0.47
1964		-----		-----	6051		-----		-----
1967	IP143	4.2005		-0.15	6057	IP143	4.16		-0.29
1971		-----		-----	6075	NF T 60-115	5.07		2.71
1986	IP143	4.8		1.82	6092	IP143	4.47		0.74
1995		-----		-----	6109		-----		-----
6004		----		-----	6112		-----		-----
6016	IP143	3.46		-2.59	6114	IP143	4.30		0.17
6021	IP143	4.54		0.97	6122		-----		-----

normality	OK
n	75
outliers	0
mean (n)	4.247
st.dev. (n)	0.4558
R(calc.)	1.276
R(IP143:04)	0.849

Lab 1622 first reported: 10.5357

Lab 1710 first reported: 2.85

Lab 1881 first reported: 5.53
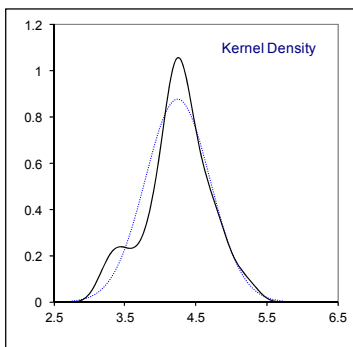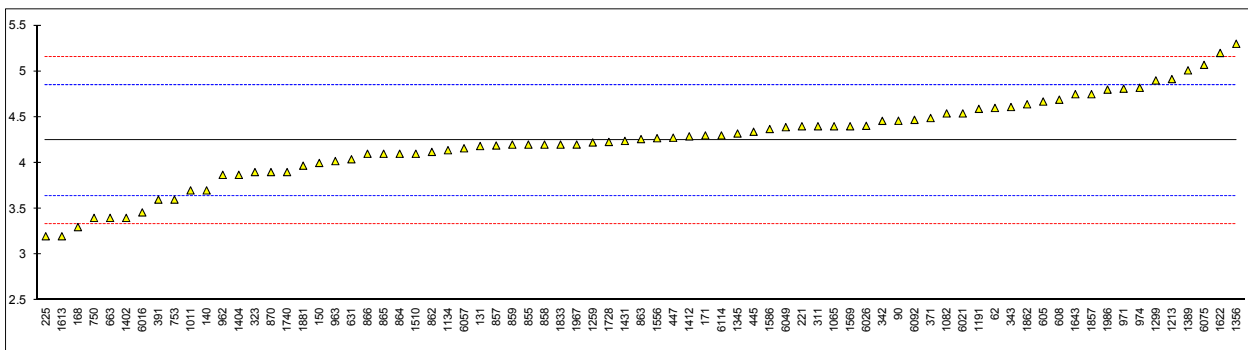
Determination of Calculated Carbon Aromaticity Index on sample #17105

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	ISO8217	845		-0.26	870	ISO8217	845.5		0.33
90		-----		-----	886		-----		-----
92		-----		-----	902	ISO8217	845		-0.26
120		-----		-----	904	ISO8217	845.5		0.33
131		-----		-----	912	ISO8217	844		-1.45
140	ISO8217	846		0.93	913		-----		-----
150	ISO8217	845		-0.26	922	ISO8217	844.9		-0.38
158		-----		-----	962	ISO8217	845.3		0.09
159		-----		-----	963	ISO8217	845		-0.26
168		-----		-----	971	ISO8217	845		-0.26
169		-----		-----	974	ISO8217	845		-0.26
171	ISO8217	845		-0.26	982	ISO8217	844.263		-1.14
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212	ISO8217	845		-0.26	1011	ISO8217	846		0.93
221	ISO8217	845.067		-0.18	1059		-----		-----
224		-----		-----	1065	ISO8217	846.1		1.05
225	ISO8217	844.9		-0.38	1082		-----		-----
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254	ISO8217	845		-0.26	1134	ISO8217	844.7		-0.62
273		-----		-----	1135	ISO8217	845		-0.26
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323	ISO8217	845.3	C	0.09	1177		-----		-----
331	ISO8217	844.5		-0.86	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336	ISO8217	846		0.93	1233		-----		-----
337		-----		-----	1254		-----		-----
342	ISO8217	845		-0.26	1259		-----		-----
343		-----		-----	1275		-----		-----
349		-----		-----	1299	ISO8217	845		-0.26
351	ISO8217	845.15		-0.08	1345		-----		-----
371	ISO8217	845	C	-0.26	1356		-----		-----
391	ISO8217	845.15		-0.08	1367	ISO8217	845.0		-0.26
398	ISO8217	845		-0.26	1389		-----		-----
399		-----		-----	1402	ISO8217	846		0.93
440		-----		-----	1404		-----		-----
444		-----		-----	1412	ISO8217	845.7		0.57
445	ISO8217	846		0.93	1428		-----		-----
447	ISO8217	844		-1.45	1431		-----		-----
463	ISO8217	844.6		-0.74	1459		-----		-----
511		-----		-----	1488		-----		-----
541	ISO8217	844.6		-0.74	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556	ISO8217	845.3		0.09
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605	ISO8217	845.7		0.57	1586	ISO8217	845.2		-0.02
608		-----		-----	1613	ISO8217	844.8		-0.50
621		-----		-----	1622		-----		-----
631	ISO8217	846.95		2.06	1631		-----		-----
663	ISO8217	845		-0.26	1643		-----		-----
671		-----		-----	1710		-----		-----
750		-----		-----	1720		-----		-----
753	ISO8217	845.6		0.45	1724		-----		-----
759		-----		-----	1728	ISO8217	844		-1.45
824	ISO8217	845		-0.26	1740	ISO8217	845		-0.26
825		-----		-----	1741	ISO8217	846.20		1.17
851		-----		-----	1796	ISO8217	845.9		0.81
855	ISO8217	845		-0.26	1807		-----		-----
857	ISO8217	845.2		-0.02	1832		-----		-----
858	ISO8217	845		-0.26	1833	ISO8217	845		-0.26
859	ISO8217	845		-0.26	1849		-----		-----
862	ISO8217	845		-0.26	1857	ISO8217	846		0.93
863	ISO8217	845		-0.26	1862	ISO8217	845		-0.26
864	ISO8217	845		-0.26	1881		-----		-----
865	ISO8217	844.6		-0.74	1906		-----		-----
866	ISO8217	845.4		0.21	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	ISO8217	846		0.93
1938		-----		-----	6026	ISO8217	845		-0.26
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	ISO8217	845		-0.26
1964		-----		-----	6051	ISO8217	846		0.93
1967	ISO8217	845		-0.26	6057	ISO8217	845		-0.26
1971		-----		-----	6075		-----		-----
1986	ISO8217	845.6		0.45	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	ISO8217	846		0.93
6021	ISO8217	847		2.12	6122		-----		-----

normality	suspect
n	71
outliers	0
mean (n)	845.221
st.dev. (n)	0.5853
R(calc.)	1.639
R(ISO8217:12)	2.35

Lab 323 first reported: 848

Lab 371 first reported: 35.3
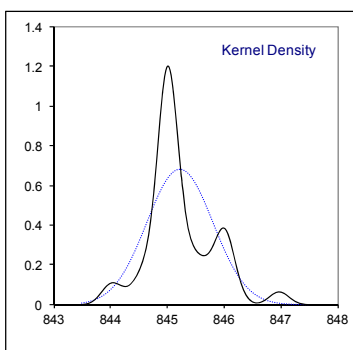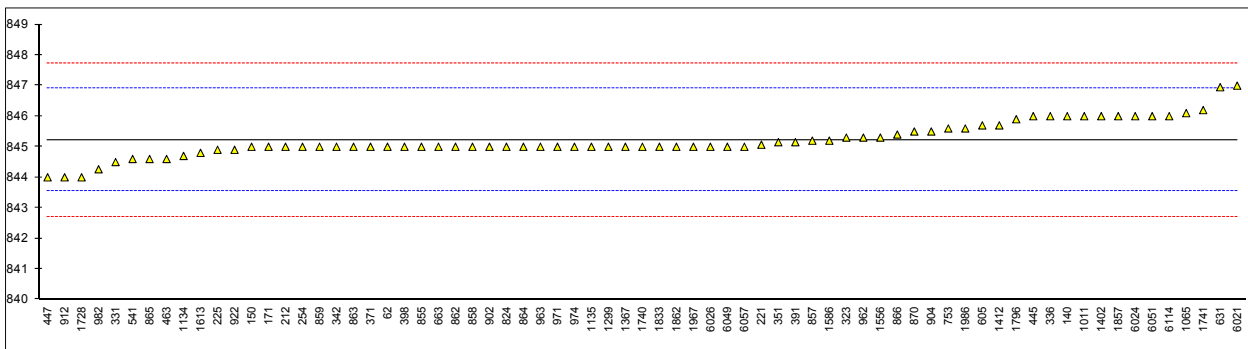
Determination of Carbon Residue - micro method on sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4530	11.2		0.01	870	ISO10370	11.52		0.74
90		-----		-----	886	D4530	11.8		1.38
92	D4530	10.47		-1.66	902	ISO10370	11.0		-0.45
120	D4530	10.97		-0.52	904	D4530	11.0		-0.45
131	D4530	11.30		0.24	912	ISO10370	11.61		0.94
140	ISO10370	9.57	R(0.05)	-3.71	913	D4530	11.95		1.72
150	D4530	11.4		0.46	922		-----		-----
158		-----		-----	962		-----		-----
159	D4530	12.7	R(0.05)	3.43	963	ISO10370	11.24		0.10
168	D4530	11.1		-0.22	971	D4530	11.35		0.35
169		-----		-----	974	D4530	11.33		0.30
171	ISO10370	10.76		-1.00	982		-----		-----
175		-----		-----	997		-----		-----
194	D4530	10.903		-0.67	1006	D4530	11.7		1.15
212	ISO10370	11.63		0.99	1011	ISO10370	11.05		-0.34
221		-----		-----	1059	ISO10370	11.19		-0.02
224		-----		-----	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095	ISO10370	10.88		-0.72
238		-----		-----	1099		-----		-----
252	D4530	10.94		-0.59	1109	D4530	10.97		-0.52
253		-----		-----	1126		-----		-----
254		-----		-----	1134	D4530	11.226		0.07
273		-----		-----	1135	ISO10370	11.09		-0.24
311	D4530	12.1		2.06	1161		-----		-----
313		-----		-----	1167		-----		-----
323	ISO10370	11.97		1.76	1177		-----		-----
331	ISO10370	10.60		-1.36	1191	ISO10370	10.99		-0.47
333		-----		-----	1213	D4530	11.07		-0.29
334	ISO10370	10.69		-1.16	1229	ISO10370	10.9		-0.68
336	ISO10370	11.00		-0.45	1233	ISO10370	11.36		0.37
337		-----		-----	1254	D4530	11.129		-0.15
342	ISO10370	11.40	C	0.46	1259	ISO10370	11.8346		1.46
343	ISO10370	11.24		0.10	1275		-----		-----
349		-----		-----	1299	D4530	11.02		-0.40
351	ISO10370	10.803		-0.90	1345		-----		-----
371		-----		-----	1356	ISO10370	11.16		-0.08
391	ISO10370	10.49		-1.61	1367	IP398	11.53		0.76
398	ISO10370	10.92		-0.63	1389		-----		-----
399		-----		-----	1402	IP398	11.5		0.69
440		-----		-----	1404	ISO10370	11.53		0.76
444		-----		-----	1412		-----		-----
445	IP398	11.38		0.42	1428	ISO10370	11.055		-0.32
447	IP398	10.89		-0.70	1431	D4530	11.14		-0.13
463	ISO10370	11.208		0.03	1459		-----		-----
511		-----		-----	1488		-----		-----
541		-----		-----	1510	D4530	11.2		0.01
562	D4530	11.7		1.15	1539	ISO10370	11.45		0.58
575		-----		-----	1556	ISO10370	10.96		-0.54
603	D4530	12.4		2.75	1569	ISO10370	11.39		0.44
604		-----		-----	1584		-----		-----
605	D4530	10.9		-0.68	1586	ISO10370	11.09		-0.24
608	D4530	11.13		-0.15	1613	D4530	10.208		-2.26
621		-----		-----	1622	D4530	10.9925		-0.47
631	D4530	10.94		-0.59	1631		-----		-----
663	D4530	10.93		-0.61	1643		-----		-----
671		-----		-----	1710	ISO10370	11.55		0.81
750	ISO10370	11.99		1.81	1720	D4530	9.98		-2.78
753		-----		-----	1724	D4530	11.57		0.85
759		-----		-----	1728	ISO10370	11.01		-0.43
824	ISO10370	10.80		-0.91	1740	ISO10370	11		-0.45
825	D4530	11.15		-0.11	1741	ISO10370	11.380		0.42
851	ISO10370	10.94		-0.59	1796		-----		-----
855	D4530	11.46		0.60	1807	ISO10370	10.80		-0.91
857	ISO10370	11.50		0.69	1832		-----		-----
858	D4530	11.39		0.44	1833	ISO10370	10.95		-0.56
859	D4530	11.7		1.15	1849		-----		-----
862	ISO10370	11.12		-0.18	1857	ISO10370	11.2		0.01
863	D4530	11.31		0.26	1862	ISO10370	11.1		-0.22
864	D4530	11.24		0.10	1881	ISO10370	12.38		2.70
865	ISO10370	11.21		0.03	1906		-----		-----
866	D4530	11.4		0.46	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D4530	11.216		0.04
1943		-----		-----	6028	ISO10370	10.7		-1.13
1956	ISO10370	11.51		0.71	6039		-----		-----
1962		-----		-----	6049	ISO10370	11.22		0.05
1964		-----		-----	6051	D4530	11.3		0.24
1967	D4530	11.154		-0.10	6057	ISO10370	10.82		-0.86
1971		-----		-----	6075		-----		-----
1986	ISO10370	11.2		0.01	6092		-----		-----
1995	D4530	11.65		1.03	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D4530	10.8751		-0.73	6114	ISO10370	10.920		-0.63
6021	ISO10370	11.05		-0.34	6122	ISO10370	10.56		-1.45

normality	suspect
n	102
outliers	2
mean (n)	11.1969
st.dev. (n)	0.39975
R(calc.)	1.1193
R(ISO10370:14)	1.2267

Lab 342 first reported: 13.07
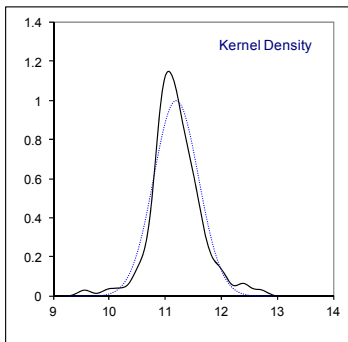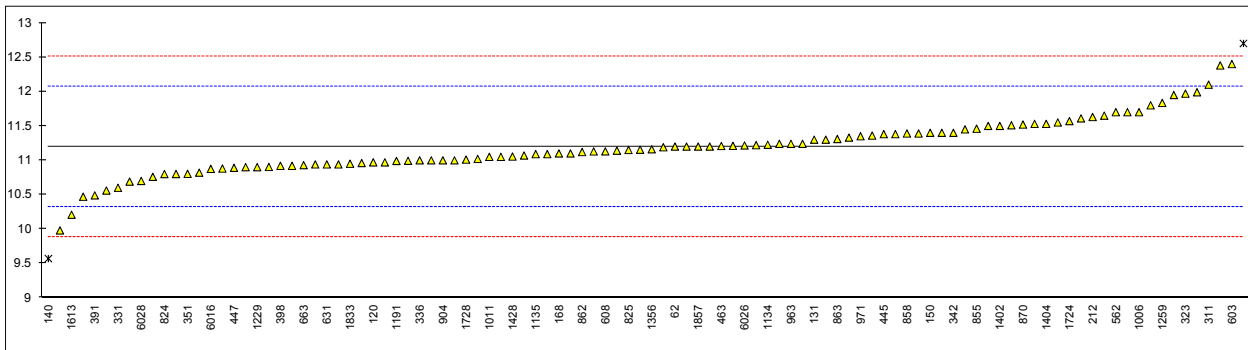
Determination of Conradson Carbon Residue on sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870	D189	11.50		0.09
90		-----		-----	886		-----		-----
92		-----		-----	902		-----		-----
120		-----		-----	904	D189	11.5		0.09
131		-----		-----	912	D189	11.04		-0.61
140		-----		-----	913	D189	11.15		-0.44
150		-----		-----	922	D189	11.75		0.48
158		-----		-----	962	D189	11.56		0.19
159		-----		-----	963	D189	11.42		-0.03
168		-----		-----	971	D189	11.45		0.02
169		-----		-----	974	D189	11.35		-0.14
171	D189	11.0		-0.68	982	D189	11.11		-0.51
175		-----		-----	997	D189	11.58	C	0.22
194		-----		-----	1006		-----		-----
212		11.56		0.19	1011		-----		-----
221		-----		-----	1059		-----		-----
224	D189	11.95		0.79	1065		-----		-----
225	D4530	11.1		-0.52	1082		-----		-----
237	D189	10.62		-1.26	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253	D189	12.00		0.86	1126		-----		-----
254	D189	10.96		-0.74	1134		-----		-----
273	D4530	10.66		-1.20	1135		-----		-----
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323		-----		-----	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254	D189	11.682		0.37
342		-----		-----	1259		-----		-----
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345	D189	11.662		0.34
371	D189	11.63		0.29	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389	D4530	11.04		-0.61
399		-----		-----	1402	D189	12.20		1.17
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D189	11.52		0.13
445	IP13	11.27		-0.26	1428		-----		-----
447		-----		-----	1431		-----		-----
463		-----		-----	1459		-----		-----
511		-----		-----	1488	ISO6615	11.60		0.25
541	D189	10.63	C	-1.24	1510		-----		-----
562	D189	12.1		1.02	1539	ISO6615	12.26		1.26
575	D189	13.11	C,R(0.05)	2.57	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605		-----		-----	1586	D189	11.53		0.14
608		-----		-----	1613	D189	10.51		-1.43
621		-----		-----	1622	D189	12.6463		1.86
631		-----		-----	1631		-----		-----
663		-----		-----	1643	D189	11.577		0.21
671		-----		-----	1710		-----		-----
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728	D189	10.89		-0.84
824		-----		-----	1740	D189	11.1		-0.52
825		-----		-----	1741		-----		-----
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832	ISO6615	11.452		0.02
858		-----		-----	1833		-----		-----
859		-----		-----	1849		-----		-----
862	D189	11.37		-0.11	1857		-----		-----
863		-----		-----	1862	D189	11.6		0.25
864		-----		-----	1881		-----		-----
865	ISO6615	11.24		-0.31	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D189	11.971		0.82
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967	D189	11.6194		0.28	6057		-----		-----
1971		-----		-----	6075		-----		-----
1986	D189	11.5		0.09	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114		-----		-----
6021		-----		-----	6122		-----		-----

normality	OK
n	43
outliers	1
mean (n)	11.4386
st.dev. (n)	0.45689
R(calc.)	1.2793
R(D189:06)	1.8189

Lab 541 first reported: 9.634

Lab 575 first reported: 13.32

Lab 997 first reported: 13.8
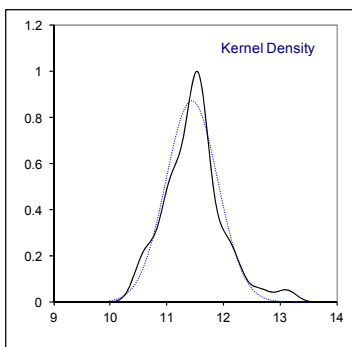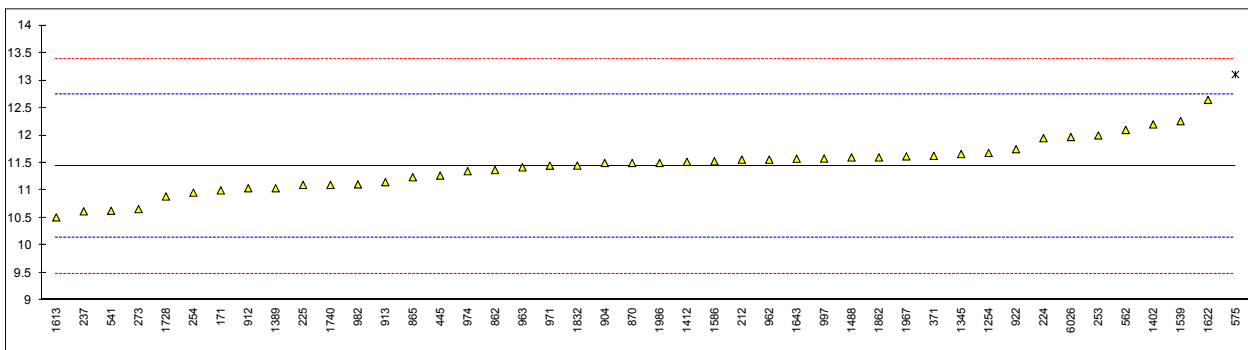
Determination of Density at 15°C on sample #17105; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	983.1		0.25	870	D1298	983.2		0.44
90	D4052	982.8		-0.31	886		-----		-----
92	D4052	982.7		-0.49	902	ISO12185	982.9		-0.12
120	ISO12185	983.4		0.81	904	D4052	983.2		0.44
131	D4052	983.10		0.25	912	D1298	982.3		-1.24
140	D4052	983.0		0.07	913	D1298	982.5		-0.87
150		-----		-----	922	D1298	982.9		-0.12
158		-----		-----	962	ISO12185	983.1		0.25
159	D4052	982.9		-0.12	963	ISO12185	983.0		0.07
168		-----		-----	971	IP365	982.7		-0.49
169		-----		-----	974	D1298	982.6		-0.68
171	ISO12185	983.4		0.81	982	D1298	983.1	C	0.25
175	D4052	983.2		0.44	997	ISO12185	981.9		-1.99
194	D4052	983.8		1.56	1006	D1298	982.7		-0.49
212	ISO12185	983.0		0.07	1011	ISO12185	983.8		1.56
221	D4052	982.5		-0.87	1059	ISO12185	980.9	R(0.05)	-3.85
224	D1298	988.06	C,R(0.01)	9.51	1065	D4052	984.2		2.31
225	D4052	982.4		-1.05	1082	ISO12185	983.1		0.25
237	D4052	983.1		0.25	1095	ISO12185	983.3		0.63
238	D4052	983.3		0.63	1099	ISO12185	983.1		0.25
252		-----		-----	1109	D4052	983.1		0.25
253	D4052	982.6		-0.68	1126	ISO12185	981.9		-1.99
254	D1298	982.9		-0.12	1134	D1298	983.1		0.25
273	D4052	984.0		1.93	1135	ISO12185	982.7		-0.49
311	ISO12185	982.7		-0.49	1161		-----		-----
313	ISO12185	982.5		-0.87	1167	ISO12185	983.10		0.25
323	ISO12185	983.2		0.44	1177		-----		-----
331	ISO12185	982.75		-0.40	1191	ISO12185	983.2		0.44
333	ISO12185	982.3		-1.24	1213	D4052	983.98		1.90
334	ISO12185	983.2		0.44	1229	ISO12185	983.2		0.44
336	ISO12185	983.6		1.19	1233	ISO12185	982.87		-0.18
337	ISO12185	982.7		-0.49	1254	ISO12185	983.06		0.18
342	D4052	983.11		0.27	1259	ISO12185	984.4		2.68
343	D4052	982.9		-0.12	1275	IP365	983.6		1.19
349		-----		-----	1299	ISO12185	983.0		0.07
351	ISO3675	983.40		0.81	1345	ISO12185	982.7		-0.49
371	D4052	982.9		-0.12	1356	ISO12185	982.55		-0.77
391	ISO12185	982.8		-0.31	1367	D1298	982.9		-0.12
398	ISO3675	983.0		0.07	1389	ISO12185	982.4		-1.05
399	ISO12185	981.6		-2.55	1402	IP365	983.4		0.81
440	D4052	983.1		0.25	1404	ISO12185	983.1		0.25
444	D4052	958.7	R(0.01)	-45.29	1412	D4052	982.7		-0.49
445	IP365	983.8		1.56	1428	ISO12185	983.9		1.75
447	IP365	981.9		-1.99	1431	ISO12185	983.23		0.50
463	ISO12185	982.70		-0.49	1459	ISO12185	982.6		-0.68
511		-----		-----	1488	ISO3675	988.45	C,R(0.01)	10.24
541	ISO12185	982.4		-1.05	1510	IP365	982.3		-1.24
562	D1298	982.1		-1.61	1539	ISO12185	983.1		0.25
575	D1298	981.4		-2.92	1556	ISO12185	982.8		-0.31
603	D1298	983.2		0.44	1569	ISO12185	982.8		-0.31
604	D4052	983.9		1.75	1584	ISO12185	983.1		0.25
605	D1298	983.4		0.81	1586	ISO12185	982.9		-0.12
608	D4052	983.1		0.25	1613	D4052	982.5		-0.87
621		-----		-----	1622	D4052	982.7		-0.49
631	D1298	984.94	R(0.05)	3.69	1631	ISO12185	982.9		-0.12
663	D4052	983.3		0.63	1643	D4052	982.9		-0.12
671	D1298	982.8	C	-0.31	1710	ISO12185	983.6		1.19
750	D1298	983.0		0.07	1720	D4052	982.9		-0.12
753	D1298	983.2		0.44	1724	D1298	982.1		-1.61
759	D1298	982.9		-0.12	1728	ISO12185	981.81		-2.15
824	ISO12185	982.9		-0.12	1740	ISO12185	982.9		-0.12
825	D4052	982.8		-0.31	1741	ISO12185	982.31		-1.22
851	ISO12185	982.8		-0.31	1796	ISO12185	983.44		0.89
855	ISO12185	983.12		0.29	1807	ISO3675	982.6		-0.68
857	ISO3675	983.1		0.25	1832	ISO12185	983.0		0.07
858	ISO12185	982.9		-0.12	1833	ISO12185	982.9		-0.12
859	D4052	983.0		0.07	1849	ISO12185	982.1		-1.61
862	ISO12185	982.8		-0.31	1857	ISO12185	983.5		1.00
863	ISO12185	982.6		-0.68	1862	ISO12185	983.1		0.25
864	ISO12185	982.7		-0.49	1881	D4052	983.1		0.25
865	ISO12185	982.9		-0.12	1906		-----		-----
866	ISO12185	983.2		0.44	1936	ISO12185	983.0		0.07

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937	ISO12185	983.0		0.07	6024	ISO12185	983.5		1.00
1938	ISO12185	982.8		-0.31	6026	D1298	983.2		0.44
1943		-----		-----	6028	ISO12185	982.1		-1.61
1956	ISO12185	984.4		2.68	6039		-----		-----
1962	D1298	985	C,R(0.05)	3.80	6049	ISO12185	982.7		-0.49
1964		-----		-----	6051	D4052	983.1		0.25
1967	D1298	982.9		-0.12	6057	ISO12185	982.7		-0.49
1971	ISO12185	983.03		0.12	6075	ISO12185	984.24		2.38
1986	D4052	983.4		0.81	6092	D4052	982.9		-0.12
1995	D4052	981.7		-2.36	6109		-----		-----
6004	D1298	983.4		0.81	6112	ISO12185	982.9		-0.12
6016	D4052	983.67		1.32	6114	ISO12185	983.2		0.44
6021	ISO12185	983.0		0.07	6122	ISO3675	983.35		0.72

normality	suspect
n	148
outliers	6
mean (n)	982.964
st.dev. (n)	0.5087
R(calc.)	1.424
R(ISO12185:96)	1.5

Lab 224 first reported: 985.11

Lab 671 first reported: 968.5

Lab 982 reported: 983.1 kg/L

Lab 1488 first reported: 987.15

Lab 1962 first reported: 1002
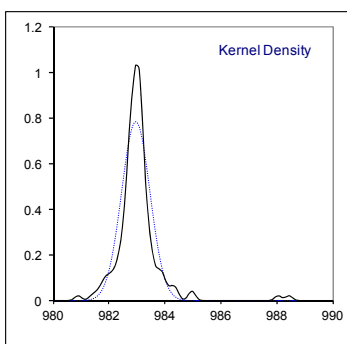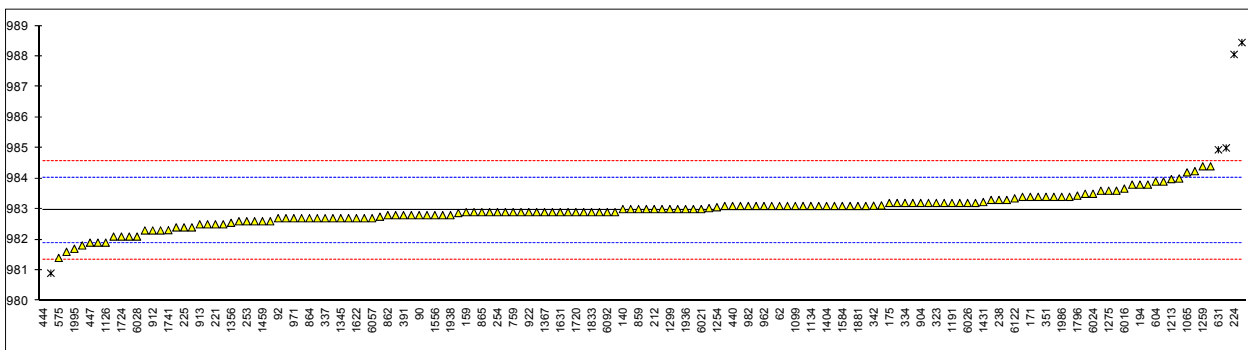
Determination of Flash Point PMcc on sample #17105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D93-A	115.5	C	-1.01	870	D93-B	118		0.16
90	D93-B	>110		-----	886	D93-A	118		0.16
92	D93-B	118		0.16	902	D93-B	118.0		0.16
120	D93-B	117.0		-0.31	904	D93-B	118		0.16
131	D93-B	118		0.16	912	D93-B	118		0.16
140	D93-B	>230	U	-----	913	D93-A	120		1.09
150	D93-B	>110		-----	922	D93-B	119		0.63
158		-----		-----	962	ISO2719-B	116		-0.77
159	D93-B	>110		-----	963	ISO2719-B	117.5		-0.07
168	D93-B	118.0		0.16	971	D93-B	118.0		0.16
169	D93-B	114		-1.71	974	D93-B	118.0		0.16
171	ISO2719-A	119.5		0.86	982		-----		-----
175	D93-B	116		-0.77	997	D93-B	118.0		0.16
194	D93-B	115		-1.24	1006	D93-B	118.0		0.16
212		114.0		-1.71	1011	ISO2719-B	120		1.09
221	D93-B	121.0		1.56	1059	ISO2719-B	116.5		-0.54
224	D93-B	120		1.09	1065	D93-A	121		1.56
225	D93-B	120.0		1.09	1082	ISO2719-A	119.5		0.86
237	D93-A	120		1.09	1095	D93-B	116.0		-0.77
238	D93-B	118.0		0.16	1099	ISO2719-A	119.5		0.86
252		-----		-----	1109	D93-B	>100		-----
253	D93-B	115		-1.24	1126	ISO2719-A	121		1.56
254	D93-B	116.0		-0.77	1134	D93-B	121.0		1.56
273	D93-B	117		-0.31	1135	ISO2719-B	118.0		0.16
311		-----		-----	1161		-----		-----
313	ISO2719-B	123.0		2.49	1167	ISO2719-B	118.25		0.28
323	ISO2719-A	117.0		-0.31	1177		-----		-----
331	D93-B	120.0		1.09	1191	ISO2719-A	120.5		1.33
333	ISO2719-B	117.0		-0.31	1213	D93-A	118		0.16
334	D93-B	114.0		-1.71	1229	ISO2719-A	115.0		-1.24
336		-----		-----	1233	ISO2719-B	120.5		1.33
337		-----		-----	1254	D93-B	117.1		-0.26
342	ISO2719-B	111.5		-2.87	1259	ISO2719-A	114.5		-1.47
343	ISO2719-B	119.5		0.86	1275		-----		-----
349		-----		-----	1299	D93-B	104.5	R(0.01)	-6.14
351	ISO2719-B	120.50		1.33	1345		-----		-----
371	ISO2719-B	116.0		-0.77	1356	ISO2719-B	134	R(0.01)	7.63
391	ISO2719-B	116		-0.77	1367	D93-A	120		1.09
398	ISO2719-B	112		-2.64	1389	D93-B	120.0		1.09
399		-----		-----	1402	IP34-B	117.0		-0.31
440	IP34-A	115.7		-0.91	1404	ISO2719-B	115.0		-1.24
444	D93-B	119.5		0.86	1412	D93-B	116.0		-0.77
445	IP34-B	118.0		0.16	1428	ISO2719-B	117.5		-0.07
447	D93-B	115		-1.24	1431	D93-B	117.7		0.02
463	D93-B	118.5		0.39	1459	ISO2719-A	116.0		-0.77
511	D93-B	112.05		-2.62	1488	ISO2719-B	120.2		1.19
541	D93-B	116.5		-0.54	1510	D93-B	118		0.16
562	D93-B	116.5		-0.54	1539	ISO2719-B	116.5		-0.54
575	D93-B	116		-0.77	1556	ISO2719-B	117.5		-0.07
603	D93-B	121.0		1.56	1569	D93-A	117.5		-0.07
604	D93-B	118		0.16	1584	ISO2719-B	116.0		-0.77
605	D93-B	118.0		0.16	1586	ISO2719-B	116.0		-0.77
608	D93-B	113.0		-2.17	1613	D93-B	116.5		-0.54
621		-----		-----	1622	D93-B	128.0	R(0.01)	4.83
631	D93-B	117.34		-0.15	1631	ISO2719-B	116		-0.77
663	D93-B	116.4		-0.59	1643	D93-B	121.1		1.61
671	D93-A	>110		-----	1710		-----		-----
750		-----		-----	1720		-----		-----
753	D93-B	124.0		2.96	1724	D93-B	119		0.63
759	ISO2719-B	120.0		1.09	1728	ISO2719-A	122		2.03
824	ISO2719-B	116.0		-0.77	1740	ISO2719-B	119		0.63
825	D93-B	120.0		1.09	1741	ISO2719-B	115		-1.24
851	ISO2719-B	120.0		1.09	1796	ISO2719-B	115.5		-1.01
855	ISO2719-B	117.5		-0.07	1807	ISO2719-B	117		-0.31
857	ISO2719-B	119.0		0.63	1832	ISO2719-B	115.0		-1.24
858	D93-B	118.0		0.16	1833	ISO2719-B	118		0.16
859	D93-B	117		-0.31	1849	ISO2719-B	119.5		0.86
862	ISO2719-B	118.0		0.16	1857	ISO2719-B	117.0		-0.31
863	D93-B	118.0		0.16	1862	ISO2719-B	116.0		-0.77
864	D93-B	119.0		0.63	1881	D93-B	117.0		-0.31
865	ISO2719-B	119.0		0.63	1906		-----		-----
866	D93-B	119		0.63	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937	ISO2719-B	116		-0.77	6024		-----		-----
1938		-----		-----	6026	D93-B	114.5		-1.47
1943		-----		-----	6028	ISO2719-A	115		-1.24
1956	ISO2719-B	120		1.09	6039		-----		-----
1962	D93-B	113.9		-1.75	6049	ISO2719-B	118.0		0.16
1964		-----		-----	6051	D93-B	114.0		-1.71
1967	D93-B	116.5		-0.54	6057	ISO2719-B	127.0	R(0.05)	4.36
1971	ISO2719-B	116.0		-0.77	6075	ISO2719-B	115.0		-1.24
1986	ISO2719-B	118.0		0.16	6092	D93-B	121		1.56
1995	D93-B	124		2.96	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D93-B	123.0		2.49	6114	D93-B	115.91		-0.81
6021	ISO2719-B	117.0		-0.31	6122	ISO2719-B	118.3		0.30

normality	OK
n	134
outliers	4
mean (n)	117.656
st.dev. (n)	2.3235
R(calc.)	6.506
R(ISO2719-B:16)	6

Lab 62 first reported: 135.5

Lab 140: reported possibly a unit error? 230F = 110°C

Kernel Density
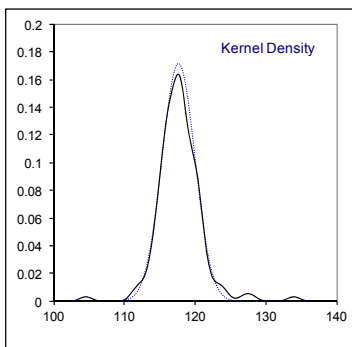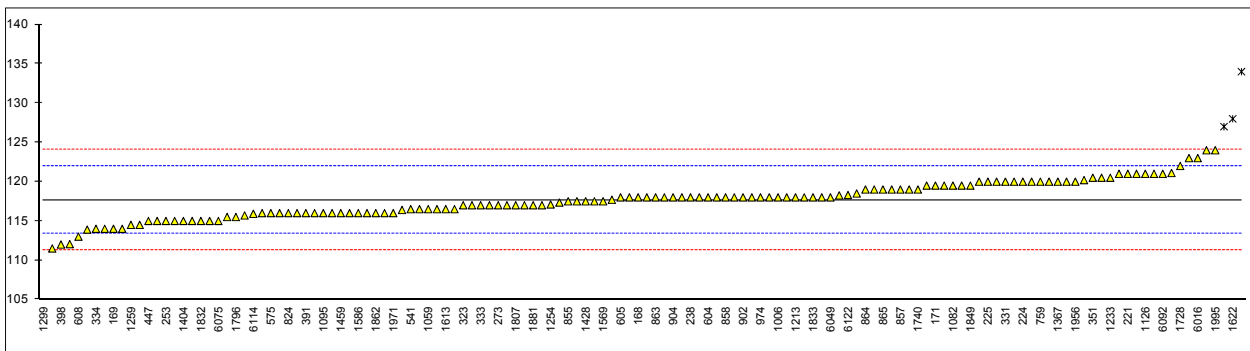
Determination of Heat of Combustion Gross on sample #17105; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90	D240	43.151		0.44	886		-----		-----
92		42.772		-2.21	902	D4868	43.02		-0.48
120		-----		-----	904	D4868	43		-0.62
131		-----		-----	912		-----		-----
140		-----		-----	913	D4868	43.01	C	-0.55
150	D240	43.324		1.65	922	D240	42.9158		-1.21
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974	D4868	43.06		-0.20
171	D240	42.895		-1.35	982	D4868	43.04		-0.34
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011	D240	43.065		-0.16
221		-----		-----	1059		-----		-----
224		-----		-----	1065		-----		-----
225	D4868	43.04		-0.34	1082	D240	43.1540		0.46
237	D4868	43.037		-0.36	1095		-----		-----
238		-----		-----	1099	PN-C-04062	43.281		1.35
252		-----		-----	1109	D4868	43.03		-0.41
253		-----		-----	1126		-----		-----
254		-----		-----	1134		43.21255		0.87
273		-----		-----	1135	D240	43.08		-0.06
311		43.235		1.03	1161		-----		-----
313		-----		-----	1167	DIN51900-2	43.181		0.65
323	D240	43.080		-0.06	1177	DIN51900 1/2	43.228		0.98
331		43.30		1.48	1191		-----		-----
333	D240	43.215		0.89	1213		43.00	C	-0.62
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259	D4868	42.971		-0.82
343	D240	43.071		-0.12	1275		-----		-----
349		-----		-----	1299	D240	43.061		-0.19
351	ISO8217Calc.	43.284		1.37	1345	D4868	43.03		-0.41
371	D4868	43.035		-0.37	1356		-----		-----
391		-----		-----	1367		43.072		-0.11
398		-----		-----	1389		-----		-----
399		-----		-----	1402	IP12	43.02		-0.48
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D4868	43.02		-0.48
445	D240	43.028		-0.42	1428		-----		-----
447	D240	43.200		0.78	1431	D240	43.044		-0.31
463		-----		-----	1459		-----		-----
511		-----		-----	1488	D240	43.1599		0.50
541		-----		-----	1510		42.82		-1.88
562		-----		-----	1539		42.938		-1.05
575		-----		-----	1556	D4868	43.04		-0.34
603		-----		-----	1569	D240	43.033		-0.39
604		-----		-----	1584		-----		-----
605		-----		-----	1586	D240	43.01		-0.55
608		43.2101		0.85	1613		-----		-----
621		-----		-----	1622	D240	43.15	C	0.43
631	D240	43.0647		-0.16	1631		-----		-----
663		-----		-----	1643	D240	43.12		0.22
671		-----		-----	1710	D4809	43.140		0.36
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728	D4868	43.0469		-0.29
824	D240	43.095		0.05	1740		42.970		-0.83
825		43.157		0.48	1741		-----		-----
851		-----		-----	1796		-----		-----
855	GB/T 384	43.080		-0.06	1807	D240	43.164		0.53
857	GB/T 384	43.126		0.27	1832		-----		-----
858	D4868	43.04		-0.34	1833		-----		-----
859	D4868	43.05		-0.27	1849		-----		-----
862	D240	43.185		0.68	1857	D4868	43.02		-0.48
863	D4868	43.050		-0.27	1862	D4868	43.02		-0.48
864	D4868	43.06		-0.20	1881		-----		-----
865	GB/T 384	43.05		-0.27	1906		43.169		0.57
866	D4868	43.30		1.48	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D4868	43.02		-0.48
1943	DIN51900-1	43.106		0.13	6028		-----		-----
1956		43.215		0.89	6039		-----		-----
1962	D240	43.232		1.01	6049	D4868	43.04		-0.34
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057		-----		-----
1971		-----		-----	6075		-----		-----
1986	D4868	43.030		-0.41	6092		-----		-----
1995		-----		-----	6109	D240	42.4774	R(0.01)	-4.27
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114		-----		-----
6021		-----		-----	6122	D240	43.269		1.27

normality	OK
n	72
outliers	1
mean (n)	43.0881
st.dev. (n)	0.10871
R(calc.)	0.3044
R(D240:17)	0.40

Lab 913 reported: 10272 kcal/kg: iis calc to MJ/kg

Lab 1213 first reported: 10270 cal/g

Lab 1622 first reported: 43.578
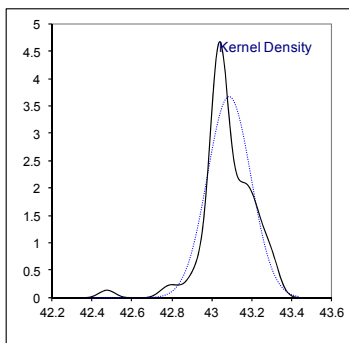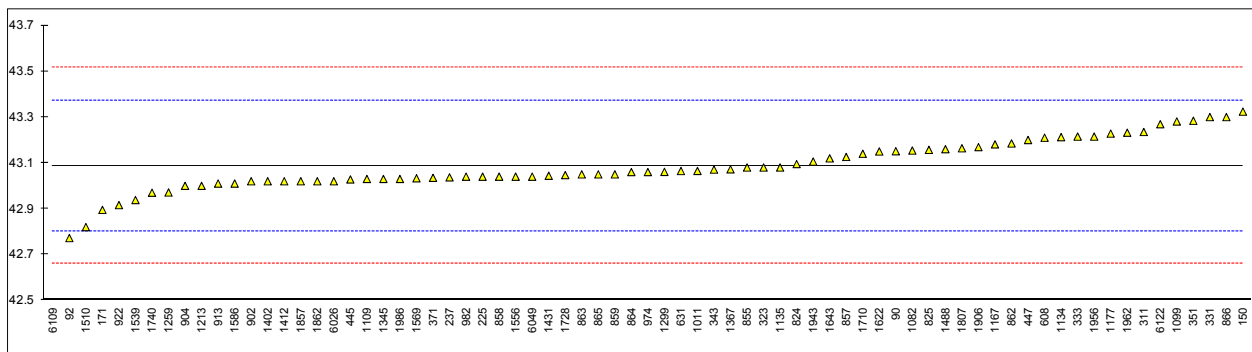
Determination of Heat of Combustion Net on sample #17105; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	902	D4868	40.67		-0.78
120		-----		-----	904	D4868	40.7		-0.57
131		-----		-----	912		-----		-----
140		-----		-----	913	D4868	40.66		-0.85
150	D240	41.039		1.80	922	D240	40.9029		0.85
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974	D4868	40.70		-0.57
171		-----		-----	982	D4868	40.68		-0.71
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059		-----		-----
224		-----		-----	1065		-----		-----
225	D4868	40.69		-0.64	1082	D240	40.8834		0.71
237	D4868	40.686		-0.67	1095		-----		-----
238		-----		-----	1099	PN-C-04062	40.899		0.82
252		-----		-----	1109	D4868	40.678		-0.73
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	D240	40.74		-0.29
311		40.900		0.83	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D240	40.790		0.06	1177	DIN51900 1/2	40.902		0.84
331		40.95		1.18	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259	D4868	40.63		-1.06
343	D240	40.830		0.34	1275		-----		-----
349		-----		-----	1299	D240	40.943		1.13
351	ISO8217Calc.	40.914		0.92	1345	D4868	40.68		-0.71
371	D4868	40.683		-0.69	1356		-----		-----
391		-----		-----	1367		41.01		1.60
398		-----		-----	1389		-----		-----
399		-----		-----	1402	IP12	40.80		0.13
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D4868	40.67		-0.78
445	D240	40.908		0.88	1428		-----		-----
447	D240	41.060		1.95	1431	D240	40.737		-0.31
463		-----		-----	1459		-----		-----
511		-----		-----	1488	D240	40.8664		0.59
541		-----		-----	1510		-----		-----
562		-----		-----	1539		40.638		-1.01
575		-----		-----	1556	D4868	40.69		-0.64
603		-----		-----	1569	D240	40.806		0.17
604		-----		-----	1584		-----		-----
605		-----		-----	1586	D240	40.67		-0.78
608		-----		-----	1613		-----		-----
621		-----		-----	1622	D240	41.032		1.75
631	D4868	40.6264		-1.09	1631		-----		-----
663		-----		-----	1643	D240	40.80		0.13
671		-----		-----	1710	D4809	40.849		0.47
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728	D4868	40.6921		-0.63
824	D240	40.830		0.34	1740		40.710		-0.50
825		-----		-----	1741	D4868	40.8851		0.72
851		-----		-----	1796		-----		-----
855	GB/T 384	40.651		-0.92	1807	D240	40.935		1.07
857	GB/T 384	40.646		-0.95	1832		-----		-----
858	D4868	40.69		-0.64	1833		-----		-----
859	D4868	40.70		-0.57	1849		-----		-----
862	D240	40.850		0.48	1857	D4868	40.67		-0.78
863	D4868	40.697		-0.59	1862	D4868	40.67		-0.78
864	D4868	40.71		-0.50	1881		-----		-----
865	GB/T 384	40.66		-0.85	1906		40.903		0.85
866	D4868	40.95		1.18	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D4868	40.67		-0.78
1943	DIN51900-1	40.741		-0.29	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	D4868	40.68		-0.71
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057		-----		-----
1971		-----		-----	6075		-----		-----
1986	D4868	40.680		-0.71	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114		-----		-----
6021		-----		-----	6122	D240	40.982		1.40

normality	OK
n	60
outliers	0
mean (n)	40.7819
st.dev. (n)	0.12406
R(calc.)	0.3474
R(D240:17)	0.40
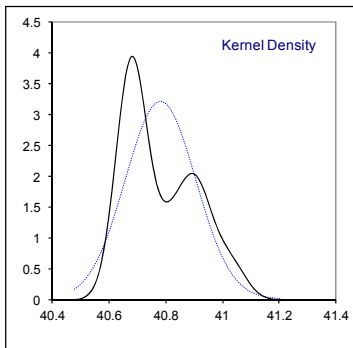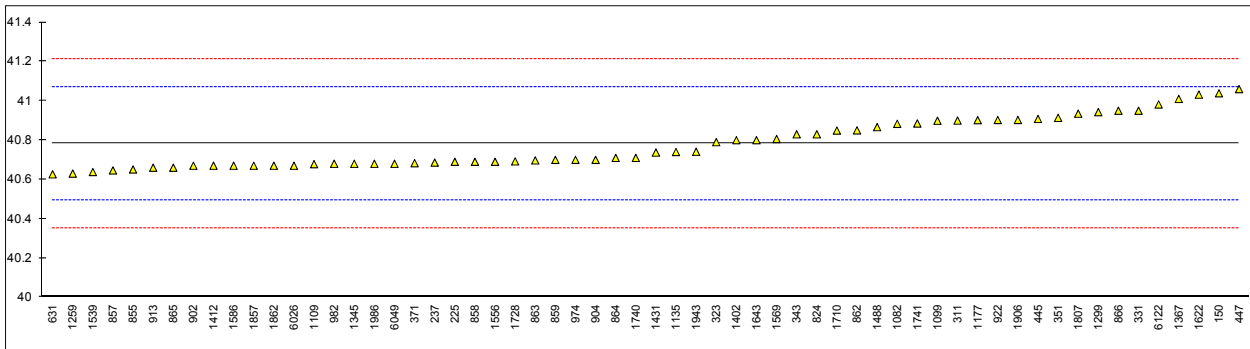
Determination of Kinematic Viscosity at 50°C on sample #17105; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D445	352.0		1.01	870	ISO3104	349.4		0.72
90	D445	341.10		-0.20	886		-----		-----
92	D445	346.75		0.43	902	ISO3104	332.1		-1.19
120	D445	340.8		-0.23	904	D445	332.8		-1.11
131	D445	347.8		0.54	912	D445	343.34		0.05
140	ISO3104	339.3		-0.40	913		-----		-----
150	D445	350.1		0.80	922	D445	343.9		0.11
158		-----		-----	962	ISO3104	338.0		-0.54
159	D445	349.2		0.70	963	ISO3104	339.1		-0.42
168	D445	355.9		1.44	971	D445	340.1		-0.31
169		-----		-----	974	D445	339.4		-0.38
171	ISO3104	352.8		1.09	982	D445	371.96		3.21
175	D445	333.2		-1.07	997	D445	343.03		0.02
194	D445	332.19		-1.18	1006	D445	354.6		1.29
212	ISO3104	353.85		1.21	1011	ISO3104	350.2		0.81
221	D445	341.7		-0.13	1059	ISO3104	359.2		1.80
224		-----		-----	1065	D445	364.5		2.38
225	D445	343.3		0.05	1082	ISO3104	350.54		0.84
237		-----		-----	1095	ISO3104	330.0		-1.42
238	D445	346.109		0.36	1099		-----	W	-----
252		-----		-----	1109	D445	336.89		-0.66
253	D445	340.62		-0.25	1126	ISO3104	255.978	R(0.01)	-9.59
254	D445	346.5		0.40	1134	D445	358.1		1.68
273	D445	348.1		0.58	1135	ISO3104	331.95		-1.21
311	ISO3104	333.5		-1.04	1161		-----		-----
313	ISO3104	331.0		-1.31	1167		-----		-----
323	ISO3104	340.0		-0.32	1177		-----		-----
331	ISO3104	355.1		1.35	1191	ISO3104	340.82		-0.23
333	ISO3104	346.6		0.41	1213	D445	339.5		-0.37
334	ISO3104	344.2		0.14	1229	ISO3104	345.3		0.27
336	ISO3104	344.6		0.19	1233	ISO3104	352.02		1.01
337		-----		-----	1254	D445	345.47		0.28
342	ISO3104	346.7		0.42	1259	ISO3104	362.6148		2.18
343	ISO3104	334.320		-0.95	1275		-----		-----
349		-----		-----	1299	D445	340.5		-0.26
351	ISO3104	351.50		0.95	1345	D445	347.4036		0.50
371	D445	338.3		-0.51	1356	ISO3104	351.35		0.93
391	ISO3104	331.9		-1.21	1367	IP71	340.8		-0.23
398	ISO3104	349.94		0.78	1389	D445	354.35		1.26
399		-----		-----	1402	ISO3104	334.0		-0.98
440		-----		-----	1404	ISO3104	345.1		0.24
444		-----		-----	1412		-----		-----
445	IP71	347.8		0.54	1428	ISO3104	351.1		0.91
447	D445	354.7		1.30	1431		-----		-----
463	D445	346.196		0.36	1459		-----		-----
511		-----		-----	1488	ISO3104	347.34463		0.49
541	D445	335.47		-0.82	1510	D445	337.5		-0.59
562		-----		-----	1539	ISO3104	343.4		0.06
575	D445	356.6		1.51	1556	ISO3104	328.47		-1.59
603	D445	351.33		0.93	1569		-----		-----
604	D445	350.61		0.85	1584	ISO3104	333.52		-1.03
605	D445	336.91		-0.66	1586	ISO3104	333.8		-1.00
608	D445	335.2		-0.85	1613	D445	345.0		0.23
621		-----		-----	1622	D445	336.2		-0.74
631	D445	342.74		-0.02	1631		-----		-----
663	D445	340.56		-0.26	1643	D445	335.54		-0.81
671		-----		-----	1710		-----		-----
750	D445	335.2		-0.85	1720		-----		-----
753	D445	331.71		-1.23	1724	D445	347.2		0.48
759	ISO3104	332.5		-1.15	1728	ISO3104	336.7		-0.68
824	ISO3104	332.8		-1.11	1740	ISO3104	339.5		-0.37
825	D445	337.6		-0.58	1741	ISO3104	337.31		-0.62
851	ISO3104	349.0		0.67	1796	ISO3104	333.57		-1.03
855	ISO3104	344.8		0.21	1807		-----		-----
857	ISO3104	341.24		-0.18	1832	ISO3104	349.853		0.77
858	D445	346.6		0.41	1833	ISO3104	352.2		1.03
859	D445	343.7		0.09	1849		-----		-----
862	D445	350.80		0.87	1857	ISO3104	333.3		-1.06
863	D445	339.82		-0.34	1862	ISO3104	334.1		-0.97
864	D445	343.2		0.03	1881	D445	333.00		-1.09
865	ISO3104	348.8		0.65	1906		-----		-----
866	D445	340.5		-0.26	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	ISO3104	332.5		-1.15
1938		-----		-----	6026	D445	334.711		-0.90
1943		-----		-----	6028	ISO3104	341		-0.21
1956	ISO3104	261.5	R(0.01)	-8.98	6039		-----		-----
1962	D445	353.81		1.21	6049	ISO3104	336.7		-0.68
1964		-----		-----	6051	D445	330.1		-1.41
1967	D445	335.077		-0.86	6057	ISO3104	343.9		0.11
1971		-----		-----	6075	ISO3104	335.1		-0.86
1986	ISO3104	336.4		-0.72	6092	D445	333.9		-0.99
1995	D445	369.21		2.90	6109		-----		-----
6004	D445	328.535		-1.58	6112		-----		-----
6016		-----		-----	6114	D445	337.00		-0.65
6021	ISO3104	333.68		-1.02	6122		-----		-----

normality	OK
n	126
outliers	2
mean (n)	342.8884
st.dev. (n)	8.65178
R(calc.)	24.2250
R(ISO3104:94)	25.3737

Lab 1099 first reported: 293.91
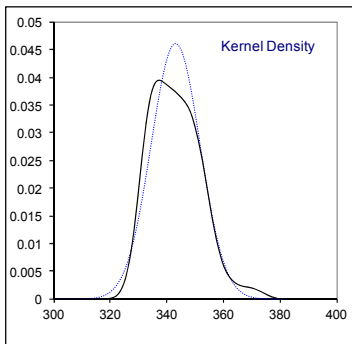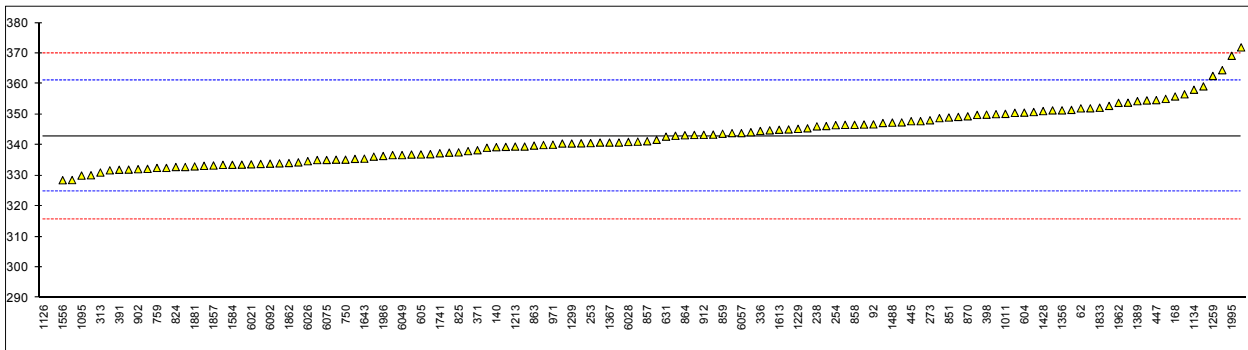
Determination of Kinematic Viscosity at 100°C on sample #17105; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870	D445	31.72		0.17
90		-----		-----	886		-----		-----
92		-----		-----	902		-----		-----
120		-----		-----	904	D445	32.23		1.07
131		-----		-----	912		-----		-----
140	ISO3104	31.67		0.08	913		-----		-----
150	D445	31.42		-0.36	922		-----		-----
158		-----		-----	962	ISO3104	31.47		-0.27
159		-----		-----	963	ISO3104	31.70		0.13
168		-----		-----	971		-----		-----
169	D445	32.438		1.44	974	D445	32.41		1.39
171	ISO3104	31.61		-0.03	982	D445	31.99		0.64
175		-----		-----	997	D445	31.61		-0.03
194		-----		-----	1006		-----		-----
212		-----		-----	1011	ISO3104	30.62		-1.78
221		-----		-----	1059	ISO3104	31.98		0.63
224		-----		-----	1065	D445	32.56		1.65
225	D445	32.29		1.17	1082	ISO3104	31.947		0.57
237		-----		-----	1095	ISO3104	31.94		0.56
238	D445	31.064		-0.99	1099		-----		-----
252		-----		-----	1109	D445	31.568		-0.10
253	D445	31.53	C	-0.17	1126		-----		-----
254		-----		-----	1134	D445	31.743506		0.21
273	D445	32.2		1.01	1135	ISO3104	31.56		-0.12
311	ISO3104	31.73		0.18	1161		-----		-----
313	ISO3104	31.44		-0.33	1167	ISO3104	32.235		1.08
323	ISO3104	31.30		-0.58	1177		-----		-----
331	ISO3104	31.42		-0.36	1191	ISO3104	31.381		-0.43
333	ISO3104	31.41		-0.38	1213	D445	32.02		0.70
334	ISO3104	31.42		-0.36	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254	D445	31.315		-0.55
342		-----		-----	1259	ISO3104	32.8503		2.16
343	ISO3104	33.329	R(0.05)	3.01	1275		-----		-----
349		-----		-----	1299	D445	31.66		0.06
351	ISO3104	31.355		-0.48	1345		-----		-----
371	D445	31.46		-0.29	1356		-----		-----
391	ISO3104	31.57		-0.10	1367	IP71	32.11		0.86
398	ISO3104	31.300		-0.58	1389	D445	31.92		0.52
399		-----		-----	1402	ISO3104	33.25	R(0.05)	2.87
440	D445	31.0417	C	-1.03	1404	ISO3104	31.59		-0.06
444		-----		-----	1412	D445	32.35		1.28
445	IP71	31.59		-0.06	1428	ISO3104	31.22		-0.72
447	D445	32.14		0.91	1431		-----		-----
463		-----		-----	1459		-----		-----
511		-----		-----	1488	ISO3104	31.55628		-0.12
541	D445	31.877		0.44	1510	D445	30.55		-1.90
562	D445	32.14		0.91	1539	ISO3104	31.02		-1.07
575	D445	31.51		-0.20	1556	ISO3104	31.249		-0.67
603		-----		-----	1569	D445	32.34		1.26
604		-----		-----	1584	ISO3104	31.481		-0.26
605	D445	31.78		0.27	1586	ISO3104	17.07	R(0.01)	-25.71
608	D445	31.45		-0.31	1613	D445	31.06		-1.00
621		-----		-----	1622	D445	30.44		-2.09
631	D445	32.609		1.74	1631	ISO3104	31.362		-0.47
663	D445	31.494		-0.23	1643	D445	31.474		-0.27
671		-----		-----	1710	ISO3104	31.50		-0.22
750		-----		-----	1720		-----		-----
753	D445	31.329		-0.52	1724	D445	31.41		-0.38
759		-----		-----	1728	ISO3104	31.56		-0.12
824	ISO3104	31.75		0.22	1740	ISO3104	31.55		-0.13
825	D445	31.15		-0.84	1741	ISO3104	30.832		-1.40
851		-----		-----	1796		-----		-----
855	ISO3104	31.71		0.15	1807	ISO3104	31.24		-0.68
857		-----		-----	1832		-----		-----
858	D445	31.69		0.11	1833	ISO3104	31.24		-0.68
859	D445	31.70		0.13	1849	ISO3104	31.41		-0.38
862	D445	31.929		0.54	1857	ISO3104	31.45		-0.31
863	D445	31.704		0.14	1862	ISO3104	31.60		-0.05
864	D445	31.90		0.48	1881	D445	32.400		1.37
865	ISO3104	31.85		0.40	1906		-----		-----
866	D445	31.80		0.31	1936	ISO3104	31.56		-0.12

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937	ISO3104	31.495		-0.23	6024	ISO3104	31.53		-0.17
1938	ISO3104	31.586		-0.07	6026	D445	31.729		0.18
1943		-----		-----	6028		-----		-----
1956	ISO3104	31.66		0.06	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057	ISO3104	31.91		0.50
1971	ISO3104	31.031		-1.05	6075		-----		-----
1986	ISO3104	31.85		0.40	6092		-----		-----
1995	D445	31.353		-0.48	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	D445	31.785		0.28
6021	ISO3104	31.394		-0.41	6122	ISO3104	30.86		-1.35

normality	OK
n	99
outliers	3
mean (n)	31.6256
st.dev. (n)	0.43363
R(calc.)	1.2142
R(ISO3104:94)	1.5850

Lab 253 first reported: 33.53

Lab 440 reported the test result 31.0417 mm^2/s under 50°C instead of 100°C
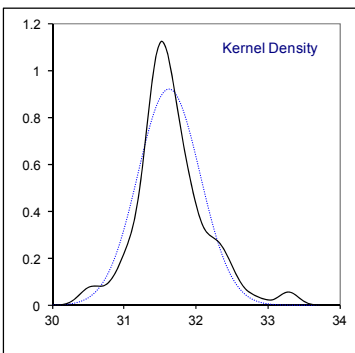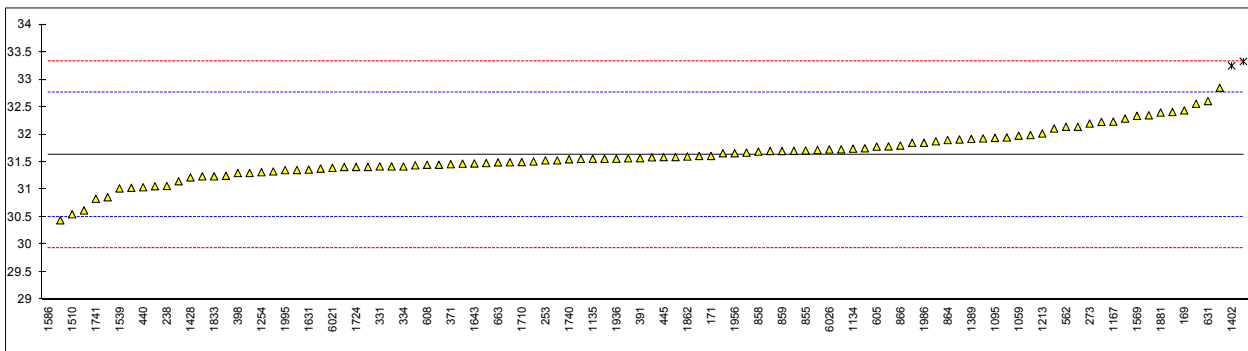
Determination of Viscosity Stabinger at 50°C on sample #17105; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	902		-----		-----
120		-----		-----	904		-----		-----
131		-----		-----	912		-----		-----
140		-----		-----	913		-----		-----
150		-----		-----	922	D7042	350.1		0.20
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974		-----		-----
171	D7042	350.4		0.23	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059	D7042	348.4		0.07
224		-----		-----	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	D7042	338.37		-0.71
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323		-----		-----	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259		-----		-----
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345		-----		-----
371		-----		-----	1356		-----		-----
391	D7042	333.0		-1.13	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402		-----		-----
440		-----		-----	1404		-----		-----
444		-----		-----	1412		-----		-----
445		-----		-----	1428		-----		-----
447		-----		-----	1431	D7042	347.23		-0.02
463		-----		-----	1459	D7042	359.25		0.92
511		-----		-----	1488		-----		-----
541		-----		-----	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605		-----		-----	1586		-----		-----
608		-----		-----	1613		-----		-----
621		-----		-----	1622		-----		-----
631		-----		-----	1631		-----		-----
663		-----		-----	1643		-----		-----
671		-----		-----	1710		-----		-----
750		-----		-----	1720	D7042	363.4		1.25
753		-----		-----	1724		-----		-----
759		-----		-----	1728		-----		-----
824		-----		-----	1740	D7042	341.9		-0.44
825		-----		-----	1741		-----		-----
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832		-----		-----
858		-----		-----	1833		-----		-----
859		-----		-----	1849		-----		-----
862	D7042	350.49		0.24	1857		-----		-----
863		-----		-----	1862		-----		-----
864		-----		-----	1881		-----		-----
865		-----		-----	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026		-----		-----
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057	D7042	341.8		-0.44
1971		-----		-----	6075		-----		-----
1986		-----		-----	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D7042	345.45		-0.16	6114		-----		-----
6021		-----		-----	6122		-----		-----

normality	OK
n	12
outliers	0
mean (n)	347.4825
st.dev. (n)	8.40736
R(calc.)	23.5406
R(D7042:16e3)	35.7560

Kernel Density
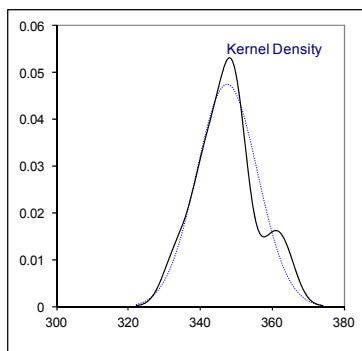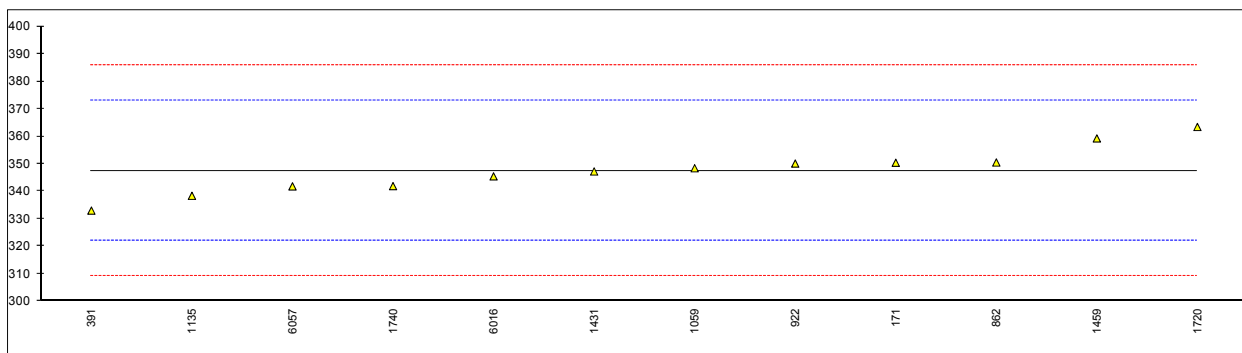
Determination of Viscosity Stabinger at 100°C on sample #17105; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	902		-----		-----
120		-----		-----	904		-----		-----
131		-----		-----	912		-----		-----
140		-----		-----	913		-----		-----
150		-----		-----	922		-----		-----
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974		-----		-----
171	D7042	31.62		0.05	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059	D7042	31.95		0.46
224		-----		-----	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	D7042	31.302		-0.34
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323		-----		-----	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259		-----		-----
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345		-----		-----
371		-----		-----	1356		-----		-----
391	D7042	31.58		0.00	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402		-----		-----
440		-----		-----	1404		-----		-----
444		-----		-----	1412		-----		-----
445		-----		-----	1428		-----		-----
447		-----		-----	1431		-----		-----
463		-----		-----	1459	D7042	31.49		-0.11
511		-----		-----	1488		-----		-----
541		-----		-----	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605		-----		-----	1586		-----		-----
608		-----		-----	1613		-----		-----
621		-----		-----	1622		-----		-----
631		-----		-----	1631		-----		-----
663		-----		-----	1643		-----		-----
671		-----		-----	1710	D7042	31.48		-0.12
750		-----		-----	1720	D7042	31.916		0.42
753		-----		-----	1724		-----		-----
759		-----		-----	1728		-----		-----
824		-----		-----	1740	D7042	31.60		0.03
825		-----		-----	1741		-----		-----
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832		-----		-----
858		-----		-----	1833		-----		-----
859		-----		-----	1849		-----		-----
862	D7042	31.488		-0.11	1857		-----		-----
863		-----		-----	1862		-----		-----
864		-----		-----	1881		-----		-----
865		-----		-----	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026		-----		-----
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057	D7042	31.68		0.13
1971		-----		-----	6075		-----		-----
1986		-----		-----	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D7042	31.249		-0.41	6114		-----		-----
6021		-----		-----	6122		-----		-----

normality	OK
n	11
outliers	0
mean (n)	31.5777
st.dev. (n)	0.21798
R(calc.)	0.6103
R(D7042:16e3)	2.2692
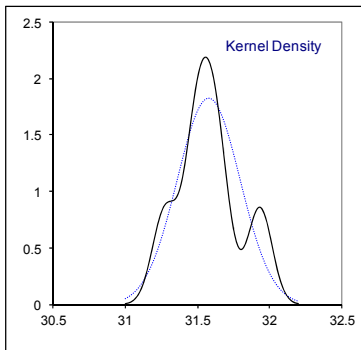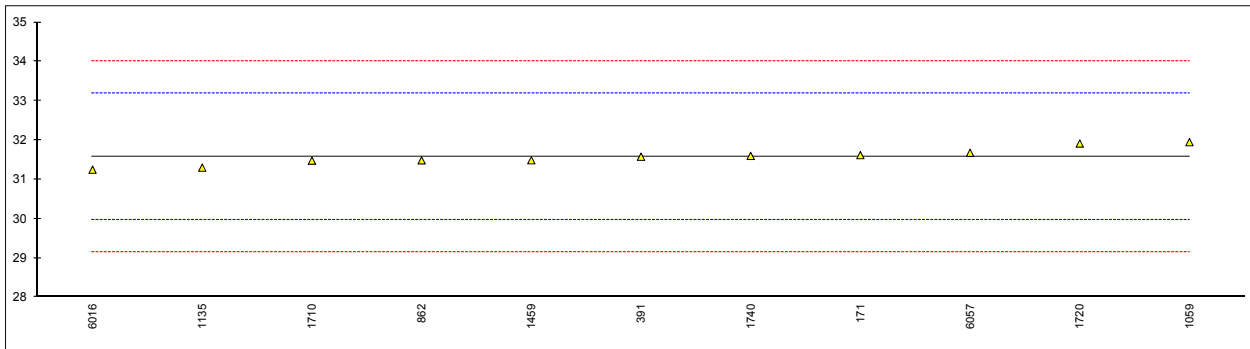
Determination of Nitrogen on sample #17105; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	902		-----		-----
120		-----		-----	904		-----		-----
131	D5762 Gravimetric	2855.68		-0.84	912		-----		-----
140	D5762 Volumetric	3600		1.68	913		-----		-----
150	D5762 Gravimetric	2700		-1.37	922		-----		-----
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974		-----		-----
171	D5762 Gravimetric	2700		-1.37	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059		-----		-----
224		-----		-----	1065	D5762 Gravimetric	3200		0.33
225		-----		-----	1082		-----		-----
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109	D4629	3362		0.88
253		-----		-----	1126		-----		-----
254		-----		-----	1134	D3228	3279.356		0.60
273		-----		-----	1135	D5762 Volumetric	3149.8		0.16
311	D5762 Volumetric	3100		-0.01	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D5762 Gravimetric	3700		2.02	1177		-----		-----
331		-----		-----	1191		-----		-----
333	D5762 Volumetric	2984		-0.41	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259	D4629	2811.67		-0.99
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345		-----		-----
371		-----		-----	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402	D5762 Volumetric	3400		1.01
440		-----		-----	1404	D5762 Volumetric	3205		0.34
444		-----		-----	1412		-----		-----
445		-----		-----	1428		-----		-----
447		-----		-----	1431		-----		-----
463		-----		-----	1459		-----		-----
511		-----		-----	1488		-----		-----
541		-----		-----	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556	D5762 Gravimetric	3750		2.19
603		-----		-----	1569	D4629	2873		-0.78
604		-----		-----	1584		-----		-----
605		-----		-----	1586	D5762 Gravimetric	2238	R(0.05)	-2.94
608	D5762 Gravimetric	2043	C,R(0.05)	-3.60	1613		-----		-----
621		-----		-----	1622		-----		-----
631		-----		-----	1631		-----		-----
663	D5762 Volumetric	2666		-1.48	1643		-----		-----
671		-----		-----	1710	MSZ11794	2890		-0.72
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728		-----		-----
824	D5762 Gravimetric	3310		0.70	1740		-----		-----
825		-----		-----	1741	D5762 Volumetric	3350.0		0.84
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832		-----		-----
858		-----		-----	1833		-----		-----
859		-----		-----	1849		-----		-----
862		-----		-----	1857	D5762 Volumetric	3000		-0.35
863		-----		-----	1862	D5762 Volumetric	3100		-0.01
864		-----		-----	1881		-----		-----
865		-----		-----	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D5762 Gravimetric	2970		-0.45
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057	D5762 Gravimetric	2530		-1.95
1971		-----		-----	6075		-----		-----
1986		-----		-----	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114		-----		-----
6021		-----		-----	6122		-----		-----

		Volumetric only	**Gravimetric only**
normality	OK	OK	OK
n	24	10	9
outliers	2	0	2
mean (n)	3103.60	3155.48	3079.52
st.dev. (n)	327.386	257.560	440.783
R(calc.)	916.68	721.17	1234.19
R(D5762:12)	825.56	839.36	819.15

Lab 608 first reported: 1893.03
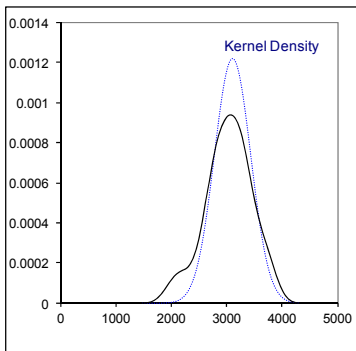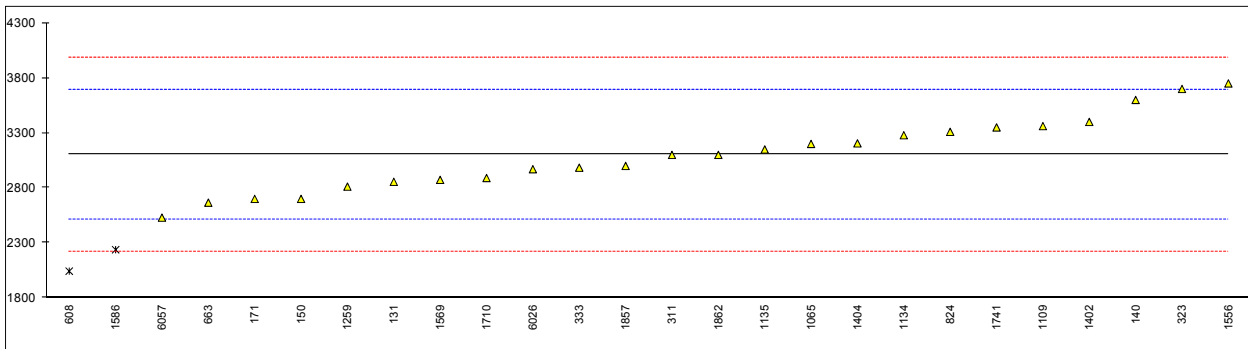
Determination of Pour Point (Lower) on sample #17105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870	ISO3016	0		-0.33
90	D97	0		-0.33	886		-----		-----
92	D97	-3		-1.60	902		-----		-----
120	D97	3		0.95	904		-----		-----
131		-----		-----	912		-----		-----
140	ISO3016	6		2.22	913		-----		-----
150		-----		-----	922	D97	0		-0.33
158		-----		-----	962	ISO3016	3		0.95
159		-----		-----	963	ISO3016	3		0.95
168		-----		-----	971		-----		-----
169		-----		-----	974		-----		-----
171		-----		-----	982	D97	6		2.22
175		-----		-----	997	D97	6		2.22
194		-----		-----	1006		-----		-----
212	ISO3016	3		0.95	1011		-----		-----
221	D97	6		2.22	1059		-----		-----
224	D97	7.0		2.65	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095	ISO3016	3		0.95
238		-----		-----	1099	ISO3016	-3		-1.60
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273	D97	0		-0.33	1135	ISO3016	3		0.95
311		-----		-----	1161		-----		-----
313		-----		-----	1167	ISO3016	3		0.95
323	ISO3016	6		2.22	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213	D97	0		-0.33
334		-----		-----	1229	ISO3016	-6		-2.87
336		-----		-----	1233		-----		-----
337		-----		-----	1254	D97	0		-0.33
342		-----		-----	1259	ISO3016	0		-0.33
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345		-----		-----
371		-----		-----	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402		-----		-----
440		-----		-----	1404	ISO3016	9		3.50
444		-----		-----	1412	D97	3		0.95
445	D97	3		0.95	1428		-----		-----
447	D97	3		0.95	1431		-----		-----
463		-----		-----	1459	ISO3016	-6	C	-2.87
511		-----		-----	1488	ISO3016	6.0		2.22
541		-----		-----	1510	D97	3		0.95
562	D97	3		0.95	1539		-----		-----
575	D97	0		-0.33	1556		-----		-----
603		-----		-----	1569		-----		-----
604	D97	3		0.95	1584	ISO3016	0		-0.33
605	D97	-3		-1.60	1586		-----		-----
608		-----		-----	1613	D97	-3		-1.60
621		-----		-----	1622	D97	0		-0.33
631	D97	-3		-1.60	1631		-----		-----
663	D97	-6		-2.87	1643		-----		-----
671	D97	0		-0.33	1710		-----		-----
750	D97	6		2.22	1720		-----		-----
753	D97	-3		-1.60	1724		-----	W	-----
759	ISO3016	0		-0.33	1728	ISO3016	3		0.95
824		-----		-----	1740	ISO3016	-6		-2.87
825	D97	3		0.95	1741		-----		-----
851		-----		-----	1796	ISO3016	0		-0.33
855	D97	0		-0.33	1807		-----		-----
857	ISO3016	0		-0.33	1832	ISO3016	3		0.95
858		-----		-----	1833		-----		-----
859		-----		-----	1849	ISO3016	-6		-2.87
862	ISO3016	0		-0.33	1857		-----		-----
863	D97	-3		-1.60	1862	ISO3016	0		-0.33
864		-----		-----	1881		-----		-----
865	ISO3016	0		-0.33	1906		-----		-----
866	D97	-3		-1.60	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	ISO3016	0		-0.33
1938		-----		-----	6026	D97	0		-0.33
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	D97	0		-0.33
1964		-----		-----	6051		-----		-----
1967	D97	0		-0.33	6057	ISO3016	-3		-1.60
1971		-----		-----	6075		-----		-----
1986	ISO3016	0		-0.33	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D5853	0		-0.33	6114		-----		-----
6021	ISO3016	0		-0.33	6122		-----		-----

normality	OK
n	64
outliers	0
mean (n)	0.77
st.dev. (n)	3.449
R(calc.)	9.66
R(ISO3016:94)	6.59

Lab 1459 first reported: -9

Lab 1724 first reported: -9
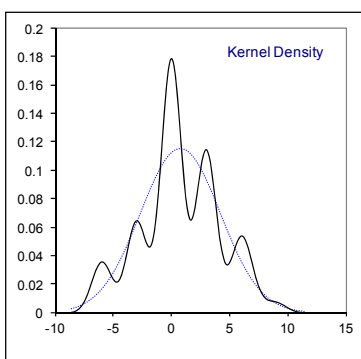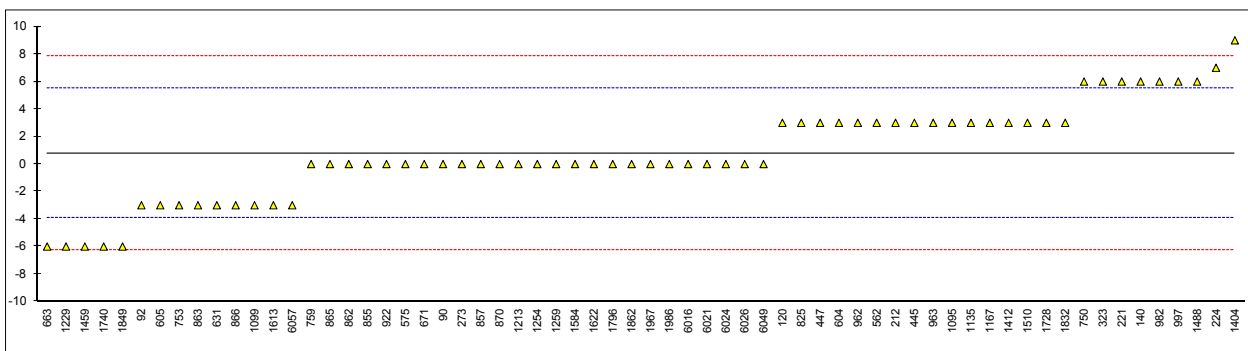
Determination of Pour Point (Upper) on sample #17105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870	D97	3		0.35
90	D97	3		0.35	886		-----		-----
92	D97	0		-0.92	902	D97	0		-0.92
120		-----		-----	904	D97	0		-0.92
131		-----		-----	912		-----		-----
140		-----		-----	913	D97	6		1.63
150	D97	-3		-2.20	922	D97	3		0.35
158		-----		-----	962	ISO3016	3		0.35
159	D97	6		1.63	963	ISO3016	3		0.35
168		-----		-----	971	D97	0		-0.92
169	D97	3		0.35	974	D97	0		-0.92
171	D97	-6		-3.47	982	D97	9		2.90
175		-----		-----	997	D97	6		1.63
194	D97	6		1.63	1006	D97	-3		-2.20
212		-----		-----	1011	D97	-3		-2.20
221	D97	9		2.90	1059		-----		-----
224	D97	9.0		2.90	1065		-----		-----
225		-----		-----	1082		-----		-----
237	D97	-3		-2.20	1095		-----		-----
238	D97	6		1.63	1099		-----		-----
252	D97	3		0.35	1109	D97	6		1.63
253	D97	0		-0.92	1126		-----		-----
254	D97	3		0.35	1134		-----		-----
273		-----		-----	1135	ISO3016	3		0.35
311		-----		-----	1161		-----		-----
313		-----		-----	1167	ISO3016	6		1.63
323	ISO3016	6		1.63	1177		-----		-----
331		-----		-----	1191	ISO3016	3		0.35
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233	ISO3016	0		-0.92
337		-----		-----	1254	D97	3		0.35
342	ISO3016	-3		-2.20	1259	ISO3016	3		0.35
343		-----		-----	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345	D97	6.0		1.63
371	ISO3016	3		0.35	1356	ISO3016	0		-0.92
391	ISO3016	0		-0.92	1367	D97	0		-0.92
398	ISO3016	0		-0.92	1389	D97	6		1.63
399		-----		-----	1402	ISO3016	6		1.63
440		-----		-----	1404	ISO3016	12		4.17
444		-----		-----	1412	D97	6		1.63
445	D97	6		1.63	1428	ISO3016	-3		-2.20
447		-----		-----	1431	D97	-3		-2.20
463		-----		-----	1459		-----		-----
511		-----		-----	1488	ISO3016	9.0		2.90
541		-----		-----	1510	D97	6		1.63
562	D97	3		0.35	1539	ISO3016	0		-0.92
575		-----		-----	1556	ISO3016	-2.4		-1.94
603	D97	3		0.35	1569	D97	-3		-2.20
604	D97	3		0.35	1584	ISO3016	3		0.35
605	D97	0		-0.92	1586	D97	3		0.35
608		-----		-----	1613	D97	0		-0.92
621		-----		-----	1622	D97	0		-0.92
631		-----		-----	1631		-----		-----
663	D97	0		-0.92	1643	D97	3		0.35
671	D97	6		1.63	1710		-----		-----
750		-----		-----	1720	D97	3		0.35
753	D97	3		0.35	1724	D97	-3		-2.20
759	ISO3016	3		0.35	1728	ISO3016	6		1.63
824	ISO3016	3		0.35	1740	ISO3016	-3		-2.20
825		-----		-----	1741	ISO3016	-3		-2.20
851	ISO3016	3		0.35	1796	ISO3016	3		0.35
855	ISO3016	3		0.35	1807	D97	3		0.35
857	ISO3016	3		0.35	1832	ISO3016	6		1.63
858	D97	3		0.35	1833		-3		-2.20
859	D97	3		0.35	1849	ISO3016	-3		-2.20
862	ISO3016	0		-0.92	1857	ISO3016	3		0.35
863	D97	0		-0.92	1862	ISO3016	3		0.35
864	D97	3		0.35	1881	D97	-3		-2.20
865	ISO3016	3		0.35	1906		-----		-----
866	D97	0		-0.92	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	ISO3016	3		0.35
1938		-----		-----	6026	D97	3		0.35
1943		-----		-----	6028	ISO3016	24	R(0.01)	9.27
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	D97	3		0.35
1964		-----		-----	6051		-----		-----
1967	D97	6		1.63	6057	ISO3016	0		-0.92
1971	ISO3016	-3.0		-2.20	6075		-----		-----
1986	ISO3016	3		0.35	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D5853	0		-0.92	6114	D97	0		-0.92
6021	ISO3016	3		0.35	6122		-----		-----

normality	OK
n	101
outliers	1
mean (n)	2.17
st.dev. (n)	3.415
R(calc.)	9.56
R(ISO3016:94)	6.59

Kernel Density
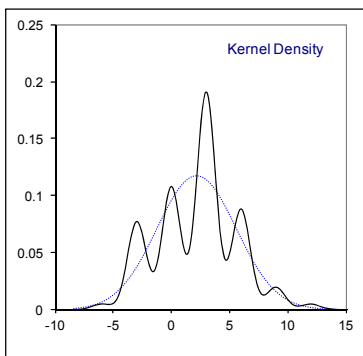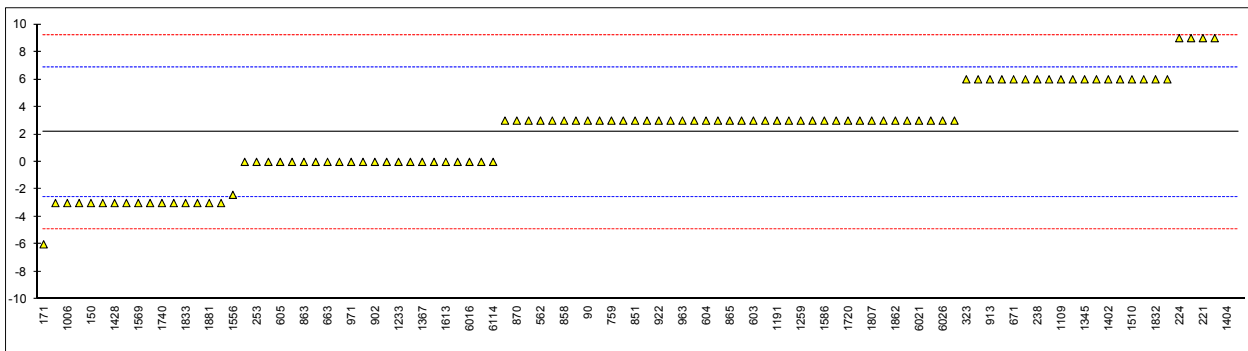
Determination of Pour Point (Automated), 3°C interval on sample #17105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870		-----		-----
90		-----		-----	886	D5950	3		1.49
92		-----		-----	902		-----		-----
120		-----		-----	904		-----		-----
131		-----		-----	912		-----		-----
140		-----		-----	913	D6749	6		2.87
150		-----		-----	922		-----		-----
158		-----		-----	962		-----		-----
159		-----		-----	963		-----		-----
168		-----		-----	971		-----		-----
169		-----		-----	974		-----		-----
171	D5950	-12	R(0.05)	-5.39	982		-----		-----
175	D5950	0		0.11	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059		-----		-----
224		-----		-----	1065	D5950	-3		-1.26
225		-----		-----	1082	D5950	0		0.11
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	D5950	-3		-1.26
311		-----		-----	1161		-----		-----
313		-----		-----	1167	D6749	3		1.49
323		-----		-----	1177		-----		-----
331	D5950	6.0		2.87	1191		-----		-----
333	D5950	0		0.11	1213		-----		-----
334		-----		-----	1229		-----		-----
336	D5950	0		0.11	1233		-----		-----
337		-----		-----	1254	D5950	0		0.11
342		-----		-----	1259		-----		-----
343		-----		-----	1275		-----		-----
349		-----		-----	1299	D97	0		0.11
351	D6749	-6		-2.64	1345		-----		-----
371		-----		-----	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402		-----		-----
440		-----		-----	1404		-----		-----
444		-----		-----	1412		-----		-----
445		-----		-----	1428		-----		-----
447		-----		-----	1431		-----		-----
463	D6892	0.0		0.11	1459		-----		-----
511		-----		-----	1488		-----		-----
541	D5950	-3		-1.26	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605		-----		-----	1586	D5950	0		0.11
608		-----		-----	1613		-----		-----
621		-----		-----	1622		-----		-----
631		-----		-----	1631		-----		-----
663		-----		-----	1643		-----		-----
671		-----		-----	1710	D97	-6		-2.64
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728		-----		-----
824		-----		-----	1740		-----		-----
825		-----		-----	1741		-----		-----
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832		-----		-----
858		-----		-----	1833	D5950	-3		-1.26
859		-----		-----	1849		-----		-----
862	D5950	0		0.11	1857		-----		-----
863		-----		-----	1862		-----		-----
864		-----		-----	1881		-----		-----
865		-----		-----	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026		-----		-----
1943		-----		-----	6028		-----		-----
1956	D5950	6		2.87	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967		-----		-----	6057		-----		-----
1971		-----		-----	6075	NF T 60-105	-3		-1.26
1986		-----		-----	6092		-----		-----
1995		0		0.11	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D5950	-3		-1.26	6114		-----		-----
6021		-----		-----	6122	D5950	0.0		0.11

normality	OK
n	24
outliers	1
mean (n)	-0.25
st.dev. (n)	3.300
R(calc.)	9.24
R(D5950:14)	6.1

Kernel Density
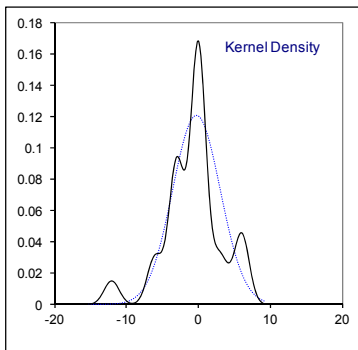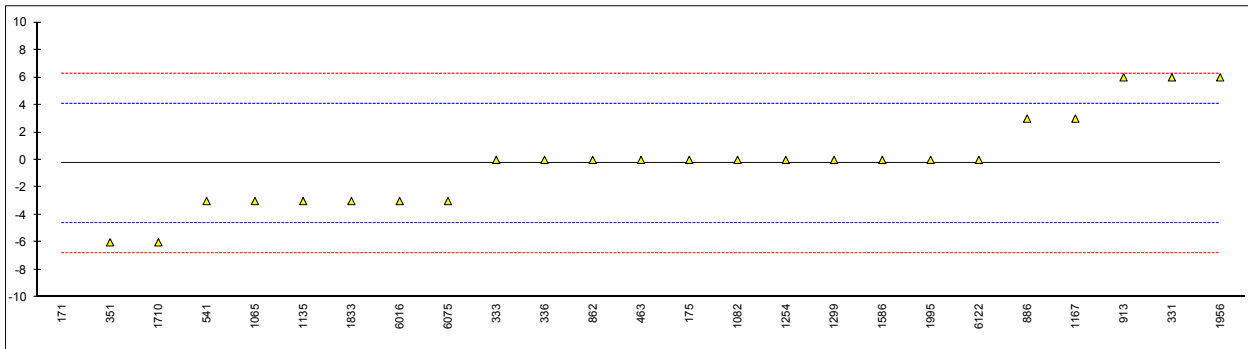
Determination of Sediment by Extraction on sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	870	D473	0.021		0.14
90	D473	0.028		0.66	886		-----		-----
92	D473	0.036		1.25	902	D473	0.02		0.06
120	D473	0.01		-0.68	904	D473	0.018		-0.08
131		-----		-----	912		-----		-----
140	D473	0.06	R(0.01)	3.02	913	D473	0.03		0.80
150	D473	0.01	C	-0.68	922	D473	<0.01		-----
158		-----		-----	962	D473	0.021		0.14
159	D473	0.012		-0.53	963	D473	0.015		-0.31
168	D473	0.04		1.54	971	D473	0.014		-0.38
169		-----		-----	974	D473	0.014		-0.38
171	D473	0.0029		-1.20	982	D473	0.0199		0.06
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212	D473	0.02		0.06	1011		-----		-----
221	D473	0.0119		-0.53	1059		-----		-----
224	D473	0.0058		-0.99	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095		-----		-----
238	D473	0.022		0.21	1099		-----		-----
252	D473	0.017		-0.16	1109	D473	0.01		-0.68
253		-----		-----	1126		-----		-----
254	D473	0.02		0.06	1134	D473	0.00451836		-1.08
273	D473	0.006		-0.97	1135	ISO3735	0.03		0.80
311	D473	<0.01		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D473	0.02		0.06	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213	D473	0.034		1.10
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254	D473	0.016		-0.23
342		-----		-----	1259		-----		-----
343	D473	0.00		-1.41	1275		-----		-----
349		-----		-----	1299		-----		-----
351		-----		-----	1345	D473	0.012		-0.53
371	D473	0.013		-0.45	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389		-----		-----
399		-----		-----	1402	ISO3735	0.03		0.80
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D473	0.013		-0.45
445	D473	<0.01		-----	1428	D473	0.015		-0.31
447	D473	0.02		0.06	1431		-----		-----
463	D473	0.0167		-0.18	1459		-----		-----
511	D473	0.0229		0.28	1488		-----		-----
541	D473	0.040		1.54	1510	D473	0.02		0.06
562	D473	0.02		0.06	1539	ISO3735	0.0039		-1.13
575	D473	0.024		0.36	1556	ISO3735	0.006		-0.97
603	D473	0		-1.41	1569		-----		-----
604		-----		-----	1584	D473	0.018		-0.08
605	D473	0.022		0.21	1586	D473	0.02		0.06
608	D473	0.03		0.80	1613	D473	0.029		0.73
621		-----		-----	1622	D473	0.0292		0.74
631	D473	0.020		0.06	1631		-----		-----
663	D473	0.020		0.06	1643	D473	0.0288		0.71
671	D473	0.0241	C	0.37	1710		-----		-----
750		-----		-----	1720		-----		-----
753	D473	0.032		0.95	1724	D473	0.022		0.21
759	D473	0.02		0.06	1728	D473	0.024		0.36
824	D473	0.019		-0.01	1740	ISO3735	0.017		-0.16
825		-----		-----	1741		-----		-----
851		-----		-----	1796	D473	0.0186		-0.04
855	D473	0.021		0.14	1807	ISO3735	0		-1.41
857	D473	0.023		0.29	1832	ISO3735	0.0184		-0.05
858	D473	0.02		0.06	1833		-----		-----
859		-----		-----	1849		-----		-----
862	D473	0.018		-0.08	1857	D473	0.02		0.06
863	D473	0.012		-0.53	1862	D473	0.017		-0.16
864	D473	0.02		0.06	1881		-----		-----
865	D473	0.015		-0.31	1906		-----		-----
866	D473	0.021		0.14	1936		-----		-----

lab	method	value	mark	z(targ)	Lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026	D473	0.0179		-0.09
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049		-----		-----
1964		-----		-----	6051	D473	0.015		-0.31
1967	D473	0.0229		0.28	6057	D473	0.02		0.06
1971		-----		-----	6075		-----		-----
1986	D473	0.02		0.06	6092		-----		-----
1995		-----		-----	6109	D473	0.047		2.06
6004		-----		-----	6112		-----		-----
6016	D473	0.0148	C	-0.32	6114	D473	0.026		0.51
6021	D473	0.020		0.06	6122		-----		-----

normality	suspect
n	83
outliers	1
mean (n)	0.0191
st.dev. (n)	0.00884
R(calc.)	0.0248
R(D473:07)	0.0379

Lab 150 first reported: 0.06

Lab 671 first reported: 0.0949

Lab 6016 first reported: 0.05

Kernel Density
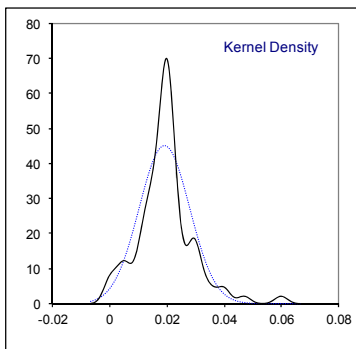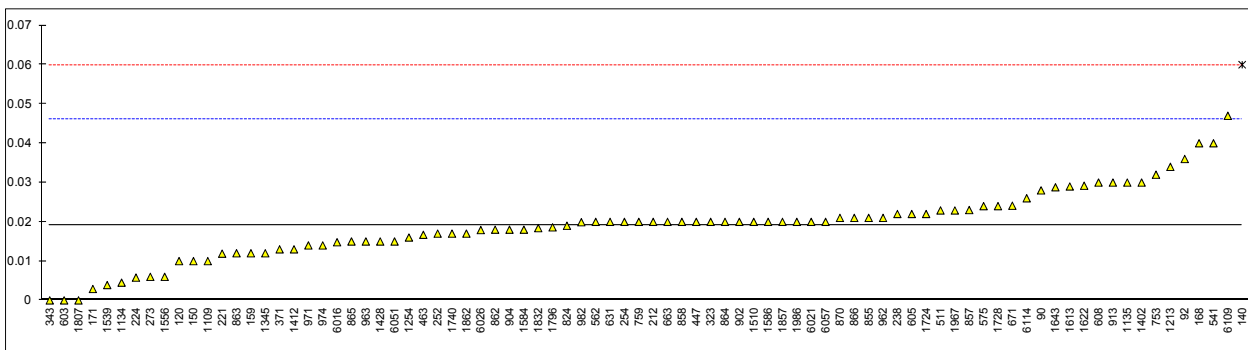
Determination of Total Sediment (Hot filtration) of sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		0.10	870	IP375	0.020		0.10
90		-----		-----	886		-----		-----
92		-----		-----	902	IP375	0.015		-0.25
120	D4870	0.01		-0.60	904	IP375	0.02		0.10
131		-----		-----	912		-----		-----
140		-----		-----	913		-----		-----
150		-----		-----	922	ISO10307-1	0.010		-0.60
158		-----		-----	962		-----		-----
159		-----		-----	963	IP375	0.017		-0.11
168		-----		-----	971	IP375	0.017		-0.11
169		-----		-----	974	IP375	0.016		-0.18
171	IP375	0.02		0.10	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212	ISO10307-1	0.02		0.10	1011	ISO10307-1	0.02		0.10
221		-----		-----	1059		-----		-----
224		-----		-----	1065		-----		-----
225		-----		-----	1082	ISO10307-1	0.022		0.24
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134	IP375	0.020		0.10
273		-----		-----	1135	ISO10307-1	0.02		0.10
311	IP375	0.02		0.10	1161		-----		-----
313		-----		-----	1167	ISO10307-1	0.03		0.79
323	IP375	0.02		0.10	1177		-----		-----
331		-----		-----	1191	ISO10307-1	0.030		0.79
333		-----		-----	1213		-----		-----
334		-----		-----	1229	ISO10307-1	0.04	R(0.01)	1.49
336	IP375	0.02		0.10	1233		-----		-----
337		-----		-----	1254	IP375	0.018		-0.04
342	ISO10307-1	0.005		-0.95	1259		-----		-----
343	ISO10307-1	0.02		0.10	1275		-----		-----
349		-----		-----	1299	ISO10307-1	0.01		-0.60
351	ISO10307-1	0.064	R(0.01)	3.17	1345	ISO10307-1	0.018		-0.04
371	IP375	0.0149		-0.26	1356	ISO10307-1	0.03		0.79
391		-----		-----	1367	IP375	<0.01		-----
398		-----		-----	1389	ISO10307-1	0.016		-0.18
399		-----		-----	1402	IP375	0.02		0.10
440		-----		-----	1404	IP375	0.07	R(0.01)	3.59
444		-----		-----	1412	IP375	0.014		-0.32
445	IP375	0.03		0.79	1428	ISO10307-1	0.013		-0.39
447		-----		-----	1431		-----		-----
463	ISO10307-1	0.0167		-0.13	1459		-----		-----
511		-----		-----	1488		-----		-----
541	D4870	0.030		0.79	1510	IP375	0.01		-0.60
562		-----		-----	1539	ISO10307-1	0.02		0.10
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605	IP375	0.013		-0.39	1586	ISO10307-1	0.02		0.10
608		-----		-----	1613	IP375	0.025		0.45
621		-----		-----	1622		-----		-----
631	D4870	0.010		-0.60	1631		-----		-----
663	IP375	0.014		-0.32	1643		-----		-----
671		-----		-----	1710		-----		-----
750	IP375	0.017		-0.11	1720		-----		-----
753	IP375	0.021		0.17	1724		-----		-----
759		-----		-----	1728		-----		-----
824	ISO10307-1	0.019		0.03	1740	ISO10307-1	0.019		0.03
825		-----		-----	1741		-----		-----
851	ISO10307-1	0.01		-0.60	1796	IP375	0.0199		0.09
855	ISO10307-1	0.021		0.17	1807	D4870	0.01		-0.60
857	ISO10307-1	0.018		-0.04	1832		-----		-----
858	D4870	0.02		0.10	1833		-----		-----
859	ISO10307-1	0.02		0.10	1849		-----		-----
862	IP375	0.018		-0.04	1857	IP375	0.02		0.10
863	D4870	0.018		-0.04	1862	IP375	0.028		0.65
864	D4870	0.021		0.17	1881	IP375	0.019		0.03
865	ISO10307-1	0.020		0.10	1906		-----		-----
866	D4870	0.02		0.10	1936		-----		-----

lab	method	value	mark	z(targ)	Lab	method	value	mark	z(targ)
1937		-----		-----	6024	IP375	0.02		0.10
1938		-----		-----	6026	IP375	0.0229		0.30
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	ISO10307-1	0.02		0.10
1964		-----		-----	6051	IP375	0.016		-0.18
1967	IP375	0.0164		-0.15	6057	ISO10307-1	0.02		0.10
1971		-----		-----	6075		-----		-----
1986	IP375	0.02		0.10	6092	IP375	0.02		0.10
1995	D4870	0.01		-0.60	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	ISO10307-1	0.020		0.10
6021	IP375	0.023		0.31	6122		-----		-----

normality	OK
n	71
outliers	3
mean (n)	0.0186
st.dev. (n)	0.00513
R(calc.)	0.0144
R(IP375:11)	0.0401
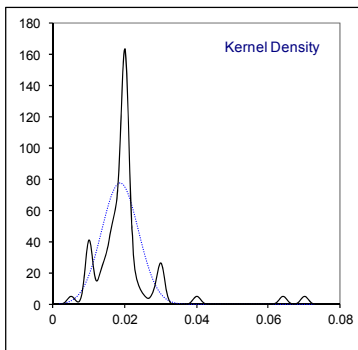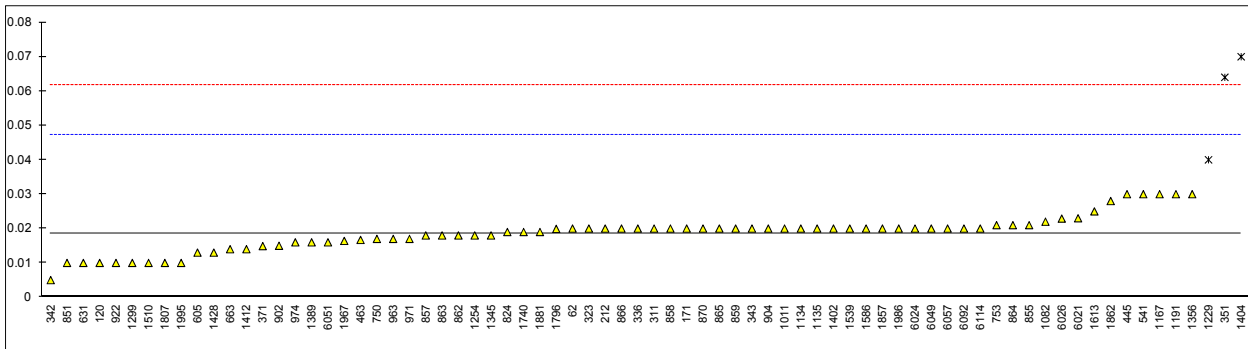
Determination of Total Sediment (Accelerated) of sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		-0.09	870	IP390	0.020		-0.09
90		-----		-----	886		-----		-----
92		-----		-----	902	IP390	0.013		-0.55
120		-----		-----	904	IP390	0.017		-0.29
131		-----		-----	912		-----		-----
140		-----		-----	913		-----		-----
150		-----		-----	922	ISO10307-2	0.011		-0.68
158		-----		-----	962		-----		-----
159		-----		-----	963	IP390	0.018		-0.22
168		-----		-----	971	IP390	0.016		-0.35
169		-----		-----	974	IP390	0.015		-0.42
171	IP390	0.03		0.56	982		-----		-----
175		-----		-----	997		-----		-----
194	ISO10307-2	0.018		-0.22	1006		-----		-----
212	ISO10307-2	0.02		-0.09	1011		-----		-----
221		-----		-----	1059		-----		-----
224		-----		-----	1065		-----		-----
225		-----		-----	1082		-----		-----
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	ISO10307-2	0.02		-0.09
311	IP390	0.04		1.21	1161		-----		-----
313		-----		-----	1167		-----		-----
323	IP390	0.02	C	-0.09	1177		-----		-----
331	ISO10307-2	0.03		0.56	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229	ISO10307-2	0.03		0.56
336		-----		-----	1233	ISO10307-2	0.06	R(0.01)	2.51
337		-----		-----	1254		-----		-----
342	ISO10307-2	0.02	C	-0.09	1259		-----		-----
343	ISO10307-2	0.02		-0.09	1275		-----		-----
349		-----		-----	1299	ISO10307-2	0.01		-0.74
351	ISO10307-2	0.070	R(0.01)	3.16	1345		-----		-----
371	IP390	0.0168		-0.30	1356	ISO10307-2	0.03		0.56
391		-----		-----	1367		-----		-----
398		-----		-----	1389	ISO10307-2	0.022		0.04
399		-----		-----	1402		-----		-----
440		-----		-----	1404	IP390	0.025		0.23
444		-----		-----	1412		-----		-----
445	IP390	0.03		0.56	1428	ISO10307-2	0.014		-0.48
447		-----		-----	1431		-----		-----
463	ISO10307-2	0.0169		-0.29	1459		-----		-----
511		-----		-----	1488		-----		-----
541		-----		-----	1510	IP390	0.01		-0.74
562		-----		-----	1539		-----		-----
575		-----		-----	1556	ISO10307-2	0.030		0.56
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605	IP390	0.010		-0.74	1586	ISO10307-2	0.02		-0.09
608		-----		-----	1613		-----		-----
621		-----		-----	1622		-----		-----
631	D4870	0.011		-0.68	1631	ISO10307-2	0.03		0.56
663		-----		-----	1643		-----		-----
671		-----		-----	1710		-----		-----
750	IP390	0.014		-0.48	1720		-----		-----
753	IP390	0.011		-0.68	1724	ISO10307-2	0.038		1.08
759		-----		-----	1728		-----		-----
824	ISO10307-2	0.021		-0.03	1740	ISO10307-2	0.021		-0.03
825		-----		-----	1741		-----		-----
851		-----		-----	1796	IP390	0.0233		0.12
855	ISO10307-2	0.022		0.04	1807		-----		-----
857	ISO10307-2	0.021		-0.03	1832		-----		-----
858	ISO10307-2	0.02		-0.09	1833	ISO10307-2	0.03		0.56
859	ISO10307-2	0.02		-0.09	1849	ISO10307-2	0.03		0.56
862	IP390	0.017		-0.29	1857	IP390	0.03		0.56
863	D4870	0.019		-0.16	1862	IP390	0.027		0.36
864	D4870	0.022		0.04	1881	IP390	0.030		0.56
865	ISO10307-2	0.021		-0.03	1906		-----		-----
866	D4870	0.02		-0.09	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	IP390	0.02		-0.09
1938		-----		-----	6026	IP390	0.0214		0.00
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	ISO10307-2	0.02		-0.09
1964		-----		-----	6051	IP390	0.026		0.30
1967	IP390	0.0177		-0.24	6057	ISO10307-2	0.02		-0.09
1971		-----		-----	6075		-----		-----
1986	IP390	0.02		-0.09	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	ISO10307-2	0.022		0.04
6021	IP390	0.027		0.36	6122		-----		-----

normality	OK
n	61
outliers	2
mean (n)	0.0214
st.dev. (n)	0.00665
R(calc.)	0.0186
R(IP390:11)	0.0430

Lab 323 first reported: 0.05

Lab 342 first reported: 0
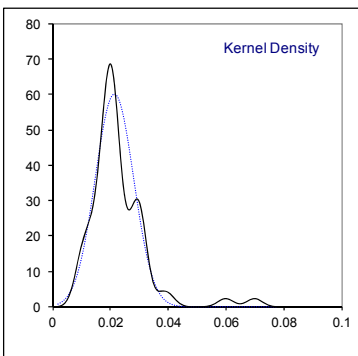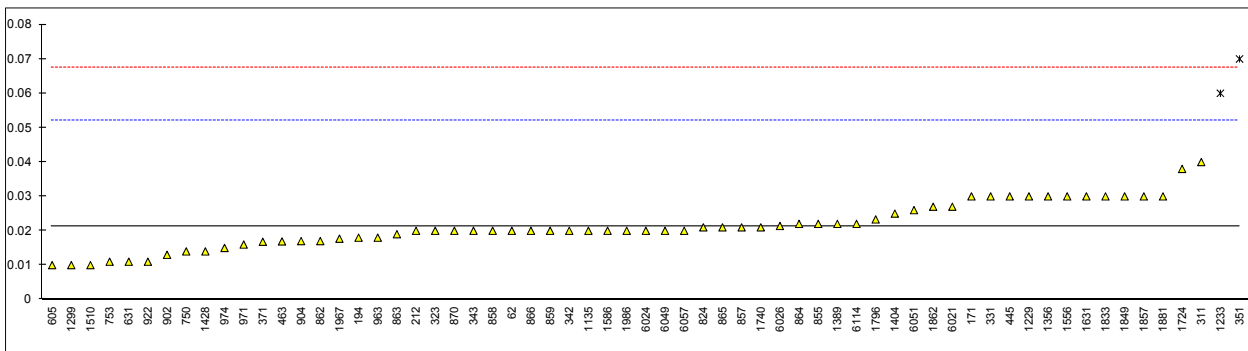
Determination of Total Sediment (Potential) of sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		0.05	870	IP390	0.020		0.05
90		-----		-----	886		-----		-----
92		-----		-----	902	IP390	0.010		-0.63
120		-----		-----	904	IP390	0.018		-0.08
131		-----		-----	912		-----		-----
140		-----		-----	913		-----		-----
150		-----		-----	922	ISO10307-2	0.011		-0.57
158		-----		-----	962		-----		-----
159		-----		-----	963	IP390	0.017		-0.15
168		-----		-----	971	IP390	0.018		-0.08
169		-----		-----	974	IP390	0.018		-0.08
171	IP390	0.02		0.05	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212	ISO10307-2	0.02		0.05	1011		-----		-----
221		-----		-----	1059		-----		-----
224		-----		-----	1065		-----		-----
225		-----		-----	1082	ISO10307-2	0.015		-0.29
237		-----		-----	1095		-----		-----
238		-----		-----	1099		-----		-----
252		-----		-----	1109		-----		-----
253		-----		-----	1126		-----		-----
254		-----		-----	1134		-----		-----
273		-----		-----	1135	ISO10307-2	0.01		-0.63
311	IP390	0.04	R(0.01)	1.43	1161		-----		-----
313		-----		-----	1167		-----		-----
323	IP390	0.02		0.05	1177		-----		-----
331	ISO10307-2	0.03		0.74	1191	ISO10307-2	0.0282		0.62
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254	IP390	0.015		-0.29
342	ISO10307-2	<0.01		-----	1259		-----		-----
343	ISO10307-2	0.02		0.05	1275		-----		-----
349		-----		-----	1299	ISO10307-2	0.01		-0.63
351	ISO10307-2	0.058	R(0.01)	2.66	1345		-----		-----
371	IP390	0.0167		-0.17	1356	ISO10307-2	0.02		0.05
391		-----		-----	1367	IP390	<0.01		-----
398		-----		-----	1389	ISO10307-2	0.025		0.40
399		-----		-----	1402	IP390	0.02		0.05
440		-----		-----	1404	IP390	0.01		-0.63
444		-----		-----	1412		-----		-----
445	IP390	0.02		0.05	1428	ISO10307-2	0.015		-0.29
447		-----		-----	1431	D4870	0.0245		0.36
463	ISO10307-2	0.020		0.05	1459		-----		-----
511		-----		-----	1488		-----		-----
541		-----		-----	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605	IP390	0.012		-0.50	1586	ISO10307-2	0.02		0.05
608		-----		-----	1613		-----		-----
621		-----		-----	1622		-----		-----
631	D4870	0.024		0.33	1631		-----		-----
663	IP390	0.010		-0.63	1643		-----		-----
671		-----		-----	1710		-----		-----
750	IP390	0.013		-0.43	1720		-----		-----
753	IP390	0.011		-0.57	1724	ISO10307-2	0.032		0.88
759		-----		-----	1728		-----		-----
824	ISO10307-2	0.022		0.19	1740	ISO10307-2	0.020		0.05
825		-----		-----	1741		-----		-----
851		-----		-----	1796	IP390	0.0208		0.11
855	ISO10307-2	0.021		0.12	1807		-----		-----
857	ISO10307-2	0.019		-0.02	1832		-----		-----
858	ISO10307-2	0.02		0.05	1833	ISO10307-2	0.03		0.74
859	ISO10307-2	0.02		0.05	1849		-----		-----
862	IP390	0.022		0.19	1857	IP390	0.02		0.05
863	D4870	0.019		-0.02	1862	IP390	0.021		0.12
864	D4870	0.021		0.12	1881	IP390	0.021		0.12
865	ISO10307-2	0.022		0.19	1906		-----		-----
866	D4870	0.02		0.05	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024	IP390	0.02		0.05
1938		-----		-----	6026	IP390	0.0199		0.05
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962		-----		-----	6049	ISO10307-2	0.02		0.05
1964		-----		-----	6051	IP390	0.017		-0.15
1967	IP390	0.0195		0.02	6057	ISO10307-2	0.02		0.05
1971		-----		-----	6075		-----		-----
1986	IP390	0.02		0.05	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016		-----		-----	6114	ISO10307-2	0.023		0.26
6021	IP390	0.023		0.26	6122		-----		-----

normality	OK
n	59
outliers	2
mean (n)	0.0192
st.dev. (n)	0.00485
R(calc.)	0.0136
R(IP390:11)	0.0408

Kernel Density
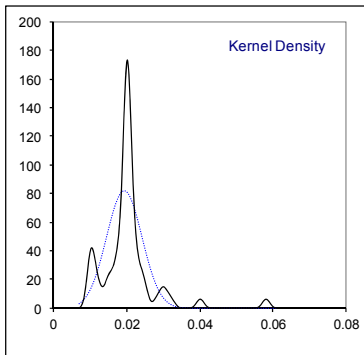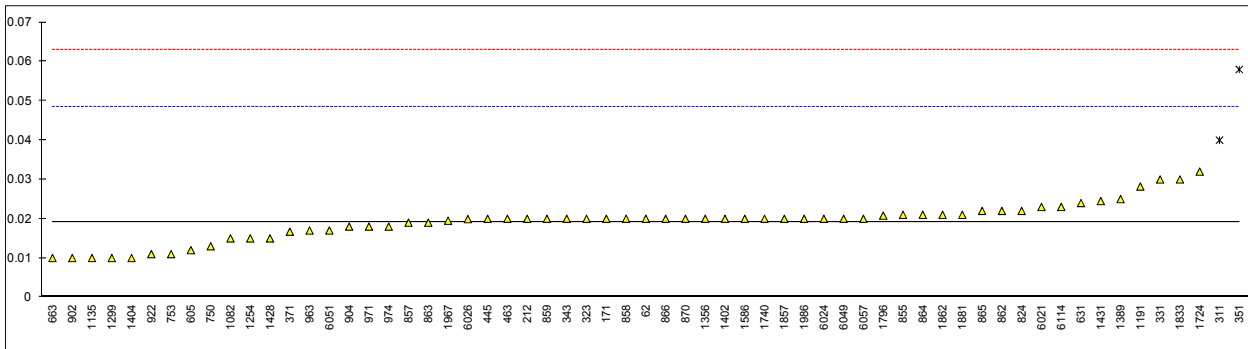
Determination of Total Sulphur on sample #17105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4294	1.09		0.65	870	ISO8754	1.048		-0.54
90	D4294	1.109		1.19	886		-----		-----
92	D4294	1.12		1.50	902	ISO8754	1.08		0.36
120	D4294	1.12		1.50	904	D4294	1.1		0.93
131	D4294	1.09110		0.68	912	D4294	1.033		-0.97
140	D4294	1.12		1.50	913	D4294	1.05		-0.49
150	D4294	1.08		0.36	922	D4294	1.087		0.56
158		-----		-----	962	ISO8754	0.956	R(0.05)	-3.15
159	D4294	1.12		1.50	963	ISO8754	1.03		-1.05
168	D4294	1.11493		1.35	971	D4294	1.06		-0.20
169	D4294	1.0284		-1.10	974	D4294	1.06		-0.20
171	D4294	1.11		1.21	982		-----		-----
175	D4294	1.11		1.21	997	D4294	1.06		-0.20
194		-----		-----	1006	D2622	1.062		-0.15
212	ISO8754	1.059		-0.23	1011	ISO8754	1.04		-0.77
221	D4294	1.0206		-1.32	1059	ISO14596mod.	1.00		-1.90
224	D4294	1.035		-0.91	1065	D4294	1.05		-0.49
225	D4294	1.050		-0.49	1082	ISO8754	1.058		-0.26
237	D4294	1.057		-0.29	1095	ISO8754	1.09		0.65
238	D4294	1.075		0.22	1099	ISO8754	1.0274		-1.13
252		-----		-----	1109	D4294	1.05		-0.49
253	D4294	1.09		0.65	1126	ISO20846mod.	1.04		-0.77
254		-----		-----	1134	IP336	1.17		2.91
273	D4294	1.02		-1.34	1135	ISO8754	1.0346		-0.92
311	D4294	1.09		0.65	1161		-----		-----
313	D4294	1.07		0.08	1167	ISO8754	1.072		0.14
323	ISO8754	1.05		-0.49	1177	DIN10304-1	1.045		-0.63
331	ISO8754	1.122		1.55	1191	ISO8754	1.037		-0.85
333	ISO8754	1.05		-0.49	1213	D4294	1.118		1.44
334	D4294	1.11		1.21	1229	ISO8754	1.06		-0.20
336	D4294	1.040		-0.77	1233	ISO8754	1.06		-0.20
337	D2622	1.08		0.36	1254	D4294	1.0498		-0.49
342	ISO8754	1.083		0.45	1259	ISO8754	1.148		2.29
343	IP336	1.123		1.58	1275	IP336	1.034		-0.94
349		-----		-----	1299	D2622	1.07		0.08
351	ISO8754	1.118		1.44	1345	D4294	1.0691		0.06
371	D4294	1.048		-0.54	1356	ISO8754	1.055		-0.34
391	ISO8754	1.07		0.08	1367	D4294	1.07		0.08
398	ISO8754	1.054		-0.37	1389	D4294	1.00		-1.90
399	ISO8754	1.03		-1.05	1402	IP336	1.13		1.78
440		-----		-----	1404	ISO8754	1.06		-0.20
444	D2622	1.03		-1.05	1412	D4294	1.094		0.76
445	IP336	1.042		-0.71	1428	ISO8754	1.06		-0.20
447	IP336	1.03		-1.05	1431	D4294	1.036		-0.88
463	ISO8754	1.04		-0.77	1459	ISO8754	1.03		-1.05
511	D4294	1.08771		0.58	1488	ISO8754	0.998		-1.96
541		-----		-----	1510	IP336	1.066		-0.03
562		-----		-----	1539	ISO8754	1.067		0.00
575	D4294	1.09982		0.93	1556	ISO8754	1.075		0.22
603	D4294	1.077		0.28	1569	ISO8754	1.097		0.85
604	D4294	1.047		-0.57	1584	ISO8754	1.069		0.05
605	D4294	1.081		0.39	1586	ISO8754	1.06		-0.20
608	D4294	1.07		0.08	1613	D4294	1.136		1.95
621		-----		-----	1622	D4294	1.34	R(0.01)	7.73
631	D4294	1.058		-0.26	1631	ISO8754	1.065		-0.06
663	D4294	1.044		-0.66	1643	D1552	1.064		-0.09
671	D4294	1.1041		1.05	1710	ISO14596	1.046		-0.60
750	D4294	1.06		-0.20	1720	D4294	1.084		0.48
753	D4294	1.056		-0.32	1724	IP336	1.082		0.42
759	D4294	1.069		0.05	1728	D4294	1.065		-0.06
824	ISO8754	1.079		0.34	1740	ISO8754	1.09		0.65
825	D4294	1.079		0.34	1741	ISO8754	1.090		0.65
851	ISO8754	1.093		0.73	1796	ISO8754	1.054		-0.37
855	ISO8754	1.044		-0.66	1807	ISO8754	1.03		-1.05
857	D4294	1.056		-0.32	1832	ISO8754	1.0425		-0.70
858	D4294	1.066		-0.03	1833	ISO8754	1.07		0.08
859	D4294	1.067		0.00	1849	ISO8754	1.05		-0.49
862	D2622	1.099		0.90	1857	ISO8754	1.04		-0.77
863	D4294	1.042		-0.71	1862	D4294	1.06		-0.20
864	D4294	1.052		-0.43	1881	D4294	1.045		-0.63
865	ISO8754	1.077		0.28	1906	D5623	1.042		-0.71
866	D4294	1.047		-0.57	1936	ISO8754	1.07		0.08

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937	ISO8754	1.035		-0.91	6024	ISO8754	1.081		0.39
1938	ISO8754	1.087		0.56	6026	D4294	1.064		-0.09
1943		1.071		0.11	6028	ISO8754	1.046		-0.60
1956	ISO8754	1.065		-0.06	6039	ISO8754	1.08		0.36
1962	ISO8754	1.012		-1.56	6049	D4294	1.053		-0.40
1964		-----		-----	6051	D4294	1.043		-0.68
1967	D4294	1.053		-0.40	6057	ISO8754	1.068		0.02
1971	ISO8754	1.068		0.02	6075	ISO8754	1.043		-0.68
1986	D4294	1.04		-0.77	6092	D4294	1.09		0.65
1995	D4294	1.04		-0.77	6109	D1552	1.1194		1.48
6004	D4294	1.09		0.65	6112		-----		-----
6016	D4294	1.131	C	1.81	6114	D4294	1.065		-0.06
6021	ISO8754	1.065		-0.06	6122	ISO8754	1.09		0.65

normality	OK
n	154
outliers	2
mean (n)	1.0671
st.dev. (n)	0.03006
R(calc.)	0.0842
R(ISO8754:03)	0.0988
Compare R(D4294:16e1)	0.0758

Lab 6016 first reported: 0.11215
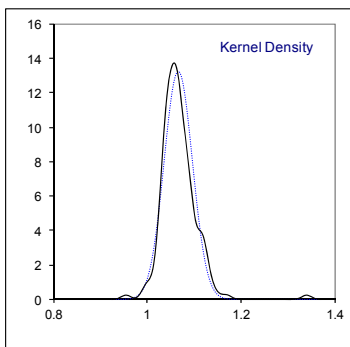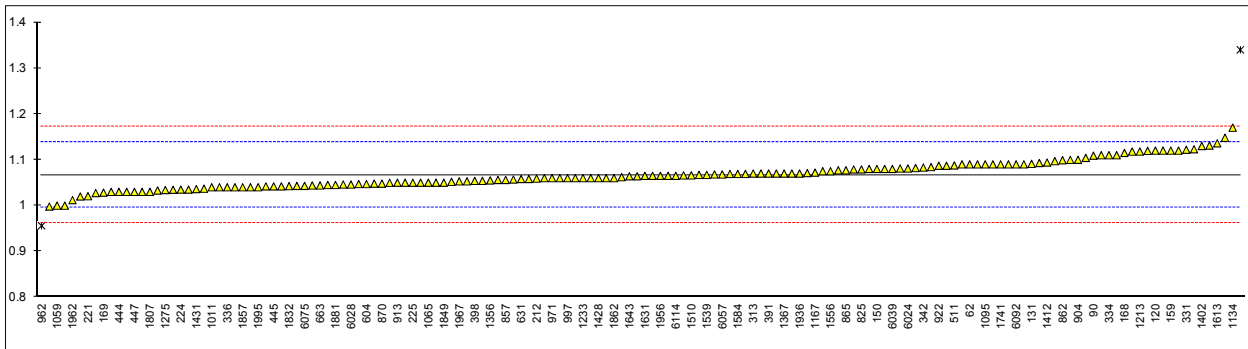
Determination of Water by distillation on sample #17105; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D95	0.1		0.82	870	ISO3733	<0.05		-----
90	D95	< 0.1		-----	886		-----		-----
92	D95	0		-0.58	902	ISO3733	<0,1		-----
120	D95	0.05		0.12	904	D95	0.05		0.12
131	D95	0.05		0.12	912	D95	0.05		0.12
140	D95	0.15	R(0.01)	1.52	913	D95	0.1		0.82
150	D95	0.10		0.82	922	D95	<0.05		-----
158		-----		-----	962	ISO3733	0.05		0.12
159	D95	0.0		-0.58	963	ISO3733	0.05		0.12
168	D95	0.05		0.12	971	D95	<0.05		-----
169		-----		-----	974	D95	<0.05		-----
171	D95	0.05		0.12	982	D95	0.05		0.12
175	D95	0.05		0.12	997	D95	0.05		0.12
194	D95	0		-0.58	1006	D95	<0.05		-----
212	ISO3733	0.0		-0.58	1011	ISO3733	< 0.10		-----
221		-----		-----	1059	ISO3733	<0,05		-----
224		-----		-----	1065	D95	0.00		-0.58
225	D95	0.05		0.12	1082		-----		-----
237	D95	0.05		0.12	1095	D95	<0.1		-----
238	D95	0.05		0.12	1099	ISO9029	<0.05		-----
252	D95	0.05		0.12	1109	D95	0.05		0.12
253	D95	0.05		0.12	1126	D95	0.00		-0.58
254	D95	0.05		0.12	1134	D95	<0.05		-----
273	D95	0.04	C	-0.02	1135	ISO3733	0.05		0.12
311		-----		-----	1161		-----		-----
313	D95	0.05		0.12	1167	EN1428	<0.1		-----
323	ISO3733	<0.05		-----	1177		-----		-----
331	D95	<0.05		-----	1191		-----		-----
333		-----		-----	1213	D95	<0.1		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233	ISO3733	0.06		0.26
337		-----		-----	1254	D95	0.05		0.12
342	ISO3733	0.03		-0.16	1259	ISO3733	0.05		0.12
343	D95	<0,1		-----	1275	IP74	<0.10		-----
349	D95	<0,1		-----	1299	D95	<0.1		-----
351	ISO3733	<0,05		-----	1345	D95	0.05		0.12
371	D95	0.048		0.09	1356	D6304-A	<0.05		-----
391	ISO3733	0.05		0.12	1367	D95	<0.05		-----
398	ISO3733	0.05		0.12	1389	D95	<0.1		-----
399		-----		-----	1402	D95	0.00		-0.58
440		-----		-----	1404		-----		-----
444		-----		-----	1412	D95	0.050		0.12
445	D95	<0.05		-----	1428	ISO3733	0.05		0.12
447	D95	0.05		0.12	1431	D95	0.02		-0.30
463	ISO3733	<0,1		-----	1459	In house	0		-0.58
511	D95	0.0		-0.58	1488	ISO3733	0.030		-0.16
541	D95	<0.05		-----	1510	D95	0.05		0.12
562	D95	0.00		-0.58	1539	D95	<0,05		-----
575	D95	0.05		0.12	1556	D6304-C	0.01		-0.44
603	D95	0.05		0.12	1569	D95	<0.10		-----
604		-----		-----	1584	ISO3733	0.05		0.12
605	D95	0.05		0.12	1586	D95	< 0.05		-----
608	D95	0.05		0.12	1613	D95	0.05		0.12
621		-----		-----	1622	D95	0.10		0.82
631	D95	0.10		0.82	1631	D95	<0.1		-----
663	D95	0.00		-0.58	1643	D95	<0.1		-----
671	D95	<0.1		-----	1710	ISO9029	0.05		0.12
750		-----		-----	1720		-----		-----
753	D95	0.05		0.12	1724	D95	0.05		0.12
759	D95	0.05		0.12	1728	D95	0.05		0.12
824	ISO3733	0		-0.58	1740	ISO3733	<0.05		-----
825	D95	<0.05		-----	1741	ISO3733	0.025		-0.23
851	ISO3733	<0.05		-----	1796	ISO3733	0.05		0.12
855	ISO3733	<0.05		-----	1807	ISO3733	0		-0.58
857	ISO3733	<0.05		-----	1832	ISO3733	0.05		0.12
858	D95	<0.05		-----	1833	ISO3733	<0.1		-----
859	D95	<0.05		-----	1849	EN1428	< 0,1		-----
862	D95	0		-0.58	1857	ISO3733	0.05		0.12
863	D95	<0.05		-----	1862	D95	0.05		0.12
864	D95	<0.05		-----	1881	D95	0.05		0.12
865	ISO3733	0.03		-0.16	1906	D6304-C	0.036143		-0.08
866	D95	<0.05		-----	1936	EN1428	<0.1		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937	EN1428	0.1		0.82	6024	ISO3733	0.05		0.12
1938		0.05		0.12	6026		-----		-----
1943	ISO3733	<0.05		-----	6028	D95	0		-0.58
1956		-----		-----	6039		-----		-----
1962	D95	<0.1		-----	6049	ISO3733	< 0.05		-----
1964		-----		-----	6051	D95	0.05		0.12
1967	D95	0.05		0.12	6057	ISO3733	0.09		0.68
1971		-----		-----	6075	ISO3733	0.00		-0.58
1986	D95	0.05		0.12	6092	D95	<0.05		-----
1995	D95	0		-0.58	6109		-----		-----
6004	D95	0.025		-0.23	6112		-----		-----
6016	D95	0.03		-0.16	6114	D95	0.05		0.12
6021	ISO3733	0.05		0.12	6122		-----		-----

normality	OK
n	88
outliers	1
mean (n)	0.0418
st.dev. (n)	0.02601
R(calc.)	0.0728
R(ISO3733:99)	0.2
Compare R(D95:13e1)	0.2

Lab 273 first reported: 0.4
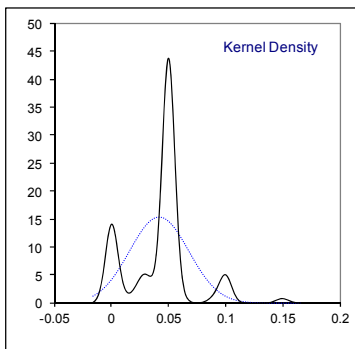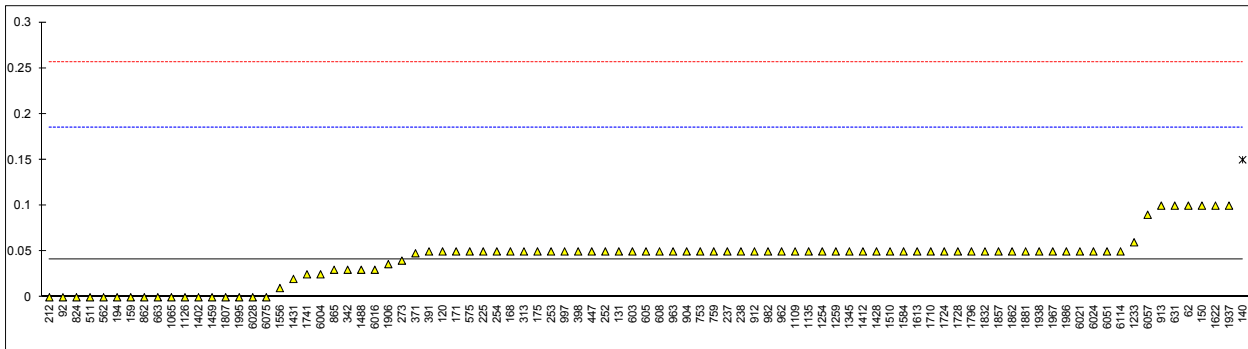
Determination of Water and Sediment on sample #17105; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D1796	0.125		1.83	870		-----		-----
90		-----		-----	886		-----		-----
92	D1796	0		-1.67	902		-----		-----
120	D1796	0.05		-0.27	904		-----		-----
131	D1796	0.10		1.13	912		-----		-----
140	D1796	0.00		-1.67	913		-----		-----
150		-----		-----	922	D1796	<0.05		-----
158		-----		-----	962		-----		-----
159	D1796	0.05		-0.27	963	D1796	0.05		-0.27
168		-----		-----	971		-----		-----
169	D1796	0.050		-0.27	974		-----		-----
171	D1796	0.05		-0.27	982		-----		-----
175		-----		-----	997		-----		-----
194		-----		-----	1006		-----		-----
212		-----		-----	1011		-----		-----
221		-----		-----	1059	D1796	<0,05		-----
224		-----		-----	1065		-----		-----
225		-----		-----	1082		-----		-----
237	D1796	0.05		-0.27	1095		-----		-----
238	D1796	0.05		-0.27	1099		-----		-----
252		-----		-----	1109	D1796	0.05		-0.27
253		-----		-----	1126		-----		-----
254		-----		-----	1134	D1796	<0.01		-----
273		-----		-----	1135	D1796	0.08		0.57
311		-----		-----	1161		-----		-----
313		-----		-----	1167		-----		-----
323	D1796	<0.05		-----	1177		-----		-----
331		-----		-----	1191		-----		-----
333		-----		-----	1213		-----		-----
334		-----		-----	1229		-----		-----
336		-----		-----	1233		-----		-----
337		-----		-----	1254		-----		-----
342		-----		-----	1259	ISO3734	0.1	C	1.13
343	D2068-C	0.1		1.13	1275		-----		-----
349		-----		-----	1299	D1796	0.08		0.57
351		-----		-----	1345		-----		-----
371		-----		-----	1356		-----		-----
391		-----		-----	1367		-----		-----
398		-----		-----	1389	D1796	<0.025		-----
399		-----		-----	1402	D1796	0.05		-0.27
440		-----		-----	1404		-----		-----
444		-----		-----	1412		-----		-----
445		-----		-----	1428	ISO3734	0.05		-0.27
447		-----		-----	1431		-----		-----
463		-----		-----	1459		-----		-----
511	D1796	0.10		1.13	1488	D1796	0.050		-0.27
541		-----		-----	1510		-----		-----
562		-----		-----	1539		-----		-----
575		-----		-----	1556		-----		-----
603		-----		-----	1569		-----		-----
604		-----		-----	1584		-----		-----
605	D1796	0.05		-0.27	1586	ISO3734	0.1		1.13
608		-----		-----	1613	D1796	0.05		-0.27
621		-----		-----	1622		-----		-----
631	D1796	0.10		1.13	1631		-----		-----
663	D1796	0.05		-0.27	1643		-----		-----
671	D1796	0		-1.67	1710		-----		-----
750		-----		-----	1720		-----		-----
753		-----		-----	1724		-----		-----
759		-----		-----	1728	D1796	0.074		0.40
824	D1796	0.10		1.13	1740	D1796	0.05		-0.27
825	D1796	0.05		-0.27	1741	ISO3734	0.025		-0.97
851		-----		-----	1796		-----		-----
855		-----		-----	1807		-----		-----
857		-----		-----	1832		-----		-----
858		-----		-----	1833		-----		-----
859		-----		-----	1849		-----		-----
862		-----		-----	1857		-----		-----
863		-----		-----	1862		-----		-----
864		-----		-----	1881		-----		-----
865	D1796	0.05		-0.27	1906		-----		-----
866		-----		-----	1936		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1937		-----		-----	6024		-----		-----
1938		-----		-----	6026		-----		-----
1943		-----		-----	6028		-----		-----
1956		-----		-----	6039		-----		-----
1962	D1796	0.075		0.43	6049		-----		-----
1964		-----		-----	6051		-----		-----
1967	D1796	0.05		-0.27	6057		-----		-----
1971		-----		-----	6075		-----		-----
1986	D1796	0.05		-0.27	6092		-----		-----
1995		-----		-----	6109		-----		-----
6004		-----		-----	6112		-----		-----
6016	D4007	0		-1.67	6114		-----		-----
6021		-----		-----	6122	ISO3734	0.10		1.13

normality	OK
n	37
outliers	0
mean (n)	0.0597
st.dev. (n)	0.03152
R(calc.)	0.0883
R(D1796:11)	0.1

Lab 1259 first reported: 0.2
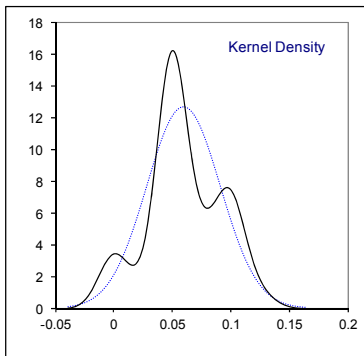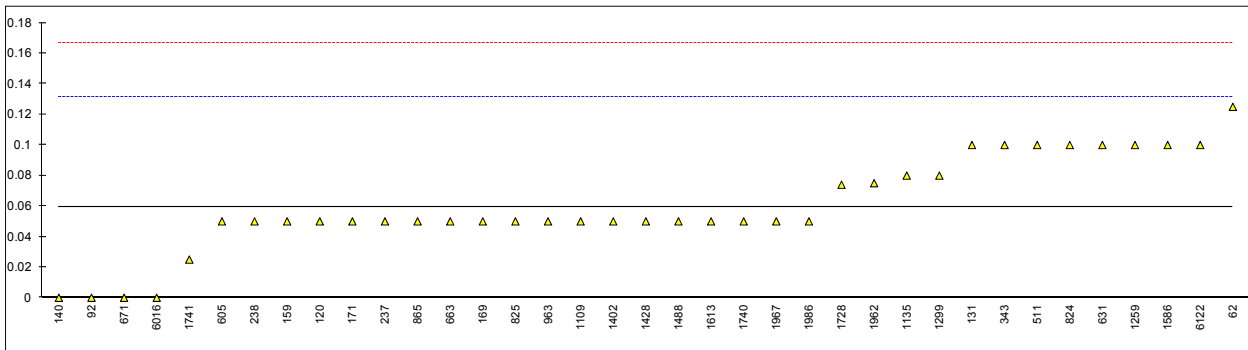
Vacuum Distillation at 10mmHg acc. ASTM D1160 (reported as AET) on sample #17105, results in °C

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
62		-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----
120	D1160	219.0	260.2	**_271.1_**	348.3	411.4	477.5	530.8	560.2
131		-----	-----	-----	-----	-----	-----	-----	-----
140		-----	-----	-----	-----	-----	-----	-----	-----
150		-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
171	D1160	**252**	274	312	379	439	501	551	**571**
175		-----	-----	-----	-----	-----	-----	-----	-----
194		-----	-----	-----	-----	-----	-----	-----	-----
212		-----	-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
252		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	217	270	308	375	434	491	-----	521
313		-----	-----	-----	-----	-----	-----	-----	-----
323		-----	-----	-----	-----	-----	-----	-----	-----
331		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
336		-----	-----	-----	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
343		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
351		-----	-----	-----	-----	-----	-----	-----	-----
371		-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----
398	D1160	**_170.6_**	_251.7_	_281.8_	_352.4_	**_406.7_**	**_452.9_**	**_494.9_**	_495.0_
399		-----	-----	-----	-----	-----	-----	-----	-----
440		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
445	D1160	211.9	255.1	303.1	370.1	430.6	478.3	-----	498.0
447		-----	-----	-----	-----	-----	-----	-----	-----
463	D1160	207	254	287	362	423	481	537	543
511		-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----	-----
605		-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
750	D1160	226	267	305	375	435	-----	-----	-----
753	D1160	191	259	298	366	428	482	-----	505
759		-----	-----	-----	-----	-----	-----	-----	-----
824		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
851		-----	-----	-----	-----	-----	-----	-----	-----
855		-----	-----	-----	-----	-----	-----	-----	-----
857		-----	-----	-----	-----	-----	-----	-----	-----
858		-----	-----	-----	-----	-----	-----	-----	-----
859		-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----
863		-----	-----	-----	-----	-----	-----	-----	-----
864		-----	-----	-----	-----	-----	-----	-----	-----
865		227.5	271.2	305.9	373.5	433.5	490.6	539.3	-----
866		-----	-----	-----	-----	-----	-----	-----	-----
870		-----	-----	-----	-----	-----	-----	-----	-----
886		-----	-----	-----	-----	-----	-----	-----	-----
902	D1160	213.1	264.7	303.0	372.5	432.9	486.6	-----	519.8

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
904	D1160	199.5	252.0	293.0	363.0	425.0	480.0	-----	522
912		-----	-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----
971		-----	-----	-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	-----	-----	-----
982		-----	-----	-----	-----	-----	-----	-----	-----
997		-----	-----	-----	-----	-----	-----	-----	-----
1006		-----	-----	-----	-----	-----	-----	-----	-----
1011		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1065		-----	-----	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1095		-----	-----	-----	-----	-----	-----	-----	-----
1099		-----	-----	-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1134	D1160	217	267	304	379	436	489	540	552
1135	D1160	220	**238**	**272**	354	417	475	537	**565**
1161		-----	-----	-----	-----	-----	-----	-----	-----
1167		-----	-----	-----	-----	-----	-----	-----	-----
1177		-----	-----	-----	-----	-----	-----	-----	-----
1191		-----	-----	-----	-----	-----	-----	-----	-----
1213		-----	-----	-----	-----	-----	-----	-----	-----
1229		-----	-----	-----	-----	-----	-----	-----	-----
1233		-----	-----	-----	-----	-----	-----	-----	-----
1254		-----	-----	-----	-----	-----	-----	-----	-----
1259	D1160	229.0	267.8	305.1	368.5	430.7	485.0	539.7	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1345	D1160	197.0	249.0	287.0	360.0	419.0	477.0	526.0	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1367		-----	-----	-----	-----	-----	-----	-----	-----
1389		-----	-----	-----	-----	-----	-----	-----	-----
1402	D1160	219.1	269.5	305.3	369.5	426.8	485.2	-----	533.5
1404		-----	-----	-----	-----	-----	-----	-----	-----
1412	D1160	220.5	268.0	297.0	365.0	424.0	477.0	525.5	-----
1428		-----	-----	-----	-----	-----	-----	-----	-----
1431		-----	-----	-----	-----	-----	-----	-----	-----
1459		-----	-----	-----	-----	-----	-----	-----	-----
1488		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1539	D1160	229	266　C	304　C	377　C	430　C	491　C	-----	513
1556		-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----
1584	D1160	216	257	295	368	428	480	-----	521
1586		223.8	265.9	303.0	371.5	429.0	486.7	-----	510.9
1613		236.7	264.5	303.1	373.8	434.6	487.0	-----	509.0
1622		-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----
1643		-----	-----	-----	-----	-----	-----	-----	-----
1710	D1160	217.4	269.4	303.3	372.0	432.8	484.4	-----	517.9
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1741		-----	-----	-----	-----	-----	-----	-----	-----
1796	D1160	214	261	300	368	429	481	-----	522
1807		-----	-----	-----	-----	-----	-----	-----	-----
1832		-----	-----	-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----
1857	D1160	214.8	257.3	295.1	366.4	426.2	473.6	-----	509.7
1862		219	254	283	364	426	478	-----	525
1881		213.9	261.2	297.9	369.4	429.9	482.8	531.5	535.9
1906		-----	-----	-----	-----	-----	-----	-----	-----
1936		-----	-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----	-----
1943		-----	-----	-----	-----	-----	-----	-----	-----
1956		-----	-----	-----	-----	-----	-----	-----	-----
1962		-----	-----	-----	-----	-----	-----	-----	-----
1964		-----	-----	-----	-----	-----	-----	-----	-----
1967	D1160	218	265	289	363	425	476	-----　W	515
1971		-----	-----	-----	-----	-----	-----	-----	-----
1986	D1160	218	260	295	368	426	481	-----	-----

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
1995		-----	-----	-----	-----	-----	-----	-----	-----
6004		-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----
6021	D1160	214	257	295	366	427	477	-----	514
6024		-----	-----	-----	-----	-----	-----	-----	-----
6026	D1160	205	257	291	360	420	476	----- W	512
6028		-----	-----	-----	-----	-----	-----	-----	-----
6039		-----	-----	-----	-----	-----	-----	-----	-----
6049		-----	-----	-----	-----	-----	-----	-----	-----
6051		-----	-----	-----	-----	-----	-----	-----	-----
6057		-----	-----	-----	-----	-----	-----	-----	-----
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6109		-----	-----	-----	-----	-----	-----	-----	-----
6112	D1160	219.3	265.9	304.2	373.4	433.5	484.4	-----	517.7
6114	D1160	212.0	267.8	309.2	382.7	441.7	494.9	538.6	543.2
6122		-----	-----	-----	-----	-----	-----	-----	-----
normality		suspect	OK	OK	OK	OK	OK	OK	OK
n		30	30	29	31	31	30	11	23
outliers		2	1+1ex	2+1ex	0+1ex	1	1	1	2+1ex
mean (n)		216.18	262.58	299.35	368.50	428.54	483.00	536.04	522.64
st.dev. (n)		9.578	6.366	7.286	7.333	6.423	6.458	7.293	15.403
R(calc.)		26.82	17.82	20.40	20.53	17.99	18.08	20.42	43.13
R(D1160:15)		49	22.13	20.70	19.96	19.00	18.52	18.41	27

The reported results underlined and bold are statistical outliers.

The reported results inderlined and italic are excluded (see §4.1)

Lab 1539 first reported respectively; 292; 325; 390; 449; 508 for 5%; 10%; 20%; 30% and 40% recovered

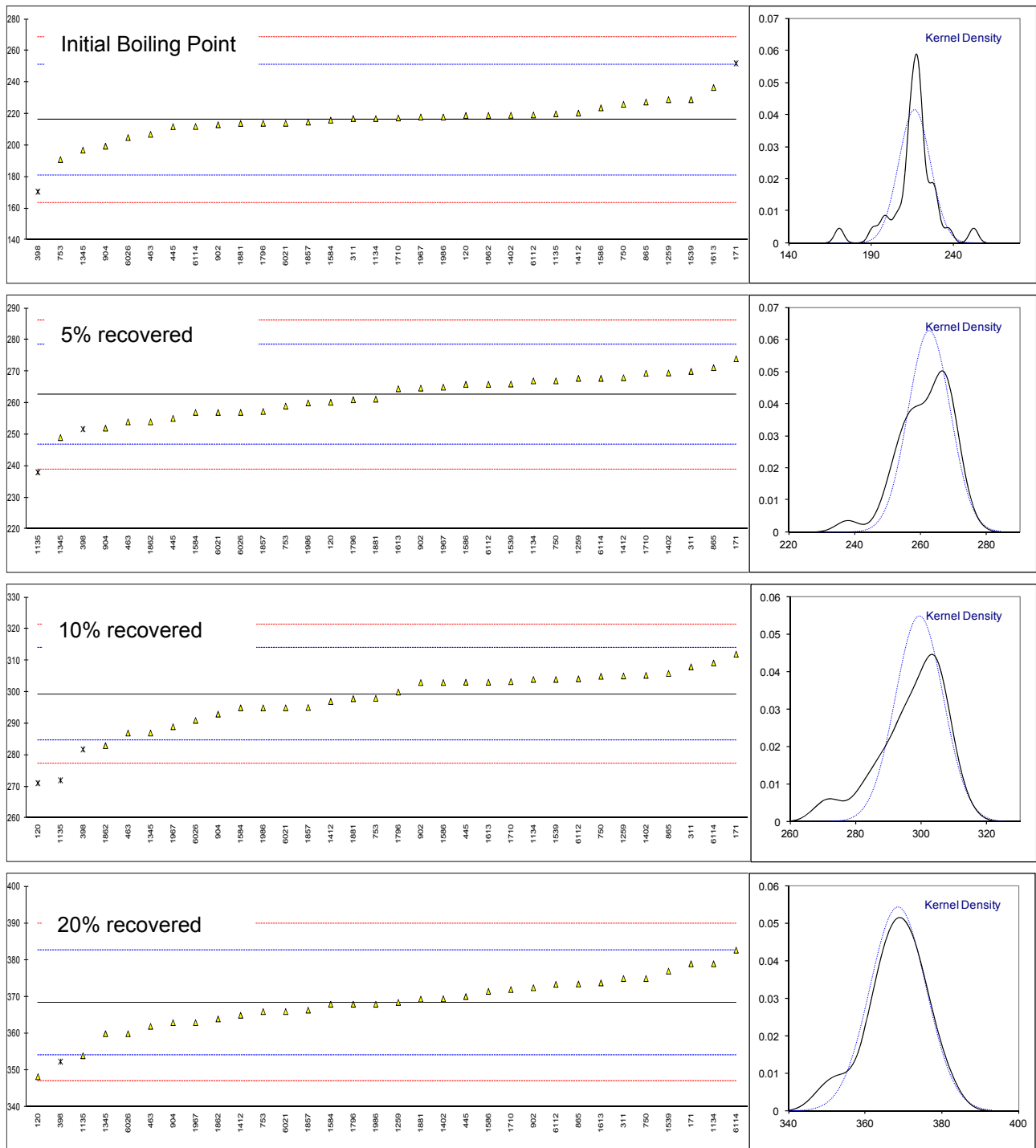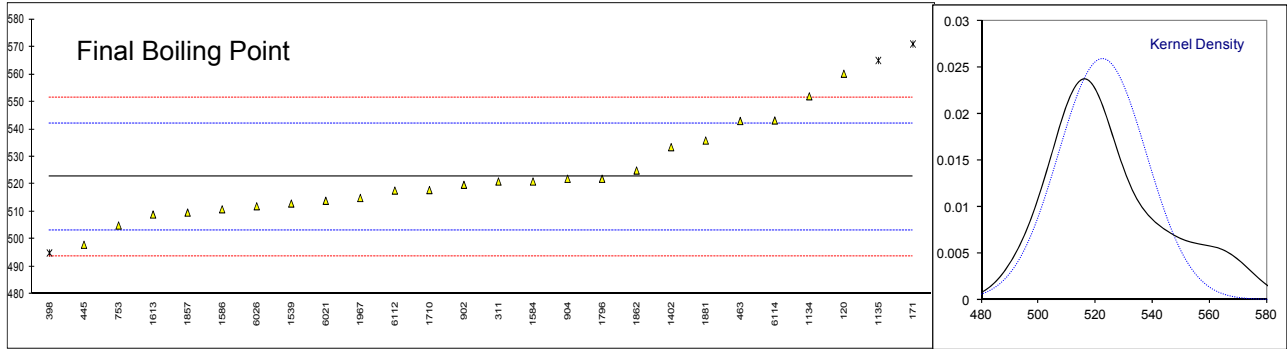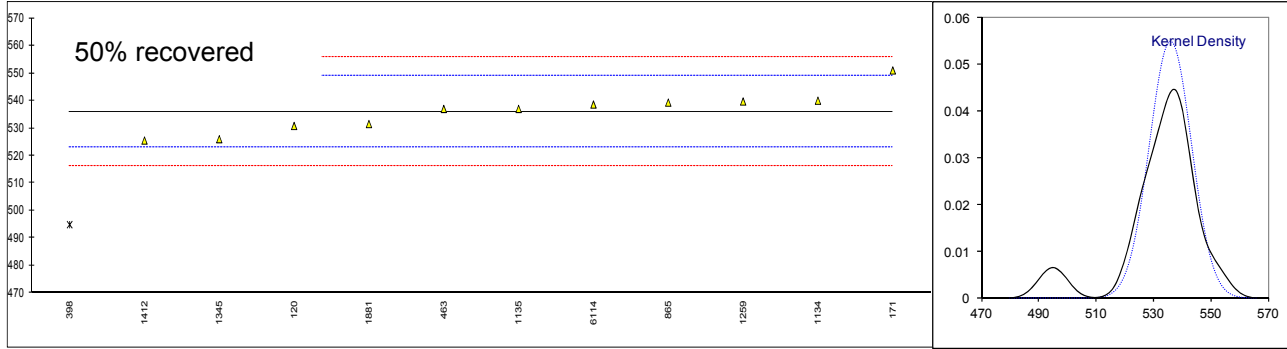Lab 1796 reported: Final Boiling Point of Vacuum Distillation is 522 °C at 49 vol %.

Lab 1967 first reported: 508 at 50% recovered

Lab 6026 first reported: 512; distillation yield: 48%

Lab 6112 reported: recovery 46.7%
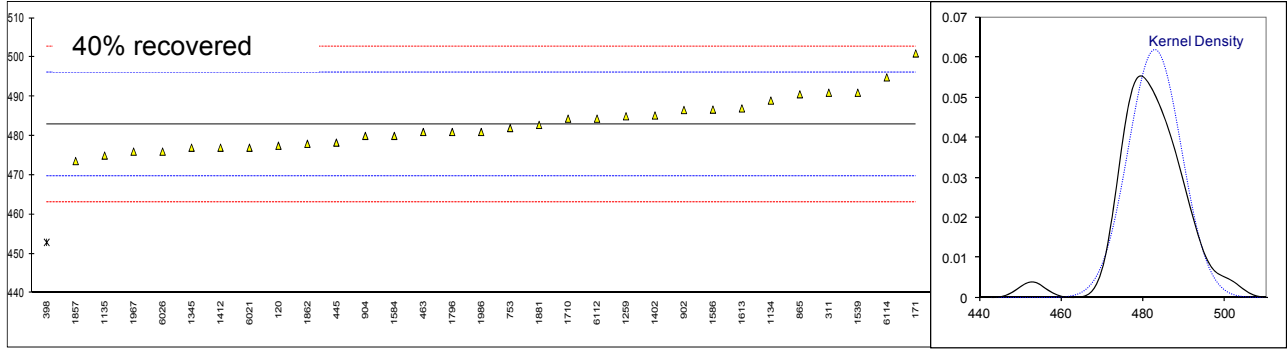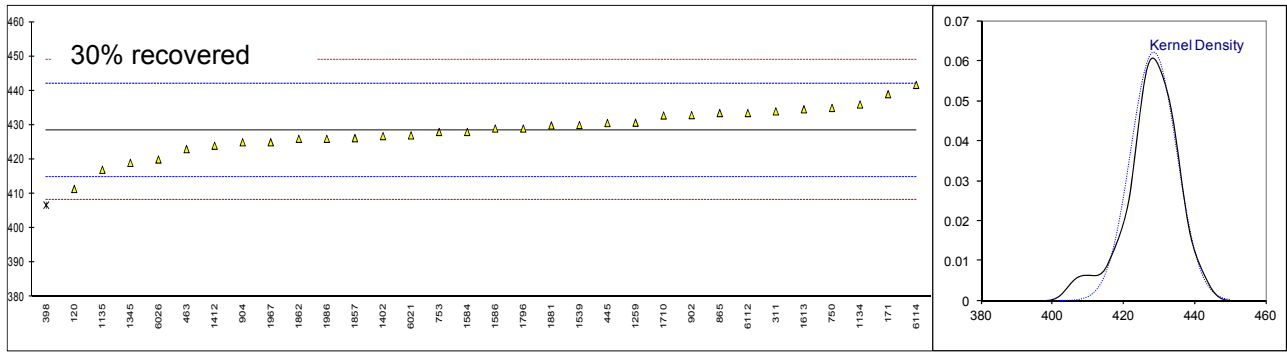
z-scores of Vacuum Distillation according to ASTM D1160 on sample #17105, results in °C

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
62		-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----
120	D1160	0.16	-0.30	-3.82	-2.83	-2.53	-0.83	-0.80	3.89
131		-----	-----	-----	-----	-----	-----	-----	-----
140		-----	-----	-----	-----	-----	-----	-----	-----
150		-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
171	D1160	2.05	1.44	1.71	1.47	1.54	2.72	2.28	5.01
175		-----	-----	-----	-----	-----	-----	-----	-----
194		-----	-----	-----	-----	-----	-----	-----	-----
212		-----	-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
252		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	0.05	0.94	1.17	0.91	0.81	1.21	-----	-0.17
313		-----	-----	-----	-----	-----	-----	-----	-----
323		-----	-----	-----	-----	-----	-----	-----	-----
331		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
336		-----	-----	-----	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
343		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
351		-----	-----	-----	-----	-----	-----	-----	-----
371		-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----
398	D1160	-2.60	-1.38	-2.37	-2.26	-3.22	-4.55	-6.25	-2.87
399		-----	-----	-----	-----	-----	-----	-----	-----
440		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
445	D1160	-0.24	-0.95	0.51	0.22	0.30	-0.71	-----	-2.56
447		-----	-----	-----	-----	-----	-----	-----	-----
463	D1160	-0.52	-1.09	-1.67	-0.91	-0.82	-0.30	0.15	2.11
511		-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----	-----
605		-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
750	D1160	0.56	0.56	0.76	0.91	0.95	-----	-----	-----
753	D1160	-1.44	-0.45	-0.18	-0.35	-0.08	-0.15	-----	-1.83
759		-----	-----	-----	-----	-----	-----	-----	-----
824		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
851		-----	-----	-----	-----	-----	-----	-----	-----
855		-----	-----	-----	-----	-----	-----	-----	-----
857		-----	-----	-----	-----	-----	-----	-----	-----
858		-----	-----	-----	-----	-----	-----	-----	-----
859		-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----
863		-----	-----	-----	-----	-----	-----	-----	-----
864		-----	-----	-----	-----	-----	-----	-----	-----
865		0.65	1.09	0.89	0.70	0.73	1.15	0.50	-----
866		-----	-----	-----	-----	-----	-----	-----	-----
870		-----	-----	-----	-----	-----	-----	-----	-----
886		-----	-----	-----	-----	-----	-----	-----	-----
902	D1160	-0.18	0.27	0.49	0.56	0.64	0.54	-----	-0.29

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
904	D1160	-0.95	-1.34	-0.86	-0.77	-0.52	-0.45	-----	-0.07
912		-----	-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----
971		-----	-----	-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	-----	-----	-----
982		-----	-----	-----	-----	-----	-----	-----	-----
997		-----	-----	-----	-----	-----	-----	-----	-----
1006		-----	-----	-----	-----	-----	-----	-----	-----
1011		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1065		-----	-----	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1095		-----	-----	-----	-----	-----	-----	-----	-----
1099		-----	-----	-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1134	D1160	0.05	0.56	0.63	1.47	1.10	0.91	0.60	3.04
1135	D1160	0.22	-3.11	-3.70	-2.03	-1.70	-1.21	0.15	4.39
1161		-----	-----	-----	-----	-----	-----	-----	-----
1167		-----	-----	-----	-----	-----	-----	-----	-----
1177		-----	-----	-----	-----	-----	-----	-----	-----
1191		-----	-----	-----	-----	-----	-----	-----	-----
1213		-----	-----	-----	-----	-----	-----	-----	-----
1229		-----	-----	-----	-----	-----	-----	-----	-----
1233		-----	-----	-----	-----	-----	-----	-----	-----
1254		-----	-----	-----	-----	-----	-----	-----	-----
1259	D1160	0.73	0.66	0.78	0.00	0.32	0.30	0.56	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1345	D1160	-1.10	-1.72	-1.67	-1.19	-1.41	-0.91	-1.53	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1367		-----	-----	-----	-----	-----	-----	-----	-----
1389		-----	-----	-----	-----	-----	-----	-----	-----
1402	D1160	0.17	0.87	0.80	0.14	-0.26	0.33	-----	1.13
1404		-----	-----	-----	-----	-----	-----	-----	-----
1412	D1160	0.25	0.69	-0.32	-0.49	-0.67	-0.91	-1.60	-----
1428		-----	-----	-----	-----	-----	-----	-----	-----
1431		-----	-----	-----	-----	-----	-----	-----	-----
1459		-----	-----	-----	-----	-----	-----	-----	-----
1488		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1539	D1160	0.73	0.43	0.63	1.19	0.22	1.21	-----	-1.00
1556		-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----
1584	D1160	-0.01	-0.71	-0.59	-0.07	-0.08	-0.45	-----	-0.17
1586		0.44	0.42	0.49	0.42	0.07	0.56	-----	-1.22
1613		1.17	0.24	0.51	0.74	0.89	0.60	-----	-1.41
1622		-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----
1643		-----	-----	-----	-----	-----	-----	-----	-----
1710	D1160	0.07	0.86	0.53	0.49	0.63	0.21	-----	-0.49
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1741		-----	-----	-----	-----	-----	-----	-----	-----
1796	D1160	-0.12	-0.20	0.09	-0.07	0.07	-0.30	-----	-0.07
1807		-----	-----	-----	-----	-----	-----	-----	-----
1832		-----	-----	-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----
1857	D1160	-0.08	-0.67	-0.58	-0.30	-0.34	-1.42	-----	-1.34
1862		0.16	-1.09	-2.21	-0.63	-0.37	-0.76	-----	0.24
1881		-0.13	-0.17	-0.20	0.13	0.20	-0.03	-0.69	1.37
1906		-----	-----	-----	-----	-----	-----	-----	-----
1936		-----	-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----	-----
1943		-----	-----	-----	-----	-----	-----	-----	-----
1956		-----	-----	-----	-----	-----	-----	-----	-----
1962		-----	-----	-----	-----	-----	-----	-----	-----
1964		-----	-----	-----	-----	-----	-----	-----	-----
1967	D1160	0.10	0.31	-1.40	-0.77	-0.52	-1.06	-----	-0.79
1971		-----	-----	-----	-----	-----	-----	-----	-----
1986	D1160	0.10	-0.33	-0.59	-0.07	-0.37	-0.30	-----	-----

lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
1995		-----	-----	-----	-----	-----	-----	-----	-----
6004		-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----
6021	D1160	-0.12	-0.71	-0.59	-0.35	-0.23	-0.91	-----	-0.90
6024		-----	-----	-----	-----	-----	-----	-----	-----
6026	D1160	-0.64	-0.71	-1.13	-1.19	-1.26	-1.06	-----	-1.10
6028		-----	-----	-----	-----	-----	-----	-----	-----
6039		-----	-----	-----	-----	-----	-----	-----	-----
6049		-----	-----	-----	-----	-----	-----	-----	-----
6051		-----	-----	-----	-----	-----	-----	-----	-----
6057		-----	-----	-----	-----	-----	-----	-----	-----
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6109		-----	-----	-----	-----	-----	-----	-----	-----
6112	D1160	0.18	0.42	0.66	0.69	0.73	0.21	-----	-0.51
6114	D1160	-0.24	0.66	1.33	1.99	1.94	1.80	0.39	2.13
6122		-----	-----	-----	-----	-----	-----	-----	-----

Determination of Total Carbon, Hydrogen and Nitrogen on sample #17105; results in %M/M

Lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
62		-----		-----	-----		-----	-----		-----
90		-----		-----	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120		-----		-----	-----		-----	-----		-----
131		-----		-----	-----		-----	-----		-----
140		-----		-----	-----		-----	-----		-----
150	D5291 - C	87.89		0.38	10.77		0.11	-----		-----
158		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
169		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
175		-----		-----	-----		-----	-----		-----
194		-----		-----	-----		-----	-----		-----
212		-----		-----	-----		-----	-----		-----
221		-----		-----	-----		-----	-----		-----
224		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
252		-----		-----	-----		-----	-----		-----
253		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
311		87.6		0.05	11.0		0.96	<0.75		-----
313		-----		-----	-----		-----	-----		-----
323	D5291 - A	88.2		0.74	10.8		0.23	0.3		-0.36
331		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
342		-----		-----	-----		-----	-----		-----
343	D5291 - A	85.9		-1.89	10.6		-0.51	0.3	C	-0.36
349		-----		-----	-----		-----	-----		-----
351		-----		-----	-----		-----	-----		-----
371		-----		-----	-----		-----	-----		-----
391	D5291 - A	88.96		1.61	10.67		-0.25	0.36		0.02
398		-----		-----	-----		-----	-----		-----
399		-----		-----	-----		-----	-----		-----
440		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	D5291 - C	83.90	R(0.01)	-4.18	9.99	R(0.05)	-2.77	0.34		-0.11
447	D5291 - B	87.3		-0.29	10.1	R(0.05)	-2.36	0.5		0.90
463		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
562		-----		-----	-----		-----	-----		-----
575		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
604		-----		-----	-----		-----	-----		-----
605		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
621		-----		-----	-----		-----	-----		-----
631		-----		-----	-----		-----	-----		-----
663		-----		-----	-----		-----	-----		-----
671		-----		-----	-----		-----	-----		-----
750		-----		-----	-----		-----	-----		-----
753		-----		-----	-----		-----	-----		-----
759		-----		-----	-----		-----	-----		-----
824	D5291 - D	87.7		0.17	10.69		-0.18	-----		-----
825		-----		-----	-----		-----	-----		-----
851		-----		-----	-----		-----	-----		-----
855		-----		-----	-----		-----	-----		-----
857		-----		-----	-----		-----	-----		-----
858		-----		-----	-----		-----	-----		-----
859		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
865		-----		-----	-----		-----	-----		-----
866		-----		-----	-----		-----	-----		-----
870		-----		-----	-----		-----	-----		-----
886		-----		-----	-----		-----	-----		-----
902		-----		-----	-----		-----	-----		-----

Lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
904		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
913		-----		-----	-----		-----	-----		-----
922		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
971		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
982		-----		-----	-----		-----	-----		-----
997		-----		-----	-----		-----	-----		-----
1006		-----		-----	-----		-----	-----		-----
1011		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1065	D5291 - D	87.88		0.37	10.9		0.59	0.35		-0.04
1082		-----		-----	-----		-----	-----		-----
1095		-----		-----	-----		-----	-----		-----
1099	INH-77	87.71377		0.18	-----		-----	-----		-----
1109		-----		-----	-----		-----	-----		-----
1126		-----		-----	-----		-----	-----		-----
1134		-----		-----	-----		-----	-----		-----
1135	D5291 - A	87.96		0.47	11.03		1.07	0.350		-0.04
1161		-----		-----	-----		-----	-----		-----
1167		-----		-----	-----		-----	-----		-----
1177	D5291 - D	87.12		-0.50	10.96		0.82	0.444		0.55
1191		87.15		-0.46	10.67		-0.25	0.26		-0.61
1213		-----		-----	-----		-----	-----		-----
1229		-----		-----	-----		-----	-----		-----
1233		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1259		-----		-----	-----		-----	-----		-----
1275	D5291 - D	86.86		-0.79	10.61		-0.48	0.38		0.15
1299		-----		-----	-----		-----	-----		-----
1345		-----		-----	-----		-----	-----		-----
1356		-----		-----	-----		-----	-----		-----
1367		-----		-----	-----		-----	-----		-----
1389		-----		-----	-----		-----	-----		-----
1402	D5291 - C	87.74		0.21	10.45		-1.07	-----		-----
1404		-----		-----	-----		-----	-----		-----
1412		-----		-----	-----		-----	-----		-----
1428		-----		-----	-----		-----	-----		-----
1431	D5291 - C	88.306		0.86	10.876		0.51	0.401		0.28
1459		-----		-----	-----		-----	-----		-----
1488		-----		-----	-----		-----	-----		-----
1510		-----		-----	-----		-----	-----		-----
1539	D5291 - D	87.30		-0.29	10.50		-0.88	0.44		0.52
1556		-----		-----	-----		-----	-----		-----
1569	D5291 - A	88.50		1.08	10.50		-0.88	0.33		-0.17
1584		-----		-----	-----		-----	-----		-----
1586		-----		-----	-----		-----	-----		-----
1613		-----		-----	-----		-----	-----		-----
1622		-----		-----	-----		-----	-----		-----
1631		-----		-----	-----		-----	-----		-----
1643	D5291 - A	88.13		0.66	10.95		0.78	0.34		-0.11
1710	D5291 - B	87.84		0.33	10.80		0.23	-----		-----
1720		-----		-----	-----		-----	-----		-----
1724		-----		-----	-----		-----	-----		-----
1728		-----		-----	-----		-----	-----		-----
1740	D5291 - A	85.9		-1.89	10.7		-0.14	0.30		-0.36
1741		-----		-----	-----		-----	-----		-----
1796		-----		-----	-----		-----	-----		-----
1807		86.3		-1.43	10.5		-0.88	0.45		0.59
1832		-----		-----	-----		-----	-----		-----
1833		-----		-----	-----		-----	-----		-----
1849		-----		-----	-----		-----	-----		-----
1857		-----		-----	-----		-----	-----		-----
1862		-----		-----	-----		-----	-----		-----
1881		-----		-----	-----		-----	-----		-----
1906		87.992		0.50	10.68		-0.22	0.238		-0.75
1936		-----		-----	-----		-----	-----		-----
1937		-----		-----	-----		-----	-----		-----
1938		-----		-----	-----		-----	-----		-----
1943		-----		-----	-----		-----	-----		-----
1956	D5291 - C	87.7		0.17	10.61		-0.48	0.35		-0.04
1962		-----		-----	-----		-----	-----		-----
1964		87.305		-0.28	10.66		-0.29	0.3407		-0.10
1967		-----		-----	-----		-----	-----		-----
1971		-----		-----	-----		-----	-----		-----
1986		-----		-----	-----		-----	-----		-----

Lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
1995		-----		-----	-----		-----	-----		-----
6004		-----		-----	-----		-----	-----		-----
6016		-----		-----	-----		-----	-----		-----
6021		-----		-----	-----		-----	-----		-----
6024		-----		-----	-----		-----	-----		-----
6026		-----		-----	-----		-----	-----		-----
6028		-----		-----	-----		-----	-----		-----
6039	D5291 - C	87.46		-0.11	11.03		1.07	0.37		0.08
6049		-----		-----	-----		-----	-----		-----
6051		-----		-----	-----		-----	-----		-----
6057		-----		-----	-----		-----	-----		-----
6075		-----		-----	-----		-----	-----		-----
6092		-----		-----	-----		-----	-----		-----
6109		-----		-----	-----		-----	-----		-----
6112		-----		-----	-----		-----	-----		-----
6114		-----		-----	-----		-----	-----		-----
6122	D5291 - A	87.68		0.14	10.78		0.15	0.349		-0.05
normality		OK			OK			OK		
n		26			24			21		
outliers		1			2			0		
mean (n)		87.5533			10.7390			0.3568		
st.dev. (n)		0.72227			0.17647			0.06376		
R(calc.)		2.0223			0.4941			0.1785		
R(D5291-ABC:16)		2.4486			0.7583			0.4456		

Lab 343 first reported: 0.2

Total Carbon

Total Hydrogen

Total Nitrogen
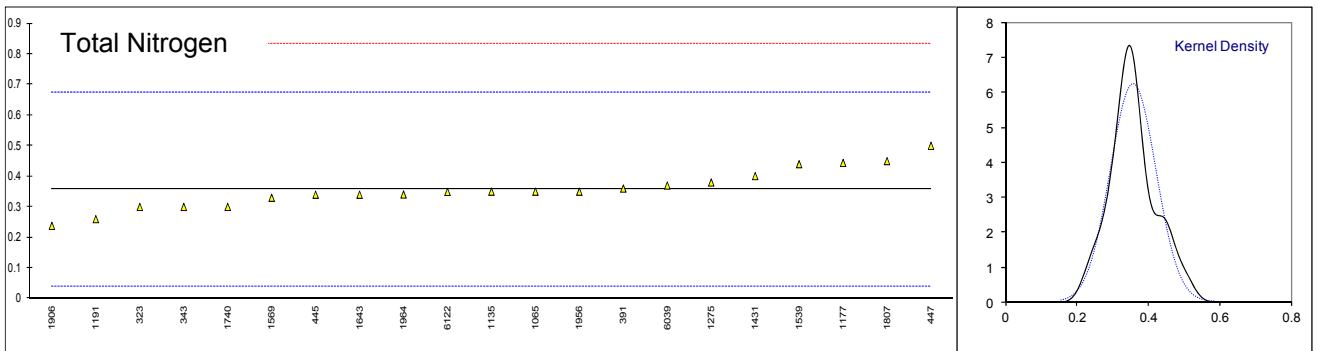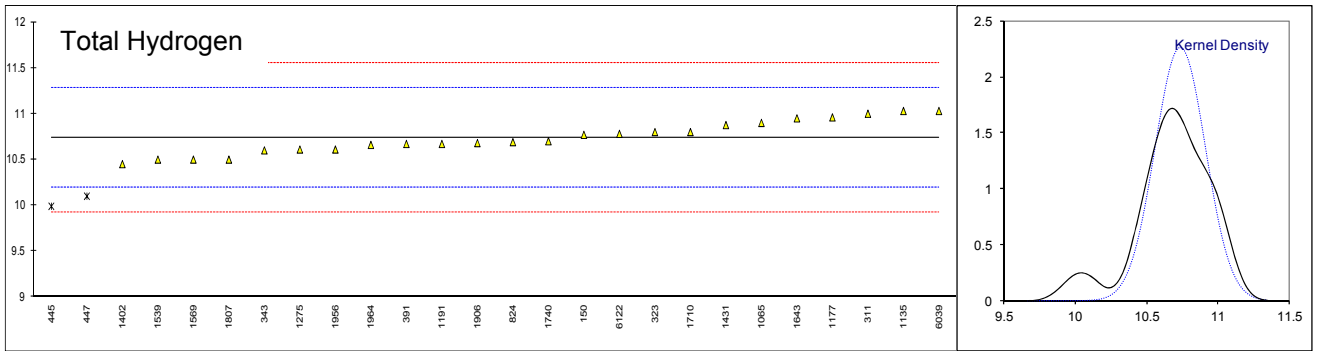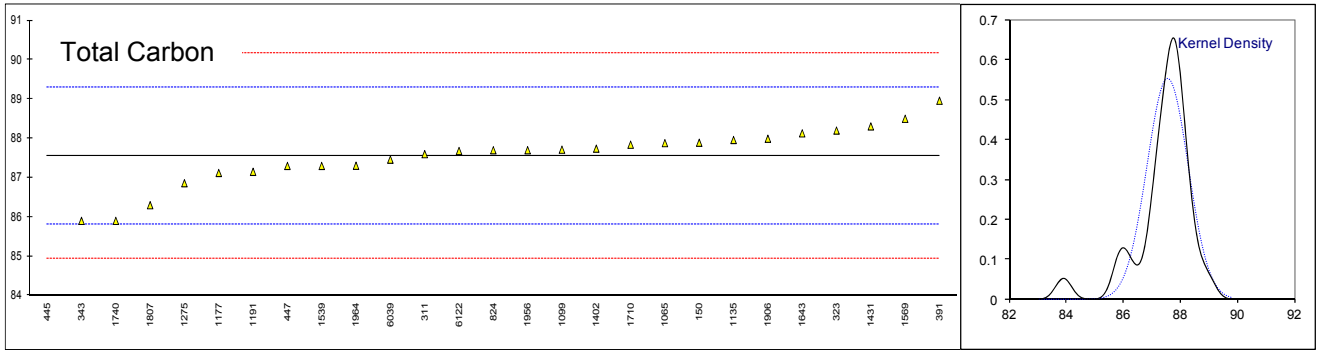
Determination of Aluminium as Al, Silicon as Si and total Al+Si on sample #17106; results in mg/kg

Lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
62	IP470	10		-0.49	12		0.10	22		-0.16
90	D5184	9.2		-1.07	7.3		-1.72	16.5		-2.04
92	D5184	9.8		-0.64	6.4		-2.07	16.2		-2.14
120	IP501	8.9		-1.29	13.6		0.72	22.5		0.01
131	IP501	11.01	C	0.24	12.02		0.11	23.03	C	0.19
140	IP501	10.75		0.05	12.39		0.25	23.14		0.23
150	IP501	10.63		-0.03	10.86		-0.34	21.49		-0.33
158		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
171	IP501	11		0.23	12		0.10	23		0.18
175		-----		-----	-----		-----	-----		-----
194	IP470	9.1		-1.14	16.8		1.96	25.9		1.17
212	IP470	9	C	-1.22	11		-0.28	20	C	-0.84
221	IP470	11.45		0.56	13.74		0.78	25.19		0.93
237	IP501	11.0	C	0.23	8.755		-1.15	19.755	C	-0.93
254	IP501	8.272		-1.75	6.947		-1.85	15.219		-2.48
273	IP470	21	R(0.01)	7.50	26	R(0.01)	5.53	-----		-----
311	IP501	11		0.23	12		0.10	23		0.18
323	IP501	10		-0.49	10		-0.67	20		-0.84
331		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334	IP501	10		-0.49	13		0.49	23		0.18
336	IP470	10		-0.49	12		0.10	22		-0.16
342	IP501	10.8		0.09	12.1		0.14	22.9		0.15
343	IP501	9		-1.22	11		-0.28	20		-0.84
351	IP501	9.68		-0.72	10.41		-0.51	20.09		-0.81
357	IP501	9.6		-0.78	5.0		-2.61	14.6		-2.69
371	IP470	9.2		-1.07	9.8		-0.75	19		-1.18
391	IP501	11		0.23	12		0.10	23		0.18
398	IP501	10		-0.49	11		-0.28	21		-0.50
399		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	IP501	11.9		0.89	13.8		0.80	25.7		1.11
447	IP470	11.7		0.74	-----		-----	-----		-----
463	IP470	31.6	R(0.01)	15.19	37.1	C,R(0.01)	9.83	68.7	C,R(0.01)	15.80
511		-----		-----	-----		-----	-----		-----
541	IP470	10		-0.49	12		0.10	22		-0.16
605	IP501	10		-0.49	9		-1.06	19		-1.18
608	IP501	13.5		2.05	-----		-----	-----		-----
621		-----		-----	-----		-----	-----		-----
631	IP470	10.6		-0.06	11.4		-0.13	22.0		-0.16
663	IP501	9.5		-0.85	10.3		-0.56	19.8		-0.91
750	IP501	11		0.23	11		-0.28	22		-0.16
824	IP501	11		0.23	13		0.49	24		0.52
851	IP501	12.58		1.38	13.13		0.54	25.71		1.11
855	IP501	11.9		0.89	13.1		0.53	25.0		0.87
862	IP501	12.5		1.32	13.8		0.80	26.3		1.31
863	IP501	10.9		0.16	12.4		0.26	23.3		0.29
864	IP501	11.2		0.38	12.8		0.41	24.0		0.52
865	IP501	11.9		0.89	13.5		0.68	25.4		1.00
902	IP470	<5	f-?	<-4.12	<10		-----	<15		-----
904	IP470	<5	f-?	<-4.12	<10		-----	<15		-----
912	IP501	8.597		-1.51	9.595		-0.83	18.192		-1.46
913		-----		-----	-----		-----	-----		-----
922	IP470	11.0		0.23	10.9		-0.32	21.9		-0.19
963	IP501	9.8		-0.64	11.8		0.03	21.6		-0.30
971	IP501	11		0.23	12		0.10	23		0.18
1011	ISO10478	11		0.23	10		-0.67	21		-0.50
1059	In house	12		0.96	13		0.49	-----		-----
1080	D5185mod.	3.7	R(0.01)	-5.07	9.5		-0.87	13.2	ex	-3.17
1082	ISO10478	13.9		2.34	8.54		-1.24	22.4		-0.02
1109	IP470	15.0		3.14	16.6		1.89	31.6		3.12
1126	IP501	10.2		-0.35	11.8		0.03	-----		-----
1134		-----		-----	-----		-----	-----		-----
1135	IP501	9.658		-0.74	12.059		0.13	21.717		-0.26
1191	ISO10478	10.2		-0.35	14.8		1.19	24.9		0.83
1229	ISO10478	10.56		-0.08	11.14		-0.23	21.7		-0.26
1233	IP501	10		-0.49	12		0.10	22		-0.16
1259		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1356	IP501	10		-0.49	17		2.04	27		1.55
1367	IP501	9		-1.22	13		0.49	22		-0.16
1372	IP470	12.89		1.61	11.848		0.04	24.738		0.78
1389	IP470	11		0.23	11		-0.28	22		-0.16

Lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1402	IP501	18	R(0.01)	5.32	17	ex	2.04	35	R(0.01)	4.28
1404	IP470	8		-1.94	15		1.27	23		0.18
1412		-----		-----	-----		-----	-----		-----
1431	IP501mod.	10.3		-0.27	13.3		0.61	23.6		0.39
1510	IP501	13		1.69	17		2.04	30		2.58
1556	IP470	17.3	R(0.01)	4.81	14.7		1.15	32.0	ex	3.26
1586	IP470	12		0.96	11		-0.28	23		0.18
1613	IP470	11.5		0.60	12.0		0.10	23.5		0.35
1643		-----		-----	-----		-----	-----		-----
1720	D5708	9.24		-1.04	-----		-----	-----		-----
1724	IP501	11.8		0.82	13.7		0.76	25.5		1.04
1740	IP501	12		0.96	14		0.88	26		1.21
1741	IP501	12.6		1.40	12.4		0.26	25.0		0.87
1833	IP501	11.67		0.72	12.77		0.40	24.44		0.67
1857	IP501	10.4		-0.20	11.05		-0.27	21.45		-0.35
1862	IP501	10.8		0.09	11.8		0.03	22.6		0.05
1881	IP470	11.4		0.53	12.6		0.34	24.0		0.52
1967	IP470	9.695		-0.71	10.155		-0.61	19.850		-0.89
1995	IP501	4.3	R(0.01)	-4.63	5.00		-2.61	9.3	R(0.01)	-4.50
6016		-----		-----	-----		-----	-----		-----
6021	IP501	9.6		-0.78	10.2		-0.59	19.8		-0.91
6028	D5184	10.46	ex	-0.16	10.06	ex	-0.65	20.52	ex	-0.67
6057	IP501	10		-0.49	11		-0.28	21		-0.50
6075		-----		-----	-----		-----	-----		-----
6092	IP501	9		-1.22	11		-0.28	-----		-----

normality	OK		suspect	suspect
n	73		73	67
outliers	6+1ex		2+2ex	3+3ex
mean (n)	10.68		11.73	22.47
st.dev. (n)	1.336		2.365	2.972
R(calc.)	3.74		6.62	8.32
R(IP470:05)	3.86		7.23	8.19
Compare R(IP501:05)	3.60		3.90	5.30

Lab 131 first reported respectively for Al and for Al+Si: 24.04; 36.06

Lab 212 first reported: 19 for Al and reported for Al+Si 30

Lab 237 first reported respectively for Al and for Al+Si: 24.2; 32.955

Lab 463 first reported respectively for Si and Al+Si: 42.9; 74.5
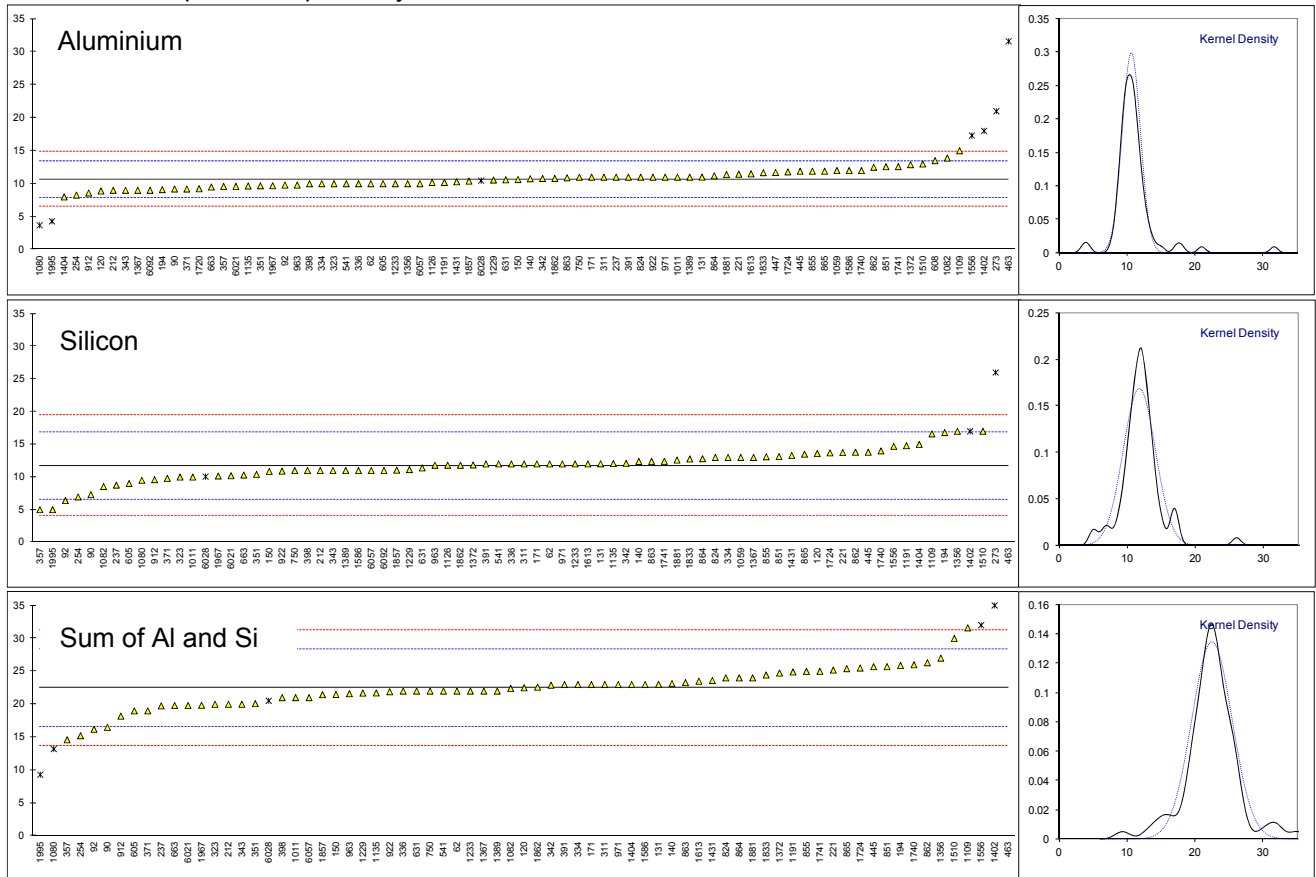
Determination of Iron as Fe, Nickel as Ni and Sodium as Na on sample #17106; results in mg/kg

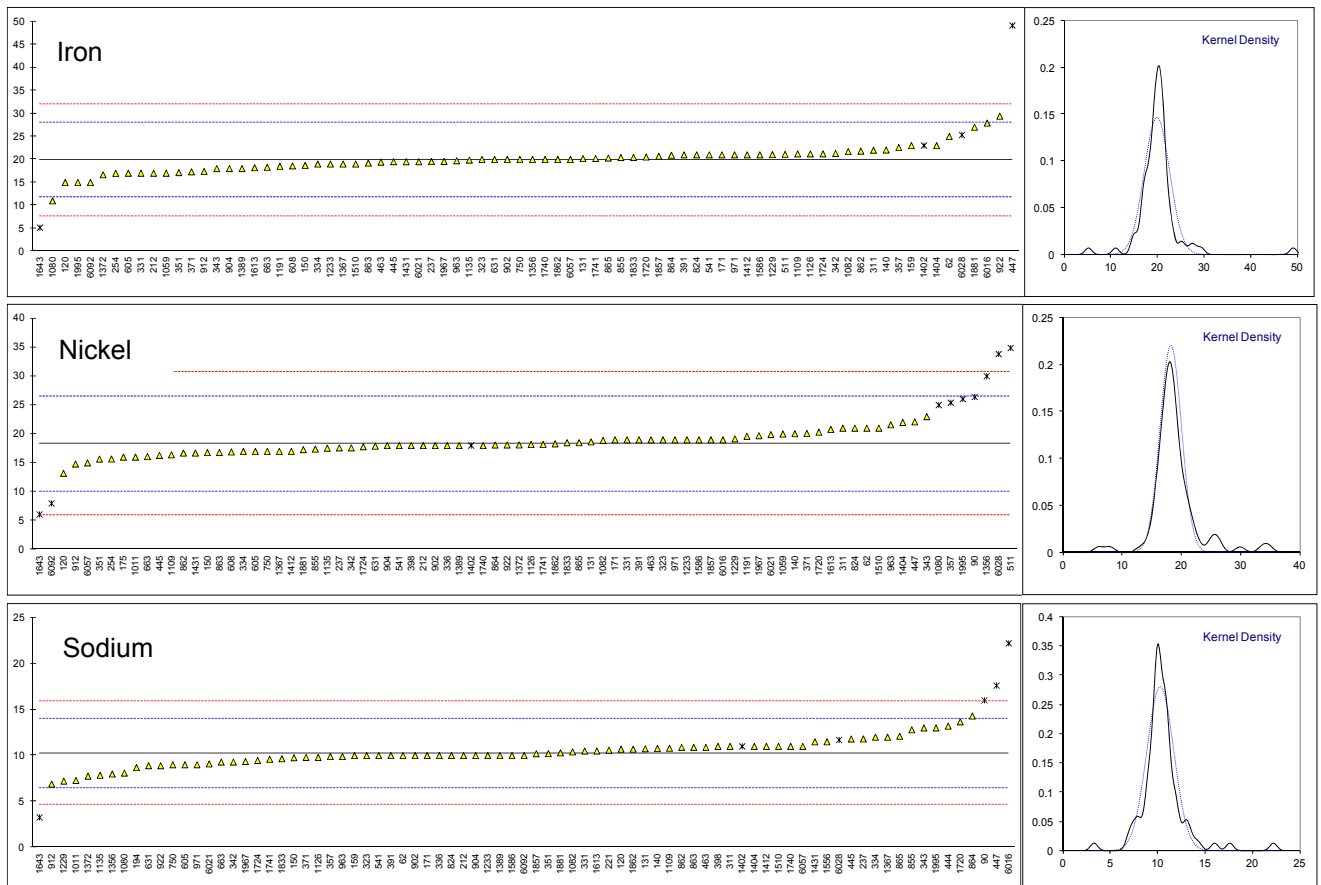| Lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
62	IP470	25		1.27	21		0.66	10		-0.14
90	D5863-B	-----		-----	26.4	R(0.05)	1.97	16	R(0.05)	3.04
92		-----		-----	-----		-----	-----		-----
120	IP501	15.0		-1.20	13.2		-1.24	10.7		0.23
131	IP501	20.18		0.08	18.64		0.08	10.74		0.25
140	IP501	22.03		0.53	20.05		0.43	10.77		0.26
150	IP501	18.72		-0.28	16.78		-0.37	9.767		-0.27
158		-----		-----	-----		-----	-----		-----
159	IP501	23		0.77	-----		-----	10		-0.14
168		-----		-----	-----		-----	-----		-----
171	IP501	21		0.28	19		0.17	10		-0.14
175	D5863-B	-----		-----	16		-0.56	-----		-----
194	IP470	-----		-----	-----		-----	8.7		-0.83
212	IP470	17		-0.71	18		-0.07	10		-0.14
221	IP470	-----		-----	-----		-----	10.58		0.16
237	IP501	19.55		-0.08	17.6		-0.17	11.81		0.82
254	IP501	16.985		-0.71	15.672	C	-0.64	-----		-----
273		-----		-----	-----		-----	-----		-----
311	IP501	22		0.52	21		0.66	11		0.39
323	IP501	20		0.03	19		0.17	10		-0.14
331	IP501	17.0		-0.71	19.0		0.17	10.5		0.12
333		-----		-----	-----		-----	-----		-----
334	IP501	19		-0.22	17		-0.31	12		0.92
336	IP470	-----		-----	18		-0.07	10		-0.14
342	IP501	21.3		0.35	17.6		-0.17	9.3		-0.52
343	D5708	18		-0.46	23		1.14	13		1.45
351	IP501	17.13		-0.68	15.66		-0.64	10.21		-0.03
357	IP501	22.6		0.67	25.4	R(0.05)	1.72	9.9		-0.20
371	IP470	17.3		-0.64	20.1		0.44	9.8		-0.25
391	IP501	21		0.28	19		0.17	10		-0.14
398	IP501	-----		-----	18		-0.07	11		0.39
399		-----		-----	-----		-----	-----		-----
444	IP501	-----		-----	-----		-----	13.2		1.56
445	IP501	19.5		-0.09	16.3		-0.48	11.8		0.81
447	IP470	49.1	R(0.01)	7.21	22.1		0.92	17.6	R(0.01)	3.89
463	IP470	19.4		-0.12	19.0		0.17	10.9		0.33
511	D5863-A	21.107		0.30	34.853	R(0.01)	4.02	-----		-----
541	IP470	21		0.28	18		-0.07	10		-0.14
605	IP501	17		-0.71	17		-0.31	9		-0.68
608	IP501	18.6		-0.31	16.9		-0.34	-----		-----
621		-----		-----	-----		-----	-----		-----
631	IP470	20.0		0.03	17.9		-0.10	8.9		-0.73
663	IP501	18.3		-0.39	16.1		-0.53	9.3		-0.52
750	IP501	20		0.03	17		-0.31	9		-0.68
824	IP501	21		0.28	21		0.66	10		-0.14
851		-----		-----	-----		-----	-----		-----
855	IP501	20.4		0.13	17.4		-0.22	12.8		1.34
862	IP501	21.8		0.48	16.7		-0.39	10.9		0.33
863	IP501	19.2		-0.17	16.8		-0.36	10.9		0.33
864	IP501	20.9		0.25	18.1		-0.05	14.3		2.14
865	IP501	20.3		0.11	18.5		0.05	12.1		0.97
902	IP470	20		0.03	18		-0.07	10		-0.14
904	IP470	18		-0.46	18		-0.07	10		-0.14
912	IP501	17.40		-0.61	14.805		-0.85	6.8995		-1.79
913		-----		-----	-----		-----	-----		-----
922	IP470	29.4		2.35	18.1		-0.05	8.9		-0.73
963	IP501	19.7		-0.04	21.6		0.80	9.9		-0.20
971	IP501	21		0.28	19		0.17	9	C	-0.68
1011	D5863-B	-----		-----	16		-0.56	7.3		-1.58
1059	In house	17		-0.71	20		0.41	-----		-----
1080	D5185mod.	11		-2.19	25	R(0.05)	1.63	8.1		-1.15
1082	INH-561B	21.7		0.45	18.9		0.15	10.4		0.07
1109	IP470	21.2		0.33	16.4		-0.46	10.8		0.28
1126	IP501	21.2		0.33	18.2		-0.02	9.8		-0.25
1134		-----		-----	-----		-----	-----		-----
1135	IP501	19.838		-0.01	17.548		-0.18	7.859		-1.28
1191	INH-22	18.5		-0.34	19.6		0.32	-----		-----
1229	In house	21.04		0.29	19.15		0.21	7.23		-1.62
1233	IP501	19		-0.22	19		0.17	10		-0.14
1259		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1356	IP501	20		0.03	30	R(0.01)	2.84	8		-1.21
1367	IP501	19		-0.22	17		-0.31	12		0.92
1372	D5708	16.66		-0.79	18.11		-0.04	7.77		-1.33

Lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
1389	IP470	18		-0.46	18		-0.07	10		-0.14
1402	IP501	23	ex	0.77	18	ex	-0.07	11	ex	0.39
1404	IP470	23		0.77	22		0.90	11		0.39
1412	IP501	21		0.28	17		-0.31	11		0.39
1431	IP501mod.	19.5		-0.09	16.7		-0.39	11.5		0.65
1510	IP501	19		-0.22	21		0.66	11		0.39
1556	IP470	-----		-----	-----		-----	11.5		0.65
1586	IP470	21		0.28	19		0.17	10		-0.14
1613	IP470	18.2		-0.41	20.8		0.61	10.5		0.12
1643	D5185	5.18	R(0.01)	-3.63	6.09	R(0.01)	-2.96	3.28	R(0.01)	-3.71
1720	D5708	20.52		0.16	20.32		0.49	13.66		1.80
1724	IP501	21.2		0.33	17.8		-0.12	9.47		-0.43
1740	IP501	20		0.03	18		-0.07	11		0.39
1741	IP501/IP470	20.2		0.08	18.2		-0.02	9.6		-0.36
1833	IP501	20.43		0.14	18.49		0.05	9.65		-0.33
1857	IP501	20.7		0.20	19.0		0.17	10.2		-0.04
1862	IP501	20.0		0.03	18.3		0.00	10.7		0.23
1881	IP470	27.0		1.76	17.3		-0.24	10.3		0.01
1967	IP470	19.560		-0.08	19.700		0.34	9.368		-0.48
1995	IP501	15		-1.20	26.04	R(0.05)	1.88	13		1.45
6016	D5708	27.9		1.98	19.0		0.17	22.2	C,R(0.01)	6.34
6021	IP501	19.5		-0.09	19.9		0.39	9.1		-0.62
6028	D5185	25.30	ex	1.34	33.82	C,R(0.01)	3.77	11.70	ex	0.76
6057	IP501	20		0.03	15		-0.80	11		0.39
6075		-----		-----	-----		-----	-----		-----
6092	IP501	15		-1.20	8	R(0.01)	-2.50	10		-0.14

normality		not OK			OK			OK
n		74			72			75
outliers		2+2ex			9+1ex			4+2ex
mean (n)		19.87			18.29			10.27
st.dev. (n)		2.732			1.811			1.428
R(calc.)		7.65			5.07			4.00
R(IP470:05)		11.34			11.54			5.27
Compare R(IP501:05)		4.85			8.32			3.84

Lab 254 first reported: 7.972 for Ni   Lab 971 first reported: 19 for Na

Lab 6016 first reported: 22.7 for Na   Lab 6028 first reported: 36.6 for Ni

Determination of Vanadium as V, Calcium as Ca and Zinc as Zn on sample #17106; results in mg/kg

Lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
62	IP470	38		-0.21	28		0.77	19	C	0.41
90	D5863-B	56	R(0.05)	2.25	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120	IP501	29.7		-1.34	20.8		-2.21	13.8		-2.43
131	IP501	41.85		0.32	24.04		-0.87	-----		-----
140	IP501	43.84		0.59	28.19		0.85	38.91	R(0.01)	11.30
150	IP501	36.84		-0.36	23.04		-1.28	17.33		-0.50
158		-----		-----	-----		-----	-----		-----
159	IP501	40		0.07	27		0.36	21		1.50
168		-----		-----	-----		-----	-----		-----
171	IP501	43		0.48	24		-0.89	19		0.41
175	D5863-B	44		0.61	-----		-----	-----		-----
194	IP470	40		0.07	26.6		0.19	17.7		-0.30
212	IP470	59	C,R(0.05)	2.66	24		-0.89	18		-0.14
221	IP470	-----		-----	-----		-----	10.74	R(0.01)	-4.11
237	IP501	41.68		0.30	25.52		-0.26	19.7		0.79
254	IP501	36.692		-0.38	-----		-----	16.030		-1.21
273	IP470	33		-0.89	-----		-----	-----		-----
311	IP501	43		0.48	28		0.77	20		0.96
323	IP501	41		0.20	27		0.36	19		0.41
331	IP501	39.0		-0.07	27.5		0.56	20.0		0.96
333		-----		-----	-----		-----	-----		-----
334	IP501	38		-0.21	24		-0.89	18		-0.14
336	IP470	36		-0.48	27		0.36	22		2.05
342	IP501	37.7		-0.25	28.1		0.81	18.2		-0.03
343	D5708	51		1.57	25		-0.47	17		-0.68
351	IP501	35.80		-0.51	23.65		-1.03	16.75		-0.82
357	IP501	40.6		0.15	26.7		0.23	21.7		1.89
371	IP470	34.6		-0.67	25.5	C	-0.27	16.6		-0.90
391	IP501	41		0.20	30		1.60	20		0.96
398	IP501	-----		-----	28		0.77	18		-0.14
399		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	IP501	37.7		-0.25	26.1		-0.02	17.8		-0.25
447	IP470	46.8		1.00	25.7		-0.18	19.6		0.74
463	IP470	39.6		0.01	26.4		0.11	19.6		0.74
511		-----		-----	-----		-----	-----		-----
541	IP470	38		-0.21	26		-0.06	18		-0.14
605	IP501	38		-0.21	23		-1.30	14		-2.32
608	IP501	33.1		-0.88	27.3		0.48	-----		-----
621		-----		-----	-----		-----	-----		-----
631	D5863-A	31.6		-1.08	-----		-----	24.9	R(0.05)	3.64
663	IP501	37.5		-0.27	25.8		-0.14	18.3		0.03
750	IP501	40		0.07	28		0.77	18		-0.14
824	IP501	44		0.61	27		0.36	20		0.96
851	IP501	36.37		-0.43	27.82		0.69	17.49		-0.42
855	IP501	35.7		-0.52	26.4		0.11	16.4		-1.01
862	IP501	37.5		-0.27	28.2		0.85	19.2		0.52
863	IP501	35.0		-0.62	24.3		-0.76	17.2		-0.57
864	IP501	36.6		-0.40	26.7		0.23	16.3		-1.07
865	IP501	37.2		-0.31	27.8		0.69	18.8		0.30
902	IP470	36		-0.48	22		-1.71	18		-0.14
904	IP470	38		-0.21	23		-1.30	18		-0.14
912	IP501	29.48		-1.37	22.72		-1.42	15.04		-1.76
913		-----		-----	-----		-----	-----		-----
922	IP470	41.2		0.23	37.5	R(0.01)	4.70	19.5		0.68
963	IP501	36.6		-0.40	25.8		-0.14	15.5		-1.50
971	IP501	39		-0.07	27		0.36	19		0.41
1011	D5863-B	45		0.75	-----		-----	-----		-----
1059	In house	40		0.07	31		2.01	20		0.96
1080	D5185mod.	55	R(0.05)	2.12	22		-1.71	18		-0.14
1082	INH-561B	39.2		-0.04	28.1		0.81	20.0		0.96
1109	IP470	39.0		-0.07	-----		-----	-----		-----
1126	IP501	41.6		0.29	27.2		0.44	20.9		1.45
1134		-----		-----	-----		-----	-----		-----
1135	IP501	39.648		0.02	28.132		0.82	18.102		-0.08
1191	INH-22	41.1		0.22	29.2		1.27	-----		-----
1229	In house	47.24		1.06	27.44		0.54	20.61		1.29
1233	IP501	41		0.20	26		-0.06	18		-0.14
1259		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1356	IP501	50		1.43	23		-1.30	14		-2.32
1367	IP501	38		-0.21	23		-1.30	17		-0.68
1372	D5708	35.44		-0.56	23.2		-1.22	17.78		-0.26
1389	IP470	34		-0.75	-----	W	-----	-----	W	-----

Lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
1402	IP501	38	ex	-0.21	10	R(0.01)	-6.68	2	R(0.01)	-8.88
1404	IP470	35		-0.62	17	R(0.01)	-3.78	19		0.41
1412	IP501	40		0.07	-----		-----	19		0.41
1431	IP501mod.	39.5		0.00	25.8		-0.14	16.8		-0.79
1510	IP501	39		-0.07	27		0.36	19		0.41
1556	IP470	47		1.02	6.0	R(0.01)	-8.33	1.9	R(0.01)	-8.94
1586	IP470	43		0.48	28		0.77	20		0.96
1613	D5863-A	50		1.43	-----	W	-----	17.0		-0.68
1643	D5185	42.5		0.41	10.0	R(0.01)	-6.68	-----		-----
1720	D5708	41.50		0.27	28.92		1.15	-----		-----
1724	IP501	40.7		0.16	28.2		0.85	17.8		-0.25
1740	IP501	39		-0.07	26		-0.06	18		-0.14
1741	IP501/IP470	39.3		-0.03	26.7		0.23	18.6		0.19
1833	IP501	39.57		0.01	27.49		0.56	18.71		0.25
1857	IP501	39.7		0.03	27.7		0.64	19.2		0.52
1862	IP501	39.4		-0.01	26.4		0.11	18.2		-0.03
1881	IP470	48.4		1.22	27.0		0.36	19.0		0.41
1967	IP470	41.410		0.26	25.830		-0.13	18.465		0.12
1995	IP501	89.46	R(0.01)	6.83	24.96		-0.49	17.96		-0.16
6016	D5708	41.2		0.23	-----		-----	-----		-----
6021	IP501	40.1		0.08	25.8		-0.14	18.6		0.19
6028	D5185	64.39	C,R(0.01)	3.40	14.99	C,R(0.01)	-4.61	41.91	C,R(0.01)	12.94
6057	IP501	35		-0.62	25		-0.47	18		-0.14
6075		-----		-----	-----		-----	-----		-----
6092	IP501	37		-0.34	26		-0.06	17		-0.68

normality		OK			OK			OK	
n		79			69			69	
outliers		5+1ex			6			6	
mean (n)		39.50			26.14	Spike 19.4 (Rec < 135%)		18.25	Spike 16.9 (Rec < 108%)
st.dev. (n)		4.217			2.048			1.652	
R(calc.)		11.81			5.73			4.62	
R(IP470:05)		20.49			6.77			5.12	
Compare R(IP501:05)		15.25			5.37			3.88	

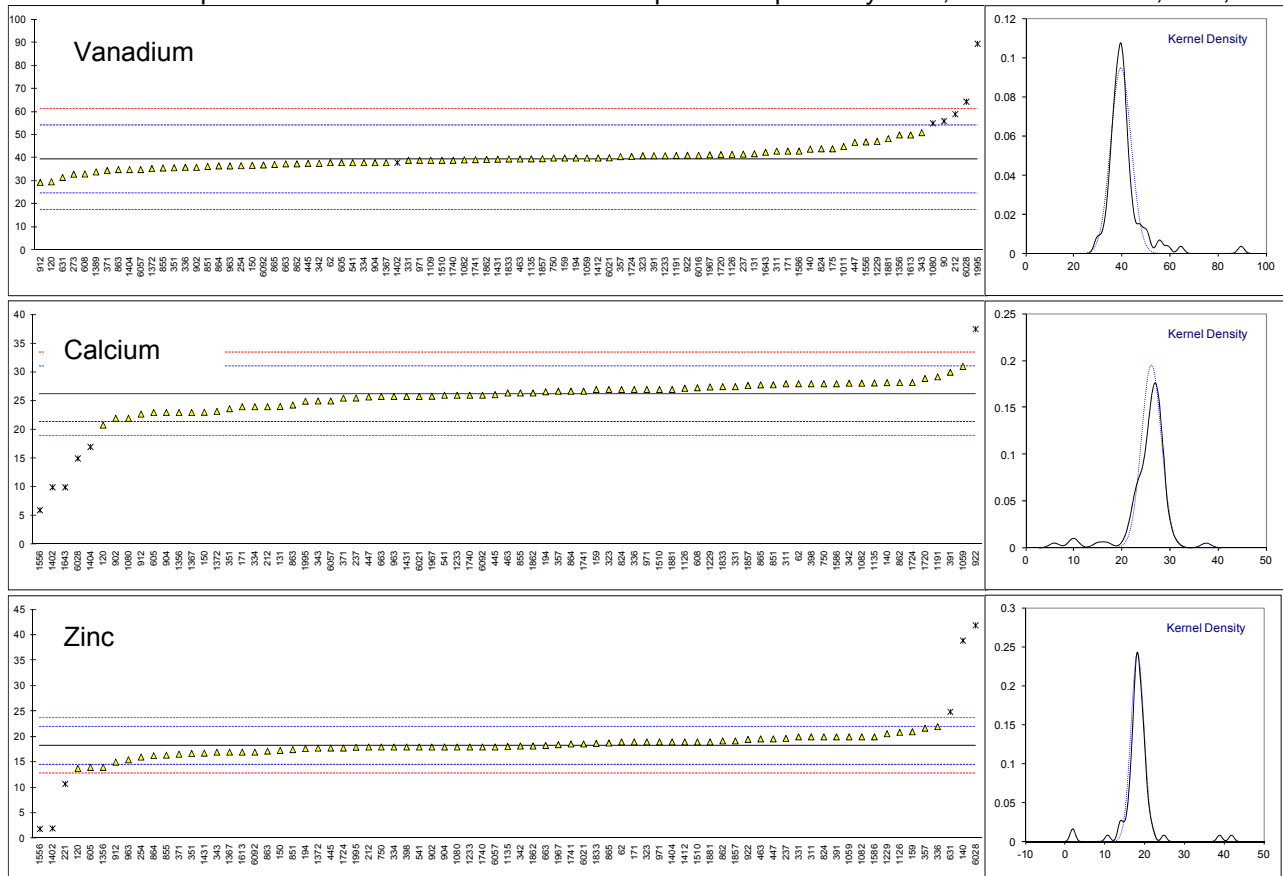Lab 62 first reported: 10 for Zn   Lab 212 first reported: 24 for V

Lab 371 first reported: 14.5 for Ca   Lab 1389 first reported respectively for Ca and Zn: 10; 11

Lab 1613 first reported: 34.0 for Ca   Lab 6028 first reported respectively for V, Ca and Zn: :71.7; 3.88; 3.7

Determination of Phosphorus as P on sample #17106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP500	17.9		0.39	
90		-----		-----	
92		-----		-----	
120	IP501	12.9		-1.91	
131		-----		-----	
140	IP501	0.217	R(0.01)	-7.76	
150	IP501	17.26		0.10	
158		-----		-----	
159	IP501	18		0.44	
168		-----		-----	
171	IP501	30	R(0.01)	5.97	
175		-----		-----	
194		-----		-----	
212	IP500	49	C,R(0.01)	14.73	
221		-----		-----	
237	IP501	17.32		0.13	
254		-----		-----	
273		-----		-----	
311	IP501	18		0.44	
323	IP501	17		-0.02	
331	IP501	17.0		-0.02	
333		-----		-----	
334	IP501	17		-0.02	
336		-----		-----	
342	IP501	17.8		0.35	
343	IP501	15		-0.94	
351	IP501	15.01		-0.94	
357	IP501	21.7		2.15	
371		-----		-----	
391	IP501	18		0.44	
398	IP501	19		0.90	
399		-----		-----	
444		-----		-----	
445	IP501	17.0		-0.02	
447		-----		-----	
463	IP500	17.25		0.09	
511		-----		-----	
541		-----		-----	
605	IP501	16		-0.48	
608	IP501	13.6		-1.59	
621		-----		-----	
631		-----		-----	
663	IP501	16.7		-0.16	
750	IP501	17		-0.02	
824	IP501	17		-0.02	
851	IP501	18.08		0.48	
855	IP501	15.3		-0.80	
862	IP501	18.1		0.49	
863	IP501	16.0		-0.48	
864	IP501	16.2		-0.39	
865	IP501	17.2		0.07	
902	IP501	16		-0.48	
904	IP500	17		-0.02	
912	IP501	13.91		-1.45	
913		-----		-----	
922		-----		-----	
963	IP501	17.4		0.16	
971	IP501	21		1.82	
1011		-----		-----	
1059	In house	18		0.44	
1080	D5185mod.	18		0.44	
1082		-----		-----	
1109		-----		-----	
1126	IP501	17.2		0.07	
1134		-----		-----	
1135	IP501	18.684		0.76	
1191		-----		-----	
1229		-----		-----	
1233	IP501	17		-0.02	
1259		-----		-----	
1299		-----		-----	
1356	IP501	14		-1.40	
1367	IP501	16		-0.48	
1372	IP500	18.51		0.68	
1389	IP500	16		-0.48	

lab	method	value	mark	z(targ)	remarks
1402	IP501	2	R(0.01)	-6.94	
1404		-----		-----	
1412	IP501	18		0.44	
1431	IP501mod.	17.3		0.12	
1510	IP501	17		-0.02	
1556		-----		-----	
1586	IP501	20		1.36	
1613		-----		-----	
1643	D5185	17.6		0.26	
1720		-----		-----	
1724	IP501	17.5		0.21	
1740	IP501	17		-0.02	
1741	IP501	17.9		0.39	
1833	IP501	16.39		-0.30	
1857	IP501	16.7		-0.16	
1862	IP501	16.7		-0.16	
1881		-----		-----	
1967	IP501	16.780		-0.12	
1995	IP501	20		1.36	
6016		-----		-----	
6021	IP501	15.7		-0.62	
6028	D5185	46.76	C,R(0.01)	13.70	
6057	IP501	14		-1.40	
6075		-----		-----	
6092	IP501	17		-0.02	

	normality	suspect	
	n	58	
	outliers	5	Spike
	mean (n)	17.04	14.6 (Recovery < 117%)
	st.dev. (n)	1.631	
	R(calc.)	4.57	
	R(IP501:05)	6.07	
Compare R(IP500:03)		3.76	

Lab 212 first reported: 50

Lab 6028 first reported: 0.001
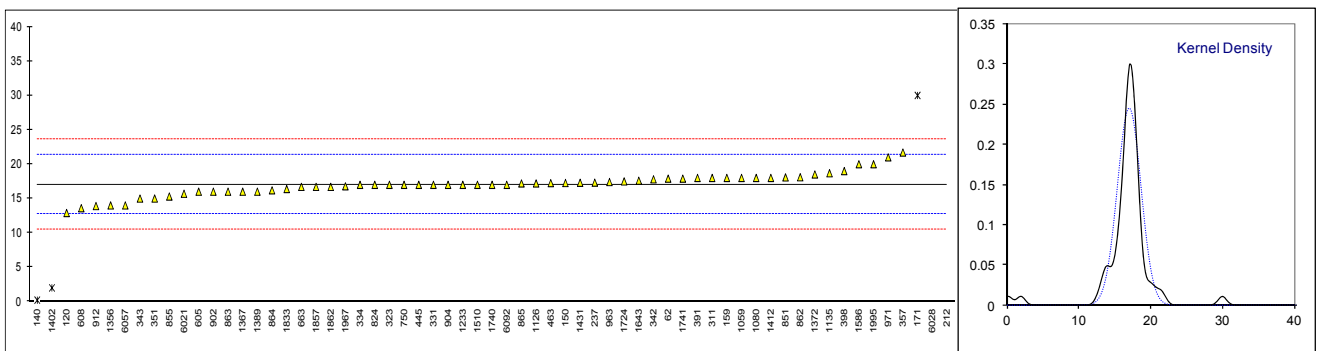
APPENDIX 2

Number of participants per country

<table>
<tr><td colspan="2"><u>Main round</u></td><td colspan="2"><u>Metals in Fuel Oil</u></td></tr>
<tr><td>1 lab in</td><td>ARGENTINA</td><td>1 lab in</td><td>ARGENTINA</td></tr>
<tr><td>1 lab in</td><td>AUSTRALIA</td><td>1 lab in</td><td>AUSTRALIA</td></tr>
<tr><td>1 lab in</td><td>AZERBAIJAN</td><td>1 lab in</td><td>AZERBAIJAN</td></tr>
<tr><td>4 labs in</td><td>BELGIUM</td><td>2 labs in</td><td>BELGIUM</td></tr>
<tr><td>1 lab in</td><td>BULGARIA</td><td>3 labs in</td><td>CANADA</td></tr>
<tr><td>3 labs in</td><td>CANADA</td><td>5 labs in</td><td>CHINA, People's Republic</td></tr>
<tr><td>1 lab in</td><td>CHILE</td><td>1 lab in</td><td>CROATIA</td></tr>
<tr><td>10 labs in</td><td>CHINA, People's Republic</td><td>2 labs in</td><td>EGYPT</td></tr>
<tr><td>1 lab in</td><td>COLOMBIA</td><td>4 labs in</td><td>FINLAND</td></tr>
<tr><td>1 lab in</td><td>COTE D'IVOIRE</td><td>5 labs in</td><td>FRANCE</td></tr>
<tr><td>2 labs in</td><td>CROATIA</td><td>1 lab in</td><td>GERMANY</td></tr>
<tr><td>1 lab in</td><td>CYPRUS</td><td>2 labs in</td><td>GREECE</td></tr>
<tr><td>1 lab in</td><td>DENMARK</td><td>1 lab in</td><td>HONG KONG</td></tr>
<tr><td>1 lab in</td><td>DJIBOUTI</td><td>1 lab in</td><td>HUNGARY</td></tr>
<tr><td>1 lab in</td><td>EGYPT</td><td>2 labs in</td><td>INDIA</td></tr>
<tr><td>3 labs in</td><td>FINLAND</td><td>1 lab in</td><td>INDONESIA</td></tr>
<tr><td>8 labs in</td><td>FRANCE</td><td>3 labs in</td><td>ITALY</td></tr>
<tr><td>2 labs in</td><td>GEORGIA</td><td>1 lab in</td><td>JORDAN</td></tr>
<tr><td>2 labs in</td><td>GERMANY</td><td>1 lab in</td><td>KAZAKHSTAN</td></tr>
<tr><td>4 labs in</td><td>GREECE</td><td>1 lab in</td><td>KENYA</td></tr>
<tr><td>1 lab in</td><td>GUAM</td><td>1 lab in</td><td>LATVIA</td></tr>
<tr><td>1 lab in</td><td>GUINEA REPUBLIC</td><td>1 lab in</td><td>LITHUANIA</td></tr>
<tr><td>1 lab in</td><td>HONG KONG</td><td>2 labs in</td><td>MALAYSIA</td></tr>
<tr><td>1 lab in</td><td>HUNGARY</td><td>1 lab in</td><td>MALTA</td></tr>
<tr><td>2 labs in</td><td>INDIA</td><td>1 lab in</td><td>MARTINIQUE</td></tr>
<tr><td>2 labs in</td><td>INDONESIA</td><td>1 lab in</td><td>MOROCCO</td></tr>
<tr><td>1 lab in</td><td>IRAN, Islamic Republic of</td><td>2 labs in</td><td>NETHERLANDS</td></tr>
<tr><td>1 lab in</td><td>ISRAEL</td><td>1 lab in</td><td>NIGERIA</td></tr>
<tr><td>3 labs in</td><td>ITALY</td><td>1 lab in</td><td>PAKISTAN</td></tr>
<tr><td>1 lab in</td><td>JORDAN</td><td>1 lab in</td><td>PERU</td></tr>
<tr><td>1 lab in</td><td>KAZAKHSTAN</td><td>1 lab in</td><td>PHILIPPINES</td></tr>
<tr><td>2 labs in</td><td>KENYA</td><td>2 labs in</td><td>PORTUGAL</td></tr>
<tr><td>4 labs in</td><td>LATVIA</td><td>5 labs in</td><td>RUSSIAN FEDERATION</td></tr>
<tr><td>1 lab in</td><td>LITHUANIA</td><td>1 lab in</td><td>SAUDI ARABIA</td></tr>
<tr><td>4 labs in</td><td>MALAYSIA</td><td>1 lab in</td><td>SENEGAL</td></tr>
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<tr><td>1 lab in</td><td>PERU</td><td>3 labs in</td><td>SWEDEN</td></tr>
<tr><td>1 lab in</td><td>PHILIPPINES</td><td>1 lab in</td><td>THAILAND</td></tr>
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<tr><td>3 labs in</td><td>PORTUGAL</td><td>4 labs in</td><td>TURKEY</td></tr>
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<tr><td>13 labs in</td><td>RUSSIAN FEDERATION</td><td>9 labs in</td><td>UNITED KINGDOM</td></tr>
<tr><td>2 labs in</td><td>SAUDI ARABIA</td><td>10 labs in</td><td>UNITED STATES OF AMERICA</td></tr>
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<tr><td>11 labs in</td><td>UNITED KINGDOM</td><td></td><td></td></tr>
<tr><td>11 labs in</td><td>UNITED STATES OF AMERICA</td><td></td><td></td></tr>
<tr><td>1 lab in</td><td>VIETNAM</td><td></td><td></td></tr>
</table>

APPENDIX 3

Abbreviations:

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= probably an error in calculations
U	= test result probably reported in a different unit
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
SDS	= Safety Data Sheet

Literature:

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9   IP 367/84
10   DIN 38402 T41/42
11   P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
12   J.N. Miller, Analyst, 118, 455, (1993)
13   Analytical Methods Committee Technical brief, No 4.January 2001
14   P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
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16   Horwitz, W and Albert, R, J. AOAC Int, 79, 3, 589, (1996)