

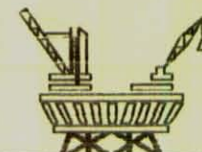


JJ PETROL OG

WORKING FILE
GEOSCIENCES

LITHOLOGICAL LOG

CAS CHROMATOGRAPH.



PETRO-TECH
PERUANA S.A.

LEGEND

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---DRILLING DATA---
BC bit condition
BS bit size
CB core bit
CGR core bit re-run
CR
CSG casing
DC depth correction
DIR directional survey
DIS directional survey
DST drill stem test
FDB forces on bit
LC lost circulation
LGM lost cement material
MZ mud motor
NB new bit
PO pump output
PP pressure
RPM rotary speed
RR re-run bit
STM pump strokes
TVL true vertical depth
WLL wireline log

---MUD DATA---
GG gaseous gas
CL clinker
FC filler cake
LR lagged after trip
MD mud density
NR no reading
PG reduced gas
PH mud pH
SG survey gas
TG trip gas
TJS test sensitivity
WL water logs

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Operator: PETRO-TECH PERUANA S.A.
Well: L06 - 21R
Location: LOBITOS - PIURA (OFFSHORE)
Country: PERU
Elevation GL: 355.0 ft
KB: 50.0 ft
Drilling Rig: PETREX # 114
Spud Date: MARCH 17TH, 1998

Mud Data:

1. FROM 5300 ft
2. SW BIOPOLYMER MUD TO TD.
- 3.
- 4.
- 5.

Logging Commenced: MARCH 18TH, 1996
Depth: 5300 ft
Logging Completed:
Depth: ft
Personnel: ALFREDO BELLEDONNE
MARIO ZAPATA

Casing Data:

1. 5 1/2", 17 #/ft at 5250 ft
- 2.
- 3.
- 4.
- 5.

Scale Feet 1:800

Comments: 1. 1 UNIT= 100 PPM
2. .
3. 1% = 10 000 PPM

Hole Data:

1	4	800	"	5500	F
2	4	3/4	"		F
3.					
4.					
5.					

SYMBOLS

Casing Core Drill Stem Test

	Sandstone
	Siltstone
	Shale
	Chert
	Conglomerate
	Limestone
	Dolomite
	Anhydrite

	Gypsum
	Marlstone
	Salt
	Coal
	Metamorphic
	Granite
	Breccia
	Tuff

	Claystone
	Serpentinite
	Diabase
	Basalt
	Pillow Lava
	Leuco Granite
	Biotite Granite
	K Feldspar

	Cataclased
	Intrusive
	Extrusive
	Altered Low
	Altered Med
	Altered High

*** Fossils ***

-  Foram
-  Amphipora
-  Fish
-  Fossils
-  Echinoid
-  Grinoid
-  Corals
-  Bryozoa
-  Belemnite
-  Bioclastic
-  Brachiopod
-  Gastropod
-  Ostracod
-  Mollusc
-  Pelecypod

-  Plant Remains
-  Spines
-  Trilobites
-  Oolitic
-  Biocurbation
-  Coated Grains
-  Algae

+++ Minerals ++

△	Chert Light
▲	Chert Dark
∠	Dolomitic
+	Feldspar
∩	Ferruginous
~	Glaucconite
//	Anhydrite

-  Gypsiferous
-  Kaolinite
-  Marly
-  Nodules
-  Mica
-  Mineral Crystals
-  Particles
-  Phosphate Pellets
-  Pyrite
-  Sulphur
-  Silty
-  Siliceous
-  Sandy
-  Salt
-  Bentonite
-  Bituminous
-  Calcareous

-  Carbonaceous
-  Coal Thin Beds
-  Dolomitic Stringers
-  Ferrug Stringers
-  Anhy Stringers
-  Gypsum Stringers
-  Limestone Stringers
-  Marl Stringers
-  Sandstone Stringers
-  Argillaceous
-  Shale Laminæ
-  Siltstone Stringers

	- Rop ft/hr 100 <=> 0			- TotalGas units 0 <=> 500 Comment 3	- C1 % 0.001 <=> 10 - C2 % 0.001 <=> 10 - C3 % 0.001 <=> 10 - IC4 % 0.001 <=> 10 - NC4 % 0.001 <=> 10 - IC5 % 0.001 <=> 10 - NC5 % 0.001 <=> 10 - CO2 % 0.001 <=> 10		Fossils Minerals Interf Lith	LithComm 2
Comment 1	Comment 2		Derefered Lith			Fluoresc 1		
689' 172' @ 6250' 25.34 172.35' 4918.25 1036.74' 1886.31' 4918.25 1886.31' S 751.78 E -03/18	NP2 HIG ATJ-S22 4 3/4 JEIS 3x12			TotalGas	C1 C2 C3 IC4 NC4 IC5 NC5 CO2			SPUD DRILLING ON 21:00 HRS MARCH 17TH 1999. K.O.P. AT 5:00.
5358' 30.80 175.2' 4967.39 1886.08' 1886.08' S 754.66 E		5350						
5420' 32.70 181.9' 5020.10' 1886.11' 1886.11' S 755.44 E		5400		0 units 500	0.001 %	10		CEMENT
5451' 33.10 181.9' 5046.13 1713.34' 1886.08' S 754.94 E		5450						START LOGGING FROM 5500 FT.
5483' 34.30 181.9' 5072.75 1730.98' 1886.08' S 754.48 E		5500						SS: LT GY, WHSH GY, 70% F, 30%
5545' 37.40 183.6' 5123.0 1748.97' 1748.97' S 752.84 E	WOB: 10-12 RPM: 0-40 PSI: 2750 SPM: 110 GPM: 148 SLIDING W/MOTOR	5550		CG: 1840 U CG: 1482 U CG: 716 U				M. QTZ, MNR FELD, TR LITH, SB ANG-SB-RND, FR-W SRT, ARG MTX, INCL. PT W/DK MIN & MICR FOSS INCL. TT, CONS, P VIS POR.
MW: 10.2 V: 52 PV: 21 YP: 33 F: 4.6 PH: 11.6 CL: 85000								CLYST: LT GY, MD GY, BLKY-SB PLTY, MOD MICR MIC, SL MICR CARB, NO CALC, PT W/MICR PYR SCATT, LOC W/SLIT GRS INCL, LOC W/MICR CALC INCL, MOD FRM.
5610' 40.50 187.1' 5173.55 1807.15' 1748.99' S 748.99 E		5600		CG: 733 U				SLTST: LT GY, MD GY, BLKY, OCC
-03/19								SB PLTY, MICR MIC, MOD MICR CARB, NO CALC, LOC W/MICR CALC INCL, LOC W/ABDT MICR MIC INCL MOD FRM.
5670' 42.00 192.0' 5218.67 1848.43' 1848.43' S 742.40 E		5650		CG: 943 U				CLYST: MD GY, MNR-IN BRNSH GT, SBLAM-SBBLY, MICR MIC, SL MIC CARB, NO CALC, MNR W/MICR CALC INCL, OCC W/CARB MAT INCL, MNR W/SLTY GRS INCL, MOD FRM.
5734' 42.70 194.2' 5265.97 1886.41' 1886.41' S 732.63 E	WOB: 9-10 RPM: 0-47 PSI: 2850 SPM: 158 GPM: 146	5700		CG: 979 U				SLTST: MD GY, MNR BRNSH GY, SB LAM-BLKY, MICR MIC, MOD MICR CARB, NO CALC, LOC W/MICR CALC INCL, MNR W/MICR PYR INCL, MOD FRM.
5796' 44.80 197.0' 5310.84 1886.41' 1886.41' S 721.10 E		5750		CG: 835 U				CLYST: PRED MD GY, MNR BRNSH GY, BLKY-SBLAM, OCC LAM, MICR MIC, SL-MOD MICR CARB, NO CALC PT W/MICR CALC INCL, PT W/MICR PYR SCATT, PT W/SLTY GRS INCL, MOD FRM, LOC PT SOL.
5859' 45.20 199.1' 5355.48		5800		CG: 997 U				CLYST: PRED MD GY, MNR BRNSH GY, BLKY-SBLAM, MOD MICR MIC, SL MICR CARB, NO CALC, PT W/ MICR CALC INCL, LOC W/MICR PYR SCATT, PT W/SLTY GRS INCL, MOD FRM.
5907' 40' 1913.70 S 707.32 E	WOB: 8-10 RPM: 0-48 PSI: 2900 SPM: 110 GPM: 148	5850		CG: 687 U				SLTST: PRED MD GY, MNR BRNSH GY, BLKY, MNR SBLAM, MICR MIC, SL-MOD MICR CARB, NO-CALC, MOD FRM.
MW: 10.2 V: 55 PV: 28 YP: 36 F: 4.0 PH: 9.6 CL: 103000				CG: 424 U				CLYST: MD GY, BRNSH GY, MNR MD BRN, BLKY-SBLAM, MICR MIC, OCC MICR MIC, MOD-MICR CARB, NO CALC, LOC W/MICR CALC INCL, PT W/MICR PYR SCATT, PT W/SLTY GRS INCL, MOD FRM, LOC SFT & SOL.
		5900		CG: 258 U				SLTST: MD GY, BRNSH GY, BLKY, MICR MIC, SL-MOD MICR CARB, NO-SL CALC, PT W/VI HYAL QTZ INCL, MOD FRM-FRM.
				CG: 1410 U				CLYST: LT-MD GY, MNR BRNSH GY, SB LAM-BLKY, MICR MIC, SL-MOD MICR CARB, NO CALC, PT W/MICR PYR SCATT, LOC W/ABDT MICR MIC INCL, MNR GRDS TO SLTST, MOD
				CG: 1367 U				