EMISSION ASSESSMENTS

REPORT NUMBER: 2425-119

Clean Energy Fuels Australia Pty Ltd

Mt Magnet Emissions Monitoring

20 January 2025

NATA

NATA Accredited Laboratory Number: 17108. Accredited for compliance with ISO/IEC 17025 - Testing.

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.

CLIENT INFORMATION

Client Name:	Clean Energy Fuels Australia Pty Ltd
Attention:	Basil Lenzo
Address:	Cooladar Hill, WA 6638

Written By: [redacted]
Environmental Scientist
B.Sc (Zoology and Ecology), B.Sc (Mathematics and Statistics)

Reviewed By: [redacted]
Technical Services Manager
B.Sc (Extractive Metallurgy)

Authorised By: [redacted]
Principal - Air
B.Sc (NDip (Mech Eng) BSc Hons (Env Sci)

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1 INTRODUCTION

Emission Assessments Pty Ltd (EAPL) was engaged by Clean Energy Fuels Australia Pty Ltd to conduct stack emissions monitoring at their Mt Magnet LNG Plant. As part of their operations at this facility, Clean Energy Fuels Australia Pty Ltd operates four Cummins natural gas generators as the main source of power at their facility. The resultant emissions are released to atmosphere via exhaust stack.

As part of the facilities Department of Water and Environmental Regulation (DWER) work approval requires that Clean Energy Fuels Australia Pty Ltd report specified discharge parameters in accordance with promulgated reference methods. These discharge parameters are as listed below in **Table i.**

Table i: Scope of Work as per Condition 3.2 of DWER operating licence

Parameter	Duration	Method
Velocity, Temperature & Volumetric flow	Each Test	USEPA Method 2
Nitrogen oxides (NO & NO_2)	30 minute	USEPA Method 7E
Carbon monoxide	30 minute	USEPA Method 10
Formaldehyde (HCHO)	30 minute	USEPA Method 323

Note 1: all units are referenced to STP dry
Note 2: Concentration units for all gases are referenced to 15% O_2
Note 3: Monitoring shall be undertaken to reflect normal operating conditions
Note 4: Where any USEPA method refers to USEPA Method 1 for the sampling plane, this must be read as a referral to AS 4323.1

Monitoring was conducted on behalf of Emission Assessments on the 10th December 2024 by Senior Environmental Scientist Khumbu Badantswana and Environmental Technician Renren Meneses.

All source data is available upon request.

2 SAMPLING PLANE ASSESSMENT

Refer to **Table ii** for sampling plane assessment for Ideal and conformant conditions.

Table ii: Stack Measurement Location Details

Parameter	Results	Units
Sampling Source:	**Generator 1 - 4**	
Stack Orientation:	Vertical	
Stack Shape:	Circular	
Internal Diameter:	0.4	m
Upstream Disturbance Actual:	2.15	m
Upstream Disturbance Required:	2.4	m
Downstream Disturbance Actual:	0.7	m
Downstream Disturbance Required:	0.8	m
Ideal/Non-ideal sampling location:	Non-ideal	
Conformance To AS4323.1:	Conformant	
Sample point increased from:	10 Points to 12 Points	

3 RESULTS TABLES & CHARTS

3.1 GENERATORS 1 – 4 STACK PARAMETERS

Table iii: Sampling Details Generators 1 - 4

Parameters		Generator 1		Generator 2		Generator 3		Generator 4	
		Run 1	Run 2	Run1	Run 2	Run 1	Run 2	Run 1	Run 2
Date:		10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024
Start Time:		08:13	08:48	09:47	10:22	14:12	14:48	15:54	16:30
Final Time:		08:43	09:18	10:17	10:52	14:42	15:18	16:24	17:00
Average stack gas temperature	°C	367	367	388	388	386	386	395.0	395.0
Dry gas molecular weight	g/g-mol	29.32	29.32	29.34	29.34	29.34	29.34	29.34	29.34
Average stack gas velocity	m/s	15	15	15	15	15	15	16	16
Actual stack gas flow rate	acm/min	110	110	115	115	113.6	113.6	118	118
Dry standard stack flow rate	dscm/min	42.0	42.0	40.9	40.9	41.8	41.8	42.0	42.0
Sample volume (dry standard)	dscm	0.0137	0.0123	0.0120	0.0150	0.0119	0.0121	0.0120	0.0108

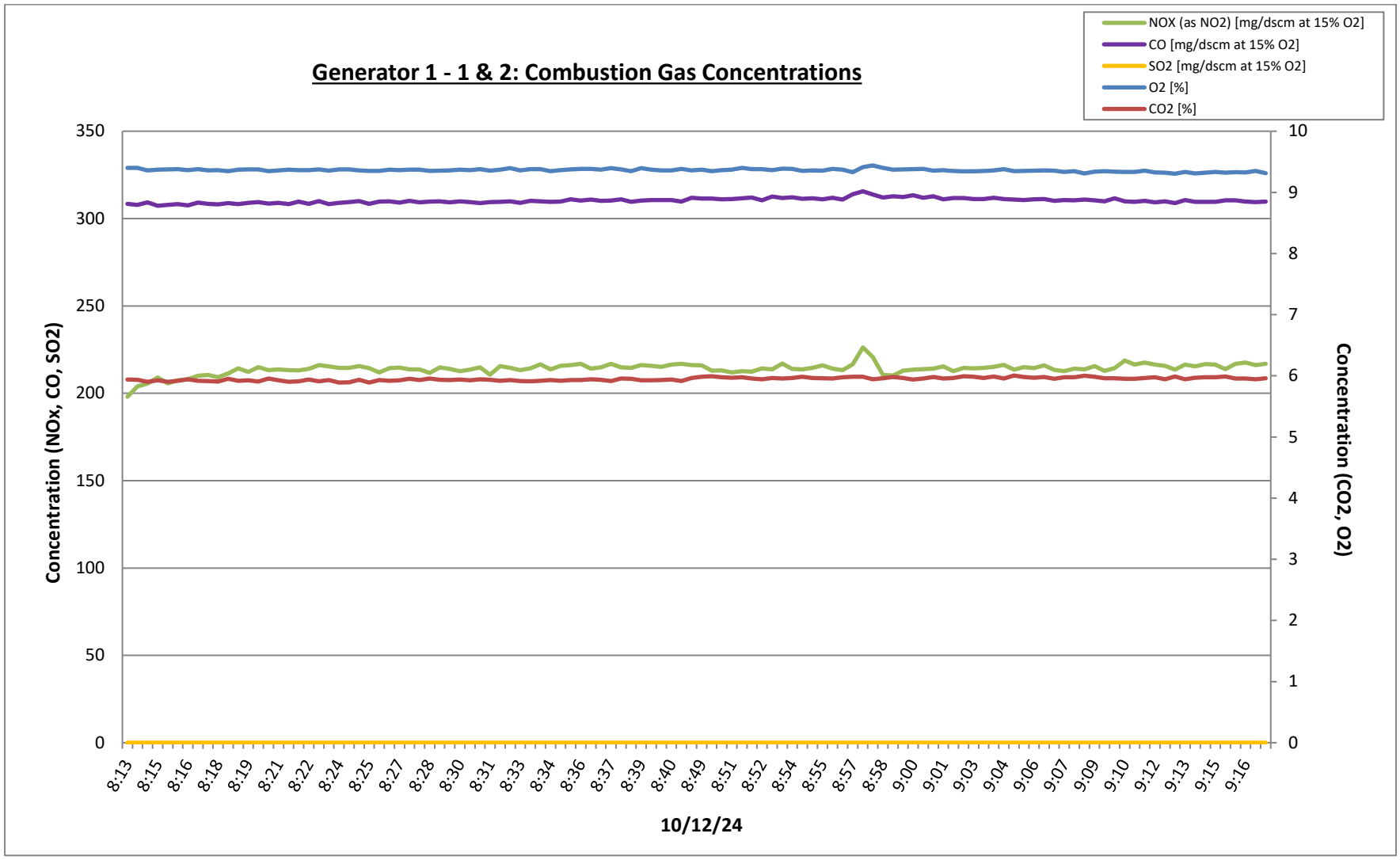
3.2 GENERATOR 1 - RESULTS

Table iv: Results Summary Generator 1

Parameter	MDL		Run 1		Run2	
			Emission Concentration	Mass Emission Rate	Emission Concentration	Mass Emission Rate
Units	mg/dscm	g/s	mg/dscm	g/s	mg/dscm	g/s
Formaldehyde	0.29	0.00020	2.9	0.0020	4.7	0.0032
Formaldehyde at 15% O_2	0.15	0.00011	1.5	0.0010	2.4	0.0017

Analyte	Units	MDL	Run 1	Run2
Sulphur Dioxide (SO_2)	mg/dscm	2.9	<2.9	<2.9
	g/s	0.002	<0.002	<0.002
	mg/dscm at 15% O_2	1.5	<1.5	<1.5
	g/s at 15% O_2	0.0011	<0.0011	<0.0011
Nitrogen Monoxide (NO)	mg/dscm	0.13	210	190
	g/s	0.000094	0.15	0.13
	mg/dscm at 15% O_2	0.069	110	98
	g/s at 15% O_2	0.000048	0.077	0.068
Nitrogen Dioxide (NO_2)	mg/dscm	0.21	85	130
	g/s	0.00014	0.059	0.088
	mg/dscm at 15% O_2	0.11	44	64
	g/s at 15% O_2	0.000076	0.031	0.045
Oxides of Nitrogen (NO_x)	mg/dscm	0.41	410	420
	g/s	0.00029	0.29	0.29
	mg/dscm at 15% O_2	0.22	210	210
	g/s at 15% O_2	0.00015	0.15	0.15
Carbon Monoxide (CO)	mg/dscm	0.13	600	610
	g/s	0.000088	0.42	0.42
	mg/dscm at 15% O_2	0.066	310	310
	g/s at 15% O_2	0.000046	0.22	0.22
Oxygen (O_2)	%	0.01	9.4	9.4
Carbon Dioxide (CO_2)	%	0.01	5.9	6.0

3.3 GENERATOR 1 CHART



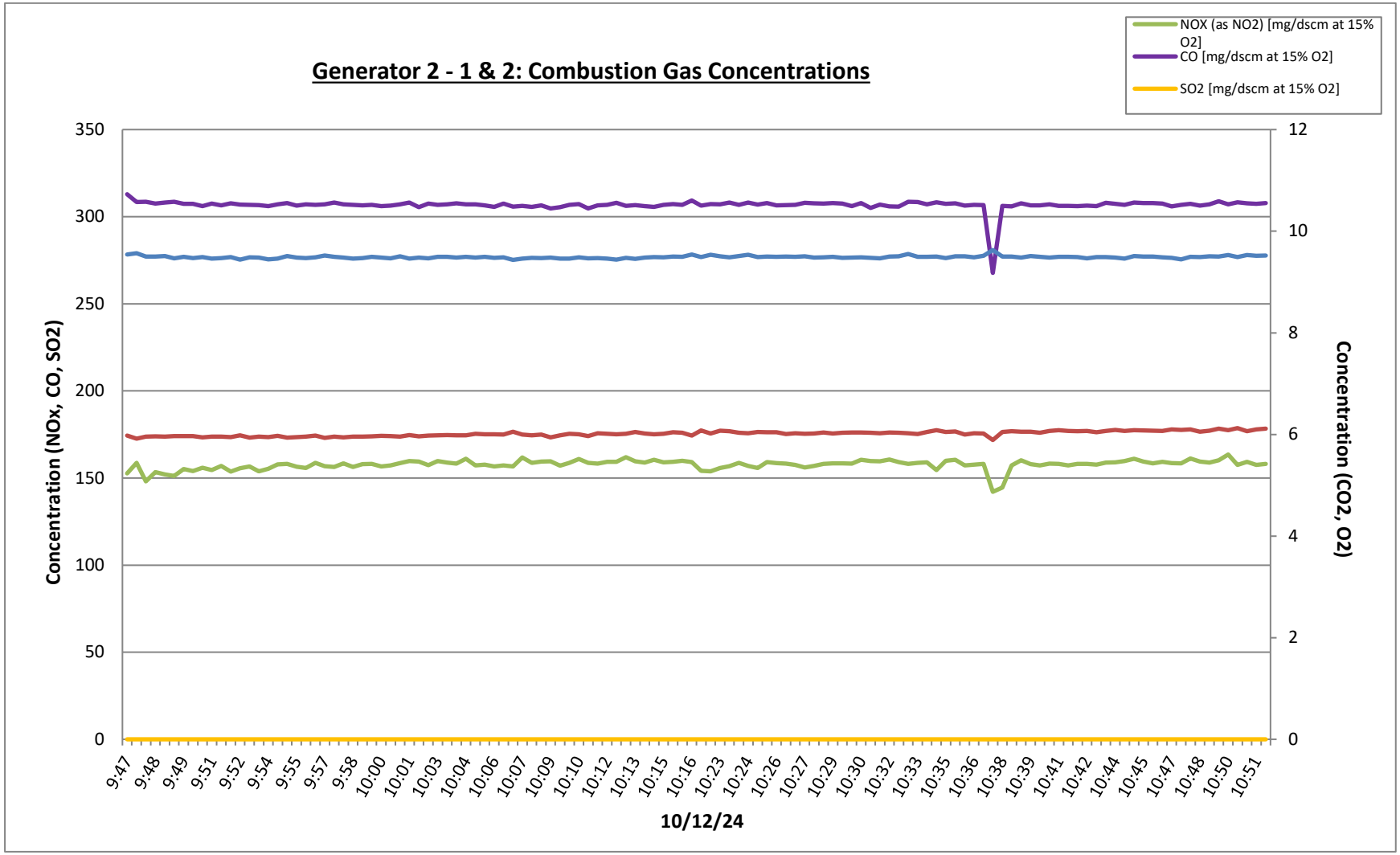
3.4 GENERATOR 2 - RESULTS

Table v: Results Summary Generator 2

Parameter	MDL		Run 1		Run2	
			Emission Concentration	Mass Emission Rate	Emission Concentration	Mass Emission Rate
Units	mg/dscm	g/s	mg/dscm	g/s	mg/dscm	g/s
Formaldehyde	0.35	0.00024	4	0.0027	5.7	0.0039
Formaldehyde at 15% O_2	0.18	0.00012	2.1	0.0014	2.9	0.0020

Analyte	Units	MDL	Run 1	Run2
Sulphur Dioxide (SO_2)	mg/dscm	2.9	<2.9	<2.9
	g/s	0.0019	<0.0019	<0.0019
	mg/dscm at 15% O_2	1.5	<1.5	<1.5
	g/s at 15% O_2	0.001	<0.001	<0.001
Nitrogen Monoxide (NO)	mg/dscm	0.13	170	160
	g/s	0.000091	0.12	0.11
	mg/dscm at 15% O_2	0.069	90	82
	g/s at 15% O_2	0.000047	0.061	0.056
Nitrogen Dioxide (NO_2)	mg/dscm	0.21	37	61
	g/s	0.00014	0.025	0.041
	mg/dscm at 15% O_2	0.11	19	31
	g/s at 15% O_2	0.000073	0.013	0.021
Oxides of Nitrogen (NO_x)	mg/dscm	0.41	300	300
	g/s	0.00028	0.21	0.21
	mg/dscm at 15% O_2	0.21	160	160
	g/s at 15% O_2	0.00015	0.11	0.11
Carbon Monoxide (CO)	mg/dscm	0.13	590	590
	g/s	0.000085	0.4	0.4
	mg/dscm at 15% O_2	0.065	310	310
	g/s at 15% O_2	0.000044	0.21	0.21
Oxygen (O_2)	%	0.01	9.5	9.5
Carbon Dioxide (CO_2)	%	0.01	6	6.1

3.5 GENERATOR 2 CHART



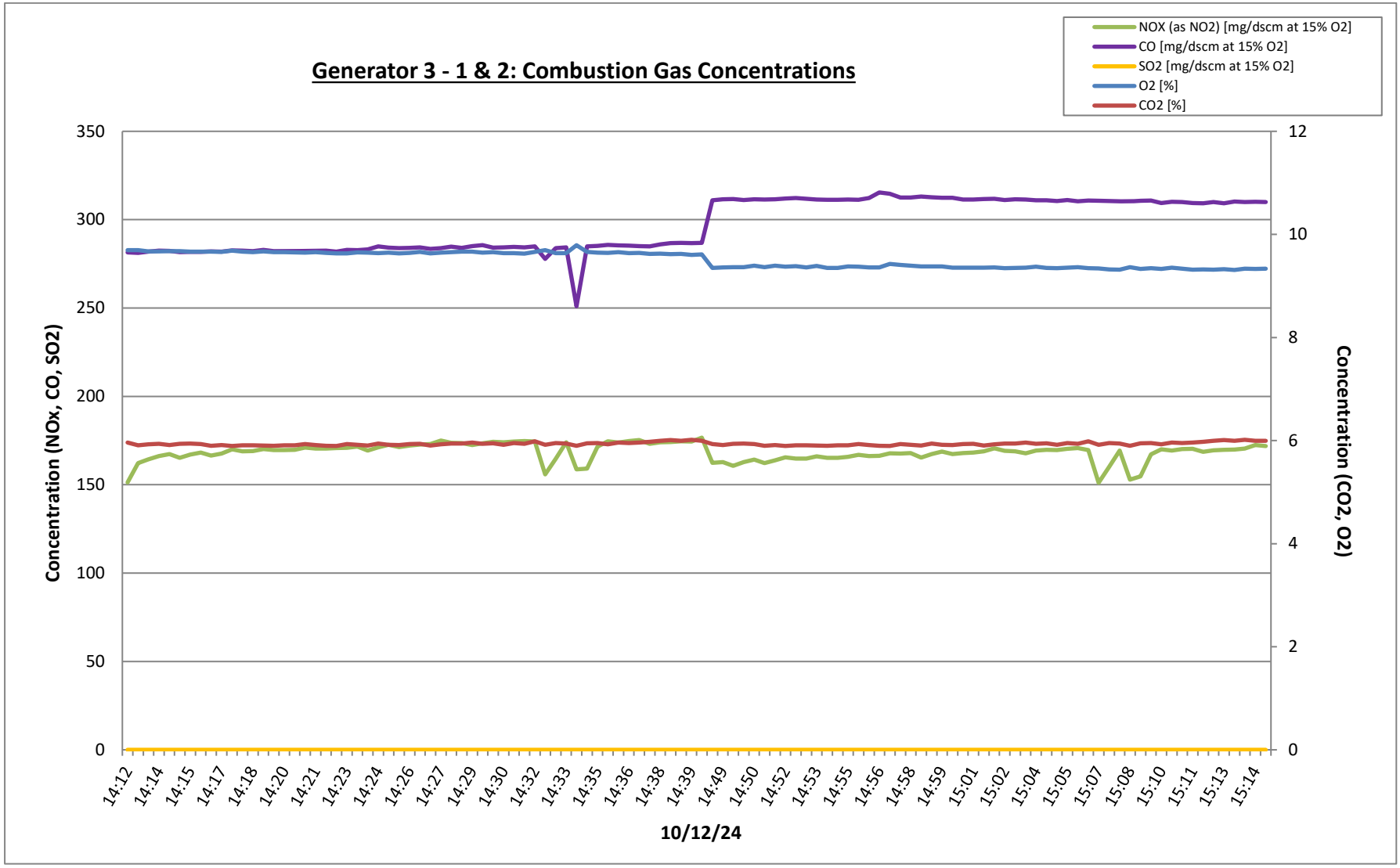
3.6 GENERATOR 3 - RESULTS

Table vi: Results Summary Generator 3

Parameter	MDL		Run 1		Run2	
			Emission Concentration	Mass Emission Rate	Emission Concentration	Mass Emission Rate
Units	mg/dscm	g/s	mg/dscm	g/s	mg/dscm	g/s
Formaldehyde	0.33	0.00023	8.4	0.0059	8.1	0.0055
Formaldehyde at 15% O_2	0.093	0.00012	4.5	0.0031	4.5	0.0030

Analyte	Units	MDL	Run 1	Run2
Sulphur Dioxide (SO_2)	mg/dscm	2.9	<2.9	<2.9
	g/s	0.002	<0.002	<0.002
	mg/dscm at 15% O_2	1.5	<1.5	35
	g/s at 15% O_2	0.0011	<0.0011	0.024
Nitrogen Monoxide (NO)	mg/dscm	0.13	170	180
	g/s	0.000093	0.12	0.12
	mg/dscm at 15% O_2	0.071	95	90
	g/s at 15% O_2	0.000049	0.066	0.61
Nitrogen Dioxide (NO_2)	mg/dscm	0.21	53	55
	g/s	0.00014	0.037	0.037
	mg/dscm at 15% O_2	0.11	28	28
	g/s at 15% O_2	0.000076	0.02	0.02
Oxides of Nitrogen (NO_x)	mg/dscm	0.41	320	320
	g/s	0.00029	0.22	0.22
	mg/dscm at 15% O_2	0.22	170	170
	g/s at 15% O_2	0.00015	0.12	0.11
Carbon Monoxide (CO)	mg/dscm	0.13	530	610
	g/s	0.000087	0.37	0.41
	mg/dscm at 15% O_2	0.066	280	310
	g/s at 15% O_2	0.000046	0.20	0.21
Oxygen (O_2)	%	0.01	9.7	9.4
Carbon Dioxide (CO_2)	%	0.01	5.9	5.8

3.7 GENERATOR 3 CHART



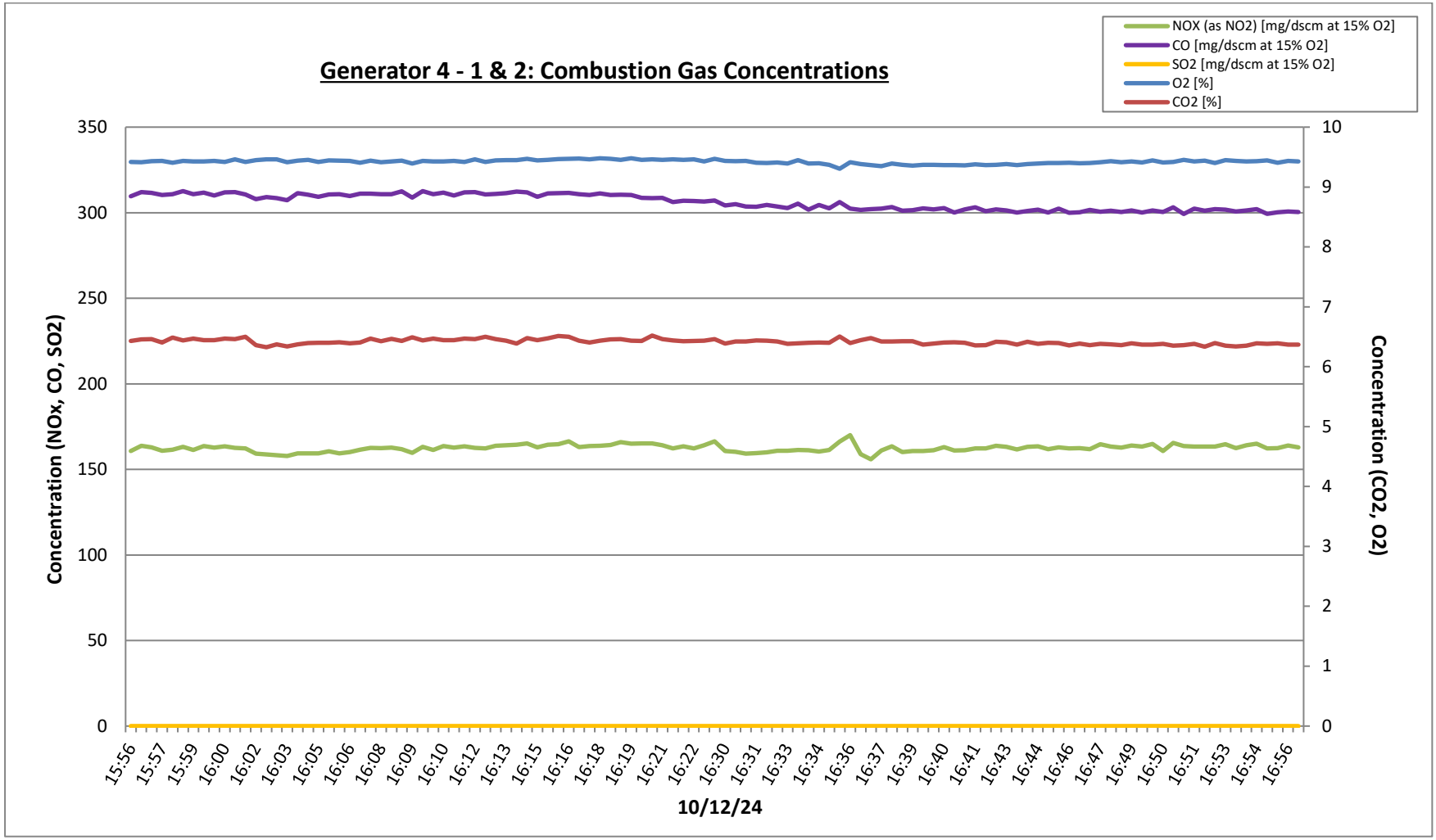
3.8 GENERATOR 4 - RESULTS

Table vii: Results Summary Generator 4

Parameter	MDL		Run 1		Run2	
			Emission Concentration	Mass Emission Rate	Emission Concentration	Mass Emission Rate
Units	mg/dscm	g/s	mg/dscm	g/s	mg/dscm	g/s
Formaldehyde	0.36	0.00025	9.8	0.0069	5.9	0.0041
Formaldehyde at 15% O_2	0.19	0.00013	5.1	0.0036	3.0	0.0021

Analyte	Units	MDL	Run 1	Run2
Sulphur Dioxide (SO_2)	mg/dscm	2.9	<2.9	<2.9
	g/s	0.002	<0.002	<0.002
	mg/dscm at 15% O_2	1.5	<1.5	<1.5
	g/s at 15% O_2	0.001	<0.001	<0.001
Nitrogen Monoxide (NO)	mg/dscm	0.13	110	110
	g/s	0.000094	0.079	0.075
	mg/dscm at 15% O_2	0.069	59	55
	g/s at 15% O_2	0.000049	0.041	0.039
Nitrogen Dioxide (NO_2)	mg/dscm	0.21	140	150
	g/s	0.00014	0.098	0.11
	mg/dscm at 15% O_2	0.11	72	78
	g/s at 15% O_2	0.000075	0.051	0.055
Oxides of Nitrogen (NO_x)	mg/dscm	0.41	310	310
	g/s	0.00029	0.22	0.22
	mg/dscm at 15% O_2	0.21	160	160
	g/s at 15% O_2	0.00015	0.11	0.11
Carbon Monoxide (CO)	mg/dscm	0.13	600	590
	g/s	0.000088	0.42	0.41
	mg/dscm at 15% O_2	0.065	310	300
	g/s at 15% O_2	0.000045	0.22	0.21
Oxygen (O_2)	%	0.01	9.4	9.4
Carbon Dioxide (CO_2)	%	0.01	6.4	6.4

3.9 GENERATOR 4 CHART



4 OPERATIONAL CONDITIONS

Plant operational conditions were noted for each test period and date provided by Clean Energy Fuels Australia Pty Ltd is listed in **Table viii**.

Table viii: Plant operational conditions during sampling

Source	Date	Duration	Test	MW
Generator 1	10/12/2024	8:13 – 8:43	Formaldehyde - Run 1	1450
		8:48 – 9:18	Formaldehyde - Run 2	1450
Generator 2	10/12/2024	9:47 – 10:17	Formaldehyde - Run 1	1450
		10:22 – 10:52	Formaldehyde - Run 2	1450
Generator 3	10/12/2024	14:12 – 14:42	Formaldehyde - Run 1	1450
		15:48 – 15:18	Formaldehyde - Run 2	1450
Generator 4	10/12/2024	15:54 – 16:24	Formaldehyde - Run 1	1200
		16:30 – 17:00	Formaldehyde - Run 2	1200

5 VARIATIONS TO PROTOCOLS

None. All QA/QC passed requirements.

6 SAMPLING METHODOLOGY

Details of the parameters/analytes used to conduct the program and the standard measurement uncertainties for each method are calculated and listed in **Table x** .

Table ix: NATA accreditation status and Standard measurement uncertainties for sampling methods

Parameter/Analyte	Sampling Method	NATA Accredited		Uncertainty (±%)
		Sampling	Analysis	
Sample Point Locations	AS4323.1	Y	N/A	n/a
Stack Velocity and Volumetric Flow Rate	USEPA Method 2	Y	N/A	8
Oxygen (O_2)	USEPA Method 3A	Y	Y	8
Carbon dioxide (CO_2)	USEPA Method 3A	Y	Y	8
Moisture (H_2O)	USEPA Method 4	Y	Y	6
Sulphur dioxide (SO_2)	USEPA Method 6C	Y	Y	10
Oxides of nitrogen (NO_x as NO_2)	USEPA Method 7E	Y	Y	12
Carbon monoxide (CO)	USEPA Method 10	Y	Y	9
Formaldehyde	USEPA Method 323	Y	Y	21

7 REPORTING LIMITATIONS

The following protocols are used for calculations and reporting data:

- All data generated from analytical laboratories are received to two significant figures.
- All calculations are performed on unrounded data.
- All particulate determinations are reported to two significant figures.
- All gaseous data is reported to two significant figures.
- Percentage concentrations are reported to one decimal place.
- Temperature is rounded to the nearest whole number.
- Gas exhaust flows are rounded to the nearest whole number.

8 DEFINITIONS

The following units of measurement and terminology potentially used within the report are listed below:

<	Less than
<result	Below Method Detection Limit
>	Greater than
≤	Less than or equal to
°C	Degrees Celsius
acm	Actual cubic metre
acm/min	Actual cubic metres per minute
dscm	Dry standard cubic metre
dscm/min	Dry standard cubic metres per minute
g/dscm	Grams per dry standard cubic meter
g/g-mole	Gram per gram-mole
g/hr	Grams per hour
g/min	Grams per minute
g/s	Grams per second
kg/hr	Kilograms per hour
kg/min	Kilograms per minute
kg/s	Kilograms per second
MDL	Method detection limit $\text{MDL} = \frac{PQL}{Dry\ Standard\ VolumeRM}$
mg/dscm	Milligrams per dry standard cubic meter
mg/hr	Milligrams per hour
mg/min	Milligrams per minute
mg/s	Milligrams per second
m/sec	Metres per second
NA	Not applicable
ng/m^3	Nanograms per cubic metre
NATA	National Association of Testing Authorities
PM_{10}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 µm
$PM_{2.5}$	PM2.5 Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 µm
ppm	Parts per million
PQL	Practical quantitation limit - lowest practically quantifiable detection limit of an analyte reported by analytical laboratory
RA	Relative Accuracy $\text{RA} = \frac{\lvert\bar{d}\rvert + \lvert cc\rvert}{RM} \times 100$ $\bar{d}$ = Arithmetic mean of the differences between paired RM and PEMS observations cc = Confidence coefficient.
RATA	Relative accuracy test audit
RM	Reference method
STP	Standard temperature and pressure.
USEPA	United States Environmental Protection Agency
µm	Micrometres or microns
µg /hr	Micrograms per hour
µg /min	Micrograms per minute
µg/s	Micrograms per second
v/v %	Volume to volume ratio as percentage

APPENDIX A

Sampling Methods Employed

Testing Program Scope

SELECTION OF SAMPLING POSITIONS

Prior to initiating the sampling program, each source was evaluated for representativeness. The application of the "preliminary methods" involves an assessment of the sampling plane using established Australian Standards and USEPA Methods. The sampling plane of each source was evaluated daily to ensure that the most representative sample point selection had been employed. These methods must be applied correctly to ensure that sampling is conducted representatively across the sampling plane.

STACK GAS VELOCITY AND FLOW RATE

Stack gas velocity was determined through differential pressure (ΔP) and stack temperature measurements using a calibrated S-type pitot tube with integrated temperature sensor and a pressure sensor (manometer). The differential pressure and temperature measurements were correlated with the absolute stack gas pressure, dry gas molecular weight, pitot tube velocity constant and pressure coefficients, to calculate stack gas velocity. The average stack gas velocity is correlated with the cross-sectional area of the measurement location to derive a volumetric flow.

MOISTURE

Moisture sampling was conducted in conjunction with each test. A sample of gas was continuously withdrawn through a sample probe into a series of pre-weighed midget impingers containing high purity de-ionised water and finally silica gel to remove the moisture content of the sample gas. Each impinger was weighed post-test to determine the mass of water collected over the sample duration. For each test the volume of gas sampled was measured using a dry gas meter and used to calculate a percentage stack moisture content by correlation with the mass of water collected.

GASEOUS PARAMETERS

Gaseous parameters were determined using a Testo 350 electrochemical portable gas analyser. A continuous gas sample was extracted from the emission source. Gases were conditioned through a refrigerated process to eliminate moisture. The conditioned gas was then presented to the gas analyser and continuously data-logged for oxygen, carbon monoxide, carbon dioxide, sulphur dioxide and oxides of nitrogen.

FORMALDEHYDE (USEPA METHOD 323)

A non-isokinetic emission sample taken from the combustion exhaust is drawn through a midget impinger train containing chilled reagent water to absorb formaldehyde. The set sampling flow rate is dependent upon the anticipated concentration of formaldehyde in the engine exhaust, to ensure collection efficiency. The chilled samples are sent to Sydney Water for NATA accredited analysis.

The equipment and condumables required for the formaldehyde sampling process include a stainless steel sampling probe and sheath. Teflon tubing is used to connect the sample probe to the impinger train, and a heated sample line is unnecessary due to the rinsing of the sample transfer system to recover condensed formaldehyde. Three midget impingers are used for sample collection, with the first serving as a moisture knockout, the second containing 20 mL of reagent high perity water, and the third containing silica gel to remove residual moisture before reaching the dry gas meter (An additional reagent midget impinger was used to ensure no breakthrough). A vacuum pump delivers controlled extraction flow rate, along with a rotameter to indicate consistent sample flow. Additionally, a dry gas meter with sufficient accuracy to measure the

sample volume within 2 percent, calibrated at the selected flow rate, and equipped with a temperature sensor is used.

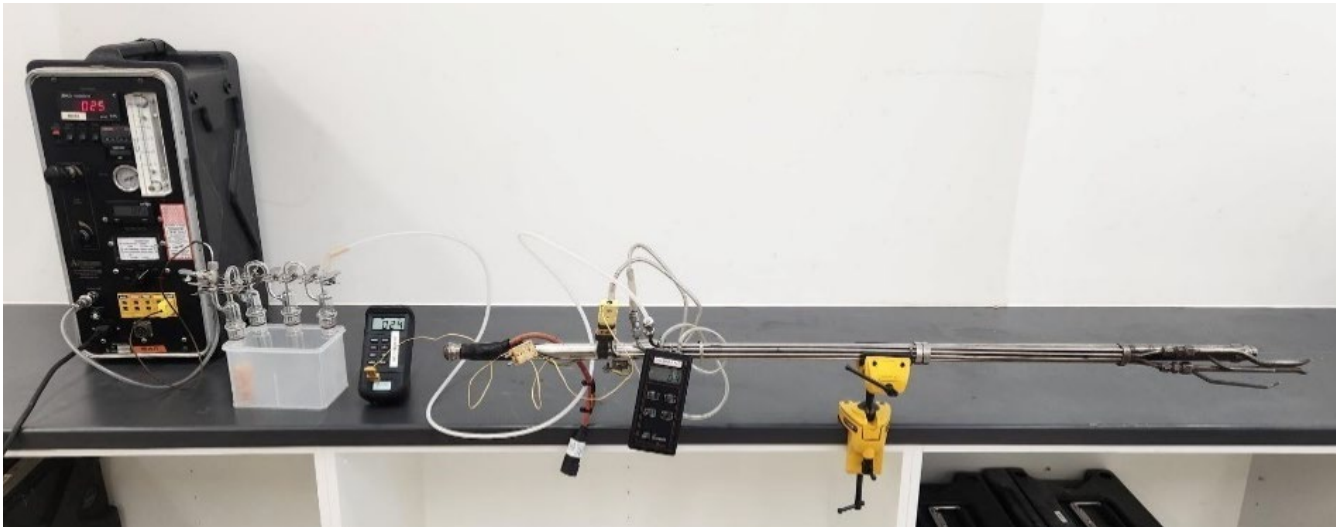


Image i: USEPA Method 323 Formaldehyde sampling train

APPENDIX B

Analytical Report and Chain of Custody

Formaldehyde (NMI)

EMIS02/241213
Due 02/01/25 Rv

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:			
Company Name:	Emission Assessments		
Address:	Unit 6/35 Sustainable Avenue, Bibra Lake, WA 6163		
Contact:	Bryan Grant	Additional email(s) for report / invoice (if required):	
Phone:	08 9494 2958		
ABN:	88 133 000 049		
Contact email:	Data@eapl.net.au		

Internal use only

NMI Quote Number: EMIS02A-TR22071 Valid until:

LIMS Reference: QT-01541 A/B

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	5-7	10	20	other
100%	50%	25%	Standard		dioxins	(pleas

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

If a PO number is required on your invoice, it must be provided at sample submission. PO's received after sample submisison will not appear on final invoice.

Purchase order required: Y / N PO Number: PO- xxx

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE DETAILS (Sample ID)	(Description)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples) Formaldehyde (Sydney Water)														COMMENTS
N24/025696	2425119-001	Generator 1_M323_Run1	10/12/2024	Di H2O	x														
N24/025697	2425119-002	Generator 1_M323_Run2	10/12/2024	Di H2O	x														
N24/025698	2425119-003	Generator 2_M323_Run1	10/12/2024	Di H2O	x														
N24/025699	2425119-004	Generator 2_M323_Run2	10/12/2024	Di H2O	x														
N24/025700	2425119-005	Generator 3_M323_Run1	10/12/2024	Di H2O	x														
N24/025701	2425119-006	Generator 3_M323_Run2	10/12/2024	Di H2O	x														
N24/025702	2425119-007	Generator 4_M323_Run1	10/12/2024	Di H2O	x														
N24/025703	2425119-008	Generator 4_M323_Run2	10/12/2024	Di H2O	x														
N24/025704	2425119-009	Generator 4_M323_Blank	10/12/2024	Di H2O	x														
NMI																			
USE																			
ONLY																			

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Print Name:		Print Name:	PAGE No: of PAGES
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Signature:		Signature:	If multiple pages, ensure ALL pages are stapled together

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Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1451622

Client	: EMISSION ASSESSMENTS PTY LTD UNIT 6 / 35 SUSTAINABLE AVENUE BIBRA LAKE WA 6163	**Job No.**	: EMIS02/241213
		Quote No.	: QT-02257
		Order No.	:
		Date Received	: 13-DEC-2024
Attention	: BRYAN GRANT	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Tim Reddan	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N24/025696	2425119-001	DI H2O GENERATOR 1_M323_RUN1
N24/025697	2425119-002	DI H2O GENERATOR 1_M323_RUN2
N24/025698	2425119-003	DI H2O GENERATOR 2_M323_RUN1
N24/025699	2425119-004	DI H2O GENERATOR 2_M323_RUN2

Lab Reg No.	Units	N24/025696	N24/025697	N24/025698	N24/025699	Method
Date Sampled		10-DEC-2024	10-DEC-2024	10-DEC-2024	10-DEC-2024	
Sample Reference		2425119-001	2425119-002	2425119-003	2425119-004	
Subcontracted						
Formaldehyde	ug/L	976	1420	1130	1900	
Report Number		317272	317272	317272	317272	

Formaldehyde determined by Sydney Water Laboratory West Ryde 2114
Method - TC006WHL
NATA Corporate Accreditation Number 63

[redacted]
Manager
Laboratory Services

02-JAN-2025

REPORT OF ANALYSIS

Client	: EMISSION ASSESSMENTS PTY LTD	**Job No.**	: EMIS02/241213
	UNIT 6 / 35 SUSTAINABLE AVENUE	**Quote No.**	: QT-02257
	BIBRA LAKE WA 6163	**Order No.**	:
		Date Received	: 13-DEC-2024
Attention	: BRYAN GRANT	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Tim Reddan	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N24/025700	2425119-005	DI H2O GENERATOR 3_M323_RUN1
N24/025701	2425119-006	DI H2O GENERATOR 3_M323_RUN2
N24/025702	2425119-007	DI H2O GENERATOR 4_M323_RUN1
N24/025703	2425119-008	DI H2O GENERATOR 4_M323_RUN2

Lab Reg No.	Units	N24/025700	N24/025701	N24/025702	N24/025703	Method
Date Sampled		10-DEC-2024	10-DEC-2024	10-DEC-2024	10-DEC-2024	
Sample Reference		2425119-005	2425119-006	2425119-007	2425119-008	
Subcontracted						
Formaldehyde	ug/L	2580	2480	2750	1380	
Report Number		317272	317272	317272	317272	

Formaldehyde determined by Sydney Water Laboratory West Ryde 2114
Method - TC006WHL
NATA Corporate Accreditation Number 63

[redacted] Manager
Laboratory Services

02-JAN-2025

REPORT OF ANALYSIS

Client	: EMISSION ASSESSMENTS PTY LTD	**Job No.**	: EMIS02/241213
	UNIT 6 / 35 SUSTAINABLE AVENUE	**Quote No.**	: QT-02257
	BIBRA LAKE WA 6163	**Order No.**	:
		Date Received	: 13-DEC-2024
Attention	: BRYAN GRANT	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Tim Reddan	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N24/025704	2425119-009	DI H2O GENERATOR 4_M323_BLANK

Lab Reg No.	Units	N24/025704				Method
Date Sampled		10-DEC-2024				
Sample Reference		2425119-009				
Subcontracted						
Formaldehyde	ug/L	<100				
Report Number		317272				

Formaldehyde determined by Sydney Water Laboratory West Ryde 2114
Method - TC006WHL
NATA Corporate Accreditation Number 63

[redacted] Manager
Laboratory Services

02-JAN-2025

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.

REPORT OF ANALYSIS

The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

Corporate Accreditation No 63

Accredited for compliance with ISO/IEC 17025 - Testing

Laboratory Services

Delivery Address: Sydney Water Corporation
51 Hermitage Rd
West Ryde NSW 2114

Telephone: (02) 9800 6935
Email: analyticalservices@sydneywater.com.au

Analytical Report 317272

Issue Date: 19/12/2024
Issued By : Sydney Water Laboratory Services

Attention:	Ilona Narouta	**Address:**	105 Delhi Road, North Ryde NSW 2113
Customer:	National Measurement Institute	**Telephone:**	02 9449 0193
Customer ID:	ZNMI	**Email:**	Ilona.Narouta@measurement.gov.au

CONTENTS

Sydney Water Approved Signatory

Justice Esoun-Nyarkoh, Organics Analyst

Where a result is required to meet a compliance limit or specification the associated uncertainty must be considered. Uncertainty estimates are available for all accredited test results.

Sydney WATER Laboratory Services

SAMPLE SUMMARY

Client Sample ID	Sample Number	Sampling Procedure	Date Sampled	Date Received	Date Authorised	Description
N24/025696	L24106324	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_1_M323_RUN1
N24/025697	L24106325	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_1_M323_RUN2
N24/025698	L24106326	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_2_M323_RUN1
N24/025699	L24106327	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_2_M323_RUN2
N24/025700	L24106328	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_3_M323_RUN1
N24/025701	L24106329	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_3_M323_RUN2
N24/025702	L24106330	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_4_M323_RUN1
N24/025703	L24106331	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_4_M323_RUN2
N24/025704	L24106332	1	10/12/2024	16/12/2024	18/12/2024	DI H2O GENERATOR_4_M323_BLANK

Sampling procedures

1 Samples analysed as received.
2 Samples collected as per FS procedures SAWI 070, Excluding Oil & Grease which is collected as per clients instructions.
3 Samples collected as per FS procedures SAWI 070.
4 Results reported as received from WNSW.

Sydney WATER Laboratory Services

ANALYTICAL RESULTS

Client Sample ID		N24/025696	N24/025697	N24/025698	N24/025699	N24/025700	N24/025701	N24/025702	N24/025703
Sampled Date		10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM	10/12/2024 12:00:00 AM
Sample Number		L24106324	L24106325	L24106326	L24106327	L24106328	L24106329	L24106330	L24106331
ORGANICS									
TC006WHL : Carbonyls (Aldehydes and Ketones)									
Formaldehyde	ug/L	976	1420	1130	1900	2580	2480	2750	1380
Acetaldehyde	ug/L	<100	<100	<100	<100	<100	<100	<100	<100
Propionaldehyde	ug/L	<100	<100	<100	<100	<100	<100	<100	<100
Gluteraldehyde	ug/L	<100	<100	<100	<100	<100	<100	<100	<100
Total Detectable Aldehydes	ug/L	976	1420	1130	1900	2580	2480	2750	1380
Date of Performance	DD/MM/YY	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24
TC06PW : Sample Prep for Organics analysis									
Aldehydes & Ketones in Prep Water	N/A	Done	Done	Done	Done	Done	Done	Done	Done
Date of Performance	DD/MM/YY	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24	17/12/24

Sydney WATER Laboratory Services

Client Sample ID		N24/025704							
Sampled Date		10/12/2024 12:00:00 AM							
Sample Number		L24106332							
ORGANICS									
TC006WHL : Carbonyls (Aldehydes and Ketones)									
Formaldehyde	ug/L	<100							
Acetaldehyde	ug/L	<100							
Propionaldehyde	ug/L	<100							
Gluteraldehyde	ug/L	<100							
Total Detectable Aldehydes	ug/L	<100							
Date of Performance	DD/MM/YY	17/12/24							
TC06PW : Sample Prep for Organics analysis									
Aldehydes & Ketones in Prep Water	N/A	Done							
Date of Performance	DD/MM/YY	17/12/24							

COMMENTS

Sydney WATER Laboratory Services

LABORATORY QC RESULTS

N/A - Not Applicable
PQL - Practical Quantitation Limit
LOQ - Limit of Quantification
RPD - Relative Percent Difference
SPIKE/Positive Control - Addition of a known amount and concentration
Duplicate Precision = Accepted - Result 2 within 95% confidence limits of result 1
Duplicate Precision = Outlier - Result 2 outside 95% confidence limits of result 1
Duplicate Precision = Not calculated - Result is outside test range

Sydney WATER Laboratory Services

LOQ	Blank	Control *Acceptance Criteria*	Spike *Acceptance Criteria*	Duplicate1	Duplicate2	RPD *Acceptance Criteria*
TC006WHL Acetaldehyde						
<100 ug/L	**<100**	**109** *70.0 - 130.0 ug/L*	**105 % Recovery** *50.0 - 130.0 % Recovery*	**<100**	**<100**	**B** *0.0 - 0.0 %*
TC006WHL Formaldehyde						
<100 ug/L	**<100**	**110** *70.0 - 130.0 ug/L*	**109 % Recovery** *50.0 - 130.0 % Recovery*	**<100**	**<100**	**B** *0.0 - 0.0 %*
TC006WHL Gluteraldehyde						
<100 ug/L	**<100**	**89.3** *70.0 - 130.0 ug/L*	**93.6 % Recovery** *50.0 - 130.0 % Recovery*	**<100**	**<100**	**B** *0.0 - 0.0 %*
TC006WHL Propionaldehyde						
<100 ug/L	**<100**	**103** *70.0 - 130.0 ug/L*	**100 % Recovery** *50.0 - 130.0 % Recovery*	**<100**	**<100**	**B** *0.0 - 0.0 %*
TC006WHL Total Detectable Aldehydes						
<100 ug/L	**F**	**C**	**E**	**<100**	**<100**	**B** *0.0 - 0.0 %*

Extra Note:

B: Duplicate RPD reject criteria is not applicable, results are <10 times LOQ
E: Spike is not applicable for this analyte
F: Blank is not applicable for this analyte
C: Standard/Control is not applicable for this analyte