DEPARTMENT OF MINES AND ENERGY

SOUTH AUSTRALIA

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CONTENTS ENVELOPE 2172

TENEMENT: Not Related

TENEMENT HOLDER: Hematite Petroleum Pty. Ltd.

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

HEMATITE SHAIL NO. 1 - ANGLESEA EMBAYMENT, OTWAY BASIN, VICTORIA
PALYNOLOGICAL EXAMINATION OF CORES & SIDE WALL CORES

by

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PALAEONTOLOGY SECTION

S.R. No. 776
G.S. No. 5077
D.M. No. 155/73
Pal.Rept.No. 3/73

7th March, 1973

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

B.R. No. 776
G.S. No. 5077
D.M. No. 155/73
Pal.Rept.No. 3/73

HEMATITE SNAIL NO. 1 - ANGLESSEA EMBAYMENT, OTWAY BASIN, VICTORIA PALYNOLOGICAL EXAMINATION OF CORES & SIDE WALL CORES

ABSTRACT

Results of palynological examination of cores and sidewall cores from Hematite Snail No. 1 Well, Anglesea Embayment, Victoria, indicate an Oligocene age at 1938 ft., a Middle Eocene age (*Proteacidites pachypolus* zone) between 2564 and 2783 ft., a Middle to Upper Paleocene (*Gambierina edwardsii* zone) for a sidewall core at 2865 ft. and an early Cretaceous age for sediments between 2997 and 4051 ft.

All Tertiary units carry marine dinoflagellate cysts indicating marine incursions, at times limited, within the sequence.

A remanié assemblage of late Permian forms is present in the highest Cretaceous sample. The source of these is unknown.

INTRODUCTION

Hematite Petroleum Pty. Ltd. drilled Snail No. 1 Well in the Anglesea Embayment of the Otway Basin at Lat. 38°54'S and Long. 144°18'E to a total depth of 4 051 feet. This report details the palynology of two core and thirteen sidewall core samples. The distribution of species is plotted on plan No. 73-130 together with the S.P. and Resistivity logs. A sidewall core 21 at 2 707 ft. was not prepared. It is a sand and is extensively mud infiltrated.

A comparison of palynological biostratigraphic schemes for southern Australia is presented in Table 1.

CORRELATION AND AGE

Cretaceous

Assemblages from SWCs. 1 to 15 and from Core 3 were generally well preserved but very sparse. The best assemblage is from SWC 15 at 2 907 ft. and contains a typical lower Cretaceous microflora with C. australiensis and D. Complex. There is nothing else in the assemblage to correlate with Lottmann and Playford's (1969) biostratigraphic scheme for the Cretaceous. The section of the well from 2 907 to 4 031 feet is therefore undifferentiated lower Cretaceous.

Tertiary

Assemblages of this age are diverse and generally well preserved. Those from SWC 17 (2 865 ft.) and SWC 29 (1 938 ft.) are better preserved than those from the middle of the section. Three distinct units are present and will be dealt with separately.

1. Middle-Upper Paleocene

SWC 17 at 2 865 ft. yielded a typical Paleocene assemblage with, in particular, Lygistepollenites balmei, Gambierina edwardsii and Australopollis obscurus. These species indicate a correlation with the Gambierina edwardsii zone of Middle to Upper Paleocene age (Harris, 1971). In terms of Stover and Evan's (1973) scheme, the assemblage

would be correlated with their Lygistepollenites balmei zone (see Table 1).

On shore sections of the Eastern View Coal Measures are to be correlated with this sample. The important difference lies in the presence of an assemblage of marine dinoflagellates in the off-shore sample. The on-shore sequence appears to be entirely non-marine and dominated by coaly facies.

2. Middle Eocene

SEO's 18-27 and Core 2 carry assemblages which are more or less similar and are assigned to the one biostratigraphic unit. The unit is characterised firstly by a diverse assemblage of Nothofagidites spp. including N. asperus in one sample. Present also are Proteacidites pachypolus and P. asperopolus , Tricolpites thomasii, and Triorites magnificus. Although N. asperus is rare and P. asperopolus is present but rare, this assemblage is a correlative of the Proteacidites pachypolus zone of Harris (1971). The absence of Proteacidites rectomarginis (= P. clintonensis Harris 1972) indicates that it is within the lower part of the zone. There are no indications of the older Proteacidites confragosus zone being present, such as the nominate species, low frequency of Nothofagidites spp., and high Haloragacidites harrisii count.

The age of this unit is Middle Eocene. In the Eucla Basin, it is present in the Pidinga Formation with a Middle Eocene foraminiferal fauna (Lindsay and Harris, 1973).

On-shore correlatives of this biostratigraphic unit in the

Otway Basin are not yet well documented. It does not appear to be present in the onshore Anglesea Embayment where only the younger half of the P. pachypolus zone is present (see Harris 1971) and the outcrop section further to the west at Browns Creek is all certainly younger. Nevertheless it is more closely related to the Demons Bluff Formation than to the Eastern View Coal Measures. The Kongorong Sand in the Gambier Embayment is a probable correlative but this has not yet been studied in detail.

This assemblage is equivalent to the lower part of Stover and Evan's (1973) Nothofagidites asperus zone in the Gippsland Basin (see Table 1).

?Oligocene

The highest sidewall core, 29 at 1 930 ft. yielded an assemblage dominated by Nothofagidites spp. associated with Proteacidites rectomarginis, very rare Cyatheacidites annulatus and Tricolpites retequetrus. The microplankton component includes the freshwater green algal colony, Pediastrum sp. C. annulatus has not been found in outcrop sections older than the Janjukian. It is rare within the basal unit at the type section of the Jan Jue Formation but not present in the Browns Creek Clays further to the west. The latter unit possibly extends into the early Oligocene. On this limited evidence SWO 29 is probably of Oligocene age but no younger. The Cyatheacidites annulatus zone of Harris (1971) is a correlative and should now be extended down into the Oligocene with the finding of C. annulata in the type Janjukian. The Proteacidites tuberculatus

zone of Stover and Partridge (1973) of Early Oligocene to Early Miocene age is a correlative.

ENVIRONMENTS

Cretaceous

No marine fossils were observed in sediments of this age. The large amount of detrital woody tissue, sands and few spores or pollen indicate rapid sedimentation in a non-marine environment.

Tertiary

All units described herein carry marine dinoflagellate cysts and acritarchs in varying amounts. In BWG 29 the microplankton dominate the assemblage and an offshore shelf environment is indicated.

Microplankton occur more sporadically in the Middle Eocene and the Paleocene units and do not reach more than 5% of the total sporomorph count.

A marginal marine facies with very limited marine influence is indicated.

A note on preservation

In contrast to the Oligocene and Paleocene assemblages, those from the Middle Eocene were generally less well preserved and were noticeably darker in colour - yellow to brown. This would indicate greater diagenetic changes in the unit compared with those above or below.

Colour changes such as these have been used elsewhere to indicate possible hydrocarbon generation. Colour changes to a darker

yellow have been shown to be associated with liquid hydrocarbons and those of darker brown colours with gaseous hydrocarbons (Staplin, 1969).

PALEOCENE-EOCENE BOUNDARY

Table 1 shows the sequence of palynological zones for the early Tertiary in Southern Australia and despite which system (i.e. Harris, 1971; Stover and Evans, 1973; Stover and Partridge, 1973) is used two zones appear to be absent from this well. That is, the whole of the Lower Eocene and probably the early part of the Middle Eocene were either not deposited or were eroded prior to the deposition of the lower F. pachypolus zone. A similar feature has been noted by Harris (1971) from on-shore sections in the Anglesea Embayment, but here more section is absent and deposition did not commence in the Eocene until late F. pachypolus zone. There is only about 80 ft. between SW017 and SW018 and it is very doubtful whether the "missing" interval is represented in this section. The geophysical logs do not show any major changes in this interval.

TABLE 1

Attempted comparison of early Tertiary palynological zonal schemes, southern Australia

Age		Harris, 1971	Stover & Partridge, 1973
	U	Triorites magnificus	
Eocene	E-U	Proteacidites pachypolus	Nothofagidites asperus
	M	Proteacidites contingosus	Proteacidites asperopolus
	L	Cupanieidites orthoteichus	Malvacipollis diversus
Paleocene	E-U	Gambierina edwardsii	Hygrotepollenites balmei
	?L		Tricolpites longus

REWORKED FOSSILS 011

Throughout the Middle Eocene and Cretaceous sediments species such as Cicatricosisporites australiensis, C. hughesi and Contignisporites sp. appear occasionally with more rarely occurring Permian striate bisaccate pollen. The source of the Cretaceous species is easily explained by the presence of the underlying Cretaceous sediments.

However, at the top of the Cretaceous section in BWC15 at 2 907 ft. several Permian species are present (not included in the chart): Dulhuntyispora parvithola (Balme and Hennelly), Striatopodocarpidites phaleratus (Balme and Hennelly), Parasaccites gondwanensis (Balme and Hennelly) and Protohaploxypinus spp. In Western Australia D. parvithola occurs only in the Upper Permian Wagina Sandstone (Segroves, 1970). Within the Cooper Basin in South Australia the presence of this species indicates an Upper Stage 5 assemblage (Paten, 1969), which probably spans the boundary between the Lower and Upper Permian.

The source of this late Permian assemblages would not appear to be from onshore Victorian Permian units as these are all within Stage 2 (Early Permian) unless later units have been completely eroded. An alternative is an unknown source to the south or south west on the margin of the Embayment. The late Permian sediments in Tasmania are too distant to be considered as a probable source.

Permian remanié microfossils have been reported previously in both Cretaceous and Tertiary sediments of the Otway Basin (Cookson, 1955; Harris, 1965).

8.3.73

Wayne K. Harris

WAYNE K. HARRIS

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APPENDIX

Data on Samples Studies

Sample No.	Depth in Feet (metres in parenthesis)	Core or Sidewall No.
S2635	1938 (590.70)	SWC29
S2631	2546 (776.02)	SWC27
S2632	2584 (787.60)	SWC25
S2633	2626 (800.40)	SWC24
S2634	2664 (811.99)	SWC23
S2651	2684 (818.08)	Core 2
S2636	2783 (848.26)	SWC18
S2637	2865 (873.25)	SWC17
S2638	2907 (886.05)	SWC15
S2644	3157 (962.25)	Core 3
S2639	3449 (1051.26)	SWC12
S2640	3600 (1097.28)	SWC9
S2641	3909 (1191.46)	SWC6
S2642	3931 (1198.17)	SWC5
S2643	4031 (1228.65)	SWC1

DEPARTMENT OF MINES — SOUTH AUSTRALIA

HEMATITE SNAIL NO. 1 WELL

ANGLESEA EMBAYMENT

SPECIES DISTRIBUTION CHART

PALAEONTOLOGY SECTION

PALAEONTOLOGIST

Director of Mines

Drn. WKH.

Ted. S.J.C

Ckd.

Exd.

SCALE: AS SHOWN

73-130 994.5

DATE: 2 MARCH 1973

Schlumberger

COMPENSATED FORMATION DENSITY LOG
Gamma-Gamma

COMPANY HEMATITE PETROLEUM
WELL SNIPIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
Location: Lat.: 38° 54' S Long.: 144° 9' E
Sec. Twp. Rge.
Other Services: ISF/LL3

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL SNIPIL 1
COMPANY HEMATITE

Elev.: K.B. 32 D.F. 31 G.L. 22.6

Permanent Datum: MSL
Log Measured From: KB 32 Ft. Above Perm. Datum
Drilling Measured From: KB

Date	1-11-70	2-11-70	2-11-70
Run No.	1	2	3
Type Log	CAL	GR	FDC
Depth—Driller	1826	1827	1826
Depth—Logger	1826	1827	1826
Bottom Log Interval	1826	1827	1826
Top Log Interval	707	707	707
Type fluid in hole	KCL POLYMER		
Salinity, PPM Cl			
Density	9.2		
Viscosity	45		
Fluid loss, ml/30 min	2.5		
Source of sample	FLOW LINE		
Rm @ Meas. Temp.	.113 @ 72°		
Rmf @ Meas. Temp.	.093 @ 72°		
Rmc @ Meas. Temp.	.066 @ 72°		
Source: Rmf / Rmc	MEAS / CALC		
Rm @ BHT	.072 @ 93°		
Circulation Stopped	1-11-70		
Time Logger on Bottom	1-11-70		
Max. Rec. Temp.	93°		
Equipment Number	1		
Location	MORWELL		
Recorded By	CHAPPEL		
Witnessed By	HERASON		

BOREHOLE RECORD

Bit No.	Bit Size	From	To
1	12"	706	1826

CASING RECORD

Size	Wgt.	From	To
13 3/8	48	GL	706

MUD RECORD

Type	Viscosity	Fluid Loss
KCL POLYMER	45	2.5

The well name, location and borehole reference data were furnished by the customer.

EQUIPMENT DATA

Run No.	PGF-EB	PDH-D	PGH-A	PGS-E	SFT-106	SGH-T	Logging Unit	Location
1	311	422	188	265	302	82	2080	SAL
2				2647				
3								

CALIBRATION DATA

Run No.	Gamma Ray API Scale	Gamma Ray background CPS	Gamma Ray Total CPS	FDC — Before Log — ACPS P_1	FDC — Before Log — ACPS P_2	FDC — After Log — ACPS P_1	FDC — After Log — ACPS P_2
1	CAL	30	450	420	900	420	900
2							
3							

LOGGING DATA

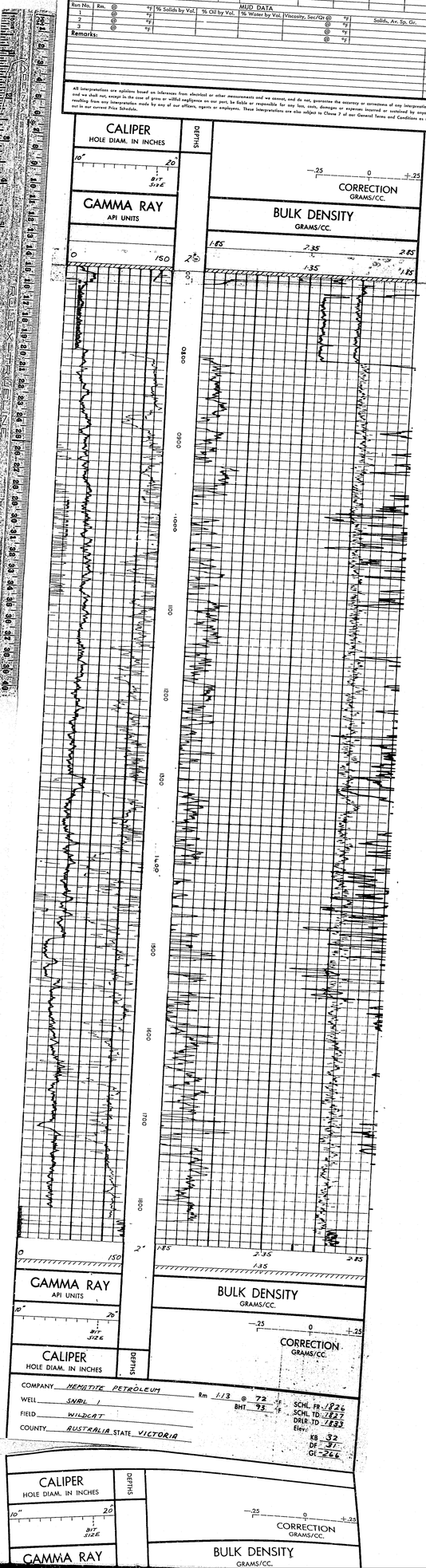
Run No.	General Depths From	General Depths To	General Speed Ft./Min.	General Tc	Gamma Ray API Scale	FDC Selectors Liquid Density	FDC Selectors Grain Density	FDC Selectors Hole Fluid	FDC Selectors Porosity Scale
1	1826	707	30	2					
2									
3									

MUD DATA

Run No.	Rm.	% Solids by Vol.	% Oil by Vol.	% Water by Vol.	Viscosity, Sec/Qt	Solids, Av. Sp. Gr.
1	@ °F				@ °F	
2	@ °F				@ °F	
3	@ °F				@ °F	
					@ °F	

Remarks:

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.



COMPANY HEMATITE PETROLEUM
WELL SNIPIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

Rm 1.13 @ 72°
BHT 93°

SCHL. FR 1826
SCHL. TD 1827
DRLR. TD 1883
Elev.:
KB 32
DF 31
GL 22.6

CALIPER
HOLE DIAM. IN INCHES
DEPTHS
10"
20"
BIT SIZE
GAMMA RAY
API UNITS
0
150
2"
CORRECTION
GRAMS/CC.
-.25
0
+.25
BULK DENSITY
GRAMS/CC.
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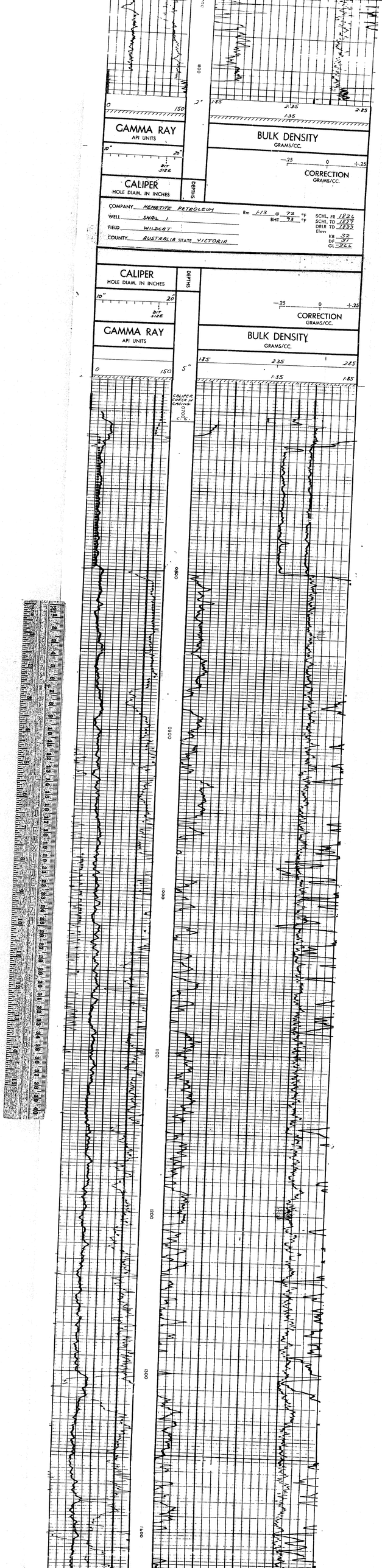
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HOLE DIAM. IN INCHES
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20"
BIT SIZE
DEPTHS
2"
BULK DENSITY
GRAMS/CC.
1.85
2.35
2.85
1.35
CORRECTION
GRAMS/CC.
-.25
0
+.25
COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
Rm 1.13 @ 72 °F
BHT 93 °F
SCHL. FR 1826
SCHL. TD 1837
DRLR TD 1833
Elevs
KB 32
DF 31
GL -262
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HOLE DIAM. IN INCHES
10"
20"
BIT SIZE
DEPTHS
5"
CALIPER CHECK CASING TOOL
GAMMA RAY
API UNITS
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BULK DENSITY
GRAMS/CC.
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CORRECTION
GRAMS/CC.
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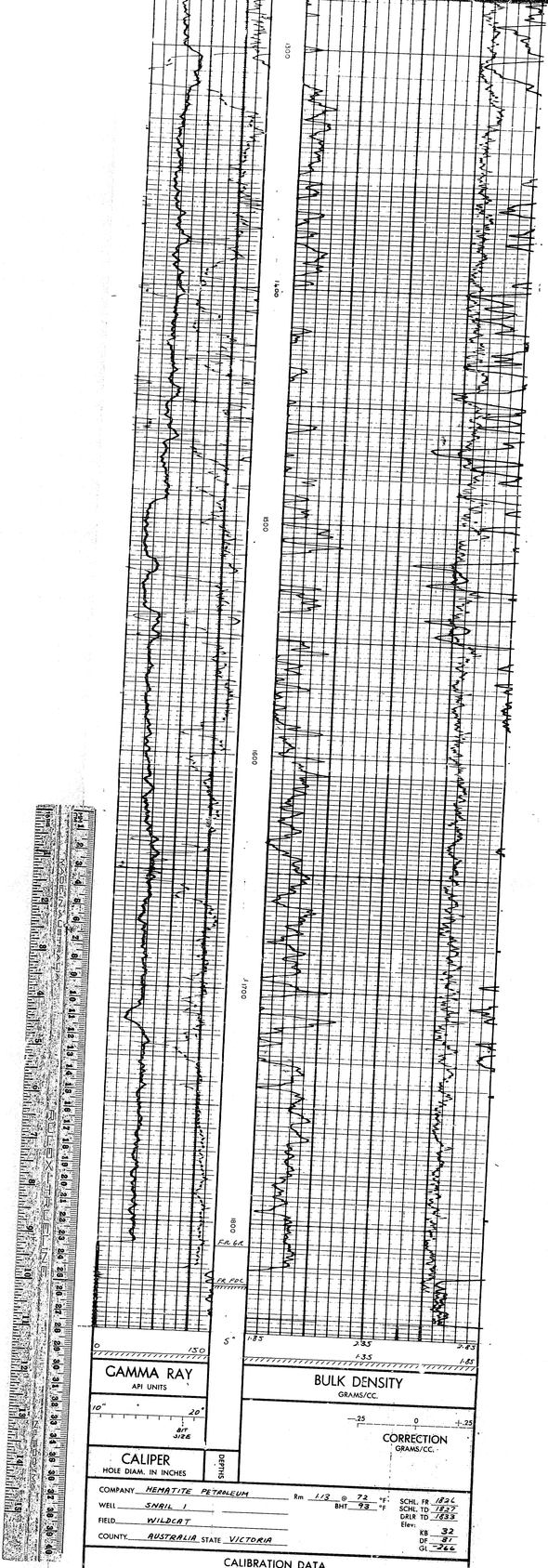

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

Rm 1.13 @ 72 °F
BHT 93 °F

SCHL. FR 1836
SCHL. TD 1837
DRLR TD 1833
Elev:
KB 32
DF 31
GL -266

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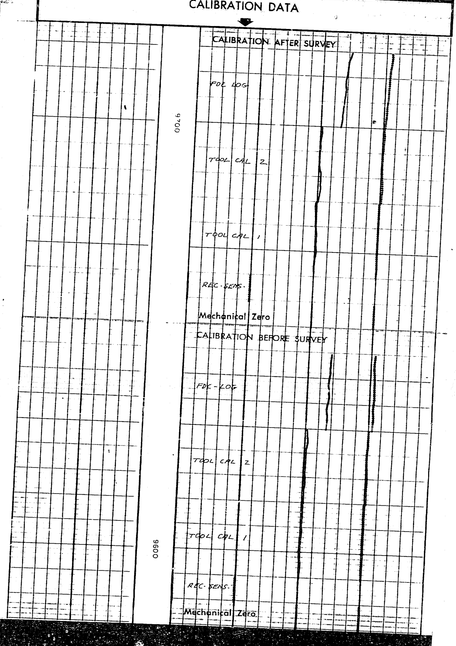

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Gamma Ray Cal

Calibrate Signal

Electrical Zero

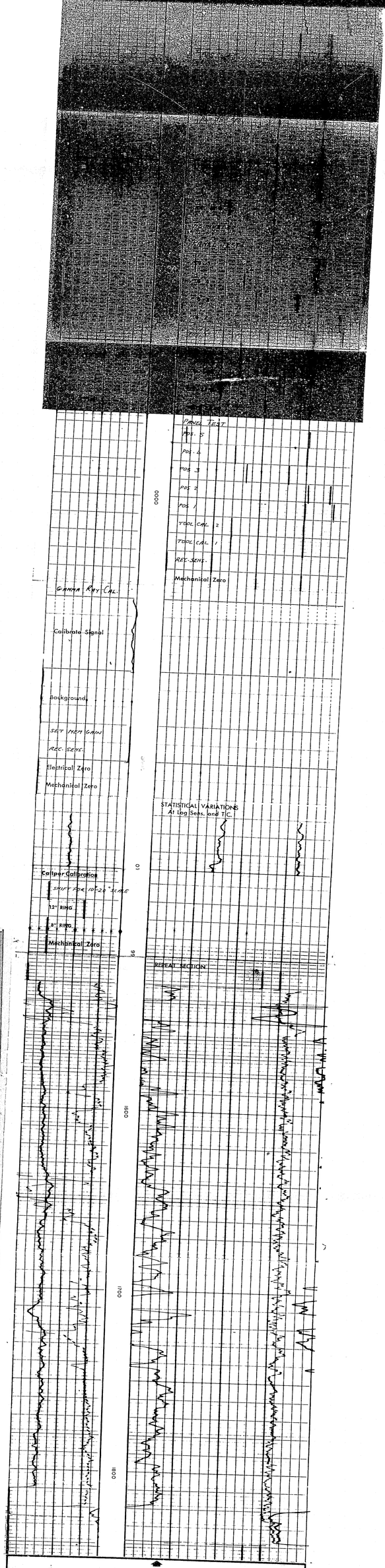
Mechanical Zero

Caliper Calibration

12 RING

8 RING

Mechanical Zero



CALIBRATION DATA

COMPANY HEMATITE PETROLEUM

WELL SNAIL 1

FIELD WILDCAT

COUNTY AUSTRALIA STATE VICTORIA

Rm 1.13 @ 72 °F

BHT 93 °F

SCHL FR 1826

SCHL TD 1827

DRLR TD 1733

Elev.:

KB 37

DF 37

GL 26.6

2172-2

Schlumberger

ISF-SONIC

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL SNAIL 1

COMPANY HEMATITE

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA
STATE VICTORIA
LOCATION
Lat. 38° 31' S
Long. 142° 12' E
Sec. Twp. Rge.

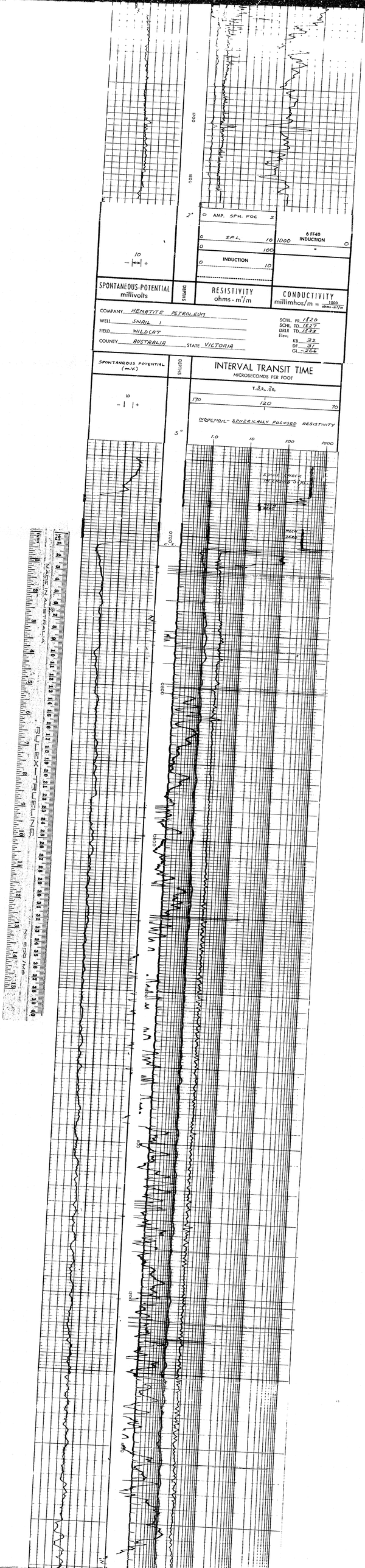
Other Services: FDC/AK

Permanent Datum MSL
Log Measured From KB
Drilling Measured From KB

Elev.: K.B. 32
D.F.
G.L. 26

25 Ft. Above Perm. Datum

| | | |


1700
1800
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0 SFL 10
0 100
INDUCTION
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SPONTANEOUS-POTENTIAL millivolts
DEPTHS
RESISTIVITY ohms-m²/m
CONDUCTIVITY millimhos/m = 1000/ohms-m²/m
COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
SCHL. FR 1820
SCHL. TO 1827
DRLR. TO 1828
Elev.
KB 32
DF 31
GL -266
SPONTANEOUS POTENTIAL (-mv.)
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
170 120 70
INDUCTION- SPHERICALLY FOCUSED RESISTIVITY
1.0 10 100 1000
5"
SPHERICALLY FOCUSED
MEDIUM
DEEP
0000
0100
0200
0300
0400
0500
0600
0700
0800
0900
1000
1100
1200
1300
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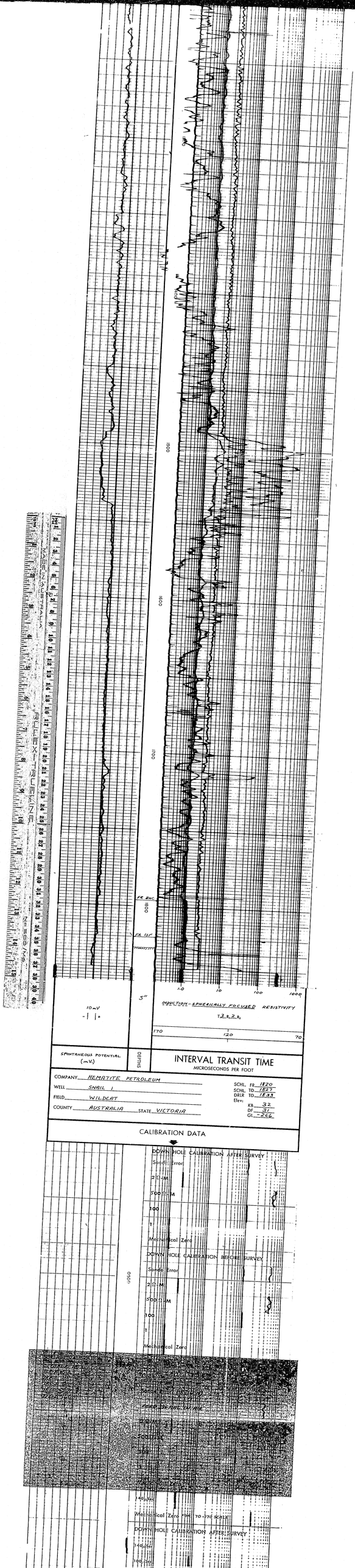
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1700
1800
1900
FR. 2nd
FR. 1st
5"
10-V
INDUCTION-SPHERICALLY FOCUSED RESISTIVITY
1.0
10
100
1000
170
120
70
SPONTANEOUS POTENTIAL (mV)
DEPTHS
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
SCHL. FR. 1820
SCHL. TD. 1827
DRLR TD. 1833
Elev.:
KB 32
DF 31
GL -266
CALIBRATION DATA
DOWN HOLE CALIBRATION AFTER SURVEY
Scale Error
250-M
500-M
100
1
Mechanical Zero
DOWN HOLE CALIBRATION BEFORE SURVEY
Scale Error
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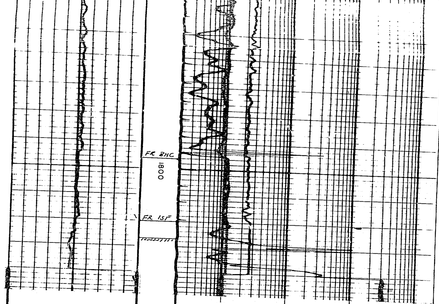
Mechanical Zero
Mechanical Zero 70-70 Scale
DOWN HOLE CALIBRATION AFTER SURVEY

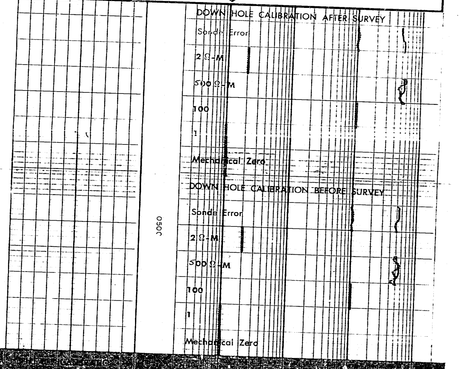


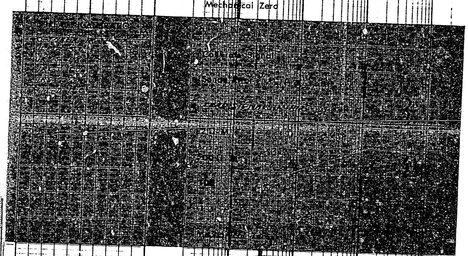
SPONTANEOUS POTENTIAL (mV)	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
10 mV	5"	

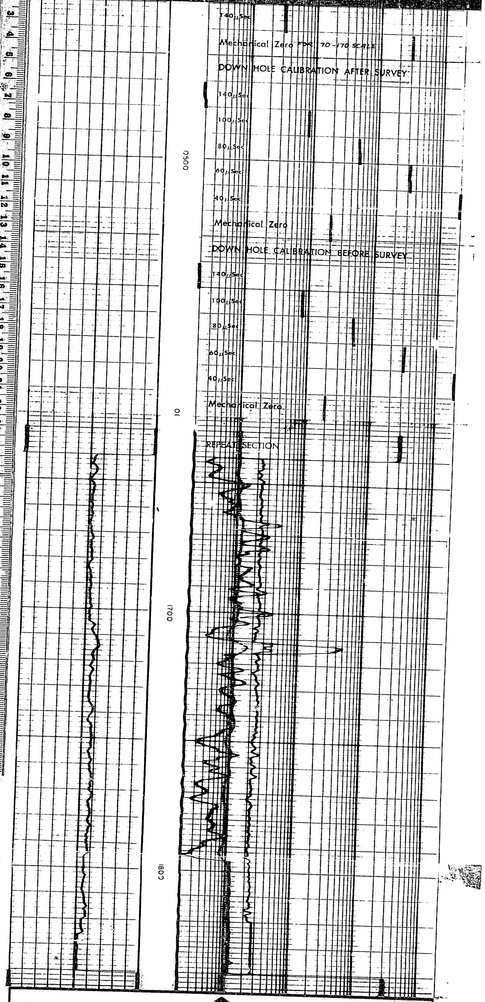
COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR. 1820
SCHL. TD. 1827
DRLR TD. 1833
Elev:
KB. 32
DF. 31
GL. -266

CALIBRATION DATA







CALIBRATION DATA

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR. 1820
SCHL. TD. 1827
DRLR TD. 1833
Elev:
KB. 32
DF. 31
GL. -266

2112-4

Schlumberger

COMPENSATED FORMATION DENSITY
COMPENSATED NEUTRON POROSITY
GAMMA RAY LOG

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL SNAIL 1
COMPANY HEMATITE

COMPANY HEMATITE PETROLEUM

WELL SNAIL 1

FIELD WILDCAT

COUNTY AUSTRALIA STATE VICTORIA

LOCATION
LAT: 38° 56' S
LONG: 144° 18' E
Sec. Twp. Rge.

Other Services:
ISF/SLM, HDT, ST, MFT, CIS

2172

Permanent Datum: MSL Elev. 0
Log Measured From KB 32 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 32
D.F. 31
G.L. -266

Date	DEC. 6, 1972		
Run No.	2	ZERO	(RUN 1 CANCELLED)
Depth—Driller	4051		
Depth—Logger	4049		
Btm. Log Interval	4048		
Top Log Interval	1794		
Casing—Driller	13-3/8 @ 1795		
Casing—Logger	1796		
Bit Size	12 1/4		
Type Fluid in Hole	LIGNOSULPHONATE		
Dens. / Visc.	11.9 / 48		
pH / Fluid Loss	9.5 / 2.6 ml	ml	ml
Source of Sample	FLOWLINE		
R_m @ Meas. Temp.	1.13 @ 76 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	0.80 @ 76 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	2.34 @ 76 °F	@ °F	@ °F
Source R_{mf} R_{mc}	PRESS		
R_m @ BHT	0.62 @ 135 °F	@ °F	@ °F
Time Since Circ.	7 HRS		
Max. Rec. Temp.	135/136 °F	@ °F	@ °F
Equip. Location	2980 SAL		
Recorded By	CHAPPS		
Witnessed By	HODGSON		

FIELD PRINT

REMARKS: SAMPLES IN HOD

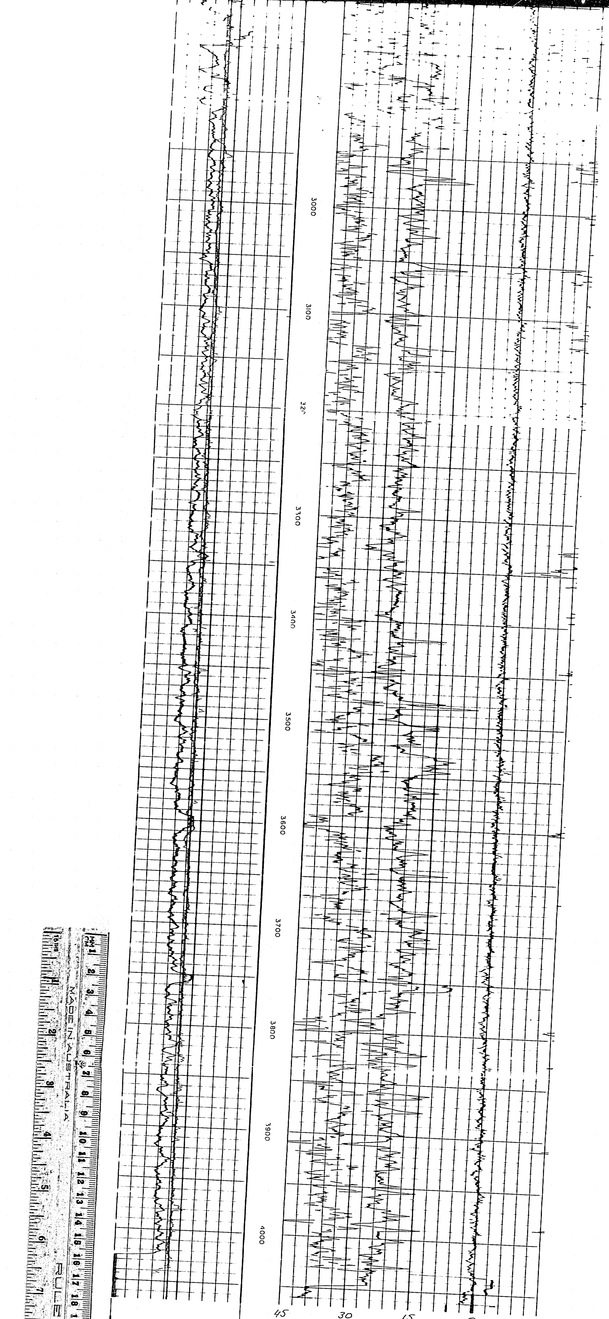
Changes in Hole Type or Additional Samples

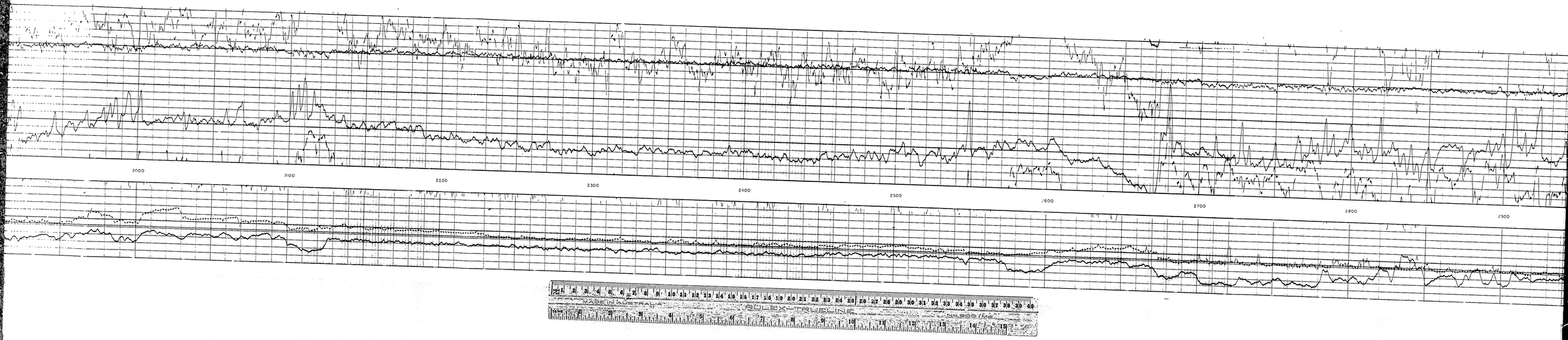
Date	Sample No.	Depth—Driller	Type Hole in Hole	Dens.	Visc.	pH	Fluid Loss	Source of Sample	R_m @ Meas. Temp.	R_{mf} @ Meas. Temp.	R_{mc} @ Meas. Temp.	Source R_{mf} R_{mc}	R_m @ BHT	R_{mf} @ BHT	R_{mc} @ BHT
					ml				@ °F	@ °F	@ °F		@ °F	@ °F	@ °F

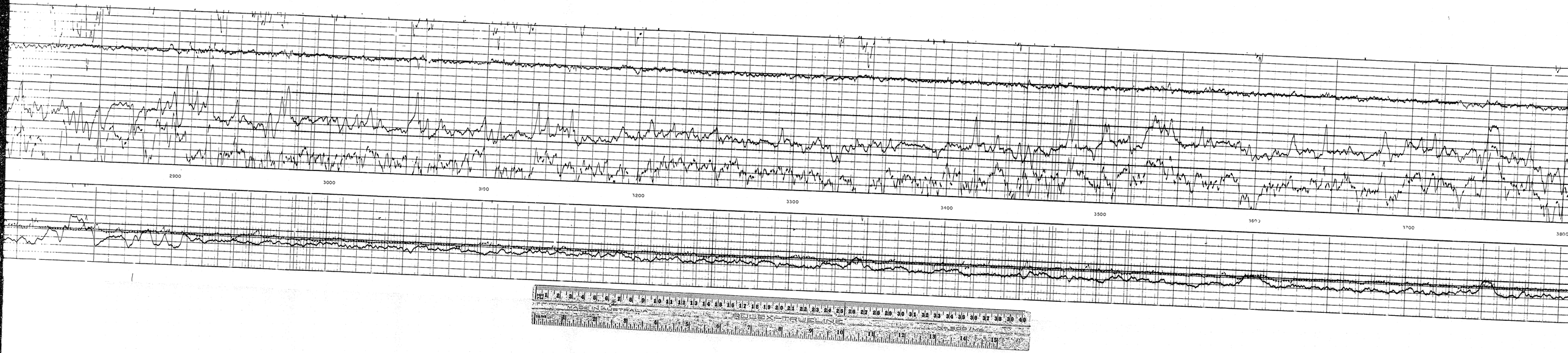
Type Log | Depth | Scale Changes: Scale Up Hole | Scale Down Hole

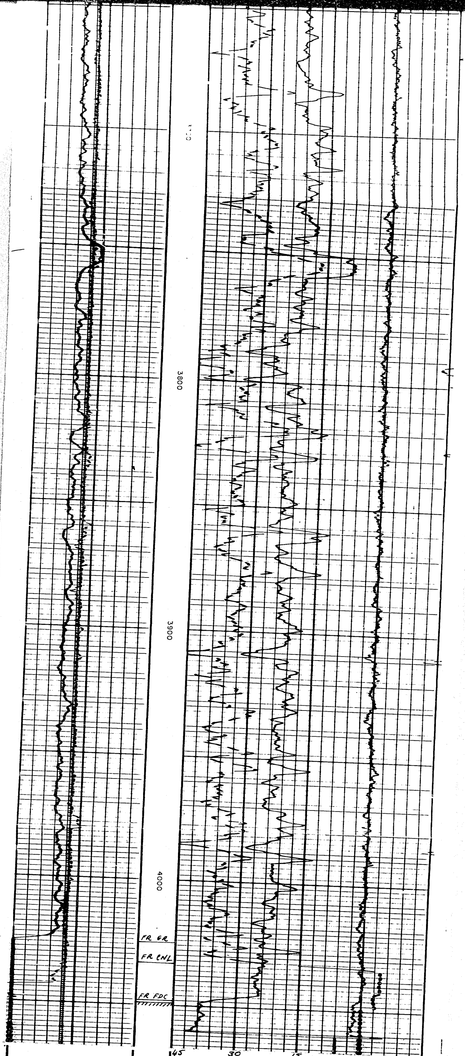
Run No.	Tool Type	Equipment Data: Bit Type	Mud Type	Rec.	Other
2 (Log)	MFT-CNT	FDH-D	FDH-D	ECCON	

SECT. F2	CNTA 1.3	
ELEM. F2	CNTA 1.3	
	CNTA 1.3	
	MAC. 121	
	CNTA 1.3	
CNTA 3.11		
CNTA 1.3		
CNTA 1.3		
MAC. 121		
CNTA 1.3		
MAC. 121		
CNTA 1.3		
MAC. 121


3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
45 30 15 0 -15
COMPENSATED NEUTRON POROSITY
(POROSITY IN LIMESTONE)
0 150
2"
1.85 2.35 2.85
GAMMA RAY
API UNITS
BULK DENSITY
GRAMS/CC.
8" BIT SIZE 18"
-.25 0 +.25
CORRECTION
GRAMS/CC.
CALIPER
HOLE DIAM. IN INCHES
DEPTHS
COMPANY HEMATITE PETROLEUM
Rm 1.13 @ 74 °F
BHT 135 °F
SCHL. FR 4061
SCHL. TD 4069
DRLR TD 4097
Elev:
KB 32
DF 37
GL -267
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
CALIPER
HOLE DIAM. IN INCHES
DEPTHS
8" BIT SIZE 18"
12¾
-.25 0 +.25
CORRECTION
GRAMS/CC.
GAMMA RAY
API UNITS
BULK DENSITY
GRAMS/CC.
0 150
5"
1.85 2.35 2.85
COMPENSATED NEUTRON POROSITY
(POROSITY IN LIMESTONE)
45 30 15 0 -15
CS
4170
4170


2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
MADE IN AUSTRALIA
ROLEX TRUE LINE


2900
3000
3100
3200
3300
3400
3500
3600
3700
3800

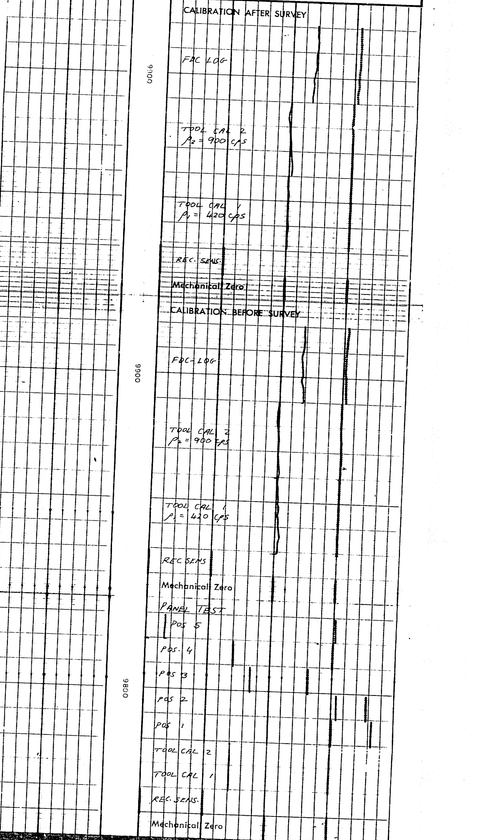


0 150	5"	45 30 15 0 -15 COMPENSATED NEUTRON POROSITY (POROSITY IF LIMESTONE)
GAMMA RAY API UNITS		1.85 2.35 2.85 **BULK DENSITY** GRAMS/CC.
8" BIT SIZE 18"		-.25 0 +.25 **CORRECTION** GRAMS/CC.
CALIPER HOLE DIAM. IN INCHES	DEPTHS	

COMPANY HEMATITE PETROLEUM Rm 1.13 @ 76 °F BHT 135 °F
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 4008
SCHL. TD 4049
DRLR TD 4051
Elev.
KB 32
DF 31
GL -266

CALIBRATION DATA



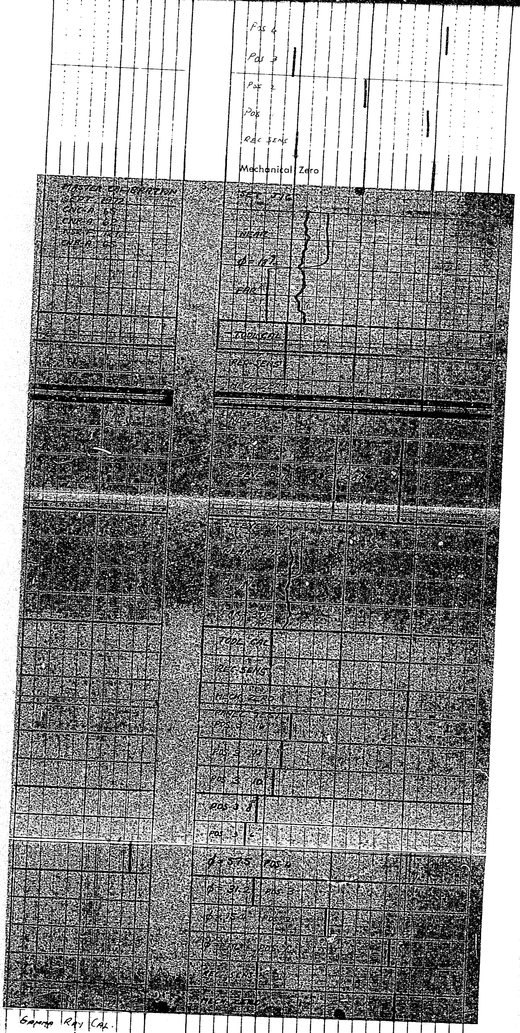
TOOL CAL 2
TOOL CAL 1
REC SENS
Mechanical Zero

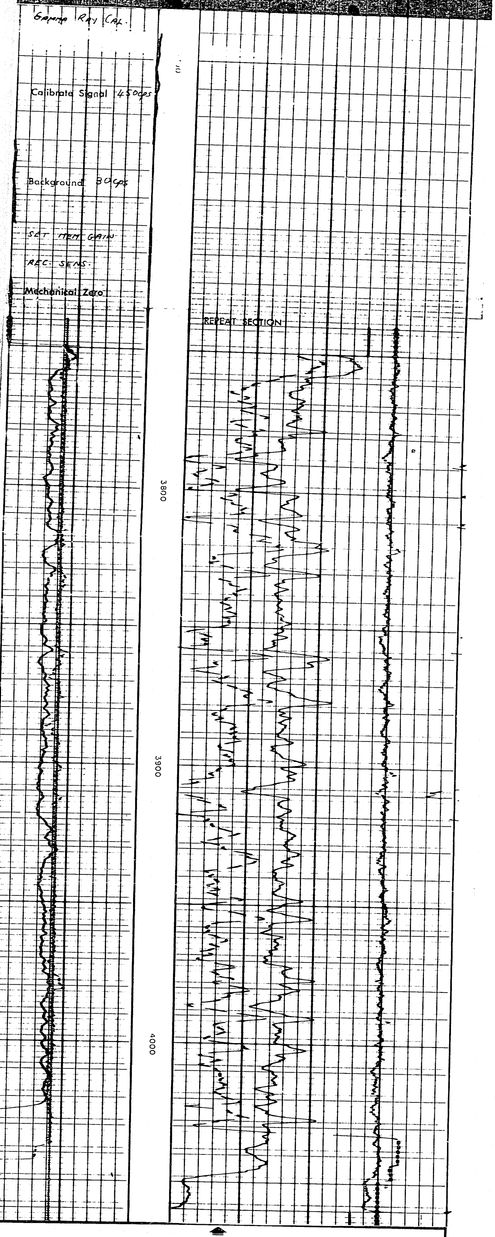
CALIBRATION AFTER SURVEY
$\phi = 18\%$
TOOL CAL
REC SENS
Mechanical Zero
PANEL TEST
Pos 4
Pos 3
Pos 2
Pos 1
REC SENS
Mechanical Zero

CALIBRATION BEFORE SURVEY
$\phi = 18\%$
TOOL CAL
REC SENS
Mechanical Zero
PANEL TEST
Pos 4
Pos 3
Pos 2
Pos 1
REC SENS
Mechanical Zero

MASTER CALIBRATION
SEPT 1972
CVC A 65
CVC B 65
MEC C 12
CVC D 65

REC SENS
MECH ZERO
PANEL TEST
Pos 4
Pos 3
Pos 2
Pos 1
REC SENS
MECH ZERO
TOOL CAL
REC SENS
MECH ZERO
Pos 4
PANEL TEST
Pos 1
REC SENS
MECH ZERO
PANEL TEST
Pos 4 16
Pos 3 17





CALIBRATION DATA

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

Rm 1.13 @ 74 °F
BHT 135 °F

SCHL. FR 4068
SCHL. TD 4004
DRLR TD 4051
Elev:
KB 32
DF 31
GL -266

2172-5

Schlumberger ISF/SONIC

COUNTY AUSTRALIA
FIELD OR LOCATION WILDCAT
WELL SNAIL 1
COMPANY HEMATITE

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
LOCATION LAT: 38° 54' S. LONG: 146° 18' E
Sec. Twp. Rge.
Other Services: FDC/CNL GR HDT, MD-ST

Permanent Datum MSL Elev. 0
Log Measured From KB 32 Ft. Above Perm. Datum
Drilling Measured From KB
Elev. K.B. 32 D.F. 31 G.L. -266

Date	DEC 6 1972		
Run No.	2 3" 7"		
Depth—Driller	4051		
Depth—Logger	4049		
Btm. Log Interval	4042		
Top Log Interval	1794		
Casing—Driller	13⅜ @ 1795	@	@
Casing—Logger	1794		
Bit Size	12¼		
Type Fluid in Hole	LIGNOSULPHONATE		
Dens. / Visc.	11.9 / 48		
pH / Fluid Loss	9.5 / 2.0 ml	ml	ml
Source of Sample	FLOWLINE		
R_m @ Meas. Temp.	1.12 @ 76 °F	°F	°F
R_{mf} @ Meas. Temp.	0.90 @ 76 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	9.30 @ 76 °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	PRESS		
R_m @ BHT	0.63 @ 130 °F	@ °F	@ °F
Time Since Circ.	4 HRS		
Max. Rec. Temp.	128 / 132 °F	°F	°F
Equip. / Location	2000 / 1375		
Recorded By	CHAPPLE		
Witnessed By	HODGSON		

FIELD NOTES

The well were historic and provide reference data were furnished by the customer

Date	DEC 6 1972		
Run No.	2 3" 7"		
Depth—Driller	4051		
Depth—Logger	4049		
Btm. Log Interval	4042		
Top Log Interval	1794		
Casing—Driller	13⅜ @ 1795	@	@
Casing—Logger	1794		
Bit Size	12¼		
Type Fluid in Hole	LIGNOSULPHONATE		
Dens. / Visc.	11.9 / 48		
pH / Fluid Loss	9.5 / 2.0 ml	ml	ml
Source of Sample	FLOWLINE		
R_m @ Meas. Temp.	1.12 @ 76 °F	°F	°F
R_{mf} @ Meas. Temp.	0.90 @ 76 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	9.30 @ 76 °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	PRESS		
R_m @ BHT	0.63 @ 130 °F	@ °F	@ °F
Time Since Circ.	4 HRS		
Max. Rec. Temp.	128 / 132 °F	°F	°F
Equip. / Location	2000 / 1375		
Recorded By	CHAPPLE		
Witnessed By	HODGSON		

Changes in Mud Type or Additional Samples

Date	Sample No.		
Depth	Type Fluid in Hole		
Dens. / Visc.			
pH / Fluid Loss			
Source of Sample			
R_m @ Meas. Temp.		°F	
R_{mf} @ Meas. Temp.		@ °F	
R_{mc} @ Meas. Temp.		@ °F	
Source: R_{mf} / R_{mc}			
R_m @ BHT		@ °F	

Run No.	2		
Tool Type	ISF		
Mem. Press. No.	4311		
Tool Corr. No.	46		
Ind. Corr. No.	77		
Sonic Corr. No.	34		
Guard Corr. No.	399		
Sonic Gain No.	32		
Sonic Cal. No.	393		
GR Corr. No.			
GR Cal. No.			
Calibrator No.			
TTR No.			
SSS	1		
Cent. Device	570		
Sonde Type	172		
Time of Hodes	60		
Speed-F.P.M.			

REMARKS: TTR RETARDED 30.4"
DEC.

Service Order No.
Well Type
Check one, filling in blanks where applicable.
☐ Surface determined scale errors used for dif-kb.
☐ Hole deviation was not corrected for.
☐ dif-kb zero set in hole at depth of
borehole signal at Rx
feet.
inch.

Scale Changes

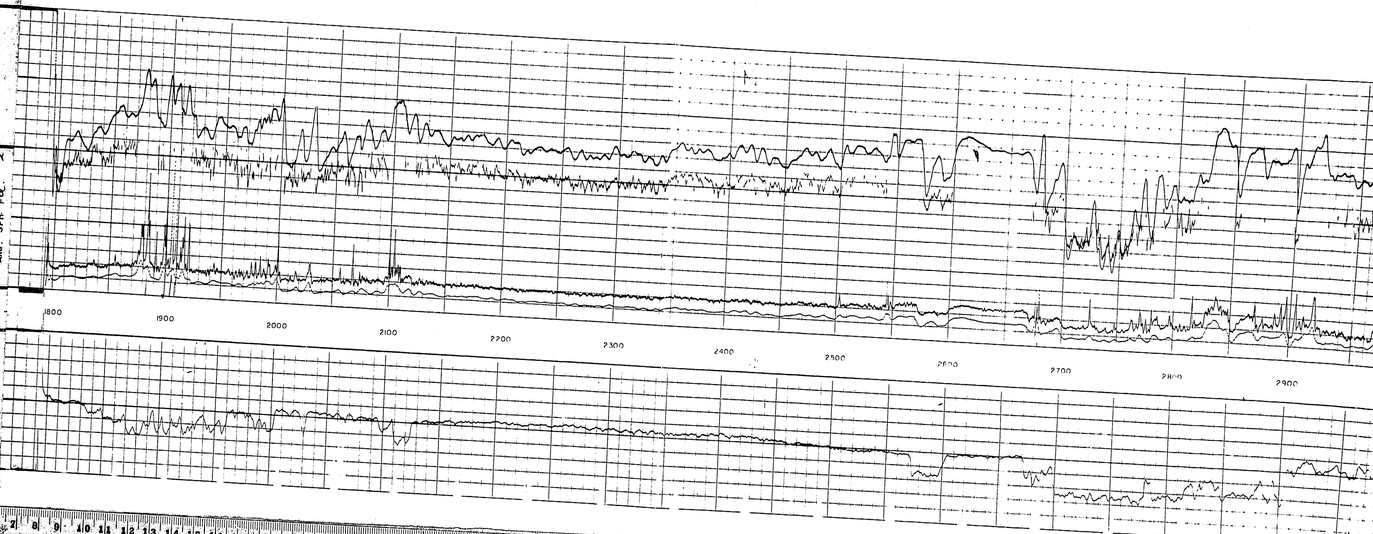
Type Log	Depth	Scale Up Hole	Scale Down Hole

CONDUCTIVITY millimhos/m = 1000 / ohms·m²/m
6 FF40 INDUCTION 0 / 1000

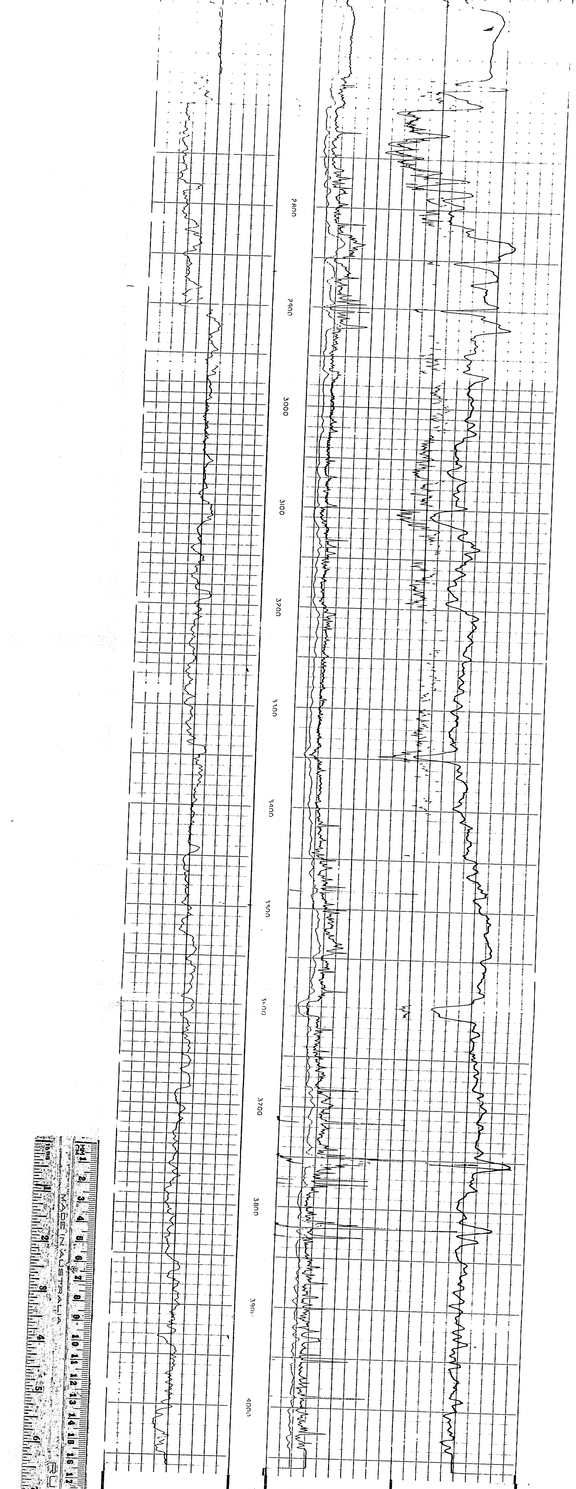
RESISTIVITY ohms·m²/m
SFL 10 / 100
INDUCTION 10 / 0
AMP. SPN. FDC 2 / 0

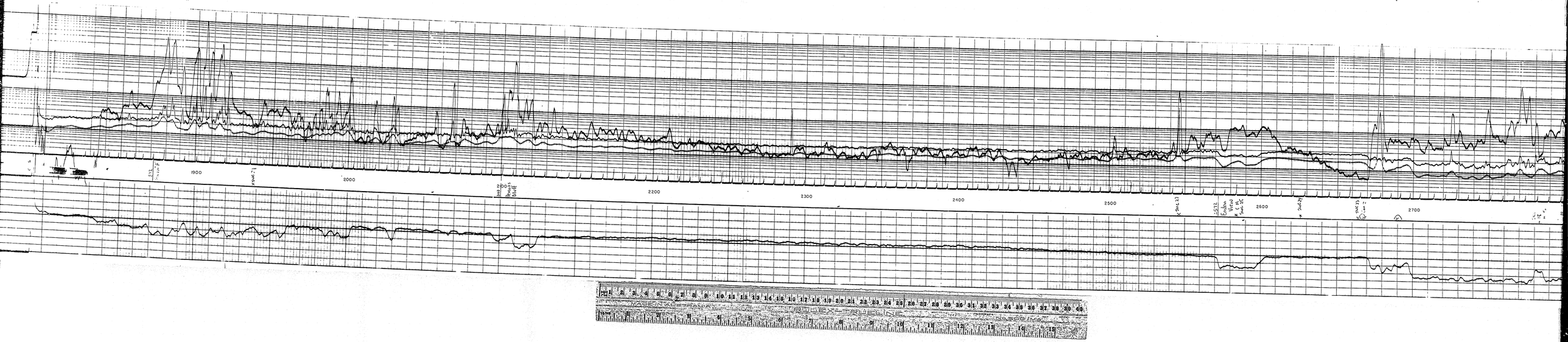
DEPTHS 5"

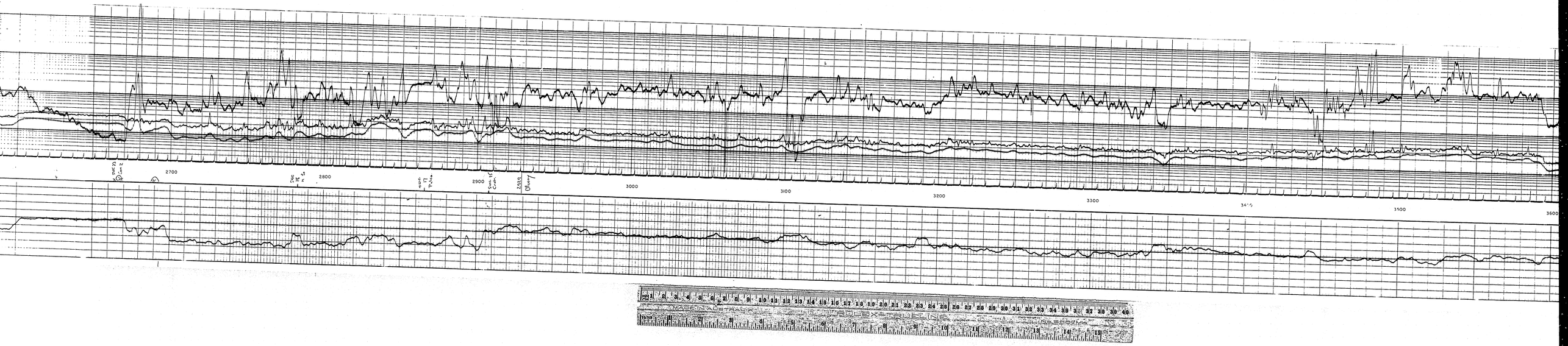
SPONTANEOUS-POTENTIAL millivolts
10 − | + |

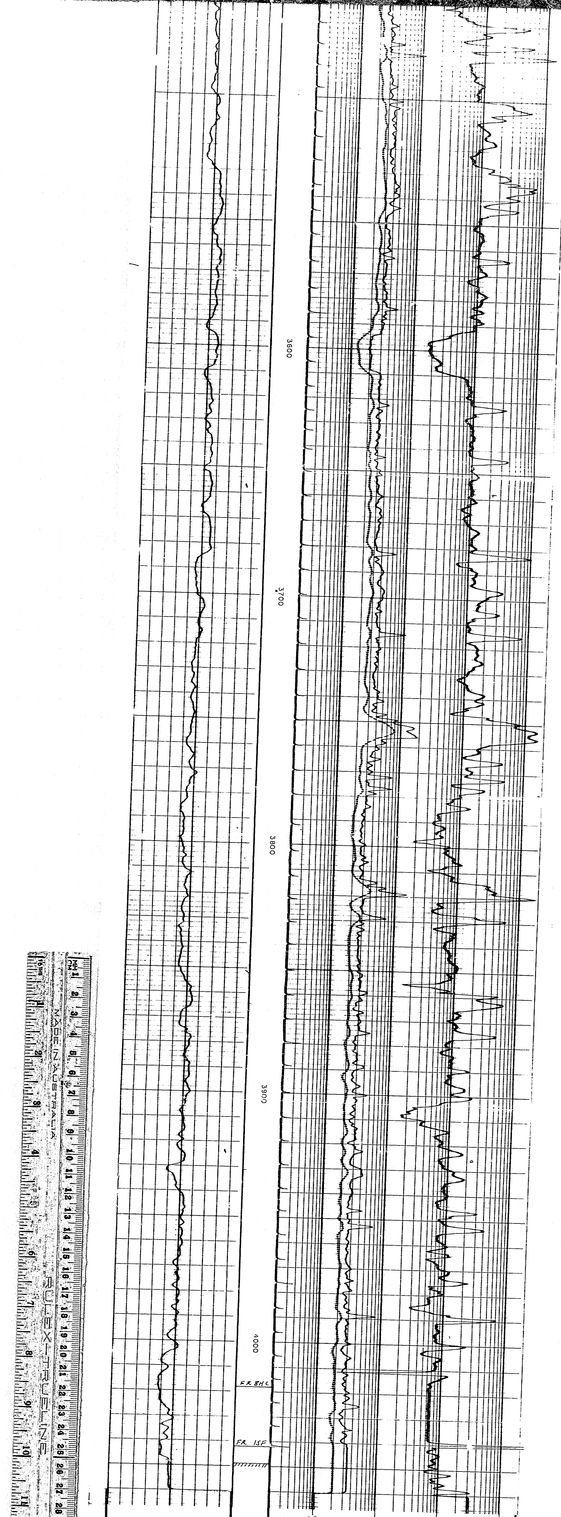


MADE IN AUSTRALIA RULEX TRUELINE No 599/MS


2400
2500
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
2"
0 AMP. SPH. FOC. 2
0 S.F.L. 10
0 100
INDUCTION
0 10
1000 6 FF40 INDUCTION 0
10
SPONTANEOUS-POTENTIAL millivolts
DEPTHS
RESISTIVITY ohms-m²/m
CONDUCTIVITY millimhos/m = 1000 / ohm-m²/m
COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
SCHL. FL 6012
SCHL. TD 2617
DRLR TD 1051
Elev.
KB 32
DF 37
GL 266
SPONTANEOUS POTENTIAL millivolts
DEPTHS
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
τ3 μs τ2 μs
10
5"
1 1
10 FT - 10 FT - SPHERICALLY FOCUSED RESISTIVITY
1.0 10 100 1000
SHOT REPORT
C. S.
1572
Horizon B
2000


1900
2000
2200
2300
2400
2500
2600
2700

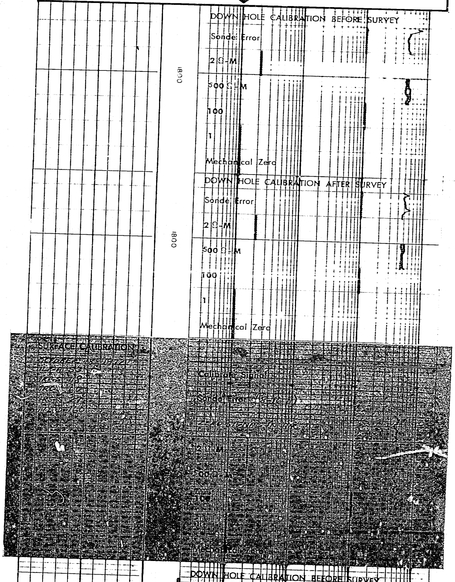

2700
2800
2900
3000
3100
3200
3300
3500
3600

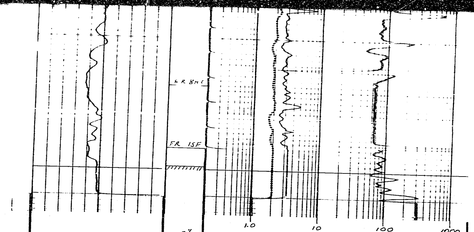


COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR. 4062
SCHL. TD. 4127
DRLR TD. 4105'
Elev:
KB 32
DF 31
GL -266

CALIBRATION DATA





INDUCTION - SPHERICALLY FOCUSED RESISTIVITY

$T = 2R_2 2R_1$

10

-mV+

170 120 70

SPONTANEOUS POTENTIAL
millivolts.

DEPTHS

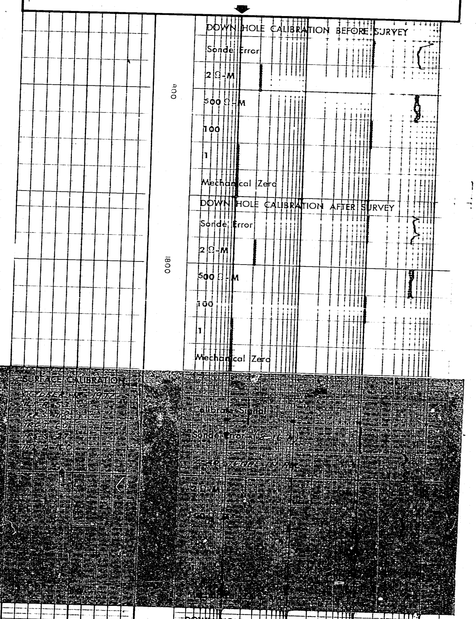
INTERVAL TRANSIT TIME

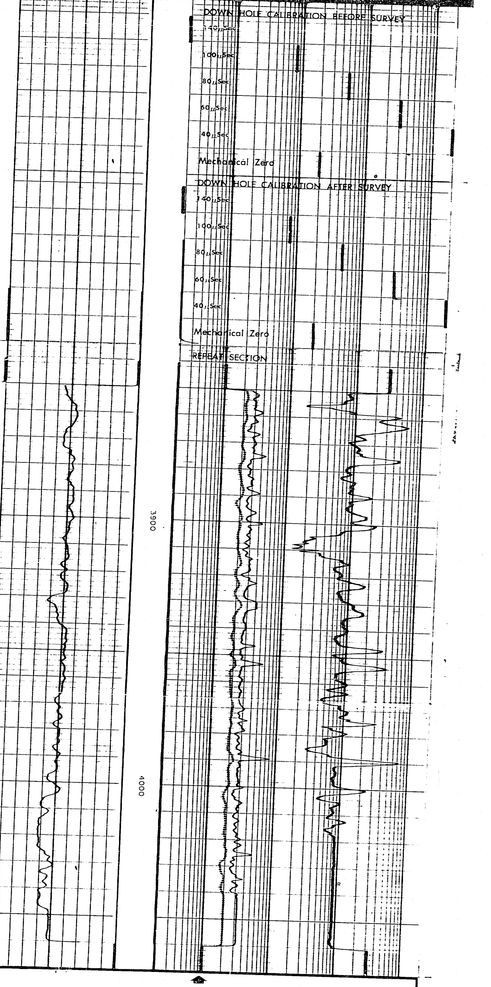
MICROSECONDS PER FOOT

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 4062
SCHL. TD 4069
DRLR TD 4051
Elev:
KB 32
DF 31
GL -266

CALIBRATION DATA





CALIBRATION DATA

COMPANY HEMATITE PETROLEUM
WELL SNAIL 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 4062
SCHL. TD 4069
DRLR TD 4051
Elev:
KB 32
DF 31
GL -266