

PERTSHIRE PETROLEUM LTD.

ANNUAL REPORT

1ST YEARS WORK PROGRAM

OR – 207

222002

List of Enclosures:

1. T-19/P
2. Morwong Prospect Lead
3. Line PB81-9
4. Coroline Lead
5. Sea Dragon/Albatross
6. Line B72A-81
7. Octopus Lead
8. Line B-24
9. Sea Elephant Lead - LINE EO 59
10. Oil and Gas Journal Article
11. Expenditures

222003

TPR
02-207

44/11/0

PERTSHIRE PETROLEUM, LTD.

WALES CENTRE, 16th FLOOR, 109 ST GEORGE'S TERRACE,
PERTH (W.A.) AUSTRALIA 6000
TELEPHONE (09) 321 8556 TELEX AA 94209

U.S. OFFICE
5599 San Felipe, Suite 1100
Houston, Texas 77056
Telex 792-088

April 22, 1982
Copy sent to BMR

Mr. H. Murchie
Director of Mines
Department of Mines
G.P.O. Box 124B
Hobart, Tasmania 7001

| | | | | |
|------------------|-------------------|-------------------|------|-------------------|
| Prof M | AD | AG | E.O. | D.S. |
| <i>hm</i> | <i>[initials]</i> | <i>[initials]</i> | | <i>[initials]</i> |
| Received | - 6 MAY 1982 | | | Registrar |
| Answered | | | | E & IL |
| DEPT. OF MINES | | | | |
| REF. No. 3309/82 | | | | |

Re: Permit T-19/P's Annual Report
(including the Fourth Quarter)
covering the first year's work
program for the period from
March 27, 1981 to March 27, 1982

Dear Mr. Murchie:

The following is a summary of the first year's work program performed on Permit T-19/P, a Bass Basin Exploration Permit awarded to Perthshire Petroleum, Ltd. on March 27, 1981:

During the first quarter of the first year's work program, Western Geophysical Company of America was contracted to shoot a seismic program of 823.05 kms. The purpose of the program was to further delineate seismic anomalies observed on pre-existing seismic data and investigate areas of T-19/P that had little or no existing data. The program was initiated on April 5, 1981 and completed in part on April 8, 1981. Due to prior commitments and deteriorating weather conditions, only about a third of the planned program (270.725 kms) were acquired during the first quarter. Plans were then made to complete the program in the first half of 1982. The data were processed by Western Geophysical in Houston, Texas, under the close supervision of Perthshire's geophysical staff.

MAPPING

The interpretation was conducted by Perthshire in our Houston offices and incorporated the older seismic with the recently acquired 4800% CDP coverages.

T/19P Part 5

Mr. H. Murchie
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April 22, 1982

MORWONG PROSPECT LEAD (ENCLOSURE 2)

This anomaly is located on the upthrown side of a down-to-the-west fault, as indicated on line PB81-9. (Enclosure 3) It was mapped on the M. diversus reflector and has an areal extent of 10,025 acres. The depth to the mapped horizon is 4,450' and has a vertical closure of .040 sec., or $\pm 140'$. The water depth is approximately 230'. Additional seismic was shot to better define the lead.

COROLINE LEAD (ENCLOSURE 4)

This low profile potential prospect is severely faulted along the southeast border of its closing contour. It may be that the enhanced data quality permits easier fault determination than the older data. It was mapped on the M. diversus reflector and has an areal closure of 18,350 acres. The depth to the mapped horizon is 1,360' and has a vertical closure of .060 sec. or 167'. The water depth is approximately 200'. Additional seismic was shot to better define the lead.

SEA DRAGON PROSPECT (ENCLOSURE 5)

This prospect was mapped on an Intra-Cretaceous reflector and is located on the downthrown side of a major transverse fault. Structurally, it is a northwest-southeast trending ridge, or horst block. Its style can be seen on seismic line B72A-81 (Enclosure 6) Using the fault as a seal, the areal closure is 47,350 acres. The depth to the mapped horizon is 5,700' and has a vertical closure of .300 sec. or 1960'. The water depth is approximately 203'.

ALBATROSS LEAD (ENCLOSURE 5)

This prospect was mapped on an Intra-Cretaceous reflector and is located on the downthrown side of a major northwest-southeast trending transverse fault. Its area of closure against the fault is approximately 10,900 acres. The depth to the mapped horizon is 8,325' and has a vertical closure of .270 sec. or $\pm 1,600'$. The water depth is approximately 179'.

Mr. H. Murchie
Page 3
April 22, 1982

OCTOPUS LEAD (ENCLOSURES 7 & 8)

This prospect was mapped on a M. diversus reflector and is on the upthrown side of a down-to-the-northeast fault. It requires additional seismic to verify northwest closure, however as presently mapped encompasses 13,175 acres at a depth of 2,150'. The vertical closure is approximately 210' and could be drilled in 240' water depth.

SEA ELEPHANT LEAD (ENCLOSURE 9)

This is a one line structural feature in the southwest portion of T-19/P that displays a major tilted down-to-the-northeast fault block with a large anticlinal feature on the northeast flank. With additional seismic, this may develop into a sizeable prospect.

Based on the mapping of the older seismic data and the program shot for Perthshire during the first quarter of 1981, the incompleted portion of said program was initiated on February 22, 1982 and designated as the "Octopus Seismic Survey". It was conducted by Western Geophysical and consisted of a program of 521.875 kms of 4800% CDP data. The seismic vessel used was the M/V Western Odyssey. David Lowry, Perthshire's Geological Supervisor, provided onboard supervision for the duration of the acquisition phase. The program was completed on February 25, 1982. By the end of the fourth quarter, the data had not been received by GeoCenter, Inc. in Houston, Texas, the company selected to process the data.

An article on the Bass Basin prepared by Perthshire's staff was published in the January 4, 1982 issue of the Oil and Gas Journal. A copy is enclosed for your records. (Enclosure 10)

No test well was drilled during the first year work program.

Enclosure 11 outlines the expenditures incurred between March 27, 1981 and March 27, 1982.

FUTURE PLANS

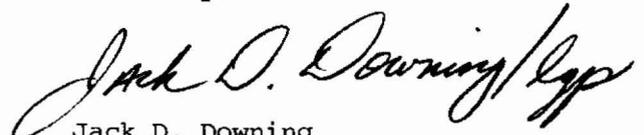
Plans for the second year work program include ensuring the data acquired is processed proficiently and efficiently, and interpreting and integrating it with the existing data.

222006

Mr. H. Murchie
Page 4
April 22, 1982

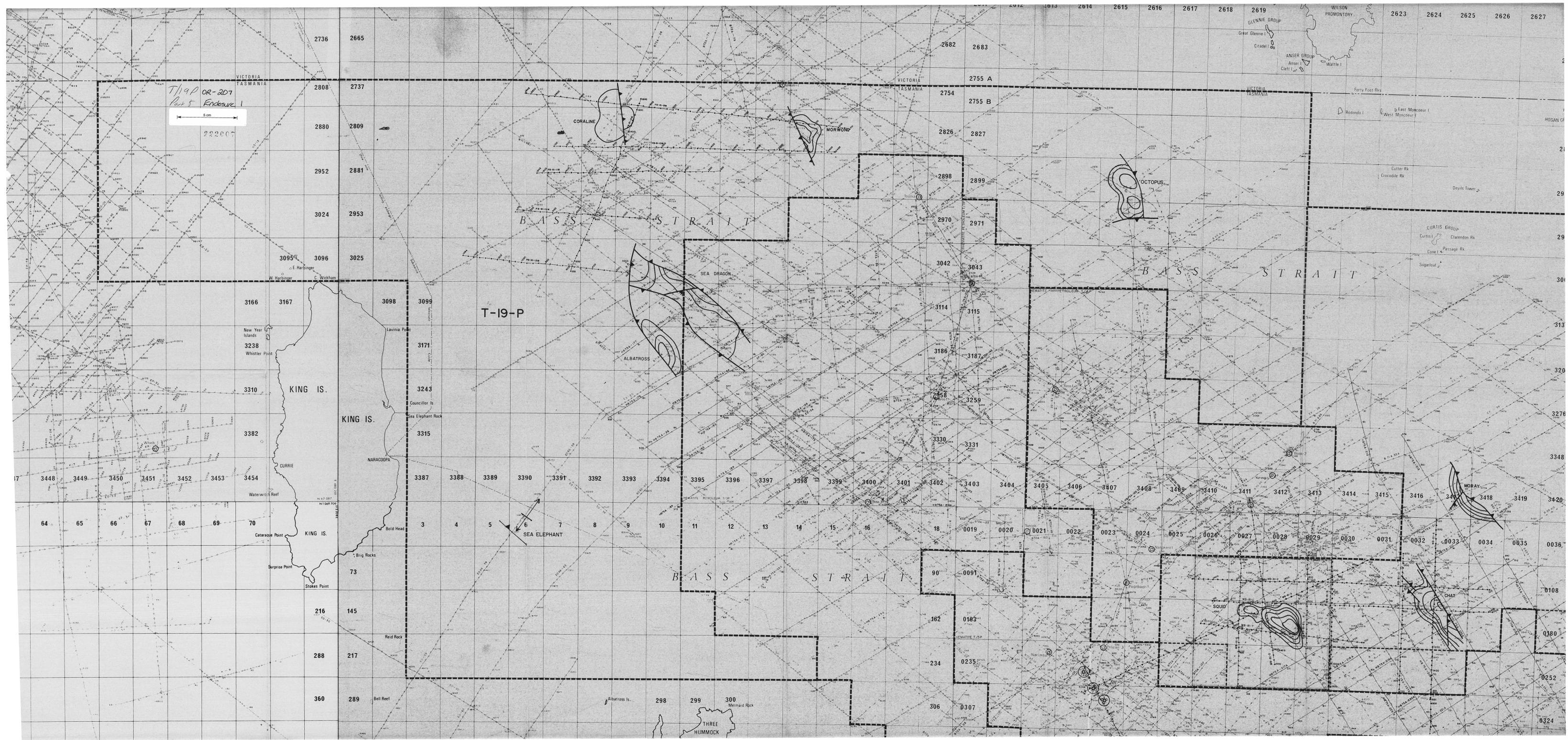
Enclosed is an extra copy of the Annual Report for your forwarding to the Bureau of Mineral Resources.

Sincerely,

A handwritten signature in cursive script that reads "Jack D. Downing/leg". The signature is written in dark ink and is positioned above the typed name and title.

Jack D. Downing
Vice President - Geophysics

JDD:lgp
Enc.



THAP OR-207
Part 5
Enclosure 1

5 km

222007

T-19-P

BASS STRAIT

BASS STRAIT

BASS STRAIT

VICTORIA
TASMANIA

VICTORIA
TASMANIA

VICTORIA
TASMANIA

KING IS.

KING IS.

KING IS.

Albatross Is.

THREE
HUMMOCK

Mermaid Rock

GLENNIE GROUP

Great Glennie I.

Citadel I.

ANSER GROUP

Anson I.

Cleft I.

WILSON
PROMONTORY

Forty Foot Rks.

Redondo I.

East Monceur I.

West Monceur I.

Gutter Rk.

Crocodile Rk.

Devils Tower

CURTIS GROUP

Curtis I.

Clarendon Rk.

Cone I.

Passage Rk.

Sugarloaf

MORAY

CHAT

SQUID

SEA ELEPHANT

SEA DRAGON

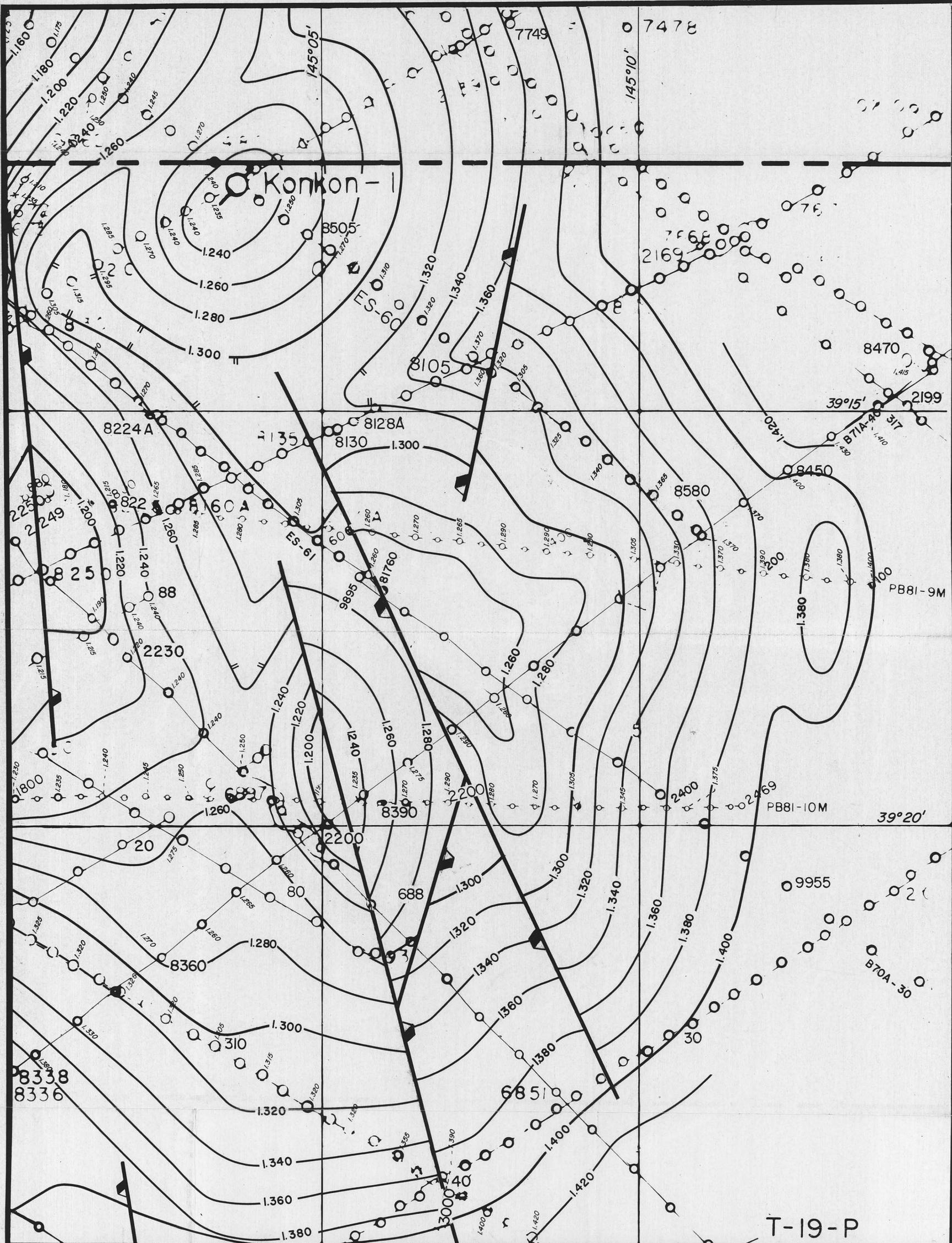
ALBATROSS

OCTOPUS

MORWONG

CORALINE

SEA ELEPHANT



AREA OF CLOSURE : 10,025 FEET
 VERTICAL CLOSURE : 0.040 sec. (140 feet)
 DEPTH TO MAPPED HORIZON : 4,450 FEET
 WATER DEPTH : 230 FEET

**WEAVER OIL AND GAS CORPORATION,
AUSTRALIA**

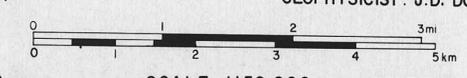
MORWONG PROSPECT
 PERMIT T-19-P
M. diversus REFLECTOR

T/19P Proj 5

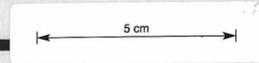
222008

Rvsd 4-22-82 mjh

GEOPHYSICIST: J.D. DOWNING



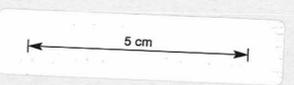
C.I.: .020 sec. SCALE 1:50,000 SEPTEMBER 1981



OR-207

Enclosure 2

OR-207
J/198 Part 5



MORWONG PROSPECT

T-19-P

222009

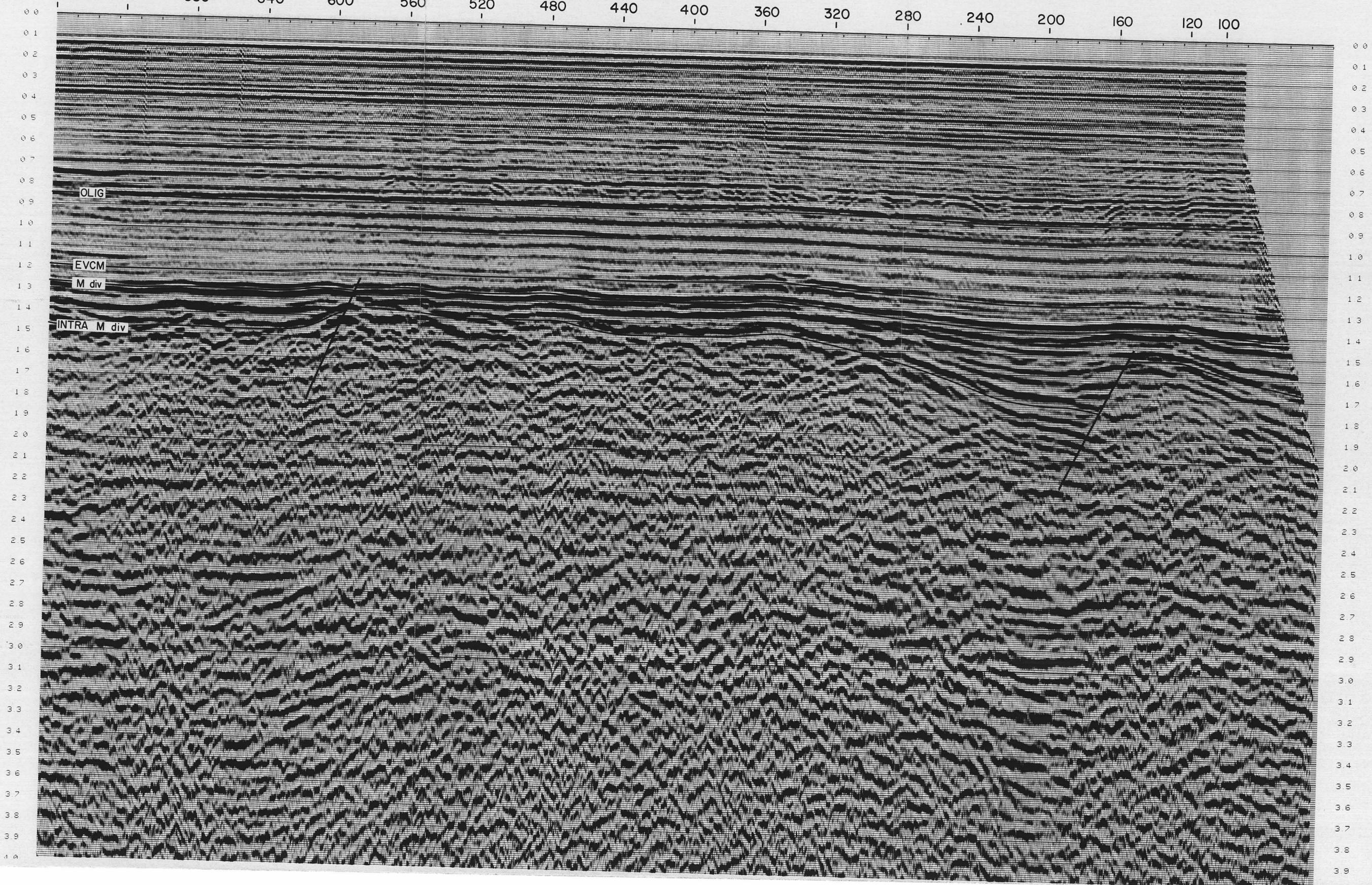
LINE PB81-09M

Enclosure 3

W

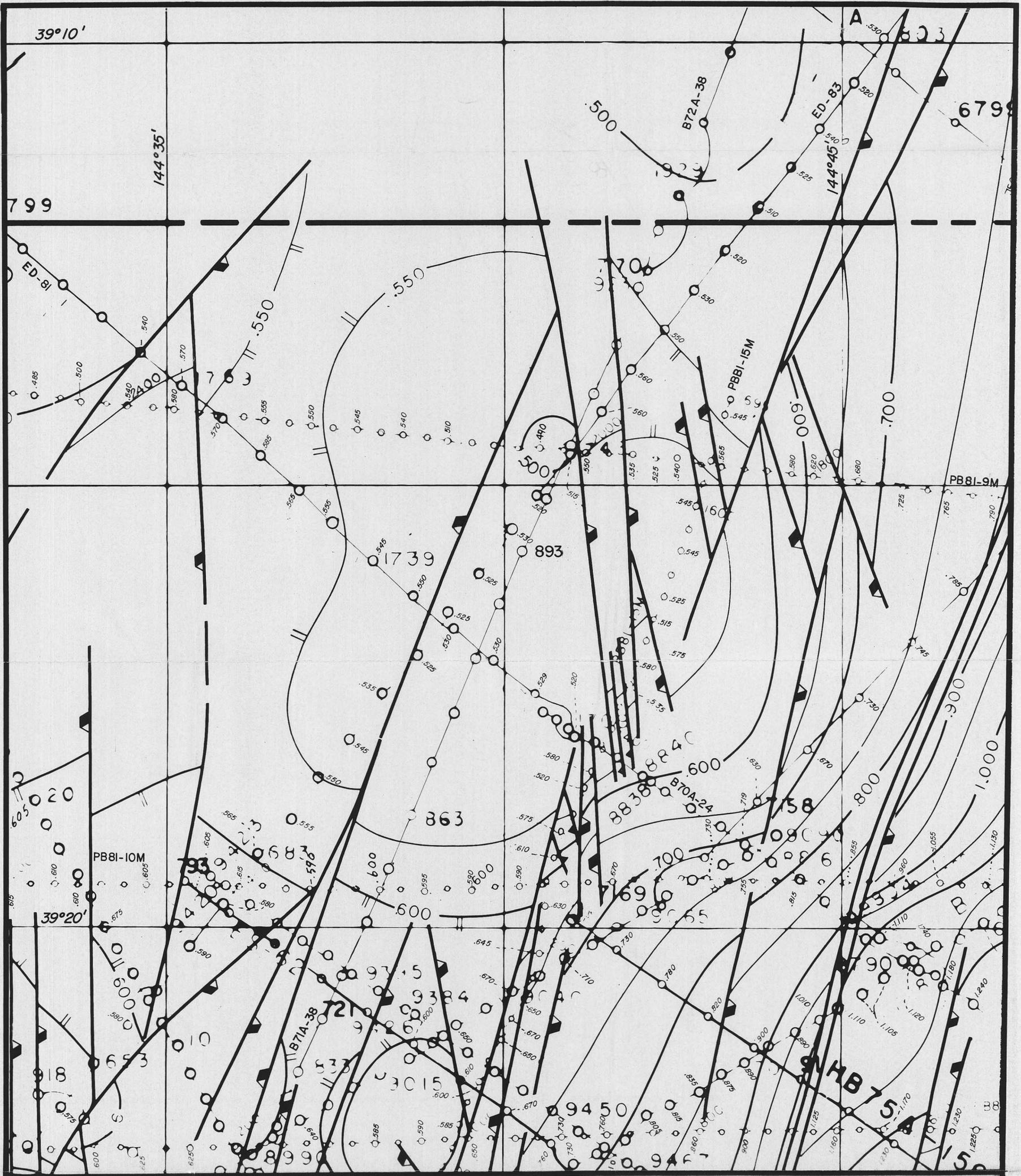
E

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AREA OF CLOSURE : 18,350 FEET
 VERTICAL CLOSURE : 167 FEET
 DEPTH TO MAPPED HORIZON : 0.490 sec.
 WATER DEPTH : 200 FEET

WEAVER OIL AND GAS CORPORATION,
AUSTRALIA

CORALINE PROSPECT
 PERMIT T-19-P
 M. diversus REFLECTOR

T/19P Part 5

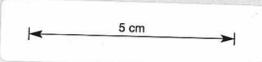
Rvsd. 4-22-82 mjh

GEOPHYSICIST : J.D. DOWNING



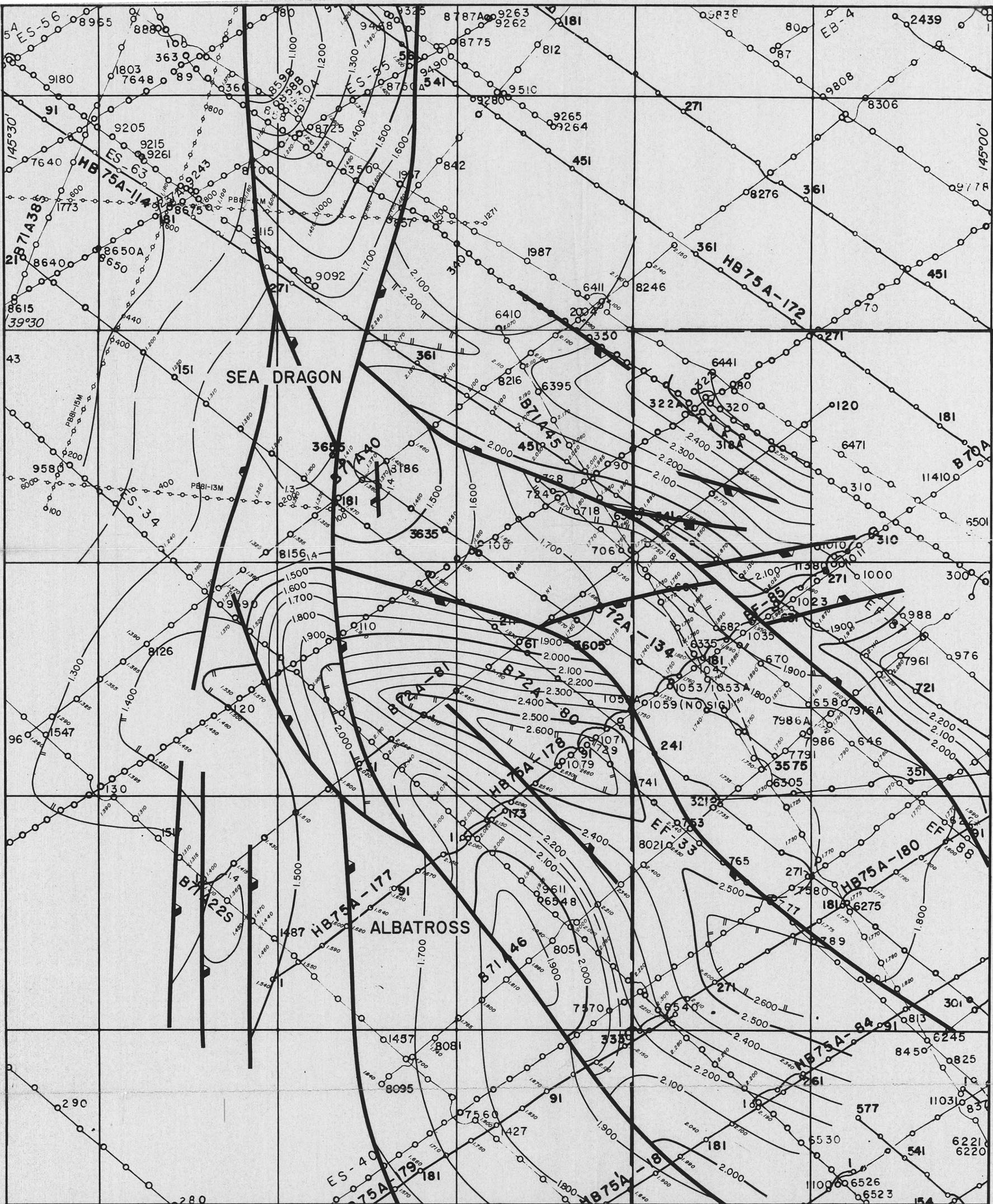
C.I. : .050 sec. SCALE 1:50,000 SEPTEMBER 1981

OR-207



Enclosure 4

222010



SEA DRAGON :

AREA OF CLOSURE : 47,350 ACRES
 VERTICAL CLOSURE : 0.300 sec. (1,900 feet)
 DEPTH TO MAPPED HORIZON : 1.5 sec. (5,700 feet)
 WATER DEPTH : 203 FEET

ALBATROSS :

AREA OF CLOSURE : 10,000 ACRES
 VERTICAL CLOSURE : ± 1600 FEET
 DEPTH TO MAPPED HORIZON : 1.9 sec. (8,325 feet)
 WATER DEPTH : 179 FEET

**WEAVER OIL AND GAS CORPORATION,
 AUSTRALIA**

**SEA DRAGON & ALBATROSS
 PROSPECTS**

222011
 PERMIT T-19-P *T/190 Part 5*

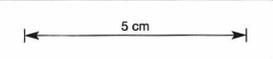
INTRA CRETACEOUS REFLECTOR

GEOPHYSICIST : J.D. DOWNING

Rvsd. 2-3-82 lal
 Rvsd. 4-22-8 mjh



C.I. : .100 sec. SCALE 1:100,000 SEPTEMBER 1981



*OR-207
 Enclosure 5*

SEA DRAGON PROSPECT

PERMIT T-19-P

NE

OR-207

LINE B72A-81
SCALE RATIO 2.8 AT 5 SEC

Enclosure 6

B71A-225

ES66-34

B72A-80

EF68-88 B71A-45

B63-10

B71A-44

5 cm

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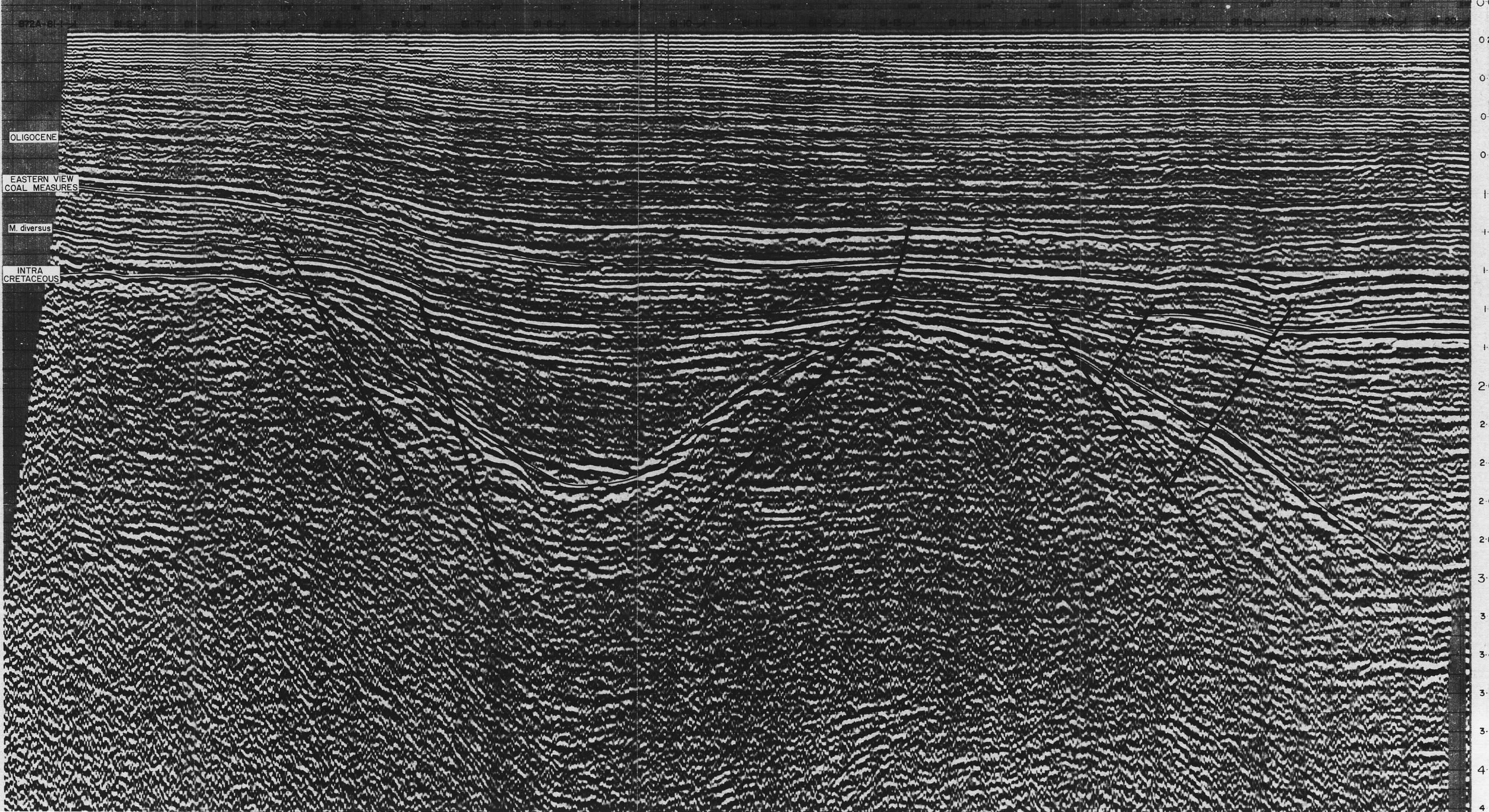
222012

WATER DEPTHS

VELOCITIES

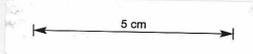
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61800-4.2

222014



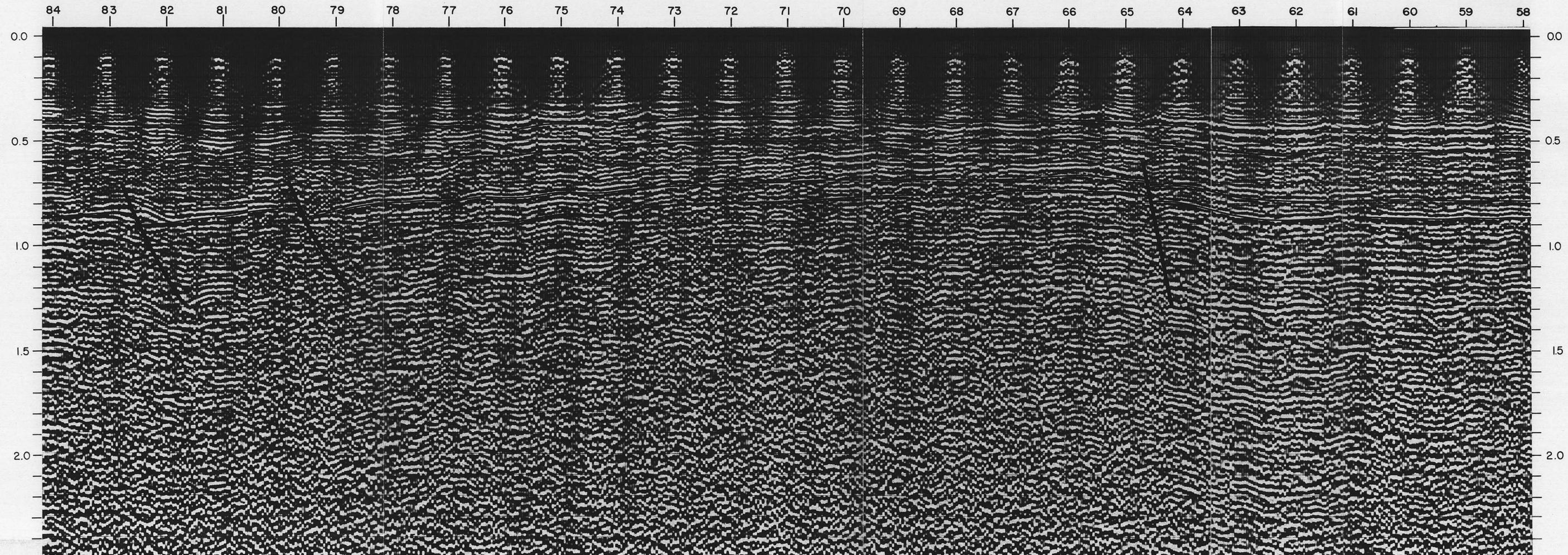
OR-207
Enclosure 8

OCTOPUS PROSPECT
T-19-P

LINE B-24

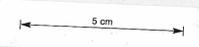
T/190
Part 5

LINE B-24



OR-207

Enclosure 9



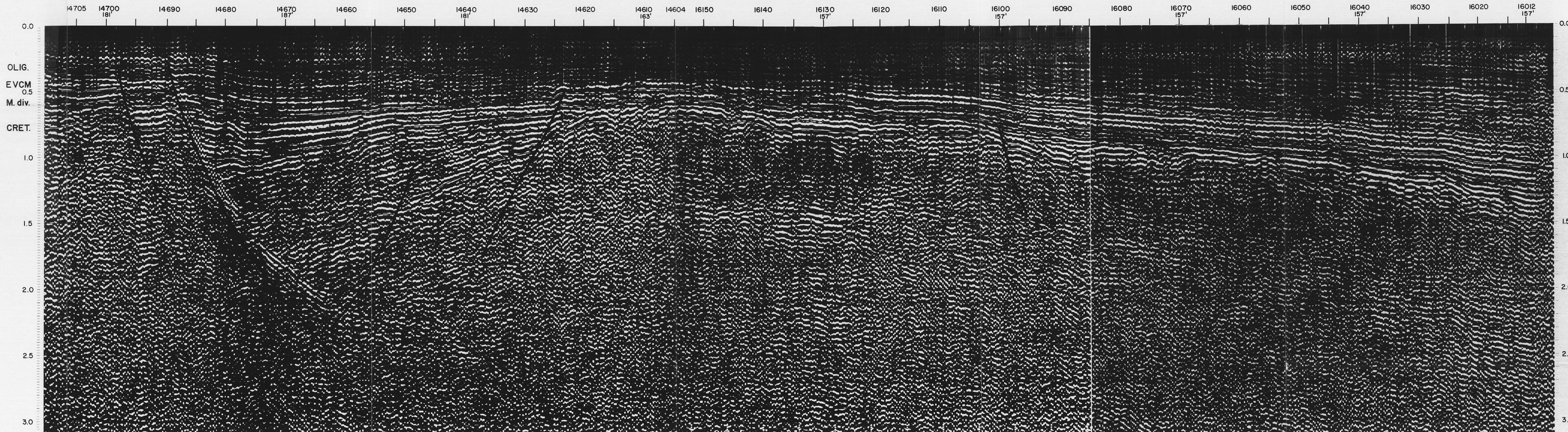
222015

LINE EO-59
OFFSHORE OTWAY SURVEY
6-FOLD STACK
H to V Scale 3.3:1
MAY 1967

SEA ELEPHANT LEAD
T-19-P

LINE EO-59
T-19-P

*1/2 ap
Part 1*



OIL & GAS JOURNAL

BASS
BASIN SET FOR
NEW EXPLORATION



New wildcat campaign set for Australia's Bass basin, p. 154

Equipment and service firms brace for another busy year, p. 47

BLM rejects record batch of bids in Sale 59 in mid-Atlantic, p. 74

Coping with pipeline problems caused by HV power lines, pp. 83 and 88

A simpler way to calculate waterflood saturations, performance, p. 112



OIL & GAS JOURNAL

Bass basin set for new exploration

Dr. O.D. Weaver
Yvon Houde
Jack Downing
Jim Smitherman
Chris Nettels
Weaver Oil & Gas Corp.
Australia
A Kaneb company

Bass basin set for new exploration

Dr. O.D. Weaver
Yvon Houde
Jack Downing
Jim Smitherman
Chris Nettels
 Weaver Oil & Gas Corp.
 Australia
 A Kaneb company

Recent leasing activity in three Mesozoic-Tertiary basins of the Bass Strait—the Gippsland, Bass, and Otway basins—has focused the attention of Australian and international explorationists on this area.

The Bass Strait, separating Tasmania from the Australian mainland, is the source of over 400,000 bbl of oil daily from its eastern portion, the Gippsland basin. The initial recoverable reserves in this basin alone exceeded 3 billion bbl of oil and 8 trillion cu ft of gas.

Fig. 1 shows the location of the productive areas and the outline of the present exploration permits in the Bass and Gippsland basins. Essentially all of the permits covering the prospective areas of both basins have now been awarded.

Recent work program bidding was

heavy for the three Victoria permits, V80-1, V80-2, and V80-3, adjoining Esso-Hematite (BHP) Gippsland basin acreage. Three consortia made up of 13 companies bid \$240 million in exploration programs for these permits. Following this, Esso-Hematite announced a \$160 million exploration program of its own over the next 3 years.

The Hubble, et al. 1 West Seahorse, a recent wildcat test well located near shore north of the Barracouta field, flowed oil at a rate of 1,900 bo/d. This is the first of a series of new test wells to be drilled on peripheral Gippsland basin acreage formerly held by Esso-Hematite.

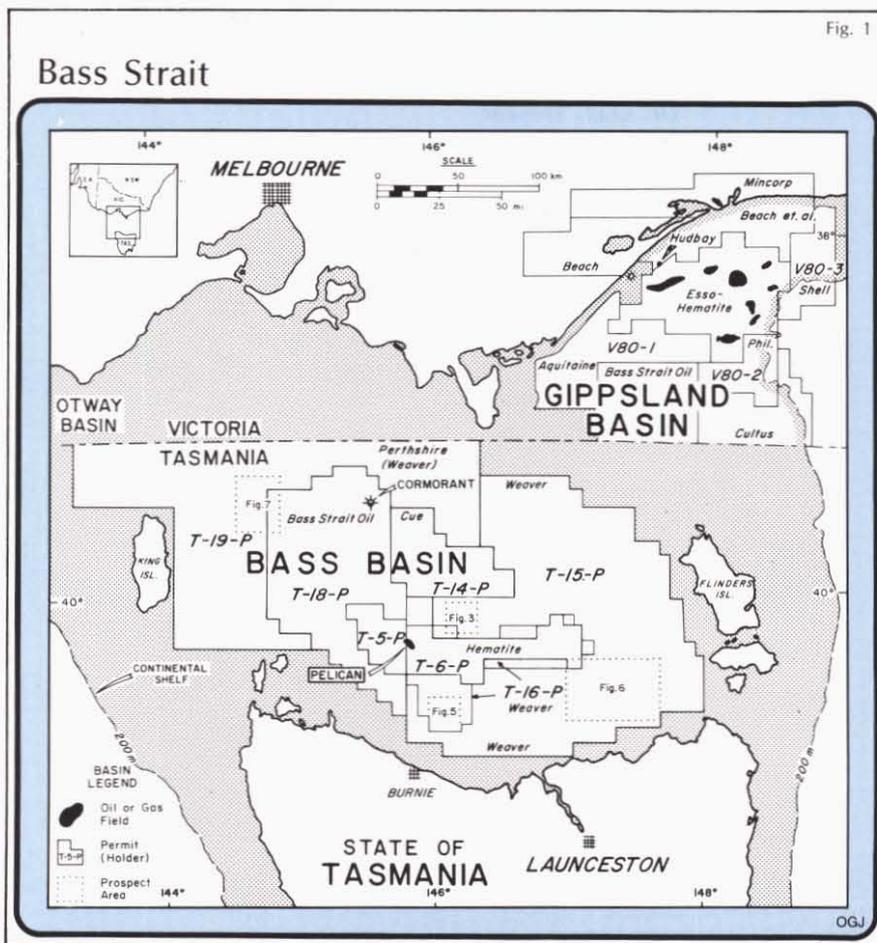
This article summarizes the oil and gas potential of the Bass basin, which contains essentially the same reservoir section as the prolific Gippsland basin, by discussing the prospectiveness of certain structural features.

Water depths in the most prospective areas of the Bass basin are less than 220 ft and drilling depths to potential reservoirs range from 3,500 ft to 10,000 ft and beyond.

The Bass basin was essentially leased in 1979 and 1980 and the bulk of the exploration drilling will take place during the 1982-84 period.

In 1964-65 Esso and Hematite were the exclusive permit holders of almost the entire offshore area shown in Fig. 1, and drilled the first test wells in the Gippsland and Bass basins. Since three of the first four Gippsland basin wells resulted in two discoveries and one confirmation, the Bass basin, with one dry hole, quickly fell behind in well activity. Only three wells had been drilled in the Bass basin by 1970, whereas over 35 wells had been drilled, with seven fields discovered, in the Gippsland basin.

The first significant Bass basin discovery was at Pelican in 1970; however, this basin with a prospective area of over 15 million acres now has had only 18 wildcat and confirmation



5 cm

wells drilled. Three of these wells are located within the potentially productive areas of the Pelican gas/condensate shutin field discovery. In addition, oil was recovered in the Cormorant well in the northern part of the Bass basin.

Hematite still holds about 1,300,000 acres in the central area of the Bass basin and plans to drill two test wells by early 1982—possibly one confirmation well in the Pelican field area, and one wildcat in the east half of their block which is outlined in Fig. 1.

A complete review and integration of all the previously acquired geological and geophysical information has been completed by the authors and combined with substantial amounts of new seismic data. This study has so far delineated a number of large structural features located in different geological provinces of the basin. A selected few of these features are illustrated and discussed in this article.

The Australian Bureau of Mineral Resources, in recognition of the untested potential of the Bass basin, has committed to a 4,500 km seismic program that centers in the Bass basin and ties to the Otway and Gippsland basins. This program reflects the Australian government's interest in evaluation of the Bass basin and will stimulate exploration activities within the entire Bass Strait geological province.

Stratigraphy. The Eastern View Coal Measures constitute the principal objective section of the Bass basin. The sediments included in this

lithostratigraphic unit range from Upper Cretaceous through the basal Upper Eocene and, in a broad sense, are equivalent to the Latrobe Valley Group, which contains all of the prolific discoveries of the Gippsland basin.

Fig. 2 illustrates the most prospective portion of the stratigraphic sequence in both the Bass and Gippsland basins and compares the occurrences and distribution of the productive zones and hydrocarbon indications in each of the basins.

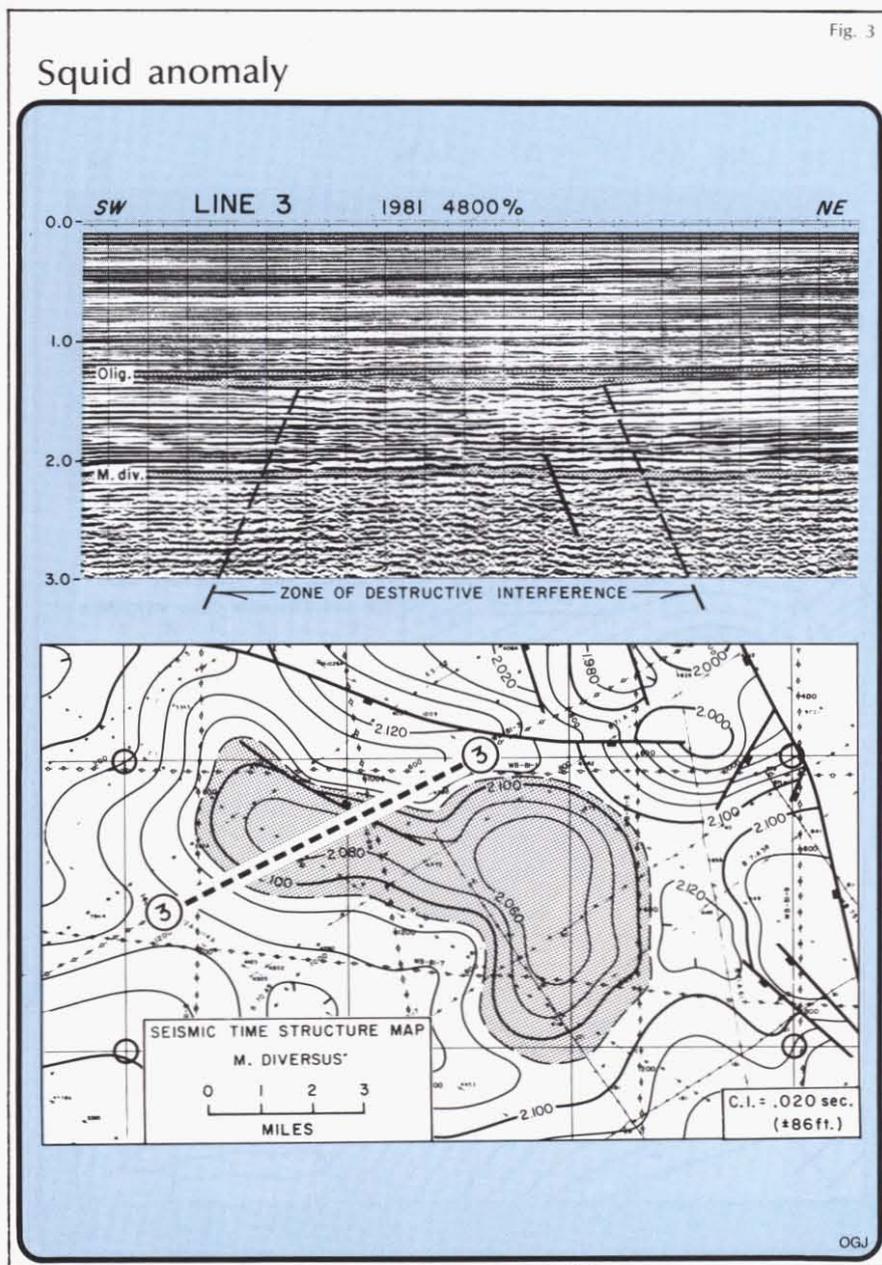
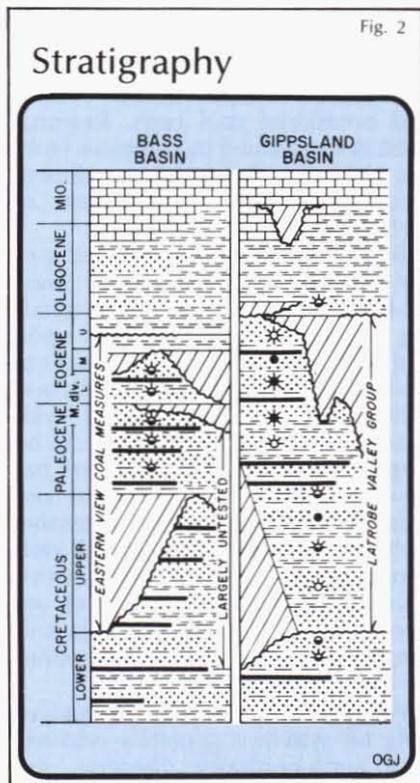
The Upper Cretaceous and Paleocene section of the Bass basin was deposited, in part, in fault controlled troughs where it reaches thicknesses of over 8,000 ft. At the basin margin, as well as in the intrabasin areas of major uplift, it rests unconformably on the Lower Cretaceous section. On the basis of limited well data the

Upper Cretaceous and Paleocene are described as containing coarse to medium grained reservoir sands interbedded with black carbonaceous shales of source rock and seal quality, along with minor coal beds.

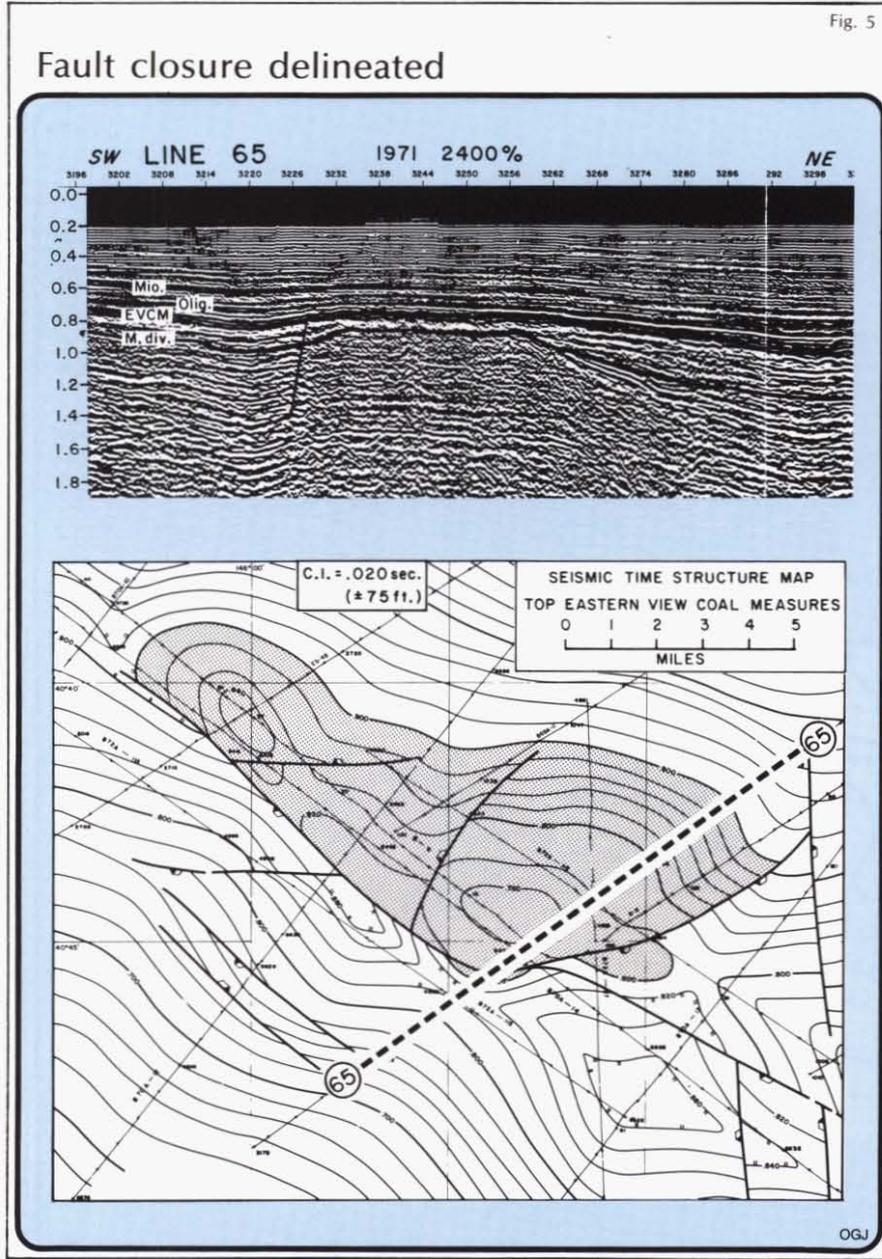
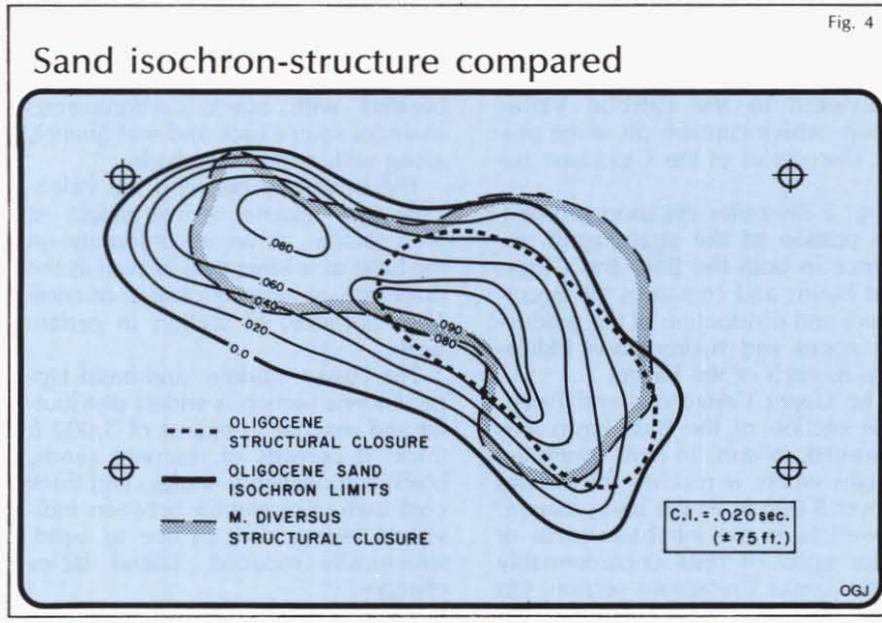
The boundary between the Paleocene and Eocene is interpreted, at least locally, as an unconformity on the basis of seismic data as well as the drastically reduced thickness, or complete absence, of section in certain wells.

The Lower, Middle, and basal Upper Eocene section is widely distributed and may be in excess of 3,000 ft thick. It consists of reservoir sands, black carbonaceous shales, and thick coal beds. Correlation between individual beds is difficult due to rapid, structurally induced, lateral facies changes.

Regional transgression from the



5 cm



5 cm

northwest led to restricted marine conditions during the Late Eocene and Oligocene. This sequence consists of a predominantly shale facies overlain by marine sands in the northwest half of the basin while in the central portion of the basin it is mostly carbonaceous, pyritic, and silty shales. The late Eocene shale section constitutes the regional seal and, in part, source rock package to the underlying reservoir section.

Detailed palynological zonation of the Eastern View Coal Measures and the Latrobe Valley Group indicates that the *Malvacipollis diversus* assemblage zone ("M. diversus") is one of the most prospective portions of the section both in the Gippsland and Bass basins. The unconformity at or within this zone has been mapped seismically.

Open marine conditions prevailed during the rest of the Tertiary and sandstones and shales were deposited which offer potentially productive reservoirs.

Basin evolution. The earliest phase in the evolution of the Bass basin and other basins of the southeastern Australian continental margin is best illustrated on Tasmania where the Permian, Triassic, and Jurassic sequence occupies structural depressions in the central part of the state.

Where exposed, this sequence consists of a basal tillite overlain by marine and lacustrine carbonaceous mudstone, limestone, and fossiliferous siltstone characterized by occurrences of oil shales and cannel coal. The sequence evolves upwards towards lacustrine and fluvial clastics and coal beds, and grades finally into marginal marine to nonmarine coarse clastics, black carbonaceous shales, and occasional coal beds. Regional uplift accompanied by extensive faulting and volcanism brought sedimentation to a close in Late Triassic or Early Jurassic.

Best illustrated in the southeast corner of the Bass basin is a major Jurassic-Early Cretaceous, northwest trending rift system superimposed upon and accompanied by major structural readjustments of preexisting faults and fault angle depressions filled with coarse clastics. This rift system can be mapped seismically as it plunges basinward and forms the central or core area of the basin where extensive faulting and subsidence lasted well into the Late Cretaceous. Prospective structures along this rift system are associated with tilted fault blocks and simple fold anticlines located within the fault bounded depression.

Whereas the onshore Tasmanian early rift system is generally oriented in a north-northwest direction, the

younger offshore rift system is offset to the east and plunges in a northwest direction. Prospective structures associated with wrench fault type deformation are recognized throughout the Tertiary section of the Bass basin.

The structural evolution and sedimentary regime of the Bass Strait basins changed drastically in Late Cretaceous. The first stage in the evolution of these basins could be classified as aborted rift valley basins or failed arms associated with triple junctions and is characterized by great thicknesses of alluvial, fluviodeltaic, and organically rich lacustrine or marine sediments. The next stage is characterized by the presence of Late Cretaceous and Tertiary, the Eastern View Coal Measures, which consists of terrigenous clastics resulting from a second cycle of deposition over these deformed eugeosynclines which de-

veloped along the continental margin.

These two stage basins are further characterized by a high geothermal gradient (up to 2.5°F./100 ft) and heat flow (2.5 or more), thus promoting early and accelerated generation, expulsion, migration of hydrocarbons into favorable stratigraphic and structural traps such as have been found in the prolific Gippsland basin and are undoubtedly left to be found in the Bass basin.

The Paleocene to basal Early Eocene period was one of structural quiescence during which the still land locked basin area expanded. Structural movements intensified in later Early Eocene, and folding and faulting as well as widespread erosion of the section took place, thus forming the intra M. diversus unconformity. A more active period of stream erosion developed during the Middle

and Late Eocene, although the basin was still mostly enclosed, and a cut and fill system developed across coal swamps. The beginning of a marine influence is recognized in the north part of the basin from wells in that area.

Basinwide transgression took place in Late Eocene and was accompanied by intermittent structural readjustments throughout the remainder of the Tertiary.

Untested potential. Four structural complexes have been selected to illustrate the untested hydrocarbon potential of diverse geological provinces of the Bass basin.

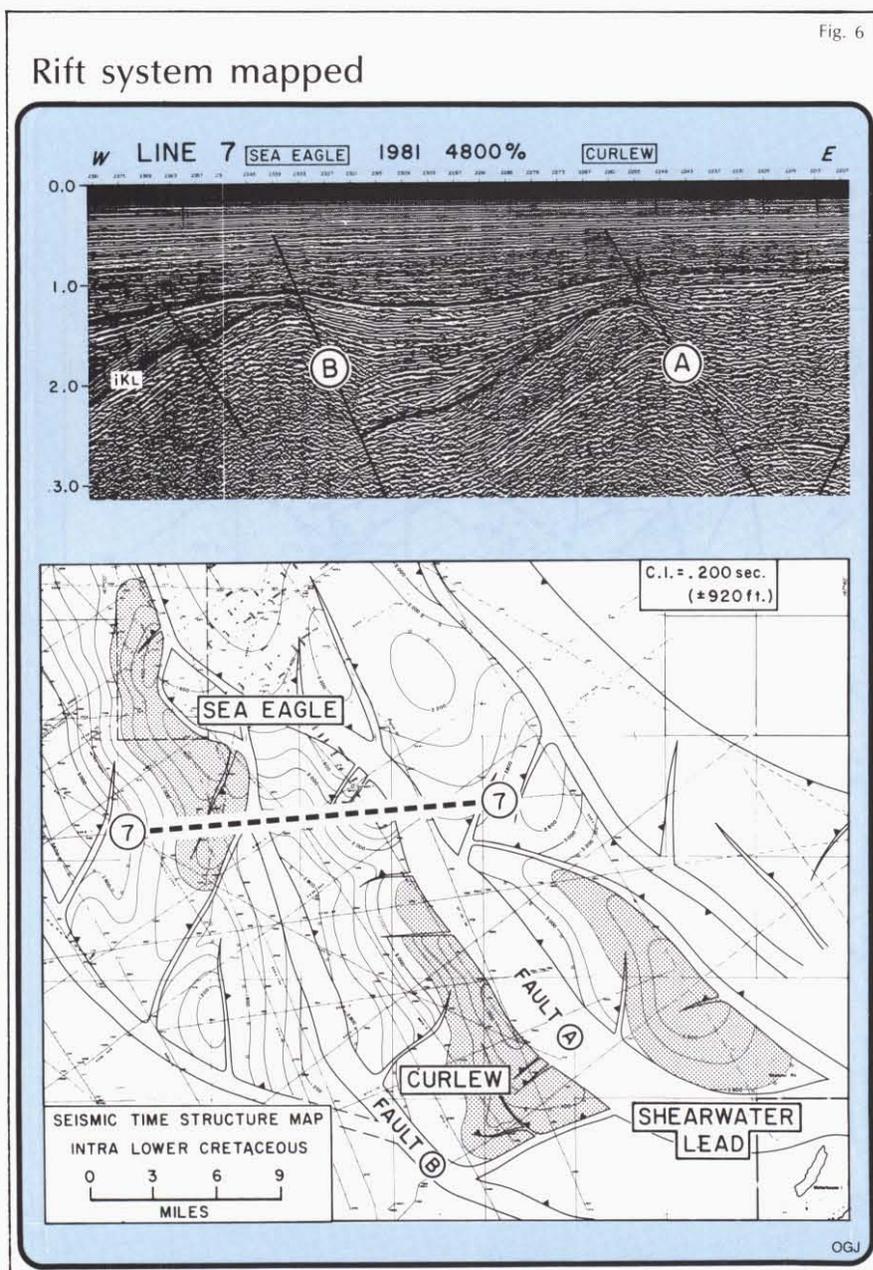
The Squid structural feature and anomaly (Fig. 3) is located in the central area of the Bass basin to the northeast by the Pelican gas/condensate field discovery in the Lower M. diversus zone of the Eocene Eastern View Coal Measures.

The feature was mapped as an anticline at the Lower M. diversus level by using both the old and new seismic data.

It is deep seated, with a demonstrated period of structural growth during deposition of its primary objective section, the Eastern View Coal Measures. A second period of growth is displayed through crestal convergence of the section between the Eastern View Coal Measures and the Oligocene reflector level. Of particular interest is the presence of an anomalous lens shaped event just below the Oligocene reflector. This anomaly is believed to be a hydrocarbon bearing sand development within the Oligocene section which is confined to the approximate area of closure of the underlying structure. Its seismic expression is characterized by polarity reversals and destructive interference, essentially within the area marked on Fig. 3. The lens and the M. diversus mapping zone have been indicated with a dot pattern for illustrative purposes.

Fig. 3 includes a 1981, 48 fold, seismic section (A-A') which trends northeast across the Squid anomaly. This section shows the lens shaped anomaly below the Oligocene horizon and the rollover at the Lower M. diversus reflector level.

Fig. 4 is an isochron of the Oligocene sand body which has an areal extent of 26,000 acres and a maximum thickness of approximately 400 ft. The outline of the closure at the M. diversus level from Fig. 3 is shown as a shaded outline on this figure. At the apex of the structure, the Oligocene objective is at a depth of 4,900 ft, and the Lower M. diversus at a depth of 7,900 ft. The area of closure for the Lower M. diversus zone is approxi-



← 5 cm →

mately 18,000 acres and the relief is 0.060 sec or about 250 ft. The Squid anomaly has two objectives: the Oligocene sand body and the Lower M. diversus, or main objective, either of which could be a great oil field. A 9,000 ft well would test these two objectives.

Located halfway between the Pelican gas/condensate field discovery and the north coast of Tasmania is the Tasmanian Devil structure (Fig. 1). This feature, as illustrated in Fig. 5, is a northwest trending, tilted fault block bounded to the southwest and southeast by a down to the coast normal fault and accompanying synclinal areas.

The structure has been mapped at the approximate top of the Eastern View Coal Measures reflector level. The northeast trending seismic section in Fig. 5 illustrates the closure at the map level and the pronounced unconformity at the Mid. M. diversus level. It is similar to the Squid structure in that it shows a major period of structural growth during deposition of the Eastern View Coal Measures section. The presence of an early structure is indicated by multiple reflectors which terminate against or onlap its basinward flank. Persistence of the structure through the shallow section, as well as the presence of an effective seal, is indicated by arching, convergence, and drape of the predominantly shale section contained within the upper Eastern View Coal Measures to Mid-Miocene reflectors level. Additional closure of the underlying section is provided by updip termination against the bounding fault.

The top of the Eastern View Coal Measures objective section is at a depth of about 3000 ft, and its area of closure is approximately 32,000 acres. Relief is in excess of 500 ft.

Sea Eagle, Curlew, and Shearwater structures are part of the rift system which occupies the southeast corner of the basin (Fig. 1 and 6). The structures are the upthrown sides of tilted fault blocks adjacent to basin forming faults, and their areas of closure have been mapped at an intra-Cretaceous reflector level. The major period of structural growth took place during the Cretaceous, as illustrated by onlap and convergence of the section on their flanks as well as erosion of the crestal areas. The magnitude and rate of dip of each tilted fault block is such that it is rooted deeply in the basin, thus making it possible for long range migration of hydrocarbons and strong water drive.

The west to east seismic section in Fig. 6 crosses the southern flank of Sea Eagle and the bounding fault of Curlew. It shows the tilted fault

blocks, the mapped intra-Cretaceous reflector level, and the down to the east faults that bound the features.

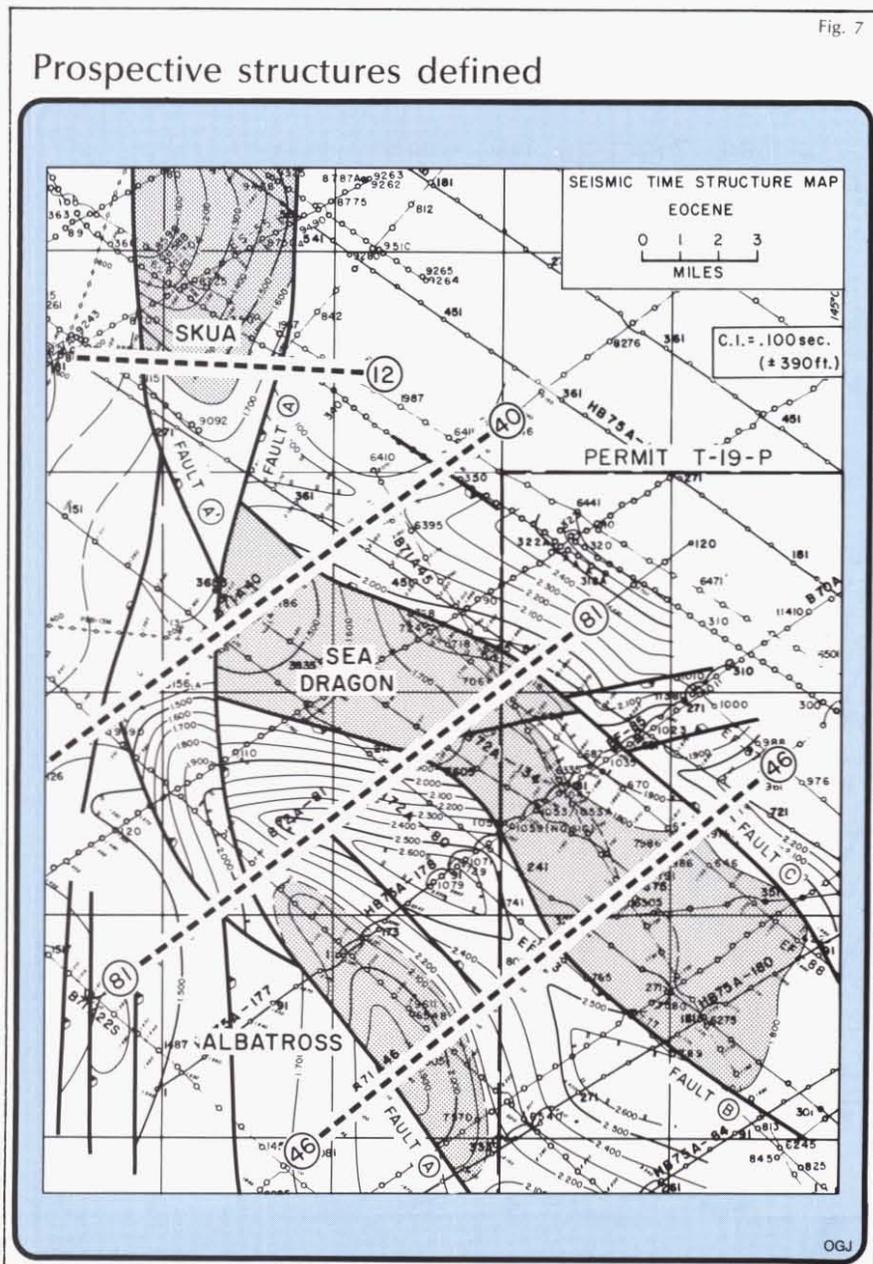
Areal closure of Sea Eagle is approximately 27,000 acres with a relief of 0.600 sec or 3,100 ft. Curlew covers approximately 20,000 acres with a relief of 0.600 sec or 2,500 ft. Shearwater is considered a structural lead at this time and additional seismic will be required for further delineation.

In the northwest portion of the basin (Fig. 1) structural mapping on pre-1974 data and recently acquired 4,800% seismic has uncovered a number of prospects and leads. Three structures have been mapped at the pre-M. diversus reflector within the Eastern View Coal Measures as shown on Fig. 7. The structural nature of the Skua, Sea Dragon, and Albatross features, their areas of closure, and the

location of seismic lines 12, 40, 81 and 46 are shown on Fig. 7. The main faults are assigned letters for ease of identification on Fig. 7 and on Fig. 8, a north-south composite of essentially east-west seismic lines across this area.

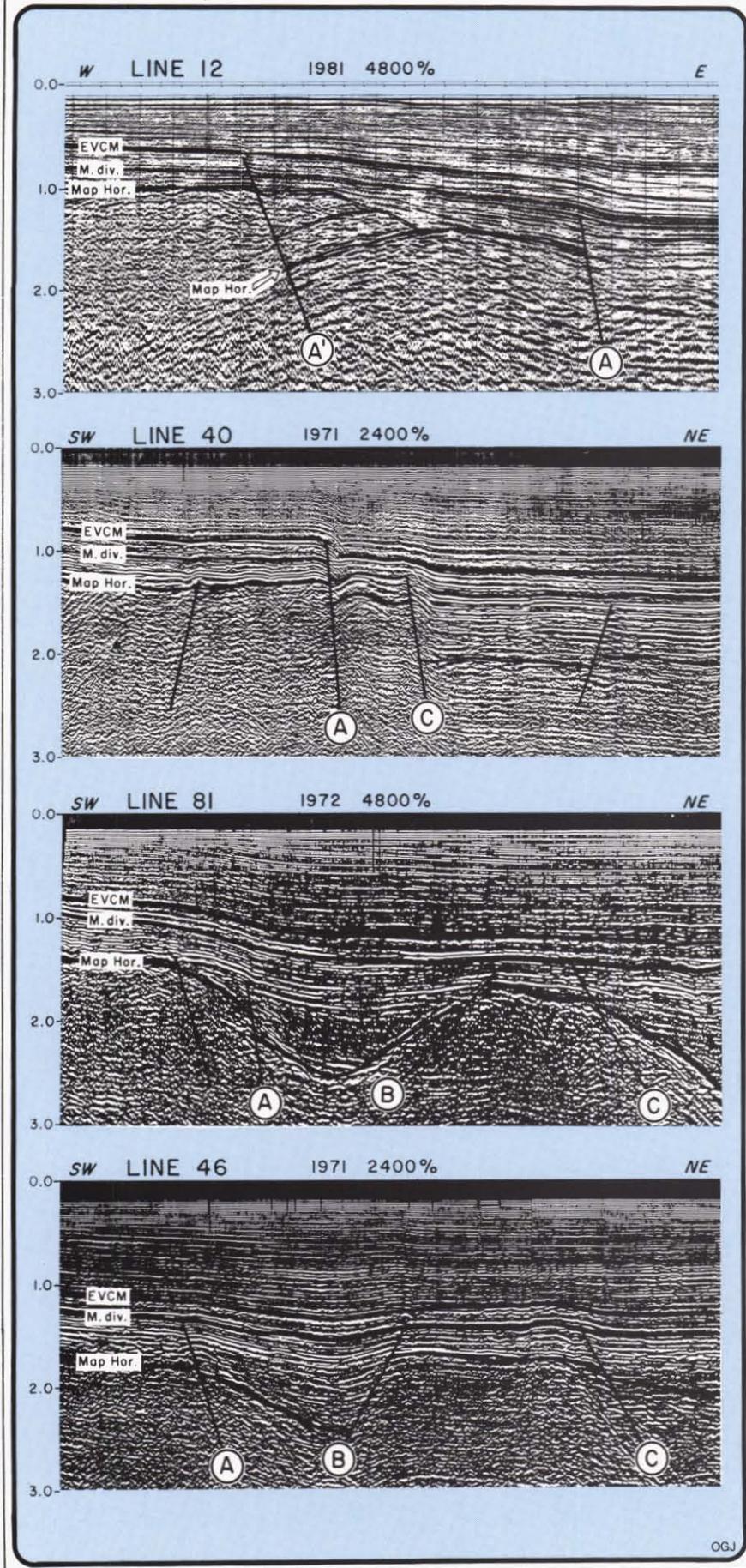
Seismic line 12 (Fig. 8), acquired in 1981, illustrates the Skua lead which is a combination anticline and erosional remnant on the upthrown side of fault "A." Above the westward tilted erosional remnant are indications of onlap at the unconformity surface. With additional seismic data to be acquired in 1982, this structural lead may develop into a prospect very similar in geometry to those found productive in the Gippsland basin.

Sea Dragon is a northwest trending horst block bounded by depositional troughs. It terminates towards the northwest against the major transverse



5 cm

Structural style illustrated



fault "A." Its area of closure is 41,000 acres. Seismic line 40 (Fig. 8) displays the rollover of the Sea Dragon structure into fault "A" and the position of fault "C" (on the northeast flank of the structure).

Seismic lines 81 and 46 show the Albatross structure, controlled by transverse fault "A" and separated by a synclinal area from the Sea Dragon horst block which is defined by faults "B" and "C." Its area of closure is 11,000 acres.

Summary. The Bass basin is sparsely tested, yet contains a thick, porous sedimentary section similar to the productive horizons in the nearby Gippsland basin.

A detailed seismic grid of over 14,000 km, much of it shot by Esso and Hematite during the period when these companies held exclusive permits on the entire Bass Strait area, is available to present day explorationists. A recent detailed study of this data plus new seismic has revealed numerous undrilled structural anomalies of significant size and reserve potential.

The selected structural features presented in this article illustrate the largely untested potential of the Bass basin. Exploration concepts derived in part from the Gippsland basin field studies have been utilized where applicable.

Prices of oil and gas have risen sharply in the past few years, bringing many undrilled structures within viable economic limits. The proximity of the shallow water Bass basin to markets in southeast Australia adds appreciably to its economic potential.

Long a stepchild to the Gippsland basin, the Bass basin is now fully leased and gives promise of major discoveries as the structure and stratigraphy of its over 15 million acres are unraveled.

The Australian Bureau of Mineral Resources newly commissioned seismic study of the Bass and adjoining basins will be available for all explorationists in 1982 and should contribute to the overall understanding of, and interest in, the Bass Strait basin complex.

The momentum of southeastern Australian exploration has now created in the Bass basin the interest and competition of Australian and international oil and gas companies so necessary for the discovery of world class reserves in this relatively untested basin.

Acknowledgements

Ross McDade, manager of Weaver Oil & Gas Corp.'s mapping section, illustrated the geological and geophysical data presented.



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Enclosure 11

PERTSHIRE PETROLEUM, LTD.
T-19-P
COSTS INCURRED FOR THE 12 MONTHS ENDED MARCH 27, 1982

| | <u>U.S. Dollars</u> | <u>Australian Dollars</u> |
|--|-------------------------|-------------------------------|
| Staff (Including Geologists, Geophysicists, Draftsmen, and Administrative) | \$ 75,809.19 | \$ 67,356.13 |
| Maps, Logs, Seismic, and Well Data Purchased (Including Reproduction Costs) | 13,287.25 | 11,749.06 |
| Seismic Lines | 177,722.68 | 155,338.40 |
| Consultants (Geological, Geophysical and Engineering) | 22,182.22 | 19,872.26 |
| Office Expenses | <u>37,374.38</u> | <u>32,991.91</u> |
| TOTAL COSTS | <u>\$326,375.72</u> | <u>\$287,307.76</u> |

Perthshire Petroleum wishes to apply the seismic portion of the above costs (A\$155,338) to our second year seismic requirement.