Results of Proficiency Test
Naphtha
April 2015

SUMMARY OF CHANGES

This revised report replaces the original report iis15N01 of June 2015.

One of the participants reported by e-mail (30th June 2015) the presence of an error in the original report iis15N01. It appeared that the determination for Octane by DHA was not evaluated correctly.
In the original report the consensus value was declared to be 0.046%M/M for Octane. However, after a complaint from a participant, this was investigated. It turned out that an unknown component that may almost co-elute with Octane, may be the cause for a large number of false positive test results.
Therefore the following pages in this report have been revised:

- The evaluation per test on page 14 (page 13 in the original report)
- Table 14 on page 18 (page 17 in the original report)
- Table and graphics on page 60 and 61

CONTENTS

Appendices:

1   INTRODUCTION

Since 1994, the Institute for Interlaboratory Studies organizes a proficiency test for the analysis of Naphtha every year. The interlaboratory study on Naphtha was extended with PTs for the determination for Mercury, Arsenic/Lead and Vapour Pressure.
In the annual proficiency testing program of 2014/2015, it was decided to continue the 4 PTs on Naphtha. In the main PT, 87 laboratories in 38 different countries have participated; in the PT for Mercury, 47 laboratories in 21 different countries have participated; in the PT for Arsenic and Lead, 28 laboratories in 14 different countries have participated and in the PT for Vapour Pressure, 48 laboratories in 20 different countries have participated. See appendix 2 for the number of participants per country. In this report, the results of the 2015 proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In this proficiency test, the participants received, depending on the registration, from one up to seven different samples of Naphtha, see table below. As the Mercury and Arsenic/Lead determination was problematic in previous round robins, it was decided to prepare also synthetic (artificial) Naphtha with a known amount of Arsenic and Lead and synthetic (artificial) Naphtha with a known amount of Mercury.

Samples	Type of bottle	Purpose	Matrix
#15031	0.5 L	For regular analysis	Real Naphtha
#15032	30 ml	For GC analysis	Real Naphtha
#15033	0.5 L	For Mercury	Artificial Naphtha
#15034	0.5 L	For Mercury	Real Naphtha
#15035	0.5 L	For Arsenic and Lead	Artificial Naphtha
#15036	0.5 L	For Arsenic and Lead	Real Naphtha
#15037	0.25 L	For DVPE	Real Naphtha

Table 1: Seven different Naphtha samples used in iis15N01

Participants were requested to report rounded and unrounded results. The unrounded 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). These PTs fall under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis internet site www.iisnl.com.

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

One drum with approx. 175 litres of light Naphtha was obtained from a local producer. Out of this batch, five different samples were prepared.
After homogenisation, a part of the Naphtha batch was directly divided over 108 brown glass bottles of 0.5 litre and labelled #15031. The homogeneity of subsamples #15031 was checked by determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/L		Density at 15°C in kg/L
sample #15031-1	0.66245	sample #15031-5	0.66244
sample #15031-2	0.66244	sample #15031-6	0.66243
sample #15031-3	0.66243	sample #15031-7	0.66243
sample #15031-4	0.66244	sample #15031-8	0.66243

Table 2: homogeneity test results of subsamples #15031

A second part of the Naphtha batch, approximately 5 litres, was separated and spiked with 217 mg MTBE, 209 mg Methanol and 22.6 mg Chloroform especially for Organic Chloride and GC analyses. After homogenisation, out of this batch, 108 amber glass bottles of 30 ml were filled and labelled #15032. The homogeneity of subsamples #15032 was checked by determination of MTBE in accordance with an in house test method on 8 stratified randomly selected samples.

	MTBE in mg/kg		MTBE in mg/kg
sample #15032-1	60	sample #15032-5	59
sample #15032-2	59	sample #15032-6	60
sample #15032-3	60	sample #15032-7	60
sample #15032-4	59	sample #15032-8	60

Table 3: homogeneity test results of subsamples #15032

A third part of the Naphtha batch, approximately 30 litres was separated and spiked with 4.95 gram Conostan Hg std (100mg/kg) and with 120μg $HgCl_2$ especially for Mercury determination. After homogenisation, out of this batch 58 amber glass bottles of 0.5 litres were filled and labelled #15034. The homogeneity of subsamples #15034 was checked by determination of Mercury in accordance with UOP938 on 4 stratified randomly selected samples.

	Mercury in μg/kg
sample #15034-1	45.3
sample #15034-2	43.9
sample #15034-3	44.3
sample #15034-4	44.7

Table 4: homogeneity test results of subsamples #15034

A fourth part of the batch, approximately 20 litre was separated and spiked with 4.89 gram Conostan As std (100mg/kg) and with 1.4 gram AvGas (0.54 g Pb/L) especially for Arsenic and Lead determination. After homogenisation, out of this batch 40 amber glass bottles of 0.5 litres were filled and labelled #15036. The homogeneity of subsamples #15036 was checked by determination of Arsenic and Lead in accordance with in house test methods on 4 stratified randomly selected samples.

	Arsenic in μg/kg	Lead in μg/kg
sample #15036-1	32	115
sample #15036-2	31	120
sample #15036-3	32	130
sample #15036-4	32	130

Table 5: homogeneity test results of subsamples #15036

The last part of this batch, especially for DVPE determination, was, after homogenisation, directly divided over 68 brown glass bottles of 0.25 litres and labelled #15037. The homogeneity of subsamples #15037 was checked by determination of DVPE in accordance with ASTM D5191 on 8 stratified randomly selected samples.

	DVPE in psi		DVPE in psi
sample #15037-1	11.59	sample #15037-5	11.62
sample #15037-2	11.60	sample #15037-6	11.62
sample #15037-3	11.60	sample #15037-7	11.60
sample #15037-4	11.60	sample #15037-8	11.62

Table 6: homogeneity test results of subsamples #15037

Furthermore, a batch of 50 litre of artificial naphtha was prepared.

Light hydro treated Naphtha 100/140	64742-49-0	10.5 kg
Petroleum Ether 40/60 (ligroin)	8032-32-4	1.2 kg
Cyclohexane	110-82-7	1.4 kg
Mixed-Xylene	1330-20-7	1.6 kg

Table 7: composition of synthetic Naphtha

A part of this batch, approximately 30 litres, was spiked with 4.93 gram Conostan Hg std (100mg/kg) and with 130 µg $HgCl_2$ especially for Mercury determination. After homogenisation, out of this batch 58 amber glass bottles of 0.5 litres were filled and labelled #15033. The homogeneity of subsamples #15033 was checked by determination of Mercury in accordance with UOP938 on 4 stratified randomly selected samples.

	Mercury in µg/kg
sample #15033-1	43.1
sample #15033-2	44.0
sample #15033-3	43.9
sample #15033-4	44.1

Table 8: homogeneity test results of subsamples #15033

The other part of the artificial Naphtha batch, approximately 20 litres was spiked with 4.41 gram Conostan As std (100mg/kg) and with 1.4 gram AvGas (0.54 g Pb/L) especially for Arsenic and Lead. After homogenisation out of this batch 58 amber glass bottles of 0.5 litres were filled and labelled #15035. The homogeneity of subsamples #15035 was checked by determination of Arsenic and Lead in accordance with an in house test method on 4 stratified randomly selected samples.

	Arsenic in µg/kg	Lead in µg/kg
sample #15035-1	27	86
sample #15035-2	28	87
sample #15035-3	27	88
sample #15035-4	25	88

Table 9: homogeneity test results of subsamples #15035

From the results in tables 2 - 9, except table 7, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the target methods or with 0.3 times the reproducibility calculated using the Horwitz equation in agreement with the procedure of ISO 13528, Annex B2 in the next table;

	Density in kg/L	MTBE in mg/kg	Mercury in µg/kg	Arsenic in µg/kg	Lead in µg/kg	DVPE in psi
r (#15031)	0.00002	--	--	--	--	--
r (#15032)	--	1.4	--	--	--	--
r (#15033)	--	--	1.3	--	--	--
r (#15034)	--	--	1.7	--	--	--
r (#15035)	--	--	--	3.5	2.7	--
r (#15036)	--	--	--	1.4	21.0	--
r (#15037)	--	--	--	--	--	0.02
0.3*R (ref.)	0.00015	4.3	9.4-9.6	6.2-7.2	16.9-22.8	0.12
reference	ISO12185:96	Horwitz	Horwitz	Horwitz	Horwitz	D5191:13

Table 10: repeatabilities of subsamples #15031, #15032, #15033, #15034, #15035, #15036 and #15037

The repeatability of the results of the homogeneity tests for samples #15031 through #15037 are all in agreement with the requirements of the reference standards or with the estimated reproducibilities calculated using the Horwitz equation. Therefore, homogeneity of all prepared subsamples was assumed.

To the participating laboratories, depending on its registration, one or more of the following samples were sent on March 18, 2015.

Bottle size	Sample id.	Determinations
1 x 0.5 litre	#15031	Regular tests
1 x 0.03 litre	#15032	PIONA/PONA only
1 x 0.5 litre, each	#15033 & #15034	Mercury only
1 x 0.5 litre, each	#15035 & #15036	Arsenic/Lead only
1 x 0.25 litre	#15037	Vapour Pressure only

Table 11: bottle sizes, sample identification and determinations

2.5 STABILITY OF THE SAMPLES

The stability of the Naphtha, packed in the brown glass bottles, was checked. The material was found to be sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were asked to determine on sample #15031 the following analyses: Colour Saybolt (Manual and/or Automated), Copper Corrosion 3hrs at 50°C, and Density at15°C, Distillation (IBP, 50% recovered and FBP), Mercaptans and Sulphur. On sample #15032 the participants were requested to determine PONA / PIONA / PNA (n-Paraffines, i-Paraffines, Olefins, Naphthenes, Aromatics, C_4 & lighter hydrocarbons and Compounds with Boiling Point > 200°C), Methanol, MTBE, Total Oxygenates, Organic Chlorides and DHA (Benzene, Heptane, Octane, Pentane and Toluene).
On samples #15033 and #15034 the participants were requested to determine Mercury only. On samples #15035 and #15036 the participants were requested to determine Arsenic and Lead only. On sample #15037 the participants were requested to determine only TVP / DVPE.
To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The detailed report form was also made available for download on the iis website www.iisnl.com. A SDS and a form to confirm receipt of the samples were added to the sample package.

3   RESULTS

During four weeks after sample dispatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in the appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after deadline, a reminder fax was sent to those laboratories that had not yet reported. Shortly after the deadline, the available results were screened for suspect data. A 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 (raw data of the) reported results. Additional or corrected results have been used for data analysis and the original results are placed under 'Remarks' in the result tables in Appendix 1.

3.1   STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organization, Statistics and Evaluation of April 2014' (iis-protocol, version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. 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. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care. In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon's, Grubbs and Rosner outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 3, no.17). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05) for the Rosner General ESD test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement 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 visualize 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 analysis results are plotted. The corresponding laboratory numbers are under 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 standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.
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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 reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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 in accordance with:

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

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

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

$$|z| < 1 \quad \text{good}$$
$$1 < |z| < 2 \quad \text{satisfactory}$$
$$2 < |z| < 3 \quad \text{questionable}$$
$$3 < |z| \quad \text{unsatisfactory}$$

4   EVALUATION

In this interlaboratory study, major problems with sample despatch were encountered during the execution. Laboratories in Algeria, Brazil, Canada, China, Iran, Nigeria, Saudi Arabia and United Arab Emirates received the samples late or not at all due to several problems (i.e. courier, customs clearance).

Most laboratories reported results, but not all laboratories were able to perform all the requested analyses. Finally, in total 75 participants for sample #15031 and #15032, 37 participants for sample #15033 and #15034, 22 participants for sample #15035 and sample #15036 and 40 participants for sample #15037 reported in total 1560 numerical results. Observed were in total 52 outlying results, which is 3.3%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1   EVALUATION PER TEST

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

In the iis PT reports, ASTM methods are referred to with a number (e.g. D2086) and an added designation for the year that the method was adopted or revised (e.g. D2086-08). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D2086-08(2013)). In the results tables of Appendix 1 only the method number and year of adoption or revision e.g. D2086-08 will be used.

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.

Evaluation for sample #15031:

Colour Saybolt: This determination was not problematic (both the manual and the automated mode). In total, only one statistical outlier was observed. The calculated reproducibilities for the manual and the automated mode are both in good agreement with the respective requirements of ASTM D156:12 and ASTM D6045:12.

Copper Corrosion: No problems have been observed. All reporting participants agreed on a result of 1(1A).

Density at 15°C: 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 good agreement with the requirements of ISO12185:96.
The current version of ASTM D4052:11 only gives reproducibilities being valid for gasolines, distillates, base stocks and lubricating oils. Therefore, this 2011 version may not be applicable to Naphtha.

Distillation: This determination was not problematic. In total nine statistical outliers were observed. All calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ASTM D86:12 (automated and manual mode).

Mercaptan Sulphur: All reporting participants, except two, reported a test result below the lower application limit of 3 mg/kg. Therefore no significant conclusions were drawn.

Sulphur: All reporting participants, except two, reported a test result below the lower application limit of 3 mg/kg. Therefore no significant conclusions were drawn.

Evaluation for sample #15032:

Organic Chloride: This determination was problematic for a number of laboratories at a level of 7.8 mg/kg. The samples were spiked with Chloroform. Therefore, the minimum Chloride concentration to be found was known (5.9 mg/kg). The laboratories should be able to find at least 4.6 mg/kg [5.9 mg/kg$_{(added\ amount)}$ − 1.3 mg/kg$_{(R\ D5808)}$]. Six laboratories reported a test result below this minimum concentration of 4.6 mg/kg and were excluded from the statistical evaluation. After exclusion of the six test results, four statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in good agreement with the requirements of ASTM D5808:09.

Methanol: This determination appeared to be very problematic at the level of 64 mg/kg. The samples were spiked with Methanol. Therefore, the minimum Methanol concentration to be found was known (61.6 mg/kg). The laboratories should be able to find at least 46.2 mg/kg [61.6 mg/kg$_{(added\ amount)}$ − 15.4 mg/kg$_{(R\ Horwitz)}$]. Seventeen laboratories reported a test result below this minimum concentration of 46.2 mg/kg and were excluded from the statistical evaluation. After exclusion of the seventeen test results, only one statistical outlier was observed. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation.

MTBE: This determination appeared to be not problematic at the level of 59 mg/kg. The samples were spiked with MTBE. Therefore, the minimum MTBE concentration to be found was known (63.8 mg/kg). The laboratories should be able to find at least 48.5 mg/kg [63.8 mg/kg$_{(added\ amount)}$ − 15.3 mg/kg$_{(R\ Horwitz)}$]. Three laboratories reported a test result below this minimum concentration of 48.5 mg/kg and were excluded from the statistical evaluation. After exclusion of the three test results, no statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in full agreement with the estimated reproducibility calculated using the Horwitz equation.

Other Oxygenates: All reporting participants reported a less than result for other oxygenates. Therefore no significant conclusions were drawn.

Total Oxygenates: This determination was problematic for a number of laboratories. Several laboratories reported a result for Methanol, that was excluded from the statistical evaluation (see "Methanol"). As Methanol is one of the components that contributes to the sum of Total Oxygenates, it was decided to exclude also the test results for Total Oxygenates of these laboratories. After exclusion of these seventeen test results, no statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in agreement with the estimated reproducibility calculated using the Horwitz equation.

PONA/PIONA: This determination was problematic. In total 22 statistical outliers were observed and 30 other test results were excluded. The calculated reproducibilities for i-paraffines and aromatics (%V/V) and n-paraffines, i-paraffines and aromatics (%M/M) after exclusion of the statistical outliers, are all in agreement with the requirements of ASTM D5443:14. However, the calculated reproducibilities for n-paraffines and naphthenes (%V/V) , naphthenes (%M/M) and C4&lighter (%V/V and %M/M) after rejection of the statistical outliers are not in agreement with the requirements of ASTM D5443:14. The consensus values for olefins and components with a boiling point above 200ºC (%V/V and %M/M) are too small to draw any significant conclusions.
                  Evaluation of the determinations should be used with care as:
                  • Twelve laboratories reported to have used ASTM D5134, ASTM D6729, ASTM D6730 or GOST52714 for the PONA/PIONA determination in %V/V. These ASTM standards do not mention conversion formulae from %M/M to %V/V.
                  • ASTM D6293:98 was intended for low boiling gasolines only; this test method was withdrawn in 2009 and replaced by D6839.
                  • ASTM D6839:07 is intended for low boiling gasolines and Naphtha streams.

Most observed reproducibilities were better than the reproducibilities of previous rounds:

	2015	2014	2013	2012	2011	2010	ASTM
n-paraffines	3.3%	8.5%	7.6%	5.7%	6.8%	5.1%	3.2%
i-paraffines	1.6%	6.0%	5.9%	4.0%	5.4%	4.0%	3.1%
Olefins	n.e. *)	325% *)	225% *)	259% *)	271% *)	220% *)	250%
naphthenes	5.3%	3.0%	3.4%	5.9%	13%	10%	1.9%
aromatics	10%	12%	13%	8.8%	5.7%	12%	8.9%
C4 & lighter	32%	44%	19%	19%	27%	38%	17%

Table 12: Comparison of observed relative target reproducibilities (%M/M)
*) probably to low olefins concentrations.

The use of a light Naphtha, with less high boiling components, in this PT may explain the better performance of the group for n- and i-paraffines, but also difficulty of the performance of the group for C1-C4, due to the high concentration.

As in previous rounds, many participating laboratories did have problems with the determination of the Naphthenes. Several laboratories reported to have used ASTM D5134, ASTM D6729, ASTM D6730 and GOST52714. The difference between these tests methods and all others used (ASTM D5443, ASTM 6293 ASTM D6839 and ISO22854) is the performance of the chromatographic system. In the first mentioned methods ASTM D5134, ASTM D6729, ASTM D6730 and GOST52714, the chromatographic system is equipped with a fused silica capillary column, while in other tests methods multiple columns are used with multi dimensional column-coupling and column-switching systems.

Benzene (DHA): This determination was problematic at a concentration of 0.75%M/M. One statistical outlier was observed and one result was excluded for statistical evaluation as the result was reported in %V/V instead of %M/M. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D5134:13. However, when the results for ASTM D5134 were evaluated separately, the calculated reproducibility is in good agreement with the requirements of ASTM D5134.

Heptane (DHA): This determination was problematic at a concentration of 0.021%M/M. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5134:13. However, when the results for ASTM D5134 were evaluated separately, the calculated reproducibility is in good agreement with the requirements of ASTM D5134.

Octane (DHA): This determination was very problematic. The group was divided in two groups. One group have found a consensus value of <0.01%M/M and the other group have found a consensus value of 0.046%M/M. After investigation, it turned out that the presence of an unknown component

that may almost co-elute with Octane, may be the cause for a large number of false positive test results.

Pentane (DHA):   This determination was not problematic at a concentration of 15.9 %M/M. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D5134:13. When the results for ASTM D5134 were evaluated separately, the calculated reproducibility is smaller and again in good agreement with the requirements of ASTM D5134.

Toluene (DHA):   Almost all reporting participants reported a "less than" test result. Therefore no significant conclusions were drawn.

Evaluation for sample #15033 and #15034:

Mercury: For sample #15033 (artificial naphtha), this determination was not problematic. Sample #15033 was spiked to a measurable concentration level of 35.02 µg/kg Hg. Therefore, the minimum Hg concentration to be found was known. The laboratories should be able to find at least 9.04 µg/kg [35.02 µg/kg$_{(added\ amount)}$ − 25.98 µg/kg$_{(R\ Horwitz)}$]. No laboratories reported a test result below this minimum concentration of 9.04 µg/kg. Only one statistical outlier was observed and the calculated reproducibility after rejection of the statistical outlier is in good agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Mercury (theoretical increment of 35.02 µg Hg/kg) may be good: "112%".

For Sample #15034 (real naphtha), this determination was not problematic. Sample #15034 was spiked to a measurable concentration level of 38.92 µg/kg Hg. Therefore, the minimum Hg concentration to be found was known. The laboratories should be able to find at least 10.50 µg/kg [38.92 µg/kg$_{(added\ amount)}$ − 28.42 µg/kg$_{(R\ Horwitz)}$]. Two laboratories reported a test result below this minimum concentration of 10.50 µg/kg and were excluded from the statistical evaluation. After exclusion of the two test results only one statistical outlier was observed. The calculated reproducibility after rejection of the suspect data is in full agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Mercury (theoretical increment of 38.92 µg Hg/kg) may be good: "94%".

Evaluation for sample #15035 and #15036:

Arsenic: For sample #15035 (artificial naphtha), this determination appeared to be problematic. Sample #15035 was spiked to a measurable concentration level of 29.2 µg/kg As. Therefore, the minimum As concentration to be found was known. The laboratories should be able to find at least 6.94 µg/kg [29.21 µg/kg$_{(added\ amount)}$ − 22.27 µg/kg$_{(R\ Horwitz)}$]. Three laboratories reported a test result below this minimum concentration of 6.94 µg/kg and were excluded from the statistical evaluation. After exclusion of the three test results, no

statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is not in agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Arsenic (theoretical increment of 29.10 µg As/kg) may be satisfactory: "71%".

For Sample #15036 (real naphtha), this determination was not problematic. Sample #15036 was spiked to a measurable concentration level of 32.26 µg/kg As. Therefore, the minimum As concentration to be found was known. The laboratories should be able to find at least 8.03 µg/kg [32.26 µg/kg$_{(added\ amount)}$ − 24.23 µg/kg$_{(R\ Horwitz)}$]. Two laboratories reported a test result below this minimum concentration of 6.94 µg/kg and were excluded from the statistical evaluation. After exclusion of the two test results, no statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in full agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Arsenic (theoretical increment of 32.26 µg As/kg) may be satisfactory: "72%".

Lead:

For sample #15035 (artificial naphtha), this determination appeared to be very problematic. Sample #15035 was spiked to a measurable concentration level of 69.90 µg/kg Pb. Therefore, the minimum Pb concentration to be found was known. The laboratories should be able to find at least 23.16 µg/kg [69.90 µg/kg$_{(added\ amount)}$ − 46.74 µg/kg$_{(R\ Horwitz)}$]. Four laboratories reported a test result below this minimum concentration of 23.16 µg/kg and were excluded from the statistical evaluation. After exclusion of the four test results, no statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Lead (theoretical increment of 69.90 µg Pb/kg) may be good: "104%".

For Sample #15036 (real naphtha), this determination appeared to be very problematic. Sample #15036 was spiked to a measurable concentration level of 69.63 µg/kg Pb. Therefore, the minimum Pb concentration to be found was known. The laboratories should be able to find at least 23.04 µg/kg [69.63 µg/kg$_{(added\ amount)}$ − 46.59 µg/kg$_{(R\ Horwitz)}$]. Two laboratories reported a test result below this minimum concentration of 23.04 µg/kg and were excluded from the statistical evaluation. After exclusion of the two test results, no statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the estimated reproducibility calculated using the Horwitz equation. The average recovery of Lead (theoretical increment of 69.63 µg Pb/kg) may be satisfactory: "83%".

Evaluation for sample #15037:

TVP: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the estimated requirements of ASTM D5191:13.

DVPE: The conversion of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in the ASTM D5191:13, showed only one statistical outlier. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D5191:13.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of the laboratories that participated. The reproducibilities derived from literature standards (in casu ASTM standards) and the calculated reproducibilities of the samples (see appendix 1) are compared in the next table.

Parameters	unit	n	average	2.8 * sd	R (target)
Color Saybolt (automated)		22	30.0	0.0	1.2
Color Saybolt (manual)		36	30.0	0.5	2.0
Copper Corrosion		58	1(1A)	n.a.	n.a.
Density at 15°C	kg/L	71	0.6625	0.0003	0.0005
Initial Boiling Point	°C	66	34.9	3.6	5.1
50% recovered	°C	64	52.7	0.9	1.9
Final Boiling Point	°C	61	83.5	3.3	6.8
Mercaptan Sulphur	mg/kg	47	<3	n.a.	n.a.
Sulphur	mg/kg	56	<3	n.a.	n.a.

Table 13: comparison of the observed and target reproducibilities of the samples #15031

Parameters	unit	n	average	2.8 * sd	R (lit)
Organic Chloride	mg/kg	19	7.8	1.1	1.3
Methanol	mg/kg	11	64.1	34.0	15.4
MTBE	mg/kg	29	59.4	14.0	14.4
Total Oxygenates	%M/M	7	0.012	0.003	0.004
n-Paraffines	%V/V	40	31.0	1.1	0.9
i-Paraffines	%V/V	40	55.2	1.0	1.3
Olefins	%V/V	44	<0.10	n.a.	n.a.
Naphthenes	%V/V	33	13.2	0.8	0.4
Aromatics	%V/V	39	0.57	0.06	0.21
C_4 & lighter	%V/V	33	1.27	0.39	0.21
Compounds bp > 200 °C	%V/V	22	<0.10	n.a.	n.a.
n-Paraffines	%M/M	38	30.2	1.0	0.9
i-Paraffines	%M/M	38	53.9	0.9	1.2
Olefins	%M/M	41	<0.10	n.a.	n.a.
Naphthenes	%M/M	30	15.2	0.8	0.4
Aromatics	%M/M	38	0.77	0.08	0.25
C_4 & lighter	%M/M	33	1.14	0.37	0.19
Compounds bp > 200 °C	%M/M	21	<0.10	n.a.	n.a.
Benzene (DHA)	%M/M	25	0.75	0.09	0.08
Heptane (DHA)	%M/M	19	0.021	0.006	0.004
Octane (DHA)	%M/M	8	<0.01	n.a.	n.a.
Pentane (DHA)	%M/M	24	15.9	0.6	0.9
Toluene (DHA)	%M/M	25	<0.01	n.a.	n.a.

Table 14: comparison of the observed and target reproducibilities of the sample #15032

Parameters	unit	n	average	2.8 * sd	R (lit)
Mercury as Hg #15033	µg/kg	36	39.1	24.1	28.6
Mercury as Hg #15034	µg/kg	32	36.6	26.5	27.0

Table 15: comparison of the observed and target reproducibility of sample #15033 and #15034

Parameters	unit	n	average	2.8 * sd	R (lit)
Arsenic as As #15035	µg/kg	8	20.7	24.0	16.6
Arsenic as As #15036	µg/kg	7	23.2	17.5	18.3
Lead as Pb #15035	µg/kg	16	72.5	72.7	48.2
Lead as Pb #15036	µg/kg	15	57.9	69.3	39.8

Table 16: comparison of the observed and target reproducibilities of the samples #15035 and #15036

Parameters	unit	n	average	2.8 * sd	R (lit)
TVP	psi	29	12.68	0.23	0.40
DVPE	psi	39	11.67	0.26	0.40

Table 17: comparison of the observed and target reproducibilities of the sample #15037

Without further statistical calculations, it can be concluded that for a number of tests there is not a reasonable compliance of the group of participating laboratories with the relevant standards. The problematic tests have been discussed in paragraph 4.1.

4.3   COMPARISON OF THE PROFICIENCY TEST OF APRIL 2015 WITH PREVIOUS PTS

	April 2015	April 2014	March 2013	April 2012
Number of reporting labs	84	74	72	71
Number of results reported	1560	1304	1339	1147
Statistical outliers	52	49	101	75
Percentage outliers	3.3%	3.8%	7.5%	6.5%

Table 18: 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 standards. The conclusions are given the following table:

Determination	April 2015	April 2014	March 2013	April 2012
Colour Saybolt	++	++	++	++
Density at 15°C	++	++	+	++
Distillation	++	+	+	+
Mercaptan Sulphur	n.a.	--	-	--
Sulphur	n.a.	--	+/-	--
Organic Chloride	+	--	n.e.	n.e.
Methanol	--	--	--	--
Methyl tert-butyl ether (MTBE)	+/-	--	-	--
Total Oxygenates	+	--	-	-
n-Paraffines	-	--	--	--
i-Paraffines	+	--	--	--
Olefins	n.e.	--	+	n.e.
Naphthenes	--	--	--	--
Aromatics	++	+	-	+
C_4 & lighter	--	--	-	+/-
DHA analyses	+/-	n.e.	n.e.	n.e.
Mercury	+	++	+/-	+
Arsenic	+/-	+/-	--	n.e.
Lead	--	--	--	n.e.
Total Vapour Pressure	++	++	+	--
DVPE acc. to D5191	++	++	+	--

table 19: comparison determinations against the standard requirements

The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:
  ++:   group performed much better than the standard
  + :   group performed better than the standard
  +/-:   group performance equals the standard
  - :   group performed worse than the standard
  -- :   group performed much worse than the standard
  n.e.: not evaluated

APPENDIX 1
Determination of Color Saybolt Automated (D6045) on sample #15031

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D6045	>30		-----	
171		-----		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D6045	30		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333	D6045	30		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349	D6045	>30		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444	D6045	>30		-----	
445	D6045	30		-----	
494		-----		-----	
529		-----		-----	
541	D6045	30		-----	
604		-----		-----	
608		-----		-----	
657		-----		-----	
753	D6045	>30		-----	
754	D6045	>30		-----	
759	D6045	30		-----	
781		-----		-----	
784		-----		-----	
785	D6045	30		-----	
823	D6045	30		-----	
855	D6045	30		-----	
862	D6045	30		-----	
868	D6045	30		-----	
873	D6045	30		-----	
875	D6045	30		-----	
922		-----		-----	
963		-----		-----	
974	D6045	30		-----	
982		-----		-----	
994		-----		-----	
995		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	D6045	30		-----	
1134		-----		-----	
1145	D6045	30		-----	
1161	D6045	>30		-----	
1200		-----		-----	
1201	D6045	30		-----	
1254		-----		-----	
1257	D6045	30		-----	
1264	D6045	30		-----	
1307	D6045	30		-----	
1397		-----		-----	
1404		-----		-----	
1429	D6045	30		-----	
1455	D6045	30		-----	
1556		-----		-----	
1612		-----		-----	
1616	D6045	30		-----	
1653		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1788		-----		-----	
1792		-----		-----	

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1807		-----	-----
1810		-----	-----
1823		-----	-----
1842		-----	-----
1857		-----	-----
1949		-----	-----
1950		-----	-----
7006		-----	-----
7013	D6045	>30	-----
9054		-----	-----
9057		-----	-----
9058		-----	-----
9061		-----	-----
9145		-----	-----

normality	Unknown
n	22
outliers	0
mean (n)	30.0
st.dev. (n)	0.00
R(calc.)	0.0
R(D6045:12)	1.2
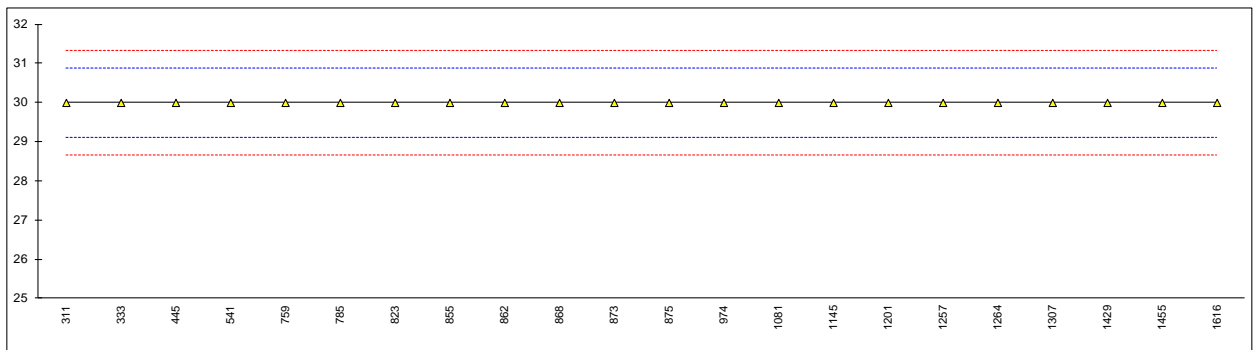
Determination of Color Saybolt manual (D156) on sample #15031

lab	method	value	mark	z(targ)	remarks
140	D156	30		0.04	
150		-----		-----	
171	D156	30		0.04	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317	D156	30		0.04	
322	D156	30		0.04	
323	D156	30		0.04	
333		-----		-----	
334		-----		-----	
336	D156	30		0.04	
337	D156	30		0.04	
340	D156	>30		-----	
349		-----		-----	
360	D156	30		0.04	
391	D156	30		0.04	
399	D156	30		0.04	
444		-----		-----	
445	D156	30		0.04	
494	D156	30		0.04	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608	D156	30		0.04	
657	D156	30		0.04	
753		-----		-----	
754		-----		-----	
759		-----		-----	
781	D156	30		0.04	
784		-----		-----	
785		-----		-----	
823	D156	30		0.04	
855		-----		-----	
862	D156	30		0.04	
868		-----		-----	
873		-----		-----	
875		-----		-----	
922	D156	30		0.04	
963	D156	30		0.04	
974	D156	30		0.04	
982	D156	29		-1.36	
994	D156	30		0.04	
995	D156	30		0.04	
1012		-----		-----	
1016	D156	>30		-----	
1062		-----		-----	
1065		-----		-----	
1066	D156	30		0.04	
1081		-----		-----	
1134	D156	30		0.04	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201	D156	30		0.04	
1254	D156	30		0.04	
1257	D156	30		0.04	
1264		-----		-----	
1307		-----		-----	
1397		-----		-----	
1404	D156	28	G(0.01)	-2.76	
1429		-----		-----	
1455	D156	30		0.04	
1556		-----		-----	
1612		-----		-----	
1616		-----		-----	
1653		-----		-----	
1656	D156	30		0.04	
1720	D156	30		0.04	
1737		-----		-----	
1741	D156	30		0.04	
1788		-----		-----	
1792	D156	>30		-----	

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1807		-----		-----	
1810		-----		-----	
1823		-----		-----	
1842	D156	30		0.04	
1857	D156	30		0.04	
1949	D156	30		0.04	
1950	D156	30		0.04	
7006		-----		-----	
7013		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D1500	L0.5	ex	-----	Result excluded, test method is not for Saybolt Color

normality	not OK
n	36
outliers	1
mean (n)	30.0
st.dev. (n)	0.17
R(calc.)	0.5
R(D156:12)	2.0

Kernel Density
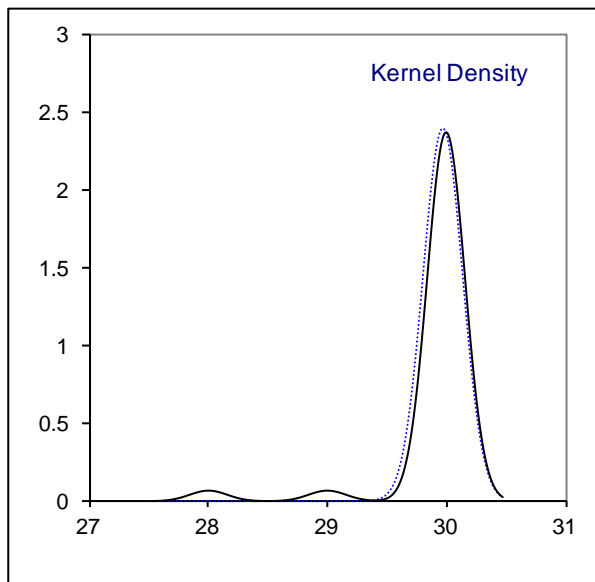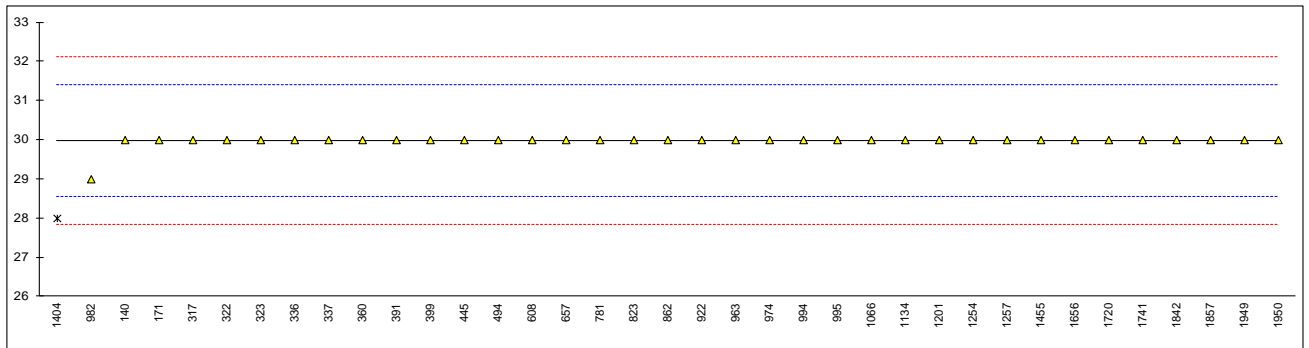
Determination of Copper Corrosion, 3hrs at 50°C on sample #15031

lab	method	value	mark	z(targ)	remarks
140	D130	1A		-----	
150	D130	1A		-----	
171	D130	1A		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D130	1A		-----	
317	D130	1A		-----	
322		-----		-----	
323	D130	1A		-----	
333		-----		-----	
334		-----		-----	
336	D130	1A		-----	
337	D130	1A		-----	
340	D130	1A		-----	
349		-----		-----	
360	D130	1A		-----	
391	D130	1A		-----	
399		-----		-----	
444		-----		-----	
445	D130	1A		-----	
494	D130	1A		-----	
529	D130	1A		-----	
541	D130	1A		-----	
604		-----		-----	
608	D130	1A		-----	
657	D130	1A		-----	
753	D130	1A		-----	
754	D130	1A		-----	
759		-----		-----	
781	D130	1A		-----	
784		-----		-----	
785	D130	1A		-----	
823	D130	1A		-----	
855	D130	1A		-----	
862	D130	1A		-----	
868	D130	1A		-----	
873	D130	1A		-----	
875	D130	1A		-----	
922	D130	1A		-----	
963	D130	1A		-----	
974	D130	1A		-----	
982		-----		-----	
994	D130	1A		-----	
995	D130	1A		-----	
1012		-----		-----	
1016	D130	1A		-----	
1062		-----		-----	
1065		-----		-----	
1066	D130	1A		-----	
1081	D130	1A		-----	
1134	D130	1A		-----	
1145		-----		-----	
1161	D130	1A		-----	
1200		-----		-----	
1201	D130	1A		-----	
1254	D130	1A		-----	
1257	D130	1A		-----	
1264	D130	1A		-----	
1307	D130	1A		-----	
1397	D130	1		-----	
1404	D130	1A		-----	
1429	D130	1A		-----	
1455	D130	1A		-----	
1556	ISO2160	1		-----	
1612		-----		-----	
1616	D130	1A		-----	
1653		-----		-----	
1656	ISO2160	1		-----	
1720		-----		-----	
1737		-----		-----	
1741	D130	1		-----	
1788	D130	1A		-----	
1792	D130	1A		-----	

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1807		-----	-----
1810		-----	-----
1823		-----	-----
1842	IP154	1A	-----
1857	D130	1A	-----
1949	D130	1A	-----
1950	D130	1A	-----
7006		-----	-----
7013	D130	1A	-----
9054		-----	-----
9057		-----	-----
9058		-----	-----
9061		-----	-----
9145	D130	1A	-----

normality	n.a.
n	58
outliers	0
mean (n)	1(1A)
st.dev. (n)	n.a
R(calc.)	n.a.
R(D130:12)	n.a.

Determination of Density at 15°C on sample #15031; results in kg/L

lab	method	value	mark	z(targ)	remarks
140	D4052	0.6626	C	0.56	First reported 662.6
150	D4052	0.6626		0.56	
171	D4052	0.662	R(0.05)	-2.80	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	ISO12185	0.6625		0.00	
317	ISO12185	0.6624		-0.56	
322	ISO12185	0.6624		-0.56	
323	D4052	0.6623		-1.12	
333	ISO12185	0.6625		0.00	
334		-----		-----	
336	D4052	0.6625		0.00	
337	ISO12185	0.6625		0.00	
340	ISO12185	0.66255		0.28	
349		-----		-----	
360	ISO12185	0.6626		0.56	
391	ISO12185	0.6624		-0.56	
399	D4052	0.6623		-1.12	
444	D4052	0.66255		0.28	
445	IP365	0.6625		0.00	
494	ISO12185	0.6625		0.00	
529	D4052	0.6625	C	0.00	First reported 0.6225
541	D4052	0.6626		0.56	
604	D4052	0.66241	C	-0.50	First reported 0.66314
608	D4052	0.6624		-0.56	
657	D4052	0.6625		0.00	
753	ISO12185	0.6626		0.56	
754	D4052	0.6627		1.12	
759	ISO12185	0.66257		0.39	
781	ISO12185	0.6627		1.12	
784	ISO12185	0.6623		-1.12	
785	D4052	0.6623		-1.12	
823	ISO12185	0.66242		-0.45	
855	ISO12185	0.66253		0.17	
862	D4052	0.66248		-0.11	
868	D4052	0.66251		0.06	
873	ISO12185	0.6624		-0.56	
875	ISO12185	0.6624		-0.56	
922	D4052	0.6624		-0.56	
963	ISO12185	0.6627		1.12	
974	D4052	0.6625		0.00	
982	D4052	0.66349	C,R(0.01)	5.54	First reported 0.6633
994	D4052	0.6626		0.56	
995	D4052	0.6625		0.00	
1012		-----		-----	
1016	D4052	0.6626		0.56	
1062	D4052	0.6624		-0.56	
1065	D1298	0.6626		0.56	
1066	ISO12185	0.6625		0.00	
1081	ISO12185	0.6626		0.56	
1134	ISO12185	0.6624		-0.56	
1145	D4052	0.66243		-0.39	
1161	ISO12185	0.66243	C	-0.39	Reported 662.43 (wrong unit)
1200		-----		-----	
1201	ISO12185	0.6626		0.56	
1254	ISO12185	0.66246		-0.22	
1257	ISO12185	0.66265		0.84	
1264	D4052	0.6626		0.56	
1307	D4052	0.66248		-0.11	
1397	ISO12185	0.6624		-0.56	
1404	ISO12185	0.6625		0.00	
1429	D4052	0.6626		0.56	
1455	ISO12185	0.6626		0.56	
1556	ISO12185	0.66262		0.67	
1612		-----		-----	
1616	D4052	0.66263		0.73	
1653		-----		-----	
1656	ISO12185	0.6624		-0.56	
1720	D4052	0.6626		0.56	
1737	D4052	0.6624		-0.56	
1741	ISO12185	0.6627	C	1.12	First reported 662.70
1788	D4052	0.66244		-0.34	
1792	D4052	0.6624		-0.56	

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1807		-----		-----	
1810		0.6624		-0.56	
1823	D4052	0.6629	R(0.05)	2.24	
1842	D4052	0.6623		-1.12	
1857	ISO12185	0.6623		-1.12	
1949	ISO12185	0.6625		0.00	
1950	ISO12185	0.6625		0.00	
7006		-----		-----	
7013	D7042	0.6659	C,R(0.01)	19.04	First reported 0.6659
9054	D4052	0.6625		0.00	
9057	D4052	0.6626		0.56	
9058	D4052	0.6621	R(0.05)	-2.24	
9061	D5002	0.662615		0.64	
9145	D4052	0.6634	R(0.01)	5.04	

normality	OK
n	71
outliers	6
mean (n)	0.66250
st.dev. (n)	0.000107
R(calc.)	0.00030
R(ISO12185:96)	0.00050

Kernel Density
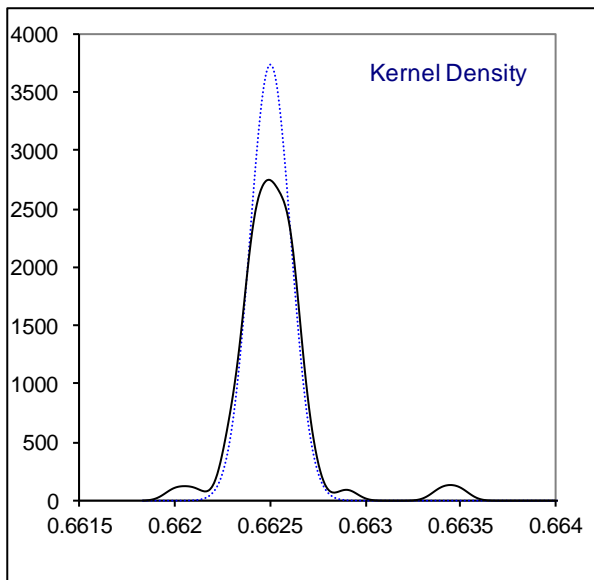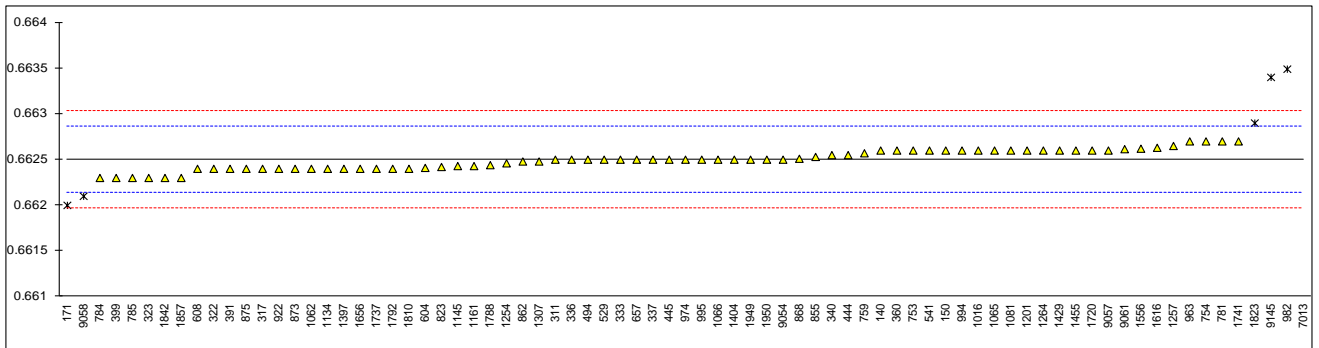
Determination of Distillation (automated and manual mode) on sample #15031; results in °C

lab	mode	method	IBP	mark	z(targ)	50%rec.	mark	z(targ)	FBP	mark	z(targ)
140	Automated	D86	34.4		-0.25	52.8		0.19	83.7		0.09
150			-----		-----	-----		-----	-----		-----
171	Automated	D86	35.9		0.57	52.6		-0.11	84.9		0.58
225			-----		-----	-----		-----	-----		-----
237			-----		-----	-----		-----	-----		-----
238			-----		-----	-----		-----	-----		-----
311	Automated	D86	33.3		-0.86	52.7		0.04	83.1		-0.16
317	Automated	D86	33.7		-0.64	52.5		-0.26	81.8		-0.70
322			-----		-----	-----		-----	-----		-----
323	Automated	D86	36.2		0.73	52.6		-0.11	83.8		0.13
333	Automated	D86	35.1		0.13	52.9		0.33	82.7		-0.33
334			-----		-----	-----		-----	-----		-----
336	Automated	D86	35.4		0.29	53.0		0.48	84.8		0.54
337			-----		-----	-----		-----	-----		-----
340	Automated	D86	34.3		-0.31	52.6		-0.11	82.8		-0.28
349			-----		-----	-----		-----	-----		-----
360	Automated	D86	34.8		-0.04	52.8		0.19	84.3		0.33
391			-----		-----	-----		-----	-----		-----
399	Automated	D86	38.0		1.71	52.6		-0.11	85.3		0.75
444			-----		-----	-----		-----	-----		-----
445	Automated	D86	35.5		0.35	52.8		0.19	84.6		0.46
494	Automated	D86	34.4		-0.25	52.2		-0.71	83.7		0.09
529	Automated	D86	35.5		0.35	52.8		0.19	83.0		-0.20
541	Automated	D86	33.8		-0.58	52.9		0.33	85.1		0.67
604	Automated	D86	38.6		2.04	53.2		0.78	82.3		-0.49
608	Automated	D86	33.7		-0.64	52.2		-0.71	84.1		0.25
657	Automated	D86	34.9		0.02	52.5		-0.26	84.4		0.38
753	Manual	D86	35.5		0.35	52.5		-0.26	81.5		-0.82
754	Automated	D86	34.1		-0.42	52.9		0.33	81.6		-0.78
759	Manual	D86	35.0		0.07	52.5		-0.26	82.0		-0.62
781	Automated	D86	34.0		-0.47	52.4		-0.41	83.0		-0.20
784	Manual	D86	35.0		0.07	53.0		0.48	82.5		-0.41
785	Automated	D86	34.5		-0.20	53.0		0.48	84.6		0.46
823	Automated	D86	32.6		-1.24	52.4		-0.41	84.2		0.29
855	Automated	D86	34.1		-0.42	52.6		-0.11	83.3		-0.08
862	Automated	D86	34.4		-0.25	52.6		-0.11	83.6		0.05
868	Automated	D86	37.4		1.39	53.0		0.48	80.2		-1.36
873	Manual	D86	36.0		0.62	53.0		0.48	83.0		-0.20
875			-----		-----	-----		-----	-----		-----
922	Manual	D86	40.0	R(0.05)	2.81	53.0		0.48	83.0		-0.20
963	Automated	D86	33.2		-0.91	52.2		-0.71	84.3		0.33
974	Automated	D86	35.5		0.35	52.8		0.19	83.0		-0.20
982	Manual	D86	35.5		0.35	52.0		-1.01	88.0	R(0.05)	1.86
994	Manual	D86	35.0		0.07	52.0		-1.01	82.0		-0.62
995	Manual	D86	33.5		-0.75	53.0		0.48	83.6		0.05
1012			-----		-----	-----		-----	-----		-----
1016	Automated	D86	34.3		-0.31	52.8		0.19	83.4		-0.04
1062			-----		-----	-----		-----	-----		-----
1065	Automated	D86	33.9		-0.53	51.4	R(0.05)	-1.90	82.4		-0.45
1066	Automated	D86	35.7		0.46	53.2		0.78	86.4		1.20
1081	Automated	D86	35.4		0.29	52.2		-0.71	84.1		0.25
1134	Automated	D86	35.0		0.07	52.6		-0.11	83.5		0.00
1145	Automated	D86	34.55		-0.17	52.45		-0.34	83.00		-0.20
1161	Automated	ISO3405	36.4		0.84	54.7	R(0.01)	3.01	96.7	R(0.01)	5.46
1200			-----		-----	-----		-----	-----		-----
1201	Automated	D86	33.2		-0.91	52.4		-0.41	79.2	R(0.05)	-1.77
1254	Automated	D86	33.7		-0.64	52.5	C	-0.26	83.0		-0.20
1257	Automated	D86	33.5		-0.75	52.6		-0.11	82.3		-0.49
1264	Automated	D86	35.1		0.13	52.7		0.04	82.3		-0.49
1307	Automated	D86	36.9		1.11	52.7		0.04	83.9		0.17
1397	Automated	D86	30.8		-2.22	52.5		-0.26	82.3		-0.49
1404	Automated	D86	33.4		-0.80	52.3		-0.56	82.2		-0.53
1429	Automated	D86	33.5		-0.75	52.8		0.19	83.7		0.09
1455	Automated	D86	34.6		-0.15	52.6		-0.11	83.9		0.17
1556	Automated	ISO3405	33.8		-0.58	52.3		-0.56	83.8		0.13
1612			-----		-----	-----		-----	-----		-----
1616	Manual	D86	36.0		0.62	53.0		0.48	86.0		1.04
1653			-----		-----	-----		-----	-----		-----
1656	Automated	ISO3405	34.7		-0.09	52.6		-0.11	85.7		0.91
1720	Automated	D86	34.6		-0.15	52.5		-0.26	83.4		-0.04
1737	Automated	D86	34.96		0.05	52.80		0.19	82.76		-0.30
1741		D86	34.8		-0.04	53.0		0.48	83.7		0.09
1788	Automated	D86	35.0		0.07	53.6		1.38	83.4		-0.04
1792	Automated	D86	34.8	C	-0.04	52.7		0.04	83.7		0.09

1807			-----		-----	-----		-----	-----		-----
1810	Automated	D86	34.9	0.02	51.9	-1.16		83.2			-0.12
1823	Automated	D86	35.7	0.46	52.9	0.33		85.3			0.75
1842	Automated	D86	36.3	0.78	52.9	0.33		79.2	R(0.05)		-1.77
1857	Automated	D86	34.5	-0.20	53.2	0.78		85.2			0.71
1949	Manual	D86	36.0	0.62	52.5	-0.26		89.0	R(0.05)		2.28
1950	Manual	D86	36.5	0.89	53.0	0.48		89.0	R(0.05)		2.28
7006	Automated	D86	33.8	-0.58	-----	-----		82.2			-0.53
7013	Automated	D86	35.5	0.35	52.4	-0.41		84.4			0.38
9054			-----	-----	-----	-----		-----			-----
9057			-----	-----	-----	-----		-----			-----
9058			-----	-----	-----	-----		-----			-----
9061			-----	-----	-----	-----		-----			-----
9145	Automated	D86	36.5	0.89	53.0	0.48		83.9			0.17

		normality	suspect	OK	OK
		n	66	64	61
		outliers	1	2	6
		mean (n)	34.87	52.68	83.49
		st.dev. (n)	1.271	0.323	1.179
		R(calc.)	3.56	0.90	3.30
	Automated	R(D86:12)	5.12	1.88	6.78
	Manual	R(D86:12)	5.60	2.85	7.20

Lab 1254: first reported 44.5
Lab 1792: first reported 44.6
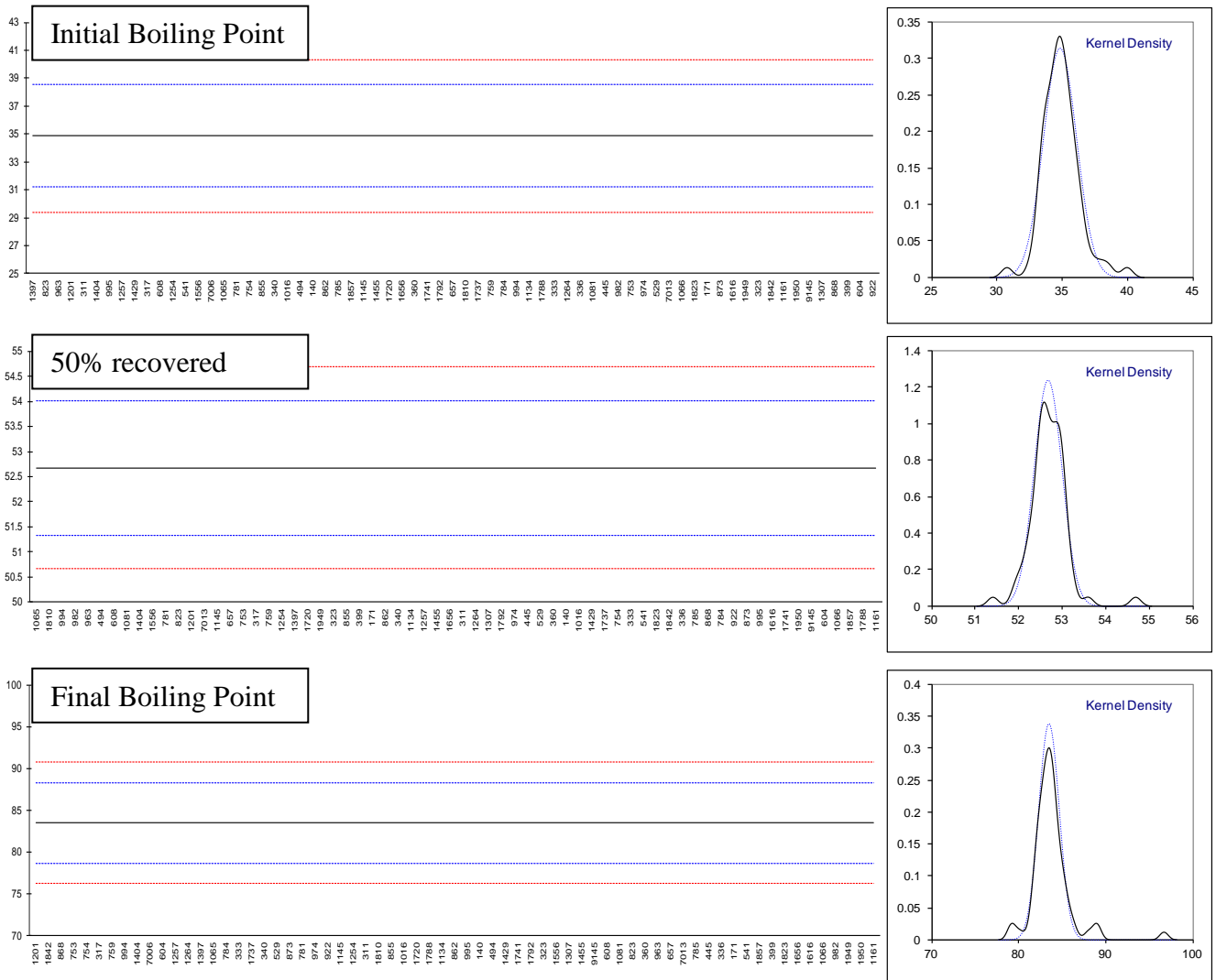
Determination of Mercaptan Sulphur as S on sample #15031; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D3227	<3.0		-----	
171	D3227	0		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	UOP163	<0.1		-----	
317	D3227	<3		-----	
322	D3227	<0.2		-----	
323	D3227	<3		-----	
333	D3227	<3		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340	D3227	<3		-----	
349		-----		-----	
360	D3227	<3		-----	
391	D3227	<3		-----	
399		-----		-----	
444	UOP163	4.26		-----	False positive result?
445	D3227	<3		-----	
494	D3227	<3		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608	D3227	1.229		-----	
657	D3227	<3		-----	
753	D3227	<3		-----	
754		-----		-----	
759	UOP163	0.2		-----	
781	D3227	<3		-----	
784		-----		-----	
785		-----		-----	
823	D3227	1		-----	
855	D3227	<1		-----	
862		-----		-----	
868	D3227	<3		-----	
873	D3227	0.1		-----	
875		-----		-----	
922	D3227	<3		-----	
963	D3227	<3		-----	
974	D3227	0.00		-----	
982		-----		-----	
994	D3227	<3		-----	
995	D3227	<3		-----	
1012		-----		-----	
1016	D3227	0.9		-----	
1062		-----		-----	
1065	D3227	0.38		-----	
1066	D3227	<3		-----	
1081	D3227	<3		-----	
1134	D3227	<3		-----	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201	D3227	1.6		-----	
1254	D3227	<3		-----	
1257	D3227	<3.0		-----	
1264	D3227	<3		-----	
1307	D3227	<3		-----	
1397	D3227	<3		-----	
1404	D3227	<3		-----	
1429		-----		-----	
1455	D3227	<1		-----	
1556	UOP163	3.7		-----	False positive result?
1612		-----		-----	
1616	D3227	<3.00		-----	
1653		-----		-----	
1656	IP342	<1		-----	
1720		-----		-----	
1737		-----		-----	
1741	D3227	<3		-----	
1788		-----		-----	
1792	D3227	0.6		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----
1810		-----	-----
1823	UOP163	0.47	-----
1842		-----	-----
1857	UOP163	<0.2	-----
1949	D3227	0.14	-----
1950	D3227	<3	-----
7006		-----	-----
7013		-----	-----
9054		-----	-----
9057		-----	-----
9058		-----	-----
9061		-----	-----
9145		-----	-----

normality	n.a.	
n	47	
outliers	n.a.	
mean (n)	<3	
st.dev. (n)	n.a.	
R(calc.)	n.a.	
R(D3227:13)	n.a.	Application Range : 3 – 100 mg/kg

Determination of Sulphur on sample #15031; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140	D5453	0.30		-----	
150	D2622	<3.0		-----	
171	D2622	0.4		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D2622	<3		-----	
317	D5453	<1.0		-----	
322	D3246	0.15		-----	
323	D5453	<1		-----	
333	D5453	0.2		-----	
334		-----		-----	
336	ISO20846	<3		-----	
337	D2622	1		-----	
340	D5453	<0.5		-----	
349	D2622	0.75		-----	
360	D5453	< 1.0		-----	
391		-----		-----	
399	D5453	0.30		-----	
444		-----		-----	
445	D2622	<3		-----	
494	D5453	<3		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D5453	0.12		-----	
753		<17		-----	
754		-----		-----	
759		-----		-----	
781	D5453	0.213	C	-----	First reported 2.13
784		-----		-----	
785	ISO20846	0.223		-----	
823	D5453	0.2		-----	
855	D5453	<0.5		-----	
862	D2622	0.3		-----	
868	D5453	<1		-----	
873	ISO20846	0.3		-----	
875	ISO20846	0.3		-----	
922	D5453	<1		-----	
963	D5453	<1		-----	
974		-----		-----	
982	D4294	78	C	-----	False positive result? First reported 34.0
994	D5453	<1		-----	
995	D5453	<1		-----	
1012		-----		-----	
1016	D2622	<3		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	ISO20846	0.10		-----	
1134	IP490	<0.1		-----	
1145	D5453	0.3		-----	
1161	ISO20846	<0.5		-----	
1200		-----		-----	
1201		-----		-----	
1254	D5453	<3		-----	
1257	D5453	<1.0		-----	
1264	D5453	<1		-----	
1307	D5453	<1		-----	
1397	D2622	<3		-----	
1404	ISO20846	<2		-----	
1429	D5453	0.6		-----	
1455	D2622	0.4		-----	
1556	ISO20846	0.166		-----	
1612		-----		-----	
1616	D5453	0.12		-----	
1653		-----		-----	
1656	ISO20846	<1		-----	
1720	D5453	0.18		-----	
1737		-----		-----	
1741		-----		-----	
1788	D5453	0.37		-----	
1792	D7220	2.2		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----	
1810	D5453	0.2		-----	
1823	D5453	0.15	C	-----	First reported 9.9
1842		-----		-----	
1857	ISO20846	0.10		-----	
1949	D5453	0.6		-----	
1950	D3120	0.10		-----	
7006	D5453	0.46		-----	
7013	D5453	0.247		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D4294	20		-----	False positive result?

normality	n.a.
n	56
outliers	n.a.
mean (n)	<3
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit)	n.a.

Determination of Chlorides, Organic Total on sample #15032; result in mg/kg

lab	method	value	mark	z(targ)	remarks
140	D5808	1.286	ex	-14.11	See §4.1
150	D7359	7.9	C	0.14	First reported 15.4
171	D5808	3	ex	-10.41	See §4.1
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5808	8		0.35	
317	UOP779	7.8		-0.08	
322		-----		-----	
323	D5808	8		0.35	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340	EN14077	5.0	R(0.05)	-6.11	
349	UOP588	2.5	C, ex	-11.49	First reported 25, See §4.1
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445		-----		-----	
494	D5808	8.4		1.22	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D5808	8.58		1.60	
753		-----		-----	
754	UOP779	7.03		-1.73	
759		-----		-----	
781		-----		-----	
784		-----		-----	
785		-----		-----	
823	D5808	7.7		-0.29	
855		-----		-----	
862		-----		-----	
868	D5808	1.6	ex	-13.43	See §4.1
873	D5808	5.95	R(0.01)	-4.06	
875		-----		-----	
922		-----		-----	
963	UOP779	4.73	R(0.05)	-6.69	
974		-----		-----	
982		-----		-----	
994		-----		-----	
995		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	D5808	7.9		0.14	
1134		-----		-----	
1145	D5808	5.66	R(0.05)	-4.69	
1161		-----		-----	
1200		-----		-----	
1201	D5808	2.6	ex	-11.28	See §4.1
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	D5808	7.75		-0.18	
1397		-----		-----	
1404		-----		-----	
1429	D7359	7.8		-0.08	
1455		-----	W	-----	Result withdrawn, reported 2.9
1556		-----		-----	
1612		-----		-----	
1616		-----		-----	
1653		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741	D5808	8.38		1.17	
1788	D5808	7.21		-1.35	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----	
1810		8.1		0.57	
1823		-----		-----	
1842		-----		-----	
1857	D5808	7.4		-0.94	
1949	IP510	7.54		-0.64	
1950	IP510	7.64		-0.42	
7006	D5808	8.1		0.57	
7013	D5808	7.640		-0.42	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D4929	0	ex	-16.88	Result excluded, zero is not real result

	normality	OK			
	n	19			
	outliers	4 (+6 excl)	Spike		
	mean (n)	7.835	5.92		<132% recovery
	st.dev. (n)	0.3939			
	R(calc.)	1.103			
	R(D5808:09)	1.300			

Kernel Density
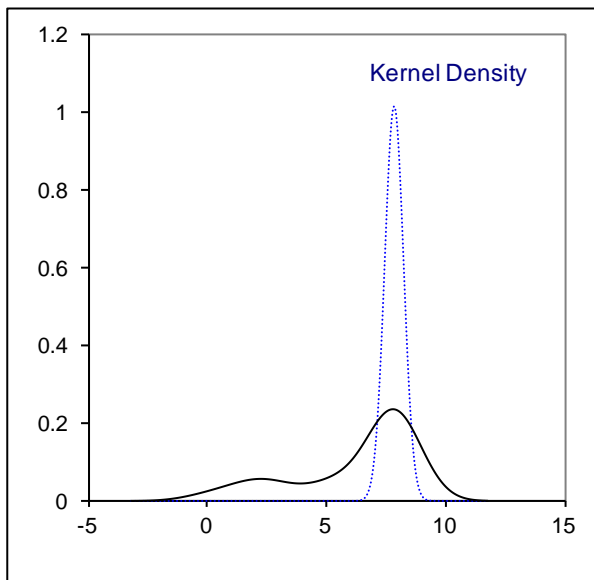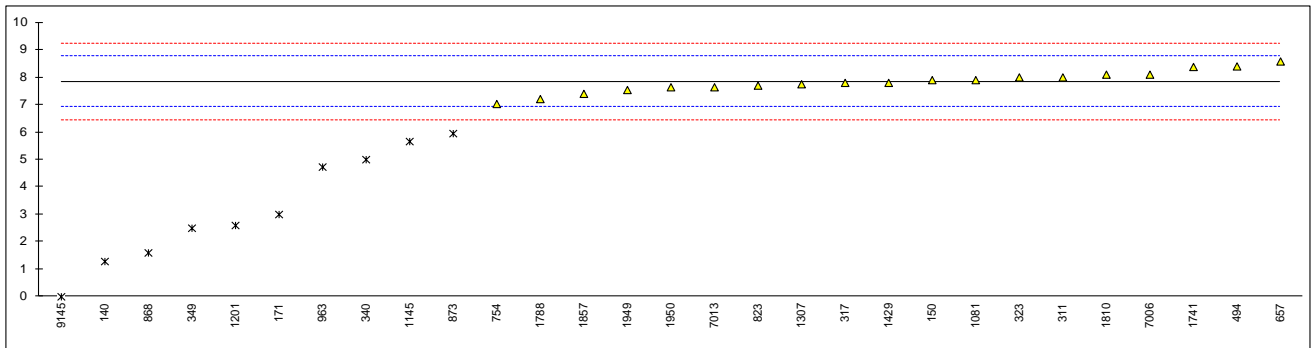
Determination of Methanol on sample #15032; result in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		84.4	C	3.70	First reported 118
171	D7423	119.9	R(0.05)	10.18	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	70		1.08	
317	INH-200	43	ex	-3.85	See §4.1
322		-----		-----	
323	INH-904	24	ex	-7.31	See §4.1
333		-----		-----	
334		-----		-----	
336	INH-2004	<10		-----	False negative?
337		-----		-----	
340	EN1601	<0.17		-----	False negative?
349		-----		-----	
360		-----		-----	
391		-----		-----	
399	INH-002	<1		-----	False negative?
444		-----		-----	
445	INH-060	28.14	ex	-6.56	See §4.1
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	INH-130	47.9		-2.95	
753		-----		-----	
754	D7423	39.905	ex	-4.41	See §4.1
759	D7423	25.3	ex	-7.08	See §4.1
781	D7423	28.52	ex	-6.49	See §4.1
784		-----		-----	
785		-----		-----	
823		-----		-----	
855	INH-024	30	ex	-6.22	See §4.1
862	D7423	25.16	ex	-7.10	See §4.1
868	INH-024	33.0	ex	-5.67	See §4.1
873		-----		-----	
875	D7423	38.42	ex	-4.68	See §4.1
922		-----		-----	
963	D7423	29.0	ex	-6.40	See §4.1
974	LOWOX	44.3	ex	-3.61	See §4.1
982		-----		-----	
994		-----		-----	
995		-----		-----	
1012		-----		-----	
1016	in house	33.62	C,ex	-5.56	First reported 0.828, see §4.1
1062		-----		-----	
1065		-----		-----	
1066	in house	50		-2.57	
1081		-----		-----	
1134		-----		-----	
1145	INH-4815	73.780		1.77	
1161		-----		-----	
1200		-----		-----	
1201	LOWOX	25.3	ex	-7.08	See §4.1
1254	D7754	44.3	ex	-3.61	See §4.1
1257		-----		-----	
1264		-----		-----	
1307	LOWOX	65.3		0.22	
1397		-----		-----	
1404		-----		-----	
1429		-----		-----	
1455	D7423	80		2.90	
1556	D7423	65.9		0.33	
1612		-----		-----	
1616		-----		-----	
1653		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737	LOWOX	57.8		-1.15	
1741		-----		-----	
1788		-----		-----	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----	
1810		-----		-----	
1823		-----		-----	
1842		-----		-----	
1857	D7754	53		-2.02	
1949	D7754	30.1	ex	-6.20	See §4.1
1950	D7754	57		-1.29	
7006		-----		-----	
7013		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D6730	0.00	ex	-11.69	Result excluded, zero is not a real result

normality	OK		
n	11		
outliers	1 (+17 excl)	Spike	
mean (n)	64.098	61.6	Recovery: <104%
st.dev. (n)	12.1353		
R(calc.)	33.979		
R(Horwitz)	15.352		

After excluding 17 results

All reported results

Kernel Density — All reported results

Kernel Density — After excluding 17 results
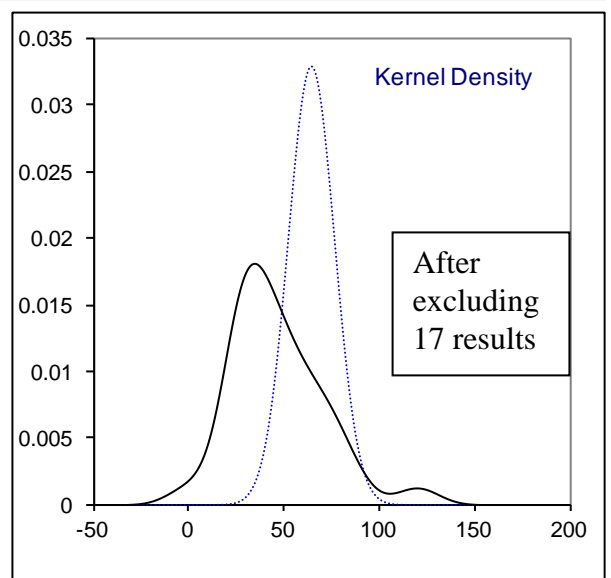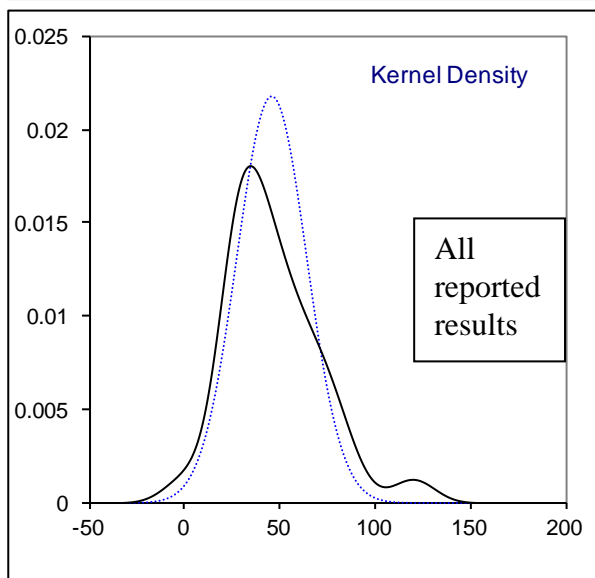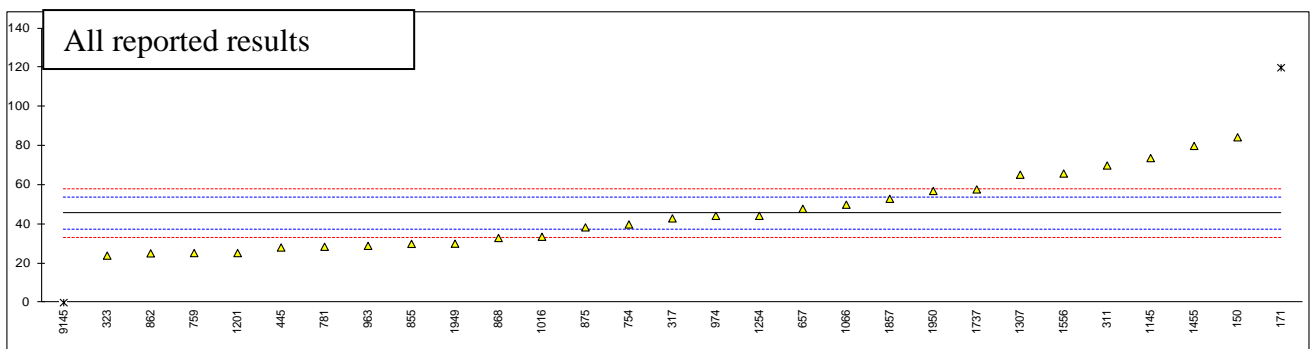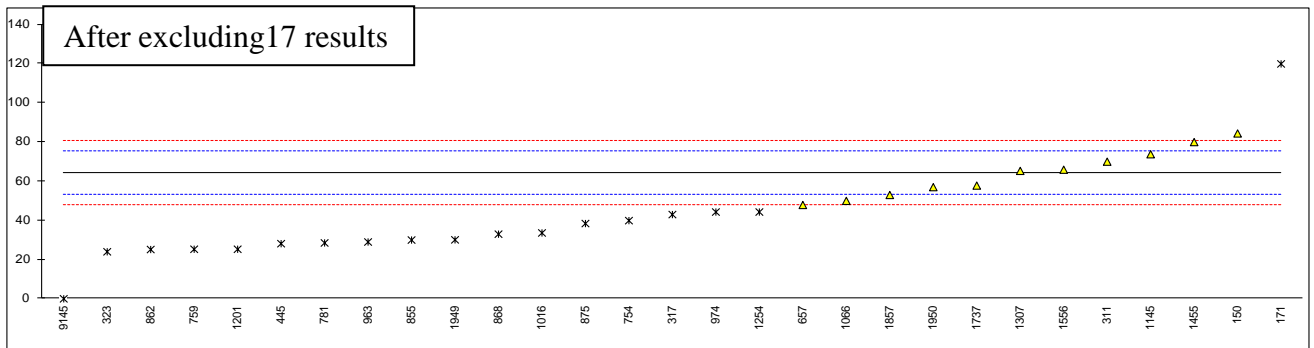
Determination of MTBE on sample #15032; result in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		61		0.32	
171	D7423	63.1		0.73	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	60		0.12	
317	INH-200	60		0.12	
322		-----		-----	
323	INH-904	52		-1.43	
333		-----		-----	
334		-----		-----	
336	INH-2004	<10		-----	False negative?
337		-----		-----	
340	EN1601	<0.17		-----	False negative?
349		-----		-----	
360		-----		-----	
391		-----		-----	
399	INH-002	60.0		0.12	
444		-----		-----	
445	INH-060	56.60		-0.54	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	INH-130	55.3		-0.79	
753		-----		-----	
754	D7423	60.025		0.13	
759	D7423	54.1		-1.03	
781	D7423	61.72		0.46	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855	INH-024	60		0.12	
862	D7423	42.55	ex	-3.27	See §4.1
868	INH-024	59.4		0.01	
873		-----		-----	
875	D7423	52.924		-1.25	
922		-----		-----	
963	D7423	59.0		-0.07	
974	LOWOX	57.7		-0.33	
982		-----		-----	
994		-----		-----	
995		-----		-----	
1012		-----		-----	
1016	in house	60.08	C	0.14	First reported 1.008
1062		-----		-----	
1065		-----		-----	
1066	in house	50		-1.82	
1081		-----		-----	
1134		-----		-----	
1145	INH-4815	58.662		-0.14	
1161		-----		-----	
1200		-----		-----	
1201	LOWOX	71.6		2.38	
1254	D7754	60.6		0.24	
1257		-----		-----	
1264		-----		-----	
1307	LOWOX	<1		-----	False negative?
1397		-----		-----	
1404		-----		-----	
1429		-----		-----	
1455	D7423	60		0.12	
1556	D7423	30.4	ex	-5.64	See §4.1
1612		-----		-----	
1616	in house	71.300		2.32	
1653		-----		-----	
1656	LOWOX	65		1.10	
1720		-----		-----	
1737	LOWOX	62.5		0.61	
1741		-----		-----	
1788		56.33		-0.59	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----	
1810		-----		-----	
1823		-----		-----	
1842		-----		-----	
1857	D7754	59		-0.07	
1949	D7754	50.8		-1.67	
1950	D7754	63		0.71	
7006		-----		-----	
7013		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D6730	0.00	ex	-11.56	Result excluded, zero is not a real result

normality	suspect			
n	29			
outliers	0 (+3 excl)	Spike		
mean (n)	59.370	63.8		Recovery : <93%
st.dev. (n)	4.9822			
R(calc.)	13.950			
R(Horwitz)	14.385			
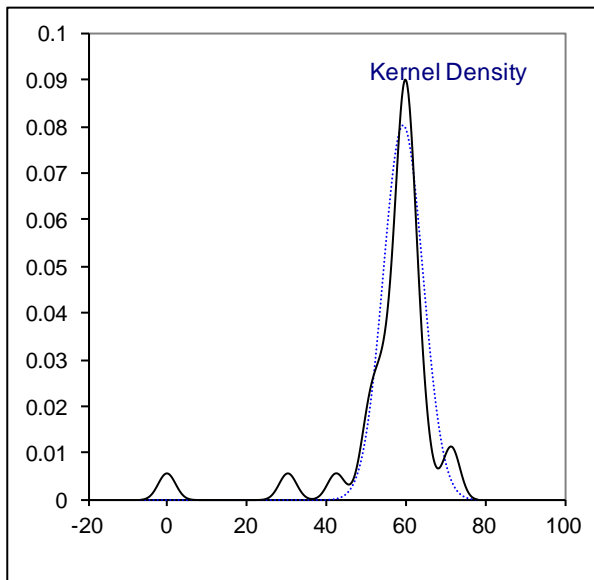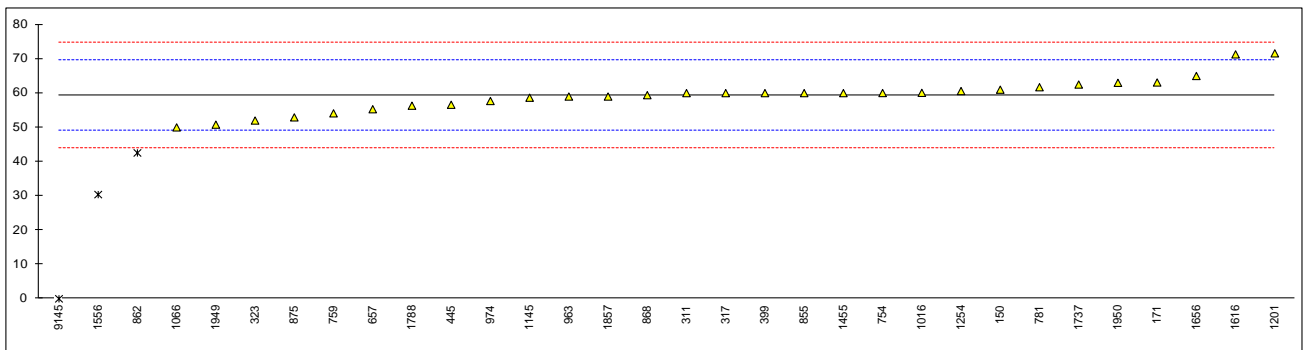
Determination of Other Oxygenates on sample #15032; result in mg/kg

lab	method	Acetone	mark	DIPE	mark	MEK	mark	TAME	mark
140		-----		-----		-----		-----	
150		<0.5		<0.5		<0.5		<0.5	
171	D7423	<0.5		<0.5		<0.5		<0.5	
225		-----		-----		-----		-----	
237		-----		-----		-----		-----	
238		-----		-----		-----		-----	
311	INH-403	<10		<1		<10		<1	
317	INH-200	<1		<1		<1		<1	
322		-----		-----		-----		-----	
323	INH-904	<2		<2		<2		<2	
333		-----		-----		-----		-----	
334		-----		-----		-----		-----	
336	INH-2004	<10		<10		<10		<10	
337		-----		-----		-----		-----	
340		-----		-----		-----		<0.17	
349		-----		-----		-----		-----	
360		-----		-----		-----		-----	
391		-----		-----		-----		-----	
399	INH-002	<1		<1		<1		<1	
444		-----		-----		-----		-----	
445		-----		<5		-----		<5	
494		-----		-----		-----		-----	
529		-----		-----		-----		-----	
541		-----		-----		-----		-----	
604		-----		-----		-----		-----	
608		-----		-----		-----		-----	
657	INH-130	0.2		<0.1		<0.1		<0.1	
753		-----		-----		-----		-----	
754	D7423	<0.5		<0.5		< 0.5		< 0.5	
759	D7423	<0.5		<0.5		<0.5		<0.5	
781	D7423	<0.5		<0.5		<0.5		<0.5	
784		-----		-----		-----		-----	
785		-----		-----		-----		-----	
823		-----		-----		-----		-----	
855	INH-024	<10		<10		<10		<10	
862	D7423	<10		<10		<10		<10	
868	INH-024	<1		<1		<1		<1	
873		-----		-----		-----		-----	
875		-----		-----		-----		-----	
922		-----		-----		-----		-----	
963	D7423	<0.5		<0.5		<0.5		<0.5	
974		-----		-----		-----		-----	
982		-----		-----		-----		-----	
994		-----		-----		-----		-----	
995		-----		-----		-----		-----	
1012		-----		-----		-----		-----	
1016		-----		-----		-----		-----	
1062		-----		-----		-----		-----	
1065		-----		-----		-----		-----	
1066		-----		<5		-----		<5	
1081		-----		-----		-----		-----	
1134		-----		-----		-----		-----	
1145	INH-4815	<1		-----		-----		<1	
1161		-----		-----		-----		-----	
1200		-----		-----		-----		-----	
1201	LOWOX	0.3		1.2		0		0	
1254		-----		-----		-----		<10	
1257		-----		-----		-----		-----	
1264		-----		-----		-----		-----	
1307	LOWOX	<1		<1		<1		<1	
1397		-----		-----		-----		-----	
1404		-----		-----		-----		-----	
1429		-----		-----		-----		-----	
1455	D7423	<5		< 5		< 5		< 5	
1556		-----		-----		-----		-----	
1612		-----		-----		-----		-----	
1616		-----		-----		-----		-----	
1653		-----		-----		-----		-----	
1656	LOWOX	<5		-----		-----		<5	
1720		-----		-----		-----		-----	
1737	LOWOX	<0.5		<0.5		<0.5		<0.5	
1741		-----		-----		-----		-----	
1788		-----		-----		-----		-----	
1792		-----		-----		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----	-----	-----
1810		-----	-----	-----	-----
1823		-----	-----	-----	-----
1842		-----	-----	-----	-----
1857		-----	n.d.	-----	n.d.
1949	D7754	<10	-----	Less 10	Less 10
1950		-----	-----	-----	<10
7006		-----	-----	-----	-----
7013		-----	-----	-----	-----
9054		-----	-----	-----	-----
9057		-----	-----	-----	-----
9058		-----	-----	-----	-----
9061		-----	-----	-----	-----
9145	D6730	0.00	0.00	0.00	0.00
	normality	n.a.	n.a.	n.a.	n.a.
	n	23	23	21	29
	outliers	n.a.	n.a.	n.a.	n.a.
	mean (n)	<10	<10	<10	<10
	st.dev. (n)	n.a.	n.a.	n.a.	n.a.
	R(calc.)	n.a.	n.a.	n.a.	n.a.
	R(Horwitz)	n.a.	n.a.	n.a.	n.a.

Determination of Total Oxygenates on sample #15032; result in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		0.0179	E,ex	4.17	Result excluded calculation error? (iis calculated 0.0145)
171		-----		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	0.0130		0.53	
317	INH-200	0.0103	ex	-1.47	See §4.1
322		-----		-----	
323	INH-904	0.008	ex	-3.18	See §4.1
333		-----		-----	
334		-----		-----	
336	INH-2004	0	ex	-9.12	Result excluded, zero is not a real result
337		-----		-----	
340	EN1601	<0.17		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445		-----		-----	
494	ISO22854	<0.1		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	INH-130	0.01033		-1.45	
753		-----		-----	
754	D7423	0.01002	ex	-1.68	See §4.1
759	D7423	0.0079	ex	-3.25	See §4.1
781	D7423	0.00903	ex	-2.41	See §4.1
784		-----		-----	
785		-----		-----	
823		-----		-----	
855	INH-024	0.0090	ex	-2.44	See §4.1
862	D7423	0.007	ex	-3.92	See §4.1
868	INH-024	0.0951	ex	61.48	See §4.1
873		-----		-----	
875		-----		-----	
922		-----		-----	
963	D7423	0.0088	ex	-2.58	See §4.1
974	LOWOX	0.0102	ex	-1.55	See §4.1
982		-----		-----	
994		-----		-----	
995		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1134		-----		-----	
1145	INH-4815	0.01324		0.71	
1161		-----		-----	
1200		-----		-----	
1201	LOWOX	0.00991	ex	-1.76	See §4.1
1254	D7754	0.01049	ex	-1.33	See §4.1
1257		-----		-----	
1264		-----		-----	
1307		-----		-----	
1397		-----		-----	
1404		-----		-----	
1429		-----		-----	
1455	D7423	0.0140		1.28	
1556	D7423	0.01	ex	-1.69	See §4.1
1612		-----		-----	
1616		-----		-----	
1653		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737	LOWOX	0.012		-0.21	
1741		-----		-----	
1788		-----		-----	
1792		-----		-----	

1807		-----		-----	
1810		-----		-----	
1823		-----		-----	
1842		-----		-----	
1857	D7754	0.0114		-0.65	
1949	D7754	0.0081	ex	-3.10	See §4.1
1950		0.012		-0.21	
7006		-----		-----	
7013		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9145	D6730	0.00	ex	-9.12	Result excluded, zero is not a real result

normality	OK
n	7
outliers	0 (+17 excl)
mean (n)	0.01228
st.dev. (n)	0.001234
R(calc.)	0.00345
R(Horwitz:n=2)	0.00377

Kernel Density
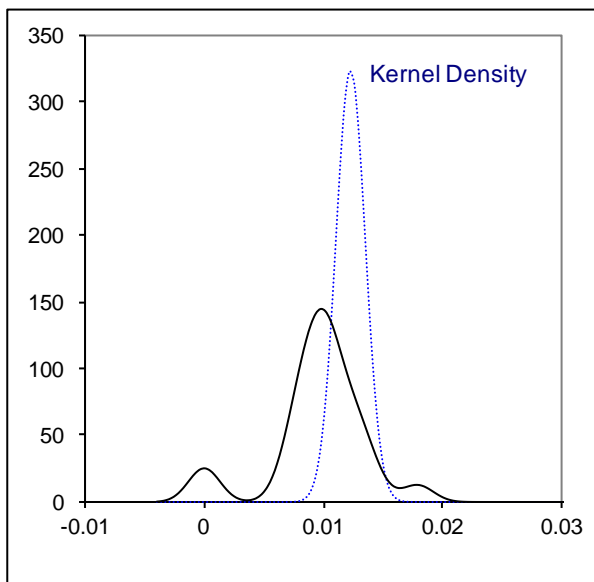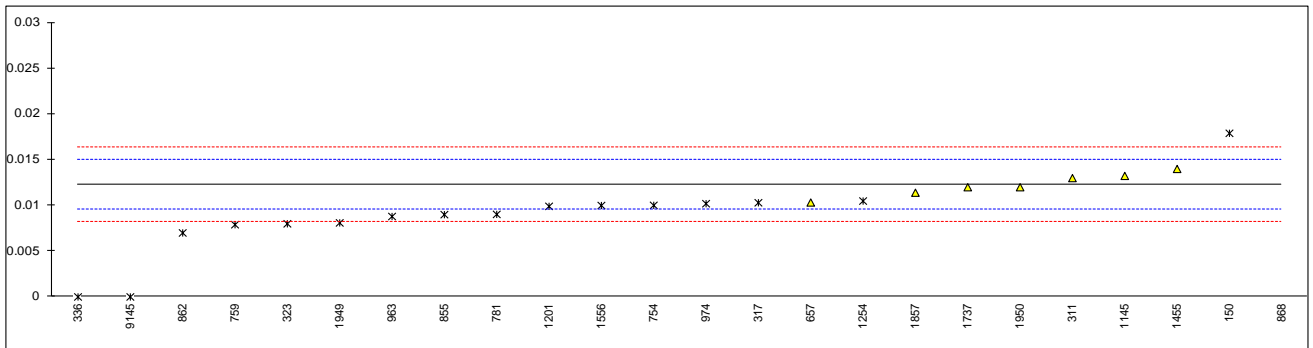
PONA/PIONA/PNA determination on sample #15032; results in %V/V

lab	method	n-paraf	mark	z(targ)	i-paraf	mark	z(targ)	Naphth.	mark	z(targ)	remark)
140	D6729	31.169		0.51	54.817		-0.92	13.430	ex	1.70	See §4.1
150		-----		-----	-----		-----	-----		-----	
171	D5443	-----		-----	-----		-----	12.5		-4.81	
225		-----		-----	-----		-----	-----		-----	
237		-----		-----	-----		-----	-----		-----	
238		-----		-----	-----		-----	-----		-----	
311	D5443	31.30		0.90	55.05		-0.40	13.07		-0.82	
317	D5443	31.03		0.10	55.03		-0.44	13.36		1.21	
322		-----		-----	-----		-----	-----		-----	
323	D5443	30.91		-0.26	55.33		0.22	13.18		-0.05	
333		-----		-----	-----		-----	-----		-----	
334		-----		-----	-----		-----	-----		-----	
336		-----		-----	-----		-----	-----		-----	
337		-----		-----	-----		-----	-----		-----	
340		-----		-----	-----		-----	-----		-----	
349		-----		-----	-----		-----	-----		-----	
360		-----		-----	-----		-----	-----		-----	
391		-----		-----	-----		-----	-----		-----	
399	D6839	30.29		-2.09	54.86		-0.82	13.81		4.37	
444		-----		-----	-----		-----	-----		-----	
445	D5443	31.22		0.66	55.37		0.31	12.62		-3.97	
494	D6839	31.25		0.75	54.80		-0.95	13.38		1.35	
529		-----		-----	-----		-----	-----		-----	
541		-----		-----	-----		-----	-----		-----	
604		-----		-----	-----		-----	-----		-----	
608	D6730	30.8953	ex	-0.30	56.5513	ex	2.93	12.0137	ex	-8.22	See §4.1
657	D5443	31.37		1.11	54.88		-0.78	13.17		-0.12	
753		-----		-----	-----		-----	-----		-----	
754	D5443	30.54		-1.35	55.52		0.64	13.36		1.21	
759	GOST-52714	29.56	C,R(0.05)	-4.25	56.04	C	1.79	13.87	ex	4.79	See §4.1
781		-----		-----	-----		-----	-----		-----	
784		-----		-----	-----		-----	-----		-----	
785	GOST-52714	30.857		-0.41	55.101		-0.29	13.366	ex	1.26	See §4.1
823		-----		-----	-----		-----	-----		-----	
855	D6839	31.06		0.19	55.04		-0.42	13.32		0.93	
862	D6730	30.250		-2.21	56.145		2.03	12.965	ex	-1.56	See §4.1
868	D6839	30.55		-1.32	55.79		1.24	13.09		-0.68	
873	D5134	31.30		0.90	55.09		-0.31	13.02	ex	-1.17	See §4.1
875	GOST-52714	30.83	C	-0.49	55.27	C	0.09	13.360	ex	1.21	See §4.1
922		-----		-----	-----		-----	-----		-----	
963	D5443	31.96		2.85	54.39		-1.86	13.08		-0.75	
974		-----		-----	-----		-----	-----		-----	
982		-----		-----	-----		-----	-----		-----	
994	D5134	31.23		0.69	55.25		0.04	12.91	ex	-1.94	See §4.1
995	D5134	30.93		-0.20	55.70		1.04	12.80	ex	-2.71	See §4.1
1012		-----		-----	-----		-----	-----		-----	
1016	ISO22854	30.93		-0.20	55.42		0.42	13.08		-0.75	
1062	D5443	30.41		-1.73	55.25		0.04	13.65		3.25	
1065	D6839	31.374		1.12	55.129		-0.23	12.911		-1.93	
1066	ISO22854	31.28		0.84	54.88		-0.78	13.26		0.51	
1081	ISO22854	31.2		0.60	54.91		-0.71	13.3		0.79	
1134	D5443	55.78	R(0.01)	73.32	30.76	R(0.01)	-54.23	12.83		-2.50	
1145	D6293	30.855		-0.42	55.035		-0.43	13.495		2.16	
1161		-----		-----	-----		-----	-----		-----	
1200		-----		-----	-----		-----	-----		-----	
1201	D5443	31.1		0.31	55.1		-0.29	13.2		0.09	
1254		-----		-----	-----		-----	-----		-----	
1257		-----		-----	-----		-----	-----		-----	
1264		-----		-----	-----		-----	-----		-----	
1307	in house	31.163		0.49	55.172		-0.13	13.009		-1.25	
1397	D6729	31.28		0.84	54.91		-0.71	13.22	ex	0.23	See §4.1
1404		-----		-----	-----		-----	-----		-----	
1429		-----		-----	-----		-----	-----		-----	
1455		-----		-----	-----		-----	-----		-----	
1556	ISO22854	31.10		0.31	54.86		-0.82	13.28		0.65	
1612		-----		-----	-----		-----	-----		-----	
1616	D6839	31.21	C	0.63	55.58	C	0.77	12.66	C	-3.69	
1653		-----		-----	-----		-----	-----		-----	
1656	D5443	30.5		-1.47	55.6		0.82	13.3		0.79	
1720	D5443	31.148		0.45	55.146		-0.19	13.129		-0.41	
1737	in house	30.23		-2.27	55.40		0.38	13.68		3.46	
1741	D6839	30.82		-0.52	54.99		-0.53	13.61		2.97	
1788	D5443	31.30		0.90	55.06		-0.38	12.98		-1.45	
1792		-----		-----	-----		-----	-----		-----	

== revised ==   Naphtha: iis15N01

lab	method										
1807		-----		-----	-----		-----	-----		-----	
1810	D6839	31.05	C	0.16	55.18		-0.11	13.18		-0.05	
1823	D6839	30.27		-2.15	55.90		1.48	13.23		0.30	
1842		-----		-----	-----		-----	-----		-----	
1857	D5443	31.08		0.25	55.15		-0.18	13.19		0.02	
1949	in house	30.74		-0.76	55.41		0.40	13.32		0.93	
1950		-----		-----	-----		-----	-----		-----	
7006		-----		-----	-----		-----	-----		-----	
7013	in house	31.572		1.70	47.9715	R(0.01)	-16.09	12.934		-1.77	
9054		-----		-----	-----		-----	-----		-----	
9057		-----		-----	-----		-----	-----		-----	
9058		-----		-----	-----		-----	-----		-----	
9061		-----		-----	-----		-----	-----		-----	
9145	D6730	31.198		0.60	55.667		0.97	12.446	ex	-5.19	See §4.1
	normality	OK			OK			OK			
	n	40			40			33			
	outliers	2	(+1 excl)		2	(+1 excl)		0	(+11 excl)		
	mean (n)	30.996			55.231			13.187			
	st.dev. (n)	0.3837			0.3666			0.2935			
	R(calc.)	1.074			1.026			0.822			
	R(D5443:14)	0.946			1.263			0.399			

Lab 608: all results excluded as normalized total = 105%
Lab 759: First reported 29.06, 56.54
Lab 875: First reported 29.211, 56.912
Lab 1616: First reported 29.57, 56.40, 13.44
Lab 1810: First reported 21.05
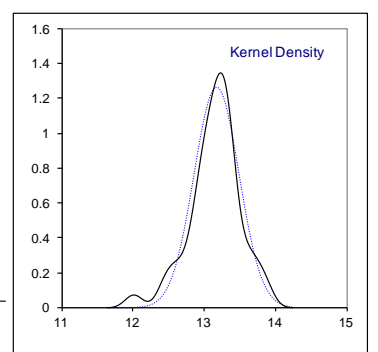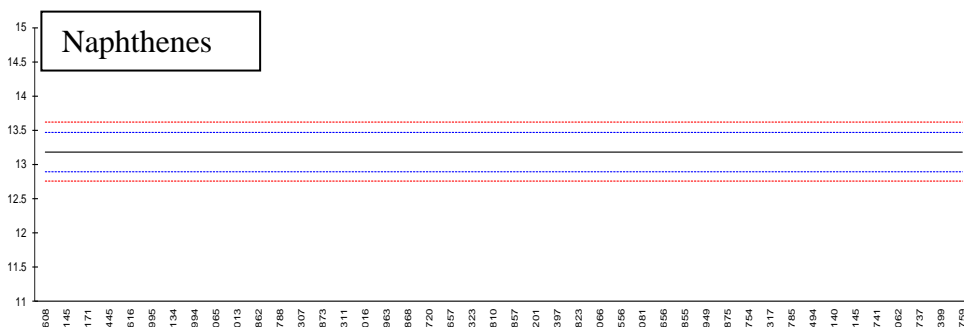
n-Paraffines

i-Paraffines

Naphthenes

PONA/PIONA/PNA determination on sample #15032; results in %V/V (continued)

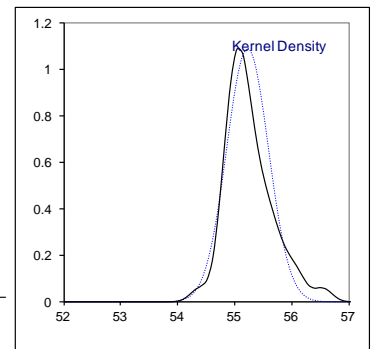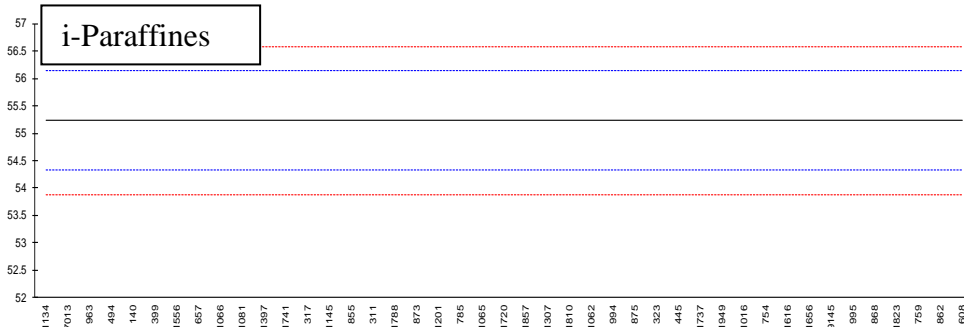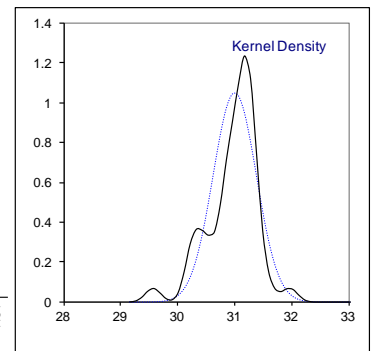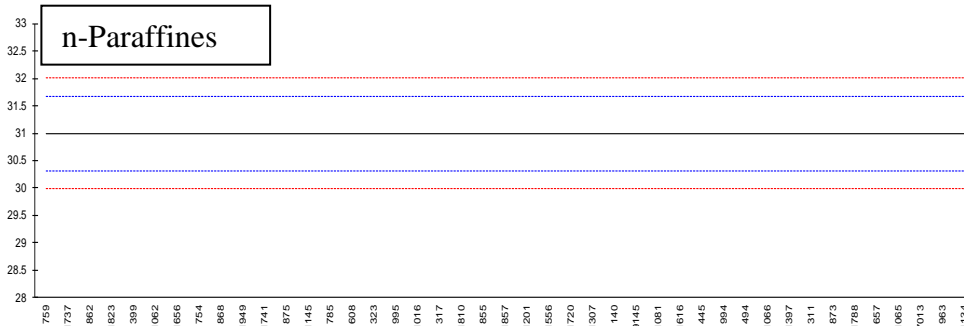| lab	method	Aromat.	mark	z(targ)	<C4	mark	z(targ)	Bp>200	mark	z(targ)
140	D6729	0.581		0.10	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171	D5443	0.57		-0.04	1.30		0.45	<0.05		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	0.58		0.09	1.40		1.80	<0.2		-----
317	D5443	0.58		0.09	1.37		1.40	<0.05		-----
322		-----		-----	-----		-----	-----		-----
323	D5443	0.58		0.09	1.04		-3.05	-----		-----
333				-----	-----		-----	-----		-----
334				-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
340	D1319	<5		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360		-----		-----	-----		-----	-----		-----
391		-----		-----	-----		-----	-----		-----
399	D6839	1.04	R(0.01)	6.16	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	D5443	0.73	R(0.01)	2.07	1.19		-1.03	<0.1		-----
494	D6839	0.58		0.09	1.33		0.86	<0.01		-----
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
604		-----		-----	-----		-----	-----		-----
608	D6730	0.5274	ex	-0.61	5.2439	ex	53.59	-----		-----
657	D5443	0.58		0.09	1.29		0.32	<0.1		-----
753		-----		-----	-----		-----	-----		-----
754	D5443	0.58		0.09	1.14	C	-1.70	<0.05		-----
759	GOST-52714	0.53	C	-0.57	1.175		-1.23	-----		-----
781		-----		-----	-----		-----	-----		-----
784		-----		-----	-----		-----	-----		-----
785	GOST-52714	0.530		-0.57	1.254		-0.17	-----		-----
823		-----		-----	-----		-----	-----		-----
855	D6839	0.57		-0.04	1.20		-0.90	<0.1		-----
862	D6730	0.593		0.26	0.290	R(0.01)	-13.16	-----		-----
868	D6839	0.55		-0.31	1.38		1.53	<0.1		-----
873	D5134	0.55		-0.31	1.39		1.66	-----		-----
875	GOST-52714	0.517		-0.74	1.180		-1.16	-----		-----
922		-----		-----	-----		-----	-----		-----
963	D5443	0.53		-0.57	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
982		-----		-----	-----		-----	-----		-----
994	D5134	0.60		0.35	1.42		2.07	-----		-----
995	D5134	0.54		-0.44	1.52		3.42	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016	ISO22854	0.58		0.09	1.06		-2.78	0.0		-----
1062	D5443	0.57		-0.04	1.34	C	0.99	0.02		-----
1065	D6839	0.584		0.14	1.30		0.45	-----		-----
1066	ISO22854	0.58		0.09	1.40		1.80	<0.01		-----
1081	ISO22854	0.59		0.22	0.98		-3.86	-----		-----
1134	D5443	0.27	R(0.01)	-4.01	0.81	DG(0.05)	-6.15	-----		-----
1145	D6293	0.59		0.22	0.795	DG(0.05)	-6.35	<0.01		-----
1161		-----		-----	-----		-----	-----		-----
1200		-----		-----	-----		-----	-----		-----
1201	D5443	0.6		0.35	1.1		-2.24	0		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1264		-----		-----	-----		-----	-----		-----
1307	in house	0.558		-0.20	1.247		-0.26	-----		-----
1397	D6729	0.59		0.22	-----		-----	-----		-----
1404		-----		-----	-----		-----	-----		-----
1429		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	0.57		-0.04	1.38		1.53	0.14	False +?	-----
1612		-----		-----	-----		-----	-----		-----
1616	D6839	0.56	C	-0.18	1.42		2.07	<0.05		-----
1653		-----		-----	-----		-----	-----		-----
1656	D5443	0.6		0.35	-----		-----	<0.1		-----
1720	D5443	0.577		0.05	1.063		-2.74	-----		-----
1737	in house	0.66	R(0.05)	1.14	1.40		1.80	-----		-----
1741	D6839	0.59		0.22	1.01		-3.46	-----		-----
1788	D5443	0.62		0.62	1.40		1.80	0.00		-----
1792		-----		-----	-----		-----	-----		-----

== revised ==   Naphtha: iis15N01

1807		-----			-----	-----		-----	-----		-----
1810	D6839	0.57	C		-0.04	-----		-----	-----		-----
1823	D6839	0.59		0.22		1.17	C	-1.30	<0.1		-----
1842		-----			-----	-----		-----	-----		-----
1857	D5443	0.58		0.09		1.34		0.99	n.d		-----
1949	in house	0.57		-0.04		1.37		1.40	<0.01		-----
1950		-----			-----	-----		-----	-----		-----
7006		-----			-----	-----		-----	-----		-----
7013	in house	0.581		0.10		-----		-----	-----		-----
9054		-----			-----	-----		-----	-----		-----
9057		-----			-----	-----		-----	-----		-----
9058		-----			-----	-----		-----	-----		-----
9061		-----			-----	-----		-----	-----		-----
9145	D6730	0.571		-0.03		1.234		-0.44	0.003		-----
	normality	OK				OK			n.a.		
	n	39				33			22		
	outliers	4	(+1 excl)			3	(+1 excl)		n.a		
	mean (n)	0.573				1.266			<0.10		
	st.dev. (n)	0.0219				0.1399			n.a.		
	R(calc.)	0.061				0.392			n.a.		
	R(D5443:14)	0.212				0.208			n.a.		

Lab 608: all results excluded as normalized total = 105%
Lab 754: First reported 0.63
Lab 759: First reported 0.49
Lab 1016: first reported 0.19
Lab 1616: first reported 0.58
Lab 1810: First reported 0.08
Lab 1823: first reported 0.37

PONA/PIONA/PNA determination on sample #15032; results in %V/V (continued)

lab	method	olefins	mark	z(targ)	Remarks
140		-----		-----	
150		-----		-----	
171	D5443	<0.05		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D6839	<0.20		-----	
317	D5543	<0.05		-----	
322		-----		-----	
323	D5443Mod.	<0.10		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		<0.3		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399	D6839	<0.2		-----	
444		-----		-----	
445	LOWOX	<0.1		-----	
494	D6839	<0.01		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608	D6730	0.0026	ex	-----	Result excluded as normalized total = 105%
657	D6839	<0.1		-----	
753		-----		-----	
754	D6839	<0.01		-----	
759	GOST-52714	0.00		-----	
781		-----		-----	
784		-----		-----	
785	GOST-52714	0.000		-----	
823		-----		-----	
855	D6839	<0.1		-----	
862	D6730	<0.01		-----	
868	D6839	<0.1		-----	
873	D5134	0.04		-----	
875	GOST-52714	0.000		-----	
922		-----		-----	
963	D5443	0.04		-----	
974		-----		-----	
982		-----		-----	
994	D5134	0.01		-----	
995	D5134	0.01		-----	
1012		-----		-----	
1016	ISO22854	0.0		-----	
1062		0.12		-----	
1065	D6839	0.002		-----	
1066	ISO22854	<0.01		-----	
1081		0		-----	
1134	D5443	0.36		-----	False positive result?
1145	D6293	0.025		-----	
1161		-----		-----	
1200		-----		-----	
1201	D6839	0		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.012		-----	
1397	D6729	0.00		-----	
1404		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	ISO22854	0.19		-----	False positive result?
1612		-----		-----	
1616	D6839	<0.05		-----	
1653		-----		-----	
1656	D5443	<0.1		-----	
1720	D5443	0.000		-----	
1737	in house	0.03		-----	
1741	D6839	<0.1		-----	
1788		0.00		-----	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----	
1810	D6839	0.1	-----	
1823	D6839	<0.1	-----	
1842		-----	-----	
1857	D6839	0.02	-----	
1949	D6839	0.15	-----	False positive result?
1950		-----	-----	
7006		-----	-----	
7013	in house	6.848	-----	False positive result?
9054		-----	-----	
9057		-----	-----	
9058		-----	-----	
9061		-----	-----	
9145	D6730	0.078	-----	

normality	n.a.
n	44
outliers	n.a.
mean (n)	<0.1
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D6839:13)	n.a.

PONA/PIONA/PNA determination on sample #15032; results in %M/M

lab	method	n-paraf	mark	z(targ)	i-paraf	mark	z(targ)	Naphth.	mark	z(targ)	remark
140	D6729	30.296		0.37	53.414		-1.01	15.511	ex	1.93	See §4.1
150		-----		-----	-----		-----	-----		-----	
171	D5443	-----		-----	-----		-----	14.59		-4.08	
225		-----		-----	-----		-----	-----		-----	
237		-----		-----	-----		-----	-----		-----	
238		-----		-----	-----		-----	-----		-----	
311	D5443	30.48		0.92	53.57		-0.66	15.18		-0.23	
317	D5443	30.13		-0.13	53.7		-0.37	15.32		0.68	
322		-----		-----	-----		-----	-----		-----	
323	D5443	30.09		-0.25	53.90		0.08	15.24		0.16	
333		-----		-----	-----		-----	-----		-----	
334		-----		-----	-----		-----	-----		-----	
336		-----		-----	-----		-----	-----		-----	
337		-----		-----	-----		-----	-----		-----	
340		-----		-----	-----		-----	-----		-----	
349		-----		-----	-----		-----	-----		-----	
360		-----		-----	-----		-----	-----		-----	
391		-----		-----	-----		-----	-----		-----	
399		-----		-----	-----		-----	-----		-----	
444		-----		-----	-----		-----	-----		-----	
445	D5443	30.43		0.77	53.87		0.01	14.65		-3.69	
494	D6839	30.35		0.53	53.54		-0.73	15.33		0.75	
529		-----		-----	-----		-----	-----		-----	
541		-----		-----	-----		-----	-----		-----	
604		-----		-----	-----		-----	-----		-----	
608	D6730	30.1498	ex	-0.07	55.1284	ex	2.84	13.997	ex	-7.95	
657	D5443	30.54		1.10	53.41		-1.02	15.29		0.49	
753		-----		-----	-----		-----	-----		-----	
754	D5443	29.77		-1.21	53.96		0.22	15.49		1.79	
759	GOST-52714	28.71	C,R(0.01)	-4.39	54.59	C	1.63	16.01	ex	5.19	See §4.1
781		-----		-----	-----		-----	-----		-----	
784		-----		-----	-----		-----	-----		-----	
785	GOST-52714	29.998		-0.53	53.677		-0.42	15.447	ex	1.51	See §4.1
823		-----		-----	-----		-----	-----		-----	
855	D6839	30.17		-0.01	53.79		-0.17	15.28		0.42	
862	D6730	29.476		-2.09	54.704		1.89	14.985	ex	-1.50	See §4.1
868	D6839	29.77		-1.21	54.28		0.93	15.19		-0.16	
873	D5134	30.48		0.92	53.78		-0.19	14.97	ex	-1.60	See §4.1
875	GOST-52714	30.03	C	-0.43	53.94	C	0.17	15.443	ex	1.49	See §4.1
922		-----		-----	-----		-----	-----		-----	
963	D5443	29.67		-1.51	54.06		0.44	15.50		1.86	
974		-----		-----	-----		-----	-----		-----	
982		-----		-----	-----		-----	-----		-----	
994	D5134	30.44		0.80	53.95		0.19	14.81	ex	-2.64	See §4.1
995	D5134	30.30		0.38	54.10		0.53	14.82	ex	-2.58	See §4.1
1012		-----		-----	-----		-----	-----		-----	
1016	ISO22854	30.13		-0.13	53.92		0.13	15.17		-0.30	
1062	D5443	29.58		-1.78	53.92		0.13	15.63		2.71	
1065	D6839	30.515		1.02	53.799		-0.14	14.906		-2.02	
1066	ISO22854	30.39		0.65	53.63		-0.52	15.22		0.03	
1081	ISO22854	30.36		0.56	53.43		-0.97	15.42		1.34	
1134	D5443	54.33	R(0.01)	72.43	30.01	R(0.01)	-53.53	14.89		-2.12	
1145	D6293	29.985		-0.57	53.735		-0.29	15.47		1.66	
1161		-----		-----	-----		-----	-----		-----	
1200		-----		-----	-----		-----	-----		-----	
1201	D5443	30.3		0.38	53.6		-0.59	15.3		0.55	
1254		-----		-----	-----		-----	-----		-----	
1257		-----		-----	-----		-----	-----		-----	
1264		-----		-----	-----		-----	-----		-----	
1307	in house	30.296		0.37	53.814		-0.11	15.031		-1.20	
1397	D6729	30.40		0.68	53.51		-0.79	15.30	ex	0.55	See §4.1
1404		-----		-----	-----		-----	-----		-----	
1429		-----		-----	-----		-----	-----		-----	
1455		-----		-----	-----		-----	-----		-----	
1556	ISO22854	30.19		0.05	53.61		-0.57	15.23		0.10	
1612		-----		-----	-----		-----	-----		-----	
1616	D6839	30.36	C	0.56	54.37	C	1.14	14.54	C	-4.41	
1653		-----		-----	-----		-----	-----		-----	
1656	D5443	29.8		-1.12	54.1		0.53	15.4		1.21	
1720	D5443	30.307		0.40	53.820		-0.10	15.100		-0.75	
1737	in house	29.23		-2.83	54.15		0.64	15.71		3.23	
1741	D6839	29.95		-0.67	53.69		-0.39	15.59		2.45	
1788	D5443	30.44		0.80	53.81		-0.12	14.98		-1.54	
1792		-----		-----	-----		-----	-----		-----	

1807		-----		-----	-----		-----	-----		-----
1810	D6839	30.24	0.20	53.80		-0.14	15.21		-0.03	
1823		-----		-----	-----		-----	-----		-----
1842		-----		-----	-----		-----	-----		-----
1857	D5443	30.26	0.26	53.66		-0.46	15.30		0.55	
1949	in house	29.96	-0.64	53.87		0.01	15.30		0.55	
1950		-----		-----	-----		-----	-----		-----
7006		-----		-----	-----		-----	-----		-----
7013	in house	31.150	2.93	46.216	R(0.01)	-17.16	14.096	G(0.05)	-7.30	
9054		-----		-----	-----		-----	-----		-----
9057		-----		-----	-----		-----	-----		-----
9058		-----		-----	-----		-----	-----		-----
9061		-----		-----	-----		-----	-----		-----
9145	D6730	30.358	0.55	54.342		1.07	14.405	ex	-5.29	See §4.1
	normality	suspect		OK			OK			
	n	38		38			30			
	outliers	2	(+1 excl)	2	(+1 excl)		1	(+11 excl)		
	mean (n)	30.174		53.864			15.215			
	st.dev. (n)	0.3513		0.3046			0.2868			
	R(calc.)	0.984		0.853			0.803			
	R(D5443:14)	0.934		1.248			0.429			

Lab 608: all results excluded as normalized total = 104 %
Lab 759: first reported 28.26, 55.05
Lab 875: first reported 28.407, 55.457
Lab 1616: first reported 28.86, 54.80,15.58
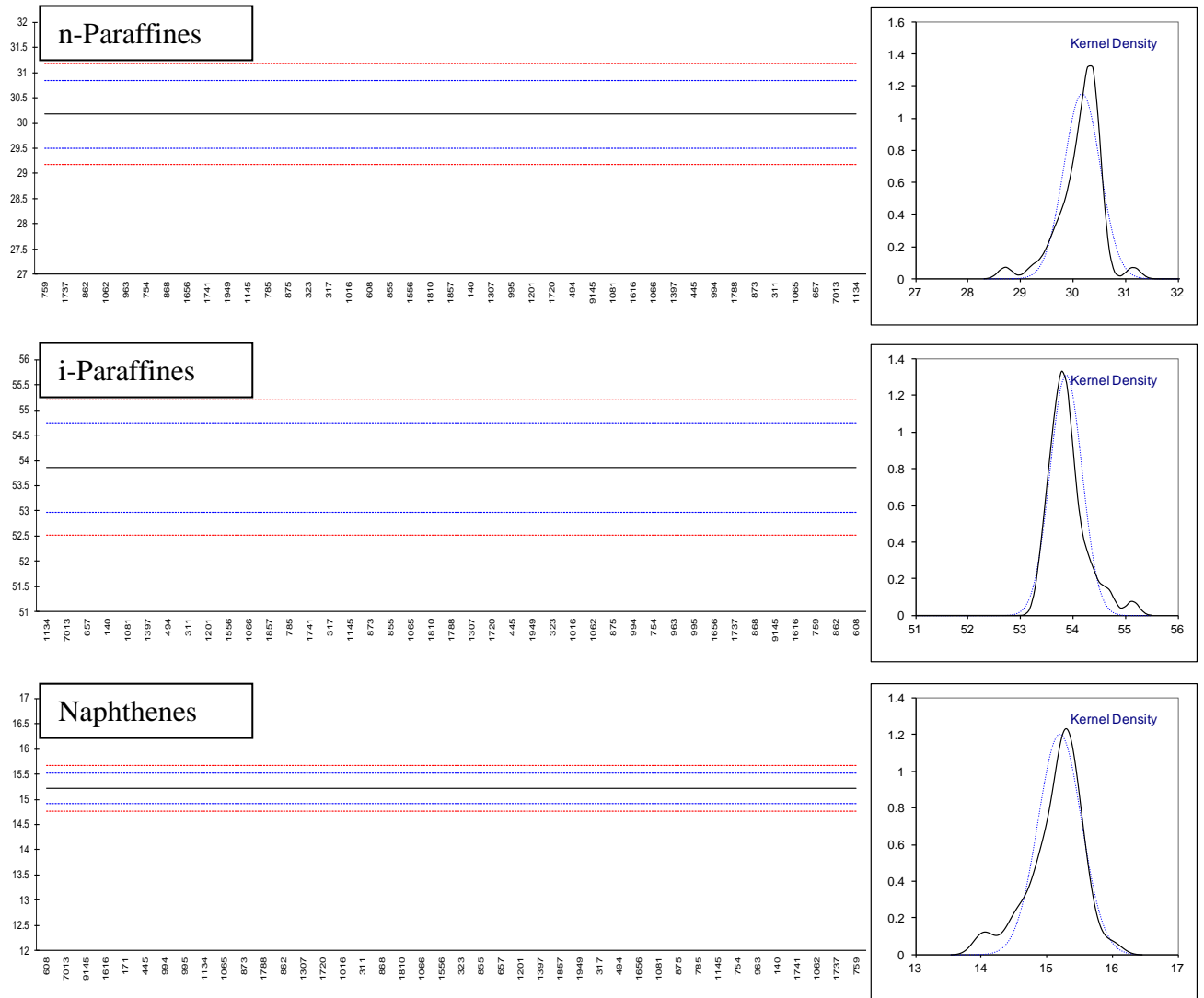
PONA/PIONA/PNA determination on sample #15032; results in %M/M (continued)

lab	method	Aromat.	mark	z(targ)	<C4	mark	z(targ)	Bp>200	mark	z(targ)
140	D6729	0.776		0.12	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171	D5443	0.77		0.06	1.14		0.01	<0.05		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	0.77		0.06	1.22		1.19	<0.20		-----
317	D5443	0.78		0.17	1.21		1.04	<0.05		-----
322		-----		-----	-----		-----	-----		-----
323	D5443	0.78		0.17	0.91		-3.38	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
340		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360		-----		-----	-----		-----	-----		-----
391		-----		-----	-----		-----	-----		-----
399		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	D5443	0.98	R(0.01)	2.46	1.05		-1.32	<0.1		-----
494	D6839	0.77		0.06	1.16		0.30	<0.01		-----
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
604		-----		-----	-----		-----	-----		-----
608	D6730	0.7108	ex	-0.62	4.5525	ex	50.31	-----		-----
657	D5443	0.77		0.06	1.12		-0.29	<0.1		-----
753		-----		-----	-----		-----	-----		-----
754	D5443	0.78		0.17	1.30	C	2.37	<0.05		-----
759	GOST52714	0.69	C	-0.86	1.032		-1.58	-----		-----
781		-----		-----	-----		-----	-----		-----
784		-----		-----	-----		-----	-----		-----
785		0.710		-0.63	1.095		-0.65	-----		-----
823		-----		-----	-----		-----	-----		-----
855	D6839	0.76		-0.06	1.36		3.25	<0.1		-----
862	D6730	0.793		0.32	0.255	R(0.01)	-13.04	-----		-----
868	D6839	0.73		-0.40	1.20		0.89	<0.1		-----
873	D5134	0.73		-0.40	1.22		1.19	-----		-----
875		0.692		-0.84	1.031		-1.60	-----		-----
922		-----		-----	-----		-----	-----		-----
963	D5443	0.73		-0.40	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
982		-----		-----	-----		-----	-----		-----
994	D5134	0.79		0.28	1.24		1.48	-----		-----
995	D5134	0.74		-0.29	1.36		3.25	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016	ISO22854	0.78		0.17	0.93		-3.09	0.0		-----
1062	D5443	0.76		-0.06	1.18	C	0.60	0.02		-----
1065	D6839	0.779		0.16	1.14		0.01	-----		-----
1066	ISO22854	0.77		0.06	1.23		1.34	<0.01		-----
1081		0.79		0.28	0.86		-4.12	-----		-----
1134	D5443	0.36	R(0.01)	-4.63	0.70	DG(0.05)	-6.48	-----		-----
1145	D6293	0.78		0.17	0.70	DG(0.05)	-6.48	<0.01		-----
1161		-----		-----	-----		-----	-----		-----
1200		-----		-----	-----		-----	-----		-----
1201	D5443	0.8		0.40	1.0		-2.06	0		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1264		-----		-----	-----		-----	-----		-----
1307	in house	0.746		-0.22	1.090		-0.73	-----		-----
1397	D6729	0.79		0.28	-----		-----	-----		-----
1404		-----		-----	-----		-----	-----		-----
1429		-----		-----	1.202		0.92	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	0.76		-0.06	1.22		1.19	0.16	False +?	-----
1612		-----		-----	-----		-----	-----		-----
1616	D6839	0.75	C	-0.17	1.23		1.34	<0.05		-----
1653		-----		-----	-----		-----	-----		-----
1656	D5443	0.8		0.40	-----		-----	<0.1		-----
1720	D5443	0.773		0.09	0.937		-2.98	-----		-----
1737	in house	0.88	R(0.05)	1.31	1.22		1.19	-----		-----
1741	D6839	0.78		0.17	0.89		-3.68	-----		-----
1788	D5443	0.82		0.63	1.23		1.34	0.00		-----
1792		-----		-----	-----		-----	-----		-----

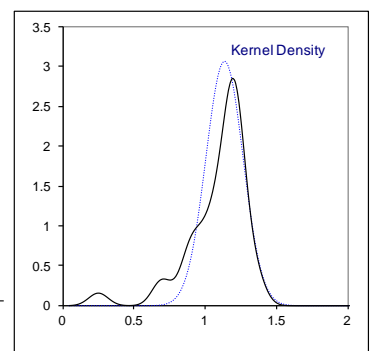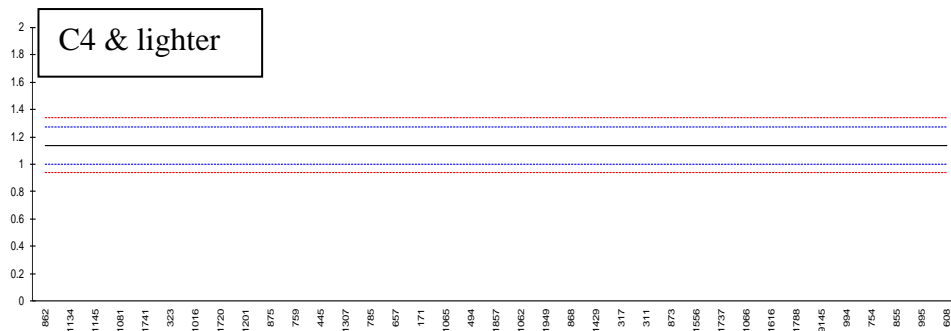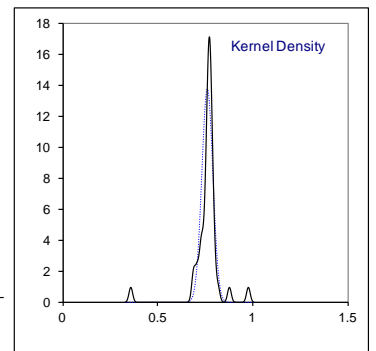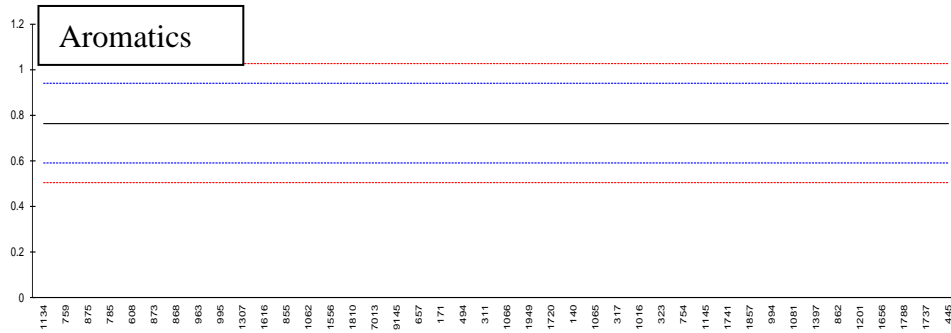|									
1807		-----		-----	-----		-----	-----	-----
1810	D6839	0.76		-0.06	-----		-----	-----	-----
1823		-----		-----	-----		-----	-----	-----
1842		-----		-----	-----		-----	-----	-----
1857	D5443	0.78		0.17	1.17		0.45	n.d.	-----
1949	D5443	0.77		0.06	1.19		0.75	<0.01	-----
1950		-----		-----	-----		-----	-----	-----
7006		-----		-----	-----		-----	-----	-----
7013	in house	0.760		-0.06	-----		-----	-----	-----
9054		-----		-----	-----		-----	-----	-----
9057		-----		-----	-----		-----	-----	-----
9058		-----		-----	-----		-----	-----	-----
9061		-----		-----	-----		-----	-----	-----
9145	D6730	0.765		0.00	1.234		1.39	0.003	-----
	normality	suspect			OK			n.a.	
	n	38			33			21	
	outliers	3	(+1 excl)		3	(+1 excl)		n.a.	
	mean (n)	0.765			1.139			<0.10	
	st.dev. (n)	0.0281			0.1304			n.a.	
	R(calc.)	0.079			0.365			n.a.	
	R(D5443:14)	0.245			0.190			n.a.	

Lab 608: all results excluded as normalized total = 104 %
Lab 754: first reported 0.55
Lab 759: first reported 0.65
Lab 1016: first reported 0.17
Lab 1616: first reported 0.77

PONA/PIONA/PNA determination on sample #15032; results in %M/M (continued)

lab	method	olefins	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5443	<0.05		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D6839	<0.20		-----	
317	D544	<0.05		-----	
322		-----		-----	
323	D5443Mod.	<0.10		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	LOWOX	<0.1		-----	
494	D6839	<0.01		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608	D6730	0.0027	ex	-----	Result excluded as normalized total = 104%
657	D6839	<0.1		-----	
753		-----		-----	
754	D6839	< 0.01		-----	
759	GOST-52714	0.00		-----	
781		-----		-----	
784		-----		-----	
785	GOST-52714	0.000		-----	
823		-----		-----	
855	D6839	<0.1		-----	
862	D6730	<0.01		-----	
868	D6839	<0.1		-----	
873	D5134	0.04		-----	
875	GOST-52714	0.000		-----	
922		-----		-----	
963	D5443	0.04		-----	
974		-----		-----	
982		-----		-----	
994	D5134	0.01		-----	
995	D5134	0.01		-----	
1012		-----		-----	
1016	ISO22854	0.0		-----	
1062		0.12		-----	
1065	D6839	0.002		-----	
1066	ISO22854	<0.01		-----	
1081		0		-----	
1134	D5443	0.41		-----	False positive result?
1145	D6293	0.03		-----	
1161		-----		-----	
1200		-----		-----	
1201	D6839	0		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.013		-----	
1397	D6729	0.00		-----	
1404		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	ISO22854	0.21		-----	False positive result?
1612		-----		-----	
1616	D6839	<0.05		-----	
1653		-----		-----	
1656	D5443	<0.1		-----	
1720	D5443	0.000		-----	
1737	in house	0.03		-----	
1741	D6839	<0.1		-----	
1788		0.00		-----	
1792		-----		-----	

1807		-----	-----	
1810		0.0	-----	
1823		-----	-----	
1842		-----	-----	
1857	D6839	0.02	-----	
1949	D6839	0.16	-----	False positive result?
1950		-----	-----	
7006		-----	-----	
7013	in house	7.726	-----	False positive result?
9054		-----	-----	
9057		-----	-----	
9058		-----	-----	
9061		-----	-----	
9145	D6730	0.087	-----	

normality	n.a.
n	41
outliers	n.a.
mean (n)	<0.10
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D6839:13)	n.a.

Determination of Benzene (DHA) on sample #15032; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D5134	0.762		0.36	
171	D5134	0.78		1.03	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336	EN238	0.6	ex	-5.60	Result excluded, reported unit in %V/V
337		-----		-----	
340	EN238	0.70	C	-1.92	First reported 0.47
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	D5134	0.73		-0.81	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D6730	0.783		1.14	
753		-----		-----	
754	D5134	0.78		1.03	
759	GOST52714	0.690	C	-2.29	First reported 0.644
781		-----		-----	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855		-----		-----	
862	D6730	0.793		1.51	
868		-----		-----	
873	D5134	0.73		-0.81	
875		0.692		-2.21	
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D5134	0.78		1.03	
995	D5134	0.73		-0.81	
1012		-----		-----	
1016		-----		-----	
1062	D5134	0.73		-0.81	
1065		-----		-----	
1066	D6729	0.77		0.66	
1081		-----		-----	
1134	D5443	0.27	R(0.01)	-17.76	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201		-----		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.743		-0.34	
1397	D6729	0.79		1.40	
1404		-----		-----	
1429	D5134	0.736		-0.59	
1455		-----		-----	
1556		-----		-----	
1612		-----		-----	
1616	D5134	0.776		0.88	
1653		-----		-----	
1656	D5443	0.8		1.76	
1720	D5134	0.763		0.40	
1737		-----		-----	
1741		-----		-----	
1788	D5134	0.736		-0.59	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----
1810		-----		-----
1823		-----		-----
1842		-----		-----
1857	D5134	0.75		-0.08
1949	D5134Mod.	0.762		0.36
1950	D5134Mod.	0.740		-0.45
7006		-----		-----
7013		-----		-----
9054		-----		-----
9057		-----		-----
9058		-----		-----
9061		-----		-----
9145	D6730	0.757		0.18

Only ASTM D5134 data:

			OK
normality	OK		OK
n	25		15
outliers	1	(+1 excl)	0
mean (n)	0.7521		0.7523
st.dev. (n)	0.03083		0.02043
R(calc.)	0.0863		0.0572
R(D5134:13)	0.0760		0.0760

Kernel Density
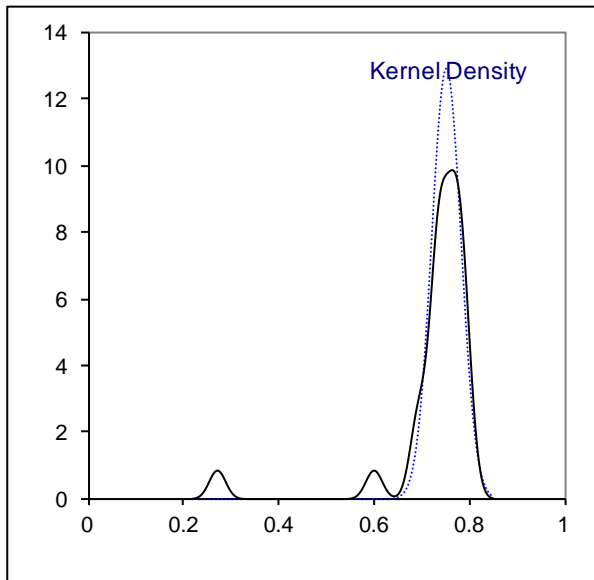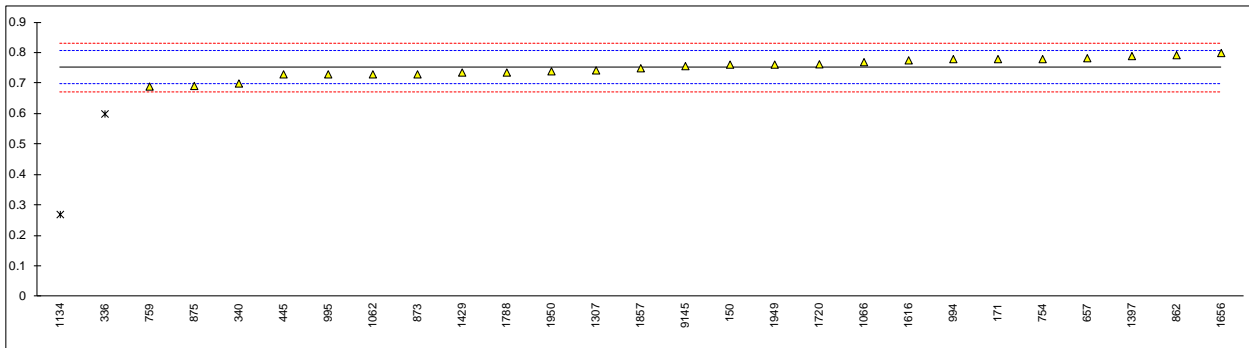
Determination of Heptane (DHA) on sample #15032; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D5134	0.023		1.61	
171	D5134	<0.05		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	D5134	0.02		-0.34	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D6730	0.024		2.26	
753		-----		-----	
754	D5134	0.03	DG(0.05)	6.17	
759	GOST52714	0.015		-3.60	
781		-----		-----	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855		-----		-----	
862	D6730	0.024		2.26	
868		-----		-----	
873	D5134	0.02		-0.34	
875		0.016		-2.95	
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D5134	0.02		-0.34	
995	D5134	0.03	G(0.05)	6.17	
1012		-----		-----	
1016		-----		-----	
1062	D5134	0.02		-0.34	
1065		-----		-----	
1066	D6729	0.02		-0.34	
1081		-----		-----	
1134	D5443	0.02		-0.34	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201		-----		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.022		0.96	
1397	D6729	0.02		-0.34	
1404		-----		-----	
1429	D5134	0.022		0.96	
1455		-----		-----	
1556		-----		-----	
1612		-----		-----	
1616	D5134	0.033	DG(0.05)	8.13	
1653		-----		-----	
1656		-----		-----	
1720	D5134	0.023		1.61	
1737		-----		-----	
1741		-----		-----	
1788	D5134	0.020		-0.34	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----	
1810		-----	-----	
1823		-----	-----	
1842		-----	-----	
1857	D5134	<0.01	<-6.84	False negative?
1949	D5134Mod.	0.021	0.31	
1950	D5134Mod.	0.020	-0.34	
7006		-----	-----	
7013		-----	-----	
9054		-----	-----	
9057		-----	-----	
9058		-----	-----	
9061		-----	-----	
9145	D6730	0.020	-0.34	

		Only ASTM D5134 data:
normality	suspect	Suspect
n	19	10
outliers	3	3
mean (n)	0.0205	0.0209
st.dev. (n)	0.00229	0.00129
R(calc.)	0.0064	0.0036
R(D5134:13)	0.0043	0.0043

Kernel Density

Determination of Octane (DHA) on sample #15032; results in %M/M

lab	method	Value	mark	z(targ)	Remarks
140		-----		-----	
150	D5134	<0.01		-----	
171	D5134	0.05		-----	False positive result?
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	D5134	<0.01		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D6730	<0.01		-----	
753		-----		-----	
754	D5134	<0.05		-----	
759	GOST52714	<0.05		-----	
781		-----		-----	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855		-----		-----	
862	D6730	<0.01		-----	
868		-----		-----	
873	D5134	0.05		-----	False positive result?
875		0.039		-----	False positive result?
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D5134	0.05		-----	False positive result?
995	D5134	0.05		-----	False positive result?
1012		-----		-----	
1016		-----		-----	
1062	D5134	0.044		-----	False positive result?
1065		-----		-----	
1066	D6729	<0.01		-----	
1081		-----		-----	
1134	D5443	0.04		-----	False positive result?
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201		-----		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.045		-----	False positive result?
1397	D6729	0.05		-----	False positive result?
1404		-----		-----	
1429	D5134	<0.01		-----	
1455		-----		-----	
1556		-----		-----	
1612		-----		-----	
1616	D5134	<0.05		-----	
1653		-----		-----	
1656		-----		-----	
1720	D5134	0.050		-----	False positive result?
1737		-----		-----	
1741		-----		-----	
1788	D5134	0.040		-----	False positive result?
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----	
1810		-----	-----	
1823		-----	-----	
1842		-----	-----	
1857	D5134	<0.01	-----	
1949	D5134Mod.	0.047	-----	False positive result?
1950	D5134Mod.	0.046	-----	False positive result?
7006		-----	-----	
7013		-----	-----	
9054		-----	-----	
9057		-----	-----	
9058		-----	-----	
9061		-----	-----	
9145	D6730	0.00	-----	

|	
normality	OK
n	8
outliers	n.a.
mean (n)	<0.01
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D5134:13)	n.a.

Determination of Pentane (DHA) on sample #15032; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D5134	15.827		-0.09	
171	D5134	15.72		-0.43	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	D5134	15.84		-0.05	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D6730	15.685		-0.54	
753		-----		-----	
754	D5134	15.67		-0.59	
759	GOST52714	15.272	C	-1.83	First reported 14.763
781		-----		-----	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855		-----		-----	
862	D6730	15.667		-0.59	
868		-----		-----	
873	D5134	15.99		0.42	
875		15.981	C	0.39	First reported 14.752
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D5134	15.83		-0.08	
995	D5134	16.16		0.95	
1012		-----		-----	
1016		-----		-----	
1062	D5134	16.139		0.89	
1065		-----		-----	
1066	D6729	15.87		0.04	
1081		-----		-----	
1134	D5443	15.82		-0.11	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201		-----		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	15.944		0.28	
1397	D6729	15.56		-0.93	
1404		-----		-----	
1429	D5134	15.820		-0.11	
1455		-----		-----	
1556		-----		-----	
1612		-----		-----	
1616	D5134	15.799		-0.18	
1653		-----		-----	
1656		-----		-----	
1720	D5134	15.641		-0.68	
1737		-----		-----	
1741		-----		-----	
1788	D5134	15.844		-0.04	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----		-----
1810		-----		-----
1823		-----		-----
1842		-----		-----
1857	D5134	16.28		1.33
1949	D5134Mod.	16.228		1.17
1950	D5134Mod.	15.979		0.39
7006		-----		-----
7013		-----		-----
9054		-----		-----
9057		-----		-----
9058		-----		-----
9061		-----		-----
9145	D6730	15.987		0.41

			Only ASTM D5134 data
normality	OK		OK
n	24		15
outliers	0		0
mean (n)	15.856		15.918
st.dev. (n)	0.2251		0.2022
R(calc.)	0.630		0.566
R(D5134:13)	0.892		0.894
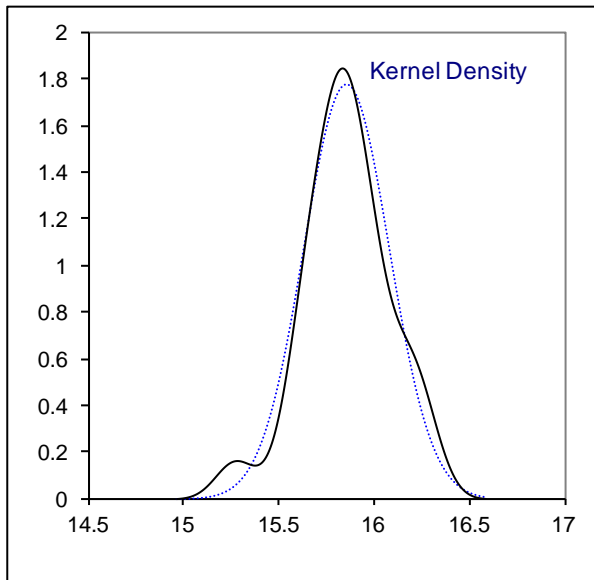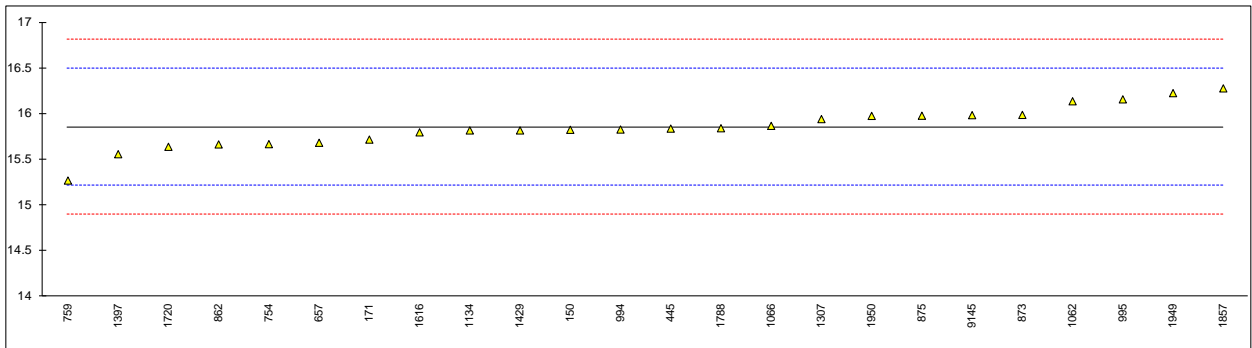
Determination of Toluene (DHA) on sample #15032; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	D5134	<0.01		-----	
171	D5134	<0.05		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
340		-----		-----	
349		-----		-----	
360		-----		-----	
391		-----		-----	
399		-----		-----	
444		-----		-----	
445	D5134	<0.01		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
604		-----		-----	
608		-----		-----	
657	D6730	<0.01		-----	
753		-----		-----	
754	D5134	<0.05		-----	
759	GOST52714	<0.05		-----	
781		-----		-----	
784		-----		-----	
785		-----		-----	
823		-----		-----	
855		-----		-----	
862	D6730	<0.01		-----	
868		-----		-----	
873	D5134	0		-----	
875		0.00		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D5134	<0.05		-----	
995	D5134	0.01		-----	
1012		-----		-----	
1016		-----		-----	
1062	D5134	0		-----	
1065		-----		-----	
1066		<0.01		-----	
1081		-----		-----	
1134	D5443	0.00		-----	
1145		-----		-----	
1161		-----		-----	
1200		-----		-----	
1201		-----		-----	
1254		-----		-----	
1257		-----		-----	
1264		-----		-----	
1307	in house	0.000		-----	
1397	D6729	0.00		-----	
1404		-----		-----	
1429	D5134	<0.01		-----	
1455		-----		-----	
1556		-----		-----	
1612		-----		-----	
1616	D5134	<0.05		-----	
1653		-----		-----	
1656	D5443	<0.1		-----	
1720	D5134	0.000		-----	
1737		-----		-----	
1741		-----		-----	
1788	D5134	0.00		-----	
1792		-----		-----	

== revised ==   Naphtha: iis15N01

1807		-----	-----
1810		-----	-----
1823		-----	-----
1842		-----	-----
1857	D5134	<0.01	-----
1949	D5134Mod.	<0.001	-----
1950	D5134Mod.	<0.01	-----
7006		-----	-----
7013		-----	-----
9054		-----	-----
9057		-----	-----
9058		-----	-----
9061		-----	-----
9145	D6730	0.00	-----

normality	n.a.
n	25
outliers	n.a.
mean (n)	<0.01
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D5134:13)	n.a.

Determination of Mercury content as Hg on sample #15033 and #15034; results in µg/kg

lab	Method	#15033	mark	z(targ)	#15034	mark	z(targ)	remarks
171	UOP938	30		-0.90	30		-0.68	
311	UOP938	56.0		1.65	54.1		1.82	
317	INH-003	57	C	1.75	24		-1.30	First reported 6
323	UOP938	38		-0.11	36		-0.06	
333		-----		-----	-----		-----	
334		-----		-----	-----		-----	
349	UOP938	37.2	C	-0.19	-----		-----	First reported 3.72
444	UOP938	38.64		-0.05	37.79		0.13	
541	INH-244	36		-0.31	29		-0.79	
608	UOP938	52.13		1.27	37.84		0.13	
609	UOP938	33.41		-0.56	84.44	C,R(0.01)	4.97	First reported 100.94
657	UOP938	24.65		-1.42	22.65		-1.45	
663	UOP938	42.445		0.32	41.737		0.54	
754	UOP938	44.184		0.50	35.851		-0.07	
823	UOP938	30.00		-0.90	26.62		-1.03	
862	UOP938	35.0		-0.41	34.8		-0.18	
868	UOP938	32.7		-0.63	32.2		-0.45	
873	UOP938	38.596		-0.05	32.988		-0.37	
875		35		-0.41	39		0.25	
912	in house	9.428	D(0.05)	-2.91	7.648	ex	-3.00	See §4.1.
922		-----		-----	-----		-----	
963	UOP938	31.30		-0.77	25.40		-1.16	
974	UOP938	28.49	C	-1.04	6.74	ex	-3.10	First reported 8.49, See §4.1.
1081	UOP938	56.5		1.70	55.4		1.96	
1134	in house	32		-0.70	39		0.25	
1145	UOP938	45.86		0.66	45.96		0.98	
1200		-----		-----	-----		-----	
1201	in house	31.1		-0.79	28.8		-0.81	
1264		-----		-----	-----		-----	
1307	UOP938	36.73		-0.24	32.80		-0.39	
1397	in house	30.09		-0.89	30.90		-0.59	
1404	UOP938	42.34		0.31	35.75		-0.08	
1429	in house	36.5727		-0.25	32.6055		-0.41	
1455	in house	55		1.56	54		1.81	
1612		-----		-----	-----		-----	
1616	UOP938	41.92		0.27	38.64		0.22	
1656	UOP938	36.6		-0.25	19.2		-1.80	
1792	in house	52.8		1.34	56.1		2.03	
1800	UOP938	45.889		0.66	46.245		1.01	
1807		-----		-----	-----		-----	
1842		-----		-----	-----		-----	
1857	in house	36		-0.31	38		0.15	
1950	UOP938Mod.	34.53		-0.45	32.53		-0.42	
1960		-----		-----	-----		-----	
2124		-----		-----	-----		-----	
9055		-----		-----	-----		-----	
9057	in house	39.2		0.01	-----		-----	
9061	EPA200	35		-0.41	44		0.77	
	normality	OK			OK			
	n	36			32			
	outliers	1	Spike	recovery	1 (+2excl)	Spike	recovery	
	mean (n)	39.135	35.02	<112%	36.560	38.92	<94%	
	st.dev. (n)	8.6142			9.4785			
	R(calc.)	24.120			26.540			
	R(Horwitz)	28.555			26.951			

#15033

#15033   Kernel Density

#15034


#15034   Kernel Density
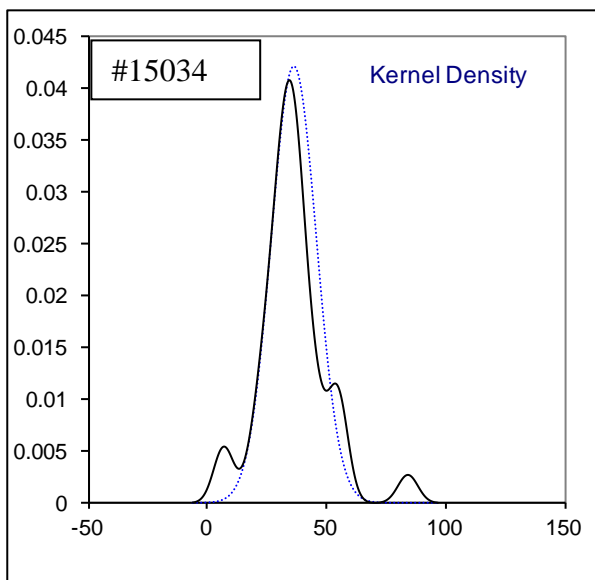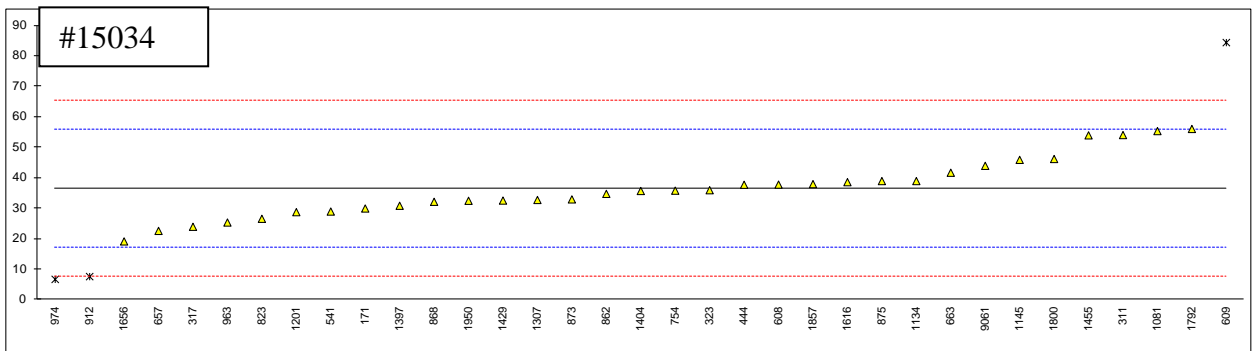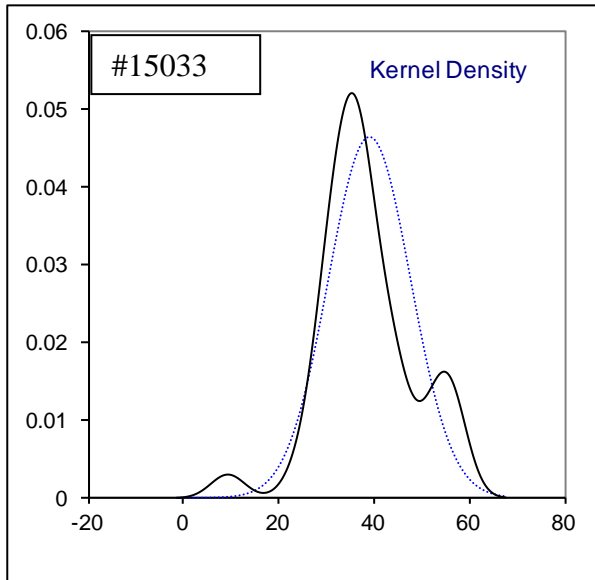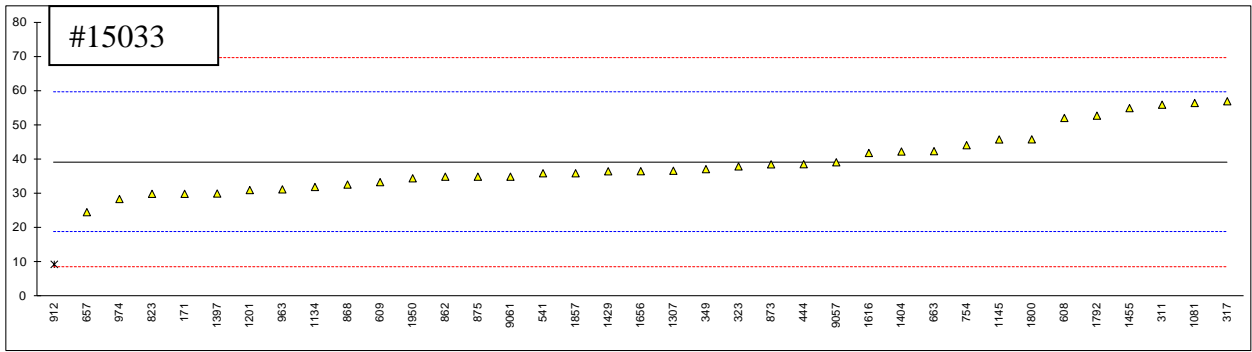
Determinations of Arsenic content as As on sample #15035 and #15036; results in µg/kg

lab	Method	#15035	mark	z(targ)	#15036	mark	z(targ)	remarks
150		-----		-----	-----		-----	
171	INH-014	6	ex	-2.47	<5		-----	See §4.1. False negative?
311	INH-006	32		1.91	34		1.65	
323	INH-018	35		2.42	27		0.58	
349	INH-9312	9		-1.97	-----		-----	
444		-----		-----	-----		-----	
759		-----		-----	-----		-----	
781		-----		-----	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873		-----		-----	-----		-----	
875		-----		-----	-----		-----	
912	in house	3.061	ex	-2.97	3.085	ex	-3.08	See §4.1.
922		-----		-----	-----		-----	
963	UOP946	17		-0.62	19		-0.64	
1066		-----		-----	-----		-----	
1081		20		-0.11	25		0.28	
1134		-----		-----	-----		-----	
1145	INH-9312	17.01		-0.62	16.08		-1.09	
1201	in house	18.3		-0.40	23.6		0.06	
1404		-----		-----	-----		-----	
1616		-----		-----	-----		-----	
1720		-----		-----	-----		-----	
1792	in house	1.6	ex	-3.22	2.4	ex	-3.18	See §4.1.
1842	INH-15	17.1		-0.60	17.7		-0.84	
1857		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
	normality	OK			OK			
	n	8			7			
	outliers	0 (+3 excl)	Spike	recovery	0 (+2 excl)	Spike	recovery	
	mean (n)	20.676	29.21	<71%	23.197	32.26	<72%	
	st.dev. (n)	8.5822			6.2325			
	R(calc.)	24.030			17.451			
	R(Horwitz)	16.607			18.312			
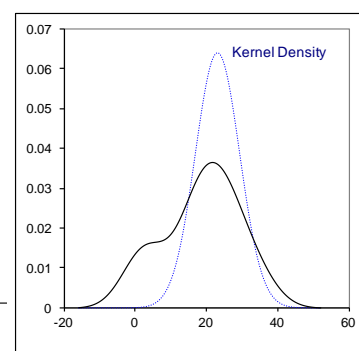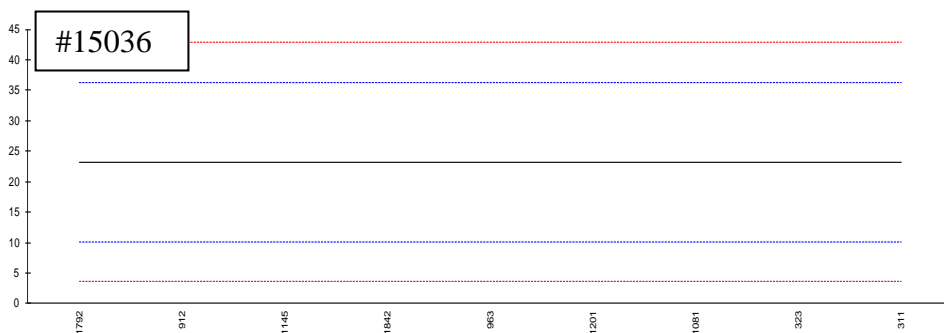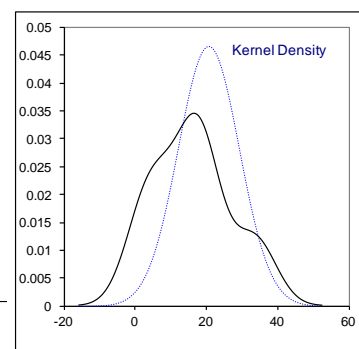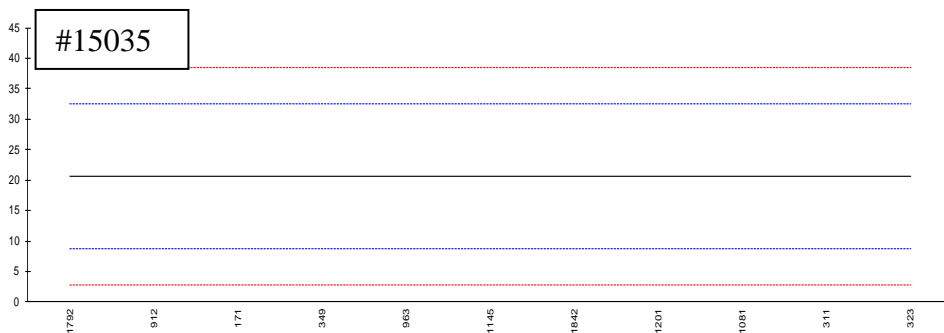
#15035

#15036

Determinations of Lead content as Pb on sample #15035 and #15036; results in µg/kg

lab	Method	#15035	mark	z(targ)	#15036	mark	z(targ)	remarks
150		12.8	ex	-3.47	<10		-----	See §4.1. False negative?
171	INH-014	70		-0.15	58		0.01	
311	INH-003	105		1.88	107		3.46	
323	INH-002	100		1.59	91		2.33	
349	UOP952	90		1.01	-----		-----	
444		-----		-----	-----		-----	
759		-----		-----	-----		-----	
781	UOP952	45.25		-1.58	30.50		-1.93	
855	SH/T0242	89.1		0.96	75.1		1.21	
862	UOP952	83.6		0.64	71.1		0.93	
868	UOP952	96.5		1.39	80.8		1.61	
873	UOP952	62.4		-0.59	42.2		-1.10	
875		46		-1.54	33		-1.75	
912	in house	2.492	ex	-4.07	2.783	ex	-3.87	See §4.1
922		-----		-----	-----		-----	
963	IP224	9	ex	-3.69	6	ex	-3.65	See §4.1
1066		-----		-----	-----		-----	
1081		35		-2.18	30		-1.96	
1134		-----		-----	-----		-----	
1145	INH-9406	70.89		-0.10	57.21		-0.05	
1201		-----		-----	-----		-----	
1404	IP224	8.9	ex	-3.69	<3		-----	See §4.1. False negative?
1616	IP224	120.8	C	2.80	79.19		1.50	
1720		-----		-----	-----		-----	
1792		-----		-----	-----		-----	
1842	INH-15	43.8		-1.67	36.4		-1.51	
1857	INH-19	52.2		-1.18	37.8		-1.41	
1950	UOP952	50.2		-1.30	38.8		-1.34	
	normality	OK			OK			
	n	16			15			
	outliers	0 (+4 excl)	Spike	recovery	0 (+2 excl)	Spike	recovery	
	mean (n)	72.546	69.90	<104%	57.873	69.63	<83%	
	st.dev. (n)	25.9761			24.7580			
	R(calc.)	72.733			69.322			
	R(Horwitz)	48.238			39.813			
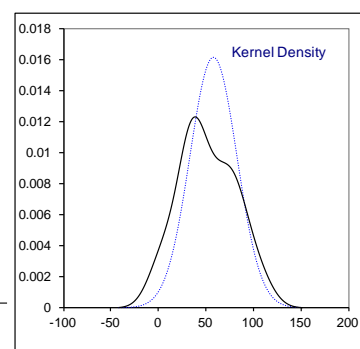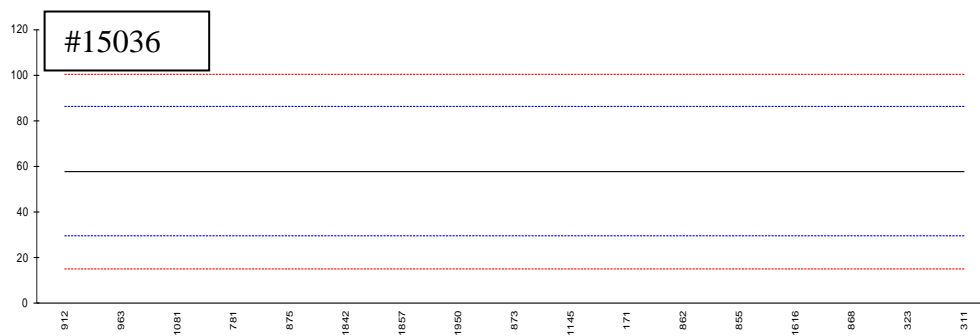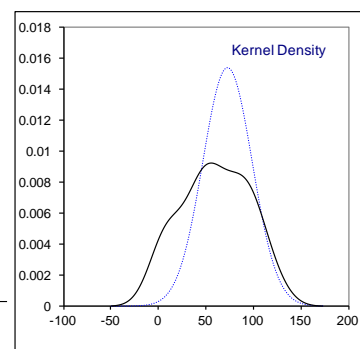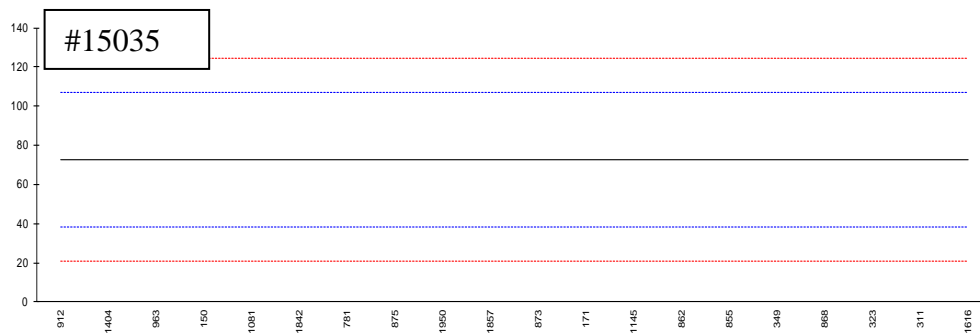
Determination of Total Vapour Pressure on sample #15037; results in psi

lab	method	value	mark	z(targ)	remarks
140	D5191	12.63		-0.35	
150	D5191	12.79		0.77	
171	D5191	12.78		0.70	
225		-----		-----	
237		-----		-----	
238		-----		-----	
317		-----		-----	
322		-----		-----	
323	D5191	12.71		0.21	
334		-----		-----	
336		-----		-----	
340		-----		-----	
360	D5191	12.90		1.54	
399	D5191	12.78		0.70	
445	D5191	12.760		0.56	
657	D5191	12.589		-0.64	
753	D5191	12.65		-0.21	
754	D5191	12.633		-0.33	
759	D5191	12.386	R(0.05)	-2.06	
781	D5191	12.56		-0.84	
785	D5191	12.69		0.07	
855	D5191	12.63		-0.35	
862	D5191	12.64		-0.28	
868	D5191	12.72		0.28	
873	D5191	12.60		-0.56	
875	D5191	12.57		-0.77	
963		-----		-----	
974	D5191	12.73		0.35	
1081		-----		-----	
1134		-----		-----	
1145		-----		-----	
1201	D5191	12.65		-0.23	
1254	D5191	12.62	C	-0.42	First reported 12.20
1257	D5191	12.68		0.00	
1264		-----		-----	
1307	D5191	12.54		-0.98	
1404	D5191	12.73		0.35	
1455	D5191	12.76		0.56	
1616	D5191	12.68		0.00	
1792	D5191	12.65		-0.23	
1857	D5191	12.64	C	-0.28	First reported 11.85
1950	D5191	12.70		0.14	
1960		-----		-----	
2124		-----		-----	
9054		-----		-----	
9058		-----		-----	
9061	D5191	12.71		0.21	
9153		-----		-----	

normality	OK	
n	29	
outliers	1	
mean (n)	12.680	
st.dev. (n)	0.0802	
R(calc.)	0.225	
R(D5191:13)	0.400	
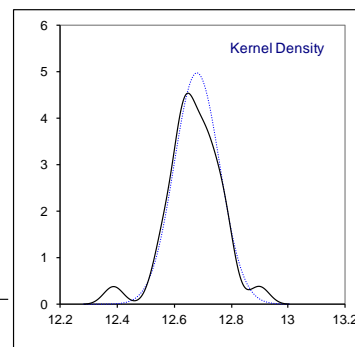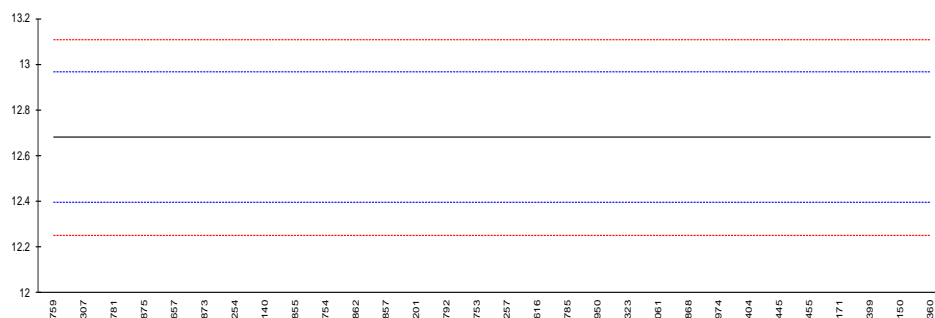
Determination of DVPE acc. D5191 on sample #15037; results in psi

lab	method	value	mark	z(targ)	remarks
140	D5191	11.64		-0.23	
150	D5191	11.79		0.82	
171	D5191	11.78		0.75	
225		-----		-----	
237		-----		-----	
238		-----		-----	
317	D5191	11.63		-0.30	
322	D5191	11.49		-1.28	
323	D5191	11.72		0.33	
334		-----		-----	
336	D5191	11.79		0.81	
340		11.69	C	0.12	Reported result first as TVP (80.6 kPa)
360	D5191	11.90		1.59	
399	D5191	11.78		0.75	
445	D5191	11.759		0.60	
657	D5191	11.589		-0.59	
753	D5191	11.66		-0.09	
754	D5191	11.632		-0.29	
759	D5191	11.40		-1.91	
781	D5191	11.57		-0.72	
785	D5191	11.69		0.12	
855	D5191	11.65		-0.16	
862	D5191	11.65		-0.16	
868	D5191	11.82		1.03	
873	D5191	11.61		-0.44	
875	D5191	11.59		-0.58	
963		-----		-----	
974	D5191	11.69		0.12	
1081	D5191	11.72		0.32	
1134		-----		-----	
1145	D5191	11.725		0.36	
1201	D5191	11.65		-0.19	
1254	D5191	11.63	C	-0.30	First reported result 11.23
1257	D5191	11.68		0.05	
1264	D5191	12.12	R(0.01)	3.13	
1307	D5191	11.553		-0.84	
1404	D5191	11.73		0.40	
1455	D5191	11.76		0.61	
1616	D5191	11.69		0.12	
1792	D5191	11.66		-0.08	
1857	D5191	11.65		-0.16	
1950	D5191	11.705		0.22	
1960		-----		-----	
2124		-----		-----	
9054	D5191	11.52		-1.07	
9058		11.70	C	0.22	Reported result first as TVP (80.7 kPa)
9061	D5191	11.71		0.26	
9153	D5191	11.65	C	-0.16	Reported result first as TVP

normality	suspect
n	39
outliers	1
mean (n)	11.673
st.dev. (n)	0.0946
R(calc.)	0.264
R(D5191:13)	0.400
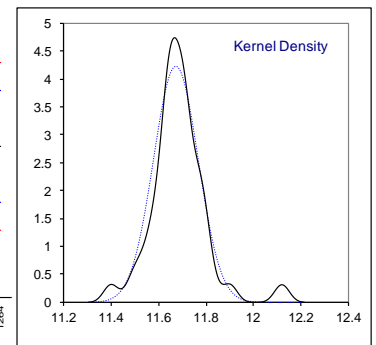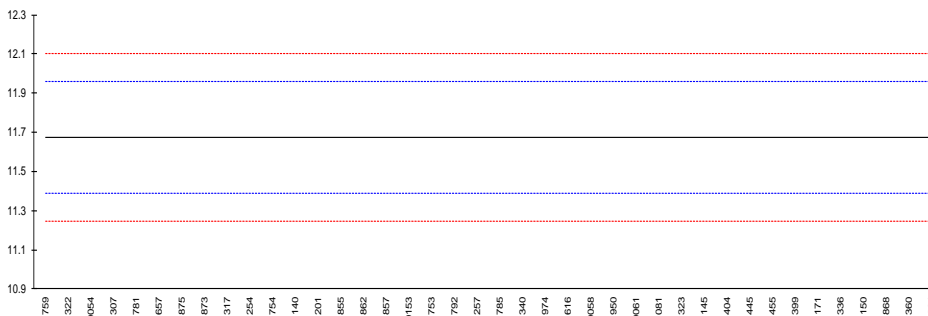
APPENDIX 2

Number of participants per country

iis15N01

1 lab in	ALGERIA
1 lab in	ARGENTINA
1 lab in	AZERBAIJAN
3 labs in	BELGIUM
1 lab in	BRAZIL
1 lab in	BULGARIA
1 lab in	CANADA
4 labs in	CHINA, P.R. of
1 lab in	CÔTE D'IVOIRE
1 lab in	CROATIA
1 lab in	CZECH REPUBLIC
7 labs in	FRANCE
1 lab in	GEORGIA
1 lab in	GERMANY
3 labs in	IRAN, Islamitic Republic
1 lab in	ISRAEL
2 labs in	ITALY
1 lab in	LATVIA
2 labs in	MALAYSIA
1 lab in	MEXICO
10 labs in	NETHERLANDS
3 labs in	NIGERIA
1 lab in	NORWAY
1 lab in	PAKISTAN
1 lab in	PORTUGAL
1 lab in	QATAR
11 labs in	RUSSIA
2 labs in	SAUDI ARABIA
1 lab in	SERBIA
1 lab in	SINGAPORE
1 lab in	SOUTH KOREA
3 labs in	SPAIN
1 lab in	SUDAN
1 lab in	SWEDEN
1 lab in	THAILAND
1 lab in	TURKEY
3 labs in	U.A.E.
3 labs in	U.S.A.
7 labs in	UNITED KINGDOM

iis15N01AsPb

1 lab in	BELGIUM
1 lab in	FRANCE
3 labs in	P.R. of CHINA
1 lab in	INDIA
4 labs in	NETHERLANDS
1 lab in	PAKISTAN
1 lab in	QATAR
6 labs in	RUSSIA
1 lab in	SAUDI ARABIA
2 labs in	SPAIN
1 lab in	SUDAN
1 lab in	THAILAND
2 labs in	U.S.A.
3 labs in	UNITED KINGDOM

iis15N01Hg

1 lab in	ALGERIA
1 lab in	ARGENTINA
2 labs in	AUSTRALIA
2 labs in	BELGIUM
2 labs in	CHINA, P.R of
1 lab in	CROATIA
3 labs in	FRANCE
1 lab in	INDIA
2 labs in	MALAYSIA
6 labs in	NETHERLANDS
1 lab in	NORWAY
1 lab in	PAKISTAN
1 lab in	QATAR
5 labs in	RUSSIA
2 labs in	SAUDI ARABIA
1 lab in	SINGAPORE
1 lab in	SOUTH KOREA
3 labs in	SPAIN
2 labs in	THAILAND
2 labs in	U.A.E.
3 labs in	U.A.E.
1 lab in	U.S.A.
7 labs in	UNITED KINGDOM

iis15N01DVPE

2 labs in	AUSTRALIA
2 labs in	BELGIUM
1 lab in	BULGARIA
3 labs in	CHINA, P.R. of
1 lab in	CÔTE D'IVOIRE
4 labs in	FRANCE
1 lab in	ITALY
1 lab in	LATVIA
6 labs in	NETHERLANDS
2 labs in	NIGERIA
1 lab in	NORWAY
1 lab in	QATAR
9 labs in	RUSSIA
1 lab in	SAUDI ARABIA
1 lab in	SINGAPORE
1 lab in	SPAIN
1 lab in	THAILAND
3 labs in	U.A.E.
3 labs in	U.S.A.
4 labs in	UNITED KINGDOM

APPENDIX 3

Abbreviations:

C   = corrected result after checking of first reported suspect 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
fr   = first reported
ex   = excluded from calculations
w   = withdrawn on request participant
E   = error in calculations
S   = scope of the reported method is not applicable
U   = reported in a deviating unit
n.a.   = not applicable
n.e.   = not evaluated
SDS   = Safety Data Sheet
RSD   = Relative Standard Deviation

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