

Leak location trial using tracer gas

Leak located on 300mm PVC main over 250 metres

Case Study CS5-PT-044-1.0

Introduction

To study the development of the technique of leak location by tracer gas Veolia uses a site based close to Lyon for training and testing different equipment. One leak can be created by opening a valve to a secondary pipe.

A test was performed on 15th of April 2014. The test was performed on a 300mm diameter pipe with a pressure of 8 Bar and flow of 10 m³/hr. The tracer gas composition was 5% of hydrogen and 95% nitrogen.

Gas injection

The network is only dedicated for fire and safety. In order to increase gas transfer in the pipe, air valves and fire hydrants are opened with a total flow of 10 m³/hr. Using the Injection Box we easily then adjusted the pressure of gas injection at 8.5 Bar to get higher pressure for gas and tuned the flow at 11.6 litre/min. The flow of gas injection should be enough to get minimum of gas to be detected and not too much to create gas bubble at the top of pipe.



Trial Details

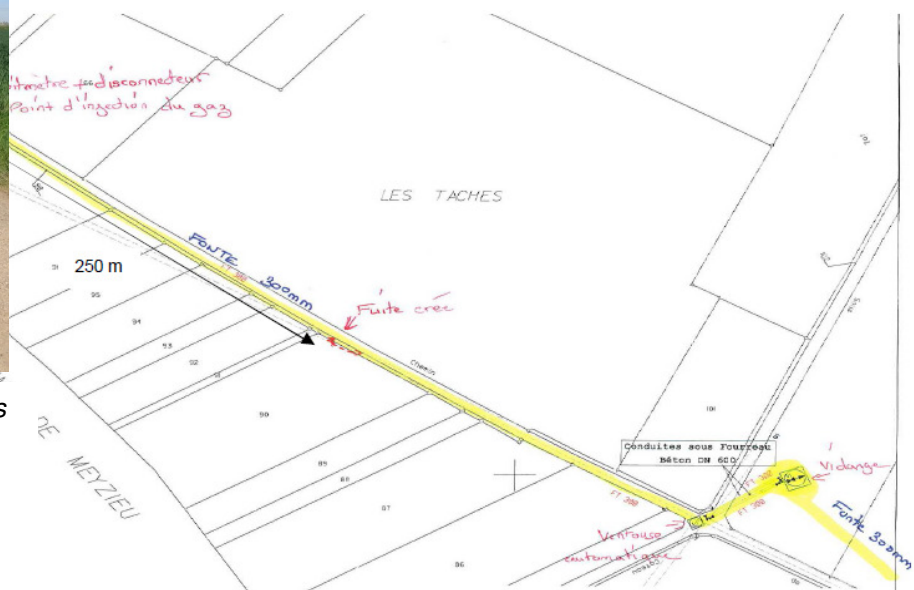
The leak is located at 250 metres from the injection point. A flow of 10m³/h means that the gas is travelling at 4cm/s. A minimum of 2 hours 30 minutes may be needed for gas to get to the leak position. Generally gas takes around one hour to go from 1 metre depth of ground. It's better to make holes on the ground every 2 metres for gas detection. One air valve located after the leak position may be used for checking H₂ presence.

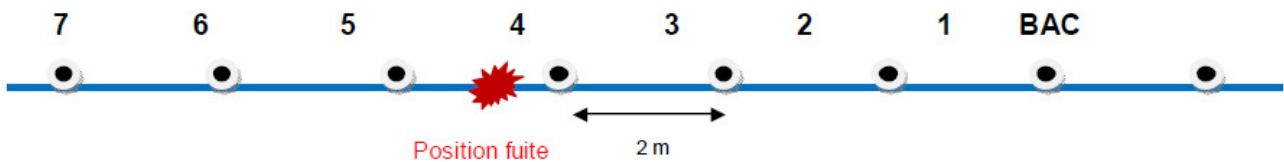


The Injection Kit controls the tracer gas flow and pressure



Detecting the tracer gas at this test site





Report Table

	Primetrace		Competitor 1	
	Bell Probe	Rod Probe	Bell Probe	Rod Probe
1	1PPM (9sec-1mn)	27PPM (6sec-1mn)	0	0
2	55PPM (6sec-2mn)	35PPM (6sec-1mn)	0	1PPM (10sec-1mn30)
3	500PPM (6sec-2mn15)	450PPM (6sec-1mn)	280PPM (15sec-2mn)	0,42% (10sec-2mn)
4	470PPM (6sec-3mn)	30PPM (6sec-50sec)	54PPM (7sec-2mn30)	63PPM (7sec-1mn)
5	91PPM (6sec-3mn)	82PPM (6sec-1mn)	60PPM (11sec-2mn30)	86PPM (7sec-3mn)
6	85PPM (6sec-3mn)	100PPM (6sec-3mn)	36PPM (9sec-3mn)	180PPM (8sec-4mn)
7	30PPM (6sec-3mn)	40PPM (6sec-1mn)	32PPM (7sec-1mn30)	62PPM (7sec-2mn)

The first value of time in the table corresponds to the first alarm on gas detection and second time corresponds to the time to get maximum gas value.

Conclusion

- Gas can be always located during 72 hours after injection.
- A minimum of time of 5 hours between injection and gas location on the ground is suggested.
- Primetrace has good reactivity and goes quickly to zero when the sensor is removed from a place close to the leak (because of the integral vacuum pump).



Primayer Limited

Primayer House, Parklands Business Park, Denmead,
 Hampshire, PO7 6XP, United Kingdom
 T +44 (0)23 9225 2228 F +44 (0)23 9225 2235
 sales@primayer.co.uk www.primayer.com

Registered in England No. 2959100 at above address

Primayer