



RIG MONITORING
FORMATION EVALUATION LOG SCALE 1:500

Country : Australia
Field : Black Watch
Location : Lat: 38° 34' 45.54" South
Long: 142° 43' 50.95" East
Well : Halladale -1 DW1(L Black Watch)
Company : Woodside Energy Ltd
Rig : Ocean Patriot

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DOE Number :
LOCATION
Latitude : 38° 34' 45.54" South
Longitude : 142° 43' 50.95" East
UTM Easting = 650,763.20 m
UTM Northing = 5,728,485.20 m

Permanent Datum : LAT
Log Measured From : Drill Floor
Drilling Measured From : Drill Floor
Elevation : 0.00 m
21.50 m Above Permanent Datum

Depth Logged : 66.30 m To 1,918.00 m Unit No. : 197 Job No. : AUFEE0003325470
Date Logged : 22-Mar-05 To 10-Apr-05
Total Depth MD : 1,918.00 m TVD : 1,869.17 m
Spud Date : 22-Mar-05 Plot Type : Final Plot Date : 28-Jun-05

Run No.	Borehole Record (MD)		Run No.	Borehole Record (MD)	
	Size From	To		Size From	To
1	914.400 mm	66.30 m			
2	444.500 mm	69.00 m			
3	444.500 mm	101.00 m			
4	311.150 mm	427.00 m			
5	215.900 mm	839.00 m			
6	215.900 mm	1,791.00 m			
7	215.900 mm	1,798.80 m			

Size	Casing Record (MD)	
	Weight From	To
762.000 mm	488.00 kgpm	99.50 m
340.000 mm	101.00 kgpm	421.00 m
244.000 mm	70.00 kgpm	834.00 m

LEGEND

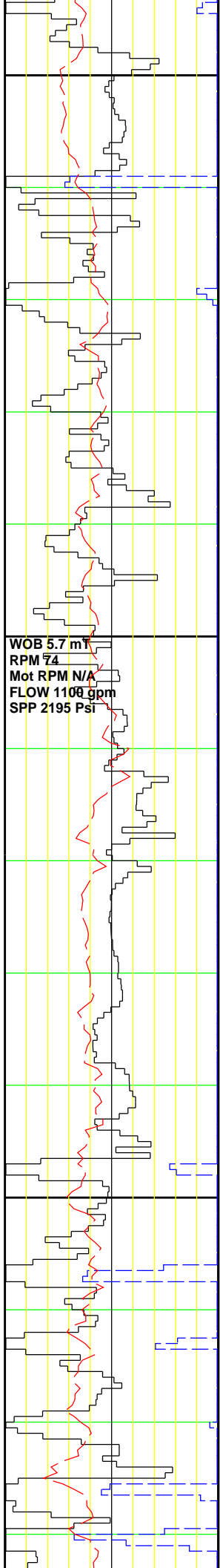
Abbreviations and Symbols

Drilling Data		Mud Data			
BG	Background Gas	Cl-	Chloride Ion Conc	Rm	Mud Resistivity
BHT	Bottomhole Temp	FC	Filter Cake	Rmf	Filtrate Resistivity
C	Carbide Test	FL	Filtrate Loss	S	Solids Content
CB	Core Bit	G	Gels	Vis	Funnel Viscosity
CG	Connection Gas	pH	Hydrogen Ion Content	MW	Mud Weight
CKF	Check For Flow	PV	Plastic Viscosity	YP	Yield Point
CO	Circulate Out	<div>Engineering Data</div> <div><div><div>Core No.</div><div>DST No.</div><div>Casing Seat</div><div>Side Wall Core</div><div>Gas Traces</div><div>Gas</div><div>Oil Traces</div><div>Oil</div></div><div><div><div>Water</div><div>Salt Water</div><div>Fresh Water</div><div>Hydrocarbons Smell</div><div>H2S Smell</div><div>Interval Tester</div><div>Wireline Log Run</div><div>Leakoff Test</div><div>Pressure Integrity</div></div></div></div>			
DB	Diamond Bit				
DC	Depth Correction				
DS	Direction Survey				
DST	Drillstem Test				
FLT	Flowline Temp.				
LAT	Logged After Trip				
NB	New Bit				
NR	No Returns				
PDC	Polycrystalline Diamond				
	Compound Bit				
PR	Partial Returns				
RPM	Revs Per Minute				
RRB	Rerun Bit				
STG	Short Trip Gas				
TB	Turbo Drill				
TG	Trip Gas				
U	Gas Units				
WOB	Weight On Bit				

Lithology Symbols

	Sandstone	
	Calcareous Sandstone	
	Glaucconitic Sandstone	
	Silty Sandstone	
	Argillaceous Sandstone	
	Siltstone	
	Sandy Siltstone	
	Argillaceous Siltstone	
	Claystone	
	Clacareous Claystone	

GAMMA (api)					
WOB (klb)					
ROP (m/hr)					
ROP WRAP (m/hr)					
RESISTIVITY (SHALLOW)					
RESISTIVITY DEEP					
TOTAL GAS %					
CHROMATOGRAPH METHANE %					
ETHANE %					
PROPANE %					
ISO-BUTANE %					
N-BUTANE %					
ISO-PENTANE %					
N-PENTANE%					
CO2 %					
OIL FLUORESCENCE PFG					
REMARKS					
<div>Norman Naidoo - Data Engr. Bronwyn Calleja - Data Engr. Sam Willis - Data Engr. Tony Wyeth - Data Engr. Jamie Connell - M/logger. Devalpally Vidyannath - M/logger. Steve McDonald - M/logger. Murali Viswanathan - Catcher. Adnan Chohan - Catcher.</div>					
<div>22/03/05 Bit 1RR2 914mm Varel L111 Jets: 3x32 TFA: 2.36 In/Out: 66.3/ 69.0 mMDRT Drilled: 2.7 m HOB: 0.4 Bit Grading: Not graded</div>					
<div>23/03/05 Bit 2 445 mm HC MX1 w/ 914mm Hole Opener Jets: 2x20, 1x18 TFA: 0.86 In/Out: 69.0/101.5 mMDRT Drilled: 32.5 m HOB: 5.0 Bit Grading: 1-1-NO-A-E-I-NO-TD</div>					
<div>WOB 4.1 mT RPM 75 Mot RPM N/A FLOW 820 gpm SPP 425 Psi</div>					
<div>24/03/05 Bit 3 445 mm HC-MX1 Jets: 2x20, 1x18 TFA: 0.86 In/Out: 101.5/427.0 mMDRT Drilled: 325.5 m HOB: 6.7 Bit Grading: 1-1-WT-A-1-I-NO-TD</div>					



150 160 170 180 190 200 210 220 230 240 250 260 270 280

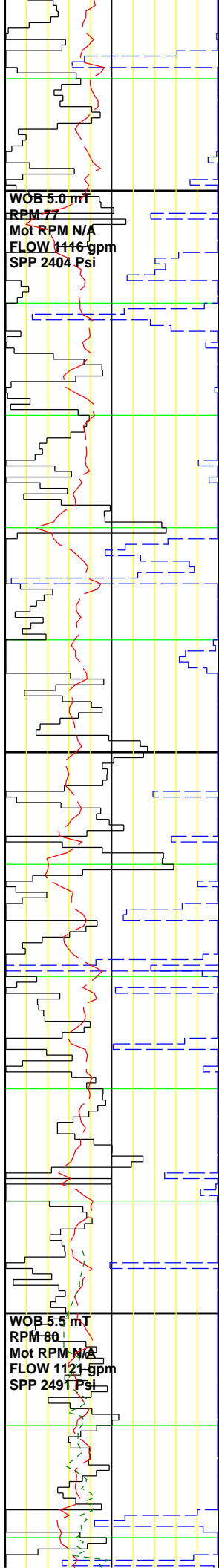
Dev @ 156.0 m Inc 0.5 deg
Az 3.8 deg

Dev @ 184.1 m Inc 0.5 deg
Az 12.1 deg

Dev @ 212.8 m Inc 0.6 deg
Az 7.1 deg

Dev @ 241.5 m Inc 0.5 deg
Az 359.8 deg

Dev @ 270.3 m Inc 0.5 deg
Az 358.4 deg



290 300 310 320 330 340 350 360 370 380 390 400 410 420

Dev @ 299.0 m Inc 0.5 deg
Az 348.1 deg

Dev @ 327.6 m Inc 0.8 deg
Az 2.3 deg

Dev @ 356.4 m Inc 0.6 deg
Az 10.6 deg

Dev @ 385.0 m Inc 0.7 deg
Az 350.3 deg

Dev @ 413.8 m Inc 0.7 deg
Az 346.3 deg

Drill with Seawater and Guar/Gel
Sweeps
Returns to sea floor

Displaced hole to unweighted Gel
mud at TD.

Section TD 445 mm (17½") hole section
@ 427.0 mMDRT (427.0 mTVD).
Set 340 mm csg at 421.0 mMDRT (420.98
mTVD).

Start drilling 311 mm (12¼") hole 13:10
hrs 27/03/2005 @ 427.0 mMDRT

25 - 27/03/05 NN, DV, AC
Bit 4
311mm HC MX-G03
Jets: 2x20, 1x18
TFA: 0.86
In/Out: 427.0/839.0 mMDRT
Drilled: 412.0 m
HOB: 8.4
Bit Grading: Not graded

WOB 7.7mT
RPM 58
Mot RPM 125
FLOW 842 gpm
SPP 1839 Psi

430
440
450
460
470
480
490
500
510
520
530
540
550
560

Dev @ 436.8 m Inc 1.1 deg
Az 338.8 deg

Dev @ 465.9 m Inc 1.2 deg
Az 260.1 deg

Dev @ 494.7 m Inc 1.1 deg
Az 254.4 deg

Dev @ 522.7 m Inc 1.4 deg
Az 256.2 deg

Dev @ 552.4 m Inc 1.3 deg
Az 268.8 deg

Drill with AQUA-DRILL mud system

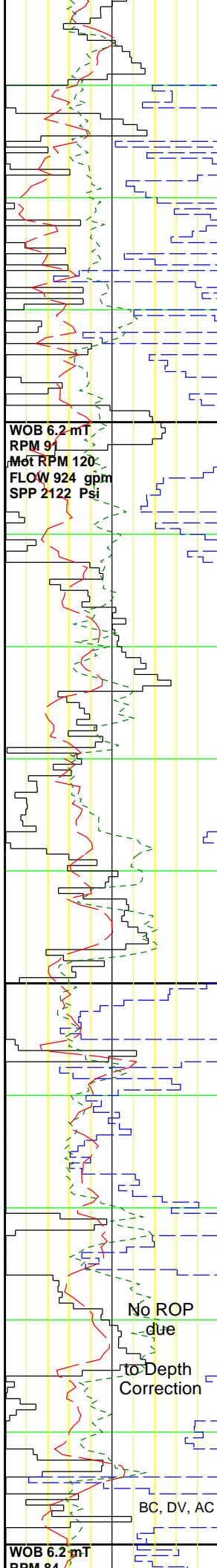
427.0 to 490.0 mMDRT
Interbedded CALCAREOUS CLAYSTONE and CALCAREOUS SILTY CLAYSTONE interbedded with minor CALCAREOUS SILTSTONE and localised ARGILLACEOUS CALCILUTITE.
CALCAREOUS CLAYSTONE (40 - 100%): med gnsh gy - lt gn, v lt gy i.p., sft - v sft, amor - sbfiss, 35% calc cly, 65% sil cly, 15% foss frag, tr mmic, tr glauc i.p..
CALCAREOUS SILTY CLAYSTONE (10 - 60%): wh - v lt gnsh gy, v sft, amor, disp, 30% calc cly, 10% calc slt, 30% sil cly, 30% sil slt.
CALCAREOUS SILTSTONE (10%): med gnsh gy - dk gnsh gy, sft - frm, sbblky - sbfiss, 30% calc cly, 70% sil slt, 20% foss frag.
ARGILLACEOUS CALCILUTITE (0 - 40%): med gnsh gy - lt gn, sft - v sft, disp, 55% calc cly, 15% calc slt, 15% sil cly, 15% sil slt, 10% foss frag, tr mic.

MW: 1.11 sg
FV: 55
PV/YP 20/32
Gels: 7/11
Gly/W/S: 3.2/92/4.8
CI: 45000 mg/l

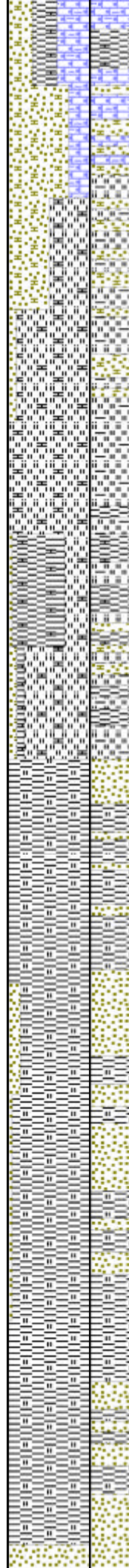
490.0 - 499.0 mMDRT
CALCAREOUS CLAYSTONE with minor ARGILLACEOUS CALCARENITE interbeds.
CALCAREOUS CLAYSTONE (1) (70%): med gnsh gy - lt gn, sft - v sft, disp, 30% calc cly, 10% calc slt, 40% sil cly, 20% sil slt, 10% foss frag, tr mic.
ARGILLACEOUS CALCARENITE (15%): yelsh brn - lt brnsh gy, sft - mod hd, disp - ang, 30% calc cly, 30% calc slt, 40% calc sd, tr - rr glauc, tr - rr lith frag, tr mic.
CALCAREOUS CLAYSTONE (2) (5%): dk brn - med brnsh gy, sft - v sft, disp, 30% calc cly, 10% calc slt, 60% sil cly, tr glauc, tr foss frag, tr mic.

499.0 - 509.0 mMDRT
CALCAREOUS CLAYSTONE.
CALCAREOUS CLAYSTONE (100%): lt gy - med bnsh gy, sft - v sft, disp, 40% calc cly, 10% calc slt, 30% sil cly, 20% sil slt, tr mic.

509.0 - 561.0 mMDRT
CALCAREOUS CLAYSTONE interbedded with SILTY CALCILUTITE.
CALCAREOUS CLAYSTONE (60 - 100%): brnsh gy - lt olv gy, olv gy, sft - v sft, disp, 30% calc cly, 10% calc slt, 40% calc sd, 20% sil cly, tr mic, tr foss frag.
SILTY CALCILUTITE (0 - 60%): lt olv gy, med gy - olv gy, sft - v sft, disp,



570
580
590
600
610
620
630
640
650
660
670
680
690
700



Dev @ 581.1 m Inc 1.1 deg
Az 265.4 deg

Dev @ 609.4 m Inc 1.3 deg
Az 275.8 deg

Dev @ 638.4 m Inc 1.1 deg
Az 273.5 deg

Dev @ 667.1 m Inc 1.4 deg
Az 258.5 deg

Dev @ 695.5 m Inc 2.1 deg
Az 241.0 deg

50% calc cly, 20% calc slt, 10% calc sd, 20% sil slt, mntr foss frag, tr glauc.

561.0 - 629.5 mMDRT
Interbedded CALCAREOUS SANDSTONE, CALCAREOUS ARGILLACEOUS SILTSTONE, CALCAREOUS SILTY CLAYSTONE with minor SIDERITIC CALCILUTITE and SIDERITIC SANDSTONE.
CALCAREOUS SANDSTONE (0 - 60%): lt brn, lt orng brn, sft - frm, disp - sbbkly, v f - med gr, pred f, prly std, sbang - ang, sphr, 20% calc cly, 10% calc slt, 20% calc sd, 50% sil sd, abdt sid cmt, mntr cal cmt, tr sid cmt, mod - gd vis por, n/s.
CALCAREOUS, ARGILLACEOUS SILTSTONE (0 - 100%): med lt gy - gnsh gy, lt olv gy, sft, disp, 30% calc cly, 10% calc slt, 10% sil cly, 50% sil slt, tr sil sd, tr glauc.
CALCAREOUS, SILTY CLAYSTONE (0 - 40%): lt olv gy, med gy - olv gy, sft - v sft, disp, 30% calc cly, 10% calc slt, 30% sil cly, 30% sil slt, tr sil sd, tr glauc, tr foss frag.
CALCAREOUS, ARGILLACEOUS SILTSTONE (2) (0 - 40%): med lt gy - gnsh gy, sft, sbbkly, 20% calc cly, 20% calc slt, 20% sil cly, 40% sil slt.
SIDERITIC CALCILUTITE (0 - 10%): v pa orng, mod rdsh orng - lt brn, frm - mod hd, bkly - sbbkly, 80% calc cly, 15% sil slt, 5% sil sd.
SIDERITIC SANDSTONE (0 - 10%): lt gy - lt brn, lt orng brn, lse, disp, v f - cse gr, pred f - med gr, sbang - sbrnd, pr - mod std, sbsphr, 20% calc cly, 10% calc slt, 10% calc sd, 60% sil sd, mntr sid cmt, tr foss frag, pr - fr vis por, n/s.

629.5 - 700.0 mMDRT
Interbedded SILTY CLAYSTONE and SANDSTONE
SILTY CLAYSTONE (90 - 100%): dk yelsh brn, brnsh gy - gysh bn, sft - v sft, disp - sbbkly, tr calc cly, 65% sil cly, 35% sil slt.
SANDSTONE (0 - 10%): clr, trnsl, v lt gy, lse, disp, med - v cse gr, pred cse - v cse, sbrnd - rnd, mod - mod wel std, sbsphr - sphr, 30% sil cly, 70% sil sd, abdt sil cmt, pr vis por, n/s.

MW: 1.14 sg
FV: 77
PV/YP: 26/42
Gels: 7/13
Gly/W/S: 3/91/6
CI: 44000 mg/l

REM 64
Mot RPM N/A
FLOW 904 gpm
SPP 2752 Psi

28/03/05 BC, JC, MV

WOB 4.2 mT
RPM 75
Mot RPM 124
FLOW 955 gpm
SPP 2595 Psi

29/03/05 NN, DV, AC
Bit 5

710
720
730
740
750
760
770
780
790
800
810
820
830
840

Dev @ 724.0 m Inc 2.2 deg
Az 237.2 deg

Dev @ 752.6 m Inc 2.9 deg
Az 218.7 deg

Dev @ 781.2 m Inc 4.6 deg
Az 213.1 deg

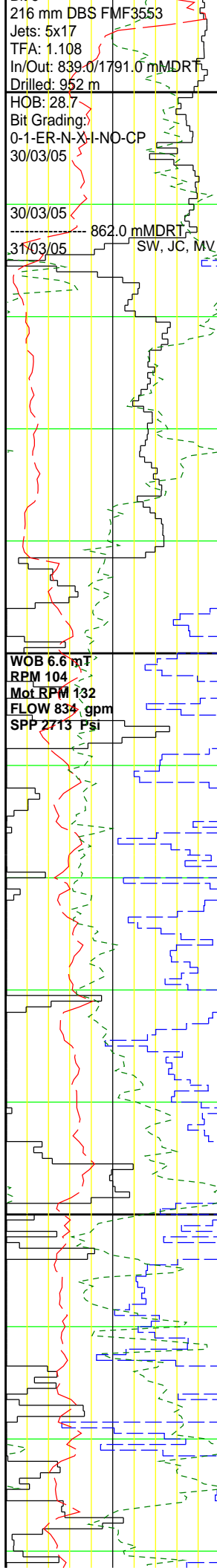
Dev @ 810.5 m Inc 4.6 deg
Az 213.3 deg

700.0 - 801.5 mMDRT
SANDSTONE with minor interbedded
ARGILLACEOUS SILTSTONE.
SANDSTONE (90 - 100%): clr, trnsl, v
lt gy, v lt brn, lse, frm - mod hd aggr, f -
v cse gr, pred med - cse, pr - mod std,
sbang - sbrnd, sbspher, tr sil cmt, tr
pyr cmt, tr - rr qtz ovgrwth, tr pyr nod, fr
- gd vis por, n/s.
ARGILLACEOUS SILTSTONE (0 -
10%): lt brnsh gy, lt grnsh gy - olv gy,
med brnsh gy, sft amor, com - abdt v f
- f qtz gr, 25% sil cly, 20% sil sd, tr
carb spec.

801.5 - 839.0 mMDRT
SILTY CLAYSTONE with minor
ARGILLACEOUS SILTSTONE and
SILTY SANDSTONE interbeds.
SILTY CLAYSTONE (15 - 100%): med
brnsh gy - dk brnsh gy, olv gy, sft,
amor, abdt slt, tr - rr v f qtz gr, tr carb,
tr foss frag, tr nod pyr.
ARGILLACEOUS SILTSTONE (15 -
55%): med brnsh gy - dk brnsh gy, olv
gy i.p., sft amor, com - abdt v f - f qtz
gr, 25% sil cly, 20% sil sd, tr carb
spec.
SILTY SANDSTONE (0 - 50%): clr,
trnsl, v lt gy, v lt brn, lse, frm - mod hd
aggr, f - v cse gr, pred med - cse, pr -
mod std, sbang - sbrnd, sbspher, 20%
sil slt, tr pyr cmt, tr - rr qtz ovgrwth, tr
pyr nod, fr - gd vis por, n/s.

Section TD 311 mm (12 1/4") hole section
@ 839.0 mMDRT (838.6 mTVD).
Set 244 mm csg at 834.0 mMDRT (833.6
mTVD).

MW: 1.18 sg
FV: 71
PV/YP: 33/26
Gels: 6/14
Gly/W/S: 3/90/7
Cl: 43000 mg/l



850
860
870
880
890
900
910
920
930
940
950
960
970
980

Dev @ 851.5 m Inc 5.1 deg
Az 204.4 deg

Dev @ 880.1 m Inc 5.3 deg
Az 205.1 deg

Dev @ 908.7 m Inc 6.3 deg
Az 189.3 deg

Dev @ 937.4 m Inc 8.7 deg
Az 196.8 deg

Dev @ 966.4 m Inc 10.3 deg
Az 204.4 deg

Start drilling 216 mm (8½") hole 18:01 hrs
30/03/2005 @ 839.0 mMDRT
Drilled to 842.0 mMDRT, Performed LOT
@ 834.0 mMDRT (EMW= 2.20 sg).

839.0 - 887.0 mMDRT
Interbedded SILTY CLAYSTONE and
SANDSTONE.
SILTY CLAYSTONE (60 - 70%): lt olv
gy - olv gy, grnsh gy, brnsh gy. sft -
frm, amor, 30% slit, 10% v f sd, tr - rr
dk grn glauc, tr rd lith i.p..
SANDSTONE (30 - 40%): clr, trnsl, lt
gy - lt brn, pa orng brn, lse mod hd
aggr, f - cse gr, pred med, pr - mod
std, ang - sbrnd, sbspher, tr pyr cmt, tr
sil cmt, rr foss frag, tr nod pyr, mod vis
por, n/s.

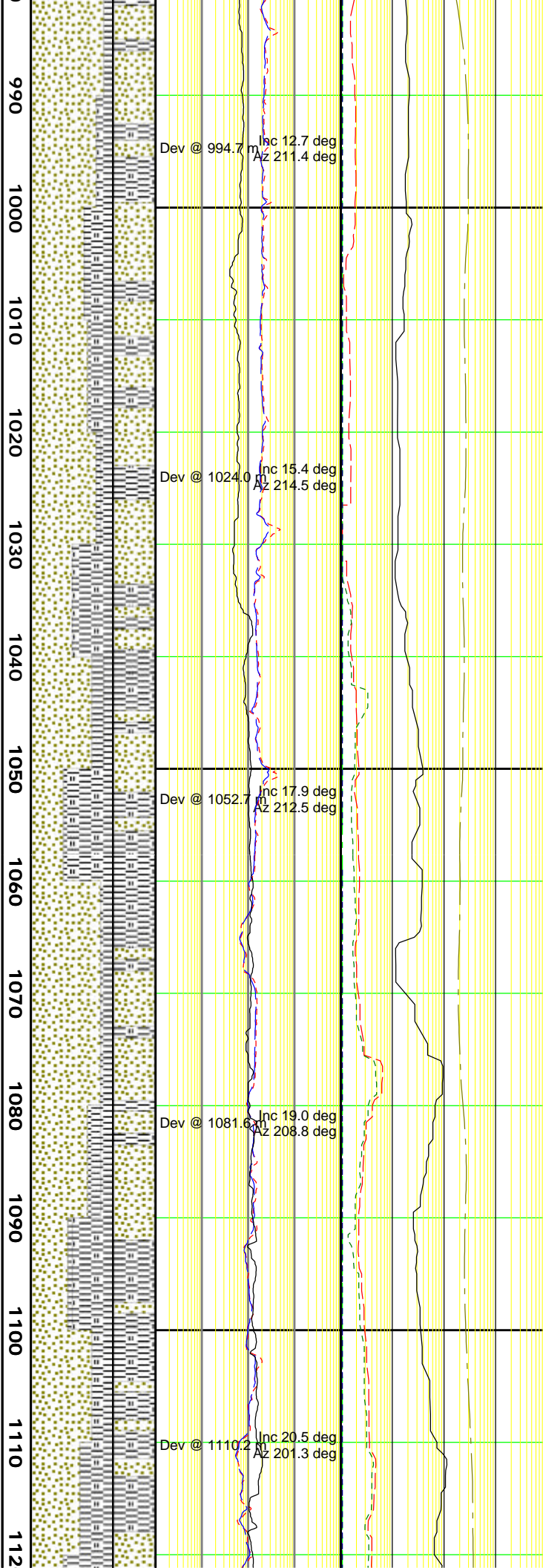
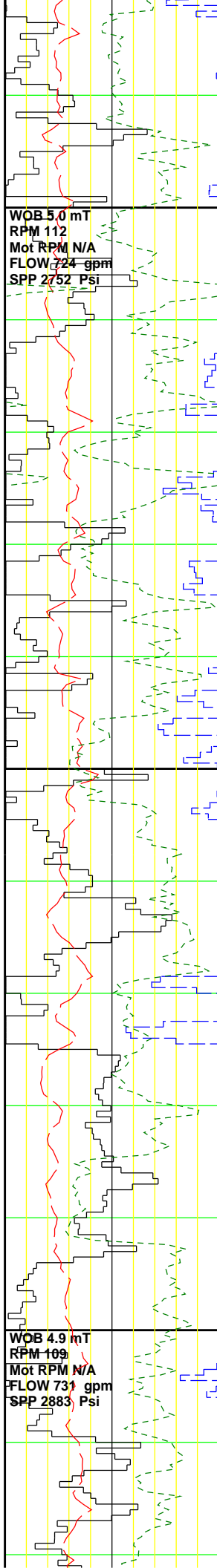
887.0 - 950.0 mMDRT
SANDSTONE with common SILTY
CLAYSTONE interbeds.
SANDSTONE (70 - 100%): dk yelsh
orng - pa orng brn, gysh orng, f - v cse,
pred med - cse, bcmg f w/ dpth, mod -
mod w/ std, bcmg pr - mod std w/ dpth,
ang - sbang, sbspher, rr sil cmt, tr pyr
cmt, mod - gd vis por, bcmg pr - mod
vis por w/ dpth, n/s.
SILTY CLAYSTONE (0 - 30%): lt olv
gy - olv gy, pa brn - brnsh gy, sft,
amor, 40% slit, tr - occ rr dk gn glauc, tr
carb.

Collect Isotube samples every 50 m from
900.0 mMDRT.

0.16% CO2 at 935.0 mMDRT

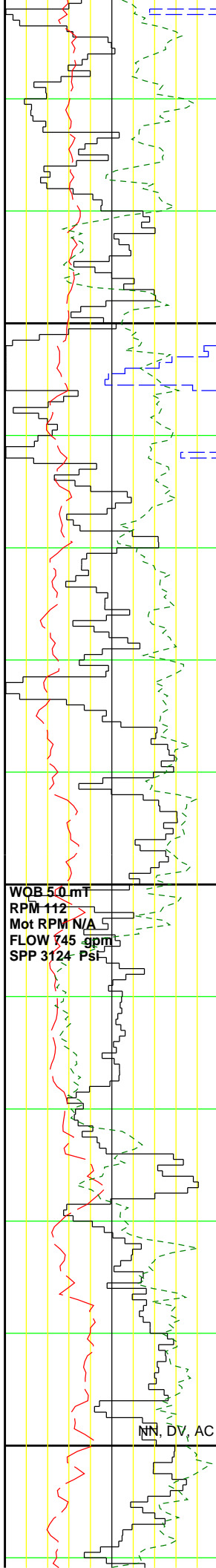
950.0 - 975.0 mMDRT
Interbedded SANDSTONE and SILTY
CLAYSTONE.
SANDSTONE (60 - 70%): clr, trnsl,
occ fstd, occ pa yelsh brn, v f - cse,
prly std, ang - sbrnd, sbspher, rr sil
cmt, tr qtz ovgrwth, tr nod pyr, mod vis
por, n/s.
SILTY CLAYSTONE (30 - 40%): lt -
med gy, olv gy i.p., sft - frm, amor,
40% slit, 10% v f sd, tr - rr carb, tr rd
lith.

975.0 - 1020.0 mMDRT
Interbedded SANDSTONE and SILTY
CLAYSTONE.
SANDSTONE (30 - 90%): clr, trnsl, pa

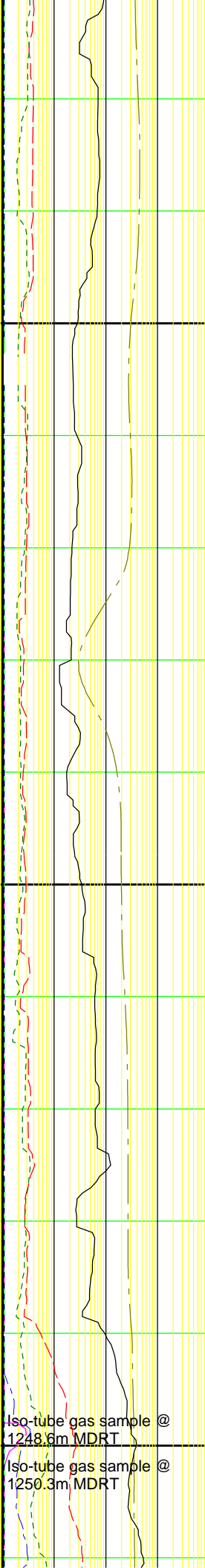
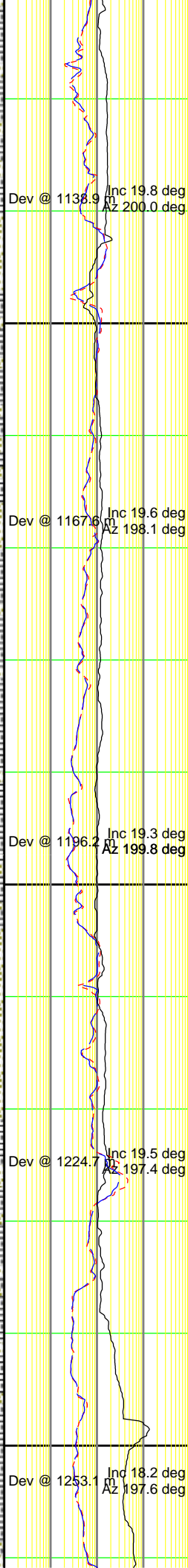
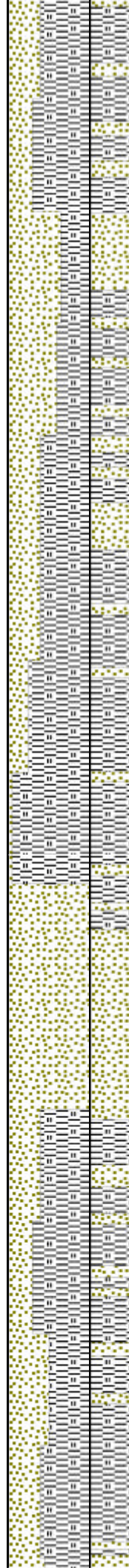


yelsh brn i.p., lse, v f - med, pred f,
mod wel - wel std, ang - sbang,
sbspher, tr pyr cmt, mod vis por, n/s.
SILTY CLAYSTONE (10 - 70%): lt -
med gy, gnsh gy - olv gy, sft - frm,
amor, 30% slt, 5% v f sd, tr - rr glauc,
tr rd lith.

1020.0 - 1160.0 mMDRT
Interbedded SANDSTONE and SILTY
CLAYSTONE with minor
CLAYSTONE.
SANDSTONE (30 - 85%): clr, trnsl, lt
gy, yelsh gy, pred lse, v f - cse, pred f -
med, mod std, sbang - sbrnd, sbspher,
rr mod stng sil cmt, tr pyr cmt, rr glauc
gr, tr lith frag, mod - gd vis por, n/s.
SILTY CLAYSTONE (10 - 70%): olv
gy - dk olv gy, gnsh gy, lt - med gy i.p.,
v sft - sft, occ frm, amor, 35% slt, 5% v
f sd, sli calc, tr glauc, tr rd lith, tr carb.
CLAYSTONE (0 - 15%): wh, pa yelsh
wh, sft, amor, sli calc, 10% slt, tr carb
spec.



0 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260



1160.0 - 1200.0 mMDRT
SILTY CLAYSTONE with minor lenses of SANDSTONE.
SLITY CLAYSTONE (50-90%): lt olv - dk gnsh gy, v sft, disp, 70% sil cly, 30% sil slt, 10% glauc, tr carb frag.
SANDSTONE (10-50%): clr, lse, sbang - sbrnd, v f - cse gr, tr v cse gr, mod std, sli elng, 10% sil cly, 10% sil slt, 80% sil sd, tr pyr cmt, 5% lith frag, gd vis por, n/s.

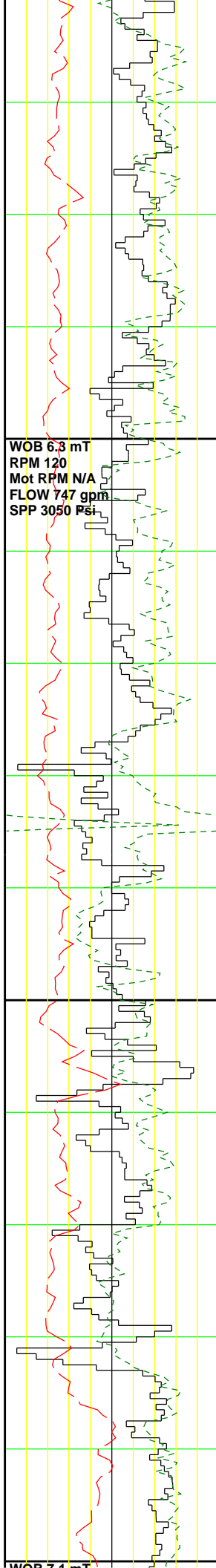
1200.0 - 1220.0 mMDRT
SANDSTONE.
SANDSTONE (100%): clr, lse, v f - cse, pred f - med, mod std - wel std, sbang - sbrnd, sli elng, 10% sil cly, 5% sil slt, 85% sil sd, tr lith frag, gd por, n/s.

1220.0 -1270.0 mMDRT
SILTY CLAYSTONE with minor SANDSTONE.
SILTY CLAYSTONE (50-70%): v lt - dk olv gy, v sft, disp, 70% cly, 30% slt, rr glauc.
SANDSTONE (30-50%): clr - brnsh wh, lse - mod hd, f - cse gr, tr v cse gr, sbang - sbrnd, mod std, sli elng, 5% cly, 5% slt, 90% sd, rr pyr cmt, rr sil cmt, tr lith frag.

Run Carbide @ 1236.0 mMDRT
Theor Ann Vol = 291.7 bbls
Act Ann Vol = 295.8 bbls
Ave hole dia = 8.69"

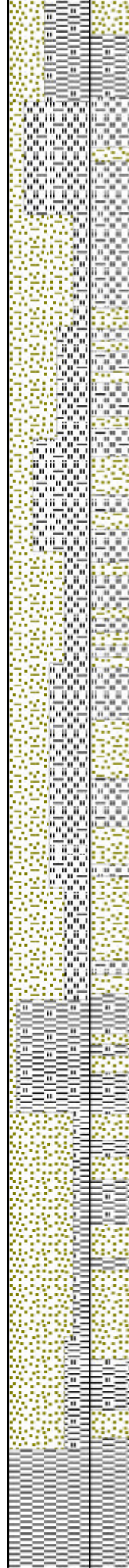
Iso-tube gas sample @
1248.6m MDRT

Iso-tube gas sample @
1250.3m MDRT



WOB 6.3 mT
RPM 120
Mot RPM N/A
FLOW 747 gpm
SPP 3050 Psi

1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400



Dev @ 1281.6 m Inc 18.9 deg
AZ 197.9 deg

HEADER BOX LOADED
WITH CUTTINGS AND
STALLING THE GAS
TRAP

Dev @ 1311.2 m Inc 18.9 deg
AZ 199.5 deg

Dev @ 1339.9 m Inc 18.3 deg
AZ 199.4 deg

Dev @ 1368.5 m Inc 18.4 deg
AZ 200.6 deg

Dev @ 1397.4 m Inc 18.4 deg
AZ 200.7 deg

1270.0 - 1358.0 mMDRT
Interbedded ARGILLACEOUS
SILTSTONE and ARGILLACEOUS
SANDSTONE.
ARGILLACEOUS SILTSTONE
(20-90%): yelsh gy - lt olv gy, v sft -
sft, disp - sbblky, 40% sil cly, 50% sil
slt, 10% sil sd, tr - rr glauc.
ARGILLACEOUS SANDSTONE
(10-80%): clr - lt yelsh gy, lse, disp,
sbang - sbrnd, v f - med, mod std - wel
std, sbspher - spher, 20% sil cly, 80%
sil sd, 10% sil cmt, tr pyr, pr vis por,
n/s.

1358.0 - 1383.0 mMDRT
SANDSTONE and minor to rare SILTY
CLAYSTONE.
SANDSTONE (80-90%): clr - v lt gy, lt
gysh brn, lse, disp, v f - med, pred f, tr
cse gr, mod std - prly std, sbang - ang,
sbspher, tr calc cly, 10% sil slt, 90% sil
sd, n/s.
SILTY CLAYSTONE (10-20%): lt olv
gy - lt gysh brn, sft - v sft, disp - sbblky,
10% calc cly, 50% sil cly, 35% sil slt,
5% sil sd, tr glauc, tr pyr.

1383.0 - 1450.0 mMDRT
CLAYSTONE.
CLAYSTONE (100%): lt gysh gn -
med olv gy sft - v sft, amor, 70% cly,
10% slt, 10% sd, 10% glauc.

WOB 7.1 mT
RPM 122
Mot RPM N/A
FLOW 714 gpm
SPP 3435 Psi

31/03/05
1498.0 mMDRT
SW-1C, MV

WOB 7.1 mT
RPM 128
Mot RPM N/A
FLOW 720 gpm
SPP 3374 Psi

1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540

Dev @ 1426.3 m
Inc 18.8 deg
AZ 202.2 deg

Iso-tube gas samples at
1436.4 and 1436.6m
MDRT.

Dev @ 1454.9 m
Inc 18.5 deg
AZ 201.7 deg

Dev @ 1483.4 m
Inc 18.6 deg
AZ 202.8 deg

Dev @ 1512.2 m
Inc 18.6 deg
AZ 203.1 deg

FLOWCHECK
PUMPS OFF GAS

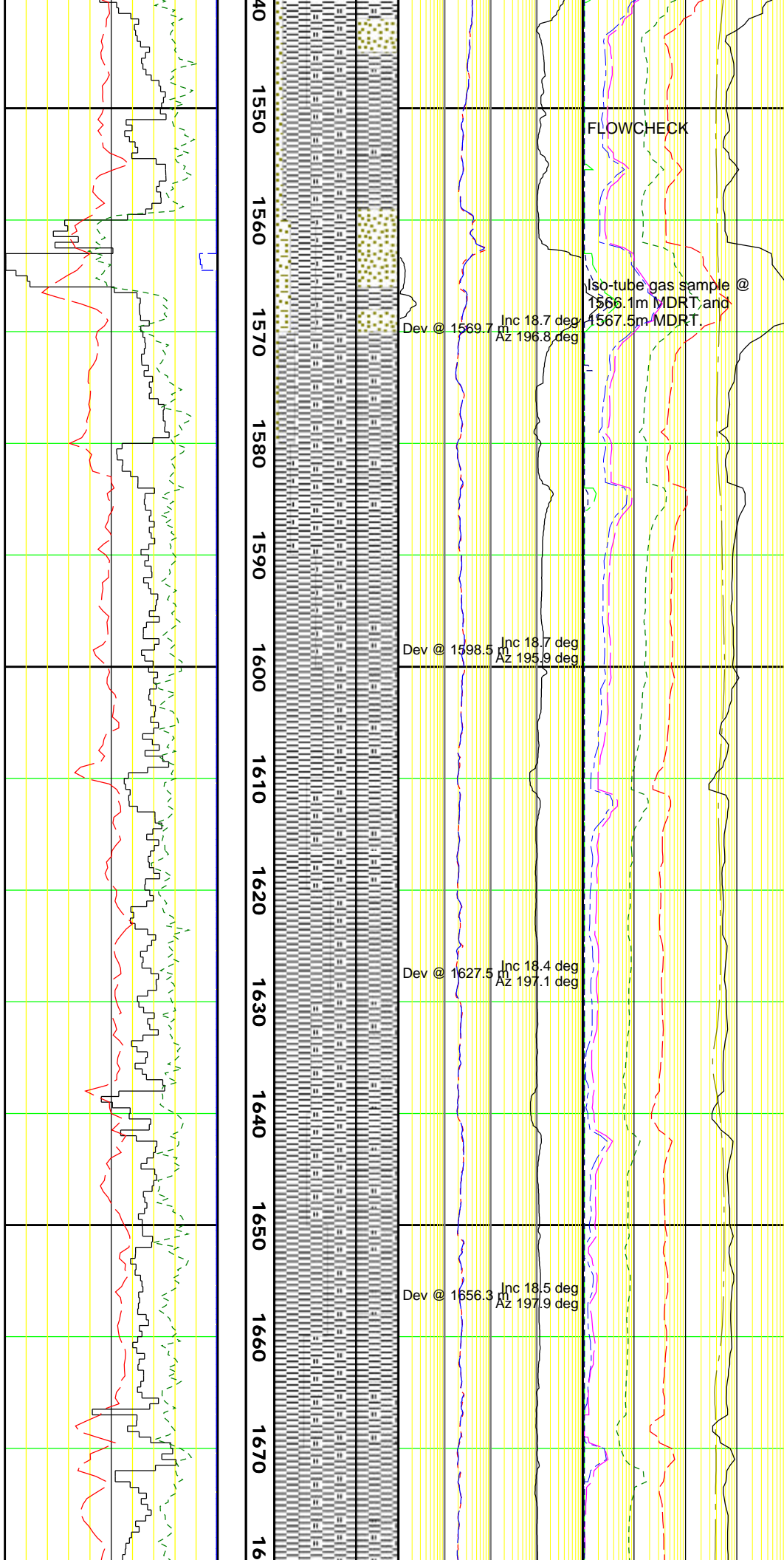
Iso-tube gas sample @
1521.4m MDRT and
1522.2m MDRT.

Iso-tube gas sample @
1535.3m MDRT.

1450.0 - 1516.0 mMDRT
CLAYSTONE.
CLAYSTONE (100%): lt olv gy - olv
gy, pa yelsh brn - lt brnsh gy, sft, amor,
90% sil cly, 10% sil slt, tr sil sd, tr pyr,
tr glauc.

1516.0 - 1537.0 mMDRT
ARGILLACEOUS SANDSTONE with
SILTY CLAYSTONE interbeds.
ARGILLACEOUS SANDSTONE
(30-80%): pal yelsh brn - lt brnsh gy,
lse, disp, sbang - ang, tr calc cly, 20%
sil cly, 10% sil slt, 70% sil sd, 20% v f
gr, 60% f g, 20% med g, 10% sil cmt,
tr - 5% glauc, tr lith frag, tr pyr, 15%
por, n/s.
SILTY CLAYSTONE (20-70%): lt olv
gy - yelsh gy, sft - v sft, amor, tr calc
cly, 60% sil cly, 40% sil slt, tr sil sd.

1537.0 - 1559.0 mMDRT
SILTY CLAYSTONE with minor



ARGILLACEOUS SANDSTONE.
SILTY CLAYSTONE (70-90%): lt olv gy - yelsh gy, sft - v sft, amor, tr calc cly, 60% sil cly, 40% sil slt, tr sil sd.
ARGILLACEOUS SANDSTONE (10-30%): pl yelsh brn - lt brnsh gy, lse, disp, sbang - ang, tr calc cly, 20% sil cly, 10% sil slt, 70% sil sd, 20% v f g, 60% f gr, 20% m gr, 10% sil cmt, tr glauc, tr lith grg, tr py, 15 % por, n/s.

1559.0 - 1570.0 mMDRT
SANDSTONE with SILTY CLAYSTONE.
SANDSTONE (50%): lt brnsh gy, lt olv gy, lt gnsh gy, lse, disp, sbang - ang, poorly std - mod std, slightly sph, 10% sil cly, 10% sil slt, 80% sil sd, 10% v f gr, 40% f gr, 30% med gr, 20% cse gr, 10% sil cmt, tr glauc, 15 % por, n/s.
SILTY CLAYSTONE (50%): lt olv gy - yelsh gy, sft - v sft, amor, tr calc cly, 60% sil cly, 40% sil slt, tr sil sd, tr carb spec, n/s.

1570.0 - 1722.0 mMDRT
Massive SILTY CLAYSTONE.
SILTY CLAYSTONE (100%): lt brnsh gry - lt olv gy becoming med lt gy - lt olv gy with depth, v lt brn - yelsh gy at base, vy sft, amor, tr calc cly, 80% sil cly, 20% sil slt, tr sil sd, tr carb spec, tr glauc.

Run Carbide @ 1667.0 mMDRT
Theor Ann Vol = 382.5 bbls
Act Ann Vol = 403.0 bbls
Ave hole dia = 8.97"

