LAKES OIL N.L.

(A.C.N. 004 247 214)

As Operator for

MIRBOO RIDGE

(A.C.N. 060 663 934)

MOUNT HESSE 2D SEISMIC SURVEY REPORT (BASIC DATA)

PEP 164, Otway Basin

JANUARY 2007

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SEISMIC SURVEY REPORT

1. Introduction

The Mount Hesse Seismic Survey was recorded between the 8th – 11th June 2006 in PEP 164 to the northeast of the township of Colac in the Otway Basin. Four lines were recorded by Lakes Oil N.L. on behalf of its wholly owned subsidiary Mirboo Ridge N.L. with a total of 27.42km recorded. The survey was conducted in conjunction with the Bellarine Seismic Survey in PEP163 held jointly by Mirboo Ridge N.L. and Jupiter Energy Ltd.

The seismic acquisition was performed by Terrex Seismic of Bibra Lake, W.A. and the processing of the data was carried out by Velseis Processing Pty Ltd of Brisbane, Qld. Surveying was performed by Dynamis Satellite Surveys Pty Ltd of Yeppon, Qld.

Interpretation of the data was performed by the staff of Lakes Oil N.L. in the Melbourne offices. Mirboo Ridge N.L., a wholly owned subsidiary of Lakes Oil N.L., is the operator of the permit and holds 100% of the permit with Jupiter Energy Ltd having the right to acquire 33-1/3% of the permit after the contribution of the first $1.2 million in expenditure.

2. Objectives of the Survey

The Mount Hesse Seismic Survey was conducted to detail a structure identified on line OGF91A-03, acquired by Gas and Fuel Exploration N.L. in 1991, to the South of the Warracbarunah-2 well drilled in 1991 as a stratigraphic well by the Geological Survey of Victoria. The structure was previously identified on only one seismic line indicating north-south closure with the new survey designed to test whether there was east-west closure giving a four-way dip closure and a potentially viable target. The Mount Hesse Seismic Survey aimed to identify a suitable drilling target within the lower Pretty Hill Sandstones along the northern margin of the basin to fulfill the year 5 work commitments within PEP 164.

3. Location of Licence

PEP 164 is located in the eastern portion of the onshore Otway Basin in western Victoria (Figure 1). It is bound to the south by the Otway Ranges and to the north by the northern edge of the basin. Colac is the largest population centre within the permit and is located approximately 25km southwest of the survey area. The survey was conducted within the Gellibrand Trough, a half-graben along the northern edge of the basin which is bound to the south by a major northerly dipping normal fault.

4. Regional Geology

4.1 General

The Otway Basin formed as a series of west-northwest trending extensional half-grabens along the south-eastern margin of the Australian continent as a result of the onset of rifting between Australia and Antarctica during the Late Jurassic. The basin covers an area of over 150,000 km^2, of which two-thirds is offshore, stretching from Cape Jaffa in the west to the Mornington Peninsula High (a NE-SW trending basement feature) in the east. The northern margin is taken as the limit of the Early Cretaceous/Tertiary deposition, roughly 60km onshore from the coast. The southern margin is generally accepted as the continental shelf, as the margin lies some 200-300km offshore in deep water and is, at present, poorly defined by seismic.

The stratigraphy, especially in the eastern Otway Basin, is poorly constrained due to a lack of deep (basement penetrating) wells and is based on outcrops of Eumeralla Formation in the uplifted areas and from the few deep wells drilled in the eastern half of the basin. Wedge shaped packages of locally derived, fluvial, quartz-rich arkosic sands (Pretty Hill Formation) were the first sediments deposited, in the lows formed by the developing half-grabens, before the basin was flooded with volcaniclastic sediments (Eumeralla Formation) transported into the basin from the east via a major fluvial braided river system. These sediments include both channel sandstones and overbank/floodplain and lacustrine mudstones.

The Pebble Point Formation represents the earliest Tertiary sediment in the Otway Basin, and occurs as a pebbly conglomerate often directly overlying Otway Group. The Pember Mudstone

of the Dilwyn Formation overlies the Pebble Point Formation, and occurs as a tan brown to grey shale which is dolomitic and slightly carbonaceous. The Dilwyn itself occurs as clear quartz sandstone. The Mepunga, Narrawaturk and Clifton Formations of the Oligocene Nirranda Group overlie the Dilwyn Formation. Within the Torquay area the Nirranda Group is represented by the Demons Bluff Formation.

The Gellibrand Marl and Port Campbell Limestone of the Heytesbury Group, and the Point Addis Limestone, Jan Juc Marl and Puebla Clay of the Torquay Group overlie the above, and represent open marine cool water carbonate conditions within the Otway Basin and Torquay Sub-Basin. These sediments were overlain by Eocene and Ogliocene volcanics followed by Pliocene to Recent aged gravels and ferrugious sands.

4.2 PEP 164 – Survey Area

PEP164 is located between PEP163 (jointly owned by Lakes Oil N.L. and Jupiter Energy) and VIC/0-06(03) (current acreage release not assigned yet) in the eastern portion of the Otway Basin. The survey area is located in the northeast corner of PEP164 along the northern margin of the basin. The survey area is focused on the Gellibrand Trough which was recognized on reinterpreted seismic lines during an Otway Basin margin definition project based on seismic shot by Shell in 1972.

The Gellibrand Trough formed as graben development increased in eastern Gondwanaland as a result of the initial rifting between Australia and Antarctica during the Late Jurassic/Early Cretaceous. The Gellibrand Trough is bound to the south by a major north, dipping normal fault which has a throw of over 1.5 sec TWT. The sedimentation within the Gellibrand Trough thickens towards the fault and is defined by the Warracbarunah-2 well drilled as a stratigraphic well by the Geological Survey of Victoria in 1991.

The well was drilled to a total depth of 1527.46m having penetrated 46.4m of the lower Cretaceous Pretty Hill Sandstone Unit a predominantly medium to coarse grained, well sorted, sub-angular to rounded quartz rich sandstone with some cementation and interbedded silt/claystones which exhibited porosities of up to 15.2%. This is overlain by a Pretty Hill Sand Shale Unit an interbedded sand/shale unit with minor coal beds which exhibits porosities of up to 19.4% in the sandier beds. There are no Late Cretaceous sediments present in the Gellibrand

Trough and this period is marked by a long episode of uplift and erosion resulting in over 1km of sediments being removed from this part of the basin forming the very distinctive Otway Group Unconformity which can be identified throughout the Otway and Gippsland Basins.

Sedimentation recommenced in the area at the beginning of the Tertiary with the deposition of the Older Volcanics although these were not extensive over the entire survey area. These volcanics were followed by the deposition of the Eastern View Formation, the Demons Bluff Formation and the Heytesbury Group during the marine transgression which occurred along the southern margin of Australia during the early Tertiary. A period of uplift , which resulted in the inversion of many of the graben bounding normal faults, and erosion occurred during the Miocene which resulted in the formation of many of the compressional features which are observed today. Most recently volcanic activity along Australia's southern margin has resulted in the deposition of the Newer Volcanics which form the majority of the surface sediments in the survey area. Mt Gellibrand to the southwest and Mt Hesse to the northeast of the survey area are remnants of this volcanic activity.

5. Exploration History

The earliest work in the Eastern Otway Basin was done by private coal companies and the Geological Survey of Victoria primarily in an unsuccessful search for economic black coal. Some deep bores were drilled for black coal in the 1880's and reached 457m still in the Otway Group eg. Bellarine No.1 at Portarlington.

Brown coals were discovered in 1899 around the Otway Ranges and mined at Wensleydale, Deans Marsh and Benwerrin. Later emphasis on brown coal exploration was focused in the Anglesea area, and a significant deposit was found near the Anglesea Township in 1958. Currently ALCOA operates a 1.2 million tonne/year open cut mine extracting brown coal as a feed stock for the Anglesea power station providing electrical generation for their Geelong Aluminum Smelter at Point Henry.

Western Mining Corporation examined the Anglesea area (EL 659) for additional brown coal +reserves over the period 1978 - 1983 and also black coal prospects in the Otway Group. They drilled a number of bores at this time. CRA explored the Bacchus Marsh to Bellarine area

(EL807-809) for brown coal potential in 1981 and drilled 4 bores on the Bellarine Peninsula to top Mesozoic.

Petroleum exploration, in the Tertiary and Otway Group, commenced near Torquay with the drilling of Geelong Oil Flow No.1 in 1950. Later wells in the nearby area include Jan Juc 1 and 2. Alliance Oil Dev. drilled Anglesea No.1 to a depth of 3068 m in 1962. Pursuit Oil drilled Hindhaugh Creek 1 to a depth of 2372 m in 1970. Neither of these wells reached Pretty Hill Sandstone. Offshore in the Torquay Basin three wells: Nerita No.1 (1967), Snail No.1 (1973) and Wild Dog-1(1993) tested the prospectivity of the Upper Cretaceous – Tertiary.

In 1960 Alliance Oil acquired 50 km of seismic near Anglesea and later drilled Anglesea-1, Pursuit Oil NL then drilled Hindhaugh Creek-1 in 1970, and then Shell Development and Pursuit Oil carried out seismic surveys in the Hindhaugh Creek area in 1972 and ran some seismic lines up onto the Paraparap Anticline. In 1982 Gas and Fuel Exploration acquired the adjacent petroleum lease of PEP 100 and later joined by Hartogen Energy Limited carried out seismic surveys with follow up drilling of wells testing the Otway Group/Pretty Hill Sandstone at Olangolah-1 (1982), Stoneyford-1 (1989), Tirrengowa-1 (1988) and Tertiary plays at Ingelby-1 and Nalangil-1 (1990). Their focus has been primarily in the north of PEP 100 and along strike to the Bellarine Peninsula in the Colac Trough area, and only the eastern ends of their seismic lines go near the Bellarine-Torquay area. In 1992 as part of a seismic farmin AGL shot the 302 km Barwon Seismic Survey that includes 5 lines over the Barrabool Hills to Anglesea area (OGF92A 400-409) within PEP163.

Shell carried out seismic work in 1972 in the Port Campbell Embayment which extends to the east as far as the Barongarook High and the Barwon Downs Graben. Shell's seismic work also delineated the half graben setting where the Warracbarunah-2 government stratigraphic bore was located on the northern edge of the Otway Basin. Later Shell (1988) shot high quality seismic throughout the Torquay Basin (Vic P28) with a number of lines running close in to the Bellarine Peninsula but to date no seismic surveys have been conducted over the Bellarine Peninsula. This led to the drilling of Wild dog-1 in 1993

Gas and Fuel carried out regional seismic in 1983 which identified the Stoneyford and Tirrengowa structures. These lines infilled the Shell coverage and conformed to the same grid direction. Hartogen acquired regional-semi detail seismic in 1983 which consolidated the seismic

coverage. Lines were confined to the Port Campbell Embayment and did not go into the Torquay Embayment. Further seismic was acquired in 1986.

These surveys led to the drilling of the Pretty Hill Sandstone at Stoneyford-1 and Tirrengowa-1 and the base Tertiary Pebble Point Formation tests at Ingleby-1 and Nalangil-1.

In 1988 and 1989 Shell acquired seismic (and gravity) data in the offshore Torquay Embayment (Vic P28) and drilled the Wild Dog-1 well prospect in the southern area of the Sub-Basin. In the1990-1998 period five more surveys were shot including the Barwon survey that covers into PEP163.

In 1993 Capital Energy acquired the former Bellarine Block of PEP 130 block covering the Bellarine Peninsula, carried out gravity surveys in 1995 and surrendered it in 1996. In 1996 Basin Oil acquired part of the old PEP100 area (as PEP 133), drilled Irrewarra-1 to 553 m in 1998 as a base-Tertiary test, later Basin Oil was acquired by Origin Energy Resources Ltd and PEP 100 was relinquished in 2000.

6. Field Operations

6.1 Environment

The Mount Hesse Seismic Survey was conducted on both established grazing land and roadsides. The survey across gazing land involved minimal environmental disturbance with some surface clearing of basalt rocks required. Where possible existing tracks were used to minimize the disturbance to the surface and the dry weather experienced throughout the survey period greatly reduced the disturbance to the ground surface.

A detailed Environmental Assessment for the Mount Hesse Seismic Survey was prepared for Lakes Oil by Mr. Chris Annear and he was onsite throughout the survey period to ensure that the recommendations made in his report were adhered to.

On completion of the survey the restoration required was minimal. All drill cuttings and flagging was removed from the lines and any fence altered was reinstated.

6.2 Aboriginal Heritage

The Wathaurong Aboriginal Co-operative was notified in regards to the survey and they had an inspector present to inspect the area before any earthworks were commenced and during the excavation stages. The survey was conducted over cleared grazing land so it was not expected to disturb any sacred sites and no sites of cultural significance were encountered during the survey.

6.3 Permitting, Line Clearing and Fencing

The permitting was conducted by Mr. Chris Annear of Petroleum Support Services of Mount Gambier S.A. The land clearing was conducted by a local contractor Mr. Rodney Knight and the fencing and rehabilitation was performed by another local contractor Mr. David Lowry. Mr. Chris Annear directed and supervised all of the local contractor works.

Prior to the start of the survey a number of landowners were contacted to grant access consent for the survey crew. All landowners were happy for the survey to proceed and all were happy with the rehabilitation performed on the completion of the survey and there have been no follow up problems in regards to the survey.

Most fences were crossed using temporary gates either of the lay down or “cockeys gate” construction. The landowners were happy to move stock from the paddocks involved in the survey whilst the survey was in progress greatly reducing the need for having to secure the fences with barbwire or electric fences. After the survey these gates were removed and the fences restored to their original condition.

6.4 Line Pointing, Chaining & Marking

Lakes Oil representatives were responsible for the line pointing. Chaining and marking was carried out by Dynamic Satellite Surveys Pty Ltd (DSS) (see Appendix 2 for full report). DSS used the RT20/RT2 real-time chain and survey method. Permanent Markers were left on all fence crossings (where practical) and at the intersections of all lines.

6.5 Data Acquisition

Acquisition Type:	Sercel 428 Digital Acquisition System
Energy Source:	3 x Hemi 44,000lb Peak Force
	6x6 Truck mounted Vibrators Online
Vibrator Point Interval:	20 metres
Vibrator Array:	12 m Pad-Pad / No Moveups
Vibrator Array Location:	Centred between Stations (Centered at SP 100.5)
Receivers:	12 x 10 Hz SM24 Geophones / Group
Receiver Interval:	20 metres
Receiver Array:	20 metres (6 phones with 2.5m phone spacing)
Receiver Array Location:	Centred on Station Pegs (Centred at SP 100)
Sweep Length:	6.0 sec
Number of Sweeps:	3
Sweep Type:	Monosweep
Sweep Frequencies:	6 – 80 Hz
Sweep Taper:	200 msec Taper
Sweep Energy per Km:	800 sec/km
Sweep Control:	Pelton Advance 2 Model 5
Accelerometers:	Pelton M5 High Performance
Similarity System:	Pelton VIBRA-SIG
Peak Force:	44000 lbs
Hold Down Weight:	44200 lbs
Vibrator Drive Level:	Force Control On - 80% Peak Force
Phase Lock:	Ground Force Phase Lock
No. of Channels:	240 Channels
Spread Geometry:	Symmetric Split Spread
Maximum Offset:	2242.5 – 7.5 – 0 – 7.5 – 2242.5 metres
Fold:	120 Fold with 10m CDP interval

Record Length: 4.0 seconds
Correlation Sample Rate: 2 milliseconds
Written to Tape S.R.: 2 milliseconds
Output Data Format: SEG D

6.6 Static Control

The basic field static control was obtained by drilling upholes to a depth of approximately 30m at the intersections of the four lines. A total of 4 holes were drilled (see figure 2 for locations) to varying depths depending on the depth required to penetrate the rock beneath the weathered zone. The depth to below the weathering varied from approximately 7.5m to 21.5m.

The drilling was performed by North West Drilling of Diamond Creek, Vic using a truck mounted rotary drilling rig. The downhole weathering survey was performed by SGS Expertest of Wingfield, S.A. using a downhole geophone and a truck mounted weight drop source. Field plots are included as Appendix 4.

6.7 Survey Issues

The survey was conducted during Winter in June so there were no fire concerns during the survey and preparation/rehabilitation periods. Prior to conducting the survey there were concerns raised about possible wet weather which would restrict access to some areas due to the likelihood of the trucks getting bogged and damaging the equipment and environment but no rain was recorded during the survey period enabling the survey to be conducted quickly with no damage caused to the ground surface.

All phases of the survey were completed successfully with the recording crew achieving good production rates. No accidents or environmental incidents were reported during the survey. Terrex Seismic held daily tool-box meetings prior to the start of work were operational and safety issues were discussed. Crew members were required to undergo random breathalyzer tests each morning prior top commencing work in an attempt to reduce the possibility of accidents. A full report on the conduction of the survey by Terrex Seismic is included as Appendix 1.

7. Data Processing

7.1 Data Processing

The data processing of the Mount Hesse Seismic Survey was performed by Velseis Processing Pty Ltd in their Brisbane processing centre between July and December 2006 with the data compiled by Mario Vecchi

All four lines were processed using similar parameters to the previous surveys carried out in the area to enable easy correlation between the different surveys. The Data Processing Report (Appendix 3) lists the tests performed on the data and describes the processing sequence.

During test and production processing special attention was given to:

1. Refraction statics corrections
2. Source noise
3. Seismic wavelet
4. Migration

The final processing sequence can be summarized as follows:

- Reformat
- Trace Edit
- Geometry
- Phase Conversion
- Gain
- Static Computation
- Deconvolution
- Velocity Analysis (1st Pass)
- Residual Statics Calculation and Application
- Velocity Analysis (2nd Pass)
- DMO
- Velocity Analysis (3rd Pass)
- Trace Amplitude Balance

- Normal Moveout Correction
- Stack
- FX Deconvolution
- Finite Difference Time Migration
- Frequency Filter
- Amplitude Balance (AGC)
- Display

7.2 Digital Archives

The following data stages were archived on CD in SEGY format:

1 Final Stack – raw
2 Final Stack – filtered
3 Migration – raw
4 Migration – filtered
5 Final display plot files (final and migrated stacks) and the processing report in CGM+ format
6 Paper displays of final filtered stacks and migrations
7 Processing reports

7.3 Contractor Performance

Velseis completed the main part of the processing project ahead of the scheduled date and the staff at Velseis were very cooperative and responsive to all requests. The processed data was of high enough quality to enable a good interpretation of the targeted structures.

APPENDIX 1

Terrex Seismic End of Job Report

LAKES OIL
2006 SEISMIC SURVEY
BELLARINE & MT HESSE 2Ds

OPERATIONS REPORT

FOR

LAKES OIL

JUNE 2006

BY

J.L.TURNER

OF

TERREX SEISMIC
U2 / 37 HOWSON WAY
BIBRA LAKE
WESTERN AUSTRALIA 6163

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1. Introduction

Terrex Seismic was contracted by Lakes Oil to conduct seismic recording operations for approximately 55 kilometers of 2D data within the Otway Basin in Victoria.

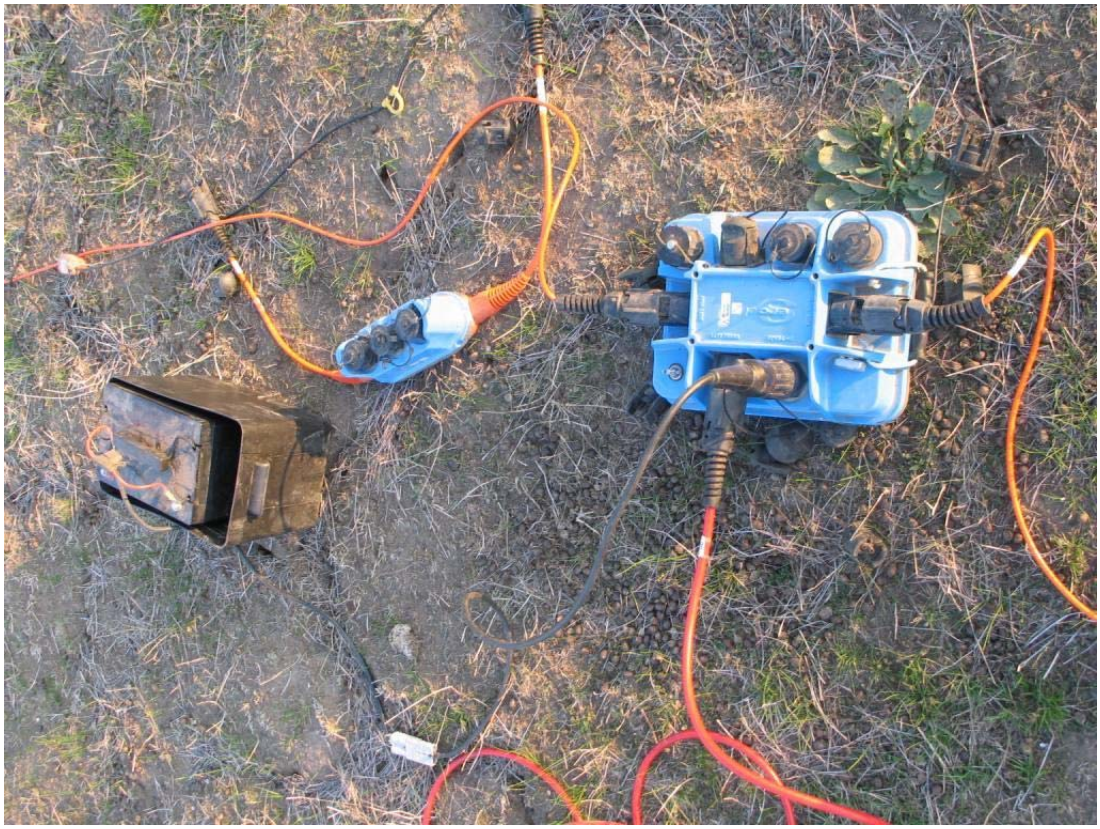
Typical Conditions for the Otway Basin Survey

1.1 Geographical Area

The acquisition area of the Lakes Oil contract was situated over two prospects, Bellarine and Mount Hesse.
The Bellarine prospect was located approximately 5 kilometers east of Queenscliffe in Victoria. The Mount Hesse prospect was located approximately 20 kilometers west of Colac in Victoria.

1.2 Weather

The weather remained fine and pleasant for the duration of the contract.



New Sercel 428 Acquisition System

1.3 Logistics

Acquisition commenced on the 5th June 2006 on line OKLB06-02 after mobilizing from the Melbourne on the 4th June 2006. Acquisition was completed on the 11th June 2006.

All line equipment was mobilized from Melbourne to Queenscliff by Terrex personal.

Access to the lines was via local roads and farm tracks.

The accommodation for the crew was provided by the Queenscliff Big 4 Resort and the Mid City Motor Inn while in Colac. Each Motel supplied meals to the crew.

Fuel for all vehicles was supplied by the Shell distributors in Geelong and Colac.

All freighting for Crew 403 whilst at the Otway Basin 2D was provided by freighting couriers.

All other logistics were supported out of Terrex Seismic Perth Office.

2. SURVEYING

2.1 RANGING / CHAINING / SURVEYING

Line chaining and survey for the entire program were completed by Dynamic Satellite Surveys personnel.

2.2 LINE CLEARING

Some line slashing was required on the Mount Hesse prospect and was provided by a local contractor who worked directly for Lakes Oil.

2.3 PERMITTING

Permitting was carried out by Mr. Tim O'Brien of Lakes Oil.

New 428 Recorder setup on the Mount Hesse prospect.

3. RECORDING / PROCESSING

3.1 RECORDING PAREMETERS

Lakes Oil 2D Victoria

Acquisition Type:	Sercel 428 Digital Acquisition System
Energy Source:	3 x Hemi 42,000lb Peak Force 6x6 Truck mounted Vibrators Online
Vibrator Point Interval:	20 metres
Vibrator Array:	12.0 m Pad-Pad / No Moveups
Vibrator Array Location:	Centred between Station Pegs
Receivers:	12 x 10 Hz SM24 Geophones / Group
Receiver Interval:	20 metres
Receiver Array:	20 metres
Receiver Array Location:	Centred on Stations (Centered at SP 1000)
Sweep Length:	6.0 seconds
Number of Sweeps:	3
Sweep Type:	Monosweep
Sweep Frequencies:	6 – 80 Hz
Sweep Taper:	200 msec Taper
Sweep Control:	Pelton Advance 2 Model 5
Accelerometers:	Pelton M5 High Performance
Similarity System:	Pelton VIBRA-SIG
Peak Force:	44000 lbs
Hold Down Weight:	44,200 lbs
Vibrator Drive Level:	Force Control On - 80% Peak Force
Phase Lock:	Ground Force Phase Lock
No. of Channels:	240Channels
Record Length:	4.0 seconds
Correlation Sample Rate:	2 millisecond
Written to Tape S.R.:	2 millisecond
Output Data Format:	SEG D

3.3 RECORDING

BELLARINE PROSPECT: PEP 163

The first production profile was recorded on line OKLB06-02 on the 5th June 2006. Acquisition began at 15:30 after the completion of wire lines and testing on that same morning. Traffic management was a large part of operations on the Bellarine prospect with both lines in this area running along existing roads. Two vehicles and three personnel were used for the traffic management teams.

Line OLKB06-02

Recording commenced on this line on the 5th June from station 160.5 in the north with 1.3 kilometers skipped due to proximity of dwellings at the beginning of the line. Line 02 continued south along the Port Arlington Queenscliff road and was completed the following day on the 6th June at station 879.5, a total of 15.4kilometers recorded with 4 VP's skipped.

Line OLKB06-01

Recording commenced on this line on the 7th June from station 163.5 in the west and continued east along the Clifton Springs road. Line 01 was completed that same day at station 757.5 in the east, a total of 11.88 kilometers recorded with no skipped VP's. The finish of line 01 represented the completion of the Bellarine prospect; the crew moved all equipment to the Mount Hesse prospect east of Colac the following day on the 8th June 2006.

MOUNT HESSE PROSPECT: PEP 164

The first production profile was recorded on line OLKMH06-02 on the 8th June 2006. Acquisition began at 14:30 after the completion of testing on that same morning. Traffic management was not required on the Mount Hesse prospect as all the lines were through open grazing country.

Open grazing country in the Mount Hesse prospect.

Line OLKMH06-02

Recording commenced on this line on the 8th June 2006 from station 509.5 in the south and was completed the following day at station 100.5 in the north, a total of 8.18 kilometers with 23 skipped VP's.

Line OLKMH06-01

Recording commenced on this line on the 9th June 2006 from station 100.5 in the north and was completed the following day at station 380.5 in the south, a total of 9.44 kilometers with 10 skipped VP's.

Line OLKMH06-04

Recording commenced on this line on the 10th June 2006 from station 422.5 in the east and was completed that same day at station 103.5 in the west, a total of 6.38 kilometers with 6 skipped VP's.

Line OLKMH06-03

Recording commenced on this line on the 11th June 2006 from station 102.5 in the west and was completed the following day at station 465.5 in the east, a total of 6.38 kilometers with 11 skipped VP's. The finish of line three represented the completion of the Lakes Oil contract. The line crew picked up and packed all recording equipment on the afternoon of the 11th June 2006 and demobilized the following day.

3.4 PROCESSING

All data ‘A’ tapes were sent to Velseis Processing in Brisbane for final processing and Data ‘B’ tapes were sent to Lakes Oil offices in Melbourne.

APPENDIX A

EQUIPMENT SPECIFICATIONS

SEISMIC ACQUISITION CREW - EQUIPMENT

3.1.1 RECORDING EQUIPMENT

- **SERCEL 428 Seismic Data Acquisition System**
  - Dell Monitor and Dell Computer
  - OYO V12 Thermal Plotter, UPS, LIM
  - One (1) Sercel Real Time APM - Sweep Correlator
  - Two (2) Fujitsu LTO Tape Drives
  - One Hundred and Fifty (150) 4 T/O Seismic Cables (600 Channels)
  - Fifteen (15) Sercel LAULs and Six (6) Sercel LAUXs
  - Twenty (20) Battery case power Cords
  - Twenty (20) Batteries for LAUL Units
  - One (1) Sercel Handheld Cable Testers
  - Four (4) Sercel Battery Chargers
- **Pelton Vibra Sig** Real Time Similarity System
- One (1) 10 metre 6 DB Boost High Gain Antenna on Recording Truck
- **Sensor SM4 10Hz High Specification Superphones**
- One Thousand two hundred (1200) Geophone strings with 6 ph/group (600 Channels with 12 phones/group)
- One (1) Sensor SMT100 Geophone Tester

Note: Terrex Seismic warrants that 90% of equipment will be used in field and up to 10% may be undergoing repair and maintenance.

3.1.2 SOURCE EQUIPMENT

- **Four (4) HEMI 44 6x6 Truck mounted Vibrators:**
  - **Peak force is 44000lbs per Vibe and**
  - **Hold-Down weight is 44200lbs per Vibe**

- **Four (4) Pelton Advance 2 Model 5 Vibrator Control Electronics**
- One (1) Pelton Encoder Sweep Generator for Recorder
- Three (3) operating Online and One (1) on Standby
- Electronics are capable of Trade Marked **Varisweep**

APPENDIX B

OCCUPATIONAL HEALTH AND SAFETY STANDARDS

Pre-Survey HSE Preparation

- Risk and Hazard Assessment completed following award of seismic contract.
- Site Specific Safety Plan (SSSP) including Medevac Plan completed for each seismic contract.
- Personnel Interviews, Fitness Medicals, Five (5) Panel Drug Tests, Random Drug and Alcohol testing on crew.
- Personnel Contracts (Collective Australian Workplace Agreement), Induction Course, Driving Assessment, Driver Training completed on crew.

Operations

- Crew Management / Communications System:
    - Crew Startup Induction/Safety Meeting.
    - Daily Workgroup Toolbox Meetings.
    - Weekly Senior Personnel Performance/Operations Meeting.
    - Sunday Crew Safety Meeting.
- Sunscreens and UV blockout creams supplied at no cost to all crew members.
- Hats, shirts and covered safety footwear must be worn by field crew at all times.
- Reflective Orange Safety Vests for all Survey and Recording Crew personnel.
- Mobile Satellite Telephones with email facilities and Fax machines are maintained on crew to assist with Safe Operations.
- Crew Medivac procedures in place as per SSSP.
- Full International Red Cross standard First Aid Kit.

APPENDIX C

TAPE LISTING

Lakes Oil Otway Basin 2D, PEP 163							
Tape #	**#ID**	**Line #**	**First FFID**	**Last FFID**	**First VP**	**Last VP**	**Date Recorded**
1A	1	OLKB06-01	1	734	318.5	723.5	5-7 June 06
		OLKB06-02					
Lakes Oil Otway Basin 2D, PEP 164							
1A	2	OLKMH06-01	1	1136	216.5	420.5	8-11 June 06
		OLKMH06-02					
		OLKMH06-03					
		OLKMH06-04					

APPENDIX D

HSE STATISTICS

Safety Statistics

Terrex Seismic Man-hours	2,592
Sub-Contractor Man-hours	0
Fatalities	0
LTI	0
MTC	0
First Aid / Medical Cases	3
Incident / Accident Reports	0
Hazard Identification Reports	0
Training Hours	41
Tool Box / Safety Meeting Man-hours	55
Audits / Inspections	4
Drills	0
Land Spills (< 5 litres)	0

Medical Statistics

Clinic Attendance	
Colds, Influenza type symptoms	3
TOTAL	**3**

APPENDIX E

SAFETY MEETING MINUTES

SAFETY MEETING

Date: 11 June 06
Location: Crew: 403
Client: Lakes Oil
Conducted by: Jon Turner
Attendance: 33
Meeting opened @ 6.30am
Meeting closed @ 6.45am

ACTION POINTS PREVIOUS MEETING
1.

TOPICS DISCUSSED

Jon Turner (PM)

- Should be finished today and moving to new job site tomorrow. The trip will take more than a day so looks like we will overnight somewhere.
- Warren, Shuffy and Mark will be leaving us tomorrow via Melbourne; thanks for your efforts.
- Next job at Griffith could be a little tricky, looks like we may start in paddocks.
- I have done up a roster, after Griffith we go to Gloucester where we need to reduce numbers down to 18 so some people will be taking a forced break. The break will not be long and you will join the crew when we get to Goondoowindi.
- Some rain last night so take care driving to work and be careful when driving on the farmers' tracks, we don't want to cut it up and we would like to avoid any incidences on the last day.
- Dave and Megan have come up with a plan to get through the foot rot paddocks which should make it easier for the crew.

Sam Coniglio (Client Rep.)

- Do we have enough spread to start this morning.
- Thanks for your efforts so far on the job.

Tim O'Brien

- Well done so far for your efforts on the job.
- Some rain last night so would like everyone to be careful in the section around the house that goes through the fence and up the hill, the ground will be soft.

Chris Annears (Permit Liaison)

- The culverts out there have not had a lot of traffic on them so you will need to be careful when driving, you may have to get out an walk them to make sure you can crossover without causing damage, the vibes have been shown how to get around.
- The foot rot area is marked by yellow plates and there is a silver water tank nearby. Make sure you understand what is required, that you can only travel in one direction through this area.
- I may be leaving today so thanks for your efforts; it has been a good job.

Ray Auckram (HSE)

- Take care out there today.
- We will be moving tomorrow so normal procedures will be followed but I will talk more tomorrow.
- These meetings are for you and require your input as well so don't just sit back, if you have an issue then raise it for discussion so solutions can be found.

Dave Berger (Observer)

- The crew keeps changing as personnel come and go so I ask everyone to be patient with each other, those experienced people take the time to train those with less time on the job.

Megan Bann (Line Boss)

- Nugget will take out the tray back; just have to wait for Vicki.
- The spread truck will go out this morning as well

Warren Campbell (Line Boss)

- Thanks for your efforts.

ACTION POINTS
1. Camp move breath test for Monday ***– Ray Auckram HSE Responsible.***
2. Drug screen tests for outgoing personnel ***– Ray Auckram HSE Responsible.***

APPENDIX F

VEHICLE LISTING

LIGHT VEHICLE LIST			
#	VEHICLE	USED FOR	REGISTRATION
1	Land Cruiser 100 Series	Front Crew	093 IIU
2	Land Cruiser 100 Series	Back Crew	096 IIU
3	Land Cruiser 100 Series	Vibe Crew	WZI 799
4	Land Cruiser Tray Back	Line Boss	1 BZJ 848
5	Land Cruiser Tray Back	Jug Ute	211 HHS
6	Land Cruiser Tray Back	Traffic Management	454 IUE
7	Land Cruiser Tray Back	Traffic Management	667 067
8	Land Cruiser Tray Back	Troubleshooter	815 HOW
9	Land Cruiser Tray Back	Cable Truck	1 BGO 007
10	Land Cruiser Tray Back	Cable Truck	1 BRD 044
11	Hilux 4x4 Tray back	Crew Manager	188 JLF
12	Hilux 4x4 Tray back	HSE	UDK 584
13	Hilux 4x4 Tray back	Traffic Management	185 JLF
14	Hilux 4x4 Tray back	Traffic Management	186 JLF
15	Hilux 4x4 Tray back	Traffic Management	187 JLF
16	Hilux 4x4 Tray back	Traffic Management	UDK 581
HEAVY VEHICLE LIST			
1	Hino 4x4 Truck	Service Truck	QCU 348
2	Isuzu 4x4 Truck	Spread Truck	1CAA 534
3	International Paystar 6x6	Spread Truck	626 JAH
4	International Paystar 6x6	Vibrator	371JCN
5	International Paystar 6x6	Vibrator	372 JCN
6	International Paystar 6x6	Vibrator	374 JCN
7	International Paystar 6x6	Vibrator	375 JCN
8	International Paystar 6x6	Vibrator	376 JCN

APPENDIX G

CREW LIST

TERREX SEISMIC
CREW LIST FOR GSLM
TASMANIA BASIN 2D SEISMIC SURVEY

POSITION	NAMES
Crew Manager	Jon Turner
HSE Advisor	Ray Auckram
HSE Advisor	Geoff Oswell
Observer	David Berger
Cable Repair	Bailey-Garden Marama
Vibe Op	Abby Bann
Vibe Op	Guy Eberhardt
Vibe Op	Dean Kingston
Vibe Op	Arnold McKenna
Vibe Op	Shane Shufflebotham
Vibe Tech	Bob Garden
Line Boss	Warren Campbell
Line Crew	Megan Bann
Line Crew	Wade Atkins
Line Crew	Nathan Collier
Line Crew	James Goodwill
Line Crew	Adam Hall
Line Crew	Scott Humberstone
Line Crew	Melinda Lynham
Line Crew	Hamish McLeod
Line Crew	Ty Nisbett
Line Crew	Jon Richardson
Line Crew	Kelly Shanks
Line Crew	Adam Smith
Line Crew	Norma Tanner
Line Crew	Byron Thompson
Line Crew	Vicki Wright
Line Crew	Glen Braithwaite
Traffic Controller	Daniel Carroll
Traffic Controller	Mark Elborn
Traffic Controller	Bradley Judge
Traffic Controller	Brett Nugent
Traffic Controller	William Smith
Traffic Controller	Larry Wilson

APPENDIX H

POSITION NUMBERS

POSITION	NUMBERS
Crew Manager	1
HSE Advisor	2
Cable Repair	1
Observer	1
Vibe Operator	5
Vibe Technician	1
Line Boss	1
Line Crew	16
Traffic Controller	6

APPENDIX I

DAILY REPORTS

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 163	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	04-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Vp's	Kms

TOTALS	
VP's...	0
Skips...	0
Kms...	0.00

Cum. Total Skips....	0
Cum.Total Vp's....	0
Cum. Total Kms....	0.00

HOURS			Down Time -			
Recording.....			Troubleshooting.....			
Recorder Move.....			Recorder.....			
Line Change.....			Vibes.....			
Detours/Terrain.....			W / on Spread.....			
W.O.S.....			Other.....			
QC Spread.....					Day Charge Hrs.....	0.0
Travel.....					Cum.Day Charge Hrs (Job)...	0.0
Layout Spread.....					Standby Hrs.....	0.0
Pickup Spread.....			Toolbox / Induction.....		Cum.Standby Hrs (Job)...	0.0
Weather.....			Total Down Time.....	0.0	Total Day.Incl Non Charge Hrs.	0.0
Mobilisation....	4.0				Cum.Total Charge Hrs (Job)...	0.0
Cum. Mobilisation....	4.0		Cum. Down Time (Job).....	0.0	Cum.Total.Incl Non Charge Hrs (Job)	0.0

COMMENTS:

Line crew arrived in Melbourne at 7:00am this morning, disembarked ferry from Tasmania and traveled to Queenscliff, arrived at 12:00 midday.
Afternoon spent loading equipment for start of production tomorrow.

Layout				Pickup			
Line	Station #		Tot	Line	Station #		Tot
			1				1

LTI= 0 MTI= 0 FAC= 0

Total Stations :			Total Stations:		
	1			1	

SURVEY REPORT

TRAFFIC MANAGEMENT Recording Crew

Vehicles **Personnel**

COMMENTS: **Mobilising with main crew, 4.0hrs.**

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 163	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	05-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OKLB06-02	160.5	321.5	161	2	1.300	47	3.220

TOTALS	
VP's...	47
Skips...	2
Kms...	3.220
Tail Kms...	1.30
Cum. Total Tail Kms....	1.30
Cum. Total Skips....	2
Cum.Total Vp's....	47
Cum. Total Kms....	3.220

HOURS

Recording.....	1.32
Recorder Move.....	
Line Change.....	
Detours/Terrain.....	
W.O.S.....	
QC Spread.....	
Travel.....	0.33
Testing.....	1.07
Layout Spread.....	4.00
Pickup Spread.....	
Weather.....	
Mobilisation....	
Cum. Mobilisation....	

Down Time -

Repegging missing Stations.....	
Recorder.....	1.00
Vibes.....	0.03
W / on Spread.....	
Other.....	0.875
Traffic Standby....	
Pre-start Equip Testing.....	0.875
Toolbox / Induction.....	**0.5**
Total Down Time.....	1.91
Cum. Down Time (Job).....	**1.91**

Day Charge Hrs.....	**6.72**
Cum.Day Charge Hrs (Job)...	**6.72**
Standby Hrs.....	**1.38**
Cum.Standby Hrs (Job)...	**1.38**
Total Day.Incl Non Charge Hrs.	**10.00**
Cum.Total Charge Hrs (Job)...	**8.10**
Cum.Total.Incl Non Charge Hrs (Job)	**10.00**

COMMENTS:

Induction Meeting at 6:30am.
Pre-start geophone leakage tests at the request of the client took 1.75 hrs, crew standing by.
Line crew traveled to the field and commenced layout, completed by 1:00pm.
Parameter testing followed the layout and was completed by 2:45pm.
Production commenced at 3:22 after the vibes detoured to the start of line.
Production continued until 4:20pm when operations were ceased due to government controls on traffic management, signs must be off road before dark.
1 hr production lost due to early finish.
Recorder downtime today was due to 2 system resets following lockouts.
Tail Kms' are the extra channels at the beginning and ends of line to produce full fold.

Bad Equipment : Cable - 0, Phones - 0

Layout				**Pickup**			
Line	Station #		Tot	Line	Station #		Tot
OLKB06-02	160	640	481	OLKB06-02	160	179	20
		Total Stations :	481			**Total Stations:**	20

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager	1	1	1	**1**
Traffic Control Team	1	2	1	**1**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 163	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	06-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OKLB06-02	323.5	879.5	558	4	1.02	345	12.180

TOTALS	
VP's...	345
Skips...	4
Kms...	12.180
Tail Kms...	1.02
Cum. Total Tail Kms....	2.32
Cum. Total Skips....	6
Cum.Total Vp's....	392
Cum. Total Kms....	15.400

HOURS		Down Time -			
Recording.....	6.13	Repegging missing Stations.....			
Recorder Move.....	0.67	Recorder.....	0.10		
Line Change.....		Vibes.....	0.50		
Detours/Terrain.....		W / on Spread.....			
W.O.S.....		Other.....			
QC Spread.....	1.45			Day Charge Hrs.....	8.70
Travel.....	0.45	Traffic Standby....	0.40	Cum.Day Charge Hrs (Job)...	15.42
Testing.....		Pre-start Equip Testing.....		Standby Hrs.....	0.70
Layout Spread.....		**Toolbox / Induction.....**	**0.3**	Cum.Standby Hrs (Job)...	2.08
Pickup Spread.....		Total Down Time.....	0.60	Total Day.Incl Non Charge Hrs.	10.00
Weather.....				Cum.Total Charge Hrs (Job)...	17.50
Mobilisation....		Cum. Down Time (Job).....	**2.51**	Cum.Total.Incl Non Charge Hrs (Job)	20.00
Cum. Mobilisation....					

COMMENTS:

Toolbox Meeting at 6:45am.
A good days production today, line crew are working well.
Vibe downtime today was due to a broken stablising rod on the pad, resulted in a damaged airbag, vibe tech repaired the problem and production continued
Damaged part dropped off for repairs, pickup tomorrow.
PM, HSE, spare vibe op, cable tech and 1 line crew personnel to Melbourne today to return extra rental vehicles to 4WD Hire.
Vibe fuel truck bogged on road verge for most of day today, required tow truck to remove.

Bad Equipment : Cable - 0, Phones - 9

Layout				Pickup			
Line	Station #		Tot	Line	Station #		Tot
OLKB06-02	641	930	290	OLKB06-02	180	765	586
OLKB06-01	163	274	112				
Total Stations :		402		**Total Stations:**		586	

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager	1	1	1	**2**
Traffic Control Team	1	2	1	**2**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 163	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	07-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OKLB06-01	163.5	757.5	595	0	1.74	318	11.880

TOTALS

VP's...	318
Skips...	0
Kms...	11.880
Tail Kms...	1.74
Cum. Total Tail Kms....	4.06
Cum. Total Skips....	6
Cum.Total Vp's....	710
Cum. Total Kms....	27.280

HOURS

Recording.....	5.80
Recorder Move.....	0.65
Line Change.....	0.73
Detours/Terrain.....	0.25
W.O.S.....	
QC Spread.....	1.43
Travel.....	0.67
Testing.....	
Layout Spread.....	
Pickup Spread.....	
Weather.....	
Mobilisation....	
Cum. Mobilisation....	

Down Time -

Repegging missing Stations.....	
Recorder.....	0.18
Vibes.....	0.07
W / on Spread.....	
Other.....	
Traffic Standby....	
Pre-start Equip Testing.....	
Toolbox / Induction.....	**0.3**
Total Down Time.....	0.25
Cum. Down Time (Job).....	**2.76**

Day Charge Hrs.....	**9.53**
Cum.Day Charge Hrs (Job)...	**24.95**
Standby Hrs.....	**0.30**
Cum.Standby Hrs (Job)...	**2.38**
Total Day.Incl Non Charge Hrs.	**10.08**
Cum.Total Charge Hrs (Job)...	**27.33**
Cum.Total.Incl Non Charge Hrs (Job)	**30.08**

COMMENTS:

Toolbox Meeting at 6:45am.
Line crew worked extremely well today with 760 channels moved on back crew.
PEP 163 completed today, will move to PEP 164 tomorrow. Crew accommodation to be moved to Colac tomorrow while line crew move spread and equipment.
388 spread truck and recorder driven to Melbourne today for transport to Northern Territory.
Traffic management will not be required on the next prospect, one personnel to return to Tasmania while the other two will be used on line crew.
Traffic management trainer arrived on crew today to run the NSW traffic course, will be completed tomorrow.

Bad Equipment : Cable - 0, Phones - 2

Layout

Line	Station #		Tot
OLKB06-01	275	757	483
Total Stations :		483	

Pickup

Line	Station #		Tot
OLKB06-02	766	930	165
OLKB06-01	163	757	595
Total Stations:		760	

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager	1	1	1	**3**
Traffic Control Team	1	2	1	**3**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 164	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	08-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OLKMH06-02	509.5	318.5	192	8	1.38	115	3.820

TOTALS	
VP's...	115
Skips...	8
Kms...	3.820
Tail Kms...	1.38
Cum. Total Tail Kms....	5.44
Cum. Total Skips....	14
Cum.Total Vp's....	825
Cum. Total Kms....	31.100

HOURS

Recording.....	2.26		
Recorder Move.....			
Prospect Move.....	1.82		
Detours/Terrain.....	0.57		
W.O.S.....			
QC Spread.....			
Travel.....	0.83		
Testing.....	1.48		
Layout Spread.....	3.17		
Pickup Spread.....			
Weather.....			
Mobilisation....			
Cum. Mobilisation....			

Down Time -

Repegging missing Stations.....	
Recorder.....	0.53
Vibes.....	0.22
W / on Spread.....	
Other.....	
Traffic Standby....	
Pre-start Equip Testing.....	
Toolbox / Induction.....	**0.3**
Total Down Time.....	0.75
Cum. Down Time (Job).....	**3.51**

Day Charge Hrs.....	**10.13**
Cum.Day Charge Hrs (Job)...	**35.08**
Standby Hrs.....	**0.30**
Cum.Standby Hrs (Job)...	**2.68**
Total Day.Incl Non Charge Hrs.	**11.18**
Cum.Total Charge Hrs (Job)...	**37.76**
Cum.Total.Incl Non Charge Hrs (Job)	**41.26**

COMMENTS:

Toolbox Meeting at 6:45am.
Line crew mobilised to the new prospect this morning, equiment was layed out and testing commenced at 12:30pm. The move went well with no waiting on spread time recorded.
NSW traffic course was completed today, instuctor departed late in the day.
Camp staff moved all luggage and equipment, setup at Colac by 3:30pm.

Bad Equipment : Cable - 0, Phones - 2

Layout

Line	Station #		Tot
OLKMH06-02	509	100	410
OLKMH06-01	100	150	51
Total Stations :		461	

Pickup

Line	Station #		Tot
OLKMH06-02	509	450	60
Total Stations:		60	

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager	1	1	0	**3**
Traffic Control Team	1	2	0.5	**3.5**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep…….	Sam Coniglio
Area.....	PEP 164	Weather.....	Fine / Cool
State.....	Victoria	DATE……	09-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OLKMH06-02	318.5	100	218	15	0	115	4.360
OLKMH06-01	100.5	253.5	154	5	0	149	3.06

TOTALS	
VP's...	264
Skips...	20
Kms...	7.420
Tail Kms...	0.00
Cum. Total Tail Kms....	5.44
Cum. Total Skips....	34
Cum.Total Vp's....	1089
Cum. Total Kms....	38.520

HOURS

Recording.....	5.13		
Recorder Move.....			
Line Move.....	0.85		
Detours/Terrain.....	0.68		
W.O.S.....			
QC Spread.....	2.43		
Travel.....	1.45		
Testing.....			
Layout Spread.....			
Pickup Spread.....			
Weather.....			
Mobilisation....			
Cum. Mobilisation....			

Down Time -

Repegging missing Stations.....	
Recorder.....	0.12
Vibes.....	0.05
W / on Spread.....	
Other.....	
Traffic Standby….	
Pre-start Equip Testing.....	
Toolbox / Induction.....	**0.3**
Total Down Time.....	0.17
Cum. Down Time (Job).....	**3.68**

Day Charge Hrs.....	**10.54**
Cum.Day Charge Hrs (Job)...	**45.62**
Standby Hrs.....	**0.30**
Cum.Standby Hrs (Job)...	**2.98**
Total Day.Incl Non Charge Hrs.	**11.01**
Cum.Total Charge Hrs (Job)...	**48.60**
Cum.Total.Incl Non Charge Hrs (Job)	**52.27**

COMMENTS:

Toolbox Meeting at 6:45am.
Minimal downtime today, good production.
A good day today, no problems to report.

Bad Equipment : Cable - 0, Phones - 2

Layout

Line	Station #		Tot
OLKMH06-02	150	380	231
OLKMH06-01	422	381	42
		Total Stations :	273

Pickup

Line	Station #		Tot
OLKMH06-02	450	100	351
		Total Stations:	351

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager				**3**
Traffic Control Team				**3.5**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep.....	Sam Coniglio
Area.....	PEP 164	Weather.....	Fine / Cool
State.....	Victoria	DATE.....	10-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OLKMH06-01	254.5	380.5	127	5	0.96	74	2.540
OLKMH06-04	422.5	103.5	320	6	0.82	273	6.38

TOTALS	
VP's...	347
Skips...	11
Kms...	8.920
Tail Kms...	1.78
Cum. Total Tail Kms....	7.22
Cum. Total Skips....	45
Cum.Total Vp's....	1436
Cum. Total Kms....	47.440

HOURS

Recording.....	5.33	Repegging missing Stations.....	
Recorder Move.....		Recorder.....	
Line Move.....	0.90	Vibes.....	
Detours/Terrain.....	0.42	W / on Spread.....	
W.O.S.....		Other.....	
QC Spread.....	2.15		
Travel.....	1.23		
Testing.....		Traffic Standby....	
Layout Spread.....		Pre-start Equip Testing.....	
Pickup Spread.....		**Toolbox / Induction.....**	**0.3**
Weather.....		Total Down Time.....	0.00
Mobilisation....			
Cum. Mobilisation....		Cum. Down Time (Job).....	**3.68**

Down Time -

Day Charge Hrs.....	**10.03**
Cum.Day Charge Hrs (Job)...	**55.65**
Standby Hrs.....	**0.30**
Cum.Standby Hrs (Job)...	**3.28**
Total Day.Incl Non Charge Hrs.	**10.33**
Cum.Total Charge Hrs (Job)...	**58.93**
Cum.Total.Incl Non Charge Hrs (Job)	**62.60**

COMMENTS:

Toolbox Meeting at 6:45am.
Line crew working well, no downtime or waiting on spread recorded today.
Will complete Lakes Oil contract tomorrow barring weather concerns.
Demobe proposed for Monday the 12th June.

Bad Equipment : Cable - 2, Phones - 3

Layout				**Pickup**			
Line	Station #		Tot	Line	Station #		Tot
OLKMH06-04	381	103	279	OLKMH06-04	422	235	188
OLKMH06-03	102	259	158	OLKMH06-01	100	380	281
Total Stations :		437		**Total Stations:**		469	

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	**Personnel**	**Charge Day**	**Cum.Charge Days (Job)...**
Traffic Control Manager				**3**
Traffic Control Team				**3.5**

COMMENTS:

Crew Manager _____

Terrex Seismic
Daily Report

CREW 403

Client.....	GSLM	Party Manager..	Jon Turner
Survey Name.	Lakes Oil 2D	Client Rep…….	Sam Coniglio
Area.....	PEP 164	Weather.....	Fine / Cool / Overnight Rain
State.....	Victoria	DATE……	11-Jun-06

Line #	Stn	Stn	Total Stns	Skips	Tail Kms	Vp's	Kms
OLKMH06-03	102.5	465.5	364	11	1.3	288	7.260

TOTALS	
VP's...	288
Skips...	11
Kms...	7.260
Tail Kms...	1.30
Cum. Total Tail Kms....	8.52
Cum. Total Skips....	56
Cum.Total Vp's....	1724
Cum. Total Kms....	54.700

HOURS			Down Time -			
	Recording.....	4.31	Repegging missing Stations.....			
	Recorder Move.....		Recorder.....	0.13		
	Line Move.....		Vibes.....			
	Detours/Terrain.....	0.32	W / on Spread.....			
	W.O.S.....		Other.....			
	QC Spread.....	0.77			Day Charge Hrs.....	9.82
	Travel.....	1.20	Traffic Standby….		Cum.Day Charge Hrs (Job)...	65.47
	Testing.....		Pre-start Equip Testing.....		Standby Hrs.....	0.30
	Layout Spread.....		**Toolbox / Induction.....**	**0.30**	Cum.Standby Hrs (Job)...	3.58
	Pickup Spread.....	3.22	Total Down Time.....	0.13	Total Day.Incl Non Charge Hrs.	10.25
	Weather.....				Cum.Total Charge Hrs (Job)...	69.05
	Mobilisation....					
	Cum. Mobilisation....		Cum. Down Time (Job).....	**3.81**	Cum.Total.Incl Non Charge Hrs (Job)	72.85

COMMENTS:

Toolbox Meeting at 6:45am.
Downtime today was due to a system lockup again, no problems otherwise.
Finished recording today at 1:15pm, line crew completed packing all spread and were back in camp by 5:00pm.
Lakes Oil contract completed.
B Tapes were handcarried by Tim O'Brien to Lakes offices in Melbourne upon completion of production.
Vibrators washed down late today in prepaation for transprot tomorrow

Bad Equipment : Cable - 0, Phones - 4

Layout				Pickup			
Line	Station #		Tot	Line	Station #		Tot
OLKMH06-03	381	103	206	OLKMH06-04	422	235	132
				OLKMH06-03	100	380	364
		Total Stations :	206			**Total Stations:**	496

LTI= **0** MTI= **0** FAC= **0**

SURVEY REPORT

COMMENTS: No Reports as Yet.

TRAFFIC MANAGEMENT Recording Crew

	Vehicles	Personnel	Charge Day	Cum.Charge Days (Job)...
Traffic Control Manager				**3**
Traffic Control Team				**3.5**

COMMENTS:

Crew Manager _____

APPENDIX J

RECORDING STATISTICS

APPENDIX J RECORDING STATISTICS LAKES OIL 2006 BELLARINE & MT HESSE 2D SEISMIC SURVEYS

Date	Travel Time	Mobilisation	Prospect Move	Laying Out, QC & Pickup Spread	Recording Time	Recorder Move	Testing & QC Spread	Line Move	Swath Move	Traverse Move	Detours & Terrain	WOS	Recorder	Vibes	Other	Troubleshoot	Safety & Other Charge	Traffic Stand-by	Total Stand-by Rate	Total Downtime	Total Mobilisation	Total Operational Hours	Total Km's	Traffic Management Supervisor	Traffic Management Crew
																									2 Man & 1 Vehicle
4 June 2006		4.00																	-	-	**4.00**	0.00			
5 June 2006	0.33			4.00	1.32		1.07						1.00	0.03	0.88		1.38		**1.38**	**1.91**	-	6.72	**3.2200**	**1**	**1**
6 June 2006	0.45				6.13	0.67	1.45						0.10	0.50			0.30	0.40	**0.70**	**0.60**	-	8.70	**12.1800**	**1**	**1**
7 June 2006	0.67				5.80	0.65	1.43	0.73			0.25		0.18	0.07			0.30		**0.30**	**0.25**	-	9.53	**11.8800**	**1**	**1**
8 June 2006	0.83		1.82	3.17	2.26		1.48				0.57		0.53	0.22			0.30		**0.30**	**0.75**		10.13	**3.8200**		**0.5**
9 June 2006	1.45				5.13		2.43	0.85			0.68		0.12	0.05			0.30		**0.30**	**0.17**		10.54	**7.4200**		
10 June 2006	1.23				5.33		2.15	0.90			0.42						0.30		**0.30**	-		10.03	**8.9200**		
11 June 2006	1.20			3.22	4.31		0.77				0.32		0.13				0.30		**0.30**	**0.13**		9.82	**7.2600**		
Total	**6.1600**	**4.0000**	**1.8200**	**10.3900**	**30.2800**	**1.3200**	**10.7800**	**2.4800**	**0.0000**	**0.0000**	**2.2400**	**0.0000**	**2.0600**	**0.8700**	**0.8800**	**0.0000**	**3.1750**	**0.4000**	**3.5750**	**3.8050**	**4.0000**	**65.4700**	**54.7000**	**3.0000**	**3.5000**

Total Mobilisation = Mobilisation
Total Stand-by Rate = Safety & Other Charges + Traffic Stand-by Rate
Total Down Time = WOS + Recorder + Vibes + Other
Total Operational Hours = Travel Time + Mobilisation + Prospect Move + Laying Out, QC & Pickup Spread + Recording Time + Recorder Move + Testing & QC Spread + Line Move + Detours & Terrain

APPENDIX 2

DSS Surveying Report

Dynamic
Satellite
Surveys

06045

Final Operations Report
on the

2006 Otway 2D Seismic Survey

for

Lakes Oil N.L.

June 2006

The Director
Dynamic Satellite Surveys Pty Ltd
PO Box 713
Yeppoon QLD 4703
Telephone: 07 4939 2866
International: +61 7 4939 2866
Facsimile: 07 4939 2867
E-mail: yeppoon@dss.com.au

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INTRODUCTION

The following report covers the **2006 Otway 2D Seismic Survey**, performed by **Dynamic Satellite Surveys Pty Ltd** (DSS) whilst contracted to **Lakes Oil N.L**.

The survey operation was situated near Geelong, Victoria at two sites. The first prospect, PEP163, was located on the Bellarine Peninsula. The second prospect, PEP164, was located 15 kilometres north-west of Winchelsea.

A total of six (6) 2D seismic lines were surveyed at 20m station intervals totalling **54.70 kilometres**.

The survey operations were completed between the 30th of May and the 5th of June, 2006.

2

INSTRUMENTATION AND PERSONNEL

2.1 Personnel and Logistics

DSS personnel involved in the survey were as follows:

Phil Kaufman	-	Bachelor of Applied Science (Surveying) - RMIT
Rebecca Robinson	-	Bachelor of Geomatic Engineering - University of Melbourne
Les Bale	-	Survey Assistant

Personnel and equipment logistics were supported by the DSS Yeppoon office.

Survey operations were based at Winchelsea.

2.2 Equipment

Equipment provided by DSS and used on this project:

	Description	Qty
Vehicles	Toyota Landcruiser Trayback - 062 IOH & 031 HOO	2
GPS receivers	NovAtel RT2 millennium c/w VHF Telemetry	3
	Garmin 128	1
Computers	Dell Inspiron 5150	2
	Fujitsu Tablets	2
Software	GravNav / GravNet GPS post-processing - Waypoint Consultancy	1
	Nav05 v3.5 field software - DSS	Ver 3.5
	MIB2006 for Windows - DSS	Ver 6.0.2
	TransIt 2006 - DSS	Ver 5.3
	MapInfo Professional	Ver 7.8
Printer	Canon i6100	1
Survey Instruments	Rapid Elevation Meter - DSS	1
	ARNIE Distance Meter - DSS	1
Miscellaneous	Necessary standard surveying equipment	
	Sundry office and transport equipment	
	Field and Office Consumables	

3

SURVEY REFERENCE SYSTEMS

3.1 Geodetic Datum

This project was based on the Geocentric Datum of Australia 1994 (GDA94), which is based on the Geodetic Reference System 1980 (GRS80) model defined by the following parameters:

Datum:	GDA94(Geocentric Datum of Australia 1994)
Spheroid:	GRS80
Reference Frame:	ITRF92 (International Terrestrial Reference Frame)
Semi-Major Axis Length:	6 378 137.0
Inverse Flattening:	298.257222101
Unit of Measure:	International Metre

3.2 Map Projection

Final rectangular coordinates were based on the Map Grid of Australia 1994 (MGA94). Parameters for this projection are as follows:

Prospect PEP163

Projection:	Universal Transverse Mercator (MGA Zone 55)
Latitude of Origin:	0°
Central Meridian (CM):	147° E
Scale Factor at CM:	0.9996
False Easting:	500 000
False Northing:	10 000 000
Unit of Measure:	International Metre

Prospect PEP164

Projection:	Universal Transverse Mercator (MGA Zone 54)
Latitude of Origin:	0°
Central Meridian (CM):	141° E
Scale Factor at CM:	0.9996
False Easting:	500 000
False Northing:	10 000 000
Unit of Measure:	International Metre

3.3 Height Datum

All elevations obtained relative to GDA94 have been reduced to the Australian Height Datum (AHD) using the AUSGEOID98 Geoid - Spheroid separation model to determine the geoid-ellipsoid separation (N) for the particular area.

GPS observations are made on the GDA94 datum. The height associated with this datum is an ellipsoidal height (h). The Australian Height Datum (AHD), the height datum associated with MGA94, is an orthometric height which is measured as the height above mean sea level, or the geoid (H).

The function that defines the relationship between the ellipsoid and orthometric heights is:

H = h - N

Or

AHD = GDA94 - (Geoid / Ellipsoid Separation)

The value for the geoid/spheroid separation is interpolated from a national model called Ausgeoid98.

AUSGEOID98 is the third in a series of national geoid models produced for Australia by the Australian Surveying and Land Information Group (AUSLIG). The geoid-ellipsoid data is prepared for the Australian region from:

- EGM96 Global Geopotential Model;
- 1996 Australian Gravity DataBase, from the Australian Geological Survey Organisation (AGSO);
- AUSLIG / AGSO GEODATA nine-second digital elevation model;
- Satellite altimeter - derived free air gravity anomalies offshore;
- Theories, techniques and software developed by Associate Professor Will Featherstone, Curtin University of Technology[1].

AUSGEOID98 N values were interpolated using the GrafNet Version 6.02 software, distributed by Waypoint Consulting Inc.

[1] Johnston, G.M., Featherstone, W.E. (1998) AUSGEOID98: A New Gravimetric Model for Australia

4

SURVEY CONTROL

On prospect PEP163, Permanent Survey Mark “Paywitt PM 157" was used as control for the survey. This is published as a 3rd Order Survey Mark in both horizontal and vertical coordinates. Check observations were made from this base station to other local Permanent Marks to verify its status. These checks can be seen in **Appendix A - Survey Control, Miscloses and Ties.**

On prospect PEP164, new survey control (WINCH1) was installed on Kellys Lane. Observations were made to GPSnet Base Stations at Colac and Ballarat to coordinate the new mark. The calculated coordinates were checked against local control marks. These checks can again be seen in **Appendix A - Survey Control, Miscloses and Ties.**

5

MONUMENTATION

All lines were pegged at a 20 metre station interval. Wooden pegs were placed at every 5th station and labelled with the appropriate station number on both sides. In between pegged stations, odd and even numbered stations were marked with yellow and pink pin-flags respectively.

Several permanent markers were placed during the survey, with the control station being left in the ground for future use. Permanent markers consisted of a 1.65m steel star picket driven to give 1.2m above ground, and tagged with an aluminium plate stating the line number and relevant station number or control number details.

The permanent markers are listed at **Appendix C - Permanent Markers**.

6

METHOD OF SURVEY

6.1 Line Pointing

A small amount of line pointing was carried out prior to the survey of lines in order for an excavator to clear boulders off line and for a fencer to construct temporary gates for line access. Line pointing was carried out by Phil Kaufman, who marked lines using pink flagging where they intersected with existing fence lines.

6.2 Surveying and Chaining

The lines were surveyed using DSS' RT2 real-time kinematic surveying technique.

RT2 enables both position and elevation coordinates to be acquired in real-time and on the appropriate datum.

The survey method utilised phase data received from US Navy NAVSTAR Satellites to provide three-dimensional positioning. One receiver was set up as a base station at a known location while other receivers were used as remote rovers.

To obtain real-time capabilities, VHF telemetry is required between the base and the remote GPS receiver. Numerous remote receivers can be used at any given time with any base station.

NovAtel real-time kinematic methods can achieve accuracies of better than +/-0.05m in position and elevation, depending on base line length. The expected precision for locating pegged positions is better than 0.3 metres and is generally better than 0.2 metres.

Initialisation of the RT2 rover GPS usually takes as little as 1-2 minutes, although this is greatly dependant on satellite geometry, availability and base line length.

Thick canopy cover degrades the quality of GPS positions and the resulting coordinates are not sufficiently accurate for seismic work. On prospect PEP163, there were large sections of line underneath considerable canopy coverage. These required elevations to be measured using a Rapid Elevation Meter (REM) and distance intervals to be measured using an ARNIE distance meter. The REM is an instrument designed by DSS that uses relative changes in pressure to measure change in heights.

When using REM to determine elevations, all points are observed at least twice, with the standard deviation between observations checked to ensure accurate results are obtained. The weather can play a large part in the accuracy of the instrument, and so the stable weather pattern throughout the REM survey resulted in accurate repeatability of measurements. In addition, observations were made to a large number of points with known elevations to verify results.

6.3 GPS Processing and Quality Control

When using RT2, all data is recorded on Fujitsu Tablets in-car and downloaded to the office computer each evening.

Quality of the satellite data is monitored by careful examination of the various on-screen quality control statistics produced by the Nav05 software in real-time.

These checks on data integrity are in the form of standard deviation (or sigma) values for Easting, Northing and Height and are generally better than 0.05 metres.

Any recording of positions when the standard deviation values are in excess of 0.1 m is highlighted to the surveyor at the time of recording, and the GPS may be re-initialised until a more accurate solution is calculated.

Any position which falls outside the required tolerances is flagged for further investigation and re-recording if necessary.

Numerous checks on pre-recorded marks were observed during each days survey. These observations confirm the integrity of the GPS base receiver and the placed markers.

The coordinates are then checked by determining point to point direction and distance. Profile plots are examined to identify any height anomalies.

7

DATA PRESENTATION

All line files were checked and finalised before the survey crew demobilised from the prospect.

All final data was in UTM grid coordinate format on the MGA94 datum on the GDA94 reference spheroid. All elevations were on the Australian Height Datum (AHD71).

Files produced were:

OLKB-XX.uka	PEP163 line data in UKOOA format.
OLKB-XXseg	PEP163 line data in SEGP1 format.
OLKMH-XX.uka	PEP164 line data in UKOOA format.
OLKMH-XXseg	PEP163 line data in SEGP1 format.
intersec.crd	All new line intersections in .crd format

All files are backed up on digital disks in the Yeppoon office for future reference.

No hard copy data was provided.

8

SAFETY

DSS personnel are aware of safety conditions concerning all exploration seismic surveys. The DSS **"Quality Policy Statement"** and **"Health, Safety and Environment Policy"** were adhered to at all times.

Each vehicle was fitted with a UHF radio, shovel, fire extinguisher, first-aid kit, vehicle recovery equipment, and weekly vehicle maintenance check lists.

Mobile phone and UHF radio contact was always available between surveyors and other personnel. Regular contact was made throughout each day to ensure trouble free operations.

9

OPERATIONAL ASPECTS

Temporary gates or drop-down facilities were placed where gates could not be found near the lines, although some detours were still necessary.

Large areas of canopy coverage on prospect PEP163 slowed progress dramatically. In these areas, a combination of elevation and distance measurement using REM and an ARNIE distance meter allowed survey production to continue, albeit at a slower pace.

Due to a large ground coverage of boulders and rocks, final lines did not always conform to design. A large number of boulders and rocks were cleared by an excavator to aid access to line. The largest detour off the design line was in the vicinity of 150m.

Line trace diagrams were provided to the Lakes Oil N.L. for distribution to the Terrex crew, before the commencement of each area, to aid in line traversing.

10

CONCLUSIONS AND RECOMMENDATIONS

The project ran smoothly for the survey crew, although it is unfortunate that they could not have arrived earlier to assist more with line pointing.

The GPS equipment functioned well with the exception of a small radio malfunction towards the end of survey, which was rectified within the hour.

Ease of access to site and the generally open terrain allowed quick and efficient completion of the survey.

There were no safety incidents on the project.

Signed,

Rebecca Robinson

Surveyor

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APPENDICES

Survey Control, Miscloses and Ties

PEP163 Survey Control, Miscloses and Ties

All values are MGA 94 (Zone 55), AHD71

Control Stations Used

Name	Easting	Northing	Height	Comment
Paywitt PM 157	293975.057	5772963.684	52.000	SMES 3rd Order H & V

Vertical check

Name	Easting	Northing	Height	Comments
Paywitt PM 86	293423.499	5769759.471	29.105	SMES 3rd Order V
			29.087	DSS Observed
			-0.018	Misclose

PEP164Survey Control, Miscloses and Ties

All values are MGA 94 (Zone 54), AHD71

Control Stations Used to Calculate New Control

Name	Easting	Northing	Height	Comment
GPSnet COLAC	725926.714	5753033.461	143.41	1st Order H & V
GPSnet BALLARAT	752174.948	5839293.768	458.47	1st Order H & V

Computed Coordinates of New Control

Name	Easting	Northing	Height	Comment
WINCH1	748170.328	5767227.780	119.98	DSS Observed

AUSPOS Check on WINCH1

Name	Easting	Northing	Height	Comments
WINCH1	748170.304	5767227.754	120.060	AUSPOS
	748170.328	5767227.780	119.978	DSS Observed
	-0.024	-0.026	-0.082	Misclose

Vertical check against local control

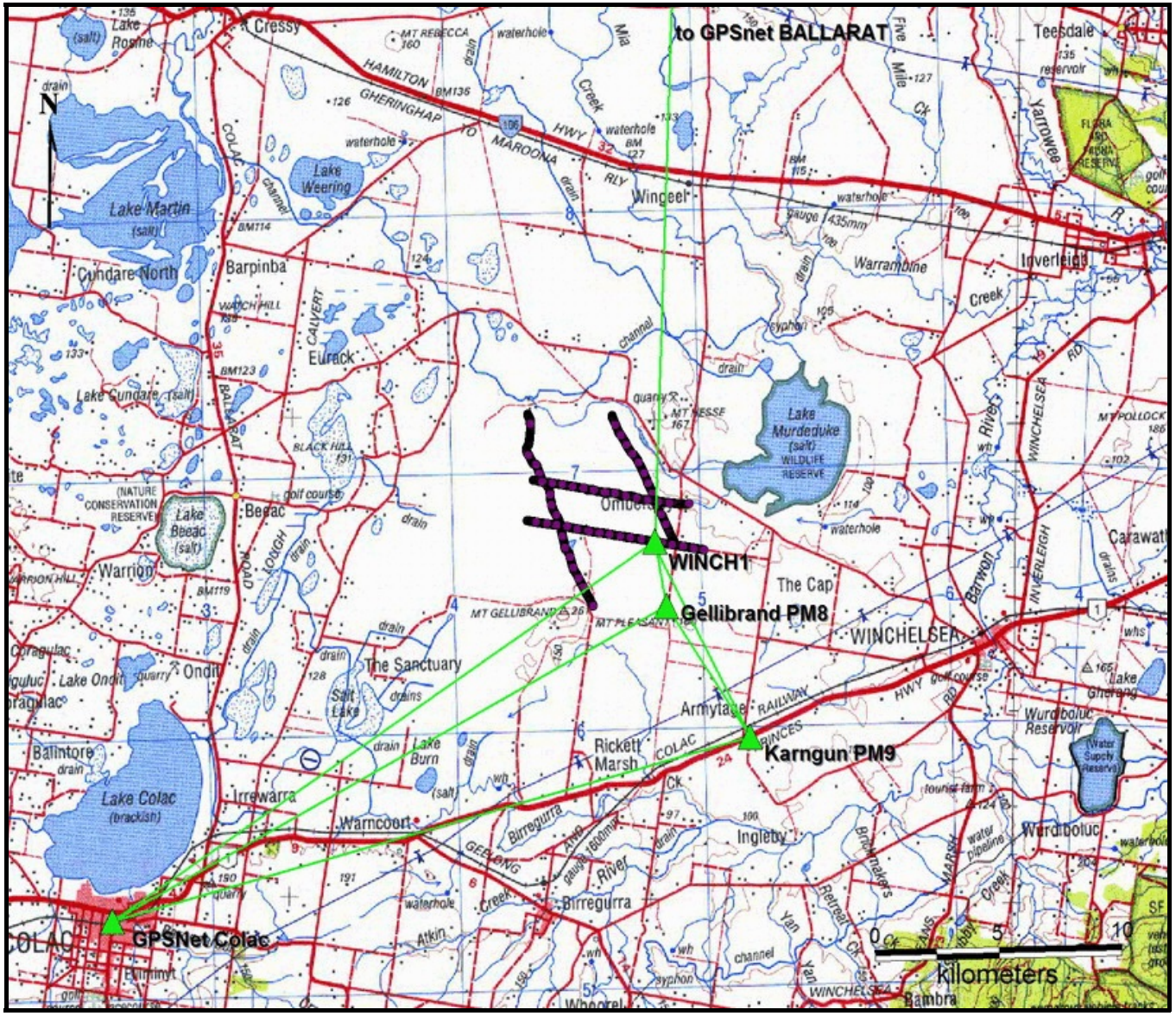
Name	Easting	Northing	Height	Comments
KARNGUN PM9			125.208	SMES 3rd Order V
			125.125	DSS Observed
			-0.083	Misclose

Horizontal check against local control

Name	Easting	Northing	Height	Comments
GELLIBRAND PM8	748589.529	5764728.541		SMES 3rd Order H
	748589.511	5764728.503	139.355	DSS Observed
	0.018	0.038		Misclose

Network Diagram

PEP164 - NETWORK DIAGRAM



Permanent Markers

Permanent Marker Listing

Coordinates are Map Grid of Australia 1994 (MGA Zone 54) and AHD71

Station	Easting	Northing	Height	Comments
WINCH1	748170.328	5767227.780	119.980	New Control
OLKMH-01 STN136	746824.100	5771451.700	114.400	New PM
OLKMH-01 EOL	748994.000	5767083.500	109.900	New PM
OLKMH-02 EOL	743130.200	5772250.400	122.100	New PM
OLKMH-03 STN101+3	742995.900	5768153.300	122.400	New PM
OLKMH-03 STN465	750158.600	5766869.300	106.971	New PM
OLKMH-02 STN337+10/ OLKMH-03 STN172+5	744401.300	5767931.000	125.300	New PM
OLKMH-04 STN351+12/ OLKMH-01 STN284+2	748187.300	5768821.600	109.000	New PM
OLKMH-04 STN121+17/ OLKMH-02 STN238+15	743668.800	5769661.500	118.700	New PM
OLKMH-04 EOL	743284.300	5769723.900	119.000	New PM
OLKMH-04 STN405	749240.700	5768647.100	100.400	New PM
PMBA92-411 VP1338+7/ EOL_VP421(1653MNW)	745637.400	5764754.800	142.700	Old PM

Line Length Summary

Line Length Summary

2006 Otway 2D Seismic Survey

Station Interval = 20 m

Line	SOL Station	EOL Station	Line Km's
OLKB-01	163	757	11.880
OLKB-02	160	930	15.400
OLKMH-01	100	380	5.600
OLKMH-02	100	509	8.180
OLKMH-03	102	465	7.260
OLKMH-04	103	422	6.380
		TOTAL =	**54.700**

Line Intersection Listing

Line Intersection Listing PEP 163

Coordinates are Map Grid of Australia 1994 (MGA Zone 55) and AHD71

Line / Station	X Line / Station	Easting	Northing	Height
OLKB-02/461+20	OLKB-01/485+01	293827.09	5772989.05	54.69

Line Intersection Listing PEP 164

Coordinates are Map Grid of Australia 1994 (MGA Zone 54) and AHD71

Line / Station	X Line / Station	Easting	Northing	Height
OLKMH-02/337+17	OLKMH-03/172+01	744394.50	5767920.26	125.53
OLKMH-04/351+19	OLKMH-01/284+16	748191.81	5768808.56	108.58
OLKMH-04/122+05	OLKMH-02/242+00	743675.02	5769646.91	119.01

Photographs

Les Stamping PM Labels

Typical Seismic Line Following Track

Stock on Line OLKMH-04

Trace Diagrams

Chronological Summary

Chronological Summary

DATE	OPERATIONS
May 30th	Site meeting at 08:30 with client and contractors - discuss program, scope & HSE. Scout lines in PEP164 area. Flagged Lines OLKMH-02 and portions OLKMH-01,03,04.
May 31st	P Kaufman commences pegging line OLKB-01. R Robinson and L Bale mobilise to Winchelsea from Shepparton.
June 1st	R Robinson and L Bale establish control on PEP164 and begin pegging line OLKMH-03.
June 2nd	R Robinson and L Bale commence pegging on line OLKB-02 with assistance of traffic control. P Kaufman completes survey of line OLKB-01.
June 3rd	R Robinson and L Bale complete pegging on line OLKMH-03 and OLKMH-02. P Kaufman completes REM of line OLKB-02.
June 4th	R Robinson and L Bale commence and complete pegging on line OLKMH-01 and meet with Chris Annear to discuss access on line OLKMH-04.
June 5th	R Robinson and L Bale commence and complete pegging on line OLKMH-04 and make checks made on local control. Job is complete. Both surveyors demobilise from job. R Robinson to Melbourne, L Bale to Brisbane.

APPENDIX 3

Velseis Processing Report

DATA PROCESSING REPORT

LAKES OIL N.L.

BELLARINE 2D SEISMIC SURVEY &
MOUNT HESSE 2D SEISMIC SURVEY
OTWAY BASIN, VICTORIA
AUSTRALIA

Date Processed: *July 2006– December 2006*
Date Compiled: *14 December 2006*
Report Number: *VP06-209*
Compiled By: *Mario Vecchi*

Velseis Processing Pty Ltd
ABN 30 058 427 204

Integrated Seismic Technologies

Disclaimer

This report has been prepared in good faith and with all due care and diligence. It is based on the seismic and other geophysical data presented and referred to, in combination with the author's experience with the seismic technique, and as tempered by the geological and stratigraphic evidence presented in various forms and through discussions with client representatives.

As such, the report represents a collation of opinions, conclusions and recommendations, the majority of which remain untested at the time of preparation. In the light of these facts it must be clearly understood that Velseis Processing Pty. Ltd., its proprietors and employees cannot take responsibility for any consequences arising from this report.

Table of Contents

INTRODUCTION

Velseis Processing processed 6 lines, totalling 54.7km, of 2D onshore seismic data for Lakes Oil from July 2006 to December 2006. All 6 lines were processed using a common offset DMO + post-stack finite difference time migration processing sequence using refraction statics, with the refraction statics being tied to upholes in the Mount Hesse survey.

Line Summary

Line	First Receiver	Last Receiver	Group Interval(M)	Length(KM)
OLKB06-01	163	757	20	11.88
OLKB06-02	160	930	20	15.4
OLKMH06-01	100	380	20	5.6
OLKMH06-02	100	509	20	8.18
OLKMH06-03	102	465	20	7.26
OLKMH06-04	103	422	20	6.38
Total				54.7

Acquisition Parameters

Recorded by	Terrex Seismic Crew 403
Instruments	Sercel SN428
Tape Format	SEG D
Sample Rate	2 ms
Record Length	4000ms
No. of Channels	240
Source	Vibroseis, 6-80Hz sweep
Receiver Array	12 phones per station over 20m
Offsets	Near Trace – 10m; Far Trace – 2390m
Group Spacing	20m
V.P. Spacing	40m
Coverage	2000%

TESTING

True Amplitude Recovery

Time raised to power correction and dB/sec corrections were tested. A time raised to power constant of 1.6 was chosen.

Deconvolution

Operator lengths of 80ms, 120ms and 160ms were tested using spiking deconvolution, of which 160ms was the best. A surface consistent spiking deconvolution using the 160ms operator length was tested with this giving a better result than the trace-by-trace deconvolution.

Migration

A suite of smoothed migration velocities (90%, 95%, 97.5%, 100%, 105%) were tested and it was decided that 100% best focused the data.

PROCESSING PARAMETERS

Reformat

Input is reformatted to ProMAX internal data format.

Trace Edit

Remove bad or noisy traces from shot records interactively.

Geometry

Assign geometry information to trace headers. Information assigned to each trace includes source, receiver and CDP locations along with offsets, elevations, and CDP fold.

Phase Conversion

The data were converted from zero to minimum phase.

Gain

Time raised to a power constant of 1.6 was used for gain recovery.

Static Computation

Statics calculated with a single layer refraction method.

For this refraction method, first breaks were picked on a refractor corresponding to the base of weathering. The statics were tied to upholes on the Mount Hesse Survey.

Replacement Velocity	Final Datum
1800 m/s	0 m

Deconvolution

Whitening of the spectrum to enhance signal resolution was achieved using a Surface Consistent Spiking Deconvolution with a 160 ms operator which was picked from the autocorrection of a shot record. The power spectrum was decomposed into shot, receiver, and offset components, however only the shot and receiver portions were applied within the deconvolution with 0.1% white noise added.

Velocity Analysis (1st Pass)

Velocities were picked using the ProMAX interactive velocity picking package (IVA). IVA uses velocity spectra, moved out gathers and stacked panels to assist in a careful interpretation of stacking velocities. As the velocity function is altered, revised gathers and stacks are produced until optimised stacking velocities are achieved.

Velocities were picked at locations 1000m (80 CDPs) apart. The regional velocity was used as the guide function and 11 velocity panels covering 85% to 115% of the guide velocities for every location. Each panel consisted of 11 trace CDP stacked sections using the 11 differing velocities.

Residual Statics Calculation and Application

Surface consistent residual statics were calculated and applied using Maximum Power Autostatics.

Pilot or reference traces were formed for a 200-800ms time gate following structure by flattening all traces along the autostatics horizon over 7 CDP's.

These traces are summed to form a single pilot trace. Each trace from the active CDP is time shifted relative to the pilot trace and summed with it. The power of the stack is measured for each time shift. This shift-power trace is then summed with other traces having the same shot and receiver in their respective domains.

After the shift spectra has been calculated for the entire line and summed in the Receiver/Shot domains, time shifts are picked at the maximum of the power shift spectra and stored as Static Values.

The pilot stack is updated and the process repeated for a number of iterations.

In this case, calculations were conducted for at least 8 iterations or until the RMS of the change in the computed statics was less than .05.

Velocity Analysis (2nd Pass)

CDP gathers were used to generate velocity data. Velocities were picked using the ProMAX interactive velocity picking package (IVA). IVA uses velocity spectra, moved out gathers and stacked panels to assist in a careful interpretation of stacking velocities. As the velocity function is altered, revised gathers and stacks are produced until optimised stacking velocities are achieved.

Velocities were picked at locations 500m apart. The 1st pass velocity was used as the guide function and 11 velocity panels covering 92% to 108% of the guide velocities for every location. Each panel consisted of 11 trace CDP stacked panels using the above velocities.

DMO

Common offset DMO was applied using bin sizes of 20m.

Velocity Analysis (3rd Pass)

CDP gathers were used to generate velocity data. Velocities were picked using the ProMAX interactive velocity picking package (IVA). IVA uses velocity spectra, moved out gathers and stacked panels to assist in a careful interpretation of stacking velocities. As the velocity function is altered, revised gathers and stacks are produced until optimised stacking velocities are achieved.

Velocities were picked at locations 500m apart. The 2nd pass velocity was used as the guide function and 11 velocity panels covering 92% to 108% of the guide velocities for every location. Each panel consisted of 11 trace CDP stacked panels using the above velocities.

Trace Amplitude Balance

500ms scaling windows with a 10% overlap.

Normal Moveout Correction

An NMO correction was applied to the data using a stacking velocity with 30% stretch mute.

Stack

Add traces within a common midpoint gather. The post stack trace was scaled by the square root of the sum of fold for each sample in the trace.

FX Deconvolution

Applied to remove random noise and increase the signal to noise ratio.

Finite Difference Time Migration

The stacked sections were migrated using 100% of smoothed stacking velocities.

Frequency Filter

The following Ormsby time variant digital Zero phase bandpass filter was applied to the data to remove high and low frequency noise.

Time (ms)	Frequency (Hz)
0	10-80

Amplitude Balance (AGC)

500ms AGC scaling windows were used to calculate and apply scalars to the data.

Display

Final Migrations were displayed at a horizontal scale of 15.74 traces / cm and a vertical scale of 6.35 cm / second.

Displayed with the traces are S.P annotation, velocity information, residual static values, refraction static values, fold and elevations. A side panel outlining the acquisition and processing parameters was produced.

ARCHIVING

1. CD-737 containing raw and filtered final stacks, raw and filtered migrations in SEGY format together with CGM+ files of the final and migrated stacks and the processing report.

2. Paper displays of final filtered stacks & migrations.

3. Processing reports.

APPENDIX

These data were processed by Velseis Processing Pty. Ltd., Brisbane, Australia.

Velseis Processing utilizes ProMAX 3D processing software. This is a totally interactive system allowing the user to view data processing at each stage, producing a final result of the highest quality.

The software executes on a quad processor Sparc 20 Sun workstation and a 62 CPU/node linux cluster. Data is viewed via X terminals networked to the main system, each terminal has a high definition monitor to enable accurate representation of the digital data in pixel form.

The overall efficiency of the system enabled processing to be completed within the allotted time frame.

Plots were generated via a 300 dpi laser plotter. This was used to generate paper plots for QC purposes as well as the ability to provide final filmed copies.

Velseis Processing is committed to offering a premium product, the software development undertaken by ProMAX resulting in processing algorithms which are state of the art.

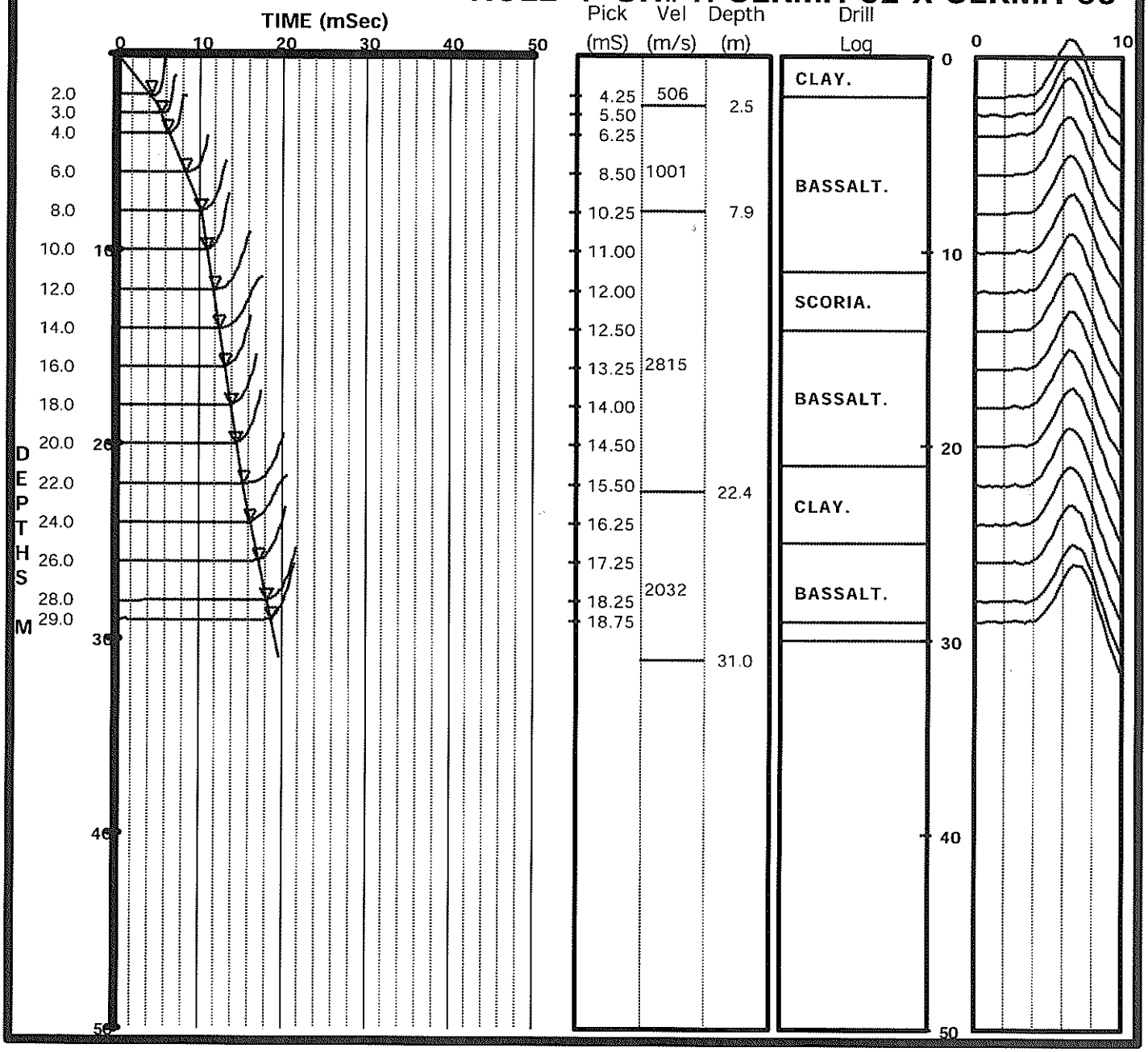
APPENDIX 4

SGS Expertest Uphole Plots

VELOCITY DATA PTY LTD
UPHOLE SURVEY

CLIENT : LAKES OIL
AREA : Mount Hesse
SITE : 54744404E 5767924N
LINE : OLKMH-02
A.T.P. : PEP164
DATE : Wed 07-06-2006
SOURCE OFFSET : 2 (m)

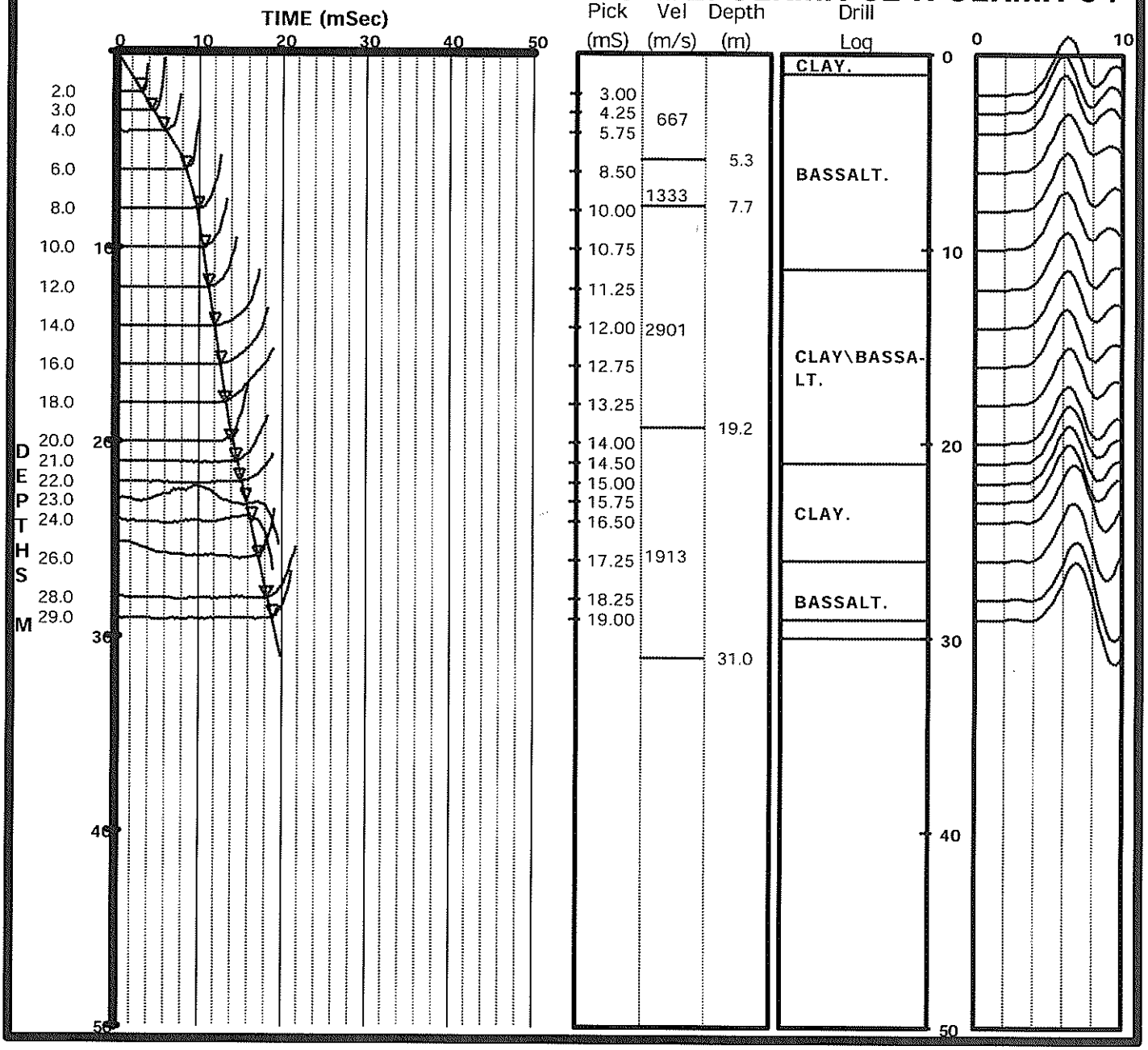
HOLE : UH#1. OLKMH-02 X OLKMH-03



VELOCITY DATA PTY LTD
UPHOLE SURVEY

CLIENT : LAKES OIL
AREA : Mount Hesse
SITE : 54743687E 5769645N
LINE : OLKMH-02
A.T.P. : PEP164
DATE : Wed 07-06-2006
SOURCE OFFSET : 2.5 (m)

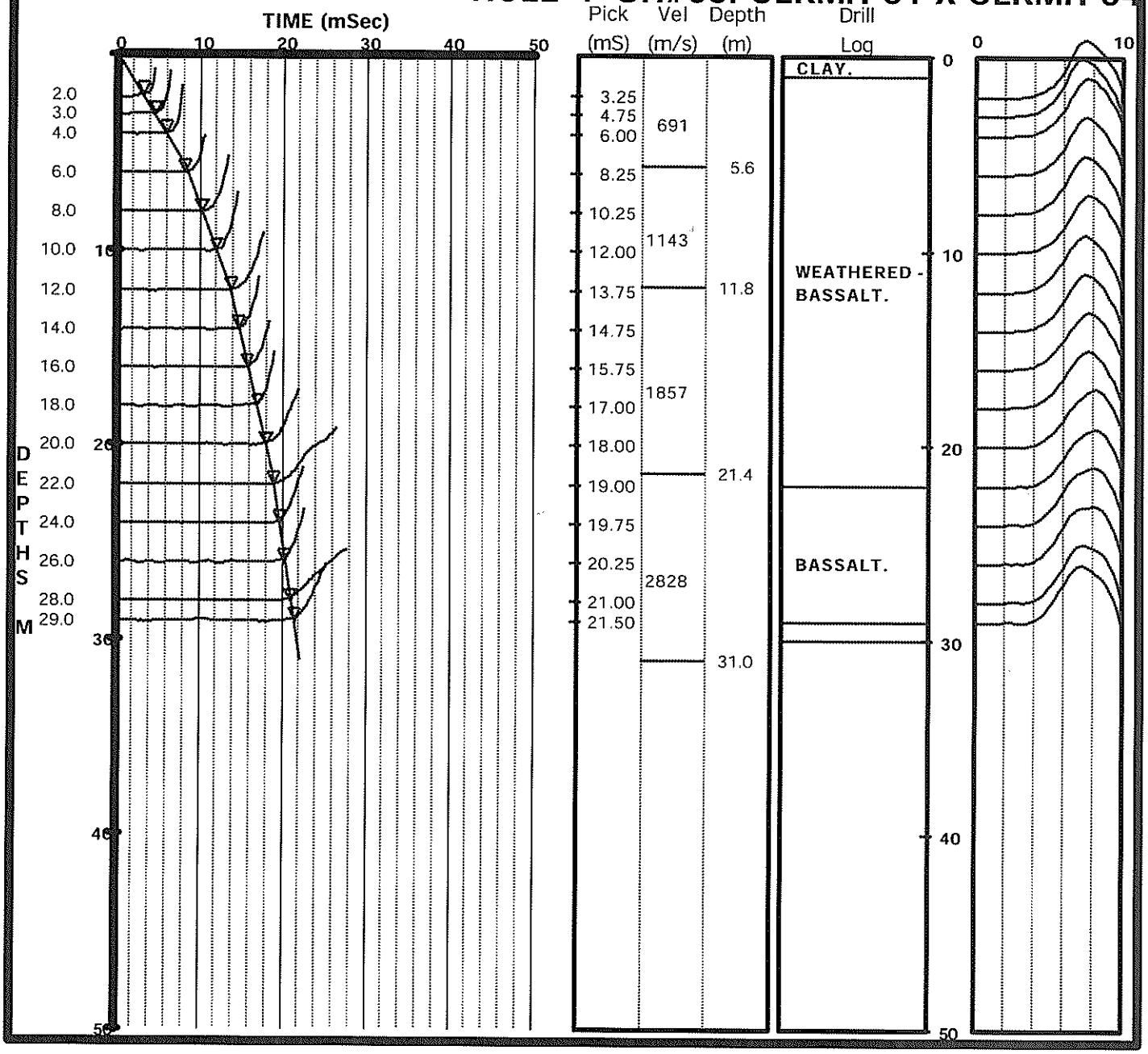
HOLE : UH#2. OLKMH-02 X OLKMH-04



VELOCITY DATA PTY LTD
UPHOLE SURVEY

CLIENT : LAKES OIL
AREA : Mount Hesse
SITE : 54748194E 5768801N
LINE : OLKMH-01
A.T.P. : PEP164
DATE : Wed 07-06-2006
SOURCE OFFSET : 2 (m)

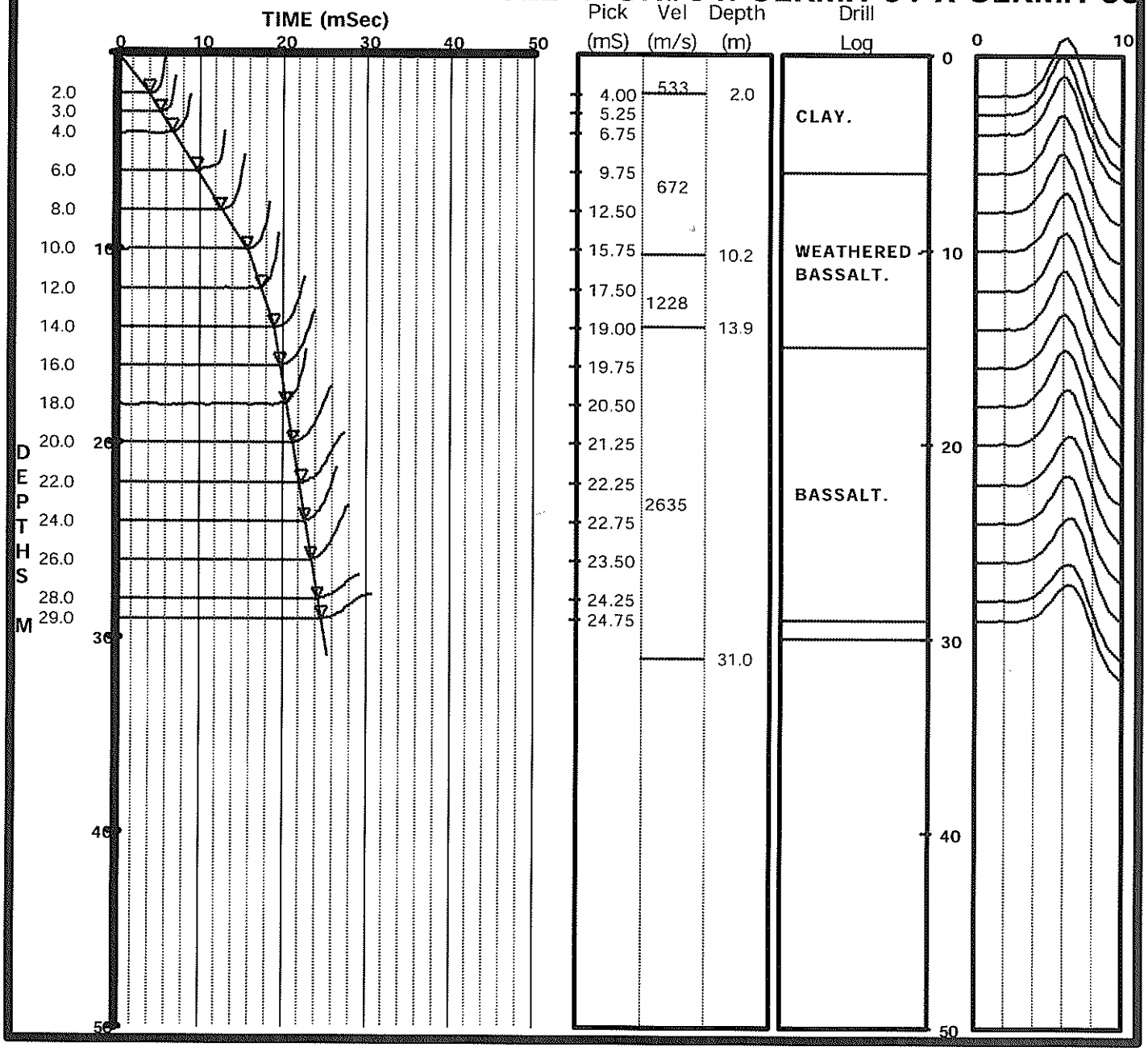
HOLE : UH#03. OLKMH-01 X OLKMH-04



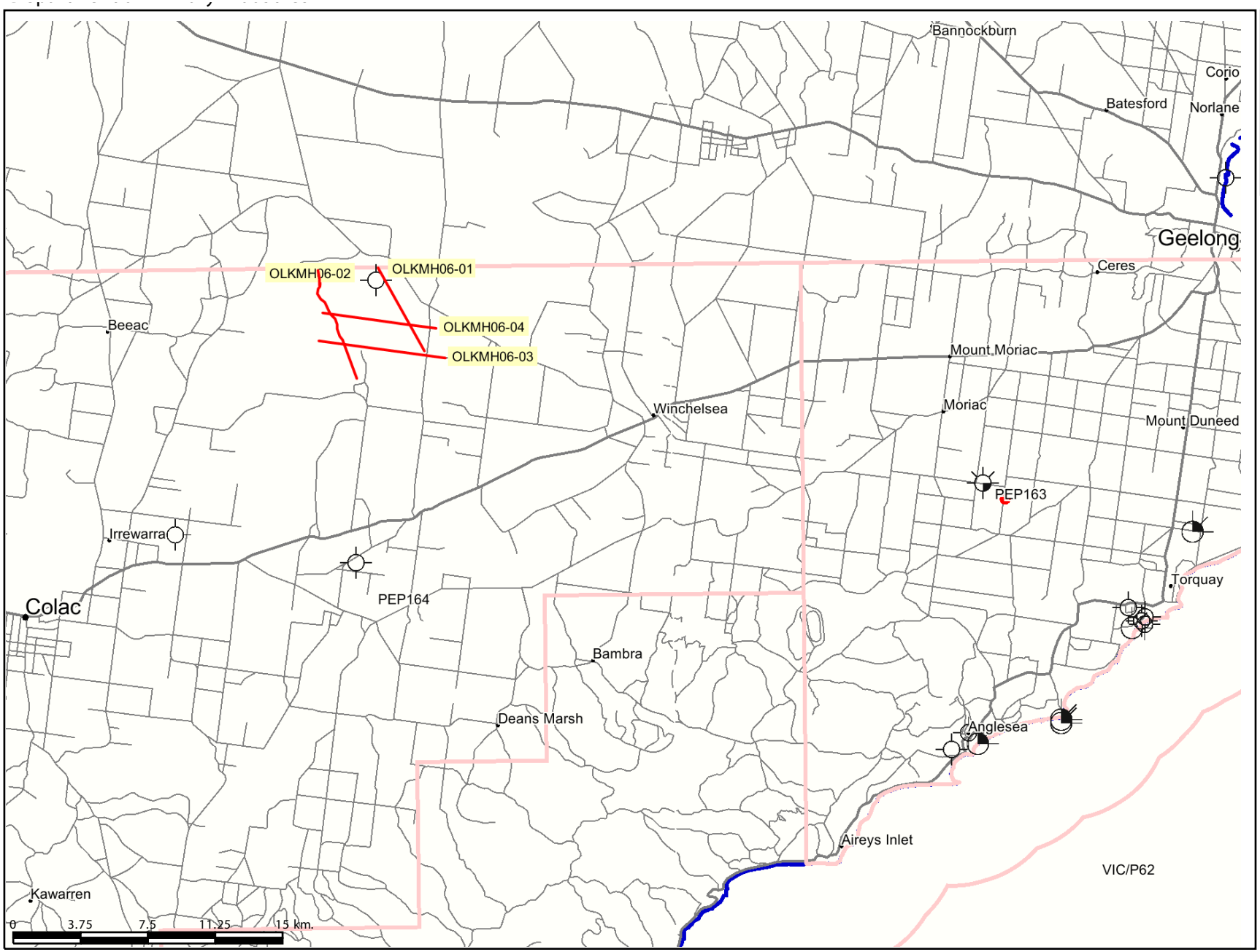
VELOCITY DATA PTY LTD
UPHOLE SURVEY

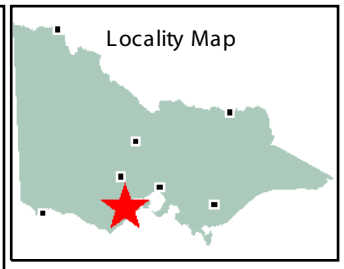
CLIENT : LAKES OIL
AREA : Mount Hesse
SITE : 54748992E 5767053N
LINE : OLKMH-01
A.T.P. : PEP164
DATE : Wed 07-06-2006
SOURCE OFFSET : 2 (m)

HOLE : UH#04: OLKMH-01 X OLKMH-03



PEP 164 Seismic Survey Location Map





Legend

Wells - Petroleum

- Confidential Well
- Dry Plugged and Abandoned
- Gas Show (strong)
- Gas Well
- Oil Show (strong)
- Oil and Gas Show (strong)
- Gas Well with strong Oil Show
- Gas Show (strong) Oil Show (weak)
- Oil well discovery
- Oil Well
- Oil Well with stong Gas Show
- Oil and Gas Well
- Gas Show (weak)
- Oil Show (weak)
- Oil and Gas Show (weak)
- Oil Well (discovery)
- Gas well with weak Oil Show
- Other

Towns

Map Scale 1:295,319

GDA
Vicgrid94

Figure 1

PEP 164

Seismic Survey Acquisition 2006

743123 E
5772247 N

746538 E
5772114 N

OLKMH-02

OLKMH-01

743645 E
5769661 N

OLKMH-04

743240 E
5769744 N

748176 E
5768827 N

749723 E
5768630 N

744466 E
5767899 N

748468 E
5768248 N

OLKMH-03

742976 E
5768174 N

748997 E
5767079 N

744930 E
5766126 N

748997 E
5767079 N

LEGEND	
	Seismic Line
	Uphole
OLKMH-01	Line title
748176 E 5768827 N	Uphole Coordinates
746538 E 5772114 N	Endpoint Line Coordinates

GN MN

0 1000 2000
Metres

Figure 2