



ATTACHMENT 2

W788

VIC-P17

GIPPSLAND BASIN

OMEQ NO. 1

RIG MOVE REPORT - POSITIONING

AND

SIDECAN SONAR SEABED

CLEARANCE SURVEYS

PG/191/83

BOX 2 OF 3

RIG MOVE REPORT
OASIS AND JMR POSITIONING
AT
OMEQ-1 LOCATION
FOR
AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD

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DSA 1115

14 October - 12 November 1982

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ABSTRACT

The following report gives details of the survey operations involved in moving the drilling rig "OCEAN DIGGER" onto the OME0-1 location in the GIPPSLAND BASIN VIC P17, carried out by Racal-Decca Survey Australia on behalf of Australian Aquitaine Petroleum Pty. Ltd.

The project commenced on the 18 October, 1982 when the survey vessel M.V. "Christmas Creek" arrived at Port Welshpool to be fitted out for the Rig Move. "OCEAN DIGGER" was finally positioned on 2 November 1982.

Laying of the location marker buoys and provisional positioning of the "OCEAN DIGGER" was by means of the Decca OASIS system. The final position was determined by independent 3D Satellite/Doppler observations by a JMR-1 Satellite Receiver.

1. REQUIREMENTS

The OME0-1 location co-ordinates were supplied by Australian Aquitaine Petroleum Pty Ltd. by telex No. 1470 on 14th October 1982.

The co-ordinates were as follows:

LATITUDE	38 ⁰	36'	45"6	South
LONGITUDE	147 ⁰	43'	02"5	East

AUSTRALIAN GEODETIC DATUM.

A.M.G., Zone 55, Central Meridian 147⁰ East

Easting 562455 Northing 5725946

The requirements of the project were as follows:

- (a) To lay and calibrate a pattern of acoustic transponders to be used as the position fixing system.

- (b) To carry out a Sidescan Sonar Survey of the drilling site seabed with the purpose of establishing the presence or absence of any debris on the seabed.
- (c) To lay location and anchor position marker buoys to guide the "OCEAN DIGGER" on to location.
- (d) To provide provisional positioning co-ordinates for the "OCEAN DIGGER" prior to the commencement of drilling operations.
- (e) To carry out a 3D satellite doppler fix on the "OCEAN DIGGER" for final positioning co-ordinates.
- (f) To carry out a Sidescan Sonar Survey of the Edina-1 location following the departure of the drilling rig from the site, to establish the presence or absence of any debris on the seabed attributable to the drilling operation at Edina-1.

2 .

SUMMARY OF EVENTS

- 17 Oct 1982 - Survey Party mobilised to Welshpool.
Fitting M.V "Christmas Creek" with OASIS and
Side Scan Sonar equipment including fabrication
of "A" Frame for S.S. Sonar.
- 18 Oct 1982 - Sailed for OME0-1 location
- 19 Oct 1982 - Weather Standby.
- 23 Oct 1982 - Deployed sea bed transponders - Commence
calibration of OASIS NET.
- 27 Oct 1982 - OASIS calibration completed - weather standby.
- 28 Oct 1982 - Side Scan Sonar survey of OME0-1 Location.
Seabed flat and featureless
- 31 Oct 1982 - Deployed location and anchor buoys
- 1 Nov 1982 - 2100 - Ocean Digger approaching location.
- 2 Nov 1982 - 1700 - Ocean Digger on Location. Final acoustic
fix. Commence JMR Sat/Doppler observations.
- 5 Nov 1982 - Christmas Creek released to commence
Side Scan Sonar survey at Edina-1 location.
- 8 Nov 1982 - 1955 Christmas Creek arrived Port Welshpool
- 9 Nov 1982 - Demobilise.

3. THE RACAL-DECCA SURVEY OASIS SYSTEM

OASIS is an integrated satellite/acoustic navigation and position fixing system, it is independent of shore based radio navigation aids and is capable of the following operations.

- a) Navigation of a vessel to a particular location using Satellite Navigation and Gyro data, with manual inputs of speed and drift.
- b) Precise calibration (Geographical Positioning) of an acoustic net of up to 5 sea-bed transponders.
- c) Accurate tracking of a vessel's position within coverage of the acoustic net.
- d) In the "relay" mode, accurate remote tracking of up to two further vehicles within coverage of the net.

4. OPERATING PROCEDURES

4.1 NAVIGATION TO LOCATION AND REFERENCE BUOY POSITION

This is undertaken using single-pass solutions from consecutive acceptable satellite passes using gyro data input for heading information and a manual input of ships speed based either on the ships log, or distance and time between satellite fixes. Given a reasonable frequency of acceptable satellite passes, by the time the vessel arrives at location its position should be known accurately enough to enable a reference buoy to be dropped within range of the proposed acoustic net. The vessel can then be either anchored or hove-to alongside this buoy and further satellite positions taken until a satisfactory fix is obtained. Once this has been accomplished the acoustic transponders may be approximately positioned relative to this buoy.

4.2 CALIBRATION OF ACOUSTIC NET

This takes place in 3 phases:

4.2.1 PHASE 1 NET RELATIVE GEOMETRY

This is achieved by navigating through the acoustic net collecting a series of 140 good range sets. The quality of these range sets is ensured by a rigid system of range checking whereby each accepted set is preceded by six correctly predicted sets, the accepted set then must also fall in the predicted "box". The range sets are alternately divided into two groups, the groups are processed and a direct solution for each is found. The operator compares the two results and if acceptable, a least squares solution for each group is generated with a third result being the mean of the two least squares solutions. If this result is accepted by the operator then this mean solution becomes the relative geometry solution - which remains throughout

the calibration.

The results are in the form of X-Y co-ordinates based on a line from transponder A to transponder B as the X-axis with A as origin. Values are in metres.

The time needed for this phase is dependent on the number of transponders involved, and the sea-state.

However, with a 5 transponder net and reasonable weather this phase may take up to six hours.

4.2.2 ORIENTATION PHASE 1A

This phase comprises navigating three legs on as constant headings as possible within coverage of all transponders. The legs should be at 90° - 120° to each other but need not be at any particular orientation with respect to the net.

Using three legs reduces errors due to ship's drift.

The result of this phase is the orientation of the perpendicular to the line drawn from transponder A to transponder B with respect to true north.

The orientation result is based on the gyro and is progressively modified during repositioning Phase 2.

This phase may be expected to take up to 1 hour,

4.2.3 REPOSITIONING PHASE 2

Having completed the geometry and orientation phases, the system now automatically enters the satellite repositioning phase.

At this stage the ship's track may be displayed on the plotter, however the ship's position will be based on the results of the relative geometry, and orientation, with the operator's original estimate of the position of transponder A. Repositioning of the net takes place after the second and subsequent successful satellite passes. Each result is in the form of a block shift of the net in metres and a change of orientation in degrees.

The new positions of all transponders with the new orientation are output after each successful pass.

At pass 15 the programme reconsiders the previous pass information and edits out any passes which appear to be contributing unreasonable errors.

The absolute accuracy of the geographical positions of the transponders depends on the number of passes processed. After twenty passes ± 25 metres is reasonable and after 30 passes ± 10 metres.

This phase of the calibration may take up to 72 hours depending on the frequency and quality of satellite passes.

4.3 ACOUSTIC TRACKING OF VESSELS POSITION

Once the positions of the sea-bed transponders have been established to the degree of accuracy required, the programme may be run in the "Navigate" mode, once this has been done any further satellite data is ignored.

The tracking programme enables the vessels position to be continuously monitored on the plotter, and manual, distance, or time initiated fixes to be

generated, with a fix relay closure for automatic marking of echo sounder or sonar records which may be required for a site-survey.

4.4 "RELAY" MODE TRACKING"

Although outside the scope of this report and not used during this operation, the relay mode enables remote acoustic tracking on the survey vessel, of up to two further relay transponders which may be attached to other vehicles, working in the same area.

4.5 OPERATOR INPUTS TO THE OASIS SYSTEM

4.5.1 SPHEROID AND DATUM TRANSFORMATION CONSTANTS

The following spheroid data, and datum transformation constants from WGS72 to A.G.D were input during the initialisation of the programme.

Note that the $\Delta X, \Delta Y, \Delta Z$, signs are reversed from normal convention for datum transformations from WGS72 to A.G.D, this is a programme requirement.

$a = 6378160$ $1/f. = 298.25$
 $\Delta X = -122, \Delta Y = -41, \Delta Z = 146$

4.5.2. TIDAL INFORMATION

The programme requires an input of variation of height of tide from mean sea level, this is needed both for the satellite programme antenna height and for the acoustic programme slant range correction.

At the OME0-1 Location the tidal range is less than two metres and therefore not significant to the OASIS System.

4.5.3 VELOCITY PROFILE

An important input to the programme is velocity of sound in seawater. This was measured frequently using an MC5 Temperature/Salinity bridge, taking readings at ten metre intervals from the sea surface to the seabed. The programme uses these results to compute a velocity profile.

4.5.4 SAT/DOP TROPOSPHERIC CORRECTION

This is calculated by the programme based on operator inputs of temperature, pressure and relative humidity. These were measured at regular intervals using an Aspirated Hygrometer and a "Baromec M1915 " barometer.

4.5.5. OFFSET BETWEEN TOWFISH AND SAT-NAV ANTENNA

During the calibration of the net the offset between the towfish and the satellite Navigation Antenna must be entered in the programme, thus the position plotted at this stage refers to the Antenna position. Prior to the final transit fix on the "OCEAN DIGGER" the offsets were changed to plot the wheelhouse position, from where the transit fixes were observed. Measured offsets can be found at the end of this report.

5. NET CALIBRATION RESULTS

5.1 RELATIVE GEOMETRY, PHASE 1

The results are in the form of X-Y co-ordinates based on a line between transponder A and transponder B with A as origin. Values are in metres.

	<u>X</u>	<u>Y</u>
A	0.0	0.0
B	2096.3	0.0
C	821.7	770.7
D	1374.8	-1389.6

Discrepancy = 0.63

The discrepancy is a measure of the agreement between the two least squares solutions used to produce the final mean solution.

A value less than five is considered satisfactory.

5.2 ORIENTATION PHASE 1A

The result is the orientation of the perpendicular to the line joining transponder A and transponder B, this is later modified during the satellite repositioning phase.

ORIENTATION = 140^o4

5.3 REPOSITIONING PHASE 2

The end result of an oasis calibration is a set of geographical co-ordinates for each transponder and the net orientation.

TRANSPONDER FINAL POSITION

	Latitude South	Longitude East	Depth (m)
A	38° 36' 15".50	147° 43' 45".26	65
B	38° 37' 02".43	147° 42' 42".58	65
C	38° 36' 51".97	147° 43' 42".68	65
D	38° 36' 13".67	147° 42' 24".51	65

ORIENTATION = 136°34

Using 25 Passes R.M.S. = 56.70

An indication of the probable error in position of the acoustic net can be obtained from the R.M.S. value and the number of passes used:

$$\text{PROBABLE ERROR} = \sqrt{\frac{\text{R.M.S.}^2}{\text{NO OF PASSES USED}}} = 11.3 \text{ Metres}$$

5.4 TRANSPONDERS

The four transponder used had the following channel numbers, codes and serial numbers:

A	Channel 1	Code A134	Serial No. 303
B	Channel 7	Code AB12345	Serial No. 278
C	Channel 4	Code AB 345	Serial No. 268
D	Channel 6	Code A 23	Serial No. 331

6. MARKER BUOYS

A fix was taken on the position of all buoys prior to the arrival on location of the "OCEAN DIGGER" and information regarding the "set" of the buoys passed to the drillship.

Marker buoys were supplied by Australian Aquitaine Petroleum and were laid as follows:

6.1 LOCATION BUOY

On location.

6.2 HEADING BUOY

914 Metres (3000 feet) from location on rig heading of 260°.

6.3 ANCHOR BUOYS

No's 3, 4, 8, and 9.

7. DRILLING SITE SEABED SURVEYS

Prior to the arrival of the Drilling Rig on a location a Sidescan Sonar Survey is carried out covering an area of 2.0 km x 2.0 km centred on the proposed location with the purpose of establishing the presence or absence of any debris on the sea bed.

A similar sidescan sonar survey of the drilling site is made following the departure of the rig from any one of the drilling sites to establish the location of any debris resulting from the drilling operation and/or to document the absence of oilfield debris.

The survey at the OME0-1 Location was commenced at 1400 on 28th October and was completed at 0300 on 29th October. Survey lines at 100 metre intervals were run with a Klein dual channel sidescan sonar operating at 150 metre range scale to ensure 100% overlap of the entire area. The seabed at the location proved to be flat and featureless. No anomalies were detected.

The final post drilling sidescan sonar survey at EDINA-1 drilling site was carried out between 1330 on 5 November and 0230 on 6 November. No significant debris was detected. A track plot of the survey lines run is enclosed as Appendix E.

8. PROVISIONAL DERRICK CO-ORDINATES

Numerous transit fixes were made to enable the rig to manoeuvre on to location, the final transit fix was completed at 1700 on 2 November and gave the derrick position as 15 metres on a bearing of 270° from the intended location, with a heading of 262° . Co-ordinates for this position were calculated and passed to the "OCEAN DIGGER" as provisional derrick co-ordinates.

PROVISIONAL DERRICK CO-ORDINATES FOR "OMEQ No. 1"

Latitude

Longitude

38° 36' 45.60 South 147° 43' 01.86 East

A.M.G. co-ordinates, Zone 55, Central Meridian 147° E

Easting 562 440 Northing 5725946

Heading of Rig 262° (T)

9. JMR-4A SATELLITE DOPPLER FIX AT OMEO NO. 1 LOCATION

JMR-4A Satellite Doppler observations were taken on board the "OCEAN DIGGER" to confirm the location of OMEO-No.1 well head which had been positioned by the "OASIS" System.

The JMR-4A contains its own microprocessor for processing of doppler count data obtained from the U.S Navy Transit Satellite System. Using frequencies transmitted from these satellites it extracts timing information, satellite ephemeris and doppler shift data to provide an accurate position fix anywhere on the earth's surface.

The raw data was recorded on JMR-1 certified cassette tapes and processed using the JMR-4A programme.

The following criteria were used for the computations:

a) Tropospheric Constant	:0.00020
b) Atmospheric Pressure	:1013
c) Doppler Edit	:tight
d) Pass elevation low angle cut off	:20 ⁰
e) Pass elevation high angle cut off	:78 ⁰
f) Drill rig heading	:262 ⁰
g) Offset antenna to drill stem	:brg. 082 ⁰ :Dist 51.5 m
h) Co-ordinate transformation constants WGS -72 to A.G.D.	:Δ X + 0.122 :Δ Y + 0.41 :Δ Z - 0.146
i) Australian National Spheroid	:a = 6378160 :f = $\frac{1}{298.25}$

After nine passes were received and processed by the JMR-4A Receiver, a power surge on the Ocean Digger rendered the Rx unserviceable.

It was replaced by a JMR-1 Receiver and a further 40 acceptable passes recorded. These were processed off line on a replacement JMR-4A.

10. SUMMARY OF RESULTS

Final position of OME0-1 derived from 3D Satellite/
Doppler Observations. 40 Acceptable passes.

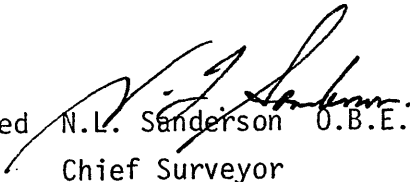
Australian Geodetic Datum: - (1966) (A.G.D)

Latitude	38 ⁰	36'	45.006	South
Longitude	147 ⁰	43'	02.245	East

Australian Map Grid Co-ordinates, Zone 55, Central
Meridian 147⁰ East.

Eastings	562449
Northings	5725964

Proposed Location → JMR-4A Final Location	19 metres.
Proposed Location → OASIS Prov. Co-Ords	15 metres
OASIS Prov. Co-Ords → JMR-4A Final Location	20 metres

Approved  N.L. Sanderson O.B.E. Assoc. I.S. Aust.
Chief Surveyor
RACAL-DECCA SURVEY AUSTRALIA

PE906193

This is an enclosure indicator page.
The enclosure PE906193 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906193 has the following characteristics:

ITEM_BARCODE = PE906193
CONTAINER_BARCODE = PE906192
NAME = Locality Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = PROSPECT_MAP
DESCRIPTION = Locality Map (enclosure from attachment
2 to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PERSONNEL LIST AND SUMMARY OF PROJECT DIARYPersonnel List

G. Hart	U.W./OASIS ENGINEER	R-DS Singapore
M. Hill	SURVEYOR	R-DS Great Yarmouth

Summary of Project Diary

- 14 October - G. Hart briefed in Sydney Office. Depart for Welshpool in D.S.A. Panel Van with spare units.
- 15 October - Arrive Welshpool arrange fabrication of "A" frame for Sidescan Sonar on Christmas Creek.
- 18 October - Complete mobilisation and fitting out Christmas Creek with OASIS and S.S. Sonar equipment. Sailed for OME0-1 Location.
- 19 October - Weather Standby
- 22 October - Weather Standby.
- 23 October - Deployed sea-bed transponders
Channel nine Serial No. 123 Code AB 145 failed.
Did not respond to recovery procedure and lost on site.
1345 - Commence relative geometry and orientation
1615 - Commence Repositioning Phase 2.
- 26 October - Complete OASIS calibration.
- 27 October - Standby Ocean Digger at Edina-1.
- 28 October - OME0-1 Side Scan Sonar Survey.
- 29 October - Standby Ocean Digger.
- 30 October - Standby Ocean Digger
- 31 October - Deploy location and Anchor Buoys for Rig Move.
- 1 November - Check Buoys - Standby for Rig Move.
- 2 November - 0045 - First OASIS Fix of Rig Move, positions drill stem 230 m from location. Assist rig to move to correct location.
1230 - Rig on location and ballasting

1700 - Final Acoustic fix positions drill stem
15 metres from location.

1800 - Commence 3D Satellite/Doppler Fix on
Ocean Digger.

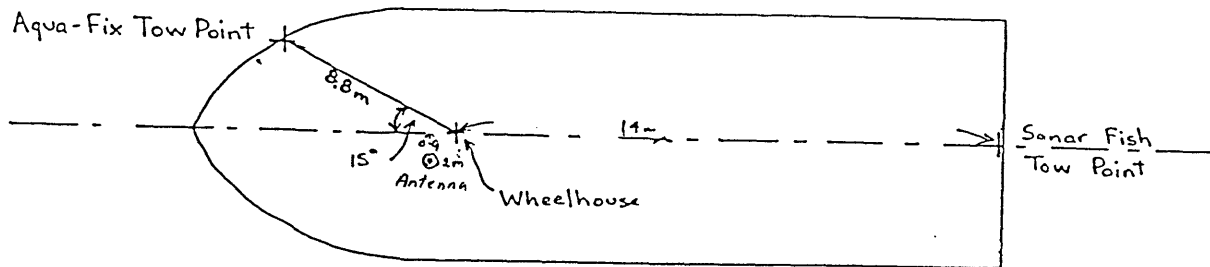
3 November- 0819 - JMR-4A Pass 9 accepted.
0930 - Power surge damaged JMR-4. Replaced with
JMR-1 receiver.

5 November- 1200 - Christmas Creek released for EDINA-1
Sidescan Sonar Survey.
1430 - Commenced EDINA-1 S.S. Sonar Survey

6 November- 0300 - Completed EDINA-1 S.S. Sonar Survey.
Return to stand by Ocean Digger

8 November- 1955 - Christmas Creek arrives Port Welshpool. Unrig
and pack equipment.

9 November- Personnel demobilised.
G. Hart to Sydney Via Panel Van for de-briefing
M. Hill to Perth.

"CHRISTMAS CREEK" OFFSETSTOWFISH TO SAT NAV ANTENNA

L = 17 metres

H = 3.5 metres

B = 28°

D = 7.3 metres

TOWFISH TO WHEELHOUSE

L = 17 metres

H = 3.5 metres

B = 15°

D = 8.3 metres

Sonar fish towpoint to wheelhouse datum = 14 metres

L = Length of tow cable

H = Height of tow point above water line

B = bearing of tow point w.r.t. ships head

D = distance of tow point from ships datum

PE906194

This is an enclosure indicator page.
The enclosure PE906194 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906194 has the following characteristics:

ITEM_BARCODE = PE906194
CONTAINER_BARCODE = PE906192
NAME = Rig Move Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Survey Map of Rig Move to Omeo-1
(enclosure from attachment 2 to WCR)
for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906195

This is an enclosure indicator page.
The enclosure PE906195 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906195 has the following characteristics:

ITEM_BARCODE = PE906195
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Post Drilling Side Scan Sonar Survey
Plan for Edina-1(enclosure from
attachment 2 to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

ANTENNA POSITION

NHGT=359

NLAT=37

NLON=36

IGTM= 35.85

LATM=- 38 36 45.238

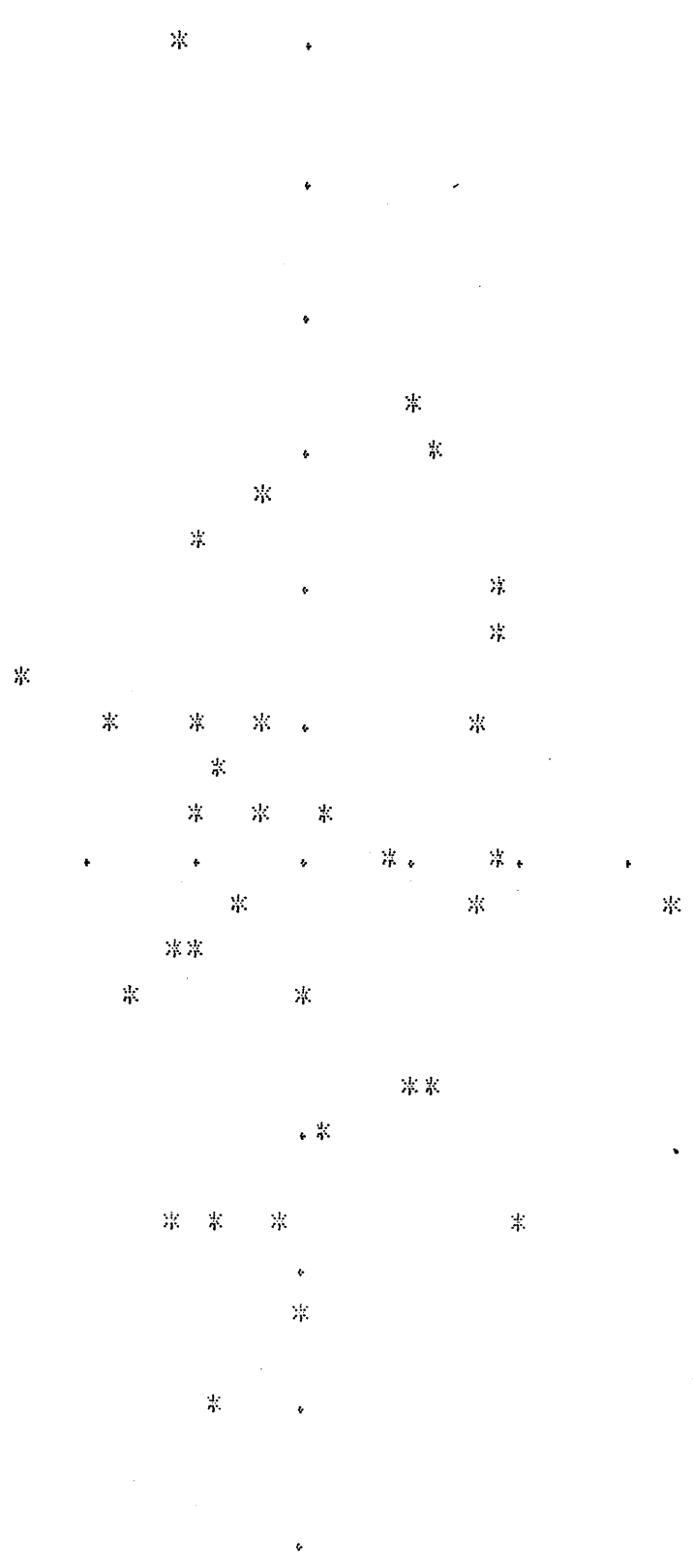
LONM= 147 43 0.137

ERHT= 0.3

ERLT= 3.1

ERLG= 1.9

*
- > . < - 10 METERS NORTH



SIDECAN SOLAR SEABED
CLEARANCE SURVEY

GIPPSLAND BASIN
SIDESCAN SONAR SEABED CLEARANCE SURVEYS
OF
DRILLING SITES IN VIC P17
FOR
AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD.

PREPARED BY
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R-DSA 1155

October 1982 - April 1983

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ABSTRACT

The following report gives details of the Sidescan Sonar Seabed Clearance Surveys carried out at the EDINA, OMEO, KYARRA and TARRA drilling locations during the Australian Aquitaine Petroleum drilling program in the Gippsland Basin Vic P17 between September 1982 and April 1983.

1- REQUIREMENTS

To conduct pre and post drilling Sidescan Sonar Surveys covering an area 2.0 km by 2.0 km centred around the drilling locations with the purpose of establishing the presence or absence of any debris on the seabed.

2- SUMMARY OF EVENTS

25/9/82 - Drilling Rig 'OCEAN DIGGER' positioned
at EDINA location

18/10/82 - Sidescan Sonar equipment mobilised and
installed in survey vessel
MV 'CHRISTMAS CREEK'

28/10/82 - OMEO pre-drill seabed survey

2/11/82 - 'OCEAN DIGGER' positioned at OMEO
location

5-6/11/82 - EDINA post-drill seabed survey

21-22/1/83 - KYARRA pre-drill seabed survey

11/2/83 - 'OCEAN DIGGER' positioned at KYARRA
location

12-13/2/83 - OMEO post-drill seabed survey

27/2/83 - TARRA pre-drill seabed survey

2/3/83 - 'OCEAN DIGGER' positioned at TARRA
location

7/3/83 - OMEO site re-runs to check anomaly

8-10/3/83 - KYARRA post-drill seabed survey

23-24/4/83 - TARRA post-drill seabed survey

3- WELLHEAD LOCATIONS

Australian Geodetic Datum - A.M.G. Zone 55

3.1 EDINA-1

Latitude 38° 36' 22".539 south
Longitude 147° 52' 41".949 east
Easting 576476 Northing 5726535

3.2 OMEQ-1

Latitude 38° 36' 45".006 south
Longitude 147° 43' 02".245 east
Easting 562449 Northing 5725964

3.3 KYARRA-1A

Latitude 38° 40' 52".532 south
Longitude 147° 11' 12".288 east
Easting 516243 Northing 5718562

3.4 TARRA-1

Latitude 38° 38' 37".150 south
Longitude 147° 42' 08".207 east
Easting 561116 Northing 5722518

4- DRILLING SITE SEABED SURVEYS

Prior to the arrival of the drilling rig at a location a sidescan sonar survey was carried out covering an area 2.0 km x 2.0 km centred on the proposed location with the purpose of establishing the presence or absence of any debris on the seabed.

A similar sidescan sonar survey of each drilling site was made following the departure of the rig from the location to locate any debris resulting from the drilling operation and/or document the absence of oil-field debris.

A Klein Hydroscan 420 Dual Channel Sidescan Sonar was fitted in the Aquitaine survey/standby vessel MV 'CHRISTMAS CREEK' to carry out the surveys. Positioning of the survey vessel was by the RACAL-DECCA OASIS system which was also used to position the drilling rig 'OCEAN DIGGER' at each location. The OASIS system, an integrated satellite/acoustic navigation and position fixing system is fully described in the Rig Move Reports, together with details of the Acoustic Net Calibration at each site.

Survey lines at 100 metre intervals were run with the dual channel sidescan sonar operating at 100m or 150m range scale to ensure 100% overlap of the entire area. Any anomalies detected were examined by running interlines on an expanded range scale.

5- SUMMARY OF RESULTS

Generally the seabed proved to be flat and featureless.

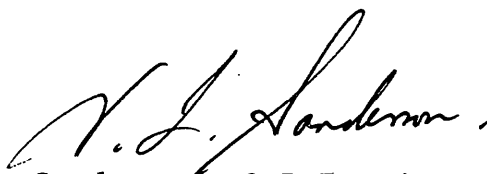
No significant debris was detected at any of the sites except what appears to be the remains of No.3 anchor marker buoy at the OMEO-1 location.

A.M.G. Co-ordinates of this anomaly are:

Easting 561785 Northing 5725595

It was detected on the original OMEO survey and confirmed during re-runs in the area on 7/3/83. If it is a sunken marker buoy the rope mooring will eventually part releasing the buoy.

Track plots of the survey lines run at each location are enclosed as appendices.



N.L. Sanderson O.B.E. Assoc. I.S. Aust.
Racal-Decca Survey Australia

PE906196

This is an enclosure indicator page.
The enclosure PE906196 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906196 has the following characteristics:

ITEM_BARCODE = PE906196
CONTAINER_BARCODE = PE906192
NAME = Locality Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = PROSPECT_MAP
DESCRIPTION = Locality Map(enclosure from attachment
2 to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906197

This is an enclosure indicator page.
The enclosure PE906197 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906197 has the following characteristics:

ITEM_BARCODE = PE906197
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Post Drilling Side Scan Sonar Survey
Plan for Edina-1(enclosure from
attachment to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906198

This is an enclosure indicator page.
The enclosure PE906198 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906198 has the following characteristics:

ITEM_BARCODE = PE906198
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Post Drilling Side Scan Sonar Survey
Plan (enclosure from attachment 2 to
WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906199

This is an enclosure indicator page.
The enclosure PE906199 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906199 has the following characteristics:

ITEM_BARCODE = PE906199
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Sonar Survey Reruns (enclosure from
attachment to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906200

This is an enclosure indicator page.
The enclosure PE906200 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906200 has the following characteristics:

ITEM_BARCODE = PE906200
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Post Drilling Side Scan Sonar Survey
Plan for Kyarra-1(enclosure from
attachment 2 to WCR) fr Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)

PE906201

This is an enclosure indicator page.
The enclosure PE906201 is enclosed within the
container PE906192 at this location in this
document.

The enclosure PE906201 has the following characteristics:

ITEM_BARCODE = PE906201
CONTAINER_BARCODE = PE906192
NAME = Side Scan Sonar Survey Map
BASIN = GIPPSLAND
PERMIT = VIC/P17
TYPE = GENERAL
SUBTYPE = SRVY_MAP
DESCRIPTION = Post Drilling Side Scan Sonar Survey
Plan for Tarra-1 (enclosure from
attachment 2 to WCR) for Omeo-1
REMARKS =
DATE_CREATED = 12/11/82
DATE_RECEIVED = 11/08/83
W_NO = W788
WELL_NAME = OMEO-1
CONTRACTOR = RACAL-DECCA SURVEY AUSTRALIA
CLIENT_OP_CO = AUSTRALIAN AQUITAINE PETROLEUM

(Inserted by DNRE - Vic Govt Mines Dept)