



OIL & GAS TECHNOLOGIES

Vapour Recovery Unit EPA Compliance Test Report

Client: Quantem
Port Botany Terminal
Friendship Rd
Port Botany, NSW
2036
Australia

VRU ID: AA609-9-8

Test Reference Number: EPA-QBC-04

Sampling Date: 4th April 2024

Revision	Date	Checked by	Notes
0	19/04/2024	Mark Jones	

Authorised by



Accreditation Number: 20978
Accredited for compliance with
ISO/IEC 17025 - TESTING

Oil & Gas Technologies Pty Ltd
58-60 Chelmsford Street
Williamstown North
VIC 3016, Australia

TABLE OF CONTENTS

1.0 Executive Summary

2.0 Introduction

3.0 Vapour Recovery Unit System

- 3.1 VRU Description
- 3.2 Gantry Product Allocation
- 3.3 VRU Schematic

4.0 Test Methodology

- 4.1 Test Procedures
- 4.2 Test Instrumentation

5.0 Test Results

- 5.1 Instrument Results
- 5.2 Loading Volumes
- 5.3 VRU Test Summary

Appendices

- A Pre-test Checklist
- B Site Data Record
- C Tank Truck Loading Data
- D Outlet measurement data
- E Chart recording of outlet data
- F Calculations
- G USEPA Method 25B (NDIR Technology)
- H Atmospheric Data
- I Stack velocity and temperature data
- J Calibration gas certificates

1.0 Executive Summary

From the testing carried out at Quantem Port Botany Terminal, on 4th April 2024, the following has been concluded.

The average hydrocarbon concentration emitted as equivalent propane was determined to be: 0.01 % +/- MU

The total mass of unrecovered organic vapours emitted per litre was determined to be: 1.98 mg/l +/- MU

Total mass of unrecovered organic vapours emitted per liter of Volatiles loaded was determined to be: 1.98 mg/l +/-

The emissions rate of unrecovered organic vapours emitted was determined to be: 0.58 g/min +/- MU

2.0 Introduction

Oil & Gas Technologies Pty Ltd was contracted by Quantem to carry out hydrocarbon monitoring at the outlet of the carbon adsorption/absorption Vapour Recovery Unit (VRU) installed at their Port Botany Terminal; in order to allow the calculation of the total amount of hydrocarbon emissions from the VRU.

This test was performed in accordance with NSW Office of Environment and Heritage (as specified in the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales, January 2007)..

(Refer Appendix G)

This test was performed on 4th April 2024 at the Quantem, Port Botany Terminal.

3.0 Vapour Recovery Unit System

3.1 VRU Description

The Port Botany Terminal is equipped with an activated carbon adsorption / absorption Vapour Recovery Unit as follows.

The VRU is installed in line with the loading gantry via a vapour supply header. Vapour is displaced from the tank truck loading process at the loading gantry to the VRU; via the vapour supply header.

Vapour is processed in the VRU, with recovered vapour returned to the bulk storage tank and unrecovered vapours emitted to atmosphere.

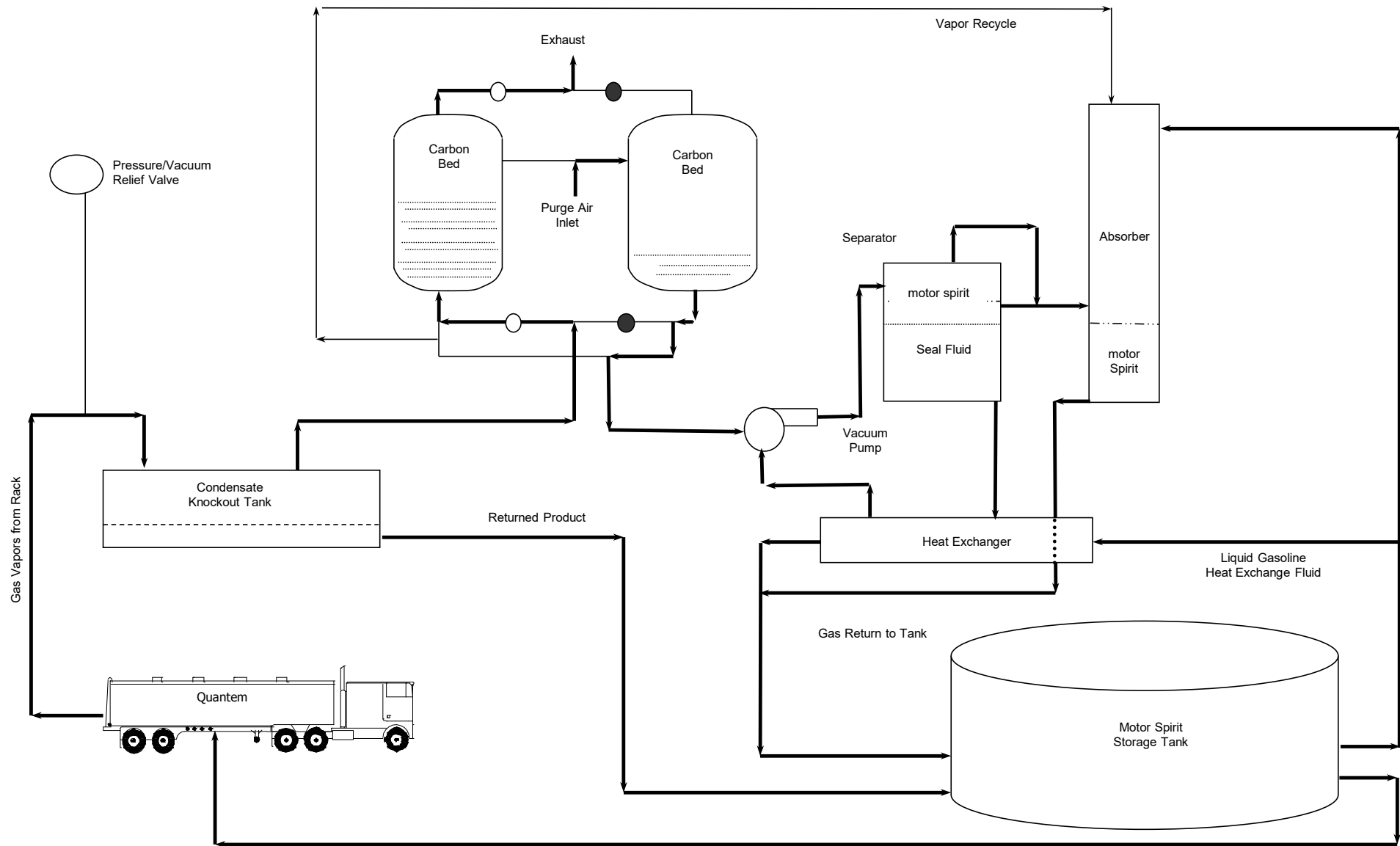
VRU Details:

Manufacturer	John Zink LRVP
Model Number	AA609-9-8
Year of Manufacture	2017

3.3 VRU Schematic

Typical Activated Carbon Adsorption / Absorption Vapour Recovery Unit. (VRU)

ACTIVATED CARBON VAPOUR RECOVERY UNIT - SIMPLIFIED SCHEMATIC



4.0 Test Methodology

The test methods used to quantify the amount of hydrocarbon vapours emitted by the Vapour Recovery Unit (VRU); in accordance with the EPA requirements for periodic testing and reporting of emissions from static sources.

Testing was performed in accordance with USEPA Method 25B.

4.1 Test Procedures

Testing is carried out in accordance with Oil & Gas Technologies Pty Ltd internal testing procedure, procedure number 'OGT-ET-001'.

In summary, inlet and outlet hydrocarbon concentrations are measured over a continuous four hour (minimum) period using a continuous hydrocarbon analyser and digital data logging system. Measurement of the outlet hydrocarbon concentration, outlet flow and outlet temperature are continuously recorded and saved to the data logger. Data is presented in this report as raw data and graphed; with the outlet concentrations shown as an average for the duration of the test. Calibration and calibration check values are not included in the averaged test results.

Calibration gas used is Propane in Nitrogen.

The hydrocarbon analysers are accurate to a maximum error of $\pm 2\%$ of full scale of the instrument, and are calibrated and verified on-site before and after performance of the test.

The specified gas mixture used to calibrate the Outlet analyser, ranged 0-10% vol, is a mixture approximating 3% Propane (balance of 97% Nitrogen).

All gas mixes are supplied with a NATA test report and subject to normal manufacturing tolerances.

Manufacturer's certificates of calibration gas mix verification are provided. (Refer appendix J)

The average ambient temperature is recorded for the four hour test period, atmospheric pressure is acquired from the Bureau of Meteorology website and recorded in the report.

Motor Spirit (petrol) and Distillate (Diesel and others) volumes loaded into tank trucks during the test period are recorded. This information is taken from the terminal inventory control system.

All values are averaged over the four-hour test period and corrected to 15°C and 101.3kPa.

4.2 Test Instrumentation

Outlet hydrocarbon concentrations are measured using a Non-dispersion type Infrared Gas analyser.

Manufacturer – Infrared Industries IR-208 ranged 0-10% volume.

The instruments are calibrated prior to the commencement of the test, and the calibration checked at the end of the test period. Any variance in reading is recorded (drift). Any drift outside of the acceptable limits of +/- 2% shall mean the test is aborted.

Analyser data is logged using a 4 channel analogue data logger.

Sample lines – PTFE and Stainless Steel construction.

Valves and fittings – Stainless Steel and PTFE construction.

The forgoing equipment is mounted in a fan cooled mobile test laboratory. All equipment is maintained in as new condition at all times.

5.0 Test Results

The test was carried out on 4th April 2024. The VRU was tested between 06:55 and 10:55.

The VRU was considered, by Quantem personnel, to be functioning normally during the period of the test.

5.1 Instrument Results

Zero and span checks were carried out at the start and end of the test period. Span calibration was checked using the gas mixtures identified above.

	%	ppm
Outlet Zero drift	0.04	357
Outlet Span drift	-0.02	-150

The calibration results are within the specified +/- 2% of instrument full range and therefore no adjustment or scaling was made.

5.2 Loading Volumes

The ratio of diesel loading to gasoline loading should be in the range of $\pm 15\%$ of what is normal for the duty period for the terminal.

The details of road tanker loaded volumes are given in Appendix A.

During the test period, loaded volumes consisted of :

71,197 litres of motor spirit

0 litres of distillate

Total volume loaded for the test period was 71,197 litres.

Volumes are corrected to 15°C.

This correlates to 0% distillate loading and 100% motor spirit loading.

5.3 VRU Test Summary

<i>Terminal Description</i>	Quantem Port Botany Terminal
<i>Vapour Control Unit Type</i>	Activated Carbon Adsorption / ULP Absorption
Test Date	4th April 2024
Test Period	06:55 and 10:55
Average Ambient Temperature	20.0 °C
Average Barometric Pressure	1023.4 hPa
<i>Average Outlet Stack Temperature</i>	25.22 °C
<i>Test Duration</i>	241 Minutes
<i>Average Outlet Emissions</i>	118.64 ppm
<i>Average Outlet Concentration (Y_{out})</i>	0.0119 %
<i>Total Petroleum Products Loaded (V_{gin test corrected})</i>	71,197 Litres
<i>Total Motor Spirits Loaded (V_{motor spirit})</i>	71,197 Litres
<i>Total Distillate Loaded (V_{Distillate})</i>	0 Litres
<i>Stack Diameter</i>	200 mm
<i>Average Gas Exhaust Flow</i>	38.9 m ³ /hr
<i>Total Hydrocarbon emissions during test</i>	140,698 mg
<i>Average milligrams emitted per liter of Volatiles loaded was :</i>	1.98 mg/l
<i>Average Milligrams emitted / Litre</i>	1.98 mg/l
<i>Emission rate of VOC's emitted during test</i>	0.584 g/min

APPENDIX A
Pre-test Checklist

for test period 4th April 2024

Pre-Test & Site Checklist – ET001

Issue:	1	Date of Issue:	03-06-22
Revision No.:	9	No. of Pages:	3

Terminal Name and Location: QUANTUM PB Tester: Simran Singh
Terminal Representative: CHRIS THACKER Test Date: 4/4/24

Pre-site checklist

Has a suitable test time been arranged? Required arrival time: 05:30
Test time between: 0655-10:55
Order / Test Number: _____ Ordered By: _____

Re-confirm arrangements with site contact 1 week prior to test. Calibration gases (3% and 30% mixes + zero air) are on hand or ordered.

Pre-test checklist

Has a suitable safe work permit been issued? Permit number/s: _____

Is a suitable set-up area available? eg/ 240V supply, restricted access, safe area.

Is all emissions test equipment in good working order and free from defects?

Has final set-up, including safety barricades, fire extinguishers and test equipment been sited by the terminal representative and approved?

POWER MUST NOT BE SWITCHED ON & THE TEST STARTED UNTIL ALL OF THE ABOVE CHECK BOXES HAVE BEEN MARKED COMPLETE AND O.K.

Test and Pack-up checklist

Perform system leak check – as per VRU Efficiency Testing Procedure. (Leak <0.05l/m)

Complete pre-test zero, calibration & QA check of instruments.

Begin sampling and carry out test for a minimum of 4 hours. (test may be extended at the request of the terminal representative)

Re-apply zero & calibration gases upon sampling completion, to check for instrument drift.

Pack all equipment away and ensure site is left in a clean, tidy and safe condition. Collect gantry through-put data (for test period) from terminal representative.

Ensure all equipment is safely secured on the test vehicle and leave site.

Does the sample point connection comply with good sampling practices Yes / No

If No, Provide details: _____

Calibration details

Terminal: QUANTEM

Date: 4/4/24

Inlet calibration gas:

Propane: 30.01 %
 Cylinder Number: 17827
 Analysis Date: 16-5-23
 Expiry Date: 16-5-27
 Cylinder Pressure: 1000 Kpa
 must be >700kPa

Outlet calibration gas:

Propane: 3.04 %
 Cylinder Number: 834586
 Analysis Date: 04/03/22
 Expiry Date: 04/03/27
 Cylinder Pressure: 12500 Kpa
 must be >700kPa

QA check gas:

Propane: 7.91 %
 Expiry Date: 21/01/26
 Cylinder Pressure: 5000 Kpa
 must be >700kPa

Initial Calibration

Time	Inlet Reading
6:47:10	30.10
6:47:20	30.10
6:47:30	30.11
6:47:40	30.10
6:47:50	30.12
6:48:00	30.12
6:48:10	30.12
Average=	30.11 %

Time	Outlet Reading
6:50:20	3.028
6:50:30	3.028
6:50:40	3.027
6:50:50	3.030
6:51:00	3.033
6:51:10	3.030
6:51:20	3.024
Average=	3.034 %

Quality Assurance Check

Time	Inlet Reading
6:54:15	8.185

Time	Outlet Reading
6:54:15	7.899

Final Calibration

Time	Inlet Reading
10:56:50	31.80
10:57:00	31.79
10:57:10	31.81
10:57:20	31.82
10:57:30	31.80
10:57:40	31.80
10:57:50	31.79
Average=	31.801 %

Time	Outlet Reading
10:59:20	3.022
10:59:30	3.023
10:59:40	3.023
10:59:50	3.023
11:00:00	3.023
11:00:10	3.020
11:00:20	3.022
Average=	3.023 %

Note: Instruments must be set for calibration gas being used.

Initial calibration, and final calibration check, must be taken at 10 second intervals, for a period of at least 1 minute, only after the instrument reading has stabilized.

ET001 – Page 3 Gas bottle change over QA check

Terminal: _____

Date: _____

NOTE: Complete this section only if cylinders are changed.

Strike through sections that are not applicable with an N/A

Initial Bottles

Inlet calibration gas:

Propane: _____ %

Expiry Date: _____

Cylinder Pressure: _____ Kpa
must be >700kPa

Outlet calibration gas:

Propane: _____ %

Expiry Date: _____

Cylinder Pressure: _____ Kpa
must be >700kPa

QA check gas:

Propane: _____ %

Cylinder Pressure: _____ Kpa
must be >700kPa

Initial Calibration

Time	Inlet Reading
Average=	%

Time	Outlet Reading
Average=	%

Quality Assurance Check

Time	Inlet Reading

Time	Outlet Reading

Final Calibration

Time	Inlet Reading
Average=	%

Time	Outlet Reading
Average=	%

OGT Tester:(sign) sdely
(name) SIMRANDEEP SINGH
(time) 11:15

APPENDIX B
Site Data Record

for test period 4th April 2024

Oil & Gas Technologies (Australia) Pty Ltd - VRU Emission Test - Site Data Record.

Client Details

Client Contact 0
Billing Address Quantem
Street Address Port Botany Terminal
 Friendship Rd
Town, State Port Botany, NSW
Post Code 2036
Country Australia

Test Reference No. EPA-QBC-04

Site Details

Test Type EPA Test
Terminal Tested Port Botany Terminal
VRU # 1 Type John Zink LRVP

VRU Serial # AA609-9-8

Year of manufacture 2017

Date 4th April 2024
Arrival time 5:30 AM
Test Start Time 6:55 AM
Test End Time 10:55 AM

Ambient Conditions At Time of Test

Weather Conditions

Test start time 6:55
Ambient Temp C 19.10

Barometric Pressure 1023.5
Mid Point Time 9:00

Ambient Temp C 20.70
Barometric Pressure 1023.8
End Time 10:55
Ambient Temp C 20.10
Barometric Pressure 1022.9

Average Temp (T)= 19.97
Average Atmos (P) = 1023.4

Calibration Gas Details, Cylinder # and Spec's

Inlet Cal Gas SPAN 30.0% propane
Total HC = 70.0% nitrogen balance
Inlet Cal Gas ZERO 0% synthetic air
Outlet Cal Gas SPAN 3.04% propane
Total HC = 96.96% nitrogen balance
Outlet Cal Gas ZERO 0% synthetic air

Gas Supplier Coregas

Analysis Date 16th May 2023 Inlet span.
 4th March 2022 Outlet span.

Delivered to Williamstown, VIC

Cylinder #'s 17827 inlet span
 834586 outlet span

	Start Cal Check %	End Cal Check %
Inlet ZERO reading	0.101	0.057
Inlet SPAN reading	30.074	31.801
Outlet ZERO reading	0.010	0.046
Outlet SPAN reading	3.028	3.013
Inlet ZERO (Drift) PPM	-442	-0.0442%
Inlet SPAN (Drift) PPM	17269	1.7269%
Outlet ZERO Drift PPM	357	0.0357%
Outlet SPAN Drift PPM	-150	-0.0150%

Notes / Comments

Tests carried out by Simrandeep Singh of Oil & Gas Technologies Pty Ltd.

APPENDIX C

Tank truck loading data
for test period 4th April 2024
Corrected to 15 degrees Celsius

Terminal Throughput during Test period

ADO	Ethanol	PULP 98	PULP 95	AVGAS	Jet A1
0	0	0	0	71197	0

All volumes in Litres corrected to 15 degrees Celsius

MOTOR SPIRIT THROUGHPUT	71,197	Litres
DISTILLATE THROUGHPUT	0	Litres
TOTAL THROUGHPUT	71,197	Litres
DISTILLATE AS % OF TOTAL	0.00%	



DELIVERY DOCKET / BILL OF LADING

TERMINALS PTY
 Phone : Phone Number
 ACN : 87 000 348407

Emergency Contact: Supplier Emergency Contact: TERMINALS PTY
 Carrier Emergency Contact:

DANGEROUS GOODS MANIFEST

	UN CODE	HAZCHEM	CLASS	PACKING GROUP	GROSS QTY
PETRO	1203	3	111		21,793

Transaction Number: **195412 - 0**

Deliver To: 150028 - KS FREIGHTERS

Carrier:	129 - Aero Refuellers	Loaded At:	Terminals Port Botany
Trailer Rego:	1CQ7MM	Loading Date:	04/04/2024
Driver Name:	6890 - Keith Lynch	Loading Cycle Started:	04/04/2024 07:51:08
Supplier:	150001 - TRAFIGURA ASIA TRADING PTE LTI	Loading Cycle Completed:	04/04/2024 08:01:03
Order Ref:		Contract Number:	150028

Delivery Docket Comments:

Compartment Details

Trailer / Comp.	Product	Qty (L)	Qty (L 15)	Weight (T)		Avg. Temp	Avg. Density
1CQ7MM 1	AVGAS	3,799	3,767	2.852		22.1	758.1
1CQ7MM 2	AVGAS	5,998	5,948	4.503		22.1	758.1
1CQ7MM 3	AVGAS	5,996	5,948	4.503		21.8	758.1
1CQ7MM 4	AVGAS	6,000	5,951	4.505		21.9	758.1
Total		21,793	21,614	16.363			

Product Comments: The fuel described in this document complies with the relevant fuel standards prescribed under the Fuel Quality Standard Act 2000

Delivery Summary			Tank Record			
	Qty (L)	Qty (L 15)	Tank	Product	Begin Dip	End Dip
AVGAS	21,793	21,614	92	11- AVGAS		

The products above have been received / delivered.

Signature:



DELIVERY DOCKET / BILL OF LADING

TERMINALS PTY
 Phone : Phone Number
 ACN : 87 000 348407

Emergency Contact: Supplier Emergency Contact: TERMINALS PTY
 Carrier Emergency Contact:

DANGEROUS GOODS MANIFEST

	UN CODE	HAZCHEM	CLASS	PACKING GROUP	GROSS QTY
PETRO	1203	3	111		49,991

Transaction Number: **195411-0**

Deliver To: 150028 - KS FREIGHTERS

Carrier:	129 - Aero Refuellers	Loaded At:	Terminals Port Botany
Trailer Rego:	91854S, 91855S	Loading Date:	04/04/2024
Driver Name:	6927 - Phillip Baker	Loading Cycle Started:	04/04/2024 07:06:41
Supplier:	150001 - TRAFIGURA ASIA TRADING PTE LTI	Loading Cycle Completed:	04/04/2024 07:42:30
Order Ref:		Contract Number:	150028

Delivery Docket Comments:

Compartment Details

Trailer / Comp.	Product	Qty (L)	Qty (L 15)	Weight (T)		Avg. Temp	Avg. Density
91854S 1	AVGAS	7,450	7,391	5.595		21.7	758.1
91854S 2	AVGAS	6,998	6,941	5.254		21.9	758.1
91854S 3	AVGAS	5,299	5,258	3.980		21.5	758.1
91855S 1	AVGAS	7,198	7,137	5.403		22.1	758.1
91855S 2	AVGAS	7,398	7,336	5.553		22.1	758.1
91855S 3	AVGAS	7,798	7,734	5.855		21.9	758.1
91855S 4	AVGAS	7,850	7,786	5.894		21.9	758.1
Total		49,991	49,583	37.534			

Product Comments: The fuel described in this document complies with the relevant fuel standards prescribed under the Fuel Quality Standard Act 2000

Delivery Summary			Tank Record			
	Qty (L)	Qty (L 15)	Tank	Product	Begin Dip	End Dip
AVGAS	49,991	49,583	92	11- AVGAS		

The products above have been received / delivered.

Signature:

APPENDIX D

Outlet measurement data including calibration data

for test period 4th April 2024

Corrected to 15 degrees Celsius

Date	Time	Outlet
4/04/2024	06:34	0.0103
4/04/2024	06:35	0.0103
4/04/2024	06:36	0.0102
4/04/2024	06:37	0.0103
4/04/2024	06:38	0.0104
4/04/2024	06:39	0.0103
4/04/2024	06:40	0.0104
4/04/2024	06:41	0.0105
4/04/2024	06:42	0.0110
4/04/2024	06:43	0.0108
4/04/2024	06:44	0.0103
4/04/2024	06:45	0.0103
4/04/2024	06:46	0.0103
4/04/2024	06:47	0.0107
4/04/2024	06:48	0.0107
4/04/2024	06:49	0.8361
4/04/2024	06:50	3.0343
4/04/2024	06:51	2.0918
4/04/2024	06:52	0.0116
4/04/2024	06:53	4.0466
4/04/2024	06:54	5.7678
4/04/2024	06:55	0.1549
4/04/2024	06:56	0.0109
4/04/2024	06:57	0.0109
4/04/2024	06:58	0.0110
4/04/2024	06:59	0.0109
4/04/2024	07:00	0.0112
4/04/2024	07:01	0.0120
4/04/2024	07:02	0.0113
4/04/2024	07:03	0.0111
4/04/2024	07:04	0.0111
4/04/2024	07:05	0.0111
4/04/2024	07:06	0.0112
4/04/2024	07:07	0.0112
4/04/2024	07:08	0.0112
4/04/2024	07:09	0.0113
4/04/2024	07:10	0.0122
4/04/2024	07:11	0.0134
4/04/2024	07:12	0.0132
4/04/2024	07:13	0.0110
4/04/2024	07:14	0.0110
4/04/2024	07:15	0.0111
4/04/2024	07:16	0.0111
4/04/2024	07:17	0.0110
4/04/2024	07:18	0.0111
4/04/2024	07:19	0.0110
4/04/2024	07:20	0.0111
4/04/2024	07:21	0.0110
4/04/2024	07:22	0.0110
4/04/2024	07:23	0.0113
4/04/2024	07:24	0.0112
4/04/2024	07:25	0.0112

Zero

Span

Test Start

Date	Time	Outlet
4/04/2024	7:26	0.0112
4/04/2024	7:27	0.0112
4/04/2024	7:28	0.0111
4/04/2024	7:29	0.0112
4/04/2024	7:30	0.0113
4/04/2024	7:31	0.0113
4/04/2024	7:32	0.0113
4/04/2024	7:33	0.0113
4/04/2024	7:34	0.0113
4/04/2024	7:35	0.0113
4/04/2024	7:36	0.0112
4/04/2024	7:37	0.0113
4/04/2024	7:38	0.0113
4/04/2024	7:39	0.0113
4/04/2024	7:40	0.0112
4/04/2024	7:41	0.0113
4/04/2024	7:42	0.0113
4/04/2024	7:43	0.011
4/04/2024	7:44	0.0102
4/04/2024	7:45	0.0101
4/04/2024	7:46	0.0103
4/04/2024	7:47	0.0102
4/04/2024	7:48	0.0103
4/04/2024	7:49	0.0102
4/04/2024	7:50	0.0103
4/04/2024	7:51	0.0102
4/04/2024	7:52	0.0102
4/04/2024	7:53	0.0103
4/04/2024	7:54	0.0102
4/04/2024	7:55	0.0104
4/04/2024	7:56	0.0103
4/04/2024	7:57	0.0101
4/04/2024	7:58	0.0102
4/04/2024	7:59	0.0102
4/04/2024	8:00	0.0102
4/04/2024	8:01	0.0102
4/04/2024	8:02	0.0104
4/04/2024	8:03	0.0102
4/04/2024	8:04	0.0103
4/04/2024	8:05	0.0103
4/04/2024	8:06	0.0103
4/04/2024	8:07	0.0102
4/04/2024	8:08	0.0103
4/04/2024	8:09	0.0102
4/04/2024	8:10	0.0103
4/04/2024	8:11	0.0102
4/04/2024	8:12	0.0103
4/04/2024	8:13	0.0103
4/04/2024	8:14	0.0102
4/04/2024	8:15	0.0103
4/04/2024	8:16	0.0104
4/04/2024	8:17	0.0103

Date	Time	Outlet
4/04/2024	08:18	0.0102
4/04/2024	08:19	0.0103
4/04/2024	08:20	0.0101
4/04/2024	08:21	0.0103
4/04/2024	08:22	0.0102
4/04/2024	08:23	0.0103
4/04/2024	08:24	0.0103
4/04/2024	08:25	0.0103
4/04/2024	08:26	0.0102
4/04/2024	08:27	0.0103
4/04/2024	08:28	0.0102
4/04/2024	08:29	0.0102
4/04/2024	08:30	0.0103
4/04/2024	08:31	0.0105
4/04/2024	08:32	0.0109
4/04/2024	08:33	0.0109
4/04/2024	08:34	0.0109
4/04/2024	08:35	0.0109
4/04/2024	08:36	0.0109
4/04/2024	08:37	0.0109
4/04/2024	08:38	0.0110
4/04/2024	08:39	0.0109
4/04/2024	08:40	0.0109
4/04/2024	08:41	0.0110
4/04/2024	08:42	0.0109
4/04/2024	08:43	0.0109
4/04/2024	08:44	0.0110
4/04/2024	08:45	0.0110
4/04/2024	08:46	0.0109
4/04/2024	08:47	0.0110
4/04/2024	08:48	0.0109
4/04/2024	08:49	0.0109
4/04/2024	08:50	0.0110
4/04/2024	08:51	0.0109
4/04/2024	08:52	0.0109
4/04/2024	08:53	0.0111
4/04/2024	08:54	0.0114
4/04/2024	08:55	0.0113
4/04/2024	08:56	0.0114
4/04/2024	08:57	0.0113
4/04/2024	08:58	0.0113
4/04/2024	08:59	0.0114
4/04/2024	09:00	0.0113
4/04/2024	09:01	0.0113
4/04/2024	09:02	0.0114
4/04/2024	09:03	0.0113
4/04/2024	09:04	0.0114
4/04/2024	09:05	0.0114
4/04/2024	09:06	0.0114
4/04/2024	09:07	0.0115
4/04/2024	09:08	0.0115
4/04/2024	09:09	0.0114

Date	Time	Outlet
4/04/2024	09:10	0.0114
4/04/2024	09:11	0.0115
4/04/2024	09:12	0.0114
4/04/2024	09:13	0.0115
4/04/2024	09:14	0.0114
4/04/2024	09:15	0.0114
4/04/2024	09:16	0.0115
4/04/2024	09:17	0.0114
4/04/2024	09:18	0.0113
4/04/2024	09:19	0.0114
4/04/2024	09:20	0.0114
4/04/2024	09:21	0.0114
4/04/2024	09:22	0.0115
4/04/2024	09:23	0.0114
4/04/2024	09:24	0.0114
4/04/2024	09:25	0.0114
4/04/2024	09:26	0.0114
4/04/2024	09:27	0.0113
4/04/2024	09:28	0.0114
4/04/2024	09:29	0.0113
4/04/2024	09:30	0.0114
4/04/2024	09:31	0.0114
4/04/2024	09:32	0.0114
4/04/2024	09:33	0.0113
4/04/2024	09:34	0.0114
4/04/2024	09:35	0.0114
4/04/2024	09:36	0.0114
4/04/2024	09:37	0.0115
4/04/2024	09:38	0.0114
4/04/2024	09:39	0.0115
4/04/2024	09:40	0.0114
4/04/2024	09:41	0.0114
4/04/2024	09:42	0.0114
4/04/2024	09:43	0.0115
4/04/2024	09:44	0.0114
4/04/2024	09:45	0.0114
4/04/2024	09:46	0.0114
4/04/2024	09:47	0.0114
4/04/2024	09:48	0.0114
4/04/2024	09:49	0.0113
4/04/2024	09:50	0.0113
4/04/2024	09:51	0.0113
4/04/2024	09:52	0.0113
4/04/2024	09:53	0.0113
4/04/2024	09:54	0.0114
4/04/2024	09:55	0.0113
4/04/2024	09:56	0.0113
4/04/2024	09:57	0.0113
4/04/2024	09:58	0.0113
4/04/2024	09:59	0.0113
4/04/2024	10:00	0.0114
4/04/2024	10:01	0.0114
4/04/2024	10:02	0.0113
4/04/2024	10:03	0.0114
4/04/2024	10:04	0.0113
4/04/2024	10:05	0.0114
4/04/2024	10:06	0.0113
4/04/2024	10:07	0.0113

Date	Time	Outlet
4/04/2024	10:08	0.0114
4/04/2024	10:09	0.0113
4/04/2024	10:10	0.0113
4/04/2024	10:11	0.0114
4/04/2024	10:12	0.0114
4/04/2024	10:13	0.0113
4/04/2024	10:14	0.0113
4/04/2024	10:15	0.0113
4/04/2024	10:16	0.0113
4/04/2024	10:17	0.0113
4/04/2024	10:18	0.0113
4/04/2024	10:19	0.0113
4/04/2024	10:20	0.0114
4/04/2024	10:21	0.0113
4/04/2024	10:22	0.0113
4/04/2024	10:23	0.0113
4/04/2024	10:24	0.0113
4/04/2024	10:25	0.0114
4/04/2024	10:26	0.0113
4/04/2024	10:27	0.0113
4/04/2024	10:28	0.0113
4/04/2024	10:29	0.0114
4/04/2024	10:30	0.0113
4/04/2024	10:31	0.0114
4/04/2024	10:32	0.0113
4/04/2024	10:33	0.0113
4/04/2024	10:34	0.0114
4/04/2024	10:35	0.0113
4/04/2024	10:36	0.0113
4/04/2024	10:37	0.0113
4/04/2024	10:38	0.0114
4/04/2024	10:39	0.0113
4/04/2024	10:40	0.0114
4/04/2024	10:41	0.0113
4/04/2024	10:42	0.0113
4/04/2024	10:43	0.0113
4/04/2024	10:44	0.0113
4/04/2024	10:45	0.0113
4/04/2024	10:46	0.0113
4/04/2024	10:47	0.0113
4/04/2024	10:48	0.0113
4/04/2024	10:49	0.0113
4/04/2024	10:50	0.0113
4/04/2024	10:51	0.0113
4/04/2024	10:52	0.0113
4/04/2024	10:53	0.0113
4/04/2024	10:54	0.0114
4/04/2024	10:55	0.0558
4/04/2024	10:56	0.0452
4/04/2024	10:57	0.0112
4/04/2024	10:58	0.4311
4/04/2024	10:59	3.0130
4/04/2024	11:00	2.3867
4/04/2024	11:01	0.0190
4/04/2024	11:02	0.0046
4/04/2024	11:03	0.0071

Test
End

Zero

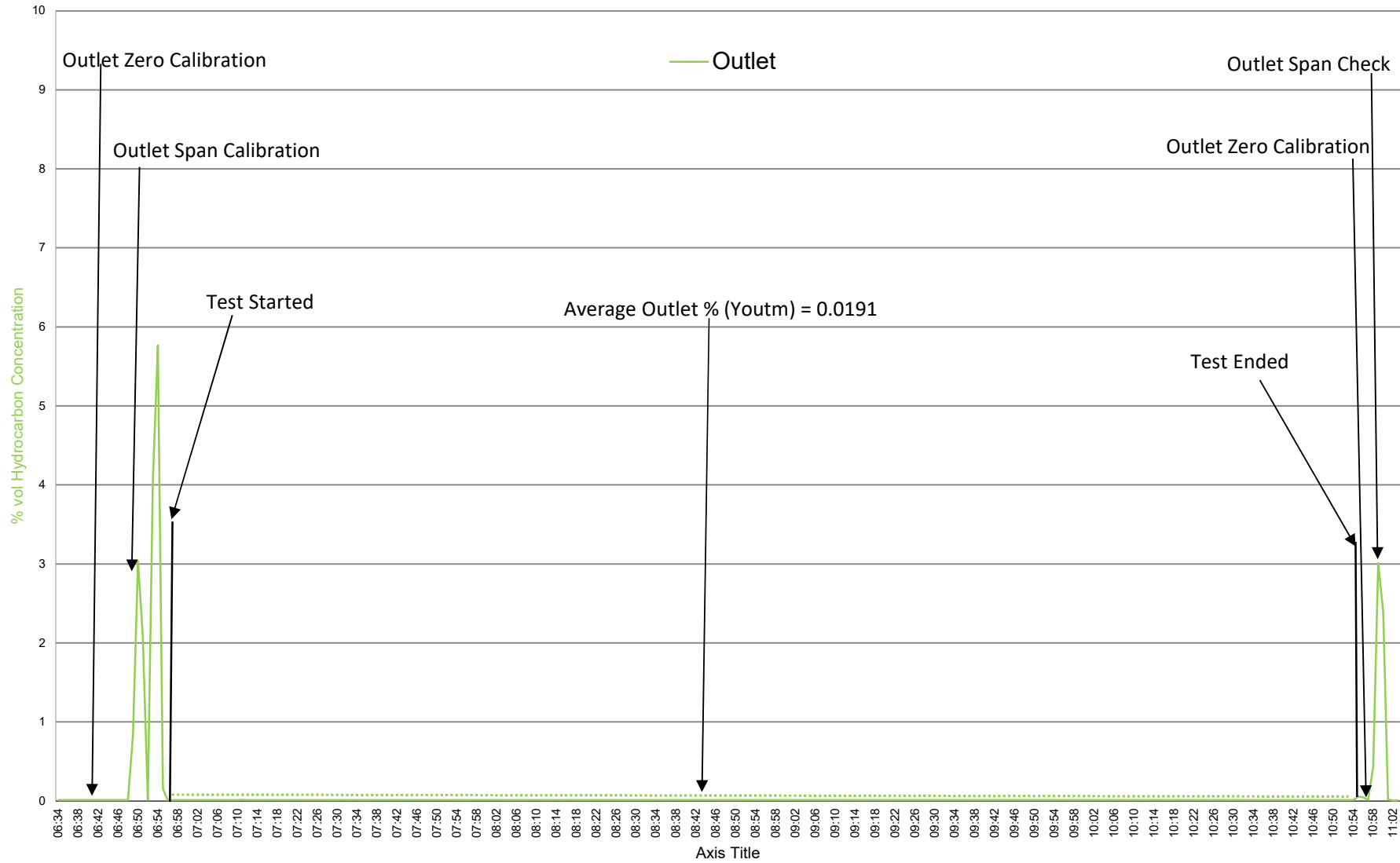
span

Averages
Outlet
0.0119

APPENDIX E

Representative chart recording of outlet data for test period 4th April 2024

Quantem VRU test - EPA-QBC-04



APPENDIX F

Calculations for determination of mass of unrecovered organic vapours for test period 4th April 2024

Calculation of mass of unrecovered organic vapours

Average Barometric Pressure was : 767.84 mm Hg

Average Ambient Temperature was : 23.15 Deg C

Average Outlet Concentration was : 0.0119 Vol. %

Total volume emitted was : 686.22 cubic meters

Total Volume Emitted standardized was : 679.87 cubic meters

Total milligrams emitted was : 140,698 mg

Total volatile Litres loaded was : 71,197 liters

Total Litres loaded was : 71,197 liters

Test duration: 241 minutes

Total milligrams emitted per liter of Volatiles loaded was : 1.9762 mg/L

Total milligrams emitted per liter loaded was : 1.9762 mg/L

Emission flow rate: 0.5838 g/min

Calculated Method Uncertainty +/- 0.28

APPENDIX G

USEPA Method 25B (NDIR Technology)

**METHOD 25B - DETERMINATION OF TOTAL GASEOUS ORGANIC
CONCENTRATION USING A NONDISPERSIVE INFRARED ANALYZER**

NOTE: This method does not include all of the specifications (*e.g.*, equipment and supplies) and procedures (*e.g.*, sampling) essential to its performance. Some material is incorporated by reference from other methods in this part. Therefore, to obtain reliable results, persons using this method should have a thorough knowledge of at least the following additional test methods: Method 1, Method 6C, and Method 25A.

1.0 Scope and Application.

1.1 Analytes.

Analyte	CAS No.	Sensitivity
Total Organic Compounds	N/A	< 2% of span

1.2 Applicability. This method is applicable for the determination of total gaseous organic concentration of vapors consisting primarily of alkanes. Other organic materials may be measured using the general procedure in this method, the appropriate calibration gas, and an analyzer set to the appropriate absorption band.

1.3 Data Quality Objectives. Adherence to the requirements of this method will enhance the quality of the data obtained from air pollutant sampling methods.

2.0 Summary of Method.

A gas sample is extracted from the source through a heated sample line, if necessary, and glass fiber filter to a nondispersive infrared analyzer (NDIR). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

3.0 Definitions. Same as Method 25A, Section 3.0.

4.0 Interferences. [Reserved]

5.0 Safety.

5.1 Disclaimer. This method may involve hazardous materials, operations, and equipment. This test method may not address all of the safety problems associated with its use. It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to performing this test method. The analyzer users manual should be consulted for specific precautions to be taken with regard to the analytical procedure.

5.2 Explosive Atmosphere. This method is often applied in highly explosive areas. Caution and care should be exercised in choice of equipment and installation.

6.0 Equipment and Supplies.

Same as Method 25A, Section 6.0, with the exception of the following:

6.1 Organic Concentration Analyzer. A nondispersive infrared analyzer designed to measure alkane organics and capable of meeting or exceeding the specifications in this method.

7.0 *Reagents and Standards.*

Same as Method 25A, Section 7.1. No fuel gas is required for an NDIR.

8.0 *Sample Collection, Preservation, Storage, and Transport.*

Same as Method 25A, Section 8.0.

9.0 *Quality Control.*

Same as Method 25A, Section 9.0.

10.0 *Calibration and Standardization.*

Same as Method 25A, Section 10.0.

11.0 *Analytical Procedure.*

The sample collection and analysis are concurrent for this method (see Section 8.0).

12.0 *Calculations and Data Analysis.*

Same as Method 25A, Section 12.0.

13.0 *Method Performance.* [Reserved]

14.0 *Pollution Prevention.* [Reserved]

15.0 *Waste Management.* [Reserved]

16.0 *References.*

Same as Method 25A, Section 16.0.

17.0 *Tables, Diagrams, Flowcharts, and Validation Data.*

[Reserved]

APPENDIX H

Atmospheric data

for test period 4th April 2024

Atmospheric data

Average Ambient Temperature (°C) 23.15

Average Barometric Pressure (hPa) 1023.70

Average Barometric pressure (mm Hg) 767.84

Date	Time	Ambient Temperature	Pressure hPa	Date	Time	Ambient Temperature	Pressure hPa
4/04/2024	6:55	22.1	1023.5	4/04/2024	7:37	22.6	1023.5
4/04/2024	6:56	22.1	1023.5	4/04/2024	7:38	22.6	1023.5
4/04/2024	6:57	22.2	1023.5	4/04/2024	7:39	22.6	1023.5
4/04/2024	6:58	22.2	1023.5	4/04/2024	7:40	22.6	1023.5
4/04/2024	6:59	22.2	1023.5	4/04/2024	7:41	22.6	1023.5
4/04/2024	7:00	22.2	1023.5	4/04/2024	7:42	22.6	1023.5
4/04/2024	7:01	22.2	1023.5	4/04/2024	7:43	22.6	1023.5
4/04/2024	7:02	22.2	1023.5	4/04/2024	7:44	22.6	1023.5
4/04/2024	7:03	22.2	1023.5	4/04/2024	7:45	22.6	1023.5
4/04/2024	7:04	22.2	1023.5	4/04/2024	7:46	22.6	1023.5
4/04/2024	7:05	22.2	1023.5	4/04/2024	7:47	22.6	1023.5
4/04/2024	7:06	22.2	1023.5	4/04/2024	7:48	22.6	1023.6
4/04/2024	7:07	22.2	1023.5	4/04/2024	7:49	22.6	1023.6
4/04/2024	7:08	22.2	1023.5	4/04/2024	7:50	22.7	1023.6
4/04/2024	7:09	22.2	1023.5	4/04/2024	7:51	22.7	1023.6
4/04/2024	7:10	22.3	1023.5	4/04/2024	7:52	22.7	1023.6
4/04/2024	7:11	22.3	1023.5	4/04/2024	7:53	22.7	1023.6
4/04/2024	7:12	22.3	1023.5	4/04/2024	7:54	22.7	1023.6
4/04/2024	7:13	22.3	1023.5	4/04/2024	7:55	22.7	1023.6
4/04/2024	7:14	22.3	1023.5	4/04/2024	7:56	22.7	1023.6
4/04/2024	7:15	22.3	1023.5	4/04/2024	7:57	22.7	1023.6
4/04/2024	7:16	22.3	1023.5	4/04/2024	7:58	22.7	1023.6
4/04/2024	7:17	22.4	1023.5	4/04/2024	7:59	22.7	1023.6
4/04/2024	7:18	22.4	1023.5	4/04/2024	8:00	22.7	1023.6
4/04/2024	7:19	22.4	1023.5	4/04/2024	8:01	22.7	1023.6
4/04/2024	7:20	22.4	1023.5	4/04/2024	8:02	22.7	1023.6
4/04/2024	7:21	22.4	1023.5	4/04/2024	8:03	22.7	1023.6
4/04/2024	7:22	22.4	1023.5	4/04/2024	8:04	22.7	1023.6
4/04/2024	7:23	22.4	1023.5	4/04/2024	8:05	22.7	1023.6
4/04/2024	7:24	22.5	1023.5	4/04/2024	8:06	22.7	1023.6
4/04/2024	7:25	22.5	1023.5	4/04/2024	8:07	22.7	1023.6
4/04/2024	7:26	22.5	1023.5	4/04/2024	8:08	22.8	1023.6
4/04/2024	7:27	22.5	1023.5	4/04/2024	8:09	22.7	1023.6
4/04/2024	7:28	22.5	1023.5	4/04/2024	8:10	22.8	1023.6
4/04/2024	7:29	22.5	1023.5	4/04/2024	8:11	22.8	1023.6
4/04/2024	7:30	22.5	1023.5	4/04/2024	8:12	22.7	1023.6
4/04/2024	7:31	22.5	1023.5	4/04/2024	8:13	22.7	1023.6
4/04/2024	7:32	22.5	1023.5	4/04/2024	8:14	22.7	1023.6
4/04/2024	7:33	22.6	1023.5	4/04/2024	8:15	22.7	1023.6
4/04/2024	7:34	22.6	1023.5	4/04/2024	8:16	22.7	1023.6
4/04/2024	7:35	22.6	1023.5	4/04/2024	8:17	22.7	1023.6
4/04/2024	7:36	22.6	1023.5	4/04/2024	8:18	22.8	1023.6

Date	Time	Ambient Temperature	Pressure hPa
4/04/2024	8:19	22.8	1023.6
4/04/2024	8:20	22.8	1023.6
4/04/2024	8:21	22.8	1023.6
4/04/2024	8:22	22.8	1023.6
4/04/2024	8:23	22.8	1023.6
4/04/2024	8:24	22.8	1023.6
4/04/2024	8:25	22.8	1023.6
4/04/2024	8:26	22.8	1023.6
4/04/2024	8:27	22.8	1023.8
4/04/2024	8:28	22.8	1023.8
4/04/2024	8:29	22.8	1023.8
4/04/2024	8:30	22.8	1023.8
4/04/2024	8:31	22.8	1023.8
4/04/2024	8:32	22.8	1023.8
4/04/2024	8:33	22.9	1023.8
4/04/2024	8:34	22.9	1023.8
4/04/2024	8:35	22.9	1023.8
4/04/2024	8:36	22.9	1023.8
4/04/2024	8:37	22.9	1023.8
4/04/2024	8:38	22.9	1023.8
4/04/2024	8:39	22.9	1023.8
4/04/2024	8:40	22.9	1023.8
4/04/2024	8:41	22.9	1023.8
4/04/2024	8:42	22.9	1023.8
4/04/2024	8:43	22.9	1023.8
4/04/2024	8:44	22.9	1023.8
4/04/2024	8:45	22.9	1023.8
4/04/2024	8:46	22.9	1023.8
4/04/2024	8:47	23.0	1023.8
4/04/2024	8:48	23.0	1023.8
4/04/2024	8:49	23.0	1023.8
4/04/2024	8:50	23.0	1023.8
4/04/2024	8:51	23.0	1023.8
4/04/2024	8:52	23.0	1023.8
4/04/2024	8:53	23.0	1023.8
4/04/2024	8:54	23.0	1023.8
4/04/2024	8:55	23.0	1023.8
4/04/2024	8:56	22.9	1023.8
4/04/2024	8:57	23.0	1023.8
4/04/2024	8:58	23.0	1023.8
4/04/2024	8:59	22.9	1023.8
4/04/2024	9:00	23.0	1023.8
4/04/2024	9:01	23.0	1023.8
4/04/2024	9:02	22.9	1023.8
4/04/2024	9:03	22.9	1023.8
4/04/2024	9:04	23.0	1023.8
4/04/2024	9:05	23.0	1023.8
4/04/2024	9:06	23.0	1023.8
4/04/2024	9:07	23.0	1023.8
4/04/2024	9:08	23.0	1023.8
4/04/2024	9:09	23.0	1023.8

Date	Time	Ambient Temperature	Pressure hPa
4/04/2024	9:10	23.0	1023.8
4/04/2024	9:11	23.1	1023.8
4/04/2024	9:12	23.1	1023.8
4/04/2024	9:13	23.1	1023.8
4/04/2024	9:14	23.2	1023.8
4/04/2024	9:15	23.2	1023.8
4/04/2024	9:16	23.2	1023.8
4/04/2024	9:17	23.2	1023.8
4/04/2024	9:18	23.2	1023.8
4/04/2024	9:19	23.2	1023.8
4/04/2024	9:20	23.2	1023.8
4/04/2024	9:21	23.3	1023.8
4/04/2024	9:22	23.3	1023.8
4/04/2024	9:23	23.3	1023.8
4/04/2024	9:24	23.3	1023.8
4/04/2024	9:25	23.3	1023.8
4/04/2024	9:26	23.3	1023.8
4/04/2024	9:27	23.3	1023.8
4/04/2024	9:28	23.4	1023.8
4/04/2024	9:29	23.4	1023.8
4/04/2024	9:30	23.3	1023.8
4/04/2024	9:31	23.4	1023.8
4/04/2024	9:32	23.4	1023.8
4/04/2024	9:33	23.4	1023.8
4/04/2024	9:34	23.4	1023.8
4/04/2024	9:35	23.4	1023.8
4/04/2024	9:36	23.4	1023.8
4/04/2024	9:37	23.4	1023.8
4/04/2024	9:38	23.5	1023.8
4/04/2024	9:39	23.5	1023.8
4/04/2024	9:40	23.5	1023.8
4/04/2024	9:41	23.5	1023.8
4/04/2024	9:42	23.5	1023.8
4/04/2024	9:43	23.5	1023.8
4/04/2024	9:44	23.5	1023.8
4/04/2024	9:45	23.5	1023.5
4/04/2024	9:46	23.5	1023.5
4/04/2024	9:47	23.6	1023.5
4/04/2024	9:48	23.6	1023.5
4/04/2024	9:49	23.6	1023.5
4/04/2024	9:50	23.6	1023.5
4/04/2024	9:51	23.6	1023.5
4/04/2024	9:52	23.6	1023.5
4/04/2024	9:53	23.6	1023.5
4/04/2024	9:54	23.6	1023.8
4/04/2024	9:55	23.7	1023.8
4/04/2024	9:56	23.7	1023.8
4/04/2024	9:57	23.7	1023.8
4/04/2024	9:58	23.7	1023.8
4/04/2024	9:59	23.7	1023.8
4/04/2024	10:00	23.7	1023.8

Date	Time	Ambient Temperature	Pressure hPa
4/04/2024	10:01	23.7	1023.8
4/04/2024	10:02	23.7	1023.8
4/04/2024	10:03	23.8	1023.8
4/04/2024	10:04	23.8	1023.8
4/04/2024	10:05	23.8	1023.8
4/04/2024	10:06	23.8	1023.8
4/04/2024	10:07	23.8	1023.8
4/04/2024	10:08	23.9	1023.8
4/04/2024	10:09	23.9	1023.8
4/04/2024	10:10	23.9	1023.8
4/04/2024	10:11	23.9	1023.8
4/04/2024	10:12	23.9	1023.8
4/04/2024	10:13	23.9	1023.8
4/04/2024	10:14	23.9	1023.8
4/04/2024	10:15	24.0	1023.8
4/04/2024	10:16	24.0	1023.8
4/04/2024	10:17	24.0	1023.8
4/04/2024	10:18	24.1	1023.8
4/04/2024	10:19	24.1	1023.8
4/04/2024	10:20	24.1	1023.8
4/04/2024	10:21	24.1	1023.9
4/04/2024	10:22	24.1	1023.9
4/04/2024	10:23	24.1	1023.9
4/04/2024	10:24	24.1	1023.9
4/04/2024	10:25	24.1	1023.9
4/04/2024	10:26	24.1	1023.9
4/04/2024	10:27	24.1	1023.9
4/04/2024	10:28	24.1	1023.9
4/04/2024	10:29	24.1	1023.9
4/04/2024	10:30	24.1	1023.9
4/04/2024	10:31	24.1	1023.9
4/04/2024	10:32	24.2	1023.9
4/04/2024	10:33	24.2	1023.9
4/04/2024	10:34	24.2	1023.9
4/04/2024	10:35	24.2	1023.9
4/04/2024	10:36	24.2	1023.9
4/04/2024	10:37	24.2	1023.9
4/04/2024	10:38	24.2	1023.9
4/04/2024	10:39	24.2	1023.9
4/04/2024	10:40	24.2	1023.9
4/04/2024	10:41	24.2	1023.9
4/04/2024	10:42	24.2	1023.9
4/04/2024	10:43	24.2	1023.9
4/04/2024	10:44	24.2	1023.9
4/04/2024	10:45	24.2	1023.9
4/04/2024	10:46	24.2	1023.9
4/04/2024	10:47	24.2	1023.9
4/04/2024	10:48	24.3	1023.9
4/04/2024	10:49	24.3	1023.9
4/04/2024	10:50	24.3	1023.9

Date	Time	Ambient Temperature	Pressure hPa
4/04/2024	10:51	24.3	1023.9
4/04/2024	10:52	24.3	1023.9
4/04/2024	10:53	24.3	1023.9
4/04/2024	10:54	24.3	1023.9
4/04/2024	10:55	24.3	1023.9

APPENDIX I
Stack Velocity and Temperature Data
for test period 4th April 2024

Average Stack Velocity (m/s) **1.64**

Average Stack Temperature (°C) **25.22**

Stack Diameter (mm) **200**

Average Stack Temperature (°K) **298.2**

Cross Sectional Area (m²) **0.031415927**

Date	Time	Velocity (m/s)	Stack Temp (°C)
4/04/2024	6:55	0.48	22.35
4/04/2024	6:56	0.34	22.39
4/04/2024	6:57	0.00	22.41
4/04/2024	6:58	0.34	22.35
4/04/2024	6:59	0.34	22.22
4/04/2024	7:00	0.34	22.23
4/04/2024	7:01	0.34	22.20
4/04/2024	7:02	0.00	22.16
4/04/2024	7:03	0.34	22.11
4/04/2024	7:04	0.34	22.08
4/04/2024	7:05	0.34	22.02
4/04/2024	7:06	0.34	22.01
4/04/2024	7:07	0.34	22.01
4/04/2024	7:08	0.34	21.99
4/04/2024	7:09	0.34	22.00
4/04/2024	7:10	0.34	21.99
4/04/2024	7:11	0.34	21.96
4/04/2024	7:12	0.34	21.94
4/04/2024	7:13	0.34	21.93
4/04/2024	7:14	0.34	21.91
4/04/2024	7:15	0.00	21.91
4/04/2024	7:16	0.00	21.93
4/04/2024	7:17	0.00	21.95
4/04/2024	7:18	3.91	21.97
4/04/2024	7:19	3.36	21.99
4/04/2024	7:20	2.56	22.00
4/04/2024	7:21	1.86	22.02
4/04/2024	7:22	1.31	22.04
4/04/2024	7:23	0.96	22.06
4/04/2024	7:24	0.68	22.08
4/04/2024	7:25	0.48	22.10
4/04/2024	7:26	0.34	22.13
4/04/2024	7:27	0.34	22.15
4/04/2024	7:28	0.3	22.17
4/04/2024	7:29	0.3	22.20
4/04/2024	7:30	0.5	22.22
4/04/2024	7:31	0.3	22.25
4/04/2024	7:32	0.3	22.29
4/04/2024	7:33	0.3	22.33
4/04/2024	7:34	0.3	22.38
4/04/2024	7:35	0.3	22.43
4/04/2024	7:36	0.3	22.48
4/04/2024	7:37	0.3	22.54
4/04/2024	7:38	0.3	22.59
4/04/2024	7:39	0.3	22.65
4/04/2024	7:40	0.3	22.72

Date	Time	Velocity (m/s)	Stack Temp (°C)
4/04/2024	7:41	0.3	22.79
4/04/2024	7:42	0.3	22.86
4/04/2024	7:43	0.3	22.92
4/04/2024	7:44	0.3	22.99
4/04/2024	7:45	0.0	23.04
4/04/2024	7:46	0.0	23.09
4/04/2024	7:47	0.9	23.13
4/04/2024	7:48	4.7	23.19
4/04/2024	7:49	3.2	23.23
4/04/2024	7:50	2.4	23.27
4/04/2024	7:51	2.3	23.32
4/04/2024	7:52	2.0	23.39
4/04/2024	7:53	1.6	23.46
4/04/2024	7:54	1.4	23.54
4/04/2024	7:55	1.3	23.63
4/04/2024	7:56	1.2	23.70
4/04/2024	7:57	1.1	23.78
4/04/2024	7:58	1.0	23.84
4/04/2024	7:59	0.5	23.91
4/04/2024	8:00	0.3	23.97
4/04/2024	8:01	0.3	24.02
4/04/2024	8:02	0.3	24.07
4/04/2024	8:03	0.3	24.10
4/04/2024	8:04	0.3	24.13
4/04/2024	8:05	0.3	24.16
4/04/2024	8:06	0.3	24.18
4/04/2024	8:07	0.5	24.21
4/04/2024	8:08	0.6	24.22
4/04/2024	8:09	1.4	24.23
4/04/2024	8:10	2.3	24.24
4/04/2024	8:11	2.1	24.26
4/04/2024	8:12	1.5	24.23
4/04/2024	8:13	1.4	24.23
4/04/2024	8:14	1.4	24.20
4/04/2024	8:15	0.0	24.17
4/04/2024	8:16	0.0	24.17
4/04/2024	8:17	1.3	24.16
4/04/2024	8:18	4.8	24.15
4/04/2024	8:19	3.5	24.14
4/04/2024	8:20	2.2	24.14
4/04/2024	8:21	1.5	24.14
4/04/2024	8:22	1.0	24.15
4/04/2024	8:23	0.8	24.15
4/04/2024	8:24	0.6	24.15
4/04/2024	8:25	0.7	24.16
4/04/2024	8:26	1.6	24.16

Date	Time	Velocity (m/s)	Stack Temp (°C)
4/04/2024	8:27	2.0	24.14
4/04/2024	8:28	2.6	24.14
4/04/2024	8:29	3.7	24.16
4/04/2024	8:30	4.5	24.17
4/04/2024	8:31	4.3	24.19
4/04/2024	8:32	3.4	24.21
4/04/2024	8:33	2.5	24.24
4/04/2024	8:34	1.9	24.28
4/04/2024	8:35	2.5	24.33
4/04/2024	8:36	2.0	24.38
4/04/2024	8:37	2.1	24.43
4/04/2024	8:38	2.0	24.47
4/04/2024	8:39	1.6	24.52
4/04/2024	8:40	0.8	24.58
4/04/2024	8:41	0.5	24.64
4/04/2024	8:42	0.5	24.72
4/04/2024	8:43	0.6	24.82
4/04/2024	8:44	0.8	24.94
4/04/2024	8:45	0.0	25.06
4/04/2024	8:46	0.8	25.18
4/04/2024	8:47	3.1	25.29
4/04/2024	8:48	5.9	25.40
4/04/2024	8:49	4.4	25.53
4/04/2024	8:50	3.1	25.68
4/04/2024	8:51	2.3	25.83
4/04/2024	8:52	1.4	25.97
4/04/2024	8:53	0.7	26.12
4/04/2024	8:54	0.5	26.29
4/04/2024	8:55	0.5	26.45
4/04/2024	8:56	0.3	26.60
4/04/2024	8:57	1.0	26.74
4/04/2024	8:58	1.6	26.90
4/04/2024	8:59	1.8	27.02
4/04/2024	9:00	1.7	27.13
4/04/2024	9:01	1.5	27.21
4/04/2024	9:02	0.0	27.27
4/04/2024	9:03	0.0	27.30
4/04/2024	9:04	1.3	27.37
4/04/2024	9:05	4.8	27.40
4/04/2024	9:06	3.5	27.40
4/04/2024	9:07	2.2	27.39
4/04/2024	9:08	1.5	27.44
4/04/2024	9:09	1.0	27.47
4/04/2024	9:10	0.8	27.50
4/04/2024	9:11	0.6	27.56
4/04/2024	9:12	0.7	27.64
4/04/2024	9:13	1.6	27.69
4/04/2024	9:14	2.0	27.69
4/04/2024	9:15	2.6	27.67

Date	Time	Velocity (m/s)	Stack Temp (°C)
4/04/2024	9:16	3.7	27.70
4/04/2024	9:17	4.5	27.73
4/04/2024	9:18	4.3	27.78
4/04/2024	9:19	3.4	27.80
4/04/2024	9:20	2.5	27.81
4/04/2024	9:21	1.9	27.85
4/04/2024	9:22	2.5	27.85
4/04/2024	9:23	2.0	27.84
4/04/2024	9:24	2.1	27.81
4/04/2024	9:25	2.0	27.77
4/04/2024	9:26	1.6	27.73
4/04/2024	9:27	0.8	27.67
4/04/2024	9:28	0.5	27.62
4/04/2024	9:29	0.5	27.61
4/04/2024	9:30	0.6	27.57
4/04/2024	9:31	0.8	27.56
4/04/2024	9:32	0.0	27.55
4/04/2024	9:33	0.8	27.47
4/04/2024	9:34	3.1	27.35
4/04/2024	9:35	5.9	27.25
4/04/2024	9:36	4.4	27.21
4/04/2024	9:37	3.1	27.22
4/04/2024	9:38	2.3	27.24
4/04/2024	9:39	1.4	27.20
4/04/2024	9:40	0.7	27.14
4/04/2024	9:41	0.5	27.12
4/04/2024	9:42	0.5	27.06
4/04/2024	9:43	0.3	26.99
4/04/2024	9:44	1.0	26.95
4/04/2024	9:45	1.6	26.91
4/04/2024	9:46	1.8	26.80
4/04/2024	9:47	1.7	26.77
4/04/2024	9:48	1.5	26.75
4/04/2024	9:49	1.1	26.76
4/04/2024	9:50	1.0	26.72
4/04/2024	9:51	0.7	26.69
4/04/2024	9:52	0.8	26.69
4/04/2024	9:53	1.1	26.70
4/04/2024	9:54	1.4	26.73
4/04/2024	9:55	1.9	26.74
4/04/2024	9:56	2.9	26.74
4/04/2024	9:57	3.9	26.75
4/04/2024	9:58	4.5	26.76
4/04/2024	9:59	4.3	26.75
4/04/2024	10:00	4.1	26.79
4/04/2024	10:01	3.5	26.82
4/04/2024	10:02	0.0	26.87
4/04/2024	10:03	0.0	26.92
4/04/2024	10:04	3.3	26.97

Date	Time	Velocity (m/s)	Stack Temp (°C)
4/04/2024	10:05	6.2	26.99
4/04/2024	10:06	5.2	27.02
4/04/2024	10:07	4.4	27.03
4/04/2024	10:08	3.6	27.07
4/04/2024	10:09	2.8	27.11
4/04/2024	10:10	2.4	27.16
4/04/2024	10:11	2.4	27.21
4/04/2024	10:12	2.3	27.26
4/04/2024	10:13	2.3	27.27
4/04/2024	10:14	1.9	27.29
4/04/2024	10:15	0.8	27.28
4/04/2024	10:16	0.3	27.30
4/04/2024	10:17	0.3	27.30
4/04/2024	10:18	0.3	27.22
4/04/2024	10:19	0.3	27.16
4/04/2024	10:20	0.3	27.17
4/04/2024	10:21	0.5	27.17
4/04/2024	10:22	0.5	27.13
4/04/2024	10:23	0.5	27.06
4/04/2024	10:24	0.3	27.02
4/04/2024	10:25	0.3	26.98
4/04/2024	10:26	0.5	26.95
4/04/2024	10:27	0.6	26.93
4/04/2024	10:28	1.3	26.94
4/04/2024	10:29	2.7	26.93
4/04/2024	10:30	3.5	26.90
4/04/2024	10:31	4.1	26.85
4/04/2024	10:32	0.0	26.79
4/04/2024	10:33	3.1	26.77
4/04/2024	10:34	5.1	26.76
4/04/2024	10:35	6.6	26.76
4/04/2024	10:36	4.7	26.72
4/04/2024	10:37	3.1	26.60
4/04/2024	10:38	2.2	26.53
4/04/2024	10:39	1.5	26.43
4/04/2024	10:40	1.4	26.41
4/04/2024	10:41	1.5	26.36
4/04/2024	10:42	1.8	26.28
4/04/2024	10:43	2.2	26.18
4/04/2024	10:44	2.1	26.12
4/04/2024	10:45	1.6	26.09
4/04/2024	10:46	0.6	26.05
4/04/2024	10:47	0.3	25.99
4/04/2024	10:48	0.3	25.94
4/04/2024	10:49	0.3	25.91
4/04/2024	10:50	0.3	25.86
4/04/2024	10:51	0.3	25.81
4/04/2024	10:52	0.3	25.78
4/04/2024	10:53	0.3	25.77
4/04/2024	10:54	0.3	25.75
4/04/2024	10:55	0.3	25.72

APPENDIX J

Calibration gas certificates for test period 4th April 2024

CERTIFIED REFERENCE MATERIAL CERTIFICATE OF A REFERENCE MATERIAL

Coregas Pty Ltd

Prod. Order No. LGP019724
 Prod. Order Batch No. LGP019724-1
 Cylinder Serial No. 834586
 Cylinder Capacity 9.5 L
 Customer No. : 10501530
 Customer : OIL & GAS TECHNOLOGIES PTY LTD
 Order No. : SO02787064

Certificate No. QCSPC029336
 Date Certified 04/03/22
 Analyst Name Willis Vongpradith
 Mixture Type Gas
 Cylinder Content 1.3m3
 Valve Type 20

Component	Required Concentration	Actual Concentration	Concentration Unit of Measure	Measurement Uncertainty	Method
Propane	3	3.04	% mol	2% rel	8115 Gravimetric
Nitrogen		Balance			

All concentration are expressed on mole fraction basis.
 The certified values are traceable to Australian National Standards of mass and thus to the International System of Units (SI).
 The certified gas mixture is typically for calibration of instruments. Measurement Uncertainty is calculated using a coverage factor K=2, which gives 95% Confidence Interval.

Technical Note :

Filling Pressure	150	BAR
Min. Useable Pressure	5	BAR
Min. Storage Temperature	10	C
Period of Validity	5 Years	



ACCREDITED FOR
**TECHNICAL
COMPETENCE**

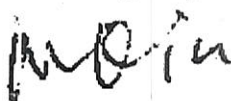
Accredited Reference Material Producer
 Number: 12803
 Site Number: 15135

Analyst



Willis Vongpradith

NATA Signatory



Mark Qin
 Manager Spec. Gas Lab

Accredited for compliance with ISO17034

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates

<CMS-10-SOP-8115-F2 Approved by SG&QC Manager 04/02/2022>

Print Date : 04/03/22

---End of Document---