

Appendix 2

1- Labsara 1 drilling data sheet

1.1. Identification:

Drilling Code: 2/615.

Location: Oujda Angad Province – rural commune of Labsara.

Coordinates: Longitude x = 790521 m; latitude y = 451832 m; altitude z = 700 m.

1.2. Technical and lithological characteristics

1.2.1- Air reconnaissance drilling at 8 "1/2

Depth 304 m.

Water coming - 243 m; Q = 1,5 L/s.

Air-lift tests: Piezometry; = 196,70 m; Dynamic level = 197,75 m; Q = 2,7 L/s.

Duration - 6 hours

Conductivity = 1310 μ S / cm; T = 25.5 ° C.

1.2.2. Lithological section

Topside	Underside	Nature
0	6	Limestone
6	111	Marly limestone
111	242	Dolomitic limestone with marly joints
242	290	Dolomitic limestone
290	298	Marl

1.3. Bore characteristics

Diameter	From	To	Type
17"1/2	0	248	MFT AIR
12"1/4	248	300	MFT AIR

1.4. Equipment

Tubing	Diameter	From	To	Thickness (mm)	Type of fitting	Type of strainer
full	14"	0	238	8.00	Welding	
Strainer	14"	238	244	8.00	Welding	Coined ribs
full	14"	244	248	8.00	Welding	
		248	300	Bare hole		

1.5. Development

Nature	Type	Volume (L)
Air-lift	Poly-phosphates	3
+ Pump	HCL acid	2

Air-lift: water tubes 4 "1/2 at 288 m - air tubes 1" 1/4 - dimension 282 m.

3/4 "piezometer tubes - 220 m.

Duration - 8 hours;

Piezometry = 196.65 m; Dynamic level = 196.75 m; Q = 3 L/s.

Development by SUBTECK 125 CV pump.

Pump setting elevation: 220 m.

1.5.1. Step pumping test:

Date: from 01/08/2019 to 15/08/2019.

Static level: 201.

Step	Flow rate (L/s)	Duration (h)	Dynamic level (m)
1	15	2h	204,11
2	18	2h	204,83
3	21	2h	205,4
4	24	2h	207,53

1.5.2. Long-term pumping test

<i>Descent</i>							<i>ascent</i>	
Date	Duration (h)	Pump setting elevation (m)	Flow rate (L/s)	Static level (m)	Dynamic level (m)	Drawdown (m)	Duration (h)	Residual drawdown (m)
16/06/2019	72	215,00	22	201,00	207,00	6,00	2	

1.6. Operating conditions

Flow rate: 22 L/s.

Dynamic level: 207 m.

Pump setting elevation: 215 m.

1.7. Quality data

Turbidity (NTU): 0,4.

Conductivity ($\mu\text{S} / \text{cm}$): 1320.

PH: 7,75.

2. Labsara 2 drilling data sheet

2.1. Identification:

Drilling Code: 6/615.

Location: Oujda Angad Province.

Coordinates: Longitude X : 791869 m Latitude Y : 453731 m Altitude Z : 667 m.

2.2. Lithological section

Topside	Underside	Nature
0	7	Limestone

7	114	Marly limestone
114	247	Dolomitic limestone with marly joints
247	290	Dolomitic limestone
290	300	Grey marl

2.3. Bore characteristics

Diameter	From	To	Type
22"	0	8	Air Drilling
17"1/2	8	250	Air Drilling
8"1/2	250	300	Air Drilling

- First water coming at 245 m; Q = 1.0 L/s.
- Second water coming at 250 m; Q = 2.5 L/s.
- Air lift development - duration 6 hours
- Flow rate = 2,5 L/s.
- Piezometry = 199.00 m.
- Drawdown: = 0,10 m.
- Conductivity: 1470 μ s/cm; Temperature = 25°C.

2.4. Equipment

Tubing	Diameter	From	To	Thickness (mm)	Type of fitting	Type of strainer
Full	18"5/8	0	8.00	8.00	Welding	
Full	14"	0	227.00	8.00	Welding	
Strainer	14"	227	245.00	8.00	Welding	Coined ribs 0.5 mm
Full	14"	245	250.00	8.00	Welding	
Trou nu		250.00	300.00			

2.5. Development

Nature	Type	Volume (L)
1 Air-lift	HCL at 22°	2.5
+ Pump	Polyphosphate	3

2.5.1. Step pumping test:

Date: from 01/08/2019 to 15/08/2019.

Static level: 187 m.

Pump setting elevation: 235 m.

Step	Flow rate (L/s)	Duration (h)	Dynamic level (m)
1	8	1h30	208,36
2	9	1h30	212,13
3	10	1h30	216,73
4	11	1h30	217,08

2.5.2. Long- term pumping test

<i>Descent</i>							<i>ascent</i>	
Date	Duration (h)	Pump setting elevation (m)	Flow rate (L/s)	Static level (m)	Dynamic level (m)	Drawdown (m)	Duration (h)	Residual drawdown (m)
17/05/2019	72	235,00	9	187,00	222,65	35,65	2	

2.6. Operating conditions

Flow rate: 9 L/s.

Dynamic level: 222,65 m.

Pump setting elevation: 235 m.