

129001

T/14P part VII*

Cue Minerals N.L.,
155 Dorcas Street,
South Melbourne,
Victoria, 3205.

Report 701/9

QUARTERLY REPORT

on

T14P

BASS BASIN, TASMANIA

FOR

THE CUE MINERALS N.L.
CONSORTIUM

General Geological Services
Work Order CUE 701

February 1981

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- 701/14 Structure Map Top Boorah S.S.
- 701/15 Structure Map Top U.M. diversus

1.00 INTRODUCTION

This report covers the work carried out for Cue Minerals N.L. with respect to T.14P for the period 1st October 1980 to 9th January 1981. This is the final quarterly report for the first year of the permit.

During the period, data collection again was prominent with the obtaining from B.H.P. (Hematite Petroleum Limited), the previous holders of the area, velocity survey data, detailed seismic lines for the HB77A, 75A and 73A surveys, plus earlier seismic sections. The Well survey was completed and formation tops evaluated from log sections.

Seismic re-interpretation is underway with emphasis on obtaining deep basin data. Base map preparation continued so as to provide a suitable medium for re-contouring after seismic re-interpretation.

A marine seismic survey, BCS81 of 537.0 km has been planned and is due to commence on the 15th February 1981.

The work programme for the second year has been prepared and is included in this report. The commitment for year one has been carried out and progress in the permit is considered satisfactory.

2.00 OPERATIONS PLANNED

2.10 Data Collection

Some collection of geophysical seismic data still remains but the bulk of that work is over. The initial Well log evaluation to establish all formation tops in past Wells is completed and presented in Section 5.10. This work has been essential to establish velocity control for the re-interpretation of seismic and preparation of a synthetic seismogram programme.

Some seismic sections are still outstanding, but the bulk of the work is now satisfactorily completed.

2.20 Geological and Geophysical Evaluation Programme

Base maps have now been completed and evaluation of the area is well under way; the position of the recently collected HB77A, 75A, 73A seismic lines to be used in re-evaluation have been plotted and preliminary contouring of selected seismic horizons has been completed on a 1:250,000 scale. Ref. Plans 701/14 and 701/15.

These two horizons on the top of the Eastern View were compiled to give an overall view of the prospects previously tested and untested by the previous holders.

Two untested prospects from the 1974 Flinders Survey, Paipan and Jerra Jerra will be further detailed by the BCS81 survey planned for early next quarter. Initial study commenced in the quarter on source rock evaluation and Burial and Thermal Geohistory analysis of the Basin. This was stimulated by the CSIRO-BMR Source Rock study, a synopsis of which was presented at the recent "PESA Symposium" on South Eastern Australia. The Cue study should be completed by mid-year 1981. It is interesting to note the conclusions of the CSIRO-BMR study which fully back up Cue's decision to investigate the section deep in the Basin below the Eastern View Coal Measures.

"The study has confirmed the hydrocarbon source potential of the Eastern View Coal Measures, indicating a fair to good potential for the 'Upper' section, and a good to very good potential for the 'Lower'. The prevalence of vitrinitic kerogen is indicative of generally gas-prone source rocks, but the exinitic kerogen content in samples from some wells (eg Cormorant No. 1; Pelican No. 1) is sufficient to warrant an oil and gas-prone rating. The Otway Group is rated as a fair to good source for gas on the limited sampling.

Thermal maturation indicators show that at the deepest levels tested, notably in Cormorant No.1, source rocks in the Eastern View Coal Measures are within the mature zone for hydrocarbon generation, but that most wells were terminated in immature or transitionally mature source rock selections.

The Eastern View Coal Measures in the deeper parts of the Bass Basin would seem to meet all the pre-requisites for successful petroleum exploration, containing thick sequences of high quality mature source rocks, reservoir, and caprocks, and apparently suitable structures. Before the potential of the sequence can be further evaluated, high quality seismic data will be required to enable the structure at depth, and the facies distribution, to be better delineated."

Source: "Petroleum Potential of the Bass Basin" by E. Nicholas, K.L. Lockwood, A.R. Martin, and K.S. Jackson. PESA Symposium November, 1980.

This quarter saw the completion of the following maps in preliminary form to aid in re-interpretation and planning of the BCS81 survey.

Structure Contours Top of Boonah S.S. (Eastern View Coal Measures)
Structure Contours Top U.M. diversus Spore-Pollen Horizon

These were compiled from earlier seismic work and study of well formation tops which are shown in Appendix 5.10. Detailed re-interpretation was then able to commence.

3.00 OPERATIONS PLANNED3.10 Interpretation

Continued development of a synthetic seismogram programme will be continued and two-way time maps of interesting horizons on a 1:100,000 scale are planned. These will be prepared during the next quarter and hopefully integrated with the BCS81 shooting to provide a 4 km cover over the entire permit suitable for the delineation of initial prospects for drilling.

Geological interpretation will continue on formation picking and development of a depositional model. This will be aided by the planned:

Burial and Thermal Geohistory Analysis of the Bass Basin

It is proposed that the Burial and Thermal Geohistory Analysis of the Bass Basin be conducted in two stages which are briefly as follows.

<u>STAGE</u>	<u>DESCRIPTION</u>	<u>APPROX. COMPLETION TIME</u>
I	Preparation of Geohistory diagrams (with reports) for each well included in study.	6-8 weeks
II	Basin-wide time series analysis of thermal values, paleostructure and basement subsidence rates for the Bass Basin. Assessment of favourable areas for hydrocarbon generation and entrapment.	One month after Stage I complete

This analysis will provide quantitative data which would:

- * identify areas of maximum paleo-heat-flow in the basin, and hence maximum potential oil generation during basin development.

- * relate the timing of such theoretical oil generation to the time of formation of drilled structures.
- * aid the prediction of timing of formation of undrilled target structures and hence the likelihood of such structures containing hydrocarbons.

The following wells will be considered initially:

TOOLKA # 1	YURONGI # 1
CORMORANT # 1	DONDU # 1
AROO # 1	BASS # 2
BASS # 1	PELICAN # 1
BASS # 3	DURROON # 1
TAROOK # 1	
NANGKERO # 1	
POONBOON # 1	
NARIMBA # 1	

STAGE I

Stage I basically involves the production of a Burial and Thermal Geohistory Diagram for each well and a report accompanying each Diagram.

Production of the Diagram Requires:

- * collation of data (a list of the necessary computer input is given as Appendix 1 herein)
- * Corroboration of data and rejection of suspect data.
- * Computer analysis and production of the Geohistory Diagram.

Report

The Stage I report will include, for each well:

- * a listing of input data used for each diagram.
- * a copy of the Geohistory Diagram at 1:10,000 scale.
- * a ready-reference (A-4 sized) Geohistory Diagram.
- * a description of the salient features of the diagram concentrating on the geotectonic aspects and their significance in the light of current theories on the formation of the Bass Basin and other Southern Margin Basins.

STAGE II

Stage II involves the basin-wide analysis of factors such as heat-flow and subsidence rates, for specific time intervals, as measured from the Geohistory Diagrams produced in Stage I.

A time series of maps of the Bass Basin will be produced showing:

- * Thermal indicator (e.g. Vitrinite reflectance= R_o) values for particular geologic horizons (e.g. base Eastern View Coal Measures) at selected time instants, which will indicate areas of maximum heat flow and potential hydrocarbon generation.
- * Broad-scale paleostructure for selected geologic horizons through time.
- * Basement subsidence rates through time.

Report

The report for Stage II will include the abovementioned Maps and an assessment of favourable areas for hydrocarbon generation and entrapment.

ESTIMATED COMPLETION DATESStage I

The Stage I report including Geohistory Diagrams is anticipated six to eight weeks from commencement of the project. The computer programmes should be ready to run in late March.

Stage II

The Stage II report should be available one month after completion of Stage I.

3.20

BCS.81

SEISMIC PROGRAMME

INDEX

- 1.00 INTRODUCTION
- 2.00 CURRENT INTERPRETATION
- 3.00 SPECIFICATION FOR SEISMIC REFLECTION SURVEY
- 3.10 General
- 3.20 Parameters of Survey and contractors tender.
- 4.00 ILLUSTRATIONS ACCOMPANYING REPORT
- CUE 701/12 Location Plan BCS 81 Survey
- CUE 701/13 Seismic Programme Line Map BCS 81 Survey.

1.00 INTRODUCTION

As mentioned in the Quarterly report for the period ending September 30th, 1980, (Report 701/7, a preliminary seismic programme has been formulated for Permit Tas T 14P.

This is to take the form of a marine seismic survey of 537.0 kilometres. The reasons for and the details of this programme are the basis of this report.

This report is also to inform Geophysical Services Inc., who will be conducting the survey of the details and parameters which have formed the basis of their successful tender for the work.

Petroleum Exploration Permit TAS T 14P, lies in the central portion of the Bass Basin. Five wells have been drilled in the permit area, all without success, but the Pelican gas/condensate discovery lies approximately 30 kilometres to the West. To the West, significant hydrocarbon shows were recorded in the Bass No. 3, Aroo No. 1 and Cormorant No. 1 wells. The prospective section to date has been the late reservoir and cap rocks.

Although a thick prospective Early Cretaceous sedimentary sequence is believed to underlie the Eastern View Group in the central basin area, it has never been explored as all marine seismic surveys shot so far have failed to record adequate reflections from horizons below the coal measures.

Previous geophysical surveys in the area include initial aeromagnetometer surveys and a series of marine seismic surveys shot between 1965 and 1975. The earliest seismic surveys used a dynamite source and analog recording for single fold CDP coverage. The latest seismic data available was shot by Hematite Petroleum Pty. Ltd. and utilized:-

Source	1,200 cu. in. airgun array
Cable	3,200 m. 48 groups
Recording	DFS 111 binary gain

Data were processed for 24 fold CDP coverage with de-convolution before and after stack. Similar equipment and processing was used by Hematite for their seismic survey of September, 1973 and data were of similar quality. Hematite's report:-

"Flinders Seismic Survey". March 1974, by J.I. Denham, M. McNicol and E. Urschel is available for this survey. Only two horizons were mapped in TAS T 14P, the deepest being within the Eastern View Group. In the Aroo area to the West an unidentified horizon was mapped below the Eastern View Group but this was not extended eastwards into TAS T 14P. Hematite's geophysicists concluded that improved data acquisition techniques will be required to record reflection data from below the coal measures.

For this current survey, Cue Minerals N.L. propose to use the G.S.I. vessel "Eugene McDermott 11" equipped with:-

Source	2,000 cu. in. airgun array
Cable	2,400m. 96 groups
Recording	DFS V floating point gain

By using this more sophisticated equipment over the proposed 549 kilometre grid, it is hoped that early Cretaceous horizons may be mapped as well as the Tertiary and Eastern View group.

3.00

SPECIFICATIONS FOR MARINE SEISMIC SURVEY3.10 General.

A total of 537.0 kilometres are required to be shot. This survey is to be known as BCS 81 and the lines are shown on the accompanying plan CUE 701/13.
(Scale 1:100,000)

Details of the lines are as follows:-

Line numbering convention.

ODD SW - NE

EVEN NW - SE

<u>LINE</u>	<u>LENGTH(KM)</u>	<u>REMARKS</u>
BCS 81-1	22.6	
BCS 81-3	32.3	Tie Bass No. 1 well
BCS 81-5	32.5	
BCS 81-7	45.3	
BCS 81-9	70.5	Tie Dondu No. 1, Poonboon No. 1 and extension to Pelican gas field.
BCS 81-11	34.0	
BCS 81-13	10.5	
BCS 81-2	21.0	
BCS 81-4	35.4	Tie Bass No. 2 well
BCS 81-6	4.3	Tie Yurongi No. 1 well
BCS 81-8	64.5	Tie Dondu No. 1 well
BCS 81-10	64.2	
BCS 81-12	54.2	Tie Nangkero No. 1 well to Bass No. 1 well
BCS 81-14	29.4	
BCS 81-16	16.3	Tie Pelican No's 1 and 2 wells to BCS 81 assignment.
15 lines	537.0	

3.20 A. Acquisition Parameters and Specifications

Tas T14P

BCS.81 Survey

Cable	:	2400 metres, 96 trace, 48 fold, 12 metre (40ft + 5ft) depth
Shot	:	1 pop per shotpoint, every 25 metres
Sample Rate	:	2 milliseconds all lines
Record Length	:	5 seconds
Filters	:	2 millisecond sample rate
Low Cut	:	8 Hertz/18dB octave..
High Cut	:	128 Hertz/72dB per octave
Cable Noise	:	3 microbars (to be monitored at boat (riders discretion but on (no account is maximum
Swell Noise	:	4 microbars (allowable to apply to (more than 30% of any (line.
Monitor Records Displayed	:	Every 50 shotpoints Defloat monitors on request
EPC Shipboard	:	Trace 92 Section
Runout at End of Lines	:	Has been allowed for on survey plan map
Navigation Specifications	:	Maxiran Shore Stations as per Contractors' specifications
Feathering Angle to be listed	:	Every 100 shotpoints when less than 6° Every 50 shotpoints when 6° to 10°, not to exceed 10°
Shotpoint Location to be Annotated by Navigation System	:	Every 10 shotpoints
Cable Offset	:	Measured every start of line, and every 40 shotpoints
Magnetics and Gravity	:	Not required

B. Data Processing

By discussion following acquisition.

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4.00

EXPENDITURE

129017

CUE MINERALS N.L.

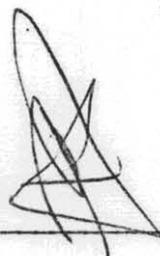
PERMIT TAS T14P

QUARTERLY REPORT - EXPENDITURE

QUARTER ENDING: 31/1/81

LEASE FEES (RENTALS)	OFFICE OVERHEAD	OFFICE STUDIES	FIELD		
			GEOLOGICAL	GEOPHYSICAL	DRILLING
	\$ 4,100	Geological & Geophysical Evaluation \$ 16,200	\$ 2,000	\$ 2,000	

SIGNED: _____



CUE MINERALS N.L.EXPENDITURE - YEAR 1PERMIT T.14P

1st Quarter	\$12,021
2nd Quarter	\$18,500
3rd Quarter	\$21,800
4th Quarter	\$24,300

Estimated Total Year 1 Programme	\$ 75,000
Actual Total Year 1 Programme	\$ 76,621

5.00

APPENDICES

5.10

WELL DATA

INDEX FOR SPORE POLLENZONES

AGE	SPORE POLLEN ZONE	ABBREVIATION
Miocene		
Oligocene	P. Tuber	P. Tub
Eocene	N. Asperus P. Asperus Diversus L. Balmei	U.N. Asp L.N. Asp P. Asp U.M. Div L.M. Div L. Balmei
Palaeocene	T. Longus T. Lillei	T. Long T. Lill
Cretaceous	N. Senectus T. Pach T. Pannosus C. Paradoxa C. Striatus C. Hughesii	N. Sen T. Pach T. Pan C. Para C. Stria C. Hugh

INDEX FOR FORAMZONES

AGE	FORAM ZONE
MIOCENE	A
	B
	C
	D ₁
	D ₂
	E
	F
	G
	H
	H ₂
OLIGOCENE	I ₁
	I ₂
	J ₁
	J ₂
EOCENE	K
	PRE K

WELL GEOLOGIC MARKERS

COMPANY CUE MINERALS N.L.

BASIN BASS

PERMIT CENTRAL BASS T.14P

WELL BASS NO.2

LOCATION Lat.39° 53' Long. 146° 18'

SEISMIC LOCATION

SHOT POINT

LINE

DATUM

T.D. 5910' (1801m)

LOGGING PROGRAMME

Age	Formation (Lithology)	Spore Pollen Zones KB + 31	Foram Zones	Formation Top KB 31+ (M)	Thickness (M)
	Water				
U. & M. Miocene	Calcarenite			?	85
M. & L. Miocene	Calcareous Mudstone			659	578
Oligocene	Mudstone, Siltstone Sandstone			910	192
		P tub 3050			
U. Eocene	Argillaceous Siltstone	M.N. Asp 3800		1102	67
		L.N. Asp 3992			
M.L. Eocene	Sandstone, Siltstone, coal	P. Asp 4308		1169	200
		M.M.Div. 4573			
Paleocene (?)	Sandstone Siltstone, coal	L.M.Div. 4740		1370	309
		L.Balmei 5071			
Unknown (?Mesozoic)	Altered 'Trachyte'			1679	78
Unknown (?Mesozoic)	Altered Mudstone			1757	43+

WELL GEOLOGIC MARKERS

129029

COMPANY CUE MINERALS N.L.

BASIN BASS

PERMIT CENTRAL BASS T.14P

WELL PELICAN 1

LOCATION 40° 20' 20"
145° 50' 37"

SEISMIC LOCATION _____

SHOT POINT _____

LINE _____

DATUM _____

T.D. 10,428' (3179m)

LOGGING PROGRAMME _____

Age	Formation	Spore Pollen Zones	Foram Zones	Formation Top		Thickness
				FT.	M.	
	Water			240	73.15	
MIOCENE	Gellibrand			251	76.50	
	Marl					
OLIGOCENE	Jan Juc	M.N.Asp 5948 L.N.Asp 6057		3900	1188.72	
OLIG. TO EOCENE	Demons Bluff	P. Asp 6834		5265	1604.77	
UPPER EOCENE	Eastern View (marine)	U.M.Div. 7527 L.M.Div. 9282		5660	1725.17	
	Non Marine	L.Balmei 10395		5843	1780.95	
GAS/CONDENSATE :	8110-24		8950-9026	TOTAL : 347'		
	8352-74		9100-94	OF PAY ZONE		
	8473-90		9372-9442			
	8554-60		9469-78			
	8627-53		9822-64			
			10029-59			
			10365-74			

WELL GEOLOGIC MARKERS

COMPANY CUE MINERALS

BASIN BASS

PERMIT CENTRAL BASS T.14P

WELL PELICAN 3

LOCATION 40° 15' 43.2"
145° 51' 50.7"

SEISMIC LOCATION _____

SHOT POINT _____

LINE _____

DATUM _____

T.D. 9537' (2907m)

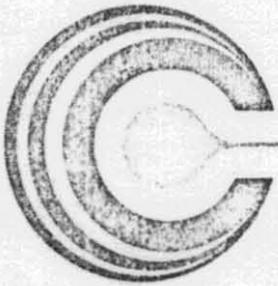
LOGGING PROGRAMME _____

Age	Formation	Spore Pollen Zones	Foram Zones	Formation Top		Thickness
				FT.	M.	
	Water					
MIOCENE	Gell. Marl			263	80.16	
OLIGOCENE	Jan Juc	P.Tuber 4600		3954	1205.18	
		U.N. Asp 5000				
EOCENE	Demons Bluff	L.N. Asp 5460		5432	1655.67	
	Eastern View			5829	1776.68	
		P. Asp 6800		6525	1988.82	
		U.M.Div 7320		7180	2188.46	
		L.M. Div. 7800		7896	2406.70	
		L.Balmei 8020		8338	2541.42	
	MINOR GAS 9120'-9250'					
	TOP ABNORMAL PRESSURE ZONE 8,400'					

5.20

WORK PROGRAMME

YEAR 2

**CUE MINERALS N.L.**

151-155 DORCAS STREET
SOUTH MELBOURNE 3205 AUSTRALIA
TELEPHONE 690 5390 TELEX AA33427

February 13, 1981

The Director,
Department of Mines,
G.P.O. Box 124B,
HOBART, Tas., 7001

Att : Mr. H. Murchie

Dear Sir,

RE : WORK PROGRAMME FOR YEAR TWO
EXPLORATION PERMIT FOR PETROLEUM NO. T.14.P
CUE MINERALS N.L.

We are pleased to submit our programme of work to be carried out by Cue Minerals N.L. in P.E.P. T.14P in the second year commencing on January 9, 1981. We apologise for the lateness of this submission.

The geological and geophysical data search and collation as programmed for the first year was accomplished before the end of 1980. Interpretation and evaluation of this data, including selected seismic reprocessing and revised velocity analysis, enabled the company to prepare a traversing grid for the marine seismic survey planned for the second year.

Our application for consent to carry out this survey was submitted to your Department on November 19, 1980, and we have subsequently notified you that this survey was scheduled to commence on February 15, 1981. The early start to the survey was considered desirable so as to take advantage of good weather and vessel availability.

An outline of our programme for the second year is as follows :

Completion of the planned geophysical survey designated BCS81 and embracing 537.0 km of seismic traversing. This amount of high resolution seismic will give an approximately 4 km grid coverage of the permit area when married with existing seismic work of good quality which will be re-processed. The work will be carried out by Geophysical Surveys Inc. using the marine seismic vessel M.V. "Eugene McDermott II".

...cont.

The objectives of the survey are twofold.

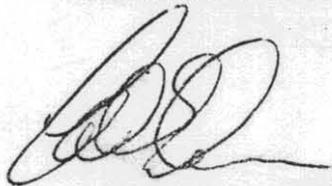
1. To test Early Cretaceous horizons deeper in the basin than previously explored.
2. To detail two prospects found but not tested by earlier surveys.

Analysis and evaluation of the results of this seismic survey will be made with particular stress being placed on the hydrocarbon potential of the deeper sediments and the earlier prospective structural traps. Drilling locations and target depths will be selected for the next year of operation.

A review of all new geological and geophysical data will be undertaken with the aims of identifying areas requiring further investigation.

A palaeoenvironmental study will be commenced using well log records in areas adjacent to T.14P and by means of detailed vertical profile analysis and re-appraisal of existing palaeontological and litho-facies data.

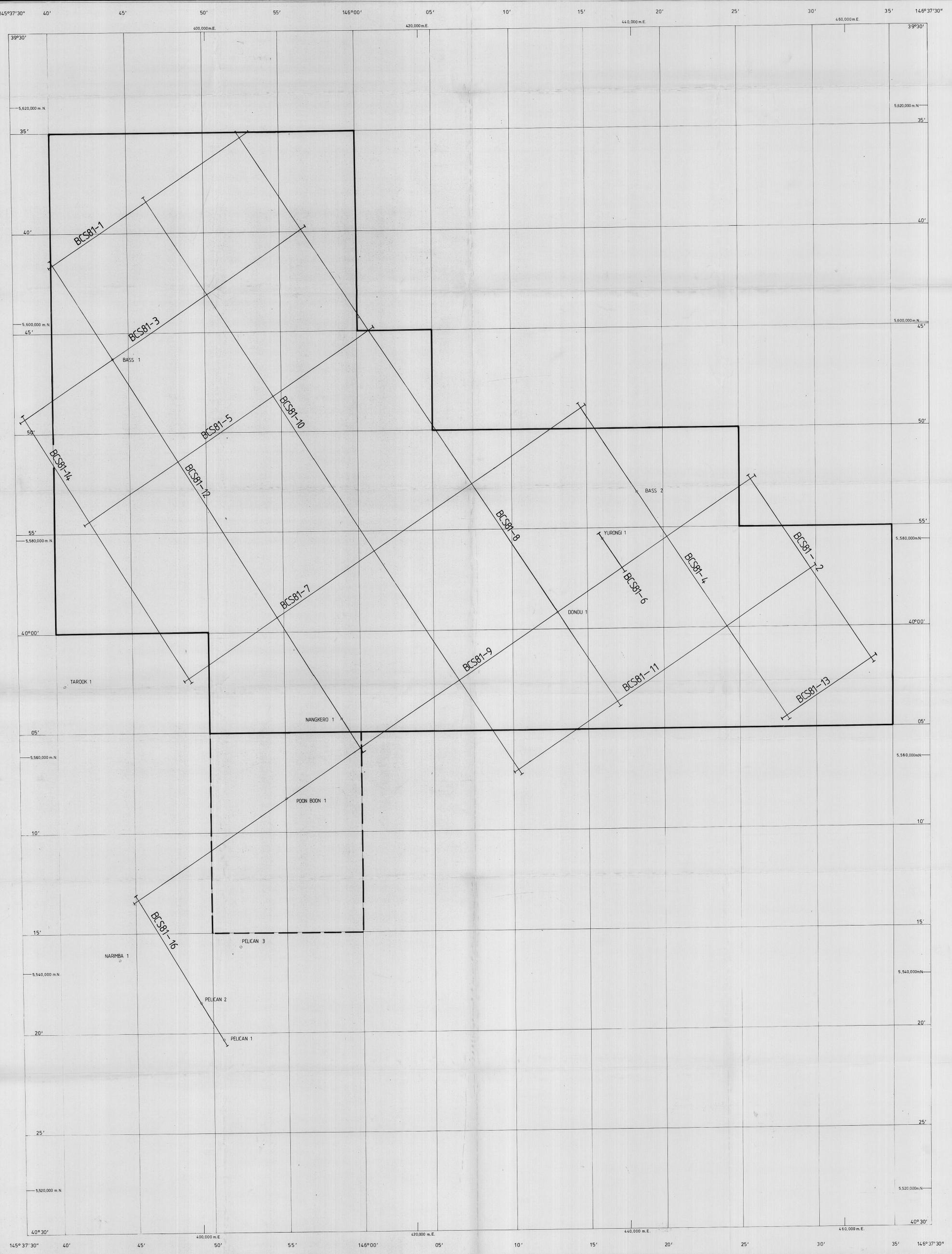
Yours faithfully,
CUE MINERALS N.L.



Colin Glazebrook,
EXPLORATION MANAGER

6.00

ILLUSTRATIONS ACCOMPANYING REPORT



SCALE 1:100,000



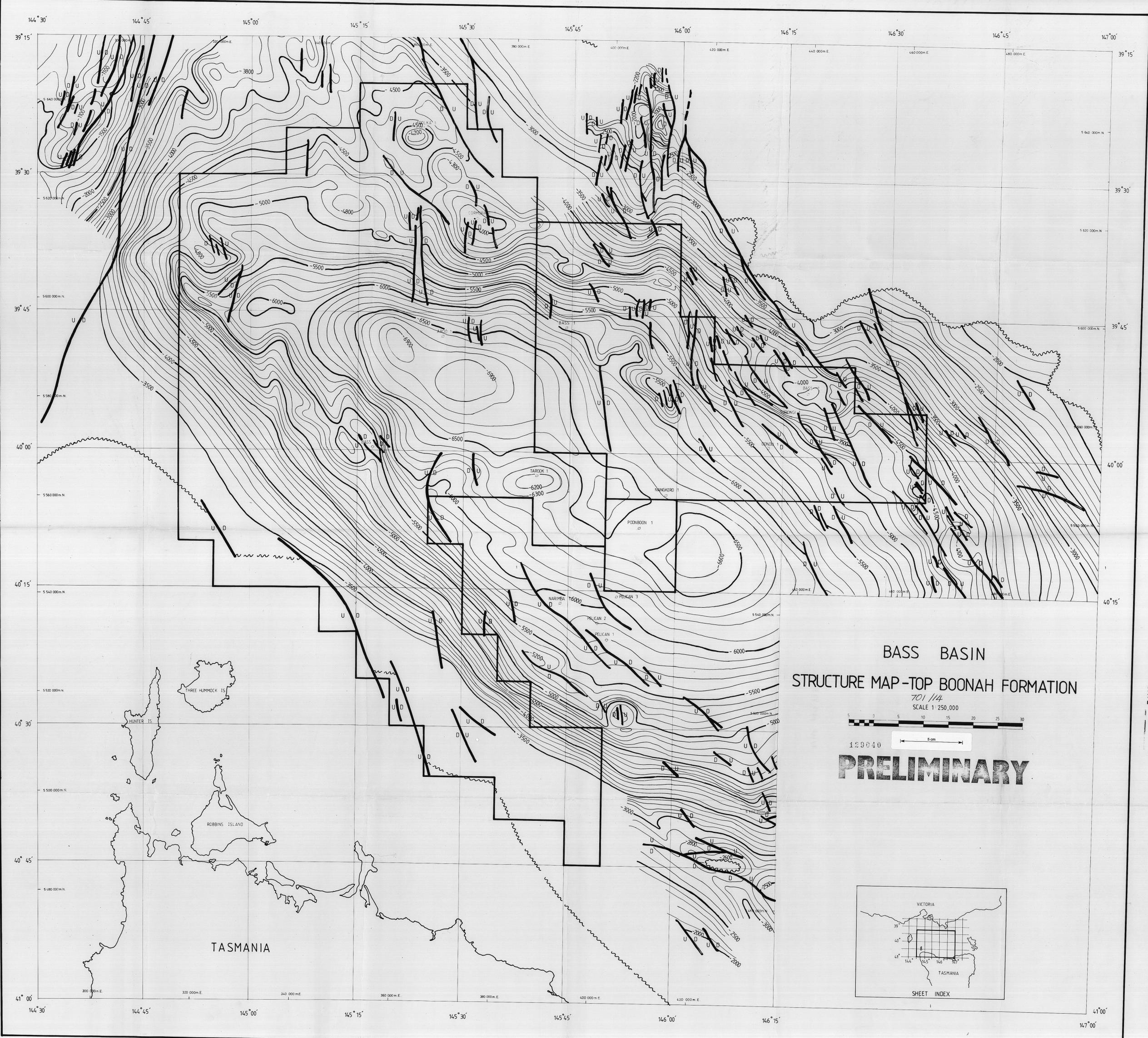
SEISMIC PROGRAMME MAP
T 14 P

PRELIMINARY

701/13

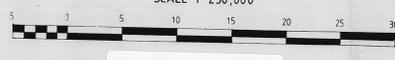
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T/14P part VII*



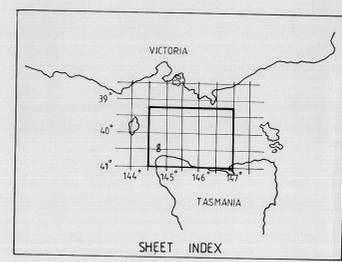
BASS BASIN
 STRUCTURE MAP - TOP BOONAH FORMATION

701/114
 SCALE 1:250,000



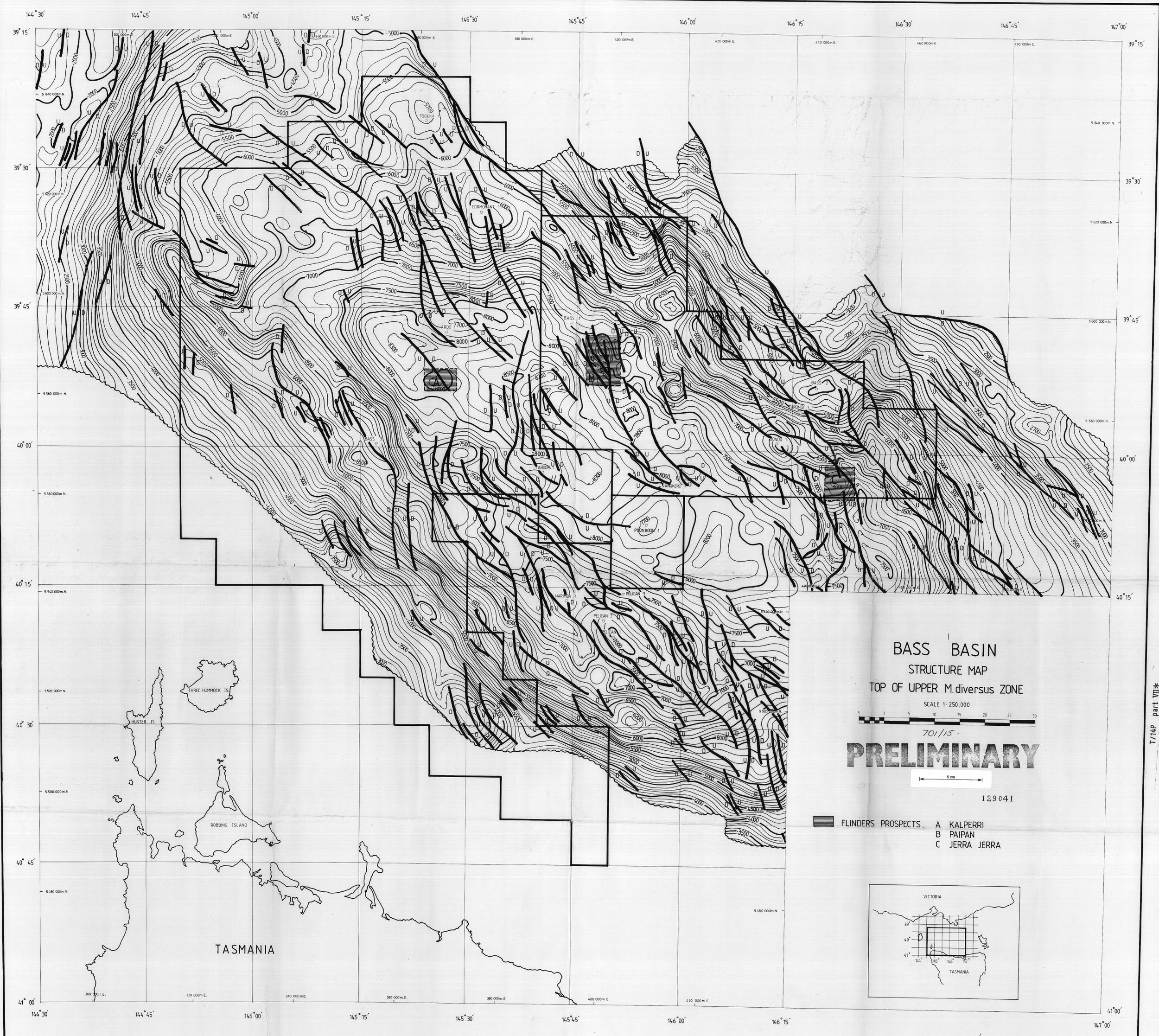
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PRELIMINARY

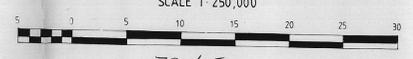


T/14P part VII*

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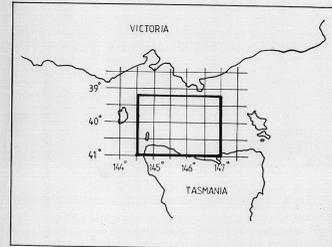


BASS BASIN
 STRUCTURE MAP
 TOP OF UPPER *M. diversus* ZONE
 SCALE 1:250,000
 701/15
PRELIMINARY



129041

- FLINDERS PROSPECTS:
 - A KALPERRI
 - B PAIPAN
 - C JERRA JERRA



T/14P part VII*

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