W8 0764-05

DEPT. NAT. RES & ENV
PE602754

EXLOG
A Baker Hughes company

COMPANY	BHP PETROLEUM PTY LTD
WELL	MINERVA-1
FIELD	OTWAY BASIN
REGION	AUSTRALIA
COORDINATES	38 deg 42' 12.23" S 142 deg 57' 12.34" E
API INDEX	
SPUD DATE	8th MARCH 1993
ELEVATION	RKB - MSL = 25.3 m RKB - FOR = 82.39m
TOTAL DEPTH	2425 m
CONTRACTOR	DOLPHIN OFFSHORE
RIG	BYFORD DOLPHIN
TYPE	SEMI-SUBMERSIBLE

LOG INTERVAL

DEPTH	FROM :	82 m	TO :	2425 m
DATE	FROM :	8/3/93	TO :	4/4/93
SCALE :	1:500		UNIT :	503

CREW : V.Surla,D.Alsop,S.Alexander,R.Tadiar

HOLE SIZE

36"	TO	115 m
17.5"	TO	560 m
12.25 "	TO	1204 m
8.5 "	TO	2107 m
6.0"	TO	2425 m TD

CASING RECORD

30"	AT	114 m
13.375"	AT	549 m
9.875"	AT	1189 m
7.0"	AT	2108 m
	AT	

MUD TYPES

Sea Water/hi vis sweeps	TO	560 m
Sea Water/gel/polymer	TO	2425 m
	TO	

LITHOLOGY SYMBOLS

Limestone
Dolomite
No Returns
Fossil
Coal And Lignite
Claystone
Shale
Siltstone
Sandstone
Conglomerate
Chert
Volcanics

EXLOG SUITE

Formation Evaluation Log	Pressure Data Log
Drilling Data Log	Well Progress Log
Pressure Gradient Analysis Log	MWD Data Log

ABBREVIATIONS

NB	NEW BIT	SVG	SURVEY GAS
RRB	RERUN BIT	C	CARBIDE TEST
CB	CORE BIT	W	MUD DENSITY _ sg
WOB	WEIGHT ON BIT	V	FUNNEL VISCOSITY
RPM	REVS PER MINUTE	F	FILTRATE - API
FLC	FLOW CHECK	FC	FILTER CAKE
CR	CIRCULATE RETURNS	PV	PLASTIC VISCOSITY
PR	POOR RETURNS	YP	YIELD POINT
NR	NO RETURNS	SOL	SOLIDS - %
LAT	LOGGED AFTER TRIP	SD	SAND - %
BG	BACKGROUND GAS	S	SALINITY - PPM
TG	TRIP GAS	RM	MUD RESISTIVITY
STG	SHORT TRIP GAS	RMF	MUD FILTRATE
CG	CONNECTION GAS		
SG	SWAB GAS		

◣	CASING SEAT	⌇	WIRELINE LOG RUN
▮	CORED INTERVAL	▯	TEST INTERVAL
▯	UNRECOVERED	◢	CONNECTION
▶	SIDEWALL CORE	▷	SIDEWALL CORES (EMPTY)

GAS - 100 Total Gas units equivalent to 2% methane.

OIL - Based on live oil in unwashed and stain of washed cuttings

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EXLOG
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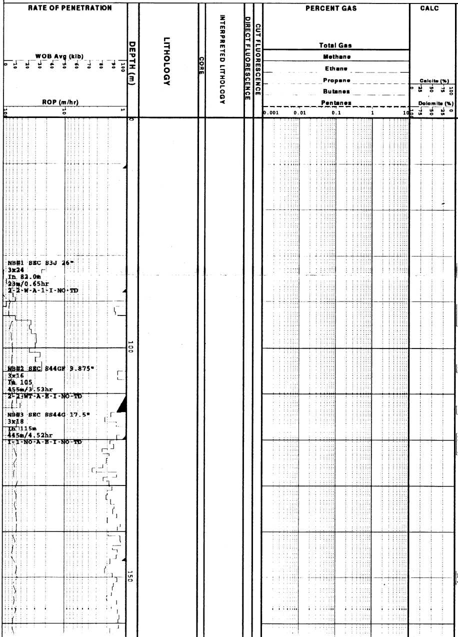
DRILLBYTE FORMATION EVALUATION LOG

MINERVA - 1

Scale 1 : 500



REMARKS

Spud MINERVA-1 @ 12:00hrs on 08/03/93

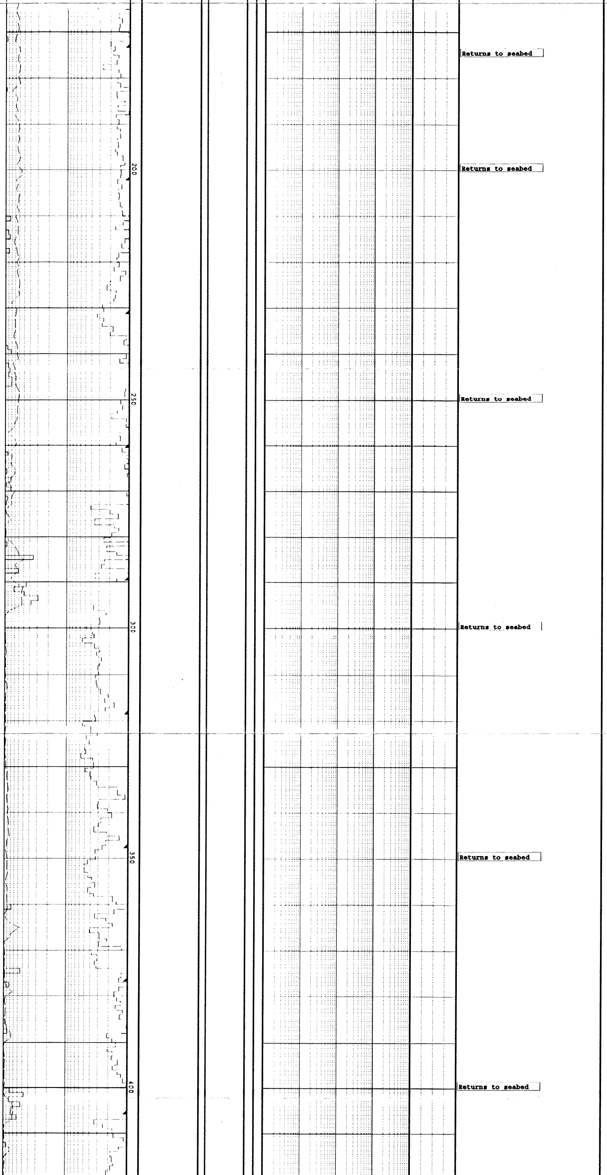
Drill with seawater and hi-vis sweeps.
Returns to seabed.

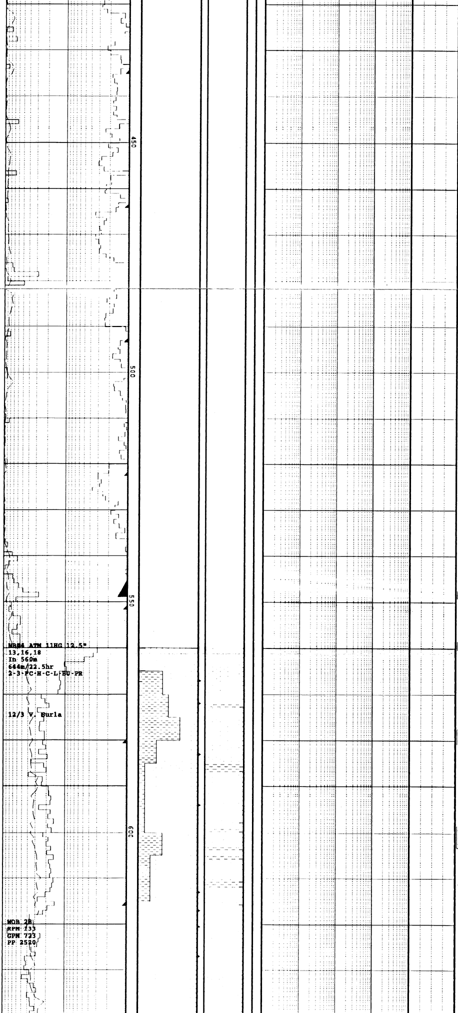
Drill 36" hole to 115m

Set 30" csg @ 114m

Drill 9.875" pilot hole to 560m. Hole opened to 17.5" diameter.

Drill with seawater and hi-vis sweeps





Returns to seabed

Returns to seabed

Set 13.375" csg @ 549m

Dev 1 deg @ 560m

SANDSTONE:brn-dk brn,gy i/p,m-c Qtz grs,occ vc i/p,pr srtd, ang-sbrnd,mod-v arg,wk sil cmt,com Pyr grs,occ Glauc,occ fossil frags,v com lse grs, fri,pr vis por,no show

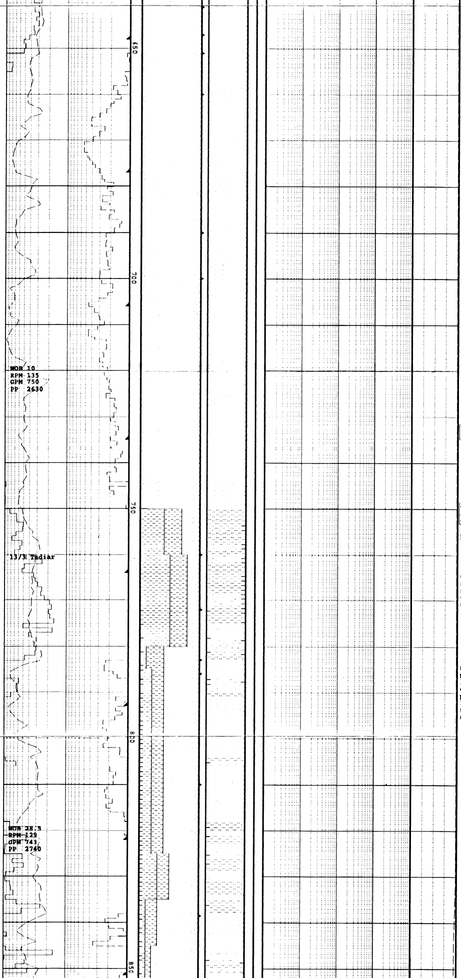
CLAYSTONE:dk brn,sft,v disp,v aren i/p,occ Pyr grs

Dev 0.6 deg @ 587m
Azi 265.8 deg

SANDSTONE:brn-dk brn,m-c Qtz grs,occ vc,sbang-rnd,mod srt, v com v disp brn arg mtx,wk sil cmt,occ Pyr grs,com lse grs,fri,pr vis por,no show

W 1.08 V 50 PV 17 YP 19
Gel 3/4 FC 1 Sol 4.5 Sd TR
pH 9.2 Cl 29k Ca 120

SANDSTONE:brn-dk brn,occ dk gy i/p,m-c,occ vc,sbang-rnd,v com v disp brn arg mtx,mod srt,occ Pyr grs,com lse grs, fri,v pr vis por,no show



SANDSTONE:brn-rd,m-vc Qtz grs sbang-rnd,pr srt,v rr rd arg mtx,v com rd-brn-gy-gn grs, fri,abnt lse grs,v gd vis por no show

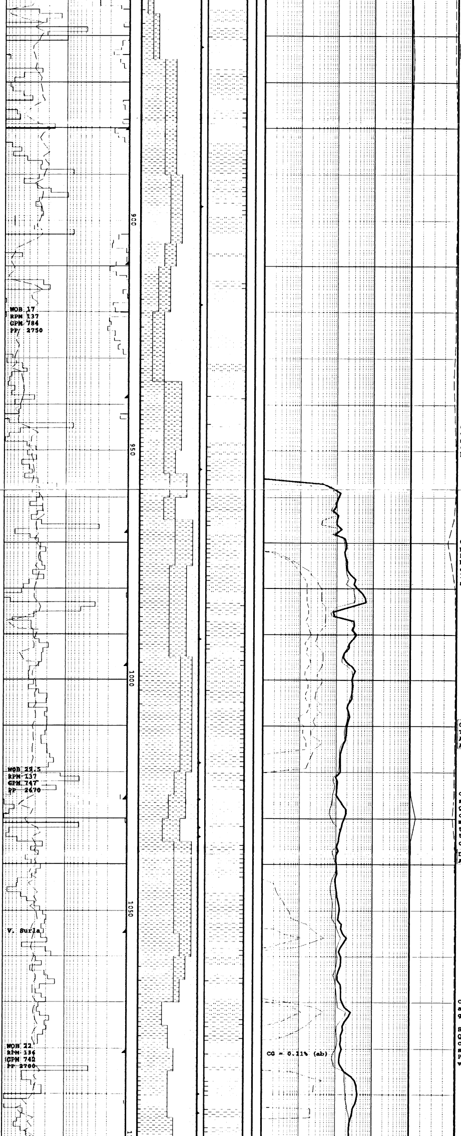
Dev 0.4 deg @ 733m
Azi 216.2 deg

W 1.09 V 60 PV 17 YP 19
Gel 5/12 FC 1 Sol 5.5 Sd 0.25
pH 9.1 Cl 31k Ca 120

SILTSTONE:dk gy-bk,dom sbfis, brit-mod hd,com arg i/p

CLAYSTONE:dk brn-v dk gy,v slty i/p,vf-c aren i/p w/ sbrnd multiclrd Qtz grs,tr-com bk carb mat,stky,v disp, sft-frm,tr rd lithic grs

SANDSTONE:dk gy,vf-vc,dom f, pr srtd,transl-transp-lt gy-lt brn-lt yel-rd Qtz grs,com dk gy arg mtx i/p,com slty i/p,tr wh arg mtx i/p,fri,abnt lse grs,str sil cmt i/p,tr-rr f Pyr aggs,v gd inf por,no show



Dev 0.6 deg @ 863m
Azi 209.9 deg

CLAYSTONE:med gy-dk gy,occ lt gy-off wh i/p,v slty i/p,com aren w/ f-c Qtz grs,mas,sft-frm,sl stky,v disp,tr-com f Pyr aggs

CLAYSTONE:lt-med gy,aren i/p w/ f sbrnd Qtz sd,v slty i/p, mod stky,v disp,sft-frm,rr-com f hd Pyr aggs,tr-rr dk brn carb mat & spks

CLAYSTONE:med-dk gy,v slty i/p,com aren i/p w/ m-c sbrnd Fe stnd Qtz grs,thn v hd med brn dol bands i/p,abnt bk carb mat,abnt f Pyr aggs,tr lt gn-rd lithic grs,tr slickensided rock flour

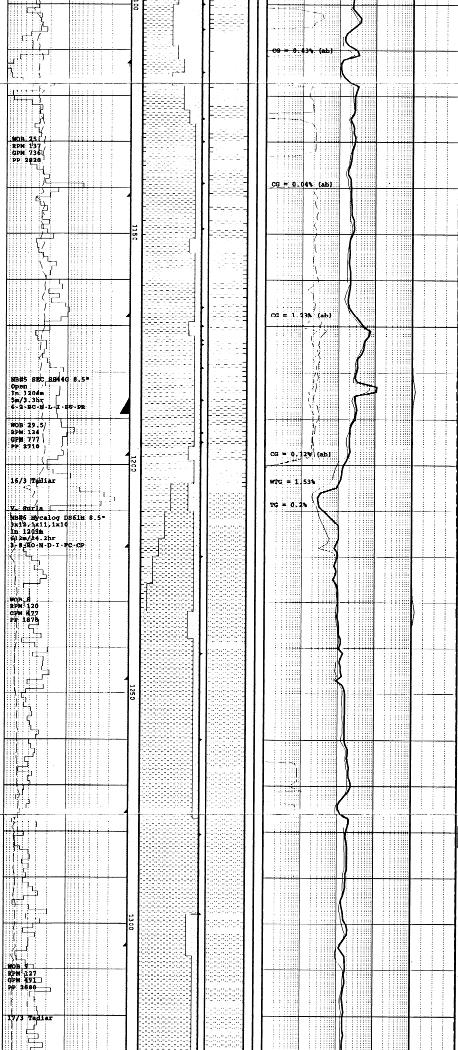
Carbide check @ 1024m
Theo lag = 3944 stks
Actl lag = 4215 stks
Av hole size = 14.4"

CLAYSTONE:dk gy-lt brn gy,v slty i/p,vf aren i/p w/ sbrnd Qtz sd,com c sbrnd-sbang sil cmtd Fe stnd Qtz grs,sft-frm, mod disp,tr lt brn dol frags, tr micmic flks,tr Glauc grs, tr slickensided rock flour, com bk carb mat

Dev 1.5 deg @ 1038m
Azi 214.1 deg

CLAYSTONE:wh-gy,sft,v disp,v aren,occ slty i/p,v com gn grns,occ bk carb flks

SANDSTONE:lt gy- med gy,f-m Qtz grs,sbrnd-rnd,mod srt,v com wh-gy v disp arg mtx,wk sil cmt,occ gy & gn grs,tr f Pyr grs,fri w/ com lse grs,pr vis por,no show



W 1.09 V 57 PV 18 YP 22
Gel 7/12 FC 1 Sol 5.4 Sd 0.5
pH 9 Cl 27k Ca 240

CLAYSTONE:wh-gy,dk gy-bk i/p,sft,v disp,v aren,occ mod slty i/p,com bk carb flks,occ gn grs,occ Qtz grs

CLAYSTONE:lt gy-gy,occ dk gy-bk i/p,com slty i/p,v aren,stky,v disp,com bk carb flks,occ gn grs,occ Qtz grs

Dev 2.5 deg @ 1180m
Azi 201.8 deg

Set 9.875" csg @ 1189m

Run E-Logs @ 1204m
1.DLL-MSFL-AS-GR-SP-AMS
2.VSP
3.CST-GR
46 shots, 100% recovery

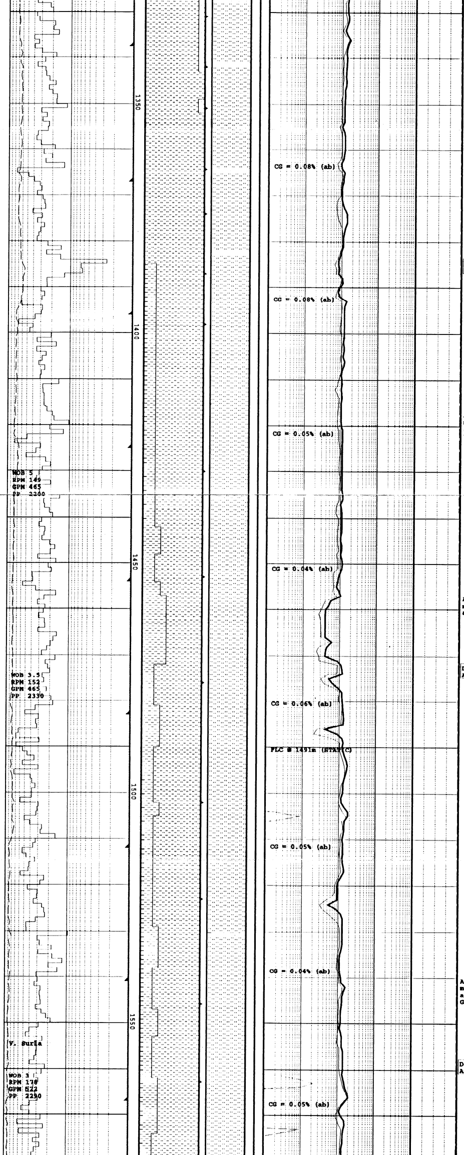
SILTSTONE:dk gy-med gy,sbfis,mod hd-hd,mod str sil cmt i/p abnt micmic flks
intbdd w/
SANDSTONE:lt gy,vf-f sbang-sbrnd Qtz grs,occ m,mod str-str calc cmt,hd,abnt f Glauc grs & pellets,abnt f Pyr aggs v pr vis por,no show

SILTSTONE:gy-dk gy,v arg,mod aren,frm-hd,mas-sbfis,occ bk flks

SANDSTONE:lt gy-gy,vf-f Qtz grs,dom f,tr c,w srt,com slty mtx,occ arg disp mtx,mod sil cmt,occ Pyr grs,mod hd,pr vis por,no show

W 1.12 V 48 PV 16 YP 18
Gel 5/8 FC 1 Sd TR
pH 9.7 Cl 27k Ca 400

SILTSTONE:gy-dk gy,occ bk i/p mas,occ sbfis i/p,mod arg,v aren,mod sil cmt,mod hd,com bk flks
w/ occ thin beds of
SANDSTONE:lt gy-gy,f-m Qtz grs,occ c grs,mod srt,com slty mtx,mod sil cmt,mod hd,pr vis por,no show



SILTSTONE:gy-dk gy,occ bk i/p mas,occ sbfis i/p,mod arg,f aren i/p,tr calc cmt,mod hd, com Glauc grs,tr rd brn hd dol frags
w/ occ thin bands of
SANDSTONE:lt gy-gy,f-m Qtz grs,occ c grs,mod srt,com slty mtx,mod sil cmt,mod hd, pr vis por,no show

Dev 4.8 deg @ 1385m
Azi 200.8 deg

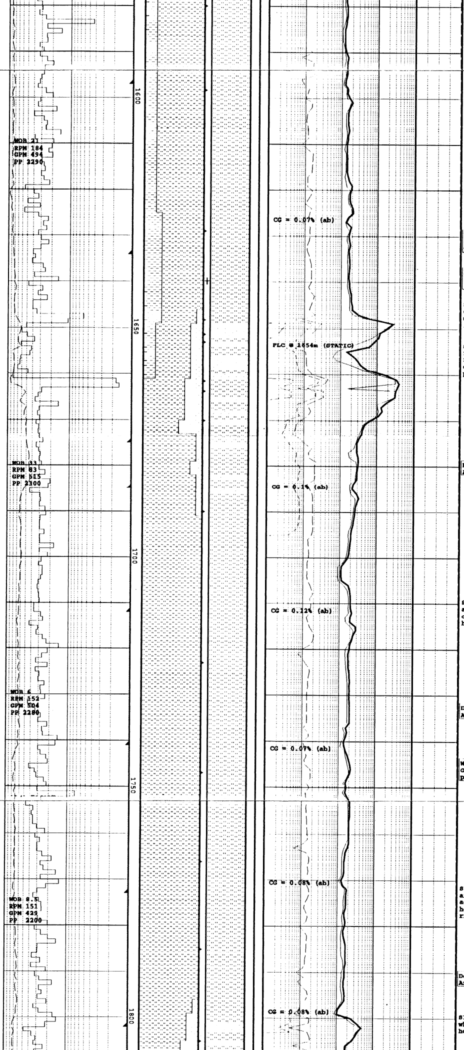
ARGILLACEOUS SILTSTONE:dk gy-med gy,abnt dk gy arg mtx,mas sbfis,frm-mod hd,tr dol frags tr calc cmt i/p,tr Pyr grs

ARGILLACEOUS SILTSTONE:dk gy-med gy,frm-mod hd,mas-sbfis, arg mtx mod disp,tr-rr Glauc

Dev 5.4 deg @ 1473m
Azi 206 deg

ARGILLACEOUS SILTSTONE:dk gy-med gy,lt gy i/p,frm-hd,mas, arg mtx v disp,tr calc,tr Gastro & shell frags

Dev 6.0 deg @ 1559m
Azi 216 deg



SILTSTONE:gy-dk gy,occ bk i/p v arg,mod sil cmt,tr calc cmt i/p,occ bk flks,occ foss frags,mod hd-hd

W 1.14 V 50 PV 20 YP 30
Gel 12/22 FC 1 Sd TR
pH 9.2 Cl 26k Ca 360

RFT #3 @ 1640m
77.7 cf gas
750ml filtrate

SILTSTONE:gy-dk gy,occ bk i/p occ mod arg i/p,mod sil cmt, mas-sbfis,frm-mod hd,occ v hd i/p,rr bk carb flks

SANDSTONE:lt gy-gy,occ wh i/p f-m qtz grs,occ c lse grs i/p rnd,w srt,mod arg,mod sil cmt occ calc cmt i/p,mod hd-hd,v pr vis por, no show

Dev 6.8 deg @ 1671m
Azi 196.6 deg

SILTSTONE:dk gy-bk,occ mod aren,occ arg i/p,mod sil cmt, occ bk flks,occ c Qtz grs,mod hd-hd

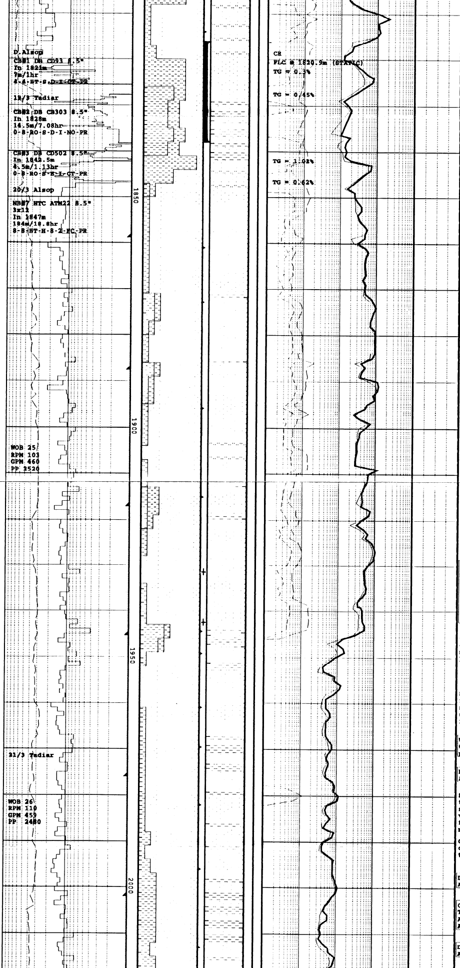
Dev 7.4 deg @ 1733m
Azi 192.7 deg

W 1.16 V 48 PV 19 YP 24
Gel 7/26 FC 1 Sd TR
pH 9 Cl 34k Ca 280

SILTSTONE:dk gy-med gy,occ aren i/p w/ f arg qtz Sst aggs,tr v wk calc cmt i/p,mod hd-hd,mas-sbfis,tr wh arg i/p rr glauc,tr shell frags

Dev 7.6 deg @ 1791m
Azi 187.8 deg

SILTSTONE:dk gy,vf aren i/p, wk calc cmt i/p,sbfis,mod hd-hd



SANDSTONE:lt gy,vf-vc,occ rnd qtz pebble,pr srtd,sbang-sbrnd transp-transl qtz grs,v slty,com lt gy arg mtx i/p, fri,com lse grs,com f Pyr aggs,tr bk spks,tr micmic spks,pr-gd inf por,no show

CLAYSTONE:lt gy-med gy,wh kaol mat i/p,v slty i/p,f aren i/p w/ pyr cmtd aggs,tr calc cmt,mas,frm-mod hd,abnt vf micxln pyr cmt & aggs,com f bk coal frags,tr lt gn lithics

1835-1838m: drill data lost due to power failure

SILTSTONE:dk gy-bk,occ vf aren i/p,tr lt gy arg mat, sbfis-sbblky,mod hd

CORE #1:1821-1828m
43% recovery

CORE #2:1828-1842.5m
91% recovery

CORE #3:1842.5-1847m
100% recovery

SANDSTONE:lt gy,transl-clr qtz grs,hd-v hd,m-vc,dom vc, pr-mod srtd,sbrnd-sbang,com sil cmt,tr Kaol,fr-gd por,no show

SANDSTONE:wh-crm i/p,pred med gy,transl-clr grs,v hd,rnd sbrnd,sbang i/p,pred m gr,f vf i/p,tr kaol,tr pyr,carb spks,com str sil cmt,fr-gd por,no show

CLAYSTONE:med-lt gy,dk gy i/p amor,frm

SILTSTONE:dk gy,lt gy i/p,mod hd,sbblky,tr qtz sd,tr carb spks

SANDSTONE:lt gy,clr-transl grs,fri-hd,m-c,mod srtd,sbrnd sbang,tr kaol,tr pyr,tr carb gd inf por

SHOW:4% dul orng fluor,slo dul yel-wh crush cut,tr thin bl-wh res ring,v pr show

RFT #1 @ 1942.5m:
113 cf gas
15ml condensate
555ml filtrate

RFT #2 @ 1931m:
77.7 cf gas
20ml condensate
830ml filtrate "p

CLAYSTONE:med brn gy-med gy,mas-sbblky,slty i/p,frm-mod
hd

SANDSTONE:lt gy,clr-transl fri-hd,f-c,mod srtd,sbrnd sbang,tr-com kaol,tr carb spks,tr-com sil cmt,fr-gd inf por,no show

W 1.15 V 45 PV 15 YP 18
Gel 5/25 FC 1 Sd TR
pH 9.5 Cl 45k Ca 120

Dev 8.2 deg @ 1966m
Azi 177.6 deg

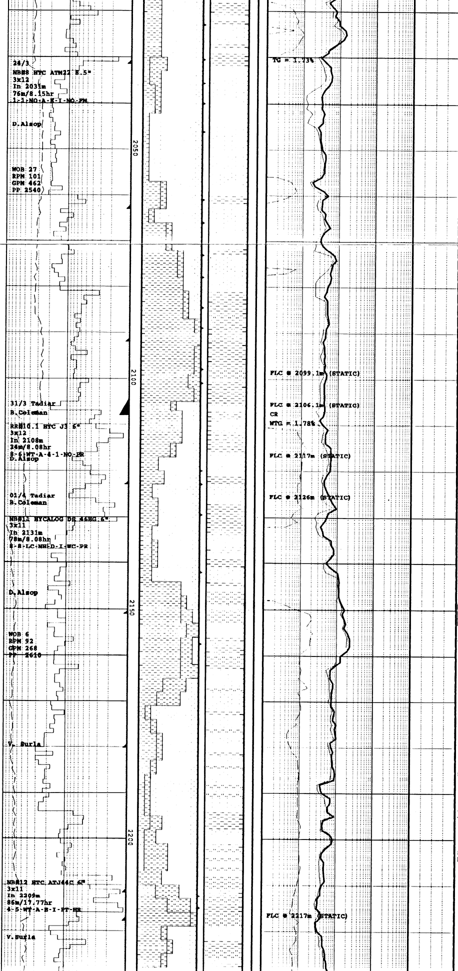
SANDSTONE:lt gy-off wh,clr transl qtz grs,vf-c,dom f,mod srtd,wk sil cmt i/p,com-abnt v lt gy arg mtx,mod hd-hd,tr f pyr aggs,v pr-fr vis por no show

CLAYSTONE:med gy,v slty,non calc,mas-sbblky,v frm-mod hd tr f pyr aggs,tr bk spks

Dev 8.6 deg @ 1995m
Azi 175.5 deg

Carbide check @ 2002m
Theo lag = 2970 stks
Actl lag = 3490 stks
Av hole size = 9.88"

Dev 8.8 deg @ 2022m
Azi 173 deg



SANDSTONE:lt gy-off wh,clr transl qtz grs,vf-c,dom m,pr mod srtd,com mod str sil cmt i/p,abnt v lt gy arg mtx,brit hd,tr f micxln pyr aggs & cmt v pr-fr vis por,no show

CLAYSTONE:med-lt gy,v slty non calc,mas-sbblky,tr f pyr aggs

Run E-Logs @ 2031m
1.DLL-MSFL-SDT-GR-SP-CAL-AMS
2.LDL-CNL-GR-FMS
3.VSP
4.RFT (3 runs)

SANDSTONE:lt gy,clr-transl grs,f-c,dom m,occ lse grs,mod srtd,sbrnd-sbang,tr-com sil cmt,com lt gy arg mtx i/p,occ slty i/p,mod hd-hd,tr pyr,tr carb flks,tr amber,tr glauc pr-fr vis por,no show

Dev 8.9 deg @ 2050m
Azi 170.5 deg

W 1.15 V 45 PV 14 YP 14
Gel 3/20 FC 14 Sd TR
pH 8.8 Cl 50k Ca 120

Dev 9.0 deg @ 2081m
Azi 165.3 deg

CLAYSTONE:med-dk gy,pred dk gy,amor-blky,occ slty i/p,sft v frm,mod hd i/p

SILTSTONE:med gy-dk gy,dk gy arg mtx,f aren i/p,hd-v hd,tr com bk carb strks,tr pyr,tr com gn chlor grs

Set 7" csg shoe @ 2108m
Drill ahead 6" hole

SANDSTONE:med gy-lt gy,clr transl grs,fri-hd,f-c,dom m tr-com sil cmt,tr pyr,tr arg mtx,tr amber,fr-gd inf por,no show

SANDSTONE:lt-gy,clr-transl qtz grs,vf-f,mod srtd,abnt wh lt gy arg mtx,v slty i/p,wk sil cmt,mod hd,tr lithic grns tr thin lam v dk brn-bk lignite,tr f pyr aggs,pr inf por,no show

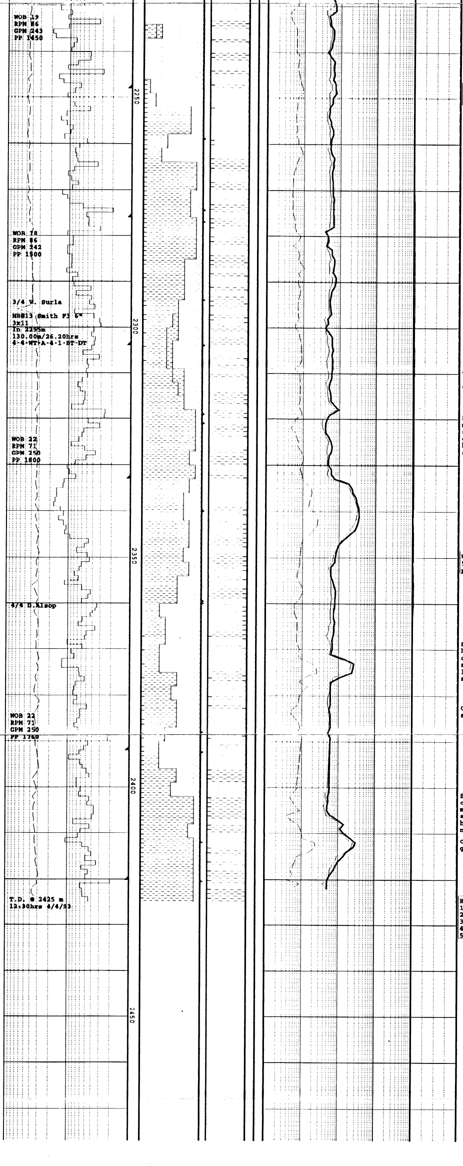
CLAYSTONE:med gy-dk gy,lt gy i/p,f aren i/p,amor,frm-v frm

W 1.15,V 43,PV/YP 14/15,Gels 3/7,F 4.8,FC 1,Sol 8.5,Sd tr, pH 9.4,Cl 46k,Ca 180

SANDSTONE:wh-lt gy,cl-transl qtz grns,mod hd,f-m,c i/p sbrnd-sbang,w srtd,abnt wh-lt gy v arg mtx,sil cmt,rr pyr mod vis por,no show

CLAYSTONE:lt-med gy,dk gy i/p v disp,amor-blky,sft-v frm

SILTSTONE:med lt gy-med gy,gy brn i/p,blky-sbfis,mod hd



SANDSTONE:wh-lt gy,fri-mod hd vf-m,dom f,sbrnd-rnd,w srt com w v disp arg mtx,occ pl grn-brn-yel lith,tr pyr grns com qtz grns,v com lse grns pr inf por,no show

W 1.16,V 45,PV/YP 16/18,Gels 5/8,F 5.2,FC 1,Sol 8.5,Sd tr, pH 9.0,Cl 49k,Ca 240

CLAYSTONE:wh-crmy,occ pl brn i/p,mass,stky,v disp,mod-v aren

SANDSTONE:wh-lt gy,occ dk gy i/p fri-mod hd,vf-m,dom f,w srt,rnd,v arg,occ sil cmt,v com lse grns & qtz grns,occ bk-pl yel lith,pr inf por,no show

CLAYSTONE:wh-pl brn,occ brn i/p,sft,mas,stky,v disp,v aren,com bk flks

SANDSTONE:wh-lt gy,occ gy i/p mod hd-hd,vf-f,dom f,rnd,w srt,mod-v arg,occ calc cmt occ sil cmt i/p,com bk-grn brn,pl yel lith,pr inf por,no show

W 1.16,V 46,PV/YP 15/20,Gels 5/9,F 5.0,FC 1,Sol 8.6,Sd tr, pH 9.2,Cl 49k,Ca 140

SANDSTONE:lt gy-lt ol gy,fri hd,vf-c,dom f-m,sbrnd-sbang com arg mtx,tr calc cmt,tr sil cmt,tr-com grn-rd-brn-blk lithics,tr pyr,p vis por,no show

CLAYSTONE:wh-pl brn,occ brn sft-disp,mass,v aren,tr carb

SANDSTONE:wh-lt gy,pred lt gy clr-transl qtz grns,mod hd,f med,pred med,c i/p,sbang sbrnd,com arg mtx,tr grn-rd brn lithics,tr pyr,p inf por no show

CLAYSTONE:lt-med gy,pred lt gy,lt brn i/p,sft,amor,v disp

Run E-logs @ 2425m
1.DLL-MSFL-AS-GR-SP-AMS
2.FMS-LDT-CNT-GR-AMS
3.VSP
4.CST(21 shot,18 rec)
5.CBL-VDC-USI