Open File Envelope No. 9060

PEL 62

GAMBIER EMBAYMENT, OTWAY BASIN

PROGRESS, ANNUAL AND RELINQUISHMENT REPORTS FOR THE PERIOD 3/11/95 TO 2/8/2000

Submitted by

Lakes Oil NL
2000

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PRIMARY INDUSTRIES AND RESOURCES SA

PORTHOS MAPPING PROJECT

Introduction

At the request of Lakes Oil NL, the Operator of PEL 62, a mapping project was undertaken of the Porthos prospect. This prospect has been identified, subsequent to the discovery of oil, in the Sawpit Sandstone in the adjacent permit in the Killanoola-1 well. This well has been put into to production at an initial rate of 300 BOPD, which apparently declined to around 100 BOPD.

Seismic Data

A grid of 20 lines of 1985,1998, and 1990 vintage data was loaded. This was done in two stages. A seismic balance exercise was carried out to tie the grid in terms of both time and phase.

This data included the following seismic lines;

OHK85-12
OHK85-108
OHK85-109
OHK85-110
OHK85-111
OHK85-118
OHB88-218
OHB88-223
OHB88-224
OHB88-227
OHB88-228
OHB88-229
OHB88-230
OK90-406
OK90-407
OK90-408
OK90-409
OK90-410
OK90-411
OK90-412

Well Data

Digital logs from the three open file wells in the area were loaded into PLOG and synthetics were created for each of these wells;

Bool Lagoon 1
Robertson-1
Robertson-2

Mapping

Three horizons were carried around the project area:

Top Eumeralla Formation
Top Laira Formation
Top Basement

The Sawpit Sandstone does not appear to be an obvious seismic event and therefore it is suggested that the Top Basement reflector be used to determine the structural integrity of the Porthos Area.

The structuring in this area is dominated by a series of extensional faults, which generally strike in a north westerly direction. Fault throws are both down to the basin deep, and margin. The main risk in this mapping is the certainty of how these faults are connected between the lines that make up the 2D seismic grid.

Killanoola

The Killanooloa Feature has been included in the mapping and exhibits closure against a fault, which throws down to the basin margin. The structure is also dominated by a distinct change in direction in the strike of the fault, which establishes a structural embayment. This is shown on the time structure map at Top Basement. This structural feature persists up through the section and the arcuate fault appears to be present at the shallowest mapped level, at the Top Eumeralla Formation. The trap is established on the high thrown block, this would appear to be an important characteristic, because as the faults in the area appear to extensional, down-thrown closures will have a greater risk of breaching the trap.

Porthos

The Porthos Prospect is mapped against the next major fault to the north of the Killanoola Fault. The Porthos Fault like the Killanoola Fault throws down to the basin margin, with the trap being developed on the high side of the fault. The Porthos Fault does not develop the arcuate nature that Killanoola develops. There are three alternate locations that could be considered for the drilling of Porthos.

Porthos Option A

This location is located on Line OHL86-111, Station 300. A copy of this line is included as an enclosure. The location depends on developing a nose against the Porthos Fault, and the seismic control along the strike of the fault in the critical north west direction is weak. The dip closure towards to the north appears to be proven because of the elevation of the adjacent line to the north.

It has some "closology" attraction, being just 3 kms north east of Killanoola. A concern is the thickness of the Laira Formation. At this location it would appear to be 40 milliseconds thick. This is considerably thinner than Killanoola were 140 milliseconds of Laira Formation were intersected. This risk is however shared by all three Porthos locations.

Porthos Option B

This location is located on OHL86-110, Station 310. The location is located on the high side of a fault, however this fault is not seen as continuing to the north much further than the actual well location.

The thickness of the Laira Formation at this location is 40 milliseconds.

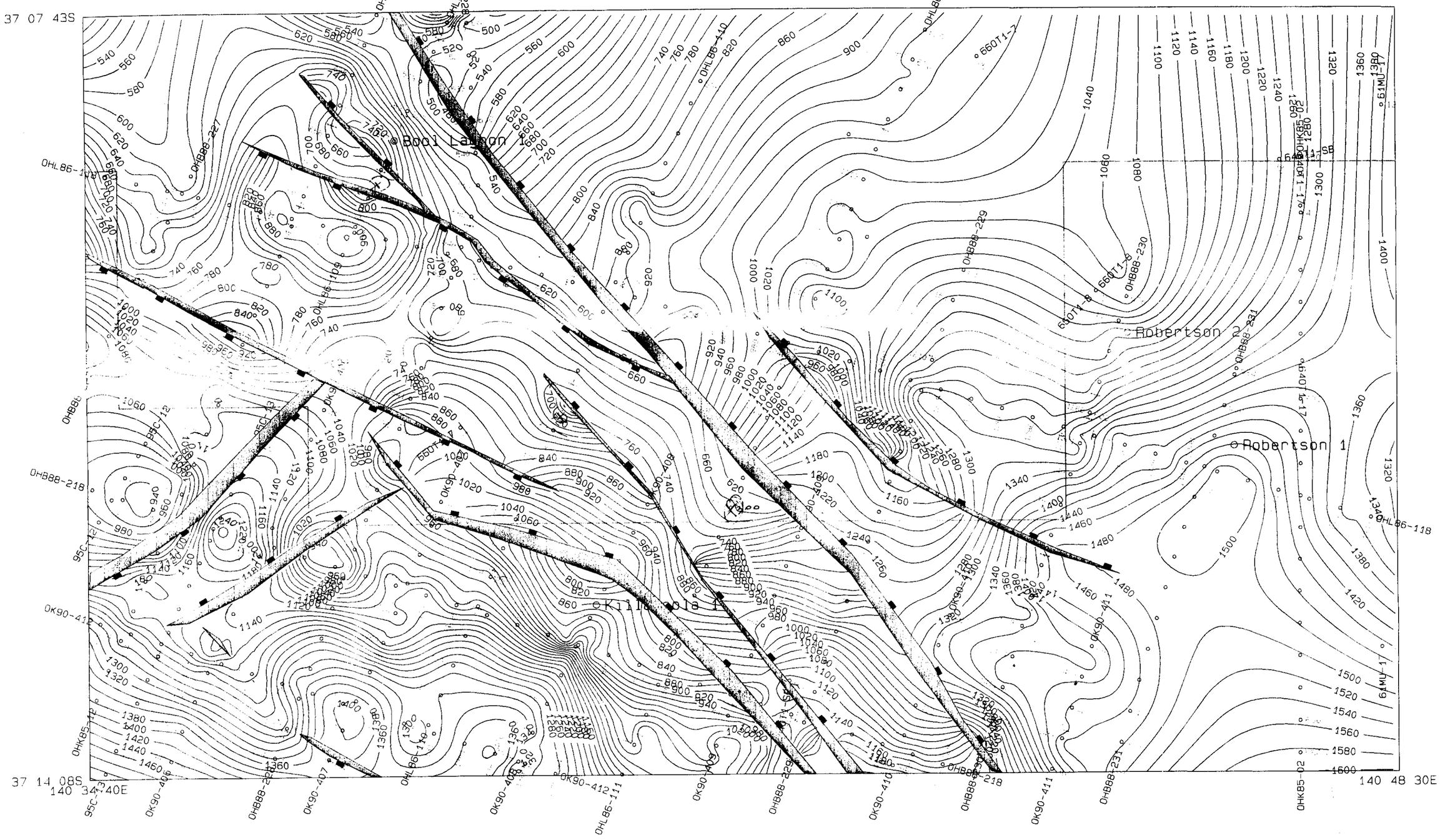
Porthos Option C

A location can be generated on Line OHL86-109, Station 155. This line is included as an enclosure. The location is located up dip of the unsuccessful Bool Lagoon-1 well. The location is developed on a horstal feature at basement level, however the fault on the northern boundary of the horst does not persist through the entire Laira Formation and therefore there is a structural risk that the Sawpit Sandstone may not be included in this critical element. The thickness of Laira formation is 80 milliseconds which is thicker than Option A. The section is thinner than that developed at Bool Lagoon where no reservoir section was developed. This location does therefore carry a high risk of reservoir failure.

porthos project well data

		kb msl bool lagoon 1 53.64		kb msl robertson 1 57		kb msl robertson 2 56.69	
kb elevation							
eumeralla	depth	234.7	181.06	274.32	217.32	245.36	188.67
	time		206		226		204
	vav		1758		1923		1850
laira fm	depth	662.33	608.69	911.35	854.35	838.2	781.51
	time		576		806		746
	vav		2114		2120		2095
basement	depth	765.05	711.41	1764.79	1707.79	1449.93	1393.24
	time		706		1516		1170
	vav		2015		2253		2382
total depth	depth	809.85	756.21	1798.32	1741.32	1506.02	1449.33

OTWAY



file: BASEMENT_porthos-PROPSECT_1: 50000.map

1: 50000

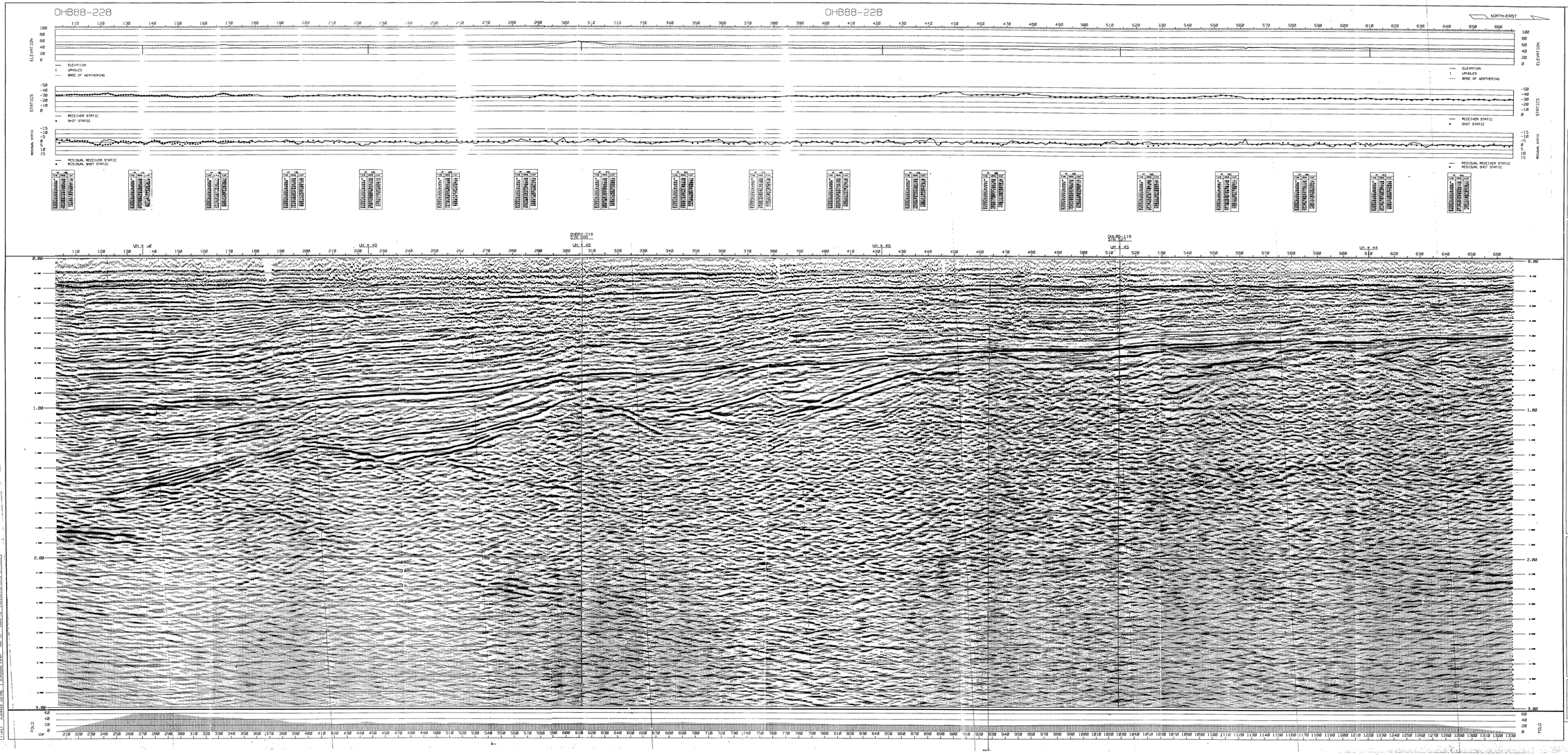
0 1 2 3 4 5
KILOMETRES

0 1 2
MILES

BARCO EXPLORATION PTY LTD

PORTHOS PROSPECT
TIME STRUCTURE
TOP BASEMENT

Date: October 14, 1999



HARTOGEN ENERGY LTD

BOOL LAGOON SEISMIC SURVEY

PERMIT : PEL 27

AREA : OTWAY BASIN

STATE : SOUTH AUSTRALIA

LINE : OH88-228

VP : 100-668

MIGRATED STACK

NORTH-ERST

RECORDING PARAMETERS

RECORDED BY	: HARPC GEOPHYSICAL CO. (NZ) LTD	SOURCE PARAMETERS :	
INSTRUMENTS	: SDS V 4 (F)	SOURCE	: 4 VIBROSEIS
TAPE FORMAT	: SEG Y DEMUX SEG Y TRACE : SEG B DEMUX SEG Y TRACE	SOURCE MAKE	: 4 X 15 TONNE SYCAM VIBROSEIS MODEL 1000
SPREAD ALIGNMENT	: SCHEMATIC SPREAD		
CORRELATION SUPPLY	: MINIMUM PHASE	SWEEP FREQUENCY	: 10-80 HZ
CORRELATION MODE	: Pilot Trace	SOURCE SWEEPS	: 20
SAMPLE RATE	: 2 MS	SOURCE	: 1 VIB TRACE PER FIELD
RECORDING LENGTH	: 12 SEC MAXIMUM + NOISE LISTEN	RECEIVER TYPE	: GPR SERCEL SM-24
DATA MODE	: 2 X 6	RECEIVER MAKE AND ARRAY	: 12 GEOPHONES PER GROUP
RECORDING FILTER	: LOW CUT 10 HZ HI CUT 250 HZ WITH 48 DB PER OCT.	RECEIVER INTERVAL	: 25 M
		ARRAY INTERVAL	: 25 M
FIELD TAPES	: 9880-9886	NUMBER OF GROUPS	: 1248
SPREAD DIAGRAM :		DIRECTION OF SHOOTING	: N - 194.4 DEGREES
SPS SHOT LINE	: 1-1478	DATE RECORDED	: 20-27 JANUARY 1988
SHOT LINE	: 1478 - 2956		
SHOT LINE	: 2956 - 4434		

PROCESSING SEQUENCE

(1) DEMULTIPLEX
REFORMAT FIELD FORMAT TO
INTERNAL FORMAT
SAMPLE RATE : 2 MS

(2) RESAMPLE
RESAMPLE TO 4 MS
RECORD LENGTH : 6 SECS

(3) EDIT OF BAD TRACES

(4) AMPLITUDE RECOVERY CORRECTIONS
T**2 T**1.5 T**1 EXPONENTIAL
T**2 T**1.5 T**1 EXPONENTIAL
APPLICATION : WHOLE TRACE

(5) EQUALIZATION
DESIGN GATE
WHOLE TRACE
OPERATOR LENGTH : 0.8 S
APPLICATION : WHOLE TRACE

(6) COMMON DEPTH POINT GATHER
PATTERN FIELD # 38

(7) STATIC : FIRST BREAK REFRACTION STATICS CORRECTION
RESIDUAL STATICS CORRECTION
WEATHERING VELOCITY : 1500 M/S
DATUM : 0 M
VELOCITY CORRECTION : FLOATING (SURFACE)

(8) VELOCITY ANALYSIS
INTERACTIVE VELOCITY ANALYSIS
CALCULATED EVERY 37 CDP INTERVALS

(9) RESIDUAL STATIC : RESIDUAL STATICS CALCULATION AND APPLICATION
DATUM CORRECTION : N
VELOCITY : 1500 M/S
OPERATOR :
OPERATOR LENGTH : 0.4 S
MAXIMUM STATIC CORRECTION : 10 MS
MAXIMUM CUMMULATIVE STATIC : 20 MS
APPLICATION : WHOLE TRACE

(10) VELOCITY ANALYSIS
INTERACTIVE VELOCITY ANALYSIS
CALCULATED EVERY 37 CDP INTERVALS

(11) NORMAL MOVEOUT CORRECTION

(12) MUTES TRACE MUTE :
TOP MUTE TIME : BOTTOM MUTE TIME :
TIME : 0 MS TIME : 0 MS

(13) TRACE SCALING :
GATE LENGTH : 1000 MS

(14) RESIDUAL : RESIDUAL STATICS CALCULATION AND APPLICATION
DATUM CORRECTION : N
VELOCITY : 1500 M/S
OPERATOR LENGTH : 0.4 S
MAXIMUM STATIC CORRECTION : 10 MS TO 1000 MS

(15) STACK
FOLD TAPERING DURING STACK FOR VARYING FOLD
STACK TO 2 SECS

(16) TRACE EQUALIZATION AFTER STACK
OPERATOR LENGTH : 0.8 S
APPLICATION : WHOLE TRACE

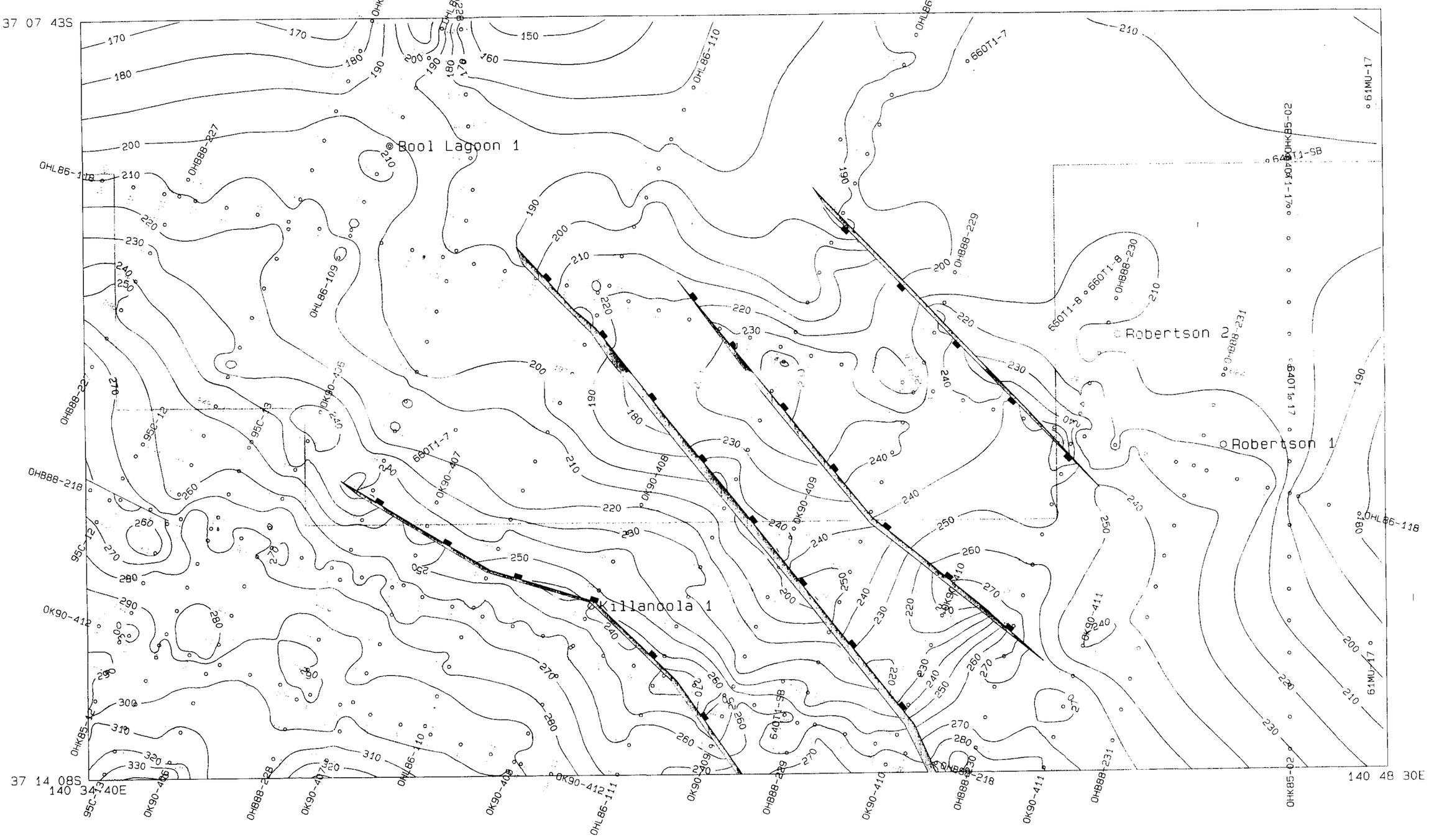
(17) FILTER : BANDPASS
FILTER TYPE : BANDPASS
APPLICATION : AFTER STACK
CORNER FREQUENCIES
LOW CUT HI CUT
8 HZ 70 HZ
8 HZ 65 HZ
8 HZ 60 HZ

(18) TRACE SCALING
GATE LENGTH : 1000 MS
SCALING FACTORS
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

(19) DATUM CORRECTION
DATUM : 0 M
VELOCITY : 1500 M/S TO SEISMIC DATUM
REPLACE WATER V = 0 M

PROCESSED BY : DIGITAL EXPLORATION LTD.
DIGICON, BRISBANE
DATE : JUNE 1988
SECTION SCALE : 96.8 INCHES PER INCH
PLOTTED TIME : 1 SECOND PLOTTED VERTICALLY

OTWAY

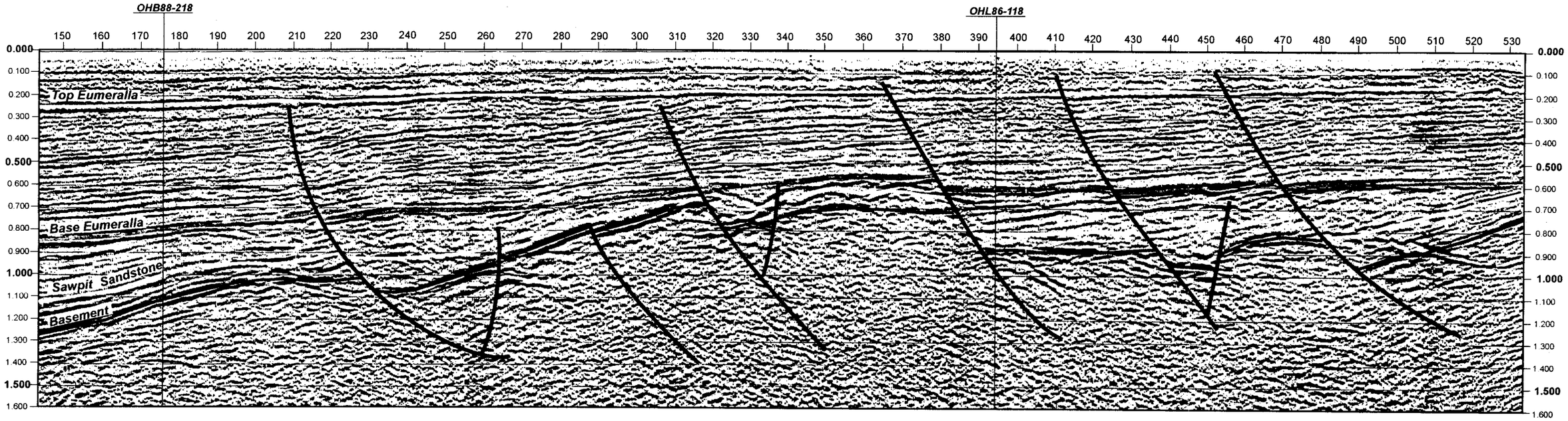


BARCO EXPLORATION PTY LTD

PORTHOS PROSPECT
TIME STRUCTURE
TOP ELMERALLA FORMATION

User: terryb Date: October 14, 1999

Seismic Line OHL86-110



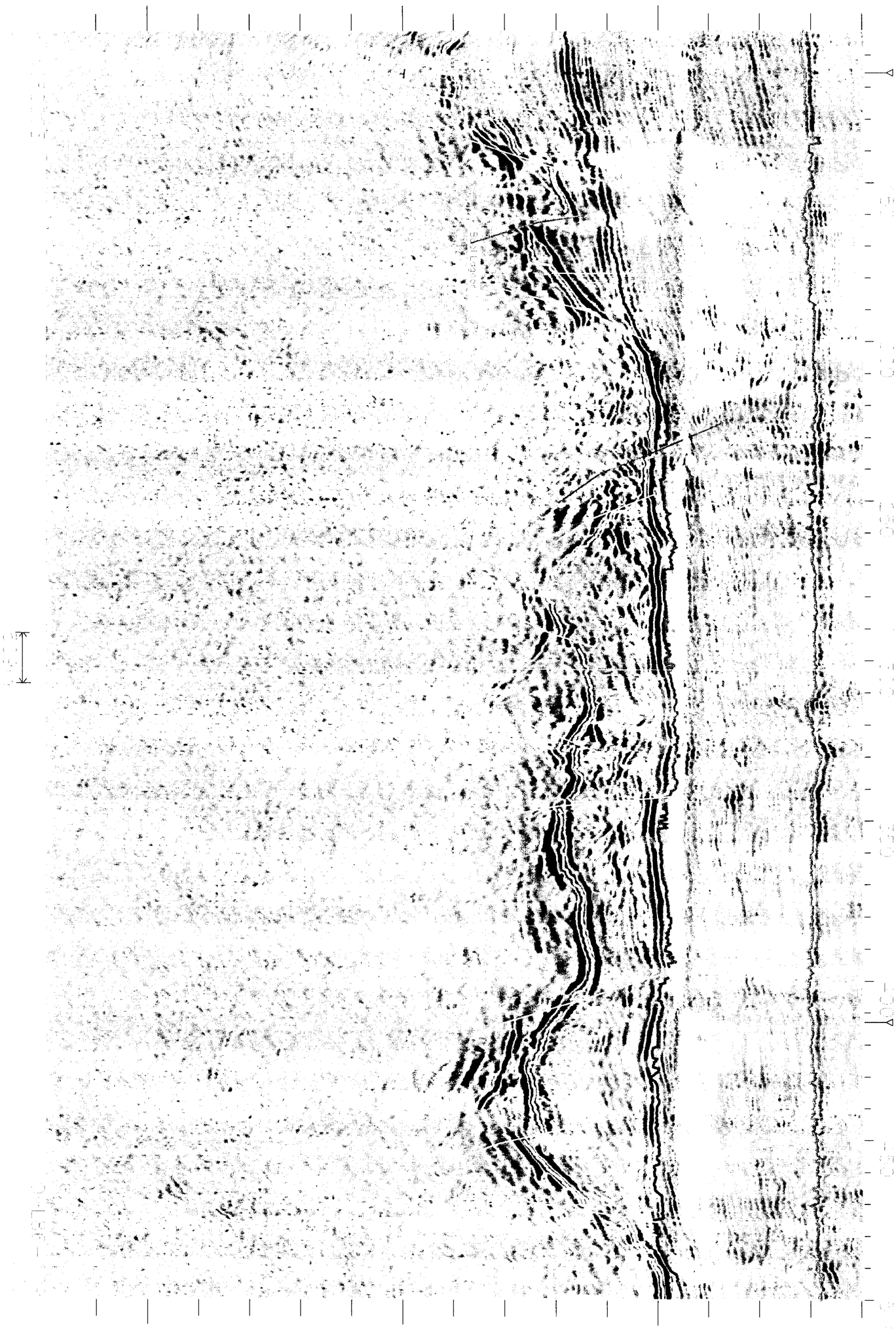
LAKES OIL N.L.

PEL 62
OTWAY BASIN - SOUTH AUSTRALIA

PORTHOS AREA

SECTION OHL86-110

Author : R. Hollingsworth		Encl. No. :
Date :		

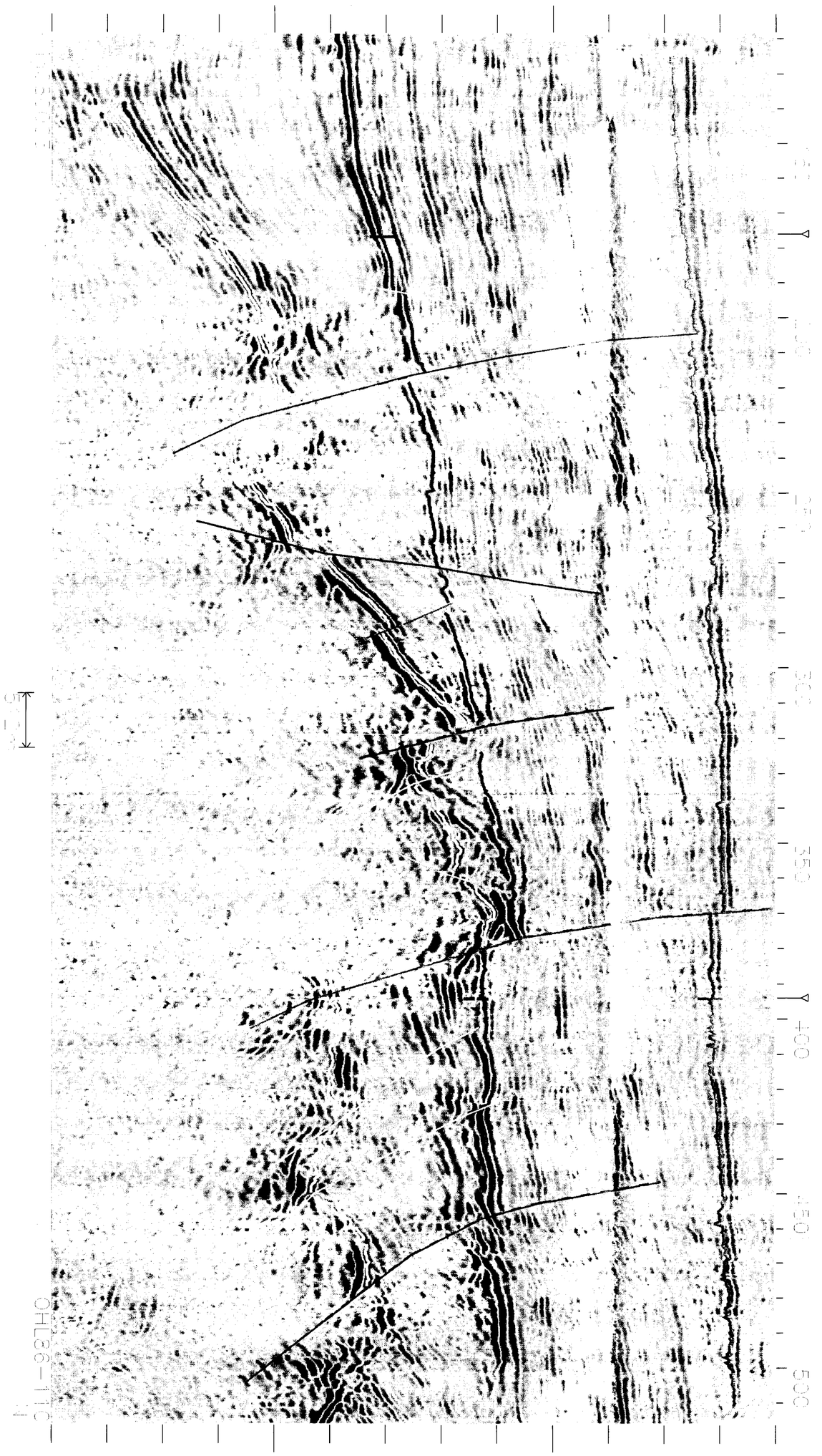


tb_otway 14-Oct 1999 16:35

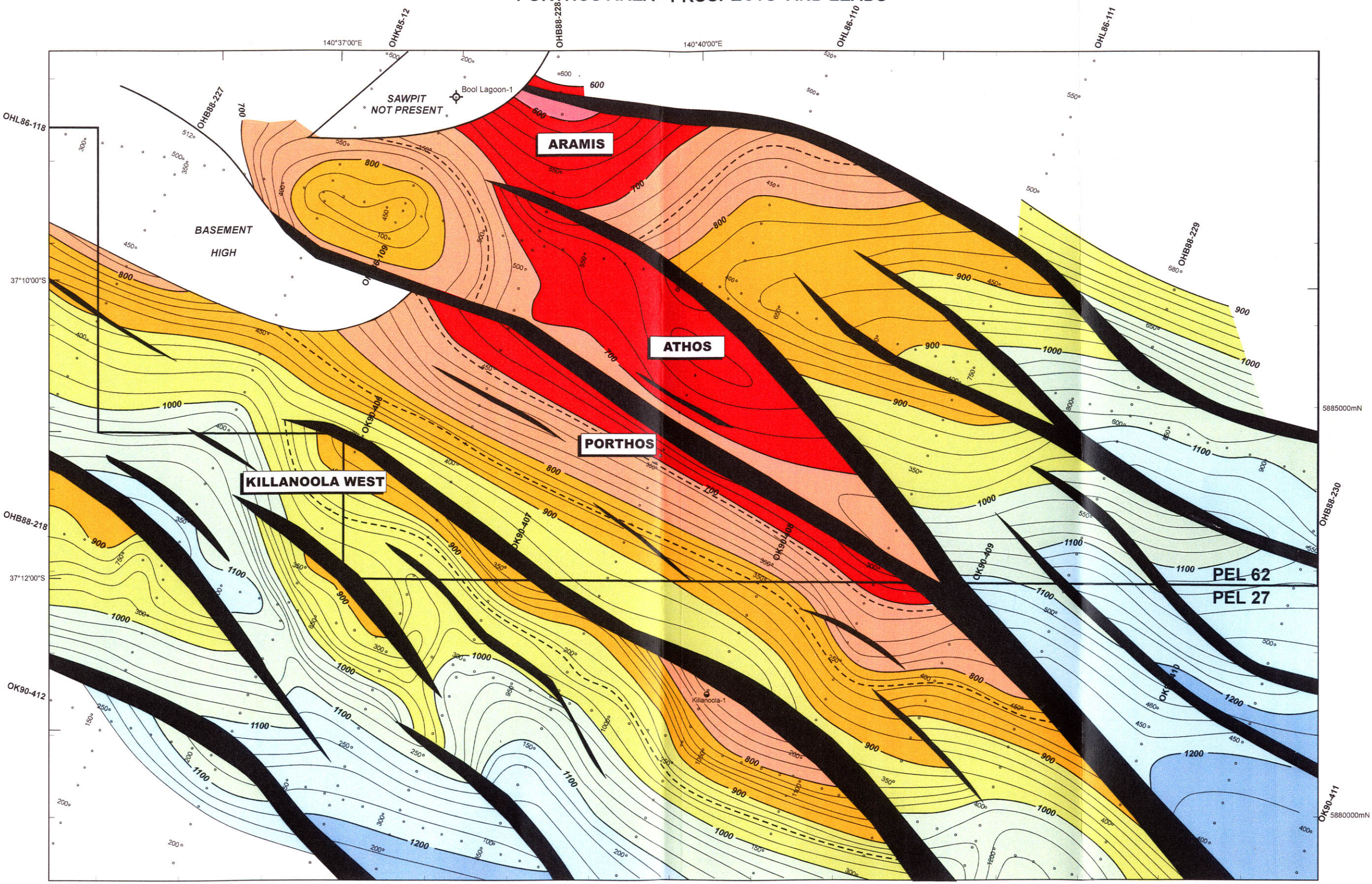
tb_otway 14-Oct-1999 16:35

tb_otway 14-Oct-1999 18:13

tb_otway 14-Oct-1999 18:13


OHL96-110
500
450
400
350
300
250
200
150
100
50
0
1 sec

PORTHOS AREA - PROSPECTS AND LEADS



1:25,000

0 1 2

Kilometres

Universal Transverse Projection
Australian National Spheroid
Central Meridian 141°00'00"E

LAKES OIL N.L.

PEL 62
OTWAY BASIN - SOUTH AUSTRALIA

PORTHOS AREA

TIME STRUCTURE MAP

NEAR TOP SAWPIT SANDSTONE

Author : R. Hollingsworth	Datum : MSL	Encl. No. :
Date :	Contour Interval : 20ms	

OTWAY

37 08 39S

140 37 21E

140 44 02E

37 13 07S

© Bool Lagoon 1

OHL86-109 190

OHB88-228 590

OHL86-110 500

660T1-7 20

OHL86-111 550

OHL86-118 480

OHL86-109 100

500

600

400

640T1-5B 40

OHB88-229 680

OHB88-218 300

OHB88-228 300

OK90-407 260

OHL86-110 150

OK90-408 260

OHL86-111 300

OK90-409 370

OHB88-229 430

OK90-410 440

OHL86-118 860

OK90-409 446

OK90-410 460

640T1-5B 50

OK90-408 360

LKO PROPOSED LOCN
SP 305, LINE 110

LIMIT OF SAWPIT CONTROLLED BY COMBINATION OF TWO MAJOR FAULTS

Killanoo

file: SAWPIT_porthos_PROPSECT_1:25000.map
740 Millisecond contour closed area = 1755 acres

1: 25000

0 1 2

KILOMETRES

0 1.00

MILES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 141 00 00E

BARCO EXPLORATION PTY LTD

PORTHOS PROSPECT
TIME STRUCTURE
TOP SAWPIT SST