CHECKED: 76/14
KESTREL

EASTMAN TELECO
A Baker Hughes company

DUAL PROPAGATION RESISTIVITY GAMMA RAY

DEPT. NAT. RES & ENV
PE602756

Company	BHP PETROLEUM
Well	MINERVA-1
Field	VIC/P31
County	OTWAY BASIN
State	VICTORIA
Country	AUSTRALIA

Well Location:
LAT : 38 deg 42' 12.23" SOUTH
LONG : 143 deg 57' 12.34" EAST

Other Services:

API Number	Sect.	Twp.	Range

Log Measured From RT 25.0m Above Perm. Datum
Depth In 560m MWD Start 12-03-93 Perm. Datum MSLT
Depth Out 2107m MWD End 24-03-93

Elev. KB N/A
Elev. DF 25.0m
Sea Bed/GL 57.0m

Bore Hole Record			Casing Record		
Hole Size	From	To	Casing Size	From	To
36"	0m	137m	30"	SEAFLOOR	136m
17 1/2"	137m	560m	13 3/8"	SEAFLOOR	549.0m
12 1/4"	560m	1204m	9 5/8"	SEAFLOOR	1194.4m
8 1/2"	1204m	2107m			

Drilling Contractor DOLPHIN DRILLING Rig BYFORD

1:500

MEASURED DEPTH

FINAL PRINT

Company Rep. G. HOWARD M. IMBERT
FIELD PERSONNEL A. FELL A. SOMOFF
Job # ETAU-235

Bit Run No.	4	6	10	11		
Eastman Teleco Data						
Run Number	1	2	3	4		
DHA Number	B 8447-02	E 1674-09	E 1674-09	E 1674-09		
Surface Gear	IS TR2300	IS TR2300	IS TR2300	IS TR2300		
Tool OD / Type	8.25"/DPR	6.75"/DPR	6.75"/DPR	6.75"/DPR		
Run Data						
Bit Diameter	12.25"	8.5"	8.5"	8.5"		
Measured Depth In	560.0m	1209.0m	1821.0m	2031.0m		
Measured Depth Out	1204.0m	1821.0m	2031.0m	2107.0m		
Top Interval Logged	550.0m	1191.0m	1810.0m	2027.0m		
Btm Interval Logged	1194.0m	1818.0m	2027.0m	2104.0m		
Min/Max Inclination	0.4/2.5	3.7/7.6	7.6/8.8	8.9/9.0		
Begin Log : Time	14:45 hrs	19:13 hrs	07:45 hrs	10:00 hrs		
Begin Log : Date	12-03-1993	16-03-93	20-03-93	24-03-93		
End Log : Time	20:45 hrs	03:30 hrs	08:00 hrs	19:35 hrs		
End Log : Date	13-03-1993	18-03-93	21-03-93	24-03-93		
Mud Data @ Depth	850m	1600m	1971m	2101m		
Mud Type	KCl PHPA	KCl PHPA	KCl PHPA	KCl PHPA		
Density from-to	1.08	1.12 - 1.14	1.14 -1.15	1.15		
Mud Chlorides	33000	40000	45000	51000		
Oil/Water Ratio	0/100	0/100	0/100	0/100		
Max Circ. Temp	32 C	59 C	64 C	61 C		
Company Rep.	G. Howard	G. Howard	G. Howard	M. Imbert		
Field Eng.	A. Fell	A. Somoff	A. Fell	A. Somoff		

Remarks

LOG MNEMONICS:

GRAM = Natural Gamma Ray, API Calibrated [RWD]
GRAX = Natural Gamma Ray, API Calibrated [MWD]
TCDM = MWD Tool Temperature [RWD]
TCDX = MWD Tool Temperature [MWD]
RPCM = Resistivity Phase Difference, Borehole Corrected [RWD]
RACM = Resistivity Amplitude Ratio, Borehole Corrected [RWD]
RPDM = Resistivity Phase Difference, Dielectric Corrected [RWD]
RADM = Resistivity Amplitude Ratio, Dielectric Corrected [RWD]
PDEM = Resistivity, Elapsed Time Since Drilled [RWD]
PDDM = Resistivity, Data Density Integrated
WBCS = Weight On Bit [Surface]
ROPS = Rate of Penetration [Surface]
RPMS = Revolutions Per Minute [Surface]

VERIFICATION MNEMONICS:

PDBV = Phase Difference Base [VER]
PDOV = Phase Difference Offset [VER]
PDCV = Phase Difference Correction [VER]
ATBV = Attenuation Base [VER]
ATOV = Attenuation Offset [VER]
ATCV = Attenuation Correction [VER]
TCDV = MTC Temperature [VER]

SUB ASSEMBLY MNEMONICS:

DPR = Dual Propagation Resistivity
DIR = Directional
DET = Gamma Ray Detector

Remarks

SENSOR TO BIT DISTANCE (M)

Teleco Run Number	1	2	3	4
Bottom of Teleco Tool	9.02	2.43	2.45	2.45
Resistivity	9.60	3.00	3.02	3.02
Gamma Ray	11.05	4.78	4.80	4.80
Directional	13.70	7.39	7.41	7.41
TOOL INFORMATION				
Total Length	12.37	12.70	12.70	12.70
Total Weight Kg	2400	1600	1600	1600
Run Circulating Hrs	35.00	34.00	24.00	18.50

RIGSITE SENSOR VERIFICATION DATA:

Verification:		Pre 1	Pre 2	Pre 3	Pre 4
DPR	s/n	8107	6029	6029	6029
PD cal.	deg	10.408	8.463	8.463	8.463
PD rig	deg	9.924	8.339	8.379	8.202
Delta +/-	deg	-0.484	-0.124	-0.084	-0.261
AR cal.	dB	6.243	5.539	5.539	5.539
AR rig	dB	6.477	5.980	6.213	5.665
Delta +/-	dB	0.234	-0.441	0.674	0.126
TEMP. Sensor	C	16.3	21.2	20.1	17.4
DET	s/n	442-4	413-8	413-8	413-8
Background	cps	3.5	3.4	4.2	3.7

Remarks

LOG ENVIRONMENTAL CORRECTIONS:

Gamma Ray: Normalised for Tool Size, Borehole Size, Sensor Type. Correction has been made for mud potassium content.

Resistivity: Normalised for Tool Size, Borehole Size, Mud Resistivity, Temperature. No correction has been applied for formation dielectric properties.

COMMENTS:

MWD Transmission Data Rate:	× 4 Splitphase (0.8 bits/second)
RWD Memory Update Rate - Gamma Ray:	5 /10 Seconds
- Resistivity:	5 /10 Seconds
Surface Logging System / Software:	M-Series / 1.33X
Gamma Ray Detector Type:	Scintillator
Surface data provided by Exlog:	Bit Depth. Rate of penetration. Weight on bit. RPM

Remarks

REMARKS:
========

Remark 1 - No surface data from Exlog.

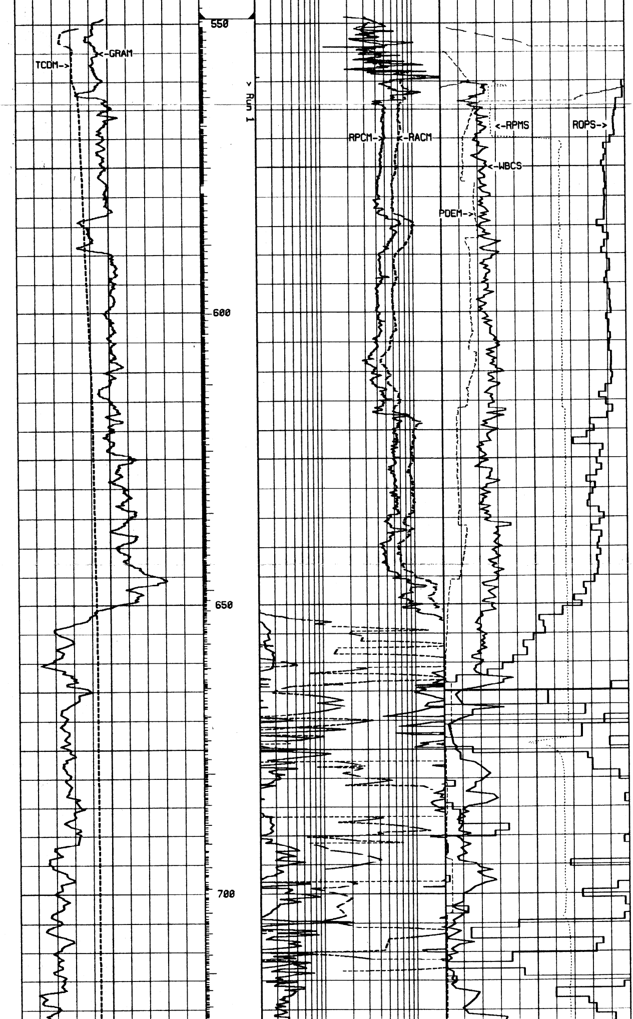
Remark 2 - No data due to casing run.

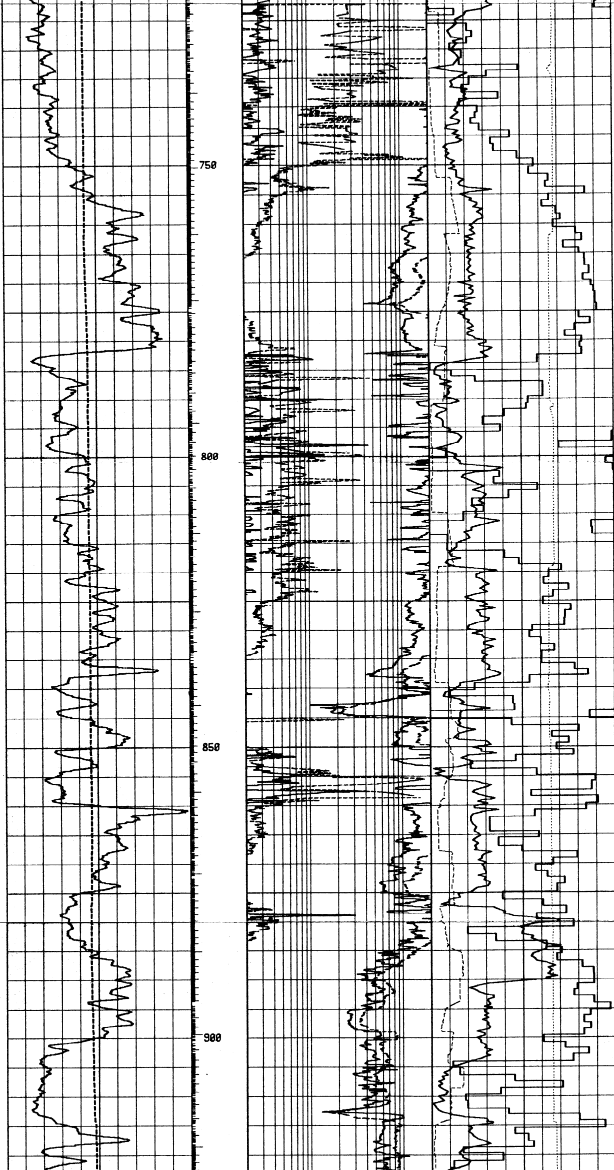
Remark 3 - Data lost due to high torque.

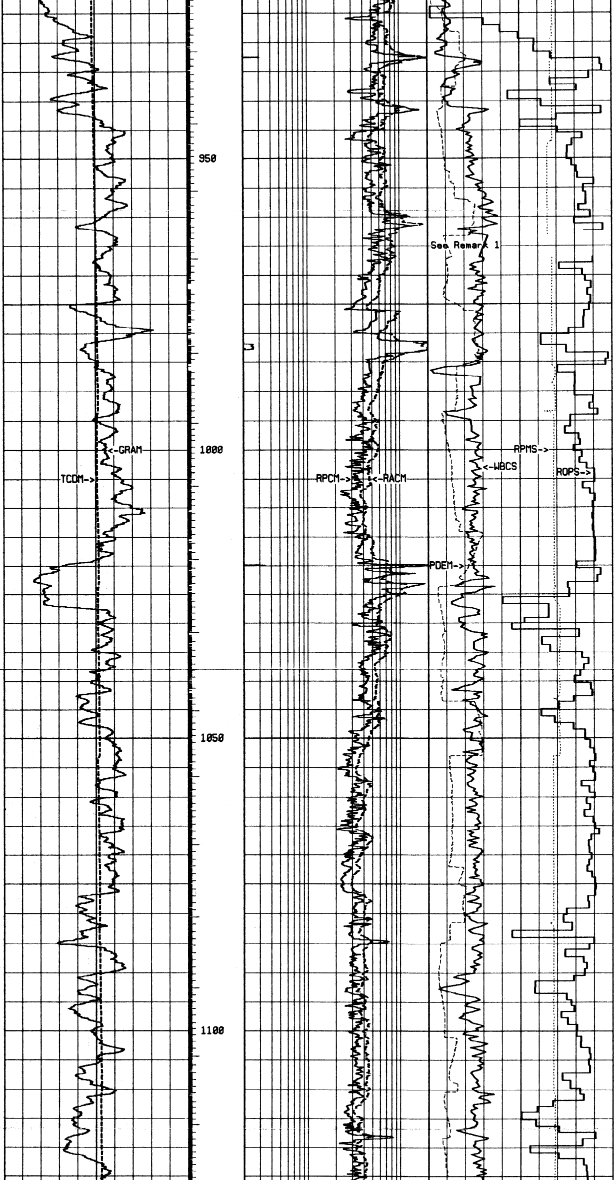
Remark 4 - TD 8 1/2" hole section.
End of Teleco MWD service.

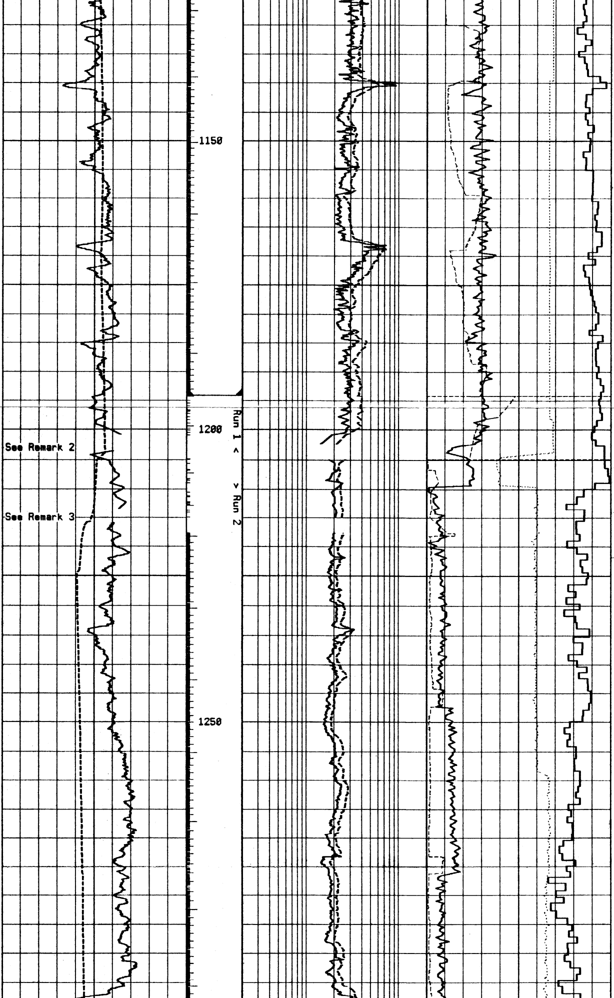
Eastman Teleco does not guarantee the accuracy or correctness of interpretation provided in or from this log. Since all interpretations are opinions based on measurements, Eastman Teleco shall under no circumstances be responsible for consequential damages or any other loss, costs, damages or expenses incurred or sustained in connection with the use of any such interpretations. Eastman Teleco disclaims all expressed and implied warranties related to its service which is governed by Eastman Teleco's standard terms and conditions.

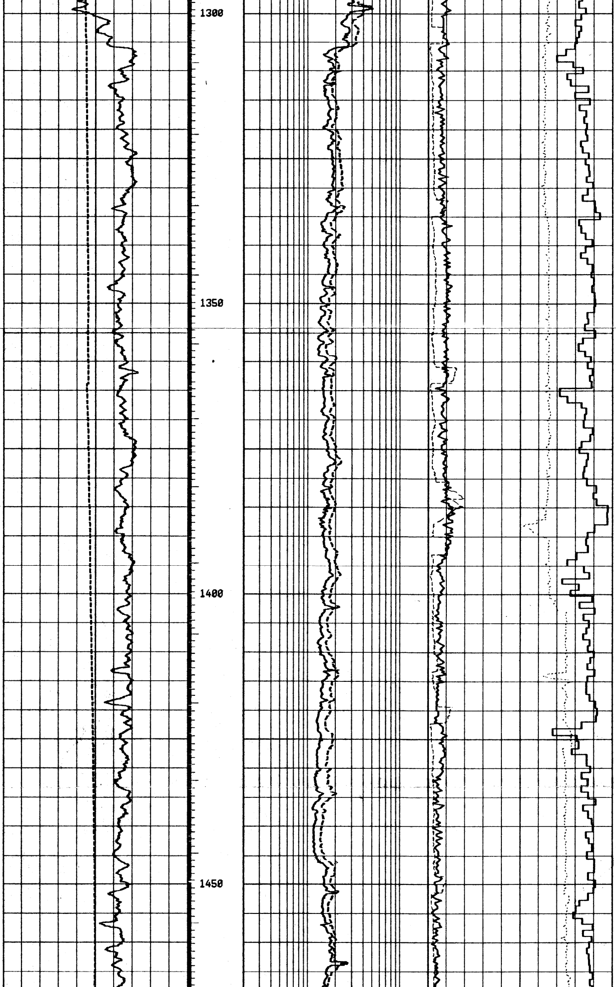
Gamma Ray App [RWD] MWD-API 0.30 m Smoothing 0.00 150.00	DEPTH METERS 1:500	Resistivity (AT) Cor [RWD] ohm-m 0.20 20.00	Surface RPM rpm 0.00 200.00 PD - Elapsed Time [RWD] mins 0.00 200.00 Rate of Penetration m/hr 1.00 m Average 200.00 0.00
CDS Temperature [RWD] deg C 0.00 100.00	PDDM 100 10 1	Resistivity (PD) Cor [RWD] ohm-m 0.20 20.00	Surface Weight On Bit klbs 0.00 100.00

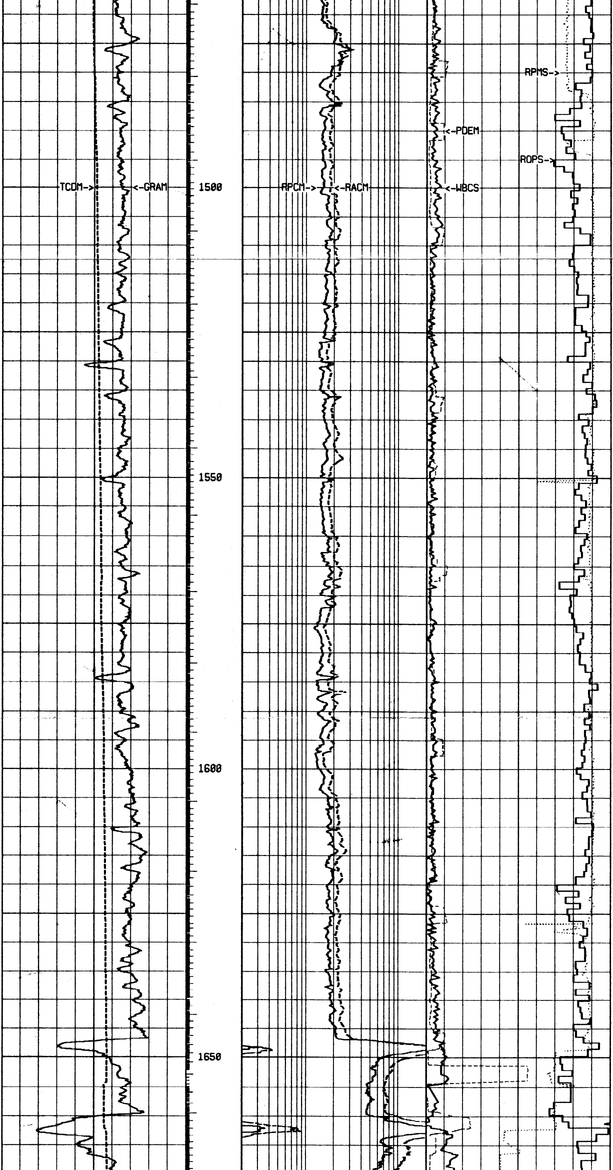


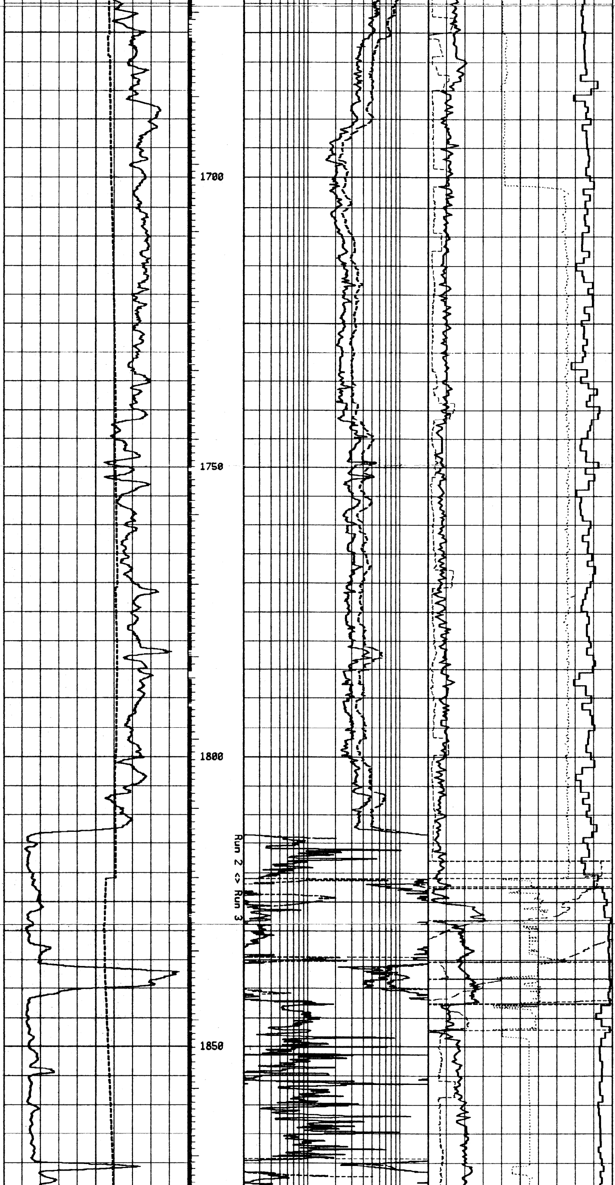


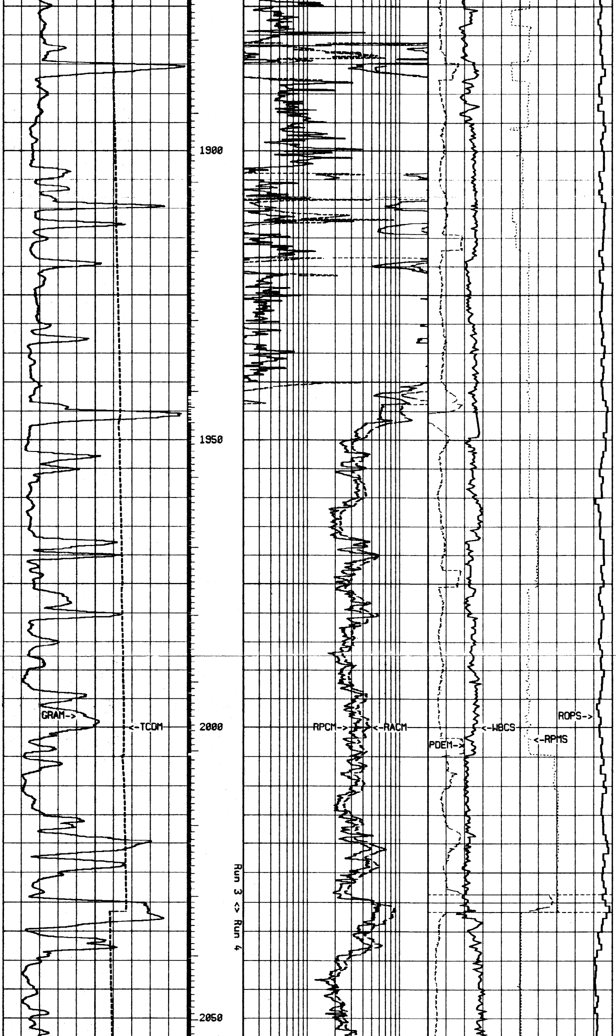


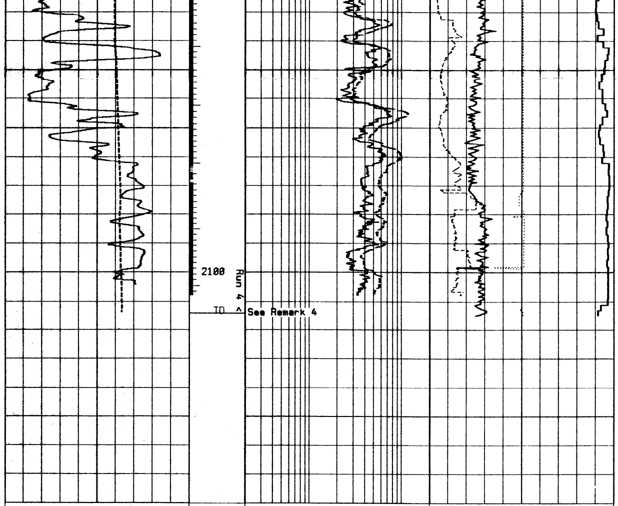












Gamma Ray App [RWD] MWD-API 0.30 m Smoothing 0.00 150.00	DEPTH METERS 1:500	Resistivity (AT) Cor [RWD] ohm-m 0.20 20.00	Surface RPM rpm 0.00 200.00 PD - Elapsed Time [RWD] mins 0.00 200.00 Rate of Penetration m/hr 1.00 m Average 200.00 0.00
CDS Temperature [RWD] deg C 0.00 100.00	PDDM 100 10 1	Resistivity (PD) Cor [RWD] ohm-m 0.20 20.00	Surface Weight On Bit klbs 0.00 100.00