Air Noise Environment
Environmental Monitoring and Assessment

Emissions Monitoring: Talinga Gas Processing Facility

Origin Energy

Origin Energy
144 Montague Road
West End QLD 4101

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Prepared by:
Air Noise Environment
ABN: 13 081 834 513

The results of tests and/or measurements included in this document are traceable to international standards.

Should you have any queries regarding the contents of this document, please contact your nearest Air Noise Environment office:

Brisbane Office

A: Unit 3, 4 Tombo Street

Capalaba, QLD 4157

T: +61 7 3245 7808

E: qld@ane.com.au

Sydney Office

A: Level 6, 69 Reservoir Street

Surry Hills, NSW 2010

T: +61 2 8217 0706

E: nsw@ane.com.au

Townsville Office

A: Level 1, 25 Sturt Street

Townsville, QLD 4810

T: +61 7 4722 2724

E: qld@ane.com.au

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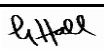
02	Samuel Putland	Gary Hall	Technical Reviewer	

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The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Air Noise Environment Pty Ltd for the purposes of this project is both complete and accurate.

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Executive Summary

Origin Energy operates a Gas Processing Facility (GPF) at Talinga and forms an integral part of the Australia Pacific LNG (APLNG) Project. The site is located at 4940 Kogan-Condamine Road Qld 4413

The existing Talinga GPF has an output of 90 TJ/day and comprises the following emission sources:

- *12 Waukesha L7042GSI rich-burn gas-fired screw compressor engines*
- *5 Caterpillar G3612 gas-fired engines (2 stacks per compressor)*
- *3 Caterpillar G3406 gas-fired engines*

Table 1 Presents a summary of emissions from monitoring completed at the Origin Talinga Gas Processing Facility during the period 1st - 3rd May 2014.

Table 1: Summary of results.

Release Point		Velocity (m/s)[1.]	NO_x (expressed as NO_2) (g/s)[1.]
Reciprocating Compressors	K4406-01.1	15.5	0.1424
	K4406-01.2	25.7	0.2101
	K4406-02.1	18.6	0.2476
	K4406-02.2	33.6	0.3778
	K4406-03.1	19.7	0.2843
	K4406-03.2	32.4	0.4129
	K4406-04.1	19.5	0.3387
	K4406-04.2	34.5	0.5832
	K4406-05.1	18.5	0.2590
	K4406-05.2	33.5	0.2929
Screw Compressors	K4404-01.1	31.3	5.6796
	K4404-02.1	30.8	5.2669
	K4404-03.1	33.3	2.0880
	K4404-04.1	32.6	4.0892
	K4404-05.1	33.3	4.3230
	K4404-07.1	33.3	3.5081
	K4404-08.1	32.2	4.6345
	K4404-09.1	34.6	3.5165
	K4404-10.1	35.7	4.9851
	K4404-11.1	36.1	6.5891
	K4404-12.1	35.4	7.2835

Release Point		Velocity (m/s)[1.]	NO_x (expressed as NO_2) (g/s)[1.]
Power Generation	G4408-01.1	6.0	0.3892
	G4408-02.1	6.6	0.3931
	G4408-03.1	6.8	0.4838

1. K4404-06.1 not sampled due to engine currently not in operation.

1 Introduction

Origin Energy commissioned Air Noise Environment Pty Ltd to conduct monitoring of air emissions from their Talinga Gas Processing Facility as part of their requirements under the Queensland Department of Environment and Heritage Protection (EHP) for the facility. Table 1.1 details the monitoring locations and the monitoring performed at each location. The monitoring was completed during the period 1st - 3rd May 2014. Screw compressor K4404-06.1 was not tested as it is currently not in operation. The engines sampled are included in Table 1.1.

Table 1.1: Monitoring locations and parameters.

Parameter	NO_x	Velocity	Temperature & Moisture	O_2, CO_2
Reciprocating Compressor K4404-01.1	✓	✓	✓	✓
Reciprocating Compressor K4404-01.2	✓	✓	✓	✓
Reciprocating Compressor K4404-02.1	✓	✓	✓	✓
Reciprocating Compressor K4404-02.2	✓	✓	✓	✓
Reciprocating Compressor K4404-03.1	✓	✓	✓	✓
Reciprocating Compressor K4404-03.2	✓	✓	✓	✓
Reciprocating Compressor K4404-04.1	✓	✓	✓	✓
Reciprocating Compressor K4404-04.2	✓	✓	✓	✓
Reciprocating Compressor K4404-05.1	✓	✓	✓	✓
Reciprocating Compressor K4404-05.2	✓	✓	✓	✓
Screw Compressor K4404-01.1	✓	✓	✓	✓
Screw Compressor K4404-02.1	✓	✓	✓	✓
Screw Compressor K4404-03.1	✓	✓	✓	✓
Screw Compressor K4404-04.1	✓	✓	✓	✓
Screw Compressor K4404-05.1	✓	✓	✓	✓
Screw Compressor K4404-07.1	✓	✓	✓	✓
Screw Compressor K4404-08.1	✓	✓	✓	✓
Screw Compressor K4404-09.1	✓	✓	✓	✓
Screw Compressor K4404-10.1	✓	✓	✓	✓
Screw Compressor K4404-11.1	✓	✓	✓	✓
Screw Compressor K4404-12.1	✓	✓	✓	✓
Power Generator G4408-01.1	✓	✓	✓	✓

Parameter	NO_x	Velocity	Temperature & Moisture	O_2, CO_2
Power Generator G4408-02.1	✓	✓	✓	✓
Power Generator G4408-03.1	✓	✓	✓	✓

The monitoring of air emissions at the Talinga Gas Processing Facility was completed during normal operating conditions. Any factors that may have affected the monitoring results were not observed by, or brought to the notice of Air Noise Environment (ANE) staff except where noted in this report.

2 Methodology

2.1 Emission Testing

Table 2.1 below lists the Methods used when undertaking emission monitoring at the Talinga Gas Processing Facility.

All air quality monitoring undertaken by the Company has been undertaken in accordance with the methods identified in Table 2.1 below unless as specified in Section 2.2.

Table 2.1: Summary of Emission Monitoring Methods.

Measurement Parameter	Method Equivalency
Sampling Positions	**AS4323.1-1995** Method 1: selection of sampling positions
Velocity, Flowrate and Temperature	**AS 4323.2-1995** Stationary Source Emissions - Method 2: Determination of Total Particulate Matter - Isokinetic Manual Sampling - Gravimetric Method
Oxygen and Carbon Dioxide	**USEPA Method 3A** Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources
Moisture Content	**USEPA Method 4** Determination of Moisture Content in Stack Gases
Oxides of Nitrogen (NO, NO_2, NO_x)	**USEPA Method 7E** Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)
Hydrocarbons (C1-C4)	**USEPA Method 18** Determination of Volatile Organic Compounds (Sample Collection by Gas Bag)

2.2 Deviation from Methods

Determination of moisture content was undertaken using a modified Method 4 sampling train. Deviations from USEPA Method 4 included the following –

- Sampling was undertaken at a single point within the exhaust gas stream; and
- A total of three midget impingers (two with water and one with silica gel) were used in the sampling train to measure moisture content.

3 Results

3.1 Introduction

The following sections present a summary of results for each sampling location.

3.1.1 Process Conditions

Table 3.1 provides a summary of process conditions during the air emissions monitoring at Talinga Gas Processing Facility.

Table 3.1: Process Conditions During Emissions Monitoring for Reciprocating and Screw Compressors.

Parameter	Average Engine Load (%)	Average Engine RPM
Reciprocating Compressor K4406-01.1	87	846
Reciprocating Compressor K4406-01.2		
Reciprocating Compressor K4406-02.1	87	999
Reciprocating Compressor K4406-02.2		
Reciprocating Compressor K4406-03.1	88	1000
Reciprocating Compressor K4406-03.2		
Reciprocating Compressor K4406-04.1	89	1000
Reciprocating Compressor K4406-04.2		
Reciprocating Compressor K4406-05.1	88	1000
Reciprocating Compressor K4406-05.2		
Screw Compressor K4404-01.1	96	1203
Screw Compressor K4404-02.1	96	1202
Screw Compressor K4404-03.1	97	1199
Screw Compressor K4404-04.1	100	1201
Screw Compressor K4404-05.1	98	1200
Screw Compressor K4404-07.1	99	1205
Screw Compressor K4404-08.1	97	1202
Screw Compressor K4404-09.1	104	1202
Screw Compressor K4404-10.1	103	1202
Screw Compressor K4404-11.1	103	1199

Parameter	Average Engine Load (%)	Average Engine RPM
Screw Compressor K4404-12.1	101	1204

Table 3.2: Process Conditions During Emissions Monitoring for Power Generators.

Parameter	Generator Load (kW)	Average Engine RPM	Combustion Temperature (°C)
Power Generation G4408-01.1	46	1500	34.9
Power Generation G4408-02.1	50	1500	48.7
Power Generation G4408-03.1	47	1499	49.0

3.1.2 Monitoring Results

Results of emissions monitoring for Talinga Gas Processing Facility are provided in Table 3.3 and Table 3.4 below for emissions monitoring completed during the period of the 1st - 3rd May 2014.

Table 3.3: Flow and Sample Characteristics for Reciprocating Compressors.

Parameter	K4406-01.1	K4406-01.2	K4406-02.1	K4406-02.2	K4406-03.1	K4406-03.2	K4406-04.1	K4406-04.2	K4406-05.1	K4406-05.2
Date (dd/mm/yy)	01/05/2014									
Start Time (hh:mm)	16:42	15:53	15:03	14:14	13:18	12:28	11:38	10:47	09:57	08:54
Sample Time (min)	17:10	16:23	15:33	14:44	13:48	12:58	12:08	11:17	10:27	09:24
Sample Volume (m^3)	0.309	0.336	0.336	0.333	0.314	0.316	0.312	0.316	0.316	0.313
Average Stack Temperature (°C)	323	362	336	403	342	401	337	412	328	395
Stack Diameter (m)	0.50									
Barometric Pressure (KPa)	101.70									
Calculated Stack Moisture (%)	10.2	9.9	10.8	9.8	12.6	9.3	10.9	11.5	11.0	9.5
Carbon Dioxide Percentage (%)	4.90	4.95	5.19	5.09	5.13	4.93	5.36	5.31	5.00	4.68
Oxygen Percentage (%)	11.91	11.80	11.36	11.54	11.44	11.80	11.03	11.13	11.73	12.37
Dry Gas Molecular Weight (g/gmole)	29.26	29.26	29.29	29.28	29.28	29.26	29.30	29.30	29.27	29.24
Average Stack Gas Velocity (m/s)	15.5	25.7	18.6	33.6	19.7	32.4	19.5	34.5	18.5	33.5
Actual Stack Flow Rate (m^3/s)	3.05	5.04	3.66	6.60	3.87	6.35	3.84	6.77	3.63	6.58
Dry Standard Stack Flow Rate (Nm^3/s)	1.26	1.96	1.47	2.41	1.51	2.34	1.54	2.39	1.47	2.43

Parameter		K4406-01.1	K4406-01.2	K4406-02.1	K4406-02.2	K4406-03.1	K4406-03.2	K4406-04.1	K4406-04.2	K4406-05.1	K4406-05.2
NO_x (expressed as NO_2)	(mg/Nm^3)	113.1	107.1	168.7	156.7	188.7	176.7	220.6	243.9	175.8	120.3
	(g/s)	0.1424	0.2101	0.2476	0.3778	0.2843	0.4129	0.3387	0.5832	0.2590	0.2929
CO	(mg/Nm^3)	435.6	451.2	441.6	425.5	485.7	489.0	521.7	518.8	513.9	443.3
	(g/s)	0.5485	0.8849	0.6482	1.0256	0.7315	1.1428	0.8011	1.2407	0.7573	1.0788

Table 3.4: Flow and Sample Characteristics for Screw Compressors.

Parameter	K4404-01	K4404-02	K4404-03	K4404-04	K4404-05	K4404-07	K4404-08	K4404-09	K4404-10	K4404-11	K4404-12
Date (dd/mm/yyyy)	02/05/2014							03/05/2014			
Start Time (hh:mm)	08:30	09:22	10:10	12:56	11:02	12:02	13:50	08:53	10:01	11:06	12:12
Sample Time (min)	09:00	09:52	10:40	13:26	11:32	12:32	14:20	09:23	10.31	11:36	12:42
Sample Volume (m^3)	0.307	0.265	0.269	0.265	0.287	0.270	0.267	0.263	0.260	0.272	0.273
Average Stack Temperature (°C)	470	453	475	466	467	464	461	479	465	469	474
Stack Diameter (m)	0.35										
Barometric Pressure (KPa)	101.01							100.94			
Calculated Stack Moisture (%)	17.1	20.1	20.8	19.7	20.4	20.6	18.8	20.7	19.6	19.2	20.3
Carbon Dioxide Percentage (%)	10.55	10.50	10.70	10.89	10.88	10.82	10.72	10.91	10.61	10.43	10.70
Oxygen Percentage (%)	1.09	1.16	1.31	0.93	0.97	1.07	1.21	0.84	1.40	1.24	0.83
Dry Gas Molecular Weight (g/g-mole)	29.73	29.73	29.76	29.78	29.78	29.77	29.76	29.78	29.75	29.72	29.74

Parameter		K4404-01	K4404-02	K4404-03	K4404-04	K4404-05	K4404-07	K4404-08	K4404-09	K4404-10	K4404-11	K4404-12
Average Stack Gas Velocity (m/s)		31.3	30.8	33.3	32.6	33.3	33.3	32.2	34.6	35.7	36.1	35.4
Actual Stack Flow Rate (m^3/s)		3.02	2.96	3.21	3.14	3.20	3.20	3.09	3.32	3.43	3.47	3.40
Dry Standard Stack Flow Rate (Nm^3/s)		0.92	0.89	0.92	0.93	0.94	0.94	0.93	0.95	1.01	1.02	0.99
NO_x (expressed as NO_2)	(mg/Nm^3)	6193.1	5937.3	2263.4	4411.9	4598.2	3727.7	4978.9	3695.0	4913.6	6433.8	7376.2
	(g/s)	5.6796	5.2669	2.0880	4.0892	4.3230	3.5081	4.6345	3.5165	4.9851	6.5891	7.2835
CO	(mg/Nm^3)	4235.2	4862.0	402.8	177.7	383.7	383.0	313.1	301.7	179.1	4507.3	4479.2
	(g/s)	3.8840	4.3130	0.3716	0.1647	0.3608	0.3604	0.2914	0.2872	0.1817	4.6160	4.4229
Methane	(mg/Nm^3)	-	-	-	-	-	-	-	513.2	445.2	492.4	500.3
	(g/s)	-	-	-	-	-	-	-	0.3876	0.3630	0.4074	0.3935
Ethane	(mg/Nm^3)	-	-	-	-	-	-	-	1.919	2.590	4.106	5.126
	(g/s)	-	-	-	-	-	-	-	0.0014	0.0021	0.0034	0.0040
Ethylene	(mg/Nm^3)	-	-	-	-	-	-	-	2.140	1.690	26.79	34.92
	(g/s)	-	-	-	-	-	-	-	0.0016	0.0014	0.0222	0.0275
Propane	(mg/Nm^3)	-	-	-	-	-	-	-	<0.039	<0.039	0.118	0.157
	(g/s)	-	-	-	-	-	-	-	<0.00003	<0.00003	0.0001	0.0001
Propylene	(mg/Nm^3)	-	-	-	-	-	-	-	0.282	0.038	1.934	2.479
	(g/s)	-	-	-	-	-	-	-	0.0002	0.00003	0.0016	0.0019

Parameter		K4404-01	K4404-02	K4404-03	K4404-04	K4404-05	K4404-07	K4404-08	K4404-09	K4404-10	K4404-11	K4404-12
I-butane	(mg/Nm^3)	-	-	-	-	-	-	-	0.519	0.908	1.608	1.530
	(g/s)	-	-	-	-	-	-	-	0.0004	0.0007	0.0013	0.0012
Butane	(mg/Nm^3)	-	-	-	-	-	-	-	<0.078	<0.078	0.078	0.078
	(g/s)	-	-	-	-	-	-	-	<0.00006	<0.00006	0.0001	0.0001
Butylene	(mg/Nm^3)	-	-	-	-	-	-	-	0.626	0.351	0.776	0.976
	(g/s)	-	-	-	-	-	-	-	0.0005	0.0003	0.0006	0.0008

Table 3.5: Flow and Sample Characteristics for Power Generators.

Parameter	G4408-01.1	G4408-02.1	G4408-03.1
Date (dd/mm/yyyy)	03/05/2014		
Start Time (hh:mm)	14:41	13:58	13:18
Sample Time (min)	15:11	14:28	13:48
Sample Volume (m^3)	0.271	0.272	0.271
Average Stack Temperature (°C)	332	328	384
Stack Diameter (m)	0.20		
Barometric Pressure (KPa)	100.94		
Calculated Stack Moisture (%)	17.8	14.8	16.8
Carbon Dioxide Percentage (%)	9.09	8.73	9.14
Oxygen Percentage (%)	4.13	4.83	4.01

Parameter		G4408-01.1	G4408-02.1	G4408-03.1
Dry Gas Molecular Weight (g/g-mole)		29.62	29.59	29.62
Average Stack Gas Velocity (m/s)		6.0	6.6	6.8
Actual Stack Flow Rate (m^3/s)		0.19	0.21	0.21
Dry Standard Stack Flow Rate (Nm^3/s)		0.07	0.08	0.07
NO_x (expressed as NO_2)	(mg/Nm^3)	5550.7	4897.4	6534.2
	(g/s)	0.3892	0.3931	0.4838
CO	(mg/Nm^3)	731.7	786.1	1051.8
	(g/s)	0.0513	0.0631	0.0779

Appendix A – Glossary of Terms

APPENDIX A: GLOSSARY OF TERMS	
<	The analytes tested for was not detected, the value stated is the reportable limit of detection
µg	Micrograms (10^{-6}grams)
AS	Australian Standard
dscm	dry standard cubic meters (at 0°C and 1 atmosphere)
g	grams
kg	kilograms
m	metres
m^3	Cubic Metres, actual gas volume in cubic metres as measured.
mg	Milligrams
min	Minute
mg/m^3	Milligrams (10^{-3}) per cubic metre.
mmH_2O	Millimetres of water
Mole	SI Unit defined as an amount of a substance that contains as many elementary entities (e.g. atoms, molecules, ions, electrons) as there are atoms in 12 grams of pure Carbon-12 (^{12}C)
N/A	Not Applicable
ng	Nanograms (10^{-9} grams)
Nm^3	Normalised Cubic Metres - Gas volume in dry cubic metres at standard temperature and pressure (0°C and 101.3 kPa) and corrected .
ou	Odour Units
°C	Degrees Celsius
$µg/m^3$	Micrograms (10^{-6}) per cubic metre. Conversions from $µg/m^3$ to parts per volume concentrations (ie, ppb) are calculated at 25 °C.
ppb / ppm	Parts per billion / million.
PM	Particulate Matter.

APPENDIX A: GLOSSARY OF TERMS	
PM_{10}, $PM_{2.5}$, PM_1	Fine particulate matter with an equivalent aerodynamic diameter of less than 10, 2.5 or 1 micrometres respectively. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments.
sec	Second
Sm3	Standardised Cubic Metres - Gas volume in dry cubic metres at standard temperature and pressure (0°C and 101.3 kPa) and corrected to a standardised value (e.g. 7% O_2)
STP	Standard Temperature and Pressure (0°C and 101.3 kPa)
TVOC	Total Volatile Organic Compounds. These compounds can be both toxic and odorous.
USEPA	United States Environmental Protection Agency

Appendix B – Calibration Record

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	ANE Capalaba	**Cylinder No.**	461 397 310 459
Calibration Date	29-Apr-14		
Testo ID	ANE Testo 01		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	0.00	0.00	-	0.0	0
	Actual	0.02	0.02	-	0.0	0
	Calibration	-	-	-		
HIGH	**Target**	15.20	21.30	-	23.6	511
	Actual	15.16	21.40	-	23.4	491
	Calibration	-	-	-	-	511

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	ANE Capalaba	**Cylinder No.**	461 397 310 459
Calibration Date	29-Apr-14		
Testo ID	ANE Testo 03		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	-	0.00	0	0.0	0
	Actual	-	0.10	1	1.0	0
	Calibration	-	-	-	-	-
HIGH	**Target**	-	21.30	995	23.6	511
	Actual	-	21.40	1121	24.0	510
	Calibration	-	-	995	-	-

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	02-May-14		
Testo ID	ANE Testo 03		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	-	0.00	0	0.0	0
	Actual	-	0.10	0	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	-	21.30	995	23.6	511
	Actual	-	21.57	942	20.3	493
	Calibration	-	21.30	995	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	02-May-14		
Testo ID	ANE Testo 01		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	0.00	0.00	-	0.0	0
	Actual	0.00	0.02	-	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	15.20	21.30	-	23.6	511
	Actual	15.12	21.62	-	19.6	492
	Calibration	-	21.30	-	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	02-May-14		
Testo ID	ANE Testo 03		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	-	0.00	0	0.0	0
	Actual	-	0.10	0	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	-	21.30	995	23.6	511
	Actual	-	21.57	942	20.3	493
	Calibration	-	21.30	995	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	02-May-14		
Testo ID	ANE Testo 01		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	0.00	0.00	-	0.0	0
	Actual	0.00	0.02	-	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	15.20	21.30	-	23.6	511
	Actual	15.12	21.62	-	19.6	492
	Calibration	-	21.30	-	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION 350			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	03-May-14		
Testo ID	ANE Testo 01		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	0.00	0.00	-	0.0	0
	Actual	0.01	0.00	-	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	15.20	21.30	-	23.6	511
	Actual	15.14	21.50	-	24.8	493
	Calibration	-	21.30	-	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION 350			
Test Location	Origin Talinga	**Cylinder No.**	461 397 310 459
Calibration Date	03-May-14		
Testo ID	ANE Testo 03		

APPENDIX B: PRE-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	-	0.00	0	0.0	0
	Actual	-	0.08	0	0.0	0
	Calibration	-	-	-	-	-
MID	**Target**	-	-	-	-	-
	Actual	-	-	-	-	-
	Calibration	-	-	-	-	-
HIGH	**Target**	-	21.30	995	23.6	511
	Actual	-	21.55	982	26.7	500
	Calibration	-	21.30	995	23.6	511

APPENDIX B: MULTI-POINT CALIBRATION 350			
Test Location	ANE Capalaba	**Cylinder No.**	461 397 310 459
Calibration Date	28-May-14		
Testo ID	ANE Testo 01		

APPENDIX B: POST-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	0.00	0.00	-	0.0	0
	Actual	0.03	0.09	-	0.0	0
	Calibration	-	-	-	-	-
HIGH	**Target**	15.20	21.30	-	23.6	511
	Actual	15.21	21.46	-	23.6	524
	Calibration	-	-	-	-	-

APPENDIX B: MULTI-POINT CALIBRATION 350			
Test Location	ANE Capalaba	**Cylinder No.**	429 847 310 459
Calibration Date	19-May-14		
Testo ID	ANE Testo 03		

APPENDIX B: POST-TEST CALIBRATION						
Range		**CO_2**	**O_2**	**NO**	**NO_2**	**CO**
LOW	**Target**	-	0.00	0	0.0	0
	Actual	-	0.24	0	0.0	0
	Calibration	-	-	-	-	-
HIGH	**Target**	-	20.90	479	23.6	197
	Actual	-	20.90	479	23.9	199
	Calibration	-	-	-	-	-