SOUTH AUSTRALIA

DEPARTMENT OF MINES AND ENERGY

OPEN FILE ENVELOPE NO. 6930

PEL 28

OTWAY BASIN

1988 GAMBIER SEISMIC SURVEY

REPORTS FOR THE PERIOD 8/12/87 TO 31/3/89

Submitted by

Beach Petroleum NL

1989

ENVELOPE 6930

TENEMENT: PEL 28, Otway Basin.

TENEMENT HOLDER: Beach Petroleum NL (operator), Home Energy Company Ltd, Gas and Fuel Exploration NL, Mount Isa Mines Ltd, Poseidon Oil Pty Ltd.

CONTENTS OF VOLUME ONE

PLANS		**Scale**	**Company plan no.**	**SADME plan no.**
Fig. 1	Proposed Gambier Seismic Survey (line locations).			Pg. 8
Fig. 2	" " " " (plotted on environmental boundaries map).	1:100 000	OT 3194 (F)	6930-1

PLANS		**Scale**	**Company plan no.**	**SADME plan no.**
Encl. 1	Proposed Gambier 1988 Seismic Survey - amended seismic line locations (plotted on fire control map).	1:50 000	OT 3770	6930-2
Encl. 2	Proposed Gambier 1988 Seismic Survey - amended seismic line locations (total seismic = 152.45 km : edition date 17/12/87) (plotted on land tenure map).	1:50 000	OT 3771 (F)	6930-3
Encl. 3	Proposed Gambier 1988 Seismic Survey - amended seismic line locations (plotted on shotpoint basemap).	1:50 000	OT 3772	6930-4

CONTENTS OF VOLUME TWO

END OF CONTENTS

Pgs 47-92

6930-9

SEPARATELY HELD DATA:

Seismic sections: Held at Document Storage Centre (see attached survey line listing).

File → SR 27/4/720
M.G. 15/9/92
2B

BEACH PETROLEUM N.L.

Level 7, 345-355 George Street,
Sydney NSW 2000, Australia
Telephone: (61 2) 262 3033
Telex: AA171499 Fax: (02) 262 3034

DOCUMENT TRANSMITTAL

REFERENCE: 116 PERMIT: PEL 28

DATE: 2·11·88

CONSIGNED TO: S.A. Mines Dept

QTY	DATA TYPE	DESCRIPTION AND REMARKS
1	Sepia copy	of the following lines:
		BUD 86-80 Final 15 TPI
		BU 85-50A ✓ " "
		BUD 86-86 ✓ " "
		-82 ✓ " "
		-84 ✓ " "
		-88 ✓ " "
		-86 Final 40 TPI
		BU 85 -50A ✓ " "
		BUD 86 -88 Migration "
		-79 ✓ Final "
		-75 ✓ Final 15 TPI
		-79 ✓ " "
		GA 88 -08 Migrat. 40 TPI
		-03 ✓ " "
		-14 ✓ " "
		BUD 86 -~~86 Final~~ "
		-75 ✓ "
		-82 ✓ "
		-88 ✓ "
		86 Migration "

BUD 86-84 ✓ Final 40 TPI
-76 ✓ " "
-80 ✓ " "
-71 ✓ " "
-71 " 15 TPI
-76 " "

No F Received

FORWARDED ..... DATE .....

RECEIVED ..... DATE 18:1:89

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YELLOW COPY 'C' — Beach file

D 27/4/720
2C

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DOCUMENT TRANSMITTAL

REFERENCE: 229 PERMIT: PEL 28/PEP 112

DATE: 14-4-89

CONSIGNED TO: S.A. Dept Mines + Energy.
P.O. Box 151 / 191 Greenhill RD
Eastwood SA / Parkside S.A. 5063
5063.

Att: MR. R. LAWS

QTY	DATA TYPE	DESCRIPTION AND REMARKS
2 s	Seismic Sections	Mt Gambier + Glenelg S.S. (see attached list on handwritten page)

RECEIVED

FORWARDED.... DATE 14-4-89...

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RECEIVED FROM BEACH PETROLEUM 18.4.89

SEPIA SEISMIC SECTIONS

SURVEY	LINE	VP RANGE	STACK	DISPLAY	MIGRATED DISPLAY
GAMBIER	GA88-11	65-720	FINAL	15 tr/", 15 cm/sec M	40 tr/" 15 cm/sec
	GA88-16	97-690	"	"	" "
	10	100-498	"	"	" "
	13	100-469	"	"	" "
	14	100-428	"	"	" "
	9	100-312	"	"	" "
	8	65-800	"	"	" "
	5	61-661	"	"	" "
	4A	63-303	"	"	" "
	7	65-285	"	"	" "
	6	106-326	"	"	" "
	1	100-700	"	"	" "
	3	159-632	"	"	" "
	2	65-495	"	"	" "
	4	101-404	"	"	" "
	8	65-800			" 40 - 7.5
	3	159-632			" " "
	14	100-428			" " "
GLENELG	GL327	76-96 (SA)	"	17.5 tr/" 3.75 "/s	" 17.5 - 3.75
	321	76-91 (SA)	"	"	

-file 27/4/720

BEACH PETROLEUM N.L.

2E

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Telephone: (61 2) 262 3033
Telex: AA171499 Fax: (02) 262 3034

DOCUMENT TRANSMITTAL

REFERENCE: 366 PERMIT: Pel 28

DATE: 4.10.89

CONSIGNED TO: S.A. Dept Mines + Energy.
191 Greenhill RD
Parkside S.A. 5063.

Att: Director.

QTY	DATA TYPE	DESCRIPTION AND REMARKS
1	Sepia	Gambier S.S continued.
		GA 88 — 08 ✓ Final Migration 40 T.P.I.
		" — 05 ✓
		" — 16 ✓
		" — 03 ✓
		" — 02 ✓
		" — 14 ✓
		" — 09 ✓
		" — 04A ✓
		" — 06 ✓
		" — 11 ✓
		" — 01 ✓
		" — 13 ✓
		" — 10 ✓
		" — 07 ✓
		" — 04 ✓
		* 2 S.P Base maps — 4001 + 4000 ✓

FORWARDED ..... DATE 4.10.89

RECEIVED ..... DATE 13.11.89

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YELLOW COPY 'C' — Beach file

→ file 27/4/720

2F

BEACH PETROLEUM N.L.

Level 7, 345-355 George Street,
Sydney NSW 2000, Australia
Telephone: (61 2) 262 3033
Telex: AA171499 Fax: (02) 262 3034

DOCUMENT TRANSMITTAL

REFERENCE: 366 PERMIT: PEL 28

DATE: 4.10.89

CONSIGNED TO: S.A. Dept Mines + Energy
191 Greenhill RD
Parkside SA. 5063.

AH: Director.

QTY	DATA TYPE	DESCRIPTION AND REMARKS
1	Sepia.	Gambier S.S. 30 lines + 2 S.P. Base maps. C Final Stack + Final Migration GA88-08 ✓ Final Stack ✓ 15 T.P.I. " — 11 ✓ " " — 05 ✓ " " — 16 ✓ " " — 01 ✓ " — 10 ✓ " " — 13 ✓ " — 04 ✓ " — 03 ✓ " — 02 ✓ " " — 14 ✓ " — 04A ✓ " — 07 ✓ " — 06 ✓ " " — 09 ✓

FORWARDED... [signature] ..... DATE... 4.10.89.

RECEIVED ..... [signature] ..... DATE... 13.11.89.

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26

BEACH PETROLEUM N.L.

Burrungule 1986 S.S. SR. 27/4/698 — Env. 6476
Orana 1987 S.S SA - 27/4/711 — Env. 6765
Gambier SS. SR. 27/4/720 — Env. 6930

Level 7, 345-355 George Street,
Sydney NSW 2000, Australia
Telephone: (61 2) 262 3033
Telex: AA171499 Fax: (02) 262 3034

DOCUMENT TRANSMITTAL

REFERENCE: 493 PERMIT: PEL 28

DATE: 13-3-91

CONSIGNED TO: SADME
191 Greenhill Rd
PARKSIDE SA 5063
Attn: Director General

QTY	DATA TYPE	DESCRIPTION AND REMARKS
1@	Report	• Burrungule Detail - Final Operations Rpt ✓ • Orana - Burrungule Seismic Survey - Vol I Interpretation Rpt ✓ Vol II Enclosures ✓ • Gambier Seismic Survey - Final Interpretation Rpt ✓ — revised version (see letter of 8/5/89 in this file) incorp. additional data from 1986 Burrungule Detail, 1985 Burrungule, 1985 Wanwin Gorae Detail).

FORWARDED ..... DATE 13-3-91

RECEIVED ..... DATE .....

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YELLOW COPY 'C' — Beach file

27/9/72

00003

BEACH PETROLEUM

NO LIABILITY

(incorporated in South Australia)

POSTAL ADDRESS:
P.O. BOX 360, CAMBERWELL, VICTORIA. 3124
TELEPHONE: (03) 813 3311
TELEGRAPHIC ADDRESS: 'BEACHPET'
TELEX: AA 36500 BEAPET
FACSIMILE: (03) 813 3902

4th FLOOR
685 BURKE ROAD
CAMBERWELL, VICTORIA. 3124
AUSTRALIA

8th December, 1987.

Director-General,
Department of Mines & Energy,
P.O. Box 151,
EASTWOOD, S.A. 5063.

Attention: Mr. T. Watts, Director, Oil & Gas.

Dear Sir,

Re: Application for Consent to carry out Vibroseis Seismic Survey in PEL 28 - 1988 GAMBIER SEISMIC SURVEY.

In accordance with the Petroleum Act (1940-1984), Beach Petroleum as Operator for the onshore permit PEL 28, hereby applies for permission to conduct approximately 155 kms of seismic within this permit.

PROGRAM LOCATION JUSTIFICATION

Seismic shot during the last three years has defined two drillable prospects and one prominent lead. It has also confirmed the presence and the extent of the major transverse fault known as the Tartwaup Fault. This fault and its associated structure is also mapped on seismic shot in Victoria.

As a result of all seismic work, our understanding of the tectonics and general stratigraphy in the other half of PEL 28 is substantially upgraded.

The Compton No. 1 well located on the downthrown side of the Tartwaup Fault will be drilled in January 1988 and it is designed to test all Tertiary and Upper Cretaceous reservoirs.

The other prospect defined, Honan, is located on the upthrown side of the Tartwaup Fault and towards the western side of the permit.

The Burrungule Detail Seismic Survey shot in 1986 extended our knowledge to the east and highlighted a prominent lead again on the upthrown side of the fault. Additional seismic is required to upgrade the Glenburnie Lead into a drillable prospect. The Gambier Seismic Survey is designed to do this.

Cont'd...

In conjunction with this detailed work, additional program is planned to the north where complex structuring right through the Upper Cretaceous and Lower Cretaceous section is seen. Regional program will also be shot south of Glenburnie across the Tartwaup Fault to determine extent of structuring there.

PROGRAM DETAILS

Name of Survey:	Gambier Seismic Survey.
Location of Operations:	37° 44' 00" E to 37° 53' 00" S. 140° 45' 00" E to 140° 58' 00" E.
Proposed Date of Commencement:	Early January 1988.
Expected Duration:	Approximately 30 days.
Contractor:	Bids have been requested from a number of Contractors for a number of surveys in south eastern Australia. We will notify as soon as the successful Contractor has been chosen.
Type of Survey:	12 fold vibroseis.
Basic Crew:	96+ channel digital recording system plus necessary ancilliary equipment i.e. cables, geophones, recording system, radios, etc. 3 vibrators in line. The number of geophones per group, number of sweeps, length of each sweep etc. will be detailed following extensive experimental work at the commencement of the survey. A detailed uphole program will again be completed. In areas where the Dilwyn Formation sandstones are drilled cementing of upholes will probably be required.

Beach Petroleum will have an experienced Bird-dog on site at all times to ensure that the survey is conducted safely and to the required standards both technically and environmentally. This supervision as well as the landman responsible for permitting all landowners is the same as that for previous seismic surveys in the area.

Land use in the area of the survey is generally private pastoral or timber growing. Where pine forests are present, work will be confined to available tracks.

A "Declaration of Environmental Factors" is included with this application as is a program map. Although the location of the marked lines has been quickly checked in the field, some changes may be required before the program is finalized.

Cont'd...

It is our hope to commence permitting first thing in the New Year.

Yours faithfully,
BEACH PETROLEUM N.L.

D.G. Langton,
EXPLORATION MANAGER.

DECLARATION OF ENVIRONMENTAL FACTORS

TO: Director-General,
Department of Mines & Energy,
P.O. Box 151,
EASTWOOD, S.A. 5063.

We, Beach Petroleum N.L.,
of 685 Burke Road,
CAMBERWELL, Vic. 3124.

being the Operator of Petroleum Exploration Licence 28 situated in the area specified within South Australia hereby submit the following information in support of an application to conduct work within PEL 28.

1. Name of Proposed Survey: Gambier Seismic Survey (See fig. 1)

2. Application to conduct this survey is attached.

3. No previous application has been made to conduct this survey.

4. Vibroseis seismic acquisition to commence in January 1988.

   Details of Seismic Crew and Equipment.

   Basic Crew: 96+ channel digital recording system plus necessary ancilliary equipment, i.e. cables, geophones, radios, etc.
   8 x 4-wheel drive vehicles.
   4 or 5 vibrators truck mounted.

5. Description of Natural Environment (See fig. 2).

   1. Land Use: The Gambier Seismic Survey is located in grazing and pine forested country with very limited area devoted to mixed horticulture.

      The attached program is to be forwarded to the South Eastern Regional Forester in Mt. Gambier. We will again complete all measures required to minimise the risk of fire.

      All property owners will be contacted individually prior to the survey. Fencing contractors will be hired locally.

   2. Environmental Subdivisions: The lines will cross three environmental regions i.e. Tartwaup (1.3.4), Mt. Gambier (1.3.5) and Caroline (1.3.6). These are discussed in more detail below.

      3.4 Tartwaup: Gently undulating limestone plain with small areas of sand or calcarenite dunes. Pine plantation and sown pastures.

      3.5 Mt. Gambier: A gently sloping ash plain with steep ash cones rising abruptly in places. The natural vegetation has been replaced with sown pastures and crops.

Cont'd...

3.6 Caroline: A gently undulating plain derived from indurated dunes with low sand dunes superimposed. Almost the entire survey in this Environmental Association will be within pine forests of the Myora Forest.

No conservation or recreational parks fall within the survey area.

References

Environments of South Australia, Province 1.
South East Division of Land Use Research CSIRO 1977.

Environments of South Australia Handbook.

Division of Land Use Research CSIRO 1982.

South Australia Planning Act 1982. The Development Plan, Part XI South East Region.

6. Environmental Impact

The environmental impact of this survey will be minimal. No forest line clearing is thought to be necessary as there are numerous pre-existing forest access tracks. The grazing country is open and line clearing will not be required.

7. Environmental Protection

All care will be taken to prevent any long term effect on the natural environment. The "Code of Environmental Practice", Australian Petroleum Exploration Association will be adhered to.

8. Aboriginal Sites

No specific aboriginal historical sites are known to fall on seismic lines. The surveyors will be asked to note any that they may find and to ensure that the seismic line avoids them.

9. Person-in-Charge

People nominated by the applicant for any contact with respect to this application:

Office: D.G. Langton,
Exploration Manager,
OR

J. Choudhury,
Chief Geophysicist.

Tel: (03) 813-3311.

Dated at Melbourne this 30th day of November, 1987 for and on behalf of Beach Petroleum No Liability by

.....

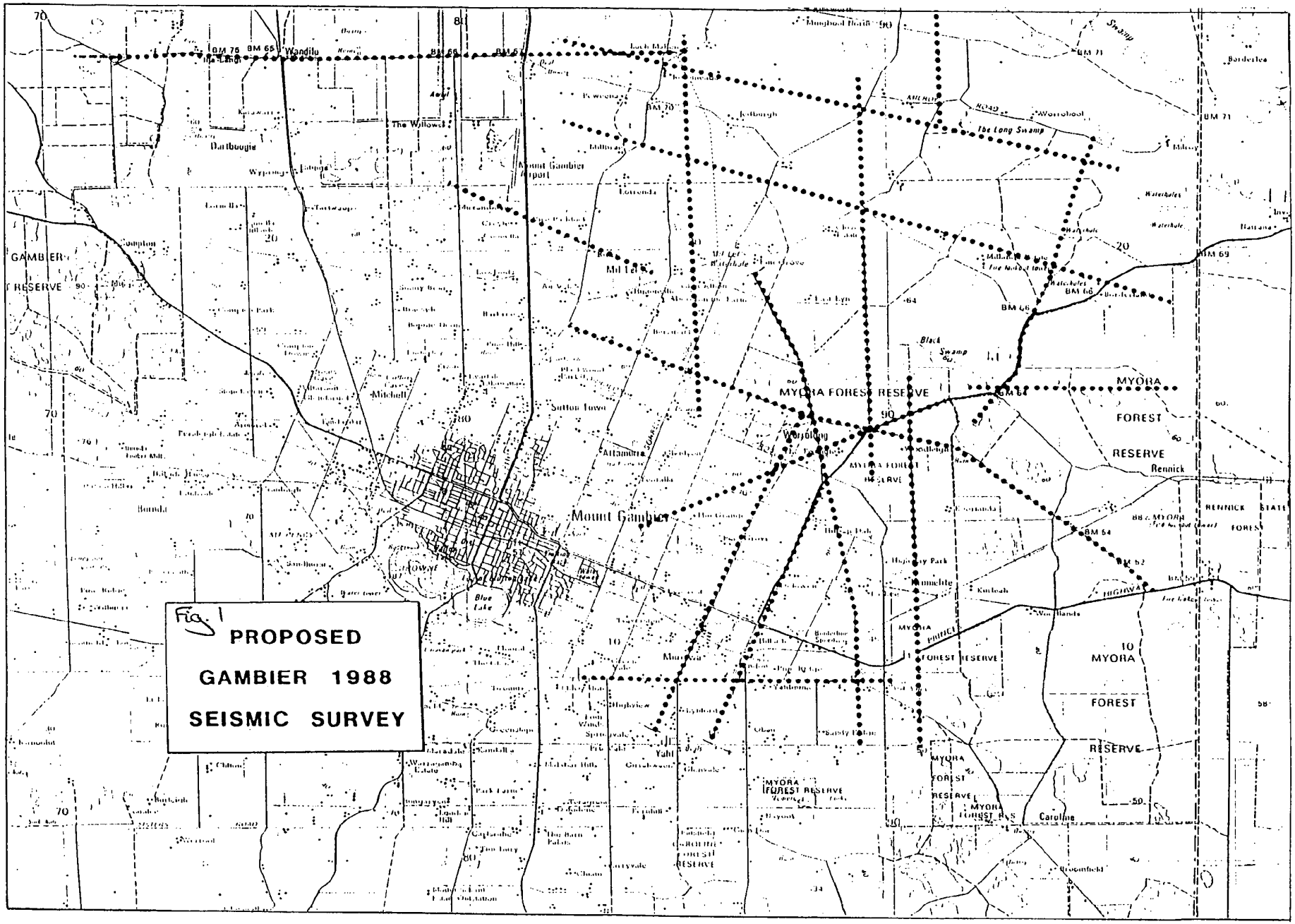
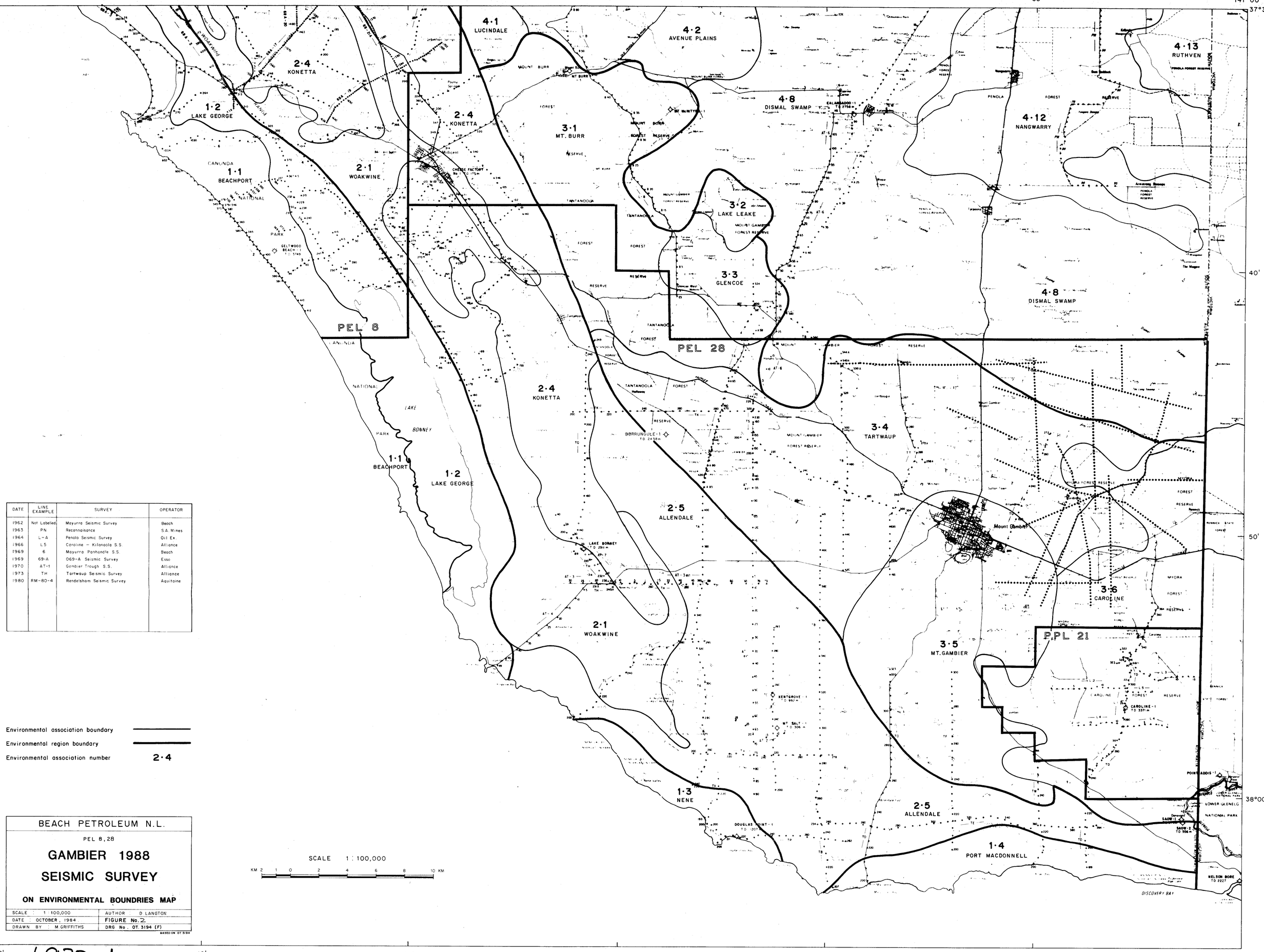


Fig. 1
PROPOSED
GAMBIER 1988
SEISMIC SURVEY
Mount Gambier
MYORA FOREST RESERVE
MYORA
FOREST
RESERVE
Rennick
Wandilo
Dartbuggie
The Willows
Mount Gambier Airport
Mitchell
Sutton Town
Worrolong
Blue Lake
Yahl
Caroline
The Long Swamp
Black Swamp
GAMBIER
RESERVE



DATE	LINE EXAMPLE	SURVEY	OPERATOR
1962	Not Labelled	Mayurra Seismic Survey	Beach
1963	PN	Reconnaisance	S.A. Mines
1964	L-A	Penola Seismic Survey	Oil Ex.
1966	L5	Caroline – Kilanoola S.S.	Alliance
1969	6	Mayurra Panhandle S.S.	Beach
1969	69-A	069-A Seismic Survey	Esso
1970	AT-1	Gambier Trough S.S.	Alliance
1973	TH	Tartwaup Seismic Survey	Alliance
1980	RM-80-4	Rendelsham Seismic Survey	Aquitaine

Environmental association boundary

Environmental region boundary

Environmental association number 2·4

BEACH PETROLEUM N.L.

PEL 8, 28

GAMBIER 1988 SEISMIC SURVEY

ON ENVIRONMENTAL BOUNDRIES MAP

SCALE : 1 : 100,000	AUTHOR : D. LANGTON
DATE : OCTOBER, 1984	FIGURE No. 2.
DRAWN BY : M.GRIFFITHS	DRG No. OT. 3194 (F)

BASED ON OT 3194

6930-1

6,768

27/4/720

00009

BEACH PETROLEUM

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685 BURKE ROAD
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AUSTRALIA

21 December, 1987.

Director General,
Department of Mines & Energy,
P.O. Box 151,
EASTWOOD S.A. 5063.

ATTENTION: Mr. T. Watts
Director of Oil & Gas

Dear Sir,

RE: GAMBIER SEISMIC SURVEY - P.E.L. 28

Further to our letter of 8th December 1987, which sought permission to conduct approximately 155km of seismic, we are forwarding herewith fire control, land tenure and shot-point base maps with an amended programme. (GA 88-16)

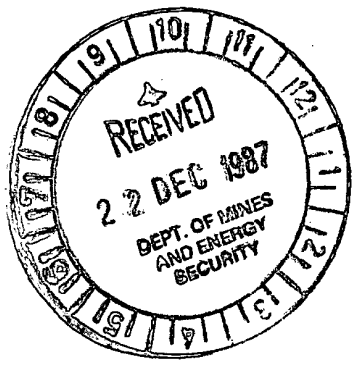
After further Joint Venture consideration, the lines over the "Glenburnie" feature were modified, and a new line was included in the East to tie both line GA88-11, and a 1985 line which ties Caroline No. 1 to a Victorian seismic survey (line WGD85-331).

New programme maps have been forwarded to the Woods and Forests Department, Mt. Gambier District Council, the University of Adelaide and the operator of P.P.L.21 whose consent has been obtained.

We trust that these alterations do not cause any inconvenience to you in your consideration of this application.

Yours faithfully,
BEACH PETROLEUM NO LIABILITY

KEN MACPHEE
ADMINISTRATOR



6930

27/4/720

00010

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(incorporated in South Australia)

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4th FLOOR
685 BURKE ROAD
CAMBERWELL, VICTORIA. 3124
AUSTRALIA

21 December, 1987.

Director General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD S.A. 5063.

RE: GAMBIER SEISMIC SURVEY P.E.L. 28

Dear Sir,

Further to our letter of 10 December 1987, we are enclosing revised programme maps for the above survey.

You will see that although the previous line GA88-13 has now been deleted, the previous line GA88-12 (now 10) still passes across the property of TELFORD, and has in fact been extended to the north to achieve better control in that area; the other programme changes do not affect the subject matter of our earlier letter.

Yours faithfully,
BEACH PETROLEUM NO LIABILITY

K. MacPhee

KEN MACPHEE
ADMINISTRATOR

23/12/87 Please advise ASAP

How goes progress with access for Road.

RECEIVED 22 DEC 1987 DEPT. OF MINES AND ENERGY

6930

BEACH PETROLEUM N.L.

PROPOSED
GAMBIER 1988
SEISMIC SURVEY

TOTAL SEISMIC : 152.45 km

EDITION DATE :17-12-87

AUTHOR	J. CHOUDHURY	APPROVED	
DATE	DECEMBER 87	ENCLOSURE No.	
SCALE	1 : 50 000		
DRAFTSMAN	M.GRIFFITHS	DRG No : 3770 F	

GA88-01 GA88-02 GA88-03 GA88-04 GA88-05 GA88-06 GA88-07 GA88-08 GA88-09 GA88-10 GA88-11 GA88-12 GA88-13 GA88-14

9·5 km 14·0 km 16·5 km 3·3 km 7·7 km 13·3 km 5·75 km 5·3 km 8·5 km 7·4 km 11·9 km 5·3 km

OPTIONAL

Based on WOODS AND FORESTS DEPARTMENT 1 : 50,000 FIRE CONTROL MAP.

6930-2

PROPOSED
GAMBIER 1988 SEISMIC SURVEY

OT 3770

D.C. MILLICENT
(Glencoe Ward)

D.C. MOUNT GAMBIER
(Young Ward)

Mingbool Ward

Warrolong Ward

Compton Ward

Glenburnie Ward

D.C. PORT MACDONNELL
Carpenter Ward

CAROLINE FOREST RESERVE

MOUNT GAMBIER FOREST RESERVE

MYORA FOREST RESERVE

PRINCES HIGHWAY

GAMBIERTOWN

Blue Lake

Cape Northumberland

Stony Point

Middle Point

Grassy Point

MACDONNELL BAY

RIDDOCH BAY

GA88-01 OPTIONAL
GAZ 2 6 1977
GAZ 30 6 1977
GAZ 20 3 1980
GAZ 13 9 1979
GAZ 18 8 1977
GAZ 19 1 1984

GA88-02
GA88-03
GA88-04
GA88-05
GA88-06
GA88-07
GA88-08
GA88-09
GA88-10
GA88-11
GA88-12
GA88-13
GA88-14
GA88-15
GA88-16
GA88-17
GA88-18

3·3 km
10·0 km
16·1 km
17·7 km
13·3 km
5·3 km
10·0 km
8·5 km
9·0 km
4·7 km
15·5 km
7·4 km
10·0 km
14·9 km
5·3 km
4·7 km
15·5 km
7·4 km
10·0 km

37°45'
38°00'
140°45'

BEACH PETROLEUM N.L.

PROPOSED
GAMBIER 1988
SEISMIC SURVEY

TOTAL SEISMIC :152.45 km

---------- OPTIONAL

EDITION DATE : 17-12-87

AUTHOR :	J.CHOUDHURY	APPROVED :	
DATE :	DECEMBER 87	ENCLOSURE No. :	
SCALE :	1 : 50 000		
DRAFTSMAN :	M.GRIFFITHS	DRG No :	3771 F

6930-3

PEL 8

PEL 28

PEL 32

PEL 28

PPL 21

PEL 28

LAKE BONNEY

LAKE BONNEY

SOUTHERN OCEAN

SOUTHERN OCEAN

SOUTH AUSTRALIA

VICTORIA

GA88-01 OPTIONAL

GA88-02 9.5 km 14.0 km

GA88-03 8.5 km

GA88-04 7.4 km

GA88-05 13.3 km

GA88-06 8.5 km

GA88-07 5.3 km

GA88-08 5.75 km

GA88-09 5.3 km

GA88-10 10.75 km

GA88-11 14.75 km

GA88-12 7.7 km 14.8 km

GA88-13 7.4 km

GA88-14 15.5 km

GA88-15 16.5 km

GA88-16

BURRUNGULE # 1

LAKE BONNEY # 1

KENTISH DVE # 1

MT. SALT # 1

DOUGLAS PT. # 1

CARDLINE # 1

BUBS-01 BUBS-02 BUBS-03 BUBS-04 BUBS-05 BUBS-06 BUBS-07 BUBS-08 BUBS-09 BUBS-10 BUBS-11 BUBS-12 BUBS-13 BUBS-14 BUBS-15 BUBS-16 BUBS-17 BUBS-18 BUBS-19 BUBS-20 BUBS-21 BUBS-22 BUBS-23 BUBS-24 BUBS-25 BUBS-26 BUBS-27 BUBS-28 BUBS-29 BUBS-30 BUBS-31 BUBS-32 BUBS-33 BUBS-34 BUBS-35 BUBS-36 BUBS-37 BUBS-38 BUBS-39 BUBS-40 BUBS-41 BUBS-42 BUBS-43 BUBS-44 BUBS-45 BUBS-46 BUBS-47 BUBS-48 BUBS-49 BUBS-50

184-01 184-02 184-03 184-04 184-05 184-06 184-07 184-08 184-09 184-10

WG85-331 WG233

GL85-507

PROPOSED GAMBIER 1988 SEISMIC SURVEY

SOUTH AUSTRALIA

TOTAL SEISMIC: 152.45 km

OPTIONAL

EDITION DATE : 17-12-87

SCALE 1 : 50,000

Km 0 1 2 3 4 Km

SCALE	:	1 : 50,000	
SPHEROID	:	AUSTRALIAN NATIONAL SPHEROID	
PROJECTION	:	UNIVERSAL TRANSVERSE MERCATOR	
CENTRAL MERIAN	:		
A.M.G. ZONE No.	:	54	

DATE	LINE KILOMETRE	SURVEY	OPERATOR
1988	GA88-01	GAMBIER TROUGH	ALLIANCE
1973	TA	TARTWARP	ALLIANCE
1984	184-10	TANTANOOLA	BEACH
1985	BUBS-38	BURRUNGULE	BEACH

6930-4

BEACH PETROLEUM N.L.

SHOTPOINT MAP

PROPOSED GAMBIER 1988 SEISMIC SURVEY

AUTHOR	M HARRISON	APPROVED	
DATE		ENCLOSURE No.	
SCALE	1 : 50,000		
DRAFTSMAN		DRG No	D[redacted]

EDITION DATE -

BEACH PETROLEUM N.L.

FINAL INTERPRETATION REPORT

FOR

1988 GAMBIER SEISMIC SURVEY PEL 28

Incorporating additional data from the following seismic surveys:

(i) Burrungule Detail 1986

(ii) Burrungule 1985

(iii) Wanwin Gorae Detail 1985

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March 1989

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Otway Basin Permit PEL 28
By: Petty-Ray Geophysical

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By: Horizon Seismic Australia Pty. Ltd.

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By: Digimap Geodata Services.

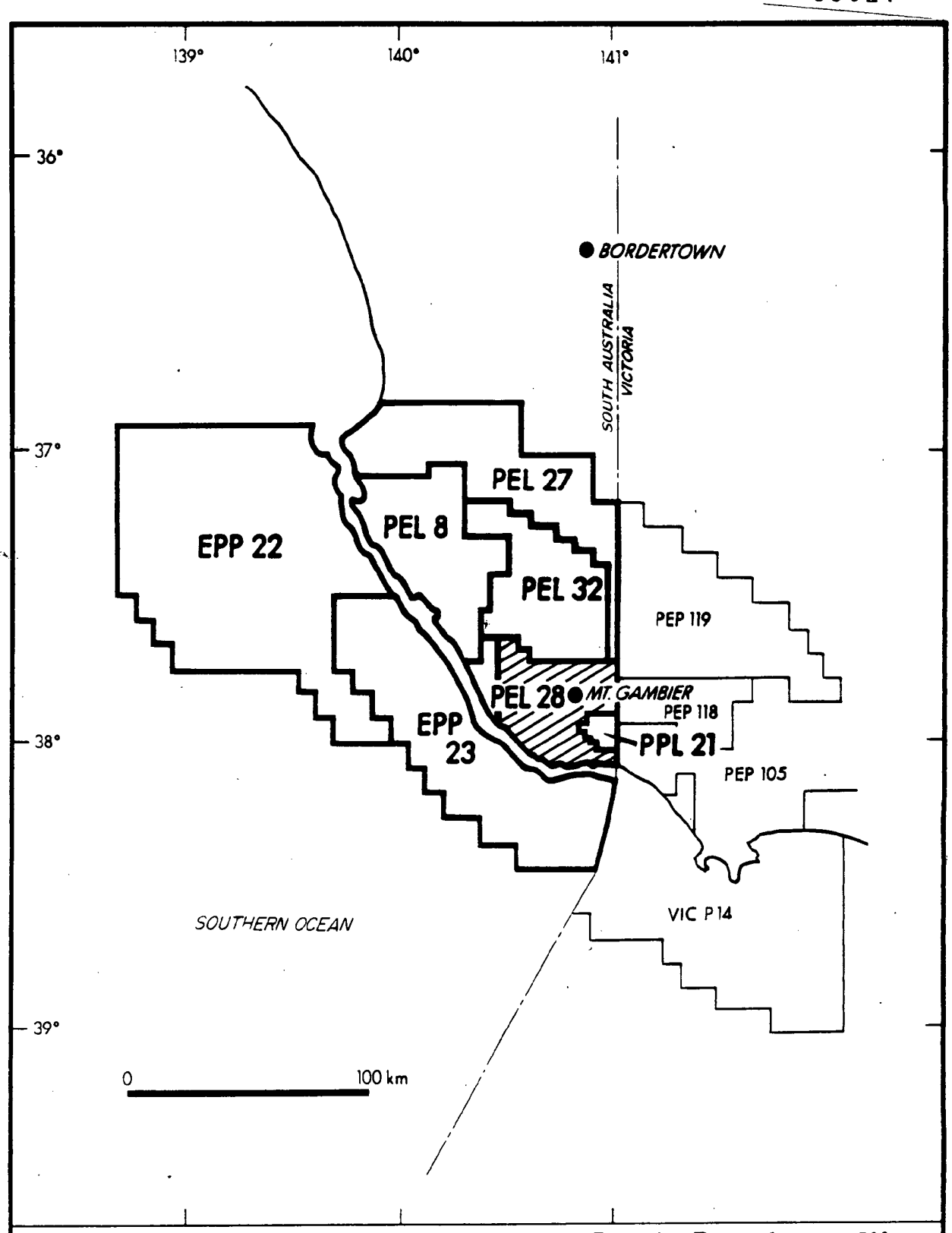
1. INTRODUCTION (See Figures 1, 2 and 3)

The 1988 Mt. Gambier Seismic Survey was acquired for the Joint Venture by Petty-Ray Geophysical Crew 6824 in PEL 28 South Australia using Vibroseis as the energy source. In all 159.05 kilometres of seismic was recorded at an average daily rate of 5.13 km/day. The recording crew commenced operations on 19th January, 1988 after completing an extensive experimental programme on the 18th January, 1988.

Figure 3 shows the orientation of the seismic survey grid. The survey area was located to the north and east of the township of Mt. Gambier approximately 20 kilometres from the town. Owing to the relatively high density of houses within the survey area, the survey lines were shot on existing access roads and tracks where possible.

Figure 3 shows that the 1988 Mt. Gambier Seismic Survey grid intersects the existing Burrungule 1985 and Burrungule Detail 1986 Seismic Survey lines including one line from the 1985 Wanwin Gorae Detail Seismic Survey: WGD85-331.

In all, a total of 248 kilometres of seismic was interpreted and this Final Interpretation Report covers the results of this work.



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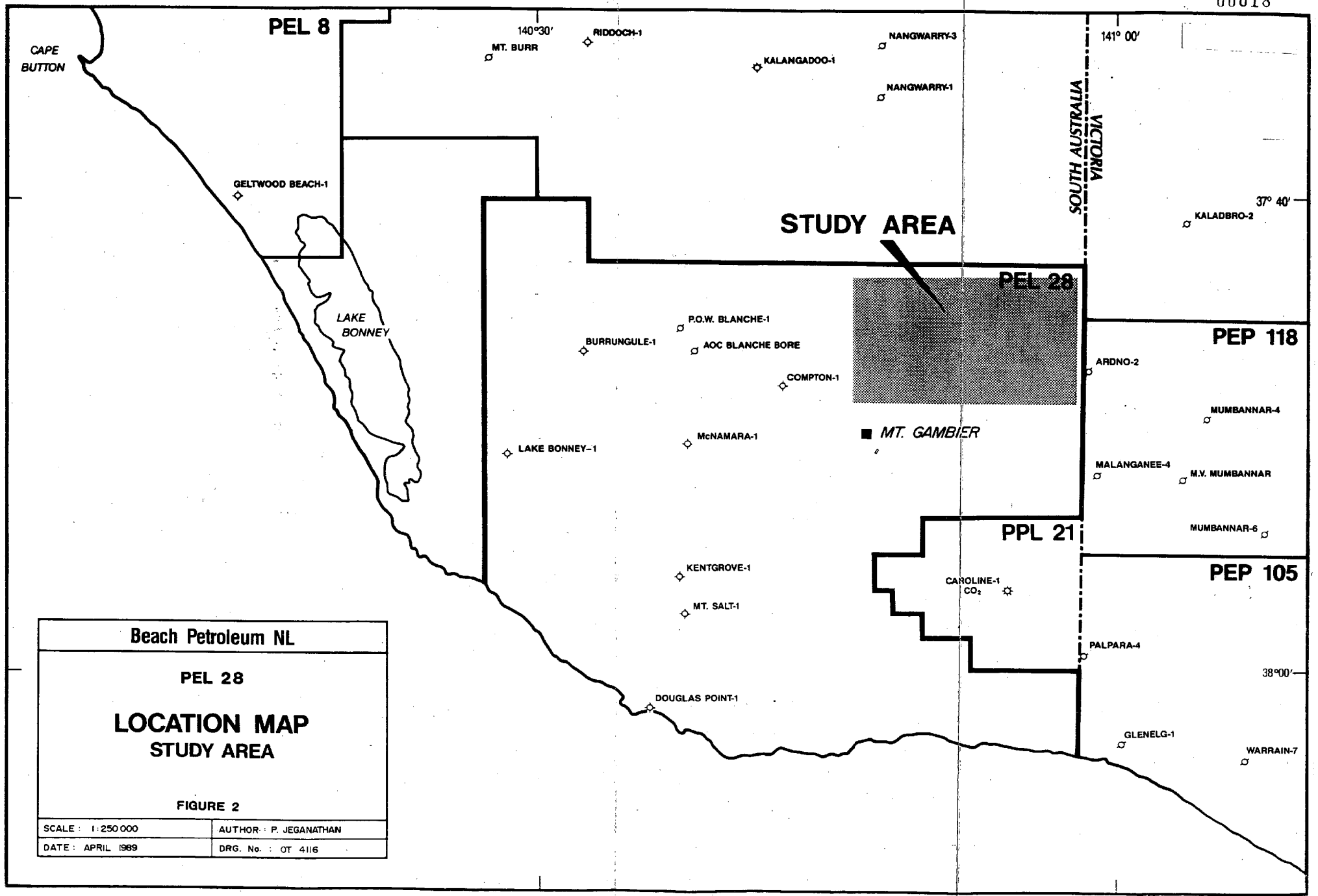
LOCATION MAP OF PEL 28

FIGURE 1



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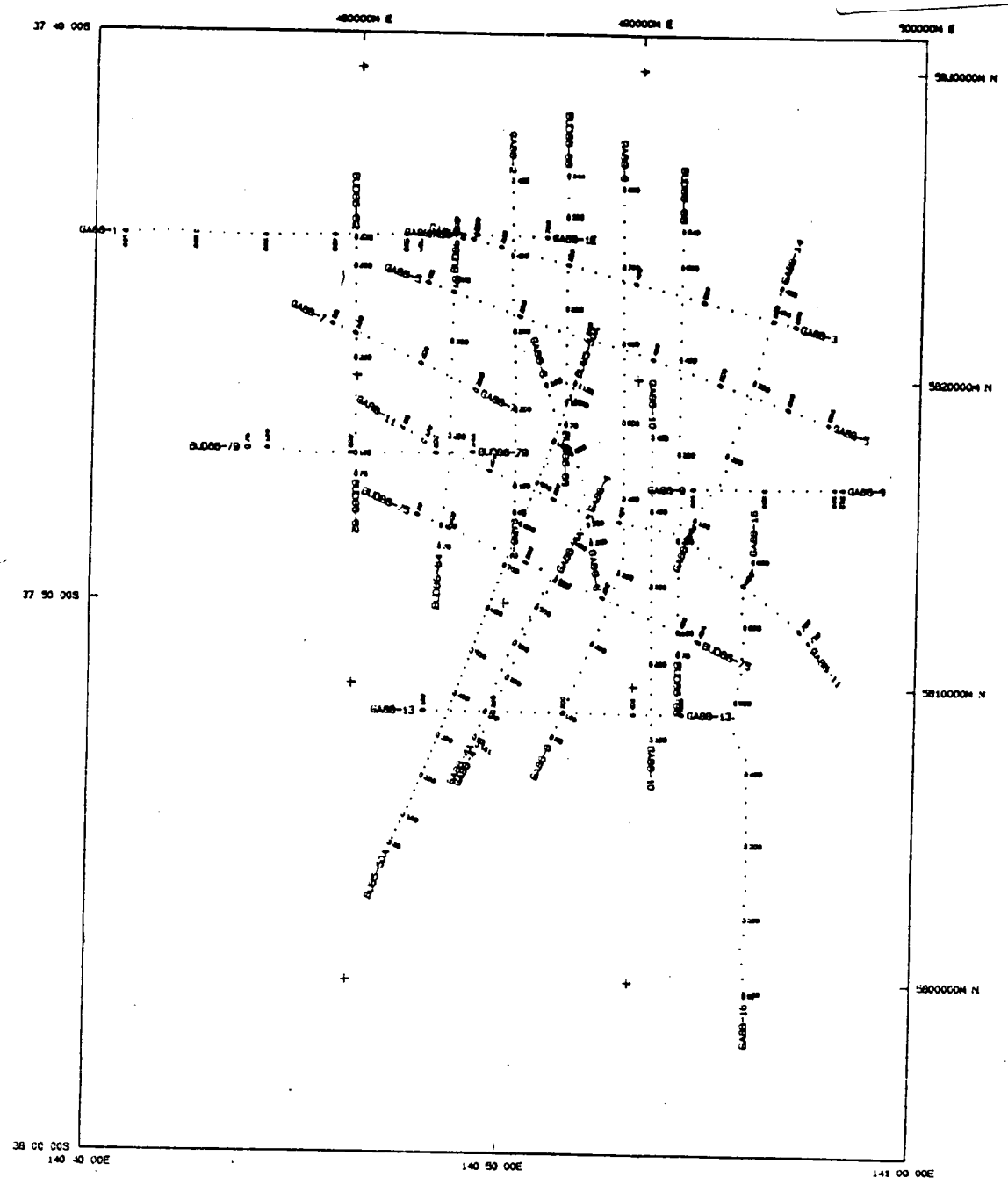
LOCATION MAP
STUDY AREA

FIGURE 2

SCALE : 1:250 000	AUTHOR : P. JEGANATHAN
DATE : APRIL 1989	DRG. No. : OT 4116



1. 150000

0 3 6 9 12 15

KILOMETRES

BEACH PETROLEUM N.L.

SEISMIC STATUS MAP PEL 28

UTM/ANS	CM 141	

FIGURE 3

2. CONCLUSIONS

1. Data quality is generally good.

2. Vibroseis is seen to be an effective energy source in this area.

3. Data quality of the 60 fold, 1988 Mt. Gambier Seismic Survey data is better than the previously acquired 24 fold data due in part to the improved processing techniques.

4. Post-stack reprocessing has improved data quality of the selected 1985 Burrungule and 1986 Burrungule Detail seismic lines as well as line WGD85-331.

5. Acquisition parameters selected are optimum for the Mt. Gambier Survey Area and were determined by adequate field testing supplemented by previous knowledge of the area.

6. Deep continuous data which has been observed on line GA88-03 can be readily followed to the north, however, data deteriorates to the south. A study of the deep data has shown that the discontinuous nature of the deep reflectors is related to the geology of the area.

7. The seismic survey grid which utilised in part existing access tracks and roads is optimum given the high density of habitation in the area.

8. The Tartwaup Fault is readily recognizable and has been interpreted as shown on Enclosures 1, 2 and 3.

9 . A number of leads have been delineated by this interpretation including the Glenburnie Prospect. The Glenburnie Prospect would appear to be a drillable target for the following reasons:

(i) it is reasonably large in areal extent being some 8.2 sq. km in area at the Near Base Pebble Point Formation level

(ii) it is ideally placed to trap any hydrocarbons migrating updip along the Tartwaup Fault

(iv) northerly dip is well defined and is unique in this area

(v) both Near Base Pebble Point Formation and Near Base Upper Cretaceous - Waarre plays can be tested with one well

(vi) seismic velocity over the Glenburnie Prospect indicates a velocity "low" over it. This would mean that the Glenburnie Prospect is a closure at depth.

3. RECOMMENDATIONS

(i) It is recommended that the Glenburnie Prospect be closely examined as a likely drilling target.

(ii) If further work is planned, it is recommended that:

(a) additional seismic be acquired to the south of the Tartwaup Fault and including PPL 21 to confirm the Near Base Upper Cretaceous structure mapped updip from Caroline #1.

and (b) additional seismic be acquired in the vicinity of line GA88-03 and to the north of it to identify any Pretty Hill leads in the area.

4. ACQUISITION (Figures 4, 5 and Appendix 1)

The 1988 Mt. Gambier Seismic Survey was recorded at 60 fold using Petty-Ray Geophysical's 120 channel MDS-14 Fibre Optic Telemetry System. This recording system was found to be very effective from a production and ease of operation point of view. Moisture did not pose any problems and leakage did not hamper production recording.

Acquisition parameter selection was determined by conducting a suite of tests on line GA88-06 on 18th January, 1988. Figure 4 is a summary of the acquisition parameter testing. The variables that were tested are listed below:

- 25 metre, 35 metre group interval
- sweep range
- sweep length
- number of sweeps
- source array length/move-up
- geophone spike length 2 inch/3inch
- geophone array
- 4 vibrators, 3 vibrators.

Quality control monitor records were produced on an SDW-400B electrostatic camera. In addition, part of the experimental data was processed on the Field Data Processing Unit (FDPU). The FDPU was also utilised to produce SEGY 6250 BPI output tapes in addition to generating brute stacks in the field for lines GA88-01, 05, 08, 11 and 13. A summary of the final

acquisition parameters that were used is shown in Figure 5. The only changes that were made to the final acquisition parameters are as follows:

(a) on 26th January, 1988 the sample rate was altered to 4ms

(b) the hi-cut filter was changed to 93Hz and

(c) on 16th February, 1988 the number of sweeps were changed from 4 to 6 sweeps.

The vibrators used were Failing Y1100A mounted on 6x6 Kenworth trucks. The energy source control was provided by an RCV/SHV 310B radio control system. For more details, refer to Appendix 1.

4.1 Uphole programme (Appendix 1 and Enclosure 4)

A total of 30 upholes were drilled at locations shown in Appendix 1. A loaded firing harness was loaded into each uphole. The configuration of the firing harness is shown in Appendix 1. Time-depth uphole plots were produced for each uphole and from these the depth of weathering and the velocities of the weathered and subweathered layers were determined. The depth of weathering was found to range from 3 to 5 metres whilst the weathering velocity ranged from 320 to 1,100 $msec^{-1}$. The subweathering velocity ranged from 1,820 to 2,300 $msec^{-1}$.

A Delay Time Map (Enclosure 4) was then produced and subsequently forwarded to Horizon Seismic Australia Pty. Ltd. who computed datum statics from the abovementioned map. Emphasis was paid on the statics in order to preserve integrity of structures - these being subtle.

4.2 Acquisition problems

A number of recovery shots were necessary owing to the proximity of seismic lines to buildings. This was unavoidable due to the population density but was left to a minimum by careful planning. The situation was monitored on a continuous basis and the observer was able to maintain a reasonable production average through difficult areas. The source maintained a 200m offset from buildings. A few days before the end of the survey the offset was reduced to 50m owing to the fruitful discussions between Beach Petroleum and SADME. This resulted in the successful re-recording of line GA88-04 as GA88-04A with a 50m offset between the source and habitation.

In some places sandy topsoil caused minor Source/Geophone coupling concerns. The geophone plants were monitored on a continuous basis which helped minimise the problem.

Receiver Type: Sensor SM-4 10Hz geophones, 1200 ohms damping resistance, 12 geophones per string, 2 inch spikes. 15 strings 10Hz, 1000 ohms damping resistance with 3 inch spikes were used for some tests.

Source: 4 Failing Y1100A vibrators located at stn. 262, source array, 57m, centred on the station.

Recorder: MDS-14 Fibre Optic System
Sample Rate: 2ms.
Record Length: Sweep length + 4 seconds listen time
Hi-Cut Filter: 109Hz 90db/octave
Lo-Cut Filter: 12Hz 24db/octave
Notch: Out

Parameters used were:

12 - 90 Hz, log 10db, 12 sec. sweep, 12m pad - pad, 4 vibrators in line.

10 sweeps, 2.33m move up
8 sweeps, 3.00m move up
6 sweeps, 4.20m move up
4 sweeps, 7.00m move up
10 sweeps, 2.33m move up with some geophone patches moved laterally, and some patches replaced by geophones with 3 inch spikes.

12 - 90 Hz, log 10db, 16 sec. sweep, 12m pad - pad

4 sweeps, 7.00m move up
6 sweeps, 4.20m move up
8 sweeps, 3.00m move up
4 sweeps, 7.00m move up, 3 vibrators in line

4 vibrators in line, 12m pad - pad, 7 metre move up

12 - 90 Hz, linear, 16 sec. sweeps
12 - 80 Hz, log 10db, 16 sec. sweeps
12 - 70 Hz, log 10db, 16 sec. sweeps
12 - 96 Hz, log 10db, 16 sec. sweeps
12 - 96 Hz, log 10db, 16 sec. sweeps, 10m move up (66m source array).

SUMMARY OF ACQUISITION PARAMETER TESTING

FIGURE 4

Sweep Range:	12 - 90 Hz, log + 10db
Sweep Length:	16 seconds
Listen Time:	4 seconds
Sample Rate:	2 milliseconds
No. Sweeps:	4
Lo-Cut Filter:	12 Hz 24db/octave
Hi-Cut Filter:	109 Hz 90db/octave
Notch Filter:	50 Hz In
Nominal Fold:	6000%
Source Array:	57m, 12m pad - pad, 7m move up, 4 vibrators in line, array centred between stations
Tape Format:	SEG B 1600 BPI Phase encoded
Receiver Array:	SM-4 10Hz, 12 geophones/string, 3.18m between geophones, 35m array length, centred on the station
Spread:	1612.5 - 137.5 - 0 - 137.5 - 1612.5

SUMMARY OF FINAL ACQUISITION PARAMETERS

FIGURE 5

5. PROCESSING (See Figures 6, 7 and Appendix 2)

Processing of the 1988 Mt. Gambier Seismic Survey was carried out by Horizon Seismic Australia in Perth on their VAX 780 system.

Comprehensive trials were carried out to determine the optimum processing sequence. The processing sequence is summarised in Figure 6 and is briefly described below as follows:

- amplitude compensation.
- multi-channel noise suppression - from this work it was decided not to run F-K filter.
- spectral compensation.
- deconvolution before stack trials were carried out on lines GA88-02 and GA88-10. Different operator lengths and predictive gaps were tested as well as surface consistent deconvolution and band-limited deconvolution. It was found that a 2 window band-limited spiking deconvolution gave better resolution and more continuous less noisy section.
- velocity analyses - initally tested constant velocity stacks spaced approximately 2km apart.
  - final analyses were OMNIVEL type which consisted of combined moved out gathers.
- initial muting trials.
- 2 passes of residual statics - surface consistent.
  - CDP consistent trim statics.
- deconvolution-after-stack trials were carried out on line GA88-02 using - predictive and
  - spiking methods.

Best results were obtained using zero-phase frequency deconvolution.

- bandpass filter trials were carried out on a deconvolution-after-stack version of line GA88-02.
- equalisation trials.
- migration - Wave Equation Migration testing was carried out using 80%, 90% and 100% of stacking velocities. From this work it was decided to use first order Wave Equation Migration with 90% of stacking velocities from 0-1 sec., and 80% of stacking velocities from 2-4 sec.
- post-stack Tau-P was tested and it was found that Tau-P after migration with 10% at 1.5 sec. and 30% at 3.0 sec. was effective.
- film display.

Final data quality was good. Figure 7 shows a representative GA88 seismic line that demonstrates high frequency content, good continuity and high resolution. Post-stack processing methods eg. zero-phase deconvolution and Tau-P filtering proved useful in preserving continuity of data quality.

5.1 Post-stack processing (Figure 8)

In order to tie more effectively with the Mt. Gambier Seismic Survey lines, the following lines were post-stack reprocessed:

1985 Burrungule Seismic Survey:	- BU85-50A
1986 Burrungule Detail Seismic Survey	- BUD86- 71, 75, 76, 79, 80, 82, 84, 86 and 88
This post-stack work took the form of	- zero-phase deconvolution
	- Tau-P filter
	- Bandpass filter.

5.2 Reprocessing (Figure 9)

Seismic lines BU85-08, BU85-40 and WGD85-331 were reprocessed. A summary of this work in shown in Figure 9. Some salient features are listed below:

- band-limited spiking deconvolution.
- zero-phase deconvolution after stack.
- Tau-P after stack.
- Wave Equation Migration.
- band-pass filter.

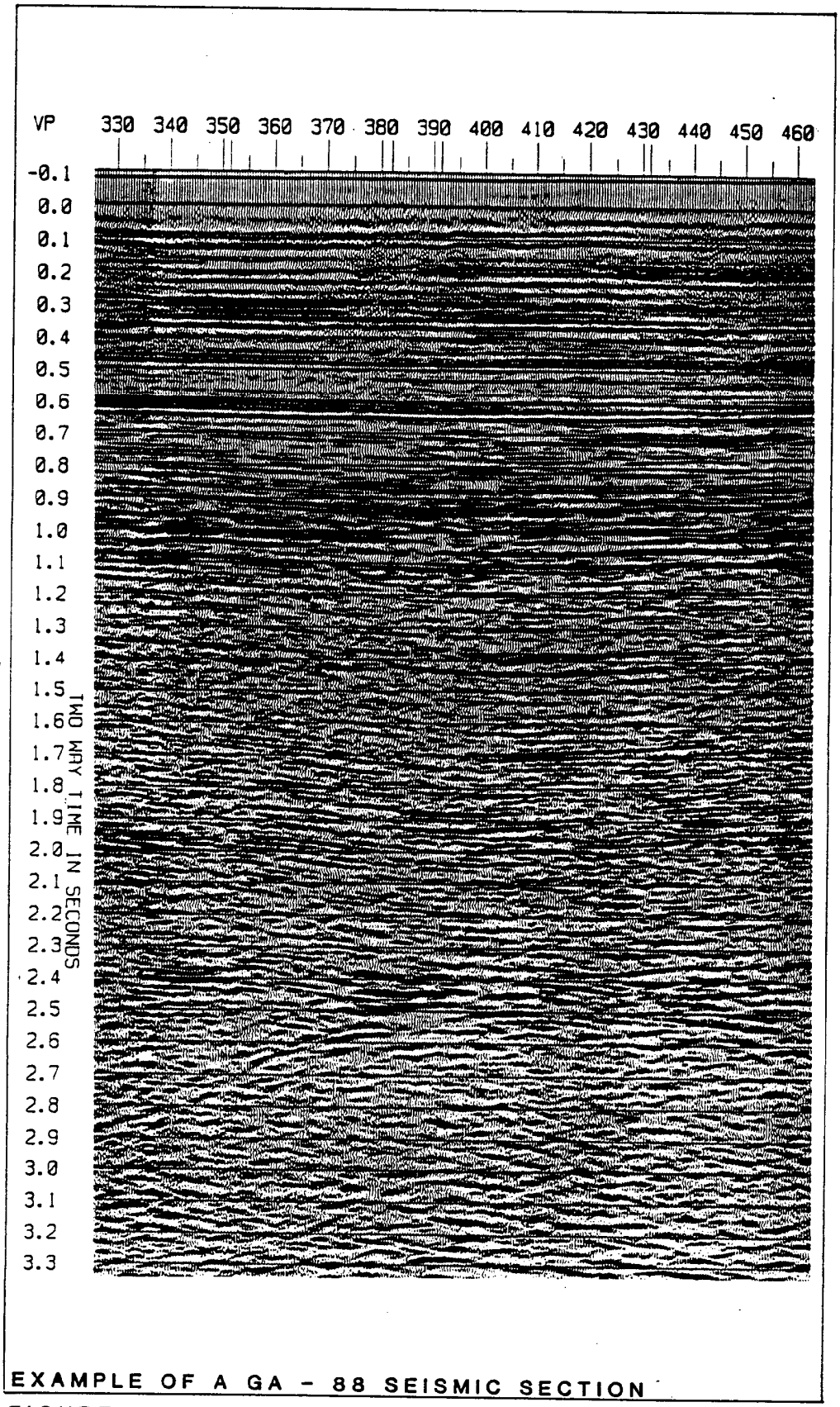
PROCESSING SEQUENCE

Processing record length: 4 seconds Sample rate: 4/2 msec

1. TRANSCRIPTION	amplitude compensation (dB) 20logt to 3 seconds zero phase correlation
2. DIFFERENTIAL STATIC CORRECTION	correction to floating datum: elevation velocity 2000 m/s weathering corrections supplied by BEACH
3. SPECTRAL COMPENSATION:	application of frequency domain filter to compensate for non-linear sweep and 50 Hz notch.
4. BAND LIMITED SPIKING DECONVOLUTION	WINDOW 1 / WINDOW 2 Operator length : 120 msec. / 120 msec. Predictive gap : 4 msec. / 4 msec. Design (near) : 0-1700 / 1500-3500 (far) : 800-1900 / 1700-3500 Application (near): 0-1800 / 1600-4000 (far) : 0-2000 / 1800-4000 Bandwidth : 12-90 Hz White noise : 1.0%
5. CDP SORT	60 fold
6. INITIAL VELOCITY ANALYSIS	CVS's at approximately 2 km intervals
7. RESIDUAL STATIC CORRECTION	"NEBULA" surface consistent residual statics number of traces in pilot: 7 acceptable static range: +/- 25ms window: 200ms to 1800ms
8. VELOCITY ANALYSIS	"OMNIVELS" velocity analyses at approximately 1km intervals
9. RESAMPLE	from 4ms to 2ms
10. N.M.O. APPLICATION	using velocities derived from "OMNIVELS" at approximately 1km intervals. Locations geologically dependant
11. MUTE	specified time followed by 60ms taper Offset(m): 225 450 725 900 1625 Time(ms) : 120 400 600 750 1030
12. PRE-STACK EQUALISATION	using 300(ms) fixed length windows
13. FINAL CORRECTION TO DATUM	correction from floating to final datum. Mean static applied to each trace
14. RESIDUAL STATIC CORRECTION	CDP consistent residual statics. number of traces in pilot: 7 acceptable static range : +/- 10ms window: 200 ms to 2500 ms
15. CDP STACK	nominal fold: 60
16. ZERO PHASE DECONVOLUTION	WINDOW 1 / WINDOW 2 Design(ms) : 100-2000 / 1800-3500 Application(ms) : 100-2050 / 1750-4000 Desired Output(Hz) : 12-90 / 12-70 120ms auto-correlation averaged over 21 adjacent traces
17. TAU-P FILTER	Time variant dip and coherency filter. 20 trace transform. mix back 90% at 1.5 sec 70% at 3.0 sec acceptable dip range +/-4.5 ms/tr
18. WAVE EQUATION MIGRATION	Finite difference method using 1st order solution. Velocities reduced: 10% from 0-1 sec : 20% from 2-4 sec.
19. BAND PASS FILTER	cosine squared tapers. Application time(msec) / Frequency limits (Hz) 0 : 15/20 - 100/110 1000 : 12/15 - 90/100 2000 : 8/12 - 80/90 3000 : 8/12 - 60/70 4000 : 8/12 - 50/60
20. POST STACK EQUALISATION	Using 600ms fixed length window

SUMMARY OF FINAL PROCESSING SEQUENCE

FIGURE 6



EXAMPLE OF A GA - 88 SEISMIC SECTION

FIGURE 7

PROCESSING SEQUENCE

POST STACK PROCESSING BY HORIZON SEISMIC AUSTRALIA

Processing record length: 3.5 seconds Sample rate: 4/2 msec

1. TRANSCRIPTION — from SEGY to HORIZON format

2. ZERO PHASE DECONVOLUTION

	WINDOW 1	WINDOW 2
Design(ms)	100-2000	1800-3500
Application(ms)	100-2050	1750-3500
Desired Output(Hz)	12-90	12-70

120ms auto-correlation averaged over 21 adjacent traces

3. TAU-P FILTER — Time variant dip and coherency filter.
20 trace transform.
mix back 90% at 1.5 sec 70% at 3.0 sec
acceptable dip range +/-4.5 ms/tr

4. BAND PASS FILTER — cosine squared tapers.

Application time(msec)	Frequency Taits (Hz)
0	15/20 - 100/110
1000	12/15 - 90/100
2000	8/12 - 80/90
3000	8/12 - 60/70
4000	8/12 - 50/60

5. POST STACK EQUALISATION — Using 600ms fixed length window

6. BULK STATIC SHIFT — Minus 15 milliseconds bulk shift applied to tie with GA88 GAMBIER SEISMIC SURVEY lines

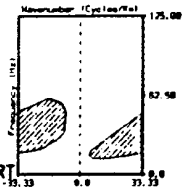
POST - STACK PROCESSING SEQUENCE

FIGURE 8

PROCESSING SEQUENCE

Processing record length: 4 seconds Sample rate: 4/2 msec

1. TRANSCRIPTION and CORRELATION — amplitude compensation (dB) 4t + 20logt to 3 seconds; zero phase correlation
2. RESAMPLE — from 2ms to 4ms
3. DIFFERENTIAL STATIC CORRECTION — correction to floating datum; elevation velocity 2100 m/s; weathering corrections supplied by BEACH
4. SPECTRAL COMPENSATION — application of frequency domain filter to compensate for non-linear sweep and 50 Hz notch.
5. FREE FORMAT F-K FILTER — applied in F-X domain



Shaded area = reject zone.
Response taper : 8.00 cycles/km and 15.00 Hz
Operator dimensions: 21 traces

6. CDP SORT — 12 fold
7. BAND LIMITED SPIKING DECONVOLUTION

	WINDOW1	WINDOW2
Operator length	120 ms	120 ms
Predictive gap	4 ms	4 ms
Design (near)	0-1700	1500-3500
(far)	800-1900	1700-3500
Application (near)	0-1800	1600-4000
(far)	0-2000	1800-4000

Bandwidth : 16-96 Hz White noise : 1.0%

8. INITIAL VELOCITY ANALYSIS — CVS's at approximately 2 km intervals
9. RESIDUAL STATIC CORRECTION — "NEBULA" surface consistent residual statics; number of traces in pilot: 7; acceptable static range: +/- 25ms; window: 200ms to 2200ms
10. VELOCITY ANALYSIS — "OMNIVELS" velocity analyses at approximately 1km intervals
11. RESAMPLE — from 4ms to 2ms
12. N.M.O. APPLICATION — using velocities derived from "OMNIVELS" at approximately 1km intervals. Locations geologically dependant
13. MUTE — specified time followed by 60ms taper

Offset(m)	375	615	735	795	975
Time(ms)	200	300	400	500	650

14. PRE-STACK EQUALISATION — using 300(ms) fixed length windows
15. FINAL CORRECTION TO DATUM — correction from floating to final datum. Mean static applied to each trace
16. RESIDUAL STATIC CORRECTION — CDP consistent residual statics. number of traces in pilot: 7; acceptable static range : +/- 10ms
17. CDP STACK — nominal fold: 12
18. ZERO PHASE DECONVOLUTION

	WINDOW 1	WINDOW 2
Design (ms)	100-2000	1800-3500
Application(ms)	100-2050	1750-4000
Desired Output(Hz)	12-90	12-70

120ms auto-correlation averaged over 21 adjacent traces

19. TAU-P FILTER — Time variant dip and coherency filter. 20 trace transform. mix back 70%; acceptable dip range +/-4.5 ms/tr
20. WAVE EQUATION MIGRATION — Finite difference method using 1st order solution. Velocities reduced : 10% from 0-1 sec : 20% from 2-4 sec.
21. BAND PASS FILTER — cosine squared tapers.

Application time(msec)	Frequency limits (Hz)
0	10/15 - 90/100
2000	10/15 - 80/90
4000	8/12 - 50/60

22. POST STACK EQUALISATION — Using 600ms fixed length windows
23. 2 ON 1 MIX — Decimate alternate traces on output

REPROCESSING SEQUENCE
FIGURE 9

6. INTERPRETATION (Figure 10)

6.1 Initial Preperation

After checking all intersections and measuring the misties, a mistie analysis was carried out which led to the decision to bulk-shift the BU85 and BUD86 lines by - 11 milliseconds at the Top Pember Mudstone Member and Near Base Pebble Point Formation levels. The BU85 and BUD86 lines were bulk-shifted by - 15 milliseconds at the Near Base Upper Cretaceous level. In addition line WGD85-331 had 20 milliseconds subtracted from it at all three mapping levels. The mistie is probably due to the zero-phase versus minimum-phase vibroseis correlation applied to the GA88 and BUD86 data respectively.

A correlation mistie of 11 milliseconds has been identified between the 1987 Orana Seismic Survey and the 1988 Mt. Gambier Seismic Survey.

All lines were examined for data quality and graded by means of a colour code. A Data Quality Map was then constructed which was used to guide the interpretation from good data quality areas in to the poorer areas thereby basing the interpretation on the best quality data available.

6.2 Well Control (Figures 10, 11(a), 11(b) and Appendix 3)

Horizon identification was carried out by satisfactorily tying seismic to a synthetic seismogram at Compton #1. In addition, Kalangadoo #1 was used to check the thickness between the interpreted horions particularly on the upthrown side of the Tartwaup Fault. Caroline #1 was used as a control point in the southern part of the Survey Area.

6.3 Interpretation Method

All seismic lines that were utilised in this interpretation were migrated, horizontally squeezed sections except BUD86-79 which was a final stack section.

Interpretation proceeded outwards in loops from the control points. Reflection events and fault planes were tied at all intersections.

The contour interval selected effectively smoothed out any residual misties after bulk-shifts had been applied.

6.4 Interpreted Horizons (Figures 11(a), 11(b) and Appendix 3)

Horizons identified at the wells and carried throughout the Study Area were:

- Top Pember Mudstone
- Near Base Pebble Point Formation

and - Near Base Upper Cretaceous Unconformity. Time Structure Contour Maps have been produced for each of the levels described above and accompany this report as Enclosures 1, 2, and 3.

6.4.1 Top Pember Mudstone

This horizon has a reasonably recognizable seismic character and can be interpreted confidently throughout the Study Area.

The Top Pember Mudstone Member Time Structure Contour Map gives a reasonably simplified picture of the trends and structural elements at this level.

The abovementioned map also gives a good indication of the young component of the major faults in the Study Area.

The Pember Mudstone is assumed to be an adequate seal in this area.

6.4.2 Near Base Pebble Point Formation

This horizon is a well defined reflector and for the most part is an easily recognizable horizon throughout the Study Area.

The Time Structure Contour Map gives a clear picture of the trends and structural elements at this level. It is a level at which the structure can be interpreted with confidence and can give an indication of structure at depth.

Any structure that is interpreted as having a vertical closure which is greater than the known thickness of the Pebble Point Formation in the area would include the upper part of the permeable and porous Timboon Sand Member of the Upper Cretaceous Paaratte Formation. Hydrocarbon accumulation could be expected in the upper part of the Timboon Sand Member if the Pebble Point Formation is not clean enough to serve as a reservoir.

The Pember Mudstone Member which overlies the Pebble Point Formation is assumed to be a reasonable seal.

Oil shows were encountered in the Pebble Point Formation at the following wells:

- Lindon #1 - recovered oil
- Fahley #1 - wet gas.

6.4.3 Near Base Upper Cretaceous Unconformity

This is the deepest reflector which could be interpreted with some degree of continuity over the Study Area.

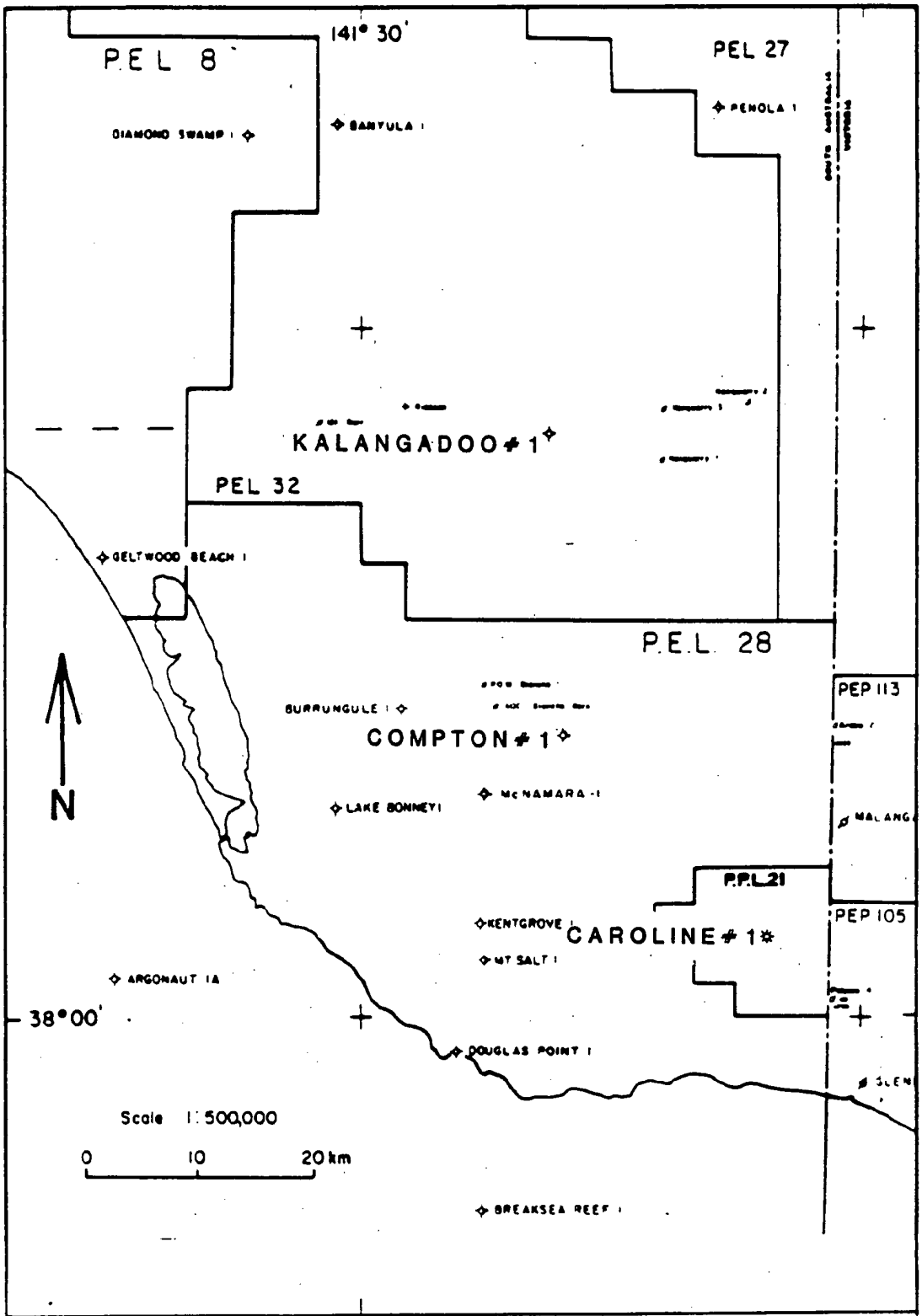
Structure at the Near Base Upper Cretaceous Unconformity level may reflect structure at the Top Waarre level.

The sands of the Waarre Formation are close to and therefore ideally located to trap any hydrocarbons migrating from the source beds of the Otway Group.

The Belfast Mudstone which overlies the Waarre Formation can provide good sealing on the downthrown side of the Tartwaup Fault.

It is emphasised that due to the variability of data quality of the interpreted horizon as well as the extensive faulting, an average level of confidence accompanies this map.

The Waarre Formation at Caroline #1 has good reservoir characteristics.



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LOCATION OF KEY WELLS

FIGURE 10

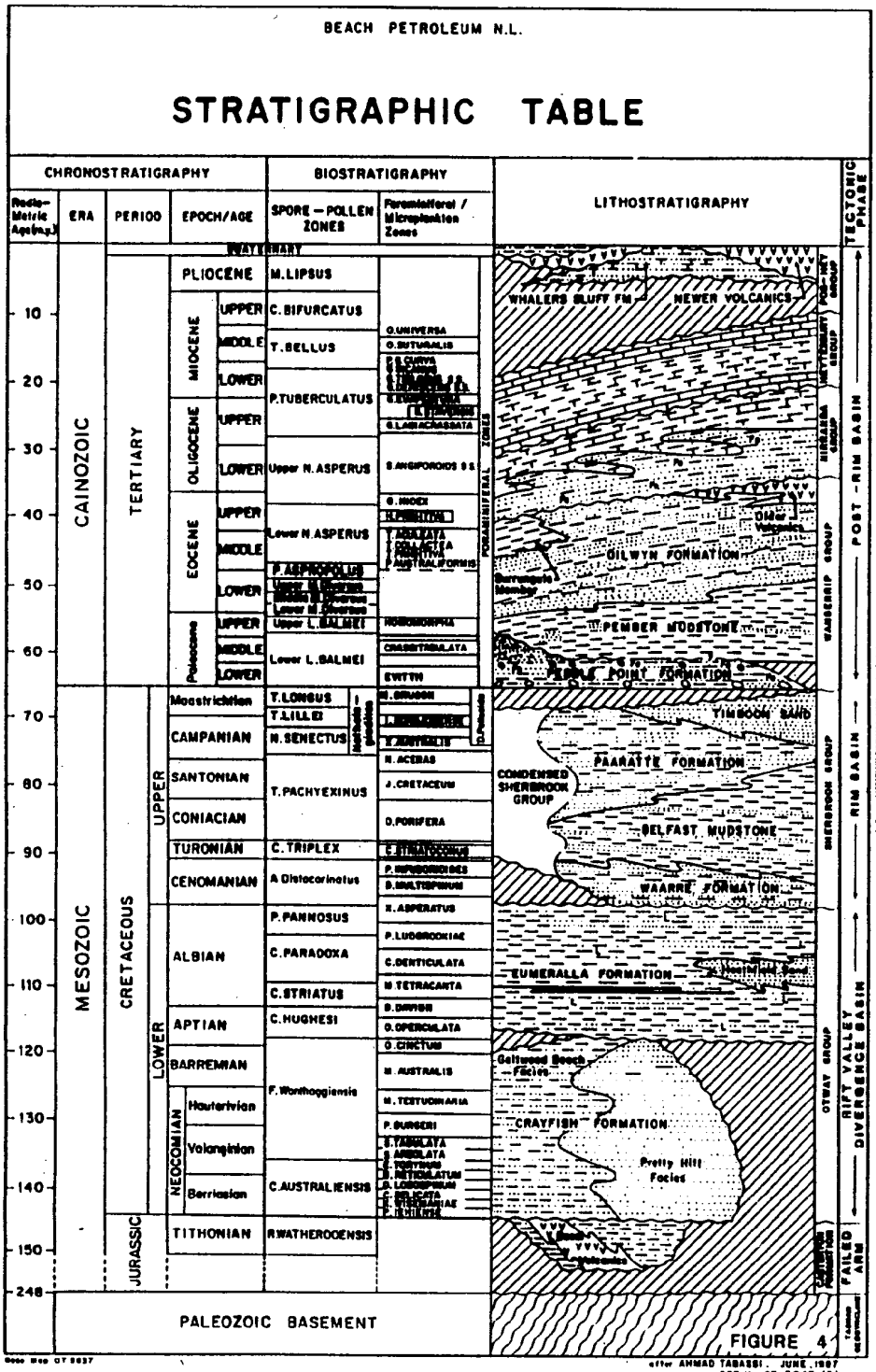


FIGURE 4

GENERALISED STATIGRAPHIC COLUMN

FIGURE 11(a)

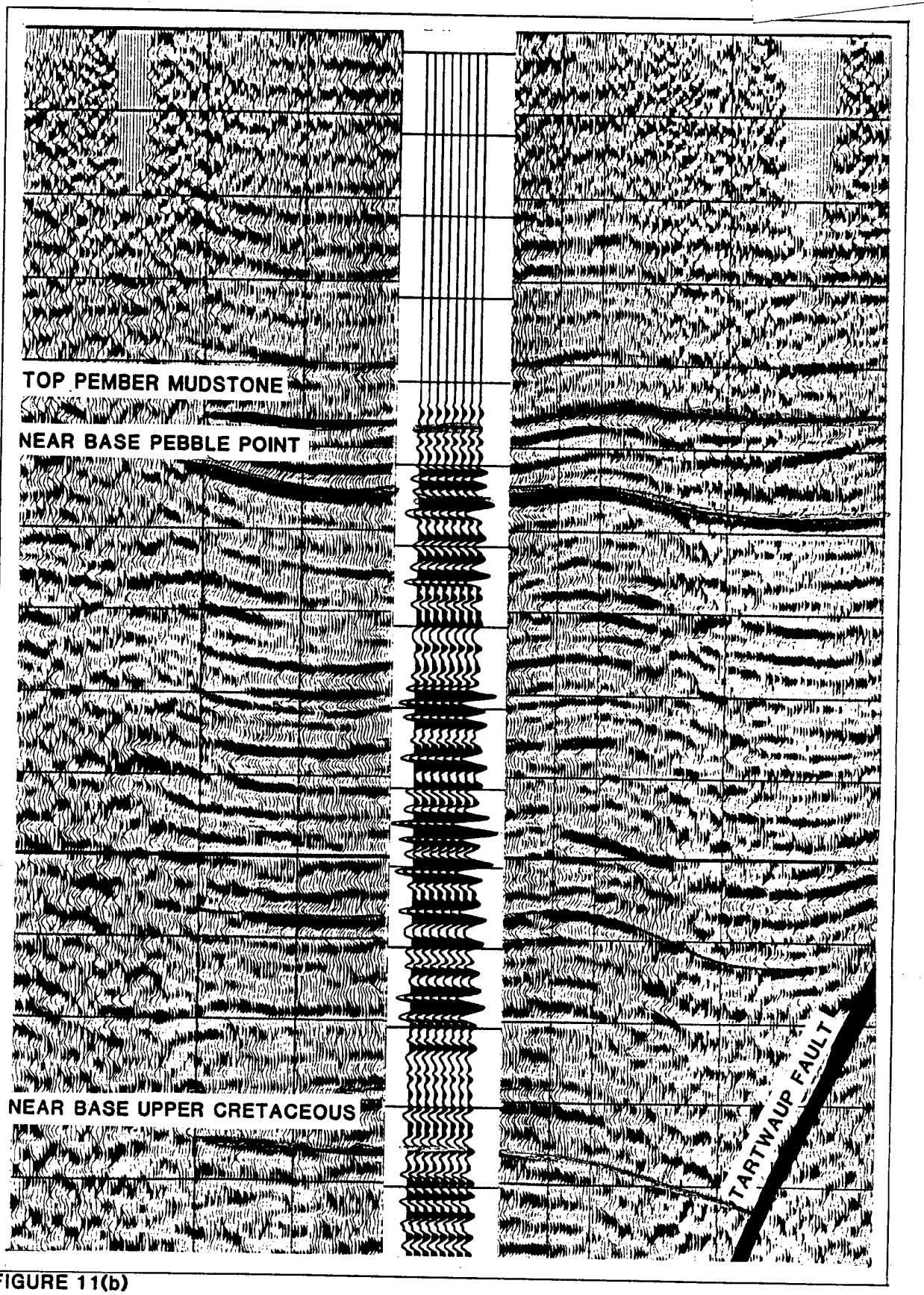


FIGURE 11(b)

SYNTHETIC SEISMOGRAM TIE TO LINE BUD86-76 SP172 AT COMPTON#1

15 - 50HZ MINIMUM PHASE NORMAL POLARITY

7. DISCUSSION OF STRUCTURAL INTERPRETATION

7.1 GENERAL STRUCTURAL STYLE

The Study Area is mainly located on the upthrown side of the major northwest-southeast trending Tartwaup Fault. A number of northwest-southeast trending anticlinal axes are observed with culminations on some of them. Faulting is interpreted as being normal and throw down to the northeast and southwest. The strike direction of the faults is in a northwest-southeast sense. At the Near Base Upper Cretaceous level, two large faults form half-grabens between the Tartwaup Fault and Caroline #1.

A number of leads have been delineated by this interpretation including the Glenburnie Prospect which is described below:

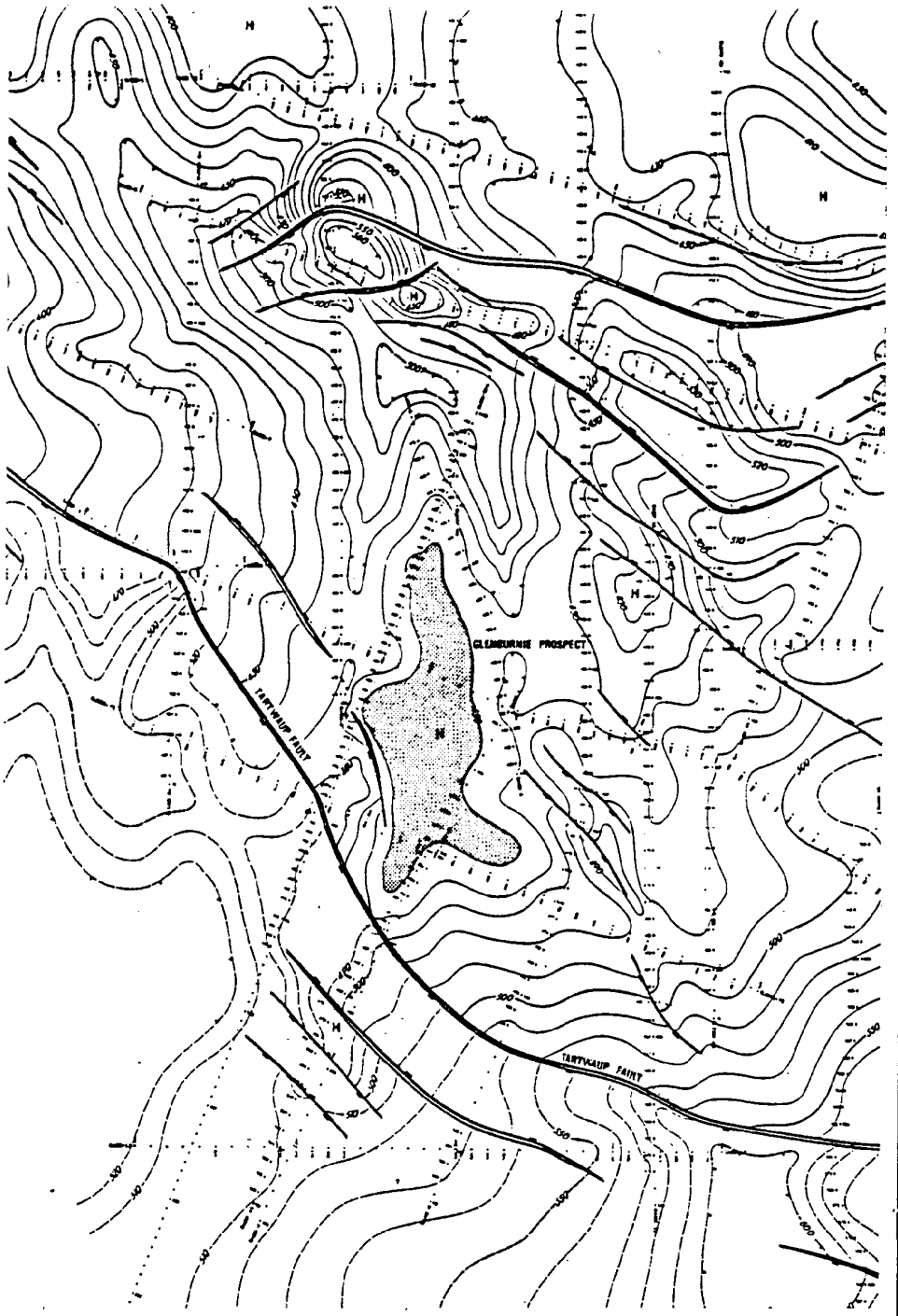
7.1.1. GLENBURNIE PROSPECT (Figures 12, 13 and 14)

This prospect is interpreted to be a closure at all three levels. In each case it is seen to have a northwest to southeast trending structural axis. At the Near Base Pebble Point level it is interpreted as a closure on the upthrown side of the Tartwaup Fault. The Glenburnie Prospect exhibits northerly dip which is unique. At this level it is some 8.2 sq. km. in areal extent with a maximum vertical relief of approximately 30 metres.

Seismic velocity over the Glenburnie Prospect indicates a velocity "low" over it which would mean that this Prospect is a closure at depth.

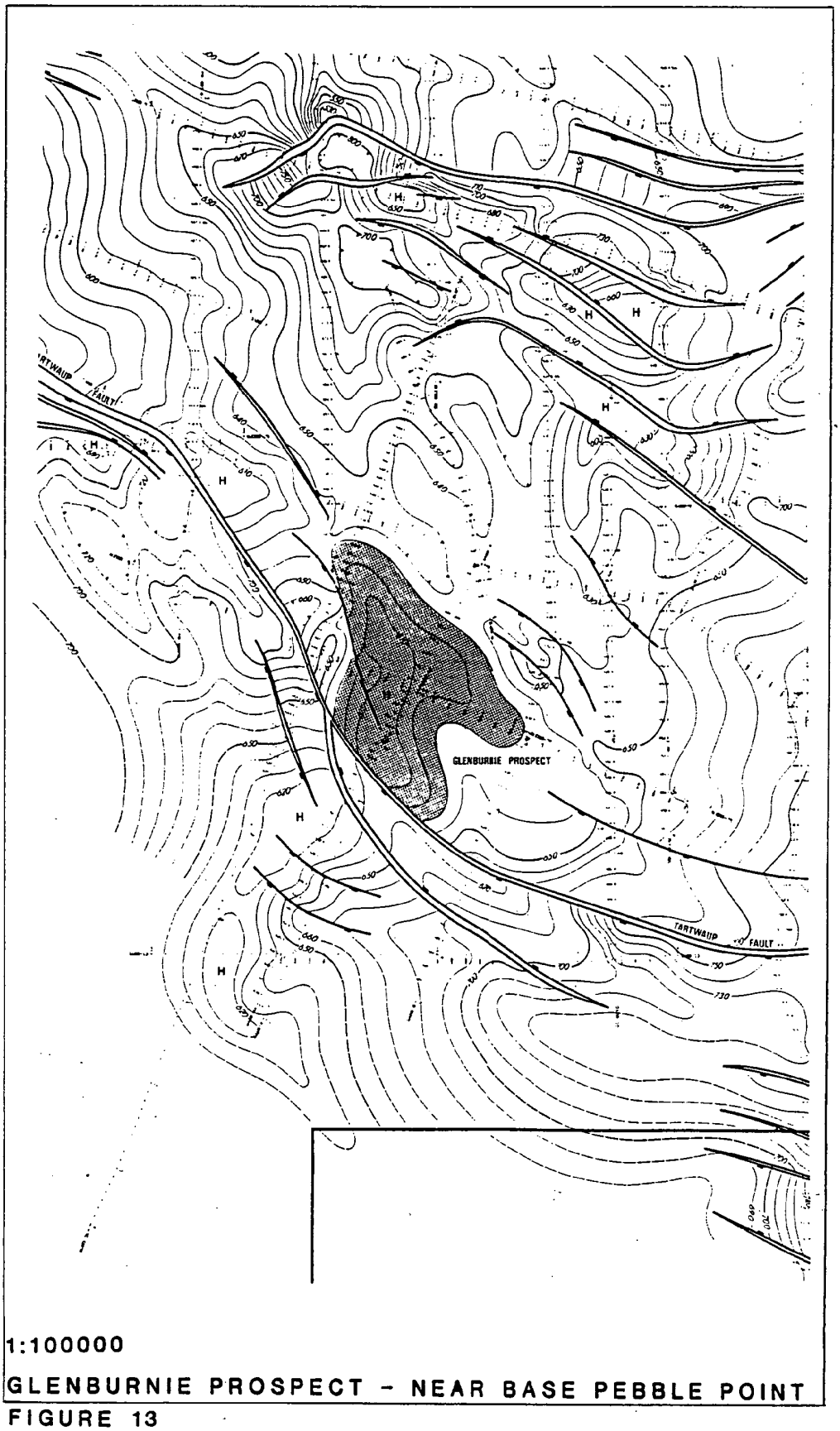
Isochore values taken from the Top Pember Mudstone to Near Base Pebble Point; and Near Base Pebble Point to Near Base Upper Cretaceous intervals indicate that the growth of the structure took place during the deposition of the Pebble Point Formation.

The Glenburnie Prospect is best seen on lines BU85-50A and BUD86-75.



GLENBURNIE PROSPECT - TOP PEMBER MDST. MBR.

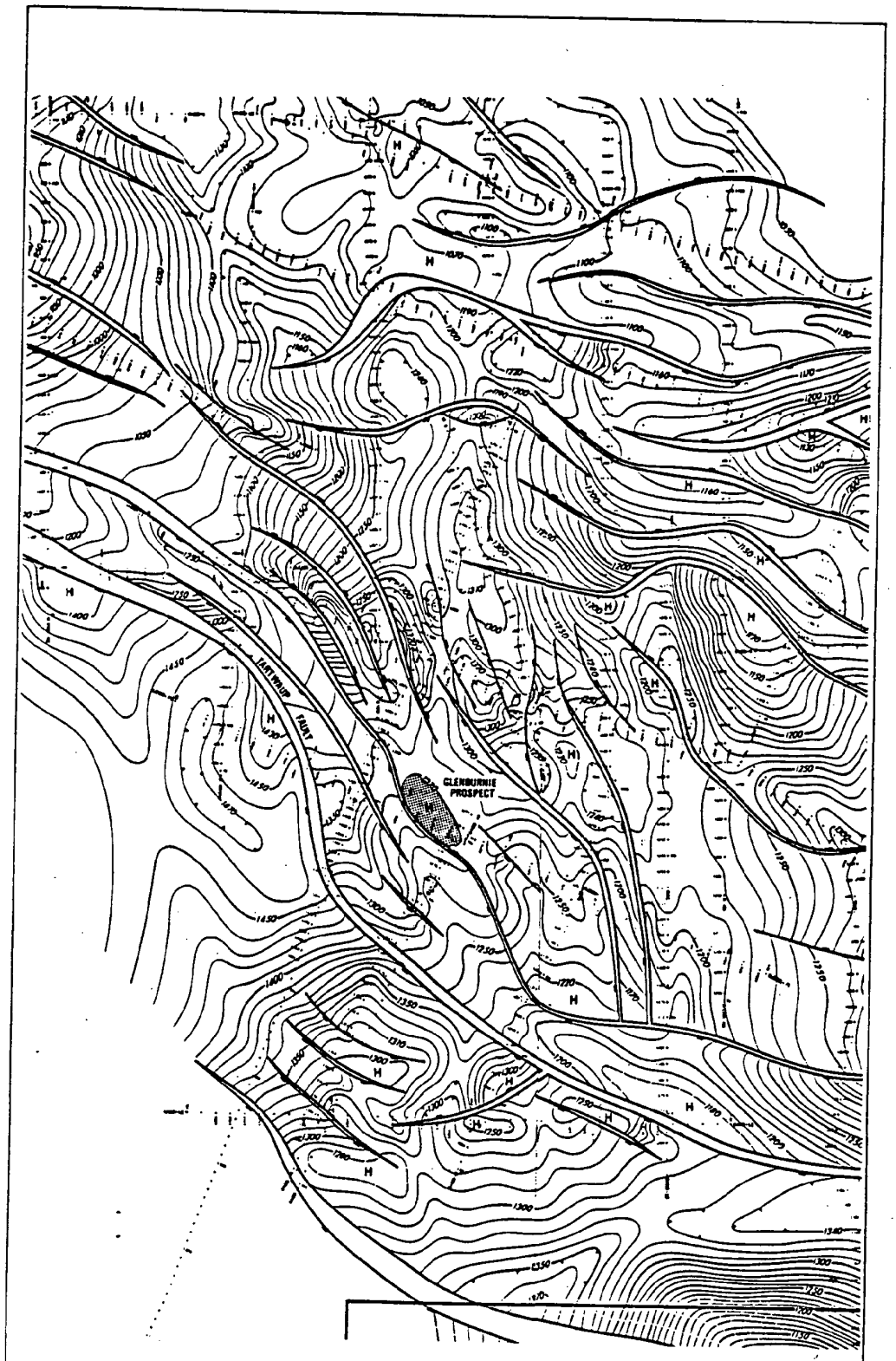
FIGURE 12



1:100000

GLENBURNIE PROSPECT - NEAR BASE PEBBLE POINT

FIGURE 13



1:100000
GLENBURNIE PROSPECT
- NEAR BASE UPPER CRETACEOUS

FIGURE 14

6930-3

480000M E

490000M E

500000M E

5820000M N

5810000M N

5800000M N

37 45 00S

37 50 00S

37 55 00S

140 45 00E

140 50 00E

140 55 00E

141 00 00E

ORANA SEISMIC SURVEY AND GAMBIER SEISMIC SURVEY

CORRELATION MISTIE APPROXIMATELY 11 MILLISECONDS BETWEEN

SOUTH AUSTRALIA
VICTORIA

GLENBURNIE PROSPECT

TARTWAUP FAULT

TARTWAUP FAULT

PPL 21

WGD85-331

CAROLINE 1

H

1: 25000

0 2.5

KILOMETRES

SCALE : 1:25,000
SPHEROID : AUSTRALIAN NATIONAL SPHEROID
PROJECTION : UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN : 141°
A.M.G. ZONE No. : 54

DATUM : MEAN SEA LEVEL

ALL LINES USED WERE MIGRATED HORIZONTALLY SQUEEZED SECTIONS EXCEPT BUD86-79 WHICH WAS A FINAL STACK SECTION.

NB: BU85 & BUD86 LINES BULK SHIFTED BY — 11 msecs
WGD85-331 BULK SHIFTED BY —20msecs

Beach Petroleum NL

PEL 28 SOUTH AUSTRALIA
MT GAMBIER SEISMIC SURVEY

TOP PEMBER MUDSTONE MEMBER
Time Structure Map

Contour Interval: 10 milliseconds

AUTHOR : P. JEGANATHAN	DATE : October 1988	SCALE : 1:25000
DRAWN : L. N.	APPROVED :	Drwg. No. : OT 4056.R

6930-5

Enclosure 1

6930-4

1: 25000

0 — 2.5

KILOMETRES

SCALE : 1:25,000
SPHEROID : AUSTRALIAN NATIONAL SPHEROID
PROJECTION : UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN : 141°
A.M.G. ZONE No. : 54

DATUM : MEAN SEA LEVEL

ALL LINES USED WERE MIGRATED HORIZONTALLY SQUEEZED SECTIONS EXCEPT BUD86-79 WHICH WAS A FINAL STACK SECTION.

NB: BU85 & BUD86 LINES BULK SHIFTED BY — 11 msecs
WGD85-331 BULK SHIFTED BY —20msecs

Beach Petroleum NL

PEL 28 SOUTH AUSTRALIA
MT GAMBIER SEISMIC SURVEY

NEAR BASE PEBBLE POINT FORMATION Time Structure Map

Contour Interval: 10 milliseconds

AUTHOR : P. JEGANATHAN	DATE : October 1988	SCALE : 1:25000
DRAWN : L.N.	APPROVED :	Drwg. No. : OT 4049 R

6930-6

Enclosure 2

480000M E
490000M E
500000M E
5820000M N
5810000M N
5800000M N
37 45 00S
37 50 00S
37 55 00S
140 45 00E
140 50 00E
140 55 00E
141 00 00E

SOUTH AUSTRALIA
VICTORIA

TARTWAUP FAULT

GLENBURNIE PROSPECT

PPL 21

CAROLINE 1

1:25000
0 2.5
KILOMETRES

SCALE : 1:25,000
SPHEROID : AUSTRALIAN NATIONAL SPHEROID
PROJECTION : UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN : 141°
A.M.G. ZONE No. : 54

DATUM : MEAN SEA LEVEL

ALL LINES USED WERE MIGRATED HORIZONTALLY SQUEEZED SECTIONS EXCEPT BUD86-79 WHICH WAS A FINAL STACK SECTION.

NB: BUD85 & BUD86 LINES BULK SHIFTED BY — 15 msecs
WGD85-331 BULK SHIFTED BY −29msecs

Beach Petroleum NL

PEL 28 SOUTH AUSTRALIA
MT GAMBIER SEISMIC SURVEY

NEAR BASE UPPER CRETACEOUS
Time Structure Map

Contour Interval: 10 milliseconds

AUTHOR : P. JEGANATHAN	DATE : October 1988	SCALE : 1:25000
DRAWN : L.N.	APPROVED :	Drwg.No : OT 4048

6930-7

Enclosure 3

6930-6

480000M E

490000M E

500000M E

5820000M N

5810000M N

5800000M N

37 45 00S

37 50 00S

37 55 00S

140 45 00E

140 50 00E

140 55 00E

141 00 00E

MAX

MAX

MIN

MIN

5·2 DELAY TIME IN MILLISECONDS
2000 ⊕ REFRACTOR VELOCITY

1: 25000
0 2,5
KILOMETRES

Beach Petroleum NL

PEL 28 SOUTH AUSTRALIA
MT GAMBIER SEISMIC SURVEY

DELAY TIME MAP

Contour Interval: 1 millisecond

AUTHOR: P. JEGANATHAN	DATE: October 1988	SCALE: 1:25000
DRAWN: L. N.	APPROVED:	Drwg. No. : OT 4028

6930-8

Enclosure 4

APPENDIX 1

FINAL OPERATIONS REPORT

BEACH PETROLEUM N.L.

GAMBIER SEISMIC SURVEY

OTWAY BASIN PERMIT P.E.L. 28

FINAL OPERATIONS REPORT

FOR

BEACH PETROLEUM N.L.

GAMBIER SEISMIC SURVEY

IN THE

OTWAY BASIN, P.E.L. 28

CONDUCTED BY

PETTY-RAY GEOPHYSICAL

CREW 6824

18 JANUARY, 1988 - 17 FEBRUARY, 1988

CONTENTS

APPENDICES

FIGURES

ENCLOSURE

1. INTRODUCTION

Petty-Ray Geophysical Crew 6824 was contracted to conduct a seismic survey in the Otway Basin P.E.L. 28 in the south-eastern region of South Australia.

The survey crew commenced operations on 10 January, 1988 and the recording crew started on 19 January, 1988, after conducting an extensive experimental programme on 18 January, 1988.

Field supervision was conducted by Mr. Pradeep Jeganathan for Beach Petroleum N.L.

2. LOCATION

The survey area was located in the south-eastern corner of P.E.L. 28. The seismic survey was conducted to the north and east of Mt. Gambier within approximately 20Km of the town.

3. TERRAIN

The prospect area primarily comprised undulating pastural plains with occasional pine plantations. The terrain did not present any limitations to recording during the survey. Difficulties were, however, experienced by the fact that the SADME regulations precluded the vibrating of any stations within 200m of habitation. In some cases this caused a considerable reduction in fold on the seismic section. Additional difficulties were occasionally experienced with fence lines. Often long detours had to be made to negotiate them especially when gates were too narrow for the vibrators to pass through.

4. WEATHER

Weather was variable during the survey. Temperatures ranged from 8 - 40 degrees Celsius with overcast skies for much of the survey. Rain did occur but not in sufficient quantities to delay production. A bush fire ban was declared on 28 January, 1988 but production was maintained.

5. LOGISTICS

Accommodation was provided for the crew at the Red Carpet Inn in Mt. Gambier. An office was set up in one of the rooms with a private telephone line and facsimile machine since poor radio communications were experienced with Head Office, Brisbane.

Most of the crew's supplies were obtained from Mt. Gambier with technical requirements being airfreighted from Brisbane or Melbourne.

The mechanic's workshop and parts trailers were parked in a lockable compound rented from Mr. D. Stevens of Dave Stevens Smash Repairs. This provided suitable facilities for the maintenance and storage of vehicles.

All recorded data tapes and monitors were sent to Beach Petroleum in Melbourne by courier for subsequent distribution to a processing centre.

6. PERMITTING

Permits for the prospect were obtained by Mr. J. Payne acting for Beach Petroleum N.L. Few problems were experienced although some difficulties arose with absentee landowners and owners being on holiday. This meant that the survey crew was temporarily held up on occasions. Generally excellent relations were maintained with the landowners.

7. SURVEYING

a. General

Surveying commenced on Sunday 10 January, 1988 with a reconnaissance of the programmed lines. Production started the next day. Control for the programme was provided by trig. points located at Myora and Kirby. In addition, ties were made to previous surveys where their lines intersected this programme. Several tie traverses were run to close off ends of lines and to form complete loops. A few tails over intersections were left as hanging lines. These were double run with sunshots to close bearings. Line clearance was performed by Mr. R. Johnson and was restricted to slashing, clearing of debris and some lopping of overhanging branches which restricted access of the vibrators to an area. There were some exceptions to this. Line GA88-05 was dozed for approximately 1 kilometre near its eastern end through private property. Line GA88-09 went into a pine plantation on its western tail. The first section needed heavy trimming and clearing with some stumps having to be sawn off at ground level to enable the vibrators to have access to the line. The second and final section was into a pine plantation but traversing it against the direction of the trails. Some pines had to be felled and the area cleared. Line GA88-10, which had a section running down a tight pine trail, needed heavy trimming and clearing of debris.

The major problem with the survey centred on the skips and recoveries. The permit agent and senior surveyor spent a considerable amount of time and energy realigning seismic lines so that the number of skips and recoveries were minimal. Their understanding was that SADME regulations required that the source maintained a 200m offset/gap from all construction. A few days before the end of production on this prospect Petty-Ray Geophysical was informed by Beach Petroleum that due to successful negotiations between Mr. J. Choudhury and Mr. R. Nelson of SADME, that this requirement could be relaxed to 50m. Subsequently, line GA88-04 was partially re-recorded as GA88-04A, in a new position, in part due to the numerous skips undertaken on the original survey on the southern part of the line.

7. SURVEYING (Cont'd)

b. Operations

Chaining was conducted using a plastic coated steel cable (aircraft control cable) marked at 25m intervals from a normal survey tape. The cable was 4 stations long. No colour change was made with the pin flags since every station was a vibrator point. Chaining distance was checked by EDM throughout the prospect. The chain length was checked at the end of each line.

Instruments used in this survey were a Wild T2000 Electronic Theodolite and a Wild D14L Distomat with a Wild T1 Theodolite and Wild D14 Distomat as a back-up. A direct feed into a GRE3 Electronic Fieldbook was used. This was supplemented by handbooking when necessary.

Normal methods of: 'Reciprocal Verticals' for turning points to determine elevations; 'Double Plate Angles' with sunshots by 'Altitude' method to establish and control bearings; 'Single Ray Verticals' to all intermediate points calculated using co-efficients for curvature and refraction developed from relevant turn point reciprocal angles.

c. Computations

Computations were made by a direct feed from the GRE3 Electronic Fieldbook into a TIPC supplemented by hand punching of field data. All computations were performed by a TIPC using Land Survey Programs from GSI/TI. Sunshots and some tie lines were computed by HP41CX hand held calculators. In addition, calculations for some lines were checked by hand to verify the TIPC results.

Adjusted interpolated co-ordinates and elevations for all stations were input onto diskette and hardcopy. A copy of each line was passed onto the in-field data processing unit as required.

7. SURVEYING (Cont'd)

d. Permanent Markers

These were placed at all intersections of lines and roads and at the start and end of lines. Markers were located at the closest fence line wherever possible although permanent markers placed in pine plantations are all liable to be pulled out. A permanent marker was located at the first road crossing the line if no fence was nearer to the start and end of line. Permanent markers comprise a normal 1.8m tall star iron with a stamped aluminium tag with relevant information bolted onto it. The star iron was driven into the ground usually to fence height and integrated into the fence as best as was possible.

Lists to client:-

Interpolated data, all stations, all lines (both on disk and hardcopy)
Field notes of all lines and traverses (both on disk and survey notes)
Intersection diagrams for all lines
Control points, trigs and previous permanent markers used
Loop Closure map (Vertical and Horizontal)
Surveyors plot map of lines with permanent markers and upholes.

8. RECORDING

Field recording was undertaken using a Geosource MDS-14, 120 channel, Fibre Optic Telemetry recording system. Quality control monitors were produced on a 48 trace SDW-400B Electrostatic camera.

a. Experimental Programme

An experimental programme was undertaken on line GA88-06 on 18 January, 1988, to determine the most suitable recording parameters for this portion of the seismic survey. A cable with takeouts at 25m intervals was arranged doubled back on itself such that traces 1/120 and 60/61 were located at the same station. The geophone array, traces 1-60, was 12 geophones spread out over 25m whilst for traces 61-120 the 12 geophones were equally spaced out over 35m.

8. RECORDING (Cont'd)

Receiver Type: Sensor SM-4 10Hz geophones, 1200 ohms damping resistance, 12 geophones per string, 2 inch spikes. 15 strings 10Hz, 1000 ohms damping resistance with 3 inch spikes were used for some tests.

Source: 4 Failing Y1100A vibrators located at stn. 262, source array, 57m, centred on the station.

Recorder: MDS-14 Fibre Optic System
Sample Rate: 2ms.
Record Length: Sweep length + 4 seconds listen time
Hi-Cut Filter: 109Hz 90db/octave
Lo-Cut Filter: 12Hz 24db/octave
Notch: Out

Parameters used were:

12 - 90 Hz, log 10db, 12 sec. sweep, 12m pad - pad, 4 vibrators in line.

10 sweeps, 2.33m move up
8 sweeps, 3.00m move up
6 sweeps, 4.20m move up
4 sweeps, 7.00m move up
10 sweeps, 2.33m move up with some geophone patches moved laterally, and some patches replaced by geophones with 3 inch spikes.

12 - 90 Hz, log 10db, 16 sec. sweep, 12m pad - pad

4 sweeps, 7.00m move up
6 sweeps, 4.20m move up
8 sweeps, 3.00m move up
4 sweeps, 7.00m move up, 3 vibrators in line

8. RECORDING (Cont'd)

4 vibrators in line, 12m pad - pad, 7 metre move up

12 - 90 Hz, linear, 16 sec. sweeps
12 - 80 Hz, log 10db, 16 sec. sweeps
12 - 70 Hz, log 10db, 16 sec. sweeps
12 - 96 Hz, log 10db, 16 sec. sweeps
12 - 96 Hz, log 10db, 16 sec. sweeps, 10m move up (66m source array).

b. Recording - Parameters

The following recording parameters were chosen at the conclusion of the experimental programme:

Sweep Range:	12 - 90 Hz, log + 10db
Sweep Length:	16 seconds
Listen Time:	4 seconds
Sample Rate:	2 milliseconds
No. Sweeps:	4
Lo-Cut Filter:	12 Hz 24db/octave
Hi-Cut Filter:	109 Hz 90db/octave
Notch Filter:	50 Hz In
Nominal Fold:	6000%
Source Array:	57m, 12m pad - pad, 7m move up, 4 vibrators in line, array centred between stations
Tape Format:	SEG B 1600 BPI Phase encoded
Receiver Array:	SM-4 10Hz, 12 geophones/string, 3.18m between geophones, 35m array length, centred on the station
Spread:	1612.5 - 137.5 - 0 - 137.5 - 1612.5

8. RECORDING (Cont'd)

The following changes were made to the recording parameters on 26 January, 1988 at the start of line GA88-011:

Sample Rate:	4 milliseconds
Hi-Cut Filter:	93 Hz

The number of sweeps were changed from 4 to 6 sweeps on 16 February, 1988. In addition, the distance the vibrators could approach any construction whilst operating was reduced from 200m to 50m on 16 February, 1988. This change greatly assisted in improving the quality of the final section.

9. PROCESSING

Processing of data was undertaken using Petty-Ray Geophysical's in-field data processing unit (DPU). Initially, the DPU processed the crew start-up tests and part of the data acquired during the experimental programme that was conducted at the beginning of the seismic survey. Data acquired using a 16 second sweep, 4 second listening period with a 2ms sample rate was sent to Petty-Ray Geophysical's main processing centre in Brisbane for analysis. This was also undertaken for lines GA88-04, GA88-13. As requested, SEG Y 6250 BPI client output tapes were produced by the DPU once the parameters were changed to 4ms sampling rate. Additional processing was undertaken as requested by Beach Petroleum N.L. This included producing brute stacks for lines GA88-11, GA88-01, GA88-05, GA88-13 and GA88-08. Parameters used in producing the brute stacks were provided by Beach Petroleum N.L.

9. PROCESSING (Cont'd)

Additional tape transcription of data from the Gambier Seismic Survey was requested three weeks after the survey was completed. Beach Petroleum N.L. requested on 4 March, 1988 that all SEG B 1600 BPI field records from the Gambier Seismic Survey be transcribed to SEG B 6250 BPI format. Since many of the original tapes had been scratched, as they were no longer needed, information on lines GA88-01, GA88-04, GA88-11, GA88-13 and GA88-16 was not able to be recovered.

10. WEATHERING SURVEY

a. Drilling

An uphole survey was conducted as part of the Gambier Seismic Survey to provide information about the sub-surface and to determine a static correction at the uphole locations. Petty-Ray Geophysical provided a Bourne 1000R mounted on a Mack 6x6 truck to drill the upholes.

Uphole locations were determined by Beach Petroleum N.L. A total of 30 upholes were drilled as part of the seismic survey. No major problems were encountered by the drilling crew although the presence of sub-surface caves within limestone formations caused some difficulty with lost circulation problems.

b. Statics

A loaded harness was lowered into each uphole (Appendix 7 & 8). Records of the travel time from the shot depth to the surface were made on an OYO McSeis 24 channel recording instrument. T-X graphs were produced for each uphole. Depth of weathering and the velocities of the weathered and sub-weathered material were determined from the graphs. Depths of weathering did not vary much ranging from 3m - 25m. Weathering velocities ranged from 320m/s to 1100m/s whilst sub-weathering velocities ranged from 1820m/s to 2300m/s. Static values were produced for the production of the brute stacks using the elevation static method and a 2100m/s replacement velocity.

11. CONCLUSIONS AND RECOMMENDATIONS

Petty-Ray Geophysical's Crew 6824 successfully completed the Gambier Seismic Survey on 18 February, 1988 at an average acquisition rate of 5.20 km./day. This rate was achieved in spite of the presence of numerous fences, which often required large detours, and the necessity of the vibrators undertaking many backups so that recovery shots could be made.

The successful negotiations carried out between Beach and SADME which resulted in the reduction of source offset from 200m to 50m from dwellings, improved data quality dramatically. It is hoped that the new S.A. Petroleum Regulations, which will pass through Parliament during 1988 will assist future surveys in minimising loss of fold.

Respectfully submitted,
PETTY-RAY GEOPHYSICAL

JOHN HORSLEY
Operations Supervisor

Approved by:

DAVID HOSKINS
General Manager - Australia

APPENDIX 1

EQUIPMENT LISTING

RECORDING	4	Failing Y1100A Vibrator Units mounted on Kenworth 6x6 trucks
	1	International 4x4 Recording Truck
	1	MDS-14 Recorder
	2	Mass Memory SMM II
	1	DC6000 Correlator
	1	SDW 400B Monitor Camera
	2	MTM 100
	1	Multi-Tape Control
	1	Oscilloscope 465B
	1	RCV 310B Vibrator Electronics
	4	RTU II (Remote Takeout Units)
	10	Battery Chargers
	120	Battery Packs
	400	Strings of SM-4 10Hz Geophones 12/string
	33	Fibre Optic Cable Links - 8 Takeouts Links at 40m spacing
	4	Fibre Optic Extension Cables - 100m
	1	Geospace 940
	1	Precision DC Source
	3	100W SSB Radios
	10	VHF Radios
	4	VHF Radios (Vibrator Controls)
	1	Client Radio
	3	Toyota Personnel Carriers
	4	Toyota Pickups
SURVEY	1	DI-4 Wild Distomat
	1	T2000 Total Station
	1	Precision Chain
	1	TIPC
		Drafting Equipment
	1	100W SSB Radio
	2	VHF Radios
	2	VHF Portable Radios
	2	Toyota 4x4 Pickups

APPENDIX 1

EQUIPMENT LISTING

(Continued)

REFRACTION	1	24 Channel OYO McSeis Refraction System
	1	Mobile Explosives Magazine
	1	Mobile Detonator Magazine
	2	4x4 Toyota Pickups
DRILLING	1	Bourne 1000 mounted on 6x6 Mack
	1	Mack 6x6 Water Truck
ADMINISTRATION	1	Party Manager's Vehicle
	3	100W SSB Radios
	2	VHF Radios
	1	Canon Photocopier
FIELD PROCESSING	1	FPT-32 Central Processor/4 MB Memory
	1	Array Processor
	4	Tape Drives 1600/6250
	1	Disc Drive
	1	High Speed Raster
	1	Printer/Plotter Printronix
	1	Printer/Plotter Versatec 2211
	1	TIPC
	1	Fully equipped air-conditioned trailer
	1	40 KVA Alternator
MAINTENANCE	1	Workshop Trailer
	1	Parts Trailer
	1	Portable Welding Unit

APPENDIX 2

PERSONNEL LISTING

Party Manager	B. Manieri
Assistant Party Manager	R. Heyer
Instrument Engineer	T. Hill
Senior Observer	R. Ambrose
Observers	H. Hancock/D. Sully
Seismologists	A. Spenceley/K. Robinson
Refraction Observer	D. Schulze/B. Jansen
Senior Surveyor	I. Beattie
Surveyor	F. Tangney/J. Paton
Analysts	A. Spenceley/K. Robinson
Driller	M. Thompson
Vibrator Mechanic	A. Jones
Mechanic	W. Morton/M. Sinkkonen
Line Boss	R. Clark
Battery Man	S. Subasic

Utility Workers:

Recording Crew	(10)
Vibrator Operators	(4)
Survey Crew	(2)
Drill Crew	(1)
Preloader	(1)
Batteries	(1)
Geophones	(1)

APPENDIX 3

LINE LISTING

LINE NO.	S.O.L.	E.O.L.	KILOMETRES
GA88-01	100	520	10.500
GA88-01E	520	700	3.250 Km. Rate
			1.250 Hrly. Rate
GA88-02	65	495	10.750
GA88-03	159	632	11.825
GA88-04	101	440	8.475
GA88-04A	63	303	6.000
GA88-05	61	661	15.000
GA88-06	106	326	5.500
GA88-07	65	285	5.500
GA88-08	65	800	18.375
GA88-09	100	312	5.300
GA88-10	100	498	9.950
GA88-11	65	720	16.375
GA88-13	100	469	9.225
GA88-14	100	428	8.200
GA88-16	97	690	14.825
		TOTAL	160.300

FOR: [redacted] PETROLEUM N.L.

BY: PETTY-RAY GEOPHYSICAL

MONTHLY STATISTICAL REPORT

AREA GAMBIER

CRE.. 682[redacted]

PERIOD JANUARY 1988

SOURCE PATTERN:

RECEIVER ARRAY:

CAMP SITES RED CARPET INN

SPREAD STA. INT.

VARISOURCE: Normal ☐ Alternate ☐ Out ☐

Date	COVERAGE Line No GA88-	STATIONS from	STATIONS to	No. of Sta.	Sweeps or Drops	COVERAGE Daily	COVERAGE Cum.	WEATHERING Line No.	WEATHERING Profiles	WEATHERING COVERAGE Daily	WEATHERING COVERAGE Cum.	HOURS Daily Tests	HOURS OB. Moves	HOURS Maint. Time	HOURS Non Prod. Time	HOURS Time Lost Weath.	HOURS Travel	HOURS Record. Time	HOURS Total Time	REMARKS
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				Survey/Beattie&Tangney travel to Sale Mechs /Jones & Morton travel to Sale
9																				Surveyors enroute to Mt. Gambier
10																				Surveyors locate line locations - waiting on parameters
11																				Receive parameters - Survey start
12																				Surveying & Chaining progressing
13																				Survey in progress - Convoy leaves Bu
14																				Surveying in progress
15																				Survey in progress - Main convoy leaves Sale
16																				All convoys arrive Mt. Gambier
17	06	Experimental		120											3.00		0.25		3.25	Layout exp. spread - 3 hrs layout
18	06	Experimental		120								0.25	-	0.50	1.75		0.50	10.25	13.00	Downtime Inst. 1Hr. (Mass Mem & Sim C.U Downtime Vib (Alternator)
19	06	326	201	125		3.125	3.125					1.00	-	-	4.75		0.75	5.00	11.50	Downtime Inst. 0.25 Hr.
20	06/04	200/440	106/369	91 71		4.15	7.275					0.50	-	0.50	3.25		0.50	7.25	12.00	OB down 1.5Hr. - Mass Memory
21	04	368	167	202		5.05	12.325					0.75	1.00	0.75	1.50		0.50	8.25	12.75	
22	04/13	166/100	101/218	66 118		4.600	16.925					0.50	0.25	0.50	1.25		0.50	9.25	12.25	Vib 4 down Kline Pump 3 Hrs.
23	13	219	411	193		4.825	21.750					0.50	0.50	1.00	0.25		0.75	9.50	12.50	OB down Correlator 0.25 Hrs.
24	13/16	412/97	469/286	58 189		6.175	27.925					0.50	-	0.25	1.75		0.50	9.25	12.25	Vib down .25Hr. Back Motor battery OB down .25Hr. Mass Memory
25	16	287	536	250		6.250	34.175					0.50	1.25	0.25	1.25		0.50	8.75	12.50	OB down 1.0Hr. Mass Memory
26	16/11	537/720	690/656	154 65		5.450	39.625					1.50	0.50	1.00	0.50		0.75	7.75	12.00	OB down 0.25Hr. Back Motor
27	11	655	392	264		6.600	46.225					0.50	0.75	0.50	-		0.75	9.50	12.00	
28	11	391	192	200		5.000	51.225					0.50	1.25	0.75	1.50		0.75	7.50	12.25	Vib 4 down 1 Hr.
29	11/01	191/100	101/164	91 64		3.875	55.100					0.75	0.50	1.50	1.75		0.75	7.00	12.25	Slow production - recoveries OB down 0.25Hr.
30	01	165	409	245		6.125	61.225					0.50	0.25	0.50	0.25		0.75	10.00	12.25	
31	01/01Ext	410/570	520/683	111 114		5.600	66.825					0.75	0.50	0.75	2.00		0.75	8.25	13.00	
	TOTALS			2671		66.825	66.825					8.75	6.75	8.25	20.00		8.50	107.25	159.50	

00065

FOR: BEACH PETROLEUM N.L.

BY: PETTY-RAY GEOPHYSICAL

MONTHLY STATISTICAL REPORT

AREA

CREW 6841

PERIOD FEBRUARY 1988

SOURCE PATTERN:

RECEIVER ARRAY:

CAMP SITES Red Carpet Inn - Mt. Gambier

SPREAD STA. INT. 25m. VARISOURCE: Normal ☐ Alternate ☐ Out ☐

Date	COVERAGE							WEATHERING				HOURS								REMARKS
	Line No. CABB-	STATIONS from	STATIONS to	No. of Sta.	Sweeps or Drops	COVERAGE Daily	COVERAGE Cum.	Line No.	Profiles	COVERAGE Daily	COVERAGE Cum.	Daily Tests	O.B. Moves	Maint. Time	Non Prod. Time	Time Lost Weath.	Travel	Record. Time	Total Time	
1	01 Exc/11	684/100	700/65	17/36		4.100	4.100					0.25	-	1.00	4.25		1.00	6.50	13.00	OB down 0.50
	01/03	520/159	570/220	50/62																
2	03	221	438	218		5.450	9.550					0.50	0.50	1.00	1.25		1.00	8.25	12.50	Numerous fences - Detours
3	03/14	439/428	632/375	193/53		6.175	15.725					0.75	0.50	0.75	1.25		0.75	8.50	12.50	
4	14	374	100	275		6.875	22.600					0.50	0.25	0.75	0.50		1.25	9.50	12.75	Vib down 0.25 hours
5	09/10	100/498	312/469	212/39		6.025	28.625					0.50	0.75	0.25	1.75		0.75	8.25	12.25	
6	10	468	247	222		5.550	34.175					0.75	0.25	1.00	1.75		0.75	7.75	12.25	OB down 0.5 hours)
7	10/08	246/65	100/126	147/61		5.200	39.375					0.75	-	1.25	2.50		0.75	7.25	12.50	OB down 0.25 hours) Tape Head
8	08	127	406	280		7.000	46.375					0.50	0.25	0.50	2.00		0.75	9.50	13.25	OB down 0.50 hours)
9	08	407	679	272		6.825	53.200					0.50	0.50	0.25	-		0.75	10.25	12.25	
10	08/05	680/661	800/552	120/109		5.750	58.950					0.75	-	0.75	2.00		0.75	8.00	12.25	OB down 0.25 hours
11	05	551	357	195		4.875	63.825					0.75	0.50	0.50	1.25		0.75	8.75	12.50	) Vibes (6 sweeps) Fences & rough terrain - slow going
12	05	356	128	229		5.725	69.550					0.50	0.50	0.75	1.25		0.75	8.75	12.50	
13	05/02	127/495	61/362	66/133		5.000	74.550					0.75	0.25	0.25	1.50		0.75	8.50	12.00	
14	02	361	137	225		5.625	80.175					0.50	-	1.25	2.00		0.50	8.00	12.25	
15	02/07	136/285	65/158	71/127		4.975	85.150					0.50	-	1.00	2.50		0.75	7.25	12.00	Vib down 0.25 hour
16	07/04A	157/63	65/108	92/45		3.450	88.600					0.50	0.25	2.75	1.25		1.00	6.25	12.00	2 Hr lost cattle chewed line
17	04A	109	241	133		3.325	91.925					0.50	-	1.50	3.00		1.00	6.50	12.50	
18	04A	242	303	61		1.55	93.475					0.50	0.25	1.00	3.00		1.25	6.00	12.00	Vib down 0.25 hr.
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				
	TOTALS			3733		93.475	93.475					10.25	4.75	16.50	33.00		15.25	143.75	223.25	

00069

APPENDIX 5

LIST OF SURVEY CONTROL DATA

LINE	STATION	EASTING	NORTHING	ELEVATION	CONNECTION
	Myora Trig	496060.563	5813290.255	89.041	GA88-11
	Kirby Trig	495020.913	5825442.324	82.392	GA88-14
OR87-01	716	471637.02	5824581.58	66.91	GA88-01
BUD86-82	332	479860.33	5824503.13	64.06	GA88-01/-05
BUD86-82	226+27	479904.80	5821356.14	56.33	GA88-07
BUD86-86	207+18	491498.36	5814999.72	57.19	GA88-11
BUD86-86	248+24	491475.23	5816150.69	61.68	GA88-09/-14
BUD86-88	96	487415.85	5819150.93	64.40	GA88-06
BUD86-79	316	483273.05	5817609.57	65.66	GA88-11
BU85-50A	454	483954.94	5810452.10	39.70	GA88-13

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-01				
100	66.91	471 637.02	5 824 581.58	SOL Previous PM Int. 01/BUD86-64/ OR87-01 Stn. 716
263 + 17	63.26	475 717.69	5 824 530.81	East fence Naracoorte-Mt. Gambier Railway line
429	66.99	479 849.53	5 824 606.34	North side of Wandilo Rd. at int. of Sunnybrae Rd (Nth of EOL BUD86-82)
496 + 5	66.05	481 533.24	5 824 634.00	East fence of Penola Rd at the int. of Wandilo Rd. EOL is 595m east

(Note: Line GA88-01 is Wandilo Road pegged on northern side).

Line GA88-01E

Line GA88-01Ext was due to export vegetable crop causing a 1250m gap. Line GA88-01 end of line was 520, line GA88-01Ext start of line was 570 effectively starting on projected peg number from GA88-01.

569 + 11	67.87	483 357.94	5 824 672.05	Fence 11m west of S.O.L.
639	69.30	485 095.32	5 824 634.20	Just off south fence Peweena near power line
704 + 6	68.46	486 726.75	5 824 597.46	Fence 106m east of E.O.L.

(Note: Line GA88-01E runs at approx. 3° greater bearing than GA88-01).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-02				
PM 1	53.46	485 623.80	5 815 416.71	S.O.L. is 232m north. North fence of Worrolong Road
104 + 24	53.76	485 624.94	5 816 648.68	Int. 02/11 station 240+16 on 11 South fence Buchanans Road
216 + 3	60.72	485 589.19	5 819 420.99	North fence Mingbool Road
322	65.57	485 477.47	5 822 059.06	Fence 16m north of int. 02/05 Station 191 on line 05
407 + 8	69.84	485 391.47	5 824 177.95	Fence 8m north of int. 02/03 Station 217 on line 03
433 + 1	69.75	485 397.93	5 824 825.04	South fence Peweena Road
495	71.35	485 349.80	5 826 381.05	E.O.L. South fence Laneway
Line GA88-03				
191 + 5	70.65	484 764.33	5 824 326.59	West fence Peweena Road S.O.L. is 805m W/N/W.
382	68.96	489 393.22	5 823 185.01	Actually PM on GA88-08 Stn 681+3m 382 is 32m north at int. 03/08
603	67.77	494 765.69	5 821 936.10	Fence 125m east of 03/14 int. E.O.L. is 750m E/S/E.

(Note: Line GA88-03 starts close to GA88-01E alignment then travels completely through paddocks to end with tail over GA88-14 approx. 500m south of Milroy Road).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-04				
101 + 14	34.53	484 477.71	5 808 019.02	S.O.L. 14m S/S/W north fence of Brim Brim Road
149 + 3	35.84	484 972.64	5 809 099.18	Int. 04/13 stn. 198+9m N/E cnr. Evans Rd & Square Mile Road
231 + 21	50.08	485 820.86	5 810 984.41	Princes Hwy. North Side, beside Evans Road sign.
347 + 17	49.88	487 083.26	5 813 574.66	Int. 04/BUD86-75 N/E cnr Evans Rd & Old Gold Road
440	54.12	488 259.14	5 815 556.86	E.O.L. at int. Evans & Buchanan Rds. S/E cnr also int. 04/11/06

(Note: GA88-04 is Evans Road pegged on the east side except for diverge through paddocks south of Old Gold Road and again near S.O.L. from Square Mile Road to Brim Brim Road).

Line GA88-04A				
63 + 13	37.34	484 385.47	5 808 261.88	SOL 13m S/W east fence Brim Brim Rd.
100	35.80	484 731.63	5 809 103.53	Int. 04A/13 north fence Square Mile Road stn. 188+9m line 13
185 + 11	50.23	485 551.64	5 811 070.90	Princes Highway north fence
256 + 21	45.47	486 530.03	5 812 557.85	Int. 04A/04 east fence Evans Road Station 301 line 04
303 + 8	46.56	487 188.73	5 813 511.32	E.O.L. 8m S/W south fence Old Gold Road

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-05				
61 + 12	65.24	482 410.78	5 823 059.63	S.O.L. is 12m W/N/W fence in line with Airport Road
137 + 20	65.58	484 212.25	5 822 449.48	West fence Peweena Road
266 + 9	66.05	487 275.03	5 821 508.18	East fence Mingbool Road
355 + 10	66.15	489 427.56	5 820 989.63	Int. 05/08 is 8m E/S/E stn. 593 on line GA88-08. West fence of Clover Estate Road at Redhill Rd cnr
661	65.78	496 701.03	5 818 680.04	E.O.L. fence at fire break to scrub

(Note: GA88-05 starts approx. 1Km. east of Penola Rd. on fence line in line with Airport Road and travels through paddocks to end at fence line of scrub just short of border).

Line GA88-06				
105 + 17	65.12	486 687.48	5 819 817.56	S.O.L. is 8m south. North fence of Clover Estate Road
160	60.95	487 181.46	5 818 559.79	Int. 06/BUD85-50A N/W fence cnr at int. of Black Swamp, Hawkins & Triangle Roads
289 + 24	54.60	488 248.52	5 815 545.29	Actually PM 440 line GA88-04 offset from int. 06/04/11 in S/E cnr of Evans & Buchanan Road int.
326	53.22	488 404.59	5 814 650.27	E.O.L. at east fence on Triangle Rd.

(Note: GA88-06 is Triangle Road pegged on west side with tail over BU85-50A through the paddocks to end on Clover Estate Road).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-07				
65 + 8	60.57	479 095.30	5 821 661.10	Fence beside hayshed S.O.L. is 8m Northwest
100	56.35	479 904.80	5 821 356.14	Cnr. Croyle & Sunnybrae Rds Sth/West cnr int. 07/BUD86-82 stn. 226+27m line BUD86-82
170 + 4	60.58	481 530.45	5 820 709.03	West fence Penola Road
262 + 3	63.10	483 645.88	5 819 816.38	North fence White Road
Line GA88-08				
63 + 18	37.36	487 129.59	5 808 273.13	S.O.L. is 32m N/N/E PM in fence
100	42.06	487 493.70	5 809 098.34	Int. 08/13 stn 299+2m N/W cnr of Square Mile Rd. & Brown Rd. Used Cadastral mark for PM.
260 + 10	50.98	489 148.78	5 812 750.93	Int. 08/BUD86-75 north fence of Old Gold Road
367	57.32	489 572.83	5 815 330.80	Actually PM 408 line GA88-11 offset 25m east of 08 at the S/E cnr of Pine Trail, Buchanans Rd. & Glenelg Highway int.
681 + 5	68.95	489 393.19	5 823 185.03	Int. of 08/03 is 32m north on edge of Mingbool Rd. PM is in south fence of Mingbool Road
796	71.72	489 342.90	5 826 052.42	E.O.L. is 100m north. PM in fence

(Note: GA88-08 starts with southern tail over Square Mile Road (GA88-13) then is Brown Road pegged on west side until Old Gold Road (BUD86-75) through paddocks to Pine Trail until just short of Redhill Road, then through paddocks to the end).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING
(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-09				
132	64.06	492 777.54	5 816 514.04	Int. 09/14 stn. 150 eastern side of Glenelg Hwy at entrace to Pine Trail.
313 + 6	65.45	497 302.83	5 816 557.16	E.O.L. is 31m west of PM, which is placed at eastern side of the Vic./ S.A. border track at the end of Pine Trail.

(Note: Line GA88-09 tails west through pines over Glenelg Hwy. then travels east along Pine Trail to border with one step to the south. PM's will probably be pulled by Forestry so for reference it is the first major Pine Trail north of int. of Glenelg Hwy. and Rennick Road).

Line GA88-10				
100	41.89	490 693.01	5 808 283.75	S.O.L. north fence of Caroline Rd.
132	41.33	490 663.23	5 809 082.25	Int. 10/13 stn. 426 + 2m fence
375 + 12	57.59	490 538.44	5 815 164.00	Int. 10/11 stn. 447 + 4m south fence of Bentley Road
498	64.34	490 521.87	5 812 814.66	E.O.L. north side of Pine Trail

(Note: Line GA88-10 starts from Caroline Road up fence line then Pine Trails).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-11				
65	58.59	481 612.32	5 818 391.62	S.O.L. eastern fence of Penola Rd. above cutting
104	47.53	482 458.63	5 817 913.57	S/E cnr of Mingbool & Buchanan Rds.
271	53.78	486 328.65	5 816 367.91	Int. 11/BU85-50A S/E cnr of Buchanan & Hawkins Road
354	54.12	488 259.14	5 815 556.86	Actually PM 440 line GA88-04 int. 11/04/06 PM is offset to the south of line 11 & is in the S/E cnr of Buchanan & Evans Roads
408	57.32	489 572.83	5 815 330.80	Int. 11/08 stn. 367 in fence S/E cnr of Glenelg Hwy. & Bentley Rd.
486 + 4	57.39	491 497.86	5 814 999.57	Int. 11/BUD86-86 stn 207+18 PM S/W cnr of Bentley Rd. & track
602 + 2	53.51	493 839.35	5 813 319.31	Int. 11/16 stn. 655 in fence S/W cnr. of Bentley & Myora Roads
720	53.59	496 135.68	5 811 491.47	Just north of Princes Hwy near previous alignment of highway

(Note: Line GA88-11 is Bentley & Buchanan Roads pegged on the south side with an extension through paddocks on western end (7° bend to the north at int. of Mingbool Road) and straight line (within reason) to highway on the eastern end of Bentley Rd.)

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-13				
100	40.00	482 523.85	5 809 098.55	S.O.L. north fence Square Mile Rd.
136 + 12	37.04	483 434.16	5 809 103.68	Int. 13/BU85-50A N/E cnr Square Mile & Hawkins Road
198 + 9	36.42	484 981.80	5 809 103.30	Int. 13/04 stn 149 + 3 N/E cnr of Square Mile & Evans Road
299 + 2	42.06	487 493.70	5 809 098.34	Int. 13/08 stn 100 N/W cnr of Square Mile & Browns Rds. Used Cadastral mark as PM
369	36.16	489 238.22	5 809 075.07	North fence of Square Mile Road at end of corner offset south from line approx. 10m.
426 + 3	41.24	490 663.23	5 809 082.25	Int. 13/10 stn. 132 fence at edge of Pines
469	39.21	491 738.70	5 809 096.55	E.O.L. Pine Trail

(Note: Line GA88-13 is Square Mile Road pegged on the north side then continues straight on through paddocks at bend to the eastern end down Pine Trail).

Line GA88-14				
100	63.37	492 080.50	5 815 490.94	S.O.L. southern end of Pine Trail
150	64.06	492 777.54	5 816 514.04	Int. 14/09 stn 132 eastern side of Glenelg Hwy. north of Rennick Road
413	69.71	494 846.39	5 822 675.41	E.O.L. is 375m N/N/E PM is in north fence of Milroy Road

(Note: Line GA88-14 starts in Pine Trail near intersection of Glenelg Hwy & Rennick Road, then pegged on eastern side of Glenelg highway as crooked line to intersection with Redhill Road. From there up Pine Trail and then through paddocks to end just over Milroy Road).

APPENDIX 6

PERMANENT SURVEY MARKER LISTING

(Continued)

STATION	ELEVATION	EASTING	NORTHING	COMMENTS
Line GA88-16				
97	32.30	494 111.61	5 799 642.25	S.O.L. Pine Trail
133 + 13	37.19	494 016.97	5 800 551.98	Int. 16/WGD85-331 Pine Trails
279 + 5	39.91	494 099.85	5 804 149.77	North fence Caroline Road
558 + 4	44.09	493 841.42	5 810 966.33	North side of Princes Highway beside Myora Road sign
655	53.39	493 839.64	5 813 319.44	Int. 16/11 stn 602 + 2 S/W cnr fence int. Myora & Bentley Rds.
690	57.71	494 136.84	5 814 129.21	E.O.L. west side of Myora Road

(Note: Line GA88-16 starts in the Pines, tails over WGD85-331 (line through Caroline #1) then up track through natural bush section to winding Pine Trail that straightens over Caroline Road. Coming out of pines it is Hutchesson Road pegged on the east side, crooked line, over Princes Highway swapping to west side of Myora Road to tail over GA88-11 (Bentley Road). Several of the PM's are liable to be pulled by Forestry on this line).

APPENDIX 7

UPHOLE LOCATIONS

UPHOLE NUMBER	LINE NO.	V.P.	DEPTH LAST CHARGE (M)	COMMENTS
1	GA88-04	348	45	Int. GA86-75 VP 236 + 8
2	GA88-13	199	60	Int. GA88-04 VP 149 + 3
3	GA88-13	299 + 10	60	Int. GA88-08 VP 100
4	GA88-10	101 + 6	60	
5	GA88-11	354	50	Int. GA88-06 VP 288
6	GA88-11	719	50	
7	GA88-16	656	50	Int. GA88-11 VP 602
8	GA88-16	500	50	
9	GA88-08	167 + 15	50	
10	GA88-11	407	50	Int. GA88-08 VP 368
11	GA88-09	304	40	
12	GA88-11	242	40	Int. GA88-02 VP 105
13	GA88-08	493	40	
14	GA88-05	656	40	
15	GA88-05	545	40	Int. GA88-14 VP 282
16	GA88-02	234	40	
17	GA88-07		50	Off line due to line relocation
18	GA88-05	355	40	Int. GA88-08 VP 593
19	GA88-03	598	60	Int. GA88-14 VP 383
20	GA88-03	490	40	
21	GA88-08	683	40	Int. GA88-03 VP 381 + 10
22	GA88-02	321	40	Int. GA88-05 VP 191
23	GA88-08	795	40	
24	GA88-01	570	40	
25	GA88-01	429	50	
26	GA88-01	330	35	
27	GA88-01	230	45	
28	GA88-04	263	50	
29	GA88-16	133	40	
30	GA88-16	332	40	

APPENDIX 8

UPHOLE CHARACTERISTICS

UPHOLE DEPTH (M)	NO. DETONATORS	NO. 'A' BOOSTERS
2.5	1	
5.0	2	
7.5	1	1
10.0	1	1
15.0	1	1
20.0	1	2
25.0	1	2
30.0	1	2
35.0	1	2
40.0	1	2
45.0	1	2
50.0	1	3
55.0	1	3
60.0	1	3

APPENDIX 9

SEGY TAPE LISTING

(6250 BPI transcribed tapes)

(Summed, Demux, Correlated, Zero Phase Field Records)

REEL	LINE	DATE CREATED	V.P.'s	FILE NO.
5001	GA88-11	28/01/88	720/19 - 405/4	1-120 123-174 176-187 189-286 289-322
5002	GA88-11	29/01/88	406/5 - 196/5	321-481 485 487-537
5003	GA88-11	30/01/88	195/4 - 101/100	538-581 585-649
			78/7 - 65/4	
5004	GA88-01	31/01/88	100/1 - 386/7	1-278 280-288
5005	GA88-01	01/02/88	387/8 - 538/9	289-534
			570/1 - 581/2	
5006	GA88-01	02/02/88	539/40 - 570/1	535-603
			665/6 - 700/1	
5007	GA88-11	02/02/88	100/99 - 79/78	1-22
5008	GA88-03	04/02/88	159/60 - 450/1	1-62 65-275 277-295
5009	GA88-03	04/02/88	451/2 - 632/3	296-477
5010	GA88-14	06/02/88	428/7 - 142/1	1-287
5011	GA88-14	06/02/88	141/0 - 100/99	288-329
5012	GA88-09	06/02/88	100/1 - 312/3	1-7 9-117 120-216
5013	GA88-10	07/02/88	498/7 - 256/5	1-134 136-244
5014	GA88-10	08/02/88	255/4 - 100/99	245-400
5015	GA88-08	09/02/88	65/6 - 291/2	2-101 103-229
5016	GA88-08	09/02/88	292/3 - 368/9	230-306
5017	GA88-08	10/02/88	369/70 - 651/2	307-589
5018	GA88-08	12/02/88	652/3 - 800/1	590-738
5019	GA88-05	12/02/88	661/0 - 455/4	1-207
5020	GA88-05	12/02/88	453/2 - 378/7	208-284
5021	GA88-05	13/02/88	377/6 - 195/4	285-467
5022	GA88-05	13/02/88	194/3 - 61/0	468-601
5023	GA88-02	14/02/88	495/4 - 362/1	1-134
5024	GA88-02	15/02/88	361/0 - 184/3	135-229 229-322
5025	GA88-02	16/02/88	183/2 - 65/4	323-430
5026	GA88-07	16/02/88	285/4 - 163/2	1-123
5027	GA88-07	17/02/88	162/1 - 65/4	124-221
5028	GA88-4A	19/02/88	69/70 - 269/70	1-207
5029	GA88-4A	19/02/88	270/1 - 301/2	208-241

APPENDIX 9

SEGY TAPE LISTING

(Continued)

(6250 BPI transcribed tapes)

(Summed, Demux, Correlated, Zero Phase Field Records)

REEL	LINE	DATE CREATED	V.P.'s	FILE NO.
TRANSCRIBED IN BRISBANE				
5001	GA88-13	09/02/88	100/1 - 292/3	1-193
5002	GA88-13	09/02/88	293/4 - 373/4	194-373
5003	GA88-04	29/01/88	440/39 - 304/3	1-142
5004	GA88-04	29/01/88	301/0 - 127/6	146-347

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-06	001	001	017	326/5	310/9
	002	018	038	309/8	281/80
	003	039	059	280/79	270/69
	004	060	080	269/8	255/4
	005	081	101	254/3	234/3
	006	102	122	233/2	213/2
	007	123	140	212/1	195/4
	008	141	161	194/3	177/6
	009	162	182	176/5	159/8
	010	183	203	158/7	136/5
	011	205	225	136/5 for 140/39	126/5
	012	226	246	125/4	110/9
GA88-04	013	001	020	440/39	440/39 for 423/2
	014	021	041	440/39 for 422/1	390/89
	015	042	062	390/89 for 401/0	381/0
	016	063	081	380/79	363/2
	017	082	102	362/1	343/2
	018	103	123	342/1	322/1
	019	124	144	321/0	302/1
	020	146	931	301/0	Similarity
	021	165	185	282/1	268/7 for 263/2
	022	186	206	268/7 for 262/1	242/1
	023	207	227	242/1 for 241/0	242/1 for 221/0
	024	228	248	242/1 for 220/19	172/1 for 200/199
	025	249	269	172/1 for 199/8	172/1 for 179/8
	026	270	281	172/1 for 178/7	167/6
	027	282	299	166/5	152/1 for 149/8
	028	300	320	152/1 for 148/9	128/7
	029	321	341	128/7 for 127/6	127/6 for 107/6
	030	342	347	127/6 for 106/5	127/6 for 101/100

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-13	031	001	021	100/1	108/9 for 120/1
	032	022	042	108/9 for 121/2	154/5 for 141/2
	033	043	063	154/5 for 142/3	159/60 for 163/4
	034	064	084	159/60 for 163/4	203/4 for 183/4
	035	085	105	203/4 for 184/5	204/5
	036	106	124	205/6	222/3 for 223/4
	037	125	145	223/4 for 224/5	223/4 for 244/5
	038	146	166	223/4 for 245/6	223/4 for 265/6
	039	167	187	222/3 for 266/7	309/10 for 286/7
	040	188	207	309/10 for 287/8	309/10 for 306/7
	041	208	228	309/10 for 307/8	326/7
	042	229	249	326/7 for 327/8	326/7 for 346/7
	043	250	270	326/7 for 347/8	376/7 for 367/8
	044	271	291	376/7 for 368/9	376/7 for 388/9
	045	292	311	407/8 for 389/90	407/8
	046	312	330	408/9	425/6
	047	331	350	427/8	446/7
	048	351	371	447/8	467/8
	049	372	373	468/9	468/9 for 469/70
GA88-16	050	001	021	97/8	118/9 for 117/8
	051	022	042	118/9	138/9
	052	043	063	139/40	159/60
	053	064	084	160/1	180/1
	054	085	105	181/2	200/1
	055	106	126	201/2	221/2
	056	127	147	222/3	242/3
	057	148	168	243/4	263/4
	058	169	184	264/5	284/5
	059	190	191	285/6	286/7
	060	209	229	304/5	324/5

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-16	061	230	250	325/6	345/6
	062	251	270	346/7	365/6
	063	271	291	366/7	386/7
	064	292	312	387/8	407/8
	065	313	333	408/9	428/9
	066	334	354	429/30	448/9
	067	355	373	449/50	467/8
	068	375	394	468/9	487/8
	069	395	415	488/9	508/9
	070	416	436	509/10	530/1
	071	437	455	531/2	548/9
	072	456	475	549/50	568/9
	073	476	496	569/70	589/90
	074	497	517	590/1	610/1
	075	518	538	611/2	631/2
	076	539	559	632/3	651/2
	077	560	580	652/3	672/3
	078	581	598	673/4	690/1
GA88-11	079	001	041	720/19	680/79
	080	042	065	679/8	656/5
	081	082	120	639/8	601/0
	082	123	164	600/99	559/8
	083	165	206	558/7	519/8
	084	207	248	518/7	477/6
	085	249	290	476/5	437/6
	086	291	332	436/5	395/4
	087	333	372	394/3	355/4
	088	373	412	354/3	315/4
	089	413	453	314/3	276/5
	090	454	496	275/4	237/6

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-11	091	497	537	236/5	196/5
	092	538	541	195/4	192/1
	093	577	616	156/5	120/19
	094	617	649	119/8	65/4
GA88-01	095	001	042	100/01	141/2
	096	043	081	142/3	180/1
	097	082	123	181/2	222/3
	098	124	163	223/4	262/3
	099	164	205	263/4	304/5
	100	206	246	305/6	345/6
	101	247	288	346/7	386/7
	102	289	327	387/8	425/6
	103	328	368	426/7	466/7
	104	369	409	467/8	507/8
	105	410	451	508/9	538/9
				570/1	581/2
	106	452	492	582/3	622/3
	107	493	534	623/4	664/5
	108	535	570	665/6	700/1
	109	571	603	539/40	570/1
GA88-11	110	001	022	100/99	79/8
GA88-03	111	001	016	159/60	174/5
	112	017	057	175/6	215/6
	113	058	098	216/7	254/5
	114	099	137	255/6	293/4
	115	138	179	294/5	335/6
	116	180	214	336/7	370/1
	117	215	255	371/2	411/2
	118	256	295	412/3	450/1
	119	296	336	451/2	491/2

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-03	120	337	376	492/3	531/2
	121	377	417	532/3	572/3
	122	418	459	573/4	614/5
	123	460	477	615/6	632/3
GA88-14	124	001	042	428/7	387/6
	125	043	081	386/5	348/7
	126	082	121	347/6	308/7
	127	122	162	307/6	267/6
	128	163	204	266/5	225/4
	129	205	245	224/3	184/3
	130	246	287	183/2	142/1
	131	288	328	141/0	101/100
	132	329		100/99	
GA88-09	133	001	040	100/01	138/9
	134	041	080	139/40	178/9
	135	081	122	179/80	218/9
	136	123	163	219/20	259/60
	137	164	205	260/1	301/2
	138	206	216	302/3	312/3
GA88-10	139	001	039	498/7	460/59
	140	040	081	459/8	418/7
	141	082	121	417/6	378/7
	142	122	162	377/6	338/7
	143	163	203	337/6	297/6
	144	204	244	296/5	256/5
	145	245	282	255/4	218/7
	146	283	323	217/6	177/6
	147	324	362	176/5	138/7
	148	363	400	137/6	100/99

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-08	149	002	041	65/6	104/5
	150	042	080	105/6	143/4
	151	081	101	144/5	164/5
	152	103	142	165/6	204/5
	153	143	183	205/6	245/6
	154	184	224	246/7	286/7
	155	225	265	287/8	327/8
	156	266	306	328/9	368/9
	157	307	345	369/70	407/8
	158	346	386	408/9	448/9
	159	387	425	449/50	487/8
	160	426	466	488/9	528/9
	161	467	507	529/30	569/70
	162	508	548	570/1	610/1
	163	549	589	611/2	651/2
	164	590	628	652/3	690/1
	165	629	668	691/2	730/1
	166	669	709	731/2	771/2
	167	710	738	772/3	800/1
GA88-05	168	001	041	661/0	621/0
	169	042	082	620/1	580/79
	170	083	121	579/8	541/0
	171	122	162	540/39	500/499
	172	163	202	499/8	460/59
	173	203	243	459/8	419/8
	174	244	284	418/7	378/7
	175	285	323	377/6	339/8
	176	324	331	338/7	331/0
	177	332	357	330/29	305/4
	178	358	384	304/3	278/7

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-05	179	385	411	277/6	251/0
	180	412	438	250/49	224/3
	181	439	465	223/2	197/6
	182	466	492	196/5	170/69
	183	493	518	169/8	144/3
	184	519	543	143/2	119/8
	185	544	570	118/7	92/1
	186	571	597	91/0	65/4
	187	598	601	64/3	61/0
GA88-02	188	001	026	495/4	470/69
	189	027	053	469/8	443/2
	190	054	080	442/1	416/5
	191	081	107	415/4	389/8
	192	108	134	388/7	362/1
	193	135	160	361/0	336/5
	194	161	201	335/4	295/4
	195	202	240	294/3	255/4
	196	241	281	254/3	214/3
	197	282	322	213/2	184/3
	198	323	362	183/2	133/2
	199	363	403	132/1	92/1
	200	404	430	91/0	65/4
GA88-07	201	001	041	285/4	245/4
	202	042	082	244/3	204/3
	203	083	123	203/2	163/2
	204	124	162	162/1	124/3
	205	163	203	123/2	83/2
	206	204	221	82/1	65/4

APPENDIX 10

SEGB 1600 BPI FIELD TAPE LISTING

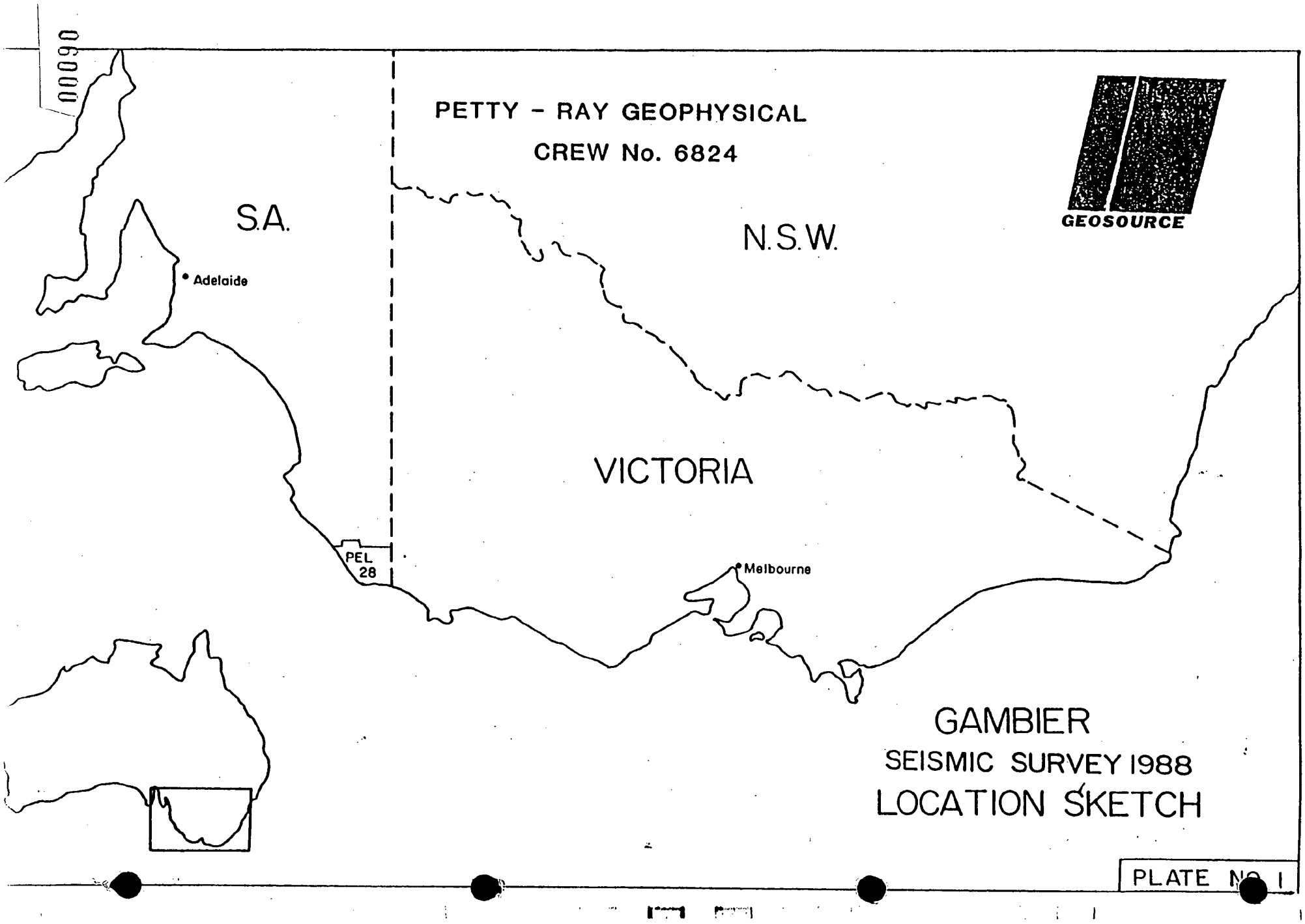
(Continued)

LINE NO.	TAPE NO.	FIRST FILE	LAST FILE	FIRST V.P.	LAST V.P.
GA88-04A	207	001	041	63/4	103/4
	208	042	065	104/5	127/8
	209	066	091	128/9	153/4
	210	092	118	154/5	180/1
	211	119	145	181/2	207/8
	212	146	172	208/9	234/5
	213	173	179	235/6	241/2

APPENDIX 11

SEGB 6250 BPI TAPE LISTING

TAPE NO.	LINE NO.	1600 BPI FIELD TAPE NO.
2000	GA88-10	139, 140, 141, 142
2001		143, 144, 145
2002		146, 147, 148
2003	GA88-08	149, 150, 151, 152
2004		153, 154, 155, 156
2005		157, 158, 159, 160
2006		161, 162, 163, 164
2007		165, 166, 167
2008	GA88-05	168, 169, 170, 171
2009		172, 173, 174, 175
2010		176, 177, 178, 179
2011		180, 181, 182, 183
2012		184, 185, 186, 187
2013	GA88-02	188, 189, 190, 191
2014		192, 193, 194, 195
2015		196, 197, 198
2016		199, 200
2017	GA88-07	201, 202, 203
2018		204, 205, 206
2019	GA88-04A	207, 208, 209, 210
2020		211, 212, 213
2021		214, 215
2103	GA88-03	111, 112, 113, 114
2104		115, 116, 117, 118
2105		119, 120, 121
2106		122, 123
2107	GA88-14	124, 125, 126, 127
2108		128, 129, 130
2109		131, 132
2110	GA88-09	133, 134, 135, 136
2111		137, 138
2112	GA88-01	098
2113	GA88-11	110


PETTY - RAY GEOPHYSICAL
CREW No. 6824
GEOSOURCE
S.A.
N.S.W.
VICTORIA
Adelaide
Melbourne
PEL 28
GAMBIER
SEISMIC SURVEY 1988
LOCATION SKETCH
PLATE NO. 1

00092

PETTY - RAY GEOPHYSICAL

CREW No. 6824

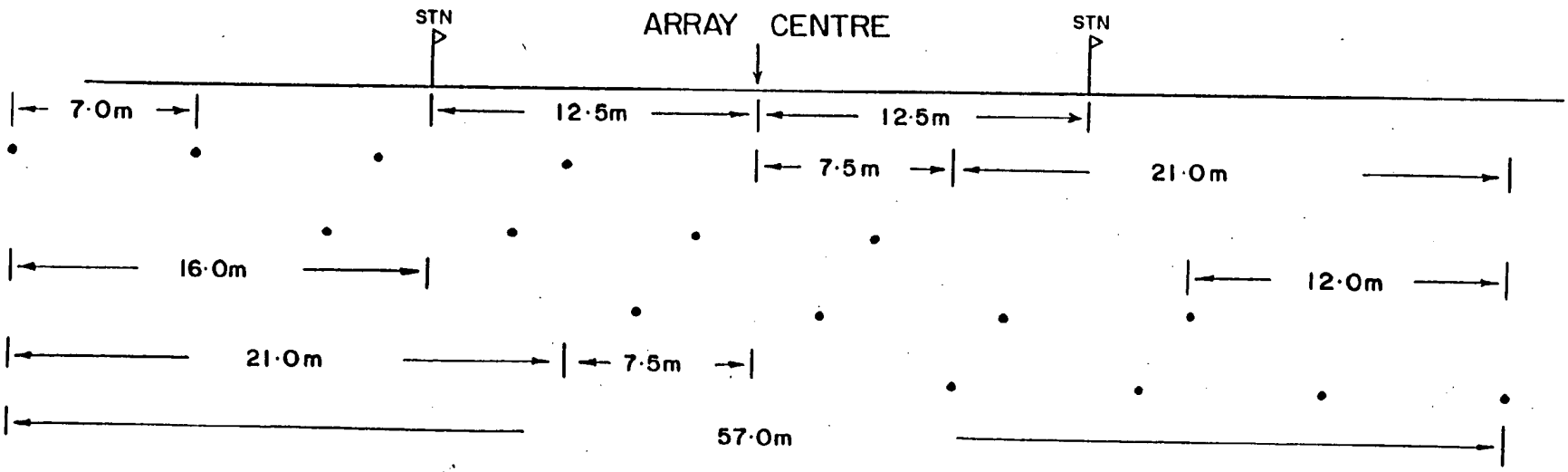
GEOSOURCE

GAMBIER SEISMIC SURVEY 1988

for BEACH PETROLEUM N.L.

SOURCE ARRAY

25m Station Interval



YI100A VIBRATORS 4 IN LINE 12m APART 7m MOVE UP

16 Sec SWEEP 4 Sec LISTEN TIME EVERY STATION 6000% CDP

PLATE NO 2

16000

PETTY - RAY GEOPHYSICAL

CREW No. 6824

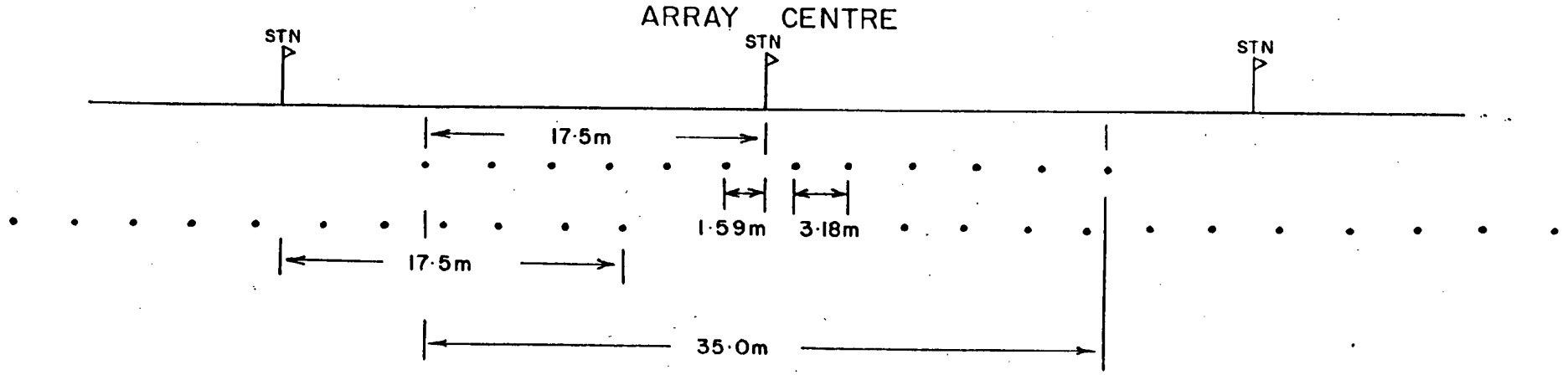
GEOSOURCE

GAMBIER SEISMIC SURVEY 1988

for BEACH PETROLEUM N.L.

RECEIVER ARRAY

25m Station Interval

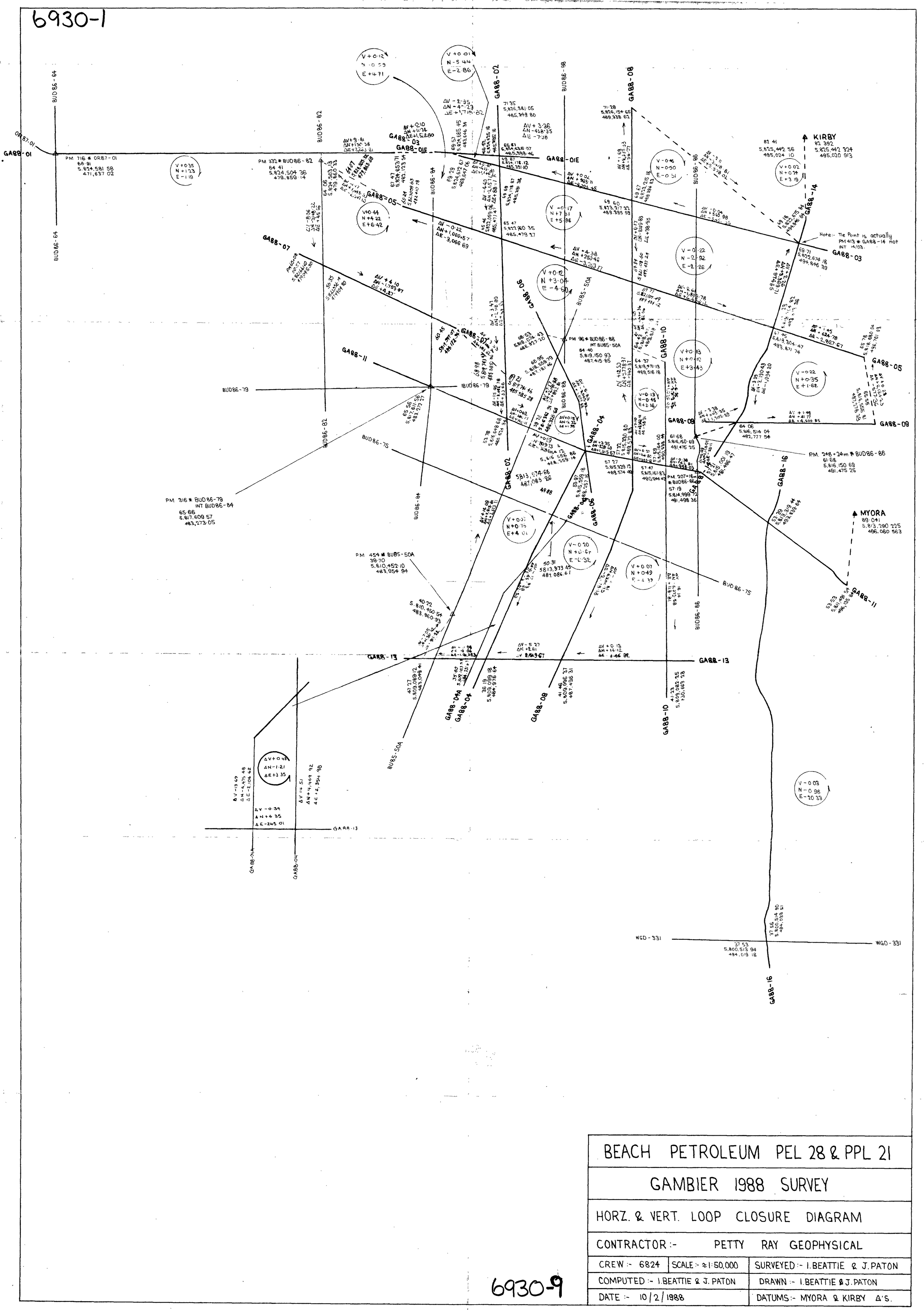


10 Hz SENSOR SM 4 GEOPHONES 1 STRING PER STATION

12 GEOPHONES PER STRING SPACED 3·18m APART

PLATE NO. 3

6930-1



BEACH PETROLEUM PEL 28 & PPL 21		
GAMBIER 1988 SURVEY		
HORZ. & VERT. LOOP CLOSURE DIAGRAM		
CONTRACTOR :- PETTY RAY GEOPHYSICAL		
CREW :- 6824	SCALE :- ≈1:50,000	SURVEYED :- I. BEATTIE & J. PATON
COMPUTED :- I. BEATTIE & J. PATON		DRAWN :- I. BEATTIE & J. PATON
DATE :- 10/2/1988		DATUMS :- MYORA & KIRBY Δ's.

6930-9

APPENDIX 2

SEISMIC DATA PROCESSING REPORT

FOR THE 1988 MT. GAMBIER SURVEY

CONDUCTED IN PERMIT PEL 28 SOUTH AUSTRALIA

FOR

BEACH PETROLEUM N.L.

BY

HORIZON SEISMIC AUSTRALIA PTY LTD.

NOVEMBER 1988

CONTENTS

APPENDICES

1. INTRODUCTION

The 1988 Mt. Gambier seismic survey comprised 160 line kilometres recorded in PEL 28, South Australia by Petty Ray Geophysical, during February 1988.

The energy source for the Mt. Gambier survey was Vibroseis. The V.P. interval was 25m with a group interval of 25m. The data was recorded with 120 channels over a split spread:
1612.5 - 137.5 - v.p. - 137.5 - 1612.5m

The data were processed by Horizon Seismic Australia Pty. Ltd. at their processing centre in Perth, Western Australia.

2. ACQUISITION PARAMETERS

The 1988 Mt. Gambier Survey data were recorded by Petty Ray Geophysical Crew 6824 and parameters are summarised as follows:-

RECORDING

Instrument Type:	MDS 14	
Tape Format:	Segb 1600 bpi	
Sample Rate:	4 msec (LINES GA88-04,06,13,16: Sample rate = 2 msec)	
Listening Time:	20 sec	
Correlated output:	4 sec	
Gain:	IFP	
Filters:	Low Cut:	12 Hz Slope 24 dB/oct
	High Cut:	93 Hz Slope 90 dB/oct
	notch:	50 Hz in
	(Lines GA88-04,06,13,16: High cut: 109 Hz Slope: 90 dB/oct)	
Geophone Polarity:	Upward movement of geophone gives negative number on tape.	

SOURCE

Type:	Vibroseis
No. of Vibs:	4 x Failing Y1100A
Source Array:	In - line array centred between stations
Sweep Frequency:	12 - 90 Hz (line GA88-04. Sweep frequency: 12 - 96 Hz)
Sweep Type:	Log. 10d/B Boost
Array Length:	57m (line GA88-04A. array length = 54m)
Sweep Spacing:	12m with 7m move-up
No. of Sweeps:	4
Sweep length:	16s + 4s listen
V.P. Interval:	25m

RECEIVERS

Type:	Sensor SM4 10 Hz
No. per Group:	12
Group Interval:	25m
Phone Spacing:	3.18m
Geophone Array:	12 in-line centred at peg
Array length:	35m

CABLE

Split spread 25m station interval: 1612.5-137.5-0-137.5-1612.5
No. of channel: 120
Nominal fold of stack: 6000%

3. COMPUTATION OF DATUM STATICS

Datum statics were computed from contoured delay times supplied by Beach Petroleum, applying the following formula:-

$$GSTA = \frac{DATUM - ELEV}{V(REPL)} - t\ (delay)$$

where: GSTA = geophone static
DATUM = 0m
V(REPL) = 2000 m/s (elevation velocity)
t(DELAY) = delay time

4. PARAMETER TESTING

Comprehensive trials were carried out to determine the best processing sequence and specific parameters, some of which had to be varied according to geological structure.

4.1 AMPLITUDE COMPENSATION

In order to compensate for the amplitude decay with time due to spherical divergences, a gain curve of $4t + 20 \log t$ to 3 secs was applied after running a suite of trials varying the gain curve over a number of selected field records.

4.2 MULTI-CHANNEL NOISE SUPPRESSION

From tests run on raw records on line GA88-02 with various free-from F-K filters applied, the optimum design was selected and compared with stacked data without any filters.
It was found that there was no significant improvement in data quality. It was therefore decided that an F-K filter should not be used on the Mt. Gambier data.

4.3 SPECTRAL COMPENSATION

Spectral analysis was carried out on the filtered sweep to design a frequency filter to be applied to compensate for the 50 Hz notch filter. The filter was applied and compared with stacked data without any filter. It was found that by compensating for the notch filter, resolution was considerably improved, particularly around the 50 Hz range, as would be expected.

4.4 DECONVOLUTION BEFORE STACK TRIALS

Deconvolution before stack (DBS) trials were performed on the data by stacking a line segment with various different deconvolution parameters, which were initially chosen from autocorrelograms. The lines chosen for the stack trials were line GA88-02 and GA88-10. Operator lengths and predictive gaps of 120-4, 120-8, 120-12, 120-16, 80-12, 160-2, 200-12 were tested, using single and dual length windows.

surface consistent deconvolution and band limited deconvolution were also tried.
It was decided to use 2 window band limited spiking deconvolution as this gave better resolution with a more continuous less noisy section.

4.5 VELOCITY ANALYSES

The initial analyses were of the constant velocity stack type comprising 15 adjacent CDP's and were made at locations selected from the Brute stacks and at an average frequency of 2.0 kilometres.

The final analyses were of the 'Omnivel' type which consisted of combined moved out gathers, 15 CDP stack panels and velocity spectra at an average frequency of 1.0 km at location selected from the residual statics stacks.

Velocity analyses were made on data which had had deviation from mean statics only applied. This means that all times and velocities are correct to a floating surface datum which is indicated on the final stacks by a continuous line.

4.6 INITIAL MUTING TRIALS

Initial mutes were selected by inspecting 100% sections from each line with final normal movement corrections applied. These were also used as a Q.C. check on the picked velocities.

In addition, a mutescan was run on a segment of line CAS8-02. This consisted of a series of stack panels with increasing offsets included into each successive panel.

4.7 RESIDUAL STATICS

Two passes of residual statics computation and application were used. The first method computes and applies surface consistent corrections, derived by correlating individual traces with a pilot which consisted of several adjacent CDP's summed after correction for local dip which is manually input.

A second pass of CDP consistent trim statics was applied, consisting of cross-correlations of NMO corrected CDP gather traces with a CDP pilot trace for each depth point. Window lengths and maximum static correction allowed are indicated on individual section labels.

4.8 DECONVOLUTION AFTER STACK

Trials were made on line GA88-02 using various deconvolution routines - predictive, spiking and zero-phase frequency domain. The zero phase frequency domain deconvolution gave the best results, increasing significantly the resolution of the data.

4.9 BANDPASS FILTERS

These were chosen from tests run on a portion of line GA88-02, and following the chosen deconvolution after stack. These tests consisted of a series of panels where the low cut and high cut filters were varied separately.

4.10 EQUALISATION TRIALS

A test was made on part of line GA88-02 using various combinations of fixed length windows. The final choice was to use 600 Ms fixed length windows.

4.11 MIGRATION

Wave equation migration was tested on line GA88-02 using velocities derived from 80%, 90% and 100% of stacking velocities. It was found that the best results were obtained by using 1st order wave equation migration with 90% of stacking velocities from zero to one second, and 80% from two to four seconds.

4.12 POST STACK TAU-P FILTER

This was tried on line GA88-02 and comprised a time variant dip filter and coherency enhancement filter. The process was considered beneficial and was used. Application pre and post-migrate were tested and it was decided to apply Tau-p filter after migration. The final parameters chosen were 10% Tau-p at 1.5 secs. and 30% at 3.0 secs.

4.13 DISPLAY

Gain and bias trials were carried out on the data. From the tests, a plotting gain of 1200 and a bias of 10% were chosen.

5. PROCESSING SEQUENCE

5.1 GENERAL PROCESSING SEQUENCE

1.	Transcription:	Transcribe SEGY to Horizon internal format with application of a gain curve of $4t + 20 \log t$ to 3 secs. Display all field records.
		NOTE: Line GA88-07. records 124 - 221 needed to be cross-correlated.
2.	Resample:	As per individual side labels.
3.	Edit:	Of bad traces.
4.	Differential field static correction:	To floating surface datum
5.	Spectral Compensation:	Application of frequency domain filter to compensate for non-linear sweep and 50 Hz notch.
6.	Deconvolution:	2 window band limited spiking deconvolution. Operator length/gap (Ms) 120/4:120/4
7.	CDP Sort:	Nominal fold: 60
8.	Initial velocity Analysis:	15 CDP constant velocity stacks every 2.0 km.
9.	Surface consistent residual statics (nebula):	7 trace pilot. Maximum static +/- 25Ms
10.	Final Velocity Analysis:	Combined moved out gathers stack panels and velocity spectra every 1.0 km - supplied to client.

11.	Resample:	From 4ms to 2ms
12.	NMO. Correction:	From floating datum
13.	Mute:	See individual labels
14.	Equalisation:	Using fixed length windows of 300 Ms
15.	Final Static correction:	Floating to final datum static application.
16.	CDP Consistent Residual Statics:	7 trace pilot. maximum static +/- 10Ms
17.	CDP stack:	Nominal fold: 60
18.	Deconvolution:	Zero phase band limited - 2 windows
19.	Bandpass Filter:	See individual labels.
20.	Equalisation:	600Ms fixed length windows
21.	Tau-P Filter:	Time variant dip limits and semblance filter.
22.	Migration:	Wave equation migration using 90% RMS velocities from 0-1 secs. 80% RMS velocities from 2 - 4 secs.
23.	Bandpass filter and Equalisation:	As for steps 19 and 20 above
24.	Display on film:	Horizontal scales: 187382 and 1819680. Vertical scale: 15 cm/sec Gain: 1200 Bias: 10% black Polarity: Negative no plotted white.

6. COMMENTS

The processing of the data was supervised by Mr Joe Choudhary and Mr. Pradeep Jeganathan, representing Beach Petroleum N.L.. They were responsible for making most of the decisions regarding the choice of processing routes and parameters, and also oversaw most of the production.

The only major problem encountered during processing involved recovery shots. A large number of these shots were standing recovery shots, which meant that numerous shots were in the same location, resulting in multiple traces within a CDP of exactly the same ray path. this created problems in calculating normal move-out correction, residual statics, and mutes. The problem was solved by eliminating all of the recovery shots.

Final data quality was good. Post-Stack processing methods such as zero-phase deconvolution, and Tau-p filtering proved very useful in helping to improve continuity of data quality.

APPENDIX A

List of Final Sections

The following final stack and migration displays were made on film at horizontal scales of 1:7382 and 1:19680 and vertical scale of 15 cm/sec.

LINE	SP	KMS
GA88-01	100-700	15.00
-02	65-495	10.75
-03	159-632	11.825
-04	101-440	8.475
-04A	63-303	6.00
-05	61-661	15.00
-06	106-326	5.50
-07	65-285	5.50
-08	65-800	18.375
-09	100-312	5.30
-10	100-498	9.95
-11	65-720	16.375
-13	100-469	9.225
-14	100-428	8.20
-16	97-690	14.825
	TOTAL	160.30 KM

APPENDIX B

Data disposal

The following data relevant to the survey was sent to the offices of Beach Petroleum. Level 7, 345-355 George St Sydney. N.S.W. 2000

1. Final stack and migrate film displays at 15 cm/sec. and Horizontal scales of 1:7382 and 1:19680 plus one paper print of each.

2. Final Interpreted 'Omnivel' velocity analyses.

3. Archive tapes containing unfiltered stacks, migrations and pre-processed traces in concatenated SEG-Y format.

STATEMENT OF QUALITY

This report describes accurately the processing of the MT GAMBIER seismic survey performed by Horizon Seismic Australia at their Perth office for Beach petroleum N.L.

Horizon Seismic Australian wish to thank the representatives of Beach Petroleum N.L. for their discussion and assistance in the selection of the processing parameters.

A. Ozsdolay

ARPAD OZSDOLAY
SENIOR PROCESSING GEOPHYSICIST

APPENDIX 3

SONSUM - WELL SONIC LOG SUMMARY PROGRAM; File : COMPTICSC

Well name = COMPTON 1

Log type = SONIC(CSC)

THIS LOG HAS BEEN CHECKSHOT CORRECTED.
KB elevation .....= 52.9 metres
SRD elevation .....= 0.0 metres
Replacement velocity .....= 2000.0 metres/s
Time from SRD to top of sonic ..= 0.4160 seconds

2-WAY TIME FROM SRD seconds	DEPTH FROM SRD metres	DEPTH FROM KB metres	INTERVAL VELOCITY metres/s	AVERAGE VELOCITY FROM SRD metres/s	REFLECTIVITY
0.418	429.4	482.3	2232.3	2001.1	0.014905
0.420	431.7	484.6	2299.8	2002.5	0.007229
0.422	434.0	486.9	2333.3	2004.1	0.006970
0.424	436.4	489.3	2366.0	2005.8	-0.001376
0.426	438.8	491.7	2359.5	2007.5	-0.031497
0.428	441.0	493.9	2215.4	2008.4	0.035632
0.430	443.3	496.2	2379.2	2010.2	-0.019048
0.432	445.6	498.5	2290.2	2011.5	0.017774
0.434	448.0	500.9	2373.1	2013.1	-0.000192
0.436	450.4	503.3	2372.2	2014.8	-0.001387
0.438	452.7	505.6	2365.6	2016.4	-0.001218
0.440	455.1	508.0	2359.9	2017.9	0.017285
0.442	457.5	510.4	2442.9	2019.9	-0.006572
0.444	460.0	512.9	2411.0	2021.6	0.004776
0.446	462.4	515.3	2434.1	2023.5	-0.014026
0.448	464.8	517.7	2366.8	2025.0	0.017676
0.450	467.2	520.1	2452.0	2026.9	-0.017349
0.452	469.6	522.5	2368.3	2028.4	0.004094
0.454	472.0	524.9	2387.8	2030.0	0.025715
0.456	474.5	527.4	2513.9	2032.1	-0.012287
0.458	476.9	529.8	2452.8	2034.0	0.016227
0.460	479.5	532.4	2533.8	2036.1	-0.019963
0.462	481.9	534.8	2434.6	2037.9	-0.024290
0.464	484.2	537.1	2319.1	2039.1	0.009740
0.466	486.6	539.5	2364.7	2040.5	0.004456
0.468	489.0	541.9	2385.9	2041.9	0.020550
0.470	491.5	544.4	2486.0	2043.8	-0.001284
0.472	493.9	546.8	2479.6	2045.7	-0.008460
0.474	496.4	549.3	2438.0	2047.3	0.005131
0.476	498.8	551.7	2463.2	2049.1	-0.005566
0.478	501.3	554.2	2435.9	2050.7	-0.001631
0.480	503.7	556.6	2428.0	2052.3	0.004385
0.482	506.2	559.1	2449.4	2053.9	0.002667
0.484	508.6	561.5	2462.5	2055.6	-0.010002
0.486	511.0	563.9	2413.7	2057.1	0.011643
0.488	513.5	566.4	2470.6	2058.8	0.002470
0.490	516.0	568.9	2482.8	2060.5	0.002385
0.492	518.5	571.4	2494.7	2062.3	0.002478
0.494	521.0	573.9	2507.1	2064.1	0.039892
0.496	523.7	576.6	2715.4	2066.7	-0.013075

0.498	526.3	579.2	2645.3	2069.0	-0.054825
0.500	528.7	581.6	2370.3	2070.2	-0.026558
0.502	531.0	583.9	2247.7	2070.9	0.030653
0.504	533.4	586.3	2389.8	2072.2	0.011494
0.506	535.8	588.7	2445.4	2073.7	0.022521
0.508	538.4	591.3	2558.1	2075.6	-0.020277
0.510	540.8	593.7	2456.4	2077.1	0.008327
0.512	543.3	596.2	2497.7	2078.7	-0.011132
0.514	545.8	598.7	2442.7	2080.1	-0.002801
0.516	548.2	601.1	2429.0	2081.5	-0.057072
0.518	550.4	603.3	2166.7	2081.8	-0.012356
0.520	552.5	605.4	2113.8	2081.9	0.103422
0.522	555.1	608.0	2601.5	2083.9	-0.025695
0.524	557.5	610.4	2471.2	2085.4	0.011065
0.526	560.1	613.0	2526.5	2087.1	-0.014628
0.528	562.5	615.4	2453.6	2088.5	0.030541
0.530	565.1	618.0	2608.2	2090.4	-0.007276
0.532	567.7	620.6	2570.5	2092.2	0.098609
0.534	570.8	623.7	3132.9	2096.1	0.011154
0.536	574.0	626.9	3203.6	2100.3	-0.063580
0.538	576.9	629.8	2820.6	2102.9	0.029626
0.540	579.8	632.7	2992.8	2106.2	-0.027744
0.542	582.7	635.6	2831.2	2108.9	-0.037200
0.544	585.3	638.2	2628.1	2110.8	0.038055
0.546	588.1	641.0	2836.1	2113.5	-0.020734
0.548	590.9	643.8	2720.9	2115.7	0.028020
0.550	593.7	646.6	2877.7	2118.5	-0.012334
0.552	596.5	649.4	2807.6	2121.0	-0.014983
0.554	599.3	652.2	2724.7	2123.1	0.000844
0.556	602.0	654.9	2729.3	2125.3	0.028018
0.558	604.9	657.8	2886.7	2128.1	-0.010774
0.560	607.7	660.6	2825.1	2130.5	-0.042515
0.562	610.3	663.2	2594.7	2132.2	0.007564
0.564	612.9	665.8	2634.3	2134.0	0.029562
0.566	615.7	668.6	2794.8	2136.3	0.009515
0.568	618.6	671.5	2848.5	2138.8	-0.015447
0.570	621.3	674.2	2761.8	2141.0	-0.019152
0.572	624.0	676.9	2658.0	2142.8	0.006001
0.574	626.7	679.6	2690.1	2144.7	0.029088
0.576	629.5	682.4	2851.3	2147.2	-0.026746
0.578	632.2	685.1	2702.7	2149.1	-0.001919
0.580	634.9	687.8	2692.4	2151.0	-0.015839
0.582	637.6	690.5	2608.4	2152.5	-0.016024
0.584	640.1	693.0	2526.1	2153.8	-0.005018
0.586	642.6	695.5	2500.9	2155.0	-0.007628
0.588	645.0	697.9	2463.1	2156.1	0.040043
0.590	647.7	700.6	2668.5	2157.8	-0.020682
0.592	650.3	703.2	2560.4	2159.2	-0.009674
0.594	652.8	705.7	2511.3	2160.3	0.020990
0.596	655.4	708.3	2619.0	2161.9	0.014740
0.598	658.1	711.0	2697.4	2163.7	0.002586
0.600	660.8	713.7	2711.4	2165.5	-0.008850
0.602	663.5	716.4	2663.8	2167.1	0.019971
0.604	666.2	719.1	2772.4	2169.2	0.016375
0.606	669.1	722.0	2864.7	2171.4	-0.022143
0.608	671.8	724.7	2740.5	2173.3	-0.026131
0.610	674.5	727.4	2601.0	2174.7	0.002672
0.612	677.1	730.0	2614.9	2176.2	0.027700
0.614	679.8	732.7	2763.9	2178.1	0.018294
0.616	682.7	735.6	2866.9	2180.3	0.000636

533 msec

0.618	685.6	738.5	2870.6	2182.5	0.030651
0.620	688.6	741.5	3052.1	2185.4	0.009610
0.622	691.7	744.6	3111.3	2188.3	0.036239
0.624	695.1	748.0	3345.3	2192.0	-0.034834
0.626	698.2	751.1	3120.1	2195.0	-0.039838
0.628	701.1	754.0	2881.0	2197.2	0.004829
0.630	704.0	756.9	3909.0	2199.4	-0.006669
0.632	706.9	759.8	2870.4	2201.6	0.014949
0.634	709.8	762.7	3957.5	2204.0	0.029005
0.636	712.9	765.8	3134.2	2206.9	0.004014
0.638	716.1	769.0	3159.5	2209.9	0.032446
0.640	719.5	772.4	3371.4	2213.5	-0.090680
0.642	722.3	775.2	2810.8	2215.4	0.019772
0.644	725.2	778.1	2924.2	2217.6	0.027653
0.646	728.3	781.2	3090.5	2220.3	0.004945
0.648	731.4	784.3	3121.2	2223.0	0.021214
0.650	734.7	787.6	3256.5	2226.2	0.001321
0.652	737.9	790.8	3265.2	2229.4	-0.028020
0.654	741.0	793.9	3087.2	2232.0	-0.051801
0.656	743.8	796.7	2783.1	2233.7	0.011785
0.658	746.7	799.6	2849.5	2235.6	-0.003703
0.660	749.5	802.4	2828.4	2237.4	-0.020591
0.662	752.2	805.1	2714.3	2238.8	0.020638
0.664	755.0	807.9	2828.7	2240.6	0.008325
0.666	757.9	810.8	2876.2	2242.5	-0.016995
0.668	760.7	813.6	2780.1	2244.1	-0.013619
0.670	763.4	816.3	2705.4	2245.5	0.006439
0.672	766.1	819.0	2740.4	2247.0	0.016067
0.674	769.0	821.9	2829.9	2248.7	-0.016343
0.676	771.7	824.6	2738.9	2250.1	0.006456
0.678	774.5	827.4	2774.5	2251.7	0.025186
0.680	777.4	830.3	2917.9	2253.7	0.009331
0.682	780.4	833.3	2972.8	2255.8	-0.033321
0.684	783.2	836.1	2781.1	2257.3	0.027519
0.686	786.1	839.0	2938.5	2259.3	-0.007774
0.688	789.0	841.9	2893.2	2261.1	-0.028830
0.690	791.7	844.6	2731.0	2262.5	0.012547
0.692	794.5	847.4	2800.4	2264.0	-0.025971
0.694	797.2	850.1	2658.7	2265.2	0.035438
0.696	800.0	852.9	2854.0	2266.9	-0.039629
0.698	802.7	855.6	2636.4	2267.9	0.004398
0.700	805.3	858.2	2659.7	2269.1	0.002202
0.702	808.0	860.9	2671.5	2270.2	-0.004177
0.704	810.6	863.5	2649.2	2271.3	-0.009951
0.706	813.2	866.1	2597.0	2272.2	0.003309
0.708	815.9	868.8	2614.3	2273.2	0.025113
0.710	818.6	871.5	2749.0	2274.5	-0.009295
0.712	821.3	874.2	2698.3	2275.7	-0.007811
0.714	824.0	876.9	2656.5	2276.8	0.003370
0.716	826.6	879.5	2674.5	2277.9	-0.009426
0.718	829.3	882.2	2624.5	2278.8	-0.023864
0.720	831.8	884.7	2502.2	2279.5	0.013905
0.722	834.3	887.2	2572.7	2280.3	-0.001539
0.724	836.9	889.8	2564.8	2281.1	0.014217
0.726	839.5	892.4	2638.8	2282.0	0.001541
0.728	842.2	895.1	2647.0	2283.0	-0.009148
0.730	844.8	897.7	2599.0	2283.9	-0.001197
0.732	847.4	900.3	2592.8	2284.8	0.016227
0.734	850.1	903.0	2678.3	2285.8	0.010749
0.736	852.8	905.7	2736.5	2287.1	-0.011471

0.738	855.5	908.4	2674.4	2288.1	0.019113
0.740	858.2	911.1	2778.7	2289.4	0.008820
0.742	861.1	914.0	2828.1	2290.9	-0.026193
0.744	863.8	916.7	2683.7	2291.9	-0.002118
0.746	866.4	919.3	2672.4	2293.0	-0.008000
0.748	869.1	922.0	2630.0	2293.9	0.022914
0.750	871.8	924.7	2753.3	2295.1	0.004710
0.752	874.6	927.5	2779.4	2296.4	0.016289
0.754	877.5	930.4	2871.4	2297.9	-0.018831
0.756	880.2	933.1	2765.3	2299.1	0.003368
0.758	883.0	935.9	2784.0	2300.4	-0.007012
0.760	885.8	938.7	2745.2	2301.6	-0.015281
0.762	888.4	941.3	2662.6	2302.5	0.013364
0.764	891.2	944.1	2734.7	2303.7	0.060246
0.766	894.2	947.1	3085.3	2305.7	0.020303
0.768	897.5	950.4	3213.2	2308.1	0.048540
0.770	901.0	953.9	3541.1	2311.3	0.014886
0.772	904.6	957.5	3648.1	2314.7	-0.035155
0.774	908.0	960.9	3400.3	2317.5	-0.036296
0.776	911.2	964.1	3162.1	2319.7	-0.019297
0.778	914.3	967.2	3042.4	2321.6	-0.010506
0.780	917.2	970.1	2979.1	2323.3	0.040458
0.782	920.5	973.4	3230.4	2325.6	0.066792
0.784	924.2	977.1	3692.8	2329.1	0.017429
0.786	928.0	980.9	3823.8	2332.9	-0.065376
0.788	931.3	984.2	3354.5	2335.5	0.009736
0.790	934.8	987.7	3420.4	2338.2	0.011647
0.792	938.3	991.2	3501.1	2341.1	-0.017901
0.794	941.6	994.5	3377.9	2343.8	0.016596
0.796	945.1	998.0	3491.9	2346.6	-0.062337
0.798	948.2	1001.1	3082.1	2348.5	0.052719
0.800	951.6	1004.5	3425.2	2351.2	0.026358
0.802	955.2	1008.1	3610.6	2354.3	0.017548
0.804	959.0	1011.9	3739.6	2357.8	-0.001283
0.806	962.7	1015.6	3730.0	2361.2	0.008750
0.808	966.5	1019.4	3795.9	2364.7	-0.016398
0.810	970.2	1023.1	3673.4	2367.9	-0.033412
0.812	973.6	1026.5	3435.9	2370.6	0.028465
0.814	977.3	1030.2	3637.2	2373.7	0.031430
0.816	981.1	1034.0	3873.3	2377.4	-0.016380
0.818	984.9	1037.8	3748.4	2380.7	-0.003695
0.820	988.6	1041.5	3720.8	2384.0	0.012167
0.822	992.4	1045.3	3812.5	2387.5	-0.027822
0.824	996.0	1048.9	3606.1	2390.4	-0.007743
0.826	999.6	1052.5	3550.7	2393.2	0.009856
0.828	1003.2	1056.1	3621.4	2396.2	-0.008485
0.830	1006.7	1059.6	3560.4	2399.0	0.032855
0.832	1010.5	1063.4	3802.3	2402.4	-0.003433
0.834	1014.3	1067.2	3776.3	2405.7	0.042940
0.836	1018.4	1071.3	4115.2	2409.8	-0.054102
0.838	1022.1	1075.0	3692.7	2412.8	-0.038086
0.840	1025.6	1078.5	3421.8	2415.2	0.014013
0.842	1029.1	1082.0	3519.0	2417.8	0.029010
0.844	1032.8	1085.7	3729.3	2421.0	-0.062736
0.846	1036.1	1089.0	3289.0	2423.0	-0.061016
0.848	1039.0	1091.9	2910.7	2424.2	-0.005774
0.850	1041.9	1094.8	3877.3	2425.2	0.014570
0.852	1044.8	1097.7	2962.4	2426.5	0.044255
0.854	1048.1	1101.0	3236.7	2428.4	-0.051389
0.856	1051.0	1103.9	2930.3	2429.5	0.054333

0.858	1054.3	1107.2	3255.9	2431.3	-0.044952
0.860	1057.2	1110.1	2975.8	2432.7	-0.000064
0.862	1060.2	1113.1	3975.4	2434.0	-0.019105
0.864	1063.1	1116.0	2863.8	2435.0	0.013140
0.866	1066.0	1118.9	2940.1	2436.1	-0.014239
0.868	1068.9	1121.8	2857.5	2437.1	0.015379
0.870	1071.8	1124.7	2946.8	2438.3	0.027295
0.872	1074.9	1127.8	3112.2	2439.8	-0.042264
0.874	1077.8	1130.7	2859.8	2440.8	0.010238
0.876	1080.7	1133.6	2918.9	2441.9	0.033567
0.878	1083.8	1136.7	3121.7	2443.4	-0.011335
0.880	1086.9	1139.8	3051.7	2444.8	0.007703
0.882	1090.0	1142.9	3099.1	2446.3	0.048710
0.884	1093.4	1146.3	3416.5	2448.5	-0.000981
0.886	1096.8	1149.7	3409.8	2450.7	-0.067888
0.888	1099.8	1152.7	2976.3	2451.8	-0.002624
0.890	1102.7	1155.6	2960.7	2453.0	0.062207
0.892	1106.1	1159.0	3353.5	2455.0	-0.000500
0.894	1109.4	1162.3	3350.1	2457.0	0.028850
0.896	1113.0	1165.9	3549.2	2459.4	0.033010
0.898	1116.8	1169.7	3791.5	2462.4	-0.059849
0.900	1120.1	1173.0	3363.3	2464.4	0.027553
0.902	1123.7	1176.6	3553.8	2466.8	0.023587
0.904	1127.4	1180.3	3725.5	2469.6	0.035780
0.906	1131.4	1184.3	4002.0	2473.0	-0.029393
0.908	1135.2	1188.1	3773.5	2475.9	-0.022483
0.910	1138.8	1191.7	3607.6	2478.4	0.013254
0.912	1142.5	1195.4	3704.5	2481.0	-0.019984
0.914	1146.1	1199.0	3559.3	2483.4	-0.005567
0.916	1149.6	1202.5	3519.9	2485.7	0.069360
0.918	1153.6	1206.5	4044.6	2489.1	-0.000194
0.920	1157.7	1210.6	4043.0	2492.4	-0.013516
0.922	1161.6	1214.5	3935.2	2495.6	-0.034174
0.924	1165.3	1218.2	3675.1	2498.1	0.114023
0.926	1169.9	1222.8	4621.0	2502.7	-0.176092
0.928	1173.2	1226.1	3337.2	2504.3	-0.047012
0.930	1176.1	1229.0	2946.5	2505.2	0.038936
0.932	1179.2	1232.1	3122.1	2506.6	0.022894
0.934	1182.5	1235.4	3268.4	2508.2	0.026593
0.936	1185.9	1238.8	3447.0	2510.2	0.031039
0.938	1189.6	1242.5	3667.9	2512.7	0.057446
0.940	1193.7	1246.6	4115.0	2516.1	-0.071295
0.942	1197.3	1250.2	3567.3	2518.3	-0.024803
0.944	1200.7	1253.6	3394.6	2520.2	0.110488
0.946	1204.9	1257.8	4237.9	2523.8	-0.070438
0.948	1208.6	1261.5	3680.1	2526.2	-0.048839
0.950	1211.9	1264.8	3337.4	2527.9	0.024964
0.952	1215.4	1268.3	3508.3	2530.0	-0.020590
0.954	1218.8	1271.7	3366.8	2531.8	-0.003747
0.956	1222.2	1275.1	3341.6	2533.5	0.100938
0.958	1226.2	1279.1	4091.9	2536.7	0.016438
0.960	1230.5	1283.4	4228.7	2540.2	-0.156866
0.962	1233.6	1286.5	3081.9	2541.4	-0.000769
0.964	1236.6	1289.5	3077.2	2542.5	0.045647
0.966	1240.0	1292.9	3371.6	2544.2	0.036829
0.968	1243.6	1296.5	3629.4	2546.4	-0.054390
0.970	1246.9	1299.8	3254.9	2547.9	0.047699
0.972	1250.5	1303.4	3581.0	2550.0	-0.086780
0.974	1253.5	1306.4	3009.1	2551.0	0.052320
0.976	1256.8	1309.7	3341.4	2552.6	0.086408

0.978	1260.8	1313.7	3973.4	2555.5	-0.083886
0.980	1264.2	1317.1	3358.4	2557.1	0.061634
0.982	1268.0	1320.9	3799.6	2559.7	0.014709
0.984	1271.9	1324.8	3913.0	2562.4	0.012646
0.986	1275.9	1328.8	4013.3	2565.3	-0.055656
0.988	1279.5	1332.4	3590.1	2567.9	-0.071514
0.990	1282.6	1335.5	3110.9	2568.5	0.018822
0.992	1285.8	1338.7	3230.2	2569.9	0.060738
0.994	1289.5	1342.4	3648.0	2572.0	-0.003219
0.996	1293.1	1346.0	3624.6	2574.1	-0.020694
0.998	1296.6	1349.5	3477.6	2575.9	-0.003247
1.000	1300.0	1352.9	3455.1	2577.7	0.026283
1.002	1303.7	1356.6	3641.6	2579.8	-0.040086
1.004	1307.0	1359.9	3360.9	2581.4	-0.017889
1.006	1310.3	1363.2	3242.8	2582.7	-0.002459
1.008	1313.5	1366.4	3226.9	2584.0	-0.027434
1.010	1316.5	1369.4	3054.6	2584.9	0.042146
1.012	1319.9	1372.8	3323.4	2586.4	0.030528
1.014	1323.4	1376.3	3532.7	2588.2	-0.063643
1.016	1326.5	1379.4	3109.9	2589.3	-0.012564
1.018	1329.5	1382.4	3032.7	2590.1	0.016171
1.020	1332.7	1385.6	3132.4	2591.2	0.047424
1.022	1336.1	1389.0	3444.3	2592.9	-0.040635
1.024	1339.3	1392.2	3175.3	2594.0	0.005110
1.026	1342.5	1395.4	3208.0	2595.2	0.014810
1.028	1345.8	1398.7	3304.4	2596.6	-0.011528
1.030	1349.0	1401.9	3229.1	2597.8	-0.008695
1.032	1352.2	1405.1	3173.4	2598.9	0.025793
1.034	1355.5	1408.4	3341.5	2600.4	-0.031670
1.036	1358.7	1411.6	3136.3	2601.4	-0.008974
1.038	1361.8	1414.7	3080.5	2602.3	0.008870
1.040	1364.9	1417.8	3135.7	2603.3	0.000022
1.042	1368.0	1420.9	3135.8	2604.4	-0.020474
1.044	1371.0	1423.9	3010.0	2605.1	0.042866
1.046	1374.3	1427.2	3279.6	2606.4	0.038529
1.048	1377.9	1430.8	3542.4	2608.2	-0.013989
1.050	1381.3	1434.2	3444.7	2609.8	-0.036489
1.052	1384.5	1437.4	3202.1	2610.9	0.043436
1.054	1388.0	1440.9	3493.0	2612.6	-0.027665
1.056	1391.3	1444.2	3304.9	2613.9	0.004674
1.058	1394.6	1447.5	3335.9	2615.3	-0.003008
1.060	1398.0	1450.9	3315.9	2616.6	-0.003600
1.062	1401.3	1454.2	3292.1	2617.9	-0.008927
1.064	1404.5	1457.4	3233.9	2619.0	0.007537
1.066	1407.8	1460.7	3283.0	2620.3	-0.033641
1.068	1410.8	1463.7	3069.3	2621.1	0.009463
1.070	1414.0	1466.9	3137.9	2622.1	0.001291
1.072	1417.1	1470.0	3136.0	2623.0	0.007536
1.074	1420.3	1473.2	3183.6	2624.1	-0.001126
1.076	1423.5	1476.4	3176.5	2625.1	0.037419
1.078	1426.9	1479.8	3423.5	2626.6	0.086506
1.080	1431.0	1483.9	4071.8	2629.3	-0.077841
1.082	1434.4	1487.3	3483.7	2630.8	-0.012914
1.084	1437.8	1490.7	3394.9	2632.3	-0.000597
1.086	1441.2	1494.1	3390.8	2633.6	0.006262
1.088	1444.7	1497.6	3433.6	2635.1	0.001522
1.090	1448.1	1501.0	3444.0	2636.6	-0.025482
1.092	1451.4	1504.3	3372.9	2637.8	0.009776
1.094	1454.7	1507.6	3337.5	2639.0	-0.017858
1.096	1457.9	1510.8	3220.4	2640.1	0.015883

1.098	1461.3	1514.2	3324.3	2641.4	0.012834
1.100	1464.7	1517.6	3410.8	2642.8	-0.001230
1.102	1468.1	1521.0	3402.4	2644.1	-0.026192
1.104	1471.3	1524.2	3228.7	2645.2	0.018277
1.106	1474.7	1527.6	3348.9	2646.5	-0.015923
1.108	1477.9	1530.8	3243.9	2647.5	0.005941
1.110	1481.2	1534.1	3282.7	2648.7	-0.007692
1.112	1484.4	1537.3	3232.6	2649.7	-0.003483
1.114	1487.6	1540.5	3210.2	2650.7	0.033274
1.116	1491.1	1544.0	3431.1	2652.1	0.010862
1.118	1494.6	1547.5	3506.5	2653.7	-0.048260
1.120	1497.7	1550.6	3183.6	2654.6	-0.031181
1.122	1500.7	1553.6	2991.1	2655.2	0.048791
1.124	1504.0	1556.9	3298.0	2656.4	-0.002397
1.126	1507.3	1560.2	3282.2	2657.5	-0.017509
1.128	1510.5	1563.4	3169.2	2658.4	0.015994
1.130	1513.8	1566.7	3272.2	2659.5	-0.013495
1.132	1516.9	1569.8	3185.1	2660.4	-0.004648
1.134	1520.1	1573.0	3155.6	2661.3	0.025149
1.136	1523.4	1576.3	3318.4	2662.4	0.000334
1.138	1526.7	1579.6	3320.7	2663.6	0.025957
1.140	1530.2	1583.1	3497.6	2665.0	-0.000764
1.142	1533.7	1586.6	3492.3	2666.5	-0.005528
1.144	1537.2	1590.1	3453.9	2667.9	-0.019537
1.146	1540.5	1593.4	3321.5	2669.0	-0.002570
1.148	1543.8	1596.7	3304.5	2670.1	-0.014992
1.150	1547.0	1599.9	3206.9	2671.1	0.028340
1.152	1550.4	1603.3	3393.9	2672.3	-0.007615
1.154	1553.8	1606.7	3342.6	2673.5	0.023039
1.156	1557.3	1610.2	3500.3	2674.9	-0.001332
1.158	1560.7	1613.6	3491.0	2676.3	0.016588
1.160	1564.4	1617.3	3608.8	2677.9	-0.020317
1.162	1567.8	1620.7	3465.0	2679.3	-0.001741
1.164	1571.3	1624.2	3453.0	2680.6	0.010612
1.166	1574.8	1627.7	3527.1	2682.1	-0.009536
1.168	1578.3	1631.2	3460.4	2683.4	0.003686
1.170	1581.7	1634.6	3486.0	2684.8	-0.013150
1.172	1585.1	1638.0	3395.6	2686.0	-0.011058
1.174	1588.5	1641.4	3321.3	2687.1	-0.001911
1.176	1591.8	1644.7	3308.6	2688.1	0.010606
1.178	1595.1	1648.0	3379.5	2689.3	0.015975
1.180	1598.6	1651.5	3489.3	2690.6	0.007635
1.182	1602.2	1655.1	3543.0	2692.1	-0.003018
1.184	1605.7	1658.6	3521.6	2693.5	-0.014575
1.186	1609.1	1662.0	3420.5	2694.7	-0.012017
1.188	1612.5	1665.4	3339.2	2695.8	0.003967
1.190	1615.8	1668.7	3365.8	2696.9	-0.005781
1.192	1619.2	1672.1	3327.1	2698.0	0.013680
1.194	1622.6	1675.5	3419.4	2699.2	-0.007638
1.196	1625.9	1678.8	3367.6	2700.3	-0.016995
1.198	1629.2	1682.1	3255.0	2701.2	0.001353
1.200	1632.5	1685.4	3263.9	2702.2	0.001353
1.202	1635.7	1688.6	3272.7	2703.1	-0.005436
1.204	1639.0	1691.9	3237.3	2704.0	0.017336
1.206	1642.3	1695.2	3351.5	2705.1	0.002135
1.208	1645.7	1698.6	3365.9	2706.2	0.044926
1.210	1649.4	1702.3	3682.5	2707.8	0.028484
1.212	1653.3	1706.2	3898.5	2709.8	-0.078791
1.214	1656.6	1709.5	3329.0	2710.8	0.000814
1.216	1659.9	1712.8	3334.5	2711.8	0.015216

1.218	1663.4	1716.3	3437.5	2713.0	0.033477
1.220	1667.0	1719.9	3675.6	2714.6	-0.023947
1.222	1670.5	1723.4	3503.7	2715.9	-0.029974
1.224	1673.8	1726.7	3299.8	2716.8	0.023500
1.226	1677.3	1730.2	3458.6	2718.0	-0.018155
1.228	1680.6	1733.5	3335.2	2719.0	-0.000014
1.230	1684.0	1736.9	3335.2	2720.0	0.012463
1.232	1687.4	1740.3	3419.3	2721.2	0.005381
1.234	1690.9	1743.8	3456.3	2722.4	0.006820
1.236	1694.4	1747.3	3503.8	2723.6	-0.007234
1.238	1697.8	1750.7	3453.5	2724.8	0.013563
1.240	1701.4	1754.3	3548.5	2726.1	-0.013981
1.242	1704.8	1757.7	3450.6	2727.3	0.005755
1.244	1708.3	1761.2	3490.5	2728.5	-0.004127
1.246	1711.8	1764.7	3461.8	2729.7	0.010185
1.248	1715.3	1768.2	3533.1	2731.0	-0.013883
1.250	1718.7	1771.6	3436.3	2732.1	0.010800
1.252	1722.2	1775.1	3511.4	2733.4	0.002193
1.254	1725.8	1778.7	3526.8	2734.6	-0.036396
1.256	1729.0	1781.9	3279.1	2735.5	0.006092
1.258	1732.4	1785.3	3319.3	2736.4	0.019004
1.260	1735.8	1788.7	3447.9	2737.5	-0.005227
1.262	1739.2	1792.1	3412.0	2738.6	0.004298
1.264	1742.7	1795.6	3441.5	2739.7	-0.011100
1.266	1746.0	1798.9	3365.9	2740.7	0.019377
1.268	1749.5	1802.4	3498.9	2741.9	-0.010224
1.270	1753.0	1805.9	3428.1	2743.0	0.032033
1.272	1756.6	1809.5	3655.0	2744.4	-0.030692
1.274	1760.1	1813.0	3437.3	2745.5	0.010593
1.276	1763.6	1816.5	3510.9	2746.7	-0.002868
1.278	1767.1	1820.0	3490.9	2747.9	-0.004135
1.280	1770.5	1823.4	3462.1	2749.0	0.008623
1.282	1774.0	1826.9	3532.3	2750.2	0.012241
1.284	1777.7	1830.6	3609.6	2751.5	-0.009897
1.286	1781.2	1834.1	3538.9	2752.8	-0.000234
1.288	1784.7	1837.6	3537.2	2754.0	0.008886
1.290	1788.3	1841.2	3600.7	2755.3	-0.015572
1.292	1791.8	1844.7	3490.2	2756.4	0.003556
1.294	1795.3	1848.2	3515.2	2757.6	-0.014390
1.296	1798.7	1851.6	3415.4	2758.6	0.015806
1.298	1802.3	1855.2	3535.1	2759.8	-0.025025
1.300	1805.6	1858.5	3353.0	2760.7	0.014467
1.302	1809.1	1862.0	3451.4	2761.8	0.034392
1.304	1812.8	1865.7	3697.3	2763.2	-0.019007
1.306	1816.3	1869.2	3559.4	2764.4	-0.008532
1.308	1819.8	1872.7	3499.2	2765.6	0.001537
1.310	1823.3	1876.2	3509.9	2766.7	0.041308
1.312	1827.2	1880.1	3812.4	2768.3	-0.033111
1.314	1830.7	1883.6	3568.0	2769.5	0.001367
1.316	1834.3	1887.2	3577.8	2770.7	0.024099
1.318	1838.1	1891.0	3754.5	2772.2	0.006312
1.320	1841.9	1894.8	3802.2	2773.8	-0.024597
1.322	1845.5	1898.4	3619.6	2775.1	0.025622
1.324	1849.3	1902.2	3810.0	2776.6	-0.030756
1.326	1852.9	1905.8	3582.6	2777.8	-0.007032
1.328	1856.4	1909.3	3532.6	2779.0	0.000028
1.330	1859.9	1912.8	3532.8	2780.1	0.006786
1.332	1863.5	1916.4	3581.1	2781.3	0.037634
1.334	1867.4	1920.3	3861.2	2782.9	-0.019328
1.336	1871.1	1924.0	3714.7	2784.3	0.000160

1.338	1874.8	1927.7	3715.9	2785.7	-0.012739
1.340	1878.4	1931.3	3622.4	2787.0	0.031887
1.342	1882.3	1935.2	3861.1	2788.6	-0.005144
1.344	1886.1	1939.0	3821.5	2790.1	-0.003690
1.346	1889.9	1942.8	3793.4	2791.6	0.021137
1.348	1893.9	1946.8	3957.3	2793.3	-0.044171
1.350	1897.5	1950.4	3622.5	2794.6	0.028912
1.352	1901.3	1954.2	3838.2	2796.1	0.009602
1.354	1905.2	1958.1	3912.6	2797.8	-0.008926
1.356	1909.1	1962.0	3843.4	2799.3	-0.004158
1.358	1912.9	1965.8	3811.5	2800.8	0.011325
1.360	1916.8	1969.7	3898.9	2802.4	-0.009590
1.362	1920.6	1973.5	3824.8	2803.9	-0.006970
1.364	1924.4	1977.3	3771.8	2805.3	0.024415
1.366	1928.3	1981.2	3960.6	2807.0	-0.019796
1.368	1932.2	1985.1	3806.9	2808.5	-0.013758
1.370	1935.9	1988.8	3703.5	2809.8	-0.024067
1.372	1939.4	1992.3	3529.5	2810.8	0.037233
1.374	1943.2	1996.1	3802.4	2812.3	-0.022615
1.376	1946.8	1999.7	3634.3	2813.5	0.026121
1.378	1950.7	2003.6	3829.2	2814.9	0.022890
1.380	1954.7	2007.6	4008.6	2816.7	-0.037502
1.382	1958.4	2011.3	3718.8	2818.0	-0.016364
1.384	1962.0	2014.9	3599.1	2819.1	0.020821
1.386	1965.7	2018.6	3752.1	2820.5	-0.012633
1.388	1969.4	2022.3	3658.5	2821.7	0.020133
1.390	1973.2	2026.1	3808.9	2823.1	-0.014332
1.392	1976.9	2029.8	3701.2	2824.3	-0.014321
1.394	1980.5	2033.4	3596.7	2825.5	0.038793
1.396	1984.4	2037.3	3887.0	2827.0	-0.007796
1.398	1988.2	2041.1	3826.9	2828.4	-0.009772
1.400	1992.0	2044.9	3752.8	2829.7	-0.071475
1.402	1995.2	2048.1	3252.1	2830.3	0.075385
1.404	1999.0	2051.9	3782.4	2831.7	-0.048375
1.406	2002.4	2055.3	3433.4	2832.5	-0.021084
1.408	2005.7	2058.6	3291.6	2833.2	0.025689
1.410	2009.2	2062.1	3465.2	2834.1	0.078518
1.412	2013.2	2066.1	4055.7	2835.8	-0.082982
1.414	2016.7	2069.6	3434.2	2836.7	-0.006406
1.416	2020.1	2073.0	3390.4	2837.4	0.016319
1.418	2023.6	2076.5	3502.9	2838.4	0.015560
1.420	2027.2	2080.1	3613.7	2839.5	0.048861
1.422	2031.2	2084.1	3984.9	2841.1	-0.053777
1.424	2034.7	2087.6	3578.2	2842.1	0.086753
1.426	2039.0	2091.9	4258.0	2844.1	-0.085517
1.428	2042.6	2095.5	3587.1	2845.1	-0.032892
1.430	2046.0	2098.9	3358.7	2845.9	0.043980
1.432	2049.6	2102.5	3667.7	2847.0	0.059788
1.434	2053.8	2106.7	4134.2	2848.8	-0.113162
1.436	2057.0	2109.9	3293.6	2849.4	0.031220
1.438	2060.6	2113.5	3505.9	2850.3	0.028207
1.440	2064.3	2117.2	3709.4	2851.5	-0.000776
1.442	2068.0	2120.9	3703.7	2852.7	-0.014466
1.444	2071.6	2124.5	3598.0	2853.8	-0.021277
1.446	2075.0	2127.9	3448.1	2854.6	0.019283
1.448	2078.6	2131.5	3583.7	2855.6	0.071511
1.450	2082.7	2135.6	4135.7	2857.3	-0.060041
1.452	2086.4	2139.3	3667.2	2858.5	-0.006186
1.454	2090.0	2142.9	3622.1	2859.5	-0.020920
1.456	2093.5	2146.4	3473.7	2860.4	0.019129

1.458	2097.1	2150.0	3609.2	2861.4	-0.000042
1.460	2100.7	2153.6	3608.9	2862.4	-0.017151
1.462	2104.2	2157.1	3487.2	2863.3	0.014044
1.464	2107.8	2160.7	3586.5	2864.2	-0.020458
1.466	2111.2	2164.1	3442.7	2865.0	0.021329
1.468	2114.8	2167.7	3592.8	2866.0	-0.009432
1.470	2118.3	2171.2	3525.6	2866.9	0.030698
1.472	2122.1	2175.0	3748.9	2868.1	-0.016886
1.474	2125.7	2178.6	3624.4	2869.2	-0.006888
1.476	2129.3	2182.2	3574.9	2870.1	0.010318
1.478	2132.9	2185.8	3649.4	2871.2	-0.013168
1.480	2136.5	2189.4	3554.5	2872.1	0.028980
1.482	2140.3	2193.2	3766.7	2873.3	-0.016953
1.484	2143.9	2196.8	3641.1	2874.3	-0.003233

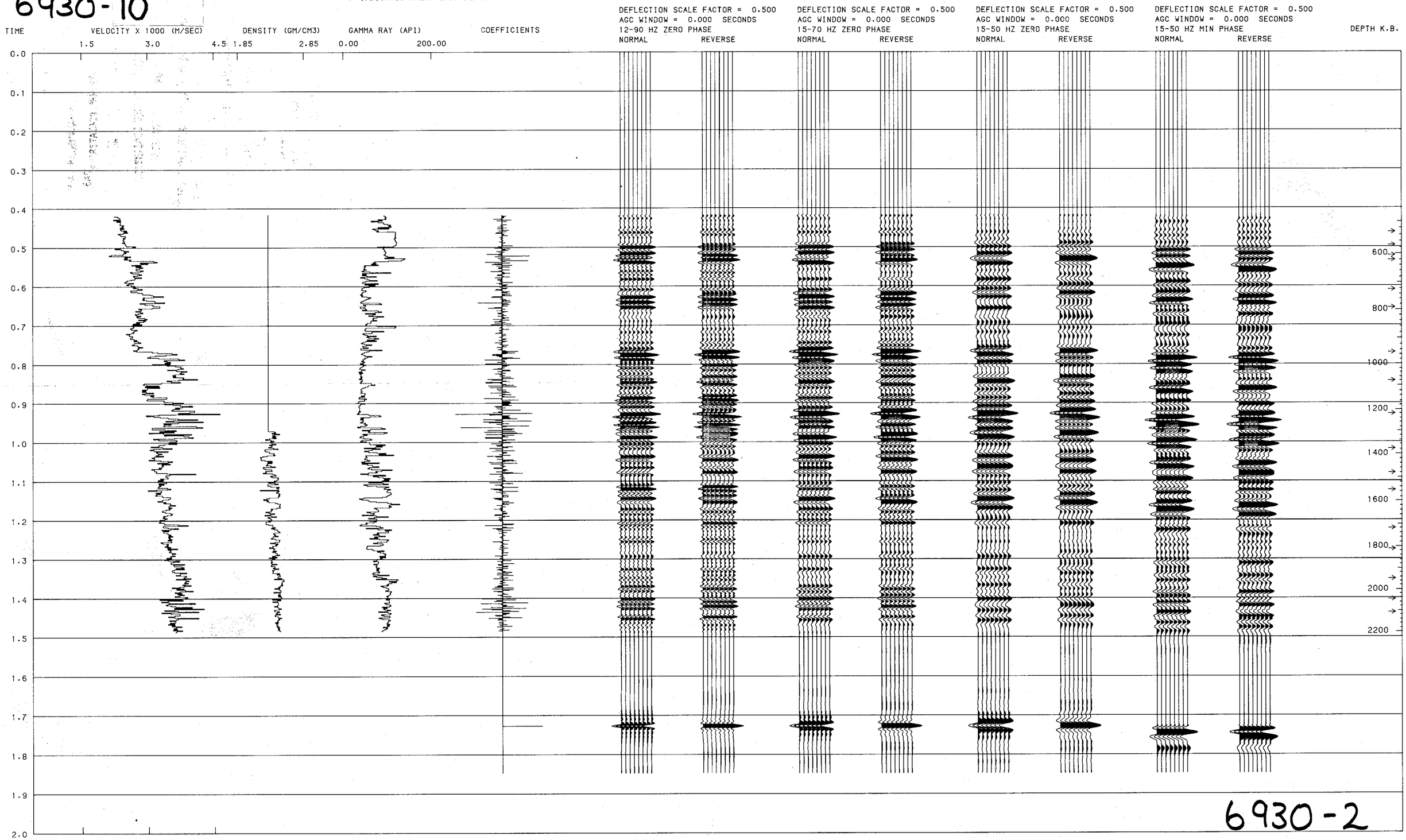
SYNTHETIC SEISMOGRAM

DIGIMAP GEODATA SERVICES

COMPANY : CLAREMONT
WELL : COMPTON 1
DATUM : 0.0 METRES A.S.L.

DATE = 5-OCT-88
SAMPLE RATE = 2 MS. DEPTHS IN METRES
SONIC LOG HAS BEEN CHECK SHOT CORRECTED -
→ INDICATES CHECK SHOT DEPTH

6930-10



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