9.1 SEISMIC PROGNOSIS versus WELL RESULTS

Seismic marker	Actual		Prognosed			Diff.	Remarks
	Section TWT(ms)	VD SS (m)	Section TWT(ms)	VD SS (m)	Accuracy (m)	(m)	
PIEDRA CLAVADA	1488.	748.0	1488.	881.0		+133.0	Picking OK
LSW PIEDRA CLAVADA	1560.	886.0	1530.	941.0		+55.0	Picking OK
RIO MAYER SUP	1790.	1367.0	1656.	1022.0		-345.0	Prog.corresp.to Top Kachaike
C8	2120.	1839.0					
SPRINGHILL	2248.	1988.0	2220.	1955.0		-33.0	Picking OK
TOBIFERA	2312.	2111.0	2280.	2013.0		-98.0	Should be picked lower

Seismic datum plane above MSL (m) : 700.0 Log depth origin : RT Log depth origin above MSL (m) : 493.9

Comments

Seismic Calibration

The Condor Cliff.x-1 well is located on the BMA97-07 line at SPN 1147 (intersection with the BSCA 90-056 line), Fig 4.

Checkshots acquired during VSP survey were used to control the time-depth conversion table and are integrated in the construction of a synthetic seismogram (Enclosure 4).

The calibration using classical synthetic seismogram (normal polarity) gives good correlation in the whole section.

The discrepancies between prognosis and realization are due to differences in the velocity model with exception of the Tobifera which must be picked lower than the prognosis. Rio Mayer Superior picking corresponds to the actual top of the Kachaike formation.

Validated on: 30-November-99 by: A.GUIDI - M.BRUN

9.2 VERTICAL SEISMIC PROFILE

VSP survey number : 1

Type of survey : FIXED OFFSET VSP — Date : 31/Oct/98

Seismic source : VIBROSEIS

Downhole receiver : C-SAT

Total levels acquired : 65 — Number of checkshot acquired : 10

Shallowest level (MD RT m) : 1100.0 — Number of shots per level : 5

Deepest level (MD RT m) : 2640.0

VSP contractor : SCHLUMBERGER — Wireline contractor : SCHLUMBERGER

Borehole characteristics during VSP survey :

VERTICAL WELL

Section diameter (in)	Section type	From (MD RT m)	To (MD RT m)
13 3/8	K55	0.0	107.5
9 5/8	C75	107.5	1057.0

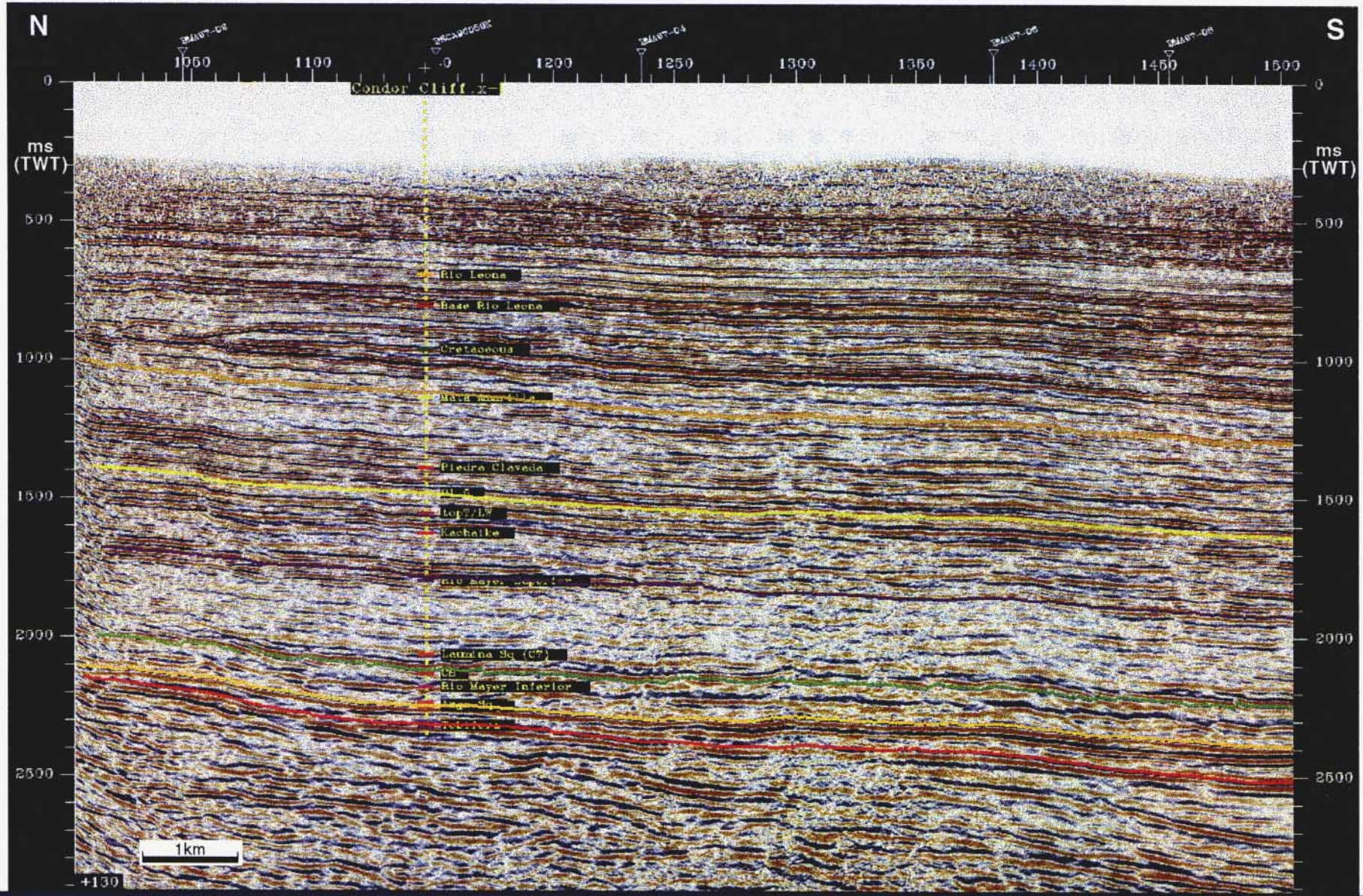
Depth references :

Seismic datum plane above MSL (m) : 700.0

Log depth origin : RT — Log depth origin above MSL (m) : 493.9

Validated on: 30-November-99 by: A.GUIDI - M.BRUN

AUSTRAL BASIN
SEISMIC LINE - Condor Cliff WELL



10. STRATIGRAPHICAL & STRUCTURAL RESULTS

TOTAL AUSTRAL	CONDOR CLIFF X-1	CCLIFF X-1

10.1 MARKER CHART

Age	Formation	Vertical thickness (m)	Marker name	MD RT log (m)	VD RT log (m)	VD SS (m)	Correlation wells		Remarks
							BF X-2 VD SS (m)	VD SS (m)	
MIOCENO-LATE OLIGOCENO	PATAGONIA	226.0	TOP PATAGONIA	224.0	224.0	-269.9	-49.3		
OLIGOCENO	RIO LEONA	91.0	TOP RIO LEONA	450.0	450.0	-43.9	-273.3		
EOCENE	MAN AIKE	204.0	MAN AIKE	541.0	541.0	-47.1	-422.3		
		191.0	TOP CRETACEOUS	745.0	745.0	-251.1	-663.0		
LATE TURONIAN-CONIACIAN	MATA AMARILLA	306.0	TOP MATA AMARILLA	936.0	936.0	-442.1	-923.3		
EARLY TURONIAN TO CENOMANIAN	PIEDRA CLAVADA	369.0	TOP PIEDRA CLAVADA	1242.0	1242.0	-748.1	-1173.3		
LATE ALBIAN	KACHAIKE	250.0	TOP KACHAIKE	1611.0	1611.0	-1117.1	-1593.3		
MIDDLE ALBIAN-APTIAN	RIO MAYER SUPERIOR	238.0	TOP RIO MAYER SUP	1861.0	1861.0	-1367.1	-1743.3		
MIDDLE ALBIAN-APTIAN	RIO MAYER SUP	151.0	TOP CENTAURO C5	2099.0	2099.0	-1605.1	-1901.1		
MIDDLE ALBIAN-APTIAN	RIO MAYER SUP	83.0	TOP LAUMINA C7	2250.0	2250.0	-1756.1	-2036.8		
MIDDLE ALBIAN-APTIAN	RIO MAYER SUP	54.0	C8	2333.0	2333.0	-1839.1	-1783.2		
NEOCOMIAN	RIO MAYER INF	38.0	TOP RIO MAYER INF	2387.0	2387.0	-1893.1	-2193.3		
NEOCOMIAN	RIO MAYER INF	46.0	TOP PALOMA SQ	2425.0	2425.0	-1931.1	-2243.4		
NEOCOMIAN	RIO MAYER INF	11.0	TOP ARGO SQ	2471.0	2471.0	-1977.1	-2282.4		
NEOCOMIAN	SPRINGHILL	6.0	TOP SPRINGHILL	2482.0	2482.0	-1988.1	-2282.3	0.0	
NEOCOMIAN	SPRINGHILL	62.0	TOP HIDRA SQ	2488.0	2488.0	-1994.1	-2300.5	0.0	
NEOCOMIAN	SPRINGHILL	55.0	D 120	2550.0	2550.0	-2056.1	-2342.6	0.0	
JURASSIC	TOBIFERA		TOP TOBIFERA	2605.0	2605.0	-2111.1	-2380.3	0.0	

Correlation wells BF X-2 : BAJADA FORTALEZA X-2 :

Log depth origin : RT
RT / MSL : 493.9 m

Validated on: 30-November-99 by: A.GUIDI - M.BRUN

10.2 Lithology

- **Patagonia Formation (224-450 mMD)**

This Formation is formed mainly by greenish gray **siltstone** (blocky and massive), with pyrite, micaceous, tuffaceous, with lithics inclusions, in part sandy, firm to soft. Thin **beds** of greenish grey **sandstone** intercalate towards the top and base of this formation. These are very fine to medium grained, subangular-subrounded, poor to well sorted, abundant argillaceous-tuffaceous matrix, quartz, mica and lithics with pyrite, friable in part loose and with poor visual porosity, in part grading to siltstone. Also, thin intercalations of light brown dolomite can be identified, specially towards the base. They are partly translucent, micritic, locally sparitic, blocky moderately hard. Fossils traces.

- **Rio Leona Formation (450-541 mMD)**

This Formation is formed mainly by light brownish gray **siltstones**. These are subblocky, irregular fracture, micaceous, tuffaceous with pyrite, locally glauconite, green-dark lithics, in part sandy, firm to soft. Grading to **claystone**. Abundant dusky brown to black **coal** levels have been identified at 470/80 m and 518/25 m, sub platy to laminar, soft to firm. Blue green **tuff** levels, are frequent and are blocky to subplaty, micaceous, micropyrite, with dark lithics, firm to soft are interbedded in this section.

- **Man Aike Formation (541-745 mMD)**

This unit has four intervals. The Basal unit (720-745m) are brownish gray **sandstones**, fine to medium, subrounded-subangular, well to fairly sorted, quartz and volcanic lithic, in part with tuffaceous matrix, friable to loose, good to poor porosity. Towards the top light gray **sandstone**, coarse to very coarse predominate.

The Lower Middle unit (685-720m) is formed at the top, mainly by dusky green to dark greenish gray **tuff**, blocky, firm to soft, sandy, with quartz inclusions, in part with pyrite, locally altered. In minor proportion, dark greenish gray to greenish black **sandstone**, fine to medium, subrounded, well sorted, quartz, minor lithics, in part with glauconite, abundant tuffaceous matrix, friable to loose, fair porosity, with pyrite and few light olive gray **claystone**, blocky to subblocky, irregular fracture, firm, with lithics inclusions.

In the Middle part 625-685m , the unit is dark greenish gray to greenish black **sandstone**, medium to coarse, locally conglomeradic, subrounded, well sorted, quartz, minor volcanic lithics, abundant glauconite, argillaceous matrix, friable to loose, good to fair porosity, with pyrite.

In the Upper 541-625m brownish gray **sandstone**, medium to coarse in part fine to very fine, subrounded, fair to poor sorted, abundant argillaceous matrix, locally tuffaceous matrix, quartz lithics, pyrite, poor porosity, grading to **siltstone** with some silty claystone beds, blocky to subblocky, irregular fracture, with coal inclusions, in part sandy, soft to firm. The presence of glauconite in the sandstone and moderate blue green tuff, blocky to subplaty, micaceous, micropyrite, included dark lithics, firm to soft, are common.

- **Cerro Fortaleza Formation (745-787 mMD)**

Towards the base, greenish gray **claystone**, subplaty to sublaminar, with irregular fracture, firm, with lithic inclusions in part grading to siltstone or tuffaceous claystone and thin intercalations of white **sandy tuff**, subblocky, soft, with quartz and lithics inclusions, locally with pyrite.

The top of this Formation is mainly composed of brownish gray **sandstone**, fine to medium, subangular, fairly sorted, abundant tuffaceous matrix, quartz, lithic, friable to loose, poor porosity and slow calcareous reaction. Also very light gray **sandstone**, medium to coarse, in part conglomerate, subrounded, well sorted, quartz lithic, friable, mainly loose, good porosity, with traces of coal.

- **Anita Formation (787-839 mMD)**

This formation can be divided in two intervals. The lower interval from 820 to 839m is mainly composed of medium light gray **tuffaceous sandstone**, fine to medium, subangular, poorly sorted, quartz-lithic, locally micaceous, friable to loose, fair porosity, grading to **sandy tuff**. Intercalations of brownish gray **claystone** levels, subplaty to sublaminar, plastic, soft, grading to **tuffaceous claystone** and white **sandy tuff**, subblocky, soft, with quartz and lithics inclusions, locally with pyrite.

The upper unit 787-820 is formed mainly by very light gray **sandstone**, medium to conglomerate, subrounded, well sorted, quartz lithic, friable, mainly loose, with good porosity.

- **Altavista Formation (839-936 mMD)**

This section is mainly composed of dark gray to medium dark gray **siltstone**, subblocky, irregular fracture, micromicaceous, with micropyrite, locally with glauconite, occasionally traces of coal. Grading to **claystone**. Intercalations of brownish gray **siltstone**, subplaty to sublaminar, plastic, soft, grading to **tuffaceous claystone** can be identified. Also medium light gray **tuffaceous sandstone**, fine to medium, subangular, poorly sorted, quartz-lithic, locally micaceous, friable to loose, poor porosity, grading to **sandy tuff**.

- **Mata Amarilla (936-1242 mMD)**

This formation can be divided in four intervals. The lower section 1110-1242 m is represented by thin intercalations of medium dark gray **silty claystone** (described in the middle section) and very light gray and greenish gray tuff, blocky, micromicaceous, firm to soft, with veins of coal, sandy, and yellowish gray **tuffaceous sandstone**, fine to medium, sub angular, poorly sorted, quartz-lithic, with pyrite, friable, mainly loose, fair porosity was observed in the last part of the unit. Also, locally in this section 1225-1234 m, medium dark gray to brownish black claystone, blocky to sublaminar, massive, irregular fracture, with micropyrite, firm to soft can be identified.

Levels of light gray **sandstone** can be identified at 1110-1040 m: medium to coarse, subrounded, poorly sorted, with quartz-volcanic lithics, in part with tuffaceous matrix, mostly loose, and good porosity.

In the middle 1030-1110 m, this section is composed of medium dark gray **silty claystone**, blocky to subplaty, compact, massive, irregular fracture, with micropyrite, firm to soft and thin intercalations of very light gray **tuffaceous sandstone**, fine to medium, locally coarse, poorly sorted, quartz-lithic, tuffaceous matrix, friable to loose, with poor porosity.

At the top 936-1030m, can be observed light gray **tuffaceous sandstone**, medium to coarse, subrounded, fairly sorted, quartz-lithic, tuffaceous matrix in part argillaceous, locally calcareous cement, friable, loose quartz grains, with fair porosity, and dark gray **siltstone**, subblocky, irregular fracture, micromicaceous, with micropyrite, locally with glauconite, occasionally with traces of coal grading to **claystone**.

- **Piedra Clavada (1242-1611 mMD)**

This unit can be separated in three intervals. The Lower section 1500-1611m, begin at the base with intercalations of light brown to olive gray **claystone**, blocky to sublaminar, irregular fracture, firm to soft, in part fossiliferous, grading to **siltstone** and thin levels of very light gray

sandy tuff, subblocky, quartz, micaceous, green lithics, soft. Also, greenish gray **claystone** and white to light brownish gray **tuff**, subblocky, micromicaceous, in part sandy. Followed by light gray **tuffaceous sandstone**, fine to medium, subangular, fair sorted, quartz-lithic, friable to loose, fair to good porosity. Very light gray **sandy tuff** interbedded with light gray **tuffaceous sandstone** and light gray **sandstone**, medium to coarse, in part fine, subangular, fairly sorted, quartz-lithic, friable to loose, with fair to good porosity, are present in this interval.

The Middle section 1295-1500m is composed of intercalations of brownish black to olive gray **tuffaceous claystone**, blocky to subblocky, irregular fracture, firm to soft, in part silty. Light gray to light brownish gray **tuff**, blocky, firm to soft, in part sandy. Greenish black **silty claystone**, blocky to subblocky, compact, massive, irregular fracture, silty, tuffaceous, soft. Towards the base can be observed intercalations of brownish black **claystone**, blocky to subplaty, compact, massive, firm to hard, in part carbonaceous to bituminous and light olive gray **siltstone**, blocky, irregular fracture, micromicaceous, grading to **claystone**. Very light gray **sandy tuff** thin levels have been identified towards the top and eventually towards the base, subblocky, quartz-lithic, micaceous, with traces of coal, firm.

The upper section 1242-1295m is represented by light gray **tuffaceous sandstone,** as described in the lower section. Intercalations of very light gray **sandy tuff**, with traces of coal and light gray **tuffaceous sandstone** with poor porosity (already described) is also present. Eventually, light gray **sandstone**, locally with calcareous cement, in part tuffaceous matrix, friable, poor to fair porosity and medium dark gray **siltstone**, blocky to subplaty, compact, massive, irregular fracture, with micropyrite, firm to soft. Intercalations of medium dark gray **silty claystone**, blocky to subplaty, compact, massive, irregular fracture, firm to soft, with micropyrite, in part grading to **siltsone** and very light gray-greenish gray-white **tuff**, blocky, micromicaceous, firm to soft, with veins of coal, sandy.

- **Kachaike (1611-1861 mMD)**

This Formation is mainly compose of brownish gray **siltstone**, blocky to sublaminar, irregular fracture, massive, with glauconite, pyrite, scarce coal, very slight calcareous reaction, firm, in part sandy. From 1780m downwards, increases the intercalations of light gray **tuffaceous siltstone**, blocky to subblocky, massive, irregular fracture, firm to soft, with coal inclusions, in part **sandy**. In minor part levels of grayish orange **calcareous claystone**, subplaty to laminar, lithic inclusions, soft to firm.

At the top, interbedded with light brownish gray to light gray **sandy tuff**, subblocky, micropyrite, lithic inclusions, soft, in part grading to **tuffaceous sandstone** with calcareous cement.

- **Rio Mayer Sup. (1861-2387 mMD)**

The Lower interval (1955-2387m) of the unit is composed of brownish black in part moderate brown **claystone**, subplaty to sublaminar, irregular fracture in part subconcoidal, massive, slightly calcareous, with micropyrite, fossils, scarce glauconite, soft-firm. Intercalation of **siltstone** (same as described in the first part) and light brownish gray **siltstone**, blocky, massive, irregular fracture (sandy, very fine quartz grains), locally with glauconite, firm; are common. In minor part from 2215m , thin levels of white to medium gray **tuff**, blocky, subplaty, massive, firm to soft, with quartz inclusions. Thin levels of light brownish gray to brownish gray **limestone**, blocky, micritic, hard and grayish orange **limestone**, sublaminar, massive, micritic, with micropyrite, moderate hard, in parts **argillaceous limestone**; can be identified, specially towards the base.

The Upper interval (1861-1955m) is composed of brownish gray to medium dark gray **siltstone**, blocky to sublaminar, irregular fracture, massive, with glauconite, abundant micropyrite, scarce coal, very slight calcareous reaction, firm. Light gray **tuffaceous siltstone** levels, blocky to subblocky, massive, irregular fracture, firm to soft, in part sandy are interbedded in this section.

- **Rio Mayer Inf. (2387-2482 mMD)**

This Formation is represented by medium dark gray in part brownish gray and black **siltstone**, blocky, irregular fracture, micropyrite diseminated, with glauconite, traces of white tuff, veins of calcite, locally fine to medium quartz grains inclusions, firm to hard, in part grading to **claystone**. In minor part intercalation of brownish black in parts moderate brown **claystone**, blocky, subconcoidal fracture, slightly calcareous reaction, micropyrite, with fossils, soft-firm. From 2466 at 2482m, brownish black **glauconitic siltstone**, blocky to subblocky, irregular fracture, firm to hard, abundant glauconite, with traces of white tuff, are frequent. Only 10% of white **tuff** has been recognized at 2470/72 blocky-subplaty, in part sandy, soft to firm. The last 2 meters are represented by very light gray **sandstone**, coarse to very coarse, in part conglomerate, subangular, fairly sorted, quartz-lithic, grains of quartz broken, scarce glauconite, slightly argillaceous matrix, friable, mainly loose, fair porosity.

ARGO SEQUENCE (2471/2488m)

The sequence begins at the base with brown black claystone with floating Quartz clasts and thin beds of fine grained conglomerate with abundant matrix. The general aspect is bituminous. There

is a gradation upwards from very fine sandstone to coarse, with a general grey- light green colouring due to chlorite and glauconite minerals. The upper part is quartzitic and coarse to very coarse. Fine cross bedding with mud drapes and signs of bioturbation were observed in the top.
It is covered by a bituminous silty claystone with some thin coaly beds, and two fine to medium grained sandstone bodies, bioturbated, with roots, erosive base and convolute structures at base.
XRD analysis indicate rather high contents of clay minerals > 20% except in the upper portion of the core. Clay composition is mainly chlorite and illite, with minor quantities of Kaolinite, mixed layers and sometimes traces of Smectite. Core porosity is usually in the range of 12-15 % but permeabilities are very low: 0-2, exceptionaly 10 mD.

- **Springhill (2482-2605 mMD)**

HIDRA SEQUENCE (2488/2550m)

Three intervals can be identified: the basal one (2540/50 m), composed of light grey sandstones medium to coarse, with alternance of brown black siltstone, both with glauconite and micropyritic inclusions.
The middle interval (2519/40m) is composed of coarse to very coarse grained light grey sandstones, capped by a fine grained conglomerate with abundant calcareous cement (Base of core #2) Mainly quartzitic, minor lithics, glauconite and micropyrite. Clay matrix. Occasional thin intercalations of brown black siltstone can be identified.
The top interval (2502/19 m), again is a coarsening upwards sequence with the major portion of fine to very fine grained, pale green to medium grained sandstone, which are capped by coarse to very coarse medium grey, quartzitic sandstone. Bioturbation intensity also increases upwards. Towars the top, thin beds of coarser grained sandstone with dissolution porosity intercalate the generally fine grained sandstone. The interval is generaly of a quartzitic composition, minor lithics, scarce glauconite and micropyrite and argillaceous matrix.
XRD analysis from some samples taken from the upper and middle intervals indicate a clay content of 10-20 % from which the major components are chlorite and illite with very minor quantities of the other clays. Core plug analysis indicates sandstone porosity of around 12-15 % although some values are around 10%. Permeabilities are generaly low, 0-10 mD, except in clean sandstones where a value of 67 mD was measured.

Upper sandstone reservoir: Medium to very coarse, partly conglomeradic, very light grey, subangular, poorly sorted, quartz hyaline, minor lithics, locally argillaceous matrix, fair porosity. Remaining section has similar sandstones, also Tuffaceous silty claystone, brown grey, hard, with coal inclusions. White altered tuff at the base. (Large proportion of cavings in recovered cuttings).

- **Tobifera (2605-2660 mMD)**

This Formation is composed of intercalations of white **tuff**, subblocky to subplaty, with lithics, firm in parts and **sandy tuff**. Very light gray **tuffaceous sandstone**, medium to coarse, subrounded, poor sorted, quartz hyaline, minor lithics, micropyrite, locally argillaceous matrix, friable, fair porosity and very light gray **sandstone**, medium to coarse, in parts conglomerate, subangular, poor sorted, quartz hyaline, minor lithics, micropyrite, locally argillaceous matrix, friable, fair porosity.

In minor part, presence of light brownish gray **tuffaceous silty-claystone**, blocky to subblocky, massive, irregular fracture, with coal inclusions, firm.

INFORMACION FALTANTE

11. PETROPHYSICAL ANALYSIS & HYDROCARBON EVALUATION

11.1 LOG INTERPRETATION PARAMETERS

Zone name : PIEDRA CLAVADA

Top (MD RT m)	1495.0	Bot (MD RT m)	1575.0	Bit size (in)	8 1/2"
Mud type	WBM	Rmf (ohm.m)	0.187	T Rmf (°C)	13.
PHIN clay (%)	0.3	RHO clay (g/cc)	2.35	DT clay (µs/ft)	
RT clay (ohm.m)		GR max (API)		GR min (API)	
RHO matrix (g/cc)	2.65	RHO Hc (g/cc)		DT matrix (µs/ft)	
"a"	1.	"m"	2.	"n"	2.
Cp					
Rw (ohm.m)	0.4	T Rw (°C)	60.		
Sw Formula	ARCHIE				

Zone name : SPRINGHILL

Top (MD RT m)	2480.0	Bot (MD RT m)	2600.0	Bit size (in)	8 1/2"
Mud type	WBM	Rmf (ohm.m)	0.187	T Rmf (°C)	13.
PHIN clay (%)	0.4	RHO clay (g/cc)	2.40	DT clay (µs/ft)	75
RT clay (ohm.m)	3.	GR max (API)	120	GR min (API)	25
RHO matrix (g/cc)	2.65	RHO Hc (g/cc)	1.00	DT matrix (µs/ft)	56
"a"	1.	"m"	2.	"n"	2.
Cp					
Rw (ohm.m)	0.11	T Rw (°C)	115.		
Sw Formula	INDONESIAN				

Validated on : 30-November-99 by: A.GUIDI - M.BRUN

... / ...

11.1 LOG INTERPRETATION PARAMETERS

Comments

PIEDRA CLAVADA
SHALINESS from SP ; SP clean -90
SP clay -25
SPRINGHILL (ARGO & HIDRA SQ)
POROSITY from DT
Caliper very bad in consequence RHOB log in not reliable

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11.2 CUT OFFS FOR NET PAY IDENTIFICATION

Zone name	MD RT (m)		VD SS (m)		CUT OFFS		
	Top	Bot	Top	Bot	PHI (%)	SW (%)	Vcl (%)
PIEDRA CLAVADA	1505.0	1570.0	-1011.1	-1076.1	23.7		21.
ARGO SQ	2482.0	2488.0	-1988.1	-1994.1	16.	54.	26.
HIDRA SQ	2488.0	2605.0	-1994.1	-2111.1	16.3	62.	22.

Comments

Classification of reservoir quality (in percentage):

	VCL	POROSITY
A	less than 20	greater than 20
B	20-30	15-20
C	30-40	10-15
D	40-60	5-10
U	greater than 60	less than 5

Validated on: 30-November-99 by: A.GUIDI - M.BRUN

11.3 RESERVOIR CHART

Reservoir	Reservoir MD KB (m) Top	Reservoir MD KB (m) Bot	Reservoir VD SS (m) Top	Reservoir VD SS (m) Bot	Layer MD KB (m) Top	Layer MD KB (m) Bot	Layer VD SS (m) Top	Layer VD SS (m) Bot	Fluid type	Gross int (m)	Net res (m)	Net pay (m)	Averages Vcl (%)	Averages Phi (%)	Averages Sw (%)	Res type	Hhc (m)	Remarks
PIEDRA CLAVADA					1506.4	1507.2	-1012.5	-1013.3	W	0.8	0.8	-	25.	20.4	100.	B	-	
PIEDRA CLAVADA					1507.2	1509.2	-1013.3	-1015.3	W	2.0	2.0	-	16.	26.8	88.	A	-	
PIEDRA CLAVADA					1509.2	1510.0	-1015.3	-1016.1	W	0.8	0.8	-	24.	25.9	90.	B	-	
PIEDRA CLAVADA					1510.0	1510.5	-1016.1	-1016.6	W	0.5	0.5	-	35.	22.7	94.	C	-	
PIEDRA CLAVADA					1510.5	1512.2	-1016.6	-1018.3		1.7	-	-	51.	16.9	100.	D	-	
PIEDRA CLAVADA					1526.0	1528.4	-1032.1	-1034.5		2.4	-	-	51.	14.	100.	D	-	
PIEDRA CLAVADA					1539.4	1540.0	-1045.5	-1046.1	W	0.6	0.6	-	23.	19.6	97.	B	-	
PIEDRA CLAVADA					1540.0	1542.2	-1046.1	-1048.3	W	2.2	2.2	-	13.	25.	85.	A	-	
PIEDRA CLAVADA					1542.2	1543.2	-1048.3	-1049.3	W	1.0	1.0	-	25.	22.5	95.	B	-	
PIEDRA CLAVADA					1543.2	1544.0	-1049.3	-1050.1	W	0.8	0.8	-	31.	19.	100.	C	-	
PIEDRA CLAVADA					1544.0	1545.0	-1050.1	-1051.1		1.0	-	-	47.	14.7	98.	D	-	
PIEDRA CLAVADA					1549.8	1551.4	-1055.9	-1057.5		1.6	-	-	55.	13.5	100.	D	-	
PIEDRA CLAVADA					1561.0	1561.6	-1067.1	-1067.7		0.6	-	-	49.	9.4	100.	D	-	
PIEDRA CLAVADA					1563.0	1563.4	-1069.1	-1069.5	W	0.4	0.4	-	25.	14.9	100.	C	-	
PIEDRA CLAVADA					1563.4	1565.0	-1069.5	-1071.1	W	1.6	1.6	-	13.	27.6	86.	A	-	
PIEDRA CLAVADA					1565.0	1566.0	-1071.1	-1072.1	W	1.0	1.0	-	24.	24.3	98.	B	-	
PIEDRA CLAVADA					1566.0	1567.0	-1072.1	-1073.1	W	1.0	1.0	-	36.	20.	93.	C	-	
PIEDRA CLAVADA					1567.0	1567.6	-1073.1	-1073.7		0.6	-	-	50.	17.2	100.	D	-	
ARGO SQ					2482.0	2482.7	-1988.1	-1988.8		0.7	-	-	59.	5.1	91	D	-	
ARGO SQ					2482.7	2484.1	-1988.8	-1990.2	O	1.4	1.4		24.	17.	52.	B		
ARGO SQ					2484.0	2485.4	-1990.1	-1991.5		1.4	-	-	44.	10.4	65.	D	-	
ARGO SQ					2486.8	2487.8	-1992.7	-1993.9		1.2	-	-	54.	12.4	58.	D	-	
HIDRA SQ					2488.5	2489.6	-1994.6	-1995.7	O	1.1	1.1		29.	11.6	77.	C		
HIDRA SQ					2489.6	2490.5	-1995.7	-1996.6		0.9	-	-	47.	8.3	77	D	-	
HIDRA SQ					2490.0	2491.0	-1996.1	-1997.1	O	0.5	0.5		25.	13.5	44	C		
HIDRA SQ					2491.0	2493.2	-1997.1	-1999.3	O	2.2	2.2		18.	17.	73	B		
HIDRA SQ					2493.2	2493.6	-1999.3	-1999.7		0.4	-	-	45.	11.9	60	D	-	
HIDRA SQ					2493.6	2496.0	-1999.7	-2002.1	O	2.4	2.4		28.	12.	59	C		
HIDRA SQ					2496.0	2497.0	-2002.1	-2003.1		1.0	-	-	52.	6.9	69.	D	-	
HIDRA SQ					2505.1	2506.0	-2011.2	-2012.1	W	0.9	0.9	-	38.	11.9	49.	C	-	
HIDRA SQ					2506.0	2507.2	-2012.1	-2013.3		1.2	-	-	37.	7.4	70.	D	-	

Validated on : 29-June-99 by: A.GUIDI - M.BRUN

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11.3 RESERVOIR CHART

Reservoir	Reservoir MD KB (m) Top	Reservoir MD KB (m) Bot	Reservoir VD SS (m) Top	Reservoir VD SS (m) Bot	Layer MD KB (m) Top	Layer MD KB (m) Bot	Layer VD SS (m) Top	Layer VD SS (m) Bot	Fluid type	Gross int (m)	Net res (m)	Net pay (m)	Averages Vcl (%)	Averages Phi (%)	Averages Sw (%)	Res type	Hhc (m)	Remarks
HIDRA SQ					2517.6	2518.2	-2023.7	-2024.3		0.6	-	-	54.	12.3	66.	D	-	
HIDRA SQ					2519.4	2519.8	-2025.5	-2025.9	W	0.4	0.4	-	19.	12.3	83.	C	-	
HIDRA SQ					2519.8	2520.8	-2025.9	-2026.9	W	1.0	1.0	-	19.	24.6	55.	A	-	
HIDRA SQ					2520.8	2521.1	-2026.9	-2027.2	W	0.3	0.3	-	27.	21.6	55.	B	-	
HIDRA SQ					2522.6	2524.0	-2028.7	-2030.1	W	1.4	1.4	-	16.	22.2	71.	A	-	
HIDRA SQ					2524.0	2524.4	-2030.1	-2030.5	W	0.4	0.4	-	23.	18.1	74.	B	-	
HIDRA SQ					2524.4	2525.2	-2030.5	-2031.3	W	0.8	-	-	50.	9.9	62.	D	-	
HIDRA SQ					2525.2	2526.1	-2031.3	-2032.2	W	0.9	0.9	-	33.	16.9	76.	C	-	
HIDRA SQ					2526.1	2526.6	-2032.2	-2032.7		0.5	-	-	48.	12.8	74.	D	-	
HIDRA SQ					2526.6	2527.0	-2032.7	-2033.1	W	0.4	0.4	-	29.	18.6	66.	C	-	
HIDRA SQ					2527.0	2528.4	-2033.1	-2034.5	W	1.4	1.4	-	14.	22.8	59.	A	-	
HIDRA SQ					2528.4	2530.4	-2034.5	-2036.5	W	2.0	2.0	-	23.	18.1	72.	B	-	
HIDRA SQ					2530.4	2530.8	-2036.5	-2036.9		0.4	-	-	51.	9.2	85.	D	-	
HIDRA SQ					2531.2	2531.9	-2037.3	-2038.0		0.7	-	-	51.	10.	84.	D	-	
HIDRA SQ					2531.9	2532.4	-2038.0	-2038.5		0.5	0.5	-	29.	16.3	66.	B	-	
HIDRA SQ					2532.4	2533.0	-2038.5	-2039.1		0.6	-	-	48.	13.6	54.	D	-	
HIDRA SQ					2533.8	2534.4	-2039.9	-2040.5		0.6	-	-	54.	7.1	65.	D	-	
HIDRA SQ					2537.6	2538.3	-2043.7	-2044.4		0.7	-	-	46.	15.9	70.	D	-	
HIDRA SQ					2538.3	2539.4	-2044.4	-2045.5	W	1.1	1.1	-	26.	16.4	67.	B	-	
HIDRA SQ					2543.0	2544.7	-2049.1	-2050.8		1.7	-	-	45.	11.9	88.	D	-	
HIDRA SQ					2544.7	2545.4	-2050.8	-2051.5	W	0.7	0.7	-	29.	19.	65.	C	-	
HIDRA SQ					2552.5	2553.8	-2058.6	-2059.9	W	1.3	1.3	-	20.	18.1	69.	B	-	
HIDRA SQ					2553.8	2555.4	-2059.9	-2061.5	W	1.6	1.6	-	17.	14.7	75.	C	-	
HIDRA SQ					2555.4	2556.5	-2061.5	-2062.7	W	1.2	1.2	-	15.	15.7	68.	B	-	
HIDRA SQ					2556.6	2557.6	-2062.7	-2063.7	W	1.0	1.0	-	15.	12.3	78.	C	-	
HIDRA SQ					2559.2	2560.0	-2065.3	-2066.1		0.8	-	-	49.	14.1	62.	D	-	
HIDRA SQ					2560.0	2560.4	-2066.1	-2066.5	W	0.4	0.4	-	37.	18.1	59.	C	-	
HIDRA SQ					2560.4	2561.0	-2066.5	-2067.1	W	0.6	0.6	-	26.	17.4	74.	B	-	
HIDRA SQ					2561.0	2564.0	-2067.1	-2070.1	W	3.0	3.0	-	8.	12.4	92.	C	-	
HIDRA SQ					2564.0	2564.8	-2070.1	-2070.9		0.8	-	-	32.	8.7	73.	D	-	
HIDRA SQ					2570.2	2571.2	-2076.3	-2077.3		1.0	-	-	41.	11.7	90.	D	-	

Validated on : 29-June-99 by: A.GUIDI - M.BRUN

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11.3 RESERVOIR CHART

Reservoir	Reservoir MD KB (m) Top	Reservoir MD KB (m) Bot	Reservoir VD SS (m) Top	Reservoir VD SS (m) Bot	Layer MD KB (m) Top	Layer MD KB (m) Bot	Layer VD SS (m) Top	Layer VD SS (m) Bot	Fluid type	Gross int (m)	Net res (m)	Net pay (m)	Averages Vcl (%)	Averages Phi (%)	Averages Sw (%)	Res type	Hnc (m)	Remarks
HIDRA SQ					2572.0	2572.2	-2078.1	-2078.3		0.2	-	-	40.	9.8	91.	D	-	
HIDRA SQ					2572.3	2572.2	-2078.4	-2078.3	W	1.0	1.0	-	36.	14.6	56.	C	-	
HIDRA SQ					2574.4	2575.2	-2080.5	-2081.3		0.8	-	-	47.	13.1	64.	D	-	
HIDRA SQ					2589.4	2590.0	-2095.5	-2096.1		0.6	-	-	49.	12.6	71.	D	-	
HIDRA SQ					2590.2	2590.7	-2096.3	-2096.8		0.5	-	-	49.	13.	71.	D	-	
HIDRA SQ					2590.7	2591.3	-2096.8	-2097.4	W	0.6	0.6	-	36.	14.6	56.	C	-	
PIEDRA CLAVADA					1505.0	1570.0	-1011.1	-1076.1	W	65.0	12.7	-	21.	23.7		A+B+C	-	
ARGO SQ					2482.0	2488.0	-1988.1	-1994.1	O	6.0	1.4	1.4	26.	18.	54.	B		
HIDRA SQ					2488.0	2605.0	-1994.1	-2111.1	O-W	117.0	28.4	5.2	22.	16.3	62.	A+B+C	-	

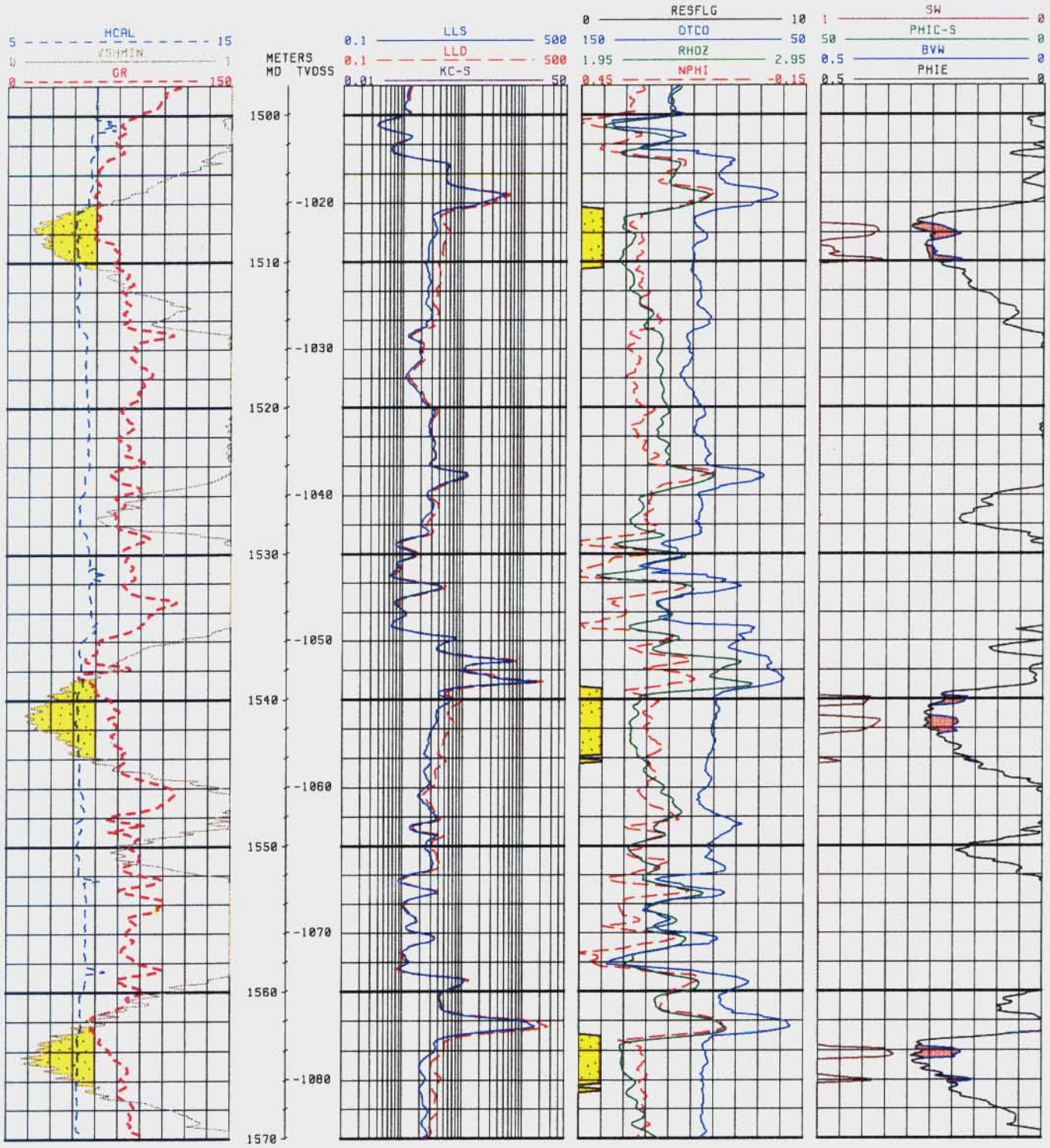
Validated on: 29-June-99 by: A.GUIDI - M.BRUN

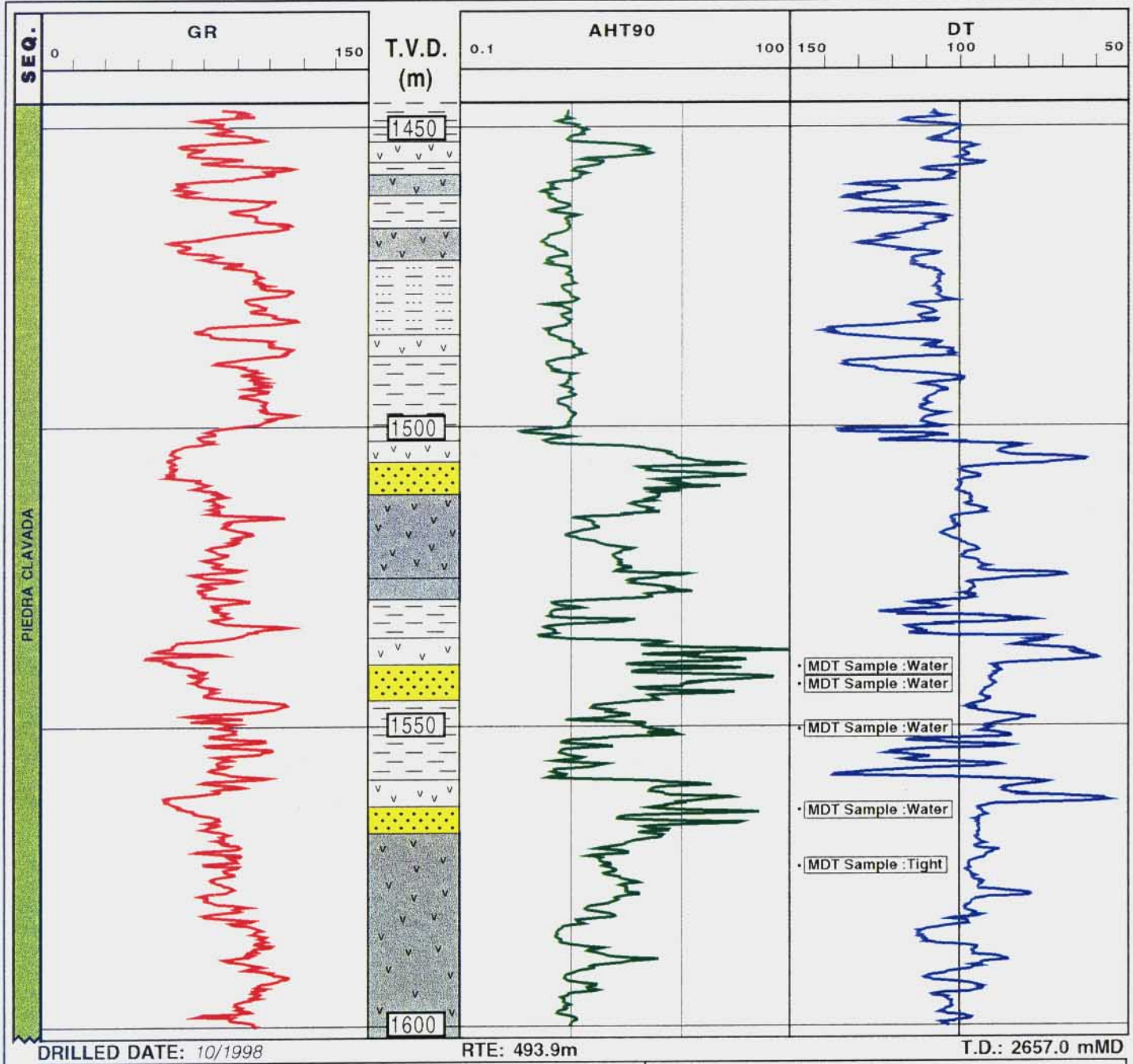
Fig. 5

UWI: CCliff.x-1

ELEV: KB 485.9 METERS

TD: 2690.0 METERS MD





DRILLED DATE: *10/1998* RTE: 493.9m T.D.: 2657.0 mMD

RESERVOIR DATA

	Piedra Clavada
TOTAL THICKNESS (m)	65
NET SAND (A+B+C)(m)	12.7
NET /GROSS (%)	20
GAS NET PAY (m)	-
OIL NET PAY (m)	-
POROSITY (%)	23.7
CORE PERMEABILITY (mD)	-
DST PERMEABILITY (mD)	-
WATER SATURATION (%)	-

COMMENTS:

FLUID DISTRIBUTION

HPG		
LPG		
GOC		
HPO		
LPO		
OWC		
GWC		
HPW		

COMMENTS:

Condor Cliff.x-1 (Piedra Clavada)

RESERVOIR COMPOSITE LOG (Scale: 1/1000)

@0003124

TOTAL AUSTRAL S.A. / *EXPLORATION DIVISION* / *August, 1999*

TOTAL

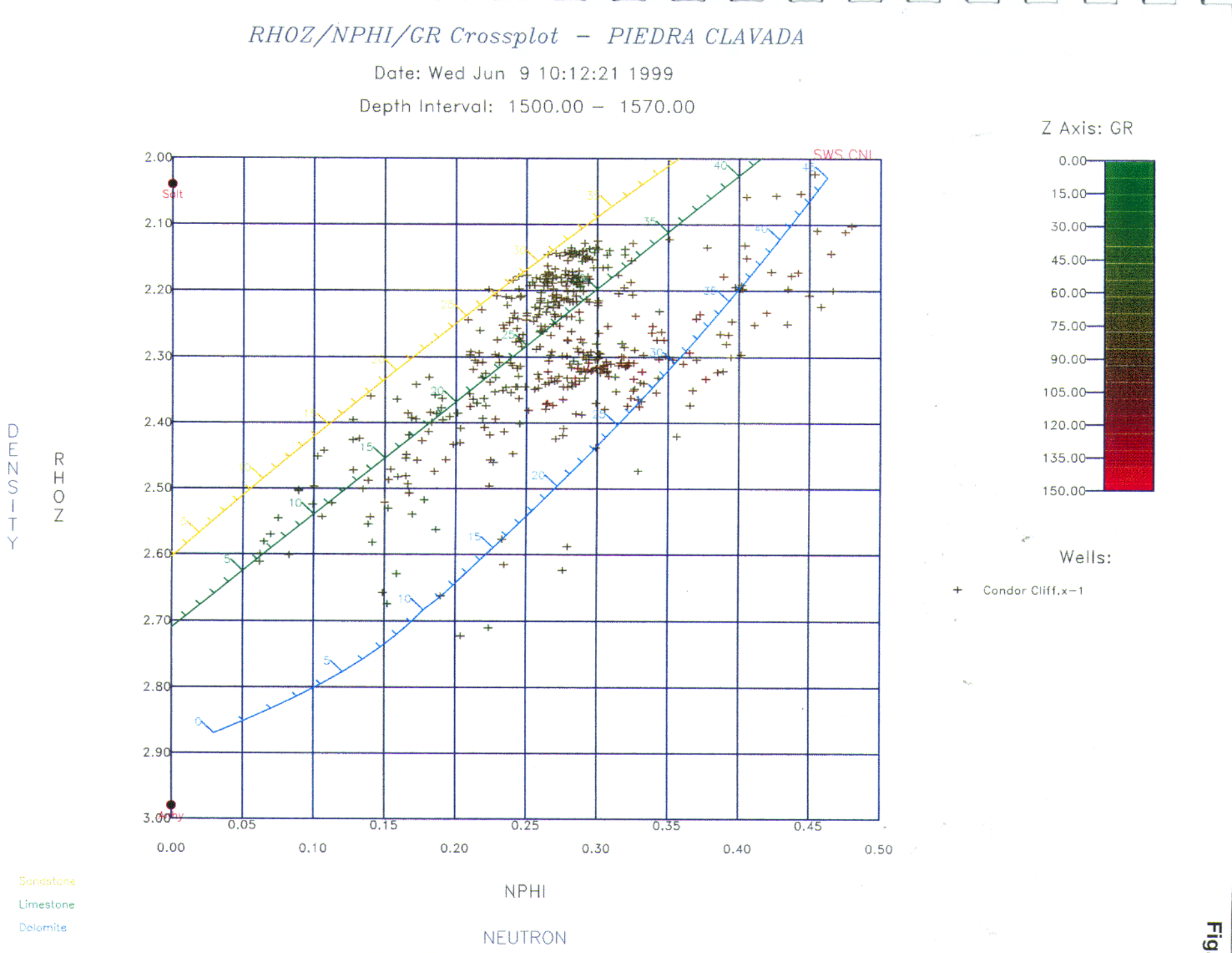

RHOZ/NPHI/GR Crossplot – PIEDRA CLAVADA
Date: Wed Jun 9 10:12:21 1999
Depth Interval: 1500.00 – 1570.00
Z Axis: GR
0.00
15.00
30.00
45.00
60.00
75.00
90.00
105.00
120.00
135.00
150.00
Wells:
Condor Cliff.x-1
SWS CNL
Salt
Anhy
2.00
2.10
2.20
2.30
2.40
2.50
2.60
2.70
2.80
2.90
3.00
DENSITY
RHOZ
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
NPHI
NEUTRON
Sandstone
Limestone
Dolomite

Fig. 7