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# AGL UPSTREAM INVESTMENTS PTY LTD

## CAMDEN GAS PROJECT

### **Annual Leak Detection and Repair Summary Report**

Reporting Period: 22 December 2015 – 21 December 2016

AGL Upstream Investments Pty Ltd

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## Foreword

<b>PREMISES</b>	Rosalind Park Gas Plant Lot 35 Medhurst Road GILEAD NSW 2560
<b>LICENCE DETAILS</b>	<a href="#"><u>Environment Protection Licence 12003</u></a>
<b>LICENCEE</b>	AGL Upstream Investments Pty Limited (AGL)
<b>LICENCEE'S ADDRESS</b>	Locked Bag 1837, St Leonards, NSW 2065
<b>REPORTING PERIOD</b>	22 December 2015 – 21 December 2016
<b>REPORT DATE</b>	17 January 2017
<b>REPORT PREPARED BY</b>	Aaron Clifton, Environment Business Partner

## 1. Introduction

### 1.1 Background

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).

The Environment Protection Licence for the CGP (EPL 12003) includes requirements for the operation and reporting of a Leak Detection and Repair (LDAR) program.

This LDAR Summary Report has been prepared to satisfy the LDAR reporting requirements of the EPL.

### 1.2 EPL12003: Leak Detection and Repair Program

EPL 12003 includes the following requirements for Leak Detection and Repair:

- Condition M7.2: *The licensee must operate a Leak Detection and Repair Program for all relevant components of plant and equipment.*
- Condition M7.3: *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).*
- Condition R4.2: *The licensee must submit a brief summary report on the Leak Detection and Repair (LDAR) program with the annual return. The summary report must include, but may not be limited to:*
  - *The total number of components inspected, as well as the number and percentage of minor, major and significant leaking components found by component types;*
  - *The type of components and the scale of the leak for any equipment where leaks are found;*
  - *The emission level of leaking equipment and emission level of re-check after leak was repaired;*
  - *The repair responses and times as listed in Table 1.*

**Table 1- Scale of leaks and classification**

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

- Condition R4.3: *Where a leak is identified, AGL should aim to have the component repaired as follows:*
  - *Within a period of 14 days if the concentration of the fugitive VOCs emission is greater than or equal to 1,000 parts per million by volume (ppmv) but not more than 10,000 ppmv (minor leak), as methane, above background .*
  - *Within a period of 5 days if the concentration of the fugitive VOCs emission is greater than or equal to 10,000 ppmv but not more than 50,000 ppmv (major leak), as methane, above background*
  - *Within a period of one day if the concentration of the fugitive VOCs emission is greater than or equal to 50,000 ppmv (significant leak > 50,000 ppmv), as methane, above background.*

### **1.3 Methodology**

The LDAR program was undertaken at the CGP by independent third party specialists, Heath Pipeline Services Pty Ltd (HPS). The LDAR program was conducted over 12 working days from 07 November to 18 November 2016, and assessed 124 wellheads, associated above ground facilities and gas gathering lines, and RPGP vessels and piping.

The LDAR program was undertaken in accordance with US EPA Method 21 – Determination of Volatile Organic Compound Leaks (40 CFR Part 60, Appendix A, Method 21).

The LDAR program was undertaken using a GMI leak surveyor operating at 1 part per million (ppm) sensitivity level.

## 2. LDAR Program Results

### 2.1 Field

The results of the LDAR program for the Camden field (including wellheads and associated above ground facilities and infrastructure, and gas gathering lines) are provided in **Table 2**.

**Table 2- Leak detection results for the Camden field LDAR program**

Component		Detected Leaks					
		Minor		Major		Significant	
Type	No.	Total	%	Total	%	Total	%
Wells (including valves, instrumentation, vessels, flanges, pipe threads and well heads)	13,760	7	0.05	2	0.01	1	0.007
Gas gathering line (km)	78.12	0	-	0	-	0	-

Where leaks were identified during the field LDAR program, the scale, emission level (pre and post repair), and the repair response and response times were recorded and are summarised in **Table 3**.

**Table 3- Camden field LDAR program repair response**

Equipment	Component	Leak Scale	Repair Response	Repair Time	Pre Repair (ppmv methane)	Post Repair (ppmv methane)
Well - EM06	Instrumentation	Major	Tightened fitting	Same day	16,500	210
Well - EM20	Instrumentation	Minor	Tightened fitting	Same day	4,650	0
Well - EM31	Valve	Minor	Tightened fitting	Same day	7,020	0
Well - JS03	Valve	Minor	Valve pumped with grease	Same day	2,500	0
Well - KP01	Valve	Major	Valve pumped with grease	Same day	12,000	0
Well - RB08	Instrumentation	Minor	Reduced pressure	Same day	2,740	0
Well - RB08	Water trap	Minor	Replaced water trap	Same day	7,200	0
Well - RB09	Stuffing box	Minor	Tightened and greased	Same day	2,880	0
Well - RB09	Instrumentation	Minor	Replaced instrumentation	Same day	9,360	0
Well - RB10	Stuffing box	Significant	Greased and replaced rubber seal	Same day	90,000	86

## 2.2 RPGP

The results of the LDAR program for RPGP (including valves, vessels, instrumentation, piping and compressors) are provided in **Table 4**.

**Table 4 – Leak detection results for the RPGP LDAR program**

Component		Detected Leaks					
		Minor		Major		Significant	
Type	No.	Total	%	Total	%	Total	%
RPGP (including valves, vessels, instrumentation, piping and compressors)	6,052	11	0.18	2	0.03	2	0.03

Where leaks were identified during the RPGP LDAR program, the scale, emission level (pre and post repair), and the repair response and response times were recorded and are summarised in **Table 5**.

**Table 5- Rosalind Park Gas Plant LDAR program repair response**

Equipment	Component	Leak Scale	Repair Response	Repair Time	Pre Repair (ppmv methane)	Post Repair (ppmv methane)
Compressor 1	Lower fuel line fitting on Cylinder 1	Minor	Copper washers installed	11 days	1,310	0
Compressor 1	Upper fuel line fitting on Cylinder 4	Minor	Copper washers installed	11 days	7,310	0
Compressor 1	Threaded fitting	Minor	Cleaned thread and tightened	11 days	8,150	0
Compressor 1	Upper fuel line fitting on Cylinder 5	Minor	Copper washers installed	11 days	5,880	0
Compressor 1	Lower fuel line fitting on Cylinder 5	Minor	Copper washers installed	11 days	5,980	0
Compressor 1	Upper fuel line fitting on Cylinder 6	Minor	Copper washers installed	11 days	1,230	0
Compressor 1	Fuel line fitting	Significant	Copper washers installed	2 days	60,000	0
Compressor 1	Upper fuel line fitting on Cylinder 2	Minor	Copper washers installed	11 days	2,330	0

Equipment	Component	Leak Scale	Repair Response	Repair Time	Pre Repair (ppmv methane)	Post Repair (ppmv methane)
Compressor 1	Threaded fitting	Major	Replaced fitting and tubing	2 days	11,000	0
Compressor 1	Threaded fitting	Minor	Tightened fitting	2 days	6,900	0
Compressor 2	Carburettor seal	Minor	Seals replaced	4 days	2,250	0
Compressor 2	Carburettor seal	Major	Seals replaced	4 days	10,000	0
Compressor 3	Threaded fitting	Minor	Tightened fitting	Same day	1,290	0
Compressor 3	Carburettor seal	Minor	Seals replaced	1 day	7,980	0
TEG Skid	Regulator vent	Significant	Regulator and diaphragm replaced	1 day	60,000 (at 150mm from source)	0

### 3 Conclusion

The LDAR program was implemented at the CGP and included an assessment of field and RPGP facilities and infrastructure.

The LDAR program was undertaken by third party leak detection specialists in accordance with US EPA Method 21 – Determination of Volatile Organic Compound Leaks (40 CFR Part 60, Appendix A, Method 21).

Leaks that were identified during the LDAR program were classified in accordance with methane emission levels.

### 4 References

1. Gas Leakage Report - Camden Gas Project, Heath Pipeline Services, issued 06 January 2017.