# SEL 5 / 2005

# Seismic Acquisition Proposal

*Overseas Energy Holdings Limited*

*Following on the steps of an exploration well drilling in Westwood and critical Gravity Measurement readings taken in SEL5/2005, a 2-dimensional seismic data acquisition will be commissioned in order to determine the best possible drill locations in the License.*

*MX Consulting Limited*

6/14/2011

Overseas Energy Holdings Limited
The Coach House 2
Park Crescent, Abingdon,
OX14 1DF, United Kingdom

Attention: Mr. Michael ROBERTS
Chief Executive Officer

June 14th, 2011

Reference: **SEL 5 / 2005 – Preliminary 2D Seismic Acquisition Recommendation**

Dear Sir,

Pursuant to your request we have prepared a proposal for identifying potential 2D seismic acquisition parameters in SEL5/2005 based on the results of the Gravity Survey recently commissioned to Dynamic Satellite Surveys PTY Ltd and the preliminary observations made by the seismic company Terrex PTY Ltd.

Further to data obtained from DSS geologists and a study of the material available on surveys performed in similar geography around the world, we have concluded that the best possibility for hydrocarbon accumulations lay along the eastern and southern flanks of the SEL. The measurements taken are presented graphically in terms of Corrected Bouguer Anomaly values and are attached to this report.

Taking into account available service company data, we have estimated the 2D line kilometers necessary for an accurate picture of the sub-surface strata, necessary for successfully drilling additional exploration wells. The graphical presentation is also attached to this report.

Should you wish to pursue this recommendation, we would co-ordinate the seismic acquisition with Terrex and assist them to obtain the best possible 2D solution for SEL5/2005. We would be happy to provide you with continued services in this regard.

Sincerely,

S. A. (Al) SEHSUVAROGLU

PERMIT TO PRACTICE

S.A. (AL) SEHSUVAROGLU, P.E.

Signature

ate Tuesday, June 14th, 2011

PERMIT NUMBER: 68358

Texas Board of Professional Engineers

STATE OF TEXAS
S. A. SEHSUVAROGLU
68358
REGISTERED
PROFESSIONAL ENGINEER

## 1.0 TABLE OF CONTENTS

## 2.0 INTRODUCTION

Overseas Energy Holdings Limited (OEHL) has developed a novel theory for oil and gas accumulation in Tasmania and has acquired Special Exploration License (SEL) 5/2005, now covering 6,885 square kilometers of northern Tasmania. OEHL is testing this theory together with conventional theories for oil and gas in Tasmania.

OEHL has identified eight drilling locations to date within SEL 5/2005. Westwood 1, OEHL's first well exploration well, was drilled in November and December 2009. The well failed to reach the reservoir target because of unanticipated exceptionally hard rock and steeply dipping beds. Westwood 1 is presently suspended pending evaluation of re-entering the well and directionally drilling to the target.

Initial well locations have been identified by Mr. George Applegate, a British geologist of note with more than 40 years of practical experience, who has spent more than [15] years studying the geology of Tasmania. Mr. Applegate has identified 12 locations in northern Tasmania for hydrocarbon accumulation. These locations coincide with major subsurface fracture systems. OEHL proposes that these fracture systems were or possibly still are hydraulically connected with the Bass Basin oil source.

OEHL is in the final stages of planning its next exploration wells, Bass Highway 1, on the coast in north central Tasmania and Weymouth Road 1, in northeastern Tasmania near the coast. The company plans to carry out a small, 2D seismic data acquisition program over prioritized drilling locations prior to the commencement of drilling operations.

The purpose of the seismic acquisition program is to develop a structural model for each drilling location. Unanticipated hard rock and steeply dipping beds were encountered during the drilling of Westwood 1. The seismic acquisition program will assist planning drilling and specifying requirements for maintaining well trajectory precision in a challenging drilling environment.

It is anticipated that 2D seismic acquisition operations will begin during the summer of 2011 with prioritized processing and interpretation of the first planned drilling locations completed in the fall of 2011.

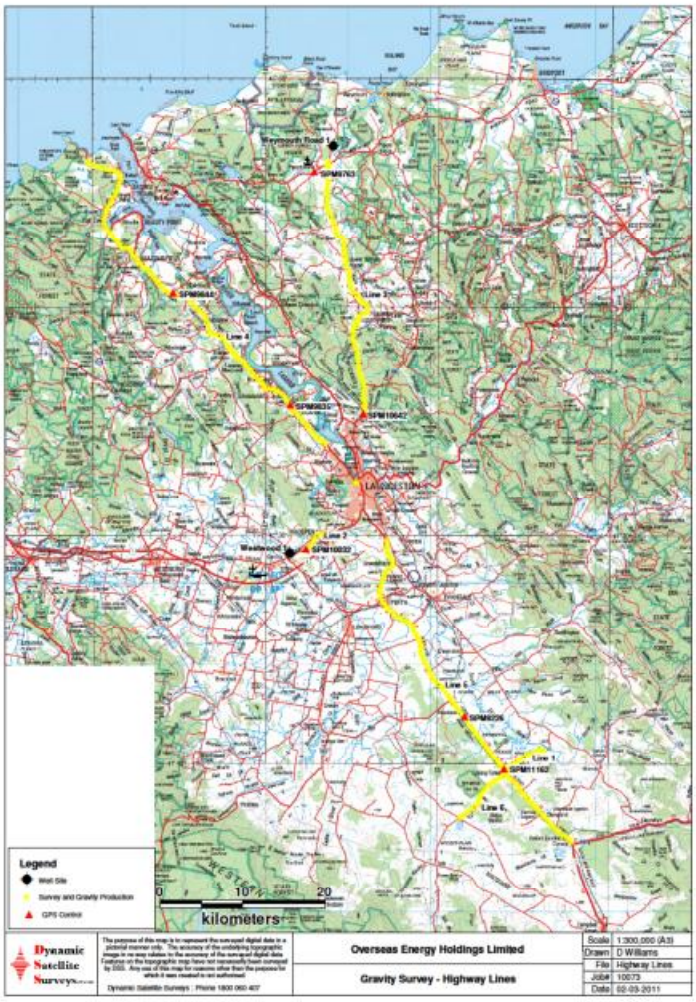
Knowledge gained from the drilling of Westwood 1 and completing the Gravity Survey allows the optimization of the design and drilling of the next exploration wells.

## 3.0 DSS PTY Ltd GRAVITY SURVEY

SEL 05-2005 Gravity Survey, completed between December 2010 and February 2011, was performed by Dynamic Satellite Surveys Pty Ltd (DSS) whilst contracted to Overseas Energy Holdings Limited (OEHL). Three observation grids were set-up around well locations Westwood, Weymouth Road and Bass Highway. The dimensions of each grid were a two-kilometer radius from the well location, splitting observations into a 250m by 250m grid.

In addition to the well grids surveyed, Dynamic Satellite Surveys were required to observe gravity readings every 450 meters between points of interest along Belle Vue Road, Barton Road, West Tamar Highway, Pipers Rivers Road, Lilydale Road, Meander Valley Highway and the Midland Highway. The survey operations were completed between 6th of December 2010 and 11th of February 2011.

The final position of the gravity measurements taken during this survey are shown in the below Figure 1.



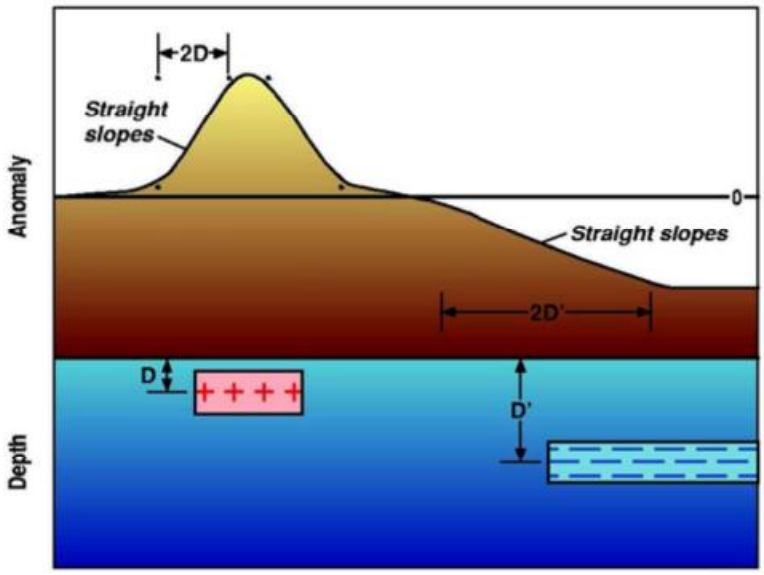
### 3.1 What is Gravity and Why Is It Measured?

Gravity is the force of attraction between masses. In geophysical terms it is the force due to the integrated mass of the whole Earth, which acts on the mechanism of a measuring instrument. If the Earth were a perfect homogeneous sphere the gravity field would only depend on the distance from the center of the Earth. In fact the Earth is a slightly irregular oblate ellipsoid which means that the gravity field at its surface is stronger at the poles than at the equator. The mass (density) distribution is also uneven, particularly in the rigid crust, which causes gravity to vary from the expected value as the measurement position changes. These variations are expressed as gravity anomalies, the mapping of which gives us an insight into the structure of the Earth.

Gravity varies as the inverse square of the distance of the observer from a mass so that nearby mass variations will have a more pronounced (higher frequency) effect than more distant masses whose effect will be integrated over a larger area (lower frequency). The force is proportional to the mass so that, per unit volume, higher density bodies will cause a more positive gravity anomaly than lower density bodies.

The general rules of gravity interpretation are:

- Higher than average density bodies will cause a positive gravity anomaly with the amplitude being in proportion to the density excess.
- Lower than average density bodies will cause a negative gravity anomaly (i.e. *porous reservoir rock*).
- The areal extent of the anomaly will reflect the dimensions of the body causing it.
- A sharp high frequency anomaly will generally indicate a shallow body.
- A broad low frequency anomaly will generally indicate a deep body.
- The edges of a body will tend to lie under inflection points on the gravity profile
- The depth of a body can be estimated by half the width of the straight slope (between the points of maximum curvature) of the anomaly in its profile as shown in the following Figure 2.



### 3.2 Description of Gravity Data Acquisition

Final rectangular coordinates were based on the Map Grid of Australia 1994 (MGA94). 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.

Known AFGN gravity base stations with AAGD07 values were used as the basis for control. Their base values were adopted as Datum origins for each prospect. The total number of gravity points gathered throughout the entire gravity program resulted in 506 readings, with 68 check readings within the well sites and an additional 331 points and 31 checks along the highway lines. Additional base stations were installed at the Penny Royal Inn in Launceston and at the Devonport Oval in Devonport.

Monumentation on the OEHL job was minimal. In cases where gravity stations needed to be revisited, such as check shots, these were marked using spray paint at the location of the observation. Where gravity base stations were installed, a Tag was stamped with DSS job number, client, contractor, type and identity code and glued to the pavement.

The survey was completed using DSS' OEMV-3 real-time kinematic (RTK) surveying technique. This method enabled both position and elevation coordinates to be acquired in real-time and on the appropriate datum. NovAtel real-time kinematic methods can achieve accuracies of better than +/-0.05min position and elevation, depending on base line length. The expected precision for locating pegged positions is better than 0.3 meters and is generally better than 0.2 meters.

Gravity surveying consisted of using a LaCoste and Romberg Model G gravity meter to observe gravity on a 250 by 250-metre grid within a two-kilometer radius for wells at Westwood, Weymouth Road and Bass Highway. Ten percent (10%) of field observations were checked every day and terrain corrections noted. All processing of gravity data was completed using GravMaster software.

Quality of the satellite data was monitored by careful examination of the various on-screen quality control statistics produced by the NAV05 software. 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 meters.

Station observations were processed using observation information and GPS data recorded on the station to compute free air and terrain correction to give values for absolute gravity and Bouguer values. In addition to this software, a spreadsheet was created to ensure specifications were met to Geoscience Australia's best practice standards. The spreadsheet was also used to create graphs as each station interval for Corrected Bouguer Anomalies versus Elevation to ensure there are no incorrect values being entered as gravity inputs.

### 3.3 Results of Gravity Data Acquisition

All final survey data was in UTM grid coordinate format on the MGA94 projection on the GRS80 reference spheroid. All elevations were on the Australian Height Datum (AHD71).

Final data produced were:

Gravity Data

- raw Gravity data for each area
- final ASCII data for each area
- base station diagrams
- check observations for each area
- thematic elevation vs Corrected Bouguer maps

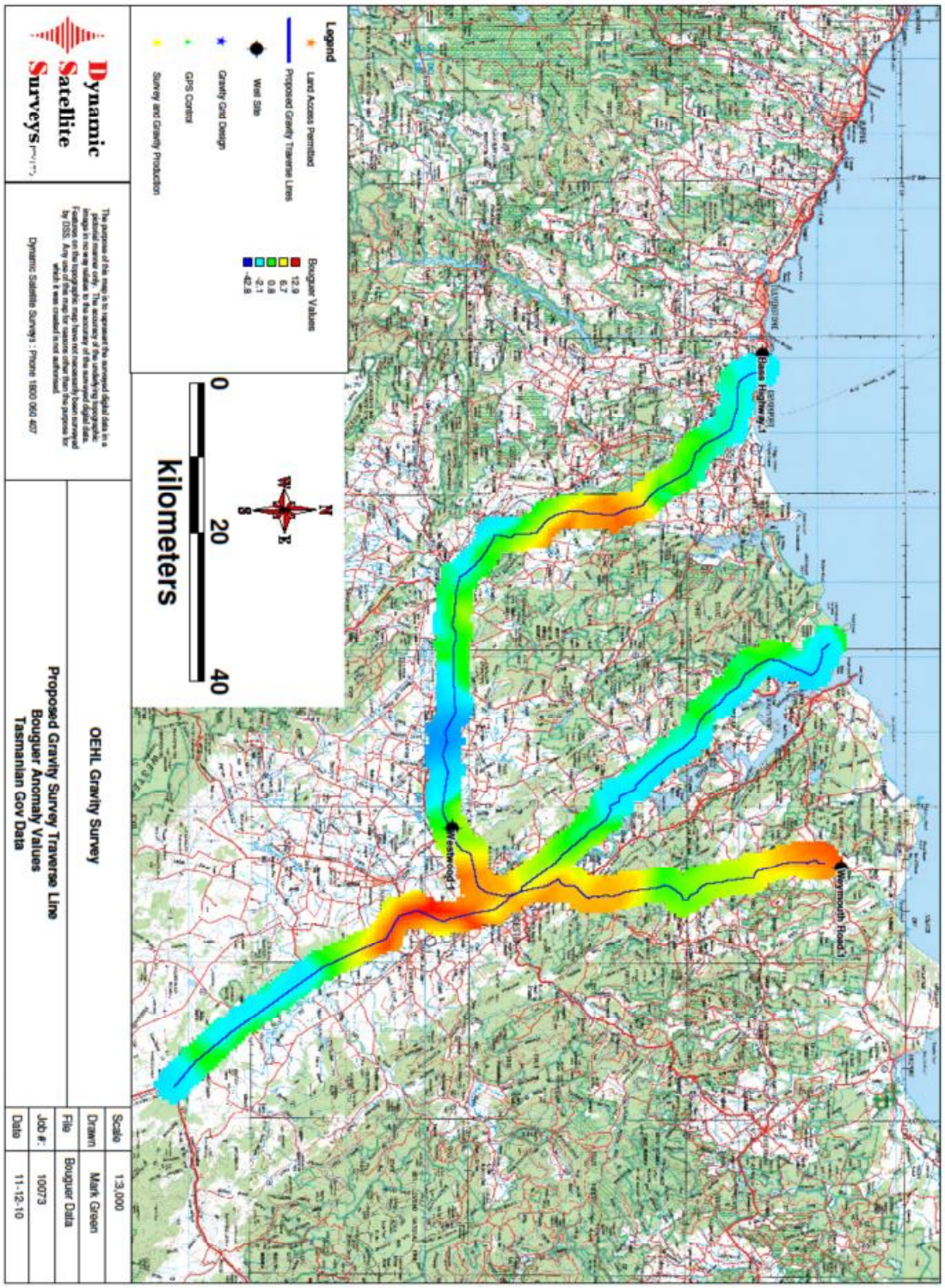
After the DSS crew downloaded data from the Viliv computer the data was processed to ensure that all observations were accurate. This involved checking Tide and Drift corrections, then comparing the check shot's Bouguer Values and Absolute Values of Gravity. Terrain corrections were then compensated before converting data into a readable spreadsheet displaying raw data, sorted data, check table and a final data spreadsheet (Geoscience Australia standard).

Historical data was retrieved from the MRT (Mineral Resources Tasmania) website to illustrate data, which had already been observed within the SEL 05-2005 lease boundary. Topographic map in Figure 3 illustrating changes in Bouguer values of 2.67 were given to OEHL to help them make decisions on which lines would be better to acquire 2D seismic data.

The calculated regional gravity field was subtracted from the observed Bouguer anomalies to yield residual Bouguer anomalies (bottom scale of Fig. 4), which reflect the density structure within the SEL5/2005. This Figure shows the final Corrected Bouguer Anomaly map for the SEL5/2005. This resulting map has been used as a guideline to selecting the 2D seismic acquisition lines.

Topographic maps were also created from data obtained by DSS on each grid showing the variation between elevation and corrected Bouguer values. On highway lines, the same variation was shown using a graph as lines are in two dimensional formats and not the three-dimensional grid format.

Overall, Dynamic Satellite Surveys completed 506 well observations for an average of 20.32 observations per day, and 331 highway observations for an average of 64.90 observations per day.


Legend
Land Access Permitted
Proposed Gravity Traverse Lines
Well Site
Gravity Grid Design
GPS Control
Survey and Gravity Production
Bouguer Values
12.9
6.7
0.8
-2.1
-42.8
0
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40
kilometers
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Dynamic Satellite Surveys
Dynamic Satellite Surveys : Phone 1800 060 407
OEHL Gravity Survey
Proposed Gravity Survey Traverse Line
Bouguer Anomaly Values
Tasmanian Gov Data
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Drawn Mark Green
File Bouguer Data
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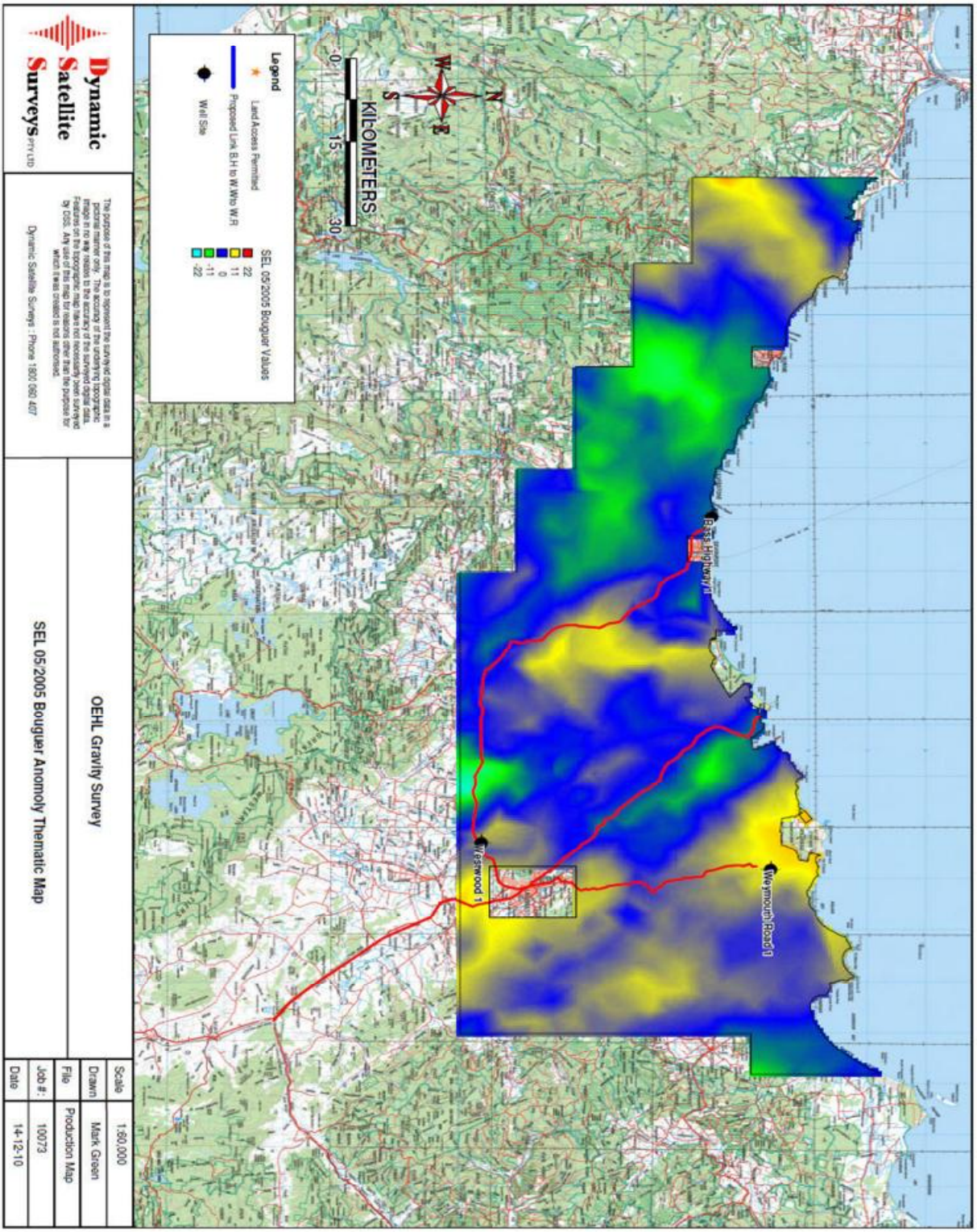
Date 11-12-10


Dynamic Satellite Surveys PTY LTD
OEHL Gravity Survey
SEL 05/2005 Bouguer Anomoly Thematic Map
Scale 1:60,000
Drawn Mark Green
File Production Map
Job #: 10073
Date 14-12-10
Legend
Land Access Permitted
Proposed Link B.H to W.Wtn W.R
Well Site
SEL 05/2005 Bouguer Values
22
11
0
-11
-22
KILOMETERS
0
15
30
N
S
E
W
Bass Highway 1
Teesrwood 1
Weymouth Road 1

## 4.0 TERREX PTY LTD SEISMIC SERVICES

Benefits of Integrated Seismic and Gravity Exploration have been explained at length in numerous technical literatures. The studies illustrated how a gravity-derived model can be used effectively to assist in the construction of a seismic acquisition model for 2D seismic data collected in a difficult data area where Jurassic dolerite extrusions outcrop at surface.

Petroleum systems around the world follow parallel trends starting with source rock generation followed by migration routes and accumulate into reservoir rock with an overlying seal rock or traps created by rock folding and faulting. Geologic environments suitable for oil generation generally occur when sediment and organic matter accumulate forming a basin.

OEHL oil and gas exploration focuses on the onshore Tasmania in the Tasmania Basin. The Company theory is that hydrocarbons migrated from the Bass Basin into the Tasmania Basin during the Paleogene period through fissures created when Tasmania was separating from Australia. According to Naji, et al., gravity data may be used to provide more geophysical information on potential hydrocarbon basins. This information turns out to be very interesting in terms of the basin evolution, and the eventual presence of hydrocarbons.

The following image from the Isaac, et al paper, illustrates the tie-in between gravity and seismic measurements and how gravity can effectively assist the selection of seismic acquisition.

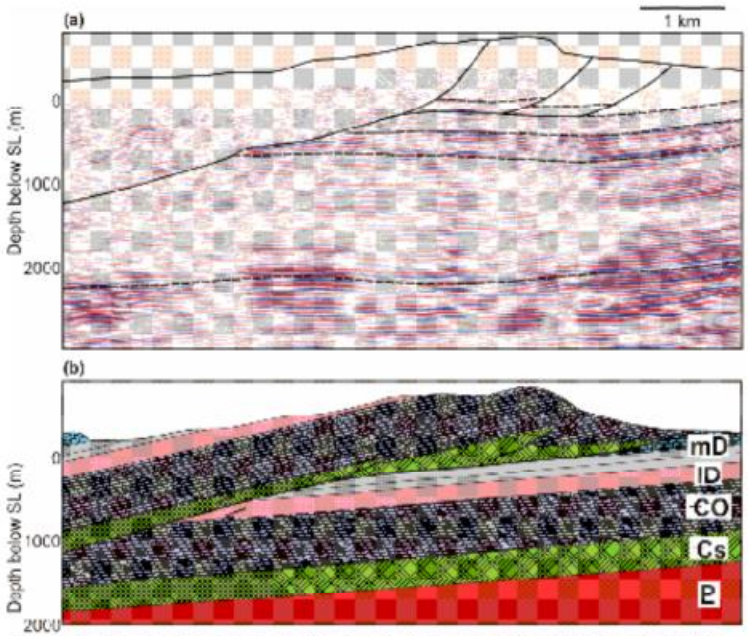



*Fig. 6. (a) The final pre-stack depth migrated seismic data with the major faults marked by solid lines and the major lithologic boundaries by dashed lines. (b) The preferred gravity model displayed at the same scale as the seismic data.*

### 4.1 Basic 2D Acquisition Modeling

Terrex Pty Ltd states that disregarding the logistical implications (roads, access, etc.), at first glance it seems the best procedure would be to run perpendicular to strike:

- at Bass Highway (1) the acquisition pattern seems fairly straight forward: ~ 3km long lines roughly E-W (ESE –WNW) and an orthogonal tie of around 4km
- at Weymouth Road (2) it's pretty much even so either NE-SW or NW-SE may do, possibly the latter would be better but uses up more km's > 3km each and a 2km tie. (Note: a case for going in the NE direction could equally be mounted as this crosses the variations a bit more in the residual.
- at Westwood (3) the acquisition mode is not clear… perhaps NE-SW with a few ties across the valley all around 3km each

The above basic lines give a total of 40km to acquire:

- (1) 3ea, 3km lines spaced at 4-600m and a 4km tie at Bass Hwy = 13km
- (2) in the NW direction 3ea, 3km lines at 400m and a 2km tie = 12km OR in the NE it would be 4 lines at 2km each + a 3km tie = 11km
- (3) at Westwood roughly 3ea, 3 km lines and a 3km tie = 12km

MX Consulting has reviewed the DSS generated maps and investigated similar studies performed in other parts of the world, with a special emphasis on Yemen, as according to Burrett, et al, the basic geology of Yemen is thought to parallel that of Tasmania. We have therefore concluded that the following acquisition plan would be more suitable to investigate the hydrocarbon potential of SEL5/2005.

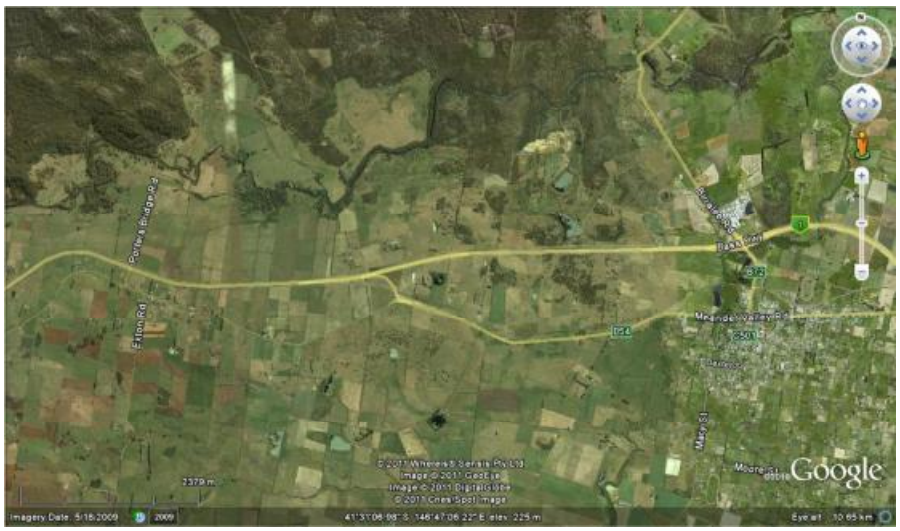
- **2ea, 2 km lines on Bass Highway #1, one W-E and one N-S, plus 2 km tie on Lillico Road N–S: (6 km)**
- **2ea, 3 km lines on Meander Highway B-53, plus 2ea 2 km tie on Exton and Westwood Roads: (10 km)**
- **4ea, 3 km lines on Tamar Highway A-7, plus 3ea 2 km tie on Winkleigh, and Spring Hill Road; (18 km)**
- **2ea, 2 km lines on Pipers River Road B-83, plus 1ea 2 km tie on Lower Turners Marsh: (6 km)**

**Current total line kilometers = 40 km.**

**According to a preliminary offer received by Terrex, the 40-km 2D seismic acquisition will have a total price quote (Lump Sum Fixed Price [excl. GST] but incl. 10% Contingency of AU$ 675,257.37**

The following images on the following pages are rough Google Earth images of the above selected areas. The exact tracing of the seismic lines will be done in co-operation with the seismic contractor.


Google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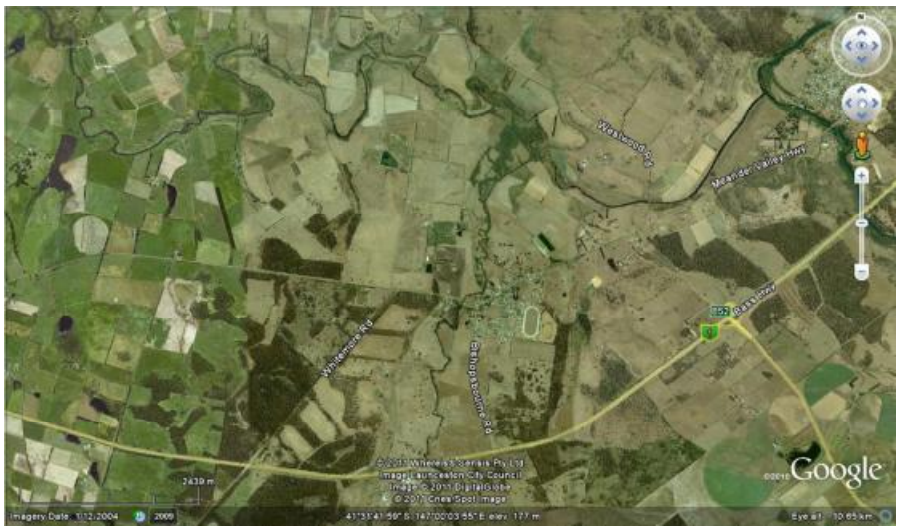
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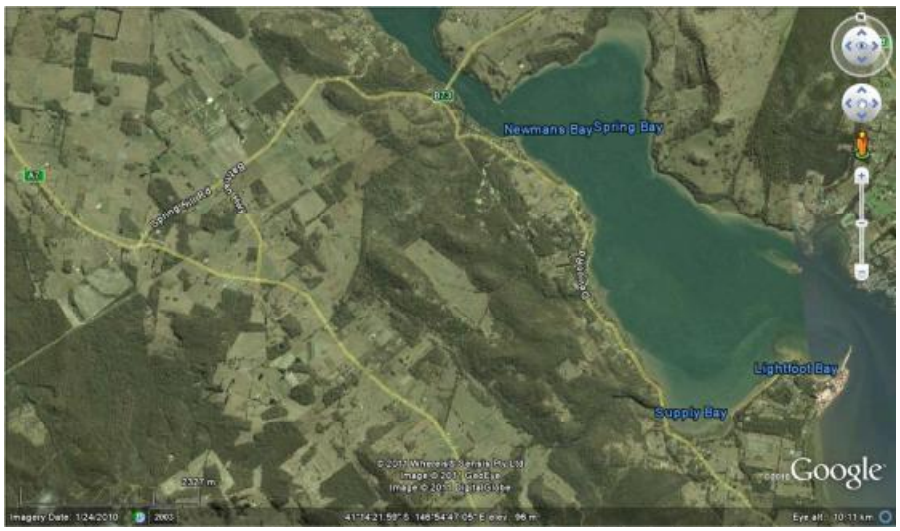
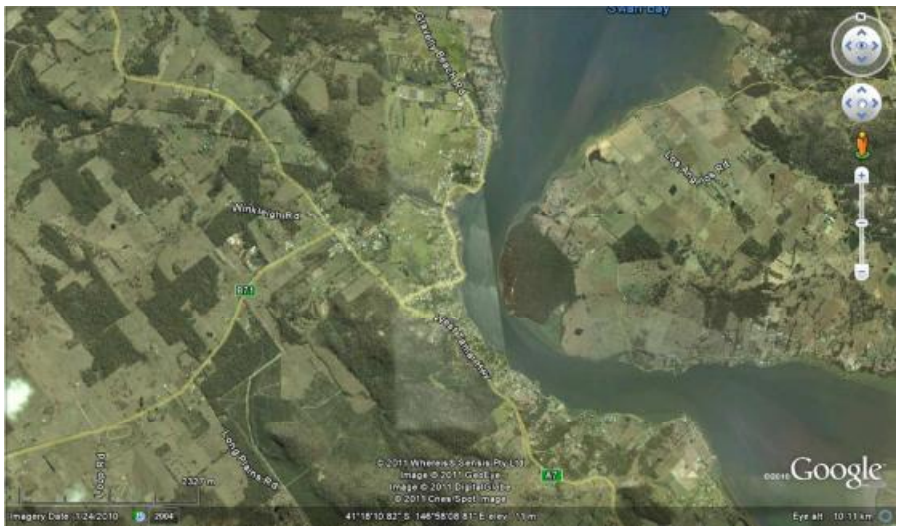

Newmans Bay
Spring Bay
Lighthoot Bay
Supply Bay
Google


Google

## 5.0 RECOMMENDED SEISMIC ACQUISITION PRACTICES

The seismic technique was originally developed by the oil exploration industry. Almost all of the developments of the technique for shallow-depth, environmental problems were adapted from oilfield practices. Seismic reflection surveys have been performed in oil exploration to delineate subsurface structure since the 1930's. The early surveys (2D, single fold, continuous coverage profiling) provided large-scale structural information about the subsurface, but forced oil exploration teams to drill without a completely accurate image of the reservoir (much as is done in environmental engineering today).

As the use of seismic surveys became more accepted and as funds were available for research, the technique evolved until it became an effective way to view and interpret large-scale subsurface geologic structural features. The advent of the 2D, multi-fold, common-depth-point surveying techniques, along with advances in instrumentation, computers, and data processing techniques, greatly increased the resolution of seismic data and the accuracy of the subsurface images.

A new set of minimum environmental standards to be met by all companies undertaking onshore seismic operations in Western Australia and Tasmania has been issued. These 'Guidelines for Onshore Petroleum Geophysical Surveying' recognize the experience gained over 45 years of operations in Western Australian lands; meet current community expectations using today's methods and technology; and allow for change to acknowledge new information, priorities and technology.

Meeting the Guidelines is a condition of undertaking a seismic survey in Tasmania. While the majority of survey practices to date have been appropriate in environmentally robust areas, the Guidelines seek consistently high standards, particularly in more fragile environments. They address the issues of line construction and rehabilitation techniques, and the planning and consultation necessary to enable environmentally sound exploration to be undertaken.

Following a wide market survey, MX Consulting Ltd has determined that Terrex Seismic Pty Ltd aims to provide its Clients with the highest Quality, highest Value “Seismic Asset” possible within the allocated budget. Terrex would make every effort in the survey design and implementation to provide high “Value for Money” seismic services to OEHL to ensure their Seismic Projects are successful from a perspective of Safe Operations, Minimal Environmental Impact and Lowest Possible Cost.

## 7.0 ACTION ITEMS

MX Consulting Ltd believes that once all relevant geological and geophysical information is obtained, better understanding on formation characteristics, more successful exploration drilling can be achieved. For an immediate improvement initiative, some related action items are listed below;

| Action | Responsible Party | Target Date |
|---|---|---|
| Review and analyze gravity data obtained by DSS during Dec 2010 thru to Feb 2011 | MX Consulting | 30 April 2011 |
| Review and analyze existing seismic survey companies operating out of So. Australia | MX Consulting | 15 May, 2011 |
| Review and analyze all technical papers on joint gravity – seismic analysis | MX Consulting | 15 May 2011 |
| Discuss findings within OEHL management and prepare basic forward going action items | OEHL | O1 June 2011 |
| Review and analyze the existing seismic acquisition tender from Terrex Pty Ltd | OEHL | 15 June 2011 |
| Solicit offers from acceptable Investors willing to participate in the 2D seismic campaign | OEHL | 15 July 2011 |
| Advise seismic contractor to mobilize to Tasmania for the 2D acquisition campaign | OEHL | 30 July 2011 |

## REFERENCES

1 Alice S. **Murray**, Ray M. **Tracey**, Department of Resources, Energy and Tourism, Minister for Resources and Energy and Geoscience Australia; "**Best Practices in Gravity Surveying**", Paper ISBN 978 1921498 34 3, GeoCat # 37202, Commonwealth of Australia, 2008

2 Tim **McCall**, Mark **Green**, Dynamic Satellite Surveys PTY Ltd, Yeppoon, Australia; "**Final Operations Report on the Overseas Energy Holdings Limited Gravity Survey SEL 05 – 2005, December 2010 and February 2011**", report on the Job #10073 January 2011- Report Version 0.

3 J. Helen **Isaac** and Donald C. **Lawton,** Fold-Fault Research Project, University of Calgary; "**Benefits of Integrated Seismic and Gravity Exploration: An example from Norman Wells, NWT**", Fold-Fault Research Project and Landmark Graphics, GX Technology and Hampson-Russell, Calgary, Alberta, 2006.

4 Adel H. **Naji**[1], M.R. **Janardhana**[1] and K.K. **Sharma**[2], [1]Dept. of Earth Science & Resources Management, Yuvaraja's College, Mysore – 570 005, India, [2]Dept. of Applied Geology, University of Madras, Chennai – 600 025, India, "**Sub-surface Structure and Oil and Gas Migration in the Qamar Gulf, Eastern Yemen Based on Gravity Anomalies**"; International Journal of Petroleum Science and Technology; ISSN 0973-6328 Volume 3, Number 1 (2009), pp. 11–17; © Research India Publications; http://www.ripublication.com/ijpst.htm.