

HYLAND MARINE SEISMIC SURVEY

OPERATIONS REPORT

OP 2 & OP 83

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OP 83

R68/3D

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GENERAL

This report describes the services performed by Marine Geophysical International, Inc., acting in the capacity of subcontractor to Western Geophysical Company of America, the prime contractor to Australian Aquitane Petroleum Pty. Ltd., whose place of business is 129 Elizabeth Street, Brisbane, Queensland, Australia.

MARGEO performed work at Western's request and under their supervision. The work was conducted on the M/V Western Geophysical which was under Western's control and direction. The navigation of the vessel and the location of the seismic lines surveyed were designated by TORAN Radio Location Systems. MARGEO performed the seismic work at the points indicated by Western as designated in the logs included at the end of this report.

LOCATION OF SURVEY

The survey was conducted in the Timor Sea off Northwestern Australia. The area was designated Hyland Area Prospect. The exact location, latitude and longitude, is available from Western.

DESCRIPTION OF EQUIPMENT

A 3,000 Joule Sparker manufactured and operated by Marine Geophysical International was used as an energy source.

The data was recorded on an Alden Facsimile Recorder utilizing a dual channel analog recording amplifier system. Two types of cable were used: an Alpine Eel Cable with ten hydrophones spaced one foot apart with a single output, and, a Pavey Cable with twenty (20) hydrophones spaced 59 inches apart with a single output. These cables were operated at a depth of six (6) feet below the surface of the water. A detailed description of the equipment and descriptions of the cables and towing arrangements are included at the end of this report.

OPERATIONAL PROCEEDURE

Western performed this seismic survey using dynamite as the principle energy source. The shot points averaged 800 meters apart over the survey. The exact locations are available from Western reports. The Sparker survey was conducted with a MARGEO 3,000 Joule Sparker to provide shallow subsurface coverage between the dynamite shot points. The Sparker was fired at an average interval of one second and a dual trace recording was made during the first one-half second interval following the ignition of the Sparker. A continuous facsimile recording was made automatically between dynamite shots. A detailed dated list of lines, shotpoints recorded with the Sparker is included at the end of this report.

DISPOSITION OF RECORDED SPARKER DATA

At Western's request, all the data, including facsimile recordings, and logs were delivered to Western's operations supervisors and managers at Darwin, Northern Territory, Australia. Copies of the DATA TRANSFER RECORDS are included at the end of this report.

DESCRIPTION OF SPARKER

The Sparker provides a method for obtaining continuous reflection profiles of geological horizons below a water body. The sound energy from an underwater spark discharge is used. Using various filtered bandwidths thus received reflected energy is recorded on an Alden timed graphic sweep recorder.

Though this spark source is not as powerful as explosives, the accurately timed, discharges enable a high degree of correlation between received reflected signal sequences. The combination of wide band sound source and variable filtered recorded reception provides ease and flexibility in operation.

The Sparker is an instrument made up of the following:

1. A wide spectrum sound source (3,000 Joule Spark).
2. A Hydrophone Array (Pavey-Alpine)
3. A signal Amplifier (GeoSpace Model #111)
4. Variable Filtering (Kron-Hite)
5. A positive drive dual Channel Recorder (Alden)

1. THE SPARK POWER SOURCE has a rating of 3,000 Joules. It has a power transformer and high voltage rectifier which with its ballast can deliver at least 10,000 volts at 2 amps. The potential is stored in four 35 Mfd capacitors connected in series parallel.

The energy is passed to the water electrode by an air gap switch designed to conduct when the gap is ionized by a small trigger spark. The trigger is a high voltage, low power spark such as used in automobile ignition.

The main water electrode discharges directly to sea water from a conducting cross section small enough to provide a current density sufficient for an explosion.

2. THE HYDROPHONE SYSTEM used consisted of two types of arrays. One type used was a standard PAVEY streamer which had 20 phones spaced 59 inches apart with the first phone being generally at a distance of 304 feet behind the boat. This array was towed at a depth of approximately 6 feet, and was used when conditions warranted.

The second type of Hydrophone Cable used was the ALPINE EEL array which consisted of 10 phones of broad frequency range spaced 12 inches apart in a clear plastic hose of 3 inch diameter. This array, being only 14 feet long was towed by a small cable at a depth of 6 to 10 feet. The distance to the

stern of the boat was varied a number of times to suit conditions but on the average the distance was 150'.

The Sparker tip was towed at a depth of 6 to 10 feet and 40 feet behind the boat.

3. THE SIGNAL AMPLIFIERS used were Geo Space Model #111 geophysical amplifiers with the Geo Space Model #115 control unit. These are standard seismic units. No A.G.C. or early gain was used and the filtering on each channel was varied as needed.
4. THE VARIABLE FILTERING used was the Krohn-Hite Model 330 laboratory type filter. This filter is variable from 2 cycles per second to 20,000 cycles with no distortion as it is a resistance capacitance type.
5. THE RECORDER used was an Alden Model 319-CA unit modified with Marine Geophysical drive system. This is a multi-speed dual channel unit with speeds of 1/8 1/4 1/2 and 1 second. Programming increases the range of this unit.

The recordings were made on Alfac paper, designed to be used with Alden Recorders. This is a moist electro-sensitive recording paper. It records in the red end of the color spectrum where the eye can see better, providing far greater flexibility than grey or black tone papers. The paper may readily be written on and notations erased without smudging the recording.

Records produced on this paper are permanent and lines and letters do not fill in.

The paper should be stored in a dry place and it easily makes excellent diazo copies.

LINES SURVEYED WITH MARINE SPARKER WITH DATES AND SEISMIC SHOT POINTS are listed below for the Hyland Area Prospect of Australian Aquitaine Petroleum Ltd.

<u>Roll #</u>	<u>Date</u>	<u>Line #</u>	<u>S.P.</u>	<u>to</u>	<u>S.P.</u>
1.	Aug. 21	EO-7	1	-	92
2	22	EO-5	93	-	114
3	23	EO-5	112R	-	175
4	23	EO-3	176	-	242
5	23	EO-1	243	-	305
6	23	EO-4	306	-	348
7	24	EO-4	346R	-	394
8	24	EO-2	395	-	411
9	25	EO-2	409R	-	484
10	28	H-5	485	-	986
11	Sept. 2	H-3	987	-	1013
12	3	H-3	1013R	-	1066
13	3	H-2	1067	-	1125
14	4	H-2	1125R	-	1176
15	4	H-1	1176	-	1189
16	5	H-1	1188R	-	1228
17	6	H-1	1227R	-	1265
18	6	H-4	1266	-	1341
19	9	H-4	1341R	-	1475
20	10	H-4	1474R	-	1501
21	10	H-15	1502	-	1525
22	10	H-15	1526	-	1600
23	11	H-11	1601	-	1620
24	11	H-13	1621	-	1660
25	11	H-15	1660R	-	1695
26	12	H-17	1697	-	1718
27	12	H-19	1719	-	1740
28	12	H-16	1741	-	1780
29	12	H-12	1781	-	1798
30	13	H-12	1798R	-	1823
31	13	H-21	1824	-	1836
32	14	H-24	1837	-	1869
33	14	H-29	1870	-	1880
34	14	H-25	1881	-	1904
35	15	KI-3	1905	-	1924
36	15	KI-5	1925	-	1947
37	15	KI-7	1948	-	1955
38	16	KI-2	1957	-	1962
39	17	H-22	1963	-	2330
40	18	H-21	2331	-	2360

(Continued)

<u>Roll #</u>	<u>Date</u>	<u>Line #</u>	<u>S.P.</u>	<u>to</u>	<u>S.P.</u>
41	Sept. 18	H-6	2361	-	2431
42	18	H-7	2432	-	2452
43	19	H-7	2452R	-	2544
44	25	H-21	2545	-	2567
45	25	H-6	2568	-	2607
46	25	H-6/27			
		H-6	2608	-	2662
47	26	H-27	2662R	-	2691
48	26	H-25	2692	-	2790
49	27	H-22	2791	-	2813
50	27	H-29	2814	-	2894
51	27	H-8	2895	-	2916
52	28	H-31B	2917	-	2961
		H-18	2962	-	2996
53	28	H-23	2997	-	3035
54	28	H-10	3045	-	3062
55	29	H-10	3063	-	3084
56	29	H-33	3085	-	3093
57	29	H-14	3094	-	3151
58	29	H-21	3152	-	3176
59	30	H-21	3176R	-	3205
60	30	H-20	3206	-	3250
61	30	H-31A	3251	-	3276
62	30	H-24	3277	-	3287
63	Oct. 1	KI-1	3288	-	3321
64	1	KI-3	3322	-	3353
65	1	KI-6	3354	-	3376
66	2	KI-2	3377	-	3425
67	2	KI-7	3426	-	3462
68	2	KI-6	3463	-	3474
69	2	KI-7	3475	-	3492
70	3	KI-4	3493	-	3510
71	3	KI-5	3511	-	3558
72	3	KI-8A	3559	-	3579
73	4	KI-8A	3580	-	3606
		KI-8B	3307	-	3614
74	5	H-32	3615	-	3630
75	5	H-45	3631	-	3645
76	5	H-23	3646	-	3664
77	5	H-28	3665	-	3663
78	5	H-47	3684	-	3694
79	5	H-34	3695	-	3713
80	6	H-30	3714	-	3734
81	6	H-41	3735	-	3749

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<u>Roll #</u>	<u>Date</u>	<u>Line #</u>	<u>S. P.</u>	<u>to</u>	<u>S. P.</u>
82	Oct. 6	H-39	3750	-	3765
83	6	H-37	3766	-	3779
84	6	H-35	3780	-	3789
85	6	H-26	3790	-	3808

The above listed Sparker records are being transferred from Marine Geophysical to Western Geophysical.

Marine Geophysical Signature

