Editado

**HALLIBURTON**

## DUAL LATEROLOG
## GAMMA RAY LOG

L06-19

| | |
|---|---|
| FILING NO. | |
| COMPANY | PETROTECH S.A |
| WELL | Z2B-21-002-D-L06-19 |
| FIELD | LOBITOS OFFSHORE |
| COUNTY | TALARA |
| STATE | PIURA |
| Location: | N:9509029.43 m.<br>E: 459310.56 m.<br>RIG:PEPESA 40 |
| Other Services: | SLD<br>CNT |
| Permanent Datum: | NIVEL DEL MAR |
| Elev. | 0 |
| Log measured from | MESA ROTARIA ____ above perm. datum |
| Drilling measured from | MESA ROTARIA |
| Elev.: K.B. | 50' |
| D.F. | 49' |
| G.L. | -335' |

WORKING FILE GEOSCIENCES

PETRO-TECH PERUANA S.A. GEOLOGIST WELL FILE

L06-19

| | | |
|---|---|---|
| Date | 20-OCTUBRE-94 | |
| Run No. | UNO | |
| Depth - Driller | 8634' | |
| Depth - Logger | 8536' | |
| Bottom Logged Interval | 8534' | |
| Top Logged Interval | 5212' | |
| Casing - Driller | 9 5/8" @5400' | |
| Casing - Logger | 5394' | |
| Bit Size | 8.5" | |
| Type fluid in hole | CALCICO POTASICO | |
| Density / Viscosity | 11.3 | 53 |
| pH / Fluid Loss | 13 | 4 |
| Source of Sample | LINEA DE FLUJO | |
| Rm @ Meas. Temp. | 0.2 @76 °F | |
| Rmf @ Meas. Temp. | 0.13 @78 ° | |
| Rmc @ Meas. Temp. | 0.46 @85 ° | |
| Source: Rmf / Rmc | PRENSA | PRENSA |
| Rm @ BHT | 0.123 @128 ° | |
| Time End Circulation | 8:30HRS. 20/10 | |
| Time Logger on bottom | 21:50HRS. 20/10 | |
| Max. rec. Temp. | 128 | |
| Equip. No. / Location | SK-7 | TALARA |
| Recorded by | F. MAZULIS | J. CASTRO |
| Witnessed by | I. CORZANO | |

Fold Here

| Changes in Mud Type or Additional Samples | | | | |
|---|---|---|---|---|
| Date / Sample No. | | | | |
| Depth - Driller | | | | |
| Type fluid in hole | | | | |
| Chlorides | | ppm | | ppm |
| Dens. / Visc. | | | | |
| ph / Fluid Loss | | | | |
| Source of Sample | | | | |
| Rm @ Meas. Temp. | 0.2 | @76 ° | @ | ° |
| Rmf @ Meas. Temp. | 0.13 | @78 ° | @ | ° |
| Rmc @ Meas. Temp. | 0.46 | @85 ° | @ | ° |
| Source: Rmf / Rmc | PRENSA | PRENSA | | |
| Rm @ BHT | 0.123 | @128 ° | @ | ° |
| Rmf @ BHT | 0.082 | @ ° | @ | ° |
| Rmc @ BHT | 0.313 | @ ° | @ | ° |

Scale Changes

| Type Log | Depth | Scale Up Hole | Scale Down Hole |
|---|---|---|---|
| | | | |

Equipment Data

| Tool Type | Serial No. | Tool Position | Other |
|---|---|---|---|
| DLL-EB | 5103 | FREE | |
| MSFL-DA | 1826 | ECCENTRALIZADA | |
| GR-DC | 4564 | FREE | |

Remarks MICRO SPHERICAL CORRIDO HASTA 7100', PATIN SALIO MALOGRADO POR CONDICIONES DEL POZO.

REGISTRO SIN CORRECCIONES DEL HUECO.

DUAL LATEROLOG CORRIDO SIN CENTRALIZADOR DEBIDO A LAS CONDICIONES DEL POZO.

L06-19

HALLIBURTON does not guarantee the accuracy of any interpretation of log data, conversion of log data to physical rock parameters, or recommendations which may be given by Halliburton personnel or which may appear on the log or in any other form. Any user of such data, interpretations, conversions, or recommendations agrees that Halliburton is not responsible, except where due to gross negligence or willful misconduct, for any loss, damages, or expenses resulting thereof.
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DUAL LATEROLOG

GAMMA RAY LOG

### MAIN LOG

HALLIBURTON Logging System - V4.00

PLAYBACK CUSTOMER DATA - TOP DEPTH 5211.5 ft

Reel : 01.DLL619 CUSTOM . .RH
Play back File : 00.MSE Output file.MSE213.EC

Logged on 20/Oct/94 at 21:57

OJO. TOPES SUPERIORES
Tolora desde el fondo marino

| | | S | W |
|---|---|---|---|
| Chacra | 2350'MD (-2075'ss) | 510 | 479 |
| Rio Bravo | 3930'MD (-3105'ss) | 1549 | 1130 |
| Palegreda | 5470'MD (-4180'ss) | 2527 | 163 |

Depthtrack curve : TENS dot 8000.00 100.00 lbs

L06-19

Depthtrack curve : TENS dot 8000.00 100.00 lbs

HALLIBURTON Logging System - V4.00

PLAYBACK CUSTOMER DATA - BOTTOM DEPTH 8541.0 ft

Reel : 01.DLL619 CUSTOM . .RH
Play back File : 00.MSE Output file.MSE213.EC

Logged on 20/Oct/94 at 21:57

MAIN LOG

### REPEAT SECTION

L06-19

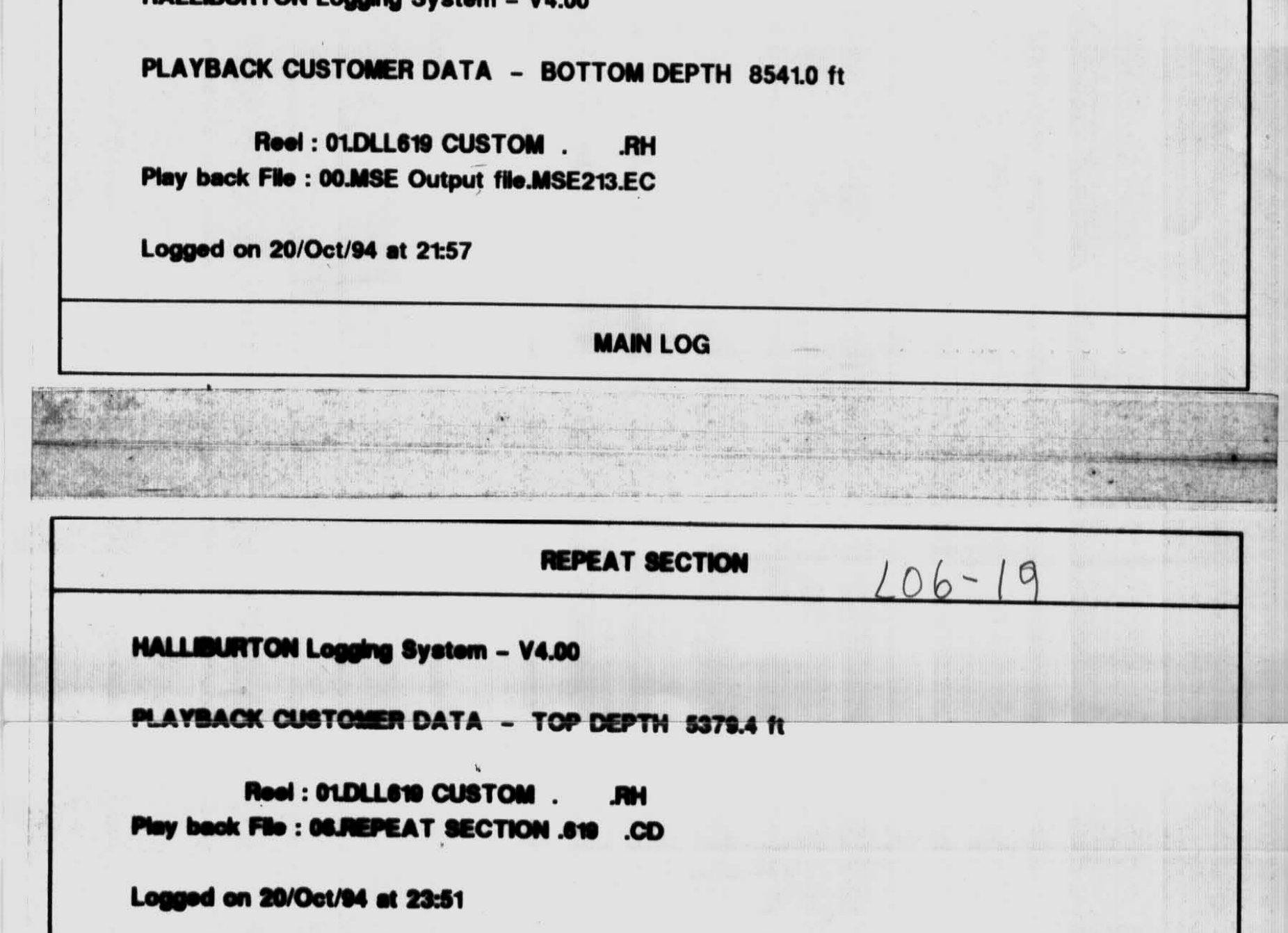
HALLIBURTON Logging System - V4.00

PLAYBACK CUSTOMER DATA - TOP DEPTH 5379.4 ft

Reel : 01.DLL619 CUSTOM . .RH
Play back File : 06.REPEAT SECTION .619 .CD

Logged on 20/Oct/94 at 23:51

Depthtrack curve : TENS dot 8000.00 100.00 lbs



Depthtrack curve : TENS dot 8000.00 100.00 lbs

HALLIBURTON Logging System - V4.00

PLAYBACK CUSTOMER DATA - BOTTOM DEPTH 5622.9 ft

Reel : 01.DLL619 CUSTOM . .RH
Play back File : 06.REPEAT SECTION .619 .CD

Logged on 20/Oct/94 at 23:51

REPEAT SECTION

### DUAL LATEROLOG AFTER-SURVEY CALIBRATION CHECK

Tool type DLL -EB
Date performed 21/Oct/94
Serial Number 5103
Time performed 00:05

100 Ohm-Meter Measurement

| Resistivity | Before | After | Units |
|---|---|---|---|
| LLS | 100.00 | 101.72 | OHM-M |
| LLD | 100.00 | 103.18 | OHM-M |

Reference Data

| | LLS | LLD | UNITS |
|---|---|---|---|
| DRIVE OUTPUT | 2037 | 1312 | |
| CHANNEL OFFSETS V(0) | 102.66 | 104.38 | MV |
| CHANNEL OFFSETS V(90) | 64.82 | 78.13 | MV |
| CHANNEL OFFSETS I(0) | 90.43 | 104.91 | MV |
| CHANNEL OFFSETS I(90) | 89.14 | 95.59 | MV |
| CHANNEL READINGS V(0) | -284.45 | -263.27 | MV |
| CHANNEL READINGS V(90) | -231.36 | -170.60 | MV |
| CHANNEL READINGS I(0) | -252.42 | -226.56 | MV |
| CHANNEL READINGS I(90) | -130.88 | -5.83 | MV |

TARGET VECTOR VOLTAGE 450.0

### DUAL LATEROLOG BEFORE-SURVEY CALIBRATION CHECK

Tool type DLL -EB
Date performed 20/Oct/94
Serial Number 5103
Time performed 20:17

100 Ohm-Meter Calibration

| Resistivity | Measured | Calibrated | Units |
|---|---|---|---|
| LLS | 117.63 | 100.00 | OHM-M |
| LLD | 124.11 | 100.00 | OHM-M |

Reference Data

| | LLS | LLD | UNITS |
|---|---|---|---|
| ZERO OFFSET | 0.04 | 0.08 | OHM-M |
| CALIBRATION RATIO | 0.85 | 0.81 | |
| POWER REFERENCE | 172090 | 151541 | |
| DRIVE OUTPUT | 2037 | 1312 | |
| CHANNEL OFFSETS V(0) | 102.41 | 104.04 | MV |
| CHANNEL OFFSETS V(90) | 64.62 | 77.76 | MV |
| CHANNEL OFFSETS I(0) | 90.20 | 104.68 | MV |
| CHANNEL OFFSETS I(90) | 88.90 | 95.25 | MV |
| CHANNEL READINGS V(0) | -323.33 | -251.89 | MV |
| CHANNEL READINGS V(90) | -80.88 | -170.01 | MV |
| CHANNEL READINGS I(0) | -280.20 | -222.03 | MV |
| CHANNEL READINGS I(90) | -6.49 | -28.68 | MV |

TARGET VECTOR VOLTAGE 450.0

### GAMMA RAY TOOL BEFORE-SURVEY CALIBRATION

Tool type GR -DC
Date performed 20/Oct/94
Serial Number 4564
Time performed 18:51

| Background | Calibrator | Standard | Units |
|---|---|---|---|
| 151.28 | 638.89 | 120.00 | CPS |

Delta Counts Per Sec: 487.61

CPS/API = 4.06

### Sensor Table

| Mnemonic | Sensor | Units | Offset(inches) | Panel |
|---|---|---|---|---|
| DPTH | System Depth | ins/10 | 0.0 | PSYS |
| TIME | System Time | MS | 0.0 | PSYS |
| DENC | Depth Encoder | | 0.0 | PSYS |
| MAGM | Magnetic Marks | | 0.0 | PSYS |
| TSPD | Tool Speed | ft/min | 0.0 | PGPP |
| SP | Spontaneous Potential | mV | 470.0 | PGPP |
| TCUR | Tool Current | mA | 0.0 | PGPP |
| CCER | Communication Channel Error | | 0.0 | PGPP |
| TENS | Line Tension | lbs | 0.0 | PGPP |
| GR | Gamma Ray | cps | 337.0 | PGR |
| SV0 | 0 Degree Shallow Voltage | mv | 193.0 | PDLL |
| SV90 | 90 Degree Shallow Voltage | mv | 193.0 | PDLL |
| SI0 | 0 Degree Shallow Current | mv | 193.0 | PDLL |
| SI90 | 90 Degree Shallow Current | mv | 193.0 | PDLL |
| DV0 | 0 Degree Deep Voltage | mv | 193.0 | PDLL |
| DV90 | 90 Degree Deep Voltage | mv | 193.0 | PDLL |
| DI0 | 0 Degree Deep Current | mv | 193.0 | PDLL |
| DI90 | 90 Degree Deep Current | mv | 193.0 | PDLL |
| CMSF | MSFL CONDUCTIVITY | mv | 12.0 | PMSF |
| CALI | MSFL CALI Caliper | cps | 12.0 | PCAL |

### Output Table

| Mnemonic | Curve | Units | Filter-Type | Value | Units |
|---|---|---|---|---|---|
| TENS | Line Tension | lbs | | | |
| BIT | Bitsize | inches | | | |
| GR | Gamma Ray | API | Weighted | 24.0 | inches |
| LLS | Laterolog Shallow Resistivity | ohm-m | Linear | 24.0 | inches |
| LLD | Laterolog Deep Resistivity | ohm-m | Linear | 24.0 | inches |
| LLDG | LLD - Groeningen Corrected | ohm-m | Linear | 24.0 | inches |
| CMSF | MSFL CONDUCTIVITY | mv | Weighted | 24.0 | inches |
| MSFL | MSFL RESISTIVITY | ohm-m | | | |
| CALI | MSFL CALI Caliper | inches | Linear | 24.0 | inches |
| AHV | Annular Hole Volume | cu ft | | | |

### Software Panel Table

| Mnemonic | Description | Version # |
|---|---|---|
| DIOP | DIOP Processor | 1.08 |
| MAN | Panel Manager | 3.05 |
| GPP | General Purpose Sensors | 3.04 |
| CAL | Caliper Panel | 3.03 |
| GR | Gamma Ray Tool | 3.02 |
| DLL | Dual Laterolog | 3.02 |
| MSFL | Micro-Spherically Focused | 3.02 |
| BHV | Borehole Volume | 3.01 |