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CENTRAL EROMANGA BASIN SEISMIC SURVEY,

QUEENSLAND, 1980:

PREVIEW REPORT

by

BMR
Record
1980/77
c.3

J. Pinchin

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SUMMARY

The Bureau of Mineral Resources is conducting a seismic survey of the Eromanga, Cooper, and underlying pre-Permian Basins west of the Canaway Fault in Queensland during July-December 1980.

A considerable amount of petroleum exploration work has been carried out by companies in the central Eromanga Basin in Queensland leading to some oil and gas shows but no significant discoveries of hydrocarbons. However most of the early seismic survey results are of inadequate quality to enable stratigraphic studies to be made, and the seismic data lack penetration below the Permian reflectors.

The BMR survey will fill gaps in the existing seismic network and is aimed at investigating the nature and extent of the Warrabin Trough and the nature and thickness of the Eromanga and Cooper Basin sequences in the area of the Thomson and Cooper Synclines. The survey is part of the Central Eromanga Basin Project, the principal aims of which are to assess the petroleum resource potential of the region and to provide a basis for future exploration.

The survey will consist of about 500 kilometres of multiple-coverage seismic reflection traverses, detailed gravity traverses, and one regional seismic refraction traverse.

INTRODUCTION

The Bureau of Mineral Resources (BMR) is conducting a seismic survey of the Eromanga, Cooper, and underlying pre-Permian Basins west of the Canaway Fault in Queensland during July-November 1980. This survey is part of the project to study the central Eromanga Basin area (Harrison & others, 1980) in order to determine the petroleum resource potential and to provide a basis for further, more comprehensive, exploration of the area for petroleum.

Although there have been oil and gas shows in some of the exploration wells in the area, where many seismic surveys have been carried out, there are many gaps in our knowledge of the structure, stratigraphy and geological history of the sedimentary basins. Most existing seismic data is of 1960 vintage, and generally of poor quality; furthermore there are large gaps in the coverage. The multiple-coverage CDP seismic traverses in the 1980 program will fill gaps in the existing seismic network, and will provide long sections for regional interpretation, and high-quality data for stratigraphic and lithological studies (Fig. 1 and Plate 1).

GEOLOGY

The geology of the central Eromanga Basin area is discussed in detail by Senior & others (1978) and its petroleum prospects are summarised by Harrison & others (1980). The following brief comments relate mainly to the geology of the area of the seismic survey west of the Canaway Fault.

The Eromanga Basin is an essentially conformable sequence of Early Jurassic to Late Cretaceous sedimentary rocks (Table 1). Throughout the proposed survey area the youngest unit, the fluvial and paludal Winton Formation, either crops out or is covered with a thin layer of Cainozoic sediments. The Eromanga sequence here is up to 2500 m thick. It ranges from a basal fluvial sequence of mainly sandstones to shallow marine siltstones with minor limestone and coal.

The Cooper Basin in Queensland is up to 1700 m thick in the west, (Senior, 1975) but thins eastward to about 300 m. The Triassic Nappamerri Formation and Permian Gidgealpa Group (sandstone, siltstone, and coal) form most of the sequence; in the west they are underlain by the glaciogene Merrimelia Formation.

The Warrabin Trough is thought to contain Carboniferous and Devonian sediments similar to those of the Adavale Basin. Several wells have penetrated a sandstone and siltstone sequence similar to the Buckabie Formation and a unit similar to the Cooladdi Dolomite; however, little is known about the extent and stratigraphy of the Trough.

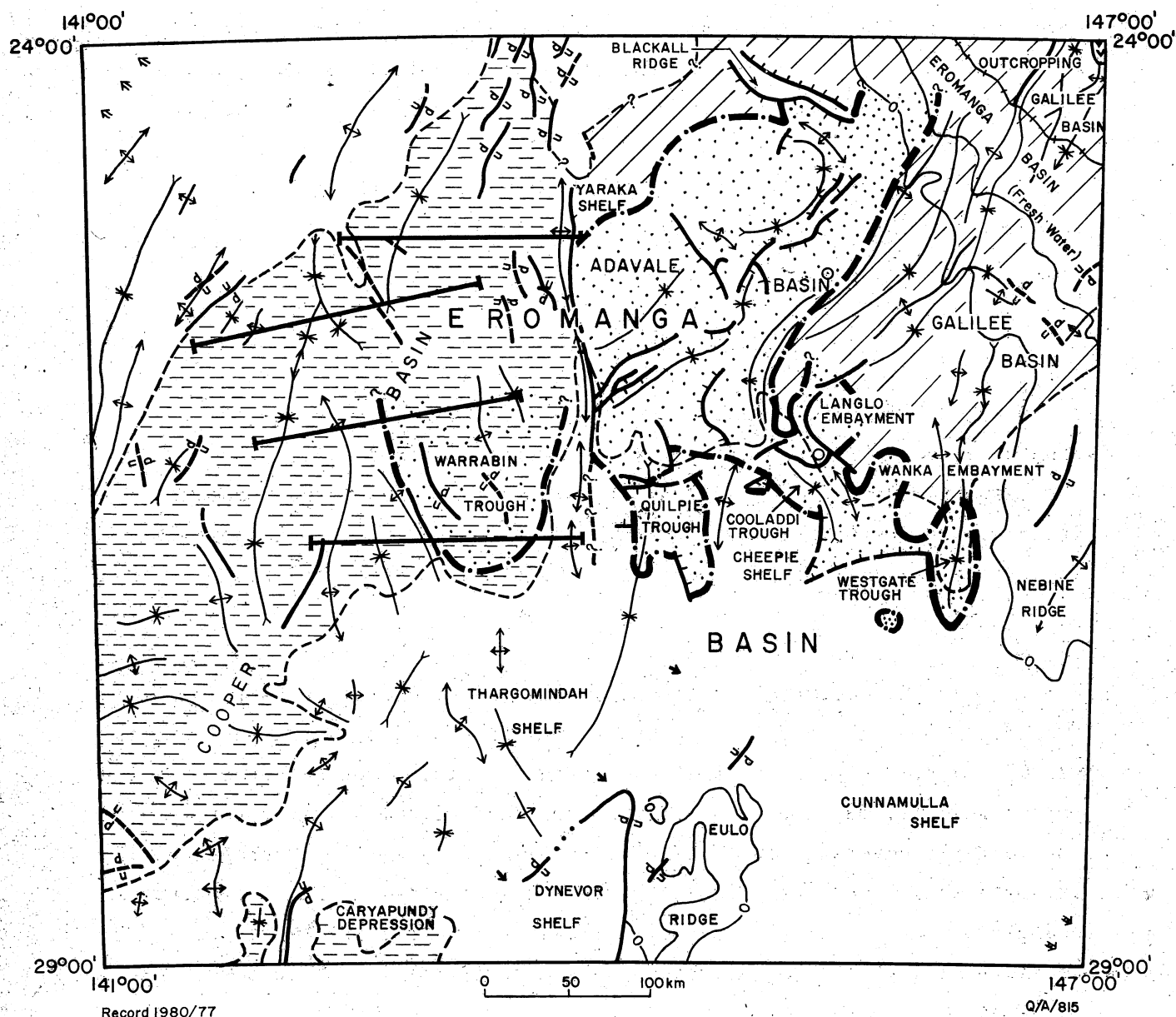
Summaries of the stratigraphy in each of the petroleum exploration wells in the area is given in Appendix 2.

PREVIOUS GEOPHYSICAL SURVEYS

Information on previous geophysical surveys in the survey area have been discussed generally by Harrison & others (1980). The results from previous aeromagnetic surveys in the central Eromanga Basin area and from gravity surveys in the area covered by the seismic survey are discussed in more detail by Horsfall and Lockwood respectively in Moss (1980).

The locations of the many seismic surveys in the survey area are shown in Plate 1; these surveys are listed by Harrison & others (1980). Most of the surveys give poor-quality data when compared to modern results, but some of them were recorded with multiple coverage. The multiple-coverage results from several lines are being reprocessed in attempts to improve their quality. The locations of the lines presently being reprocessed are also shown in Plate 1; it is likely that more sections will be treated in this way as interpretation of the area progresses.

These extensive surveys have enabled several seismic horizons to be mapped in the area. The most widespread and most prominent reflectors are the Wyandra Sandstone (previously named by the private companies the "C horizon", the "T horizon", the "top of Transition Beds", or "Yongala Group-Unit A") and the top of the Gidgealpa Group (the top Permian or "P horizon"). Plate 2 is a map of the P horizon, compiled from well data and from information in reports of early seismic surveys (Senior, 1975) but does not incorporate data from seismic surveys or wells after 1970. It shows the regional structure as the overlying sequences are basically conformable. The general structural trends can be seen to be broad anticlines and synclines trending north and north-west.



- | | |
|--|---|
| Cooper Basin | Galilee Basin |
| Adavale Basin (overlain by Galilee) | Outcropping Drummond Basin |
| Outcrop margin of Eromanga Basin | Thinning of Eromanga Basin rocks towards Dynevor, Cunnamulla Shelves and Eulo Ridge |
| Zero structure contour on base of Rolling Downs Group (datum M.S.L.) | Thickening of Eromanga Basin rocks towards the Surat Basin |
| Anticline axis with plunge direction | Concealed truncated margin at Permo-Triassic Cooper and Galilee Basins |
| Syncline axis with plunge direction | Fault cutting pre Eromanga Basin rocks |
| Monocline | Margin of Adavale Basin and equivalents |
| Fault cutting Eromanga Basin and older rocks | Fault cutting Adavale Basin rocks |
| Thinning of Eromanga Basin rocks towards the Boulia Shelf | Salt diapir in Adavale Basin rocks |
| Proposed 1980 seismic traverses (generalised) | |

Fig. 1 Structural sketch map (from Senior and others, 1978)

The seismic data from below the Permian are not good enough to enable any regional maps to be drawn. In the west, the Permian sequence appears to rest on sedimentary basement that does not produce a strong reflection, even on modern seismic data. In the east, the Devonian-Carboniferous sediments of the Warrabin Trough can be seen on some seismic sections to be up to 5000 m deep, but the quality of the old data is inadequate to define their maximum depth or areal extent. It is hoped that data from the new BMR survey, together with data from recent company surveys, will enable the Warrabin Trough to be reinterpreted.

Figures 3 to 12 show time/depth curves and velocities derived from well velocity information for each of the petroleum exploration wells in the area. These data will be used as a basis for converting seismic reflection times to depth for the preparation of accurate contour maps and to assist in the petroleum resource assessment of the area.

OBJECTIVES AND PROGRAM

The general objectives of the seismic survey are to provide good-quality data to enable regional maps to be drawn of the various sequences in the Eromanga and Cooper Basins and Warrabin Trough.

Particular problems to be investigated in the area are noted:

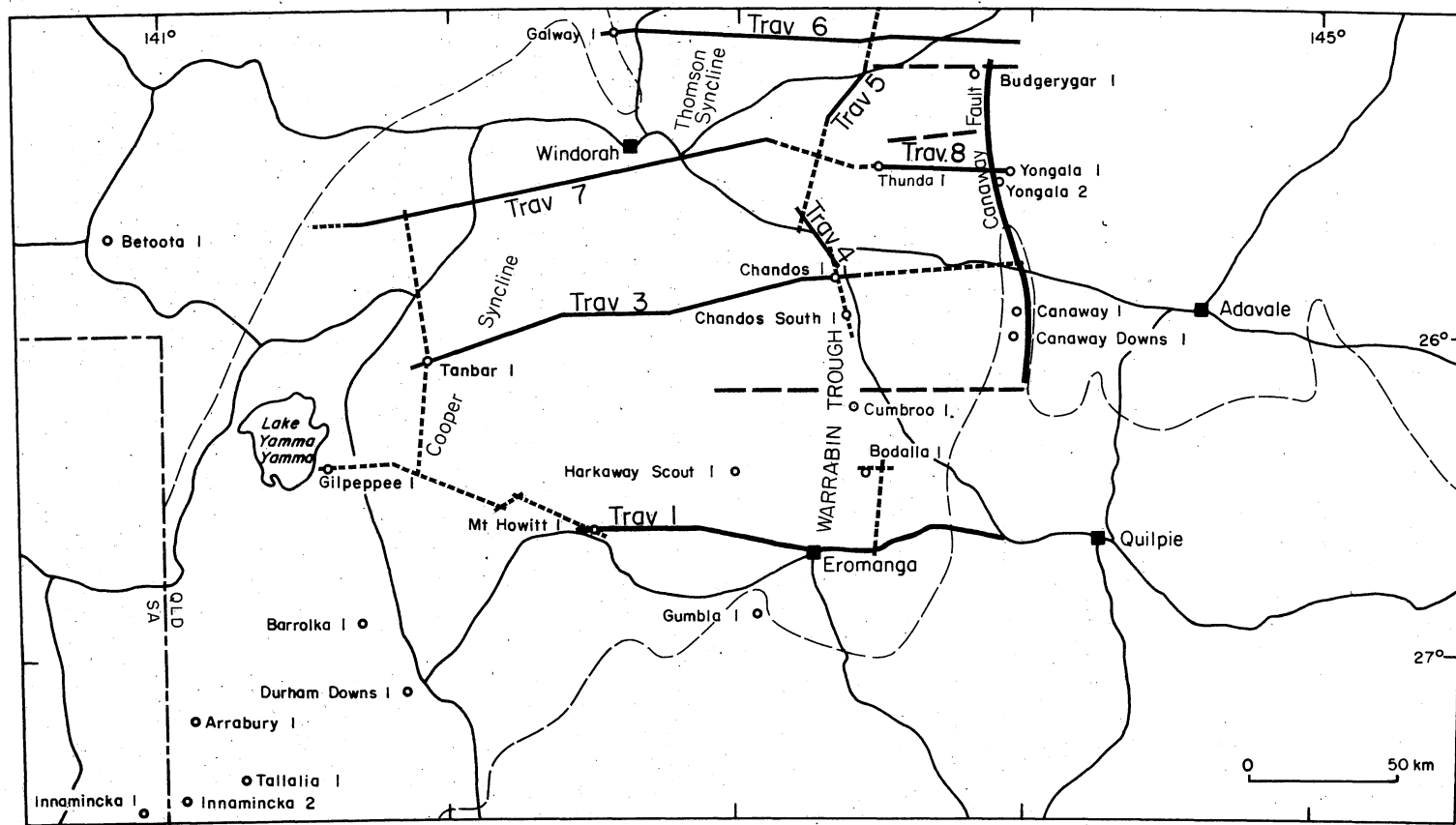
- 1) The western and northern extents of the Warrabin Trough are ill-defined.
- 2) The depth and nature of sedimentary rocks in the Warrabin Trough are poorly known.
- 3) The extent and distribution of the coal measure facies of the Gidgealpa Group are unknown.
- 4) There have been no previous seismic lines across the axes of the Cooper and Thomson Synclines. The Eromanga sequence which is thickest there may contain basal Jurassic marine sandstone, which appears to be the source of the Jurassic oil in the Poolawanna wells in the western part of the Eromanga Basin.

- 5) The possibility of minor faults blocking the flow of artesian water and so favouring hydrocarbon entrapment will be investigated (Senior & Habermehl, 1980). The first step is to see if any of the numerous lineaments visible on the Landsat photographs (Plate 3), suspected of being small faults, can be detected as faults by seismic methods.
- 6) The structural and stratigraphic relations at the basin margin's are poorly know. An investigation of the structural and stratigraphic relations at the margins will provide clues to the development of the basins and their geological history, and may lead to the exploration for possible marginal stratigraphic and structural traps.

The proposed locations of the traverses are shown in Figure 2. The main program consists of four long, regional east-west tie-lines, which will cross the Warrabin Trough and the Thomson Syncline and extend into the Cooper Syncline. They tie to wells at each end, either directly or by links through existing multiple-coverage seismic traverses. In addition to these east-west lines, there will be several short north-south traverses which will provide tie-lines to wells and other seismic traverses north of the Warrabin Trough.

The seismic survey has commenced in the southeast along Traverse 1. For ease of access this line is partly along the road through Eromanga township. Experimental heat-flow holes are located and magneto-telluric profiles are being recorded along Traverse 1. A major crustal refraction profile is being recorded along this line. In addition to the crustal refraction, with offset distances of up to 300 km, a more detailed refraction program, coupled with wide-angle reflection recording, (Kaila & Krishna, 1979) is being recorded with offset distances up to 37.5 km.

All seismic reflection records are being digitally recorded to 20 seconds record time in attempts to record deep crustal reflections.



Q/B3-11A

- Trav 1** Proposed 1980 BMR seismic reflection traverse
- Existing good quality seismic lines
- Petroleum exploration drilling
- Record 1980/60
- " 1980/77
- Seismic lines being reprocessed by BMR
- Approximate limit of Permian

Fig. 2. Proposed seismic reflection traverses, 1980

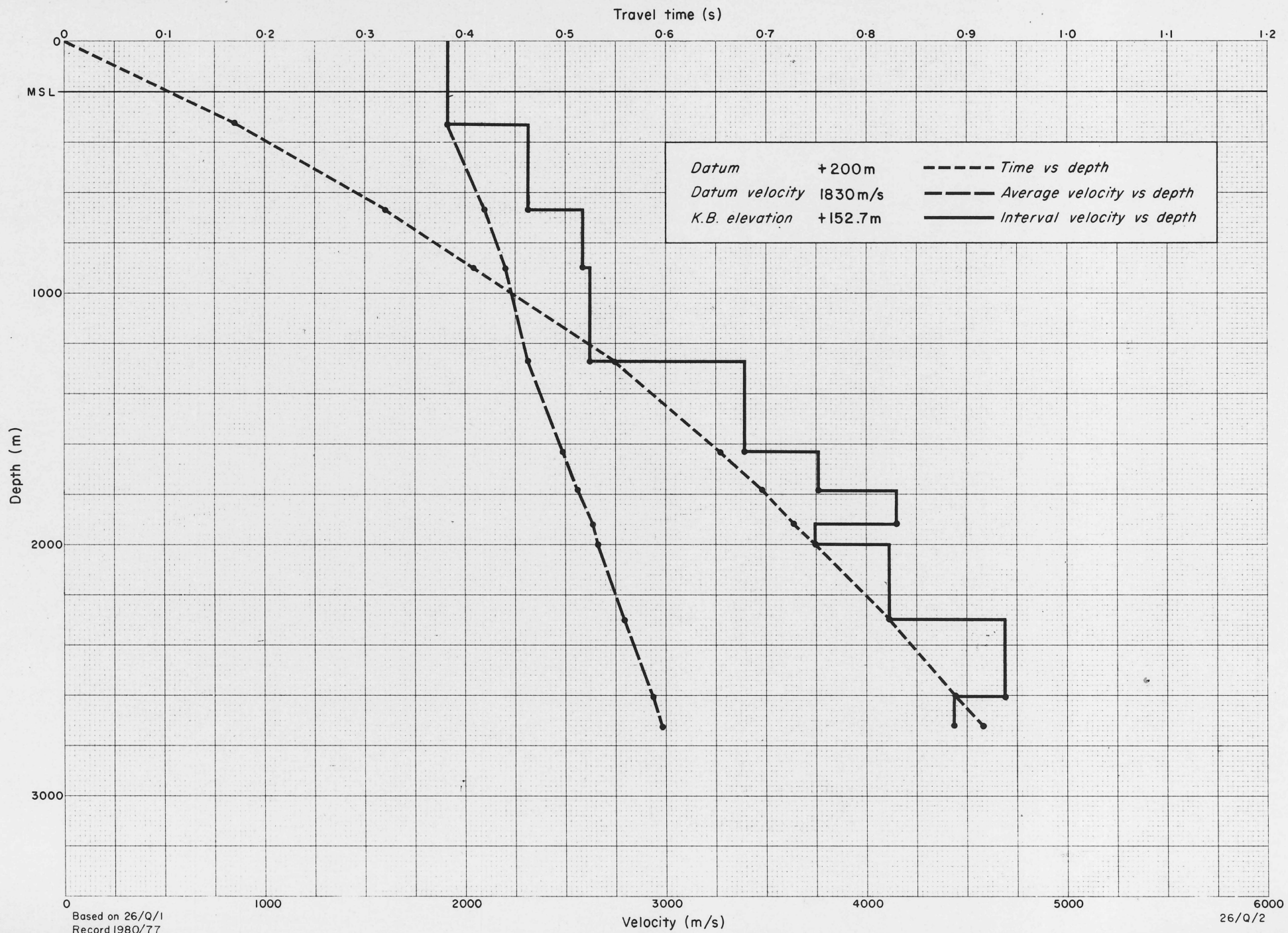


Fig. 3 Well velocity data, Bodalla I

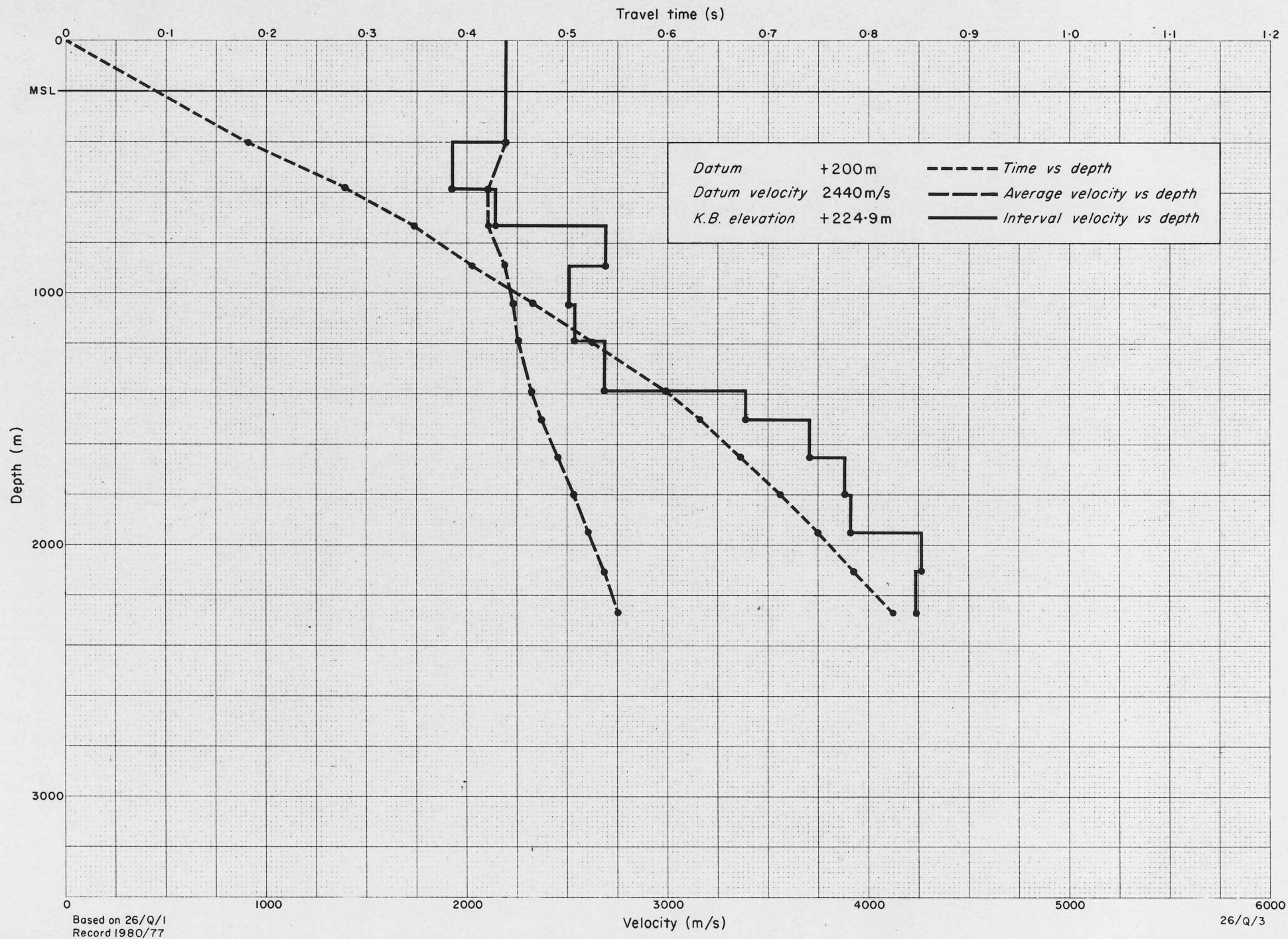


Fig. 4 Well velocity data, Chandos I

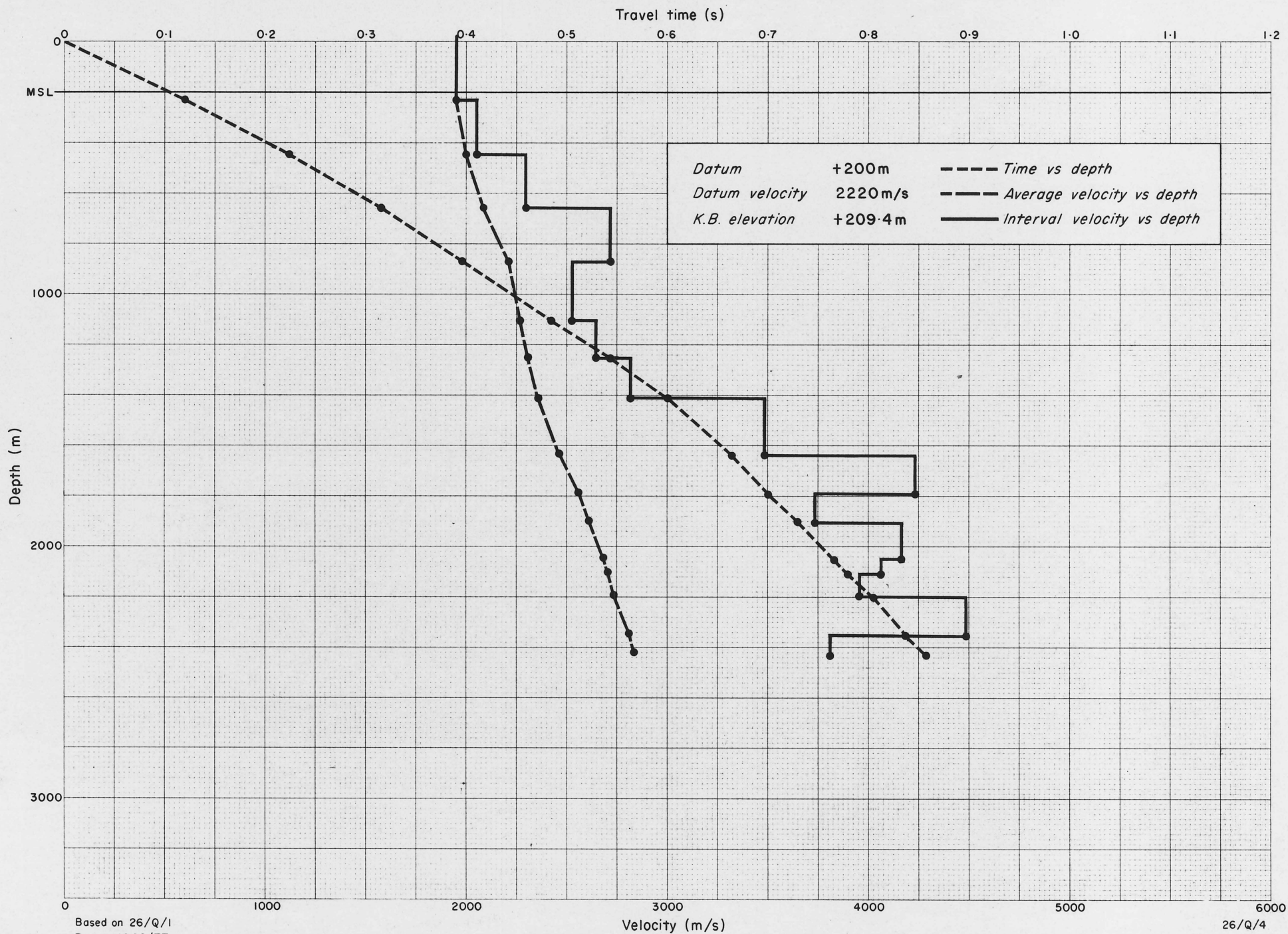


Fig.5 Well velocity data, Chandos South I

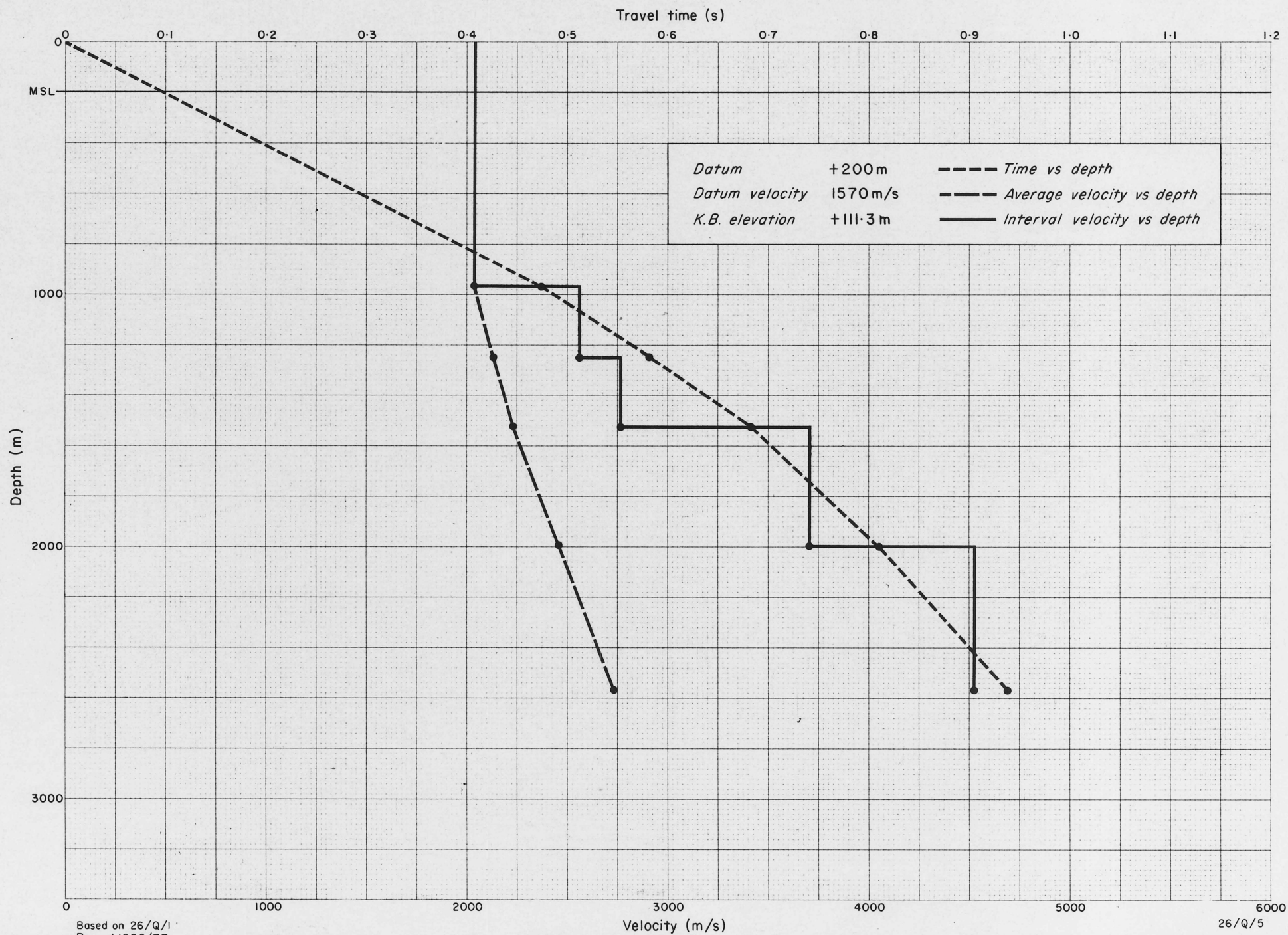


Fig.6 Well velocity data, Durham Downs I

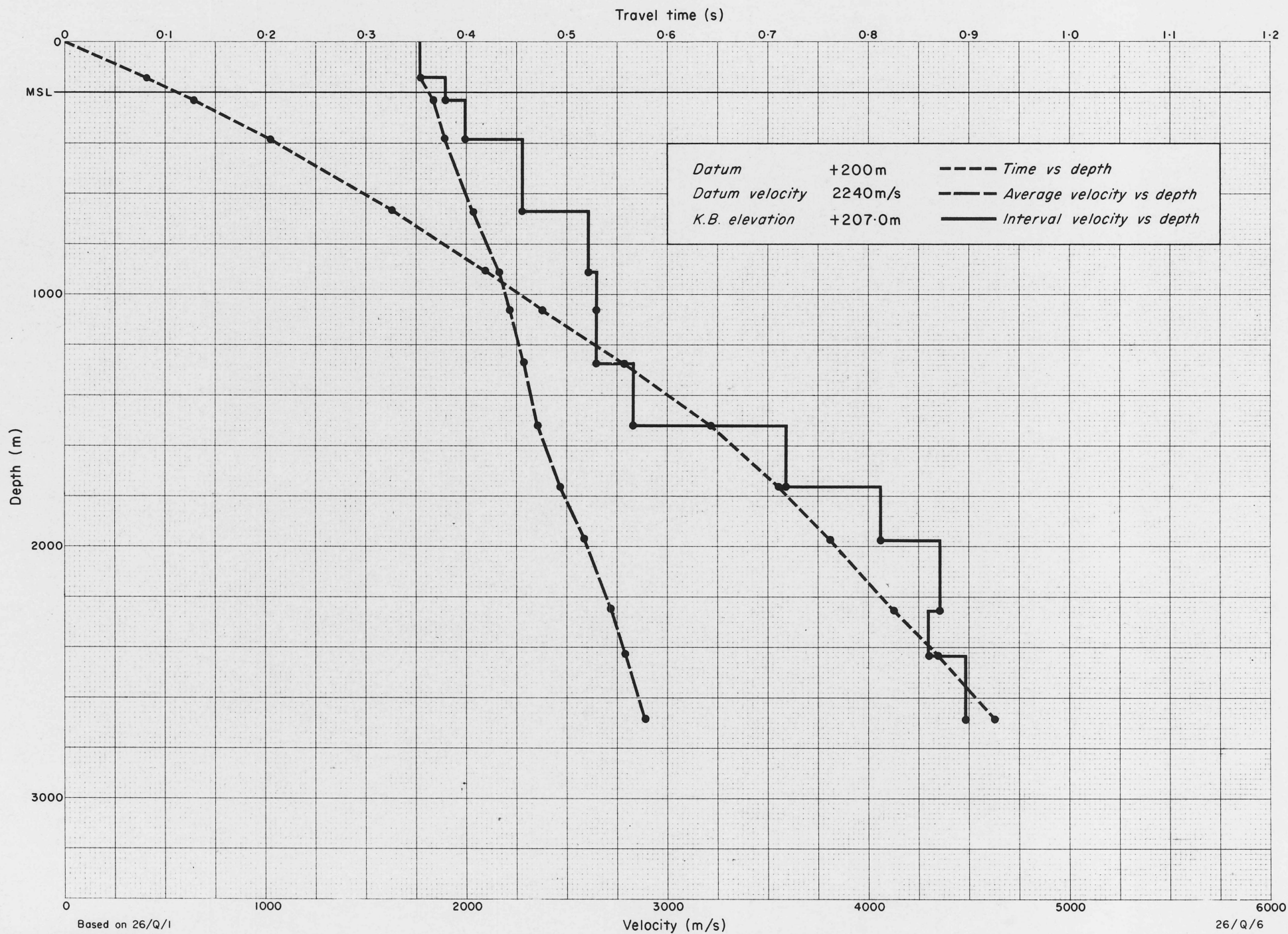


Fig.7 Well velocity data, Galway I

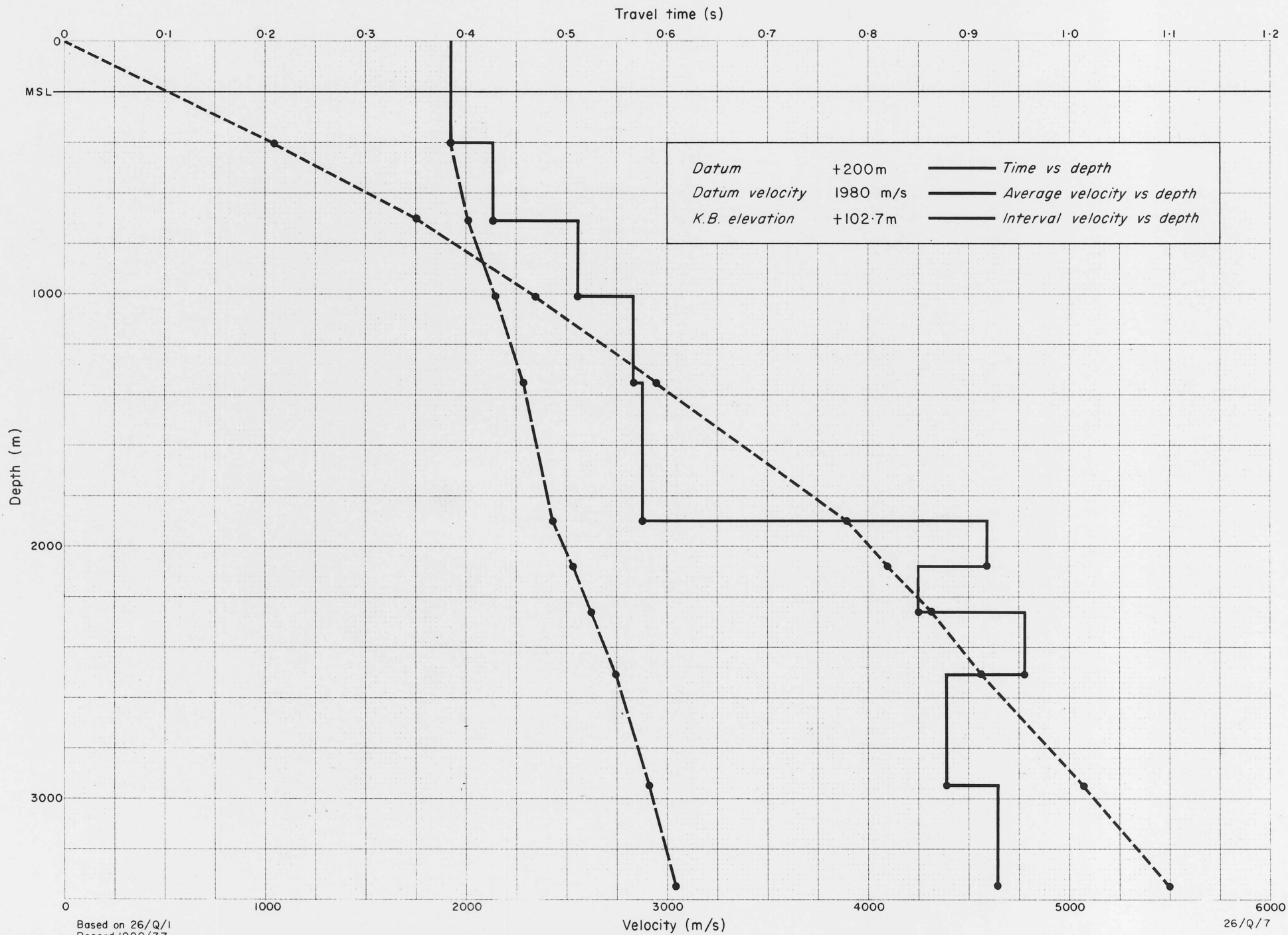


Fig.8 Well velocity data, Gilpepee I

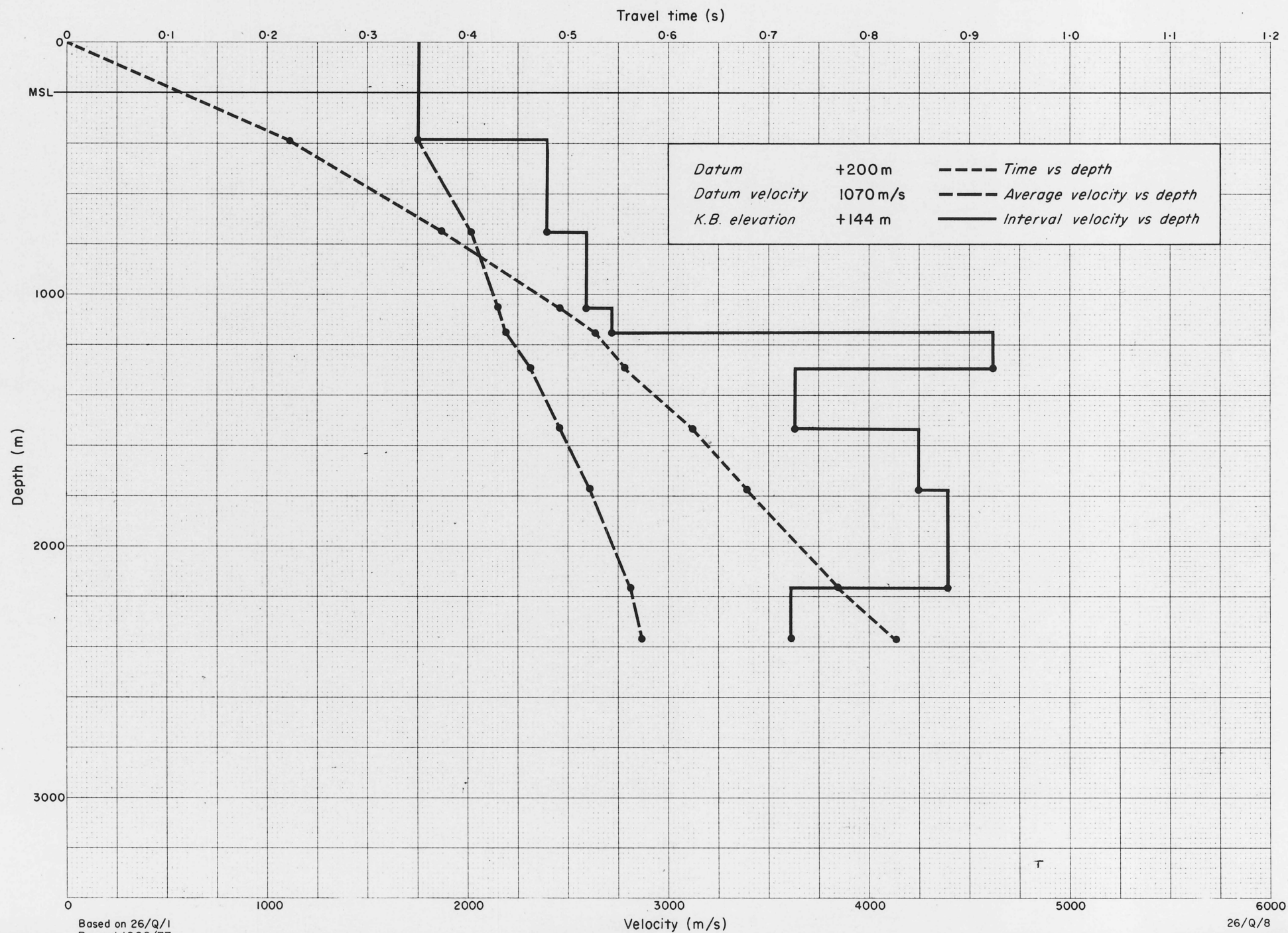


Fig.9 Well velocity data, Mt Howitt I

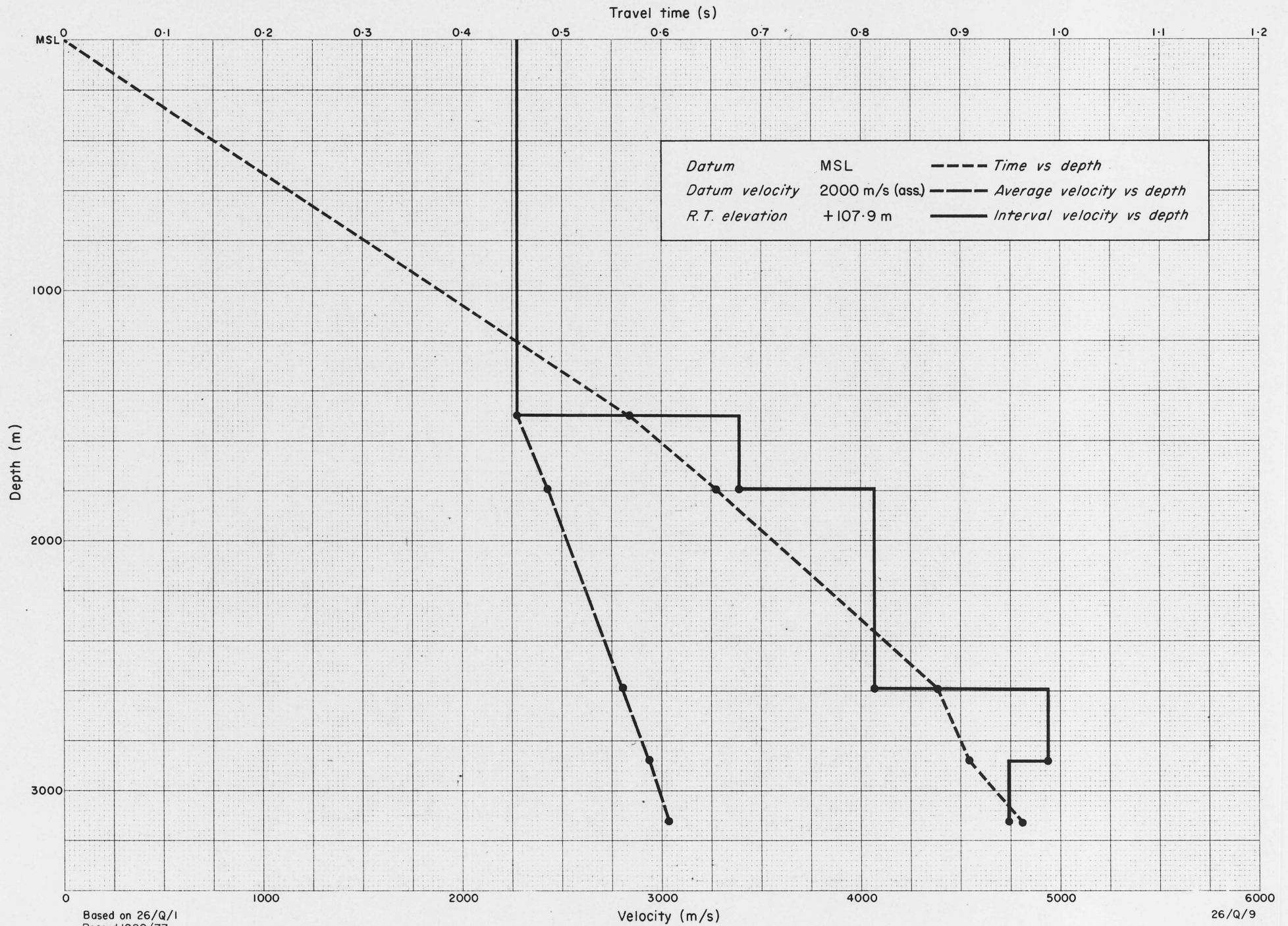


Fig.10 Well velocity data, Tanbar I

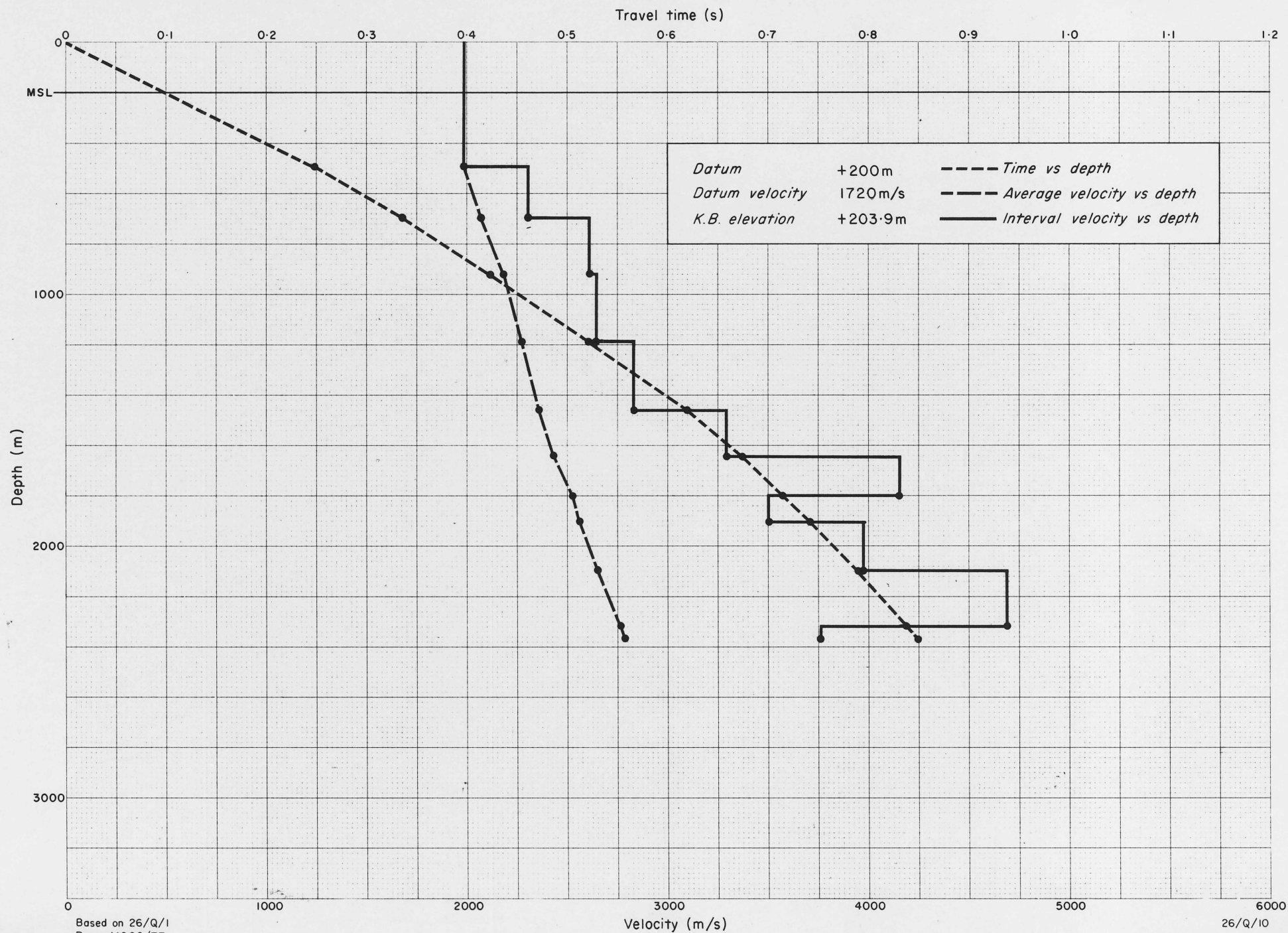


Fig. II Well velocity data, Thunda I

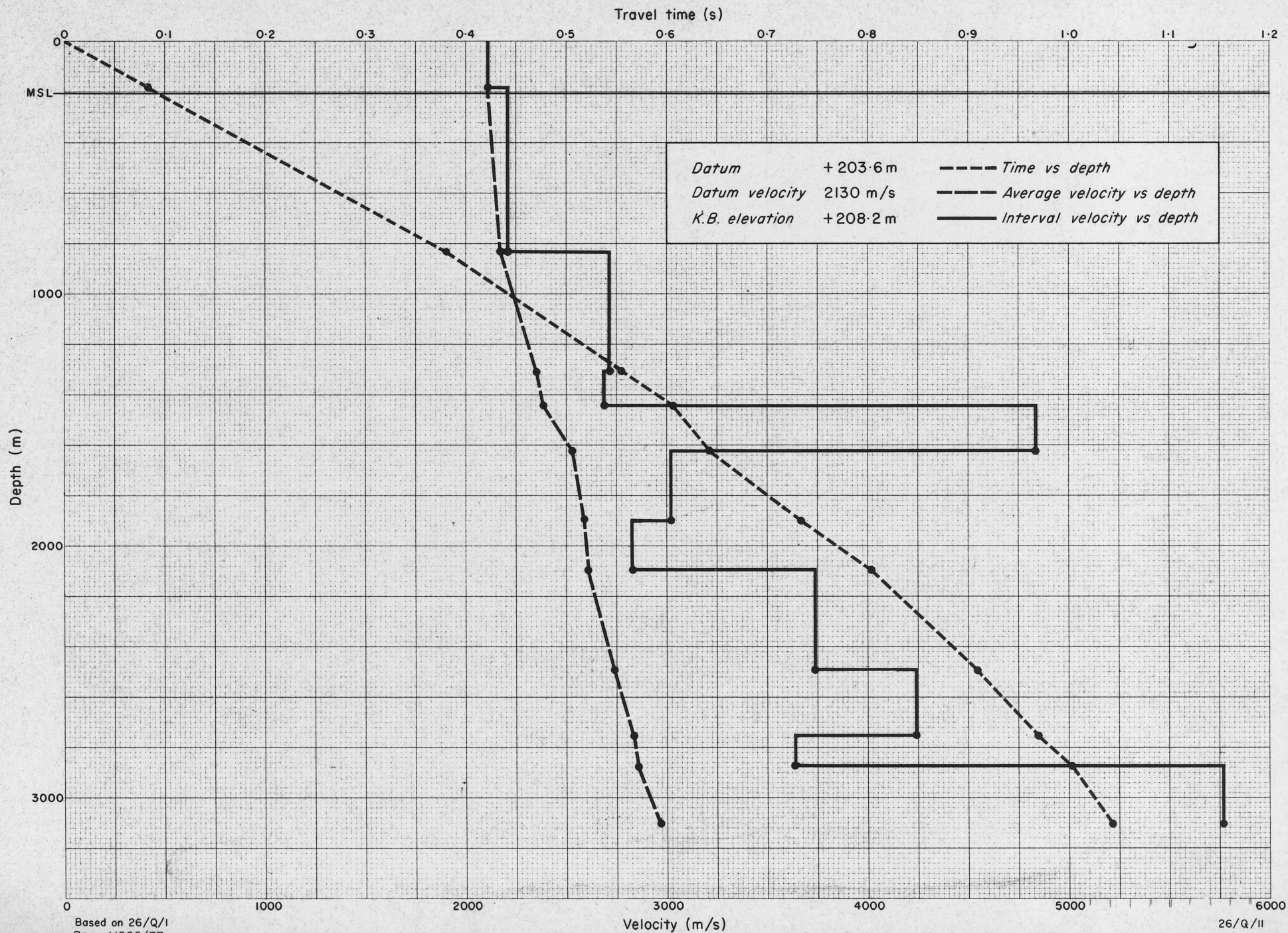


Fig.12 Well velocity data, Yongala I

The recording technique will generally be 6-fold C.D.P. with a geophone group interval of $83 \frac{1}{3}$ m; this is being reduced to $41 \frac{2}{3}$ m for more detailed, high-resolution recording at the western end of Traverse 1 over the Mount Howitt anticline. In this area the Landsat photos show a dense concentration of strong lineaments which may be caused by minor faults within the Eromanga Basin (see Plate 3).

Details of equipment, vehicles, and personnel are given in Appendix 1.

In addition to the seismic work, gravity observations are being made at $1/2$ km intervals along the seismic traverses, and along extensions of the traverses where recent company seismic surveys have been made and surveying information is available.

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Bulletin 167.

TABLE 1 STRATIGRAPHY

BASIN	AGE	GROUP	FORMATION AND MEMBER	
	Quaternary			
	Tertiary		Glendower Fm (Eyre Fm)	
	Cretaceous	Rolling Downs Group	Winton & *Mackunda Fm Allaru Mudstone *Toolebuc Fm Wallumbilla Fm	
EROMANGA	Jurassic		Cadna-Owie Fm (inc. Wyandra Sst Mbr*)	
			Hooray Sst	
		Injune Creek	Westbourne Fm Adori Fm *Birkhead Fm	
			Hutton Fm	Hutton Sandstone Evergreen Fm (Boxvale Sst) Precipice Sst
COOPER	Triassic		*Nappamerri Fm	
	Permian		*Gidgealpa Group Merrimelia Fm	
WARRABIN TROUGH?	Carboniferous		Buckabie Fm Etonvale Fm *Cooladdi Dolomite/Bury Lst Log Creek Fm	
			Innamincka Red Beds	

(* Seismic reflectors)

APPENDIX 1: PROPOSED PERSONNEL, VEHICLES, AND EQUIPMENTPERSONNEL

Party Leaders	J. Pinchin *	
	J. Bauer *	
Party Manager	J. Sommerville	
Geophysicists	K. Wake-Dyster	
	M. Sexton	
	O. Dixon (GSQ)	
	W. Anfiloff *	
Technical Officers (Science)	D. Pfister *	
	G. Price *	
Technical Officers (Engineering)	J.K. Grace *	
	D. Gardner	
Shooters	R. Cherry	
	L. Rickardsson	
Mechanic	D. McIntyre	
Toolpusher	E. Cherry)	
Drillers	K. Huth)	
	L. Keast)	
	J. Henry)	
	T. Shanahan)	
Drill mechanic	T. Johnston)	
Drill assistance	D. Eaton)	
	R. Clark)	
Cook	1	
Cook's offsider	1	
Fields hands (Seismic)	12	
Field hand (Gravity)	1	
Surveying staff	7 from Australian Survey Office, Brisbane	

Pet. Tech. Section

* Part-time

APPENDIX 1 (CONT)VEHICLES

Recording truck	1 x International D1610, 3 tonne, 4 x 4
Workshop truck	1 x " " " "
Flat-top trucks	2 x " " " "
Water tankers	2 x " " " "
Drilling rigs	4 x Mayhew 1000/Mack 6 x 8 trucks
Drill water tanker	4 x Mack R875, 6 x 6, 1900 gallon
Shooting truck	1 x Landrover LWB, 4 x 4, Tray-top
Personnel carriers	3 x Landrover LWB, 4 x 4, S/W
Geophone carriers	3 x International D1310, 30cwt, 4 x 4
Stores truck	1 x " " " "
Pre-loading truck	1 x Landrover LWB, 4 x 4, Tray-top
Office caravan	1 x 4 wheel
Kitchen caravan	1 x 4 wheel
Ablutions caravans	2 x 4 wheel
Stores trailers	2 x 4 wheel
Generator trailer	1 x 4 wheel
Drill trailer	1 x 4 wheel
Drill mechanics trailer	1 x 2 wheel

EQUIPMENT

Recording system	TI DFS IV
Cameras	SIE TRO-6 SIE ERC-10
Input switch	I/O Rota-long
Radio firing unit	I/O RFU
Cables	18 x 539 m, 48-channel
Geophones	1280 x GSC 20D, 8Hz
Transceivers	6 CODAN 6924 12 Phillips FM 828
Gravity meter	1 Worden W169

APPENDIX 2: STRATIGRAPHY IN PETROLEUM EXPLORATION WELLS

Note: Formation names are those of Senior & others 1978

BARROLKA 1

Australian Aquitaine Petroleum Pty Ltd
 Lat. 26°54'2"S
 Long. 141°41'4"E

T.D. 2682 m
 K.B. 111 m
 G.L. 107 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
	Kw Winton	5	848
	Klm Mackunda	)	
	Kla Allaru	) 853	233
L Cretaceous	Klo Toolebuc	) 1086	26
	Klu Wallumbilla	1112	353
	Klc Coorena Mem	1465	94
U Jurassic	JKh Hooray Sst	1559	121
	Juw Westbourne	1680	111
	Ja Adori Sst	1791	41
M Jurassic	Jmb Birkhead	1832	74
L Jurassic	Jlh Hutton Sst	1906	267
L-M Triassic	Tln Nappamerri	2173	381
Permian	Toolachee	2554	61
	Patchawarra	2615	52
	Basement	2667	

Notes: DST 2596-2621 m. Gas at 46 000 m³/day

BODALLA 1

BP Petroleum Development Australia
 Lat. 26°25'43"S
 Long. 143°26'09"E

T.D. 2686 m
 K.B. 152 m
 G.L. 148 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickenss (m)</u>
Quaternary	Alluvium	0	36
U. Cretaceous	Kw Winton	40	713
	Klm Mackunda	753	469
	Kla Allaru		
L. Cretaceous			
	Klu Wallumbilla		
	Kle Cadna-owie	1222	83
	JKh Hooray Sst	1305	119
U. Jurassic	Juw Westbourne	1424	70
	Ja Adori Sst	1494	71
M. Jurassic	Jmb Birkhead	1565	98
	Jlh Hutton Sst	1663	77
L. Jurassic	Jle Evergreen	1740	28
	Jlp Precipice Sst	1768	36
Triassic	Tln Nappamerri	1804	71
Permian	P? Permian	1875	35
Dev-Carb.	DCb Buckabie	1910	644
M. Devonian	Dmc Cooladdi Dol.	2554	20
	Dml? M. Devonian	2574	111+

Notes: No significant hydrocarbon shows
 All sandstone formations saturated with fresh water
 No Toolebuc Formation present - boundary between Allaru and
 Wallumbilla Formations difficult to define

BUDGERYGAR 1

A.O.D.
Lat. 25° 14' 19"S
Long. 143° 48' 29"E

T.D. 1630 m
K.B. 189 m
G.L. 184 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
U. Cretaceous	Kw Winton)	5	449
	Klm Mackunda)		
	Kla Allaru)	454	202
L. Cretaceous	Klo Toolebuc)	656	17
	Klu Wallumbilla)	673	218
	Kle Cadna-owie)	891	624
U. Jurassic	JKh Hooray Sst)		
	Juw Westbourne)		
	Ja Adori Sst)		
M. Jurassic	Jmb Birkhead)		
L. Jurassic	Jlh Hutton Sst	1515	43
L-M. Triassic	Rln Nappamerri	1558	54
U. Permian	Upper Permian	1612	5
	Basement	1617	

CANAWAY 1

A.O.D.
Lat. 25°56'06"S
Long. 143°57'00"E

T.D. 1505 m
K.B. 239 m
G.L. 235 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Quaternary	Cz	0	
U. Cretaceous	Kw/Klm (Winton (Mackunda	4	462
	Kla Allaru	466	211
L. Cretaceous	Klo Toolebuc	677	3
	Klu Wallumbilla	680	218
	Kle Cadna-owie	-	-
	JKh Hooray Sst	898	247
U. Jurassic	Juw Westbourne	1145	41
	Ja Adori Sst	1186	36
M. Jurassic	Jmb Birkhead	1222	67
L. Jurassic	Jlh Hutton Sst	1289	190
Triassic	T -		
Permian	P -		
	Basement	1479	26 +

CHANDOS 1

A.O.D.		T.D. 2978 m
Lat. 25°50'14"S		K.B. 225 m
Long. 143°19'36"		G.L. 221 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Quaternary	Cz		0	4
U. Cretaceous	Kw	Winton	4	908
	Klm	-	-	-
	Kla	Allaru	912	201
L. Cretaceous	Klo	Toolebuc	1113	36
	Klu	Wallumbilla	1149	260
	JKh	Hooray Sst	1409	285
U. Jurassic	Juw	Westbourne	1694	56
	Ja	Adori Sst	1750	40
M. Jurassic	Jmb	Birkhead	1790	101
L. Jurassic	Jlh	Hutton Sst	1891	233
Triassic	T	Nappamerri (?)	2124	249
Permian	Pg	Gidgealpa	2373	63
U. Dev-Carb.	DCb	Buckabie	2436	406
	Basement		2842	

Notes: Oil shows in L. Triassic & Permian
Adavale equivalents below Gidgealpa Group

CHANDOS SOUTH 1

A.O.D. T.D. 2450 m
Lat. 25°57'02"S K.B. 209 m
Long. 143°22'00"E G.L. 204 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Quaternary	Cz		5	32
U. Cretaceous	Kw	Winton	37	867
	Klm	-	-	-
	Kla	Allaru	904	206
L. Cretaceous	Klo	Toolebuc	1110	10
	Klu	Wallumbilla	1120	306
	Kle	-		
	JKh	Hooray Sst	1426	680
U. Jurassic	Juw	Westbourne)		
	Ja	Adori Sst)		
M. Jurassic	Jmb	Birkhead)		
L. Jurassic	Jlh	Hutton Sst)		
Triassic	T	Nappamerri (?)	2106	246
Permian	Plg	Gidgealpa	2352	61
	Basement		2413	38+

Notes: Shows of oil in L. Triassic but flushed

CUMBROO 1

A.O.D. T.D. 2207 m
Lat. 26°13'40"S K.B. 166 m
Long. 143°22'47"E G.L. 162 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Tertiary	Cz	4	51
U. Cretaceous	Kw Winton	55	790
	Klm -	-	-
	Kla Allaru	845	181
L. Cretaceous	Klo Toolebuc	1026	4
	Klu Wallumbilla	1030	313
	Kle -	-	-
U. Jurassic	JKh Hooray Sst	1343	219
	Juw Westbourne	1562	90
	Ja Adori Sst	1652	44
M. Jurassic	Jmb Birkhead	1696	73
L. Jurassic	Jlh Hutton Sst	1769	202
Triassic	Tln Nappamerri	1971	160
Permian	Plg Gidgealpa	2131	42
	(Basement		
	(DCb Buckabie ?	2173	34+

Notes: Hydrocarbon shows in Gidgealpa Permian however low permeability

GALWAY 1

French Petroleum Co (Aust) P.L.
 Lat. 25°04'30"S
 Long. 142°33'41"E

T.D. 2703 m
 K.B. 207 m
 G.L. 202 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Tertiary	Duricrust		5	6
U. Cretaceous	Kw	Winton	11	629
	Klm	Mackunda)	640	619
	Kla	Allaru)		
L. Cretaceous	Klo	Toolebuc	1259	18
	Klu	Wallumbilla	1277	226
	Kle	Cadna-owie	1503	85
	JKh	Hooray Sst	1588	146
U. Jurassic	Juw	Westbourne	1734	112
	Ja	Adori Sst	1846	37
M. Jurassic	Jmb	Birkhead	1883	94
	Jlh	Hutton Sst	1977	233
L. Jurassic	Jle	Evergreen	2210	35
	Jlb	Boxvale Sst Mem	2245	18
	Jlp	Shale Mem	2263	18
		Precipice Sst	2281	36
U. Triassic	T	Upper	2317	78
M. Triassic	T	Middle	2395	44
L. Triassic	T	Lower	2439	216
Ordovician	O	Lower (Unnamed)	2655	48+

Notes: No Permian sediments encountered

GILPEPPEE 1

A.O.D.	T.D. 3265 m
Lat. 26°25'25"	K.B. 103 m
Long. 141°33'17"	G.L. 98 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Quaternary			5	41
Tertiary	Tg	Glendower	46	79
Cretaceous	Kw	Winton	125	844
	Klm	Mackunda)	969	409
	Kla	Allaru)		
	Klo	Toolebuc)		
	Klu	Wallumbilla	1379	36
	Kle	Cadna-owie	1414	297
	Kle	Cadna-owie	1711	91
Jurassic	JKh	Hooray Sst	1803	122
	Juw	Westbourne	1925	104
	Ja	Adori Sst	2029	44
	Jmb	Birkhead	2073	91
	Jlh	Hutton	2164	205
Triassic	T	Upper	2370	120
	T	Middle	2490	190
	T	Lower	2680	183
Permian	Plg	Gidgealpa	2863	329
Dev-Carb.		Innamincka Red Beds	3191	73+

Notes: No Merrimelia. Shows only in Triassic. No Basement

MT. HOWITT

Delhi Petroleum Pty Ltd	T.D. 2353 m
Lat. 26°37'27"S	K.B. 144 m
Long. 142°28'17"E	G.L. 139 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
U. Cretaceous	Kw	Winton	0	405
	Klm	Mackunda	405	28
	Kla	Allaru	433	235
L. Cretaceous	Klo	Toolebuc	668	28
	Klu	Wallumbilla	696	307
	Kle	Cadna-owie	1003	103
	JKh	Hooray Sst	1106	127
U. Jurassic	Juw	Westbourne	1233	114
	Ja	Adori	1347	42
M. Jurassic	Jmb	Birkhead	1389	90
L. Jurassic	Jlh	Hutton Sst	1479	235
Triassic	Tln	Nappamerri	1714	393
Permian	Plg	Gidgealpa	2107	136
	Plm	Merrimelia	2243	20
Ordovician		(Unnamed)	2263	90+

Notes: Weak hydrocarbon shows in Jurassic and Triassic sediments

TANBAR 1

Australian Aquitaine Petroleum Pty Ltd
Lat. 26°05'22"S
Long. 141°55'30"E

T.D. 3067 m
K.B. 108 m
G.L. 103 m

<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
	Kw	Winton	62	991
U. Cretaceous	Klm	Mackunda(?)	)	
	Kla	Allaru		350
L. Cretaceous	Klo	Toolebuc		23
	Klu	Wallumbilla	1403	292
	Kle	Cadna-owie	1426	77
	JKh	Hooray Sst	1718	129
U. Jurassic	Juw	Westbourne	1795	94
	Ja	Adori Sst	1924	37
M. Jurassic	Jmb	Birkhead	2018	105
L. Jurassic	Jlh	Hutton Sst	2055	338
Triassic	Tln	Nappamerri	2160	283
Permian	Plg	Gidgealpa	2498	50
	Plm	Merrimelia	2781	200
Devonian		Innamicka	2831	36+

Notes: Minor gas shows in Jurassic-Cretaceous

THUNDA 1

A.O.D. T.D. 2207 m
Lat. 25°29'30"S K.B. 204 m
Long. 143°28'28"E G.L. 200 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Cretaceous	Kw Winton	4	925
	Klm Mackunda)	929	292
	Kla Allaru)		
	Klo Toolebuc)	1201	20
	Klu Wallumbilla	1221	243
	Kle Cadna-owie	1464	31
	JKh Hooray Sst	1566	207
Jurassic	Juw Westbourne	-	-
	Ja Adori	1773	37
	Jmb Birkhead	1810	99
	Jlh Hutton	1909	142
	Jle Evergreen	2051	53
	Jlp Precipice	2104	43
	Tln Nappamerri	2147	174
Triassic			
Permian	Plg Gidgealpa	2323	36
Devonian	Innaminicka Red Beds	2359	52+

- Notes:
1. Erosional unconformity at top of Innamincka Red Beds
 2. Onlap onto various sequences below this
 3. Oil staining only in Upper Triassic

YONGALA 1

A.O.D.		T.D. 3100 m
Lat. 25°30'19"S		K.B. 208 m
Long. 143°55'48"E		G.L. 204 m

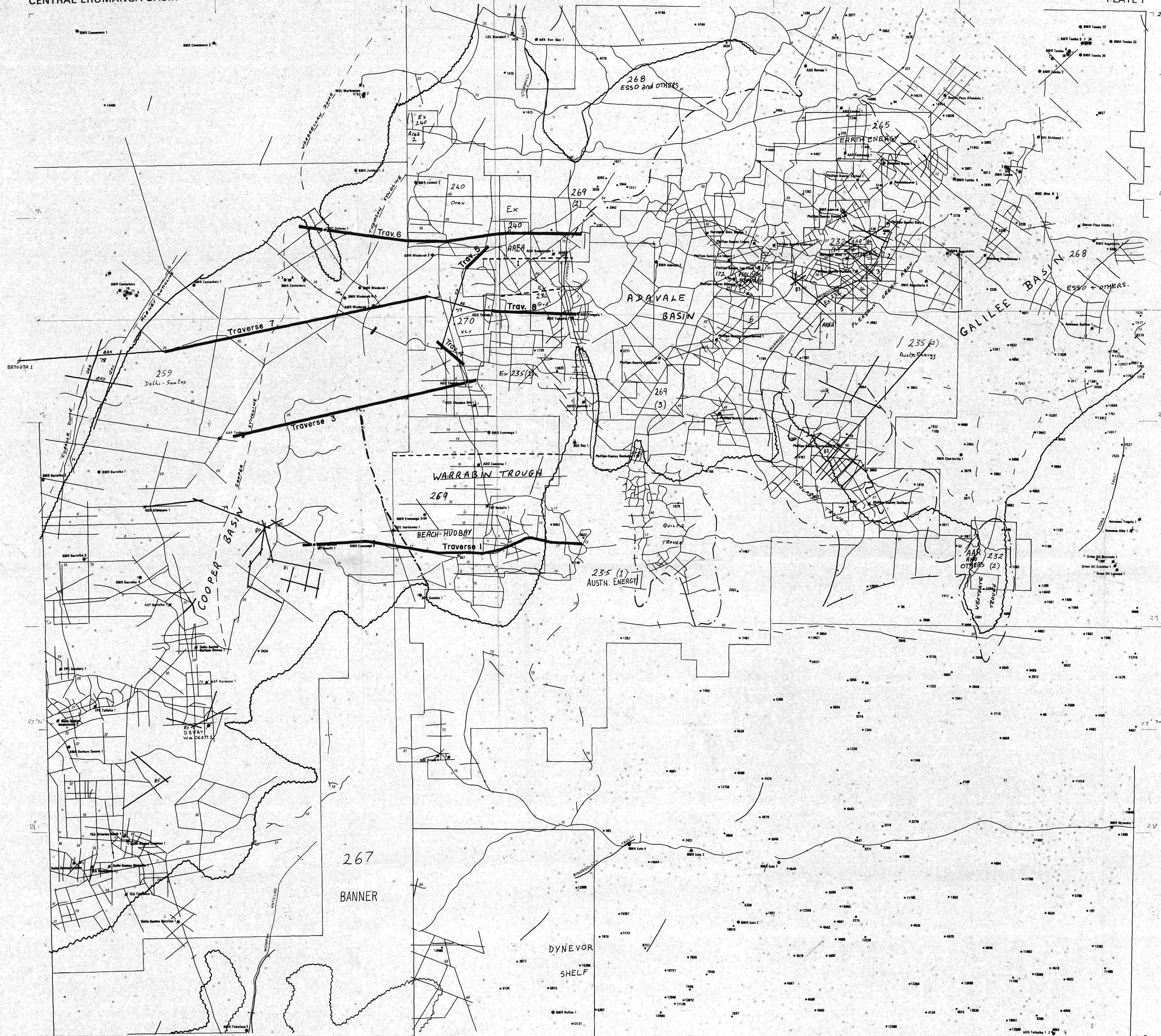
<u>Age</u>	<u>Formation</u>		<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Tertiary	Cz		0	5
	Kw/Klm	Winton) Mackunda)	5	824
U. Cretaceous	Kla	Allaru	829	229
	Klo	Toolebuc	1058	10
L. Cretaceous	Klu	Wallumbilla	1068	233
	Kle	Cadna-owie	1301	266
	JKh	-	-	-
U. Jurassic	Juw	Westbourne	1567	57
	Ja	Adori Sst	1624	29
M. Jurassic	Jmb	Birkhead	1653	68
L. Jurassic	Jlh	Hutton Sst	1721	271
Triassic	T	Triassic	1992	76
Permian	P	Permian (Gidgealpa?)	2068	25
Devonian	DCb	Buckabie	2093	642
	Dme	Etonvale	2735	310
	Dmg	Gumbardo	3045	26
		Basement	3071	29+

Notes: Gas shows in Permian coal and at the base of the Etonvale

YONGALA 2

A.O.D. T.D. 2027 m
Lat. 28° 31' 00" S K.B. 237 m
Long. 141° 42' 00" E G.L. 233 m

<u>Age</u>	<u>Formation</u>	<u>Depth to Top (m)(KB)</u>	<u>Formation Thickness (m)</u>
Quaternary	Cz		
Cretaceous	Kw Winton	5	696
	Klm Mackunda	?	
	Kla Allaru	701	212
	Klo Toolebuc	913	9
	Klu Wallumbilla	922	267
Jurassic	JKh Hooray Sst	1189	256
	Juw Westbourne	1445	52
	Ja Adori	1496	22
	Jmb Birkhead	1519	84
	Jlh Hutton	1603	222
Triassic	T	1825	101
Permian		1925	25
Perm/Carb.		1950	77+



SEISMIC SURVEYS IN THE CENTRAL EROMANGA BASIN

REF NO	YEAR OF SURVEY	ABBREVIATED TITLE	REFERENCE
ALLIANCE OIL DEVELOPMENT			
1	1962	Alpha	ADD 1963a
2	1963	Bulgroo	ADD 1963c
3	1965	Trinidad	ADD 1964a
4	1965	Chandos	ADD 1964a
5	1966	Regleigh	ADD 1966b
6	1968	Cowra	ADD 1968
7	1969	South Chandos	ADD 1968a
8	1969	Yamma Yamma	ADD 1969b
9	1969	Borroughs	ADD 1970a
10	1970	Harkaway	ADD 1970b
AMERICAN OVERSEAS PETROLEUM COMPANY			
11	1963	Blackall Mitchell	Amosess 1963a
12	1963	Tambo	Amosess 1963b
13	1965	Augathella	Amosess 1965
14	1968	Ravensbourne	Amosess 1968
BRITISH PETROLEUM DEVELOPMENT			
15	1966	Thylungra	B P 1966
16	1966	Taliyaba	Fairley 1967
BUREAU OF MINERAL RESOURCES			
17	1959	Quilpie-Eromanga	Bigg, Wither and Merton, 1962
18	1962	Thargomindah-Nocconda	Lodwick and Jones, 1964
19	1961	Westbourne	Bigg, Wither and Davies, 1964
20	1962	St. George-Eulo	Davis and Lodwick, 1966
21	1962-63	Thargomindah-Nocconda	Davis and Robinson, 1966
CLARENCE RIVER BASIN OIL			
22	1964	Olive River	Clarence River Basin Oil Exploration Co. NL, 1964
CONORADA PETROLEUM CORPORATION			
23	1961	Stonewange	Conorada Petroleum Corp., 1961
DELHI AUSTRALIAN PETROLEUM COMPANY AND SANTOS LIMITED			
24	1962	Onetons-Clifton Hills	Delhi-Santos, 1962a
25	1962	Innamuckna-Mt. Gason	Delhi-Santos, 1962b
26	1963	Diamantina-Mt. Gregor Range	Delhi-Santos, 1963b
27	1964	Cooper Creek	Delhi-Santos, 1965c
28	1965	Strezlecki-Cooper	Delhi-Santos, 1965d
29	1966	Eromanga-Frome seismic and gravity	Delhi-Santos, 1966b
30	1967	Cooper Basin seismic and gravity	Delhi-Santos, 1967
31	1971	Duneroo	Delhi-Santos, 1971
FLINDERS PETROLEUM NL			
32	1970	Cooper Creek central	Flinders, 1970a
33	1971	Sandy Creek	Flinders, 1971
FRENCH PETROLEUM COMPANY (AUSTRALIA) LIMITED			
34	1960	Haddon Downs Seismic	(unpublished)
35	1966	Windorah-Wolgolga seismic and gravity	FPC, 1966
36	1967	Tickalara seismic and gravity	FPC, 1967
HARTOGN EXPLORATION			
37	1971	Cootabynia	Hartogon Exploration, 1971
38	1973	Mt. Edinborough	Hartogon Exploration, 1973
LONGREACH OIL LIMITED			
39	1969	Thomson River	Longreach Oil Ltd, 1969
MARATHON PETROLEUM AUSTRALIA			
40	1963	Ruthven	Marathon, 1964
41	1964	Barcoo	Marathon, 1965
42	1964	Wooroolah	Musser, 1964
43	1967	West Blackall	Marathon Petroleum Aust., 1967
NEW SOUTH WALES OIL AND GAS			
44	1969	Hamilton Gate refraction	NSW Oil & Gas, 1970
PHILLIPS PETROLEUM AND SUNRAY OX OIL COMPANY			
45	1961	Adavale	Hier and Spry, 1961
46	1961	Jundah-Yaraka-Blackwater-Langlo	Hier and Fjellstul, 1961
47	1962	Charleville North	Fjellstul, 1962
48	1959-60	Quilpie-Thargomindah-Charleville	Hier and Spry, 1962
49	1962	Gumbardo	Fjellstul and Beck, 1962
50	1963	Toompine-Wyandra	Phillips-Sunray, 1963a
51	1963	Quilberry Creek	Fjellstul and Beck, 1963a
52	1963	Gowan Range	Fjellstul and Beck, 1963b
53	1963	Highfields	Fjellstul and Tallis, 1964a
54	1963	Gillmore	Fjellstul and Tallis, 1964b
55	1964	Log Creek	Fjellstul and Rhodes, 1965a
56	1965	Stafford	Fjellstul and Rhodes, 1965b
57	1965	Leopardwood	Fjellstul, Rhodes and Tallis, 1965
58	1965	Mt. Watson	Rhodes and Fjellstul, 1965a
59	1966	Stathconen	Rhodes and Fjellstul, 1965b
60	1966	Powell Creek	Tallis and Fjellstul, 1965a
61	1966	Rockwell	Tallis and Fjellstul, 1965b
62	1966	Adavale Basin Detail	Fjellstul and Rhodes, 1966
63	1966	Bride Creek	Phillips-Sunray, 1966a
64	1966	Yaraka	Phillips-Sunray, 1966b
65	1966	Bulloo Downs	Phillips-Sunray, 1966c
66	1966	Lake Dartmouth	Tallis and Fjellstul, 1966a
67	1963	Pleasant Creek	Fjellstul, Tallis and Beck, 1963
68	1965	Listowel	Fjellstul, Rhodes and Collins, 1966
69	1966	Panhandle	Fjellstul, Tallis and Beck, 1966
70	1961-65	Carlow-Hope Creek	Slans and Netzel, 1967
71	1965	Lissov	Slans and Netzel, 1967
72	1967	Wellford	Phillips-Sunray, 1968
SMART OIL EXPLORATION			
73	1959	Grey Range	SOE 1962b
74	1963	Eromanga	SOE 1963a
75	1965	Tinderry	SOE 1965
TOTAL EXPLORATION			
76	1970	Epsilon	TEA 1970
BEARER			
- 1970 East Lynne			
- 1969 Windorah			
no reference (Tambora area)			

RECENT SEISMIC SURVEYS (Confidential)

77	1976	Clifton	University of Sydney
78	1979	Wilparoo	Delhi Oil Co
79	1974	Karumba	Agip/Amoco
80	1974	Wandale	"
81	1974	Bangalah	"
82	1978	Kallaroo	Agip/Amoco
83	1978	Yarran	"
84	1978	Maraga	"
85	1974	Conanberry	Delhi Oil Co

Record 1980/32, 1980/77

267 Authority to Prospect

Ex232 Surrendered or
Advertised Area

DISTRIBUTION OF SEISMIC SURVEYS AND DRILLHOLES,
BASIN MARGINS, PETROLEUM TENEMENTS AND SEISMIC
TRAVERSES PROPOSED FOR 1980

Scale 1:1 000 000

0 10 20 30 40 50 60 70 80 90 100 KILOMETRES

SEISMIC LINES PROPOSED FOR 1980

SEISMIC SECTIONS BEING REPROCESSED

Trav. 6

AUS 1/1010

EROMANGA BASIN

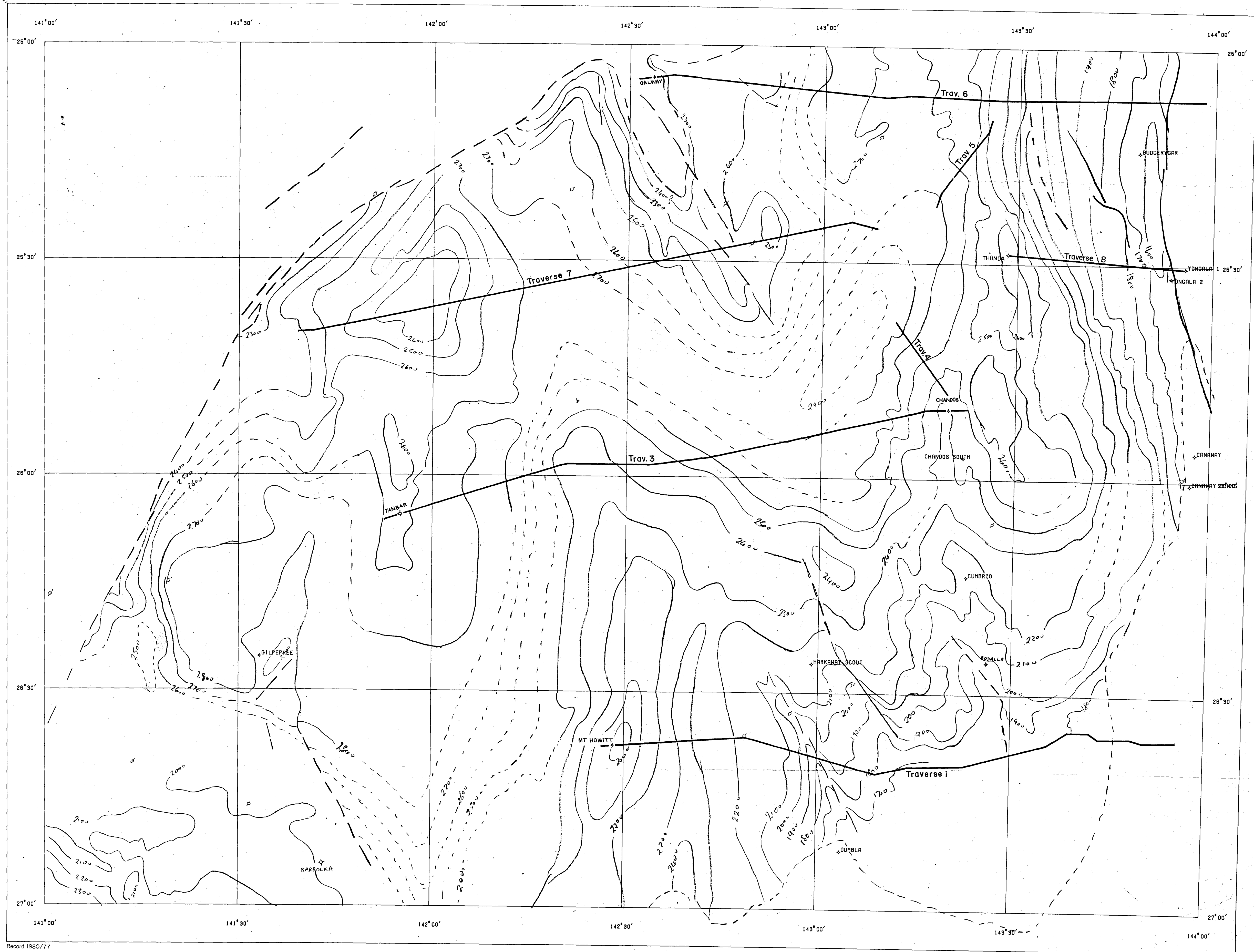
QUEENSLAND

SCALE 1:500000



PLATE

EDITION OF 1980/02/20



Record 1980/77

AUSTRALIAN NATIONAL SPHEROID
TRANSVERSE MERCATOR PROJECTION
ZONE 55 - WIDTH OF 6.0° AND
CENTRAL MERIDIAN 141°00' EAST

✱ Petroleum Exploration Wells
Trav. 3 Proposed seismic traverses

EROMANGA BASIN

STRUCTURE CONTOURS OF TOP PERMIAN

Map drawn by B. Senior, Contour interval 100m,
datum sea level.

EROMANGA BASIN
QUEENSLAND

26/9/12

EROMANGA BASIN

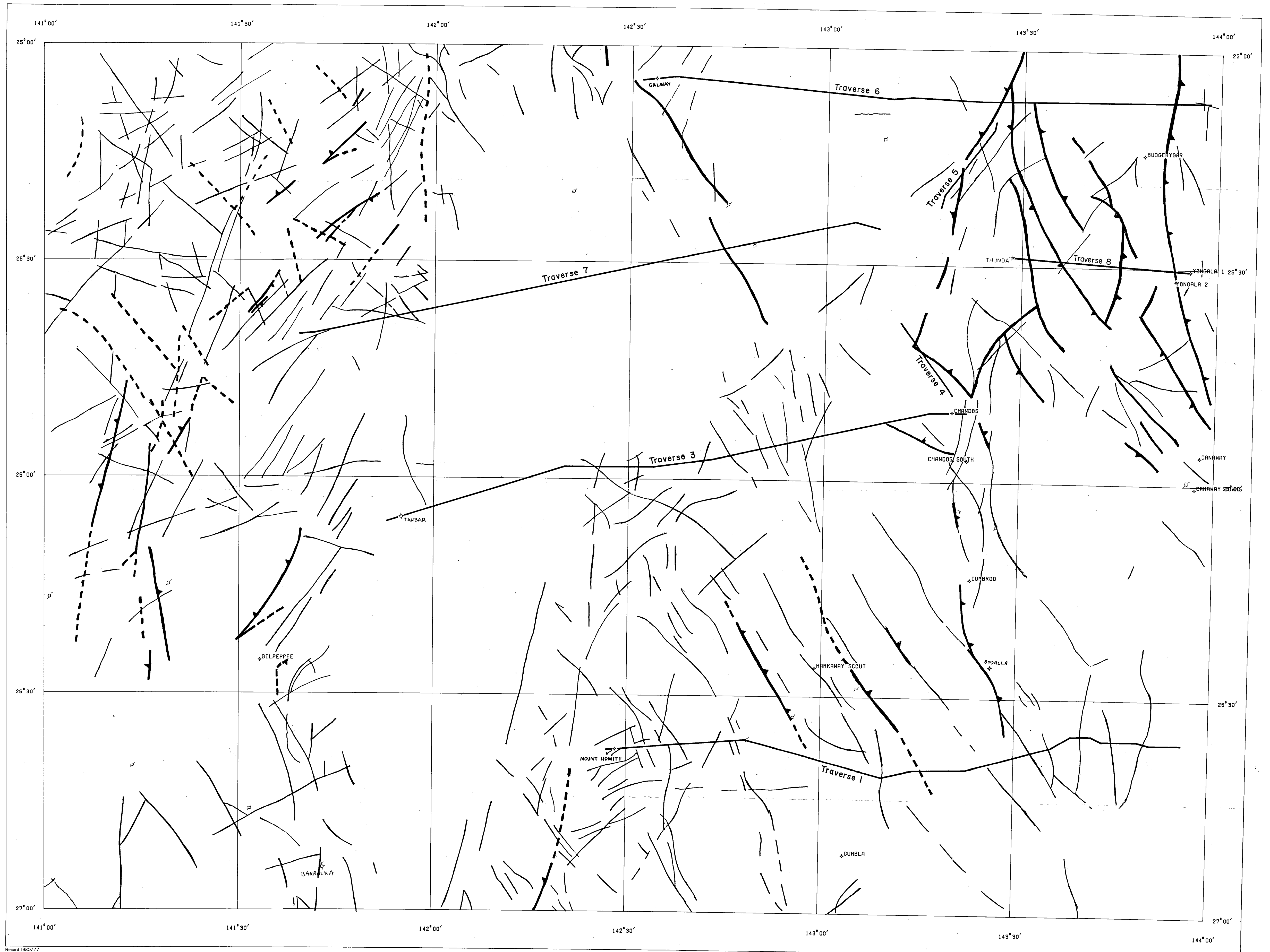
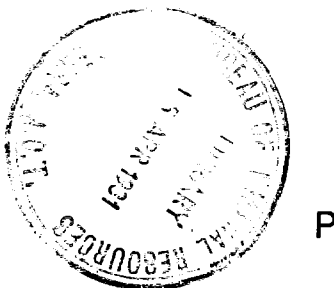
QUEENSLAND

SCALE 1:500000

EDITION OF 1980/02/20

PLATE 3

081102
201180



AUSTRALIAN NATIONAL SPHEROID
TRANSVERSE MERCATOR PROJECTION
ZONE 55 - WIDTH OF 6.0° AND
CENTRAL MERIDIAN 141°00' EAST

- Fault determined by seismic surveys and/or geological reconnaissance (down thrown side indicated)
- Inferred fault determined by seismic surveys and/or geological reconnaissance
- Landsat interpreted linear features
- Petroleum Exploration Well
- Proposed seismic traverses

EROMANGA BASIN

LANDSAT LINEAMENTS

(From Senior and Habermehl, 1980)

EROMANGA BASIN
QUEENSLAND

26/Q/13