

# 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 15<sup>th</sup> of April 2014. The test was performed on a 300mm diameter pipe with a pressure of 8 Bar and flow of 10 m<sup>3</sup>/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 m<sup>3</sup>/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

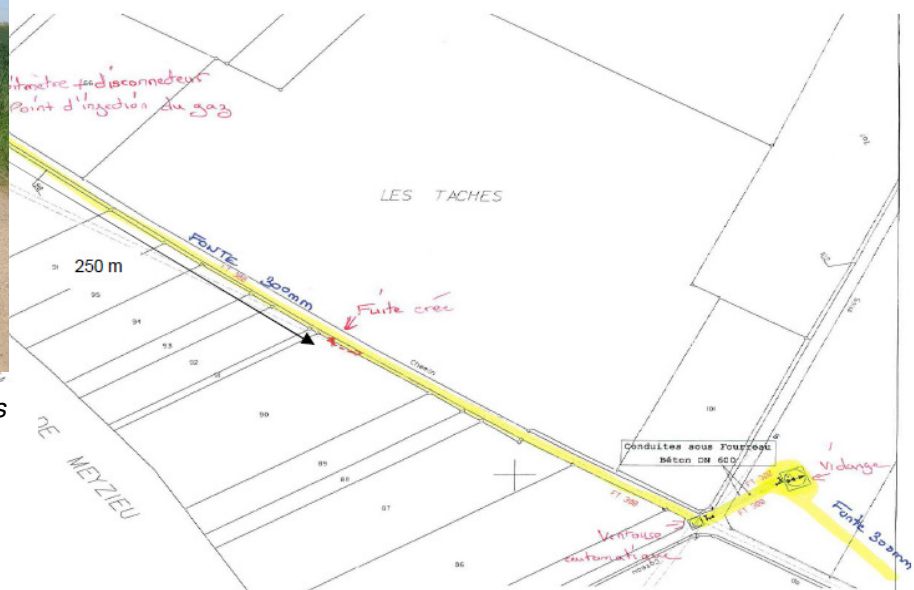
The leak is located at 250 metres from the injection point. A flow of 10m<sup>3</sup>/h means that the gas is travelling at 4cm/s. A minimum of 2 hours 30 minutes may be needed for gas to get to the leak position. Generally gas takes around one hour to go from 1 metre depth of ground. It's better to make holes on the ground every 2 metres for gas detection. One air valve located after the leak position may be used for checking H<sub>2</sub> presence.

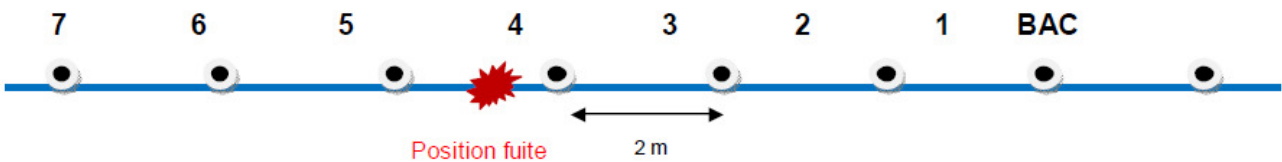


*The Injection Kit controls the tracer gas flow and pressure*



*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 time of 5 hours between injection and gas location on the ground is suggested.
- It is preferred to add a bigger pump onto exiting units for the gas detection
- Primetrace has a better reactivity compared to the competitor and goes quicker to zero when the sensor is removed from a place because of the vacuum pump.



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