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AGL UPSTREAM INVESTMENTS PTY LTD

Gloucester Gas Project

Annual Leak Detection and Repair Summary Report

Reporting Period: 6 August 2014 to 5 August 2015

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Foreword

PREMISES	Gloucester Gas Project 22 Tate Street GLOUCESTER NSW 2422
LICENCE DETAILS	Environment Protection Licence 20358
LICENCEE	AGL Upstream Investments Pty Limited (AGL)
LICENCEE'S ADDRESS	Locked Bag 1837, North Sydney, NSW 2060
REPORTING PERIOD	6 August 2014 - 5 August 2015
REPORT DATE	21 August 2015
REPORT PREPARED BY	Ben Eastwood, Field Environment Manager

1. Introduction

The Gloucester Gas Project (GGP) is owned and operated by AGL and is located in the Gloucester Valley southeast of the township of Gloucester. The GGP includes the Waukivory Pilot Project which is an exploration activity.

This Leak Detection and Repair (LDAR) Summary Report has been prepared to satisfy EPL 20358, Condition R5.1, and relates to the LDAR Program required by EPL 20358 Condition M9.

AGL engaged Heath Pipeline Services Pty Ltd (HPS) to complete gas leakage audit in accordance with the requirements of Condition M9. The annual audit was conducted by HPS on 5 May 2015 for the Gloucester Gas Project.

2. Regulatory Requirements

Regulatory conditions that apply to the LDAR program and where they have been addressed in this report are summarised in **Table 1**.

Table 1 - EPL 20358 Conditions

Ref	Condition	Section
M9.1	<i>The licensee must operate a leak detection and repair (LDAR) program for all relevant components of plant and equipment in order to detect gas leaks</i>	Section 1
M9.2	<i>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)</i>	Section 3
M9.3	<i>Leak Detection and Repairs</i> <i>When a gas leak is identified, the licensee must have the component repaired as follows:</i> <ul style="list-style-type: none"> <i>Within a period of 14 days if the concentration of the fugitive VOC's 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.</i> 	Table 3

Ref	Condition	Section
	<ul style="list-style-type: none"> • Within a period of 5 days if the concentration of the fugitive VOC's emission is greater than or equal to 10,000 parts per million by volume (ppmv) but not more than 50,000 ppmv (major leak), as methane, above background. • Within a period of 1 day if the concentration of the fugitive VOC's emission is greater than or equal to 50,000 parts per million by volume (ppmv) but not more than 10,000 ppmv (significant leak >50,000 ppmv), as methane, above background. 	
R5.1	<p>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 not be limited to:</p> <ol style="list-style-type: none"> 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 the table below. 	Table 2 and Table 3

3. Methodology

The survey was completed using a GMI Leaksurveyor using US EPA Method 21. The GMI Leaksurveyor Series is a fast response semiconductor gas detector with a scale sensitivity of 10 Parts Per Million (ppm). All leaks located with the GMI Leaksurveyor Series were confirmed with a bubble test. Seventeen sites were physically inspected and surveyed on 5 May 2015.

4. LDAR Program Results

Table 2 shows the survey results taken at the Waukivory Pilot Project including wellheads, associated above ground facilities and gas gathering lines.

Table 2 - Leak detection results for Gloucester Gas Project

Component		Detected Leaks					
		Minor		Major		Significant	
Type	Qty	Total	%	Total	%	Total	%
Wellhead	32	0	0	0	0	0	0
Ground entry Point	32	0	0	0	0	0	0
Control Panel	6	0	0	0	0	0	0
Position Control Valve	4	0	0	0	0	0	0
Bull Plugs & Caps	58	0	0	0	0	0	0
Flanges	124	0	0	0	0	0	0
Gauges	51	1	2	0	0	0	0
Valves	108	0	0	0	0	0	0

Component		Detected Leaks					
		Minor		Major		Significant	
Type	Qty	Total	%	Total	%	Total	%
Swagelok Fittings	56	0	0	0	0	0	0
Threaded Connections	245	0	0	0	0	0	0
Sensor Cable	3	1	33 ^a	0	0	0	0

^a: There are three sensor cables installed. One of the sensor cables demonstrated a minor leak (representing 33% of the total sample).

Table 3 lists components in the Gloucester field where leaks were identified. It includes the scale of the leak, the emission level of the leak pre repair and post repair, and the repair response and response time.

Table 3 - Gloucester field leaks and repair response

Equipment	Component	Leak Scale	Repair Response	Repair Time	Pre Repair (ppm)	Post Repair (ppm)
Stratford #10	Down hole sensor cable	Minor	Replaced two ball valves and relocated telemetry line	6 days	1890	<10
Craven #6	Valve to pressure gauge off wellhead	Minor	Operator tightened valve	Same day	1500	<10

5. Summary

Seventeen sites were inspected during the LDAR program and 719 components surveyed for gas leaks. There were no significant or major gas leaks detected during the survey. Two minor gas leaks were detected at separate wellheads which were repaired within the timeframe required by EPL20358. AGL complied with Condition M9.3 for leaks detected as part of the LDAR program.

6. References

Heath Pipeline Services Pty Ltd (2015), Gas Leakage Audit, 2015 Final Report for AGL Upstream Investments, Gloucester gas Project.