

**Tilana – 1 Prognosis
Exploration Permit T/14P
Offshore Tasmania**

August 1985

Amoco Australia Petroleum Company

OR-0321

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COMMONWEALTH OF AUSTRALIA
PETROLEUM (SUBMERGED LANDS)
ACT, 1967-1974

STATE OF TASMANIA
PETROLEUM (SUBMERGED LANDS)
ACT, 1982

APPLICATION FOR PERMISSION TO DRILL

To: The Designated Authority,
 Department of Mines,
 PO Box 56,
ROSNY PARK,
 Tasmania. 7018

.. AMOCO AUSTRALIA PETROLEUM COMPANY.....

being the .. Operator for Amoco Australia Petroleum Company.....
 (state whether permittee, licensee, or operator for)
 South Australian Oil & Gas Corporation Pty. Ltd., Cue Mineral, N.L.,
 .. Setright Oil & Gas Pty. Ltd., Cue Energy Resources, N.L., Galveston.....
 Mining Corporation, Cue Petroleum Pty. Ltd., Romsey Resources Pty. Ltd.
 and South Eastern Petroleum N.L.
 of exploration permit (production licence) no. ...T/14P.....

situated in the area specified as being adjacent to the State of TASMANIA
 hereby applies for permission to drill a well.

The following information is submitted in support of the application.

- i. Name of the well ...Tilana No. 1.....
- ii. Location (latitudes and longitudes) ..39° 53' 36.96" South.....
 ..145° 58' 42.2" East.....
- iii. Block number3336.....
- iv. Estimated costUS\$7,306,250.....
- v. Name and address of the contractor ..Diamond M. Exploration.....
 ..Company, G.P.O. Box 1553, Hobart, Tas, 7000.....
- vi. Name of drilling vessel ...Diamond 'M' Epoch.....
- vii. Port from which drilling vessel will operateHobart.....
- viii. Scheduled commencement date5th September, 1985.....
- ix. Estimated duration of drilling ..47 days.....

- x. Target depth2375. M.....
- xi. Copy of technical details of the drilling vessel and drilling equipment, together with a detailed Operational Sequences Manual, Emergency Response Plan and seven (7) copies of the Oil Spill Contingency Plan (if these items have not previously been supplied).
- xii. Drilling programme to be attached.
- xiii. Geological prognosis to be attached.
- xiv. Seismic map to be attached, or, if previously supplied, reference to the particular survey is to be made.
- xv. Location map to be attached.
- xvi. Other information it is desired to have considered by the Designated Authority.

.....

.....

.....

Dated at Hobart this 29th day of August 1985

.....
C.W. Waring
 (applicant)

C.W. WARING
 PRESIDENT
 AMOCO AUSTRALIA PETROLEUM COMPANY

Note:

Seven (7) copies of this application plus item xv (size A4), together with three (3) copies of items xii, xiii, xiv are to be submitted not less than one (1) month prior to the commencement of operations.

**Amoco Australia Petroleum Company**

(Inc. in Delaware, U.S.A., with Limited Liability - Registered
as a Foreign Company in Tasmania)

15 Blue Street, North Sydney
P.O. Box 126, North Sydney 2060
Phone (02) 957 4500
Telex AA23359
Facsimile (02) 922 4886

August 27, 1985

Mr. Hugh Murchie,
The Director of Mines,
Tasmanian Department of Mines,
P.O. Box 56,
Rosny Park. Tas. 7018

Dear Sir,

Permit T/14P Application for Permission
to Drill Well Prognosis
MISC-AUP-364-L-400-BFW

Amoco Australia Petroleum Company, as Operator of the Exploration Permit T/14P in the Bass Basin, hereby applies for permission to drill the well Tilana -1 to a total depth of 2375 metres to test sandstone objectives in the Eocene Eastern View Coal Measures.

The well would be located at:

Latitude 39 degrees 53 minutes 36.96 seconds SOUTH

Longitude 145 degrees 58 minutes 42.2 seconds EAST
on seismic line B71-A-50 at Shotpoint 5199 in a water depth of 80 metres (Attachment 1).

The enclosed Prognosis illustrates the structural position of the well, location, predicted lithology and the planned evaluation program.

Yours faithfully,

C.W. Waring,
President.

Enclosures.

BWF/lrc

WELL PROGNOSIS

The Tilana -1 well will test marginal marine and non-marine sandstones with intraformational shales acting as seals within the Eocene Eastern View Coal Measures.

The Tilana structure is a north-south trending anticline with four-way dip closure existing from the Upper Eocene Demons Bluff Formation and Eastern View Coal Measures to the Lower Eocene Orange Seismic Horizon (see prognosis). The predicted stratigraphic sequence to be penetrated in the well is based primarily on correlations with the recently drilled Yolla -1 well on trend 16km to the northwest. Hydrocarbon indications below Miocene age rocks in Yolla -1 suggest possible targets in Tilana -1 anywhere from basal Demons Bluff to total depth, all of which exist under four-way structural closure.

EVALUATION PROGRAM

The evaluation program has been developed based on the following casing points measured below the rotary table:

<u>Casing Size</u>	<u>Shoe</u>	<u>Formation</u>
30"	198M	Torquay Group
20"	406M	Torquay Group
13 3/8"	1734M	Demons Bluff
9 5/8"	as required.	

Sampling Program

- Drill cuttings will be taken from the 20" shoe (406M) to Total Depth as follows:

<u>Sample Type</u>	<u>Interval</u>
Washed and Dried (6 sets)	5M samples from 406-1734M 3M samples from 1734-Total Depth Samples will be collected in paper or plastic bags.
Wet (Paleo-Palynology/Geochemistry) (2 sets)	10M wet composites 406-1734M 9M wet composites from 1734- Total Depth. Samples collected in cloth bags.
Wet (Geochemistry) (1 set)	9M wet composites from 1734 to Total Depth. Samples collected in 1 litre cans.

Sampling Program (cont'd)

- Conventional cores to more thoroughly investigate shows and potential reservoir rocks would be cut upon the recommendation of the wellsite geologist with concurrence of Amoco's Sydney Office.
- Sidewall cores would only be taken below the 13 3/8" shoe, to complement any conventional cores cut, and would be programmed to obtain detailed palynological, geochemical and lithological data. Extra sidewall cores would be located around suspected unconformities and within zones of hydrocarbon shows.
- Drilling fluid samples in 1 litre cans would be taken of drilling mud in and out every 250m. These samples would be used as a check on mud filtrate properties for logging and testing programs.

Analytical Program

- Core Analysis

Core Laboratories Inc. in Adelaide would do routine or special core analysis as the case may dictate.

- Paleontological and Palynological Analysis

All paleontological and palynological analysis would be conducted by Analabs.

The paleontological analysis would be restricted to that portion of the hole above the Eastern View Coal Measures and would consist of an analysis every 100 metres from the 10 metre composite samples.

Roger Morgan would conduct the palynologic work. During drilling, wet composites would be analysed routinely every 100 metres from the top Eastern View Coal Measures to total depth. Later, as considered necessary, samples would be analysed on a maximum interval spacing of 25 meters. The sample material would be comprised of conventional core, sidewall core and cuttings obtained during the drilling of the well.

Analytical Program (cont'd)

- Geochemistry

Except for vitrinite reflectance determinations, all geochemical analyses would be conducted by Analabs. The geochemical program would initially consist of headspace analyses of composite canned samples from the top Eastern View Coal Measures to total depth. This would be followed by more screening analyses in the form of TOC and subsequent Rockeval pyrolysis. More detailed hydrocarbon and bitumen evaluations would be conducted if the analyses confirmed potential source rocks and if free hydrocarbons were obtained from the well.

Vitrinite reflectance determinations would be conducted concurrently during the drilling of the well by Brian Watson of Amdel. The analyses would be done every 200 meters from the top of the Eastern View Coal Measures to total depth.

Wireline Logging Program

The following wireline logging program is planned (Schlumberger terminology):

<u>Interval</u>	<u>Log Suite</u>
20" to 13 3/8" Casing 406M to 1743M	ISF-BHC-GR-SP-Ca1 (GR to Seabed)
13 3/8" to Total Depth 1734 to 2375M	DLL-GR-SP-MSFL-Ca1 LDT-CNL-GR-Ca1 LSS-GR HDT VSP CST

Testing Program

The decision to test the hole would be based on encouragement from mud log shows and wireline log analysis. The rig would be equipped to conduct both RFT's and conventional DST's through casing.

Revised Well Prognosis (1)

1. Based on seismic character and "quick look" modelling of magnetic data, Amoco believes either extrusive or intrusive (sill) rocks will be encountered in Tilana No. 1 below 2000 meters that will roughly correlate to the igneous event that was responsible for the intrusive rocks penetrated in Yolla No. 1 between 2563 and 2672 meters. We further believe that this igneous event may be fairly wide-spread in this portion of the Bass Basin and may, locally at least, provide a semi-regional seal. This hypothesis is supported in Yolla No. 1 by the fact that all reservoir quality sands below this igneous unit are hydrocarbon bearing whereas above this unit the sands all calculate wet with gas shows confined to and presumably related to associated coal beds.

A lack of shows in Tilana No. 1 above this igneous unit, if it exists, should not condemn the hydrocarbon potential of the section below. Yolla No. 1 may turn out to be quite unique in having hydrocarbons at the top of the Eastern View Coal Measures Formation, resulting from the shallower extension of deeper seated faulting.

2. We do not know to what extent the sands below the 2600 meters igneous unit in Yolla No. 1 are in communication, but if they are, it is significant that no water contact has been identified on e-logs. The 300 plus meter interval over which these sands occur exceeds the structural closure as mapped by seismic and if the sands are in communication would suggest an element of stratigraphic trapping is involved. Possibly related to the proposed regional igneous seal, but more likely associated with the lenticular nature of the sands.
3. We recognize that the dip attitude of the beds below 2375 meters (the proposed igneous zone) are not conformable with the beds above, are apparently separated by an unconformity, and that structural closure below 2375 meters at the Tilana No. 1 location is nebulous. However, the faulting at this deeper level is difficult to interpret and probably more extensive than has been mapped by Amoco. If the sand/shale ratio at Tilana is similar to that at Yolla for this deeper unit, fault sealing could reasonably be expected, thus resulting in tilted fault block traps. Alternatively, sealing of truncated reservoirs by the "igneous unit" is a possible trapping mechanism.
4. The Tilana No.1 well does not appear to be nearly as hot as Yolla No. 1 and it is possible that the deeper gas/condensate zone at Yolla could be in the oil phase at Tilana. The occurrence of CO₂ in DST No.1 at Yolla suggests to us the possibility that the gas/condensate zone at Yolla migrated from deeper source rocks at temperatures beyond the oil window and either in association with carbonates or volcanics, the latter of which is most likely.

Evaluation Program

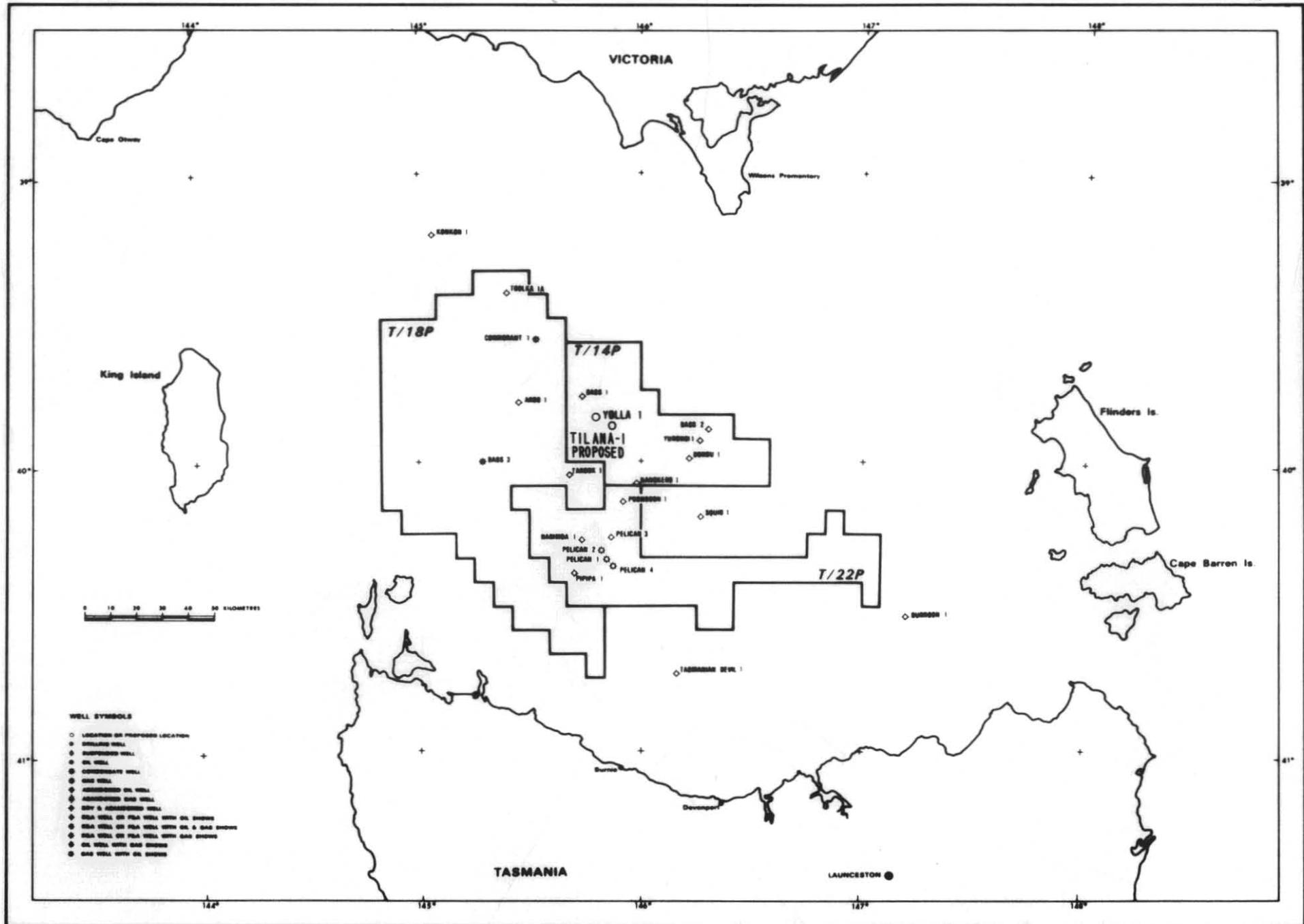
The evaluation program will remain as is presently authorized.

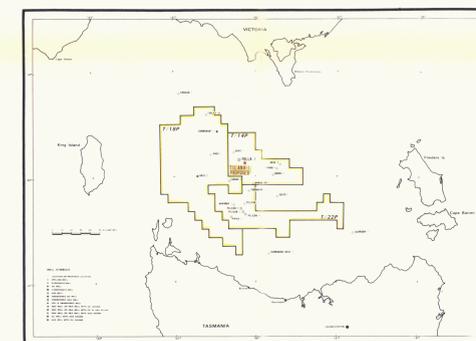
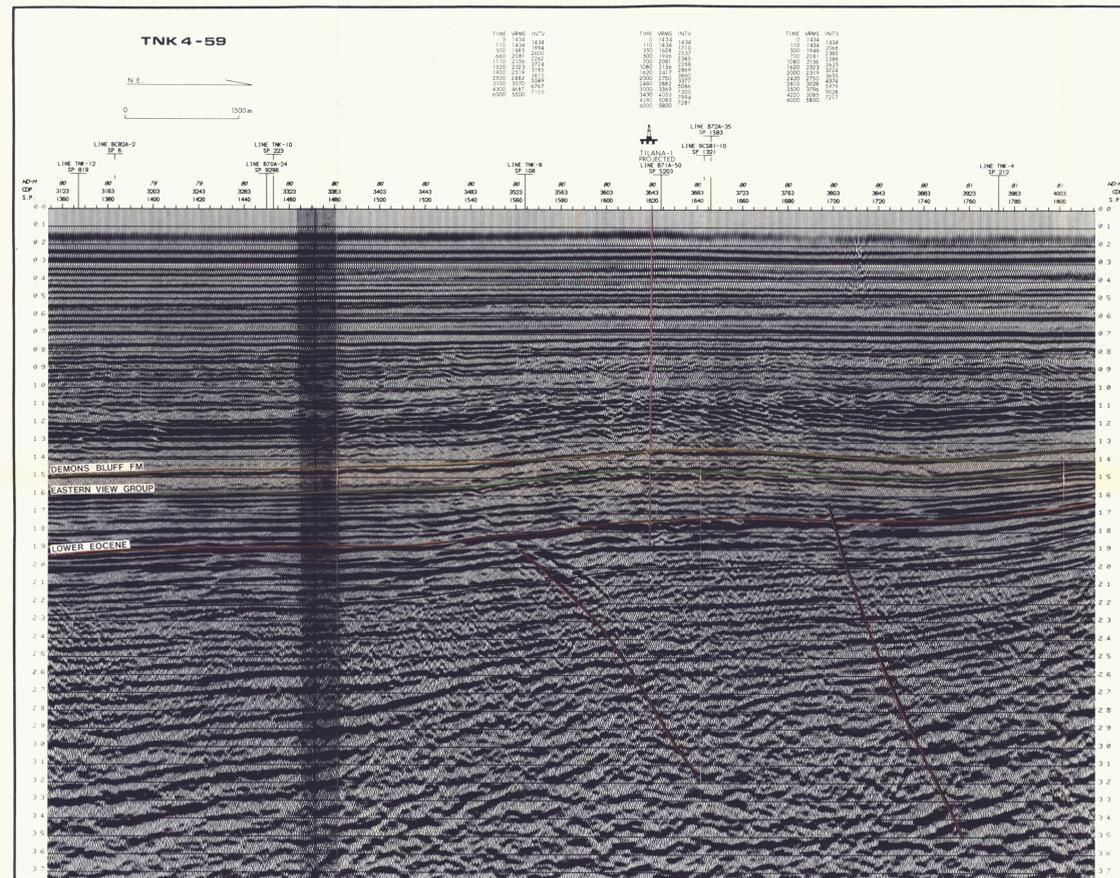
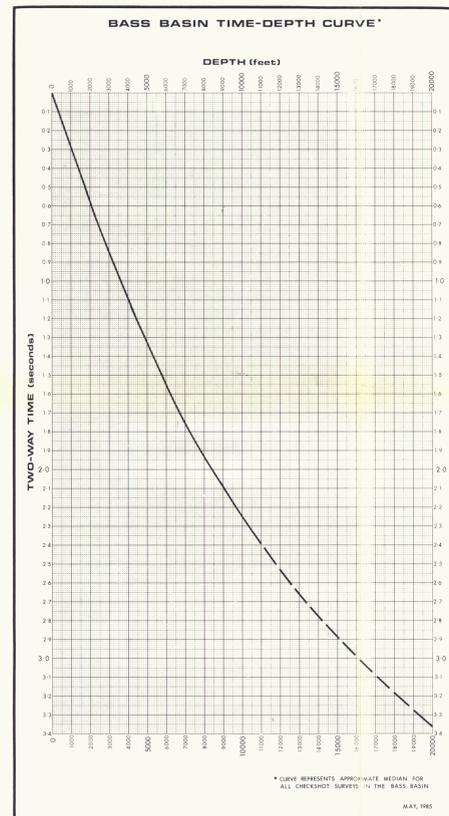
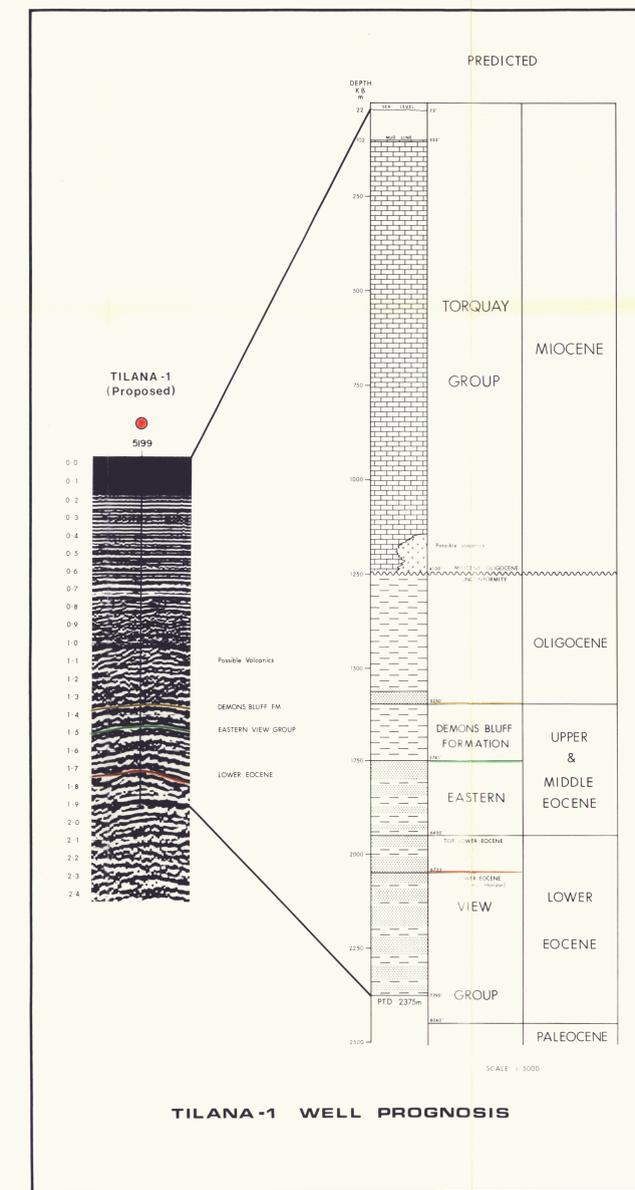
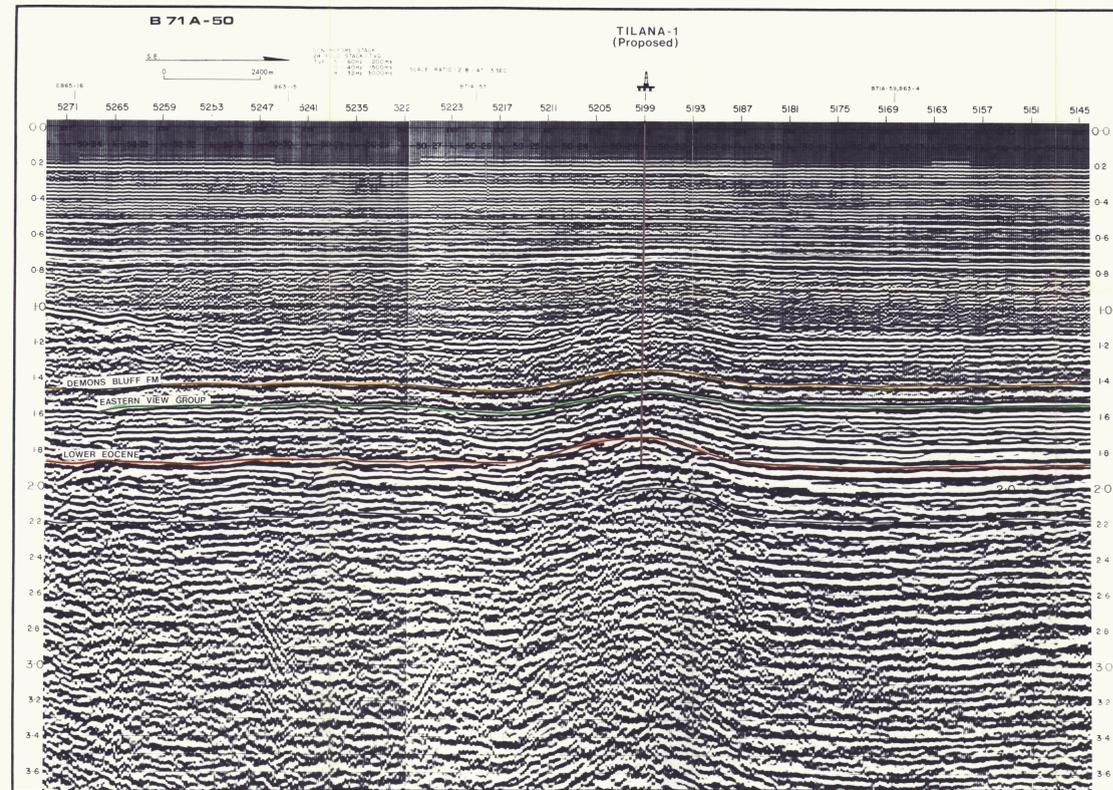
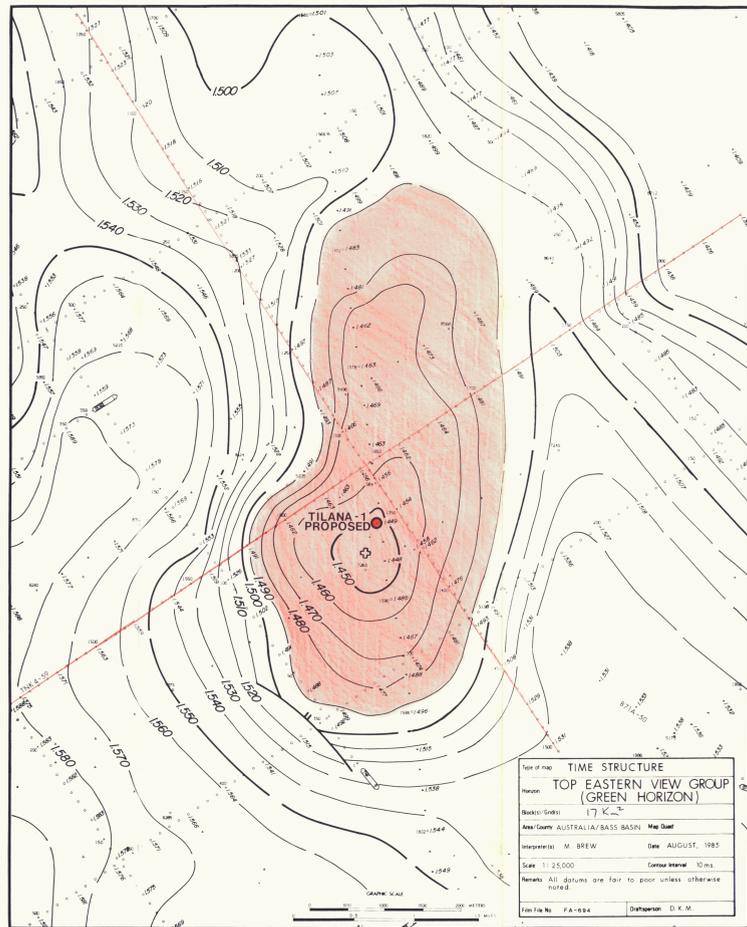
REVISED WELL PROGNOSIS (2)

1. Since drilling below the depth of 3066 meters the well has continued to encounter sandstones, albeit volcanics overwhelmingly predominate below 3115 meters. Nevertheless, sandstones are intermitantly present indicating there is a quartz source province nearby that may have been a prolific source of silicilastics prior to the onset of apparently widespread volcanogenic activity during the L.L. Balmei. It is of course this, as yet unseen, possible reservoir sequence that spurs us to request permission to drill deeper.
2. Virtually every sandstone below 2960 meters has had some fluorescence indicative of a light oil with associated components of (C1-C5) gas peaks. Further, the wireline logs support hydrocarbon saturations in those sandstones logged so far.
3. Our vitrinite analyses indicate we are in the peak oil generation and migration maturity window for most kerogen macerals and that oil prone macerals are prevalent. Whether the oil indications to date are a result of in situ oil generation is not known. If so, this would be a negative factor as only a minimal amount of recognizable potential source rock has been penetrated below 2960 meters. However, we optimistically believe there is a reasonably high chance that the oil seen is a result of lateral migration from hopefully thicker source areas such as the trough southwest of Tilana.
4. We recognize that it is very difficult (impossible?) to determine whether we are at present under structural closure. However, the oil indications seen are not residual oil and as noted under (2) above, hydrocarbon saturations in some sandstones have been interpreted from the logs. Therefore we conclude that there is some form of trapping mechanism, if not structural, then stratigraphic.

We can only assume that this trapping mechanism will persist and as such there is a realistic chance for hydrocarbon accumulations if an adequate reservoir is encountered.
5. There's nothing particularly magic about our proposed new target depth of 3900 meters other than the fact that it will see us through another seismic reflector that could correspond to the much desired base of the volcanic sequence we're currently drilling. Alternatively, it could be the top Otway, in which case the T. longus would be very abbreviated or absent. Upon review of the velocity survey to 3066 meters we now estimate that 3600 meters probably corresponds to 2.445 seconds on the seismic and 3900 meters will correspond to 2.58 seconds.

318011





AMOCO
 Amoco Australia Petroleum Company

BASS BASIN
 EXPLORATION PERMIT T/14P

TILANA-1
 WELL PROGNOSIS

Report No.	Enclosure No.	Author	B.F.W.
Date: AUGUST 1985	Scale:	Drawn by:	Draw No.:

Scale: 1:5000



318014

WELL **TILANA No.1**
LOCATION **BASS STRAIT TASMANIA**

AREA **T/14 P**
SURFACE LOCATION **LAT 39°53'36.73"S, LONG 145°58'41.97"E**
BOTTOM HOLE LOCATION

SPUD **September 5, 1985 (2030hrs)**
COMPLETION
WATER DEPTH / KB ELEV. **80m (262') / 22m (73')**
DRILLERS **TD.**

DRILLING HISTORY

