Schlumberger

Company: **ESSO Australia Pty. Ltd.**

8.5 in. Section

Well: **West Moonfish−1**

Field: **Moonfish**

Rig: **ENSCO 102** State: **Victoria**

Rig: ENSCO 102
Field: Moonfish
Location: Bass Strait
Well: West Moonfish−1
Company: ESSO Australia Pty. Ltd.

GeoVISION Resistivity Quadrant
1:500 True Vertical Depth
Recorded Mode Log

Location

Total depth:	3369.0 m
Spud date:	05−Jan−05
Runs:	5 To 8

Elevation

K.B.	Top Drive
G.L.	−52.12 m
D.F.	39.24 m

Permanent datum:	Mean Sea Level	Elev.: 0.0 m
Log measured from:	Drill Floor	39.24 m above Perm. datum
Depth reference:	Driller's Depth	

Service Order no.	x = 585687.25m (East)	Longitude	Latitude
ASQ−04−12	y = 5777075.49m (North)	E 147º 58' 40.63''	S 38º 09' 0.48''

Depth logged:	2527.0 m To 3360.2 m	Mag decl: 13.04 deg.	Other services:
Date logged:	26−Jan−05 To 05−Feb−05	Mag dip: −68.70 deg.	Directional Drilling, D&I Survey

Bore hole record

Hole size	from	to
26.0 in.	Surface	160.0 m
17.5 in.	160.0 m	761.0 m
12.25 in.	761.0 m	2532.0 m
8.5 in.	2532.0 m	3369.0 m

Casing record

Size	Density	from	to
20 in.	94.0 lb/ft	Surface	155.3 m
13.375 in.	68.0 lb/ft	Surface	755.4 m
9.625 in.	47.0 lb/ft	Surface	2527.0 m

Mud record

Type	from	to
S−W/Bentonite	160.0 m	761.0 m
KCL/PHPA/Glycol	761.0 m	3369.0 m

Borehole deviation record

Min	Max	from	to
0.18 deg.	0.47 deg.	160.0 m	761.0 m
0.35 deg.	33.78 deg.	761.0 m	2532.0 m
24.18 deg.	37.50 deg.	2532.0 m	3369.0 m

Surface equipment

Unit	OLU−JA−9602
Depth system	PDA − DES−DA

Software record

IDEAL Wis	ID9_1C_01	
SPM	hspm9_2c_08	
LWD	V8.2B14	V6.2B01
MWD	V7.0c00	

Bit Run Summary

Run number		5	6	7	8		
Bit size	in.	8.5	8.5	8.5	8.5		
Bit start depth	m	2532.0	2688.0	2866.0	3024.0		
Bit end depth	m	2688.0	2866.0	3024.0	3369.0		
Top interval logged	m	2527.0	2660.4	2832.8	2990.8		
Bottom interval logged	m	2681.9	2859.9	3015.2	3360.2		
Begin log: time		21:00	01:25	02:43	07:48		
Begin log: date		26−Jan−05	30−Jan−05	02−Feb−05	04−Feb−05		
End log: time		02:03	06:58	12:49	18:50		
End log: date		29−Jan−05	01−Feb−05	03−Feb−05	05−Feb−05		
Mud data							
Depth	m	2676.0	2838.0	2957.0	3226.0		

Type		KCL/PHPA/Glycol	KCL/PHPA/Glycol	KCL/PHPA/Glycol	KCL/PHPA/Glycol						
Mud weight	ppg	10.1	10.0	10.2	10.2						
Solids	%	8.9	8.9	9.1	9.2						
Chlorides	mg/L	40000	40000	40000	39000						
Rm	ohm.m@ºC	0.11@25.2	0.11@24.7	0.11@22.9	0.11@23.4						
Rmf	ohm.m@ºC	0.09@24.6	0.09@24.1	0.09@22.3	0.09@23.3						
Rmc	ohm.m@ºC	0.18@25.8	0.14@25.3	0.15@23.8	0.16@23.6						
Potassium	%	6.0	7.0	6.0	6.0						
Environmental data											
GR											
Mud weight	ppg	10.1	10.0	10.2	10.2						
Bit size	in.	8.5	8.5	8.5	8.5						
Resistivity											
Neutron porosity											
Hole Size	in.	8.5	8.5	8.5	8.5						
Mud weight	ppg	10.1	10.0	10.2	10.2						
Temperature	ºC	86.3	84.7	85.5	97.3						
Mud salinity	ppm	63487	69810	62996	64793						
Formation salinity											
Recording rate 1	SEC	10 sec.	10 sec.	10 sec.	10 sec.						
Recording rate 2	SEC	10 sec.	10 sec.	10 sec.	10 sec.						
Filtering GR		3 pt.	3 pt.	3 pt.	3 pt.						
Filtering density		3 pt.	3 pt.	3 pt.	3 pt.						
Filtering Neutron		3 pt.	3 pt.	3 pt.	3 pt.						
Company representative		B. Steel	R. Bain	R. Morris							
Anadrill personnel		J. Dolan	K. Handley	M. Y. Tan	C. Soper	D. Hay					

OTHER SERVICES FOR RUN5	OTHER SERVICES FOR RUN6	OTHER SERVICES FOR RUN7
Directional Drilling D&I Survey	Directional Drilling D&I Survey	Directional Drilling D&I Survey
REMARKS: RUN NUMBER 5	**REMARKS: RUN NUMBER 6**	**REMARKS: RUN NUMBER 7**
8−1/2 in. hole section was drilled from 2532.0 m to 2688.0 m. Depth is referenced to Driller's Depth. All data presented is from tool memory. GR corrected for Mud Weight, Tool and Bit Size. GVR*6 resistivity is corrected for bit size, mud resistivity and borehole temperature. Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index. PEF readings were affected by the presence of Barite in the mud system. Mud type is KCL/PHPA/Glycol. POOH for bit change.	8−1/2 in. hole section was drilled from 2688.0 m to 2866.0 m. Depth is referenced to Driller's Depth. All data presented is from tool memory. GR corrected for Mud Weight, Tool and Bit Size. GVR*6 resistivity is corrected for bit size, mud resistivity and borehole temperature. Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index. PEF reading were affected by the presence of Barite in the mud system. Mud type is KCL/PHPA/Glycol. POOH for bit change.	8−1/2 in. hole section was drilled from 2866.0 m to 3024.0 m. Depth is referenced to Driller's Depth. All data presented is from tool memory. GR corrected for Mud Weight, Tool and Bit Size. GVR*6 resistivity is corrected for bit size, mud resistivity and borehole temperature. Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index. Ultrasonic Caliper not available during sliding intervals. PEF readings were affected by the presence of Barite in the mud system.

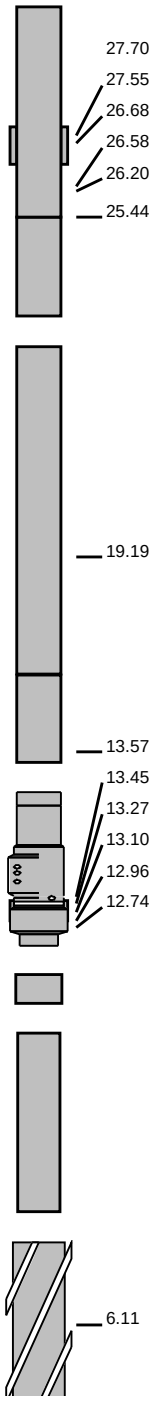
Mud type is KCL/PHPA/Glycol.

POOH for bit change.

EQUIPMENT DESCRIPTION

RUN5

DOWNHOLE EQUIPMENT



6−3/4 in. ADN*6C — 29.68

S/N: 0403
8−1/4 in. Stabilizer
NSR−M A202
GSR−J A1994
Software: V8.2B14

6−3/4 in. PowerPulse* — 23.44

MDC FA27
MEC 064BA
MDI 738BC
Software: V7.0C00

6−3/4 in. GVR*6 — 15.06

S/N: 192
8−1/4 in. Stabilizer
Software: V6.2B01

7 in. Cross Over Sub — 11.98

S/N: SBD2074

6−1/2 in. NM Pony Collar — 11.40

S/N: 6649

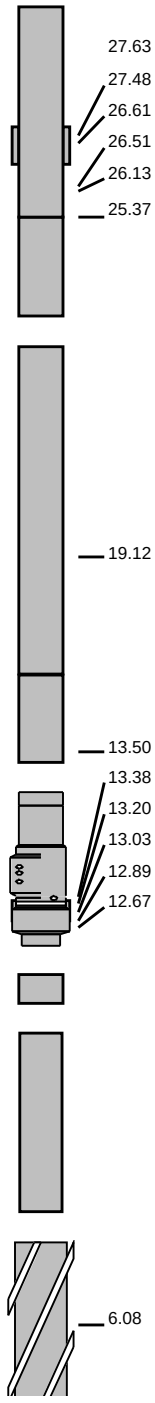
Adjustable Gauge Stabilizer — 7.79

S/N: 450−084
OD 7−7/8 − 8−1/2 in

Bit Res — 6.11

RUN6

DOWNHOLE EQUIPMENT



6−3/4 in. ADN*6C — 29.61

S/N: 0403
8−1/4 in. Stabilizer
NSR−M A202
GSR−J A1994
Software: V8.2B14

6−3/4 in. PowerPulse* — 23.37

MDC FA27
MEC 064BA
MDI 738BC
Software: V7.0C00

6−3/4 in. GVR*6 — 14.99

S/N: 192
8−1/4 in. Stabilizer
Software: V6.2B01

7 in. Cross Over Sub — 11.91

S/N: SBD2074

6−1/2 in. NM Pony Collar — 11.33

S/N: 6649

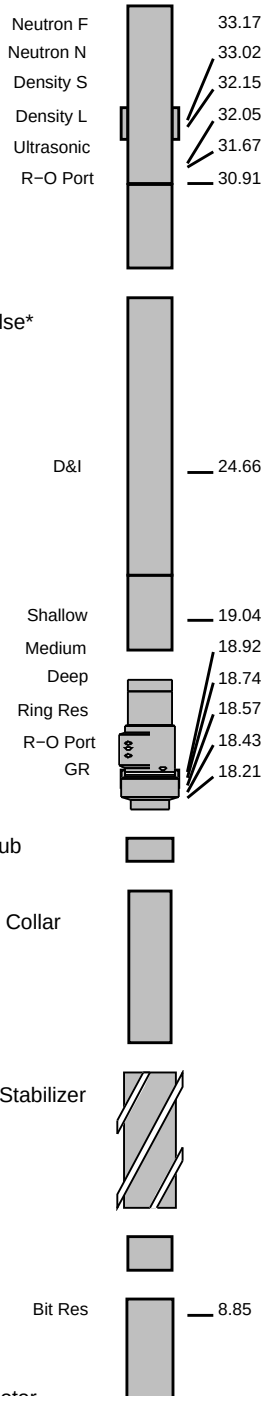
Adjustable Gauge Stabilizer — 7.72

S/N: 450−084
OD 7−7/8 − 8−1/2 in

Bit Res — 6.08

RUN7

DOWNHOLE EQUIPMENT



6−3/4 in. ADN*6C — 35.15

S/N: 0403
8−1/4 in. Stabilizer
NSR−M A202
GSR−J A1994
Software: V8.2B14

6−3/4 in. PowerPulse* — 28.91

MDC FA27
MEC 064BA
MDI 738BC
Software: V7.0C00

6−3/4 in. GVR*6 — 20.53

S/N: 192
8−1/4 in. Stabilizer
Software: V6.2B01

7 in. Cross Over Sub — 17.45

S/N: SBD2074

6−1/2 in. NM Pony Collar — 16.87

S/N: 6403

Adjustable Gauge Stabilizer — 13.26

S/N: ASQ990301
OD 7−7/8 − 8−1/2 in

6−7/8 in. ADOS — 10.03

S/N: AO127724

Bit Res — 8.85 — 9.23

PowerPak* Mud Motor

6−3/8 in. NM Pony Collar S/N: GS97−26 — 4.56 6−1/2 in. NB Roller Reamer S/N: GU1490 — 2.07 Hughes Insert Bit — 0.24 MX30D S/N: 6023698 OD 8−1/2 in. 0.00	6−3/8 in. NM Pony Collar S/N: GS97−26 — 4.49 8−1/2 in. NB Stabilizer S/N: DOTS3229 — 2.00 Hughes Insert Bit — 0.24 MX30DX S/N: 6025358 OD 8−1/2 in. 0.00	PowerPak® Mud Motor A700GT S/N: N7310 1.15 deg Bend 8−3/8 in. Motor Sleeve Smith Insert Bit — 0.25 GF11Y S/N: MX0600 OD 8−1/2 in. 0.00
Maximum string diameter 8.50 in. All lengths in Meters	Maximum string diameter 8.50 in. All lengths in Meters	Maximum string diameter 8.50 in. All lengths in Meters

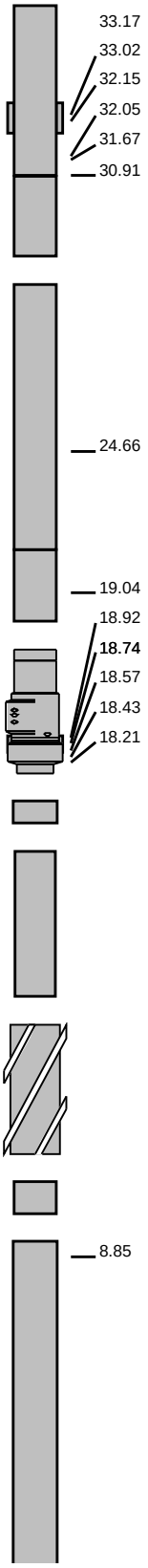
OTHER SERVICES FOR RUN8	OTHER SERVICES FOR RUN	OTHER SERVICES FOR RUN
Directional Drilling D&I Survey		

REMARKS: RUN NUMBER 8	REMARKS: RUN NUMBER	REMARKS: RUN NUMBER
8−1/2 in. hole section was drilled from 3024.0 m to 3369.0 m. Depth is referenced to Driller's Depth. All data presented is from tool memory. GR corrected for Mud Weight, Tool and Bit Size. GVR*6 resistivity is corrected for bit size, mud resistivity and borehole temperature. Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index. Ultrasonic Caliper not available during sliding intervals. PEF readings were affected by the presence of Barite in the mud system. Mud type is KCL/PHPA/Glycol. POOH due to well TD.		

EQUIPMENT DESCRIPTION

RUN8	RUN	RUN

DOWNHOLE EQUIPMENT



6−3/4 in. ADN*6C — 35.15

S/N; 0403
8−1/4 in. Stabilizer
NSR−M A202
GSR−J A1994
Software: V8.2B14

6−3/4 in. PowerPulse* — 28.91

MDC FA27
MEC 064BA
MDI 738BC
Software: V7.0C00

6−3/4 in. GVR*6 — 20.53

S/N: 192
8−1/4 in. Stabilizer
Software: V6.2B01

7 in. Cross Over Sub — 17.45

S/N: SBD2074

6−1/2 in. NM Pony Collar — 16.87

S/N: 6403

Adjustable Gauge Stabilizer — 13.26

S/N: ASQ990301
OD 7−7/8 − 8−1/2 in

6−7/8 in. ADOS — 10.03

S/N: AO127724

PowerPak* Mud Motor — 9.23

A700GT S/N: N7310
1.15 deg Bend
8−3/8 in. Motor Sleeve

Reed Hycalog PDC Bit
DSX 173 S/N: 208594
OD 8−1/2 in.

0.00

0.25

Maximum string diameter 8.50 in.

All lengths in Meters

True Vertical Depth Log

IDEAL Version: ID9_1C_01

IDF

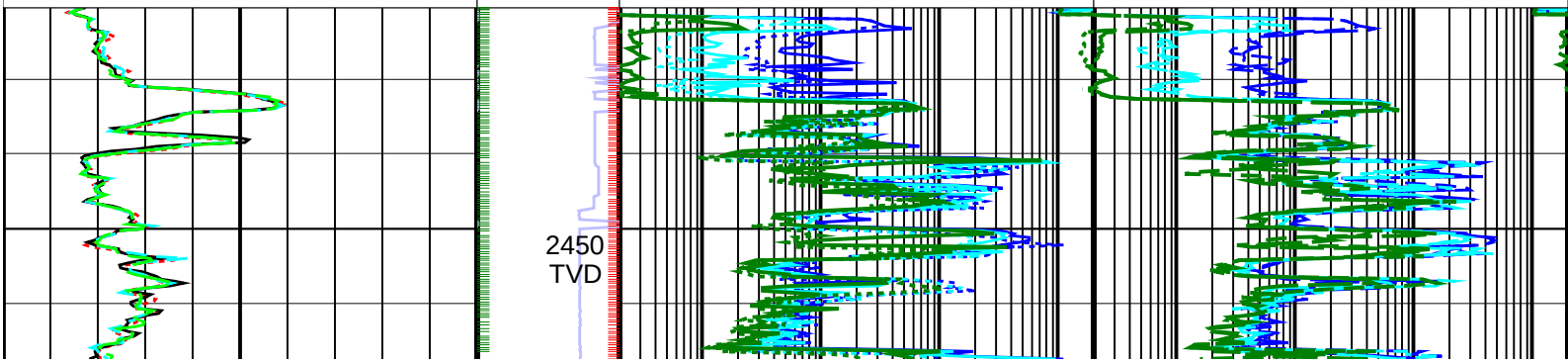
RAB	id9_1c_01	MWD_10	id9_1c_01
ADN	id9_1c_01		

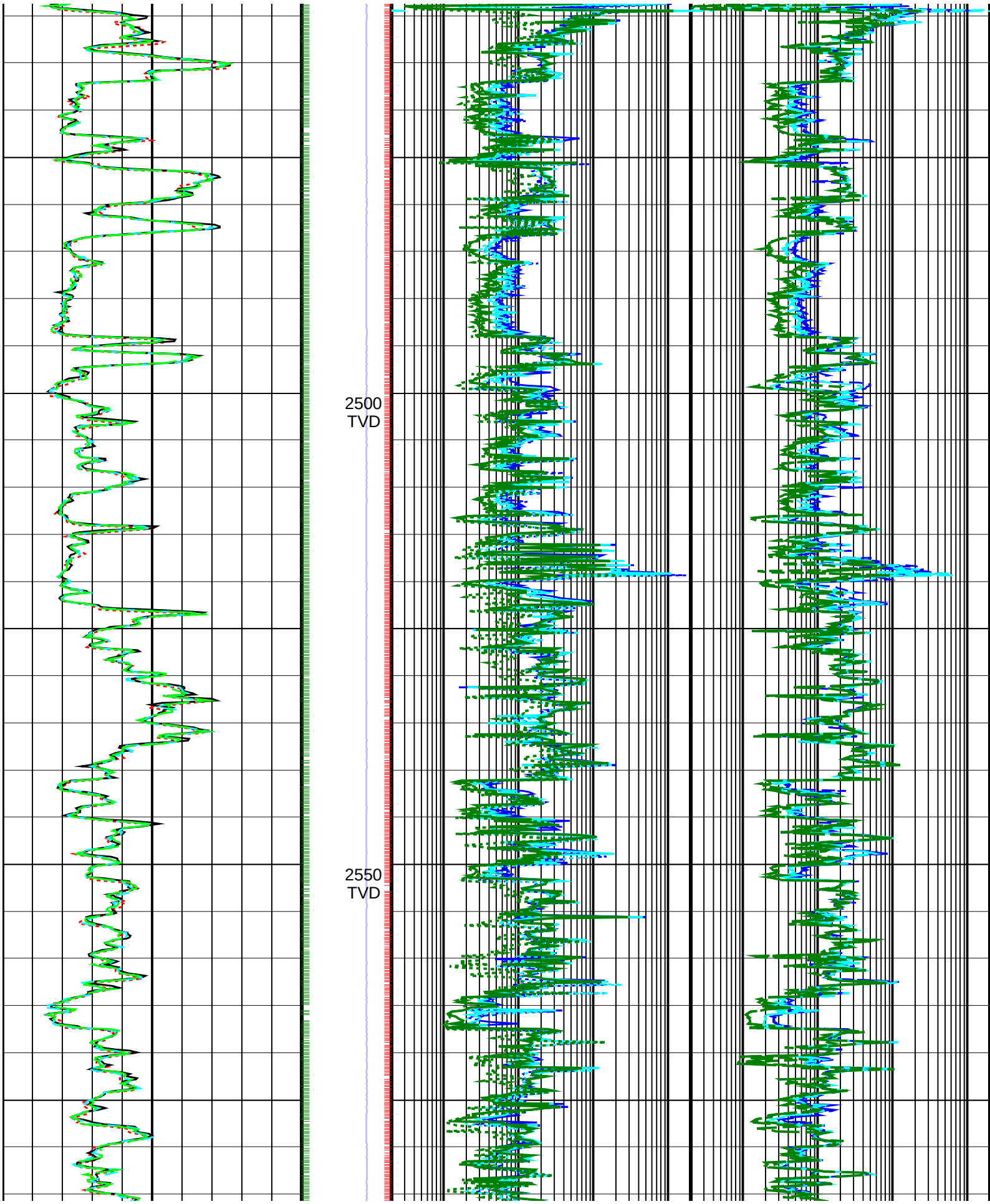
Format: GeoVISION Quad Resistivity Log **Vertical Scale: 1:500** **Graphics File Created: 08−Feb−2005 03:07**

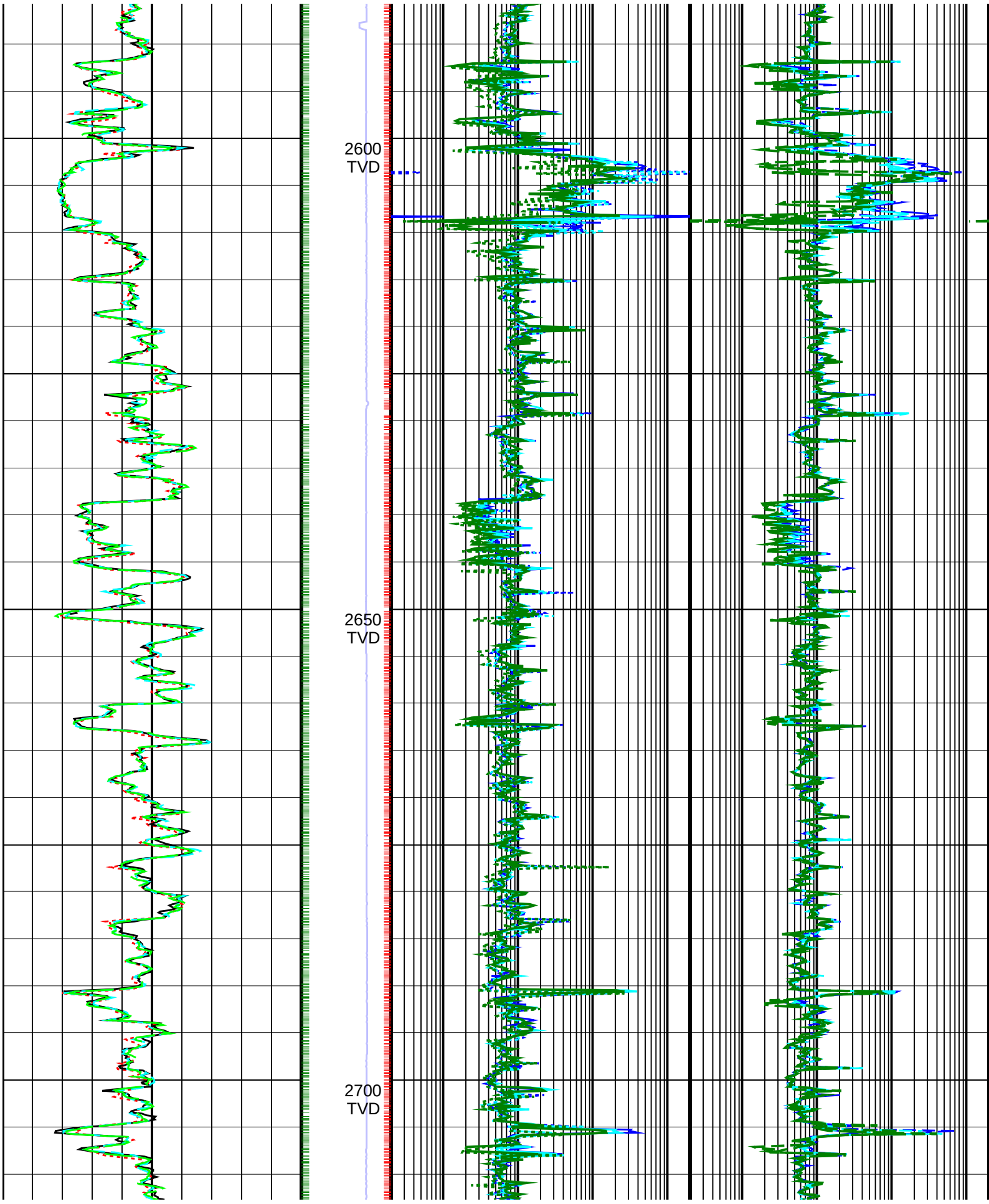
PIP SUMMARY

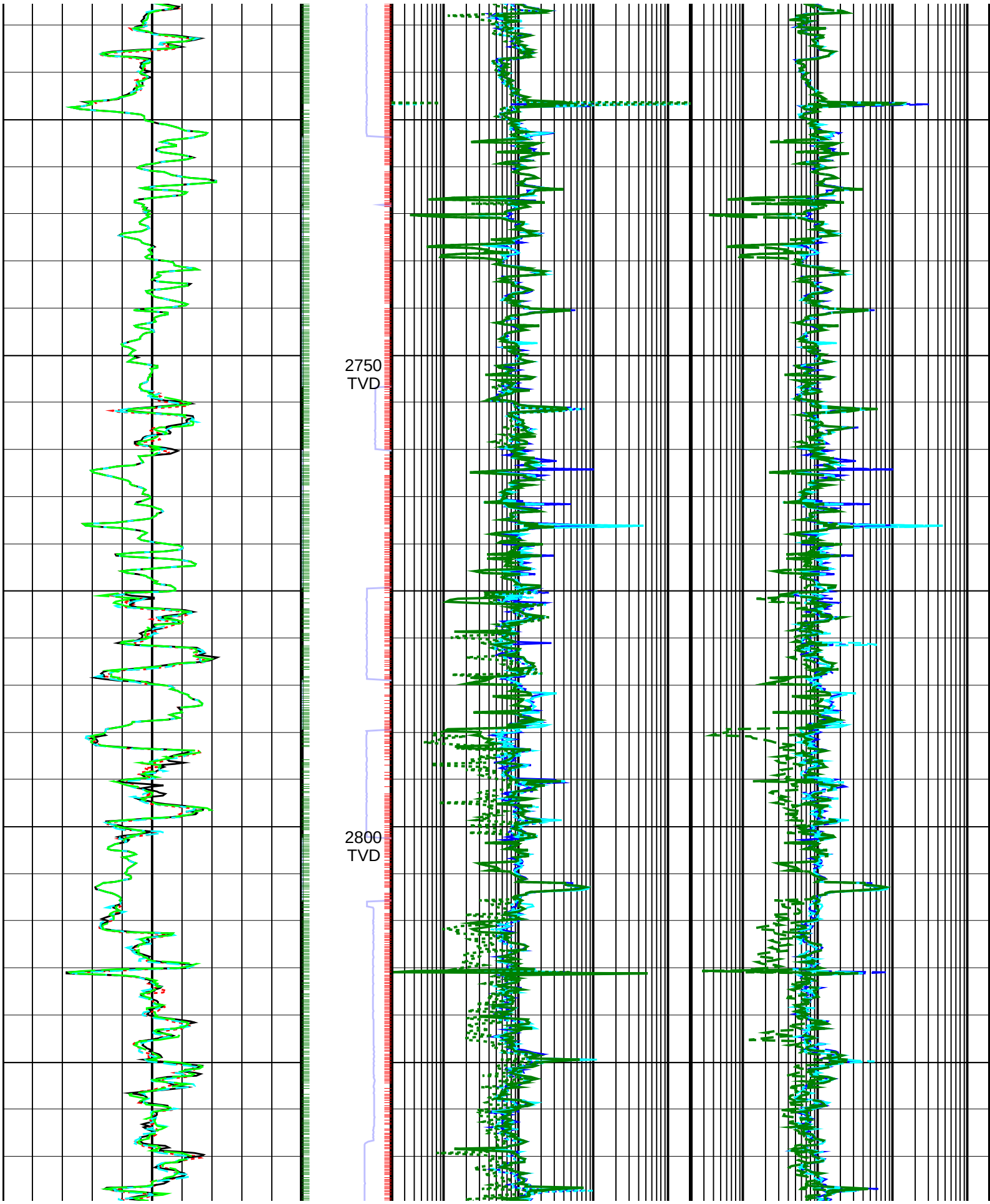
Gamma Ray Samples
Button Samples

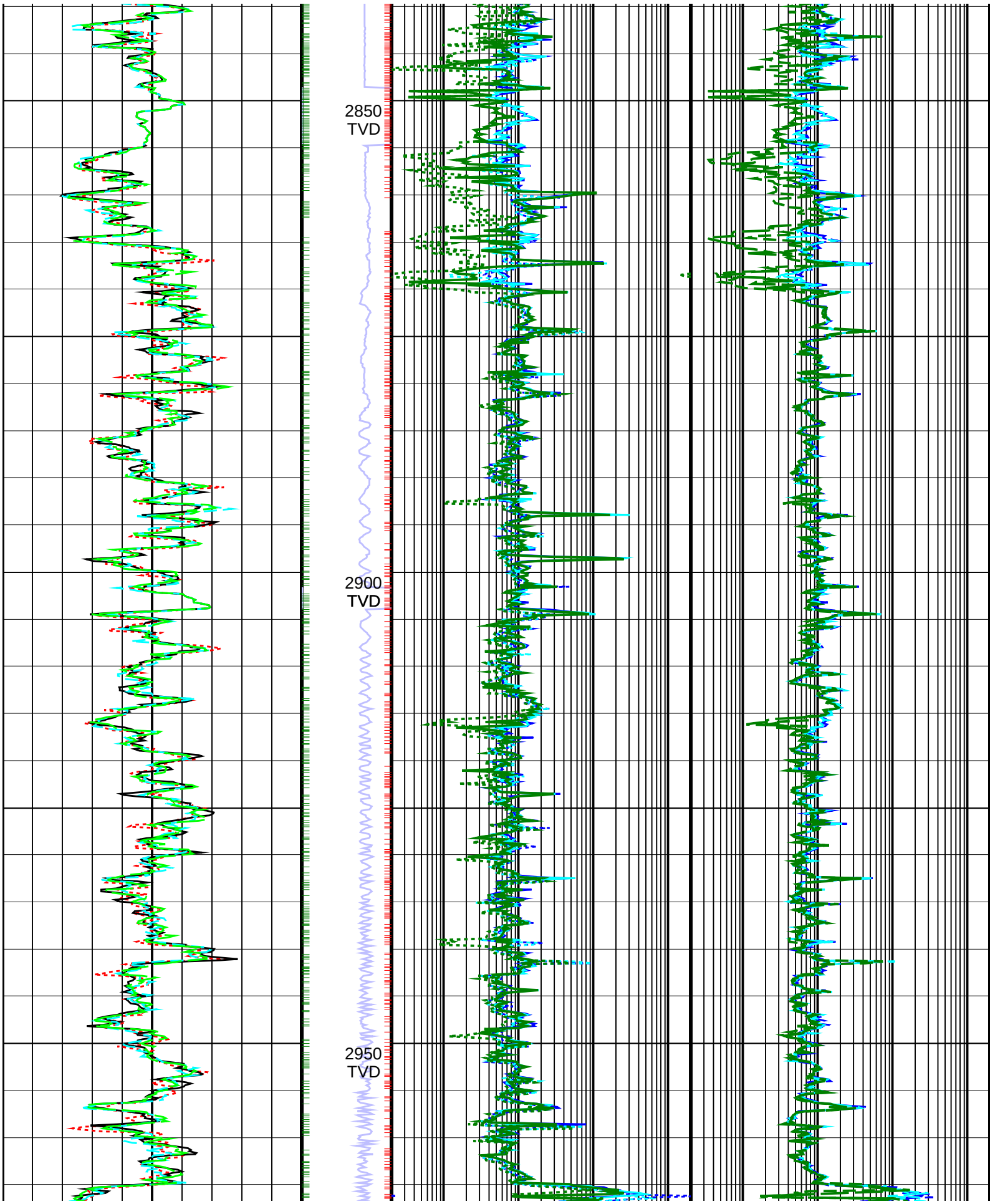
	Shallow Button Resistivity, Down (RES_BS_DN) 0.2 (OHMM) 2000	Shallow Button Resistivity, Right (RES_BS_RG) 0.2 (OHMM) 2000
	Shallow Button Resistivity, Up (RES_BS_UP) 0.2 (OHMM) 2000	Shallow Button Resistivity, Left (RES_BS_LF) 0.2 (OHMM) 2000
RAB Gamma Ray, Right (GR_RAB_RG) 0 (GAPI) 200	Medium Button Resistivity, Down (RES_BM_DN) 0.2 (OHMM) 2000	Medium Button Resistivity, Right (RES_BM_RG) 0.2 (OHMM) 2000
RAB Gamma Ray, Left (GR_RAB_LF) 0 (GAPI) 200	Medium Button Resistivity, Up (RES_BM_UP) 0.2 (OHMM) 2000	Medium Button Resistivity, Left (RES_BM_LF) 0.2 (OHMM) 2000
RAB Gamma Ray, Down (GR_RAB_DN) 0 (GAPI) 200	Deep Button Resistivity, Down (RES_BD_DN) 0.2 (OHMM) 2000	Deep Button Resistivity, Right (RES_BD_RG) 0.2 (OHMM) 2000
RAB Gamma Ray, Up (GR_RAB_UP) 0 (GAPI) 200	RAB Rotational Speed (RPM_RAB) (RPM) 400 0	Deep Button Resistivity, Up (RES_BD_UP) 0.2 (OHMM) 2000
		Deep Button Resistivity, Left (RES_BD_LF) 0.2 (OHMM) 2000

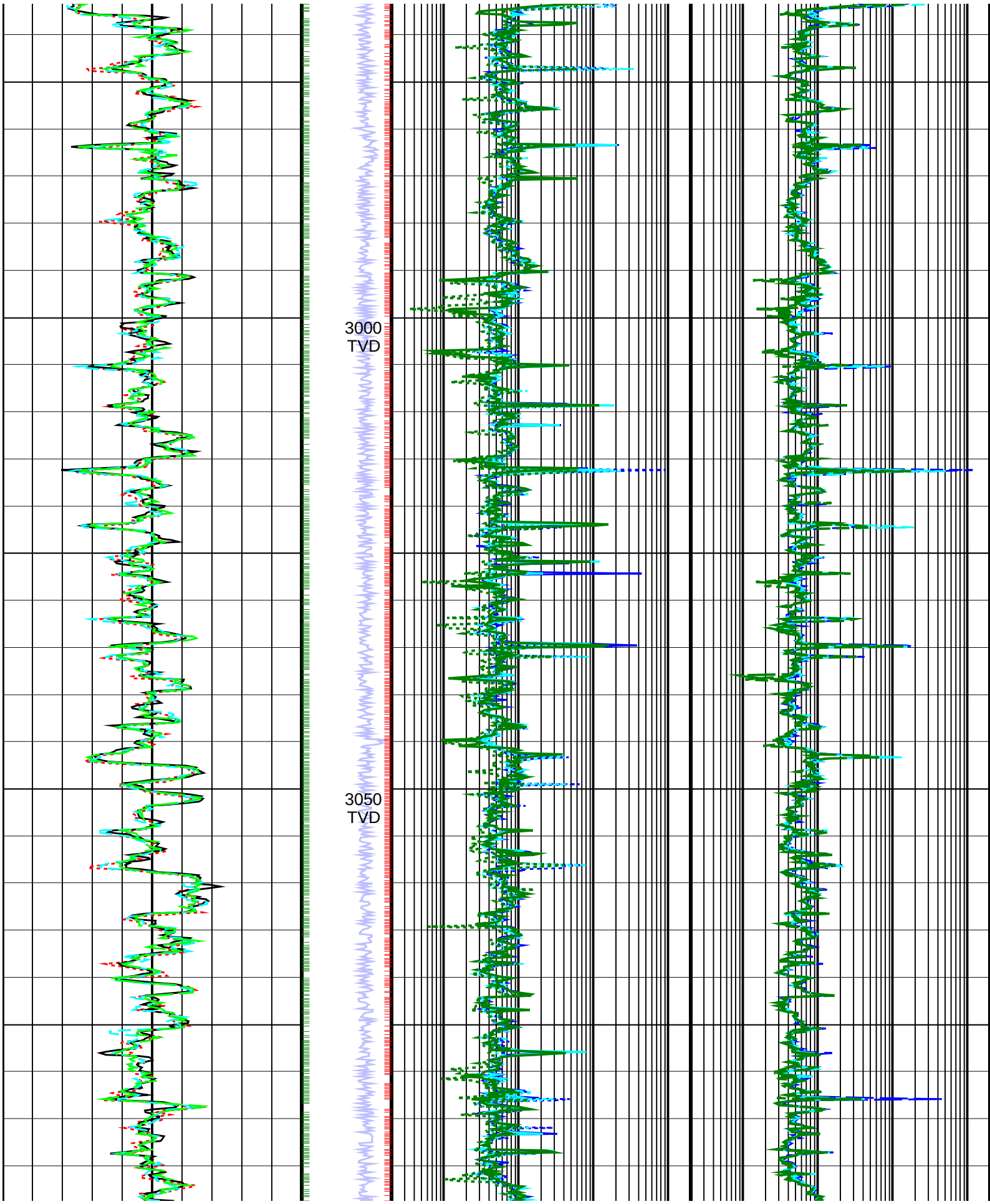


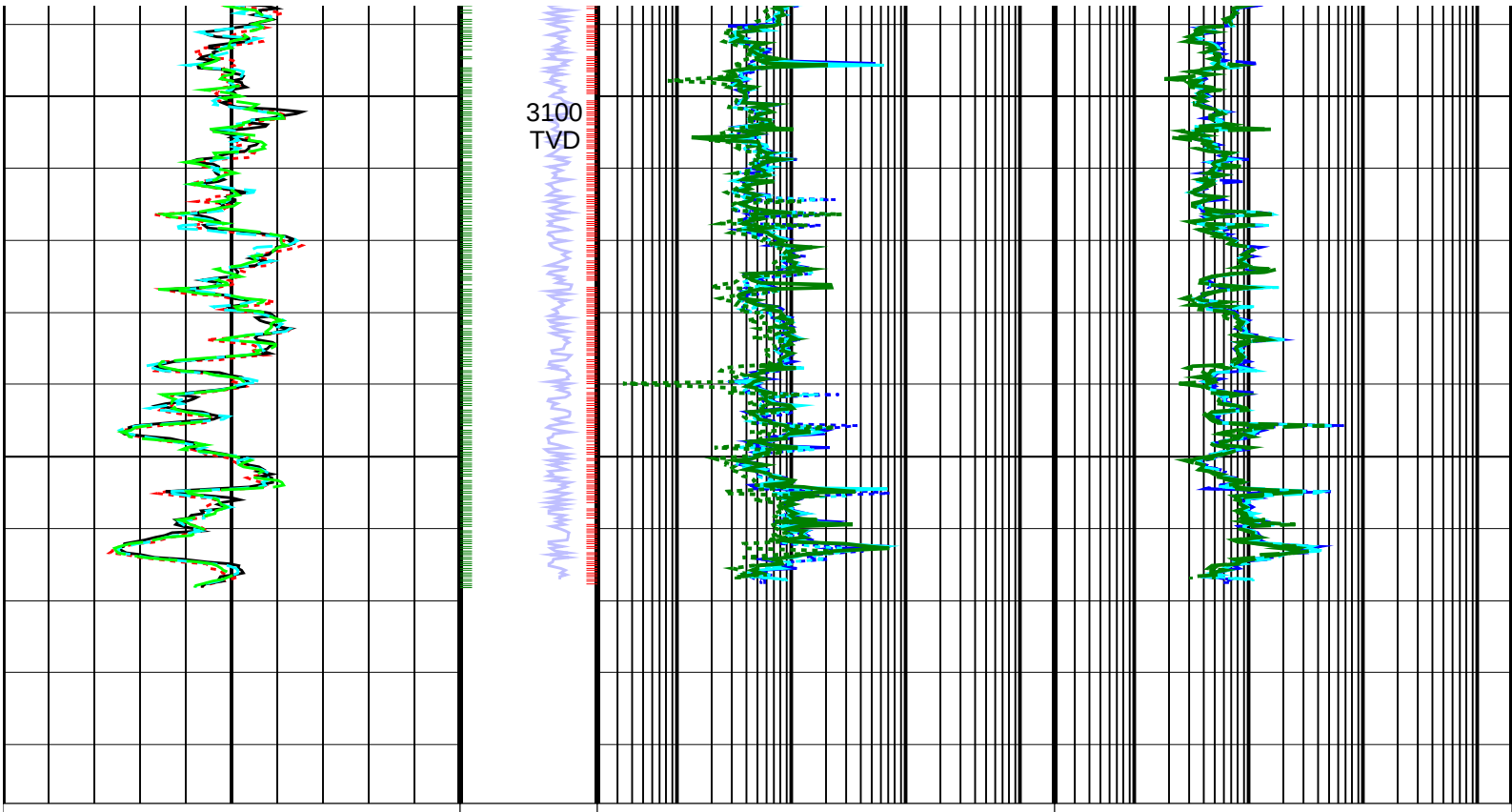

2500
TVD
2550
TVD


2600
TVD
2650
TVD
2700
TVD


2750
TVD
2800
TVD


2850
TVD
2900
TVD
2950
TVD


3000
TVD
3050
TVD



RAB Gamma Ray, Up (GR_RAB_UP) 0 (GAPI) 200	RAB Rotational Speed (RPM_RAB) (RPM) 400 0	Deep Button Resistivity, Up (RES_BD_UP) 0.2 (OHMM) 2000	Deep Button Resistivity, Left (RES_BD_LF) 0.2 (OHMM) 2000
RAB Gamma Ray, Down (GR_RAB_DN) 0 (GAPI) 200		Deep Button Resistivity, Down (RES_BD_DN) 0.2 (OHMM) 2000	Deep Button Resistivity, Right (RES_BD_RG) 0.2 (OHMM) 2000
RAB Gamma Ray, Left (GR_RAB_LF) 0 (GAPI) 200		Medium Button Resistivity, Up (RES_BM_UP) 0.2 (OHMM) 2000	Medium Button Resistivity, Left (RES_BM_LF) 0.2 (OHMM) 2000
RAB Gamma Ray, Right (GR_RAB_RG) 0 (GAPI) 200		Medium Button Resistivity, Down (RES_BM_DN) 0.2 (OHMM) 2000	Medium Button Resistivity, Right (RES_BM_RG) 0.2 (OHMM) 2000
		Shallow Button Resistivity, Up (RES_BS_UP) 0.2 (OHMM) 2000	Shallow Button Resistivity, Left (RES_BS_LF) 0.2 (OHMM) 2000
		Shallow Button Resistivity, Down (RES_BS_DN) 0.2 (OHMM) 2000	Shallow Button Resistivity, Right (RES_BS_RG) 0.2 (OHMM) 2000

PIP SUMMARY

Gamma Ray Samples

Button Samples

IDEAL Version: ID9_1C_01

IDF

RAB	id9_1c_01	MWD_10	id9_1c_01
ADN	id9_1c_01		

True Vertical Depth Log

6.75−in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:

Tool Name and Serial Number	ADN6 − CA	0403
Collar Type and Serial Number	ADDC − AA	0403
Chassis Type and Serial Number	ADSE − EA	018
Neutron Logging Source	NSR − M	202
Density Logging Source	GSR − J/Z	1994
Stabilizer Size	8.25 − in.	
Calibration Status	Valid	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Density: Magnesium Block

Phase	LS window 3 − Mg CPS	Value	Phase	SS window 1 − Mg CPS	Value	Phase	SS window 3 − Mg CPS	Value
Master		1022	Master		2282	Master		5972
	250.0 (Minimum) 4125 (Nominal) 8000 (Maximum)			700.0 (Minimum) 9350 (Nominal) 18000 (Maximum)			2500 (Minimum) 23750 (Nominal) 45000 (Maximum)	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Density: Aluminum Block

Phase	LS window 3 − Al CPS	Value	Phase	SS window 1 − Al CPS	Value	Phase	SS window 3 − Al CPS	Value
Master		156.6	Master		1184	Master		3762
	50.00 (Minimum) 725.0 (Nominal) 1400 (Maximum)			500.0 (Minimum) 4250 (Nominal) 8000 (Maximum)			1500 (Minimum) 15750 (Nominal) 30000 (Maximum)	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Density: Background

Phase	LS window 3 − Background CPS	Value	Phase	SS window 1 − Background CPS	Value	Phase	SS window 3 − Background CPS	Value
Master		34.18	Master		108.6	Master		480.8
	15.00 (Minimum) 82.50 (Nominal) 150.0 (Maximum)			40.00 (Minimum) 220.0 (Nominal) 400.0 (Maximum)			150.0 (Minimum) 825.0 (Nominal) 1500 (Maximum)	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Density: Water Block Check

Phase	Long spacing water density G/C3	Value	Phase	Short spacing water density G/C3	Value
Master		1.030	Master		1.120
	1.024 (Minimum) 1.039 (Nominal) 1.054 (Maximum)			1.096 (Minimum) 1.126 (Nominal) 1.156 (Maximum)	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Neutron: Water Tank

Phase	Far 1 tube 1 gain	Value	Phase	Far 1 tube 1 offset CPS	Value
Master		1.133	Master		0.2488
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	
Phase	Far 1 tube 2 gain	Value	Phase	Far 1 tube 2 offset CPS	Value
Master		1.082	Master		0.2448
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	
Phase	Far 1 tube 3 gain	Value	Phase	Far 1 tube 3 offset CPS	Value
Master		1.120	Master		0.2026
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	

Phase	Far 2 tube 1 gain	Value
Master		1.113
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)	

Phase	Far 2 tube 1 offset CPS	Value
Master		0.3294
	−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	

Phase	Far 2 tube 2 gain	Value
Master		1.060
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)	

Phase	Far 2 tube 2 offset CPS	Value
Master		−0.1372
	−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	

Phase	Far 2 tube 3 gain	Value
Master		1.149
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)	

Phase	Far 2 tube 3 offset CPS	Value
Master		0.5438
	−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)	

Phase	Near 1 tube 1 gain	Value
Master		1.133
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)	

Phase	Near 1 tube 1 offset CPS	Value
Master		30.21
	−100.0 (Minimum) 0 (Nominal) 100.0 (Maximum)	

Phase	Near 2 tube 1 gain	Value
Master		1.111
	0.8000 (Minimum) 1.050 (Nominal) 1.300 (Maximum)	

Phase	Near 2 tube 1 offset CPS	Value
Master		13.40
	−100.0 (Minimum) 0 (Nominal) 100.0 (Maximum)	

Master: 30−Nov−2004 12:45

6.75−in. Azimuthal Density Neutron Calibration

Neutron: Water Block Check

Phase	Far Neutron water porosity PU	Value
Master		117.4
	90.00 (Minimum) 100.0 (Nominal) 125.0 (Maximum)	

6.75−in. Resistivity At−the−Bit / Equipment Identification

Primary Equipment:

Tool Name and Serial Number	RAB6 − CA	192
Calibration Status	Valid	

Master: 21−Dec−2004 11:22

6.75−in. Resistivity At−the−Bit Calibration

Resistivity: Fixture

Phase	Ring/T1 factor	Value
Master		0.9984
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	Ring/T2 factor	Value
Master		1.002
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	M0/T1 factor	Value
Master		0.9909
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	M0/T2 factor	Value
Master		0.9928
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	M2/T1 factor	Value
Master		0.9973
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	M2/T2 factor	Value
Master		1.000
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	BTN shallow/T1 factor	Value
Master		0.9975
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

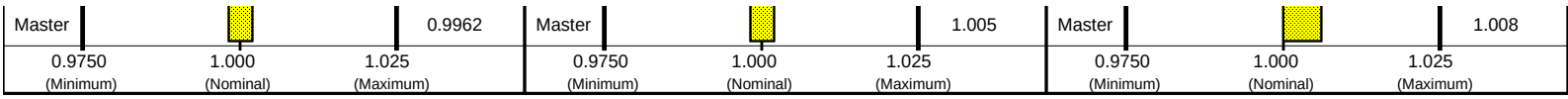
Phase	BTN shallow/T2 factor	Value
Master		1.000
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

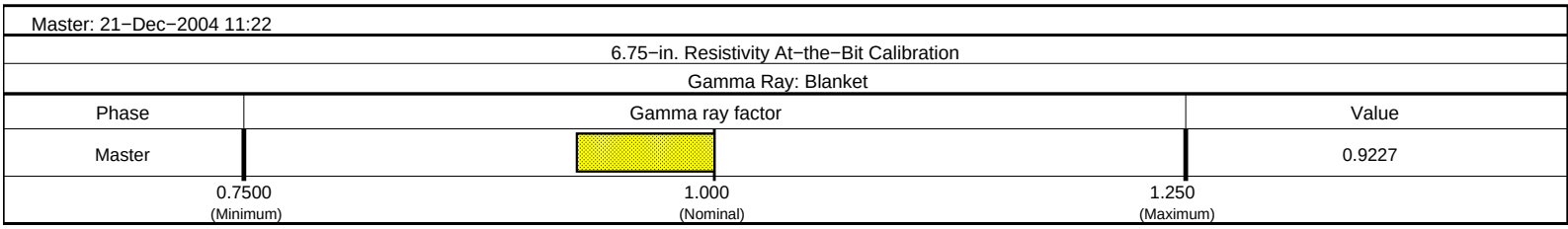
Phase	BTN medium/T1 factor	Value
Master		0.9935
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	

Phase	BTN medium/T2 factor	Value

Phase	BTN deep/T1 factor	Value

Phase	BTN deep/T2 factor	Value





SCHLUMBERGER

Survey report 5-Feb-2005 20:30:55 Page 1 of 5

Client.....: ESSO Australia Pty. Ltd.
Field.....: Moonfish

Well.....: West Moonfish-1
API number.....:
Engineer.....: J.Dolan / K.Handley / M.Y.Tan

Rig:.....: ENSCO 102
STATE:.....: Victoria

Spud date.....: 05-Jan-05
Last survey date.....: 05-Feb-05
Total accepted surveys...: 116
MD of first survey.....: 0.00 m
MD of last survey.....: 3369.00 m

----- Survey calculation methods-----
Method for positions.....: Minimum curvature
Method for DLS.....: Mason & Taylor

----- Depth reference -----
Permanent datum.....: Mean Sea Level
Depth reference.....: Driller's Depth
GL above permanent.....: -52.12 m
KB above permanent.....: Top Drive
DF above permanent.....: 39.24 m

----- Vertical section origin-----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

----- Platform reference point-----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

Azimuth from Vsect Origin to target: 171.73 degrees

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2004
Magnetic date.....: 08-Jan-2005
Magnetic field strength..: 1199.31 HCNT
Magnetic dec (+E/W-).....: 13.04 degrees
Magnetic dip.....: -68.70 degrees

----- MWD survey Reference Criteria ---
Reference G.....: 1000.02 mGal
Reference H.....: 1199.31 HCNT
Reference Dip.....: -68.70 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.04 degrees
Grid convergence (+E/W-).: -0.60 degrees
Total az corr (+E/W-).....: 13.64 degrees
(Total az corr = magnetic dec - grid conv)
Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIP	None
2	91.00	0.00	0.00	91.00	91.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD_M	None
3	181.88	0.35	328.21	90.88	181.88	-0.25	0.24	-0.15	0.28	328.21	0.04	MWD	None
4	209.79	0.46	330.61	27.91	209.79	-0.44	0.41	-0.25	0.47	328.78	0.04	MWD	None
5	238.18	0.46	334.44	28.39	238.18	-0.65	0.61	-0.35	0.70	329.99	0.01	MWD	None
6	266.14	0.41	322.98	27.96	266.14	-0.85	0.79	-0.46	0.91	329.77	0.04	MWD	None
7	294.58	0.45	330.64	28.44	294.58	-1.04	0.97	-0.58	1.13	329.25	0.02	MWD	None
8	323.45	0.47	319.47	28.87	323.45	-1.25	1.16	-0.71	1.36	328.51	0.03	MWD	None
9	352.76	0.37	334.57	29.31	352.75	-1.44	1.33	-0.83	1.57	328.19	0.05	MWD	None
10	381.80	0.35	324.72	29.04	381.79	-1.61	1.49	-0.92	1.75	328.35	0.02	MWD	None
11	411.24	0.31	328.91	29.44	411.23	-1.76	1.63	-1.01	1.92	328.21	0.02	MWD	None
12	440.44	0.31	306.16	29.20	440.43	-1.89	1.75	-1.12	2.07	327.41	0.04	MWD	None
13	469.19	0.35	319.12	28.75	469.18	-2.02	1.86	-1.24	2.23	326.36	0.03	MWD	None
14	498.06	0.33	320.27	28.87	498.05	-2.16	1.99	-1.35	2.40	325.89	0.01	MWD	None
15	526.97	0.37	310.22	28.91	526.96	-2.30	2.11	-1.47	2.58	325.15	0.03	MWD	None
16	555.67	0.28	328.64	28.70	555.66	-2.44	2.23	-1.58	2.74	324.74	0.05	MWD	None
17	584.65	0.30	319.14	28.98	584.64	-2.57	2.35	-1.67	2.88	324.69	0.02	MWD	None
18	613.64	0.26	310.54	28.99	613.63	-2.68	2.45	-1.77	3.02	324.24	0.02	MWD	None
19	642.62	0.21	308.91	28.98	642.61	-2.77	2.53	-1.86	3.14	323.70	0.02	MWD	None

20	671.64	0.18	340.56	29.02	671.63	-2.85	2.60	-1.91	3.23	323.69	0.04	MWD	None
21	700.59	0.24	324.48	28.95	700.58	-2.95	2.70	-1.96	3.34	323.93	0.03	MWD	None
22	716.66	0.28	343.92	16.07	716.65	-3.02	2.76	-1.99	3.41	324.17	0.06	MWD	None
23	760.72	0.35	341.43	44.06	760.71	-3.26	2.99	-2.07	3.64	325.37	0.02	MWD	None
24	789.81	0.37	350.28	29.09	789.80	-3.44	3.17	-2.11	3.81	326.33	0.02	MWD	None
25	818.90	0.39	345.99	29.09	818.89	-3.63	3.36	-2.15	3.99	327.36	0.01	MWD	None
26	848.10	0.45	351.62	29.20	848.09	-3.85	3.57	-2.19	4.19	328.44	0.02	MWD	None
27	877.05	0.38	344.38	28.95	877.04	-4.05	3.77	-2.23	4.38	329.37	0.03	MWD	None
28	906.37	0.28	0.58	29.32	906.36	-4.22	3.94	-2.26	4.54	330.16	0.05	MWD	None
29	935.33	0.35	12.98	28.96	935.32	-4.37	4.09	-2.24	4.67	331.33	0.03	MWD	None
30	964.33	0.27	17.88	29.00	964.31	-4.52	4.25	-2.20	4.78	332.63	0.03	MWD	None

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
31	992.58	0.29	13.91	28.25	992.56	-4.64	4.38	-2.16	4.88	333.74	0.01	MWD	None
32	1021.76	0.36	9.73	29.18	1021.74	-4.80	4.54	-2.13	5.01	334.90	0.03	MWD	None
33	1050.63	0.30	18.15	28.87	1050.61	-4.95	4.70	-2.09	5.14	336.06	0.03	MWD	None
34	1079.82	0.33	13.33	29.19	1079.80	-5.10	4.86	-2.04	5.27	337.17	0.01	MWD	None
35	1108.59	0.28	27.98	28.77	1108.57	-5.23	5.00	-1.99	5.38	338.27	0.03	MWD	None
36	1137.86	0.28	33.98	29.27	1137.84	-5.34	5.12	-1.92	5.47	339.46	0.01	MWD	None
37	1166.83	0.29	28.94	28.97	1166.81	-5.46	5.24	-1.84	5.56	340.63	0.01	MWD	None
38	1195.74	0.29	56.71	28.91	1195.72	-5.54	5.35	-1.75	5.63	341.91	0.05	MWD	None
39	1224.73	0.34	48.47	28.99	1224.71	-5.62	5.45	-1.62	5.68	343.42	0.02	MWD	None
40	1253.76	0.28	53.99	29.03	1253.74	-5.70	5.54	-1.50	5.74	344.86	0.02	MWD	None
41	1282.95	0.28	76.24	29.19	1282.93	-5.74	5.60	-1.37	5.77	346.23	0.04	MWD	None
42	1312.43	0.35	69.81	29.48	1312.41	-5.77	5.65	-1.22	5.78	347.83	0.03	MWD	None
43	1341.45	0.49	75.67	29.02	1341.43	-5.80	5.71	-1.02	5.80	349.92	0.05	MWD	None
44	1370.44	0.54	77.71	28.99	1370.42	-5.82	5.77	-0.76	5.82	352.48	0.02	MWD	None
45	1399.38	0.57	80.90	28.94	1399.36	-5.83	5.82	-0.49	5.84	355.23	0.01	MWD	None
46	1428.34	0.57	72.23	28.96	1428.31	-5.86	5.89	-0.21	5.90	357.99	0.03	MWD	None
47	1457.45	0.71	75.91	29.11	1457.42	-5.90	5.98	0.11	5.98	1.02	0.05	MWD	None
48	1486.39	0.67	81.34	28.94	1486.36	-5.92	6.05	0.45	6.07	4.23	0.03	MWD	None
49	1515.33	0.64	84.68	28.94	1515.30	-5.91	6.09	0.78	6.14	7.26	0.02	MWD	None
50	1544.31	0.58	114.39	28.98	1544.28	-5.83	6.04	1.07	6.14	10.04	0.11	MWD	None
51	1573.33	0.68	130.93	29.02	1573.30	-5.62	5.87	1.33	6.02	12.80	0.07	MWD	None
52	1602.43	0.81	124.83	29.10	1602.39	-5.35	5.64	1.63	5.87	16.15	0.05	MWD	None
53	1630.64	0.88	126.64	28.21	1630.60	-5.06	5.40	1.97	5.74	20.06	0.03	MWD	None
54	1659.72	0.73	120.96	29.08	1659.68	-4.78	5.17	2.31	5.66	24.07	0.06	MWD	None
55	1688.54	0.77	115.92	28.82	1688.49	-4.56	4.99	2.64	5.64	27.89	0.03	MWD	None
56	1716.29	1.42	170.03	27.75	1716.24	-4.11	4.57	2.87	5.39	32.12	0.42	MWD	None
57	1747.14	3.39	168.14	30.85	1747.06	-2.82	3.30	3.12	4.54	43.41	0.64	MWD	None
58	1776.39	6.07	175.23	29.25	1776.21	-0.41	0.91	3.43	3.55	75.11	0.94	MWD	None
59	1803.97	9.73	177.60	27.58	1803.52	3.37	-2.87	3.65	4.64	128.22	1.33	MWD	None
60	1833.36	13.39	175.76	29.39	1832.31	9.23	-8.75	4.00	9.62	155.42	1.25	MWD	None

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
61	1863.43	16.85	168.96	30.07	1861.34	17.06	-16.50	5.09	17.27	162.84	1.29	MWD	None
62	1892.32	20.05	169.00	28.89	1888.74	26.19	-25.47	6.84	26.38	164.97	1.11	MWD	None
63	1921.31	23.60	171.03	28.99	1915.65	36.96	-36.09	8.70	37.12	166.45	1.25	MWD	None
64	1950.39	26.42	171.08	29.08	1942.00	49.26	-48.23	10.61	49.38	167.60	0.97	MWD	None
65	1980.01	28.74	171.62	29.62	1968.25	62.97	-61.79	12.67	63.07	168.42	0.79	MWD	None
66	2008.88	30.11	172.21	28.87	1993.40	77.15	-75.83	14.66	77.24	169.06	0.49	MWD	None
67	2037.15	31.81	172.17	28.27	2017.64	91.69	-90.24	16.64	91.76	169.55	0.60	MWD	None
68	2051.91	33.50	172.13	14.76	2030.06	99.66	-98.13	17.72	99.72	169.76	1.15	MWD	None
69	2066.15	33.78	171.23	14.24	2041.92	107.55	-105.93	18.87	107.60	169.90	0.40	MWD	None
70	2095.12	33.12	171.96	28.97	2066.09	123.51	-121.73	21.20	123.56	170.12	0.27	MWD	None
71	2124.15	33.36	172.51	29.03	2090.37	139.43	-137.50	23.35	139.47	170.36	0.13	MWD	None
72	2153.24	33.01	172.88	29.09	2114.72	155.35	-153.29	25.38	155.38	170.60	0.14	MWD	None
73	2181.81	32.54	173.18	28.56	2138.73	170.80	-168.64	27.25	170.82	170.82	0.17	MWD	None
74	2210.92	31.59	173.23	29.12	2163.41	186.26	-183.99	29.08	186.27	171.02	0.33	MWD	None
75	2240.12	31.28	173.54	29.20	2188.32	201.48	-199.11	30.84	201.49	171.20	0.12	MWD	None
76	2268.93	31.04	173.24	28.81	2212.98	216.38	-213.92	32.55	216.38	171.35	0.10	MWD	None
77	2298.13	31.01	173.23	29.20	2238.00	231.42	-228.87	34.32	231.43	171.47	0.01	MWD	None
78	2327.14	30.80	172.89	29.01	2262.89	246.32	-243.66	36.12	246.32	171.57	0.09	MWD	None
79	2356.90	30.47	172.50	29.76	2288.50	261.48	-258.70	38.05	261.48	171.63	0.13	MWD	None
80	2385.70	30.69	172.74	28.80	2313.29	276.13	-273.23	39.93	276.13	171.68	0.09	MWD	None
81	2414.71	30.89	172.94	29.01	2338.21	290.98	-287.96	41.78	290.98	171.74	0.08	MWD	None
82	2443.86	30.53	172.62	29.15	2363.27	305.86	-302.73	43.66	305.86	171.79	0.14	MWD	None
83	2472.51	30.38	172.52	28.65	2387.97	320.38	-317.13	45.53	320.38	171.83	0.06	MWD	None
84	2500.10	30.49	173.16	27.59	2411.76	334.36	-331.00	47.28	334.36	171.87	0.12	MWD	None

85	2513.76	30.10	173.67	13.66	2423.55	341.24	-337.84	48.07	341.25	171.90	0.34	MWD	None
86	2534.52	28.77	174.36	20.76	2441.63	351.44	-347.99	49.13	351.44	171.96	0.66	MWD	None
87	2563.83	27.68	175.01	29.31	2467.46	365.28	-361.79	50.42	365.29	172.07	0.39	MWD	None
88	2591.89	27.75	175.43	28.06	2492.30	378.31	-374.80	51.50	378.32	172.18	0.07	MWD	None
89	2621.44	27.65	176.02	29.55	2518.46	392.01	-388.49	52.53	392.03	172.30	0.10	MWD	None
90	2649.26	26.55	176.15	27.82	2543.23	404.65	-401.14	53.39	404.68	172.42	0.40	MWD	None

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
91	2679.64	25.96	176.64	30.38	2570.47	418.04	-414.55	54.24	418.08	172.55	0.21	MWD	None
92	2709.01	25.79	176.94	29.37	2596.90	430.81	-427.35	54.96	430.87	172.67	0.07	MWD	None
93	2738.14	25.73	177.20	29.13	2623.13	443.41	-439.99	55.60	443.49	172.80	0.04	MWD	None
94	2766.75	25.60	177.87	28.61	2648.92	455.74	-452.37	56.14	455.84	172.93	0.11	MWD	None
95	2795.87	25.09	178.27	29.12	2675.24	468.13	-464.83	56.56	468.26	173.06	0.18	MWD	None
96	2824.87	24.62	179.06	29.00	2701.55	480.23	-477.01	56.84	480.39	173.20	0.20	MWD	None
97	2844.77	24.22	179.64	19.90	2719.67	488.38	-485.24	56.94	488.57	173.31	0.23	MWD	None
98	2853.96	24.18	180.01	9.19	2728.05	492.11	-489.01	56.95	492.31	173.36	0.17	MWD	None
99	2882.63	27.57	178.74	28.67	2753.85	504.51	-501.52	57.09	504.76	173.51	1.20	MWD	None
100	2911.83	32.47	177.23	29.20	2779.12	519.03	-516.11	57.62	519.32	173.63	1.70	MWD	None
101	2940.58	35.22	173.63	28.75	2803.00	535.00	-532.06	58.91	535.31	173.68	1.18	MWD	None
102	2969.76	36.72	171.96	29.18	2826.62	552.14	-549.06	61.07	552.45	173.65	0.61	MWD	None
103	2998.29	36.71	172.92	28.53	2849.49	569.19	-565.97	63.31	569.50	173.62	0.20	MWD	None
104	3027.63	37.32	171.60	29.34	2872.91	586.85	-583.47	65.69	587.16	173.58	0.34	MWD	None
105	3056.67	37.50	171.93	29.04	2895.98	604.50	-600.93	68.22	604.79	173.52	0.09	MWD	None
106	3086.05	37.34	171.98	29.38	2919.31	622.35	-618.61	70.72	622.64	173.48	0.06	MWD	None
107	3115.20	36.75	171.59	29.15	2942.58	639.91	-635.99	73.22	640.19	173.43	0.22	MWD	None
108	3143.56	36.84	172.02	28.36	2965.29	656.90	-652.80	75.65	657.17	173.39	0.10	MWD	None
109	3173.28	36.36	171.83	29.72	2989.15	674.62	-670.35	78.13	674.89	173.35	0.17	MWD	None
110	3202.29	35.86	171.78	29.01	3012.59	691.71	-687.27	80.57	691.98	173.31	0.17	MWD	None
111	3231.67	35.66	172.64	29.38	3036.43	708.88	-704.28	82.90	709.14	173.29	0.18	MWD	None
112	3259.72	35.26	172.40	28.05	3059.28	725.15	-720.41	85.02	725.41	173.27	0.15	MWD	None
113	3289.09	34.82	172.26	29.37	3083.32	742.01	-737.13	87.27	742.27	173.25	0.15	MWD	None
114	3318.30	34.25	172.36	29.21	3107.39	758.57	-753.54	89.48	758.83	173.23	0.20	MWD	None
115	3343.24	33.90	172.67	24.94	3128.04	772.54	-767.39	91.30	772.80	173.21	0.16	MWD	None
116	**3369.00**	**33.54**	**172.99**	**25.76**	**3149.47**	**786.84**	**-781.58**	**93.09**	**787.10**	**173.21**	**0.16**	**Projection To TD**	

Company: **ESSO Australia Pty. Ltd.**

Schlumberger

Well: **West Moonfish−1**

Field: **Moonfish**

Rig: **ENSCO 102** **8.5 in. Section**

State: **Victoria**

GeoVISION Resistivity Quadrant
1:500 True Vertical Depth
Recorded Mode Log