GEOIL TECHNOLOGY INC,
SUCURSAL DEL PERU

FINAL WELL REPORT

WELL: Z-2B-24-081-D-LO6(LO6-23)

JUNE, 2001

PETRO-TECH PERUANA S.A.

CONTENTS

INTRODUCTION

Geoil Technology Inc. Sucursal del Perú, started Mudlogging operations on the Development Well Z2B-24-081-D-LO6 (LO6-23) on April 27th, 2001 at 23:00 Hrs.

Z2B-24-081-D-LO6 (LO6-23) directional well was drilled in the Lobitos Area, located in Talara Basin. The main objective was Basal Salina sand and Mogollón as secondary objective.

This report includes geological information and drilling rig activity from the Mudlogging Unit personnel of well LO6-23 from 597 feet to the Final Total Depth at 9040 feet into Basal Salina formation, that reached on June 06th, 2001.

Complete Lithological Data and Gas Show from the high speed MTI M200 Chromatograph, Drilling Operations, Bit Record, Fluorescence Data, Mud Data Record, Mud Properties, Bottom Hole Assemblies, Survey Data Record and Time Distribution in hours are included accordingly.

Also included a Drilling Geological Log, generated from the Data Acquisition Unit on Real Time, for an easy correlation and interpretation for future wells likely to be drilled around.

WELL DATA

Company:	Petro - Tech Peruana S.A.	
Well:	Z2B-24-081-D-LO6 (LO6-23)	
Well Type:	Development	
Field:	Lobitos Offshore	
Basin:	Talara	
Región:	Piura	
State/Country:	Perú	
Surface Coordinates (UTM):	**North** 9'508,657.06 m	**East** 459,054.37 m
Elevations:	WD: 335 ft	K.B.: 50 ft
Spud Date:	April 24th, 2001	
End Date:	June 06th, 2001	
Objectives:	Basal Salina, Mogollón	
Total depth:	9040 ft	
Drilling Contractor / Rig:	PEPESA 48	
Drilling Fluids:	M-I	
Logging Contractor:	Schlumberger	
Mudlogging / Unit:	Geoil Technology Inc. Suc. del Perú	
Geoil Crew:	Alejandro Garro E.	
	Julio Ortiz N.	
	Oscar Gutierrez S.	


Colombia
Ecuador
WELL:
L 06-23
67
39
AB
8
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64
32
8X
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87
AMERICA DEL SUR
Brasil
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10
Z-29
Z-13
Z-14
31
85
86
D
71
40
34
35
75
OCEANO
PACIFICO
Z-39
Z-2
Z-40
Z-22
Z-41
Z-42
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Bolivia
Z-51
Z-52
Chile
GEOIL
PETRO-TECH PERUANA S.A.
LOCATION MAP
WELL: L06 - 23
0 100 200 300 km
0 100 200 mi
DATE
JUNE, 2001
LOTE
Z-2B

STRATIGRAPHIC SEQUENCE

WELL: LO6 – 23

The stratigraphic column expected according with offset wells and seismic data consists of Tertiary formations.

TERTIARY FORMATIONS

It is constituted mainly by continental and marine sediments, product of erosion of the Amotape chains in different lifting stages.
The Tertiary sequence is formed by the formations: Talara (Eocene), Chacra (Eocene), Rio Bravo (Eocene), Palegreda (Eocene), Mogollón (Eocene), San Cristobal (Eocene), Basal Salina (Paleocene), Balcones (Paleocene).

TALARA Fm. **Interval: Surf. to 2500'**
E-log Top: Surf. to 2490'

Talara formation consist of homogeneous sequence of Claystones with some intercalation of sand and sandstone.
Claystone was brown, blocky, soft, very slightly to non calcareous, micromicaceous, minor microcarbonaceous, silty in part, at the middle part gray, medium gray, subblocky minor blocky, soft & moderately firm, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion.
Sandstone was light gray, gray, very fine grained, well sorted, silty matrix, calcareous, friable to moderately hard, dirty, dark grain inclusion, very poor visual porosity.
The more common accessories were dolomite, calcite, microfossil.
NO OIL SHOW:
GAS SHOW:
The maximum gas readings in this formation was 620 units of Total Gas at 1717' containing all gas

CHACRA Fm. **Interval: 2500' to 3610'**
E-log Top: 2490' to 3592'

This formation was composed by Claystone with very thin layers of Siltstone.
Claystone was gray, slightly brownish gray, subblocky to blocky, soft minor moderately firm, non calcareous, micromicaceous, microcarbonaceous, very rare with laminar coal inclusion.
The more common accessories were dolomite, calcite.

NO OIL SHOWS
GAS SHOW
The background gas was 29 units of Total Gas.

RIO BRAVO Fm.

Interval: 3610' to 5200'
E-log Top: 3592' to 5146'

The Rio Bravo formation is comformed by sandstone interbedding with claystone and siltstone.
Sandstone was white, slightly grayish white, very fine to medium grained, subangular to subrounded, fair sorted, clean in part, non to calcareous, friable, fair visual porosity. At the lower section (4690-5200) is light gray, gray, very fine grained, well sorted, very argillaceous matrix, non calcareous, moderate hard, dirty, occasionally micaceous, very poor visual porosity.
This lithology is different at observed in the well LO6-25
Claystone was brownish gray, gray, subblocky to subplaty, soft to moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, rare with laminar coal inclusion.
The more common accessories were calcite, shell fragments, coal, dolomite, pyrite.
OIL SHOWS
From 3610' to 3640' the maximum fluorescence was 15%
From 3640' to 3670' the maximum fluorescence was 10%
From 3670' to 3730' the maximum fluorescence was 50%
From 3730' to 3820' the maximum fluorescence was 30%
From 3820' to 3850' the maximum fluorescence was 20%
From 3850' to 3880' the maximum fluorescence was 10%
From 3880' to 3910' the maximum fluorescence was traces
From 3910' to 3940' the maximum fluorescence was 5%
From 3940' to 3970' the maximum fluorescence was 15%
From 4240' to 4270' the maximum fluorescence was 5%
From 4270' to 4300' the maximum fluorescence was 10%
From 4300' to 4330' the maximum fluorescence was 5%
From 4330' to 4360' the maximum fluorescence was 5%
From 4360' to 4390' the maximum fluorescence was traces
From 4480' to 4540' the maximum fluorescence was 5%
From 4540' to 4570' the maximum fluorescence was traces
From 4630' to 4660' the maximum fluorescence was 5%
GAS SHOW:
The maximum gas readings in this formation was 100 units of Total Gas at 3662' containing all gas

PALEGREDA Fm.

Interval: 5200' to 5890'
E-log Top: 5146' to 5869'

This formation composed by homogeneous sequence of Claystone with some intercalations of thin layers of Siltstone.
Claystone was slightly brownish gray, gray, blocky to subblocky, moderately firm to soft, non calcareous, very micromicaceous, microcarbonaceous, locally silty.
The more common accessories were calcite, dolomite.
NO OIL SHOWS
GAS SHOW
The background gas readings was 10 units of Total Gas

MOGOLLON Fm.

Interval: 5890' to 6340'
E-log Top: 5869' to 6340'

The Mogollón formation was the secondary objective of this well, is comformed by sandstone interbedding with Claystone.
Sandstone was white, slightly grayish white, minor whitish, very fine to fine and traces medium grained, subangular to subrounded, fair sorted, slightly argillaceous matrix, clean in part, very calcareous, friable and moderately hard, occasionally micaceous, with dark grain inclusion, poor to fair visual porosity.
Claystone was gray, slightly brownish gray, blocky to subplaty, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, locally silty.
The interval 6020' to 6040' lithologically constitute the best body of this formation, and have high gas readings with complete chromatography.
The more common accessories were calcite, pyrite and shell fragments.

OIL SHOWS

From 5890' to 5910' the maximum fluorescence was 5%
From 5930' to 5940' the maximum fluorescence was 5%
From 5970' to 5980' the maximum fluorescence was 10%
From 5980' to 5990' the maximum fluorescence was 15%
From 5990' to 6000' the maximum fluorescence was 10%
From 6000' to 6010' the maximum fluorescence was 5%
From 6020' to 6030' the maximum fluorescence was 30%
From 6030' to 6040' the maximum fluorescence was 15%
From 6120' to 6130' the maximum fluorescence was 5%

GAS SHOW

The maximum gas readings in this formation was 34 units of Total Gas at 6024' containing all gas, readings taken from chromatograph draws.
The maximum mud weight used was 10.9 PPG

SAN CRISTOBAL Fm.

Interval: 6340' to 7780'
E-log Top: 6340' to 7902'

This formation composed by monotonous sequence of claystone.
Claystone was brownish gray, gray, blocky to subblocky minor subplaty, moderately firm minor firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty in part. Toward the base dark, subblocky to blocky, firm to compact, non calcareous, micromicaceous, locally microcarbonaceous, siliceous in part.
The more common accessories were calcite, dolomite, microfossils.

NO OIL SHOWS

GAS SHOW

The background gas readings was 10 units of Total Gas

BASAL SALINA Fm.

Interval: 7780' to 9040' (T.D)
E-log Top: 7902' to 9040' (T.D)

This formation was the main objective of this well, according with lithology can be divided in 3 sections.

The Upper section (7780'- 8100') it's constituted by massive clean sand .
The interval 7910' to 8080' lithologically constitute the best reservoir quality of this formation.
Sand was hyaline, white, minor milky, transparent, quartzose, fine to granules grains, predominantly subrounded, poor sorted, fractured, some dark & traces smoky grains.
Sandstone was white, minor slightly grayish white, very fine to medium grained, fair sorted, slightly clean to clean, very calcareous, moderately hard minor friable, dark grain inclusion, poor to fair visual porosity.
The middle section (8100'- 8270') is a claystone break, comformed by gray, slightly brownish gray, subblocky to blocky minor subplaty, moderately firm, non calcareous, very micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty.
The lower section (8270'- 9040') formed by thin layer of poor sandstone with intercalation of claystones
Sandstone was slightly grayish white, grayish white, light gray, very fine grain, well sorted, argillaceous matrix, calcareous, moderately hard to hard, dirty, dark grain inclusion, poor visual porosity
Claystone was gray, slightly brownish gray, subblocky to blocky minor subplaty, moderately firm to firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty.
The more common accessory was calcite, pyrite.

OIL SHOWS

From 7960' to 7980' the maximum fluorescence was traces
From 7980' to 8000' the maximum fluorescence was 15%
From 8000' to 8020' the maximum fluorescence was 10%
From 8020' to 8030' the maximum fluorescence was 20%
From 8030' to 8050' the maximum fluorescence was 30%
From 8050' to 8060' the maximum fluorescence was 40%
From 8060' to 8070' the maximum fluorescence was 15%
From 8070' to 8080' the maximum fluorescence was 10%
From 8080' to 8090' the maximum fluorescence was 5%
From 8270' to 8280' the maximum fluorescence was 5%
From 8290' to 8300' the maximum fluorescence was 5%
From 8300' to 8310' the maximum fluorescence was traces
From 8420' to 8425' the maximum fluorescence was 20%
From 8425' to 8430' the maximum fluorescence was 5%
From 8430' to 8440' the maximum fluorescence was traces
From 8455' to 8460' the maximum fluorescence was traces
From 8460' to 8470' the maximum fluorescence was 5%
From 8470' to 8480' the maximum fluorescence was traces
From 8520' to 8540' the maximum fluorescence was traces
From 8570' to 8580' the maximum fluorescence was traces
From 8710' to 8715' the maximum fluorescence was traces
From 8840' to 8850' the maximum fluorescence was 30%
From 8850' to 8860' the maximum fluorescence was 10%
From 8970' to 9010' the maximum fluorescence was traces

GAS SHOW:

The maximum gas readings in this formation was 81 units of Total Gas at 8041' containing all gas.

TRIP GAS AND SHORT TRIP GAS

TG: 752 units of TG at 7865'
TG: 126 units of TG at 8336'

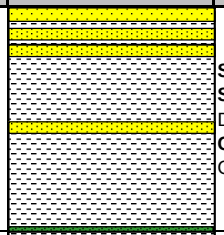
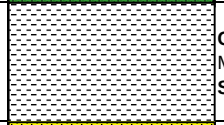
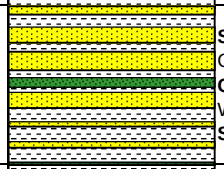
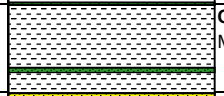
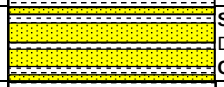
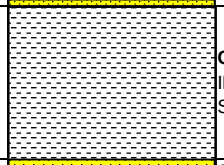
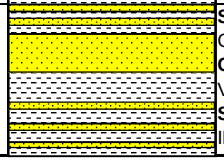
TG: 386 units of TG at 8652’
STG: 91 units of TG at 8088’
STG: 127 units of TG at 8223’ due wash out
STG: 94 units of TG at 8232’ due wash out
STG: 125 units of TG at 8307’ due wash out
STG: 53 units of TG at 8315’ due wash out
STG: 72 units of TG at 8419’ due wash out
STG: 828 units of TG at 8489’ due wash out
STG: 316 units of TG at 8545’ due wash out
STG: 1038 units of TG at 8570’ due wash out
STG: 349 units of TG at 8876’ due wash out
STG: 357 units of TG at 8878’ due wash out
STG: 855 units of TG at 9040’

MUD SAMPLE

Mud sample taken while drilling at the depth of 7920’ no show.
The maximum mud weight used was 12.3 ppg

STRATIGRAPHIC COLUMN

WELL : LO6-23

AGE	FORMATION	THICKNESS (ft)	LITHOLOGY	DESCRIPTION
TERTIARY	**TALARA (SURF-2500')**	2115		**SAND:** HYAL, WH, TRNSL, QTZ, F - C GR, SBANG - SBRD, FR SRT, W/ DK, SMKY, LT GN & LT GY GR. **SANDSTONE**: LT GY, GY, V F GR, SBANG-SBRND, W SRT, SLTY MTX, CALC CMT, FRI MNR MOD HD, DRTY, W/ SOME DK GR INCL, V P VIS POR. **CLAYSTONE:** BRN, SBBLKY - BLKY, SFT, V SL CALC, MICRMIC, MICRCARB, LOC SILTY & GY, BRN'SH GY, SBLKY MNR BLKY, SFT, NON CALC, MICRMIC, MICRCARB, OCC W/ LAM COAL INCL.
	CHACRA (2500' - 3610')	1010		**CLAYSTONE:** GY, MD GY, MNR BRN'SH GY, SBBLKY - BLKY, SFT MNR MOD FRM, NON ALC, MICRMIC, MICRCARB, SOME W/ LAM COAL INCL, OCC SLTY. **SILTSTONE:** LT GY, GY, SBBLKY - BLKY,SFT, V SL CALC, MICMIC, LOC MICCARB, LOC SDY.
	RIO BRAVO (3610' - 5200')	1590		**SANDSTONE:** SL GY'SH WH, WH, V F MNR M GR, SBANG-SBRD, CLN IN PT, CALC CMT, FRI, OCC V FRI, OCC MIC, DK GR INCL, P - FR VIS POR. **CLAYSTONE:**BRN'SH GY, GY, BLKY-SBBLKY, SFT-MOD FRM, NON CALC, V MICRMIC, MICRCARB, RARE W/. LAM COAL INCL, SILTY IN PT. **SILTSTONE**: GY, BRN'SH GY, BLKY, SFT, NON CALC, MICRMIC, SL MICRCARB, W/LAM COAL INCL.
	PALEGREDA (5200' - 5890')	690		**CLAYSTONE:** GY, SL BRN'SH GY, SBBLKY-BLKY, MOD FM MNR SFT, NON CALC, V MICRMIC, MNR MICCARB, LOC SLTY.
	MOGOLLON (5890' - 6340')	450		**SANDSTONE:** WH, GY'SH WH, V F-F GR, SBANG-SBRD, W SRTD, SL ARG MTX, CALC, FRI & MOD HD, W/. DK & GN GR INCL, P VIS POR, W/ OIL SHOW. **CLAYSTONE:** SL BRNSH GY, GY, SBBLKY-BLKY, MOD FRM, NON CALC, MICRMIC, LOC SLTY.
	SAN CRISTOBAL (6340' - 7780')	1440		**CLAYSTONE:** GY, SBBLKY-SBPLTY MNR BLKY, MOD FRM, NON CALC, MICRMIC, MNR MICRCARB, SLTY IN PT AND TOWARD THE BASE DK, SBBLKY-BLKY, FRM-CMP, NON CALC, MICRMIC, LOC MICRCARB, SIL IN PT.
	BASAL SALINA (7780' - 9040')	1260		**SAND:** HYAL, WH, TRNSP, QTZ, M-GRNL GR, PRED SBRND, P SRT, FRACT, SOME DK MNR SMKY, LT GN, GR INCL, W/ OIL SHOW. **CLAYSTONE:** GY, SL BRN'SH GY, SBBLKY-BLKY, MOD FRM MNR FRM, NON CALC, MICRMIC SOME VERY MICRMIC, MNR MICRCARB. **SANDSTONE:** SL GY'SH WH, LT GY, V F GR, W SRT, ARG MTX, CALC, MOD HD, DRTY IN PT, DK GR INCL, P-V P VIS POR

FORMATION TOPS

WELL: LO6 - 23

COORDINATES	**N: 9'508,657.06 mts**
(UTM)	**E: 459,054.37 mts**
KB: 50 FT	**WATER DEPTH: 335 FT**

FM / MBR	EXPECTED TOPS			MUD LOGGING TOPS			ELECTRICAL TOPS		
	MD	VD	SS	MD	VD	SS	MD	VD	SS
TALARA	SURF.	SURF.		SURF.	SURF.		SURF.	SURF.	
CHACRA	2300'	2250'	-2200'	2500'	2435'	-2385'	2490'	2426'	-2376'
RIO BRAVO	3900'	3750'	-3700'	3610'	3425'	-3375'	3592'	3409'	-3359'
PALEGREDA	5100'	4800'	-4750'	5200'	4906'	-4856'	5146'	4854'	-4804'
MOGOLLON	5800'	5450'	-5400'	5890'	5541'	-5491'	5869'	5540'	-5490'
SAN CRISTOBAL	6350'	5950'	-5900'	6340'	5942'	-5892'	6340'	5942'	-5892'
BASAL SALINA	7850'	7330'	-7280'	7780'	7230'	-7180'	7902'	7334'	-7284'
BALCONES	8500'	7900'	-7850'						
TOTAL DEPTH	8700'	8100'	-8050'	9040'	8332'	-8282'	9040'	8332'	-8282'

LITHOLOGYCAL DESCRIPTIONS

WELL: LO6-23

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
DRILLING SPUDDED ON APRIL 24th, 2001 at 05:00 hrs			
TALARA FM. AT SURFACE			
597 – 610	50 50	**SANDSTONE:** gray, 100% very fine grains, very well sorted, very argillaceous matrix, calcareous cement, friable to moderately hard, dirty, some with dark grain inclusions, very poor visual porosity. **CLAYSTONE:** light brown, brown, subblocky to blocky, moderately soft, non calcareous, occasionally micromicaceous, occasionally microcarbonaceous, some with laminar coal inclusions. **Acc:** traces recent shell fragment.	NF
610 – 640	30 50 20	**SAND:** hyaline, white, translucent, quartzose, 30% fine, 50% medium, 20% coarse grains, subangular to subrounded, fair sorted, 25% dark, smoky, light green & traces light gray grains. **SANDSTONE:** whitish, slightly grayish white, 30% very fine, 50% fine, 20% medium grains, fairly sorted, slightly argillaceous matrix, very calcareous cement, friable to moderately hard, dark & green grain inclusions, poor visual porosity. **CLAYSTONE:** light brown, brown, subblocky to blocky, slightly soft, non calcareous, occasionally micromicaceous, microcarbonaceous, some with laminar coal inclusions. **Acc:** traces massive calcite.	NF
640 – 670	50 40 10	**SAND:** hyaline, translucent, white, quartzose, 30% fine, 50% medium, 20% coarse grains, subangular to subrounded, fairly sorted, 30% dark, smoky, light green & traces light gray grains. **SANDSTONE:** slightly grayish white, 30% very fine, 50% fine, 20% medium grains, subangular to subrounded, fairly sorted, slightly argillaceous matrix, calcareous cement, friable, slightly dirty, dark & green grain inclusions, poor visual porosity. **CLAYSTONE:** light brown, brown, subblocky to blocky, moderately soft, non calcareous, occasionally micromicaceous, occasionally microcarbonaceous, some with laminar coal inclusions. **Acc:** traces massive calcite.	NF
670 – 700	30 40 30	**SAND:** hyaline, white, translucent, quartzose, 30% fine, 50% medium, 20% coarse grains, subangular to subrounded, fairly sorted, 25% dark, smoky, light green & traces light red grains. **SANDSTONE:** slightly greenish gray white, 60% very fine, 40% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous cement, friable to moderately hard, slightly dirty, dark & green grain inclusions, poor visual porosity. **CLAYSTONE:** light brown, brown, subblocky to blocky, moderately soft & slightly firm, non calcareous, micromicaceous, occasionally microcarbonaceous, few with laminar coal inclusions. **Acc:** traces massive calcite & dolomite.	NF
700 – 730	30 40	**SAND:** hyaline, white, translucent, quartzose, 30% fine, 40% medium, 20% coarse, 10% very coarse grains, subangular to subrounded, fairly sorted, 20% dark, smoky, light green & traces light gray grains. **SANDSTONE:** slightly greenish gray white, 50% very fine, 50% fine	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		grains, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous cement, friable to moderately hard, slightly dirty, dark & green grain inclusions, poor visual porosity.	NF
	30	**CLAYSTONE:** light brown, brown, subblocky to blocky, moderately firm, very slightly calcareous, slightly micromicaceous, occasionally micro carbonaceous, few with laminar coal inclusions. **Acc:** traces massive calcite & dolomite.	
730 – 760	20	**SAND:** hyaline, white, translucent, quartzose, 40% fine, 40% medium, 20% coarse grains, subangular to subrounded, fairly sorted, common dark, smoky, light green & rare light gray grains.	
	60	**SANDSTONE:** slightly greenish gray white, 40% very fine, 60% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous cement, friable to moderately hard, slightly dirty, dark & green grain inclusions, poor visual porosity.	NF
	20	**CLAYSTONE:** light brown, brown, subblocky to blocky, moderately firm, very slightly calcareous, micromicaceous, slightly micro-carbonaceous, smooth surface, few with laminar coal inclusions. **Acc:** few massive calcite & traces shell fragment.	
760 – 790	10	**SAND:** hyaline, white, translucent, quartzose, 40% fine, 40% medium, 20% coarse grains, subangular to subrounded, fairly sorted, common dark, smoky & light green grains.	
	50	**SANDSTONE:** slightly greenish, grayish white, 30% very fine, 50% fine, 20% medium grains, subangular to subrounded, fairly sorted, argillaceous matrix, calcareous cement, friable to moderately hard, slightly dirty, dark & green grain inclusions, poor visual porosity.	NF
	40	**CLAYSTONE:** light brown, brown, subblocky to blocky, moderately firm, very slightly calcareous, micromicaceous, slightly micro-carbonaceous, smooth surface, few with laminar coal inclusions. **Acc:** few massive calcite & traces coal.	
790 – 820	40	**SANDSTONE:** slightly greenish, grayish white, 50% very fine, 50% fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous cement, friable to moderately hard, slightly dirty, dark & green grain inclusions, poor visual porosity.	NF
	60	**CLAYSTONE:** light brown, brown, subblocky to blocky, moderately firm, very slightly calcareous, micromicaceous, slightly micro-carbonaceous, smooth surface, few with laminar coal inclusions. **Acc:** few massive calcite & traces coal.	
820 – 850	30	**SANDSTONE:** light grayish white, minor light greenish gray, 70% very fine, 30% fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous cement, friable to moderately hard, dirty, dark & green grain inclusions, poor to very poor visual porosity.	
	70	**CLAYSTONE:** brown, light brown, subblocky to blocky, moderately soft locally firm, very slightly calcareous, micromicaceous, slightly microcarbonaceous, smooth surface. **Acc:** few massive calcite & rare coal.	NF
850 – 880	100	**CLAYSTONE:** brown, light brown, minor medium gray subblocky to blocky, moderately firm, very slightly calcareous, micromicaceous, locally microcarbonaceous, smooth surface.	NF
880 – 910	100	**CLAYSTONE:** brown, light brown, subblocky to blocky, moderately soft, very slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, few with laminar coal inclusions, minor medium gray subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, slightly microcarbonaceous, smooth surface. **Acc:** few massive calcite & traces dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
910 – 940	100	**CLAYSTONE:** brown, light brown, subblocky to blocky, soft, very slightly calcareous, occasionally micromicaceous, locally micro-carbonaceous, rare with laminar coal inclusions, smooth surface. **Acc:** few dolomite & traces massive calcite.	NF
940 – 970	100	**CLAYSTONE:** brown, light brown, minor slightly grayish brown subblocky to blocky, soft, very slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, rare with laminar coal inclusions, silty in part. **Acc:** few dolomite.	NF
970 – 1000	100	**CLAYSTONE:** brown, light brown, subblocky to blocky, soft, very slightly calcareous, occasionally micromicaceous, locally micro-carbonaceous, rare with laminar coal inclusions, silty in part. **Acc:** few dolomite.	NF
1000 – 1030	10 90	**SILTSTONE:** light grayish, subblocky, moderately firm, slightly calcareous, slightly micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** brown, light brown, minor medium gray, subblocky to blocky, soft, very slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, rare with laminar coal inclusions, slightly rough surface. **Acc:** few dolomite & traces massive calcite..	NF
1030 – 1060	10 90	**SANDSTONE:** slightly grayish green, 70% fine, 30% medium grains, subrounded, well sorted, argillaceous matrix, very calcareous cement, moderately hard, locally friable, dirty, with dark & green grain inclusions, very poor visual porosity. **CLAYSTONE:** brown, brownish gray, medium gray, subblocky to blocky, moderately soft, slightly calcareous, occasionally micro-micaceous, slightly microcarbonaceous, slightly rough surface, silty in part **Acc:** traces massive calcite & rare microfossil.	NF
1060 – 1090	10 90	**SILTSTONE:** light gray, grayish, subblocky, moderately firm, slightly calcareous, slightly micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** medium gray, brownish gray, minor brown, subblocky moderately soft, slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, occasionally rough surface, silty in part **Acc:** traces massive calcite & dolomite.	NF
1090 – 1120	10 90	**SANDSTONE:** slightly grayish green, 100% fine grains, sub rounded, very well sorted, argillaceous matrix, very calcareous cement, moderately friable, dirty, few with glauconite inclusions, very poor visual porosity. **CLAYSTONE:** medium gray, brownish gray, minor brown, subblocky moderately soft, slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, occasionally rough surface, locally silty. **Acc:** traces massive calcite, dolomite, coal, glauconite, microfossil.	NF
1120 – 1150	10 10 80	**SANDSTONE:** slightly grayish green, 100% fine grains, sub-rounded, very well sorted, argillaceous matrix, very calcareous cement, moderately friable, dirty, few with glauconite inclusions, very poor visual porosity. **SILTSTONE:** light gray, grayish, subblocky, moderately firm, slightly calcareous, slightly micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** medium gray, brownish gray, minor brown, subblocky, moderately soft, slightly calcareous, occasionally micromicaceous, locally microcarbonaceous, occasionally rough surface, locally silty. **Acc:** traces dolomite & rare massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
1150 – 1180	10 90	**SILTSTONE:** grayish, blocky, soft, very slightly calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** grayish brown, brown, subblocky to blocky, very soft to soft, slightly calcareous, micromicaceous, microcarbonaceous. **Acc:** traces dolomite.	 NF
1180 – 1210	10 90	**SILTSTONE:** grayish, blocky, soft, very slightly calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** grayish brown, brown, subblocky to blocky, very soft to soft, very slightly calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite.	 NF
1210 – 1240	100	**CLAYSTONE:** brown, minor grayish brown, subblocky to blocky, very soft to soft, very slightly calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
1240 – 1270	100	**CLAYSTONE:** brown, minor grayish brown, subblocky to blocky, very soft to soft, very slightly calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces dolomite.	NF
1270 – 1300	100	**CLAYSTONE:** brown, subblocky to blocky, soft, very slightly calcareous, micromicaceous, minor microcarbonaceous, locally silty, smooth texture. **Acc:** traces dolomite, microfossils.	NF
1300 – 1330	100	**CLAYSTONE:** brown, subblocky to blocky, soft, very slightly calcareous, micromicaceous, minor microcarbonaceous, scarce with dusty pyrite scattered, smooth texture. **Acc:** traces microfossils.	NF
1330 – 1360	100	**CLAYSTONE:** light brown, brown, subplaty to subblocky, soft occasionally very soft, non calcareous, micromicaceous, occasionally microcarbonaceous, very rare with dusty pyrite agglomerated, smooth texture. **Acc:** traces dolomite.	NF
1360 – 1390	30 70	**SANDSTONE:** slightly greenish gray white, 50% very fine, 50% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderate hard, dirty, dark & green grain inclusions, poor visual porosity. **CLAYSTONE:** light brown, brown, subplaty to subblocky, soft occasionally very soft, non calcareous, micromicaceous, occasionally microcarbonaceous, very rare with dusty pyrite agglomerated, smooth texture. **Acc:** some dolomite, traces microfossils.	 NF
1390 – 1420	20 80	**SANDSTONE:** slightly greenish gray white, 50% very fine, 50% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderate hard, dirty, dark & green grain inclusions, poor visual porosity. **CLAYSTONE:** light brown, brown, minor grayish brown, subplaty to subblocky, soft occasionally very soft, non calcareous, micromicaceous, occasionally microcarbonaceous, very rare with dusty pyrite agglomerated, smooth texture. **Acc:** some dolomite, traces microfossils.	 NF
1420 – 1450	100	**CLAYSTONE:** brown, minor light brown, subblocky minor subplaty, soft, very slightly calcareous, micromicaceous, occasionally micro carbonaceous, smooth texture. **Acc:** traces dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
1450 – 1480	100	**CLAYSTONE:** brown, minor light brown, subblocky to subplaty in part, soft, very slightly calcareous, micromicaceous, occasionally microcarbonaceous, moderately smooth texture. **Acc:** traces dolomite & microfossil.	NF
1480 – 1500	100	**CLAYSTONE:** light brown, brown, minor medium gray, subblocky to subplaty in part, moderately soft to soft, very slightly calcareous, occasionally micromicaceous, slightly microcarbonaceous, locally smooth texture. **Acc:** traces dolomite & rare massive calcite.	NF
1500 – 1510	100	**CLAYSTONE:** brown, minor medium gray, subblocky to blocky in part, moderately soft, very slightly to non calcareous, slightly micromicaceous, very slightly microcarbonaceous, smooth texture. **Acc:** traces dolomite & massive calcite.	NF
1510 – 1540	100	**CLAYSTONE:** brown, grayish brown, minor medium gray, subblocky to subplaty, moderately soft, very slightly to non calcareous, occasionally micromicaceous, slightly microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	NF
1540 – 1570	100	**CLAYSTONE:** brown, grayish brown, minor medium gray, subblocky to blocky in part, soft, very slightly to non calcareous, occasionally micromicaceous, very slightly microcarbonaceous, smooth texture. **Acc:** traces dolomite & massive calcite.	NF
1570 – 1600	10 90	**SANDSTONE:** light greenish, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, calcareous, moderate friable, dirty, common with & green grain inclusions, very poor visual porosity. **CLAYSTONE:** brown, grayish brown, minor medium gray, subblocky to blocky in part, soft, very slightly to non calcareous, occasionally micromicaceous, very slightly microcarbonaceous, smooth texture. **Acc:** traces dolomite & massive calcite.	NF
1600 – 1630	60 40	**SANDSTONE:** light gray-gray, 100% very fine grain, well sorted, silty matrix, calcareous in part, friable to moderate hard, dirty, dark grain inclusions, very poor visual porosity, grading to siltstone. **CLAYSTONE:** brown, subblocky to blocky in part, soft, very slightly to non calcareous, occasionally micromicaceous, very slightly microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	NF
1630 – 1660	50 10 40	**SANDSTONE:** light gray-gray, 100% very fine grain, well sorted, silty matrix, calcareous in part, friable, dirty, dark grain inclusions, very poor visual porosity, grading to siltstone. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** light brown-brown, subblocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **Acc:** traces massive calcite.	NF
1660 – 1690	10 10 80	**SANDSTONE:** light gray-gray, 100% very fine grain, well sorted, silty matrix, calcareous in part, friable, dirty, dark grain inclusions, very poor visual porosity, grading to siltstone. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brown minor medium gray, subplaty to subblocky, soft, non calcareous, micromicaceous, microcarbonaceous, occasionally with laminar coal inclusion. **Acc:** traces massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
1690 – 1720	20 40 40	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 80% fine, traces medium grain, subangular to subrounded, fair sorted, occasionally dark grains. **SANDSTONE:** whitish, 60% very fine, 40% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous in part, friable, dark grain inclusion, poor visual porosity. **CLAYSTONE:** medium gray, subblocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
1720 – 1750	20 10 70	**SANDSTONE:** whitish, 60% very fine, 40% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous in part, friable, dark grain inclusion, poor visual porosity. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** medium gray, subblocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces dolomite.	NF
1750 – 1780	100	**CLAYSTONE:** medium gray, brownish gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces dolomite.	NF
1780 – 1810	10 90	**SANDSTONE:** light gray-gray, 100% very fine grain, subangular to subrounded, well sorted, very argillaceous matrix, slightly calcareous, friable, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** few dolomite.	NF
1810 – 1840	100	**CLAYSTONE:** medium gray, gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces dolomite.	NF
1840 – 1870	100	**CLAYSTONE:** medium gray, minor brownish gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** few dolomite.	NF
1870 – 1900	100	**CLAYSTONE:** gray, subblocky minor subplaty, soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces dolomite.	NF
1900 – 1930	100	**CLAYSTONE:** gray, subblocky minor subplaty, soft, non calcareous, micromicaceous, microcarbonaceous, few laminar coal inclusion. **Acc:** traces dolomite.	NF
1930 – 1960	100	**CLAYSTONE:** gray, subblocky minor blocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces dolomite.	NF
1960 – 1990	100	**CLAYSTONE:** gray, subblocky minor blocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces dolomite.	NF
1990 – 2020	100	**CLAYSTONE:** gray, subblocky minor blocky, soft, non calcareous, micromicaceous, microcarbonaceous, very rare with laminar coal inclusion. **Acc:** few dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
2020 – 2050	100	**CLAYSTONE:** gray, subblocky minor blocky, soft, non calcareous, micromicaceous, microcarbonaceous, very rare with laminar coal inclusion. **Acc:** few dolomite.	NF
2050 – 2080	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky occasionally subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, smooth texture. **Acc:** few dolomite.	NF
2080 – 2110	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky occasionally subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, smooth texture. **Acc:** few dolomite.	NF
2110 – 2140	100	**CLAYSTONE:** gray, subblocky minor subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbona-ceous, rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
2140 – 2170	100	**CLAYSTONE:** gray, subblocky minor subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbona-ceous, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite.	NF
2170 – 2200	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite.	NF
2200 – 2230	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbona- ceous, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite.	NF
2230 – 2260	100	**CLAYSTONE:** medium gray, brownish gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** few dolomite, traces massive calcite.	NF
2260 – 2290	100	**CLAYSTONE:** medium gray, brownish gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** few dolomite.	NF
2290 – 2320	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** few dolomite.	NF
2320 – 2350	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite.	NF
2350 – 2380	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite.	NF
2380 – 2410	100	**CLAYSTONE:** brown, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** few dolomite.	NF
2410 – 2440	100	**CLAYSTONE:** brown, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** few dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
2440 – 2470	100	**CLAYSTONE:** brown, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
2470 – 2500	10 20 70	**SANDSTONE:** light gray, grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, dirty in part, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, microcarbonaceous, scarce with laminar coal inclusion. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** traces dolomite, calcite.	NF
CHACRA FM. AT 2500'			
2500 – 2530	10 10 80	**SANDSTONE:** light gray, grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, dirty in part, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, microcarbonaceous, scarce with laminar coal inclusion. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** traces massive calcite.	NF
2530 – 2560	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces massive calcite.	NF
2560 – 2590	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** traces massive calcite, dolomite.	NF
2590 – 2620	100	**CLAYSTONE:** medium gray, gray, brownish gray, subblocky to subplaty, soft occasionally moderate firm, non calcareous, micromicaceous, microcarbonaceous, with laminar coal inclusion. **Acc:** few dolomite.	NF
2620 – 2650	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** few dolomite.	NF
2650 – 2680	10 90	**SILTSTONE:** gray, blocky, very soft to soft, non calcareous, very micromicaceous, microcarbonaceous, locally with laminar coal inclusion. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
2680 – 2710	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, soft occasionally very soft, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **Acc:** traces dolomite, massive calcite.	NF
2710 – 2740	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky minor subplaty, soft occasionally moderate firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** few dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
2740 – 2770	10 90	**SILTSTONE:** gray, blocky, soft, non calcareous, very micro micaceous, microcarbonaceous. **CLAYSTONE:** gray, minor brownish gray, subblocky minor blocky, soft very minor moderate firm, non calcareous, very micro micaceous, microcarbonaceous, silty. **Acc:** few dolomite.	NF
2770 – 2800	10 90	**SANDSTONE:** grayish white, 100% very fine grains, subrounded, very well sorted, argillaceous matrix, calcareous, moderately friable, occasionally hard, slightly dirty, with dark & traces green grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately soft to occasionally firm, non calcareous, micromicaceous, locally microcarbonaceous, silty in part, rare with laminar coal inclusion. **Acc:** few dolomite & traces massive calcite.	NF
2800 – 2830	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately soft to firm in part, non calcareous, micromicaceous, occasionally microcarbonaceous, slightly silty, rare with laminar coal inclusion. **Acc:** few dolomite.	NF
2830 – 2860	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately soft to firm in part, non calcareous, micromicaceous, occasionally microcarbonaceous, slightly rough surface, rare with laminar coal inclusion. **Acc:** few dolomite & rare glauconite.	NF
2860 – 2890	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately soft, occasionally firm, non calcareous, micromicaceous, slightly microcarbonaceous, slightly rough surface, silty in part, rare with laminar coal inclusion. **Acc:** few dolomite, traces massive calcite & rare glauconite.	NF
2890 – 2920	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately soft, occasionally firm, non calcareous, micromicaceous, slightly microcarbonaceous, slightly rough surface, few with laminar coal inclusion. **Acc:** few dolomite & traces massive calcite.	NF
2920 – 2950	100	**CLAYSTONE:** medium gray, brownish gray, subblocky, soft, non calcareous, very micromicaceous, occasionally microcarbonaceous, slightly rough surface, rare with laminar coal inclusion. **Acc:** few dolomite & massive calcite.	NF
2950 – 2980	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft to very soft, non calcareous, very micromicaceous, occasionally micro carbonaceous, slightly rough surface. **Acc:** few dolomite.	NF
2980 – 3010	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft to very soft, non calcareous, very micromicaceous, occasionally micro carbonaceous, slightly rough surface, silty in part. **Acc:** traces dolomite & massive calcite.	NF
3010 – 3040	100	**CLAYSTONE:** gray, brownish gray, minor light brown, subblocky to subplaty, soft, non calcareous, very micromicaceous, occasionally microcarbonaceous, slightly rough surface. **Acc:** traces dolomite & massive calcite.	NF
3040 – 3070	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, slightly firm, non calcareous, very micromicaceous, micro carbonaceous, slightly rough surface, occasionally silty. **Acc:** traces dolomite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
3070 – 3100	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, slightly firm, non calcareous, very micromicaceous, microcarbonaceous, slightly rough surface, occasionally silty. **Acc:** few dolomite.	NF
3100 – 3130	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty in part, moderately soft, non calcareous, very micromicaceous, micro-carbonaceous, smooth texture, rare with laminar coal. **Acc:** few dolomite & traces massive calcite.	NF
3130 – 3160	100	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty in part, moderately soft to soft, non calcareous, very micromicaceous, micro-carbonaceous, smooth texture, rare with laminar coal. **Acc:** few dolomite & traces massive calcite.	NF
3160 – 3190	100	**CLAYSTONE:** gray, minor brownish gray, subblocky minor blocky, moderately soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, rare with laminar coal. **Acc:** some dolomite & rare massive calcite.	NF
3190 – 3220	100	**CLAYSTONE:** gray, brown, brownish gray, subblocky to subplaty, moderately soft to soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, few with laminar coal. **Acc:** few dolomite & traces massive calcite.	NF
3220 – 3250	100	**CLAYSTONE:** gray, brown, brownish gray, subblocky to subplaty, soft, non calcareous, occasionally very micromicaceous, locally microcarbonaceous, smooth texture, few with laminar coal. **Acc:** few dolomite & traces massive calcite.	NF
3250 – 3280	10 90	**SILTSTONE:** light gray, gray, subblocky to blocky, very slightly calcareous, soft, micromicaceous, microcarbonaceous, locally sandy **CLAYSTONE:** gray, brown, brownish gray, subblocky to subplaty, soft, non calcareous, occasionally very micromicaceous, locally microcarbonaceous, smooth texture, few with laminar coal. **Acc:** traces massive calcite.	NF
3280 – 3310	10 90	**SANDSTONE:** light grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, slightly dirty, occasionally micaceous, with laminar coal & dark grain inclusions, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, some with laminar coal. **Acc:** traces massive calcite.	NF
3310 – 3340	10 90	**SANDSTONE:** light grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, slightly dirty, occasionally micaceous, with laminar coal & dark grain inclusions, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, some with laminar coal. **Acc:** traces dolomite, massive calcite.	NF
3340 – 3370	10 90	**SANDSTONE:** light grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, slightly dirty, occasionally micaceous, with laminar coal & dark grain inclusions, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, some with laminar coal. **Acc:** traces dolomite, massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
3370 – 3400	10 90	**SANDSTONE:** light grayish white, occasionally grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable, slightly dirty, occasionally micaceous, with laminar coal & dark grain inclusions, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, soft, non calcareous, very micromicaceous, locally microcarbonaceous, smooth texture, some with laminar coal. **Acc:** traces dolomite.	NF
3400 – 3430	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, soft, non calcareous, very micromicaceous, microcarbonaceous, smooth texture, locally silty. **Acc:** traces dolomite.	NF
3430 – 3460	100	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally with laminar coal inclusion. **Acc:** traces dolomite, massive calcite.	NF
3460 – 3490	10 90	**SANDSTONE:** whitish, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, friable, dark grain inclusions, poor visual porosity. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, silty, rare with laminar coal inclusion. **Acc:** traces dolomite, massive calcite.	NF
3490 – 3520	10 90	**SILTSTONE:** gray, subblocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally with laminar coal inclusion. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, silty, rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
3520 – 3550	10 90	**SILTSTONE:** gray, subblocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally with laminar coal inclusion. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, silty, rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
3550 – 3580	20 80	**SILTSTONE:** gray, subblocky, soft to moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally with laminar coal inclusion. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, soft & moderate firm, non calcareous, micromicaceous, microcarbonaceous, silty, very rare with laminar coal inclusion. **Acc:** traces dolomite.	NF
3580 – 3610	TR 10 90	**SANDSTONE:** slightly grayish white, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, very slightly calcareous, friable, dark grain inclusion, poor visual porosity. **SILTSTONE:** gray, subblocky to blocky, moderate firm, non calcareous, very micromicaceous, microcarbonaceous. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, soft & moderate firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** traces dolomite, massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		RIO BRAVO FM AT 3610'	
3610 – 3640	10 20 70	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 70% fine, 10% medium grain, subangular to subrounded, fair sorted, occasionally dark grains. **SANDSTONE:** white, minor hyaline white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, clean, non calcareous, friable minor very friable, occasionally dark grain inclusion, poor to fair visual porosity. **FLUOR:** bright slightly yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** gray, slightly brownish gray, subblocky, minor subplaty, soft & moderate firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces dolomite, massive calcite.	15%
3640 – 3670	10 20 70	**SAND:** hyaline, white, translucent, quartzose, 40% fine, 40% medium, 20% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains. **SANDSTONE:** white, hyaline white, 40% very fine, 50% fine, 10% medium grain, subrounded, fair sorted, clean, non calcareous, friable, occasionally dark grain inclusion, poor to fair visual porosity. **FLUOR:** bright slightly yellowish white natural fluorescence, moderately fast moderately strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** gray, brownish gray, subblocky, minor subplaty, soft, moderately firm in part, non calcareous, micromicaceous, micro-carbonaceous, locally silty. **Acc:** traces dolomite, massive calcite.	10%
3670 – 3700	20 50 30	**SAND:** hyaline, white, translucent, quartzose, 50% fine, 40% medium, 10% coarse grain, subangular to subrounded, fair sorted, with dark & light green grains. **SANDSTONE:** whitish, minor light grayish white, 40% very fine, 40% fine, 20% medium grain, mainly subrounded, fairly sorted, clean, sandy matrix, non calcareous, moderately friable, occasionally dark & green grain inclusion, poor to fair visual porosity. **FLUOR:** bright light yellowish white natural fluorescence, fast strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, slightly firm, non calcareous, occasionally micromicaceous, slightly microcarbonaceous, smooth texture. **Acc:** traces dolomite, massive calcite.	50%
3700 – 3730	10 50 40	**SAND:** hyaline, white, translucent, quartzose, 40% fine, 50% medium, 10% coarse grain, subangular to subrounded, fair sorted, with dark & light green grains. **SANDSTONE:** light grayish white, minor whitish, 50% very fine, 40% fine, 10% medium grain, subrounded, fairly sorted, slightly clean, silty matrix, non calcareous, moderately hard, occasionally dark & green grain inclusion, poor visual porosity. **FLUOR:** bright light yellowish white natural fluorescence, fast strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, slightly firm, non calcareous, occasionally micromicaceous, slightly microcarbonaceous, smooth texture. **Acc:** few massive calcite, traces dolomite	50%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
3730 – 3760	10 40 50	**SAND:** hyaline, white, translucent, quartzose, 70% fine, 30% medium grain, subangular to subrounded, well sorted, with dark & light green grains. **SANDSTONE:** light grayish white, minor whitish, 50% very fine, 40% fine, 10% medium grain, subrounded, fairly sorted, slightly clean, silty matrix, non calcareous, moderately hard, occasionally dark & green grain inclusion, poor visual porosity. **FLUOR:** bright light yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, slightly firm, non calcareous, occasionally micromicaceous, slightly microcarbonaceous, smooth texture. **Acc:** traces dolomite, massive calcite.	30%
3760 – 3790	10 40 50	**SAND:** hyaline, white, translucent, quartzose, 50% very fine, 40% fine, 10% medium grain, subangular to subrounded, well sorted, some with dark grains. **SANDSTONE:** light grayish white, minor whitish, 50% very fine, 50% fine grain, subrounded, well sorted, slightly clean, silty matrix, non calcareous, moderately hard, some with dark grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, slightly firm, non calcareous, micromicaceous, slightly micro-carbonaceous, traces with laminar coal inclusions. **Acc:** traces dolomite, massive calcite.	30%
3790 – 3820	10 30 60	**SAND:** hyaline, white, translucent, quartzose, 40% very fine, 50% fine, 10% medium grain, subangular to subrounded, fairly sorted, some with dark grains. **SANDSTONE:** light grayish white, minor whitish, 40% very fine, 60% fine grain, subrounded, well sorted, slightly clean, silty matrix, non calcareous, slightly hard, some with dark grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, slightly firm, non calcareous, micromicaceous, slightly micro-carbonaceous, traces with laminar coal inclusions. **Acc:** traces massive calcite.	30%
3820 – 3850	50 50	**SANDSTONE:** light grayish white, grayish white, 50% very fine, 40% fine, 10% medium grain, subrounded, fairly sorted, argillaceous matrix, calcareous cement, slightly friable, some with dark grain & few coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring. **CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, occasionally subplaty, moderately soft to firm in part, non calcareous, micromicaceous, slightly microcarbonaceous, locally carbonaceous. **Acc:** some massive calcite, traces coal.	20%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
3850 – 3880	20	**SANDSTONE:** light grayish white, grayish white, 60% very fine, 40% fine grain, subrounded, well sorted, argillaceous matrix, calcareous cement, slightly friable, some with dark grain & few coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong stream milky white cut, yellowish white residual ring.	10%
	10	**SILTSTONE:** light gray, gray, subblocky, moderately soft, slightly calcareous, micromicaceous, slightly microcarbonaceous, sandy.	
	70	**CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, minor subplaty, moderately soft to firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally carbonaceous. **Acc:** some massive calcite, traces coal.	
3880 – 3910	10	**SANDSTONE:** light grayish white, grayish white, 80% very fine, 20% fine grain, subrounded, well sorted, argillaceous matrix, calcareous cement, slightly friable, some with dark grain & few coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong stream milky white cut, yellowish white residual ring.	TR
	10	**SILTSTONE:** light gray, gray, subblocky, moderately soft, slightly calcareous, micromicaceous, slightly microcarbonaceous, sandy.	
	80	**CLAYSTONE:** brown, grayish brown, minor gray, subblocky to subplaty, soft, non calcareous, occasionally very micromicaceous, slightly microcarbonaceous, few with laminar coal inclusions. **Acc:** traces massive calcite, dolomite & rare coal.	
3910 – 3940	30	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 60% fine, 20% medium grain, subangular to subrounded, fair sorted, occasionally dark grains	5%
	30	**SANDSTONE:** white, occasionally slightly grayish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, clean in part, very calcareous, friable occasionally very friable, dark grain inclusion, poor visual porosity. **FLUOR:** slightly bright slightly yellowish white natural fluorescence, slow weak stream milky white cut, yellowish residual ring.	
	40	**CLAYSTONE:** gray, brownish gray, subblocky to subplaty, moderately soft to soft, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusions. **Acc:** few dolomite, traces massive calcite, shell fragments, massive pyrite.	
3940 – 3970	10	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 50% fine, 20% medium, 10% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains	15%
	50	**SANDSTONE:** white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, clean, non calcareous, friable minor very friable, some micaceous, dark grain inclusion, poor to fair visual porosity. **FLUOR:** bright slightly yellowish white natural fluorescence, moderate fast moderate strong stream milky white cut, yellowish white residual ring.	
	40	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm, non calcareous, micromicaceous, minor microcarbonaceous, smooth texture. **Acc:** traces dolomite, coal.	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
3970 – 4000	70 30	**SANDSTONE:** light gray, 100% very fine grain, well sorted, silty matrix, slightly calcareous, friable & moderate hard, dirty, occasionally micaceous, some with laminar coal & dark grain inclusion, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm, non calcareous, micromicaceous, minor microcarbonaceous, smooth texture. **Acc:** traces shell fragment, massive calcite.	NF
4000 – 4030	50 50	**SANDSTONE:** light gray, minor gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, friable to moderate hard, dirty, micaceous, scarce with laminar coal & dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbo-naceous, some with laminar coal inclusion. **Acc:** traces shell fragment, dolomite.	NF
4030 – 4060	60 40	**SANDSTONE:** white, slightly grayish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, mainly clean, calcareous in part, friable, micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbo-naceous, some with laminar coal inclusion. **Acc:** traces massive calcite.	NF
4060 – 4075	20 60 20	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 60% fine, 20% medium, traces coarse grain, subangular to subrounded, fair sorted, occasionally dark grains **SANDSTONE:** white, minor slightly grayish white, 70% very fine, 30% fine, traces medium grain, subangular to subrounded, well sorted, clean in part, calcareous, friable very minor moderate hard, micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbo-naceous, some with laminar coal inclusion. **Acc:** traces massive calcite, dolomite.	NF
4075 – 4090	40 60	**SANDSTONE:** white, minor slightly grayish white, 50% very fine, 50% fine grain, subangular to subrounded, well sorted, clean in part, calcareous, friable very minor moderate hard, micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbo-naceous, some with laminar coal inclusion. **Acc:** few massive calcite.	NF
4090 – 4120	30 10 60	**SANDSTONE:** whitish, minor slightly grayish white, 50% very fine, 50% fine grain, subangular to subrounded, well sorted, clean in part, calcareous, friable very minor moderate hard, micaceous, dark grain inclusion, poor visual porosity. **SILTSTONE:** light gray, gray, subblocky, moderate firm, non calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbo-naceous, some with laminar coal inclusion. **Acc:** few massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
4120 – 4150	20 20 60	**SANDSTONE:** whitish, minor slightly grayish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, clean in part, calcareous, friable very minor moderate hard, micaceous, dark grain inclusion, poor visual porosity. **SILTSTONE:** light gray, gray, subblocky, moderate firm, non calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** brownish gray, minor gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** few massive calcite.	 NF
4150 – 4180	20 80	**SANDSTONE:** light grayish white, minor whitish, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous in part, friable minor moderate hard, occasionally micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** brownish gray, minor gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** few massive calcite.	 NF
4180 – 4210	10 90	**SANDSTONE:** light grayish white, 100% very fine grain, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderate hard, occasionally micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** brownish gray, minor gray, subblocky to blocky, moderate firm minor soft, non calcareous, very micromicaceous, microcarbonaceous, some with laminar coal inclusion. **Acc:** few massive calcite, traces dolomite.	 NF
4210 – 4230	40 60	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, well sorted, slightly argillaceous matrix, very calcareous, friable occasionally moderate hard, some dirty, micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** gray minor brown, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, minor microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	 NF
4230 – 4240	10 90	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, well sorted, slightly argillaceous matrix, very calcareous, friable occasionally moderate hard, some dirty, micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** brownish gray minor minor gray, subblocky to blocky, soft to moderate firm, non calcareous, micromicaceous, minor microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	 NF
4240 – 4270	20 80	**SANDSTONE:** light grayish white, minor whitish, 80% very fine, 20% fine grain, subrounded, well sorted, silty matrix, calcareous cement, moderately friable, locally clean, some with dark & green grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty in part, moderately soft, very slightly to non calcareous, micromicaceous, occasionally microcarbonaceous, smooth texture. **Acc:** traces dolomite, massive calcite	 5%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
4270 – 4300	50 10 40	**SANDSTONE:** light grayish white, minor whitish, 80% very fine, 20% fine grain, subrounded, well sorted, silty matrix, calcareous cement, moderately friable, locally clean, some with dark & green grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring. **SILTSTONE:** light gray, gray, subblocky, moderate soft to firm, slightly calcareous, micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty in part, moderately soft, very slightly to non calcareous, micromicaceous, occasionally microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	10%
4300 – 4330	50 10 40	**SANDSTONE:** light grayish white, whitish, 80% very fine, 20% fine grain, subrounded, well sorted, silty matrix, calcareous cement, moderately friable, locally clean, some with dark & green grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring. **SILTSTONE:** light gray, gray, subblocky, moderate soft to firm, slightly calcareous, micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** brownish gray, medium gray, brown, subblocky to blocky, slightly soft to firm in part, very slightly to non calcareous, micromicaceous, occasionally microcarbonaceous, rare with laminar coal inclusions, smooth texture. **Acc:** traces massive calcite.	5%
4330 – 4360	30 20 50	**SANDSTONE:** grayish white, 80% very fine, 20% fine grain, subrounded, well sorted, argillaceous matrix in part, calcareous cement, moderately friable to hard in part, some with dark grain & coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring. **SILTSTONE:** light gray, gray, subblocky, moderate soft to firm, slightly calcareous, micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky, subplaty in part, slightly soft, non calcareous, very micromicaceous, occasionally microcarbonaceous, moderately rough surface. **Acc:** traces dolomite & massive calcite.	5%
4360 – 4390	20 20 60	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous cement, slightly friable to hard, some with dark grain & coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring. **SILTSTONE:** light gray, gray, subblocky, moderate soft to firm, slightly calcareous, micromicaceous, slightly microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky, subplaty in part, slightly soft, non calcareous, very micromicaceous, occasionally microcarbonaceous, moderately rough surface. **Acc:** traces massive calcite & rare pyrite.	TR
4390 – 4420	20	**SANDSTONE:** grayish white, light gray, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, slightly calcareous	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		cement, slightly friable to hard, slightly dirty, some with dark grain & few coal inclusion, poor to very poor visual porosity.	
	30	**SILTSTONE:** gray, brownish gray, subblocky, moderately soft to firm, very slightly calcareous, micromicaceous, slightly micro carbonaceous with coal inclusions.	NF
	50	**CLAYSTONE:** brown, brownish gray, minor gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, occasionally microcarbonaceous, locally carbonaceous, moderately rough surface.	
		Acc: traces dolomite.	
4420 – 4450	30	**SANDSTONE:** grayish white, light gray, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, slightly calcareous cement, slightly friable to hard, slightly dirty, some with dark grain & few coal inclusion, poor to very poor visual porosity.	
	20	**SILTSTONE:** gray, brownish gray, subblocky, moderately soft to firm in part, slightly calcareous, occasionally micromicaceous, slightly microcarbonaceous with coal inclusions.	NF
	50	**CLAYSTONE:** brown, brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, occasionally microcarbonaceous, locally carbonaceous, moderately rough surface.	
		Acc: traces dolomite & massive calcite.	
4450 – 4480	20	**SANDSTONE:** grayish white, light gray, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, slightly calcareous cement, slightly friable to hard, slightly dirty, some with dark grain & few coal inclusion, poor to very poor visual porosity.	
	30	**SILTSTONE:** gray, brownish gray, subblocky, moderately firm, very slightly calcareous, micromicaceous, slightly microcarbonaceous with coal inclusions, sandy.	NF
	50	**CLAYSTONE:** brownish gray, minor medium gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, moderately rough surface.	
		Acc: traces dolomite & massive calcite.	
4480 – 4510	30	**SANDSTONE:** light grayish white, 100% very fine grain, sub rounded, very well sorted, argillaceous matrix, slightly calcareous cement, slightly friable to hard, micaceous, some with dark grain & few coal inclusion, poor visual porosity.	
		FLUOR: slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring.	5%
	30	**SILTSTONE:** gray, brownish gray, subblocky, moderately firm, very slightly calcareous, micromicaceous, slightly microcarbonaceous with coal inclusions, sandy.	
	40	**CLAYSTONE:** brownish gray, minor medium gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, moderately rough surface.	
		Acc: traces dolomite & massive calcite.	
4510 – 4540	10	**SAND:** hyaline, white, transparent, quartzose, 80% fine, 20% medium, traces coarse grain, subangular to subrounded, fair sorted, occasionally dark grains	
	30	**SANDSTONE:** light grayish white, grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix in part, calcareous cement, moderately friable to hard, micaceous, slightly clean, some with dark grain & few coal inclusion, poor visual	5%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring.	
	20	**SILTSTONE:** gray, brownish gray, subblocky, moderately firm, very slightly calcareous, micromicaceous, slightly microcarbonaceous with coal inclusions, sandy.	
	40	**CLAYSTONE:** brownish gray, minor medium gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, slightly microcarbonaceous, moderately rough surface, silty in part. **Acc:** traces dolomite & massive calcite.	
4540 – 4570	TR	**SAND:** hyaline, white, transparent, quartzose, 80% fine, 20% medium, traces coarse grain, subangular to subrounded, fair sorted, occasionally dark grains	
	30	**SANDSTONE:** light grayish white, grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, calcareous cement, moderately friable to hard, micaceous, slightly clean, some with dark grain & few coal inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, slightly fast slightly strong streaming milky white cut, slightly yellowish residual ring.	TR
	20	**SILTSTONE:** gray, brownish gray, subblocky, moderately firm, very slightly calcareous, micromicaceous, slightly microcarbonaceous, with coal inclusions, sandy.	
	50	**CLAYSTONE:** brownish gray, minor medium gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, slightly microcarbonaceous, moderately rough surface, silty in part. **Acc:** traces dolomite & massive calcite.	
4570 – 4600	20	**SANDSTONE:** light grayish white, grayish white, 100% very fine grain, subrounded, very well sorted, silty to argillaceous matrix in part, occasionally calcareous cement, moderately friable to hard, slightly clean, some with dark grain inclusion, poor visual porosity.	
	20	**SILTSTONE:** light gray, gray, subblocky, moderately firm, slightly calcareous, micromicaceous, slightly microcarbonaceous, sandy.	NF
	60	**CLAYSTONE:** medium gray, brownish gray, subblocky to blocky, locally subplaty, slightly firm, non calcareous, micromicaceous, slightly microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite.	
4600 – 4630	30	**SAND:** hyaline, white, translucent, quartzose,10% very fine, 50% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains	
	30	**SANDSTONE:** white, hyaline white, 40% very fine, 50% fine, 10% medium grain, subrounded, well sorted, silty to sandy matrix, calcareous cement, friable, clean, some with dark grain inclusion, poor to fair visual porosity.	NF
	40	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, rare with laminar coal inclusions. **Acc:** traces shell fragments, coal.	
4630 – 4660	70	**SANDSTONE:** white, light grayish white, 50% very fine, 50% fine grain, subrounded, well sorted, slightly argillaceous matrix, non calcareous, moderately hard, micaceous, some with dark grain inclusion, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence,slow	5%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		weak streaming slightly milky white cut, yellowish residual ring.	
	30	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, rare with laminar coal inclusions.	
		Acc: traces dolomite & coal.	
4660 – 4690	50	**SANDSTONE:** light grayish white, grayish white, 80% very fine, 20% fine grain, subrounded, well sorted, argillaceous matrix, calcareous cement in part, friable to moderately hard, micaceous, slightly dirty, rare with dark grain inclusion, poor visual porosity.	NF
	50	**CLAYSTONE:** ray, brownish gray, subblocky, minor blocky, firm, non calcareous, very micromicaceous, slightly microcarbonaceous, locally silty.	
		Acc: traces massive calcite.	
4690 – 4720	60	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, non calcareous, friable to moderately hard, micaceous, slightly dirty, rare with dark grain inclusion, poor visual porosity.	NF
	40	**CLAYSTONE:** gray, brownish gray, subblocky, minor blocky, moderately firm, non calcareous, micromicaceous, slightly micro carbonaceous, locally silty.	
		Acc: traces massive calcite.	
4720 – 4750	40	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, non calcareous, friable to moderately hard, micaceous, slightly dirty, rare with dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, subblocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous with coal inclusions, sandy.	NF
	50	**CLAYSTONE:** brownish gray, gray, subblocky, minor subplaty, soft to moderately firm, non calcareous, micromicaceous, slightly micro carbonaceous, slightly rough surface.	
		Acc: traces massive calcite.	
4750 – 4780	30	**SANDSTONE:** grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, non calcareous, friable to moderately hard, micaceous, slightly dirty, rare with dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, subblocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous with coal inclusions, sandy.	NF
	60	**CLAYSTONE:** brown, brownish gray, subblocky to subplaty, soft to moderately firm, non calcareous, micromicaceous, slightly micro carbonaceous, slightly rough surface, locally silty.	
		Acc: traces massive calcite.	
4780 – 4810	30	**SANDSTONE:** light gray, grayish white, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard, micaceous, dirty, with dark grain inclusion, very poor visual porosity.	
	70	**CLAYSTONE:** brown, brownish gray, minor gray, subblocky to subplaty, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly rough surface, locally silty.	NF
		Acc: traces massive calcite.	
4810 – 4830	20	**SANDSTONE:** light gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard, micaceous, dirty, dark grain inclusion, very poor visual porosity.	
	80	**CLAYSTONE:** brownish gray, minor gray, subblocky to subplaty, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly rough surface, locally silty.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
4830 – 4840	40	**SANDSTONE:** light gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard, micaceous, dirty, with dark grain inclusion, very poor visual porosity.	
	60	**CLAYSTONE:** brownish gray, minor gray, subblocky to subplaty in part, moderately firm occasionally firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
4840 – 4870	30	**SANDSTONE:** grayish white, minor light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, moderately hard minor friable, slightly dirty, occasionally micaceous, very rare with laminar coal & dark grain inclusion, poor visual porosity.	NF
	70	**CLAYSTONE:** brownish gray, gray, subblocky to subplaty, moderately firm, non calcareous, micromicaceous, minor micro carbonaceous, locally silty. **Acc:** few dolomite.	
4870 – 4890	20	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard minor friable, dirty, micaceous, dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, blocky, moderate firm, non calc, micromicaceous, locally microcarbonaceous.	NF
	70	**CLAYSTONE:** brownish gray, subblocky to subplaty, soft & moderately firm, non calcareous, micromicaceous, minor micro carbonaceous, locally silty. **Acc:** traces massive calcite.	
4890 – 4900	30	**SANDSTONE:** light gray, 100% very fine grain, subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, with dark grain inclusion, very poor visual porosity.	
	70	**CLAYSTONE:** brownish gray, subblocky to subplaty, soft to moderately firm, non calcareous, micromicaceous, minor micro carbonaceous, slightly rough surface, locally silty. **Acc:** traces massive calcite.	NF
4900 – 4930	20	**SANDSTONE:** light gray, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, non calcareous, moderately hard, minor friable, dirty, micaceous, with dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, subblocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, sandy.	NF
	70	**CLAYSTONE:** brownish gray, subblocky to subplaty, soft to moderately firm, non calcareous, micromicaceous, slightly micro carbonaceous, slightly rough surface. **Acc:** traces massive calcite.	
4930 – 4950	20	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard minor friable, dirty, occasionally micaceous, dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous.	NF
	70	**CLAYSTONE:** brownish gray, minor gray, subblocky minor subplaty, soft to moderately firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite.	
4950 – 4960	30	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard minor friable, dirty, occasionally micaceous, dark grain inclusion, very poor visual	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		porosity.	NF
	70	**CLAYSTONE:** brownish gray, minor gray, subblocky to subplaty in part, soft to moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, silty. **Acc:** traces massive calcite.	
4960 – 4980	20	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard minor friable, dirty, micaceous, dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous.	NF
	70	**CLAYSTONE:** brownish gray, subblocky minor subplaty, moderately firm occasionally soft, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty. **Acc:** traces massive calcite.	
4980 – 5000	20	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard minor friable, dirty, micaceous, dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous.	NF
	70	**CLAYSTONE:** brownish gray, subblocky minor subplaty, moderately firm occasionally soft, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty. **Acc:** traces massive calcite.	
5000 – 5020	10	**SANDSTONE:** light gray, grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, calcareous cement, moderately friable, slightly dirty, occasionally micaceous, with dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, light gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous, sandy.	NF
	80	**CLAYSTONE:** brownish gray, subblocky to subplaty, moderately soft to soft, non calcareous, micromicaceous, occasionally micro carbonaceous, locally rough surface. **Acc:** traces dolomite.	
5020 – 5050	10	**SANDSTONE:** light gray, grayish white, 100% very fine grain, subrounded, very well sorted, argillaceous matrix, calcareous cement, moderately friable, moderately dirty, micaceous, with dark grain inclusion, very poor visual porosity.	
	10	**SILTSTONE:** gray, light gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous, rare with coal inclusions, sandy.	NF
	80	**CLAYSTONE:** brownish gray, subblocky to subplaty, moderately soft to soft, non calcareous, micromicaceous, occasionally micro-carbonaceous, smooth texture. **Acc:** traces dolomite & massive calcite.	
5050 – 5080	20	**SANDSTONE:** light gray, occasionally grayish white, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderate hard, dirty, micaceous, dark grain inclusion, poor visual porosity.	
	10	**SILTSTONE:** gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous, rare with coal inclusions.	NF
	70	**CLAYSTONE:** brownish gray, gray, subblocky to subplaty in part, moderately soft, non calcareous, micromicaceous, occasionally microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5080 – 5110	20 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** brownish gray, gray, subblocky to blocky, moderate firm, non calcareous, micromicaceous, microcarbonaceous, silty in part . **Acc:** traces massive calcite.	NF
5110 – 5120	20 TR 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderate hard to hard, dirty, locally micaceous, with dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, light gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky , moderately soft, non calcareous, micromicaceous, slightly microcarbonaceous, smooth texture. **Acc:** traces massive calcite.	NF
5120 – 5130	20 10 70	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderate hard, dirty, locally micaceous, with dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky , moderately soft, non calcareous, micromicaceous, slightly microcarbonaceous.	NF
5130 – 5140	10 10 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderate hard, dirty, locally micaceous, with dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, light gray, blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky , moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty. **Acc:** traces dolomite.	NF
5140 – 5150	10 20 70	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderate hard, dirty, micaceous, with dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky , moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty. **Acc:** traces dolomite.	NF
5150 – 5160	20 TR 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. Acc: traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5160 – 5170	20 10 70	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderate hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
5170 – 5180	10 10 80	**SANDSTONE:** gray, minor light gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderate hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, subblocky to blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, occasionally microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
5180 – 5200	20 TR 80	**SANDSTONE:** grayish white, 100% very fine grain, well sorted, slightly argillaceous matrix, very calcareous, moderately hard, occasionally micaceous, dark grain inclusion, poor visual porosity. **SILTSTONE:** gray, subblocky to blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, minor gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, occasionally microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
PALEGREDA FM. AT 5200'			
5200 – 5220	10 20 70	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard, dirty, occasionally micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, soft, very slightly calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
5220 – 5230	20 80	**SILTSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky minor subplaty, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5230 – 5250	10 10 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, subblocky to blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor brownish gray, subblocky minor subplaty, moderately firm occasionally soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5250 – 5270	10 90	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky minor subplaty, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces dolomite.	NF
5270 – 5280	10 10 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderate hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **SILTSTONE:** gray, blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky minor subplaty, moderately firm occasionally soft, non calcareous, micromicaceous, slightly microcarbonaceous. **Acc:** traces massive calcite.	NF
5280 – 5290	20 TR 80	**SANDSTONE:** white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, very calcareous, friable to moderate hard, dark grain inclusion, poor visual porosity. **SILTSTONE:** gray, blocky, moderately soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky minor subplaty, moderate firm minor soft, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5290 – 5300	10 90	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard occasionally hard, dirty, locally micaceous, dark grain inclusion, poor visual porosity. **CLAYSTONE:** brownish gray, gray subblocky to subplaty, moderately firm, non calcareous, micromicaceous, minor microcar-bonaceous, silty in part. **Acc:** traces massive calcite.	NF
5300 – 5310	20 10 70	**SANDSTONE:** grayish white, occasionally whitish, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, very calcareous, friable to moderately hard, dark grain inclusion, poor visual porosity. **SILTSTONE:** gray, blocky, moderately soft, very slightly calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** brownish gray, gray, subblocky minor subplaty, moderately firm occasionally soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5310 – 5330	10 90	**SANDSTONE:** gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces dolomite.	NF
5330 – 5340	10 90	**SILTSTONE:** gray, light gray, subblocky to blocky, soft, very slightly calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces dolomite, massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5340 – 5360	10 90	**SILTSTONE:** gray, light gray, subblocky to blocky, soft, very slightly calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5360 – 5380	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5380 – 5390	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5390 – 5410	30 70	**SILTSTONE:** gray, subblocky to blocky, moderate firm, very slightly calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5410 – 5420	40 60	**SILTSTONE:** gray, light gray, subblocky to blocky, moderate firm, very slightly calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5420 – 5430	20 80	**SILTSTONE:** gray, light gray, subblocky to blocky, moderate firm, very slightly calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5430 – 5450	30 70	**SILTSTONE:** gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, minor microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5450 – 5470	20 80	**SILTSTONE:** gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, minor microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5470 – 5480	10 90	**SILTSTONE:** gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, minor microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5480 – 5490	100	**CLAYSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5490 – 5510	10 90	**SILTSTONE:** gray, subblocky to blocky, soft occasionally moderate firm, non calcareous, micromicaceous, minor microcarbonaceous **CLAYSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, locally microcarbonaceous, silty, few with laminar coal inclusion. **Acc:** traces massive calcite.	NF
5510 – 5530	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty, few with laminar coal inclusion. **Acc:** traces massive calcite.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5530 – 5550	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5550 – 5570	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5570 – 5580	20 80	**SANDSTONE:** light grayish white, light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, moderate friable, dirty, with laminar coal and dark grain inclusion, poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** few massive calcite.	NF
5580 – 5590	TR 20 80	**SAND:** hyaline, white, quartzose, fine to medium grain, subangular to subrounded, well sorted, traces dark grain inclusion. **SANDSTONE:** light grayish white, light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, moderate friable, dirty, with dark & traces green grain inclusion, poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** few massive calcite.	NF
5590 – 5610	10 10 80	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, friable, dirty, with dark grain inclusion, very poor visual porosity **SILTSTONE:** light gray, gray, subblocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion, silty. **Acc:** traces massive calcite.	NF
5610 – 5620	10 90	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, friable occasionally moderate hard, dirty, with dark grain inclusion, very poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion, silty. **Acc:** few massive calcite.	NF
5620 – 5630	10 10 80	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, friable, dirty, with dark grain inclusion, very poor visual porosity **SILTSTONE:** light gray, gray, subblocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** few massive calcite, traces massive pyrite.	NF
5630 – 5640	10 20 70	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, friable, dirty, with dark grain inclusion, very poor visual porosity **SILTSTONE:** light gray, gray, subblocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** few massive calcite.	
5640 – 5650	10 90	**SILTSTONE:** light gray, subblocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5650 – 5670	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5670 – 5680	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, rare with laminar coal inclusion, silty. **Acc:** traces massive calcite.	NF
5680 – 5690	10 90	**SILTSTONE:** light gray, gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5690 – 5710	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, very rare with laminar coal inclusion, silty. **Acc:** traces massive calcite.	NF
5710 – 5730	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5730 – 5750	10 90	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, calcareous, moderate hard to friable, dirty, with dark grain inclusion, very poor visual porosity **CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5750 – 5770	10 90	**SILTSTONE:** light gray, gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, locally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5770 – 5790	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, occasionally microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5790 – 5800	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous, occasionally microcarbonaceous, silty. Acc: traces dolomite, massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5800 – 5820	10 90	**SILTSTONE:** light gray, gray, subblocky to blocky, moderate firm, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** few massive calcite.	NF
5820 – 5830	10 90	**SILTSTONE:** light gray, gray, subblocky to blocky, moderate firm, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** slightly brownish gray, minor gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite.	NF
5830 – 5840	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** slightly brownish gray, minor gray, subblocky to blocky, soft & moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
5840 – 5850	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite.	NF
5850 – 5860	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, very micromicaceous, minor microcarbonaceous, locally silty.	NF
5860 – 5870	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** traces massive calcite	NF
5870 – 5880	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** traces massive calcite	NF
5880 – 5890	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy.	NF
MOGOLLON FM AT 5890'			
5890 – 5900	50 50	**SANDSTONE:** white, 60 very fine, 40% fine, traces medium grain, subangular to subrounded, fair to well sorted, slightly clean, very calcareous, friable very minor moderate hard, dark grain inclusion, poor visual porosity & minor slightly creamish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly clean, very calcareous, friable to moderate hard, dark grain inclusion, poor visual porosity **FLUOR:** pale yellowish white natural fluorescence, slow weak stream milky white cut, yellowish white residual ring **CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** few massive calcite	5%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
5900 – 5910	60	**SANDSTONE:** white, 60% very fine, 40% fine, traces medium grain, subangular to subrounded, fair to well sorted, slightly clean, very calcareous, friable very minor moderate hard, dark grain inclusion, poor visual porosity & minor slightly creamish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly clean, very calcareous, friable to moderate hard, dark grain inclusion, poor visual porosity **FLUOR:** pale yellowish white natural fluorescence, slow weak stream milky white cut, yellowish white residual ring	5%
	40	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** few massive calcite	
5910 – 5920	20	**SANDSTONE:** white, 60% very fine, 40% fine, traces medium grain, subangular to subrounded, fair to well sorted, slightly clean, very calcareous, friable minor moderate hard, dark grain inclusion, poor visual porosity & minor slightly creamish white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly clean, very calcareous, friable to moderate hard, dark grain inclusion, poor visual porosity	NF
	80	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** traces shell fragments	
5920 – 5930	30	**SANDSTONE:** grayish white, 90% very fine, 10% fine grain, well sorted, argillaceous matrix, slightly calcareous, friable to moderate hard, slightly dirty, dark grain inclusion, poor visual porosity	NF
	10	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous.	
	60	**CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, very micromicaceous, minor microcarbonaceous, locally waxy. **Acc:** traces massive calcite	
5930 – 5940	40	**SANDSTONE:** slightly creamish white, white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly clean, very calcareous, friable occasionally moderate hard, dark grain inclusion, poor visual porosity **FLUOR:** pale yellowish white natural fluorescence, slow weak stream milky white cut, no residual ring	5%
	60	**CLAYSTONE:** brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, micromicaceous, minor micro-carbonaceous, slightly waxy. **Acc:** few massive calcite	
5940 – 5950	50	**SANDSTONE:** grayish white, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, friable, occasionally micaceous, dark grain inclusion, poor visual porosity	NF
	50	**CLAYSTONE:** brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, micromicaceous, minor micro-carbonaceous, slightly waxy. **Acc:** few massive calcite, traces shell fragments	
5950 – 5960	50	**SANDSTONE:** grayish white, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, friable, occasionally micaceous, dark grain	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		inclusion, poor visual porosity	
	50	**CLAYSTONE:** brownish gray, gray, subblocky minor blocky, moderately firm, non calcareous, micromicaceous, minor micro carbonaceous, slightly waxy. **Acc:** few massive calcite	
5960 – 5970	60	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, occasionally micaceous, dark grain inclusion, very poor visual porosity	NF
	40	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** few massive calcite	
5970 – 5980	60	**SANDSTONE:** white minor whitish, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly clean, very calcareous, friable, occasionally micaceous, dark grain inclusion, poor visual porosity **FLUOR:** slightly dull white natural fluorescence, slow weak stream slightly milky white crush cut, no residual ring.	10%
	40	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite	
5980 – 5990	80	**SANDSTONE:** slightly grayish white, whitish, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, friable & moderately hard, occasionally micaceous, rare with laminar coal & dark grain inclusion, poor visual porosity **FLUOR:** slightly dull white natural fluorescence, slow weak stream slightly milky white crush cut, whitish residual ring.	15%
	20	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite, massive pyrite	
5990 – 6000	80	**SANDSTONE:** slightly grayish white, whitish, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, friable & moderately hard, occasionally micaceous, rare with laminar coal & dark grain inclusion, poor visual porosity **FLUOR:** slightly dull white natural fluorescence, slow weak stream slightly milky white crush cut, whitish residual ring.	10%
	20	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty.	
6000 – 6010	80	**SANDSTONE:** grayish white, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, moderately hard, occasionally micaceous, rare with laminar coal, dark grain inclusion, poor visual porosity **FLUOR:** slightly dull white natural fluorescence, slow weak stream slightly milky white crush cut, whitish residual ring.	5%
	20	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6010 – 6020	40 10 50	**SANDSTONE:** grayish white, minor light gray, 100% very fine grain, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, occasionally micaceous, rare with laminar coal, dark grain inclusion, poor to very poor visual porosity **SILTSTONE:** gray, blocky, soft, non calcareous, micromicaceous, occasionally microcarbonaceous, locally with laminar coal inclusions. **CLAYSTONE:** slightly brownish gray, gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty. **Acc:** traces massive calcite	NF
6020 – 6030	80 20	**SANDSTONE:** white, 70% very fine, 30% fine grain, subangular to subrounded, well sorted, clean, calcareous, friable occasionally moderately hard, dark grains inclusions, fair visual porosity **FLUOR:** slightly bright white natural fluorescence, fast strong streaming milky white cut, yellowish white residual ring. **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty. **Acc:** traces massive calcite	30%
6030 – 6040	50 50	**SANDSTONE:** white same as above & grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, friable to moderately hard, micaceous, dark grains inclusions, poor visual porosity **FLUOR:** slightly bright white natural fluorescence, fast stream milky white cut, yellowish white residual ring. **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, micro carbonaceous, silty. **Acc:** traces massive calcite	15%
6040 – 6050	30 70	**SANDSTONE:** slightly grayish white, grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, moderately hard, micaceous, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, locally waxy **Acc:** traces massive calcite	NF
6050 – 6060	30 70	**SANDSTONE:** slightly grayish white, grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, moderately hard, micaceous, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky, minor blocky, moderately firm, minor firm, non calcareous, micromicaceous, minor microcarbonaceous, locally waxy **Acc:** few massive calcite	NF
6060 – 6080	50 50	**SANDSTONE:** grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, friable, micaceous, dark grain inclusion, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, occasionally silty **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6080 – 6090	30 70	**SANDSTONE:** slightly grayish white, grayish white, 100% very fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, friable & moderately hard, occasionally micaceous, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, occasionally silty **Acc:** few massive calcite	NF
6090 – 6100	40 60	**SANDSTONE:** light gray, 100% very fine grain, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard occasionally hard, slightly dirty, dark grains inclusions, micaceous inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** few massive calcite	NF
6100 – 6120	40 60	**SANDSTONE:** light gray, 100% very fine grain, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard occasionally hard, slightly dirty, dark grains inclusions, micaceous inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** few massive calcite	NF
6120 – 6130	TR 40 60	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 60% fine, 20% medium, traces coarse grains, subangular to subrounded, fair sorted, traces dark grains **SANDSTONE:** white, 60% very fine, 40% fine, traces medium grains, subangular to subrounded, fair to well sorted, slightly clean, calcareous, friable, dark grains inclusion, poor to fair visual porosity, & minor slightly grayish white, 70% very fine, 30% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, dark grains inclusions, poor visual porosity **FLUOR:** slightly bright white natural fluorescence, moderately fast moderately strong streaming milky white cut, yellowish white residual ring. **CLAYSTONE:** slightly brownish gray, subblocky minor blocky, soft & moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** few massive calcite	5%
6130 – 6140	70 30	**SANDSTONE:** slightly grayish white, grayish white, 90% very fine, 10% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, moderately hard, micaceous, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, subblocky, minor blocky, soft to moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** common massive calcite	NF
6140 – 6150	70 30	**SANDSTONE:** slightly grayish white, grayish white, 90% very fine, 10% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, moderately hard, micaceous, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky minor blocky,	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		soft to moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	
6150 – 6160	60 40	**SANDSTONE:** white, 70% very fine, 30% fine grains, subangular to subrounded, well sorted, slightly clean, very calcareous (mud support), moderately hard occasionally hard, dark grains inclusions, poor visual porosity & minor slightly grayish white, grayish white, 70% very fine, 30% fine grains, subangular to subrounded, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, dark grains inclusions, poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** common massive calcite	NF
6160 – 6170	60 40	**SANDSTONE:** grayish white, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, slightly calcareous, moderately hard occasionally hard, micaceous, slightly dirty, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6170 – 6180	60 40	**SANDSTONE:** light gray, occasionally grayish white, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard, dirty, micaceous, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** few massive calcite	NF
6180 – 6190	70 30	**SANDSTONE:** light gray minor grayish white, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard, dirty, micaceous, dark grains inclusions, poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, occasionally soft, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6190 – 6200	70 30	**SANDSTONE:** light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, some with laminar coal & dark grains inclusions, very poor to poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, occasionally soft, non calcareous, micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6200 – 6220	70 30	**SANDSTONE:** light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to friable, dirty, some with laminar coal inclusions, very poor to poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, micromicaceous, microcarbonaceous, silty **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6220 – 6230	50 50	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6230 – 6240	70 30	**SANDSTONE:** light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous, moderately hard to friable, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6240 – 6250	50 50	**SANDSTONE:** light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous, moderately hard to friable, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6250 – 6270	50 10 40	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **SILTSTONE:** gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6270 – 6280	60 10 30	**SANDSTONE:** light gray, occasionally gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **SILTSTONE:** gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** gray, subblocky minor blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty **Acc:** few massive calcite	NF
6280 – 6300	40 10 50	**SANDSTONE:** light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, calcareous, moderately hard, dirty, dark grains inclusions, very poor visual porosity **SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, microcarbonaceous, rare with laminar coal inclusion. **CLAYSTONE:** slightly brownish gray, gray, subblocky minor subplaty, moderately firm, non calcareous, micromicaceous, microcarbonaceous, silty **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6300 – 6310	20 10 70	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, very argillaceous matrix, slightly calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** slightly brownish gray, gray, subplaty to subblocky, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty **Acc:** traces massive calcite	NF
6310 – 6320	30 70	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, very argillaceous matrix, slightly calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty **Acc:** traces massive calcite	NF
6320 – 6330	20 80	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, very argillaceous matrix, slightly calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** gray, subplaty to subblocky, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty	NF
6330 – 6340	30 70	**SANDSTONE:** gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
SAN CRISTOBAL FM AT 6340'			
6340 – 6350	10 90	**SANDSTONE:** gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, occasionally firm, non calcareous, micromicaceous, microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
6350 – 6370	10 90	**SANDSTONE:** gray, 100% very fine grains, subangular to subrounded, well sorted, very argillaceous matrix, non calcareous, moderately hard occasionally hard, dirty, micaceous, dark grains inclusions, very poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm, occasionally firm, non calcareous, micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6370 – 6380	10	**SANDSTONE:** light gray, gray, 100% very fine grains, subangular to subrounded, well sorted, very argillaceous matrix, non calcareous, moderately hard, occasionally hard, dirty, micaceous, dark grains inclusions, very poor visual porosity	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
	90	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	
6380 – 6390	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly texture **Acc:** ----	NF
6390 – 6410	100	**CLAYSTONE:** gray, subblocky minor to subplaty, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces dolomite	NF
6410 – 6430	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly texture **Acc:** traces massive calcite	NF
6430 – 6450	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6450 – 6470	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture	NF
6470 – 6490	100	**CLAYSTONE:** gray, subblocky minor subplaty, moderately firm & soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6490 – 6500	100	**CLAYSTONE:** gray, subblocky minor subplaty, moderately firm and soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly texture **Acc:** traces dolomite	NF
6500 – 6510	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** ---	NF
6510 – 6520	100	**CLAYSTONE:** gray, dark in part, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6520 – 6530	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non to very slightly calcareous, very micromicaceous to micromicaceous, microcarbonaceous, silty **Acc:** traces massive calcite	NF
6530 – 6540	100	**CLAYSTONE:** gray, brownish gray in part, subblocky to blocky, occasionally subplaty, moderately firm to firm, non to very slightly calcareous, very micromicaceous to micromicaceous, microcarbonaceous, silty	NF
6540 – 6550	100	**CLAYSTONE:** gray, dark gray in part, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, silty in part	NF
6550 – 6560	100	**CLAYSTONE:** gray, subblocky to blocky, occasionally subplaty, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6560 – 6570	100	**CLAYSTONE:** gray, in part brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly texture	NF
6570 – 6580	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture	NF
6580 – 6600	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture	NF
6600 – 6620	100	**CLAYSTONE:** gray, subblocky minor subplaty, moderately firm minor soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture	NF
6620 – 6640	100	**CLAYSTONE:** gray, subplaty to subblocky, moderately firm to soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6640 – 6660	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm to soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture	NF
6660 – 6670	10 90	**SILTSTONE:** gray, subblocky, moderately firm, slightly calcareous, micromicaceous in part, microcarbonaceous **CLAYSTONE:** gray, subblocky to subplaty, moderately firm to soft, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6670 – 6690	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, non calcareous, micromicaceous, microcarbonaceous	NF
6690 – 6700	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, slightly calcareous, micromicaceous, microcarbonaceous **Acc:** traces massive calcite	NF
6700 – 6720	100	**CLAYSTONE:** gray, subblocky to subplaty, moderately firm, slightly calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
6720 – 6730	100	**CLAYSTONE:** gray, subplaty to subblocky, soft & moderately firm, non calcareous, micromicaceous minor very micromicaceous, microcarbonaceous, locally silty	NF
6730 – 6740	10 90	**SILTSTONE:** gray, subblocky, very soft to soft, non calcareous, micromicaceous, microcarbonaceous **CLAYSTONE:** gray, subplaty to subblocky, soft & moderately firm, non calcareous, micromicaceous minor very micromicaceous, microcarbonaceous, locally silty	NF
6740 – 6750	100	**CLAYSTONE:** gray, subblocky to subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6750 – 6760	100	**CLAYSTONE:** gray, subblocky to subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty	NF
6760 – 6780	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
6780 – 6800	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky to subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6800 – 6810	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky to subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
6810 – 6830	100	**CLAYSTONE:** brownish gray, minor gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous, microcarbonaceous, slightly smooth texture	NF
6830 – 6850	100	**CLAYSTONE:** brownish gray, occasionally gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	NF
6850 – 6870	100	**CLAYSTONE:** brownish gray, occasionally gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, locally microcarbonaceous, some slightly waxy.	NF
6870 – 6890	100	**CLAYSTONE:** brownish gray, occasionally gray, subblocky to subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, locally microcarbonaceous, some slightly waxy. **Acc:** traces massive calcite	NF
6890 – 6900	100	**CLAYSTONE:** brownish gray, occasionally gray, subblocky to subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, locally microcarbonaceous, some slightly waxy.	NF
6900 – 6920	100	**CLAYSTONE:** brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, very micromicaceous to micromicaceous, locally microcarbonaceous, locally silty. **Acc:** traces microfossils	NF
6920 – 6940	100	**CLAYSTONE:** brownish gray, occasionally gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, very rare with dusty pyrite agglomerate. **Acc:** traces massive calcite	NF
6940 – 6960	100	**CLAYSTONE:** brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, very rare with dusty pyrite agglomerate. **Acc:** traces massive calcite	NF
6960 – 6970	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, very rare with dusty pyrite agglomerate. **Acc:** traces massive calcite	NF
6970 – 6980	100	**CLAYSTONE:** brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, locally silty.	NF
6980 – 7000	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, moderately firm to firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, locally silty.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7000 – 7010	100	**CLAYSTONE:** brownish gray, gray, blocky to subblocky, minor subplaty, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, microcarbonaceous **Acc:** massive calcite	NF
7010 – 7030	100	**CLAYSTONE:** brownish gray, gray, blocky to subblocky, minor subplaty, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, microcarbonaceous **Acc:** traces massive calcite, pyrite	NF
7030 – 7050	100	**CLAYSTONE:** brownish gray, gray, blocky to subblocky, minor subplaty, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, microcarbonaceous **Acc:** traces massive calcite	NF
7050 – 7060	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous **Acc:** traces massive calcite, massive pyrite	NF
7060 – 7070	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** calcite	NF
7070 – 7080	100	**CLAYSTONE:** brownish gray, gray, subblocky to subplaty, minor blocky, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, microcarbonaceous **Acc:** traces massive calcite	NF
7080 – 7090	100	**CLAYSTONE:** brownish gray, minor gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, occasionally soft, non to very slightly calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous **Acc:** traces massive calcite	NF
7090 – 7100	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm to firm, occasionally soft, non to very slightly calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous **Acc:** traces massive calcite	NF
7100 – 7110	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, occasionally soft, non calcareous, micromicaceous locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** traces massive calcite	NF
7110 – 7130	100	**CLAYSTONE:** brownish gray minor gray, subblocky to blocky, occasionally subplaty, moderately firm minor soft, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, silty in part. **Acc:** traces massive calcite	NF
7130 – 7150	100	**CLAYSTONE:** brownish gray minor gray, subblocky to blocky, minor subplaty, moderately firm minor soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbo-naceous, locally silty. **Acc:** traces massive calcite	NF
7150 – 7170	100	**CLAYSTONE:** brownish gray, subblocky to blocky minor subplaty, moderately firm minor soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces microfossil	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7170 – 7190	100	**CLAYSTONE:** brownish gray, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. Acc: traces microfossil	NF
7190 – 7200	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. Acc: traces microfossil, massive pyrite	NF
7200 – 7220	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. Acc: traces massive calcite	NF
7220 – 7230	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. Acc: traces massive calcite	NF
7230 – 7250	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7250 – 7260	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces microfossil	NF
7260 – 7280	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7280 – 7300	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7300 – 7320	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7320 – 7340	100	**CLAYSTONE:** brownish gray, brown, subblocky to blocky minor subplaty, soft & moderately firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7340 – 7360	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to subplaty, soft & moderately firm, non calcareous, micromicaceous to very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7360 – 7380	100	**CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF
7380 – 7400	10 90	**SANDSTONE:** light gray to gray, 90% very fine, 10% fine grains, quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly hard to hard, dirty, with dark grains and coal inclusions, very poor visual porosity **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF
7400 – 7410	100	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, soft, non calcareous, very micromicaceous, microcarbonaceous. **Acc:** calcite	NF
7410 – 7430	TR 100	**SANDSTONE:** light gray to gray, 100% very fine grains, quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly hard to hard, dirty, with dark grains and coal inclusions, very poor visual porosity **CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty in part. **Acc:** calcite	NF
7430 – 7440	TR 100	**SANDSTONE:** light gray to gray, 100% very fine grains, quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly hard to hard, dirty, with dark grains inclusions, very poor visual porosity **CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm, minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF
7440 – 7450	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm minor soft, non calcareous, micromicaceous, minor microcarbonaceous, silty in part.	NF
7450 – 7460	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, occasionally subplaty, moderately firm, locally moderately soft, non calcareous, micromicaceous, microcarbonaceous, locally silty. **Acc:** calcite	NF
7460 – 7470	TR 100	**SANDSTONE:** light gray to gray, 100% very fine grains, quartz, subangular to subrounded, well sorted, moderately hard, dirty, with dark grains inclusions, very poor visual porosity **CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm to soft, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF
7470 – 7490	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, moderately firm to soft, non calcareous, micromicaceous locally very micromicaceous, microcarbonaceous, locally silty. **Acc:** calcite	NF
7490 – 7510	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, moderately firm to soft, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7510 – 7520	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky minor subplaty, moderately firm to soft, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** traces massive calcite	NF
7520 – 7540	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, minor subplaty, moderately firm to soft, occasionally firm, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous, silty in part. **Acc:** traces massive calcite	NF
7540 – 7550	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, moderately firm to soft, occasionally firm, non calcareous, micromicaceous to very micromicaceous, microcarbonaceous, occasionally with glauconite inclusions, locally silty. **Acc:** traces massive calcite	NF
7550 – 7560	100	**CLAYSTONE:** brownish gray, gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous to very micromicaceous, microcarbonaceous, occasionally with glauconite inclusions, silty in part.	NF
7560 – 7570	100	**CLAYSTONE:** gray, subblocky to subplaty minor blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, silty in part & very minor dark, subblocky, firm to compact, non calc, micromicaceous, minor microcarbonaceous, siliceous in part.	NF
7570 – 7580	100	**CLAYSTONE:** gray, subblocky to subplaty minor blocky, moderately firm, non calcareous, micromicaceous, minor microcarbonaceous, silty in part & minor dark, subblocky, firm to compact, non calc, micromicaceous, minor microcarbonaceous, siliceous in part.	NF
7580 – 7600	100	**CLAYSTONE:** gray, subblocky to subplaty minor blocky, moderately firm occasionally firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture & minor dark, subblocky to blocky, firm to compact, non calc, micromicaceous, minor microcarbonaceous, siliceous in part. **Acc:** traces massive calcite	NF
7600 – 7610	100	**CLAYSTONE:** gray, subblocky to subplaty minor blocky, moderately firm occasionally firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture & very minor dark, subblocky to blocky, firm to compact, non calc, micromicaceous, minor microcarbonaceous, siliceous in part.	NF
7610 – 7630	100	**CLAYSTONE:** gray, slightly brownish gray, subplaty to subblocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF
7630 – 7640	100	**CLAYSTONE:** predominantly gray, minor brownish gray, subblocky to blocky, minor subplaty, moderately firm occasionally firm, very occasionally moderately soft, non calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous **Acc:** traces calcite	NF
7640 – 7660	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, minor subplaty, moderately firm occasionally firm, non calcareous, micromicaceous to very micromicaceous, microcarbonaceous, silty in part **Acc:** traces calcite	NF
7660 – 7670	TR TR	**SAND:** hyaline, white, translucent, quartzose, fine to medium grain, subangular to subrounded, well sorted. **SANDSTONE:** grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calc in part, friable to moderately hard,	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		dark grain inclusion, poor visual porosity.	NF
	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, minor subplaty, moderately firm occasionally firm, non calcareous, micromicaceous to very micromicaceous, microcarbonaceous, silty in part **Acc:** traces laminar calcite	
7670 – 7680	TR	**SAND:** hyaline, white, translucent, quartzose, fine to coarse grain, subangular to subrounded, fair sorted.	
	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, slightly smooth texture.	NF
7680 – 7690	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, slightly smooth texture.	NF
7690 – 7700	TR	**SANDSTONE:** grayish white, light gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard occasionally friable, slightly dirty, common dark grain inclusion, poor visual porosity.	NF
	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous.	
7700 – 7710	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous.	NF
7710 – 7720	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
7720 – 7730	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture, very minor dark, subblocky to blocky, firm to compact, non calcareous, micromicaceous, minor microcarbonaceous . **Acc:** traces massive calcite	NF
7730 – 7740	100	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture, very minor dark, subblocky to blocky, firm to compact, non calcareous, micromicaceous, minor microcarbonaceous . **Acc:** traces massive calcite	NF
7740 – 7750	100	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, smooth texture **Acc:** traces massive calcite	NF
7750 – 7770	TR	**SANDSTONE:** grayish white, gray, 90% very fine, 10% fine grain quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, slightly dirty, common dark & green grain inclusion, poor visual porosity.	
	10	**SILTSTONE:** gray, subblocky to blocky, moderately firm, slightly calcareous, micromicaceous, microcarbonaceous	NF
	90	**CLAYSTONE:** predominantly gray, minor brownish gray, subblocky to subplaty, occasionally subplaty, moderately firm occasionally firm, slightly calcareous, micromicaceous, locally very micromicaceous, microcarbonaceous, slightly smooth texture	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7770 – 7780	TR 100	**SANDSTONE:** grayish white, gray, 100% very fine grain, quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, slightly dirty, common dark & green grain inclusion, poor visual porosity. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to subplaty, occasionally subplaty, moderately firm minor firm, non to slightly calcareous, micromicaceous, very micromicaceous in part, microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
BASAL SALINA FM AT 7780'			
7780 – 7790	20 TR 80	**SAND:** hyaline, white, translucent, 90% medium, 10% coarse to very coarse grain quartz, subangular to subrounded, fair to well sorted **SANDSTONE:** grayish white, gray, 90% very fine, 10% fine grain quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, slightly dirty, common dark & green grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to subplaty, occasionally subplaty, moderately firm minor firm, non to slightly calcareous, micromicaceous, very micromicaceous in part, microcarbonaceous, locally silty **Acc:** traces calcite	NF
7790 – 7800	10 TR 90	**SAND:** hyaline, white, translucent, 90% medium, 10% coarse to very coarse grain quartz, subangular to subrounded, fair to well sorted **SANDSTONE:** grayish white, gray, 90% very fine, 10% fine grain quartz, subangular to subrounded, well sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, slightly dirty, common dark & green grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to subplaty, occasionally subplaty, moderately firm minor firm, non calcareous, micromicaceous, very micromicaceous in part, microcarbonaceous, locally silty **Acc:** traces calcite	NF
7800 – 7810	TR 100	**SANDSTONE:** grayish white, light gray, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard & hard, slightly dirty, common dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, minor subplaty, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty	NF
7810 – 7820	10 90	**SANDSTONE:** grayish white, light gray, 80% very fine, 20% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard & hard, slightly dirty, common dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to subplaty, minor subplaty, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
7820 – 7830	10 90	**SANDSTONE:** light gray, minor grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, calcareous, friable occasionally moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7830 – 7840	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
7840 – 7850	10 90	**SANDSTONE:** grayish white, light gray, 100% very fine grain, subrounded, well sorted, argillaceous matrix, very slightly calcareous, moderately hard occasionally hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces calcite	NF
7850 – 7860	TR 100	**SANDSTONE:** grayish white, light gray, 100% very fine grain, subrounded, well sorted, argillaceous matrix, very slightly calcareous, moderately hard occasionally hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty **Acc:** traces massive calcite	NF
7860 – 7870	10 90	**SANDSTONE:** light gray minor grayish white, 100% very fine grain, subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard, slightly dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty	NF
7870 – 7880	10 90	**SANDSTONE:** light gray minor grayish white, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard, slightly dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF
7880 – 7890	TR 40 60	**SAND:** hyaline, white, transparent, quartzose, 20% very fine, 60% fine, 20% medium, traces coarse grain, subangular to subrounded, traces dark grains. **SANDSTONE:** dirty white, grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard & hard, some dirty, tight, occasionally micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
7890 – 7900	20 80	**SANDSTONE:** dirty white, grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, argillaceous matrix, very calcareous, moderately hard & hard, some dirty, tight, occasionally micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7900 – 7910	20 80	**SANDSTONE:** light gray, occasionally grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard & hard, dirty, micaceous, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7910 – 7920	60 40	**SAND:** hyaline, white, transparent, quartzose, 30% medium, 40% coarse, 30% very coarse, traces granules grain, subrounded minor subangular, fair sorted, fractured, traces dark, smoky & light red grains **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	NF
		Note: while drilling mud sample taken at 7920' No show	
7920 – 7930	40 10 50	**SAND:** hyaline, white, occasionally milky white, transparent, quartzose, 20% medium, 30% coarse, 30% very coarse, 20% granules grain, subrounded to rounded, poor sorted, fractured, some dark, smoky grains **SANDSTONE:** hyaline, white, 40% very fine, 40% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, clean, slightly calcareous, friable, occasionally dark grain inclusions, fair visual porosity. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
7930 – 7940	40 10 50	**SAND:** hyaline, white, occasionally milky white, translucent quartz, 20% medium, 40% coarse, 30% very coarse, 10% granules grains, subrounded to rounded, poor sorted, fractured, occasionally dark and smoky grains. **SANDSTONE:** hyaline, white, 30% very fine, 50% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, clean, slightly calcareous, friable to moderately hard, occasionally dark grain inclusions, fair visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbo-ceous, silty in part. **Acc:** traces calcite	NF
7940 – 7950	30 20 50	**SAND:** hyaline, white, occasionally milky white, translucent quartz, 30% fine - medium, 30% coarse, 30% very coarse, 10% granules grains, subrounded to rounded, poor sorted, fractured, occasionally dark and smoky grains. **SANDSTONE:** hyaline, white, light grayish white, 30% very fine, 50% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, clean, slightly calcareous, friable to moderately hard, occasionally dark grain inclusions, fair visual porosity. **CLAYSTONE:** predominantly gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
7950 – 7960	40	**SAND:** hyaline, white, occasionally milky white, translucent quartz, 10% fine, 20% medium, 30% coarse, 30% very coarse, 10% granules grains, subrounded to rounded, poor sorted, occasionally dark and smoky grains.	
	20	**SANDSTONE:** hyaline, white, light grayish white, 30% very fine, 60% fine, 10% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, clean, slightly calcareous, friable to moderately hard, occasionally dark grain inclusions, fair visual porosity.	NF
	40	**CLAYSTONE:** dark gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces pyrite, calcite	
7960 – 7970	60	**SAND:** hyaline, white, translucent quartz, 10% medium, 40% coarse, 40% very coarse, 10% granules grains, subrounded to rounded, poor sorted, with few dark and smoky grains.	
	10	**SANDSTONE:** hyaline, white, light grayish white, 20% very fine, 70% fine, 10% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, occasionally dark grain inclusions, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately slow weak stream milky white cut, no residual ring	TR
	30	**CLAYSTONE:** dark gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces pyrite, calcite	
7970 – 7980	30	**SAND:** hyaline, white, translucent quartz, 10% medium, 20% coarse, 50% very coarse, 20% granules grains, subrounded to rounded, poor sorted, occasionally dark and smoky grains.	
	10	**SANDSTONE:** hyaline, white, light grayish white, 10% very fine, 70% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, with few dark grain inclusions, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately slow weak stream milky white cut, no residual ring	TR
	60	**CLAYSTONE:** dark gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces pyrite, calcite	
7980 – 7990	60	**SAND:** hyaline, white, translucent quartz, 10% medium, 20% coarse, 50% very coarse, 20% granules grains, subrounded to rounded, poor sorted, occasionally dark and smoky grains.	
	10	**SANDSTONE:** hyaline, white, light grayish white, 10% very fine, 70% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, with few dark grain inclusions, poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately slow weak stream milky white cut, poor residual ring	15%
	30	**CLAYSTONE:** predominantly gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, in part silty.	
7990 – 8000	60	**SAND:** hyaline, white, translucent quartz, 20% medium, 30% coarse, 30% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, occasionally dark and smoky grains.	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
	10	**SANDSTONE:** hyaline, white, light grayish white, 10% very fine, 70% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, with few dark grain inclusions, poor visual porosity.	15%
		FLUOR: slightly bright yellowish white natural fluorescence, moderately slow weak stream milky white cut, poor residual ring	
	30	**CLAYSTONE:** predominantly gray, minor brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, in part silty.	
		Acc: traces calcite	
8000 – 8010	60	**SAND:** hyaline, white, translucent quartz, 20% medium, 30% coarse, 30% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, with few dark and smoky grains.	
	10	**SANDSTONE:** hyaline, white, grayish white, 10% very fine, 70% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, tight, with few dark grain inclusions, very poor visual porosity.	10%
		FLUOR: slightly bright yellowish white natural fluorescence, moderately fast weak stream milky white cut, poor residual ring	
	30	**CLAYSTONE:** gray, dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	
		Acc: traces calcite	
8010 – 8020	40	**SAND:** hyaline, white, translucent quartz, 20% medium, 20% coarse, 40% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, occasionally dark and smoky grains.	
	20	**SANDSTONE:** hyaline, white, grayish white, 10% very fine, 70% fine, 20% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, tight, with few dark grain inclusions, very poor visual porosity.	10%
		FLUOR: slightly bright yellowish white natural fluorescence, moderately fast weak stream milky white cut, poor residual ring	
	40	**CLAYSTONE:** gray, dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, silty in part.	
		Acc: traces calcite	
8020 – 8030	60	**SAND:** hyaline, white, translucent quartz, 20% medium, 20% coarse, 40% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, with few dark and smoky grains.	
	20	**SANDSTONE:** hyaline, white, grayish white, 10% very fine, 80% fine, 10% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, some tight, occasionally dark grain inclusions, very poor visual porosity.	20%
		FLUOR: slightly bright yellowish white natural fluorescence, moderately fast moderately strong stream milky white cut, fair residual ring	
	20	**CLAYSTONE:** gray, dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally in part.	
		Acc: traces calcite	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8030 – 8040	50 20 30	**SAND:** hyaline, white, translucent quartz, 10% medium, 30% coarse, 40% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, occasionally dark and smoky grains. **SANDSTONE:** hyaline, white, grayish white, 10% very fine, 80% fine, 10% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, tight, occasionally dark grain inclusions, very poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately fast weak stream milky white cut, fair residual ring. **CLAYSTONE:** gray, dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces calcite	30%
8040 – 8050	60 20 20	**SAND:** hyaline, white, translucent quartz, 20% medium, 30% coarse, 30% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, with few dark and smoky grains. **SANDSTONE:** hyaline, white, grayish white, 10% very fine, 80% fine, 10% medium quartz grains, subangular to subrounded, fair sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, tight, with dark grain inclusions, very poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately fast moderately strong stream milky white cut, fair residual ring. **CLAYSTONE:** dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	30%
8050 – 8060	50 30 20	**SAND:** hyaline, white, translucent, occasionally milky white quartz, 10% medium, 30% coarse, 40% very coarse, 20% granules grains, subrounded to rounded, poor sorted, fractured, with dark and smoky grains. **SANDSTONE:** hyaline, white, grayish white, 10% very fine, 80% fine, 10% medium quartz grains, subangular to subrounded, fair to moderately well sorted, argillaceous matrix, calcareous, moderately hard to hard, tight, with dark grain inclusions, very poor visual porosity. **FLUOR:** slightly bright yellowish white natural fluorescence, moderately fast moderately strong stream milky white cut, fair residual ring. **CLAYSTONE:** dark gray, minor brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	40%
8060 – 8070	40 20 	**SAND:** hyaline, white, occasionally milky, transparent, quartzose, 20% medium, 30% coarse, 30% very coarse, 20% granules grain, subrounded to rounded, poor sorted, fractured, some dark, smoky & traces light red grains **SANDSTONE:** white, whitish, occasionally grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, very calcareous, friable to moderately hard, occasionally micaceous, dark grain inclusions, poor to fair visual porosity. **FLUOR:** slightly yellowish white natural fluorescence, slow weak stream milky white cut, slightly yellowish white residual ring	15%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
	40	**CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	
8070 – 8080	10	**SAND:** hyaline, white, occasionally milky, transparent, quartzose, 20% very fine, 40% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, very rare fractured, occasionally dark grains	
	50	**SANDSTONE:** white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, slightly calcareous, friable to moderately hard, occasionally micaceous, dark grain inclusions, poor to fair visual porosity. **FLUOR:** slightly yellowish white natural fluorescence, slow weak stream milky white cut, slightly yellowish white residual ring	10%
	40	**CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	
8080 – 8090	10	**SAND:** hyaline, white, occasionally milky, transparent, quartzose, 20% very fine, 40% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, very rare fractured, occasionally dark grains	
	40	**SANDSTONE:** white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, slightly calcareous, friable to moderately hard, occasionally micaceous, dark grain inclusions, poor to fair visual porosity. **FLUOR:** slightly yellowish white natural fluorescence, slow weak stream milky white cut, slightly yellowish white residual ring	5%
	50	**CLAYSTONE:** slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	
8090 – 8100	30	**SANDSTONE:** grayish white to light gray, 100% very fine grain quartz, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, slightly dirty, micaceous, dark grain inclusions, very poor visual porosity.	NF
	70	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive pyrite	
8100 – 8110	20	**SANDSTONE:** grayish white, minor light gray, 100% very fine grain quartz, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, moderately hard occasionally hard, slightly dirty, micaceous, dark grain inclusions, poor visual porosity.	NF
	80	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, occasionally firm, non calcareous, micromicaceous, some very micromicaceous, minor microcarbonaceous, slightly smooth texture.	
8110 – 8120	20	**SANDSTONE:** grayish white, minor light gray, 100% very fine grain quartz, subangular to subrounded, well sorted, slightly argillaceous matrix, very calcareous, moderately hard, occasionally hard, slightly dirty, micaceous, dark grain inclusions, poor visual porosity.	NF
	80	**CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, occasionally firm, non calcareous, micromicaceous, some very micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive pyrite	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8120 – 8140	10 90	**SANDSTONE:** grayish white, light gray, 100% very fine grain, quartz, subangular to subrounded, well sorted, slightly argillaceous matrix, moderately calcareous, moderately hard to hard, dirty, micaceous, with dark grain inclusions, very poor visual porosity. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, very micromicaceous in part, minor microcarbonaceous, locally silty.	NF
8140 – 8150	10 90	**SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, occasionally microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, very micromicaceous in part, minor microcarbonaceous, in part silty.	NF
8150 – 8160	10 90	**SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, occasionally microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, very micromicaceous in part, minor microcarbonaceous, in part silty. **Acc:** traces massive calcite.	NF
8160 – 8170	10 90	**SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, very micromicaceous in part, minor microcarbonaceous, in part silty. **Acc:** traces massive calcite.	NF
8170 – 8180	100	**CLAYSTONE:** gray, minor brownish gray, subblocky to blocky, in part subplaty, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, microcarbonaceous, silty in part.	NF
8180 – 8190	10 90	**SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** gray, subblocky to subplaty very minor platy, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, locally silty.	NF
8190 – 8200	10 90	**SILTSTONE:** gray, subblocky to blocky, soft to moderately firm, non calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** gray, slightly brownish gray, subblocky to subplaty very minor platy, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8200 – 8220	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8220 – 8230	20 80	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8230 – 8240	10	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous.	
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbo-naceous, locally silty.	NF
8240 – 8250	10	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard & hard, dirty, occasionally micaceous, dark grain inclusion, very poor visual porosity.	NF
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbo-naceous, locally silty. **Acc:** traces laminar calcite	
8250 – 8270	10	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous.	
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to subplaty minor platy, moderately firm occasionally soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces laminar calcite	NF
8270 – 8280	10	**SAND:** hyaline, white, minor milky, transparent, quartzose, 20% very fine, 60% fine, 20% medium grain, mainly subrounded, traces dark grains.	
	TR	**SANDSTONE:** whitish, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, slightly calcareous, friable, dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring	5%
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to subplaty minor platy, moderately firm occasionally soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	
8280 – 8290	TR	**SAND:** hyaline, white, minor milky, transparent, quartzose, 20% very fine, 60% fine, 20% medium grain, mainly subrounded, traces dark grains.	
	10	**SANDSTONE:** whitish, 100% very fine grain, well sorted, slightly argillaceous matrix, slightly calcareous, friable, dark grain inclusion, poor visual porosity	NF
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to subplaty minor platy, moderately firm occasionally soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	
8290 – 8300	TR	**SAND:** hyaline, white, minor milky, transparent, quartzose, 20% very fine, 60% fine, 20% medium grain, mainly subrounded, traces dark grains.	
	30	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, silty matrix, very calcareous, friable occasionally moderately hard, slightly dirty, micaceous, dark grain inclusion, very poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring	5%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
	70	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to subplaty minor platy, moderately firm occasionally soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty.	
8300 – 8310	10	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, silty matrix, very calcareous, friable occasionally moderately hard, slightly dirty, micaceous, dark grain inclusion, very poor visual porosity	
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to subplaty minor platy, moderately firm occasionally soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty.	NF
8310 – 8330	10	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous.	
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces laminar calcite	NF
8330 – 8340	20	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, microcarbonaceous.	
	80	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, locally silty.	NF
8340 – 8350	10	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, argillaceous matrix, very slightly calcareous, moderately hard, slightly dirty, dark grain inclusion, poor visual porosity	
	90	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
8350 – 8360	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
8360 – 8380	10	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, micaceous, dark grain inclusion, very poor visual porosity	
	90	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm occasionally soft, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	NF
8380 – 8390	10	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, argillaceous matrix, very slightly calcareous, friable & moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity	
	90	**CLAYSTONE:** slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8390 – 8400	100	**CLAYSTONE:** slightly brownish gray, minor gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty.	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8400 – 8410	10 90	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, argillaceous matrix, very slightly calcareous, friable & moderately hard, dirty, micaceous, dark grain inclusion, very poor visual porosity **CLAYSTONE:** slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	 NF
8410 – 8420	10 90	**SANDSTONE:** very light gray, 100% very fine quartz grains, well sorted, argillaceous matrix, slightly calcareous, friable to moderately hard, dirty, micaceous, with dark grain inclusion, very poor visual porosity **CLAYSTONE:** predominantly slightly brownish gray, minor gray, subblocky to blocky, very occasionally subplaty, moderately firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, silty in part. **Acc:** traces calcite	 NF
8420 – 8425	40 60	**SANDSTONE:** slightly grayish white, minor whitish, 100% very fine quartz grains, well sorted, slightly clean, very calcareous, moderately hard, occasionally micromicaceous, with dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, slow weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, slightly smooth texture **Acc:** traces massive calcite	 20%
8425 – 8430	20 80	**SANDSTONE:** very light gray, whitish, 100% very fine quartz grains, well sorted, slightly clean, calcareous, friable to moderately hard, slightly dirty, occasionally micromicaceous, with dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, slow weak stream slightly milky white cut, no residual ring **CLAYSTONE:** slightly brownish gray, minor gray, subblocky to blocky, very occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally in part. **Acc:** traces calcite	 5%
8430 – 8440	20 80	**SANDSTONE:** slightly grayish white, minor whitish, 100% very fine grains, well sorted, slightly clean, calcareous, friable to moderately hard, occasionally micromicaceous, with dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, slow weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, very occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally in part. **Acc:** traces calcite	 TR
8440 – 8450	10 90	**SANDSTONE:** slightly grayish white, minor whitish, 100% very fine grains, well sorted, slightly clean, calcareous, friable to moderately hard, occasionally micromicaceous, with dark grain inclusion, poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm,	 NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces calcite	
8450 – 8455	40 60	**SANDSTONE:** white, slightly grayish white, 100% very fine grains, well sorted, clean in part, calcareous, moderately hard minor hard, occasionally micromicaceous, with some dark grain inclusion, poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces calcite	NF
8455 – 8460	40 60	**SANDSTONE:** white, slightly grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, calcareous, moderately hard minor hard, tight in part, with some dark grain inclusion, poor visual porosity **FLUOR:** pale yellowish white natural fluorescence, no cut, no residual ring **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	TR
8460 – 8470	40 60	**SANDSTONE:** slightly grayish white, grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, clean in part, calcareous, moderately hard minor hard, tight in part, with some dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, slow weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces laminar calcite	5%
8470 – 8480	30 70	**SANDSTONE:** white, slightly grayish white, 100% very fine grains, subangular to subrounded, well sorted, slightly clean, very calcareous, friable to moderately hard, occasionally micaceous, with some dark grain inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, slow weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture. **Acc:** traces massive calcite	TR
8480 – 8490	20 80	**SANDSTONE:** white, slightly grayish white, 100% very fine grains, subangular to subrounded, well sorted, slightly clean, very calcareous, friable to moderately hard, occasionally micaceous, with some dark grain inclusion, poor visual porosity **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, very micromicaceous to micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF
8490 – 8495	20	**SANDSTONE:** white, slightly grayish white, 90% very fine, 10% fine grains, subangular to subrounded, well sorted, slightly clean, calcareous, friable to moderately hard, some dark grain inclusion, poor visual porosity	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
	80	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, minor micro carbonaceous, locally silty.	NF
8495 – 8500	10	**SANDSTONE:** white, slightly grayish white, 90% very fine, 10% fine grains, subangular to subrounded, well sorted, slightly clean, calcareous, friable to moderately hard, some dark grain inclusion, poor visual porosity	NF
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm occasionally firm, non calcareous, micromicaceous some very micromicaceous, minor micro carbonaceous, silty in part. **Acc:** traces massive pyrite	
8500 – 8510	10	**SANDSTONE:** white, slightly grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly clean, calcareous, friable to moderately hard, with some dark grains inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring	TR
	90	**CLAYSTONE:** predominantly gray, minor slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty. **Acc:** traces laminar calcite	
8510 – 8520	10	**SANDSTONE:** slightly grayish white, grayish white, 100% very fine grain, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, with some dark grains inclusion, poor visual porosity	NF
	90	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty.	
8520 – 8530	20	**SAND:** hyaline, white, occasionally milky, translucent, quartzose, 60% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains.	TR
	10	**SANDSTONE:** slightly grayish white, grayish white, 100% very fine grain, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, with some dark grains inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring	
	70	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty.	
8530 – 8534	30	**SAND:** hyaline, white, occasionally milky, translucent, quartzose, 60% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains.	TR
	10	**SANDSTONE:** slightly grayish white, grayish white, 100% very fine grain, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, with some dark grains inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring	
	60	**CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty.	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8534 – 8540	TR 10 90	**SAND:** hyaline, white, occasionally milky, translucent, quartzose, 60% fine, 30% medium, 10% coarse grain, subangular to subrounded, fair sorted, occasionally dark grains. **SANDSTONE:** slightly grayish white, grayish white, 100% very fine grain, well sorted, slightly argillaceous matrix, calcareous, friable to moderately hard, with some dark grains inclusion, poor visual porosity **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm, non calcareous, micromicaceous, slightly microcarbonaceous, locally silty.	 TR
8540 – 8550	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, some very micromicaceous, minor microcarbonaceous, slightly smooth texture.	 NF
8550 – 8560	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** slightly brownish gray, gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, some very micromicaceous, minor microcarbonaceous, slightly smooth texture.	 NF
8560 – 8565	10 90	**SANDSTONE:** gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	 NF
8565 – 8570	10 90	**SANDSTONE:** gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	 NF
8570 – 8580	TR 30 70	**SAND:** hyaline, white, very occasionally milky, translucent quartz, fine to medium grains, subangular to subrounded, moderately sorted, occasionally dark grains. **SANDSTONE:** gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **FLUOR:** pale yellowish natural fluorescecnce, very slow very weak stream slightly milky white cut, no residual ring **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	 TR
8580 – 8590	10 90	**SANDSTONE:** gray, 100% very fine grain, well sorted, very argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite, massive pyrite	 NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8590 – 8600	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, slightly calcareous, micromicaceous, microcarbonaceous. **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite, massive pyrite	NF
8600 – 8610	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, subblocky to blocky, moderately firm occasionally frim, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty.	NF
8610 – 8630	10 90	**SANDSTONE:** gray, 100% very fine grain, well sorted, very argillaceous matrix, calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces laminar calcite	NF
8630 – 8650	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces laminar calcite	NF
8650 – 8655	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to frim, occasionally moderately soft, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces calcite, pyrite.	NF
8655 – 8660	10 90	**SANDSTONE:** slightly grayish white, 90% very fine, 10% fine grain, subangular to subrounded, well sorted, slightly argillaceous matrix, non calcareous, moderately hard, occasionally micaceous, dark grains inclusion, poor visual porosity **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, locally silty.	NF
8660 – 8670	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, minor microcarbonaceous, some slightly waxy.	NF
8670 – 8680	10 90	**SANDSTONE:** very light gray, 100% very fine grain, well sorted, very argillaceous matrix, non calcareous, moderately hard to hard, dirty, dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8680 – 8690	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces laminar calcite	NF
8690 – 8700	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8700 – 8710	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to frim, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, in part silty. **Acc:** pyrite, calcite	NF
8710 – 8715	10 20 70	**SAND:** hyaline, translucent, very occasionally white, quartzose, 90% fine, 10% medium, traces coarse grains, subangular to subrounded, well sorted, traces dark grains. **SANDSTONE:** very light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, dirty, with dark grains inclusion, poor visual porosity **FLUOR:** pale yellowish white natural fluorescence, slow very weak stream slightly milky white cut, no residual ring **CLAYSTONE:** predominantly gray, minor slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** pyrite, calcite	TR
8715 – 8720	10 90	**SANDSTONE:** very light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, dirty, with dark grains inclusion, poor visual porosity **CLAYSTONE:** predominantly gray, minor slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, silty in part. **Acc:** calcite, pyrite	NF
8720 – 8730	10 90	**SANDSTONE:** very light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, dirty, with dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, minor slightly brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, occasionally very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite, pyrite	NF
8730 – 8740	10 90	**SANDSTONE:** very light gray, 100% very fine grains, subangular to subrounded, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, occasionally moderately friable, dirty, slightly micromicaceous, with dark grains inclusion, very poor visual porosity **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces massive calcite	NF
8740 – 8750	100	**CLAYSTONE:** predominantly gray, minor slightly brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** calcite, pyrite	NF
8750 – 8760	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky	

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		to blocky, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8760 – 8780	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8780 – 8790	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, very minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8790 – 8810	100	**CLAYSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, occasionally silty. **Acc:** traces massive calcite	NF
8810 – 8820	10 90	**SILTSTONE:** gray, subblocky to blocky, soft, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** gray, very minor slightly brownish gray, subblocky to blocky minor subplaty, moderately firm minor firm, non calcareous, micromicaceous some very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8820 – 8830	10 90	**SILTSTONE:** gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous. **CLAYSTONE:** predominantly gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm minor firm, non to very slightly calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, silty in part. **Acc:** traces massive calcite	NF
8830 – 8840	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm minor firm, non to very slightly calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8840 – 8850	30 20 50	**SAND:** hyaline, white, quartz, fine to medium grains, subangular, subrounded, well sorted **SANDSTONE:** grayish white, white, fine to medium grains, subangular to subrounded, well sorted, non calcareous, occasionally slightly calcareous cement, moderately friable, with dark grains inclusions, poor visual porosity **FLUOR:** slightly yellowish white, yellowish natural fluorescence, moderately fast weak stream milky white cut, no residual ring **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm minor firm, non to very slightly calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite, pyrite	30%

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
8850 – 8860	10 10 80	**SAND:** hyaline, white, translucent, quartz, fine to medium grains, subangular, subrounded, well sorted **SANDSTONE:** grayish white, white, 90% fine, 10% medium grains, subangular to subrounded, well sorted, argillaceous matrix, non to slightly calcareous, moderately friable to moderately hard, slightly micromicaceous, with dark grains inclusions, poor visual porosity **FLUOR:** slightly yellowish white natural fluorescence, moderately fast weak stream milky white cut, no residual ring **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, occasionally subplaty, moderately firm minor firm, non to slightly calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite, pyrite	10%
8860 – 8870	100	**CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, very occasionally subplaty, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces calcite	NF
8870 – 8880	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces massive calcite	NF
8880 – 8890	10 90	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, dirty, tight in part, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8890 – 8900	10 90	**SANDSTONE:** light gray, 100% very fine grain, well sorted, argillaceous matrix, non calcareous, moderately hard to hard, dirty, tight in part, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8900 – 8910	20 80	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, tight in part, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8910 – 8920	10 90	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, tight in part, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8920 – 8930	10 90	**SANDSTONE:** light gray, gray, 100% very fine grain, well sorted, argillaceous matrix, slightly calcareous, moderately hard to hard, dirty, tight in part, dark grain inclusion, very poor visual porosity. **CLAYSTONE:** predominantly gray, occasionally brownish gray,	NF

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, silty in part. **Acc:** traces massive calcite	
8930 – 8940	100	**CLAYSTONE:** predominantly gray, occasionally brownish gray, subblocky to blocky, occasionally subplaty, moderately firm to firm, locally moderately soft, non calcareous, micromicaceous, in part very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces calcite	NF
8940 – 8950	100	**CLAYSTONE:** gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, occasionally soft to moderately soft, non calcareous, micromicaceous, minor microcarbonaceous, in part silty. **Acc:** traces massive calcite	NF
8950 – 8960	20 80	**SILTSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, minor firm, non calcareous, micromicaceous, minor microcarbonaceous, in part sandy. **CLAYSTONE:** predominantly gray, occasionally slightly brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8960 – 8970	20 80	**SILTSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm, minor firm, occasionally moderately soft, non calcareous, micromicaceous, minor microcarbonaceous, in part sandy. **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm to firm, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	NF
8970 – 8980	20 80	**SANDSTONE:** grayish white, grayish, 100% very fine grain, well sorted, silty matrix, calcareous, moderately hard to friable, occasionally micaceous, dark grain inclusion, poor visual porosity, grading to silty sandstone. **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no res ring **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally silty. **Acc:** traces massive calcite	TR
8980 – 8990	20 80	**SANDSTONE:** grayish white, grayish, 100% very fine grain, well sorted, silty matrix, calcareous, moderately hard to friable, occasionally micaceous, dark grain inclusion, poor visual porosity, grading to silty sandstone. **FLUOR:** yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no res ring **CLAYSTONE:** gray, occasionally brownish gray, subblocky to blocky, moderately firm minor soft, non calcareous, micromicaceous, locally very micromicaceous, minor microcarbonaceous, locally silty.	TR
8990 – 9000	20	**SANDSTONE:** grayish white, occasionally grayish, 100% very fine grain, well sorted, silty matrix, slightly calcareous, friable to moderately hard, occasionally micaceous, dark grain inclusion, very poor visual porosity, grading to silty sandstone. **FLUOR:** yellowish white natural fluorescence, very slow very weak	TR

INTERVAL (feet)	%	LITHOLOGICAL DESCRIPTION	FLUOR %
		stream slightly milky white cut, no res ring	
	80	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	
9000 – 9010	20	**SANDSTONE:** grayish white, grayish, 100% very fine grain, well sorted, silty matrix, slightly calcareous, friable to moderately hard, occasionally micaceous, dark grain inclusion, very poor visual porosity, grading to silty sandstone.	
		FLUOR: yellowish white natural fluorescence, very slow very weak stream slightly milky white cut, no res ring	TR
	80	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	
9010 – 9020	TR	**SAND:** hyaline, white, transparent, quartzose, 70% very fine, 30% fine grain, subrounded, well sorted, traces dark grains.	
	40	**SANDSTONE:** grayish white, whitish, 100% very fine grain, well sorted, slightly clean, calcareous, friable minor moderately hard, occasionally micaceous, dark grain inclusion, poor visual porosity.	NF
	60	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	
		Acc: traces massive calcite	
9020 – 9030	40	**SANDSTONE:** grayish white, whitish, 100% very fine grain, well sorted, slightly clean, calcareous, friable minor moderately hard, occasionally micaceous, dark grain inclusion, poor visual porosity.	
	60	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF
		Acc: traces massive calcite	
9030 – 9040	10	**SANDSTONE:** grayish white, whitish, 100% very fine grain, well sorted, slightly clean, calcareous, friable minor moderately hard, occasionally micaceous, dark grain inclusion, poor visual porosity.	
	90	**CLAYSTONE:** gray, slightly brownish gray, subblocky to blocky, moderately firm minor firm, non calcareous, micromicaceous, minor microcarbonaceous, slightly smooth texture.	NF
		Acc: traces massive calcite	
		Drilling stopped on June 06th, 2001 at 14:00 hrs. F.T.D: 9040’	

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PETRO-TECH PERUANA S.A.

GAS SHOWS DATA RECORD

WELL: LO6- 23

DEPTH (feet)	DITCH SAMPLE GAS							FORMATION
	TYPE	TGC(ppm)	ppm					
			C1	C2	C3	C4	C5	
1500 - 1514	BKG	196	196					TALARA
1514 - 1541	FM	1308	1308					TALARA
1541 - 1577	FM	2755	2755					TALARA
1577 - 1584	FM	94	94					TALARA
1584 - 1600	FM	2576	2576					TALARA
1600 - 1630	FM	872	872					TALARA
1630 - 1706	FM	2249	2249					TALARA
1706 - 1731	FM	54617	54179	76	34	21	20	TALARA
1731 - 2108	FM	580	580					TALARA
2108 - 2190	FM	2777	2755	11				TALARA
2190 - 2285	FM	1225	1225					TALARA
2285 - 2366	FM	2588	2588					TALARA
2366 - 2382	FM	6236	6202	17				TALARA
2382 - 2428	FM	1615	1615					TALARA
2428 - 2474	FM	3674	3620	27				TALARA
2474 - 2504	FM	2250	2250					TALARA
2504 - 2514	FM	15519	14350	112	81	93	66	CHACRA
2514 - 2692	FM	2720	2720					CHACRA
2692 - 2770	FM	270	270					CHACRA
2770 - 3190	FM	710	710					CHACRA
3190 - 3253	FM	338	338					CHACRA
3253 - 3618	FM	3240	3155	19	13	2		CHACRA
3618 - 3632	FM	3268	2755	46	44	36	29	RIO BRAVO
3632 - 3643	FM	1069	1069					RIO BRAVO
3643 - 3668	FM	5770	5422	33	29	25	19	RIO BRAVO
3668 - 3695	FM	2019	1603	24	31	35	27	RIO BRAVO
3695 - 3760	FM	1583	1142	25	21	37	36	RIO BRAVO
3760 - 3792	FM	950	580	26	23	26	29	RIO BRAVO
3792 - 3824	FM	2164	1840	20	17	22	29	RIO BRAVO
3824 - 3878	FM	1107	932	17	7	5	20	RIO BRAVO
3878 - 3923	FM	641	542	8	6	5	9	RIO BRAVO
3923 - 4003	FM	1071	935	12	10	8	10	RIO BRAVO
4003 - 4038	FM	742	621	9	7	8	10	RIO BRAVO
4038 - 4178	FM	269	265	2				RIO BRAVO
4178 - 4203	FM	480	476	2				RIO BRAVO
4203 - 4229	FM	260	258	1				RIO BRAVO
4229 - 4240	FM	1222	1222					RIO BRAVO

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PETRO-TECH PERUANA S.A.

GAS SHOWS DATA RECORD

WELL: LO6- 23

DEPTH (feet)	DITCH SAMPLE GAS							FORMATION
	TYPE	TGC(ppm)	ppm					
			C1	C2	C3	C4	C5	
4240 - 4308	FM	3395	3190	22	16	12	13	RIO BRAVO
4308 - 4333	FM	2389	2249	17	10	9	8	RIO BRAVO
4333 - 4343	FM	693	693					RIO BRAVO
4343 - 4473	FM	2538	2410	12	9	8	9	RIO BRAVO
4473 - 4500	FM	1562	1400	16	10	10	12	RIO BRAVO
4500 - 4541	FM	4408	4136	25	22	19	16	RIO BRAVO
4541 - 4602	FM	1874	1715	14	12	10	11	RIO BRAVO
4602 - 4684	FM	1336	1308	4	2	1	2	RIO BRAVO
4684 - 4771	FM	1048	1048					RIO BRAVO
4771 - 4792	FM	543	543					RIO BRAVO
4792 - 4998	FM	1539	1498	6	2	2	3	RIO BRAVO
4998 - 5194	FM	949	933	2	1	1	1	RIO BRAVO
5194 - 5323	FM	711	711					PALEGREDA
5323 - 5363	FM	149	149					PALEGREDA
*5885 - 5910	FM	1204	1200	2				MOGOLLON
*5910 - 5945	FM	1763	1750	5	1			MOGOLLON
*5945 - 5954	FM	1860	1845	6	1			MOGOLLON
*5954 - 5967	FM	1616	1610	3				MOGOLLON
*5967 - 5970	FM	2259	2220	15	3			MOGOLLON
*5970 - 5976	FM	1900	1880	7	2			MOGOLLON
*5976 - 5987	FM	1284	1280	2				MOGOLLON
*5987 - 6010	FM	1009	1005	2				MOGOLLON
*6010 - 6024	FM	2581	2480	23	5	5	4	MOGOLLON
*6024 - 6030	FM	3421	3280	30	9	6	6	MOGOLLON
*6030 - 6036	FM	1119	1110	3	1			MOGOLLON
*6036 - 6064	FM	992	990	1				MOGOLLON
*6064 - 6077	FM	1381	1370	4	1			MOGOLLON
*6077 - 6104	FM	922	920	1				MOGOLLON
*6104 - 6109	FM	660	660					MOGOLLON
*6109 - 6118	FM	992	990	1				MOGOLLON
*6118 - 6131	FM	1036	1030	3				MOGOLLON
*6131 - 6137	FM	1843	1820	7	3			MOGOLLON
*6137 - 6156	FM	892	890	1				MOGOLLON
*6156 - 6166	FM	942	940	1				MOGOLLON
*6166 - 6175	FM	822	820	1				MOGOLLON
*6175 - 6280	FM	710	710					MOGOLLON
*6280 - 6318	FM	892	890	1				MOGOLLON

GEOIL™

PETRO-TECH PERUANA S.A.

GAS SHOWS DATA RECORD

WELL: LO6- 23

DEPTH (feet)	DITCH SAMPLE GAS							FORMATION
	TYPE	TGC(ppm)	ppm					
			C1	C2	C3	C4	C5	
6318 - 6571	FM	847	825	2	1		3	SAN CRISTOBAL
6571 - 6764	FM	262	258	2				SAN CRISTOBAL
6764 - 6929	FM	577	543	17				SAN CRISTOBAL
6929 - 7275	FM	950	906	22				SAN CRISTOBAL
7275 - 7370	FM	613	581	16				SAN CRISTOBAL
7370 - 7635	FM	928	880	24				SAN CRISTOBAL
7635 - 7805	FM	539	507	16				SAN CRISTOBAL
7805 - 7811	FM	65225	62034	1308	87	71	6	BASAL SALINA
7811 - 7850	FM	663	621	21				BASAL SALINA
7850 - 7884	FM	504	474	15				BASAL SALINA
7884 - 7910	FM	2173	2105	34				BASAL SALINA
7910 - 7921	FM	12126	11419	225	12	54	1	BASAL SALINA
7921 - 7986	FM	465	443	11				BASAL SALINA
7986 - 7992	FM	2032	1603	58	12	38	25	BASAL SALINA
7992 - 8009	FM	2851	2101	87	76	87		BASAL SALINA
8009 - 8022	FM	1356	932	82	36	38		BASAL SALINA
8022 - 8042	FM	4172	3376	150	21	87	17	BASAL SALINA
8042 - 8055	FM	2701	1715	87	106	106	14	BASAL SALINA
8055 - 8065	FM	2288	1068	44	361	11	1	BASAL SALINA
8065 - 8091	FM	471	443	14				BASAL SALINA
8091 - 8133	FM	201	197	2				BASAL SALINA
8133 - 8136	FM	1114	1068	23				BASAL SALINA
8136 - 8185	FM	150	150					BASAL SALINA
8185 - 8229	FM	140	140					BASAL SALINA
8229 - 8256	FM	131	131					BASAL SALINA
8256 - 8300	FM	337	295	21				BASAL SALINA
8300 - 8312	FM	316	316					BASAL SALINA
8312 - 8329	FM	197	197					BASAL SALINA
8329 - 8331	FM	241	107	67				BASAL SALINA
8331 - 8337	FM	100	100					BASAL SALINA
8337 - 8343	FM	426	362	32				BASAL SALINA
8343 - 8364	FM	276	276					BASAL SALINA
8364 - 8366	FM	579	543	18				BASAL SALINA
8366 - 8409	FM	179	179					BASAL SALINA
8409 - 8412	FM	442	414	14				BASAL SALINA
8412 - 8421	FM	225	225					BASAL SALINA
8421 - 8425	FM	1305	1223	41				BASAL SALINA

GAS SHOWS DATA RECORD

WELL: LO6- 23

DEPTH (feet)	DITCH SAMPLE GAS							FORMATION
	TYPE	TGC(ppm)	ppm					
			C1	C2	C3	C4	C5	
8425 - 8452	FM	300	276	12				BASAL SALINA
8452 - 8463	FM	6753	6209	172	26	28	2	BASAL SALINA
8463 - 8476	FM	207	197	5				BASAL SALINA
8476 - 8494	FM	1832	1603	58	15	17		BASAL SALINA
8489	STG	82347	71444	3177	444	663	113	BASAL SALINA
8494 - 8497	FM	508	474	17				BASAL SALINA
8497 - 8503	FM	764	581	39	15	15		BASAL SALINA
8503 - 8531	FM	300	276	12				BASAL SALINA
8531 - 8538	FM	506	474	16				BASAL SALINA
8538 - 8571	FM	637	581	28				BASAL SALINA
8570	STG	103055	90605	3472	697	705	119	BASAL SALINA
8570	TG	69366	60891	2313	475	501	84	BASAL SALINA
8571 - 8576	FM	1243	998	47	18	18	5	BASAL SALINA
8576 - 8608	FM	210	210					BASAL SALINA
8608 - 8656	FM	150	150					BASAL SALINA
8652	TG	38210	34632	1102	189	168	27	BASAL SALINA
8656 - 8661	FM	1700	1498	58	10	14		BASAL SALINA
8661 - 8713	FM	338	316	11				BASAL SALINA
8713 - 8716	FM	2585	2407	67	8	5		BASAL SALINA
8716 - 8731	FM	332	316	8				BASAL SALINA
8731 - 8842	FM	409	387	11				BASAL SALINA
8842 - 8849	FM	2060	1836	58	13	11	5	BASAL SALINA
8849 - 8861	FM	415	387	14				BASAL SALINA
8851	CG	12948	11190	511	74	106	18	BASAL SALINA
8861 - 8879	FM	189	189					BASAL SALINA
8876	STG	34627	30442	1269	132	259	43	BASAL SALINA
8878	STG	35504	30983	1319	190	272	45	BASAL SALINA
8879 - 8895	FM	466	362	20	8	10		BASAL SALINA
8895 - 8918	FM	360	338	11				BASAL SALINA
8918 - 8949	FM	184	184					BASAL SALINA
8945	CG	3975	3562	134	19	17	4	BASAL SALINA
8949 - 8962	FM	300	276	12				BASAL SALINA
8962 - 9024	FM	541	507	17				BASAL SALINA
9024 - 9040	FM	197	197					BASAL SALINA
9040	STG	84827	74497	3131	572	498	72	BASAL SALINA
9040	STG	43801	36955	1745	401	442	77	BASAL SALINA

*Readings taken from chromatograph draws

GAS SHOWS DATA RECORD

WELL: LO6- 23

DEPTH (feet)	DITCH SAMPLE GAS							FORMATION
	TYPE	TGC(ppm)	ppm					
			C1	C2	C3	C4	C5	

UNITS CONVERTION

Parts per million	Units of Gas
100 ppm	1 u

GEOIL™

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FLUORESCENCE DATA RECORD

WELL: LO6 - 23

Depth (Feet)	FLUORESCENCE					COLOUR	DISTRIBUTION				INTENSITY				FORMATION
	Traces	Poor	Fair	Good	%		Even	Motled	Patchy	Spotty	Bright	Pale	Faint	Dull	
3610 - 3640		X			15	sli bri yel'sh wh			X		X				RIO BRAVO
3640 - 3670		X			10	sli bri yel'sh wh			X		X				RIO BRAVO
3670 - 3700			X		50	sli bri yel'sh wh		X			X				RIO BRAVO
3700 - 3730			X		50	sli bri yel'sh wh		X			X				RIO BRAVO
3730 - 3760			X		30	sli bri yel'sh wh		X			X				RIO BRAVO
3760 - 3790			X		30	sli bri yel'sh wh		X			X				RIO BRAVO
3790 - 3820			X		30	sli bri yel'sh wh		X			X				RIO BRAVO
3820 - 3850		X			20	sli bri yel'sh wh			X		X				RIO BRAVO
3850 - 3880		X			10	sli bri yel'sh wh			X		X				RIO BRAVO
3880 - 3910	X				-5	sli bri yel'sh wh				X	X				RIO BRAVO
3910 - 3940		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
3940 - 3970		X			15	sli bri yel'sh wh			X		X				RIO BRAVO
4240 - 4270		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
4270 - 4300		X			10	sli bri yel'sh wh			X		X				RIO BRAVO
4300 - 4330		X			5	sli bri yel'sh wh				X	X				RIO BRAVO

FLUORESCENCE DATA RECORD

WELL: LO6 - 23

Depth (Feet)	FLUORESCENCE					COLOUR	DISTRIBUTION				INTENSITY				FORMATION
	Traces	Poor	Fair	Good	%		Even	Motled	Patchy	Spotty	Bright	Pale	Faint	Dull	
4330 - 4360		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
4360 - 4390	X				-5	sli bri yel'sh wh				X	X				RIO BRAVO
4480 - 4510		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
4510 - 4540		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
4540 - 4570	X				-5	sli bri yel'sh wh				X	X				RIO BRAVO
4630 - 4660		X			5	sli bri yel'sh wh				X	X				RIO BRAVO
5890 - 5900		X			5	pale yel'sh wh				X		X			MOGOLLON
5900 - 5910		X			5	pale yel'sh wh				X		X			MOGOLLON
5930 - 5940		X			5	pale yel'sh wh				X		X			MOGOLLON
5970 - 5980		X			10	sl dull wh			X					X	MOGOLLON
5980 - 5990		X			15	sl dull wh			X					X	MOGOLLON
5990 - 6000		X			10	sl dull wh			X					X	MOGOLLON
6000 - 6010		X			5	sl dull wh				X				X	MOGOLLON
6020 - 6030			X		30	sl bri wh		X			X				MOGOLLON
6030 - 6040		X			15	sl bri wh			X		X				MOGOLLON

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FLUORESCENCE DATA RECORD

WELL: LO6 - 23

Depth	FLUORESCENCE					COLOUR	DISTRIBUTION				INTENSITY				FORMATION
(Feet)	Traces	Poor	Fair	Good	%		Even	Motled	Patchy	Spotty	Bright	Pale	Faint	Dull	
6120 - 6130		X			5	sl bri wh				X	X				MOGOLLON
7960 - 7980	X				-5	sl bri yel'sh wh				X	X				BASAL SALINA
7980 - 8000		X			15	sl bri yel'sh wh			X		X				BASAL SALINA
8000 - 8020		X			10	sl bri yel'sh wh			X		X				BASAL SALINA
8020 - 8030		X			20	sl bri yel'sh wh			X		X				BASAL SALINA
8030 - 8050		X			30	sl bri yel'sh wh			X		X				BASAL SALINA
8050 - 8060			X		40	sl bri yel'sh wh		X			X				BASAL SALINA
8060 - 8070		X			15	sl yel'sh wh			X		X				BASAL SALINA
8070 - 8080		X			10	sl yel'sh wh			X		X				BASAL SALINA
8080 - 8090		X			5	sl yel'sh wh				X	X				BASAL SALINA
8270 - 8280		X			5	yel'sh wh				X	X				BASAL SALINA
8290 - 8300		X			5	yel'sh wh				X	X				BASAL SALINA
8420 - 8425		X			20	yel'sh wh			X			X			BASAL SALINA
8425 - 8430		X			5	yel'sh wh				X		X			BASAL SALINA
8430 - 8440	X				-5	yel'sh wh				X		X			BASAL SALINA

FLUORESCENCE DATA RECORD

WELL: LO6 - 23

Depth	FLUORESCENCE					COLOUR	DISTRIBUTION				INTENSITY				FORMATION
(Feet)	Traces	Poor	Fair	Good	%		Even	Motled	Patchy	Spotty	Bright	Pale	Faint	Dull	
8455 - 8460	X				-5	yel'sh wh				X		X			BASAL SALINA
8460 - 8470		X			5	yel'sh wh				X		X			BASAL SALINA
8470 - 8480	X				-5	yel'sh wh				X		X			BASAL SALINA
8520 - 8540	X				-5	yel'sh wh				X		X			BASAL SALINA
8570 - 8580	X				-5	yel'sh wh				X		X			BASAL SALINA
8710 - 8715	X				-5	yel'sh wh				X		X			BASAL SALINA
8840 - 8850		X			30	sl yel'sh wh			X		X				BASAL SALINA
8850 - 8860		X			10	sl yel'sh wh			X		X				BASAL SALINA
8970 - 9010	X				-5	yel'sh wh				X		X			BASAL SALINA

DAILY OPERATION REPORT

WELL: LO6-23

APRIL 24, 2001

00:00 - 01:00	CONTINUE RIH 18" CONDUCTOR AT 395 FT
01:00 - 02:00	RETIRE PIECE 18" CONDUCTOR, PUT 4" HOSE
02:00 - 05:00	MAKE UP BHA, RIH TO 393 FT
05:00 - 07:00	DRILL FROM 393 FT TO 414 FT
07:00 - 09:30	DRILL FROM 414 FT TO 445 FT, JUNK PRESENCE
09:30 - 11:00	POOH
11:00 - 13:00	RIH W/ MAGNET, RECOVERED TRACES OF JUNK
13:00 - 14:00	RIH W/ SAME BIT
14:00 - 15:00	DRILL FROM 445 FT TO 473 FT
15:00 - 15:30	PO OH 1 STAND OF 5" HW TO SHOE
15:30 - 20:30	REPAIR CONDUCTOR TABLE IN FIRST NIVEL
20:30 - 21:00	RIH TO 473 FT
21:00 - 24:00	DRILL FROM 473 FT TO 580 FT

APRIL 25, 2001

00:00 - 00:30	DRILL FROM 580 FT TO 597 FT
00:30 - 01:00	PUMP VISCOSITY PILL
01:00 - 02:30	POOH, LAY DOWN 6 HW, RETIRE RED AND BIT
02:30 - 03:30	MAKE UP UNDER REAMER WITH SAME BIT, PICK UP KELLY AND TEST OK
03:30 - 05:00	RETIRE KELLY AND CONTINUE RIH TO 407 FT
05:00 - 10:30	WIDEN HOLE WITH UNDER REAMER FROM 407 FT TO 597 FT
10:30 - 13:00	CIRCULATE AND PUMP VISCOSITY PILL, POOH TO RUN CONDUCTOR
13:00 - 17:00	RUN 18" CONDUCTOR TO 430 FT
17:00 - 18:30	WELD TOPS IN FIRST NIVEL, RETIRE PIECE OF CONDUCTOR
18:30 - 21:00	MAKE UP BIT W/ UNDER REAMER AND RIH TO 430 FT
21:00 - 22:30	WIDEN HOLE WITH UNDER REAMER FROM 430 FT TO 470 FT WITH RETURN, NOT PASS CONDUCTOR
22:30 - 24:00	PULL CONDUCTOR AND PUT SUPPORT IN FIRST NIVEL

APRIL 26, 2001

00:00 - 03:00	WIDEN HOLE WITH UNDER REAMER FROM 470 FT TO 597 FT
03:00 - 03:30	CIRCULATE AND PUMP VISCOSITY PILL
03:30 - 05:00	POOH, RETIRE UNDER REAMER
05:00 - 09:30	RUN 18" CONDUCTOR TO 489 FT, NOT PASS MORE
09:30 - 10:30	WELD TOPS IN FIRST NIVEL, RETIRE PIECE OF CONDUCTOR

10:30 - 11:30	MAKE UP 17" BIT W/ UNDER REAMER, PICK UP KELLY AND TEST WITH 1000 PSI OK
11:30 - 13:00	RETIRE KELLY AND RIH TO 484 FT
13:00 - 15:30	WIDEN HOLE WITH UNDER REAMER FROM 479 FT TO 597 FT
15:30 - 16:00	CIRCULATE AND PUMP VISCOSITY PILL
16:00 - 17:00	POOH, RETIRE BIT AND UNDER REAMER
17:00 - 20:00	WELD AND RUN 18" CONDUCTOR TO 597 FT, ASSURE CONDUCTOR IN FIRST NIVE
20:00 - 24:00	CUT PIECE 18" CONDUCTOR, WELD 21 1/4" FLANGE

APRIL 27, 2001

00:00 - 04:00	NIPPLE UP 21 1/4" BOP's
04:00 - 04:30	RIH WITH 5" DP WITHOUT BIT TO 597 FT
04:30 - 05:00	TEST BOP, OPEN AND CLOSE ANNULAR OK
05:00 - 06:00	PICK UP KELLY, CIRCULATE, CLOSE ANNULAR, TEST ADMISSION OK
06:00 - 06:30	B.J PUT CEMENT HEAD, TEST LINES WITH 2000 PSI OK
06:30 - 07:00	B.J CEMENT, RETIRE CEMENT HEAD
07:00 - 07:30	PULL PIPE, PUT HEAD, PUMP 22 BLS SEA WATER, PRESSURIZED WITH 140 PSI
07:30 - 21:30	W.O.C
21:30 - 22:30	MAKE UP NEW KELLY WITH KELLY BUSHING
22:30 - 23:30	DRILL CEMENT FROM 590 FT TO 597 FT, DISPLACE WATER BY MUD
23:30 - 24:00	DRILL FROM 597 FT TO 613 FT

APRIL 28, 2001

00:00 - 04:30	DRILL FROM 613 FT TO 725 FT
04:30 - 05:00	CIRCULATE AND SURVEY 1º AT 725 FT
05:00 - 17:30	DRILL FROM 725 FT TO 1000 FT
17:30 - 18:00	CIRCULATE AND SURVEY 1 3/4º AT 1000 FT
18:00 - 19:30	DRILL FROM 1000 FT TO 1030 FT
19:30 - 20:00	CIRCULATE
20:00 - 24:00	POOH TO CHANGE BIT, MAKE UP NEW BIT AND RIH

APRIL 29, 2001

00:00 - 01:00	CONTINUE RIH TO 1030 FT
01:00 - 18:30	DRILL FROM 1030 FT TO 1500 FT
18:30 - 20:00	CIRCULATE AND SURVEY 1 3/4º AT 1500 FT
20:00 - 21:00	SHORT TRIP WITH DIFFICULTY WITH 150000 LBS AT 1302 FT
21:00 - 22:00	PICK UP KELLY, POOH JOINT BY JOINT W/ CIRCULATION FROM 1302 FT TO 1083
22:00 - 24:00	CONTINUE POOH IN STANDS FROM 1083 FT TO 736 FT WITH DIFFICULTY.

APRIL 30, 2001

00:00 - 00:30	CONTINUE POOH TO CONDUCTOR
00:30 - 01:30	RIH, SET AT 1340 FT
01:30 - 02:00	RIH W/ CIRCULATION TO 1500 FT
02:00 - 03:00	CLEAN FLOW LINE AND SHALE SHAKER
03:00 - 04:00	CIRCULATE
04:00 - 07:00	POOH
07:00 - 07:30	PREPAIR TO RUN CASING
07:30 - 14:30	RUN 13 3/8" CASING
14:30 - 17:00	RIG UP CEMENT LINES
17:00 - 20:00	B.J TEST LINES W/ 2500 PSI AND CEMENT, DISPLACE W/ 225 BLS OF MUD, RIG
	DOWN CEMENT LINES
20:00 - 24:00	W.O.C

MAY 01, 2001

00:00 - 20:00	W.O.C
20:00 - 24:00	NIPPLE UP BOP's

MAY 02, 2001

00:00 - 14:30	CONTINUE NIPPLE UP BOP's
14:30 - 15:00	TEST BOP's W/ 1200 PSI FOR 15 MIN. TEST MANIFOLD NEGATIVE
15:00 - 16:00	CHANGE 4" UNION, CHECK CONNECTIONS
16:00 - 16:30	TEST LINES AND MANIFOLD GAS VALVE W/ 1200 PSI OK
16:30 - 18:30	MAKE UP BIT RR, STB TO 60 FT, RIH TO 1450 FT TOP CEMENT
18:30 - 19:00	TEST RAMS W/ 1200 PSI OK, ANNULAR W/ 900 PSI OK
19:00 - 21:30	DRILL CEMENT FROM 1450 FT TO 1470 FT, CEMENT VERY HARD
21:30 - 24:00	POOH TO CHECK BIT

MAY 03, 2001

00:00 - 01:00	FINISHED POOH, CHANGE BIT
01:00 - 03:00	MAKE UP FDS BIT, RIH TO 1470 FT
03:00 - 03:30	PICK UP KELLY, DRILL CEMENT FROM 1470 FT TO 1500 FT
03:30 - 05:00	DRILL FROM 1500 FT TO 1600 FT
05:00 - 05:30	CIRCULATE
05:30 - 09:30	POOH DISARM STB, BIT, 4 1/2" HW, 6 1/4" DC's, 7 3/4" DC's
09:30 - 12:00	MAKE UP BHA WITH PDC BIT S91PX AND DOWNHOLE MOTOR
12:00 - 17:30	REPAIR RAISER AND FLOW LINE
17:30 - 21:00	RIH CONTINUE ADD MONELS, 7 3/4" DC's, HW, DP TO 1600 FT
21:00 - 22:30	TEST SLIM 1 FOR SEVERAL TIMES NEGATIVE
22:30 - 24:00	POOH TO CHECK SLIM 1

MAY 04, 2001

00:00 - 01:30	CONTINUE POOH, RETIRE SLIM 1, CHANGE BIT
01:30 - 03:00	PUT TRICONIC BIT, SLIM 1, RIH TO 584 FT, TEST SLIM 1 W/ 680 GLS 1350 PSI OK
03:00 - 06:30	RETIRE KELLY, POOH, CHANGE TRICONIC BIT, MAKE UP PDC BIT, RIH TO 1591 FT
06:30 - 10:30	PICK UP KELLY, TAKE SURVEY, DRILL SLIDING FROM 1600 FT TO 1818 FT
10:30 - 11:00	SURVEY TWO TIMES NEGATIVE
11:00 - 20:00	DRILL FROM 1818 FT TO 2192 FT
20:00 - 20:30	CIRCULATE
20:30 - 21:30	SHORT TRIP TO SHOE OK
21:30 - 22:30	DRILL FROM 2192 FT TO 2255 FT
22:30 - 23:30	REPAIR PUMP#2
23:30 - 24:00	DRILL FROM 2255 FT TO 2318 FT

MAY 05, 2001

00:00 - 05:30	DRILL FROM 2318 FT TO 2691 FT
05:30 - 06:00	CIRCULATE
06:00 - 09:30	POOH, RETIRE BIT AND MOTOR
09:30 - 12:30	MAKE UP NEW BHA, SAME BIT, RIH TO 321 FT, TEST MWD W/ 709 GLS 750 PSI OK
12:30 - 13:30	CONTINUE RIH TO 1461 FT
13:30 - 15:00	PUT SECURITY VALVE, CUT OF DRILLING LINE 85 FT
15:00 - 16:00	CONTINUE RIH TO 2647 FT
16:00 - 16:30	PICK UP KELLY, REAM FROM 2647 FT TO 2691 FT
16:30 - 24:00	DRILL FROM 2691 FT TO 3195 FT

MAY 06, 2001

00:00 - 01:00	DRILL FROM 3195 FT 3253 FT
01:00 - 02:00	CIRCULATE
02:00 - 03:00	SHORT TRIP TO 2461 FT OK
03:00 - 12:00	DRILL FROM 3253 FT 3635 FT
12:00 - 12:30	CIRCULATE
12:30 - 15:00	POOH TO CHANGE BIT
15:00 - 17:00	RETIRE BIT, MAKE UP NEW PDC DS69HF, RIH TO 500 FT
17:00 - 17:30	PICK UP KELLY, TEST MWD WITH 900 PSI 700 GPM
17:30 - 19:00	CONTINUE RIH TO 3575 FT
19:00 - 19:30	PICK UP KELLY, REAM FROM 3575 FT TO 3635 FT
19:30 - 24:00	DRILL FROM 3635 FT TO 3784 FT

MAY 07, 2001

00:00 - 03:30	DRILL FROM 3784 FT TO 3875 FT
03:30 - 04:00	REPAIR PUMP#2
04:00 - 06:00	DRILL FROM 3875 FT TO 3914 FT
06:00 - 06:30	REPAIR PUMP#1
06:30 - 24:00	DRILL FROM 3914 FT TO 4229 FT

MAY 08, 2001

00:00 - 00:30	CIRCULATE
00:30 - 03:30	POOH
03:30 - 04:30	REPAIR BIT BRAKER, CHANGE BIT, MAKE UP PDC BD535, RIH TO 60 FT
04:30 - 05:30	CHECK MWD, RIH TO 300 FT
05:30 - 06:00	TEST MWD OK
06:00 - 07:30	RIH TO 4179 FT
07:30 - 08:00	PICK UP KELLY, REAM FROM 4179 FT TO 4229 FT
08:00 - 24:00	DRILL FROM 4229 FT TO 4750 FT

MAY 09, 2001

00:00 - 06:00	DRILL FROM 4750 FT TO 4998 FT
06:00 - 07:00	CIRCULATE AND SLUG PIPE
07:00 - 10:00	POOH, CHECK BIT
10:00 - 12:30	CHANGE BHA, PUT SAME BIT, SLIM 1 AND RIH TO 300 FT
12:30 - 13:00	TEST SLIM 1 OK
13:00 - 15:30	CONTINUE RIH TO 4729 FT
15:30 - 16:00	PICK UP KELLY, REAM FROM 4729 FT TO 4780 FT
16:00 - 16:30	CONTINUE RIH, SET TO 4940 FT, PICK UP KELLY AND REAM FROM TO BOTTOM
16:30 - 24:00	DRILL FROM 4998 FT TO 5280 FT

MAY 10, 2001

00:00 - 01:00	DRILL FROM 5280 FT TO 5313 FT
01:00 - 02:00	CIRCULATE
02:00 - 05:30	POOH TO SHOE
05:30 - 08:00	RIH TO 5231 FT
08:00 - 08:30	PICK UP KELLY, RIH W/ PUMP AND ROTATION FROM 5231 FT TO 5262 FT, AFTER WITH PUMP TO 5313 FT
08:30 - 10:30	PUMP VISCOSITY PILL AND CIRCULATE
10:30 - 16:00	RETIRE KELLY, POOH, RETIRE BIT, LAY DOWN ASSY OF 12 1/4"
16:00 - 16:30	PREPAIR TO RUN CASING
16:30 - 24:00	RUN 9 5/8" CASING TO 4438 FT

MAY 11, 2001

00:00 - 01:30	CONTINUE RUN 9 5/8" CASING TO 5313 FT, VALVE AT 5216 FT
01:30 - 02:30	B.J MAKE UP LINES AND CEMENT HEAD
02:30 - 04:00	CIRCULATE
04:00 - 04:30	B.J TEST LINES W/ 2500 PSI OK
04:30 - 05:30	B.J REPAIR CEMENT HEAD
05:30 - 08:30	CEMENT AND DISPLACE
08:30 - 24:00	W.O.C

MAY 12, 2001

00:00 - 05:00	WELD FLOW LINE AND LINES 2"
05:00 - 05:30	TEST BLIND W/ 1500 PSI OK
05:30 - 06:30	MAKE UP DRILL PIPE W/ CUP TESTER, TEST ANNULAR W/ 750 AND 1500 PSI, AFTER BOP's W/. 2250 PSI BY 15 MIN. OK
06:30 - 07:30	TEST RAMS 5" W/ 2300 PSI NEGATIVE, REPAIR 2" LINE
07:30 - 08:00	TEST RAMS 5" W/ 2300 PSI OK, TEST CHOKE MANIFOLD LINES W/ 2300 PSI OK
08:00 - 09:30	TEST CHOKE MANIFOLD VALVE BY VALVE W/ 2300 PSI
09:30 - 13:30	MAKE UP 8 1/2" BIT, ASSY FREE AND RIH TO 5214 FT
13:30 - 16:00	DRILL CEMENT, VALVE FROM 5214 FT TO 5313 FT
16:00 - 16:30	DRILL FROM 5313 FT TO 5323 FT
16:30 - 20:00	POOH
20:00 - 22:00	MAKE UP DOWN HOLE MOTOR AND RIH TO 70 FT
22:00 - 22:30	PICK UP KELLY, TEST ANADRILL TOOL OK
22:30 - 24:00	RETIRE KELLY, POOH, WORK IN 1.5º MOTOR, RIH TO 1045

MAY 13, 2001

00:00 - 02:30	CONTINUE RIH TO 5307 FT
02:30 - 03:30	PICK UP KELLY, ANADRILL ORIENTE TOOL
03:30 - 24:00	DRILL SLIDING FROM 5323 FT TO 5772 FT

MAY 14, 2001

00:00 - 02:00	DRILL SLIDING FROM 5772 FT TO 5818 FT
02:00 - 03:00	CIRCULATE
03:00 - 09:00	POOH TO CHANGE ASSY, RETIRE DOWN HOLE MOTOR, BIT
09:00 - 11:30	MAKE UP NEW ASSY, PDC BIT, RIH TO 313 FT
11:30 - 12:00	PICK UP KELLY, TEST SLIM 1 W/ 500 GPM 350 PSI OK, RETIRE KELLY
12:00 - 17:30	CONTINUE RIH TO 5272 FT, PICK UP KELLY, FILL HOLE, RETIRE KELLY, RIH TO 574 FT.
17:30 - 18:00	PICK UP KELLY AND CLEAN W/ PUMP FROM 5746 FT TO 5818 FT
18:00 - 18:30	DRILL FROM 5818 FT TO 5849 FT
18:30 - 19:00	SURVEY 2 TIMES
19:00 - 19:30	DRILL FROM 5849 FT TO 5854 FT
19:30 - 20:00	TEST PUMPS, DECREASE PRESSION, CHECK LINES
20:00 - 24:00	RETIRE KELLY, POOH (3384 FT).

MAY 15, 2001

00:00 - 03:30	POOH CONTINUE
03:30 - 04:00	RETIRE BIT, CHANGE JETS 5x16 - 1x15
04:00 - 06:30	MAKE UP BIT AND RIH CHECKING PEGAxPEGA TO DC 6 1/4" RIH @ 497' PICK UP KELLY TEST COLUMN WITH 490 GPM 120 SPM 580 PSI
06:30 - 11:00	CONTINUE RIH DRILL PIPE AT 1608' TEST COLUMN WITH 498 GPM 122 SPM 900 PSI, AFTER AT 2545 FT WITH 494 GPM 121 SPM 950 PSI, AFTER AT 3487 FT WITH 490 GPM 120 SPM 1025 PSI, AFTER AT 4430 FT WITH 490 GPM 120 SPM 1150 PSI,

	AFTER AT 5275 FT WITH 490 GPM 120 SPM 1200 PSI, CONTINUE RIH TO 5854 FT
11:10 - 12:30	DRILL FROM 5854 FT TO 5943 FT
12:30 - 13:00	SURVEY TWICE
13:00 - 24:00	DRILL FROM 5943 FT TO 6321 FT

MAY 16, 2001

00:00 - 01:00	CIRCULATE
01:00 - 02:00	SHORT TRIP AT 5831'
02:00 - 07:30	DRILL FROM 6321 FT TO 6571 FT
07:30 - 08:30	CIRCULATE AND SURVEY
08:30 - 10:30	POOH TO CHANGE BHA AT 4085 FT
10:30 - 12:00	SET GUIDE PLATINA OF THE LOWER PART OF THE RIG
12:00 - 15:00	FINISH POOH
15:00 - 16:00	LAY DOWN ASSY
16:00 - 21:30	MAKE UP MOTOR POWER PACK + SLIM-1 AND PDC BIT, RIH TO 117 FT, TEST SLIM CONTINUE RIH TO CASING POINT
21:30 - 22:30	RUN 80' DRILLING CABLE AND CUT 90'
22:30 - 24:00	FILL PIPE AND RIH TO 6571 FT

MAY 17, 2001

00:00 - 00:30	PICK UP KELLY AND CLEAN FROM 6516 FT TO 6571 FT
00:30 - 23:30	DRILL SLIDING AND ROTATING FROM 6571 FT TO 6764 FT
23:30 - 24:00	CIRCULATE TO POOH

MAY 18, 2001

00:00 - 05:30	POOH, TEST BOP's OK
05:30 - 07:30	LAY DOWN PDC BIT, MAKE UP GTM1, CHANGE DOWN HOLE MOTOR, RIH TO 137 F
07:30 - 10:00	PICK UP KELLY, TEST MWD NEGATIVE RETIRE KELLY , REVIEW MWD AND UBHO CHANGE PULSER, TEST TOOL MWD WITH 500 GPM 850 PSI OK
10:00 - 11:00	RETIRE KELLY TO LINE BEND HOUSING MOTOR 1.5º
11:00 - 14:30	RIH TO SHOE
14:30 - 15:00	PICK UP KELLY, BREAK CIRCULATION
15:00 - 15:30	RIH TO 6724 FT
15:30 - 16:00	CLEAN FROM 6724 FT TO 6764 FT
16:00 - 24:00	DRILL FROM 6764 FT TO 6853 FT

MAY 19, 2001

00:00 - 17:00	DRILL SLIDING AND ROTATING FROM 6853 FT TO 7122 FT
17:00 - 18:30	REPAIR MUD PUMPS #1 AND #2, POOH 4 STANDS, RIH TO BOTTOM OK
18:30 - 24:00	DRILL SLIDING AND ROTATING FROM 7122 FT TO 7210 FT

MAY 20, 2001

00:00 - 09:30	DRILL SLIDING AND ROTATING FROM 7210 FT TO 7331 FT
09:30 - 10:00	TRY ORIENTATION AND TAKE SURVEY NEGATIVE
10:00 - 11:00	CIRCULATE, PUMP SLUG PIPE
11:00 - 16:30	POOH , RETIRE MWD, CHANGE PULSER, BATERY AND SHORTING PLUG
16:30 - 17:30	PUT MWD, RIH TO 76 FT PICK UP KELLY AND TEST WITH 478 GPM 850 PSI OK
17:30 - 22:00	POOH, MAKE UP PDC BIT, RIH WITH SAME BHA DOWN TO SHOE
22:00 - 22:30	PICK UP KELLY, BREAK CIRCULATION, TEST MWD OK
22:30 - 24:00	CONTINUE RIH

MAY 21, 2001

00:00 - 00:30	PICK UP KELLY AND CLEAN FROM 7291 FT TO 7331 FT
00:30 - 22:30	DRILL WITH DOWN HOLE MOTOR FROM 7331 FT TO 7614 FT
22:30 - 24:00	REPAIR MUD PUMP, POOH 3 STANDS

MAY 22, 2001

00:00 - 03:30	FINISH REPAIR MUD PUMP #2
03:30 - 04:00	RIH TO 7614 FT
04:00 - 24:00	DRILL WITH DOWN HOLE MOTOR FROM 7614 FT TO 7771 FT

MAY 23, 2001

00:00 - 04:30	DRILL FROM 7771 FT TO 7802 FT
04:30 - 05:30	REPAIR TRANSMISION CHAIN
05:30 - 11:30	DRILL FROM 7802 FT TO 7850 FT
11:30 - 12:30	CIRCULATE
12:30 - 14:00	SHORT TRIP TO 7261 FT OK
14:00 - 15:00	DRILL FROM 7850 FT TO 7865 FT
15:00 - 18:00	CIRCULATE, MUD WEIGHT UP FROM 11.8 TO 12.0 PPG, PUMP SLUG PIPE
18:00 - 24:00	POOH

MAY 24, 2001

00:00 - 01:30	FINISH POOH
01:30 - 03:30	RETIRE SLIM 1, POWER PACK MOTOR, MONELS AND MAKE UP NEW ASSY WITH TRICONIC BIT
03:30 - 06:00	RIH TO SHOE
06:00 - 06:30	PICK UP KELLY AND BREAK CIRCULATION
06:30 - 08:00	CONTINUE RIH TO 7842 FT
08:00 - 08:30	REAM FROM 7842 FT TO 7865 FT
08:30 - 16:00	DRILL FROM 7865 FT TO 7920 FT, DRILLING BREAK
16:00 - 16:30	CIRCULATE, CHECK WELL, 191 UNITS OF GAS
16:30 - 24:00	DRILL FROM 7920 FT TO 8002 FT

MAY 25, 2001

00:00 - 09:00	DRILL FROM 8002 FT TO 8088 FT
09:00 - 10:00	CIRCULATE
10:00 - 11:00	SHORT TRIP TO 7684 FT
11:00 - 24:00	DRILL FROM 8088 FT TO 8162 FT

MAY 26, 2001

00:00 - 11:00	DRILL FROM 8162 FT TO 8223 FT, PRESSURE DROP
11:00 - 12:30	CHECK MUD PUMPS AND INJECTION LINE OK, RETIRE KELLY
12:30 - 18:00	POOH TO 7959 FT, PICK UP KELLY, CHECK PRESSURE PUMP #1 130 SPM 1000 PSI CONTINUE POOH TO 6343 FT PICK UP KELLY CHECK PRESSURE 1000 PSI 142 SPM CONTINUE POOH FIND WASH OUT IN D.P # 65, DEPTH 6148 FT, RETIRE PIPE AND RIH TO 7852 FT, PICK UP KELLY AND REAM 40 FT, AFTER RIH IN STANDS TO 8185 FT PICK UP KELLY AND REAM TO 8223 FT
18:00 - 19:00	DRILL FROM 8223 FT TO 8229 FT, PRESSURE DROP
19:00 - 19:30	CHANGE PUMP, CHECK AND PRESSURE DROP
19:30 - 21:30	POOH TO 6430 FT, WASH OUT IN D.P #57, PICK UP KELLY AND TEST PUMP #1 WITH 122 SPM 1300 PSI, PUMP #2 WITH 122 SPM 1300 PSI, RETIRE KELLY, RIH TO 6524 F PICK UP KELLY , CIRCULATE
21:30 - 23:30	REPAIR CHAIN OF PRINCIPAL DRUM
23:30 - 24:00	RETIRE KELLY, CONTINUE RIH TO 7847 FT

MAY 27, 2001

00:00 - 00:30	CONTINUE RIH TO 8183 FT
00:30 - 01:00	REAM FROM 8183 FT TO 8229 FT
01:00 - 01:30	DRILL FROM 8229 FT TO 8232 FT, PRESSURE DROP
01:30 - 04:30	REPAIR CHAIN OF PRINCIPAL DRUM-MALACATE
04:30 - 07:30	POOH TO 6156 FT, FIND WASH OUT AT 2066 D.P #66, PICK UP KELLY CHECK PRESSURE WITH PUMP #1 WITH 122 SPM 1300 PSI, RETIRE KELLY, RIH TO 8182 FT
07:30 - 08:00	REAM FROM 8182 FT TO 8232 FT
08:00 - 21:00	DRILL FROM 8232 FT TO 8307 FT, PRESSURE DROP
21:00 - 21:30	CHANGE PUMP, CHECK , CONTINUE PRESSURE DROP, CHECK LINE
21:30 - 24:00	POOH TO 6148 FT, FIND WASH OUT AT 2129 FT D.P #68

MAY 28, 2001

00:00 - 00:30	RETIRE PIPE, PICK UP KELLY AND TEST PUMP#2 WITH 125 SPM 1300 PSI
00:30 - 02:00	RIH TO 7904 FT
02:00 - 03:00	REAM FROM 7904 FT TO 8038 FT
03:00 - 03:30	CONTINUE RIH TO 8307 FT
03:30 - 05:00	DRILL FROM 8307 FT TO 8315 FT, PRESSURE DROP
05:00 - 06:00	POOH TO 6774 FT
06:00 - 07:00	CHANGE CHAIN OF MALACATE
07:00 - 08:00	CONTINUE POOH TO 6407 FT, FIND WASH OUT IN D.P #61 AT 1908 FT, RETIRE PIPI TEST WITH 122 SPM 1275PSI, RETIRE KELLY
08:00 - 09:30	RIH TO 8248 FT
09:30 - 10:00	REAM FROM 8248 FT TO 8315 FT
10:00 - 14:00	DRILL FROM 8315 FT TO 8336 FT
14:00 - 19:30	PUMP SLUG PIPE, POOH, RETIRE BIT
19:30 - 22:30	MAKE UP NEW BIT, RIH TO SHOE
22:30 - 23:30	CUT OFF DRILLING LINE
23:30 - 24:00	PICK UP KELLY, BREAK CIRCULATION

MAY 29, 2001

00:00 - 03:00	RIH TO 8000 FT, CHANGE 10 D.P IN THE INTERVAL 6493 FT TO 6178 FT
03:00 - 05:00	LAY DOWN 10 D.P IN THE INTERVAL 7967 FT TO 8280 FT AND PUT JOINT BY JOINT
05:00 - 05:30	REAM FROM 8280 FT TO 8336 FT
05:30 -20:30	DRILL FROM 8336 FT TO 8419 FT
20:30 - 21:00	PRESSURE DROP, CHANGE PUMP, CONTINUE PRESSURE DROP
21:00 - 24:00	POOH TO 6680 FT, FIND WASH OUT D.P #55 AT 1720 FT, RETIRE D.P, PICK UP KELL CHECK PRESSURE, RETIRE KELLY, RIH TO 8373 FT

MAY 30, 2001

00:00 - 00:30	REAM FROM 8373 FT TO 8419 FT
00:30 - 13:30	DRILL FROM 8419 FT TO 8489 FT, PRESSURE DROP
13:30 - 17:00	POOH AT 6588 FT, FIND WASH OUT IN D.P # 63 AT 1972 FT, PICK UP KELLY CHECK PRESSURE WITH 1400 PSI 122 SPM, RETIRE KELLY, RIH TO 8489 FT
17:00 - 24:00	DRILL FROM 8489 FT TO 8523 FT

MAY 31, 2001

00:00 - 03:30	DRILL FROM 8523 FT TO 8545 FT
03:30 - 04:00	PRESSURE DROP, CHECK PUMPS, NEGATIVE
04:00 - 08:30	POOH FIND WASH OUT IN D.P # 58 AT 1814 FT, CONTINUE POOH TO 6179 FT, PICK UP KELLY, CHECK PRESSURE WITH 122 SPM 1200 PSI OK, RIH TO 8499 FT

08:30 - 09:00	PICK UP KELLY, REAM FROM 8499 FT TO 8545 FT
09:00 - 14:00	DRILL FROM 8545 FT TO 8570 FT
14:00 - 21:00	PRESSURE DROP, POOH FIND WASH OUT IN D.P #59 AT 1845 FT, CONTINUE POOH 79 PIPES AT 6055 FT, PICK UP KELLY CHECK PRESSURE WITH 120 SPM 1050 PSI, CONTINUE POOH 112 PIPES AT 5111 FT, PICK UP KELLY CHECK PRESSURE WITH 120 SPM 1050 PSI, RIH SET AT 8539 FT
21:00 - 21:30	REAM FROM 8539 FT TO 8570 FT
21:30 - 22:30	ATTEMPT DRILL, PRESSURE DROP, CIRCULATE
22:30 - 24:00	POOH

JUNE 01, 2001

00:00 - 04:30	CONTINUE POOH, RETIRE 21 D.P POSITION 50-70, CHECK CONNECTION BY WASH OUT NEGATIVE, POOH
04:30 - 05:30	CHECK BIT, RIH WITH SAME BIT TO 370 FT, PICK UP KELLY TEST WITH 120 SPM 400 PSI OK
05:30 - 09:00	CONTINUE RIH, CHECK PRESSURE EVERY 10 STANDS, RIH TO 4860 FT
09:00 - 10:00	RUN AND ADD 35 OF DRILLING LINE IN DRUM
10:00 - 18:30	CONTINUE RIH, CHECK PRESSURE AT 5802 FT, 6460 FT, POOH RETIRE 21 D.P, CHECK PRESSURE AT 5802 FT OK, RUN 42 D.P IN INTERVAL 1500 FT - 2815 FT, CHECK PRESSURE WITH 120 SPM 1300 PSI OK, CONTINUE RIH, SIT AT 8035 FT, CLEAN WITH KELLY FROM 8035 FT TO 8075 FT, AND 8191 FT TO 8260 FT, RIH, SIT AT 8440 FT
18:30 - 19:30	PICK UP KELLY AND CLEAN FROM 8440 FT TO 8570 FT
19:30 - 24:00	DRILL FROM 8570 FT TO 8588 FT

JUNE 02, 2001

00:00 - 17:30	DRILL FROM 8588 FT TO 8655 FT
17:30 - 18:00	CIRCULATE, SLUG PIPE
18:00 - 24:00	POOH

JUNE 03, 2001

00:00 - 03:30	CHANGE BIT, RIH TO SHOE
03:30 - 04:00	PICK UP KELLY, BREAK CIRCULATION
04:00 - 06:30	CONTINUE RIH TO 8595 FT
06:30 - 07:00	PICK UP KELLY, CLEAN FROM 8595 FT TO 8655 FT
07:00 - 24:00	DRILL FROM 8655 FT TO 8735 FT

JUNE 04, 2001

00:00 - 24:00	DRILL FROM 8735 FT TO 8859 FT

JUNE 05, 2001

00:00 - 02:30	DRILL FROM 8859 FT TO 8876 FT
02:30 - 03:30	CHECK CIRCULATION, PRESSURE DROP
03:30 - 07:30	POOH TO 6836 FT, FIND WASH OUT IN PIPE# 64 AT 2040 FT, RIH TO 8842 FT
07:30 - 08:00	PICK UP KELLY, CLEAN TO 8876 FT
08:00 - 08:30	DRILL FROM 8876 FT TO 8878 FT
08:30 - 09:30	CHECK BY PRESSURE DROP, CIRCULATE
09:30 - 10:30	POOH TO 8466 FT, FIND WASH OUT IN PIPE# 12 AT 412 FT, RIH TO 8878 FT
10:30 - 24:00	DRILL FROM 8878 FT TO 8945 FT

JUNE 06, 2001

00:00 - 14:00	DRILL FROM 8945 FT TO 9040 T.D.
14:00 - 15:30	CIRCULATE, SLUG PIPE
15:30 - 19:00	POOH TO SHOE

19:00 - 20:00	CUT OFF DRILLING LINE 190 FT
20:00 - 22:00	RIH, SET AT 8530 FT
22:00 - 22:30	PICK UP KELLY, CLEAN FROM 8530 FT TO 8570 FT
22:30 - 23:00	CONTINUE RIH TO 9040 FT
23:00 - 24:00	CIRCULATE

JUNE 07, 2001

00:00 - 01:30	CIRCULATE
01:30 - 07:30	POOH
07:30 - 14:00	SCHLUMBERGER MAKE UP TOOLS, RIH, LOGGING WITH HALS-MSFL-LDT-CNL-GR FROM 9040 FT TO 5313 FT
14:00 - 16:30	MAKE UP DIPMETER
16:30 - 20:00	RIH, LOGGING WITH DIPMETER FROM 9040 FT TO 5313 FT
20:00 - 21:00	LAY DOWN DIPMETER
21:00 - 24:00	MAKE UP CHECK SHOT, TEST NEGATIVE, REPAIR

JUNE 08, 2001

00:00 - 01:30	CONTINUE REPAIR CHECK SHOT
01:30 - 05:30	RIH, LOGGING WITH CHECK SHOT AT AT THE INTERVALS: 9000 FT, 8841 FT, 8263 FT, 8083 FT, 7783 FT, 7300 FT, 6800 FT, 6343 FT, 5892 FT, 5553 FT, 5311 FT, 4646 FT, 4160 FT, 3595 FT, 3000 FT, 2493 FT, 2000 FT, 1575 FT, 1000 FT, 500 FT, POOH
05:30 - 07:00	RIG DOWN SCHLUMBERGER
07:00 - 12:00	MAKE UP MONEL WITH MULTISHOT, RIH TO 5300 FT
12:00 - 12:30	PICK UP KELLY, BREAK CIRCULATION
12:30 - 15:00	CONTINUE RIH TO 9040 FT
15:00 - 17:00	CIRCULATE
17:00 - 23:00	POOH TAKING MULTISHOT
23:00 - 23:30	AT 4000 FT PUMP VISCOSITY PILL
23:30 - 24:00	CONTINUE POOH

JUNE 09, 2001

00:00 - 04:00	CONTINUE POOH, LAY DOWN 3 DC's, 2 MONELS, STB, MULTISHOT
04:00 - 05:00	PREPAIR TO RUN CASING
05:00 - 13:30	RUN 5 1/2" CASING, SHOE AT 8275 FT
13:30 - 14:00	B.J PUT CEMENT HEAD AND 2" LINES
14:00 - 15:30	CIRCULATE WITH PUMP#2 123 STK 800 PSI
15:30 - 16:30	PUT PLUG, TEST LINES NEGATIVE, REPAIR LINES OK, TEST LINES WITH 3000 PSI OK, DESPLACE RED PLUG WITH 4 BLS MUD
16:30 - 17:00	PUT BLACK PLUG, PUMP WASH FLUID
17:00 - 20:00	B.J. CEMENT
20:00 - 20:30	B.J RIG DOWN 2" LINES
20:30 - 24:00	W.O.C

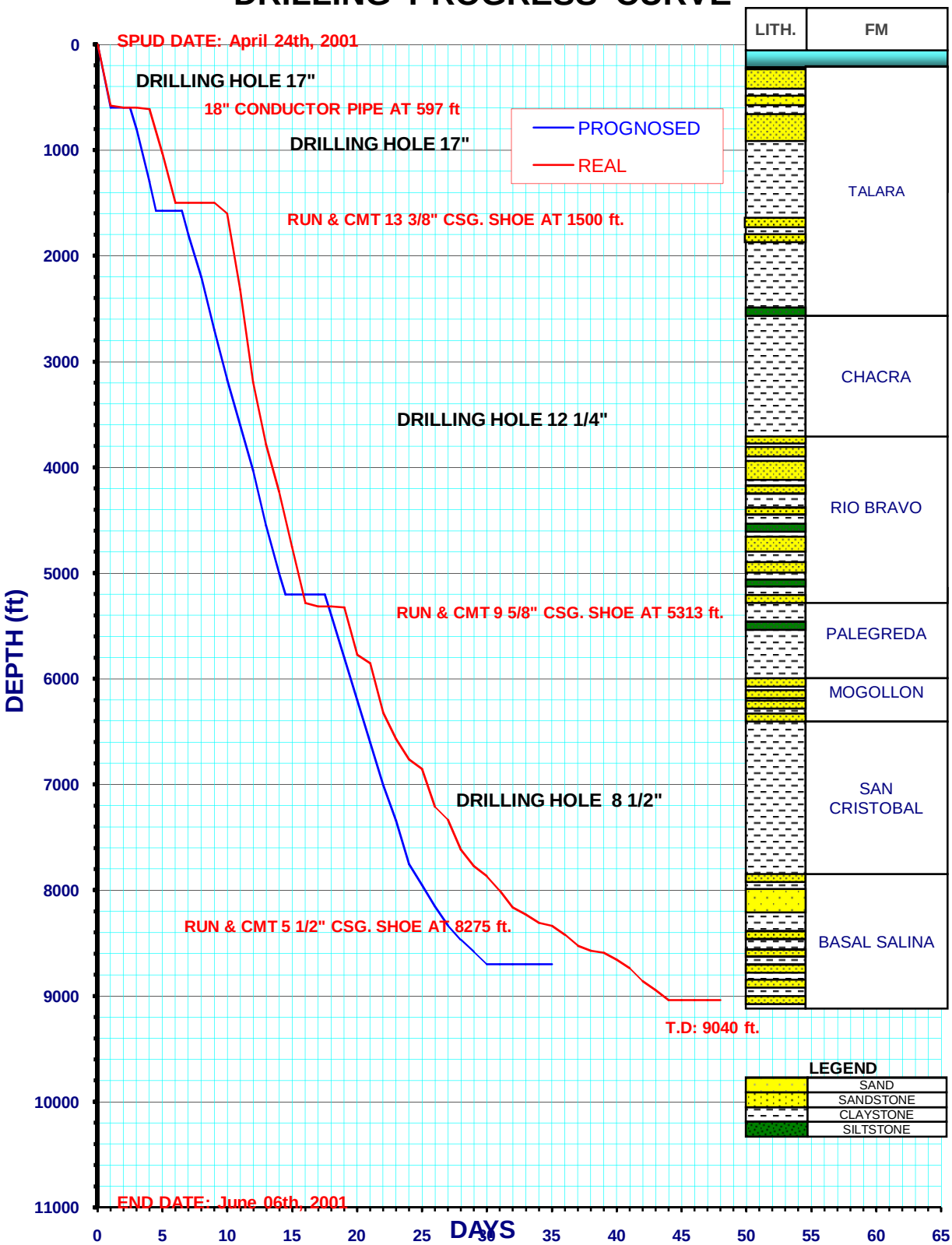
JUNE 10, 2001

00:00 - 24:00	W.O.C

GEOIL™

PETRO-TECH PERUANA S.A.

DRILLING PROGRESS CURVE



GEOIL™

PETRO-TECH PERUANA S.A.

MUD DATA RECORD

WELL: LO6-23

DATE	DEPTH	MW	FV	PV/YP	GELS	FIL	PH	CALC.	CHLR	SOL.	SAND	MBT	MUD TYPE
04/26/01	597'	8.4											SEA WATER
04/27/01	605'	8.5	60	9/22									SPUD MUD
04/28/01	1030'	9.0	60	12/26	10/14/17		9.0						SPUD MUD
04/29/01	1500'	9.1	64	13/28	12/16/22		9.0						SPUD MUD
04/30/01	1500'	9.0	52	10/17	6/9/12		9.0						SPUD MUD
05/01/01	1500'	8.6	55	10/17	6/9/12		9.0						SPUD MUD
05/02/01	1500'	8.7	50	14/20	6/8/9	7.4	10.0	380	20000	2.0	0.10	5.0	FLO-DRILL
05/03/01	1600'	8.8	50	14/21	6/8/9	7.4	10.6	380	19800	2.0	0.10	5.0	FLO-DRILL
05/04/01	2318'	8.9	50	14/26	8/12/15	6.8	10.0	200	24000	4.0	0.20	7.5	FLO-DRILL
05/05/01	3195'	9.3	51	17/25	8/14/17	6.6	9.4	380	26000	5.0	0.30	15.0	FLO-DRILL
05/06/01	3784'	9.5	52	17/28	8/15/18	6.0	9.4	320	28000	6.0	0.30	17.5	FLO-DRILL
05/07/01	4229'	9.7	52	16/27	8/16/20	5.8	9.3	280	26000	7.0	0.40	20.0	FLO-DRILL
05/08/01	4750'	9.8	53	19/27	8/17/22	5.6	9.4	240	26000	8.0	0.40	20.0	FLO-DRILL
05/09/01	5282'	9.8	52	18/27	8/16/22	5.6	9.4	280	28000	8.0	0.30	20.0	FLO-DRILL
05/10/01	5313'	9.9	54	19/28	8/17/23	5.4	9.8	380	27000	8.0	0.40	22.5	FLO-DRILL
05/11/01	5313'	9.9	50	18/22	7/12/17	5.6	9.8	320	25000	8.0	0.30	22.5	FLO-DRILL
05/12/01	5323'	9.5	50	14/20	7/10/12	5.6	11.0	240	28000	5.0	0.20	12.5	FLO-DRILL
05/13/01	5772'	10.2	51	15/20	8/10/13	5.4	10.5	240	28000	9.0	0.25	12.5	FLO-DRILL
05/14/01	5854'	10.4	54	16/24	8/12/16	5.4	10.0	280	26000	11.0	0.30	12.5	FLO-DRILL
05/15/01	6321'	10.9	50	17/26	8/12/16	5.2	9.6	240	26000	13.0	0.30	15.0	FLO-DRILL
05/16/01	6571'	10.9	52	17/27	8/13/16	5.2	9.4	240	27000	13.0	0.30	15.0	FLO-DRILL
05/17/01	6764'	10.9	52	16/27	8/14/17	5.4	9.4	320	26000	13.0	0.30	16.0	FLO-DRILL
05/18/01	6853'	10.9	51	17/27	8/15/18	5.2	9.4	240	27000	13.5	0.30	17.5	FLO-DRILL
05/19/01	7210'	10.9	52	17/28	8/15/19	5.2	10.0	240	28000	14.0	0.30	17.5	FLO-DRILL
05/20/01	7331'	11.0	51	17/27	8/15/18	5.2	10.0	240	28000	14.0	0.30	17.5	FLO-DRILL
05/21/01	7616'	11.0	52	19/28	9/18/24	5.6	10.2	320	28000	14.0	0.30	19.0	FLO-DRILL
05/22/01	7771'	11.4	53	20/28	10/18/26	5.6	10.5	80	27000	16.0	0.25	20.0	FLO-DRILL
05/23/01	7865'	12.0	53	21/29	12/20/28	5.6	10.5	80	26000	18.0	0.30	20.0	FLO-DRILL
05/24/01	8002'	12.1	54	21/28	9/19/27	5.4	10.4	160	28000	19.0	0.25	19.0	FLO-DRILL
05/25/01	8162'	12.3	54	21/29	10/21/28	5.2	10.5	160	27000	19.0	0.50	20.0	FLO-DRILL

GEOIL

PETRO-TECH PERUANA S.A.

MUD DATA RECORD

WELL: LO6-23

DATE	DEPTH	MW	FV	PV/YP	GELS	FIL	PH	CALC.	CHLR	SOL.	SAND	MBT	MUD TYPE
05/26/01	8229'	12.3	54	21/29	10/21/28	5.2	10.5	160	27000	19.0	0.50	20.0	FLO-DRILL
05/27/01	8307'	12.3	55	23/29	10/22/29	5.0	10.5	160	26000	19.0	0.40	20.0	FLO-DRILL
05/28/01	8336'	12.3	55	23/28	10/23/30	5.0	10.4	160	25000	20.0	0.50	21.0	FLO-DRILL
05/29/01	8419'	12.3	55	23/27	9/21/28	5.0	10.5	160	29000	19.0	0.40	20.0	FLO-DRILL
05/30/01	8523'	12.3	55	23/28	10/23/30	5.0	10.5	180	29000	20.0	0.50	20.0	FLO-DRILL
05/31/01	8570'	12.3	56	23/28	10/22/32	5.0	10.5	180	29000	20.0	0.50	20.0	FLO-DRILL
06/01/01	8588'	12.3	56	22/28	10/24/32	5.0	10.4	180	28000	20.0	0.50	20.0	FLO-DRILL
06/02/01	8655'	12.3	58	23/28	10/24/34	5.0	10.5	200	27000	20.0	0.50	20.0	FLO-DRILL
06/03/01	8735'	12.3	59	23/29	10/24/34	5.0	10.5	200	27000	20.0	0.30	20.0	FLO-DRILL
06/04/01	8859'	12.3	59	23/29	10/24/34	5.0	10.5	200	27000	20.0	0.60	20.0	FLO-DRILL
06/05/01	8945'	12.3	60	24/32	10/26/35	5.0	10.5	200	26500	21.0	0.60	22.5	FLO-DRILL
06/06/01	9040'	12.4	60	24/30	10/26/36	5.0	10.6	200	26500	21.0	0.60	22.5	FLO-DRILL

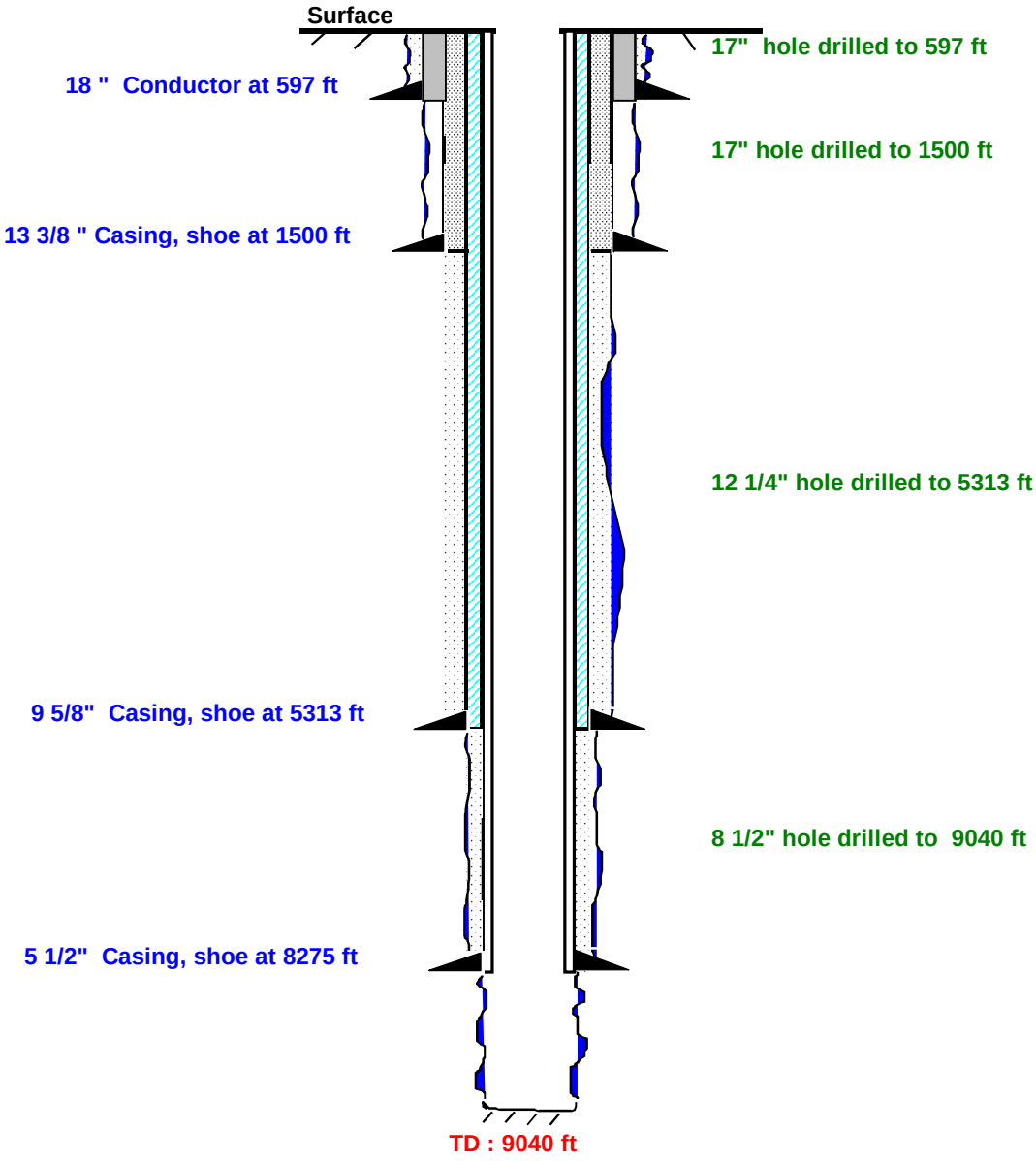
MUD PROPERTIES

WELL: LO6-25

DEPTH (Feet)	MW (ppg)	FV (sec / qt)	PV (cp)	YP (lb 100 sq ft)
605	8.5	60	9	22
1030	9.0	60	12	26
1500	9.1	64	13	28
1600	8.8	50	14	21
2318	8.9	50	14	26
3195	9.3	51	17	25
3784	9.5	52	17	28
4229	9.7	52	16	27
4750	9.8	53	19	27
5282	9.8	52	18	27
5313	9.9	54	19	28
5323	9.5	50	14	20
5772	10.2	51	15	20
5854	10.4	54	16	24
6321	10.9	50	17	26
6571	10.9	52	17	27
6764	10.9	52	16	27
6853	10.9	51	17	27
7210	10.9	52	17	28
7331	11.0	51	17	27
7616	11.0	52	19	28
7771	11.4	53	20	28
7865	12.0	53	21	29
8002	12.1	54	21	28
8162	12.3	54	21	29
8229	12.3	54	21	29
8307	12.3	55	23	29
8336	12.3	55	23	28
8419	12.3	55	23	27
8523	12.3	55	23	28
8570	12.3	56	23	28
8588	12.3	56	22	28
8655	12.3	58	23	28
8735	12.3	59	23	29
8859	12.3	59	23	29
8945	12.3	60	24	32
9040	12.4	60	24	30

WELLBORE SCHEME

WELL: LO6 - 23



BIT RECORD TABLE

FIELD: LOBITOS	WELL: Z2B-24-081-D-LO6	PETRO-TECH N°: LO6-23	RIG: PEPESA 48	UNIT: GEOIL

Bit identification							Bit performance and drilling parameters									
BIT	Run #	Size inches	Type	Make	Serial #	Jets	Depth In	Depth Out	Ft Drill.	Hrs.	Rop Ft/Hr	WOB Klbs	RPM Table	Flow gpm	SPP psi	IADC Dull Code
1	RR	17	GTX-1	HTC	L59GE	2x18 1x16	393	597	204	9	22.66	10/12	100	550	950	3-3-1/8
2	RR	17	GTX-C1	HTC	W52CL	3x22 1x16	597	1030	433	19	22.78	15/20	120	531	725	4-6-1/8
3	RR	17	GTX-C1	HTC	W53CL	3x18 1x16	1030	1500	470	17.5	26.85	15/20	120	532	1000	-----
4	RR	12 1/4	ATX-C1	HTC	A33-CA	3x16 1x18	1450	1470	C L E A N C E M E N T							
5	RR	12 1/4	FDS	HTC	YE7185	3x18	1500	1600	100	1.5	66.6	25/30	120/130	662	1300	3-3-1/8
6	RR	12 1/4	S91PX	PDC	JR8589	5x16 2x18	1600	3635	2035	37.5	54.2	15/20	110/120	700	1600	20% Desg
7	RR	12 1/4	DS69HF	PDC	19243	3x16 3x18	3635	4229	594	27.5	21.6	25/30	100/110	700	1900	70% Desg
8	N	12 1/4	BD535	PDC	402502	4x16 2x20 1x18	4229	5313	1084	30.5	35.5	25	80	650	1600	35% Desg
9	RR	8 1/2	GT-M1	HTC	L26CW	3x22	5313	5323	10	0.5	20	30	100	512	750	3-3-1/16
10	N	8 1/2	GT-M1	HTC	S04DV	3x22	5323	5818	495	22.5	22	25/30	80/SLD	500	1300	3-3-1/32
11	N	8 1/2	DS110NSV	PDC	H47615	4x16 2x18	5818	6764	946	42	22.5	5/10	80/SLD	500	1700	5% Desg
12	N	8 1/2	GT-M1	HTC	S05DV	2x22 1x24	6764	7331	567	40	14.1	25/30	80/SLD	480	1750	2-2-1/16
13	RR	8 1/2	DS110NSV	PDC	H47615	3x16 3x18	7331	7865	534	53.5	10	30/35	70/80	420	1900	5% Desg
14	N	8 1/2	HP51	REED	BW4023	3x24	7865	8336	471	68	6.9	38/40	90	420	1400	4-7-1/16
15	N	8 1/2	GTM 18	HTC	R16DF	3x24	8336	8655	319	66	4.8	35	90	400	1300	2-2-4
16	N	8 1/2	GTM 09	HTC	R14DD	3x24	8655	9040	385	71.5	5.4	38	90	401	1300	2-3-1/16

GEOIL™

PETRO-TECH PERUANA S.A.

SURVEYS DATA (ANADRILL)

WELL: LO6 - 23

DEPTH	INCLINAT.	AZIMUTH	TVD	V. SECT.	N/ - S	E/ - W	CLOSURE
(feet)	(degree)	(degree)	(feet)	(feet)	(feet)	(feet)	(feet)
1537	1.50	42.0	1536.82	-19.91	14.95	13.46	20.12
1681	5.60	211.2	1680.64	-14.75	10.34	11.08	15.15
1745	9.60	212.4	1744.06	-6.29	3.16	6.60	7.32
1837	14.60	215.9	1833.99	12.97	-12.72	-4.32	13.44
1901	17.40	215.4	1895.51	30.60	-27.06	-14.59	30.74
1962	18.70	209.6	1953.51	49.48	-43.00	-24.71	49.59
1993	19.70	206.0	1982.79	59.61	-52.02	-29.45	59.78
2056	22.40	206.0	2041.58	82.03	-72.35	-39.37	82.37
2119	25.30	211.1	2099.20	107.37	-94.68	-51.59	107.82
2182	28.20	212.9	2155.45	135.71	-118.71	-66.63	136.13
2245	28.40	213.1	2210.92	165.58	-143.76	-82.90	165.95
2338	28.30	211.8	2292.77	209.72	-181.02	-106.59	210.07
2400	28.70	213.5	2347.25	239.30	-205.93	-122.55	239.64
2463	29.00	215.7	2402.44	269.69	-230.94	-139.82	269.97
2524	29.10	216.7	2455.76	299.28	-254.84	-157.31	299.49
2587	28.60	216.0	2510.94	329.65	-279.33	-175.33	329.79
2697	27.60	214.1	2607.98	381.44	-321.73	-205.09	381.54
2791	27.50	213.8	2691.32	424.92	-357.79	-229.37	425.00
2949	26.70	213.8	2831.97	496.89	-417.60	-269.41	496.97
3106	26.40	212.9	2972.41	567.07	-476.22	-307.99	567.14
3263	26.30	211.4	3113.10	636.72	-535.21	-345.07	636.81
3421	26.10	210.9	3254.87	706.40	-594.91	-381.16	706.54
3579	25.80	211.7	3396.94	775.47	-653.99	-417.07	775.66
3704	25.60	211.4	3509.58	829.64	-700.18	-445.44	829.86
3830	25.00	210.3	3623.49	883.41	-746.41	-473.05	883.69
3988	24.60	210.8	3766.92	949.58	-803.48	-506.74	949.93
4113	23.80	210.4	3880.93	1000.74	-847.58	-532.82	1001.15
4270	22.90	209.6	4025.07	1062.82	-901.47	-563.94	1063.33
4426	21.20	208.6	4169.66	1121.19	-952.63	-592.44	1121.82
4581	19.90	208.2	4314.79	1175.38	-1000.34	-618.58	1176.15
4739	18.50	208.2	4464.00	1227.09	-1045.13	-643.13	1228.01
4896	16.30	208.9	4613.81	1273.84	-1087.38	-665.55	1274.89
5036	15.60	208.2	4748.70	1312.23	-1121.24	-683.98	1313.40
5099	15.70	208.2	4809.40	1329.15	-1136.23	-692.02	1330.38
5162	16.10	208.2	4869.77	1346.27	-1151.38	-700.14	1347.55
5225	16.50	207.5	4930.13	1363.84	-1167.00	-708.40	1365.18
5274	17.00	208.2	4977.05	1377.89	-1179.49	-715.00	1379.28
5346	19.30	209.6	5045.49	1400.16	-1199.05	-725.81	1401.61
5478	22.80	218.1	5168.73	1447.33	-1238.07	-752.33	1448.73
5507	22.70	218.8	5195.48	1458.51	-1246.85	-759.30	1459.86
5539	23.60	219.5	5224.53	1470.88	-1256.49	-767.15	1472.17
DEPTH	INCLINAT.	AZIMUTH	TVD	V. SECT.	N/ - S	E/ - W	CLOSURE
(feet)	(degree)	(degree)	(feet)	(feet)	(feet)	(feet)	(feet)

5597	23.30	217.4	5278.11	1494.04	-1274.68	-781.60	1495.23
5629	23.40	218.2	5307.49	1506.69	-1284.70	-789.37	1507.84
5660	24.40	217.4	5335.83	1519.22	-1294.63	-797.07	1520.32
5723	26.63	216.7	5392.68	1546.31	-1316.30	-813.40	1547.34
5753	27.63	217.5	5419.38	1559.97	-1327.21	-821.65	1560.96
5799	27.80	218.1	5460.10	1581.31	-1344.11	-834.76	1582.24
5862	27.30	218.1	5515.96	1610.37	-1367.04	-852.74	1611.20
5957	27.20	218.1	5600.42	1653.74	-1401.27	-879.58	1654.46
6051	26.90	216.7	5684.14	1696.41	-1435.23	-905.55	1697.03
6145	26.70	215.9	5768.04	1738.75	-1469.39	-930.64	1739.31
6240	26.60	214.5	5852.95	1781.34	-1504.20	-955.20	1781.86
6335	26.40	213.1	5937.97	1823.73	-1539.42	-978.78	1824.24
6428	26.10	211.0	6021.38	1864.84	-1574.28	-1000.61	1865.36
6459	26.10	211.1	6049.22	1878.46	-1585.96	-1007.64	1879.00
6490	26.10	210.3	6077.06	1892.08	-1597.69	-1014.60	1892.63
6516	26.10	209.6	6100.40	1903.49	-1607.60	-1020.31	1904.06
6540	26.10	209.6	6121.96	1914.02	-1616.78	-1025.53	1914.60
6572	26.20	209.6	6150.68	1928.08	-1629.04	-1032.50	1928.69
6603	26.20	209.9	6178.50	1941.74	-1640.93	-1039.29	1942.36
6664	26.40	209.7	6233.18	1968.70	-1664.38	-1052.72	1969.36
6700	26.20	209.4	6265.46	1984.60	-1678.26	-1060.59	1985.30
6729	26.30	208.9	6291.46	1997.39	-1689.46	-1066.83	1998.10
6791	26.60	213.2	6346.98	2024.96	-1713.10	-1081.07	2025.69
6885	26.40	219.4	6431.12	2066.81	-1746.86	-1105.87	2067.48
6916	25.84	218.8	6458.95	2080.39	-1757.46	-1114.47	2081.04
6979	26.30	218.8	6515.54	2107.98	-1779.03	-1131.82	2108.55
7011	27.20	219.5	6544.12	2122.32	-1790.20	-1140.92	2122.86
7043	27.40	220.2	6572.55	2136.91	-1801.47	-1150.32	2137.41
7074	27.30	220.5	6600.09	2151.06	-1812.32	-1159.54	2151.53
7105	26.80	220.2	6627.70	2165.07	-1823.07	-1168.67	2165.50
7136	26.60	220.9	6655.39	2178.90	-1833.65	-1177.73	2179.29
7167	26.40	221.6	6683.14	2192.61	-1844.05	-1186.84	2192.97
7198	26.10	222.3	6710.94	2206.19	-1854.25	-1196.01	2206.51
7230	26.40	222.3	6739.64	2220.18	-1864.71	-1205.54	2220.47
7262	26.80	223.0	6768.25	2234.34	-1875.25	-1215.24	2234.59
7293	26.70	223.0	6795.93	2248.11	-1885.46	-1224.76	2248.33
7388	27.00	222.3	6880.69	2290.51	-1917.02	-1253.83	2290.65
7482	26.40	220.9	6964.67	2332.35	-1948.59	-1281.87	2332.43
7576	26.10	220.2	7048.98	2373.64	-1980.18	-1308.90	2373.68
7670	27.20	218.8	7132.99	2415.59	-2012.72	-1335.71	2415.61
7764	29.60	216.7	7215.67	2460.18	-2048.08	-1363.05	2460.20
7796	30.30	216.0	7243.40	2476.14	-2060.95	-1372.52	2476.16
7880	31.40	214.3	7315.51	2519.21	-2096.08	-1397.45	2519.21
7973	30.50	214.4	7395.27	2569.04	-2135.57	-1424.44	2567.04
8068	29.90	213.7	7477.38	2614.82	-2175.16	-1451.20	2614.82
8162	28.70	213.9	7559.35	2660.82	-2213.39	-1476.79	2660.83
8256	26.50	216.2	7642.65	2704.35	-2249.05	-1501.77	2704.35
8351	25.30	215.4	7728.11	2745.82	-2282.70	-1526.04	2745.82
8445	24.90	212.4	7813.23	2785.68	-2315.78	-1548.28	2785.68
8539	24.10	212.2	7898.77	2824.65	-2348.73	-1569.11	2824.65
DEPTH	**INCLINAT.**	**AZIMUTH**	**TVD**	**V. SECT.**	**N/ - S**	**E/ - W**	**CLOSURE**
(feet)	(degree)	(degree)	(feet)	(feet)	(feet)	(feet)	(feet)
8633	23.20	210.9	7984.88	2862.33	-2380.86	-1588.86	2862.33
8727	22.40	209.3	8071.53	2898.68	-2412.37	-1607.12	2898.68

8822	21.70	208.9	8159.58	2934.22	-2443.53	-1624.47	2934.23
8916	21.20	208.9	8247.07	2968.47	-2473.62	-1641.08	2968.49
9010	21.70	209.6	8334.56	3002.73	-2503.61	-1657.88	3002.77

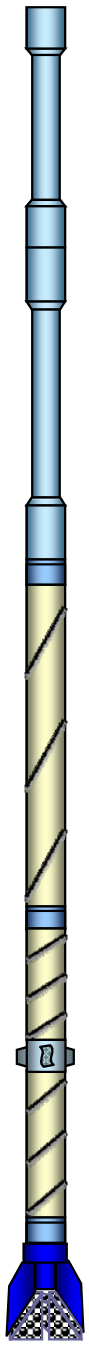
GEOIL®

PETRO-TECH PERUANA S.A.

BHA No. 1

WELL : LO6-23

April 27th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
9HW	4 1/2"	2 7/8"	4 1/2" IF	4 1/2" IF	252.71	**1030.00**
14 HW	5"	3 1/8"	4 1/2" IF	4 1/2" IF	425.19	**777.29**
X/O	6 9/16"	4 1/2"	4 1/2" XH	4 1/2" IF	2.91	**352.10**
8 DC's	6 1/4"	2 1/4"	4 1/2" XH	4 1/2" XH	241.39	**349.19**
X/O	6 9/16"	4 1/2"	6 5/8" Reg	4 1/2" XH	2.90	**107.80**
1 DC's	6 1/4"	2 1/4"	6 5/8" Reg	6 5/8" Reg	31.05	**104.90**
STB	8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	6.55	**73.85**
2 DC's	6 1/4"	2 1/4"	6 5/8" Reg	6 5/8" Reg	62.04	**67.30**
RED	7 7/8"	3 1/8"	7 5/8" Reg	6 5/8" Reg	3.68	**5.26**
BIT#2RR 17" GTX-1 W52CL JET: 3x22 1x16	17"				1.58	**1.58**

TOTAL LENGTH	**1030.00**

DEPTH IN: 597'

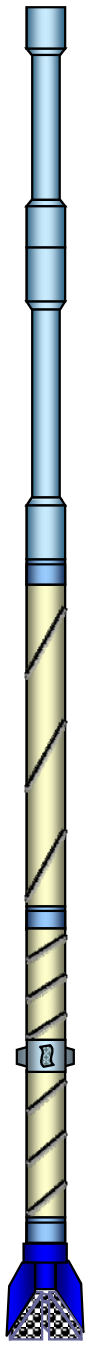
GEOIL®

PETRO-TECH PERUANA S.A.

BHA No. 2

WELL : LO6-23

April 28th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
9HW	4 1/2"	2 7/8"	4 1/2" IF	4 1/2" IF	270.58	**1047.87**
14 HW	5"	3 1/8"	4 1/2" IF	4 1/2" IF	425.19	**777.29**
X/O	6 9/16"	4 1/2"	4 1/2" XH	4 1/2" IF	2.91	**352.10**
8 DC's	6 1/4"	2 1/4"	4 1/2" XH	4 1/2" XH	241.39	**349.19**
X/O	6 9/16"	4 1/2"	6 5/8" Reg	4 1/2" XH	2.90	**107.80**
1 DC's	6 1/4"	2 1/4"	6 5/8" Reg	6 5/8" Reg	31.05	**104.90**
STB	8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	6.55	**73.85**
2 DC's	6 1/4"	2 1/4"	6 5/8" Reg	6 5/8" Reg	62.04	**67.30**
RED	7 7/8"	3 1/8"	7 5/8" Reg	6 5/8" Reg	3.68	**5.26**
BIT#3RR 17" GTX-1 W53CL JET: 3x18 1x16	17"				1.58	**1.58**

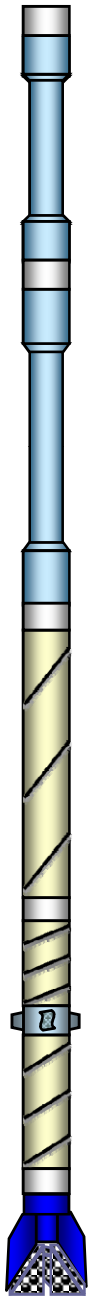
TOTAL LENGTH	**1047.87**

DEPTH IN: 1300'

BHA No. 3

WELL : LO6-23

May 02nd, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
XO	7 5/8"	2 7/8"	4 1/2" IF	4 1/2" XH	0.80	**1046.71**
9 HWDP	4 1/2"	2 3/4"	4 1/2" XH	4 1/2" XH	270.48	**1045.91**
XO	7 5/8"	2 7/8"	4 1/2" IF	4 1/2" XH	1.50	**775.43**
14 HWDP	5"	3"	4 1/2" XH	4 1/2" XH	425.19	**773.93**
XO	7 5/8"	2 7/8"	4 1/2" XH	4 1/2" IF	2.91	**348.74**
8 DC's	6 1/4"	2 1/4"	4 1/2" XH	4 1/2" XH	241.39	**345.83**
XO	7 5/8"	2 7/8"	6 5/8" Reg	4 1/2" XH	2.90	**104.44**
DC	8"	2 3/4"	6 5/8" Reg	6 5/8" Reg	31.05	**101.54**
STB	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	4.55	**70.49**
2 DC's	8"	2 3/4"	6 5/8" Reg	6 5/8" Reg	62.04	**65.94**
XO	7 5/8"	2 7/8"	6 5/8" Reg	4 1/2" XH	2.90	**3.90**
BIT#5RR 12 1/4" FDS YE7185 JET: 3x18	12 1/4"			6 5/8" Reg	1.00	**1.00**

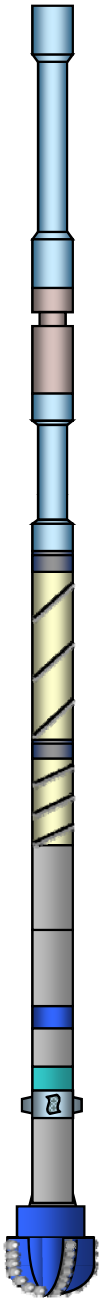
TOTAL LENGTH	**1046.71**

DEPTH IN: 1500 Ft.

BHA No.4

WELL : LO6-23

May 03rd, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**994.80**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**449.42**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**417.28**
X/O	6 1/4"	2 3/4"	4 1/2" XH	4 1/2" IF	1.60	**235.15**
3 DC's	6 1/4"	2 13/16"	4 1/2" XH	4 1/2" XH	89.69	**233.55**
X/O	7 21/32"	2 15/16"	6 5/8" Reg	4 1/2 XH	2.90	**143.86**
7 3/4" DC	7 13/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	31.31	**140.96**
MNDC	7 7/8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	29.26	**109.65**
MNDC	7 15/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	30.94	**80.39**
UBHO	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.25	**49.45**
Pony NMDC	7 11/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	10.62	**47.20**
Float Sub w/ valve	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.58	**36.58**
12" Stb	8 1/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.97	**34.00**
Power Pak Motor	8 1/4"		6 5/8" Reg	6 5/8" Reg	27.20	**28.03**
BIT#6RR 12 1/4" PDC S91PX JR8589 JET: 5x16 2x18	12 1/4"			6 5/8" Reg	0.83	**0.83**

TOTAL LENGTH	**994.80**

DEPTH IN: 1600 Ft.

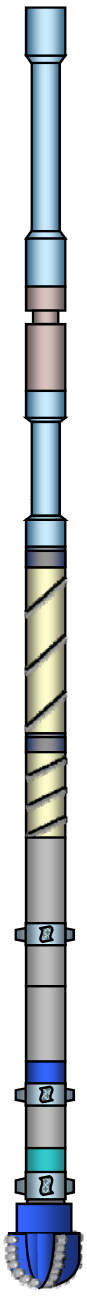
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.5

WELL : LO6-23

May 05th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**989.96**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**444.58**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**412.44**
X/O	6 1/4"	2 3/4"	4 1/2" XH	4 1/2" IF	1.60	**230.31**
3 DC's	6 1/4"	2 13/16"	4 1/2" XH	4 1/2" XH	89.69	**228.71**
X/O	7 21/32"	2 15/16"	6 5/8" Reg	4 1/2 XH	2.90	**139.02**
7 3/4" DC	7 13/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	31.31	**136.12**
MNDC	7 7/8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	29.26	**104.81**
12 1/4" Stb	7 15/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	5.17	**75.55**
Pony MNDC	7 13/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	11.75	**70.38**
MNDC	7 15/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	30.94	**58.63**
UBHO	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.25	**27.69**
12" WM Stb	8 1/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.97	**25.44**
Pony NMDC	7 11/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	10.62	**19.47**
Float Sub w/ valve	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.58	**8.85**
12 1/4" NB Stb	7 3/4"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.44	**6.27**
BIT#6RR 12 1/4" PDC S91PX JR8589 JET: 5x16 2x18	12 1/4"			6 5/8" Reg	0.83	**0.83**

TOTAL LENGTH	**989.96**

DEPTH IN: 2692 Ft.

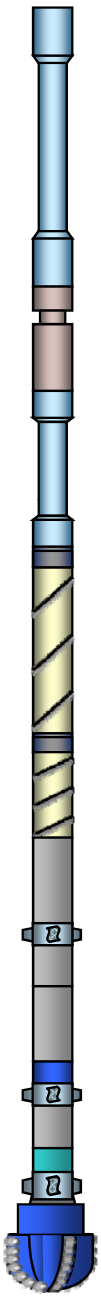
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.5A

WELL : LO6-23

May 05th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**989.96**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**444.58**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**412.44**
X/O	6 1/4"	2 3/4"	4 1/2" XH	4 1/2" IF	1.60	**230.31**
3 DC's	6 1/4"	2 13/16"	4 1/2" XH	4 1/2" XH	89.69	**228.71**
X/O	7 21/32"	2 15/16"	6 5/8" Reg	4 1/2 XH	2.90	**139.02**
7 3/4" DC	7 13/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	31.31	**136.12**
MNDC	7 7/8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	29.26	**104.81**
12 1/4" Stb	7 15/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	5.17	**75.55**
Pony MNDC	7 13/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	11.75	**70.38**
MNDC	7 15/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	30.94	**58.63**
UBHO	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.25	**27.69**
12" WM Stb	8 1/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.97	**25.44**
Pony NMDC	7 11/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	10.62	**19.47**
Float Sub w/ valve	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.58	**8.85**
12 1/4" NB Stb	7 3/4"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.44	**6.27**
BIT#7RR 12 1/4" PDC DS69HF 19243 JET: 3x16 3x18	12 1/4"			6 5/8" Reg	0.83	**0.83**

TOTAL LENGTH	**989.96**

DEPTH IN: 3635 Ft.

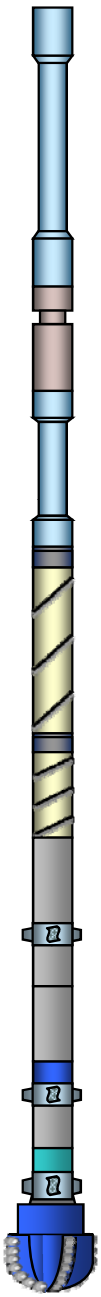
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.5B

WELL : LO6-23

May 08th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**989.96**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**444.58**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**412.44**
X/O	6 1/4"	2 3/4"	4 1/2" XH	4 1/2" IF	1.60	**230.31**
3 DC's	6 1/4"	2 13/16"	4 1/2" XH	4 1/2" XH	89.69	**228.71**
X/O	7 21/32"	2 15/16"	6 5/8" Reg	4 1/2 XH	2.90	**139.02**
7 3/4" DC	7 13/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	31.31	**136.12**
MNDC	7 7/8"	2 7/8"	6 5/8" Reg	6 5/8" Reg	29.26	**104.81**
12 1/4" Stb	7 15/16"	2 7/8"	6 5/8" Reg	6 5/8" Reg	5.17	**75.55**
Pony MNDC	7 13/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	11.75	**70.38**
MNDC	7 15/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	30.94	**58.63**
UBHO	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.25	**27.69**
12" WM Stb	8 1/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.97	**25.44**
Pony NMDC	7 11/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	10.62	**19.47**
Float Sub w/ valve	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.58	**8.85**
12 1/4" NB Stb	7 3/4"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.44	**6.27**
BIT#8 12 1/4" PDC BD535 JET: 4x16 2x20 1x18	12 1/4"			6 5/8" Reg	0.83	**0.83**

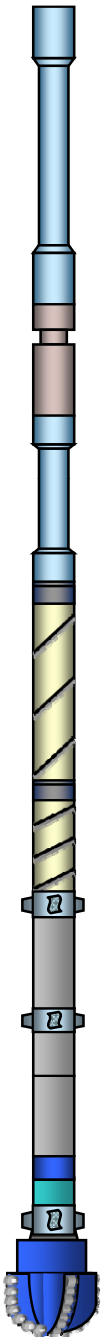
TOTAL LENGTH	**989.96**

DEPTH IN: 4229 Ft.

BHA No.6

WELL : LO6-23

May 09th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**978.79**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**433.41**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**401.27**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2" IF	1.60	**219.14**
3 DC's	6 1/4"	2 13/16"	4 1/2" XH	4 1/2" XH	89.69	**217.54**
X/O	7 3/4"	2 15/16"	6 5/8" Reg	4 1/2 XH	2.90	**127.85**
7 3/4" DC	7 3/4"	2 13/16"	6 5/8" Reg	6 5/8" Reg	31.31	**124.95**
12 1/8" Stb	7 15/16	2 7/8"	6 5/8" Reg	6 5/8" Reg	5.16	**93.64**
MNDC	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	29.26	**88.48**
12" Stb	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.25	**59.22**
Pony MNDC	8 1/16"	2 13/16"	6 5/8" Reg	6 5/8" Reg	11.75	**53.97**
MNDC	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	30.96	**42.22**
UBHO	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.24	**11.26**
Float Sub w/ valve	8"	2 13/16"	6 5/8" Reg	6 5/8" Reg	2.58	**9.02**
12 1/8" NB Stb	7 3/4"	2 13/16"	6 5/8" Reg	6 5/8" Reg	5.44	**6.44**
BIT#8 12 1/4" PDC BD535 JET: 4x16 2x20 1x18	12 1/4"			6 5/8" Reg	1.00	**1.00**

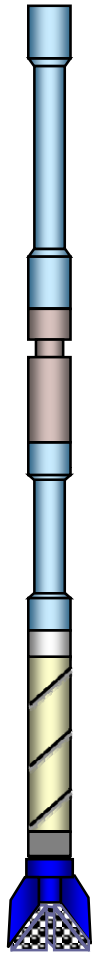
TOTAL LENGTH	**978.79**

DEPTH IN: 4998 Ft.

BHA No.7

WELL : LO6-23

May 12th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP	5"	3"	4 1/2" XH	4 1/2" XH	545.38	**947.58**
HYDRAULIC JAR	6 3/8"	2 3/4"	4 1/2" XH	4 1/2" IF	32.14	**402.20**
6 HWDP	5"	3"	4 1/2" XH	4 1/2" XH	182.13	**370.06**
X/O	6 3/8"	2 3/4"	4 1/2" XH	4 1/2" XH	1.60	**187.93**
6 DC's	6 1/4"	2 15/16"	4 1/2" XH	4 1/2" XH	182.50	**186.33**
Bit Sub	6 1/4"	2 3/4"	4 1/2" XH	4 1/2" XH	3.03	**3.83**
BIT#9RR 8 1/2" GTS1 L26CW JET: 3x22	8 1/2"			4 1/2" Reg	0.80	**0.80**

TOTAL LENGTH	**947.58**

DEPTH IN: 5313 Ft.

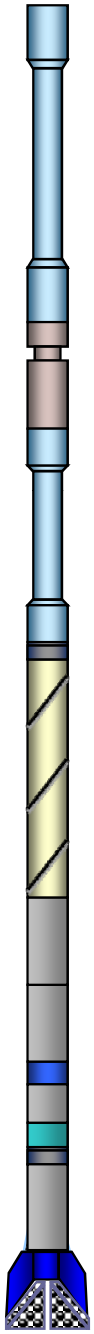
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.8

WELL : LO6-23

May 12th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1044.40**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**499.02**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**466.88**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**284.75**
6 DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	182.50	**283.15**
MNDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	30.71	**100.65**
MNDC w/ slim1	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	30.34	**69.94**
UBHO	6 11/16"	2 3/4"	4 1/2" XH	4 1/2" XH	2.27	**39.60**
Pony NMDC	6 3/8"	2 13/16"	4 1/2" XH	4 1/2" XH	7.57	**37.33**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**29.76**
X/O	6 1/2"	2 15/16"	4 1/2" IF	4 1/2" XH	1.47	**27.55**
A675XP Motor	6 3/4"	2 7/8"	4 1/2" R	4 1/2" IF	25.25	**26.08**
BIT#10 8 1/2" HTC GT-M1 JET: 3x22	8 1/2"			4 1/2" Reg	0.83	**0.83**

TOTAL LENGTH	**1044.40**

DEPTH IN: 5323 Ft.

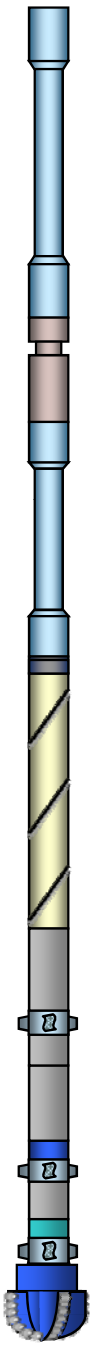
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.9

WELL : LO6-23

May 14th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1043.21**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**497.83**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**465.69**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**283.56**
6 DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	182.50	**281.96**
NMDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	30.71	**99.46**
8 1/2" Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	5.17	**68.75**
Pony MNDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	7.57	**63.58**
MNDC w/ slim1	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	30.34	**56.01**
UBHO	6 11/16"	2 3/4"	4 1/2" XH	4 1/2" XH	2.27	**25.67**
8 5/16" Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	4.54	**23.40**
Pony NMDC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	10.35	**18.86**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**8.51**
8 1/2" NB Stb	6 3/16"	2 7/8"	4 1/2" R	4 1/2" XH	5.50	**6.30**
BIT#11 8 1/2" PDC DS110NSV JET: 4x16 2x18	8 1/2"			4 1/2" Reg	0.80	**0.80**

TOTAL LENGTH	**1043.21**

DEPTH IN: 5818 Ft.

GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.10

WELL : LO6-23

May 16th, 2001

ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1049.54**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**504.16**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**472.02**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**289.89**
6 DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	182.50	**288.29**
MNDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	30.71	**105.79**
MNDC w/ slim1	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	30.34	**75.08**
UBHO	6 11/16"	2 3/4"	4 1/2" XH	4 1/2" XH	2.27	**44.74**
Pony NMDC	6 3/8"	2 13/16"	4 1/2" XH	4 1/2" XH	7.57	**42.47**
8 3/8" Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	5.17	**34.90**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**29.73**
X/O	6 1/2"	2 15/16"	4 1/2" IF	4 1/2" XH	1.47	**27.52**
A675XP Motor	6 3/4"	2 7/8"	4 1/2" R	4 1/2" IF	25.25	**26.05**
BIT#11 8 1/2" PDC DS110 JET: 5x16, 1x18	8 1/2"			4 1/2" Reg	0.80	**0.80**

TOTAL LENGTH	**1049.54**

DEPTH IN: 6571 Ft.

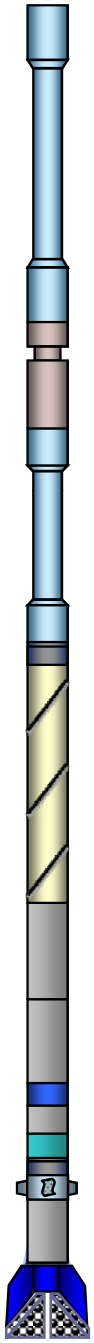
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.11

WELL : LO6-23

May 18th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1050.53**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**505.15**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**473.01**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**290.88**
6 DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	182.50	**289.28**
MNDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	30.71	**106.78**
MNDC w/ slim1	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	30.34	**76.07**
UBHO	6 11/16"	2 3/4"	4 1/2" XH	4 1/2" XH	2.27	**45.73**
Pony NMDC	6 3/8"	2 13/16"	4 1/2" XH	4 1/2" XH	7.57	**43.46**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**35.89**
X/O	6 1/2"	2 15/16"	4 1/2" IF	4 1/2" XH	1.47	**33.68**
8 3/8" WM Stb	6 3/4"	2 13/16"	4 1/2" XH	4 1/2" XH	6.11	**32.21**
A675XP Motor	6 3/4"	2 7/8"	4 1/2" R	4 1/2" IF	25.27	**26.10**
BIT#12 8 1/2" HTC GT-M1 JET: 2x22 1x24	8 1/2"			4 1/2" Reg	0.83	**0.83**

TOTAL LENGTH	**1050.53**

DEPTH IN: 6764 Ft.

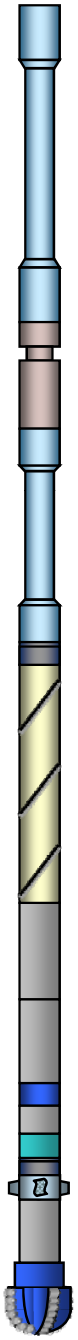
GEOIL™

PETRO-TECH PERUANA S.A.

BHA No.12

WELL : LO6-23

May 20th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1050.50**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.14	**505.12**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**472.98**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**290.85**
6 DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	182.50	**289.25**
MNDC	6 3/4"	2 7/8"	4 1/2" XH	4 1/2" XH	30.71	**106.75**
MNDC w/ slim1	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	30.34	**76.04**
UBHO	6 11/16"	2 3/4"	4 1/2" XH	4 1/2" XH	2.27	**45.70**
Pony NMDC	6 3/8"	2 13/16"	4 1/2" XH	4 1/2" XH	7.57	**43.43**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**35.86**
X/O	6 1/2"	2 15/16"	4 1/2" IF	4 1/2" XH	1.47	**33.65**
8 11/32" WM Stb	6 3/4"	2 13/16"	4 1/2" XH	4 1/2" XH	6.11	**32.18**
A675XP Motor	6 3/4"	2 7/8"	4 1/2" R	4 1/2" IF	25.27	**26.07**
BIT#13RR 8 1/2" PDC DS110 JET: 3x16, 3x18	8 1/2"			4 1/2" Reg	0.80	**0.80**

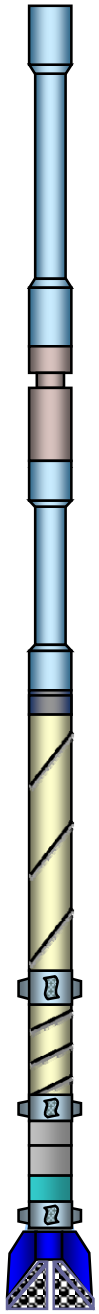
TOTAL LENGTH	**1050.50**

DEPTH IN: 7331 Ft.

BHA No.13

WELL : LO6-23

May 24th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1036.17**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.28	**490.79**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**458.51**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**276.38**
7 6 1/4"DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	213.62	**274.78**
8 5/16"Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	4.54	**61.16**
DC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	27.68	**56.62**
8 1/4"Stb	6 7/16"	2 15/16"	4 1/2" XH	4 1/2" XH	5.63	**28.94**
Pony DC	6 1/2"	2 13/16"	4 1/2" XH	4 1/2" XH	4.98	**23.31**
Pony NMDC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	10.35	**18.33**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**7.98**
8 3/8" NB Stb	6 3/4"	2 7/8"	4 1/2" R	4 1/2" XH	4.92	**5.77**
BIT#14 8 1/2" REED HP51 JET: 3x24	8 1/2"			4 1/2" Reg	0.85	**0.85**

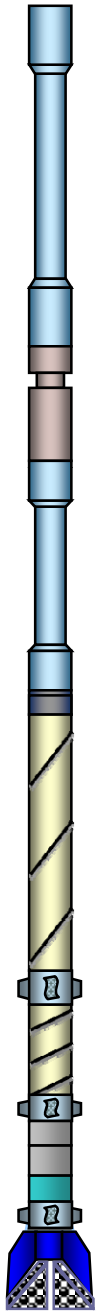
TOTAL LENGTH	**1036.17**

DEPTH IN: 7865 Ft.

BHA No.13A

WELL : LO6-23

May 29th, 2001



ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1036.17**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.28	**490.79**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**458.51**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**276.38**
7 6 1/4"DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	213.62	**274.78**
8 5/16"Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	4.54	**61.16**
DC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	27.68	**56.62**
8 1/4"Stb	6 7/16"	2 15/16"	4 1/2" XH	4 1/2" XH	5.63	**28.94**
Pony DC	6 1/2"	2 13/16"	4 1/2" XH	4 1/2" XH	4.98	**23.31**
Pony NMDC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	10.35	**18.33**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**7.98**
8 3/8" NB Stb	6 3/4"	2 7/8"	4 1/2" R	4 1/2" XH	4.92	**5.77**
BIT#15 8 1/2" HTC GTM 18 JET: 3x24	8 1/2"			4 1/2" Reg	0.85	**0.85**

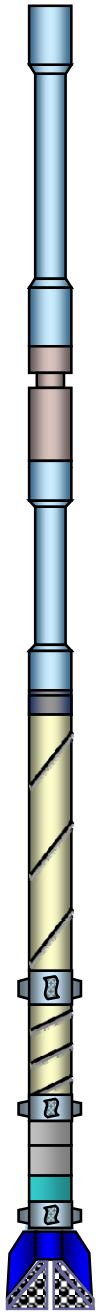
TOTAL LENGTH	**1036.17**

DEPTH IN: 8336 Ft.

BHA No.13B

WELL : LO6-23

June 03rd, 2001

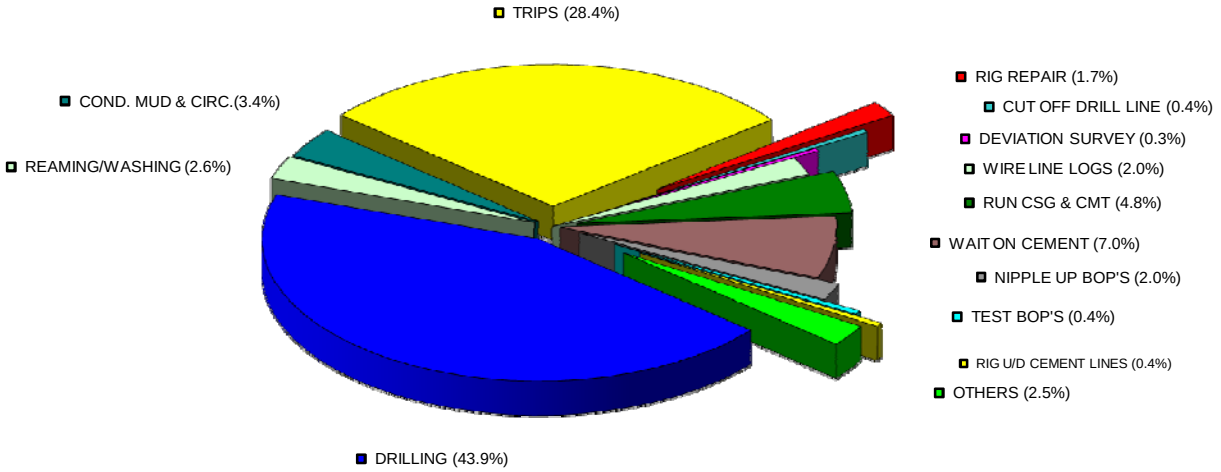


ITEM	OD	ID	BOTTOM THREAD	TOP THREAD	LENGTH	CUM. LENGTH
18 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	545.38	**1036.17**
HYDRAULIC JAR	6 1/2"	2 3/4"	4 1/2" IF	4 1/2" IF	32.28	**490.79**
6 HWDP's	5"	3"	4 1/2" IF	4 1/2" IF	182.13	**458.51**
X/O	6 5/16"	2 1/2"	4 1/2" XH	4 1/2 IF	1.60	**276.38**
7 6 1/4"DC's	6 1/2"	2 7/8"	4 1/2" XH	4 1/2" XH	213.62	**274.78**
8 5/16"Stb	6 11/16"	2 7/8"	4 1/2" XH	4 1/2" XH	4.54	**61.16**
DC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	27.68	**56.62**
8 1/4"Stb	6 7/16"	2 15/16"	4 1/2" XH	4 1/2" XH	5.63	**28.94**
Pony DC	6 1/2"	2 13/16"	4 1/2" XH	4 1/2" XH	4.98	**23.31**
Pony NMDC	6 1/8"	2 7/8"	4 1/2" XH	4 1/2" XH	10.35	**18.33**
Float Sub w/ valve	6 5/8"	2 7/8"	4 1/2" XH	4 1/2" XH	2.21	**7.98**
8 3/8" NB Stb	6 3/4"	2 7/8"	4 1/2" R	4 1/2" XH	4.92	**5.77**
BIT#16 8 1/2" HTC GTM 09 JET: 3x24	8 1/2"			4 1/2" Reg	0.85	**0.85**

TOTAL LENGTH	**1036.17**

DEPTH IN: 8652 Ft.

TIME DISTRIBUTION (HOURS)
WELL: LO6-23



TOTAL HOURS: 1151.9

FROM APRIL 24th, 2001 TO JUNE 10th, 2001

DRILLING (43.9%)	REAMING/WASHING (2.6%)	COND. MUD & CIRC.(3.4%)	TRIPS (28.4%)	RIG REPAIR (1.7%)
CUT OFF DRILLING LINE (0.4%)	DEVIATION SURVEY (0.3%)	WIRE LINE LOGS (2.0%)	RUN CSG & CMT (4.8%)	WAIT ON CEMENT (7.0%)
NIPPLE UP BOP'S (2.0%)	TEST BOP'S (0.4%)	RIG UP/DOWN CEMENT LINES (0.4%)	OTHERS (2.5%)	

CONCLUSION

Z-2B-24-081-D-LO6 (LO6-23) directional well drilled from platform LO6, with PEPESA 48 Rig, located in the Offshore Lobitos Area, Talara Basin. The Tertiary sedimentary sequence drilled was as follows:

Talara Fm (Surface - 2500 ft), Chacra Fm (2500 - 3610 ft), Rio Bravo Fm (3610 - 5200 ft), Palegreda Fm (5200 - 5890 ft), Mogollón Fm (5890 - 6340 ft), San Cristobal Fm (6340 - 7780 ft), Basal Salina Fm (7780 - 9040 ft FTD).

Fair to good oil shows were observed from 3670 ft to 3850 ft in Rio Bravo formation, with fluorescence ranging from 20% to 50%. They contained slightly bright yellowish white fluorescence and with solvent yielded moderately fast moderately strong streaming milky white cut, with yellowish white residual ring.The maximum gas reading recorded for this interval was 100 units of Total gas at 3662 ft, which showed complete chromatography (C1 thru C5).

Only poor oil shows were observed from 5970 ft to 6040 ft in Mogollón formation, with fluorescence ranging from 10% to 30%. They contained slightly dull to slightly bright white fluorescence and with solvent yielded moderately fast moderately strong streaming milky white cut, with slightly yellowish white residual ring. The maximum gas readings recorded for this interval was 34 units of Total Gas at 6024 ft, which showed complete chromatography. The mud weight used was 10.9 ppg.

The main objective was Basal Saline formation. The Upper Basal Salina (7780 ft to 8100 ft) it's made up by good bodies of clean sands, specially the section 7910 ft to 8080 ft constitute the best reservoir quality. Poor to good oil shows were observed from 7980 ft to 8080 ft, and fluorescence occurred in amounts ranging from 10% to 40%. They contained slightly bright yellowish white fluorescence and with solvent yielded fast strong streaming milky white cut, with yellowish white residual ring. The maximum gas reading recorded for this formation was 81 units of Total Gas at 8041 ft which showed complete chromatography (C1 thru C5). The mud weight was 10.3 ppg.

Drilling reached 9040 ft into Basal Salina formation.