



## Cirrus International Ltd

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Borehole Remediation Cambridge England.

Cirrus were contracted by their client to attempt yield improvement on a newly completed borehole in the Cambridge area.

The borehole had been completed and developed by the contractor, the yield / performance was not as expected/designed. For operational reasons the yield would have to be improved or another borehole drilled.

The AirBurst work was carried out over one half day.

One would hope the results speak for themselves.

The attached pages are :-

- 1) The AirBurst data form used prior to operations and during operations.
- 2) A copy of the results from the client.

Client details have been removed for reasons of confidentiality.

# Cirrus International



## Airburst Field Data Record

Contractor	Cirrus International				Date	23 <sup>rd</sup> February 2005	
Customer	XXXX						
Address							
City	Cambridge	County	Cambridge	Post Code	CB4 0AP		
Contact							
Contact							

Borehole Identity	Birchmore 12	Well Diameter	
Borehole Depth	52.5m	Slot size	1.5mm
Static Level	14.6m		
Casing Depth	52.5m	Casing Diameter	
Liner Depth		Liner Diameter	
Screen Depth	50.5m – 22.5m	Screen diameter	473mm
Geo formation		Screen length	28 m

### Well Performance Prior to Airburst

Specific capacity	?		
Pumping Rate	16.5* l/s	Drawdown	?
Pumping Level	34.5* m	Pump setting	?
Well Video	Yes/No	Date	23/02/05

#### Comments

Suspected problems with completion  
Treat with Airburst + Hyperchlorine  
Airburst initial treatment 400 psi, 600 psi, 800 psi, 400 psi  
No video inspection requested  
\* figures supplied onsite

### Well Performance After Airburst

Airgun Model llx		Ambient temp	0 deg
Chamber Size		Pumping Rate	N/A
Operating Pressures	400-800 psi	SWL	?
Gas Source/Type	Air/Nitrogen	PWL	?
Bursts rate	1x15cmx4	Drawdown	?
Burst interval	10s	Specific capacity	?
Max depth	52 m	Min Depth	22m
Well Video	Not Requested	Date	23/02/05

#### Comments



## Airburst Field Data Record Continuation Sheet

### Comments/Drawings

During AirBursting it was observed that the grout/filler level settled by some 2m. This would be very significant for a mature borehole, however in this case a number of possible explanations are possible

- (a) There could have been a void under the base of the grout.
- (b) The borehole was drilled using a rotary mud process and the grout did not totally replace the mud.
- (c) The screen was damaged and the grout was flowing through the damaged area.

For case C this was immediately discounted as the airburst tool collects samples of material in the well bore . The samples were entirely fines sediment.

Based on the original measured depth of the borehole of 52.5m and the change in level during airburst to 51.32m there was a total of 1.18m of fill obtained from the area surrounding the borehole. This figure should increase once settlement of the suspended solids has taken place.

Based on this and providing the existing hydrological conditions are favourable we should see a considerable improvement in borehole performance.

The sediment removal from the bottom of the well should take no more than 1-2 well volumes utilising an airburst tool, alternatively a bailing technique could be used.

The displaced grout should be replaced.

Fill levels,

Pass 1 (absolute depth not recorded, operator report of 200 mm level change)

Pass 2 51.85 m

Pass 3 51.38 m

Pass 4 51.32 m

### Client Provided Yield-Drawdown Curves

