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AGL UPSTREAM INVESTMENTS PTY LTD

CAMDEN GAS PROJECT

Annual Leak Detection and Repair Summary Report

Reporting Period: 13 May 2013 – 21 December 2013

AGL Upstream Investments Pty Ltd

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Foreword

PREMISES	Rosalind Park Gas Plant Lot 35 Medhurst Road GILEAD NSW 2560
LICENCE DETAILS	<u>Environment Protection Licence 12003</u>
LICENCEE	AGL Upstream Investments Pty Limited (AGL)
LICENCEE'S ADDRESS	Locked Bag 1837, North Sydney, NSW 2060
REPORTING PERIOD	13 May 2013 – 21 December 2013
REPORT DATE	17 February 2014
REPORT PREPARED BY	Aaron Clifton, Environment Manager

1. Introduction

The Camden Gas Project (CGP) is owned and operated by AGL and is located in the Macarthur region 65 km southwest of Sydney, in the Wollondilly, Camden and Campbelltown Local Government Areas. The CGP has been producing gas for the Sydney region since 2001 and currently consists of 144 gas wells, low-pressure underground gas gathering pipes and the Rosalind Park Gas Plant (RPGP).

This Leak Detection and Repair (LDAR) Summary Report has been prepared to satisfy EPL 12003, Conditions R4.1 and R4.2, and relates to the LDAR Program required by EPL 12003 Conditions M7.2 and M7.3.

EPL 12003 Condition M7.3 stipulate the LDAR Program must, unless otherwise approved by the EPA, monitor for the detection of leaks in accordance with US EPA Method 21 – Determination of Volatile Organic Compound Leaks (40 CFR Part 60, Appendix A, Method 21).

EPL 12003 Condition R4.2 requires AGL to submit a brief summary report on the LDAR Program with the Annual Return. The summary report must include, but may not be limited to:

- a. The total number of components inspected, as well as the number and percentage of minor, major and significant leaking components found by component types;
- b. The type of components and the scale of the leak for any equipment where leaks are found;
- c. The emission level of leaking equipment and emission level of re-check after leak was repaired;
- d. The repair responses and times as listed in the table below

Table 1 is an extract from EPL Condition R4.2 which specifies the scale of leaks by minor, major and significant classification.

Table 1- Scale of leaks and classification

Scale of leak (ppmv)	Classification
1000-<10,000	Minor
>=10,000 - <50,000	Major
>=50,000	Significant

2. LDAR Program Results

In April 2013 (prior to the EPA finalising the EPL variation to include Conditions M7.1 – M7.3, R4.1 and R4.2), AGL engaged Heath Pipeline Services Pty Ltd (HPS) to complete an annual gas leakage audit. The annual audit was conducted by HPS in accordance with US EPA Method 21. The audit commenced on 22 April 2013, through until 01 May, and encompassed 120 wellheads, associated above ground facilities and gas gathering lines, and RPGP vessels and piping. A GMI Gasurveyor 500 operating at 10 parts per million (ppmv) sensitivity level with an upper detection limit of 10,000ppmv was employed for the survey.

Table 2 shows the results of the audit of the wellheads, associated above ground facilities and gas gathering lines. No leaks were identified (HPS, 2013a).

Table 2- HPS audit results for Camden wellheads, associated above ground facilities and gas gathering line

Component		Detected Leaks					
		Minor		Major		Significant	
Type	No.*	Total	%	Total	%	Total	%
Valve^	2880	0	0	0	0	0	0
Control Valve^^	480	0	0	0	0	0	0
Pressure Safety Valve	360	0	0	0	0	0	0
Instrumentation	1080	0	0	0	0	0	0
Vessel	240	0	0	0	0	0	0
Flange	480	0	0	0	0	0	0
Wellhead	120	0	0	0	0	0	0
Gas gathering line (km)	71.41	0	0	0	0	0	0

* Approximate, based on standard free flow well configuration for 120 wells, excluding threaded fittings. Total to be confirmed during 2014 LDAR program.

^ Example - Ball valve, needle valve, check valve, globe valve, butterfly valve

^^ Example - Pressure control valve, flow control valve, shut down valve

Table 3 shows the results of the audit of the RPGP vessels and piping. Three Major leaks ($\geq 10,000$ – $< 50,000$ ppmv) and one Minor leak ($1,000$ – $< 10,000$ ppmv) were identified and repaired at RPGP (HPS, 2013b).

Table 3- HPS audit results for the RPGP vessels and piping

Component		Detected Leaks					
		Minor		Major		Significant	
Type	No.*	Total	%	Total	%	Total	%
Valve^	290	0	0	0	0	0	0
Control Valve^^	45	1	2	3	7	0	0
Pressure Safety Valve	13	0	0	0	0	0	0
Instrumentation	75	0	0	0	0	0	0
Vessel	16	0	0	0	0	0	0
Compressor	3	0	0	0	0	0	0

* Approximate, excluding threaded fittings, flare package and gas odouriser. Total to be confirmed during 2014 LDAR program.

^ Example - Ball valve, needle valve, check valve, globe valve, butterfly valve.

^^ Example - Pressure control valve, flow control valve, shut down valve.

Table 4 shows the type of components at the RPGP where leaks were found; the scale of the leak; the emission level of the leak pre repair and post repair; and the repair response and response time.

Table 4- Rosalind Park Gas Plant leaks and repair response details

Equipment	Component	Leak Scale	Repair Response	Repair Time	Emission Level (ppmv)	
					Pre Repair	Post Repair*
Compressor #1	Actuator PCV-1100	Minor	RPGP shutdown and all 4 Actuators were replaced	12 days	6,000	<20
Instrument Gas Receiver V-304	Actuator SDV-365	Major			>10,000	<20
TEG Contactor V-001	Actuator SDV-268	Major			>10,000	<20
TEG Reboiler E-207	Actuator XV-264	Major			>10,000	<20

* Post repair readings were undertaken by AGL using the Innova LS Gas Detector.

3. EPA LDAR Results

Between the 13 September 2013 and 06 December 2013, Officers from the EPA Wollongong Office inspected 95 wells. Using the EPA's own gas detectors, the EPA Officers performed leak audits of the wellheads and associated above ground facilities in accordance with US EPA Method 21.

Table 5 shows the results of the EPA audit of the wellheads and associated above ground facilities.

Table 5- EPA audit results for Camden wellheads and associated above ground facilities

Component		Detected Leaks					
		Minor		Major		Significant	
Type	No.*	Total	%	Total	%	Total	%
Valve^	2280	1	0.04	1	0.04	1	0.04
Control Valve^^	380	1	0.3	1	0.3	0	0
Pressure Safety Valve	285	0	0	0	0	0	0
Instrumentation	855	0	0	1	0.1	0	0
Vessel	190	0	0	0	0	0	0
Flange	380	0	0	0	0	1	0.3
Wellhead	95	1	1.05	1	1.05	0	0

* Approximate, based on standard free flow well configuration for 95 wells, excluding threaded fittings.

^ Example - Ball valve, needle valve, check valve, globe valve, butterfly valve

^^ Example - Pressure control valve, flow control valve, shut down valve

Table 6 shows the type of components at the wellheads and associated above ground facilities where leaks were found; the scale of the leak; the emission level of the leak pre repair and post repair; and the repair response and response time.

Table 6- Wellheads and associated above ground facilities leaks and repair response details

Equipment	Component	Leak Scale	Repair Response	Repair Time	Emission Level (ppmv)	
					Pre Repair	Post Repair*
GL17	Variable Choke	Minor	Replaced Variable Choke	1 day	2,200	<20
LB10	Master Valve	Minor	Tighten Master Valve	7 days	6,000	<20
RP10	Wellhead	Minor	Tighten Wellhead	1 day	9,250	<20
EM38	Master Valve	Major	Tighten Master Valve	1 day	10,000	<20
EM22	Wellhead	Major	Tighten Wellhead	7 days	13,000	<20
GL11	Flowboss	Major	Tighten fittings	At time of leak	35,000	<20
EM05	Variable Choke	Major	Tighten Variable Choke	At time of leak	13,000 – 50,000	<20
EM31	Annulus Valve	Significant	Replace Annulus Valve and tighten all fittings	1 day	50,250	<20
GL05	Orifice Plate	Significant	Tighten studs	At time of leak	50,250	<20

* Post repair readings were undertaken by AGL using the Innova LS Gas Detector.

4. References

Heath Pipeline Services Pty Ltd, 2013a. Gas Leakage Audit 2013 – Final Report for Camden (NSW)
 Heath Pipeline Services Pty Ltd, 2013b. Gas Leakage Audit 2013 – Final Report for Rosalind Park Gas Plant