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29-Oct-2014

**AGL Energy Limited**  
**L21, 101 Miller Street**  
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**New South Wales 2065**  
**Attention: Rachel Braikenridge**

**REPORT NUMBER: M142055AR2**

Site/Client Ref: BTEX Analysis

Order No: 4510010590

## CERTIFICATE OF ANALYSIS

This report replaces previous report(s) dated 28/10/2014 or earlier

**SAMPLES:** Five samples were received for analysis

**DATE RECEIVED:** 24-Sep-2014

**DATE COMMENCED:** 30-Sep-2014

**METHODS:** See Attached Results

**RESULTS:** Please refer to attached pages for results.

Note: Results are based on samples as received at SGS Leeder Consulting's laboratories

**REPORTED BY:**

**Evan Jones**  
Laboratory Manager



NATA Accredited Laboratory Number: 14429

Accredited for compliance  
with ISO/IEC 17025.

**(I) RESULTS**

**Report N°: M142055AR2**

**Matrix: Water**

**Method: MA-15.WW.01 Volatile Organic Compounds**

Sample units are expressed in mg/L

		Leeder ID	2014017752	2014017754	2014019139	2014019141	2014019143
		Client ID	Broken x-link gel sample	Pontilands Dam	Linear gel sample without choline chloride	Linear gel sample with choline chloride	Choline chloride Raw
Analyte Name	PQL						
Benzene	0.001		nd	nd	nd	nd	<0.01
Ethylbenzene	0.001		nd	nd	nd	nd	<0.01
Toluene	0.001		nd	nd	nd	nd	<0.01
m&p-Xylenes	0.001		nd	nd	nd	nd	<0.01
o-Xylene	0.001		nd	nd	nd	nd	<0.01

**Matrix: Water**

**Method: MA-15.WW.01 Volatile Organic Compounds**

Sample units are expressed in mg/L

		Leeder ID	2014019144	2014019145
		Client ID	Linear gel sample without choline chloride	Method
Analyte Name	PQL		Duplicate	Blank
Benzene	0.001		nd	nd
Ethylbenzene	0.001		nd	nd
Toluene	0.001		nd	nd
m&p-Xylenes	0.001		nd	nd
o-Xylene	0.001		nd	nd

**Results:**

The tables on this page show the results of test done on the AGL CSG fracture stimulation fluids

**(I) RESULTS**

**Report N°: M142055AR2**

**Matrix: Water**

**Method: VOC Surrogate Recovery**

Sample units are expressed in %

		Leeder ID	2014017752	2014017754	2014019139	2014019141	2014019143
		Client ID	Broken x-link gel sample	Pontilands Dam	Linear gel sample without choline chloride	Linear gel sample with choline chloride	Choline chloride Raw
Analyte Name	PQL						
Dibromofluoromethane			84	102	111	95	64
12-Dichloroethane-d4			106	107	98	102	69
Toluene-d8			101	101	94	97	93
p-Bromofluorobenzene			91	90	82	82	81

**Matrix: Water**

**Method: VOC Surrogate Recovery**

Sample units are expressed in %

		Leeder ID	2014019144	2014019145
		Client ID	Linear gel sample without choline chloride	Method
Analyte Name	PQL		Duplicate	Blank
Dibromofluoromethane			103	111
12-Dichloroethane-d4			95	101
Toluene-d8			95	97
p-Bromofluorobenzene			82	82

**Surrogates:**

These are organic compounds which are added to all samples prior to analysis, and are used to determine the extraction efficiency of the method. These compounds are similar to the target analytes in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

The surrogacy and quality control test is completed to ensure the accuracy of the fracture stimulation fluid test, the results of which are reported on page 2

**(II) QUALITY CONTROL**

**Report N°: M142055AR2**

**Matrix: Water**

**Method: MA-15.WW.01 Volatile Organic Compounds**

Quality Control Results are expressed in Percent Recovery of expected result

Analyte Name	Leeder ID	2014019146	2014019147
	Client ID	Method	Method
	PQL	Spike	Spike Dup
Benzene		104	96
Ethylbenzene		101	94
Toluene		106	99
m&p-Xylenes		66	60
o-Xylene		101	92

**Matrix: Water**

**Method: VOC Surrogate Recovery**

Quality Control Results are expressed in Percent Recovery of expected result

Analyte Name	Leeder ID	2014019146	2014019147
	Client ID	Method	Method
	PQL	Spike	Spike Dup
Dibromofluoromethane		80	106
12-Dichloroethane-d4		80	96
Toluene-d8		93	94
p-Bromofluorobenzene		86	87

**Method Spike (& Spike Dup):**

A control matrix is spiked with known concentrations of the target analytes (in this case BTEX). The spiking occurs during the sample preparation and prior to the extraction procedure. The purpose of the spiking (carried out in duplicate) is to determine the precision and bias of the procedure. The results are reported as a percentage recovery of the amount added. The surrogacy and quality control test is completed to ensure the accuracy of the fracture stimulation fluid test, the results of which are reported on page 2

**QUALIFIERS / NOTES FOR REPORTED RESULTS**

PQL	Practical Quantitation Limit
<i>is</i>	Insufficient Sample to perform this analysis.
T	Tentative identification based on computer library search of mass spectra.
ND	Not Detected – The analyte was not detected above the reported PQL.
NC	Not calculated, Results below PQL
<i>nr</i>	Not Requested for analysis.
R	Rejected Result – results for this analysis failed QC checks.
SQ	Semi-Quantitative result – quantitation based on a generic response factor for this class of analyte.
IM	Inappropriate method of analysis for this compound
U	Unable to provide Quality Control data – high levels of compounds in sample interfered with analysis of QC results.
UF	Unable to provide Quality Control data- Surrogates failed QC checks due to sample matrix effects
L	Analyte detected at a level above the linear response of calibration curve.
E	Estimated result. NATA accreditation does not cover estimated results.
C1	These compounds co-elute.
C2	These compounds co-elute.
CT	Elevated concentration. Results reported from carbon tube analysis
**	Sample shows non-petroleum hydrocarbon profile

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## **APPENDIX ONE.**

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