CONOCO IDROCARBURI SPA

WELL: **GARGANO - 1D**

COMPOSITE WELL LOG

LOCATION :
Monte Mario Coordinates
Latitude : 41° 50' 46" N
Longitude : 03° 15' 27" E

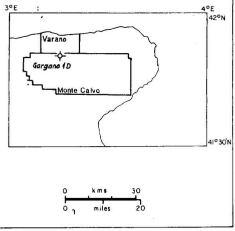
ELEVATIONS :

K B Mean Sea Level :	73.0m.
K B Ground Floor :	13.0m.
Ground Elevation :	60.0m.
Total Depth :	

Final T D 4853 m (15 921') Driller

Country : ITALY
Area : SOUTH EAST ITALY
Licence : MONTE CALVO
Field : GARGANO
Date Spudded : 28th April 1982
Temporarily abandoned : 3rd Sept '82
Re-enter for deepening : 29th April '84
Date Completed : 24th June '84
Plugged and Abandoned
Dry Hole

LOCATION PLAT 1:1,000,000



CONOCO GEOLOGISTS

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MUDLOG SERVICE

GEOSERVICES - ITALOG

DRILLING CONTRACTORS & RIG

PANTERRA (POOL INTERNATIONAL) - RIG 211
IDECO 1700 TYPE RIG

SCHLUMBERGER LOGS

TYPE	RUN No	INTERVAL
DIL BHC/GR/SP	1	459 - 38 m
DIL GR/SP	1	Processed from the above log
LDT CNL/GR	1	459 - 38 m
DLL GR/SP	2	2290 - 445 m
LDT CNL/GR/CAL	2	2290 - 445 m
DDBHC/GR	2	2290 - 436 m
HDT	1	2290 - 413 m
FDC/GR	1	2290 - 2150 m 1800 - 1500 m 550 - 445 m
SLS/GR	3	3631 - 2098 m
DLL/MSFL/GR/SP/CAL	3	3632 - 2277 m
LDT/CNL/GR/CAL	3	3632 - 2277 m
DLL/MSFL/GR/SP/CAL	4	3977 - 3570.6 m
LDT/CNL/GR/CAL	4	3981 - 3595 m
SLS/GR	4	3979 - 3591.5 m
HDT	2	3981 - 2277 m
LDT/CNL/GR	5	4427 - 3967 m
DLL/MSFL/GR/SP	5	4423.5 - 4005.5 m GR continued to 3950 m
DDBHC/GR	5	4424.5 - 3966.5 m
HDT	3	4428 - 4005.5 m
VSP	1	
CST	1	30 shots, 11 rec. 18 lost, 1 misfire
DIL/SLS/GR	2	4005 - 4784 m.
HDT-CYBERDYP	4	4005 - 4785 m.
LDL/CNL/GR	6	4005 - 4785 m.
V.S.P.	2	2050 - 4770 m.
C.S.T.	2	SHOT 30 - recovered 23 lost 2 empty 5

CEMENT

PLUG No	CEMENT	INTERVAL & PURPOSE
1	100 sx 'G'	Bridge Plug at 3740 m (12,270')

MUD TYPE

MUD TYPE	INTERVAL
Fresh Water - Gel	0 - 453.5 m
Low Solids - CMC	453.5 - 4424.6 m
Low Solids - CMC	4424.6 - 4853.0 m

BIT SIZE

BIT SIZE	INTERVAL
36"	0 - 39 m
26"	39 - 460 m
17½"	460 - 2290 m
12¼"	2290 - 4024 m
8½"	4024 - 4853 m

CASING

SIZE	SHOE	TYPE & CEMENT
30"	[illegible]	[illegible] jts [illegible]lbs/ft. Vetco ATD cmtd. w. 600 sx 'G'
20"	453.5 m	38 jts 94lbs/ft. K-55 Vetco Type L. cmtd. w. 800 sx 'G' tailed w. 200 sx 'G'
13⅜"	2280 m	194 jts 72lbs/ft N-80 Butt cmtd. w. 1200 sx 'G' @ 15.8ppg
9⅝"	4005.5 m	235 jts. 53.5lbs/ft + 104 jts 47lbs/ft; cmtd. w. 1007 sx 'G' + 1.8% Bentonite + 1.5% [illegible] @ 13.2 ppg. Tailed with 347 sx 'G' @ 15.0 ppg.

WELLSITE CORE DATA

CORE No	INTERVAL	CUT	REC	REC %
1	4722.3 - 4725	2.7	2.5	90%
2	TERMINAL CORE BARREL JAMMED IN HOLE			

CORE DATA CORRECTED TO G.R. LOG

CORE No	INTERVAL	CUT	REC	REC %

AUTHORS
D.B. HAIG
B.J. LONSDALE

APPROVED

REMARKS

E/F

DRAFTED	DATE
D.RYDER	MARCH 1985

MAIN LITHOLOGICAL SYMBOLS

- SHALE CLAYSTONE CLAY MUDSTONE
- SILTSTONE SILT
- SANDSTONE SAND
- CONGLOMERATE LOOSE PEBBLES
- BRECCIA
- COAL LIGNITE ETC
- LIMESTONE (UNDIFFERENTIATED)
- DOLOMITIC LIMESTONE
- DOLOMITE
- CALCAREOUS DOLOMITE
- ANHYDRITE
- HALITE
- POLYHALITE
- CARNALLITE
- LANGBEINITE
- SYLVITE
- POTASSIUM SALTS (UNDIFFERENTIATED)
- SEDIMENTARY VOLCANICS (TUFFS AGGLOMERATES ETC)
- IGNEOUS ROCKS (LAVAS, SILLS, DYKES, PLUTONICS ETC
- METAMORPHIC ROCKS

SECONDARY LITHOLOGICAL SYMBOLS

- ARGILLACEOUS
- ARENACEOUS
- RUDACEOUS
- CARBONACEOUS
- CALCAREOUS
- DOLOMITIC
- ANHYDRITIC
- CHERT
- GLAUCONITIC
- PYRITIC
- IRONSTONE
- MICACEOUS
- BITUMEN
- PELLETS
- OOLITHS

SYMBOLS FOR USE IN CARBONATE PROVINCES

- MICRITIC LIMESTONE
- SPARITIC LIMESTONE
- LIME MUDSTONE
- WACKESTONE
- PACKSTONE
- GRAINSTONE
- BOUNDSTONE
- ONCOLITHS GRAPESTONES
- STROMATOLITHS
- LITHOCLASTS INTRACLASTS
- MEDIUM COARSE FINE SUCROSIC — RECRYSTALLISED CARBONATES

FOSSIL SYMBOLS

- AMMONITES
- BELEMNITES
- BRACHIOPODS
- BRYOZOANS
- CORALS
- CRINOID STEMS
- ECHINOID SPINES
- FORAMINIFERA
- GASTROPODS
- MICROFOSSILS
- OSTRACODS
- PELECYPODS
- SHELL FRAGMENTS
- NO PALAEONTOLOGICAL AGE DETERMINATIONS

CASING & COMPLETION

Hole Deviation $\frac{1^{\circ}}{2}$

Bridge Plug or Drillable Plug

Cement Plug

Sidewall Sample Recovered

Sidewall Sample Unrecovered

Casing Shoe

Production Perforations

Perforations Tested & Sqeezed

Cored Interval % Rec. — Rec.

LITHOLOGY

Gas Show (continuous)

Oil Show (continuous)

Hydrocarbon Shows

① Regular

② ②r Re - Run

Drill Stem Test

[1] Formation Interval Test

GEOLOGICAL AGE AND FORMATION

BIT & DEVIATION DATA
DRILLING RATE
Mins / Metre
0 5 10 15 20 25
BITS / DEVIATIONS — DATES

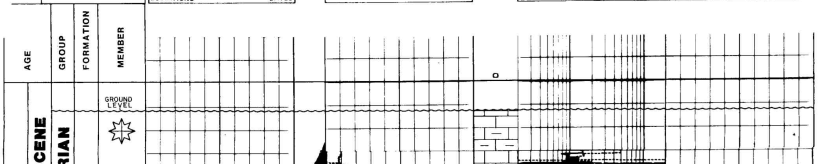
SPONTANEOUS POTENTIAL
MILLIVOLTS
10 +
GAMMA RAY
0 API UNITS 200
CORING & PERF INTERVALS

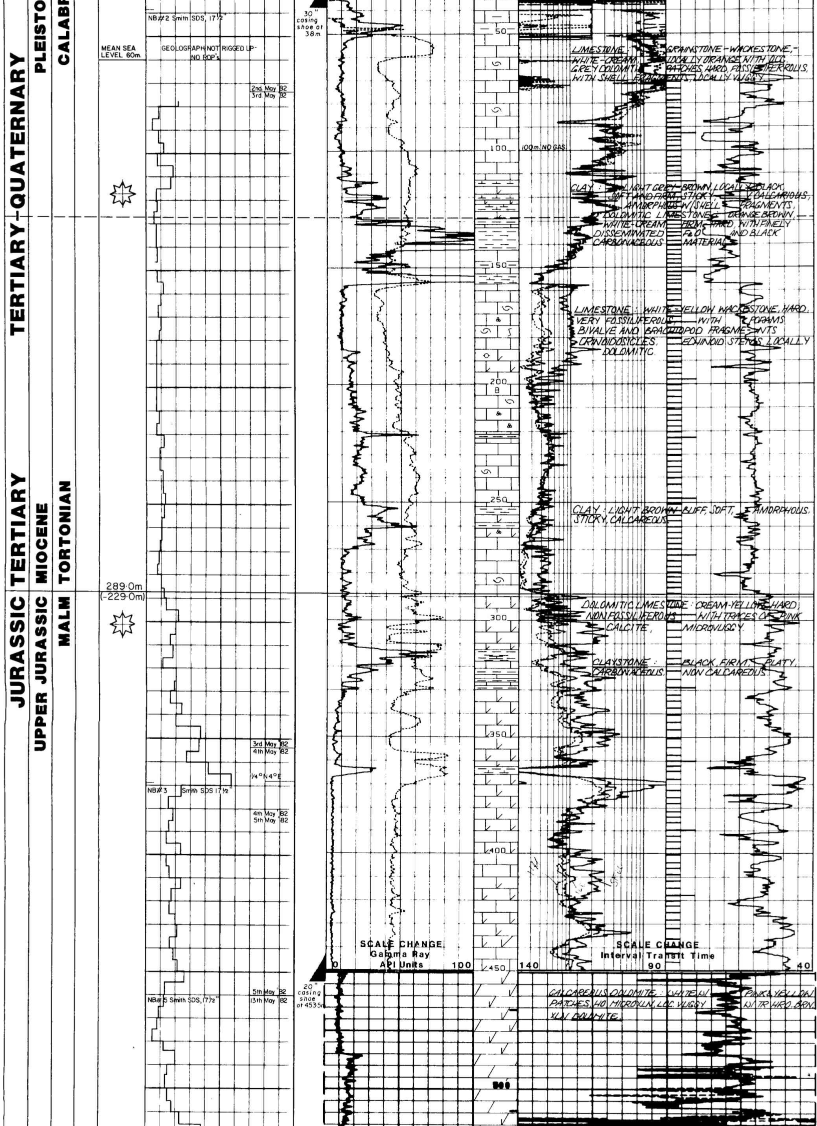
DEPTH SCALE 1:1000m

RESISTIVITY
OHMS M²/M
DEEP INDUCTION
2.0 R_{ILD} 200
FOCUSED RESISTIVITY (SFL)
2.0 RSFL AV 200

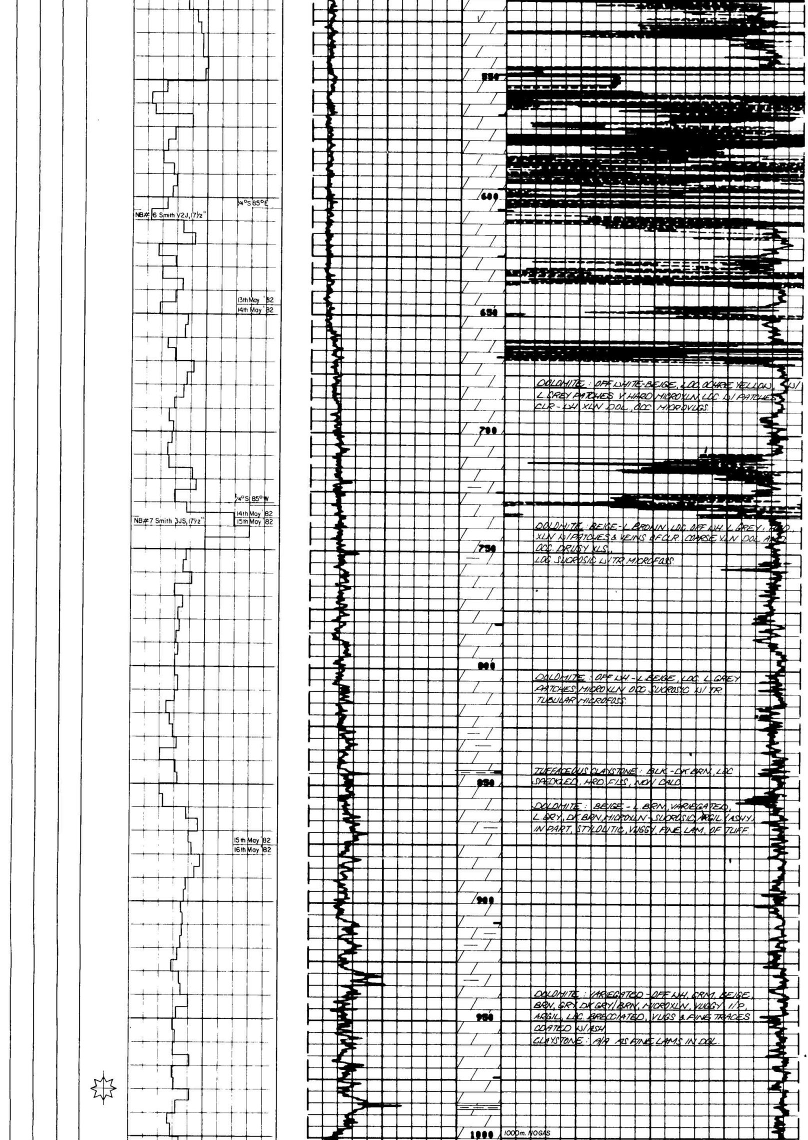
BOREHOLE COMPENSATED SONIC LOG
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
240 40

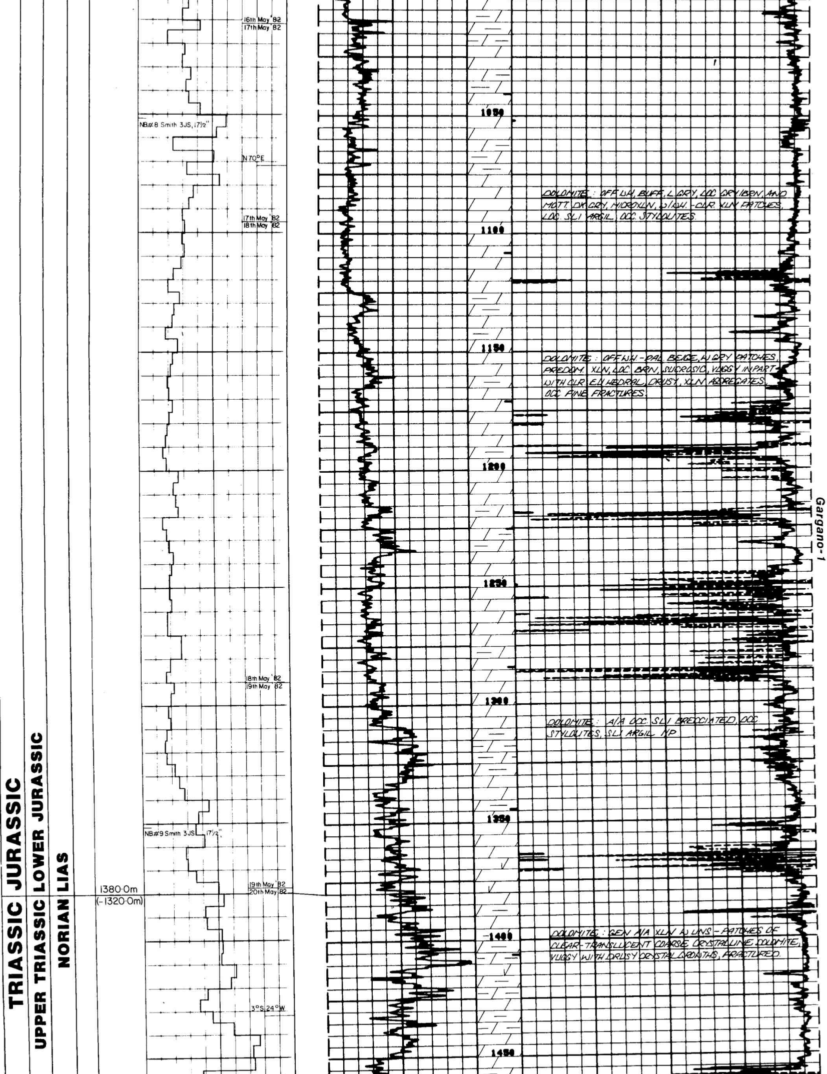
LITHOLOGICAL DESCRIPTION





Gargano-1





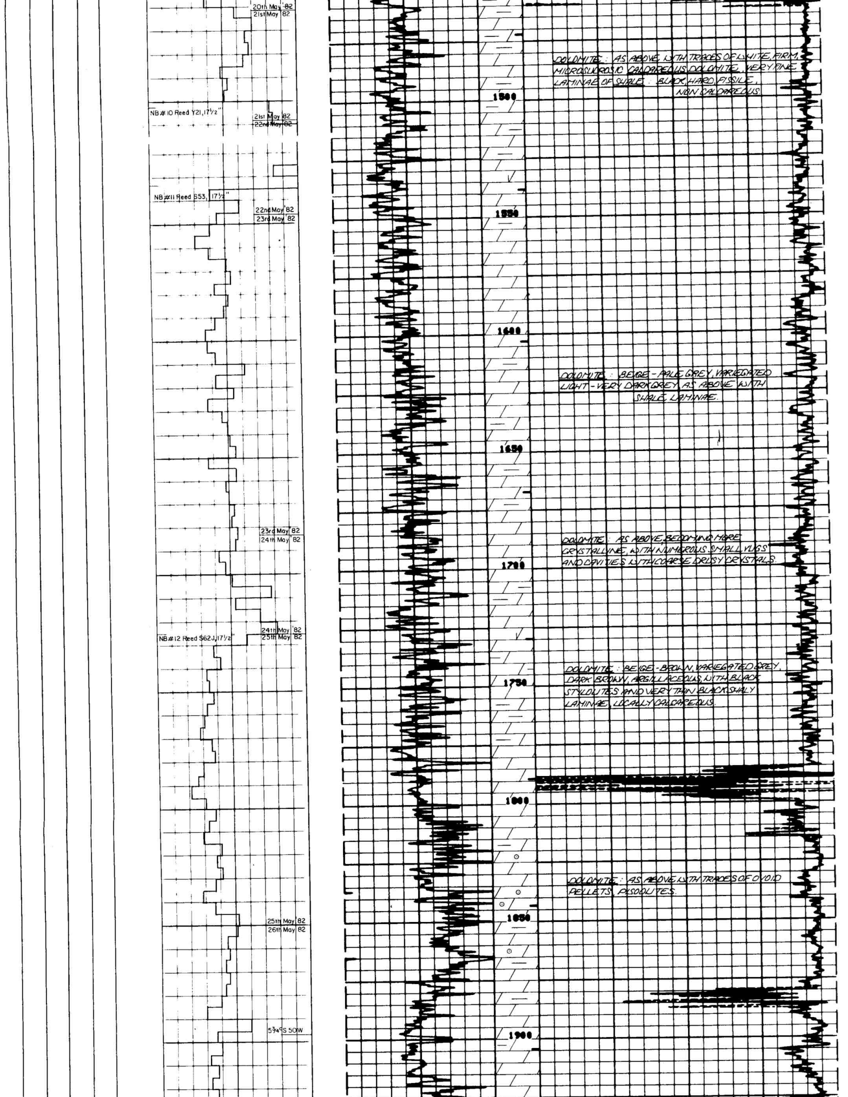
DOLOMITE : OFF WH, BUFF, L GRY, LOC GRY/BRN, AND MOTT. DK GRY, MICROXLN, W/WH. -CLR. XLN PATCHES, LOC. SLI ARGIL, OCC. STYLOLITES.

DOLOMITE : OFF WH.-PAL. BEIGE, W GRY PATCHES, PREDOM. XLN, LOC. BRN, SUCROSIC, VUGGY IN PART-WITH CLR. EUHEDRAL, DRUSY, XLN AGGREGATES, OCC. FINE FRACTURES.

DOLOMITE : A/A OCC. SLI BRECCIATED, OCC. STYLOLITES, SLI ARGIL. NP

DOLOMITE : GEN A/A XLN W LNS - PATCHES OF CLEAR-TRANSLUCENT COARSE CRYSTALLINE DOLOMITE, VUGGY WITH DRUSY CRYSTAL GROWTHS, FRACTURED.

Gargano-1



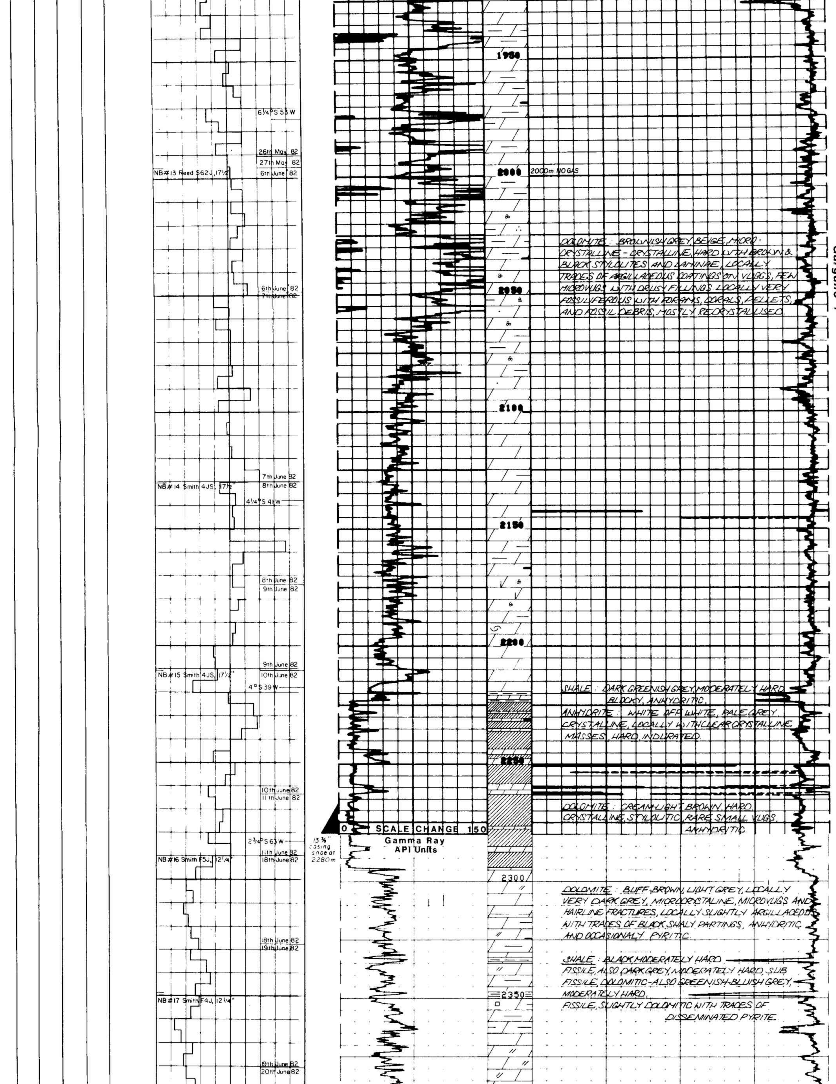
DOLOMITE : AS ABOVE, WITH TRACES OF WHITE, FIRM, MICROSUCROSIC CALCAREOUS DOLOMITE, VERY FINE LAMINAE OF SHALE : BLACK, HARD, FISSILE, NON CALCAREOUS.

DOLOMITE : BEIGE - PALE GREY, VARIEGATED LIGHT - VERY DARK GREY, AS ABOVE WITH SHALE LAMINAE.

DOLOMITE : AS ABOVE, BECOMING MORE CRYSTALLINE, WITH NUMEROUS SMALL VUGS AND CAVITIES WITH COARSE DRUSY CRYSTALS.

DOLOMITE : BEIGE - BROWN, VARIEGATED GREY, DARK BROWN, ARGILLACEOUS, WITH BLACK STYLOLITES AND VERY THIN BLACK SHALY LAMINAE, LOCALLY CALCAREOUS.

DOLOMITE : AS ABOVE WITH TRACES OF OVOID PELLETS, PISOLITES.



DOLOMITE : BROWNISH GREY, BEIGE, MICRO-CRYSTALLINE - CRYSTALLINE, HARD WITH BROWN & BLACK STYLOLITES AND LAMINAE, LOCALLY TRACES OF ARGILLACEOUS COATINGS ON VUGGS, FEW MICROVUGS WITH DRUSY FILLINGS. LOCALLY VERY FOSSILIFEROUS WITH FORAMS, CORALS, PELLETS, AND FOSSIL DEBRIS, MOSTLY RECRYSTALLISED.

SHALE : DARK GREENISH GREY, MODERATELY HARD, BLOCKY, ANHYDRITIC.

ANHYDRITE : WHITE OFF WHITE, PALE GREY, CRYSTALLINE, LOCALLY WITH CLEAR CRYSTALLINE MASSES, HARD, INDURATED.

DOLOMITE : CREAM-LIGHT BROWN, HARD, CRYSTALLINE, STYLOLITIC, RARE SMALL VUGS, ANHYDRITIC.

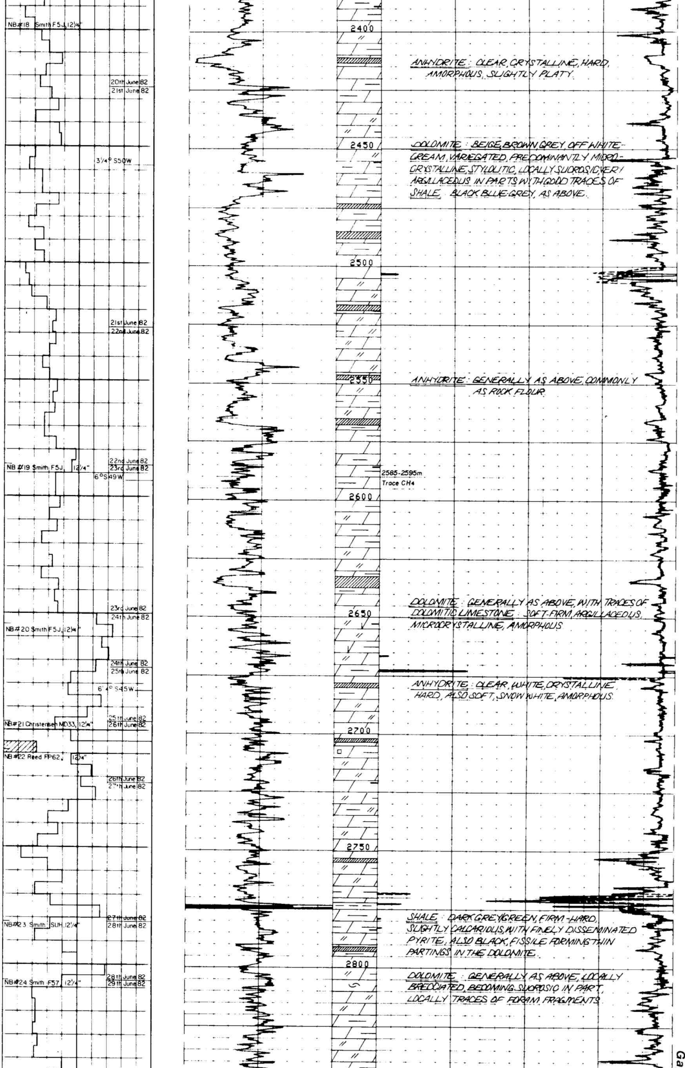
DOLOMITE : BUFF-BROWN, LIGHT GREY, LOCALLY VERY DARK GREY, MICROCRYSTALINE, MICROVUGS AND HAIRLINE FRACTURES, LOCALLY SLIGHTLY ARGILLACEOUS WITH TRACES OF BLACK SHALY PARTINGS, ANHYDRITIC AND OCCASIONALY PYRITIC.

SHALE : BLACK, MODERATELY HARD FISSILE, ALSO DARK GREY, MODERATELY HARD, SUB FISSILE, DOLOMITIC - ALSO GREENISH-BLUISH GREY, MODERATELY HARD, FISSILE, SLIGHTLY DOLOMITIC WITH TRACES OF DISSEMINATED PYRITE.

TRIASSIC

UPPER TRIASSIC

NORIAN



ANHYDRITE : CLEAR, CRYSTALLINE, HARD, AMORPHOUS, SLIGHTLY PLATY.

DOLOMITE : BEIGE, BROWN GREY, OFF WHITE-CREAM, VARIEGATED, PREDOMINANTLY MICRO-CRYSTALLINE, STYLOLITIC, LOCALLY SUCROSIC, VERY ARGILLACEOUS IN PARTS WITH GOOD TRACES OF SHALE : BLACK BLUE-GREY, AS ABOVE.

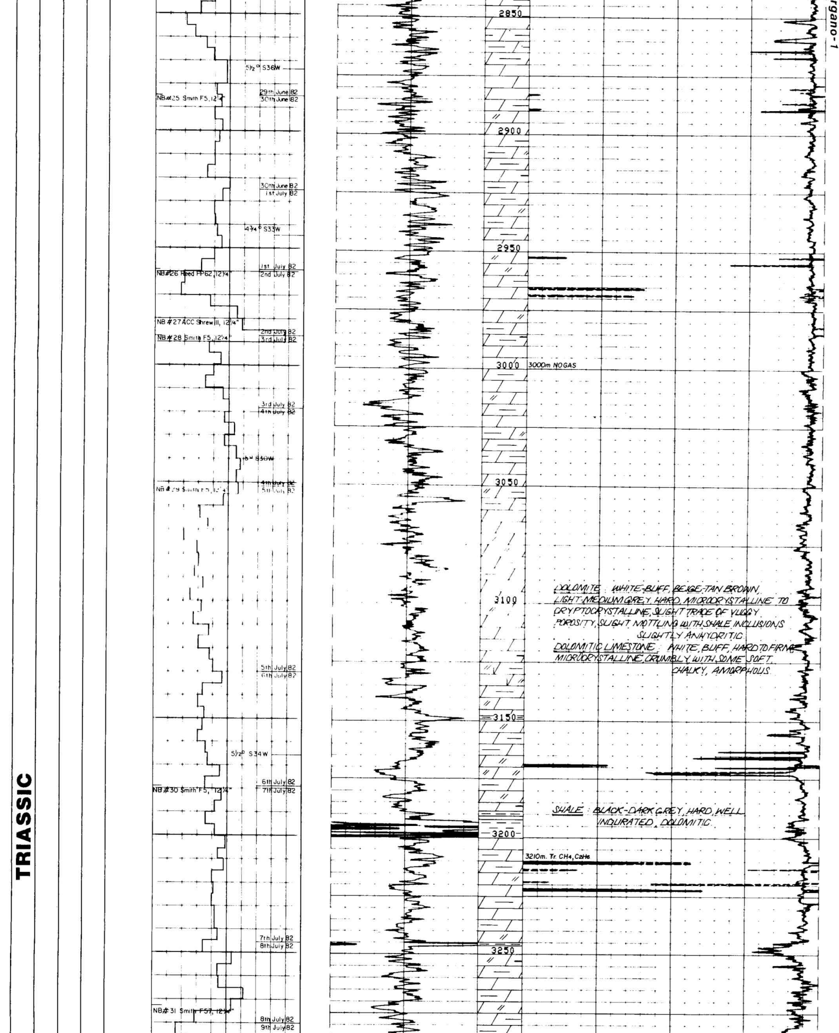
ANHYDRITE : GENERALLY AS ABOVE, COMMONLY AS ROCK FLOUR.

DOLOMITE : GENERALLY AS ABOVE, WITH TRACES OF DOLOMITIC LIMESTONE : SOFT-FIRM, ARGILLACEOUS, MICROCRYSTALLINE, AMORPHOUS

ANHYDRITE : CLEAR, WHITE, CRYSTALLINE, HARD, ALSO SOFT, SNOW WHITE, AMORPHOUS.

SHALE : DARK GREY/GREEN, FIRM-HARD, SLIGHTLY CALCARIOUS, WITH FINELY DISSEMINATED PYRITE, ALSO BLACK, FISSILE, FORMING THIN PARTINGS IN THE DOLONITE.

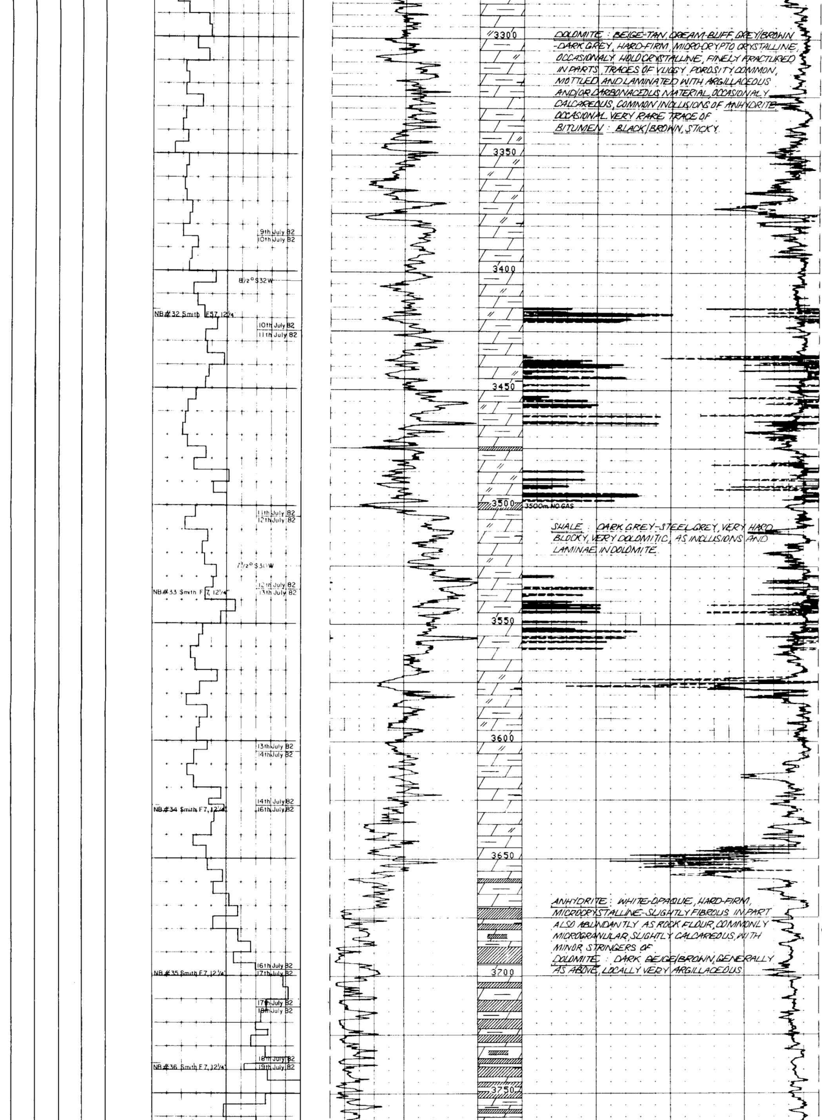
DOLOMITE : GENERALLY AS ABOVE, LOCALLY BRECCIATED, BECOMING SUCROSIC IN PART, LOCALLY TRACES OF FORAM FRAGMENTS



DOLOMITE : WHITE-BUFF, BEIGE-TAN BROWN, LIGHT-MEDIUM GREY, HARD, MICROCRYSTALLINE TO CRYPTOCRYSTALLINE, SLIGHT TRACE OF VUGGY POROSITY, SLIGHT MOTTLING WITH SHALE INCLUSIONS SLIGHTLY ANHYDRITIC

DOLOMITIC LIMESTONE : WHITE, BUFF, HARD TO FIRM, MICROCRYSTALLINE, CRUMBLY, WITH SOME SOFT, CHALKY, AMORPHOUS.

SHALE : BLACK-DARK GREY, HARD, WELL INDURATED, DOLOMITIC.

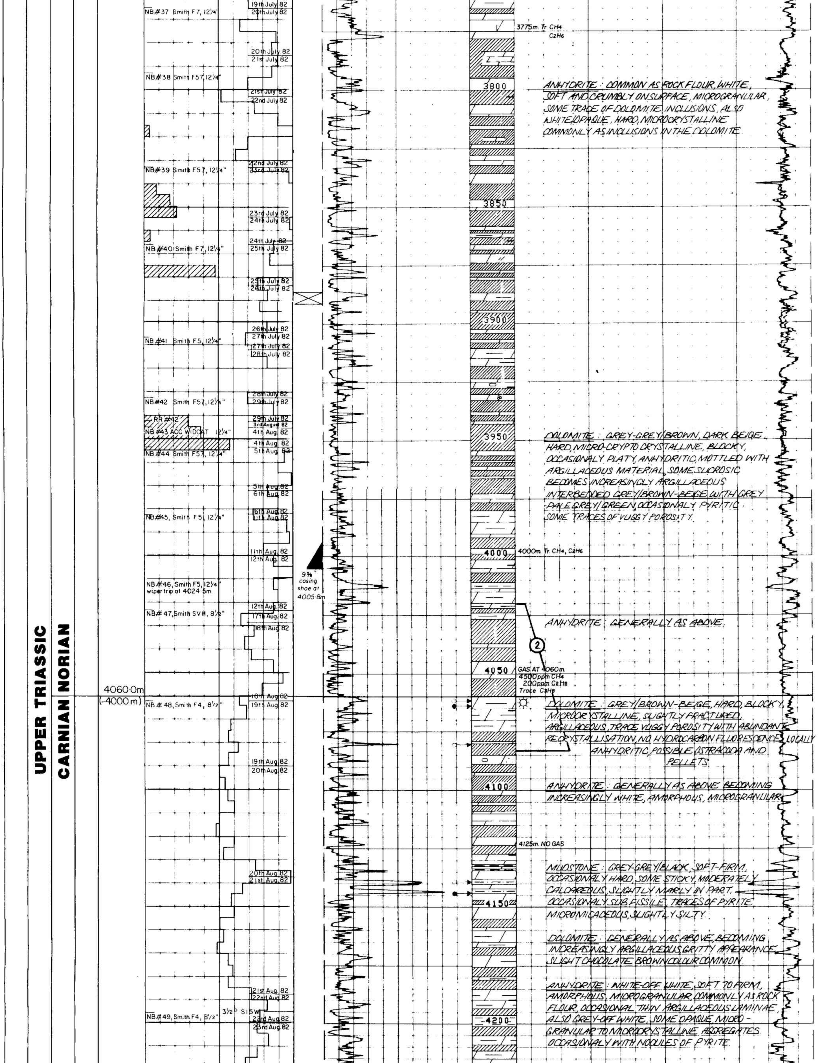


DOLOMITE : BEIGE-TAN, CREAM-BUFF, GREY/BROWN -DARK GREY, HARD-FIRM, MICRO-CRYPTO CRYSTALLINE, OCCASIONALY HOLOCRYSTALLINE, FINELY FRACTURED IN PARTS, TRACES OF VUGGY POROSITY COMMON, MOTTLED AND LAMINATED WITH ARGILLACEOUS AND/OR CARBONACEOUS MATERIAL, OCCASIONALY CALCAREOUS, COMMON INCLUSIONS OF ANHYDRITE OCCASIONAL VERY RARE TRACE OF
BITUMEN : BLACK/BROWN, STICKY.

SHALE : DARK GREY-STEEL GREY, VERY HARD BLOCKY, VERY DOLOMITIC, AS INCLUSIONS AND LAMINAE IN DOLOMITE.

ANHYDRITE : WHITE-OPAQUE, HARD-FIRM, MICROCRYSTALLINE-SLIGHTLY FIBROUS IN PART ALSO ABUNDANTLY AS ROCK FLOUR, COMMONLY MICROGRANULAR, SLIGHTLY CALCAREOUS, WITH MINOR STRINGERS OF
DOLOMITE : DARK BEIGE/BROWN, GENERALLY AS ABOVE, LOCALLY VERY ARGILLACEOUS.

Gargano-1



ANHYDRITE : COMMON AS ROCK FLOUR, WHITE, SOFT AND CRUMBLY ON SURFACE, MICROGRANULAR, SOME TRACE OF DOLOMITE INCLUSIONS, ALSO WHITE/OPAQUE, HARD, MICROCRYSTALLINE COMMONLY AS INCLUSIONS IN THE DOLOMITE.

DOLOMITE : GREY-GREY/BROWN, DARK BEIGE, HARD, MICRO-CRYPTO CRYSTALLINE, BLOCKY, OCCASIONALY PLATY, ANHYDRITIC, MOTTLED WITH ARGILLACEOUS MATERIAL, SOME SUCROSIC BECOMES INCREASINGLY ARGILLACEOUS INTERBEDDED GREY/BROWN-BEIGE WITH GREY -PALE GREY/GREEN, OCCASIONALY PYRITIC. SOME TRACES OF VUGGY POROSITY.

ANHYDRITE : GENERALLY AS ABOVE.

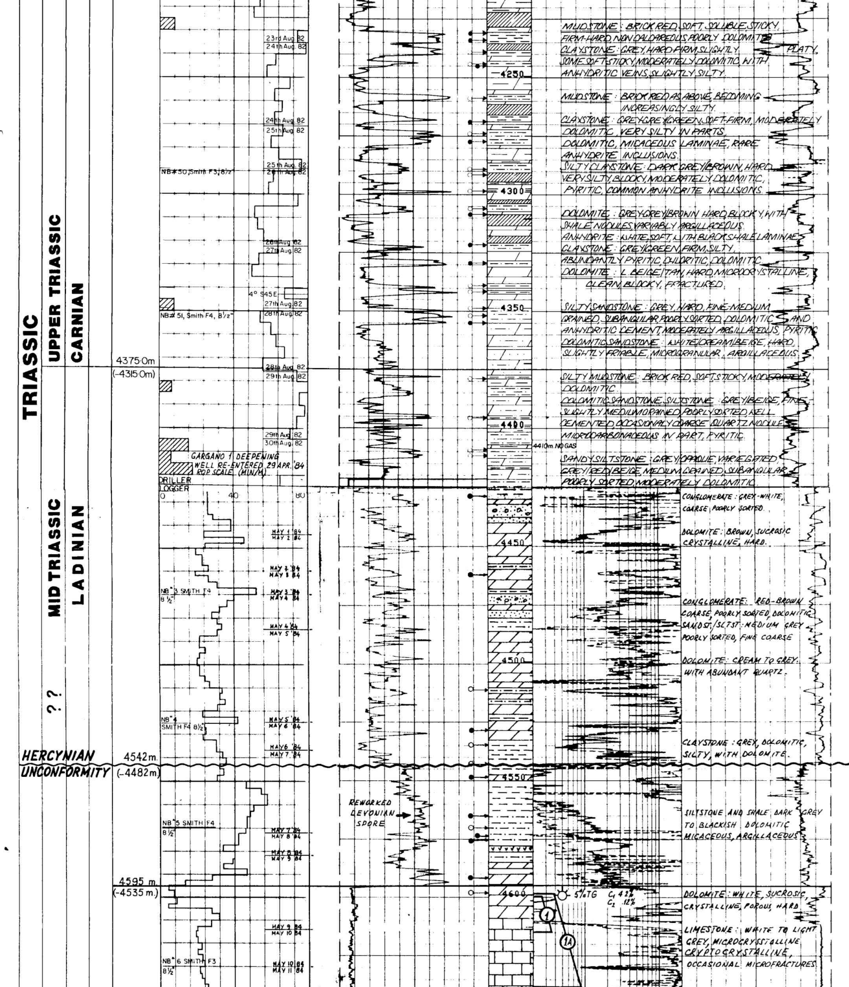
DOLOMITE : GREY/BROWN-BEIGE, HARD, BLOCKY, MICROCRYSTALLINE, SLIGHTLY FRACTURED, ARGILLACEOUS, TRACE VUGGY POROSITY WITH ABUNDANT RECRYSTALLISATION, NO HYDROCARBON FLUORESCENCE, LOCALLY ANHYDRITIC, POSSIBLE OSTRACODA AND PELLETS

ANHYDRITE : GENERALLY AS ABOVE BECOMING INCREASINGLY WHITE, AMORPHOUS, MICROGRANULAR

MUDSTONE : GREY-GREY/BLACK, SOFT-FIRM, OCCASIONALY HARD, SOME STICKY, MODERATELY CALCAREOUS, SLIGHTLY MARLY IN PART, OCCASIONALY SUB FISSILE, TRACES OF PYRITE, MICROMICACEOUS, SLIGHTLY SILTY.

DOLOMITE : GENERALLY AS ABOVE, BECOMING INCREASINGLY ARGILLACEOUS, GRITTY APPEARANCE, SLIGHT CHOCOLATE BROWN COLOUR COMMON

ANHYDRITE : WHITE-OFF WHITE, SOFT TO FIRM, AMORPHOUS, MICROGRANULAR, COMMONLY AS ROCK FLOUR, OCCASIONAL THIN ARGILLACEOUS LAMINAE, ALSO GREY-OFF WHITE, SOME OPAQUE, MICRO-GRANULAR TO MICROCRYSTALLINE AGGREGATES. OCCASIONALY WITH NODULES OF PYRITE.



MUDSTONE : BRICK RED, SOFT, SOLUBLE, STICKY, FIRM-HARD, NON CALCAREOUS, POORLY DOLOMITIC
CLAYSTONE : GREY, HARD-FIRM, SLIGHTLY PLATY, SOME SOFT-STICKY, MODERATELY DOLOMITIC, WITH ANHYDRITIC VEINS, SLIGHTLY SILTY.

MUDSTONE : BRICK RED AS ABOVE, BECOMING INCREASINGLY SILTY.
CLAYSTONE : GREY-GREY/GREEN, SOFT-FIRM, MODERATELY DOLOMITIC, VERY SILTY IN PARTS, DOLOMITIC, MICACEOUS LAMINAE, RARE ANHYDRITE INCLUSIONS.
SILTY CLAYSTONE : DARK GREY/BROWN, HARD, VERY SILTY, BLOCKY, MODERATELY DOLOMITIC, PYRITIC, COMMON ANHYDRITE INCLUSIONS.

DOLOMITE : GREY-GREY/BROWN HARD, BLOCKY, WITH SHALE NODULES, VARIABLY ARGILLACEOUS.
ANHYDRITE : WHITE, SOFT, WITH BLACK SHALE LAMINAE.
CLAYSTONE : GREY/GREEN, FIRM, SILTY, ABUNDANTLY PYRITIC, CHLORITIC, DOLOMITIC.
DOLOMITE : L. BEIGE/TAN, HARD, MICROCRYSTALLINE, CLEAN, BLOCKY, FRACTURED.

SILTY SANDSTONE : GREY, HARD, FINE-MEDIUM GRAINED, SUBANGULAR, POORLY SORTED, DOLOMITIC AND ANHYDRITIC CEMENT, MODERATELY ARGILLACEOUS, PYRITIC
DOLOMITIC SANDSTONE : WHITE/CREAM/BEIGE, HARD, SLIGHTLY FRIABLE, MICROGRANULAR, ARGILLACEOUS.

SILTY MUDSTONE : BRICK RED, SOFT, STICKY, MODERATELY DOLOMITIC.
DOLOMITIC SANDSTONE, SILTSTONE : GREY/BEIGE, FINE-SLIGHTLY MEDIUM GRAINED, POORLY SORTED, WELL CEMENTED, OCCASIONALY COARSE QUARTZ NODULE MICROCARBONACEOUS IN PART, PYRITIC.

SANDY SILTSTONE : GREY/OPAQUE, VARIEGATED, GREY/RED/BEIGE, MEDIUM GRAINED, SUBANGULAR, POORLY SORTED, MODERATELY DOLOMITIC.

CONGLOMERATE : GREY-WHITE, COARSE POORLY SORTED.

DOLOMITE : BROWN, SUCROSIC CRYSTALLINE, HARD.

CONGLOMERATE : RED-BROWN COARSE, POORLY SORTED, DOLOMITIC
SANDST./SLTST. : MEDIUM GREY POORLY SORTED, FINE COARSE

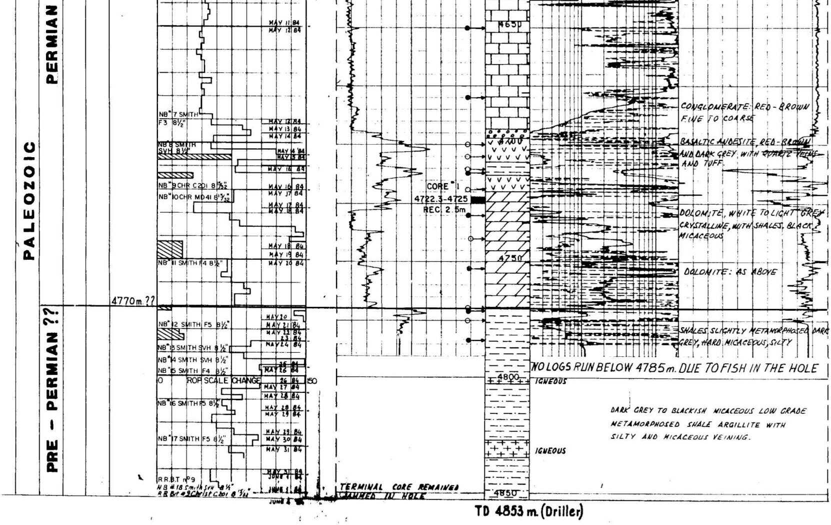
DOLOMITE : CREAM TO GREY. WITH ABUNDANT QUARTZ.

CLAYSTONE : GREY, DOLOMITIC, SILTY, WITH DOLOMITE.

SILTSTONE AND SHALE DARK GREY TO BLACKISH DOLOMITIC MICACEOUS, ARGILLACEOUS

DOLOMITE : WHITE, SUCROSIC, CRYSTALLINE, POROUS, HARD

LIMESTONE : WHITE TO LIGHT GREY, MICROCRYSSTALLINE CRYPTOCRYSTALLINE, OCCASIONAL MICROFRACTURES



SUMMARY OF DST RESULTS

		No. 1	No. 1A	No. 2
Interval	Metres	4600 - 4615 m.	4598.9 - 4637.9 m.	4020.1 - 4084.1 m.
Perforations	Metres	Open Hole Tool opened but packer failed to seat.	Open Hole	Open Hole
Initial Hydrostatic	PSIG		8509	6659
Initial Flow	"		6345	1842
Initial Build-Up	"		8298	3490
2nd Flow	"		7233	—
2nd Build-Up	"		8259	—
Final Flow	"		7331	1855
Final Build-Up	"		8122	3871
Final Hydrostatic	"		8496	6526
Formation Fluids Recovered			143 bbls water 48/64" choke	NO IN FLOW
Stabilised Flowrate	BWPD		656	—
Pressure Gauge Depth			4590 (15062')	4004 (13137')
			Water Salinity 160000 ppm Cl	NO IN FLOW