

PHOENIX SURVEYS INC.

	Company	Noble Energy Inc.
	Well	Pettinger USX AB Z7-02
	Field	Wattenberg
	County	Weird
	State/Prov	Colorado
Location	SHL 490 FUL & 2140 FEL Sec - 27 , Twp - 1N, Rge - 64W	Craig Shores NW NE
Well Field	Elevation : 4650	Elevation
Country	K & A 4832	Dip / Azimuth
State/Prov	DT - 4639	Magnetic
Log Measured From		
Permanant Datum	G/L	
Measured from	KB	
Date	December 7, 2011	
Ran Number	1	
Depth Other	7289	
Bottom Depth	7289	
Depth Log Interval	7.75'	
Top Log Interval	759	
Casing Other	759	
BH Size	7'-6"	
Type Fluid In Hole	Oil/Gel	
Density/Viscosity	9.6 / 50	
Source of Sample	Floated	
Rtn @ Mass Temp	3.25 @ 62°F	
Rtn @ Mass Temp	3.52 @ 62°F	
Source of fluid/filtrate	Massair / Calc	
Rtn @ BH	0.95 @ 207° F	
Time Logged on Bottom	2110	
Maximum Recorded Temperature	207° F	
Equipment Number	8220	
Recorded By	Boydell, CO	
Interfaced By	Latt CM	
Wire M.I.		

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, damages incurred or by anyone resulting from all surveys made by any of our officers, agents or employees. These interpretations are subject to our general terms and conditions set out in our current Price Schedule.

Comments

Anular volume calculated for 4.5" casing  
Cade Drilling Rig 21  
Thank you for using Phoenix Surveys!!  
API #: 05-123-32946-00  
No Repeat Due to Hole Conditions

Database File:	12455.db
Dataset Pathname:	final
Presentation Format:	pds1
Data Creation:	Wed Dec 07 21:35:23 2011

Charted by:		Depth in Feet scaled 1:240	
6	Density Caliper (in)	16	
2	Deep Resistivity (Ohm-m)	200	Density Porosity (pu)
2	Medium Resistivity (Ohm-m)	20	Neutron Porosity (pu)
50	SP (mV)	150	
	ABHV (ft/s)		
2	Shallow Resistivity (Ohm-m)	200	
	Rt (Ohm-m)	200	

Database File: 12455.db  
 Dataset Pathname: final  
 Presentation Format: pdc1  
 Dataset Creation: Wed Dec 07 21:35:23 2011  
 Charted by: Depth in Feet scaled 1.240

Track	Value	Track	Value	Track	Value
Density Caliper (in)	16	Deep Resistivity (Ohm-m)	200	Density Porosity (pu)	0
Gamma Ray (GAPI)	130	Medium Resistivity (Ohm-m)	200	Neutron Porosity (pu)	0
SP (mV)	150	Shallow Resistivity (Ohm-m)	200		
ABHV (ft/s)		Rt (Ohm-m)	200		

2.68 SS Matrix

Database File: 12455.db  
 Dataset Pathname: final  
 Presentation Format: pdc1  
 Dataset Creation: Wed Dec 07 21:35:23 2011  
 Charted by: Depth in Feet scaled 1:240

6 Density Caliper (in) 16  
 30 Gamma Ray (GAPI) 130  
 50 SP (mV) 150  
 ABHV (ft3)

2 Deep Resistivity (Ohm-m) 200  
 2 Medium Resistivity (Ohm-m) 200  
 2 Shallow Resistivity (Ohm-m) 200  
 2 Rt (Ohm-m) 200

20 Density Porosity (pu) 0  
 20 Neutron Porosity (pu) 0

4050  
 4100  
 4150  
 4200  
 4450  
 4500  
 4550

2.68 SS Matrix

Database File: 12455 db  
 Dataset Pathname: final  
 Presentation Format: pdf1  
 Dataset Creation: Wed Dec 07 21:35:23 2011  
 Charted by: Depth in Feet scaled 1:240

Track	Log Type	Scale
6	Density Caliper (in)	16
30	Gamma Ray (GAPI)	130
50	SP (mV)	150
	ABHV (ft3)	
2	Deep Resistivity (Ohm-m)	200
2	Medium Resistivity (Ohm-m)	200
2	Shallow Resistivity (Ohm-m)	200
2	Rt (Ohm-m)	200
20	Density Porosity (pu)	0
20	Neutron Porosity (pu)	0

2.68 SS Matrix

<p>Database File: 12455.db</p> <p>Dataset Pathname: final</p> <p>Presentation Format: pdc</p> <p>Dataset Creation: Wed Dec 07 21:35:23 2011</p> <p>Charted by: Depth in Feet scaled 1.240</p>			
<p>6 Density Caliper (in) 16</p> <p>30 Gamma Ray (GAPI) 130</p> <p>50 SP (mV) 150</p> <p>ABHV (ft)</p> <p>2 Deep Resistivity (Ohm-m) 200</p> <p>2 Medium Resistivity (Ohm-m) 200</p> <p>2 Shallow Resistivity (Ohm-m) 200</p> <p>2 Rt (Ohm-m) 200</p> <p>2 Density Porosity (pu) 0</p> <p>2 Neutron Porosity (pu) 0</p>			
<p>6 Density Caliper (in) 16</p> <p>30 Gamma Ray (GAPI) 200</p> <p>0 SP (mV) 200</p> <p>ABHV (ft)</p> <p>2 Deep Resistivity (Ohm-m) 200</p> <p>2 Medium Resistivity (Ohm-m) 200</p> <p>2 Shallow Resistivity (Ohm-m) 200</p> <p>2 Rt (Ohm-m) 200</p> <p>2 Density Porosity (pu) 0</p> <p>2 Neutron Porosity (pu) 0</p>			

The log plot displays the following data series and annotations:

- Depth Scale:** 0 to 52 (left), 7050 to 7250 (right).
- Gamma Ray:** Indicated by a red dashed line.
- Caliper:** Indicated by a blue dotted line.
- SP (Self-Potential):** Indicated by a black line.
- Resistivity:**
  - Deep Resistivity (Ohm-m): 200 scale, black line.
  - Medium Resistivity (Ohm-m): 200 scale, green line.
  - Shallow Resistivity (Ohm-m): 200 scale, red line.
  - RT (Ohm-m): 200 scale, green line.
- Porosity:**
  - Neutron Porosity (pu): 20 scale, red line.
  - Density Porosity (pu): 20 scale, blue line.
- Matrix Labels:**
  - 2.71 LS Matrix (top right)
  - Matrix Change @ 7090' (middle right)
  - 2.68 SS Matrix (middle right)
  - 2.68 SS Matrix (bottom right)
- Other Annotations:**
  - Pulled Tight (near 7250)
  - Logger's TD 7283 (near 7250)