.TA

FINA EXPLORATION AUSTRALIA S. A.

FINA

ANEMONE-1, 1A

WELL COMPLETION REPORT

VOLUME 1

BASIC DATA

WELL COMPLETION REPORT ANEMONE-1, 1A

VOLUME I

BASIC DATA

BASIC DATA

GL/89/028
MT/JMQ/AH/BT/kl
20 October 1989

WELL COMPLETION REPORT ANEMONE-1, 1A

BASIC DATA

CONTENTS

CONTENTS.....(i)
SUMMARY.....(ii)
WELL DATA SUMMARY.....1
GEOLOGICAL SAMPLING.....2
CUTTINGS DESCRIPTION ANEMONE-1.....3
CUTTINGS DESCRIPTION ANEMONE-1A.....12
CORE DESCRIPTION.....16
SIDEWALL CORE DESCRIPTION.....17
RFT RESULTS.....22
HYDROCARBON SHOWS ANEMONE-1.....23
HYDROCARBON SHOWS ANEMONE-1A.....25
TEST RESULTS.....27
WIRELINE LOGS.....28
MWD LOGS.....29

LIST OF APPENDICES

APPENDIX 1 MICROPALAEONTOLOGY
APPENDIX 2 PALYNOLOGY
APPENDIX 3 GEOCHEMISTRY
APPENDIX 4 FLUID ANALYSIS
APPENDIX 5 VELOCITY SURVEY VSP RESULTS
APPENDIX 6 GEOCHEMICAL LOG

LIST OF FIGURES

FIGURE 1 Location Map
FIGURE 2 Core #1

SUMMARY

Exploration wells Anemone-1 and sidetrack Anemone-1A were located in Licence VIC/P20 in the Gippsland Basin offshore Victoria, south-eastern Australia. The wells represent the second of a four well drilling commitment on VIC/P20 to be fulfilled before 23 July 1990. Joint venture partners for the operation were:

Petrofina Exploration Australia S.A.	30%	(Operator)
Japex Gippsland Limited	30%	
Overseas Petroleum and Investment Corporation	30%	
Bridge Oil Limited	10%	

The objective of the wells was to evaluate the hydrocarbon potential of Maastrichtian and Campanian aged Latrobe Group sandstones in a fault-dependent structural closure. Anemone-1 was spudded on 29 May 1989 using the semi-submersible rig Zapata Arctic. It reached a total depth of 4609m (drillers) on 15 July 1989, where the pipe became stuck in the hole, resulting in it being necessary to plug back and sidetrack (Anemone-1A) from 3896m to 4775m (drillers).

WELL DATA SUMMARY - ANEMONE-1/1A

WELL:	Anemone-1/1A
PERMIT:	VIC/P20, Gippsland Basin, Australia
OPERATOR:	Petrofina Exploration Australia S.A.
LATITUDE:	38°45'52.46" S
LONGITUDE:	148°19'48.63" E
UTM:	5,708,493.7 N 615,565.6 E
KBE:	27m
WD:	231m
TYPE OF RIG:	Semi-Submersible
NAME:	Zapata Arctic
CONTRACTOR:	Zapata Off-Shore Company
OBJECTIVES:	Coastal plain and deltaic Intra-Campanian and Maastrichtian Sandstones
SPUD DATE:	29 May 1989
DATE REACHED TD:	15 July 1989 (Anemone-1)
DATE COMMENCED SIDETRACK:	26 July 1989 (Anemone-1A)
DATE REACHED TD:	4 September 1989 (Anemone-1A)
DATE PLUGGED & ABANDONED:	20 October 1989
DRILLED DEPTH:	Anemone-1 4609m (driller) Anemone-1A 4775m (driller)
WELL STATUS:	Plugged and Abandoned. Non-commercial gas-condensate discovery

fig 1 to follow

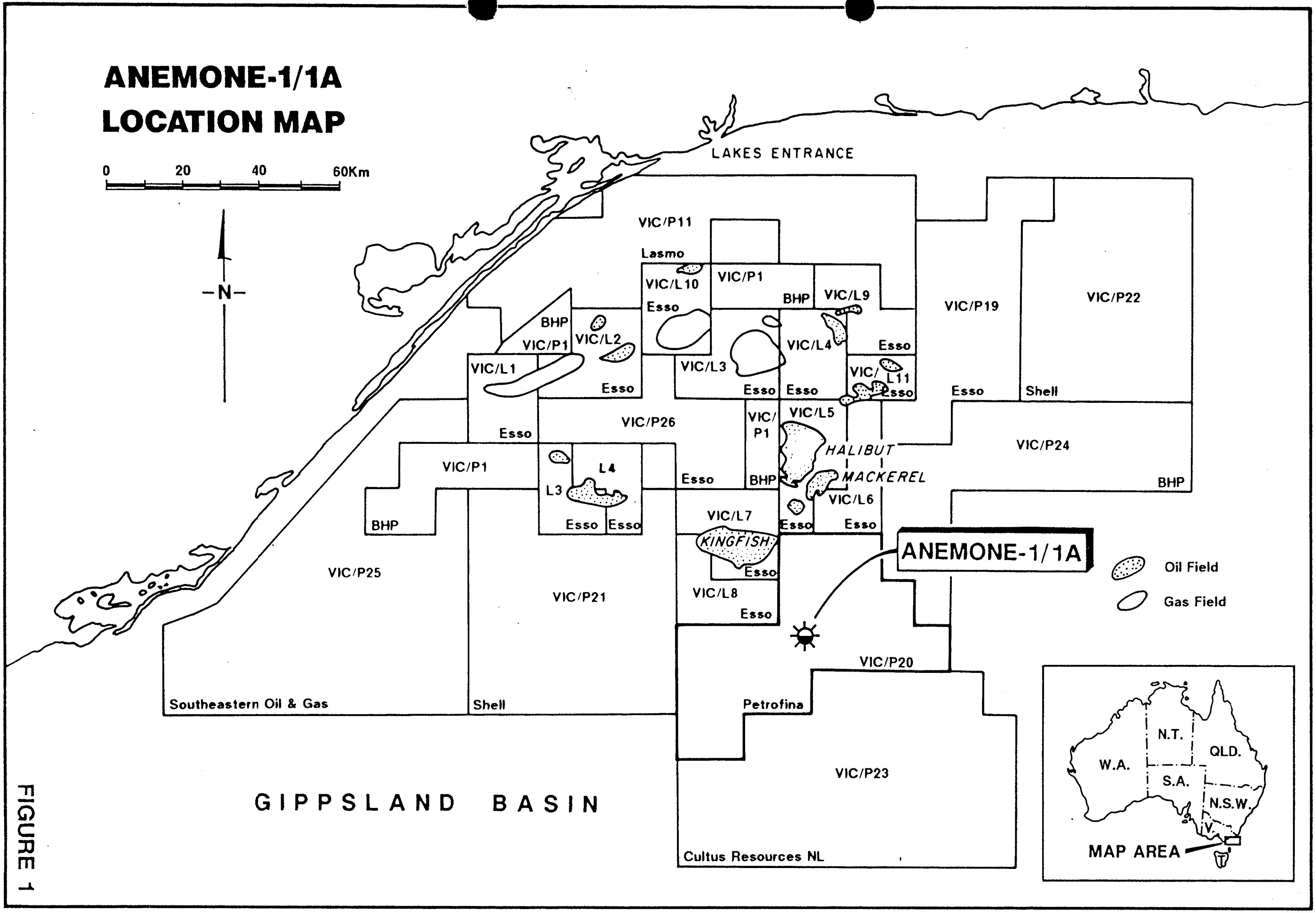


FIGURE 1

G 363

GEOLOGICAL SAMPLING

CUTTINGS SAMPLES

Sample Type	No. of Sets	Addressee	Sample Interval
Washed and dried	3	PEXAUS	10,5*
	1	Japex, Tokyo	10,5*
	1	OPIC, Taiwan	10,5*
	1	Bridge Oil, Sydney	10,5*
	1	DITR, Melbourne	10,5*
	1	BMR, Canberra	10,5*
Unwashed	2	PEXAUS	10,5*
Canned Geochemical	1	Amdel	10**
	1	PSA, Brussels	10**

* 10m intervals from 570-2310m, 5m intervals from 2310-4609m for Anemone-1
5m intervals from 3900-4775m for Anemone-1A

** from 2300-4609m for Anemone-1 and from 3900-4775m for Anemone-1A

CORES

One "Junk Basket" core was cut in Anemone-1.
Cored interval from 4158.8-4159.2m with 100% recovery.

CUTTINGS DESCRIPTION
ANEMONE-1

252-570m Returns to seafloor.

570-740m CALCARENITE: light to medium grey, firm to moderately hard, medium crystalline, common cement, sucrosic texture, poor porosity, no shows.

740-996m CALCARENITE: light to medium grey, soft to firm, sucrosic texture, fine crystalline, common fossils, no visible porosity, no shows.

MARL: light to medium grey, olive grey, soft, sticky, plastic, calcilutitic in parts, abundant forams.

996-1317m MARL: light grey, off white, soft to firm, sticky, plastic, common glauconite and forams, trace pyrite.

1317-2390m CALCAREOUS CLAYSTONE: medium grey, grading to greenish grey, soft to moderately hard, dominantly firm, silty in parts, common glauconite, common pyrite, abundant forams.

2390-2552m SILTSTONE grading to CLAYSTONE: medium grey, olive grey, greenish grey, moderately hard, very argillaceous, calcareous, marly in parts, traces of pyrite, abundant forams.

2552-2581m CALCARENITE: light grey, off white, cream, moderately hard, medium crystalline, common calcareous cement, fossiliferous.

2581-2602m SANDSTONE: dark green, loose to moderately firm, dominantly loose, fine to coarse, subangular to subrounded, moderately sorted, very abundant glauconite, common quartz, good porosity, no shows.

2602-2691m SILTSTONE: dark green, medium brown, moderately hard, very sandy, very abundant glauconite, common pyrite, dominantly subblocky.

2691-2709m SANDSTONE: medium green, translucent, dominantly loose, fine to very coarse, subrounded, moderately sorted, glauconitic, fair to good porosity, no shows.

2709-2813m SANDSTONE: dark green, generally loose, occasionally hard, fine to coarse, subrounded, glauconitic, abundant argillaceous matrix, fair to poor porosity, no shows.

SILTSTONE: medium grey to medium green, moderately hard, glauconitic, subblocky.

2813-2829m SILTSTONE: medium grey, moderately hard, argillaceous, very fine sandy, subfissile.

2829-2859m SANDSTONE: light grey, clear, translucent, fine to very coarse, subrounded, well sorted, quartzose, clean, good porosity, no shows.

2859-2970m SANDSTONE: light grey, clear, translucent, loose, fine to coarse, dominantly medium, well sorted subangular to subrounded, clean with 10% glauconite grains, good porosity, no shows.

SILTSTONE: medium grey, olive grey, firm to moderately hard, argillaceous, very fine sandy, dominantly subblocky to subfissile.

2970-3076m SANDSTONE: light grey, clear, translucent, loose, fine to coarse, dominantly medium, slightly fining downwards, subangular to subrounded, quartzose, some glauconite, good porosity, no shows.

SILTSTONE: medium to dark brown, medium to dark grey, moderately hard to hard in parts, argillaceous, very fine sandy, carbonaceous, common coaly laminations, subblocky to subfissile.

3076-3090m SILTSTONE: dark grey brown, hard micromicaceous, argillaceous, carbonaceous, trace pyrite.

SANDSTONE: clear, opaque, firm to hard, common loose grains, angular to subangular, common bit fractured grains, slightly calcareous, trace pyrite, moderate to poor porosity, no shows, with trace:

COAL: black, hard, blocky, silty in part, argillaceous, subvitreous to vitreous.

3090-3201m SANDSTONE: light grey, clear, translucent, loose, medium to coarse, moderately sorted, angular to subangular, abundant fractured grains, common biotite, common carbonaceous fragments, occasional muscovite, occasional to common pyrite, no shows, with trace to 10%:

SILTSTONE: (1-3m interbeds) dark grey, argillaceous, sandy in part, moderately hard to hard, common biotite, very carbonaceous, pyritic, with trace:

COAL: as above.

3201-3325m SANDSTONE: as above with 2-3m interbedded:

SILTSTONE: as above but medium brown where sandy, with trace:

COAL: black, vitreous, conchoidal fractures, brittle.

3325-3390m SILTSTONE: medium to very dark brown, dark grey brown, moderately hard to hard, very carbonaceous, micromicaceous, platy to subfissile.

SANDSTONE: clear, translucent, loose, medium to coarse, angular to subangular, moderately sorted, trace pyrite, no shows.

3390-3465m SANDSTONE: clear, translucent, medium to coarse, locally fine to medium, predominantly loose with locally well cemented stringers, angular to subangular, common bit fractured grains, moderately sorted, trace biotite, trace carbonaceous fragments, moderate to nil porosity and no shows.

3465-3480m SILTSTONE: light to dark grey, dark brown, firm to soft, sticky in part, very argillaceous, carbonaceous, amorphous to blocky, trace exinite.

SANDSTONE: as above.

3480-3498m SANDSTONE: clear, milky white, predominantly medium to coarse, fine in part, loose, common fractured grains, subangular, moderately sorted, calcareous, tight, trace pyrite, trace carbonaceous fragments, no shows.

SILTSTONE: as above.

3498-3520m SILTSTONE: light to medium grey, grey brown, firm to moderately hard, subfissile to blocky, carbonaceous specks, very argillaceous, sandy, micromicaceous in part, trace glauconite from 3510m.

SANDSTONE: as above.

3520-3566m SANDSTONE: clear, light grey, translucent, hard, common bit fractured angular grains, fine to coarse, poorly sorted, argillaceous matrix, silica? cement, trace glauconite, trace pyrite, poor porosity, no shows.

SILTSTONE: as above.

3566-3610m SILTSTONE: light to medium grey brown, occasionally off white, firm to moderately hard, soft to sticky in part, argillaceous in part, common very fine carbonaceous flecks, occasional pyrite, with minor (1-3m) interbeds of:

SANDSTONE: clear, light grey, loose, fine to coarse, poorly sorted, angular to subrounded, argillaceous in part, trace glauconite, trace pyrite, common mica, no shows.

3610-3673m SANDSTONE: clear to light grey, fine to medium occasionally medium to coarse, loose, moderately to well sorted, subangular to subrounded, common biotite, trace muscovite, trace pyrite, trace glauconite, no shows, with very minor interbedded:

SILTSTONE: medium brown, medium brown grey, blocky to subfissile, very argillaceous, variably sandy, grading to CARBONACEOUS SANDSTONE in part, occasional pyrite, occasional glauconite, common biotite.

3673-3725m SANDSTONE: clear to light grey, fine to medium grading to coarse in part, loose, subrounded, moderately sorted, common biotite, argillaceous in part, no shows, grading in part to:

SILTSTONE: light brown grey, firm to soft, very argillaceous, micromicaceous, common very fine carbonaceous specks, trace glauconite, blocky to platy.

3725-3798m SANDSTONE: clear, translucent, light grey, loose, fine to coarse becoming very coarse in part, angular to subrounded, poorly sorted, occasional glauconite, trace to common biotite, trace pyrite, no shows, with minor (2-3m) interbedded:

SILTSTONE: light to medium grey brown, firm, very argillaceous, blocky to subfissile, trace carbonaceous material, trace glauconite, grades to very fine SANDSTONE in part.

3798-3881m SANDSTONE: clear to translucent, loose, fine to coarse, predominantly fine to medium, angular to subrounded, moderately to poorly sorted, fractured grains where coarse, white to trace to common biotite, no shows, grading to:

SILTSTONE: medium grey brown, dark grey in part, blocky to subfissile, very argillaceous, sandy where brown, micromicaceous, occasional glauconite, pale yellow cut where dark grey.

3881-3911m Massive Porous SANDSTONE: clear to translucent, loose to hard in parts, medium to very coarse, angular to subrounded, commonly fractured grains where coarse, traces silica and calcite cement, traces pyrite, traces biotite, good inferred porosity, no shows.

3911-4158m SANDSTONE: predominantly as above becoming harder with local calcite and silica cement, common to trace mica and occasional trace glauconite, with trace pale yellow orange fluorescence in interbedded SILTSTONE sequence between 4030m and 4052m. SANDSTONE is interbedded with:

SILTSTONE: predominantly as above becoming massive and medium to dark grey, hard and subfissile to fissile grading to SHALE.

4158-4158.8m SHALE: as per core below.

4158.8-4159.2m Core # 1 (Cut with reverse circulation junk sub)
SHALE: dark grey to black, hard to very hard, silty, biotitic, carbonaceous, glauconitic, pyritised in parts, fossiliferous, common bivalves.

4159.2-4174m SHALE: dark grey to dark brown, hard at the top, grading to moderately hard with depth, silty, grading to SILTSTONE/CLAYSTONE with depth, carbonaceous, generally as above, with very minor:

SANDSTONE: light grey, clear, translucent, common fractured quartz grains, angular to subangular, poor porosity, with trace:

COAL: black, hard, brittle.

4174.6-4187m SILTSTONE: medium to dark grey, medium to dark brown, firm to moderately hard, dominantly moderately hard, very argillaceous, carbonaceous, glauconitic in parts, pyritic in parts, micaceous, with trace:

SANDSTONE: as above.

4187-4200m SILTSTONE: dark grey, dark brown, moderately hard, pyritic, micaceous, generally as above.

SANDSTONE: medium grey, medium green, moderately hard, fine to medium, subangular to subrounded, quartzose, common pyrite, common glauconite, tight, no shows and minor:

SANDSTONE: light grey, clear, translucent, loose, medium to very coarse, moderately sorted, clean, some siliceous and calcareous cement, poor to fair porosity at the top.

4200-4225m SILTSTONE: as above.

SANDSTONE: light grey, clear, translucent, generally as above.

4225-4257m SANDSTONE: light grey, clear, translucent, loose, common fractured quartz grains, medium to very coarse, angular to subrounded, moderately sorted, generally clean, siliceous cement, fair porosity and minor:

SILTSTONE: medium grey, medium brown, moderately hard, argillaceous, pyritic, micaceous, subfissile to platy.

4257-4291m SILTSTONE: medium to dark grey, medium to dark moderately hard, very argillaceous, carbonaceous, pyritic in parts, micaceous, subfissile to platy, with minor:

SANDSTONE: light grey, off white, loose to hard, fine to coarse, poorly sorted, angular to subangular, some siliceous cement, tight.

4291-4294m SANDSTONE: generally as above, poor porosity.

4294-4314m SILTSTONE: grading to CLAYSTONE: as above, with minor:

SANDSTONE: as above, tight.

4314-4525m SILTSTONE: medium to dark grey, becoming browner with depth, moderately hard, very argillaceous, grading to CLAYSTONE, blocky to subfissile, variably carbonaceous, micromicaceous, pyritic, common glauconite, with very minor:

SANDSTONE: light grey, light brown to off white, moderately hard to hard, fine to medium grained, dominantly medium, subangular to subrounded, silica and calcite cement, common feldspar, micaceous, tight, no shows.

4525-4605m SANDSTONE: light grey, clear to translucent, off white, loose to moderately hard, fine to very coarse, poorly sorted, angular to subrounded, minor argillaceous matrix, silica cement in parts, poor to very good porosity, with minor:

SILTSTONE: as above.

4605-4609m SANDSTONE 1 (at the top): off white, clear, cream, mottled, vericoloured, loose to moderately hard, fine to very coarse to granuled, angular to subrounded, dominantly quartz, abundant feldspar, argillaceous matrix, some siliceous cement, poor porosity, abundant dull to bright gold mineral fluorescence.

SANDSTONE 2: light grey, clear, translucent, loose to moderately hard, dominantly loose, fine to very coarse to granuled, poorly sorted, generally clean, fair to good porosity, rare mineral fluorescence, with minor:

SILTSTONE: medium to dark grey, moderately hard to hard, argillaceous, carbonaceous, very abundant biotite pyritic in parts, laminated in parts, subblocky.

CUTTINGS DESCRIPTION
ANEMONE-1A

3879-3897m	CEMENT: Contamination
3897-3930m	SANDSTONE: light grey, clear, translucent, dominantly loose, some aggregates, fine to very coarse, poorly sorted, angular to subrounded, some siliceous cement, poor to fair porosity, no shows.
3930-3965m	SILTSTONE: medium grey, medium brown, firm to moderately hard, argillaceous, carbonaceous, biotitic, pyritic and glauconitic in parts, subblocky, with minor:
	SANDSTONE: as above.
3965-3981m	SANDSTONE: light grey, clear, translucent, loose, some aggregates, fine to very coarse, dominantly medium, fining down, poorly sorted, angular to subrounded, generally clean, traces siliceous cement, fair to moderate porosity, no shows, with very minor:
	SILTSTONE: as above.
3981-4046m	SANDSTONE: light grey, off white, loose, common fractured quartz, fine to very coarse, poorly sorted, angular to subrounded, dominantly subrounded, common siliceous cement in parts, poor to fair porosity, no shows, interbedded with:
	SILTSTONE: medium to dark brown, moderately hard, argillaceous, carbonaceous, pyritic in parts, subblocky.
4046-4145m	Dominantly SANDSTONE: as above, with common interbedded SILTSTONE: as above.
4145-4202m	SILTSTONE dark grey, dark brown, moderately hard to hard, very argillaceous, grading to CLAYSTONE becoming shaley from 4175m, carbonaceous, pyritic, rarely micaceous and glauconitic, subfissile to fissile.

4202-4244m SANDSTONE: light grey, clear, frosty, loose, common fractured quartz, fine to very coarse, dominantly coarse, angular to subangular, common siliceous cement, poor to fair porosity, no shows, interbedded with minor:

SILTSTONE: dark grey, dark brown, moderately hard to hard, very argillaceous, as above.

4244-4251m SANDSTONE: light grey, clear, translucent, loose, common fractured quartz, fine to very coarse, dominantly medium, angular to subrounded, poorly sorted, silica cemented, poor to fair porosity.

4251-4281m SILTSTONE: medium to dark grey, moderately hard to hard argillaceous, grading to CLAYSTONE, carbonaceous, rarely pyritic, rarely glauconitic, biotitic in parts, subblocky to subfissile, with minor interbedded:

SANDSTONE: light grey, off white, dominantly moderately hard, fine to medium, subangular to subrounded, moderately sorted, common off white argillaceous matrix, common calcareous cement, common siliceous cement, poor porosity.

4281-4298m SANDSTONE: light grey, off white, as above, with interbedded:

SILTSTONE: medium to dark grey, moderately hard to hard, argillaceous, carbonaceous, as above.

4298-4528m SILTSTONE: medium to dark grey to brown, moderately hard to hard, grading to CLAYSTONE, carbonaceous, with abundant coaly laminations, pyritic, scarcely glauconitic, rarely micaceous, subblocky to subfissile.

4528-4555 SANDSTONE: clear, translucent, light grey, fine to coarse, angular to subrounded, moderate to poorly sorted, predominantly loose, slightly calcareous, trace argillaceous matrix, quartz overgrowths, moderate to good porosity.

4555-4585m SANDSTONE: clear, light grey, occasionally light brown stained, predominantly loose, angular to subangular, dominantly angular with bit fractured grains, medium to very coarse grading to medium to coarse, trace lithics, slightly calcareous, moderate to good inferred visual porosity.

4585-4653m SANDSTONE: clear, translucent, light grey, occasionally light brown stained, predominantly loose, medium to very coarse, grading to medium to fine in part, moderately to poorly sorted, angular to subangular with common bit fractured grains, trace calcite (dolomite?) cement, occasional mica flakes, moderate to good porosity.

SILTSTONE: (Trace only), medium grey brown, hard, micromicaceous, trace carbonaceous material, blocky.

4653-4715m SANDSTONE: clear, translucent, white, predominantly loose, occasional moderately hard aggregates, medium to very coarse, angular to subangular, occasionally silty to argillaceous matrix, common micas, weak calcareous cement, moderate inferred visual porosity.

4715-4743m SANDSTONE: predominantly as above grading to medium to fine with depth, becoming silty in part, angular to subangular and with moderate to poor inferred visual porosity.

SILTSTONE: (Minor stringers), medium to dark grey, hard, argillaceous, common micas, common very fine quartz grains, sandy in part, blocky.

4743-4750m SANDSTONE: predominantly as above, fine to very coarse, predominantly medium to coarse, loose, angular to subangular, moderate to well sorted, weak calcite cement, trace micromicaceous matrix, good to excellent inferred visual porosity.

4750-4775m

<u>SANDSTONE:</u> clear, translucent, light grey, loose, medium to very coarse, angular to subangular, poorly sorted, trace calcareous cement, trace pyrite, occasional mica, moderate to poor porosity.

<u>SILTSTONE:</u> (Minor stringers), medium to dark grey, moderately hard to hard, micromicaceous in part, sandy in part, occasional very fine carbonaceous material, blocky.

CORE DESCRIPTION

Core-1 Anemone-1

Interval Cored: 4158.8-4159.2m

Recovery: 0.4m, 100%

Core cut with Reverse Circulating Junk Basket

Lithology: MASSIVE SHALE, dark grey to black, hard to very hard, very fine silty, carbonaceous in part, glauconitic in part, very abundant biotite, pyritized in part, common fossils, common silicified Bivalves.

NOTE: A very well preserved Bivalve (Pelecypoda) shell, 35mm in length by 40mm in width can be observed. Both valves are preserved silicified.

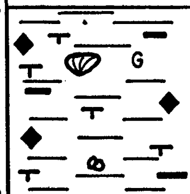
PETROFINA EXPLORATION AUSTRALIA S.A.

CORE LOG

ENCLOSURE

WELL: **ANEMONE-1** LOCATION: VIC/P20 Gippsland GEOLOGIST: G.A. POMILIO

CORE No.: 1 INTERVAL CORED: 4158.8 - 4159.2m RECOVERY : 0.4m (100%)

RATE OF PENETRATION (m/hr) 25 – 0	DEPTH (DRILLER) (m)	LITHOLOGY	SEDIMENTARY STUCTURES	GRAIN SIZE (vc c m f vf)	DEPOSITIONAL ENVIRONMENT	POROSITY	STAIN	BLEEDING	FLUORESCENCE	COLOUR	CUT	DESCRIPTION
												CORE # 1 CORED WITH REVERSE CIRCULATION JUNK SUB WHILE ATTEMPTING TO RECOVER LOST CONES FROM PREVIOUS BIT RUNS.
	4158.8 – 4159.2				MARINE							MASSIVE SHALE : dk gy to blk, hd-vhd, vf slty, carb i/p, glauc i/p, v-abnd biotite, pyritized i/p, com foss, com bivalves, silicified.

NOTE : A very well preserved Bivalve (Pelecypoda) shell, 35mm in length x 40mm in width can be observed. Both halves are preserved, silicified.

Bivalve mould

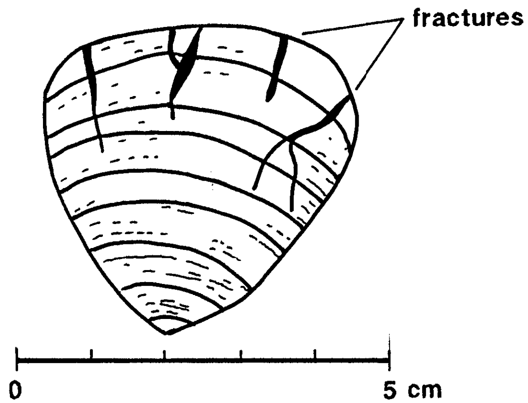


FIGURE 2

G 362

SIDEWALL CORE DESCRIPTION

WELL: ANEMONE-1	LOCATION: VIC/P20	GEOLOGIST: A. POMILIO
RUN NUMBER: 1	TYPE:	HOLE SIZE: 12¼"

DEPTH (m)	RECOVERY (inches)	LITHOLOGICAL DESCRIPTION	VISIBLE POROSITY	SHOWS
3063	1½	SANDSTONE: medium green, firm-friable, fine-medium, dominantly fine, subangular-subrounded, dominantly subrounded, poorly sorted, argillaceous matrix, abundant biotite, trace pyrite, poor porosity, no shows.	poor	
3036	1	SANDSTONE: medium-dark green, firm-friable, fine, subangular-subrounded, dominantly subrounded, poorly sorted, quartz, glauconite, common argillaceous matrix, common muscovite, common pyrite.	very poor	
3029	1	SANDSTONE: light grey, clear, translucent, loose-friable, dominantly friable, medium-coarse, subangular-subrounded, well sorted, clean, quartz.	good	
2996.5	1½	COALY CLAYSTONE GRADING TO COAL: medium-dark brown, firm, sticky, silty in parts, very carbonaceous. COMMON COAL PARTICLES IN SAMPLE.		
2975	½	CARBONACEOUS SANDSTONE: light grey, light greenish grey, friable, fine-medium, dominantly fine, subangular-subrounded, moderately sorted, dominantly quartz, common glauconite, common coal laminations, scarce argillaceous matrix.	fair	
2958	1/3	SILTSTONE: medium grey, soft-firm, very argillaceous, very fine sandy, common pyrite, blocky.		
2921	¼	ARGILLACEOUS SANDSTONE: medium grey, firm-friable, dominantly very fine-fine, subangular-subrounded, poorly sorted, very abundant argillaceous matrix, grading to CLAYSTONE.		
2913.6	LOST			
2902	LOST			
2880.6	1	COALY CLAYSTONE: medium-dark brown, moderately firm, sticky, sandy, very carbonaceous, grading to COAL in parts.		
2863	3/4	SANDSTONE: light grey, firm-friable, dominantly fine-very fine, secondary fine-medium, subangular-subrounded, moderately sorted, quartz, argillaceous matrix in parts.	poor-fair	

SIDEWALL CORE DESCRIPTION

WELL: ANEMONE-1	**LOCATION:** VIC/P20	**GEOLOGIST:** A. POMILIO
RUN NUMBER: 1	**TYPE:**	**HOLE SIZE:** 12¼"

DEPTH (m)	RECOVERY (inches)	LITHOLOGICAL DESCRIPTION	VISIBLE POROSITY	SHOWS
2858	1½	SANDSTONE: light grey, friable-moderately hard, fine-coarse, dominantly fine-medium, subangular-subrounded, moderate-poorly sorted, dominantly quartz, common glauconite, common pyrite, common biotite.	fair	
2850	¼	VERY FINE ARGILLACEOUS SANDSTONE: medium-dark grey, firm, moderately hard, poorly sorted, grading to SANDY CLAYSTONE.	very poor	
2838	3/4	SANDSTONE: light grey, clear, translucent, loose, fine-coarse, subangular-subrounded, moderately sorted, quartz, some glauconite.	good	
2825	3/4	CLAYSTONE: medium brown, medium grey, firm-moderately hard, silty in parts, blocky.		
2820	1	SILTSTONE: light-medium grey, dominantly medium grey, firm-moderately hard, very fine-fine, subangular-subrounded, moderately sorted, quartz, some glauconite, common muscovite, some pyrite, argillaceous.	very poor	
2816	1/3	CLAYSTONE: medium-dark grey, firm-moderately hard, silty in parts, trace pyrite.		
2809.5	1	SANDSTONE: light-medium grey, light green, friable-loose, dominantly friable, fine-coarse, dominantly subangular-subrounded, moderately sorted, quartz, glauconite abundant, clean.	good	
2795	LOST			
2789	1	SANDSTONE: medium grey, friable, fine-medium, quartz, some glauconite, subangular-subrounded, moderately sorted, common biotite.	good	
2773	LOST			
2762	1½	SANDSTONE: medium grey, loose-friable, medium-coarse, subangular-subrounded, dominantly subangular, moderately sorted, dominantly quartz, abundant biotite, some argillaceous matrix.	good	
2750	1½	GLAUCONITE SANDSTONE: dark green, moderately hard, very fine-fine glauconite (50-60%), very fine quartz (40-50%), subangular-subrounded, argillaceous matrix?	very poor	

SIDEWALL CORE DESCRIPTION

WELL: ANEMONE-1	**LOCATION:** VIC/P20	**GEOLOGIST:** A. POMILIO
RUN NUMBER: 1	**TYPE:**	**HOLE SIZE:** 12¼"

DEPTH (m)	RECOVERY (inches)	LITHOLOGICAL DESCRIPTION	VISIBLE POROSITY	SHOWS
✓ 2728.5	3/4	GLAUCONITIC, ARGILLACEOUS SANDSTONE: dark green, green-grey-black, firm, very fine-fine, grading to CLAYSTONE.	very poor	
2707	3/4	GLAUCONITIC SANDSTONE: medium-dark green, moderately hard, fine-medium, subangular-subrounded, moderately sorted, some argillaceous matrix.	fair	
2700	1½	GLAUCONITIC SANDSTONE: as above.	poor-fair	
✓ 2690	1	GLAUCONITIC SANDSTONE: generally as above. Dominantly moderately hard.	poor	
2674	LOST			
✓ 2660	2	SILTSTONE: medium brown, medium grey, firm-moderately hard, argillaceous, some glauconite, some biotite.		
✓ 2650.8	1.2	CLAYSTONE: dark grey, firm, sticky, plastic-massive.		
2625	LOST			
✓ 2620	3/4	SANDSTONE: medium-dark grey, green, firm, fine-medium, subangular-subrounded, moderately sorted, sandy, glauconite, abundant mud/filtrate invasion.	fair	
2615	1½	GLAUCONITIC, ARGILLACEOUS BIOTITIC SANDSTONE: dark green, moderately hard, fine, subangular-subrounded, poorly sorted, grading to CLAYSTONE.		
2609	2	ARGILLACEOUS, GLAUCONITIC SANDSTONE: very fine, grading to CLAYSTONE, as above.		
2601.5	2	CLAYSTONE: dark grey, greyish black, moderately hard, sticky, carbonaceous, glauconitic, very fine sandy.		
✓ 2595.4	1.3	VERY ARGILLACEOUS, GLAUCONITIC SANDSTONE: dark green, firm, sticky, fine, subangular-subrounded, poorly sorted, grading to CLAYSTONE.		
2585	3/4	VERY ARGILLACEOUS, GLAUCONITIC SANDSTONE: as above.		
2583	3/4	CLAYSTONE: dark grey, dark green, firm, moderately hard, grading to plastic, very fine quartz, glauconitic sandy.		

SIDEWALL CORE DESCRIPTION

WELL: ANEMONE-1	LOCATION: VIC/P20	GEOLOGIST: A. POMILIO
RUN NUMBER: 1	TYPE:	HOLE SIZE: 12¼"

DEPTH (m)	RECOVERY (inches)	LITHOLOGICAL DESCRIPTION	VISIBLE POROSITY	SHOWS
2579	3/4	CALCARENITE: medium grey, medium olive grey, firm-moderately hard, plastic, some calcareous cement.		
2574	½	CALCARENITE: medium grey, olive grey, firm, sticky, plastic, marly.		
2566	3/4	CALCARENITE: medium grey, medium olive grey, firm-moderately hard, plastic, some calcareous cement.		
2555	½	CLAYSTONE: as above, slightly more calcareous.		
2539	½	CALCAREOUS CLAYSTONE: medium grey, firm, plastic, sticky, calcareous in parts.		
2408	2	CALCAREOUS CLAYSTONE: medium grey, firm-moderately hard, marly, plastic, calcareous, fossiliferous.		
2305.5	LOST			
2210	1.2	CALCAREOUS CLAYSTONE, MARLY: medium grey, olive grey, firm-moderately hard, plastic, sticky.		
2105	2	CALCAREOUS CLAYSTONE: medium grey, olive grey, firm-sticky, marly, as above.		
2014	EMPTY			
1915	LOST			
1802	½	CALCAREOUS CLAYSTONE: as above.		
1704	1/3	CALCAREOUS CLAYSTONE: medium grey, olive grey, firm, plastic, sticky, marly.		
1603	LOST			
1504	2	CALCAREOUS CLAYSTONE: as above.		
1402.5	1	CALCAREOUS CLAYSTONE: medium grey, olive grey, moderately hard-hard, marly, trace very fine pyrite xls.		
1356.5	½	MARL: light-medium grey, moderately hard, argillaceous, calcareous.		
1323.5	1/3	MARL: light-medium grey, firm, argillaceous, calcareous, some glauconite.		
1312.5	1/5	MARL: as above.		

SIDEWALL CORE DESCRIPTION

WELL: ANEMONE-1	**LOCATION:** VIC/P20	**GEOLOGIST:** A. POMILIO
RUN NUMBER: 1	**TYPE:**	**HOLE SIZE:** 12¼"

DEPTH (m)	RECOVERY (inches)	LITHOLOGICAL DESCRIPTION	VISIBLE POROSITY	SHOWS
1262	1	CALCARENITE: light-medium grey, firm-moderately hard, fine-xln, very argillaceous, marly, fossiliferous, common glauconite.		
1194	2	CALCARENITE: medium grey, firm, moderately hard, fine-medium xln, sucrosic texture, very argillaceous, marly, common glauconite.		
1130	1	CALCARENITE: as above.		
		Attempted: 60 Recovered: 50 Lost: 9 Empty: 1		

ANEMONE-1A RFT SURVEY INTERMEDIATE LOGGING RUN

	LEVEL	DEPTH M BKB	DEPTH ft BKB	HYDROSTATIC PRESSURE PSI	HYDRO. GRADIENT PSI/ft	FORMATION PRESSURE PSI	FORMATION GRADIENT PSI/ft	Kh md	DELTA PRESSURE	DEPTH ft SUBSEA
	1	3121.00	10239.38	5115.60	0.4996	4459.80	0.4394	1200	655.80	-10150.80
	2	3171.00	10403.42	5196.30	0.4995	4529.30	0.4391	220	667.00	-10314.84
	3	3251.00	10665.88	5324.90	0.4992	4638.30	0.4385	1050	686.60	-10577.30
	4	3350.00	10990.68	5483.60	0.4989	4777.80	0.4382	400	705.80	-10902.10
	5	3364.00	11036.61	5505.20	0.4988	4802.00	0.4386	100	703.20	-10948.03
	6	3365.50	11041.53	5506.00	0.4987	4803.40	0.4385	210	702.60	-10952.95
	7	3368.50	11051.37	5510.30	0.4986	4807.60	0.4385	200	702.70	-10962.79
	8	3416.00	11207.21	5587.10	0.4985	4875.90	0.4385	42	711.20	-11118.63
	9	3665.00	12024.13	5990.20	0.4982	5247.80	0.4397	126	742.40	-11935.55
	10	3739.00	12266.91	6111.50	0.4982	5349.50	0.4393	214	762.00	-12178.33
	11	3907.00	12818.09	6387.60	0.4983	5662.70	0.4448	8	724.90	-12729.50
	12	3965.00	13008.37	6482.80	0.4984	5718.80	0.4426	298	764.00	-12919.79
	13	4031.00	13224.90	6589.80	0.4983	5825.50	0.4435	117	764.30	-13136.32
	14	4044.00	13267.56	6596.15	0.4972	5843.25	0.4434	72	752.90	-13178.97
	15	4055.50	13305.28	6615.70	0.4972	5861.60	0.4435	11	754.10	-13216.70
	16	4065.00	13336.45	6631.20	0.4972	5884.00	0.4441	12	747.20	-13247.87
	17	4074.50	13367.62	6646.90	0.4972	5893.13	0.4438	80	753.77	-13279.04
	18	4081.00	13388.94	6653.05	0.4969	5903.40	0.4439	66	749.65	-13300.36
	19	4139.00	13579.23	6746.80	0.4968	5990.87	0.4441	74	755.93	-13490.65
*	20	4201.50	13784.28	6847.60	0.4968	6189.70	0.4519	18	657.90	-13695.70
	21	4203.60	13791.17	6852.40	0.4969	6188.30	0.4516	28	664.10	-13702.59
*	22	4209.50	13810.53	6860.00	0.4967	Dry				-13721.95
*	23	4217.20	13835.79	6874.20	0.4968	6193.70	0.4505	108	680.50	-13747.21
	24	4219.30	13842.68	6874.70	0.4966	6192.95	0.4503	62	681.75	-13754.10
*	25	4222.00	13851.54	6878.50	0.4966	S.F.				-13762.96
*	26	4222.40	13852.85	6877.40	0.4965	6309.00	0.4584		568.40	-13764.27
*	27	4227.50	13869.58	6892.20	0.4969	6207.30	0.4504		684.90	-13781.00
	28	4229.30	13875.49	6894.40	0.4969	6203.85	0.4500		690.55	-13786.91
+	29	4230.50	13879.42	6895.50	0.4968	6204.90	0.4499		690.60	-13790.84
*	30	4233.70	13889.92	6904.70	0.4971	S.F.				-13801.34
*	31	4234.00	13890.91	6904.90	0.4971	S.F.				-13802.33
	32	4236.70	13899.77	6903.40	0.4967	6207.10	0.4494	26	696.30	-13811.18
	33	4241.00	13913.87	6910.15	0.4966	6210.00	0.4492	38	700.15	-13825.29
	34	4243.80	13923.06	6914.50	0.4966	6212.15	0.4490	15	702.35	-13834.48

* For sample points taken following Measurement @ 4243.8m, Pressure readings are +1.0 psi higher.

\+ Sample recovered from 2 3/4 gallon chamber contained:
21.35 cu ft gas C1 = 77% C2 = 13% C3 = 6.6% 1C4 = 0.4% nC4 = 0.5% CO2 = nil H2S = nil
5.9 litres of filtrate and 150 ml light oil emulsion

Composition:

Cl-	=	13,500 ppm
SO3 2-	=	60 mg/l
Ca2+	=	520 mg/l
Nitrates	=	0.352 mg/l
Resistivity	=	0.287

The drilling mud composition was:

Cl-	=	13,000 ppm
SO3 2-	=	80 g/l
Ca2+	=	560 g/l
Nitrates	=	none added
Resistivity	=	0.284

Sample in 1 gallon chamber preserved.
From the compositions, the fluid sample is probably mostly mud filtrate.
The oil emulsion on top of the sample is too small to measure specific gravity.
It is light green in colour with a very volatile smell and is probably condensate.

HYDROCARBON SHOWS
ANEMONE-1

DEPTH	LITHOLOGY	GAS %	OIL SHOWS
3355-3366m	Siltstone	TG 0.07 C1 0.04 C2 0.01	Trace faint yellow crush cut fluorescence (in residual ring) from bulk sample
3471-3474m	Siltstone	TG 0.07 C1 0.04	Show as above
3830-3842m	Siltstone	TG 0.02 C1 0.01	Trace pale yellow crush cut fluorescence where dark grey.
3915-3920m	Sandstone	TG 0.02 C1 0.02	Trace dull orange fluorescence and very weak crush cut fluorescence
4030-4052m	Interbedded Siltstone and Sandstone	TG 0.35 C1 0.3 C2 0.03	Occasional pale yellow orange fluorescence and poor to good pale yellow cut fluorescence
4200-4243m	Sandstone	TG 0.2-11 C1 0.2-10 C2 Tr-0.25 C3 NIL-0.08	Traces of dull yellow to gold fluorescence with traces of dull yellow, slow crush cut fluorescence
4531-4561m	Sandstone	TG 0.1-35 C1 0.1-35 C2 Tr-0.9 C3 NIL-0.4	Trace to 5% moderately bright green yellow fluorescence, with trace fast bluish white cut and thin residual ring

HYDROCARBON SHOWS (cont'd)

DEPTH	LITHOLOGY	GAS %	OIL SHOWS
4561-4570m	Sandstone	TG 4-10 C1 4-10 C2 0.1-0.3 C3 0.04-0.09	5-20% dull to moderately bright gold to yellow fluorescence with very slow moderately bright bluish white cut and thin residual ring. Common light to dark brown residual oil staining
4570-4605m	Sandstone	TG 4-50 C1 4-45 C2 0.2-2.5 C3 0.07-0.4 iC4 NIL-0.015	10% dull to moderately bright gold/yellow fluorescence with very slow moderately bright bluish white cut and thin residual ring. Common light to dark brown residual oil staining.
4605-4609m	Sandstone	TG 4-7 C1 3-5 C2 0.3-0.5 C3 0.15-0.3 iC4 Tr nC4 Tr-0.03	Trace to 2% moderately bright bluish white to pale yellow fluorescence with moderately fast to instant bluish white cut.

HYDROCARBON SHOWS
ANEMONE-1A

DEPTH	LITHOLOGY	GAS %	OIL SHOWS
4203-4250m	Sandstone	TG 0.1-10 C1 0.1-9.5 C2 Tr-0.6 C3 NIL-0.04	No fluorescence
4535-4555m	Sandstone	TG 0.9-10 C1 0.9-10 C2 Tr-0.2 C3 Tr-0.02	Trace moderately bright yellow green fluorescence with a weak green yellow cut and a thin residual fluorescent ring
4555-4585m	Sandstone	TG 3-18 C1 2.7-12 C2 0.03-0.3 C3 Tr-0.05	Trace to 5% fluorescence as above
4585-4632m	Sandstone	TG 0.04-4.5 C1 0.04-3.5 C2 NIL-0.25 C3 NIL-0.12	No fluorescence
4632-4647m	Sandstone	TG 0.1-0.45 C1 0.1-0.45	Very rare pale green fluorescence with no direct cut and trace very weak pale green crush cut, and trace residual fluorescent ring

HYDROCARBON SHOWS (cont'd)

DEPTH	LITHOLOGY	GAS %	OIL SHOWS
4743-4750m	Sandstone	TG 1-30 C1 0.2-17 C2 NIL-0.8 C3 NIL-0.4 iC4 NIL-0.01 nC4 NIL-0.03	Less than 1% pale to moderately bright green fluorescence with no direct cut and moderate crush cut and very weak residual fluorescent ring. No odour

TEST RESULTS

DST #1

Perforations: 4599-4618m
4629-4652m (6 shot/ft 60° offset)

Results : Flow Rates

1. Condensate : 120-150 bpd (gravity 0.78 SG)
2. Water : 120-140 bpd (NaCl = 10,000 ppm)
3. Gas : 0.8-1.0 mmscf (gravity = 0.94) (air = 1) (C1/Ctotal = ±80%)
4. WHIP : 250-350 psi

Well head initial pressure
Kaurosh

5. Maximum shut in reservoir pressure at gauge : 9245 psi

DST #2

Perforations: 4535-4545m (6 shot/ft 60° offset)
(DST #1 isolated by bridge plug)

Results : Flow Rates

1. Water : 60 bpd
2. Gas : RTSTM
3. Condensate : None
4. WHIP : 10 psi
5. Maximum shut in reservoir pressure at gauge : 8937 psi

WIRELINE LOGS

SUITE NO.	LOG	INTERVAL
1	DLL/SLS/GR/CAL	1113.5-258m
2	DLT/MSFL/LDT/CNT	DLT/MSFL 3063-1104m
	GR/SP/CAL (SUPERCOMBO)	LDT/CNT 3049-2450m
	SHDT/FMS/GR	3065-2450m
	CST/GR	3063-1104m
3	DLL/BHC/MSFL	4155-3066.6m
	LDL/CNL/NGS	4142-3066.6m
	CERT	4121-3066.6m
4	DLL/BHC/MSFL/NGS	4465-3880m
	LDL/CNL/NGS	4490-3880m
	SHDT/FMS/GR	4486.3-3068m
	VSP	4360-400m
	RFT/GR	4243-3121m
	CBL/VDL/GR	3068-1050m
5	DLL/MSFL/SLS/GR	4743-4488.5m
6	LDL/CNL/GR	4748-4530m
CASED	CNT COUNTS/GR	4734-3800m
	GST/GR	4644-3890m
	CBL/VDL/GR	

MWD LOGS

ANEMONE-1

HOLE SIZE	TOOLS (Teleco)	INTERVAL
17½"	Directional (D)	560-1115m
12¼"	Resistivity, Gamma Ray, Directional (RGD)	1115-3076m
8½"	Resistivity, Gamma Ray, Directional (RGD)	3076-4605m

Note:	RGD	failed	560-1115m
	RGD	failed	2939-3076m
	RG	failed	3358-3850m
	RG	intermittent	3850-4043m
	RGD	failed	4273-4293m
	RGD	failed	4454-4510m
	RG	intermittent	4510-4557m
	RGD	failed	4557-4609m

ANEMONE-1A

HOLE SIZE	TOOLS (Smith)	INTERVAL
8½"	Directional (D)	3896-4500m

APPENDIX 1

WELL COMPLETION REPORT

ANEMONE-1,1A

BASIC DATA

APPENDIX 1

MICROPALAEONTOLOGY

MICROPALAEONTOLOGICAL REPORT

ON THE PETROFINA ET AL.

ANEMONE NO.1 WELL

GIPPSLAND BASIN.

M. Apthorpe
Apthorpe Palaeontology Pty Ltd
35 Bailey Street, Trigg 6029
Western Australia
3rd October 1989

CONTENTS

1. INTRODUCTION 2

2. LIST OF SAMPLES EXAMINED 3

3. NATURE AND AGE SIGNIFICANCE OF THE FORAMINIFERAL ASSEMBLAGES 4

4. REFERENCES 13

Table 1: Summary of micropalaeontological age determinations, Anemone-1.

Enclosure 1. Distribution of planktonic foraminifera in selected sidewall cores, 1130 to 2615m, Anemone-1.

Enclosure 2. Distribution of benthonic foraminifera in selected sidewall cores, 1130 to 2615m, Anemone-1.

1. INTRODUCTION

Twenty sidewall cores between the depths 1130m to 2615m from Anemone-1 were submitted by Petrofina Exploration Australia S.A. for micropalaeontological age dating and environmental interpretation.

The interval 1130 to 2210m as seen in these cores consists of Pliocene and Miocene limestones and marls of outer shelf and upper bathyal facies. The deepest sample at 2210m is high in the early Miocene. A 200m sample gap intervenes between this and the next sample at 2408m, which is of Latest Oligocene age. The facies in this and the next sample, at 2539m, is similar to that of the Miocene above. Between 2555m and 2579m, three samples consist of bioclastic limestone, in part silty and recrystallised, which contains a poorly preserved fauna identified as Zone I-1, of Late Oligocene age. Some features of the fauna suggest the possibility of slumping or mass transport to explain the genesis of this limestone. This unit overlies an interval with a glauconitic matrix. A sidewall core at 2585m in this unit yielded foraminifera. Extremely rare specimens suggest that the age is either Early Oligocene or Eocene, but the foraminiferal evidence in this sample is very poor. Two samples in a glauconitic sandstone beneath this were barren of foraminifera.

The sequence appears to differ from that seen in the Angler-1 well. Marine faunas of Middle Eocene age were not definitely identified in Anemone-1. All that can be said of the sample at 2585m is that it lies somewhere between Middle Eocene and Early Oligocene in age, based on the range of two species. Whereas in Angler-1 Early Oligocene carbonates of zone J were identified above the marine Gurnard Formation, in

Anemone-1, zone J (usually seen in the basal Lakes Entrance Formation) was not seen in the carbonate samples submitted. The oldest carbonate sample is the Late Oligocene (Zone I-1) sample at 2579m. As much of the Late Oligocene and Early Miocene in Angler was masked by caving in the ditch cuttings, comparisons of that part of the sequence are not possible. The sequence above 1802m in Anemone-1 appears to be similar to the deep-water mid-Miocene to Late Pliocene interval seen in Angler-1.

The foraminiferal zonation used in this report is the zonal scheme developed for the temperate water faunas of the Gippsland Basin by D.J.Taylor (1966, 1983a, 1983b and unpublished data).

2. LIST OF SAMPLES STUDIED.

All samples are sidewall cores. Depths are in metres below rotary table.

1130m	2105
1194	2210
1262	2408
1312.5	2539
1323.5	2555
1356.5	2566
1402.5	2579
1504	2585
1704	2601.5
1802	2615

3. NATURE AND AGE SIGNIFICANCE OF THE FORAMINIFERAL ASSEMBLAGES.

At 1130m : Zone A-3 : Late Pliocene.

The sidewall core contains a moderately diverse foraminiferal fauna consisting mostly of small planktonic specimens. *Globorotalia inflata* is moderately abundant, as is *G. scitula scitula*. The age is defined by the presence of *Globorotalia inflata*, *G. tosaensis tosaensis* and *G. cf. puncticulata*, in the absence of the Pleistocene indicator, *G. truncatulinoides*. The assemblage can be approximately correlated with zone N21 of the tropical zonation. The virtual absence of *Globigerinoides* and *Orbulina* may suggest cold temperate water temperatures at this time. The benthic assemblage consists of genera such as *Cassidulina*, *Cibicides*, *Astrononion*, *Anomalinoides*, *Bolivina* and *Euuvigerina*, suggesting deep outer shelf water depths. Bathyal indicators appear to be lacking.

At 1194m : Zone A-4 : late Early Pliocene to Mid Pliocene.

This sample contains an abundant, well-preserved planktonic-dominated fauna. The assemblage is dominated by *Globorotalia cf. inflata*, with some specimens very close to *G. inflata* s.s., and many specimens grading into *G. crassaformis ronda*. *Globorotalia conoidea* is also very common. *Globigerina spp.* consist of very small specimens; *Globigerinoides spp.* are extremely rare. Based on the age ranges of *Globorotalia cf. inflata* and *G. crassaformis*, the age is no older than zone A-4 (Taylor, unpublished data). The evolutionary appearance of the *G. inflata* group marks the base of Taylor's zone A, low in the Pliocene. Based on the ranges given by Jenkins (1986) for the ages of G. conomiozea and G. miozea conoidea, the age would not be younger than Early Pliocene. The benthonic assemblage is sparse but diverse. The most common species are Vulvulina pennatula and Planulina cf. wuellerstorfi, pointing to bathyal water depths in excess of 500m.

At 1262m : Zone B-1 : Earliest Pliocene to Latest Miocene.

The sample contains an abundant planktonic dominated assemblage, dominated by Globorotalia miozea conoidea, Turborotalia acostaensis and small globigerinids. There is a total absence of the Globorotalia inflata group, indicating an age older than zone A. The occurrence of both Globorotalia conomiozea and G. miotumida miotumida together is inconsistent with distributions reported in Taylor's unpublished 1981 zonation framework chart. However, subsequently Taylor recorded both species together in Helios-1 at 645m, in a sample which he dated as zone B-1 (Taylor, 1983a). Benthonic specimens are moderately common in this sample. The presence of species such as Karreriella bradyi, Osangularia bengalensis and Vulvulina pennatula suggests upper bathyal water depths.

1312.5m - 1402.5m : Zone B-2 : Late Miocene.

Four sidewall cores in this interval contain variable, planktonic-dominated assemblages. All contain Globorotalia miotumida miotumida, whereas G. conomiozea is present only as two "cf." occurrences. This suggests an age in B-2 rather than B-1. This age assignment is confirmed by the occurrence of

Globorotalia lenguaensis at 1323.5m and 1356.5m. The lowest three samples contain Turborotalia acostaensis acostaensis, indicating an age no older than B-2. Some reworking from Zone E is indicated by the presence of Praeorbulina glomerosa, and probably also by the persistent occurrences of Globorotalia miozea miozea (from Zone D and older). Variations in planktonic assemblages in this interval are marked. The highest sidewall core at 1312.5m is dominated by large specimens of Globorotalia miozea conoidea. The next sample at 1323.5m is dominated by small Turborotalia, principally T. continuosa and T. cf. siakensis. The sample at 1356.5m is dominated by small Globorotalia scitula and small Turborotalia spp. The deepest sample at 1402.5m is also dominated by these two forms, with Orbulina becoming more common in this sample. The presence of Turborotalia mayeri in this deepest sample suggests an age near the boundary with zone C. Taylor equates the extinction of this species with the top of zone C. The variations in the abundance of the principal planktonic species can be interpreted as indicating the influence of differing water masses, or current systems, through the Late Miocene.

The benthonic assemblage in these sample is very sparse, with no one species or group dominant. Sphaeroidina bulloides is conspicuous because of the large size of the specimens. The species has a wide depth occurrence in Gippsland, from 100m to greater than 2000m (Taylor, unpublished data). Martinotiella communis and Karreriella bradyi are present as occasional specimens, suggesting upper slope water depths. The remainder of the benthos consists of Cassidulina spp., Cibicides spp., Gyroidina sp., Anomalinoides spp., Notorotalia and Siphouvigerina, suggesting either deep shelf depths, or that the benthic assemblage has been transported from those depths into deeper water.

At 1504m : probably Zone C : Middle Miocene.

The presence of Globorotalia miozea miozea in this sample was initially thought to indicate an age in zone D-1, at which level this species becomes extinct. However, further work has shown the presence of rare specimens of G. miozea miozea much higher in the sequence, and these occurrences are now interpreted as reworking. This sample contains the deepest occurrence of G. miotumida miotumida s.s. It also contains G. lenguaensis, reported by Bolli and Saunders (1986) to range no older than N14. Based on the occurrence of the latter two species, and the presence of Turborotalia cf. acostaensis, the sample is thought to be of zone C age, at the top of the Middle Miocene. The presence of Hoeglundina elegans and Cyclammina sp. suggests a bathyal environment.

1704 - ?1802m : Zone D-1 : Middle Miocene.

Both samples consist of a silty limestone or calcisiltite, indurated and with poorly preserved assemblages, often pyrite-filled. The presence of Globorotalia peripheroacuta, G. peripheroronda, G. zealandica and Orbulina spp. in the higher sample indicates a definite D-1 age determination. The lower sample still contains G. peripheroacuta, suggesting the same age, but Orbulina is virtually absent (one specimen of O. suturalis was found), which is anomalous. No specimens of Praeorbulina were found. This suggests possible shape sorting of the assemblage, as Orbulina (and its ancestor, Praeorbulina) are normally abundant at this level above the Orbulina datum. (See also discussion on next sample below). The benthos of both samples is sparse. Cassidulina plus uvigerinids are moderately common in the higher sample. Karreriella bradyi and Vulvulina pennatula in the deeper sample, plus Cassidulina and lagenids suggest an upper bathyal depth. Although the environment is not well defined by these two samples, the presence of Cassidulina neocarinata and the possibility of shape sorting of the planktonic component both suggest that this poorly preserved interval may represent canyon fill sediments, emplaced by mass transport.

At 2105m : Zone E-2 - Latest Early Miocene.

The foraminiferal assemblage in this sample is abundant and diverse, in contrast to the samples just discussed. The planktonic component is dominated by the genus Globigerinoides. G. sicanus and Praeorbulina glomerosa are moderately common. Together these species indicate Taylor's zone E-2, a zone immediately prior to the Orbulina datum, and thus equivalent to tropical zone N8. Other conspicuous planktonic species present include Globorotalia miozea miozea, G. praescitula and G. menardii. The benthonic assemblage is diverse, and includes many small Lagena and Fissurina spp. Osangularia bengalensis is conspicuous; Cibicides spp. are almost absent. The depositional environment is interpreted as probably upper bathyal.

Taylor, in common with other authors such as Bolli and Saunders (1986), places the Middle / Early Miocene boundary at 15.0 million years before present, between tropical zones N8 and N9. However, some authors (eg. Haq et al., 1987) place the boundary at 16.2 m.y., thus including Zone N8 in the Middle Miocene. In such usage, zone E-2 would also be called "Middle Miocene". This illustrates the problem of using European stage subdivisions when the usage applied to these terms has not always been uniform. Correlation in Gippsland by use of the local zone names eliminates one source of ambiguity.

At 2210m : Zone F : Early Miocene.

The indicator species for the base of zone F, Globigerinoides sicanus (=bisphericus), was not found in this sample. However, other species present include G. transitorius, G. miozea miozea and G. praescitula. The latter two species, which are common in this sample, have base ranges in zone F in Selene-1 (Taylor, 1983b). Also present is Globorotalia zealandica, which has the upper part of its range within the equivalent of zone F (Jenkins, 1971). Zone F can be correlated approximately with the upper part of Zone N7 of the tropical zonation. The environment of deposition is questionably interpreted as upper bathyal, although some species may well have been derived from shelf depths.

At 2408m : Zone H-2 : Latest Oligocene.

The age of this sample is based primarily on the base range of Globigerina woodi woodi, which is abundant here. Globigerinoides spp. are virtually absent - only two somewhat questionable specimens being found after detailed searching. The presence of Globigerina euapertura and Turborotalia opima opima initially suggested correlation with Taylor's zone I-1, in spite of the presence of G. woodi. However, J. Rexilius (pers. comm.) indicates that T. opima opima is unreliable as an indicator species in Gippsland; and the species has long been recorded from the Early Miocene of Western Australia (Apthorpe, unpublished data). Jenkins (1986) records G. euapertura as overlapping the range of G. woodi. On this basis the provisional dating of the sample as I-1 has been changed to zone H-2. Taylor correlated this zone with basal zone N4, in the latest Oligocene.

The benthonic assemblage contains an unusual number of large Ammobaculites cf. agglutinans and other agglutinated species. On the basis of the presence of Vulvulina pennatula, Karreriella bradyi and abundance of lagenids and Brizalina, the sample is considered to have been deposited in upper bathyal depths.

2539m - 2579m : Zone I-1 : Late Oligocene.

The uppermost sample in this interval contains an abundant planktonic assemblage dominated by very small Globigerina and Turborotalia spp., mostly specifically indeterminable. Species suggestive of the age are extremely rare. The presence of Globoquadrina dehiscens establishes that the age is no older than zone I-1 (Taylor, unpublished data), and the absence of Globigerina woodi s.s. indicates that it is no younger than this. (Specimens identified as G. cf. woodi occur rarely in this and other samples below). Turborotalia opima opima is intermittently present, becoming more common in the two lowest samples. Turborotalia extans occurs in three of the four samples. Its overlap with Globoquadrina dehiscens seems to contradict its range as suggested by Taylor, who would confine it to zone I-2 and older. No other indications of I-2 species were seen.

The benthonic assemblage of all four sidewall cores contains many species in common, but their abundances vary from sample to sample. The sample at 2539m contains a sparse benthos, which includes Hoeglundina elegans, Karreriella bradyi, Martinotiella communis and Vulvulina pennatula. These species are considered to indicate upper bathyal water depths. The sample at 2555m is a limestone, much of the washed residue consisting of broken foraminifera with relatively few specimens identifyable. The sparse benthos is dominated by small specimens of Cibicides, Pullenia and Globocassidulina - essentially a shelf assemblage. Some of the planktonic specimens are deformed, possibly due to mass transport before the chambers were diagenetically infilled with calcite. These two observations suggest that the sediment may have been emplaced by slumping of material from the (outer) shelf. The sample at 2566m contains a large amount of residue greater than 70 microns size. Much of the sample consists of quartz silt and broken biogenic grains; foraminifera are relatively sparse, poorly preserved and frequently indeterminable. Bone chips and teeth are more common than usual. The presence of a few bathyal foraminifera (Cyclammina sp., Karreriella bradyi, Vulvulina pennatula) continues to suggest bathyal depths of deposition. Sediment influx from shallow depths is strongly suggested. The deepest carbonate sample, at 2579m, contains an abundant but recrystallised foraminiferal assemblage. The low diversity benthonic part of the assemblage is dominated by Cibicides spp., suggesting a shelf origin for some of the fauna. However, rare specimens of Cyclammina sp. and Vulvulina pennatula continue to suggest bathyal depths of deposition, so that some of the sediment may well have been transported downslope. The sample contains chips of Latrobe Group claystones and sandstones, which are interpreted to be the result of drilling contamination (because of the variety of different rock types present), rather than indicating reworking.

At 2585m : possibly zone J ??? : ?possibly Early Oligocene ???

This sample consists of coarse quartz grains and rare glauconite pellets in a large amount of matrix of hard, dark green glauconite. Embedded in the matrix are rare foraminifera, predominantly planktonic. Virtually all specimens are broken or have their walls partly dissolved away. Although many of the specimens can be identified as *Globigerina sp.* (or *Subbotina sp.*) on the basis of the internal glauconite molds which remain, most diagnostic features of specimens have been destroyed. Very rare specimens, mostly thick-walled, form an exception to this statement, but the age indications are somewhat contradictory. One whole specimen of *Globorotalia testarugosa* was recovered. The species is reported only from the Oligocene by Jenkins (1971). *Globigerina cf. angiporoides* occurs as a single, damaged specimen. The range of *G. angiporoides* is Middle Eocene to Early Oligocene. *Planorotalites cf. renzi* is identified as a single, partially dissolved small specimen. If the specimen is, in fact, *P. renzi*, it would indicate a Middle Eocene age for the sample. There is thus no clear indication of the age from the foraminiferal assemblage, due mostly to the extremely bad preservation. The benthonic assemblage is similarly affected; the most common identified form was the robust *Globocassidulina subglobosa*. *Cibicides spp.* and ?*Haplophragmoides sp.* comprise most of the other identified forms. There is too little evidence to suggest a water depth. The environment was either a marine shelf, or a marginal marine area into which marine fauna was carried. The former interpretation is tentatively preferred.

2601.5 – 2615m : age indeterminable : virtually barren.

The higher sample is a greensand, consisting of a large amount of brownish altered glauconite pellets, and rare quartz. Rare fish teeth and bone fragments suggest a marine origin, but only one fragmentary foraminiferid was found. The sample at 2615m is a glauconitic quartz sand in which no foraminifera were found. No age can be suggested for either sample.

4. REFERENCES.

Bolli, H.M. and Saunders, J.B. (1986): Oligocene to Holocene low latitude planktic foraminifera. p155-262 in Bolli, H.M., Saunders, J.B. and Perch-Nielsen, K. (eds), Plankton Stratigraphy : Cambridge University Press.

Haq, B.U., Hardenbol, J. and Vail, P.R. (1987): Chronology of fluctuating sea levels since the Triassic : Science, v.235, p.1156-1166.

Jenkins, D.G. (1971) : New Zealand Cenozoic Planktonic Foraminifera. New Zealand Geological Survey, Paleontological Bulletin 42.

Jenkins, D.G. (1986) : Southern mid-latitude Paleocene to Holocene planktic foraminifera. p.263-282 in Bolli, H.M., Saunders, J.B. and Perch-Nielsen, K. (eds), Plankton Stratigraphy : Cambridge University Press.

Taylor, D.J. (1966) : Esso Gippsland Shelf No.1 : the Mid-Tertiary foraminiferal sequence. Commonwealth of Australia, Bureau of Mineral Resources, Geology and Geophysics. Publications Petroleum Search Subsidy Acts Australia, no. 76, p.31-46.

Taylor, D.J. (1983a) : Stratigraphy of the foraminiferal sequence in Helios #1, Gippsland Basin. Appendix 6 in Helios-1 well completion report. Phillips Australian Oil Company, unpublished report.

Taylor, D.J. (1983b) : Stratigraphy of the foraminiferal sequence in Selene #1, Gippsland Basin. Appendix No.7 in Selene-1 well completion report. Phillips Australian Oil Company, unpublished report.

TABLE 1. SUMMARY OF MICROPALAEONTOLOGICAL AGE DETERMINATIONS, ANEMONE-1.

DEPTH (M)	ZONE	AGE	ENVIRONMENT
At 1130	A-3	Late Pliocene	Deep outer shelf
At 1194	A-4	late Early Pliocene to mid-Pliocene	Bathyal
At 1262	B-1	Earliest Pliocene to latest Miocene	Upper bathyal
1312.5-1402.5	B-2	Late Miocene	Outer shelf to upper bathyal.
At 1504	probably C	Middle Miocene	Upper bathyal
1704-?1802	D-1	Middle Miocene	Upper bathyal - possibly canyon fill
At 2105	E-2	latest Early Miocene	Probably upper bathyal
At 2210	F	Early Miocene	Probably upper bathyal
At 2408	H-2	Latest Oligocene	Upper bathyal
2539-2579	I-1	Late Oligocene	Upper bathyal, possibly + slumping
At 2585	J???(-N?)	???Early Oligocene (to possibly Eocene)	indet.(see text)
2601.5-2615	-	indeterminable (virtually barren)	

PE900767

This is an enclosure indicator page.
The enclosure PE900767 is enclosed within the container PE902139 at this location in this document.

The enclosure PE900767 has the following characteristics:

ITEM_BARCODE = PE900767
CONTAINER_BARCODE = PE902139
NAME = Planktonic Foraminifera
BASIN = GIPPSLAND
PERMIT = VIC/P20
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Anemone 1, 1A Planktonic Foraminifera. Enclosure 1 from appendix 1 of WCR volume 1.
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W997
WELL_NAME = Anemone-1
CONTRACTOR =
CLIENT_OP_CO = Petrofina Exploration Australia S.A.

(Inserted by DNRE - Vic Govt Mines Dept)

PE900768

This is an enclosure indicator page.
The enclosure PE900768 is enclosed within the container PE902139 at this location in this document.

The enclosure PE900768 has the following characteristics:

ITEM_BARCODE =	PE900768
CONTAINER_BARCODE =	PE902139
NAME =	Benthonic Foraminifera
BASIN =	GIPPSLAND
PERMIT =	VIC/P20
TYPE =	WELL
SUBTYPE =	DIAGRAM
DESCRIPTION =	Anemone 1, 1A Benthonic Foraminifera. Enclosure 2 from appendix 1 of WCR volume 1.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	
W_NO =	W997
WELL_NAME =	Anemone-1
CONTRACTOR =	
CLIENT_OP_CO =	Petrofina Exploration Australia S.A.

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 2

APPENDIX 2

WELL COMPLETION REPORT

ANEMONE-1,1A

BASIC DATA

APPENDIX 2

PALYNOLOGY

PALYNOLOGY OF PETROFINA ANEMONE - 1

GIPPSLAND BASIN, AUSTRALIA

by

ROGER MORGAN

Box 161, MAITLAND, SOUTH AUSTRALIA 5573

PH. (088) 322795
FAX. (088) 322658

FOR COMPLETION REPORT

OCTOBER 1989

PALYNOLOGY OF PETROFINA ANEMONE-1

GIPPSLAND BASIN, AUSTRALIA

CONTENTS

		PAGE
I	SUMMARY	3
II	INTRODUCTION	5
III	PALYNOSTRATIGRAPHY	7
IV	REFERENCES	18
FIG 1	ZONATION FRAMEWORK	
FIG 2	MATURITY PROFILE, ANEMONE-1	

I SUMMARY

2574m : indeterminate : very lean.

2583m (swc) : probably upper N. asperus Zone (P. comatum Dinoflagellate Zone) : Late Eocene : offshore marine : immature.
HIATUS removing middle N. asperus Zone.

2595.4m (swc) - 2620m (swc) : lower N. asperus Zone (D. heterophlycta Dinoflagellate Zone) : Middle Eocene : offshore marine : immature.
HIATUS removing P. asperopolus to lower M. diversus Zones (early Eocene)

2650.8m (swc) - 2660m (swc) : upper L. balmei Zone (A. homomorphum Dinoflagellate Zone) : late Paleocene : offshore marine : immature.

2690m (swc) - 2728.5m (swc) : lower L. balmei Zone (E. crassitabulata Dinoflagellate Zone) : early to mid Paleocene : offshore marine : immature.

2750m (swc) - indeterminate (barren) : logs suggest Paleocene : POSSIBLE HIATUS removing early Paleocene (Danian) T. evittii Dinoflagellate Zone, or possibly represented by unfavourable lithologies.

2762m (swc) - 2809.5m (swc) : upper T. longus Zone (M. druggii Dinoflagellate Zone) : latest Maastrichtian : nearshore marine : immature.

2816m (swc) - 2825m (swc) : middle T. longus Zone : Maastrichtian : brackish : immature.

2838m (swc) - 3230m (cutts) : lower T. longus Zone : Maastrichtian : non-marine to brackish : immature.

3250m (cutts) - 3385m (cutts) : upper T. lilliei Zone (non-marine part) : Campanian : non-marine : immature.

3450m (cutts) - 3515m (cutts) : middle T. lilliei Zone (part I. korojonense Dinoflagellate zone) : Campanian : nearshore to brackish : immature.

3570m (cutts) - 3875m (cutts) : lower T. lilliei Zone : (part I. korojonense Dinoflagellate Zone) : Campanian : nearshore marine : immature.

3950m (cutts) - 4100m (cutts) upper N. senectus Zone (less marine part) : Campanian : marginally marine to non-marine : marginally mature for oil.

4159m (core catcher) - 4375m (cutts) (possibly 4285m) : lower N. senectus Zone (N. aceras Dinoflagellate Zone 4159 - 4285) : Campanian : nearshore marine to offshore marine : marginally mature for oil.

4400m (cutts) - 4775m (cutts) : T. pachyexinus Zone (I. cretacea - O. porifera Dinoflagellate Zones) : Santonian : offshore marine to nearshore marine ; marginally mature but containing fully mature specimens below 4570m. These may indicate penetration of an unconformity or contemporaneous volcanic activity.

II INTRODUCTION

Eighty five samples were submitted by Mark Tringham and Brian Thurley for palynology. Twenty eight were sidewall cores in the Maastrichtian to Eocene section. During the drilling of the older Cretaceous, several batches of urgent "hotshot" cuttings samples were examined, to provide age control before logging, comprising twelve samples. A further twenty seven cuttings samples plus one bit sample were submitted at well completion. Fillin samples to tighten up boundaries comprised the last sample group and numbered seventeen samples. All these samples are reported in detail herein. Raw data is presented in Appendix I.

The published palynostratigraphic framework for the Cretaceous of Australia is most recently reviewed by Helby, Morgan and Partridge (1987), but detailed modifications to this scheme for Petrofina were discussed by Morgan (1988). Until Anemone-1, dinoflagellates had been only rarely recorded from the Cretaceous of the Gippsland Basin, although Marshall (1988) provided taxonomic study of some Santonian dinoflagellates.

In the Tertiary, the Gippsland zonal scheme was most recently published by Partridge (1976), but the scheme is essentially similar to that for New Zealand for which substantial new data is available in Wilson (1988). Significant new Gippsland data is available in unpublished and privately circulated material, Harris (1985), Morgan (1988) and Marshall and Partridge (1988). The zonal framework of Partridge (1976) is shown in fig.1.

Organic maturity data was generated in the form of the Spore Colour Index and plotted on Fig. 2. The oil and gas windows follow the general consensus of geochemical literature. The oil window corresponds to spore colours of

	AGE		SPORE - POLLEN ZONES	DINOFLAGELLATE ZONES
Early Tertiary	Early Oligocene		P. tuberculatus	
Early Tertiary	Late Eocene		upper N. asperus	P. comatum
Early Tertiary	Late Eocene		middle N. asperus	V. extensa
Early Tertiary	Middle Eocene		lower N. asperus	D. heterophlycta W. echinosuturata
Early Tertiary	Early Eocene		P. asperopolus	W. edwardsii W. thompsonae W. ornata
Early Tertiary	Early Eocene		upper M. diversus	W. waipawaensis
Early Tertiary	Early Eocene		middle M. diversus	
Early Tertiary	Early Eocene		lower M. diversus	W. hyperacantha
Early Tertiary	Paleocene		upper L. balmei	A. homomorpha
Early Tertiary	Paleocene		lower L. balmei	E. crassitabulata T. evittii
Late Cretaceous	Maastrichtian		T. longus	M. druggii
Late Cretaceous	Campanian		T. lillei	I.korojonense
Late Cretaceous	Campanian		N. senectus	X. australis
Late Cretaceous	Santonian		T. pachyexinus	N. aceras I. cretaceum O. porifera
Late Cretaceous	Coniacian		C. triplex	
Late Cretaceous	Turonian		C. triplex	C. striatoconus P. infusorioides
Late Cretaceous	Cenomanian		A. distocarinatus	
Early Cretaceous	Albian	Late	P. pannosus	
Early Cretaceous	Albian	Middle	upper C. paradoxa	
Early Cretaceous	Albian	Early	lower C. paradoxa	
Early Cretaceous	Albian	Early	C. striatus	
Early Cretaceous	Aptian		upper C. hughesi	
Early Cretaceous	Aptian		lower C. hughesi	
Early Cretaceous	Barremian		F. wonthaggiensis	
Early Cretaceous	Hauterivian		F. wonthaggiensis	
Early Cretaceous	Valanginian		upper C. australiensis	
Early Cretaceous	Berriasian		lower C. australiensis	
Juras.	Tithonian		R. watherooensis	

FIGURE 1 ZONATION FRAMEWORK

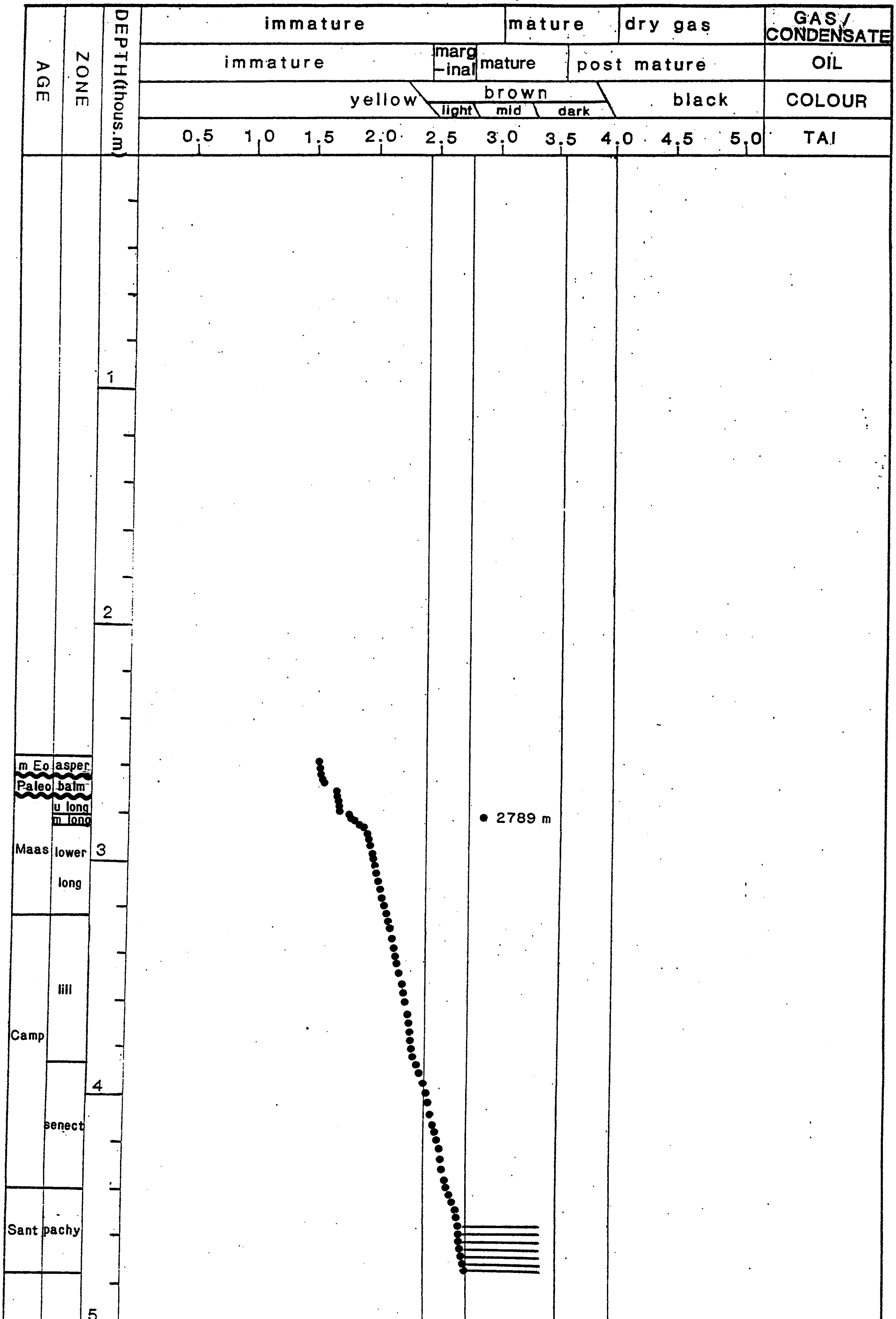


FIGURE 2 MATURITY PROFILE, ANEMONE 1

light-mid brown (2.7) to dark brown (3.6). This would correspond to Vitrinite Reflectance values of 0.6% to 1.3%. However, factors such as detailed kerogen type, basin type, basin history and heating curves all affect precise interpretation, and analytical machine-based maturity parameters are probably more reliable.

III PALYNOSTRATIGRAPHY

A. 2574m (swc) : indeterminate

The yield was too poor for assignment. Nothothofagidites spp. are the most frequent but only indicate an N. asperus or younger assignment. The dinoflagellates are not age diagnostic, but do indicate marine enviroments.

B. 2583m (swc) : probably upper N. asperus Zone (P comatum Dinoflagellate Zone)

This sidewall core is quite lean and so is not confidently assigned. The presence of frequent Nothofagidites spp including N. falcata indicates the N. asperus Zone or younger, and the absence of middle N. asperus Zone markers, plus the dinoflagellate evidence, favour the upper N. asperus Zone. Nothofagidites spp. dominate in a lean assemblage.

Frequent Phthanoperidinium comatum indicates the late Eocene P. comatum Dinoflagellate Zone. Operculodinium spp. are also frequent.

Offshore marine environments are indicated by the high content (50%) of dinoflagellates, despite their low diversity.

Colourless palynomorphs indicate immaturity for hydrocarbons.

C. Middle N. asperus Zone (V. extensa Dinoflagellate Zone)

This interval was not seen and is presumed absent by hiatus.

D. 2595.4m (swc) - 2620m (swc) : lower N. asperus Zone (D. heterophlycta Dinoflagellate Zone).

Zonal assignment is indicated at the top by youngest Santalumidites cainozoicus and Proteacidites pachypolus and at the base by oldest common Nothofagidites, and the dinoflagellate data. Nothofagidites and Proteacidites are common, and diversity is low in these environments.

Assignment to the D. heterophlycta Dinoflagellate Zone is indicated at the top by youngest Deflandrea heterophlycta, Tritonites pandus and T. inaequalis. At the base, oldest Rhombodinium glabrum and Achilleodinium biformoides are diagnostic. Oldest D. phosphoritica occurs at 2609m (swc). Cleistosphaeridium, Cordosphaeridium, Spiniferites and Corrudinium are frequent. Homotriblium tasmaniense at 2620m is probably reworked.

Offshore marine environments are indicated by the dominance of dinoflagellates over terrestrial palynomorphs and their moderate diversity.

Colourless palynomorphs indicated immaturity for hydrocarbons.

E. P. asperopolus to lower M. diversus Zones not seen.

Their absence indicates a significant hiatus removing all of the Early Eocene, and a part of the Middle Eocene.

F. 2650.8m (swc) - 2660m (swc) : upper L. balmei Zone (A. homomorphum Dinoflagellate Zone)

Zonal assignment is clearly indicated at the top by consistent Gambierina rudata and at the base by oldest Proteacidites grandis and P. incurvatus. Proteacidites, Dilwynites and Haloragacidites harrisii dominate the moderately diverse assemblages.

Dinoflagellates dominate (70% of palynomorphs) but are of moderate diversity. Zonal assignment is indicated at the top by the absence of younger indicators and at the base by oldest Apectodinium homomorphum. A. homomophum dominates the upper assemblage and Spiniferites dominates the lower one.

Offshore marine environments are indicated by the dominant and diverse dinoflagellates.

Colourless palynomorphs indicate immaturity for hydrocarbons.

G. 2690m (swc) - 2728.5m (swc) : lower L. balmei Zone (E. crassitabulata Dinoflagellate Zone).

Zonal assignment is indicated at the top by youngest Tetracolporites verrucosus and the absence of younger indicators, and at the base by oldest consistent Lygistepollenites balmei without older markers. Within the interval, Proteacidites, Phyllocladidites mawsonii and Cyathidites are frequent in moderately diverse assemblages.

Dinoflagellates are most frequent at the interval base (80%) and decrease rapidly to 5% at the interval top. Diversity decreases upward. Age diagnostic species include Isabelidinium bakeri (2728.5m) and Deflandrea medcalfii (2707m) without other markers. These indicate the E. crassitabulata Zone. Areoligera medusettiformis dominates at 2728.5m.

Environments are offshore marine at the base, becoming more nearshore towards the top, as shown by dinoflagellate content and diversity.

Colourless to light yellow palynomorphs indicate immaturity for hydrocarbons.

H. 2750m (swc) : indeterminate.

This sample was almost barren, yielding only a few longranging species.

I. basal L. balmei Zone (T. evittii Dinoflagellate Zone) not seen.

The absence of this interval may be due to hiatus, or be represented by unfavourable lithologies such as that at 2750m.

J. 2762 (swc) - 2809.5m (swc) : upper T. longus Zone (M. druggii Dinoflagellate Zone).

Assignment is shown at the top by youngest Tricolpites confessus and T. longus supported by youngest T. waipawaensis at 2809.5m. At the base, oldest G. rudata dominance over N. endurus is diagnostic. Proteacidites spp., G. rudata and P. mawsonii dominate these assemblages.

Dinoflagellates are not common, but zonal assignment is clearly indicated in all samples by the presence of Manumiella conorata, associated at 2762m with M.

druggii. Cyclopsiella vieta is common at 2789m, and frequent Homotriblium tasmaniense at 2809.5m is presumed caved.

Environments are nearshore marine as shown by low dinoflagellate content and diversity.

Light yellow spore colours indicate immaturity for hydrocarbons. The sample at 2789m contains mid-brown colours, but these are anomolous in the section and are presumed to be caused by some staining effect peculiar to the environment of deposition.

K. 2816m (swc) - 2825m (swc) : middle T. longus Zone.

These samples are assigned by having G. rudata and N. endurus in equal quantities. In the upper T. longus Zone above, G. rudata dominates while in the lower T. longus Zone below, N. endurus dominates. Proteacidites spp. and P. mawsonii are frequent in this interval, and Triporopollenites sectilis is more common here then elsewhere in the section. T. lilliei is a consistent component and some larger spores (Aequitriradites Foraminisporis and Cicatricosisporites) are also seen here and may reflect the environment, as these are less able to be transported.

Dinoflagellates are absent, but the presence of very rare spiny acritarchs and the high cuticle content of residues indicate brackish environments.

Light yellow spore colours indicate immaturity for hydrocarbon generation.

L. 2838m (swc) - 3230m (cutts)(3063m in swc) : lower T.

longus Zone.

Assignment is indicated at the top by the dominance of N. endurus over G. rudata and at the base by oldest T. verrucosus. The zone base at 3230m is in cuttings and could be caved somewhat. At 3170m (cutts), several T. verrucosus specimens occur, but it is absent from assemblages at 3130m and 3120m (also cuttings). It is relatively frequent in cuttings at 3075m, and certainly in place in the swc at 3063m, supported by oldest T. longus at 3036m (swc). Thus the zone base is certain at 3075m possible at 3170m (cutts) but could be as low as 3230m. Within the zone, T. confessus is frequent at 2850m and common at 3063 - 3120m. Quadraplanus brossus occurs consistently down to 2865m. Proteacidites, P. mawsonii and N. endurus are frequent throughout. Cyathidites spp. are frequent in the intervals 2921-58m and 3170 - 3230m.

Trace dinoflagellates were seen at the top (2838m) and base (3063 - 75m) of the interval. Zonal assignment is not possible.

Mostly non-marine environments are indicated by the dominant and diverse spores and pollen, presence of Botryococcus, common cuticle and amorphous sapropel, and absence of marine indicators. Brackish incursions are shown at 2838m and 3063 - 75m as shown by scarce dinoflagellates.

Light yellow to yellow spore colours indicate immaturity for hydrocarbons.

M. 3250m (cutts) - 3385m (cutts) : upper T. lilliei Zone (non-marine part)

Zone assignment at the top is on the absence of younger indicators. As discussed above, the base of T. longus and therefore the top of T. lilliei may be slightly caved. The base of this upper T. lilliei subzone is based on the absence of the dinoflagellates seen below. As such, this reflects the marine/non-marine interface and is intrinsically time transgressive. Within the subzone, Proteacidites, P. mawsonii and N. endurus are consistently frequent. Towards the base (3350 - 85m) Cyathidites and Falcisporites are also frequent. Dilwynites spp. are occassionally frequent (3335 and 3385m). A single T. longus at 3385m is considered caved.

Dinoflagellates are totally absent from this interval and this, the common and diverse spores and pollen, frequent cuticle, tracheid and amorphous sapropel, indicate non-marine anoxic environments. Lakes, swamps and marshes seem likely.

Yellow spore colours indicate immaturity for hydrocarbons.

N. 3450m (cutts) - 3515m (cutts) : middle T. lilliei Zone (I. korojonense Zone)

This interval contains T. lilliei without younger or older indicators. Assignment to a middle subzone is based purely on dinoflagellate data. Amongst the spores and pollen, Proteacidites, P. mawsonii and Cyathidites spp. are frequent.

Amongst the dinoflagellates, I. cretaceum forms are common at 3480 and 3515m but show affinities to I. greenense of Marshall. Also present are I. pellucidum (greenense variety), Odontochitina prolata and

Chatangiella packhamii, indicating assignment to the I. korojonense Zone of Helby et al. (1987).

Dinoflagellates are rare at 3450m and 3515m indicating brackish environments, but comprise 30% of palynomorphs at 3480m, indicating nearshore marine environments. Given that these are all cuttings samples, the dinoflagellates at 3515m could all be caved from 3480m.

Yellow spore colours indicate immaturity for hydrocarbons.

O. 3570m (cutts) - 3875m (cutts) : lower T. lilliei Zone (I. korojonense Zone)

This interval is entirely within the recorded range of Tricolporites lilliei without younger or older indicators. The subdivision is dinoflagellate based. T. lilliei is, however, quite rare near its base range and in cuttings samples such as these, is clearly imprecise. Thus, although its oldest occurrence is at 3875m, it is inconsistent beneath 3780m, and could be caved beneath about that point. Amongst the pollen and spores, Proteacidites, P. mawsonii, N. endurus and G. rudata are the most frequent forms.

Yellow to light brown spore colours indicate immaturity but approaching marginal maturity for hydrocarbons.

Isabelidinium pellucidum (with affinities to I. greenense of Marshall) occurs throughout, but maybe partly caved. Typical I. pellucidum is also seen at 3575m and 3610m and indicates assignment to the I. korojonense Dinoflagellate Zone of Helby et al (1987).

Cyclopsiella is common below 3715m. Environments are within the nearshore to marginally marine range. Dinoflagellate content varies from 1% to 50% and diversity from 1 to 10 species.

P. 3950m (cutts) - 4100m (cutts) : upper N. senectus Zone (less marine part)

The subzone is defined at the top on the absence of younger indicators and at the base on the downhole influx of diverse dinoflagellates including Nelsoniella spp.. As discussed above, the zone top may be caved including Nelsoniella spp . Notably, T. sabulosus is consistent below 3715m and quite prominent at 3875 - 4100m. It may have potential as a top senectus marker. Overall, however, Proteacidites, N. endurus, N. senectus and P. mawsonii dominate most assemblages. N. senectus is most frequent at 3950 - 60m.

Dinoflagellates are quite rare, reaching a maximum 5% at 3960m. The assemblages are not easily characterized, comprising mostly nondescript Isabelidinium, Cyclopsiella and Trithyrodinium of the suspectum group. At 4100 only Cylopsiella was seen.

Environments range from non-marine at 4040 - 4100m, to marginally marine at 3950 - 60m, where low contents and low diversity of dinoflagellates occur with high proportions of plant debris and pollen and spores.

Light brown spore colours indicate marginal maturity for oil, but immaturity for gas/condensate.

Q. 4159m (bit sample) - 4375m (cutts) (possibly 4285m) :

lower N. senectus Zone (N. aceras Dinoflagellate Zone).

Zonal assignment at the top is on dinoflagellate data and coincides with a massive downhole influx of dinoflagellates (absent at 4100, 50% at 4159m). At the base, oldest consistent N. senectus and N. endurus are diagnostic, but could be caved in these cuttings samples. The base of the dinoflagellate N. aceras at 4285m may be a better base to the N. senectus Zone in this well. Amongst the subordinate spores and pollen, Proteacidites spp. dominate.

Dinoflagellates are dominant, comprising around 70% of palynomorphs. Nelsoniella spp. without younger indicators at 4159 - 4285 indicate assignment of that interval to the N. aceras Dinoflagellate Zone of Helby et al. 1987. Other common species include I. variabile, C. tripartita and Trithyrodinium. Beneath 4325m, no clear zonal assignment is possible.

Nearshore to offshore marine environments are indicated by the common but frequently moderate to low diversity dinoflagellates.

Light brown spore colours indicate marginal maturity for oil but immaturity for gas/condensate.

R. 4400m (cutts) - 4775m (cutts) : T. pachyexinus Zone (I. cretacea - O. porifera Dinoflagellate Zones).

Assignment to the Tricolpites pachyexinus Zone (= Tricolporites apoxyexinus Zone) is indicated at the top by the absence of younger indicators and at the base by oldest Tricolpites gillii at 4755m (although this could be caved slightly). Within the interval, Proteacidites, Cyathidites and Falcisporites dominate the spores and pollen. A. cruciformsis is more consistent in this interval than above. Rare Nothofagidites and T. sabulosus are considered caved. T. confessus is consistent to 4510m and has potential to subdivide the interval.

Dinoflagellates occur in all samples and oldest Trithyrodinium spp. at 4775m and O. porifera at 4525m indicate a general correlation with the I. cretacea to O. porifera Zones interval of Helby et al. (1987). The individual zones cannot be identified due to the absence of the key species. Chatangiella spp, I. variabile and C. porosa are common.

Nearshore to offshore marine environments are indicated by the moderate to high (30% to 50%) proportion of dinoflagellates, and their moderate to high diversity.

These assemblages contain 90% palynomorphs of light brown colour indicating marginal maturity for oil. Below 4570m, 10% of the assemblage is dark brown to black, suggesting full maturity. This maybe caused by reworking, penetration of an unconformity, or contemporaneous volcanic activity. If contemporaneous volcanic activity is responsible, and the lower maturity may be an accurate measure of regional maturity at T.D.

IV REFERENCES

Harris, W.K. (1985) Middle to Late Eocene Depositional Cycles and Dinoflagellate Zones in Southern Australia Spec. Publ., S. Aust. Dept. Mines and Energy 5 : 133-144

Helby, R.J., Morgan, R.P., and Partridge A.D., (1987) A palynological Zonation of the Australian Mesozoic Australas. Assoc. Palaeont.,. Mem. 4

Marshall, N.G. (1988) A Santonian dinoflagellate assemblage from the Gippsland Basin, Southeastern Australia Australas, Assoc, Palaentols. Mem. 5, 195-213

Marshall, N.G. and Partridge A.D. (1988) The Eocene acritarch Tritonites gen. nov. and the age of the Marlin Channel, Gippsland Basin, Southeastern Australia Australas. Assoc. Palaentols. Mem. 5, 239-257

Morgan, R.P. (1988) Petrofina Gippsland Cretaceous palynology project report 7 : regional synthesis unpubl. rpt. for Petrofina

Partridge A.D. (1976) The Geological Expression of Eustacy in the Early Tertiary of the Gippsland Basin Aust. Pet. Explor. Assoc. J., 16 : 73-79

PE900769

This is an enclosure indicator page.
The enclosure PE900769 is enclosed within the container PE902139 at this location in this document.

The enclosure PE900769 has the following characteristics:

ITEM_BARCODE = PE900769
CONTAINER_BARCODE = PE902139
NAME = Palynology Range Chart
BASIN = GIPPSLAND
PERMIT = VIC/P20
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Palynology Range Chart of Graphic Abundances by Group and Lowest Appearance, Roger Morgan,(enclosure from WCR)for Anemone-1
REMARKS =
DATE_CREATED = 30/09/89
DATE_RECEIVED =
W_NO = W997
WELL_NAME = ANEMONE-1
CONTRACTOR =
CLIENT_OP_CO = PETROFINA EXPLORATION AUSTRALIA

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 3

APPENDIX 3

WELL COMPLETION REPORT

ANEMONE-1,1A

BASIC DATA

A P P E N D I X 3

GEOCHEMISTRY

AMDEL

CORE

SERVICES

GEOCHEMICAL EVALUATION OF ROCK AND FLUID SAMPLES FROM

ANEMONE -1 AND ANEMONE -1A

VIC/P20, GIPPSLAND BASIN

CONTENTS

1. INTRODUCTION

2. ANALYTICAL PROCEDURES

3. RESULTS

4. INTERPRETATION

Source Rock Geochemistry

4.1 Maturity
4.2 Source Richness
4.3 Kerogen Type and Source Quality

Petroleum Geochemistry

4.4 Maturity
4.5 Source Affinity

5. CONCLUSIONS

6. REFERENCES

LIST OF TABLES

1. Rock-Eval Pyrolysis Cuttings, Anemone -1
2. Rock-Eval Pyrolysis Cuttings, Anemone -1A
3. Vitrinite Reflectance Measurements
4. Percentage of Inertinite, Vitrinite & Exinite in Dispersed Organic Matter
5. Organic Matter Type and Abundance
6. Exinite Maceral Abundance and Fluorescence Characteristics
7. Stable isotopic Composition of Gas Components
8. Quantified Whole Oil Composition RFT
9. Quantified Whole Oil Composition DST-1
10. Quantified Gasoline Range Analysis RFT
11. Quantified Gasoline Range Analysis DST-1
12. Gasoline Range Parameters RFT
13. Gasoline Range Parameters DST-1
14. C_{12+} Bulk Compositions and Alkane Ratios, Anemone -1, 1A
15. Oil Maturity Based on Aromatic Hydrocarbon Distributions
16. Biomarker Ratios Anemone -1A and other Intra-Latrobe Oils
17. Additional Biomarker Ratios Anemone -1A and other Intra-Latrobe Oils
18. Stable Isotopic Carbon Composition of Condensate and Isolated Fractions
19. Headspace Gas Analyses
20. Headspace Gas Analysis Ratios

21-22 Water Analyses

23. Density, API and Sulphur Content, Anemone -1, 1A

LIST OF FIGURES

1-5	Rock-Eval Hydrogen Index versus Tmax plots, Anemone -1
6.	Rock-Eval Hydrogen Index versus Tmax plots, Anemone -1A
7.	Vitrinite Reflectance versus depth plot, Anemone -1, 1A
8.	Whole Oil Gas Chromatogram, Anemone -1, RFT
9.	Whole Oil Gas Chromatogram, Anemone -1A, DST -1
10.	Gasoline Range Chromatogram, Anemone -1 RFT
11.	Gasoline Range Chromatogram, Anemone -1A DST -1
12.	Oil Source Affinity Based on C_5 - C_7 alkanes
13.	Oil Maturity and Alteration based on C_5 - C_7 alkanes
14.	Gas Chromatograph of Saturated Hydrocarbons, Angler -1
15.	Gas Chromatograph of Saturated Hydrocarbons, Anemone -1 RFT
16.	Gas Chromatograph of Saturated Hydrocarbons, Anemone -1A DST
17.	Genetic Affinity based on Alkane/Isoalkane Ratios
18.	Oil Classification based on Bulk Composition
19-22	GC-MS of Aromatic Hydrocarbons
23-29	GC-MS of Branched and Cyclic Alkanes RFT Condensate
30.	Oil Source Affinity Based on GC-MS Data
31.	Oil Maturity Domains
32.	Sterane Maturity - Migration Plot
33-39	GC-MS of Branched and Cyclic Alkanes DST-1 Condensate

24 November 1989

AMDEL CORE SERVICES

Petrofina Exploration Australia SA
Level 2
476 St Kilda Road
MELBOURNE VIC 3004

Attention: Brian Thurley

REPORT: 009/022

CLIENT REFERENCE:

MATERIAL: Cuttings, Sidewall Core, Gas and Condensate

LOCALITY: Anemone 1, Anemone -1A

WORK REQUIRED: TOC, Rock-Eval Pyrolysis, Organic Petrology, Stable Isotopic Composition of Gas, Condensate and Condensate Fractions, API and Sulphur Content of Condensate, Quantified Gasoline Range Analysis Liquid Chromatography, GC of Saturated Hydrocarbons, GC-MS of Aromatics and Naphthenes Fractions

Please direct technical enquiries regarding this work to Brian L Watson (Adelaide) under whose supervision the work was carried out.

Dr Brian G Steveson
Manager Australasia
on behalf of Amdel Core Services Pty Ltd

Please reply to: PO Box 109 Eastwood SA 5063

Amdel Core Services Pty Limited
Incorporated in South Australia

1. INTRODUCTION

Rock-Eval pyrolysis, TOC and Organic Petrology analyses were requested on cuttings sidewall core and core samples from Anemone -1, -1A, Vic/P20, Gippsland Basin.

Petroleum geochemical analyses were also requested on gas and condensate recovered from RFT and DST tests. The aims of these analyses are outlined below:

- To determine the maturity, source richness and source quality of the sedimentary section intersected in the Anemone -1, 1A location
- To determine the maturity of the condensates and gases recovered from RFT and DST tests.
- To determine the source affinity of the condensates recovered from RFT and DST tests.
- To determine whether the gases and condensates recovered in this location were generated "in situ" or alternatively from a distant source.
- To compare the gas and condensates recovered from this location with that recovered from the Angler -1 location and determine whether these hydrocarbons were generated from the same source.

This report is a formal presentation of results reported by telephone and facsimile as work was requested and completed over the period of 5th July 1989 to 20 November 1989.

2. ANALYTICAL PROCEDURES

The analytical procedures used in this study are provided in Appendix 1.

3. RESULTS

Analytical data is presented in this report as follows:

	Table	Figure	Appendix
<u>Source Rock Analyses</u>			
TOC and Rock-Eval data (Anemone -1)	1	1-5	-
TOC and Rock-Eval data (Anemone -1A)	2	6	-
Vitrinite Reflectance determinations	3	7	2
Descriptions of dispersed organic matter	4-6	-	3
<u>Petroleum Geochemistry</u>			
Stable Isotopic Composition of Gases	7	-	-
Gravity and Sulphur of Condensates	23	-	-
Quantified Whole Oil Compositions	8-9	8,9	-
Quantified Gasoline Range Analysis	10-13	10,13	-
Bulk Composition of Condensates	14	18	-

	Table	Figure	Appendix
GC of saturated Hydrocarbons and Isoprenoid/Alkane Ratio	14	14-17	-
GC-MS of Aromatics	15	19-22	-
GC-MS of Naphthenes	16-17	23-39	-
Stable Isotopic Composition of Whole Condensate and Isolated Fractions	18	-	-
Headspace Gas analyses	19-20	-	-
Water analyses	21-22	-	-
Density API and Sulphur Content	23	-	-

4. INTERPRETATION

Source Rock Geochemistry

4.1 Maturity

Vitrinite Reflectance data of cuttings, core and sidewall core samples (Table 3; Figure 7) indicate that the sediments intersected in the Anemone -1 and Anemone -1A locations are sufficiently mature for:

- the generation of light oil and condensate from sediments rich in resinite, suberinite and bituminite below 3150 metres depth (VR threshold for significant generation = 0.45%; Snowdon and Powell, 1982; Latrobe Group (Maastrichtian).

- significant gas generation from woody-herbaceous organic matter (vitrinite and to a lesser extent inertinite) below 4000 metres depth (VR >0.6%; Monnier *et al*, 1983; Latrobe Group (Campanian)).

- oil generation from organic matter rich in exinites other than resinite, suberinite and bituminite below approximately 4500 metres depth (VR >0.7%; Connan and Cassou, 1980).

Rock-Eval Tmax values lie within the range 249-445°C in the samples examined. However, some Tmax values are anomalously low due to small and irregularly shaped S_2 peaks. Reliable Tmax values lie with the range 430-445°C and indicate equivalent vitrinite reflectance values of 0.4-0.7%. These values show good agreement with the measured vitrinite reflectance values (Table 3).

These maturity parameters indicate that the sedimentary section intersected in the Anemone -1, 1A location is slightly more mature than the sedimentary section intersected at the Angler -1 location at equivalent depths.

Production indices of greater than 0.2 indicate the presence of migrated hydrocarbons in the following intervals:

Depth (m)	Formation/Unit	Production Index
Anemone -1		
2360-70	Lakes Entrance Formation	0.21 - 0.22
2450	" " "	0.23

Depth (m)	Formation/Unit	Production Index
4080	Latrobe Group (Campanian)	0.20
4620	Latrobe Group (Santonian)	0.20
Anemone -1A		
4510-4530	Latrobe Group (Santonian)	0.27
4630		0.30
4670		0.33
4710		0.52
4730-40		0.23 - 0.30
4770		0.34

4.2 Source Richness

Organic richness ranges from poor to excellent in the interval studied (TOC = 0.09-20.0%; Table 1). Source richness for the generation of hydrocarbons (genetic potential) also ranges from poor to excellent ($S_1 + S_2$ = 0.06-57.55 kg of hydrocarbons/tonne). The Upper Latrobe Group coals (Maastrichtian and Campanian units) have the best organic and source richness in the interval studied. This is also the case in Angler -1.

The variation of organic richness and source richness for each unit studied is summarised below:

Formation/Unit	Organic Richness		Source Richness	
	Range (TOC%)	Rating	$S_1 + S_2$ (kg of hydro carbons/ tonne	Rating
Lakes Entrance Fm	0.31-0.60	Poor	0.33-0.70	Poor
Gurnard Fm	0.45-0.57	Poor	0.15-0.30	Poor
Latrobe Group				
(?Paleocene)	0.38-0.84	Poor	0.11-0.33	Poor
(Maastrichtian)	0.29-18.30	Poor-Excellent	0.39-53.44	Poor-Excellent
(Campanian)	0.18-20.0	Poor-Excellent	0.30-57.55	Poor-Excellent
(Santonian)				
4260-4530	0.88-2.15	Poor-Good	0.62-5.54	Poor-Good
4540-4775	0.04-0.73	Poor	0.06-0.98	Poor

Intervals with the best organic and source richness are listed below:

Formation/Unit	Depth (m)	TOC (%)	$S_1 + S_2$ (kg of hydrocarbons/tonne)	Rating
Latrobe Group				
Maastrichtian	3040	2.25	2.81	Good
	3060-3110	1.53-18.30	3.33-53.44	Good-Excellent
	3150-3180	2.35- 8.75	9.23-19.07	Excellent
Campanian	3210-3370	0.79-20.0	1.89-57.55	Fair to Excellent
	3470-3610	1.06-6.75	2.44-25.50	Fair to Excellent
	3980-4020	1.07-2.50	2.14-6.80	Fair to Excellent
	4160-4200	1.26-2.15	2.00-4.77	Fair to Good
Santonian	4250-4500	1.58-2.15	2.32-5.54	Fair to Good

4.3 Kerogen Type and Source Quality

Rock-Eval Hydrogen Index and Tmax data (Tables 1 and 2) indicates that sediments intersected in the Anemone -1 and 1A locations contain organic matter with bulk compositions ranging from that of Type II to Type IV kerogen. Sediments containing organic matter with the bulk composition of more oil prone Type II to Type II-III kerogen occur in the Latrobe Group (Maastrichtian-Santonian).

Organic petrology of selected samples in the Maastrichtian unit of the Latrobe Group illustrates that the better quality source rocks in this unit contain organic matter which consists largely of vitrinite (40-70%). Exinite and inertinite are present in moderate amounts (exinite 10-15%; inertinite 15-50%). Much of the organic matter in these samples occurs in coals and carbonaceous shales.

Vitrinite and inertinite contents in the Campanian unit are quite variable. Proportions of vitrinite decrease steadily with increasing depth (from 65-70% to 5-10%) whilst inertinite contents increase steadily with increasing depth (from 20% to 80-90%). Exinite contents also tend to decrease with increasing depth (from 10-15% to 5-10%).

Maceral compositions show less variation in the Santonian unit where organic matter consists largely of inertinite (80-90%). Proportions of vitrinite range from <5-15% whilst exinite contents lie in the range of <5 to 5-10%.

The exinite macerals present in these samples also vary systematically with depth. Terrestrial macerals dominate the Maastrichtian and Campanian units (cutinite, sporinite, resinite, suberinite) whilst ?marine derived exinites (phytoplankton, etc) are more common in the Santonian unit of the Latrobe Group.

Oil noted in the Santonian sample from 4310 metres depth is closely associated with the bitumite in this shale and may therefore, have been generated "in situ". Oil in cuttings from 4500 metres depth shows a similar association with bituminite and may also have been generated "in situ". However, oil noted in the samples from 4630 and 4710 metres depth shows no common association with the organic matter in these samples and is therefore more likely to represent a migrated hydrocarbon phase.

Petroleum Geochemistry

4.4 Hydrocarbon Maturity

The MPI derived maturity of the Anemone -1 RFT condensate demonstrates that this condensate, like the Angler -1 condensate belongs to the peak mature group of Gippsland Basin Crudes (Burns *et al.*, 1987).

Well	Depth (m)	API Gravity	MPI	VR_{calc}* (%)	VR_{calc}• (%)
Anemone -1 RFT	4230.5	51.9	1.62	1.35	1.33
Angler -1	4226	42.9	1.08	0.98	1.05
Kingfish -7	2314	46.0	1.26	1.10	1.16
Fortescue A21	2735	41.2	1.14	1.02	1.08
Kipper -1	1823	45.0	1.07	0.97	1.04

* Derived using calibration of Boreham *et al* (1988)
• Derived using calibration of Radke and Welte (1983)

Maturity dependent sterane and hopane ratios (parameters 4-6 and 11; Table 16) are consistent with the maturation level indicated by the aromatic hydrocarbon ratios.

These peak mature oils are of paraffinic bulk composition, have specific gravities within the range 41-46° API, and possess characteristic trimodal n-alkane profiles. The oils of this group described by Burns *et al* are all located above or adjacent to the central deep of Gippsland Basin (i.e. the inferred source kitchen or generative depression, Demaison, 1984). Whilst the Angler and Anemone condensates fit the geochemical parameters of this classification they differed in their geographical location relative to the central deep of the basin.

Comparison of the maturity of the sedimentary sections intersected in the Anemone and Angler locations with that of the condensates, indicates that these condensates were not generated "in situ". Extrapolation of measured vitrinite reflectance values to the levels of maturity indicated for expulsion of the Anemone -1, RFT condensate indicates that this level of maturity may occur below 6,500 metres depth in this location. This depth is similar to that indicated for generation of the Angler -1 condensate in the Angler location. However, variations in organic matter present in sediments in both locations indicate that the organic matter present in source rocks at these depths would most likely consist largely of algal/bacterial organic matter. Therefore hydrocarbons generated from these sediments would be expected to be geochemically dissimilar to the Anemone and Angler condensates. In consideration of the marked similarities in composition and maturity of the Angler -1 and Anemone -1 RFT condensates with those from the peak mature group of Gippsland oils, (Burns *et al*) it seems more likely that the Angler -1 and Anemone -1 RFT condensates were generated laterally in the basin depocentre rather than at greater depths in their present locations.

The MPI derived maturity of the Anemone -1A DST -1 condensate is significantly lower than that of the Angler -1 and Anemone -1 RFT condensates and indicates that this condensate belongs to the early mature group of Gippsland Basin crudes (Burns *et al*, 1987).

Well	Depth (m)	API Gravity	MPI	VR_{calc}*	VR_{calc}•
Anemone -1A DST-1	4599-4652	57.2	0.84	0.81	0.91
Wirrah -1	2633		0.83	0.80	0.90
Tuna -4	2507.2		0.89	0.84	0.93
Flounder -4	2531.7		0.91	0.86	0.95

* Derived using calibration of Boreham *et al* (1988)

• Derived using calibration of Radke & Welte (1983)

These early mature oils may have a unimodal or bimodal n-alkane distribution and exhibit an odd-over-even predominance in the n-C_{25} - n-C_{35} range. The Anemone -1A DST condensate has a distinctly bimodal n-alkane profile and noticeable odd-over-even predominance in the n-C_{23} - n-C_{29} range.

The total reservoired volumes of early mature oils are fairly small (less than 10% of discovered reserves) in comparison with the oil generated at peak maturity in the Gippsland Basin. However, these oils may still form commercial accumulations.

Comparison of the maturity of the sedimentary section intersected in the Anemone 1, 1A section indicates that this oil (DST -1), unlike the RFT condensate, may have been generated in this location or nearly to this location. Extrapolation of the measured Vitrinite Reflectance data indicates that this maturity (VR_{calc} 0.81) should be reached at approximately 5200 metres depth in this location. Maturity dependent sterane and hopane ratios (Parameters 4-6 & 9-11; Table 16) are inconsistent with the aromatic maturity data for this condensate and indicate that this condensate was generated from a mature source (VR >1.2%). These maturity ratios are very similar to those of the Anemone -1 RFT condensate. This inconsistency may be explained by the generation and expulsion of a mature condensate from the basin depocentre which has combined with a less mature condensate/oil during migration and accumulation. This possibility seems particularly likely in view of the maturity of the DST-1 gas (VR ~ 1.5%; indicated from its isotopic separation) and the implied migration path of the Anemone -1 RFT condensate and gas.

Organic matter in the Santonian sediments examined from this well consists largely of Land-Plant derived kerogen but contains a significant component of marine derived algal/bacterial kerogen. Hydrocarbons generated from this type of mixed kerogen could be expected to display a bimodal n-alkane profile similar to that of the Anemone -1A DST-1 condensate. The source affinity of this oil is discussed in more detail in the following section.

The isotopic separation of the C_1 - C_5 hydrocarbon components of the Anemone -1 and 1A gases indicate that they were both generated at a similar maturity to the Angler -1 C_2 - C_4 gas components (Level of Organic Maturity (LOM) of approximately 12; VR ≈ 1.5%). The slightly smaller separation of the Anemone -1A DST -1 gas components suggests that this gas may have been generated at a slightly higher maturity than the Anemone -1 RFT gas. The isotopic separation of the gas from Kingfish -7 indicates that this gas was also generated at a very similar maturity to the Anemone and Angler gases.

4.5 Source Affinity

The terrestrial source affinity of Anemone -1 RFT condensate is clearly evident from aspects of its C_{12+} molecular composition and gasoline range hydrocarbons. The high pristane/phytane ratio (pr/ph 4.03), in combination with an intermediate pristane/n-heptadecane ratio and a low phytane n-octadecane ratio (Table 14, Figure 17), indicate that these oils originated predominantly from land plant detritus which accumulated in an oxic aquatic environment.

GC-MS analysis of the naphthenes fraction of the oil identified a range of biomarker hydrocarbons (Tables 16-17, Figures 23-32) which further characterise the land plant (and bacterial precursors) from which it was derived.

The saturated biomarkers present (in approximate order of increasing abundance) are: C_{29} steranes and diasteranes (m/z 217, 259); C_{29}+ hopanes, C_{19-20} diterpanes (m/z 123, 259); C_{20} labdanes, C_{19} and C_{20} isopimaranes (m/z 109, 123); drimanes and rearranged drimanes (m/z 123); C_{16} - C_{20} acyclic isoprenoids (m/z 183); and C_{14} - C_{24} n-alkylcyclohexanes (m/z 83) (Figures 23-29).

The C_{27} - C_{29} sterane and diasterane distribution of this condensate is dominated by the C_{29} homologues of higher plant origin (Parameters 1-3; Table 16). This is a characteristic feature of most Australian non-marine crude oils (see e.g. Vincent *et al*, 1985; Philp and Gilbert, 1986) and is similar to the Angler -1 condensate.

The higher abundance of steranes and hopanes in this condensate in comparison to the Angler -1 condensate may be the result of less intense degradation of the source organic matter by bacteria, prior to burial beyond the zone of near surface microbiological activity.

The n-alkylclohexanes are probably derived from bacteria which are capable of tolerating low pH (acidic) conditions such as those which exist in coal swamps and certain fresh water lakes.

The bicyclic and tricyclic diterpenoid alkanes identified in Figures 23-29 are derived from resins of the type synthesised by Araucariacean conifers (kauri pines: Alexander *et al*., 1988). The diterpane distribution of the Anemone -1 RFT and Angler -1 condensates like those of other Gippsland Basin crudes (Alexander *et al*., 1987) is characterised by a predominance of tetracyclics over tricyclic (and bicyclic) compounds. However, on the basis of significant differences in the relative abundances of certain individual diterpanes (parameters 4-6, Table 17), the Anemone -1 RFT and Angler -1 oils can be distinguished from the intra-Latrobe crudes at Volador -1 and Basker -1. These relative abundances are very similar in the Anemone -1 RFT and Angler -1 condensates indicating that the sources of these oils contain similar conifer resin assemblages and may possibly be of the same age.

Gasoline range hydrocarbons (C_3 - C_7; Table 10, 11 Fig 10-13) are also consistent with generation from terrestrial, "land plant" kerogen. The maturity indicated by the isoheptane value versus heptane value plot is broadly consistent with that of the parameters previously discussed. These ratios are very similar to those for the Angler -1 condensate further indicating that these condensates have similar maturities. As these ratios are also sensitive to biodegradation then the degree of biodegradation of the two condensates is also similar.

The carbon isotopic composition of the aromatic and saturated hydrocarbons of the Anemone -1 RFT condensate are similar to those of the condensate from Angler -1. However, the canonical variable (CV) of the Anemone sample is markedly lower and suggests that this condensate was generated from a marine source (CV < 0.47). This anomalous isotopic composition may be due to the contribution of bacterial lipids (which are isotopically similar to those of marine algae) to the source material of the Anemone -1 RFT condensate.

The source affinity of the Anemone -1A DST -1 condensate is different to that of the Anemone -1 RFT and Angler -1 RFT condensates. The moderately low pristane/phytane ratio (2.72) and the moderately high phytane/n-octadecane ratio (0.24) although indicative of a plant source, approach values indicative of a mixed or algal/bacterial source deposited in a slightly oxic aquatic environment. Gasoline range hydrocarbons also indicate a land plant source and approach values indicative of a mixed or algal/bacterial source. The carbon isotopic compositions of the DST-1 oil fractions distinguish this oil from the Angler -1 and Anemone -1 RFT oils. The Canonical Variable (CV = 0.74; after Sofer (1984)) indicates that this oil was generated from predominantly terrigenous organic matter.

GC-MS analysis of the naphthenes fraction of the oil identified a range of biomarker hydrocarbons (Tables 16 & 17, Figures 23-32) which further characterise the organic matter from which it was derived.

The saturated biomarkers present (in approximate order of increasing abundance) are: C_{29} steranes and diasteranes (m/z 217, 259); C_{19-20} diterpanes (m/z 123, 259; C_{20} labdanes, C_{19} and C_{20} isopimaranes (m/z 109, 123); C_{29} hopanes (m/z 191); drimanes and re-arranged drimanes (m/z 123); C_{16} - C_{20} acyclic isoprenoids (m/z 183); and C_{14} - C_{24} n-alkylcyclohexanes (m/z 83)(Figures 32-38).

The C_{27} - C_{29} sterane and diasterane distribution of this condensate indicates a significant input of land-plant and algal/bacterial components in the precursor organic matter from which it was derived (parameters 1-3; Table 16). These distributions are in contrast to those of the Anemone -1 RFT and Angler - 1 RFT condensates which are dominated by the C_{29} homologues of higher plant origin.

In view of the implied complex origin of this condensate and mixing of a mature ?terrestrial condensate with a less mature condensate/oil (see previous section), it seems likely that the less mature oil may have been derived from a source containing predominantly algal/bacterial organic matter. An origin such as this would explain the sterane and diasterane distribution. However, generation from a source containing both land plant and algal/bacterial organic matter cannot be discounted as such a variation in composition may be expected in certain paralic environments of deposition.

The bicyclic and tricyclic diterpenoid alkanes identified in Figures 32-38 and are derived from resins of the type synthesised by Araucariacean conifers (kauri pines: Alexander *et al.*, 1988). The diterpane distribution of the Anemone -1 RFT, DST-1 and Angler -1 condensates like those of other Gippsland Basin crudes (Alexander *et al.*, 1987), is characterised by a predominance of tetracyclics over tricyclic (and bicyclic) compounds. Precursors of the tetracyclic diterpanes (notably 17-nortetracyclane, phyllocladane, beyerane and kaurane) occur widely in conifers of the Podocarpaceal family (Alexander *et al*., 1987). However on the basis of significant differences in the relative abundances of certain individual diterpanes (parameters 4-6, Table 17), the Anemone -1A DST-1 condensate can be distinguished from the Anemone -1 RFT, Angler -1 RFT and other intra-Latrobe crudes.

5. CONCLUSIONS

1. Vitrinite Reflectance and Rock-Eval pyrolysis data of cuttings, core and sidewall core samples (Table 3, Figure 7) indicate that the sediments intersected in the Anemone -1 and Anemone -1A locations are sufficiently mature for:

   - the generation of light oil and condensate from sediments rich in resinite, suberinite and bituminite below 3150 metres depth (VR threshold for significant generation = 0.45%; Snowdon and Powell, 1982; Latrobe Group (Maastrichtian)).

   - significant gas generation from woody-herbaceous organic matter (vitrinite and to a lesser extent inertinite) below 4000 metres depth (VR >0.6%; Monnier *et al*, 1983; Latrobe Group (Campanian)).

   - oil generation from organic matter rich in exinites other than resinite, suberinite and bituminite below approximately 4500 metres depth (VR >0.7%; Connan and Cassou, 1980).

   - These maturity parameters indicate that the sedimentary section intersected in the Anemone -1, 1A location is slightly more mature than the sedimentary section intersected at the Angler -1 location at equivalent depths.

2. Production indices of greater than 0.2 indicate the presence of migrated hydrocarbons in the following intervals:

Depth (m)	Formation/Unit	Production Index
Anemone -1		
2360-70	Lakes Entrance Formation	0.21-0.22
2450	" " "	0.23
4080	Latrobe Group (Campanian)	0.20
4620	Latrobe Group (Santonian)	0.20
Anemone -1A		
4510-4530	Latrobe Group (Santonian)	0.27
4630		0.30
4670		0.33
4710		0.52
4730-40		0.23-0.30
4770		0.34

3. Intervals with the best organic and source richness are listed below:

Formation/Unit	Depth (m)	TOC (%)	$S_1 + S_2$ (kg of hydrocarbons/tonne)	Rating
Latrobe Group				
Maastrichtian	3040	2.25	2.81	Good
	3060-3110	1.53-18.30	3.33-53.44	Good-Excellent
	3150-3180	2.35- 8.75	9.23-19.07	Excellent
Campanian	3210-3370	0.79-20.0	1.89-57.55	Fair to Excellent
	3470-3610	1.06-6.75	2.44-25.50	Fair to Excellent
	3980-4020	1.07-2.50	2.14-6.80	Fair to Excellent
	4160-4200	1.26-2.15	2.00-4.77	Fair to Good
Santonian	4250-4500	1.58-2.15	2.32-5.54	Fair to Good

4. Rock-Eval Hydrogen Index and Tmax data (Tables 1 and 2) indicates that sediments intersected in the Anemone -1 and 1A locations contain organic matter with bulk compositions ranging from that of Type II to Type IV kerogen. Sediments containing organic matter with the bulk composition of more oil prone Type II to Type III kerogen occur in the Latrobe Group (Maastrichtian-Santonian).

   Organic petrology of selected samples in the Maastrichtian unit of the Latrobe Group oils that the better quality the source rocks in this unit contain organic matter which consists largely of vitrinite (40-70%). Exinite and inertinite are present in moderate amounts (exinite 10-15%; inertinite 15-50%). Much of the organic matter in these samples occurs in coals and carbonaceous shales.

5. The MPI derived maturity of the Anemone -1 RFT condensate demonstrates that this condensate, like the Angler -1 condensate, belongs to the peak mature group of Gippsland Basin Crudes (Burns *et al.*, 1987). Maturity dependent sterane and hopane ratios are consistent with this level of maturation. Isotopic separation of this RFT gas indicates that it was generated at a maturity of approximately VR = 1.5%.

6. The Anemone -1 RFT condensate and gas were generated from a terrestrial source located in the depocentre of the Gippsland Basin and have migrated up dip to their present location.

7. The MPI derived maturity of the Anemone -1A DST-1 condensate is significantly lower than that of the Angler -1 and Anemone -1 RFT condensates and indicates that this condensate belongs to the early mature group of Gippsland Basin (Burns *et al.*, 1987). However, maturity dependent sterane and hopane ratios (Parameters 4-6 and 9-10; Table 16) are inconsistent with this aromatic maturity data and indicate that this condensate was generated from a mature source (VR >1.2%). Isotopic separation of the DST-1 gas indicates that it was generated at a maturity of approximately VR = 1.5%.

8. The source affinity of the Anemone -1A DST-1 condensate is distinctly different to that of the Angler -1 RFT and Anemone -1 RFT condensates. The saturated biomarkers, molecular composition and gasoline range hydrocarbons present in this condensate indicate that it was generated from a source or sources containing both land plant and algal bacterial organic matter. In view of the maturity of the associated gas, the problematical response of the aromatic and saturated maturation parameters and the implied migration pathway of the Anemone -1 RFT condensate and gas, it seems most likely that this condensate represents a mixture of at least two hydrocarbon phases which have been generated from sources of different maturity. This mixing is likely to have occurred during the migration of hydrocarbons (probably generated from a predominantly terrestrial source) from the depocentre of the Gippsland Basin and accumulation in the Anemone -1 location.

The second hydrocarbon phase is likely to have been generated from a less mature source containing a major component of algal/bacterial kerogen.

REFERENCES

ALEXANDER, R., NOBLE, R.A. & KAGI, R.I., 1987. Fossil resin biomarkers and their application in oil to source-rock correlation, Gippsland Basin, Australia. *APEA J.*, 27(1), 63-72.

ALEXANDER, R., LARCHER, A.V., KAGI, R.I. & PRICE, P., 1988. The use of plant-derived biomarkers for correlation of oils with source rocks in the Cooper/Eromanga Basin system, Australia. *APEA J.*, 28(1), 310-324.

BOREHAM, C.J., CRICK, I.H. & POWELL, T.G., 1988. Alternative calibration of the Methylphenanthrene Index against vitrinite reflectance:application to maturation measurement of oils and sediments. *Org. Geochem.*, 12, 289-294.

BURNS, B.J., BOSTWICK, T.R. & EMMETT, J.K., 1987. Gippsland terrestrial oils - recognition of compositional variations due to maturity and biodegradation effects. *APEA J.*, 27(1), 74-84.

BURNS, B.J., JAMES, A.T., EMMETT, J.K., 1984. The use of gas isotopes in determining the source of some Gippsland Basin oils. *APEA J.*, 24(1), 217-221.

DEMAISON, G., 1984. The generative basin concept. In: *Petroleum Geochemistry and Basin Evaluation* (eds. DEMAISON, G. & MORRIS, R.J.), AAPG Memoir 35, pp 1-14.

JAMES, A.T., 1983. Correlation of natural gas using the carbon isotopic distribution between hydrocarbon component. *AAPG Bulletin*, 67, 1176-1191.

PHILP, R.P. & GILBERT, R.D., 1985. Biomarker distribution in Australian oils predominantly derived from terrigenous source material. In: *Advances in Organic Geochemistry*, 1985 (eds LEYTHAEUSER, D. & RULLKOTTER, J.), Pergamon, Oxford, pp 73-84.

POWELL, T.G. and SNOWDON, L.R., 1983. A composite hydrocarbon generation model - implications for evaluation of basins for oil and gas. *Erdol and Kohle*, 36(4), 163-170.

SNOWDON, L.R. & POWELL, T.G., 1982. Immature oil and condensate - modification of hydrocarbon generation model for terrestrial organic matter. *Bull. Am. Assoc. Petrol. Geol.*, 66, 775-788.

SOFER, Z., 1984. Stable carbon isotope composition of crude oils: application to source depositional environments and petroleum alteration. *Bull. Am. Assoc. Petrol. Geol.*, 68, 31-49.

VINCENT, P.W., MORTIMORE, I.R. & MCKIRDY, D.M., 1985. Hydrocarbon generation, migration and entrapment in the Jackson-Naccowlah area, ATP-259-P, Southwestern Queensland. *APEA J.*, 25(1), 62-84.

TABLE 1

AMDEL

Rock-Eval Pyrolysis 16/11/89

Client: PETROFINA EXPLORATION AUSTRALIA S.A.

Well: ANEMONE-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
LAKES ENTRANCE FORMATION											
2300	417	0.10	0.50	0.46	0.60	0.17	1.08	0.05	0.60	83	77
2310	322	0.08	0.39	0.50	0.47	0.17	0.78	0.03	0.53	73	94
2320	311	0.04	0.29	0.50	0.33	0.12	0.58	0.02	0.41	70	121
2340	342	0.05	0.33	0.45	0.38	0.13	0.73	0.03	0.50	66	90
2360	337	0.07	0.27	0.52	0.34	0.21	0.51	0.02	0.42	64	123
2370	304	0.10	0.37	0.35	0.47	0.22	1.05	0.03	0.59	62	59
2400	430	0.15	0.55	0.39	0.70	0.21	1.41	0.05	0.46	119	84
2430	358	0.08	0.40	0.49	0.48	0.17	0.81	0.04	0.40	100	122
2440	338	0.11	0.55	0.57	0.66	0.17	0.96	0.05	0.54	101	105
2450	319	0.14	0.48	0.50	0.62	0.23	0.96	0.05	0.45	106	111
2470	319	0.08	0.37	0.59	0.45	0.18	0.62	0.03	0.51	72	115
2490	341	0.06	0.40	0.44	0.46	0.13	0.90	0.03	0.42	95	104
2530	291	0.06	0.33	0.33	0.39	0.16	1.00	0.03	0.51	64	64
2540									0.31		
GURNARD											
2630	262	0.04	0.23	0.62	0.27	0.15	0.37	0.02	0.48	47	129
2640	279	0.04	0.16	0.56	0.20	0.20	0.28	0.01	0.48	33	116
2650	252	0.05	0.25	0.33	0.30	0.17	0.75	0.02	0.45	55	73
2660	237	0.03	0.12	0.45	0.15	0.21	0.26	0.01	0.45	26	100
2670	249	0.04	0.11	0.60	0.15	0.29	0.18	0.01	0.57	19	105
LATROBE GROUP											
Paleocene?											
2680	272	0.04	0.15	0.52	0.19	0.22	0.28	0.01	0.84	17	61
2690	296	0.04	0.29	0.62	0.33	0.12	0.46	0.02	0.48	60	129
2710									0.38		
2740	261	0.03	0.08	0.31	0.11	0.30	0.25	0.00	0.45	17	68
2750	272	0.05	0.23	0.57	0.28	0.18	0.40	0.02	0.44	52	129
2760									0.39		
Maastrichtian											
2810	341	0.03	0.43	0.44	0.46	0.07	0.97	0.03	0.41	104	107
2820	338	0.04	0.45	0.61	0.49	0.08	0.73	0.04	0.56	80	108
2830	293	0.05	0.42	0.58	0.47	0.11	0.72	0.03	0.47	89	123
2840	378	0.04	0.47	0.47	0.51	0.08	1.00	0.04	0.46	102	102
2850	338	0.01	0.38	0.45	0.39	0.03	0.84	0.03	0.48	79	93
2860	422	0.05	1.85	0.29	1.90	0.03	6.37	0.15	1.25	148	23
2870	423	0.03	0.41	0.39	0.44	0.07	1.05	0.03	0.47	87	82
2880	430	0.07	1.66	0.78	1.73	0.04	2.12	0.14	1.06	156	73
2890	429	0.11	1.75	0.57	1.86	0.06	3.07	0.15	1.11	157	51
2920	425	0.05	1.40	0.29	1.45	0.03	4.82	0.12	0.87	161	33
2990	424	0.05	1.13	0.31	1.18	0.04	3.64	0.09	1.02	110	30
3000	431	0.09	1.89	0.73	1.98	0.05	2.58	0.16	1.39	135	52
3010	420	0.07	0.85	0.58	0.92	0.08	1.46	0.07	0.76	111	76
3020	411	0.05	0.48	0.49	0.53	0.10	0.97	0.04	0.58	82	84
3040	430	0.11	2.70	0.90	2.81	0.04	3.00	0.23	2.25	120	40
3050	424	0.05	0.55	0.81	0.60	0.08	0.67	0.05	0.73	75	110

AMDEL

Rock-Eval Pyrolysis 16/11/89

Client: PETROFINA EXPLORATION AUSTRALIA S.A.

Well: ANEMONE-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
3060	426	0.20	9.23	0.88	9.43	0.02	10.48	0.78	3.80	242	23
3070	423	0.50	39.61	1.68	40.11	0.01	23.57	0.79	13.50	293	12
3080	424	0.39	24.94	3.18	25.33	0.02	7.84	2.11	9.10	274	34
3090	422	0.52	26.81	3.24	27.33	0.02	8.27	2.27	10.20	262	31
3100	420	1.13	52.31	2.56	53.44	0.02	20.43	4.45	18.30	285	13
3110	418	0.04	3.29	0.00	3.33	0.01	0.00	0.27	1.53	215	0
3120	420	0.06	1.53	0.17	1.59	0.04	9.00	0.13	0.55	278	30
3130	419	0.08	1.87	0.25	1.95	0.04	7.48	0.16	1.18	158	21
3140									0.29		
3150	420	0.25	8.98	0.73	9.23	0.03	12.30	0.76	3.60	249	20
3160	422	0.34	18.73	1.04	19.07	0.02	18.00	1.58	8.75	214	11
3170	424	0.30	18.05	0.78	18.35	0.02	23.14	1.52	6.15	293	12
3180	424	0.50	10.33	0.57	10.83	0.05	18.12	0.90	2.35	439	24
3190	417	0.05	3.15	0.23	3.20	0.02	13.69	0.26	0.53	594	43
Campanian											
3200	422	0.04	0.44	0.14	0.48	0.08	3.14	0.04	0.40	110	35
3210	422	0.10	2.63	0.41	2.73	0.04	6.41	0.22	1.78	147	23
3220	422	0.13	6.68	0.59	6.81	0.02	11.32	0.56	2.55	261	23
3230	421	0.09	4.25	0.47	4.34	0.02	9.04	0.36	2.25	188	20
3240	422	0.29	12.54	1.17	12.83	0.02	10.71	1.06	5.60	223	20
3250	421	0.45	12.89	0.57	13.34	0.03	22.79	0.57	6.85	188	8
3260	419	0.08	2.07	0.15	2.15	0.04	13.80	0.17	0.89	232	16
3270	420	0.51	14.32	0.57	14.83	0.03	25.12	1.23	6.10	234	9
3280	420	0.29	8.90	0.83	9.19	0.03	10.72	0.76	4.60	193	18
3290	422	0.13	2.46	0.23	2.59	0.05	10.69	0.21	1.24	198	18
3300	420	1.24	16.26	0.50	17.50	0.07	32.52	1.45	4.00	407	13
3310	421	0.80	11.13	0.41	11.93	0.07	27.14	0.99	2.90	383	14
3320	423	0.10	1.79	0.11	1.89	0.05	16.27	0.15	0.79	226	13
3330	420	0.24	5.05	0.41	5.29	0.05	12.31	0.44	1.29	391	32
3340	423	1.98	45.28	1.27	47.26	0.04	35.65	3.93	16.30	277	7
3350	421	2.45	47.50	1.62	49.95	0.05	29.32	4.16	17.40	272	9
3360	419	2.98	54.58	1.44	57.55	0.05	37.90	0.99	20.00	273	7
3370	420	2.64	48.22	1.44	50.86	0.05	33.48	4.23	15.00	321	9
3430	422	0.08	1.00	0.12	1.08	0.07	8.33	0.09	0.55	181	21
3440	422	0.04	0.88	0.15	0.92	0.04	5.86	0.07	0.62	142	24
3450	422	0.11	1.33	0.15	1.44	0.08	8.86	0.12	0.62	214	24
3460									0.35		
3470	422	0.17	3.68	0.34	3.85	0.04	10.82	0.32	1.45	253	23
3480	424	0.89	24.61	0.56	25.50	0.03	43.94	2.12	6.75	364	8
3490	422	0.18	4.24	0.18	4.42	0.04	23.55	0.36	3.65	116	4
3500	424	0.22	5.48	0.22	5.70	0.04	24.90	0.47	1.94	282	11
3510	423	0.24	6.90	0.38	7.14	0.03	18.15	0.59	3.05	226	12
3520	423	0.23	5.95	0.36	6.18	0.04	16.52	0.51	2.40	247	15
3530	423	0.48	10.45	0.60	10.93	0.04	17.41	0.91	3.90	267	15
3540	415	0.44	11.12	0.49	11.56	0.04	22.69	0.96	4.40	252	11
3550	421	0.12	3.82	0.22	3.94	0.03	17.36	0.32	1.81	211	12

AMDEL

Rock-Eval Pyrolysis 16/11/89

Client: PETROFINA EXPLORATION AUSTRALIA S.A.

Well: ANEMONE-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
3560	426	0.09	2.35	0.41	2.44	0.04	5.73	0.20	1.06	221	38
3570	427	0.13	2.77	0.47	2.90	0.04	5.84	1.15	1.80	154	26
3580	425	0.14	4.76	0.36	4.90	0.03	13.22	0.40	2.20	216	16
3590	428	0.15	4.51	0.27	4.66	0.03	16.70	0.38	1.94	232	13
3600	425	0.41	9.18	0.47	9.59	0.04	19.53	0.79	3.85	238	12
3610	424	0.18	4.26	0.29	4.44	0.04	14.68	0.37	1.93	221	15
3620									0.36		
3630									0.24		
3640	426	0.02	0.29	0.07	0.30	0.05	4.30	0.04	0.41	70	16
3650	424	0.06	0.50	0.09	0.56	0.11	5.55	0.04	0.48	104	19
3660	423	0.10	0.65	0.15	0.75	0.14	4.33	0.06	0.44	148	34
3670	422	0.10	0.96	0.13	1.06	0.09	7.38	0.08	0.40	240	33
3680									0.22		
3690									0.18		
3700									0.23		
3710									0.35		
3720	424	0.11	1.11	0.16	1.22	0.09	6.93	0.10	0.66	168	24
3840	423	0.10	0.87	0.19	0.97	0.10	4.57	0.08	0.48	181	40
3940	408	0.09	0.64	0.12	0.73	0.12	5.33	0.06	0.45	142	27
3980	423	0.41	4.58	0.56	4.99	0.08	8.17	0.41	2.10	218	27
3990	430	0.25	2.64	0.32	2.89	0.09	8.25	0.24	1.45	182	22
4000	424	0.67	6.13	0.29	6.80	0.10	21.13	0.56	2.50	245	11
4010	427	0.51	5.54	0.37	6.05	0.08	14.97	0.50	2.35	235	15
4020	429	0.20	1.94	0.28	2.14	0.09	6.92	0.17	1.07	181	26
4030	431	0.09	0.53	0.11	0.62	0.15	4.81	0.05	0.44	120	25
4030	429	0.17	1.29	0.28	1.46	0.12	4.60	0.12	0.75	172	37
4040	422	0.53	4.09	0.17	4.62	0.11	24.05	0.38	1.74	235	9
4050	422	0.18	1.23	0.09	1.41	0.13	13.66	0.11	0.54	227	16
4060	426	0.11	0.84	0.10	0.95	0.12	8.40	0.07	0.41	204	24
4070	426	0.29	2.13	0.07	2.42	0.12	30.42	0.20	0.87	244	8
4080	426	0.15	0.61	0.07	0.76	0.20	8.71	0.06	0.50	122	14
4090									0.23		
4100									0.24		
4110									0.22		
4120	430	0.10	0.61	0.10	0.71	0.14	6.10	0.05	0.53	115	18
4140	431	0.08	0.51	0.15	0.59	0.14	3.40	0.04	0.52	98	28
4150	428	0.14	0.82	0.13	0.96	0.15	6.30	0.08	0.70	117	18
4159*	432	0.27	3.39	1.30	3.66	0.07	2.61	0.30	1.97	172	66
4160	431	0.21	1.79	0.28	2.00	0.10	6.39	0.16	1.26	142	22
4170	429	0.28	4.49	0.30	4.77	0.06	14.96	0.39	2.15	208	13
4180	430	0.22	3.67	0.35	3.89	0.06	10.48	0.32	1.98	185	17
4190	432	0.24	3.18	0.48	3.42	0.07	6.62	0.28	1.71	185	28
4200	431	0.20	2.32	0.26	2.52	0.08	8.92	0.21	1.27	182	20
4210	431	0.12	0.88	0.11	1.00	0.12	8.00	0.08	0.46	191	23
4220	432	0.19	1.26	0.23	1.45	0.13	5.47	0.12	0.83	151	27
4230	432	0.15	0.92	0.16	1.07	0.14	5.75	0.08	0.54	170	29

AMDEL

Rock-Eval Pyrolysis 16/11/89

Client: PETROFINA EXPLORATION AUSTRALIA S.A.

Well: ANEMONE-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
4240									0.23		
4250	429	0.41	4.25	0.41	4.66	0.09	10.36	0.38	2.05	207	20
Santonian											
4260	430	0.52	3.80	0.33	4.32	0.12	11.51	0.36	1.94	195	17
4270	429	0.38	5.16	0.27	5.54	0.07	19.11	0.46	2.15	240	12
4280	430	0.40	3.34	0.50	3.74	0.11	6.68	0.31	1.77	188	28
4290	430	0.40	3.98	0.47	4.38	0.09	8.46	0.36	1.98	201	23
4300	430	0.33	3.96	0.50	4.29	0.08	7.92	0.35	2.00	198	25
4310	432	0.32	3.26	0.37	3.58	0.09	8.81	0.29	1.71	190	21
4320	434	0.32	2.76	0.32	3.08	0.10	8.62	0.25	1.49	185	21
4330	432	0.34	3.02	0.35	3.36	0.10	8.62	0.28	1.85	163	18
4340	434	0.34	2.86	0.28	3.20	0.11	10.21	0.26	1.66	172	16
4350	435	0.30	2.27	0.41	2.57	0.12	5.53	0.21	1.62	140	25
4360	433	0.36	2.78	0.33	3.14	0.11	8.42	0.26	1.64	169	20
4370	434	0.43	3.36	0.26	3.79	0.11	12.92	0.31	1.81	185	14
4380	435	0.43	3.54	0.27	3.97	0.11	13.11	0.33	1.87	189	14
4390	433	0.48	3.59	0.25	4.07	0.12	14.36	0.33	1.72	208	14
4400	435	0.56	4.00	0.21	4.56	0.12	19.04	0.38	1.80	222	11
4410	434	0.61	4.24	0.21	4.85	0.13	20.19	0.40	1.78	238	11
4420	434	0.33	2.53	0.24	2.86	0.12	10.54	0.23	1.58	160	15
4430	435	0.36	2.98	0.16	3.34	0.11	18.62	0.27	1.65	180	9
4440	434	0.35	3.25	0.21	3.60	0.10	15.47	0.30	1.80	180	11
4450	434	0.29	2.42	0.25	2.71	0.11	9.68	0.22	1.74	139	14
4460	433	0.25	2.59	0.29	2.84	0.09	8.93	0.23	1.79	144	16
4470	432	0.30	3.20	0.30	3.50	0.09	10.66	0.29	1.83	174	16
4480	433	0.23	2.57	0.28	2.80	0.08	9.17	0.23	1.69	152	16
4490	435	0.28	2.30	0.36	2.58	0.11	6.38	0.21	1.76	130	20
4500	433	0.27	2.19	0.35	2.46	0.11	6.25	0.20	1.79	122	19
4510	434	0.25	2.25	0.33	2.50	0.10	6.81	0.20	1.81	124	18
4520	432	0.21	2.14	0.45	2.35	0.09	4.75	0.19	1.80	118	25
4530	434	0.20	1.09	0.30	1.29	0.16	3.63	0.10	0.95	114	31
4540									0.34		
4560									0.33		
4570									0.35		
4580									0.27		
4590									0.27		
4600									0.26		
4620	438	0.20	0.78	0.15	0.98	0.20	5.20	0.08	0.73	106	20
4650									0.33		

TABLE 2

AMDEL

Rock-Eval Pyrolysis 16/11/89

Client: PETROFINA

Well: ANEMONE-1A

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
Santonian											
4500	434	0.33	1.99	0.49	2.32	0.14	4.06	0.19	1.71	116	28
4510	444	0.22	0.59	1.33	0.81	0.27	0.44	0.06	1.09	54	122
4520	442	0.17	0.45	1.91	0.62	0.27	0.23	0.05	0.88	51	217
4530	437	0.35	0.98	0.77	1.33	0.27	1.27	0.11	1.05	93	73
4540	445	0.06	0.00	0.16	0.06	1.00	0.00	0.00	0.04	0	400
4550	374	0.09	0.18	0.08	0.27	0.35	2.25	0.02	0.21	85	38
4560	276	0.05	0.07	0.11	0.12	0.42	0.63	0.01	0.12	58	91
4570	296	0.07	0.13	0.11	0.20	0.35	1.18	0.01	0.29	44	37
4580	276	0.08	0.08	0.21	0.16	0.50	0.38	0.01	0.38	21	55
4585	278	0.05	0.10	0.04	0.15	0.36	2.50	0.01	0.24	41	16
4590	328	0.08	0.14	0.11	0.22	0.36	1.27	0.01	0.21	66	52
4600	310	0.07	0.09	0.10	0.16	0.44	0.90	0.01	0.25	36	40
4610	276	0.10	0.11	0.19	0.21	0.50	0.57	0.01	0.09	122	211
4620	318	0.08	0.10	0.14	0.18	0.44	0.71	0.01	0.10	100	140
4630	330	0.09	0.21	0.13	0.30	0.30	1.61	0.02	0.31	67	41
4640	312	0.06	0.07	0.13	0.13	0.50	0.53	0.01	0.02	350	650
4650	298	0.09	0.14	0.11	0.23	0.41	1.27	0.01	0.17	82	64
4660	276	0.09	0.10	0.08	0.19	0.50	1.25	0.01	0.22	45	36
4670	340	0.10	0.21	0.11	0.31	0.33	1.90	0.02	0.33	63	33
4680	274	0.09	0.18	0.16	0.27	0.35	1.12	0.02	0.24	75	66
4690	277	0.04	0.11	0.16	0.15	0.29	0.68	0.01	0.15	73	106
4700	248	0.07	0.10	0.14	0.17	0.44	0.71	0.01	0.26	38	53
4710	308	0.23	0.21	0.14	0.44	0.52	1.50	0.03	0.38	55	36
4720	368	0.06	0.06	0.47	0.12	0.50	0.12	0.01	0.10	60	470
4730	323	0.12	0.28	0.10	0.40	0.30	2.80	0.03	0.24	116	41
4740	253	0.06	0.21	0.11	0.27	0.23	1.90	0.02	0.15	140	73
4750	276	0.08	0.08	0.13	0.16	0.50	0.61	0.01	0.21	38	61
4760	276	0.04	0.13	0.10	0.17	0.25	1.30	0.01	0.25	52	40
4770	294	0.11	0.22	0.09	0.33	0.34	2.44	0.02	0.27	81	33
4775	312	0.07	0.16	0.09	0.23	0.30	1.78	0.01	0.28	57	32

TABLE 3

SUMMARY OF VITRINITE REFLECTANCE MEASUREMENTS, ANEMONE -1 AND ANEMONE -1A

Depth (m)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
2609*	0.43•(0.41	0.05	0.34-0.51	12
2820*	0.38	0.05	0.29-0.49	26
2880.5*	0.42	0.05	0.30-0.51	37
2975*	0.43	0.06	0.30-0.56	29
3040*	0.41	0.04	0.31-0.47	24
3070	0.42	0.04	0.32-0.51	30
3120	0.44	0.04	0.39-0.51	16
3170	0.47	0.04	0.38-0.53	28
3250	0.44	0.04	0.36-0.53	30
3300	0.50	0.04	0.43-0.58	34
3330	0.47	0.03	0.43-0.53	8
3360	0.49	0.03	0.42-0.55	34
3450	0.53	0.00	0.53	2
3510	0.52	0.06	0.45-0.67	16
3570	0.55	0.06	0.47-0.68	14
3610	0.52	0.03	0.46-0.60	16
3710	0.58	0.07	0.46-0.64	4
3840	0.50†	0.03	0.44-0.56	12
3880	0.53†	0.05	0.47-0.65	11
3980	0.54†	0.04	0.47-0.61	16
4040	0.58†	0.09	0.48-0.76	12
4159+	0.61	0.05	0.51-0.72	38
4190	0.63	0.07	0.51-0.79	23
4200	0.65	0.06	0.51-0.77	26
4310	0.64	0.08	0.52-0.83	21
4360	0.67	0.08	0.52-0.86	32
4400	0.64	0.08	0.51-0.77	27
4450	0.67	0.11	0.50-0.85	20
4490	0.73•(0.70)	0.09	0.56-0.91	35
4500	0.69	0.07	0.57-0.85	19
4520	0.76•(0.73)	0.06	0.63-0.86	17
4530	0.71	0.08	0.52-0.24	26

* Swc
\+ Core
• Influenced by reworked Vitrinite
† Influenced by caved cuttings
() Preferred value

TABLE 4

PERCENTAGE OF VITRINITE, INERTINITE AND EXINITE IN DISPERSED ORGANIC MATTER, ANEMONE -1, 1A

Depth (m)	Percentage of Vitrinite	Percentage of Inertinite	Percentage of Exinite
Anemone -1			
Latrobe Group Maastrichtian			
2880.5	40	50	10
3070	70	15	15
3170	60	25	15
Campanian			
3300	65-70	20	10-15
3360	65-70	20	10-15
3510	20	65-70	10-15
3610	10	85	5
3980	10-20	70-80	10
4040	5-10	80-90	5-10
4190	5-10	80-90	5-10
Santonian			
4310	<5	85-90	5-10
4400	5	90	5
Anemone -1A			
4500	5-10	85-90	5
4630	<5	90	5
4710	15	80	5
4775	5	90	<5

TABLE 5

ORGANIC MATTER TYPE AND ABUNDANCE, ANEMONE -1, 1A

Depth (m)	Estimated Volume of DOM	Estimated Volume of Exinites	Exinite Macerals
Anemone -1			
Latrobe Group Maastrichtion			
2880.5	3-5	Ra-Sp	cut, lipto, spo, bmite, res, sub
3070	>20	Sp	cut, lipto, spo, res, sub, bmite
3170	~10	Co	cut, spo, lipto, res, lama, tela, sub
Campanian			
3300	5-10	Co	cut, lipto, spo, res, bmite
3360	15-20	Co	cut, lipto, spo, bmite, sub
3510	3-5	Sp	cut, lipto, spo, res, ?phyto
3610	1-2	Ra	lipto, cut, lama, phyto, res
3980	2-3	Ra-Sp	cut, lipto, spo, res
4040	0.5-1	Ra	cut, lipto, spo, res, bmite
4190	1-2	Ra	lama, phyto, lipto, spo, cut, tela, sub
Santonian			
4310	1-2	Ra	lipto, bmite, phyto, spo, lama, oil
4400	1-2	Ra	lipto, phyto, spo, cut, bmite
Anemone -1A			
4500	1-2	Ra	phyto, bmite, lipto, lama, spo, cut, oil
4630	<0.5	Vr	phyto, bmite, lipto, cut, oil
4710	<0.5	Vr	bmite, lipto, ?cut, oil
4775	<0.5	Vr	phyto, lipto

TABLE 6

EXINITE MACERAL ABUNDANCE AND FLUORESCENCE CHARACTERISTICS

ANEMONE -1, 1A

Depth (m)	Exinite Macerals	Lithology/Comments
Anemone -1 Latrobe Group Maastrichtian		
2880.5	cut(Ra-Sp;mO), lipto(Ra-SplmY-mO), spo(Ra;mY), bmite(Ra;dO-dB), res(Vr;iY-mO), sub(Vr;dO)	Silty shale
3070	cut(Sp;mY-mO), lipto(Sp;mY-mO), spo(Ra-Sp;mY-mO), res(Ra;mO), sub(Ra;mO), bmite(Ra;dO)	Chiefly coal and carbonaceous shale, ~30% silty sandstone
3170	cut(Co;mY-mO), spo(Sp;mY-mO), lipto(Sp;mY-mO), res(Ra;mY-dO), lama(Ra;mO), tela(Tr;iY-iO), sub(Tr;dO)	Chiefly carbonaceous shale and coal, 20-30% sandstone. Telalginite is biodegraded *?Botryococcus* - related algae
Campanian		
3300	cut(Co;mY-mO) lipto(Sp;mY-mO), Spo(Ra-Sp;mO), res(Ra;iY-dO), bmite(Ra;dO)	Chiefly carbonaceous shale and coal, 20-30% sandstone
3360	cut(Co;mY-mO), lipto(Sp;mY-mO), spo(Ra;mY-mO), bmite(Ra;mO-dO), sub(Vr;dO)	Chiefly carbonaceous shale and coal, <5% sandstone
3510	cut(Sp;mY-mO), lipto(Sp;mY-mO), spo(Ra;mY-mO), res(Ra;iY), ?phyto (Vr;iY)	Shale with trace coal, 20-30% sandstone
3610	lipto(Ra;mO), cut(Ra;mO), lama(Ra; mO), phyto(Vr;iY), res(Vr;iY)	Sandstone
3980	cut(Ra-Sp;mY-mO), lipto(Ra;mY-mO), spo(Ra;mO), res(Vr;iY)	Chiefly shale with trace coal 30-40% sandstone
4040	cut(Ra;mO), lipto(Ra;mY-mO), spo(Vr;mO), res(Vr;iY), bmite (Vr;dO)	Chiefly sandstone, ~30% silty shale

Depth (m)	Exinite Macerals	Lithology/Comments
4190	lama(Ra;mY-mO), phyto(Ra-Vr;iY), lipto(Ra-Vr;mO), spo(Vr;mO), cut(Vr;mY-mO), sub(Vr;mO-dO), tela(Vr;iY)	Chiefly shale, trace coal, 10-20% sandstone. Telalginite is *?Botryococcus* - related
Santonian		
4310	lipto(Ra;mO), bmite(Ra;dO-nofl), ?phtyo(Ra-Vr;mY-mO), spo(Vr;mO-dO), lama(Vr;mO), oil(Vr;iYG-iY)	Silty shale; oil is associated with bituminite. Some sporinite is oxidised
4400	phyto(Ra;iY-mO), lipto(Ra;mO), spo(Ra-Vr;mO-dO), cut(Vr;dO), bmite(Vr;dO)	Shale; some sporinite and cutinite are oxidised
Anemone -1A		
4500	phyto(Ra;iY-mY), bmite(Ra-Vr;dO), lipto(Ra-Vr;mO), lama(Vr;mY), spo(Tr;mO), cut(Tr;mO), oil (Tr;iYG)	Shale oil is associated with bituminite. Bituminite is common in ~5% of these shale cuttings
4630	phyto(Vr;mY), bmite(Vr;dO-nofl) lipto(Vr-Tr;mY-dO), cut(Tr;dO), oil (Tr;iY)	Chiefly sandstone, <5% siltstone and shale. Oil occurs in the siltstone
4710	bmite(Vr;dO), lipto(Vr;mY-mO), cut(Tr;mO), oil(Tr;iYG-iY)	Chiefly sandstone, ~5% siltstone and shale. Oil as above
4775	phyto(Vr;mO), lipto(Vr;mO)	Chiefly sandstone, <5% siltstone and shale

TABLE 7

STABLE ISOTOPIC COMPOSITION OF GAS FROM ANGLER -1, ANEMONE -1 AND ANEMONE -1A

	$\delta^{13}C$ ‰		
	Angler -1 (RFT)	Anemone -1 (RFT)	Anemone -1A (DST)
Methane	-36.7	-41.3	-36.7
Ethane	-26.0	-27.3	-29.4
Propane	-25.2	-26.3	-26.6
n-Butane	-23.5	-25.1	-26.3
n-Pentane	-20.3	-26.2	-26.1

TABLE 8

amdel technology and enterprise

Amdel Limited
(Incorporated in S.A.)
31 Flemington Street,
Frewville, S.A. 5063

Telephone: (08) 372 2700

P.O. Box 114,
Eastwood, S.A. 5063

Telex: AA82520
Facsimile: (08) 79 6623

NATA CERTIFICATE

AMDEL LIQUID ANALYSIS SERVICE   Method R2.1

Client: PETROFINA   Report # F7574/89

Sample: ANEMONE 1A
RFT sample 1, 4230.5m

Boiling Point Range (Deg.C)	Component	Weight%	Mol%
-88.6	ETHANE	0.00	0.00
-42.1	PROPANE	0.02	0.06
-11.7	I-BUTANE	0.02	0.04
-0.5	N-BUTANE	0.08	0.18
27.9	I-PENTANE	0.19	0.34
36.1	N-PENTANE	0.31	0.56
36.1-68.9	C-6	2.97	4.49
80.0	BENZENE	0.51	0.85
68.9-98.3	C-7	11.26	14.63
100.9	METHYLCYCHX	7.59	10.07
110.6	TOLUENE	4.19	5.92
98.3-125.6	C-8	10.95	12.48
136.1-144.4	ETHYLBZ+XYL	7.66	9.40
125.6-150.6	C-9	8.73	8.90
150.6-173.9	C-10	11.43	10.46
173.9-196.1	C-11	7.50	6.25
196.1-215.0	C-12	4.66	3.56
215.0-235.0	C-13	4.76	3.36
235.0-252.2	C-14	1.60	1.05
252.2-270.6	C-15	3.99	2.45
270.6-287.8	C-16	1.69	0.97
287.8-302.8	C-17	0.93	0.50
302.8-317.2	C-18	0.88	0.45
317.2-330.0	C-19	0.57	0.28
330.0-344.4	C-20	0.52	0.24
344.4-357.2	C-21	0.50	0.22
357.2-369.4	C-22	0.47	0.20
369.4-380.0	C-23	0.47	0.19
380.0-391.1	C-24	0.48	0.18
391.1-401.7	C-25	0.53	0.20
401.7-412.2	C-26	0.74	0.26
412.2-422.2	C-27	0.61	0.21
>422.2	C-28+	3.19	1.05
	Total	100.00	100.00

(0.00 = LESS THAN 0.01%)

The above boiling point ranges refer to the normal paraffin hydrocarbon boiling in that range. Aromatics, branched hydrocarbons, naphthenes and olefins may have higher or lower carbon numbers but are grouped and reported according to their boiling points.

Average molecular weight of C-8 plus   146 g/mol

This report relates specifically to the sample tested; it also relates to the batch insofar as the sample is representative of the Batch.

Approved Signatory

Date   25-Aug-89

TABLE 9

amdel technology and enterprise

NATA CERTIFICATE

Amdel Limited
(Incorporated in S.A.)
31 Flemington Street,
Frewville, S.A. 5063

Telephone: (08) 372 2700

P.O. Box 114,
Eastwood, S.A. 5063

Telex: AA82520
Facsimile: (08) 79 6623

AMDEL LIQUID ANALYSIS SERVICE   Method R2.1

Client: PETROFINA   Report # F7574/89

Sample: ANEMONE 1A
DST #1, Condensate

Boiling Point Range (Deg.C)	Component	Weight%	Mol%
-88.6	ETHANE	0.05	0.17
-42.1	PROPANE	1.67	3.89
-11.7	I-BUTANE	1.79	3.16
-0.5	N-BUTANE	5.97	10.55
27.9	I-PENTANE	3.39	4.82
36.1	N-PENTANE	5.30	7.54
36.1-68.9	C-6	7.76	9.25
80.0	BENZENE	0.92	1.21
68.9-98.3	C-7	13.36	13.69
100.9	METHYLCYCHX	6.73	7.04
110.6	TOLUENE	3.99	4.45
98.3-125.6	C-8	7.61	6.84
136.1-144.4	ETHYLBZ+XYL	5.55	5.37
125.6-150.6	C-9	5.94	4.74
150.6-173.9	C-10	7.46	5.38
173.9-196.1	C-11	4.60	3.02
196.1-215.0	C-12	3.46	2.09
215.0-235.0	C-13	3.81	2.12
235.0-252.2	C-14	2.91	1.51
252.2-270.6	C-15	2.05	0.99
270.6-287.8	C-16	1.31	0.59
287.8-302.8	C-17	1.11	0.47
302.8-317.2	C-18	0.62	0.25
317.2-330.0	C-19	0.46	0.18
330.0-344.4	C-20	0.31	0.11
344.4-357.2	C-21	0.28	0.10
357.2-369.4	C-22	0.20	0.07
369.4-380.0	C-23	0.24	0.08
380.0-391.1	C-24	0.20	0.06
391.1-401.7	C-25	0.28	0.08
401.7-412.2	C-26	0.13	0.04
412.2-422.2	C-27	0.12	0.03
>422.2	C-28+	0.42	0.11
	Total	100.00	100.00

(0.00 = LESS THAN 0.01%)

The above boiling point ranges refer to the normal paraffin hydrocarbon boiling in that range. Aromatics, branched hydrocarbons, naphthenes and olefins may have higher or lower carbon numbers but are grouped and reported according to their boiling points.

Average molecular weight of C-8 plus   141 g/mol

This report relates specifically to the sample tested; it also relates to the batch insofar as the sample is representative of the Batch.

Approved Signatory

Date   27-Oct-89

TABLE 10

AMDEL
GASOLINE-RANGE ANALYSIS

ANEMONE-1A
RFT PRE-TEST SAMPLE

COMPOUND	NORMAL %	BRANCHED %	CYCLIC %	AROMATIC %
2-METHYLBUTANE		0.30		
N-PENTANE	0.57			
2,2-DIMETHYLBUTANE		0.08		
CYCLOPENTANE			0.00	
2,3-DIMETHYLBUTANE		0.37		
2-METHYLPENTANE		1.75		
3-METHYLPENTANE		1.35		
N-HEXANE	4.60			
2,2-DIMETHYLPENTANE		0.38		
METHYLCYCLOPENTANE			3.91	
2,4-DIMETHYLPENTANE		0.43		
2,2,3-TRIMETHYLBUTANE		0.12		
BENZENE				1.80
3,3-DIMETHYLPENTANE		0.18		
CYCLOHEXANE			8.69	
2-METHYLHEXANE		3.79		
2,3-DIMETHYLPENTANE		0.84		
1,1-DIMETHYLCYCLOPENTANE			0.87	
3-METHYLHEXANE		3.99		
TRANS-1,3-DIMETHYLCYCLOPENTANE			1.59	
CIS-1,3-DIMETHYLCYCLOPENTANE			1.52	
3-ETHYLPENTANE		0.00		
TRANS-1,2-DIMETHYLCYCLOPENTANE			2.73	
N-HEPTANE	11.05			
METHYLCYCLOHEXANE			29.63	
ETHYLCYCLOPENTANE			1.32	
TOLUENE				18.14
TOTAL PERCENTAGES	16.22	13.59	50.25	19.94

TABLE 11

AMDEL
GASOLINE-RANGE ANALYSIS

ANEMONE-1A
DST-1

COMPOUND	NORMAL %	BRANCHED %	CYCLIC %	AROMATIC %
2-METHYLBUTANE		8.65		
N-PENTANE	9.81			
2,2-DIMETHYLBUTANE		0.26		
CYCLOPENTANE			0.70	
2,3-DIMETHYLBUTANE		0.37		
2-METHYLPENTANE		5.75		
3-METHYLPENTANE		3.93		
N-HEXANE	8.47			
2,2-DIMETHYLPENTANE		0.47		
METHYLCYCLOPENTANE			5.65	
2,4-DIMETHYLPENTANE		0.73		
2,2,3-TRIMETHYLBUTANE		0.27		
BENZENE				3.22
3,3-DIMETHYLPENTANE		0.38		
CYCLOHEXANE			10.27	
2-METHYLHEXANE		3.01		
2,3-DIMETHYLPENTANE		0.88		
1,1-DIMETHYLCYCLOPENTANE			1.03	
3-METHYLHEXANE		3.30		
TRANS-1,3-DIMETHYLCYCLOPENTANE			1.38	
CIS-1,3-DIMETHYLCYCLOPENTANE			1.47	
3-ETHYLPENTANE		0.00		
TRANS-1,2-DIMETHYLCYCLOPENTANE			2.18	
N-HEPTANE	7.30			
METHYLCYCLOHEXANE			12.22	
ETHYLCYCLOPENTANE			1.66	
TOLUENE				6.65
TOTAL PERCENTAGES	25.58	28.00	36.55	9.88

TABLE 12

AMDEL
GASOLINE-RANGE PARAMETERS

ANEMONE-1A
RFT PRE-TEST SAMPLE

PARAMETER	
1	1.17
2	0.37
3	0.75
4	4.83
5	1.63
6	0.53
7	0.29
8	1.33
9	17.08

KEY TO PARAMETERS

Parameter	Derivation	Specificity
1	n-hexane/methylcyclopentane	mat/biodeg
2	n-heptane/methylcyclohexane	mat/biodeg
3	3-methylpentane/benzene	water washing
4	cyclohexane/benzene	water washing
5	methylcyclohexane/toluene	water washing
6	isopentane/normal pentane	mat/biodeg
7	3-methylpentane/n-hexane	biodegradation
8	isoheptane value *	maturity
9	heptane value *	maturity

(* from Thompson, 1983)

TABLE 13

AMDEL
GASOLINE-RANGE PARAMETERS

ANEMONE-1A
DST-1

PARAMETER	
1	1.50
2	0.60
3	1.22
4	3.19
5	1.84
6	0.88
7	0.46
8	1.26
9	16.97

KEY TO PARAMETERS

Parameter	Derivation	Specificity
1	n-hexane/methylcyclopentane	mat/biodeg
2	n-heptane/methylcyclohexane	mat/biodeg
3	3-methylpentane/benzene	water washing
4	cyclohexane/benzene	water washing
5	methylcyclohexane/toluene	water washing
6	isopentane/normal pentane	mat/biodeg
7	3-methylpentane/n-hexane	biodegradation
8	isoheptane value *	maturity
9	heptane value *	maturity

(* from Thompson, 1983)

TABLE 14

C_{12+} BULK COMPOSITION AND ALKANE RATIOS OF OILS, ANEMONE -1, 1A

Sample	C_{12+} Composition				Alkane Ratios					
	N+ iso para	Naph	Arom	Res+Asph	n-C_{10}	npC_{15}	Np/Pr	Pr/Ph	Pr/n-C_{17}	Ph/n-C_{18}
Angler -1										
RFT Pre-Test 4226 m	58.5	20.9	12.6	8.0	8.05	3.66	0.37	6.22	0.50	0.08
Wirrah -1* 2195.3 m					6.8	3.8	nd	9.5	nd	0.05
Anemone -1A										
RFT	24.0	16.5	8.78	50.7	3.0	3.3	0.50	4.03	0.54	0.15
DST	17.2	12.3	24.1	46.3	3.2	2.7	0.64	2.72	0.64	0.24

* From Burns (1987)

N+ iso para = normal + isoparaffins
Naph = naphthenes
Arom = aromatic hydrocarbons
Res = resins + polar compounds
Asph = asphaltenes

a,b = isoalkanes (after Burns *et al* 1987)
Np = norpristane
Pr = pristane
Ph = phytane
n-C_{17} = n-heptadecane
n-C_{18} = n-octadecane

TABLE 15

AROMATIC MATURITY DATA, ANEMONE-1,1A AND ANGLER-1

SAMPLE	MPI	MPR	DNR	MPDF	VR CALC A	B	C	D	E	F
ANGLER-1										
RFT	1.080	1.490	8.500	0.560	1.05	1.65	1.11	4.80	0.98	1.09
ANEMONE-1										
RFT	1.619	1.220	2.471	0.569	1.37	1.33	1.03	2.03	1.35	1.11
DST-1	0.843	1.000	2.947	0.467	0.91	1.79	0.94	2.25	0.81	0.88

KEY TO AROMATIC MATURITY INDICATORS

Methylphenanthrene index (MPI), methylphenanthrene ratio (MPR), dimethylnaphthalene ratio (DNR) and calculated vitrinite reflectance (VR_{calc}) are derived from the following equations (after Radke and Welte, 1983; Radke *et al.*, 1984):

$$MPI = \frac{1.5\ (2\text{-}MP + 3\text{-}MP)}{P + 1\text{-}MP + 9\text{-}MP}$$

$$VR_{calc}\ (a) = 0.6\ MPI + 0.4\ (\text{for } VR < 1.35\%)$$

$$VR_{calc}\ (b) = -0.6\ MPI + 2.3\ (\text{for } VR > 1.35\%)$$

$$MPR = \frac{2\text{-}MP}{1\text{-}MP}$$

$$VR_{calc}\ (c) = 0.99\ \log_{10} MPR + 0.94\ (VR = 0.5\text{-}1.7\%)$$

$$DNR = \frac{2,6\text{-}DMN + 2,7\text{-}DMN}{1,5\text{-}DMN}$$

$$VR_{calc}\ (d) = 0.046\ DNR + 0.89\ (\text{for } VR = 0.9\text{-}1.5\%)$$

Where	P	=	phenanthrene
	1-MP	=	1-methylphenanthrene
	2-MP	=	2-methylphenanthrene
	3-MP	=	3-methylphenanthrene
	9-MP	=	9-methylphenanthrene
	1,5-DMN	=	1,5-dimethylnaphthalene
	2,6-DMN	=	2,6-dimethylnaphthalene
	2,7-DMN	=	2,7-dimethylnaphthalene

Peak areas measured from m/z 156 (dimethylnaphthalene), m/z 178 (phenanthrene) and m/z 192 (methylphenanthrene) mass fragmentograms of diaromatic and triaromatic hydrocarbon fraction isolated by thin layer chromatography.

Recalibration of the methylphanthrene index using data from a suite of Australian coals has given rise to another equation for calculated vitrinite reflectance (after Boreham *et al.*, 1988):

$$VR_{calc}\ (e) = 0.7\ MPI + 0.22\ (\text{for } VR < 1.7\%)$$

The methylphenanthrene distribution ratio (MPDF) and calculated vitrinite reflectance VR_{calc} (f) is derived from the following equation (after Kvalheim *et al.*, 1987):

$$MPDF = \frac{(2\text{-}MP + 3\text{-}MP)}{(2\text{-}MP + 3\text{-}MP + 1\text{-}MP + 9\text{-}MP)}$$

$$VR_{calc}\ (f) = -0.166 + 2.242\ MPDF$$

TABLE 16

BIOMARKER PARAMETERS OF SOURCE, MATURITY, MIGRATION AND BIODEGRADATION, ANEMONE 1, 1A

Formation & Depth (m)	Steranes							Terpanes						Acyclic Alkanes			
Parameter *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Anemone -1																	
RFT	28.20.53	1.9	1.6	0.82	1.7	1.0	0.68	-	1.0	0.25	1.5	0.15	-	4.0	0.83	0.54	0.15
DST	36:14:47	1.3	1.0	1.1	1.4	1.5	1.4	-	1.2	0.20	1.5	0.13	-	2.7	0.59	0.64	0.24
Angler -1•	39:14:47	1.5	1.8	0.69	1.4	0.87	0.66	-	1.2	0.43	-	-	-	6.2	0.56	0.50	0.08

* See key (next page) for derivation and specificity of each parameter
- not determined
** <0.01
*** <75
• These values may be unreliable due to the low signal to noise ratios in the 217, 259 and 191 mass fragmentograms

KEY TO BIOMARKER PARAMETERS OF SOURCE, MATURITY, MIGRATION AND BIODEGRADATION

Parameter	* Derivation	Specificity
1	C_{27} : C_{28} : C_{29} 5α(H)14α(H)17α(H) 20R steranes	Source
2	C_{29} 5α(H)14α(H)17α(H) 20R sterane / C_{27} 5α(H)14α(H)17α(H) 20R sterane	Source
3	C_{29} 13β(H)17α(H) 20R diasterane / C_{27} 13β(H)17α(H) 20R diasterane	Source
4	C_{29} 5α(H)14α(H)17α(H) 20S sterane / C_{29} 5α(H)14α(H)17α(H) 20R sterane	Maturity, Biodegradation
5	C_{27} 13β(H)17α(H) 20S diasterane / C_{27} 13β(H)17α(H) 20R diasterane	Maturity
6	C_{29} 5α(H)14β(H)17β(H) 20R sterane / C_{29} 5α(H)14α(H)17α(H) 20R sterane	Maturity, Migration
7	C_{29} 13β(H)17α(H) 20R+20S diasteranes / C_{29} 5α(H) steranes	Migration, Source
8	C_{30} pentacyclic terpane/C_{30} 17α(H)21β(H) hopane	Source
9	C_{27} 17α(H)-22,29,30-trisnorhopane / C_{27} 18α(H)-22,29,30-trisnorhopane (T_m/T_s)	Maturity, Source
10	T_s / C_{30} 17α(H)21β(H) hopane	Maturity
11	C_{32} 17α(H)21β(H) 22S homohopane / C_{32} 17α(H)21β(H) 22R homohopane	Maturity
12	C_{30} 17β(H)21α(H) moretane / C_{30} 17α(H)21β(H) hopane	Maturity
13	C_{29} 17α(H)-25-norhopane / C_{29} 17α(H)-30-norhopane	Biodegradation
14	pristane / phytane	Source
15	2,6,10-trimethyltridecane / pristane	Maturity
16	pristane / _n_-heptadecane	Source, Biodegradation, Maturity
17	phytane / _n_-octadecane	Source, Biodegradation, Maturity

* Ratios calculated from peak areas as follows:

Parameters 1-6 m/z = 217 mass fragmentogram
Parameter 7 m/z = 217, 259 mass fragmentograms
Parameters 8-13 m/z = 191 mass fragmentogram
Parameters 14-17 capillary gas chromatogram of alkanes or whole oil/extract

TABLE 17

SOURCE-DEPENDENT BIOMARKER RATIOS IN ANEMONE -1, 1A AND OTHER INTRA-LATROBE OILS, GIPPSLAND BASIN

Well	C_{30} Hopane / C_{29} Steranes	C_{15}, C_{16} Drimanes / C_{30} Hopane	Diterpanes / C_{30} Hopane	Tricyclics / Tetracyclics	C_{20} Labdane / C_{19} Isopim	Rimurane / 17-Nortetra
Angler -1	0.38	40	106	0.34	0.44	0.13
Volador -1 *	nd	nd	5.9	0.62	1.1	1.3
Basker -1 *	nd	nd	5.3	0.60	0.65	0.97
Anemone -1 RFT	1.66	6.2	6.9	0.30	0.50	0.17
DST	7.0	2.2	1.0	0.66	1.3	0.42
Parameter	1	2	3	4	5	6

* Data from Alexander *et al* (1987)
nd not determined

Ratios measured from mass fragmentograms as follows:

parameter	1	m/z 191, 217
parameter	2 & 4	m/z 123, 191
parameters	5-7	m/z 123

TABLE 18

STABLE CARBON ISOTOPIC COMPOSITION OF CONDENSATE AND ISOLATED FRACTIONS, ANEMONE -1 AND ANGLER -1

	Anemone -1 (RFT)	Anemone -1 (DST)	Angler -1 (RFT)
Fraction	δC_{PDB} (‰)		δC_{PDB} (‰)
Saturated Hydrocarbons	-26.7	-27.8	-26.4
Aromatics	-25.7	-26.1	-24.7
NSO Compounds	-26.2	-25.8	-26.1
Whole Oil	-25.9	-26.7	-25.5
Topped Oil	-26.3	-26.8	-26.0
Canonical Variable *	-1.153	- 0.74	0.7

* after Sofer. (1984)

TABLE 19

TABLE 1:HEADSPACE GAS ANALYSIS (ppm)

SAMPLE	C1	C2	C3	iC4	nC4	iC5	nC5	C6
4540 m	4318	3194	1556	235	384	134	86	131
4562 m	4991	2635	986	108	186	55	36	55
1:15 14/7	1411	3114	3297	1603	3467	1268	1043	981
3:30 14/7	1583	3485	2908	1986	4518	1725	1437	1497

TABLE 20

TABLE 2:HEADSPACE GAS RATIOS

SAMPLE	WET GAS (%)	C1/(C2+C3)	TOTAL (ppm)	SUM C1-C4 (ppm)	C5+ (ppm)	C3-C6 (%)	I4/N4	I5/N5
4540 m	55.43	0.91	10039	9688	351	25.16	0.61	1.55
4562 m	43.96	1.38	9051	8906	146	15.75	0.58	1.55
1:15 14/7	89.06	0.22	16184	12893	3291	72.04	0.46	1.22
3:30 14/7	89.07	0.25	19140	14481	4659	73.52	0.44	1.20

TABLE 21

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN W.A.)

Water Analysis Report   Job No. 9AD1648   Method W2/1   Page W1

Sample ID. ANEMONE

Chemical Composition

		mg/L	me/L
Cations			
Calcium	(Ca)	145.0	7.236
Magnesium	(Mg)	9.5	0.782
Sodium	(Na)	2726.0	118.573
Potassium	(K)	107.0	2.737
Anions			
Hydroxide	(OH)		
Carbonate	(CO3)		
Bi-Carbonate	(HCO3)	342.4	5.614
Sulphate	(SO4)	875.0	18.218
Chloride	(Cl)	3574	100.680
Nitrate	(NO3)	<0.1	

Other Analyses

Reaction - pH	7.3
Conductivity (E.C) (micro -S/cm at 25°C)	12800
Resistivity Ohm.M at 25°C	0.781

Derived Data

	mg/L
Total Dissolved Solids	
A. Based on E.C.	7979
B. Calculated (HCO3=CO3)	7608
Total Hardness	401
Carbonate Hardness	328
Non-Carbonate Hardness	73
Total Alkalinity	328
(Each as CaCO3)	

Totals and Balance

Cations (me/L)	129.3	Diff=	4.82
Anions (me/L)	124.5	Sum =	253.84

ION BALANCE (Diff*100/Sum) = 1.90%

Sodium / Total Cation Ratio 91.7%

Remarks

Note: mg/L = Milligrams per litre
me/L = MilliEqivs.per litre

Name: MR B.WATSON
Address: AMDEL LTD
PETROLEUM SERVICES
ADELAIDE

Date Collected 4-9-89
Date Received 4-9-89
Collected by CLIENT

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Water Analysis Report   Job No. 9AD1648   Method W2/1 Page W2

Sample ID. ANEMONE RFT SAMPLE 2

Chemical Composition

		mg/L	me/L
Cations			
Calcium	(Ca)	622.0	31.038
Magnesium	(Mg)	22.0	1.811
Sodium	(Na)	9840.0	428.012
Potassium	(K)	334.0	8.542
Anions			
Hydroxide	(OH)		
Carbonate	(CO3)		
Bi-Carbonate	(HCO3)	820.6	13.452
Sulphate	(SO4)	3424.0	71.291
Chloride	(Cl)	12796	360.438
Nitrate	(NO3)	<0.1	

Other Analyses

Reaction - pH	6.3
Conductivity (E.C) (micro -S/cm at 25°C)	41200
Resistivity Ohm.M at 25°C	0.243

Derived Data

	mg/L
Total Dissolved Solids	
A. Based on E.C.	31684
B. Calculated (HCO3=CO3)	27448
Total Hardness	1644
Carbonate Hardness	786
Non-Carbonate Hardness	858
Total Alkalinity	786
(Each as CaCO3)	

Totals and Balance

Cations (me/L)	469.4	Diff=	24.22
Anions (me/L)	445.2	Sum =	914.58

ION BALANCE (Diff*100/Sum) = 2.65%

Sodium / Total Cation Ratio 91.2%

Remarks

IMBALANCE UNKNOWN ALL RESULTS CHECKED AND VERIFIED.

Note: mg/L = Milligrams per litre
me/L = MilliEqivs.per litre

Name: MR B.WATSON
Address: AMDEL LTD
PETROLEUM SERVICES
ADELAIDE

Date Collected NOT SHOWN
Date Received 4-9-89
Collected by CLIENT

TABLE 23

DENSITY, API AND SULPHUR CONTENT, ANEMONE -1, 1A CONDENSATE

Well	Depth (m)	Test	Density (g/cc)	API	Sulphur (%)
Anemone -1	4230.5	RFT	0.7712	51.9	<0.1
Anemone -1A	4599 - 4652	DST-1	0.7497	57.2	<0.1
Angler -1	4226	RFT	0.8111	42.9	<0.1

FIGURE 1

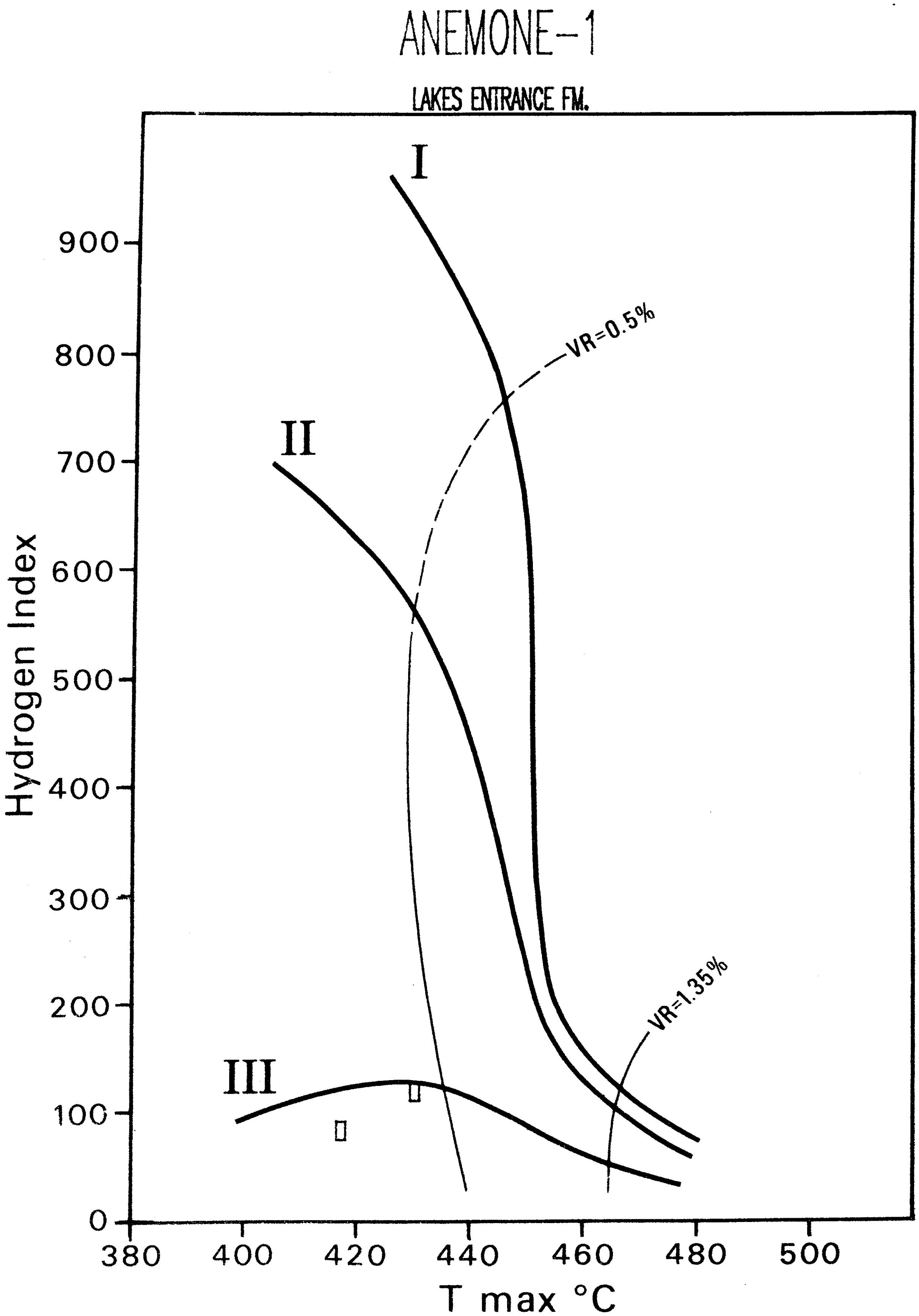
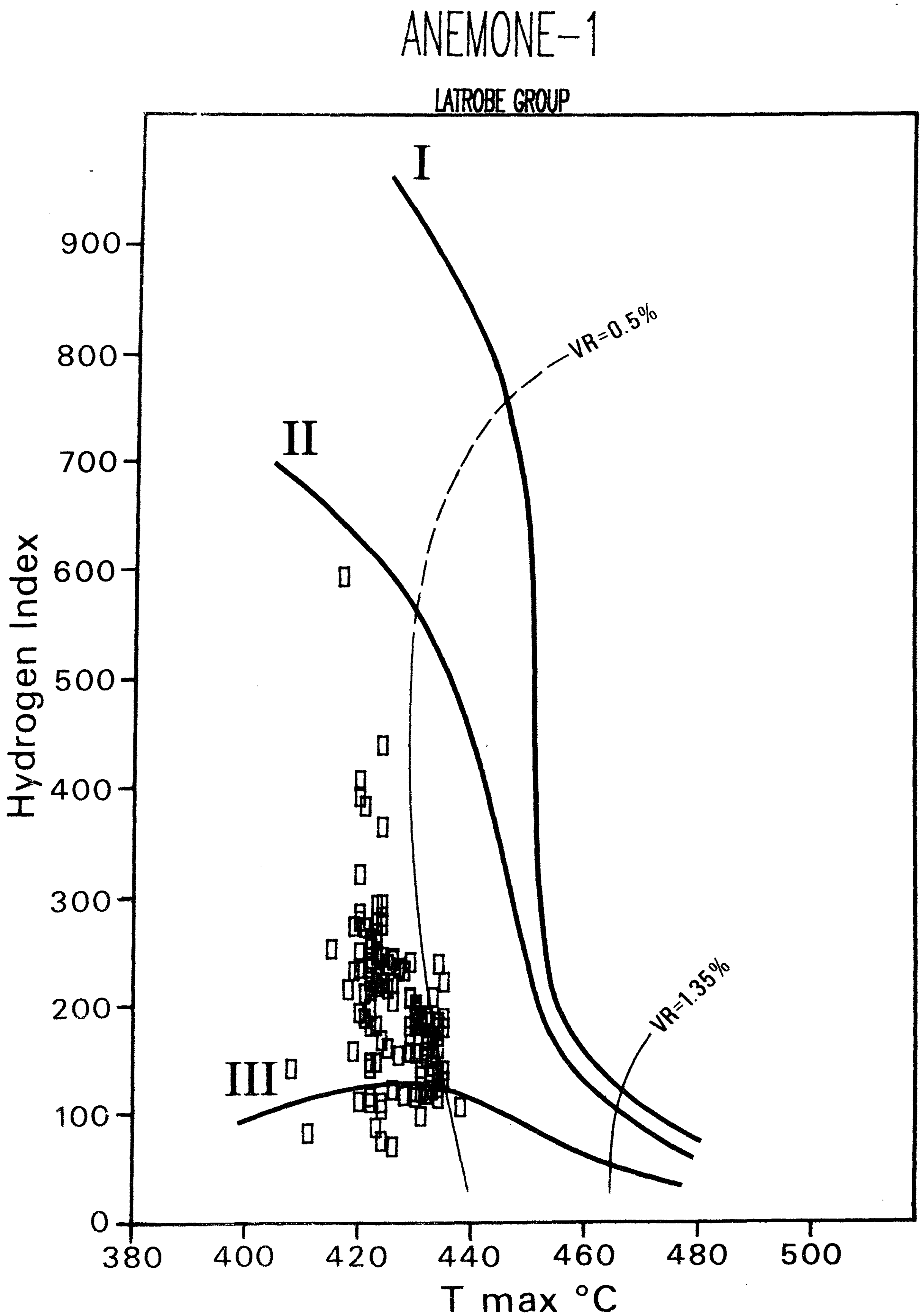

ANEMONE-1
LAKES ENTRANCE FM.
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
900
800
700
600
500
400
300
200
100
0
380
400
420
440
460
480
500
T max °C

FIGURE 2



ANEMONE-1
LATROBE GROUP
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
900
800
700
600
500
400
300
200
100
0
380
400
420
440
460
480
500
T max °C

FIGURE 3

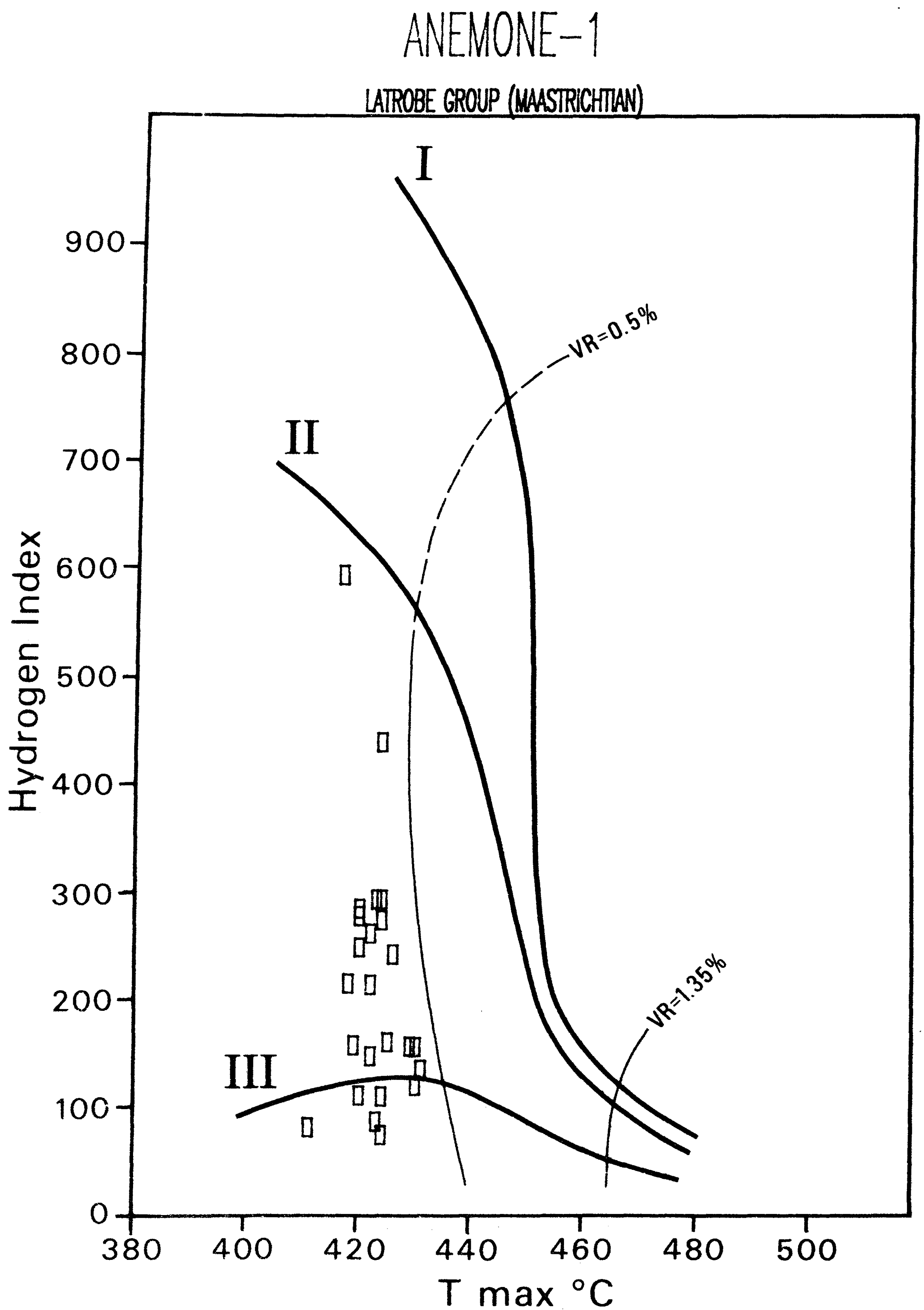
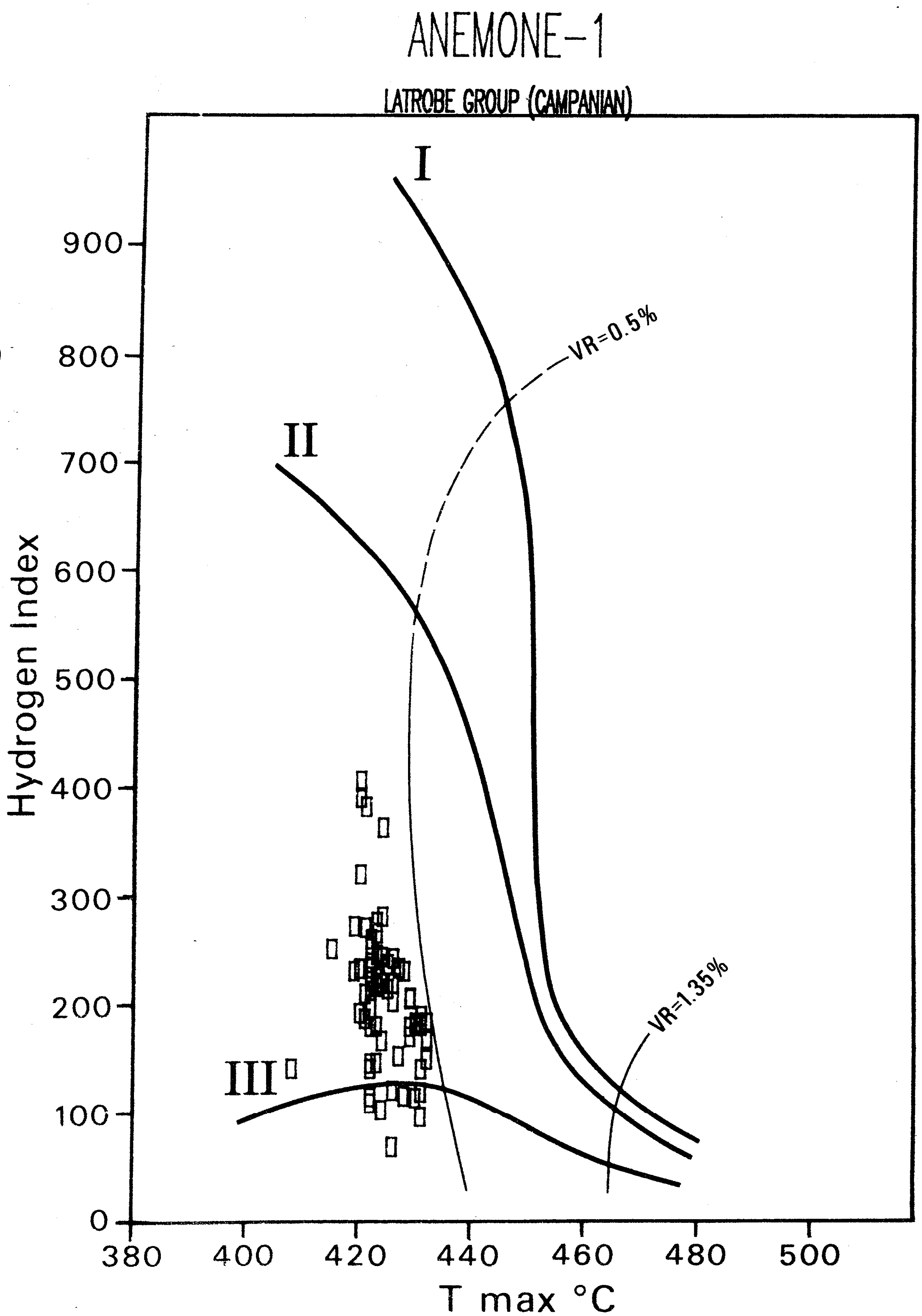

ANEMONE-1
LATROBE GROUP (MAASTRICHTIAN)
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
0
100
200
300
400
500
600
700
800
900
380
400
420
440
460
480
500
T max °C

FIGURE 4



ANEMONE-1
LATROBE GROUP (CAMPANIAN)
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
900
800
700
600
500
400
300
200
100
0
380
400
420
440
460
480
500
T max °C

FIGURE 5

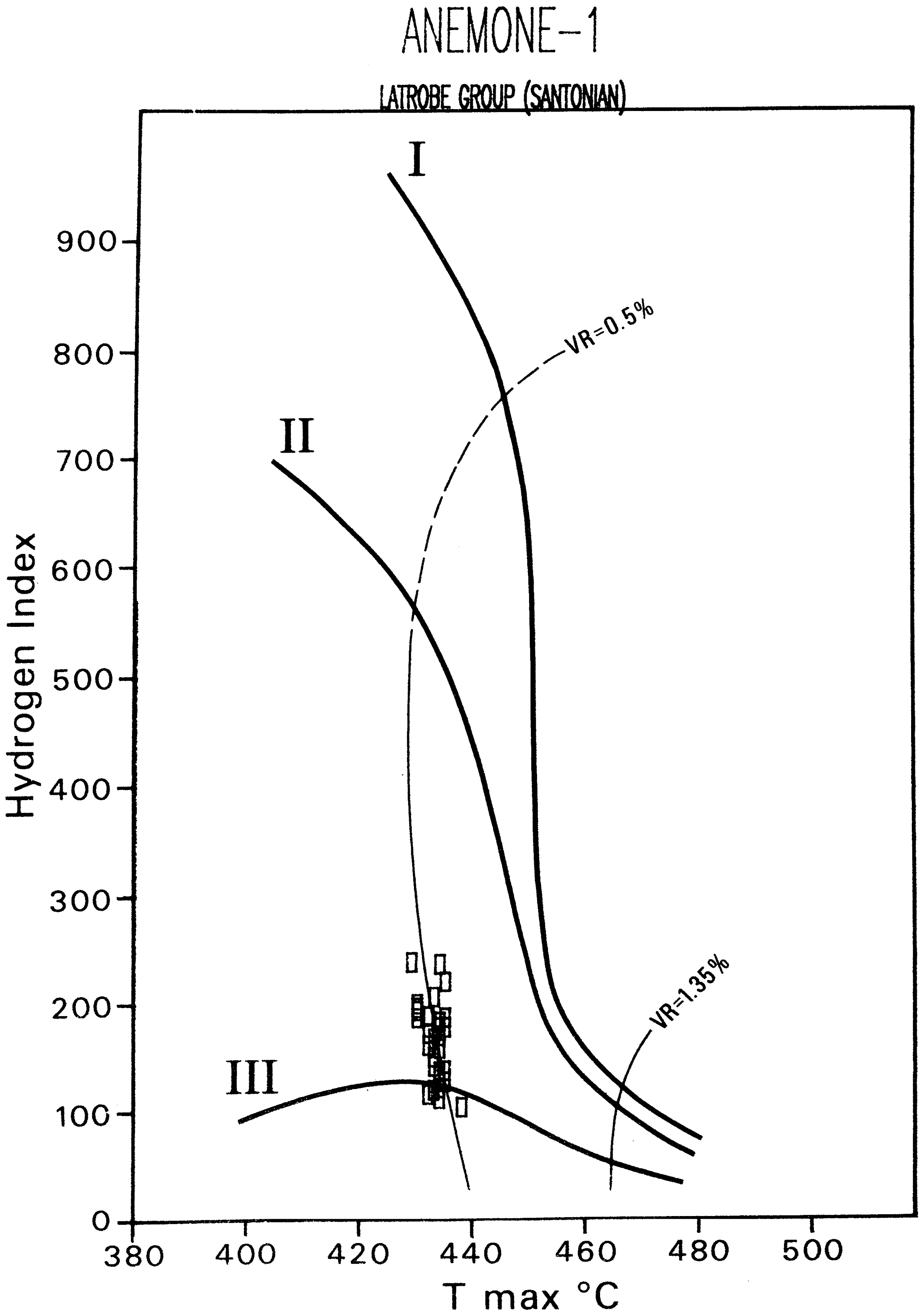

ANEMONE-1
LATROBE GROUP (SANTONIAN)
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
0
100
200
300
400
500
600
700
800
900
T max °C
380
400
420
440
460
480
500

FIGURE 6

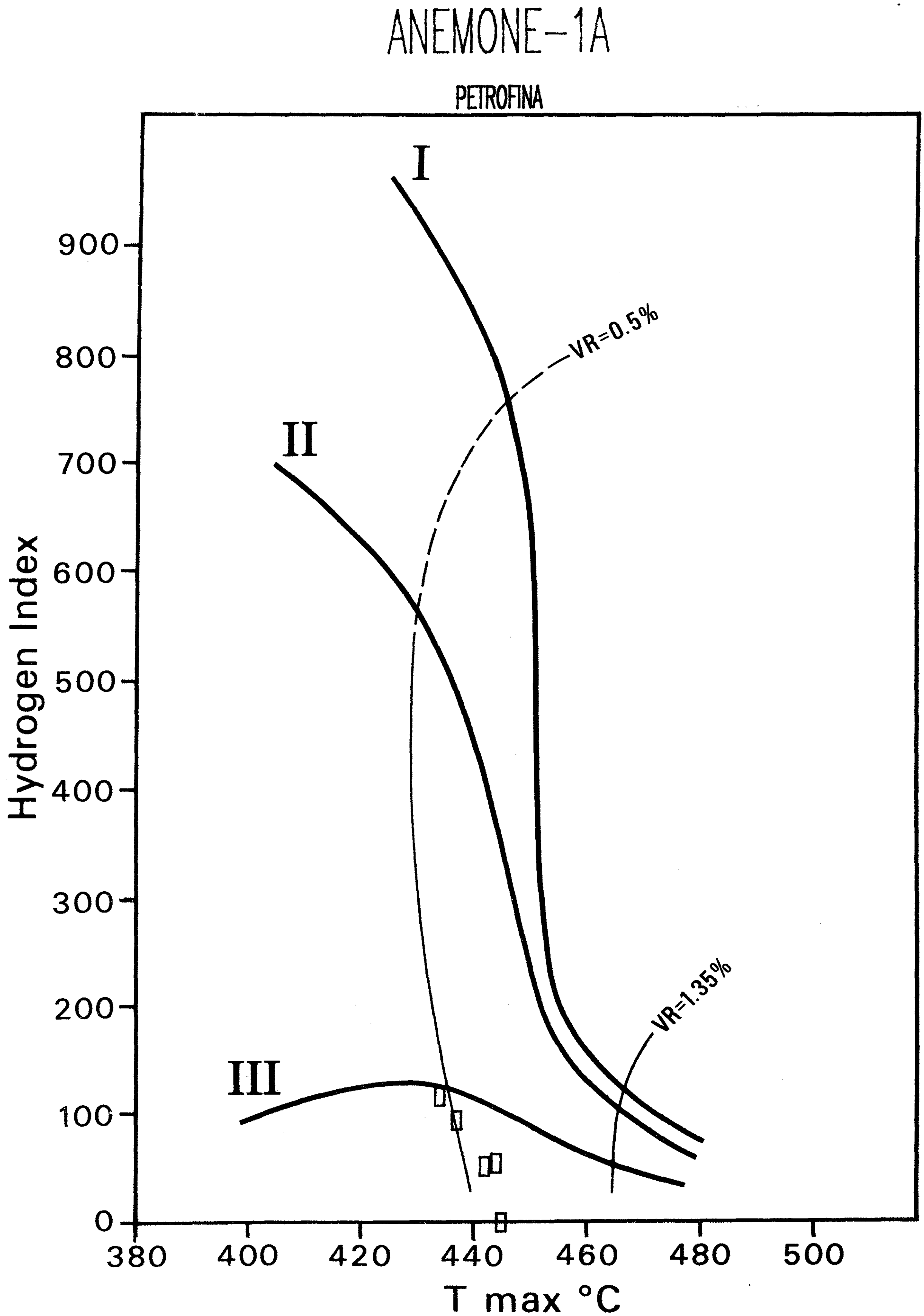

ANEMONE-1A
PETROFINA
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
900
800
700
600
500
400
300
200
100
0
380
400
420
440
460
480
500
T max °C

FIGURE 7

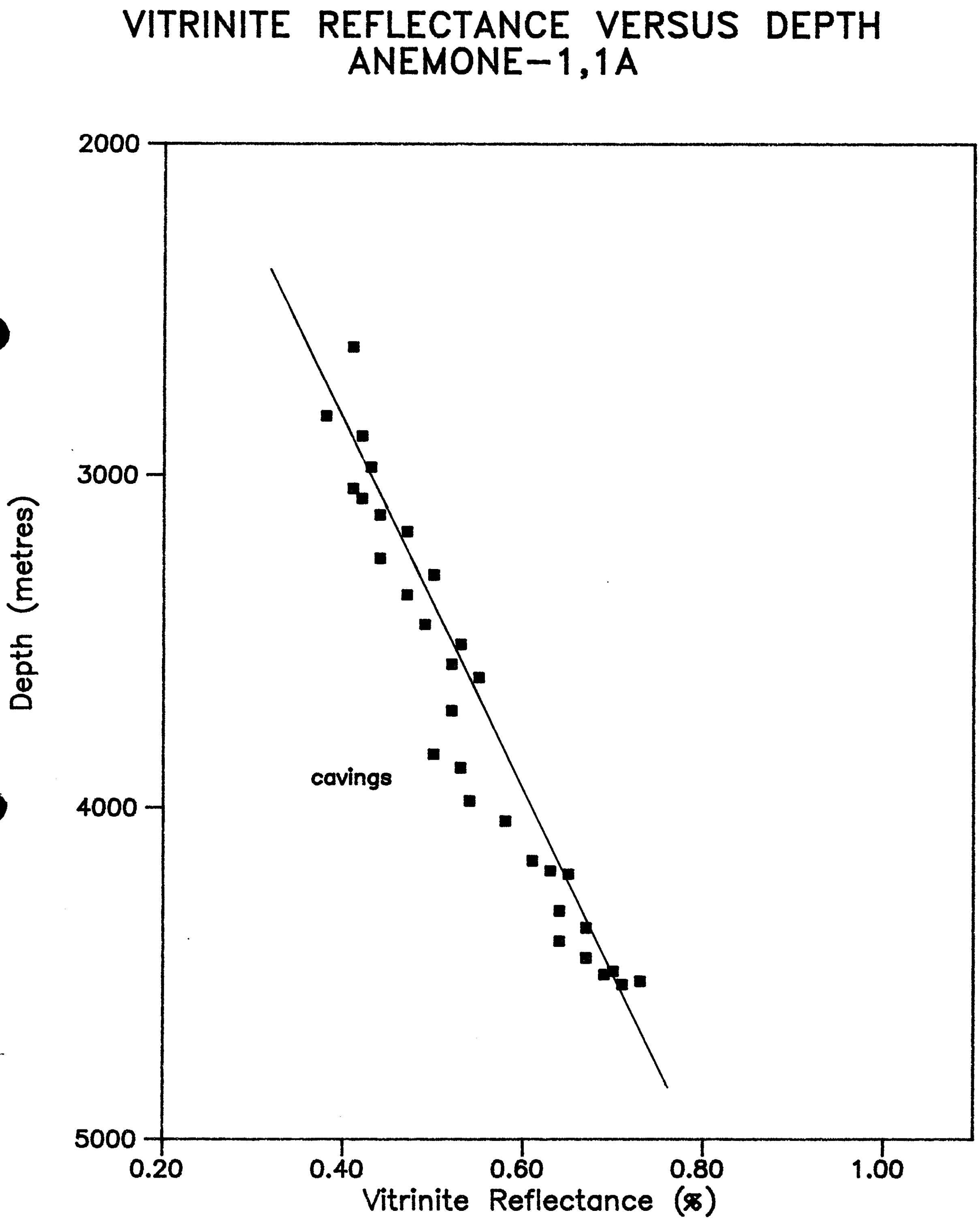

VITRINITE REFLECTANCE VERSUS DEPTH
ANEMONE-1,1A
Depth (metres)
2000
3000
4000
5000
cavings
0.20
0.40
0.60
0.80
1.00
Vitrinite Reflectance (%)

FIGURE 8

ANEMONE -1
RFT SAMPLE
WHOLE OIL GAS CHROMATOGRAM

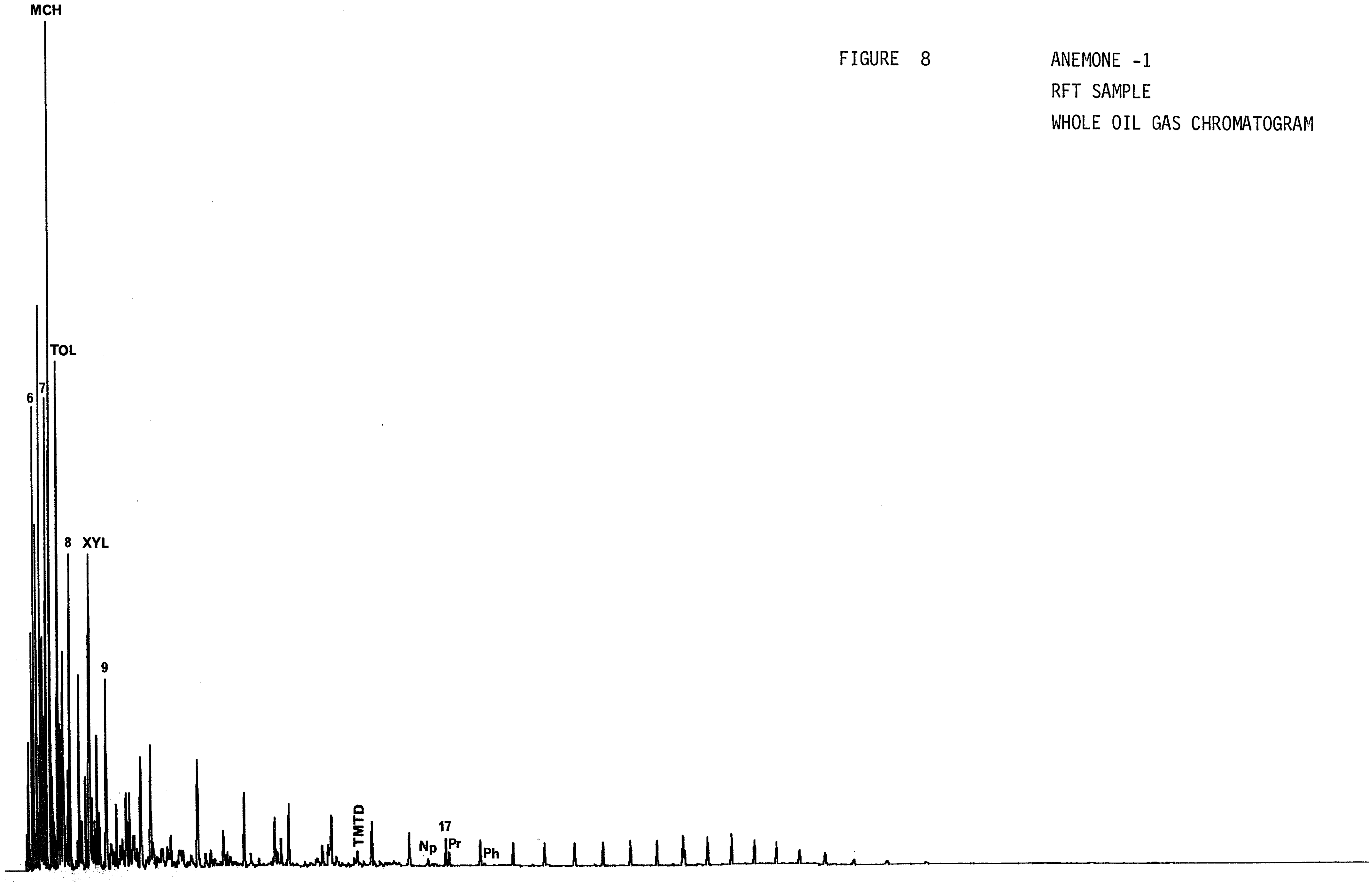


FIGURE 9

ANEMONE -1

DST -1

WHOLE OIL CHROMATOGRAM

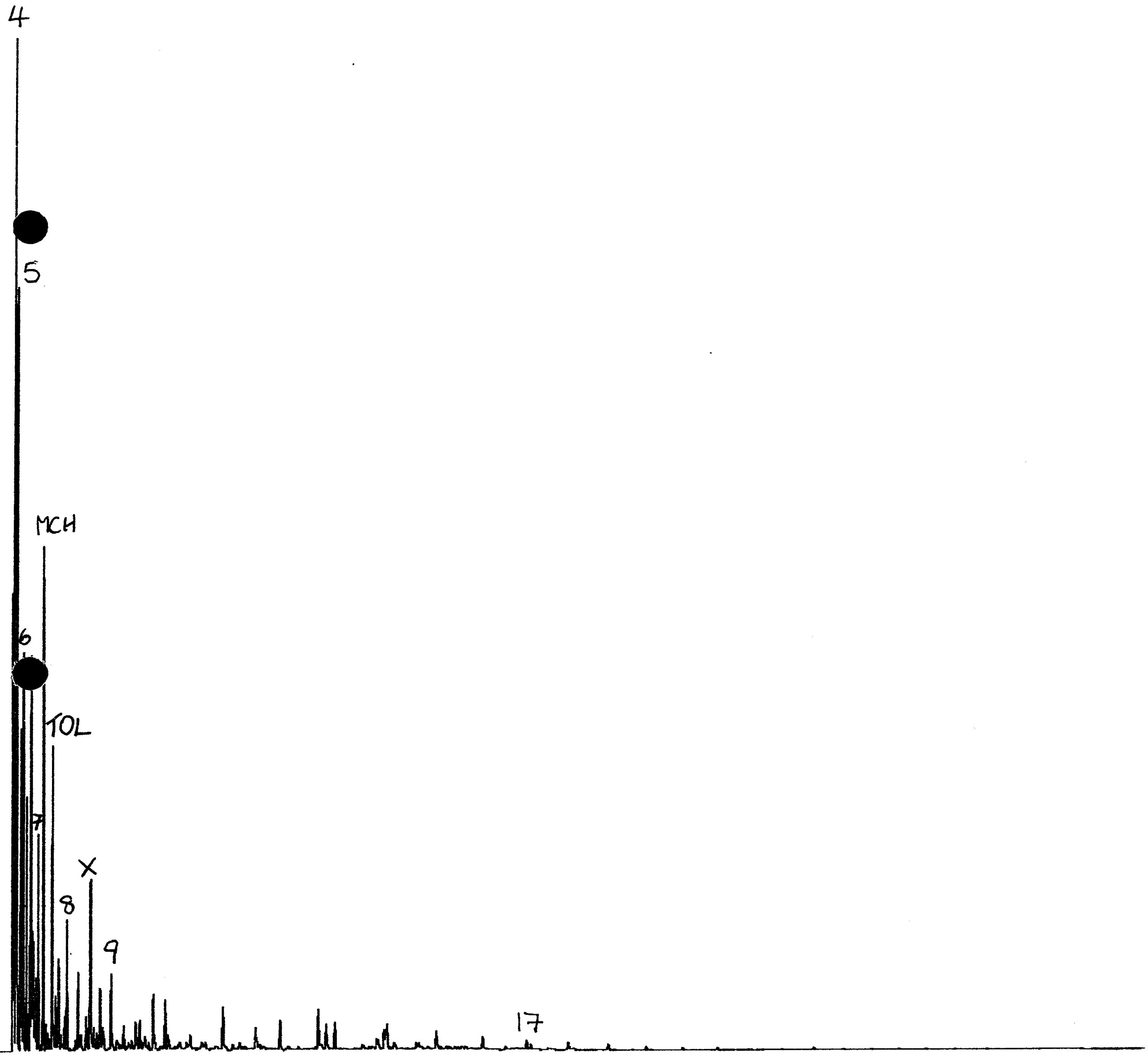


FIGURE 10

ANEMONE -1

RFT

GASOLINE RANGE CHROMATOGRAM

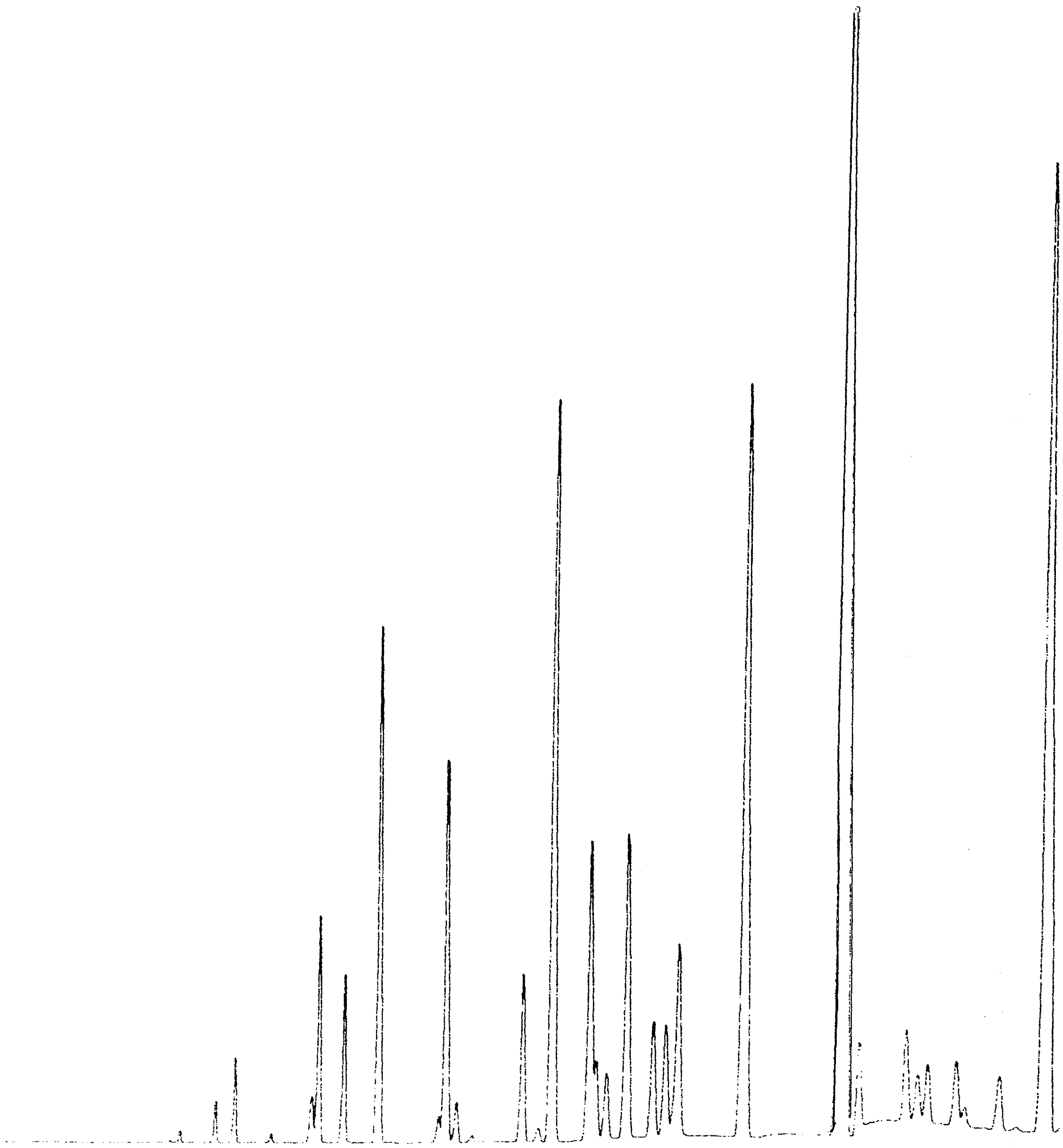


FIGURE 11 ANEMONE -1A DST -1
GASOLINE RANGE CHROMATOGRAM

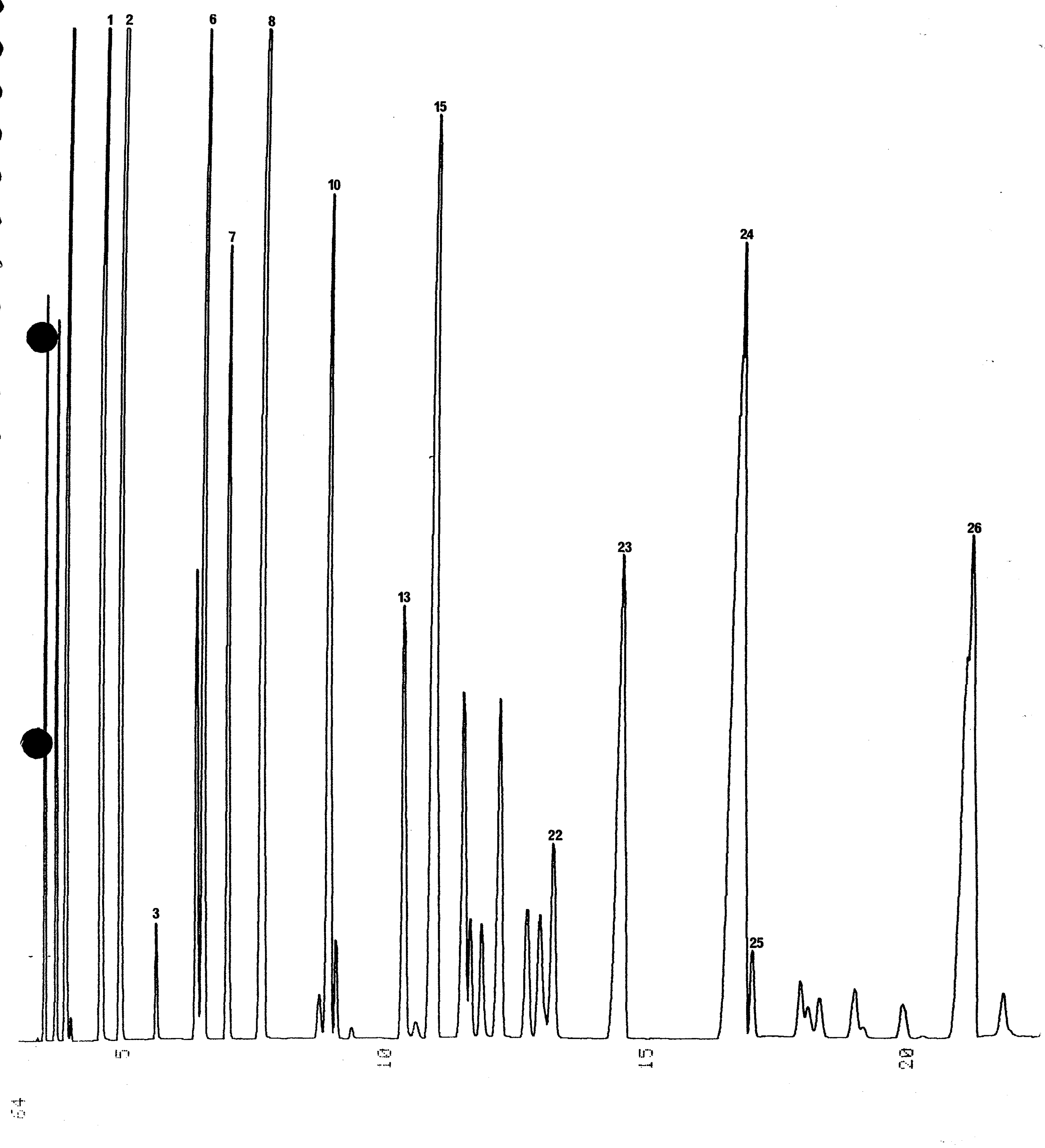
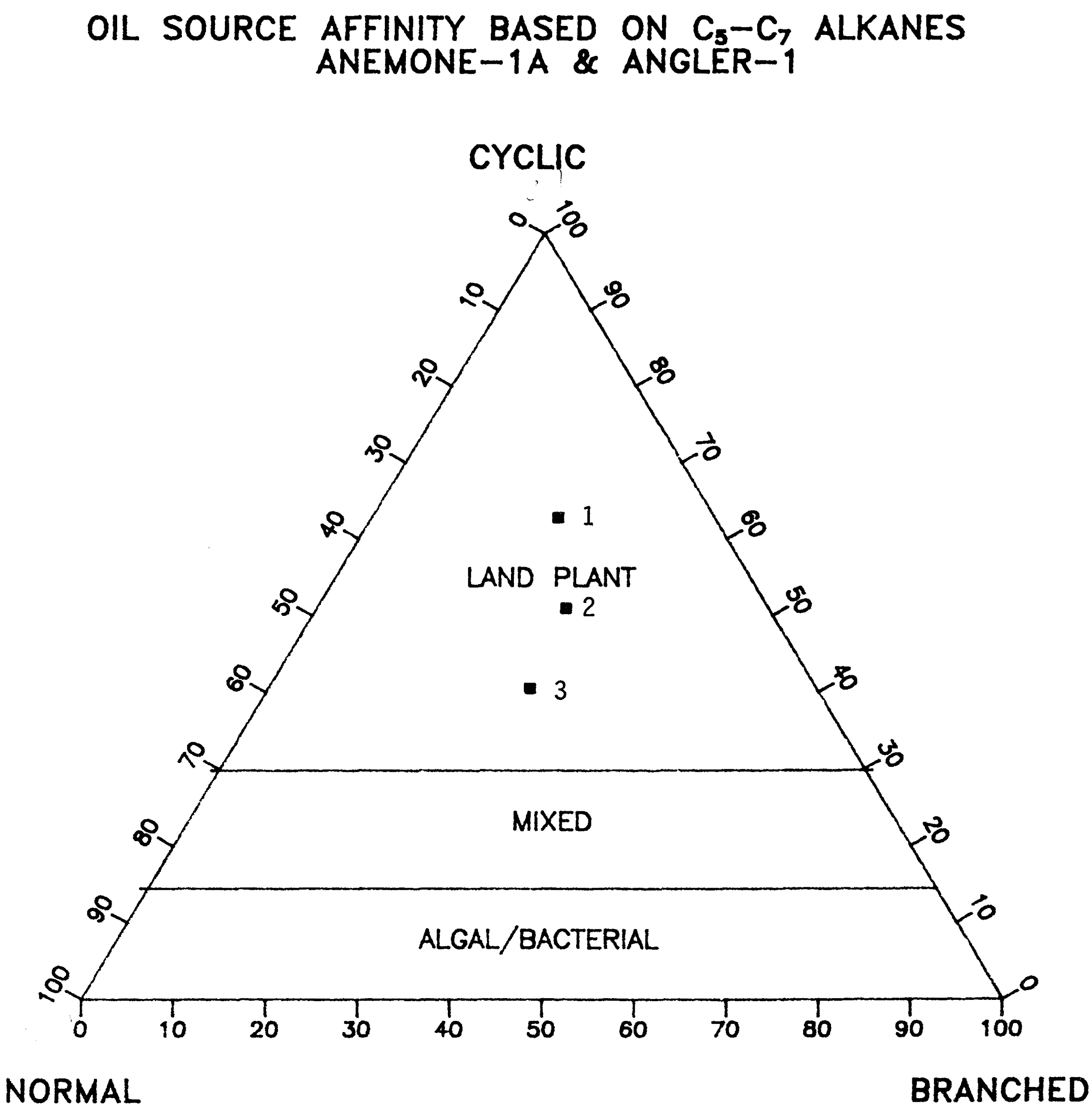
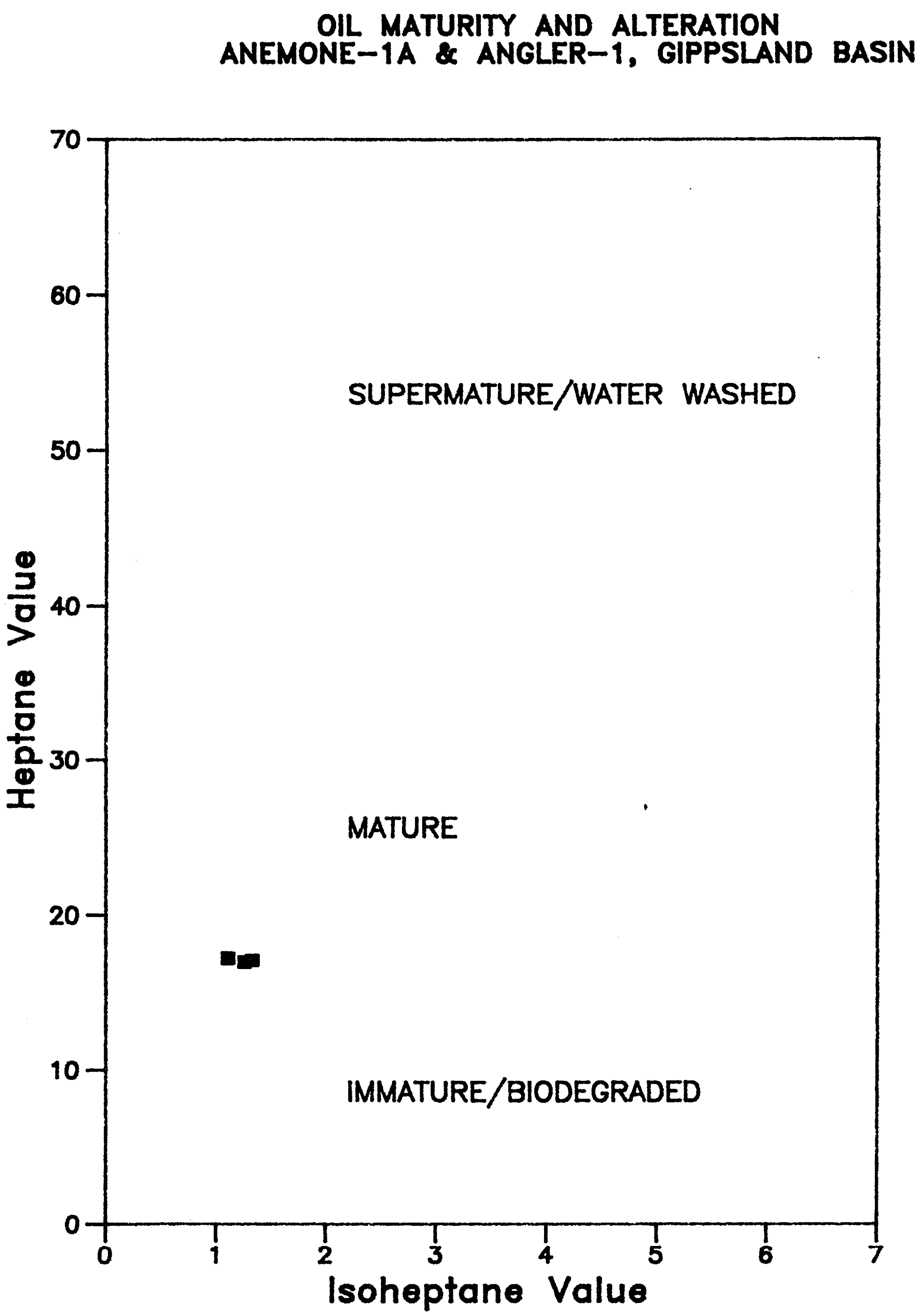


FIGURE 12



1 ANGLER -1
2 ANEMONE -1 RFT
3 ANEMONE -1A DST

FIGURE 13



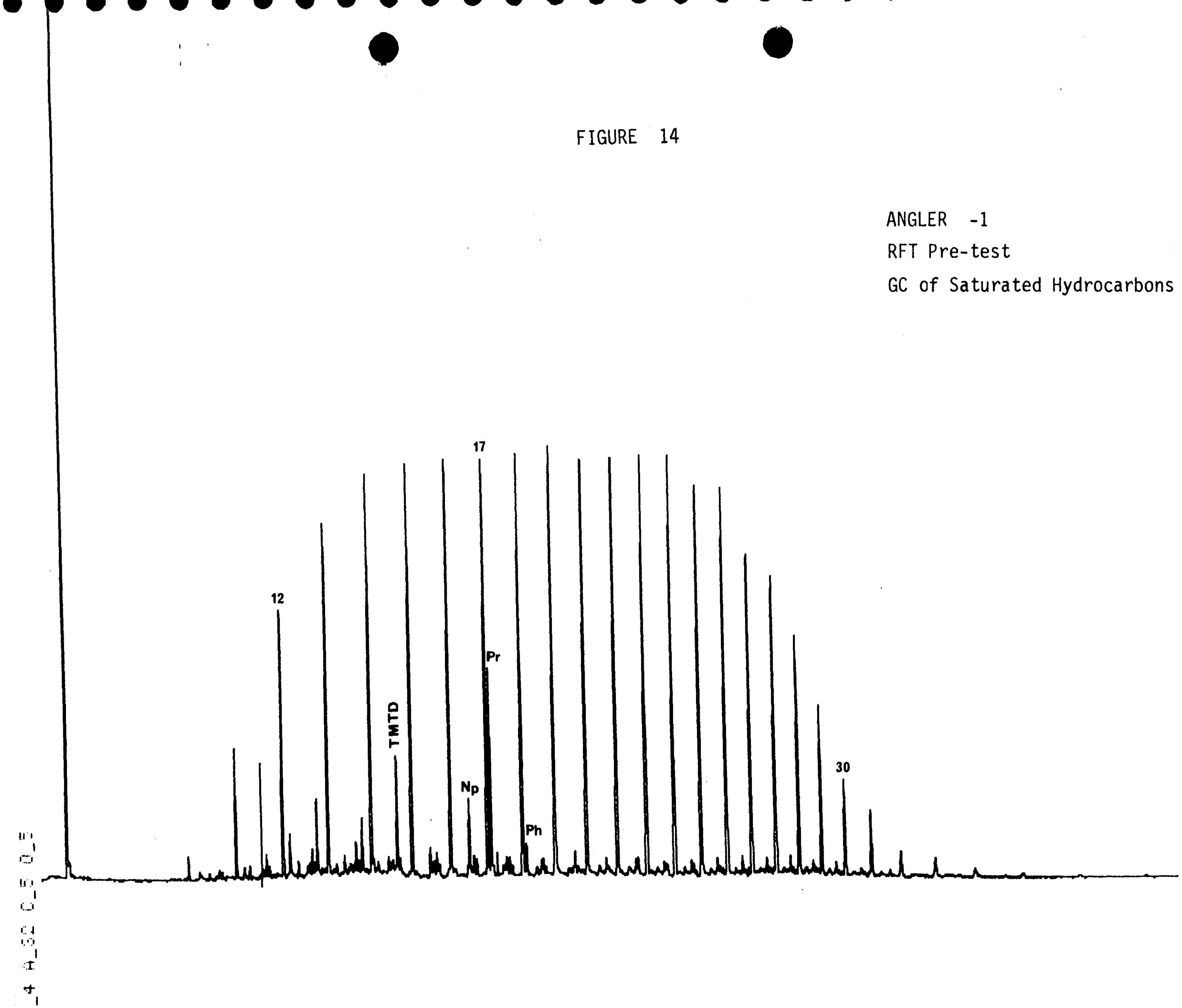
OIL MATURITY AND ALTERATION
ANEMONE-1A & ANGLER-1, GIPPSLAND BASIN
70
60
50
40
30
20
10
0
Heptane Value
SUPERMATURE/WATER WASHED
MATURE
IMMATURE/BIODEGRADED
0
1
2
3
4
5
6
7
Isoheptane Value

FIGURE 14

ANGLER -1

RFT Pre-test

GC of Saturated Hydrocarbons



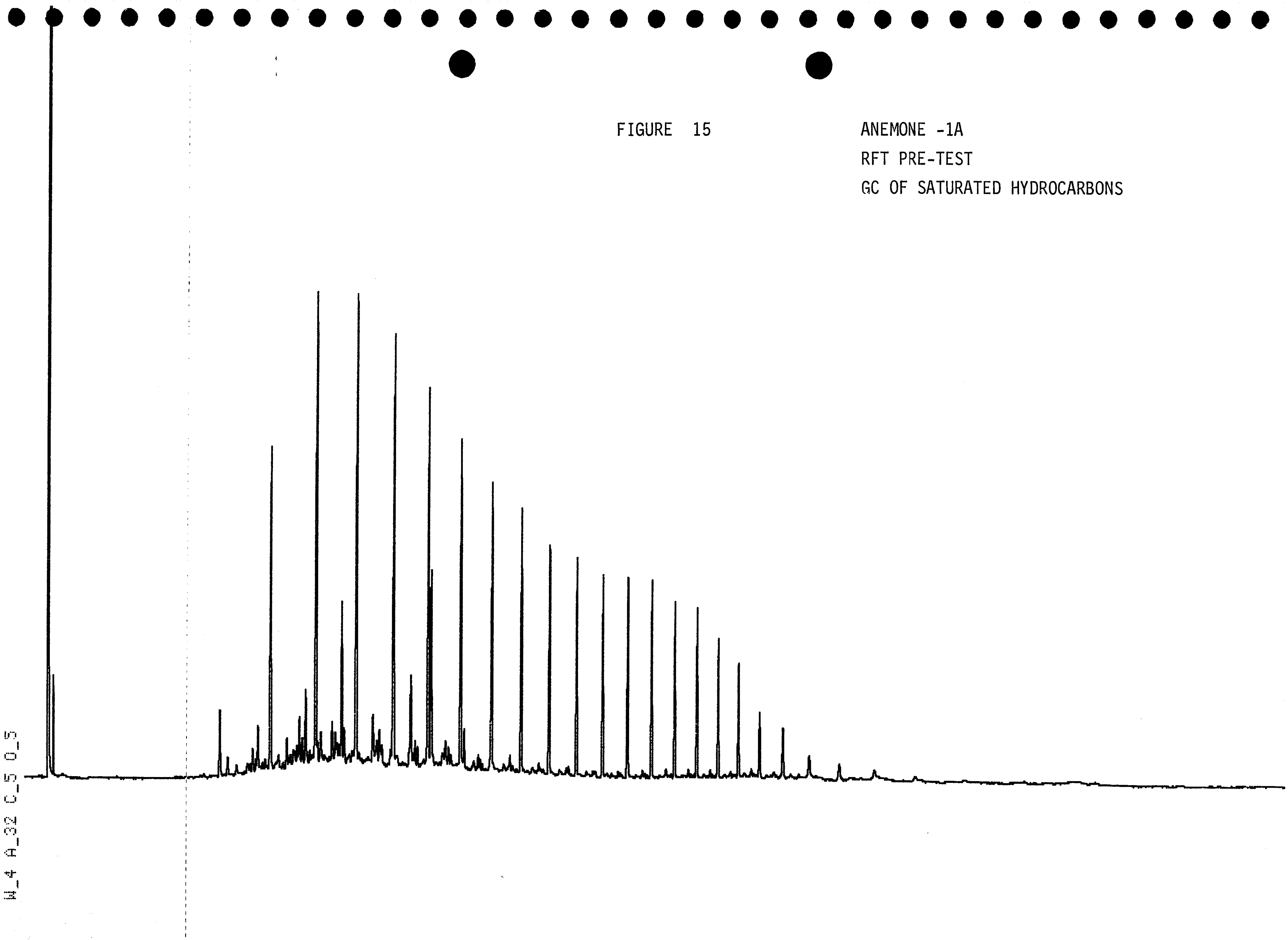


FIGURE 15

ANEMONE -1A
RFT PRE-TEST
GC OF SATURATED HYDROCARBONS

FIGURE 16

ANEMONE 1A DST 1

GC OF SATURATES

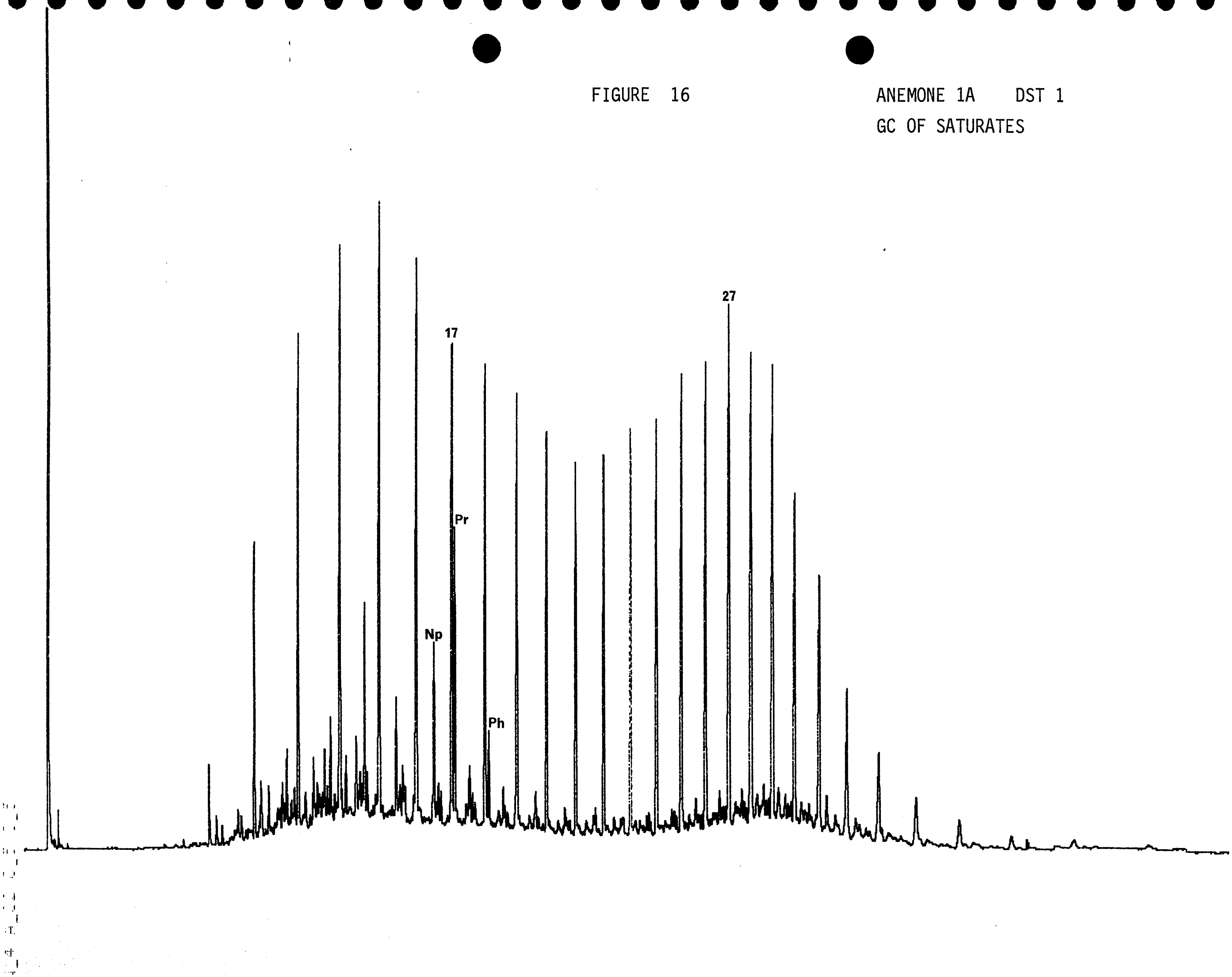


FIGURE 17

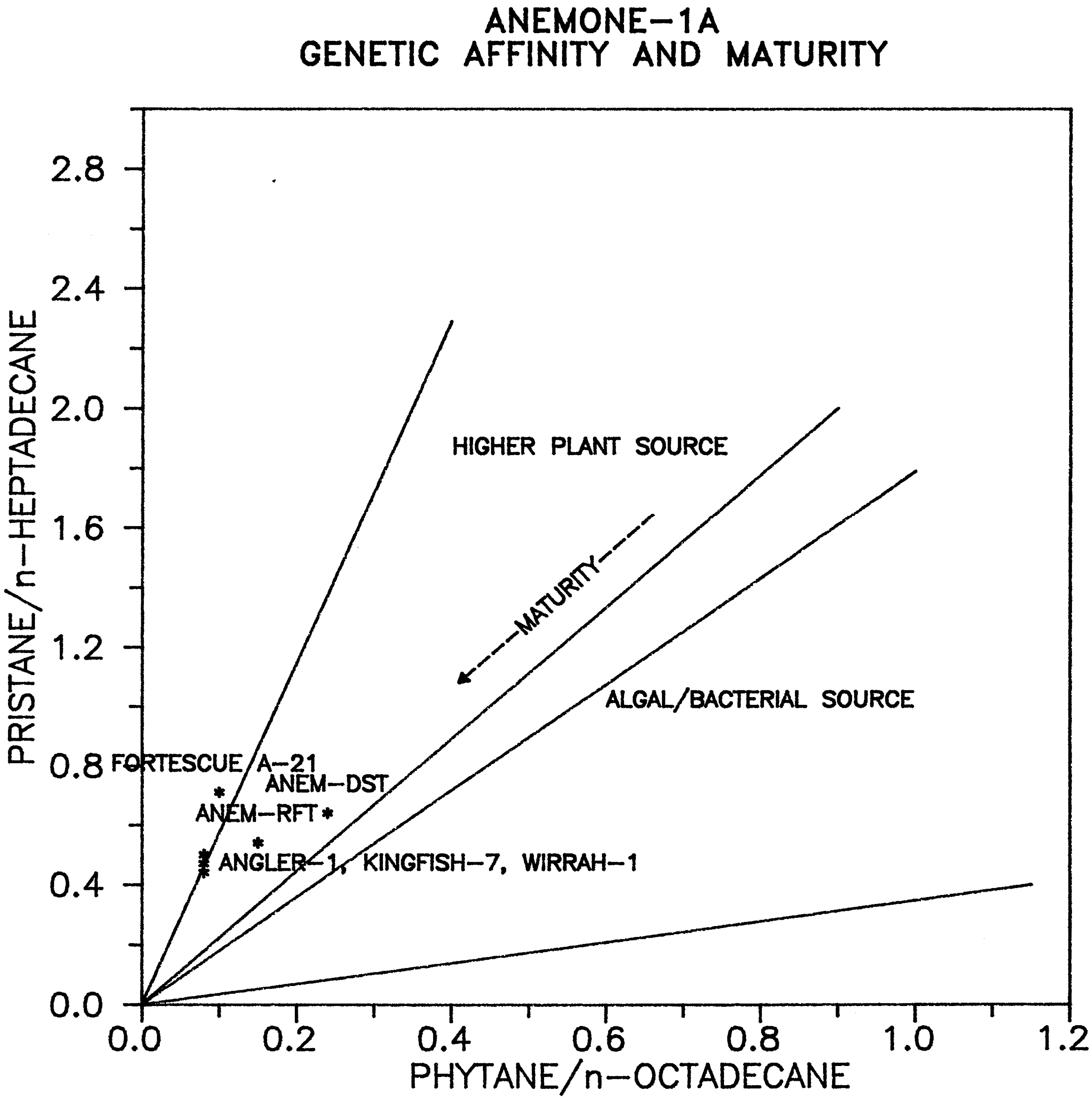
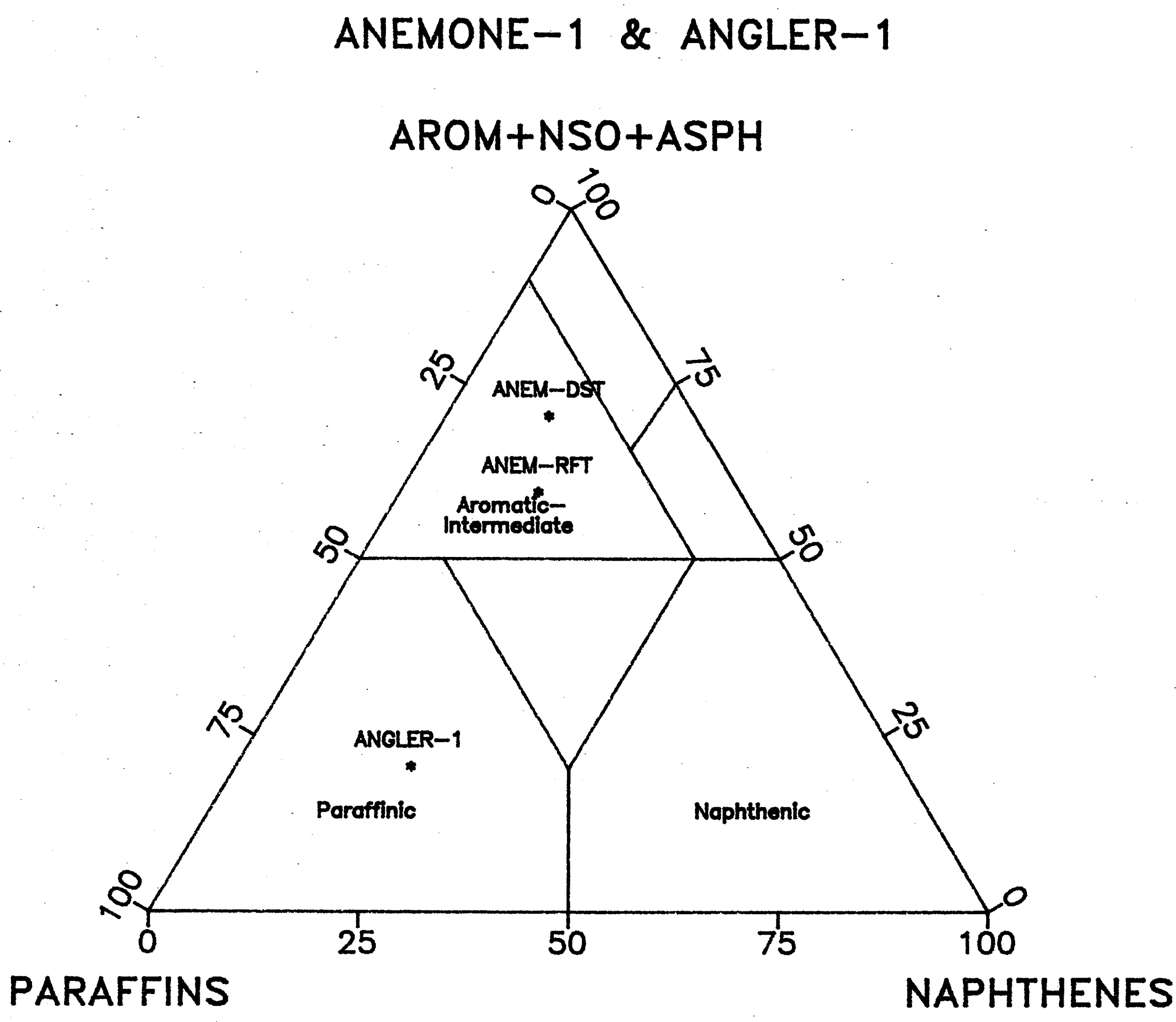

ANEMONE-1A
GENETIC AFFINITY AND MATURITY
PRISTANE/n-HEPTADECANE
PHYTANE/n-OCTADECANE
0.0
0.4
0.8
1.2
1.6
2.0
2.4
2.8
0.0
0.2
0.4
0.6
0.8
1.0
1.2
HIGHER PLANT SOURCE
MATURITY
ALGAL/BACTERIAL SOURCE
FORTESCUE A-21
ANEM-DST
ANEM-RFT
ANGLER-1, KINGFISH-7, WIRRAH-1

FIGURE 18


ANEMONE-1 & ANGLER-1
AROM+NSO+ASPH
ANEM-DST
ANEM-RFT
Aromatic-
Intermediate
ANGLER-1
Paraffinic
Naphthenic
0
100
25
75
50
50
75
25
100
0
0
25
50
75
100
PARAFFINS
NAPHTHENES

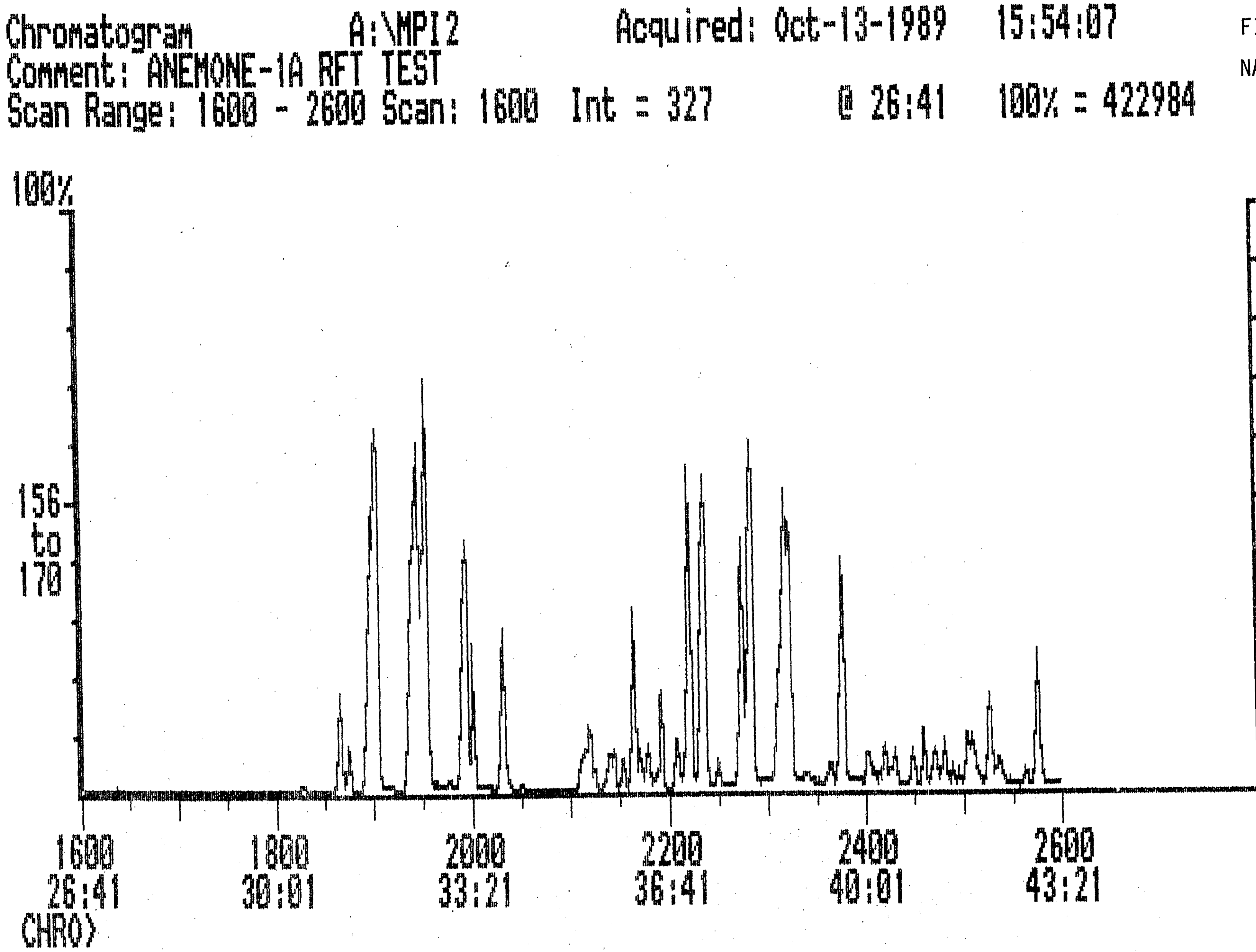


FIGURE 19

NAPHTHALENES

Chromatogram A:\MP12 Acquired: Oct-13-1989 15:54:07
Comment: ANEMONE-1A RFT TEST
Scan Range: 2400 - 3600 Scan: 2400 Int = 27385 @ 40:01 100% = 314580

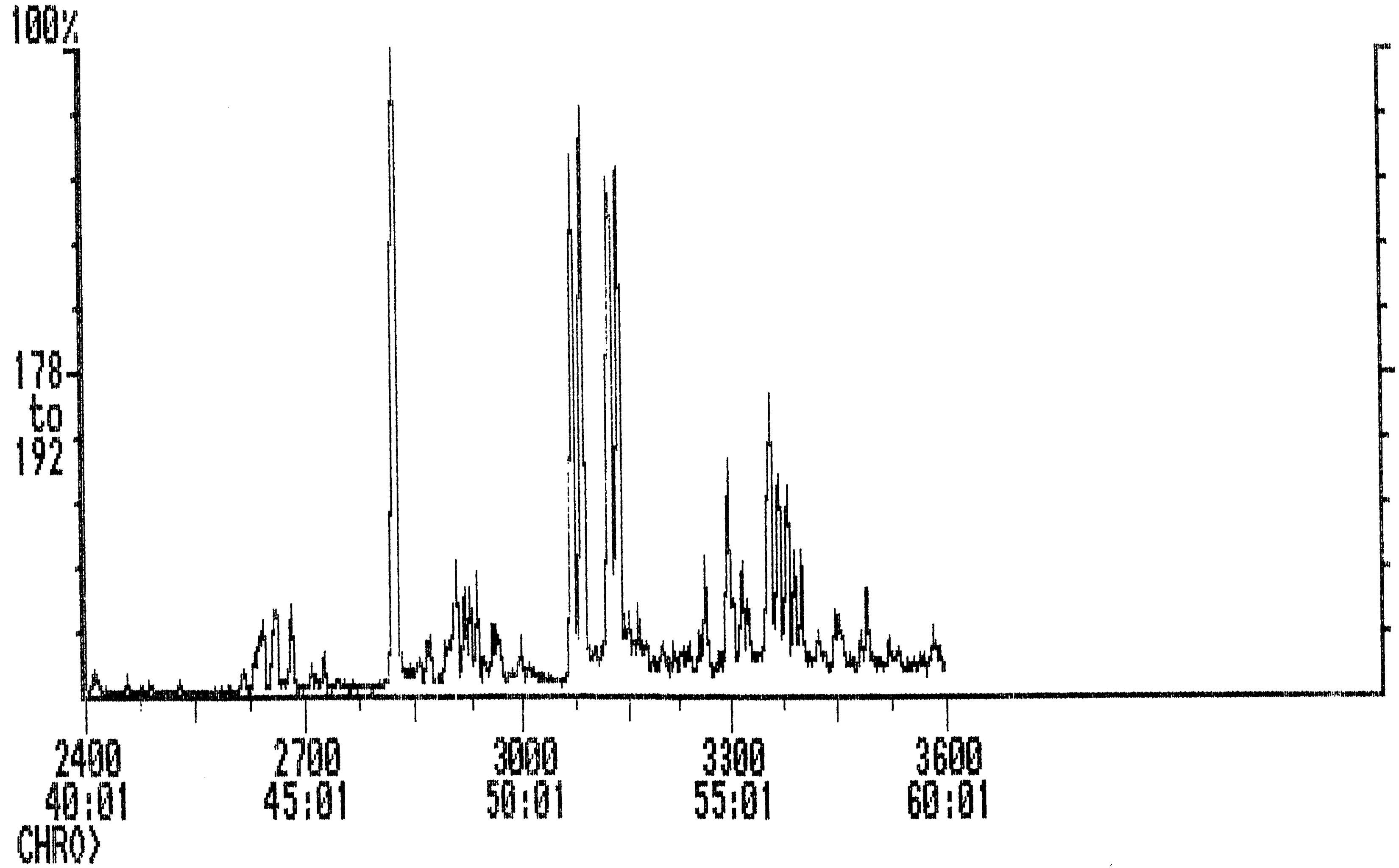


FIGURE 20

PHENANTHRENES

Chromatogram A:MPI66 Acquired: Oct-25-1989 17:14:19
Comment: ANEMONE-1A DST-1 AMDEL CORE SERVICES
Scan Range: 1600 - 2600 Scan: 1600 Int = 6670 @ 26:41 100% = 206443

FIGURE 21

NAPHTHALENES

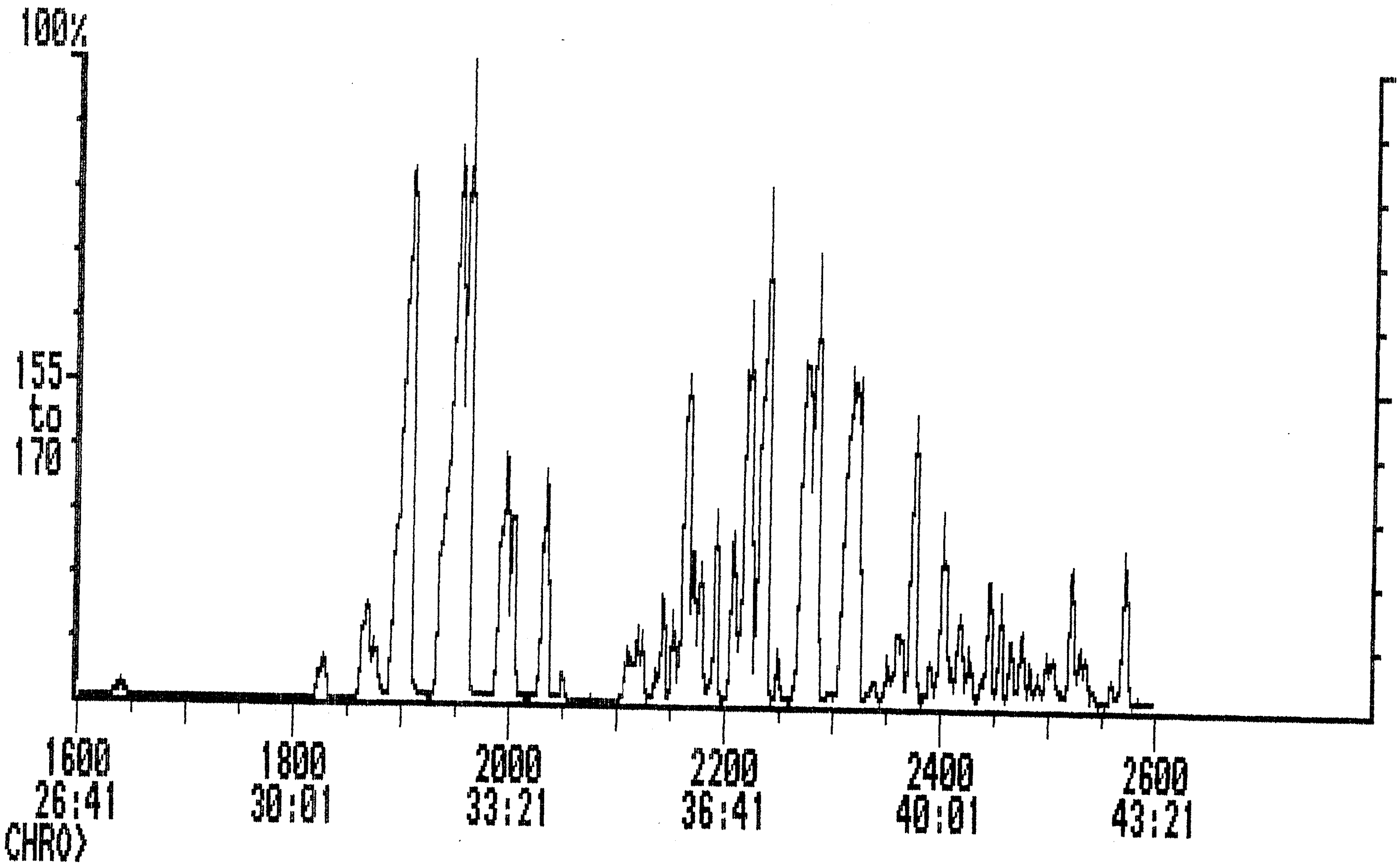
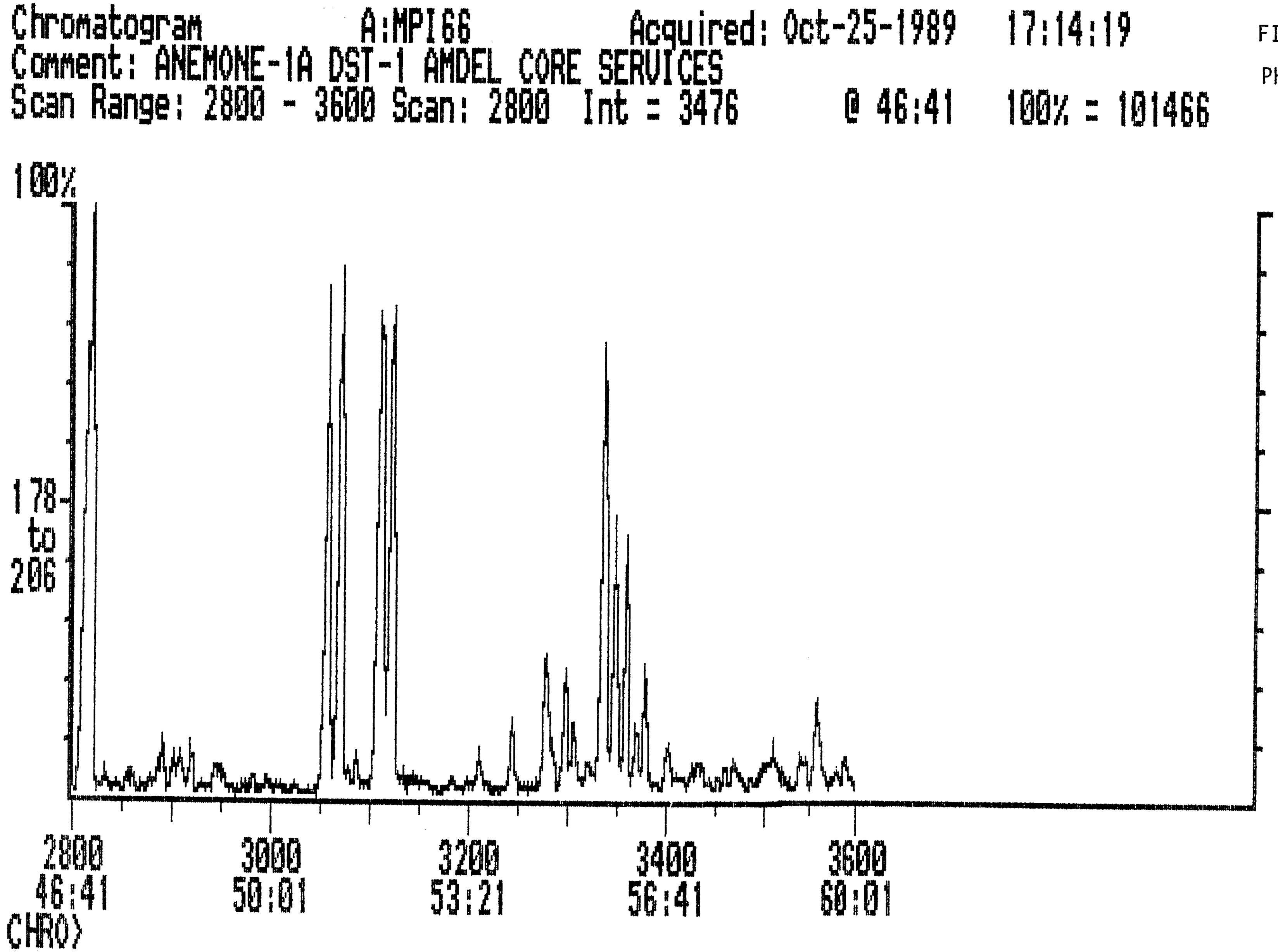


FIGURE 22

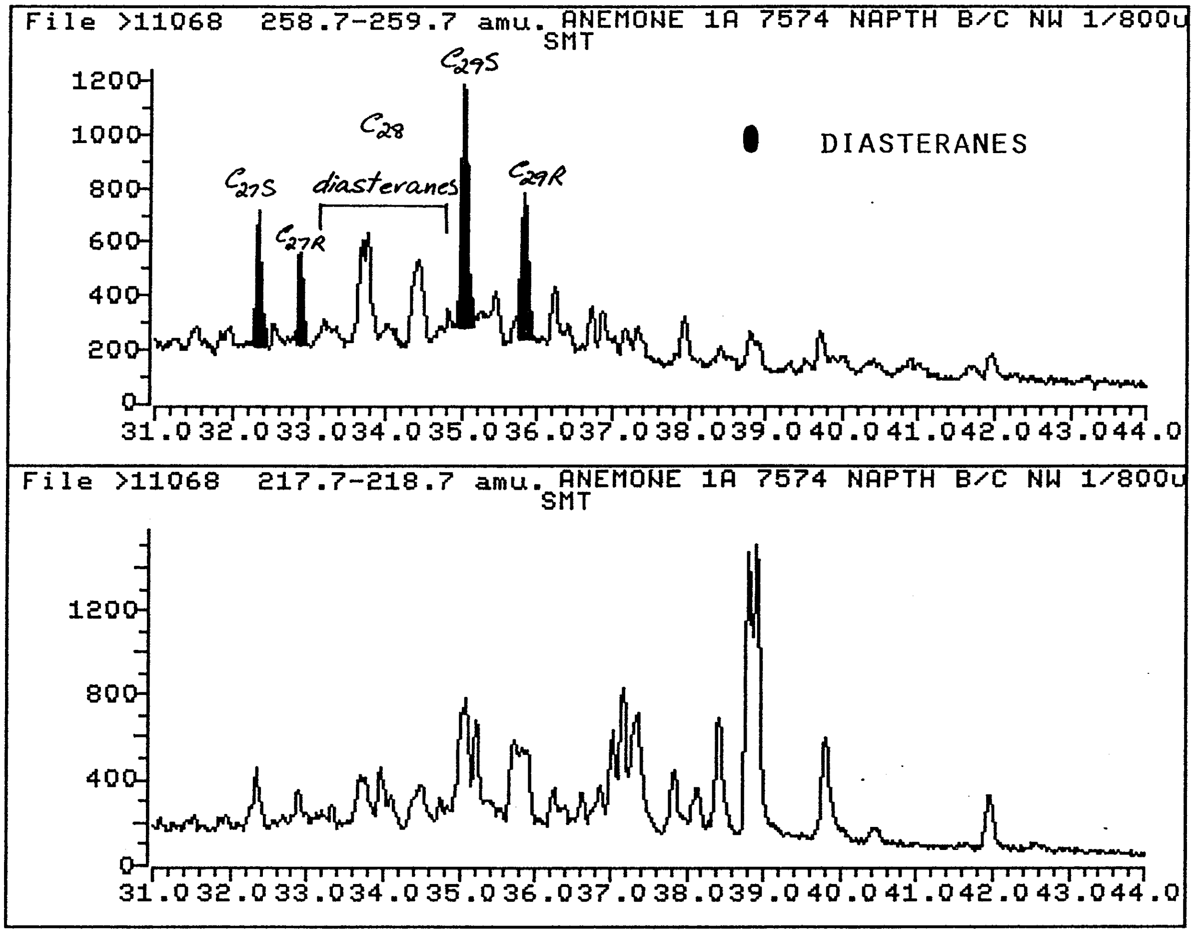
PHENANTHRENES



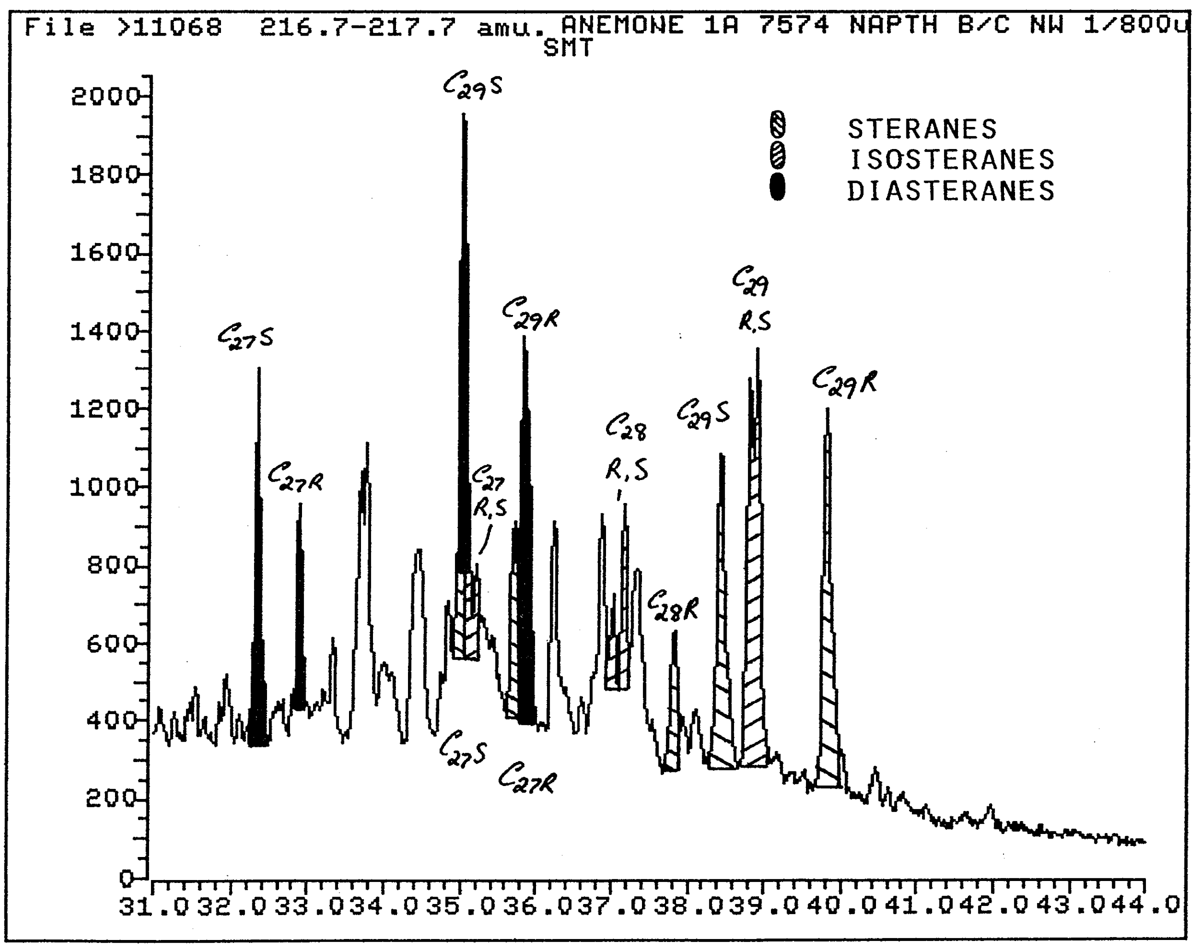
FIGURES 23 - 29

GC-MS BRANCHED/CYCLIC FRACTION

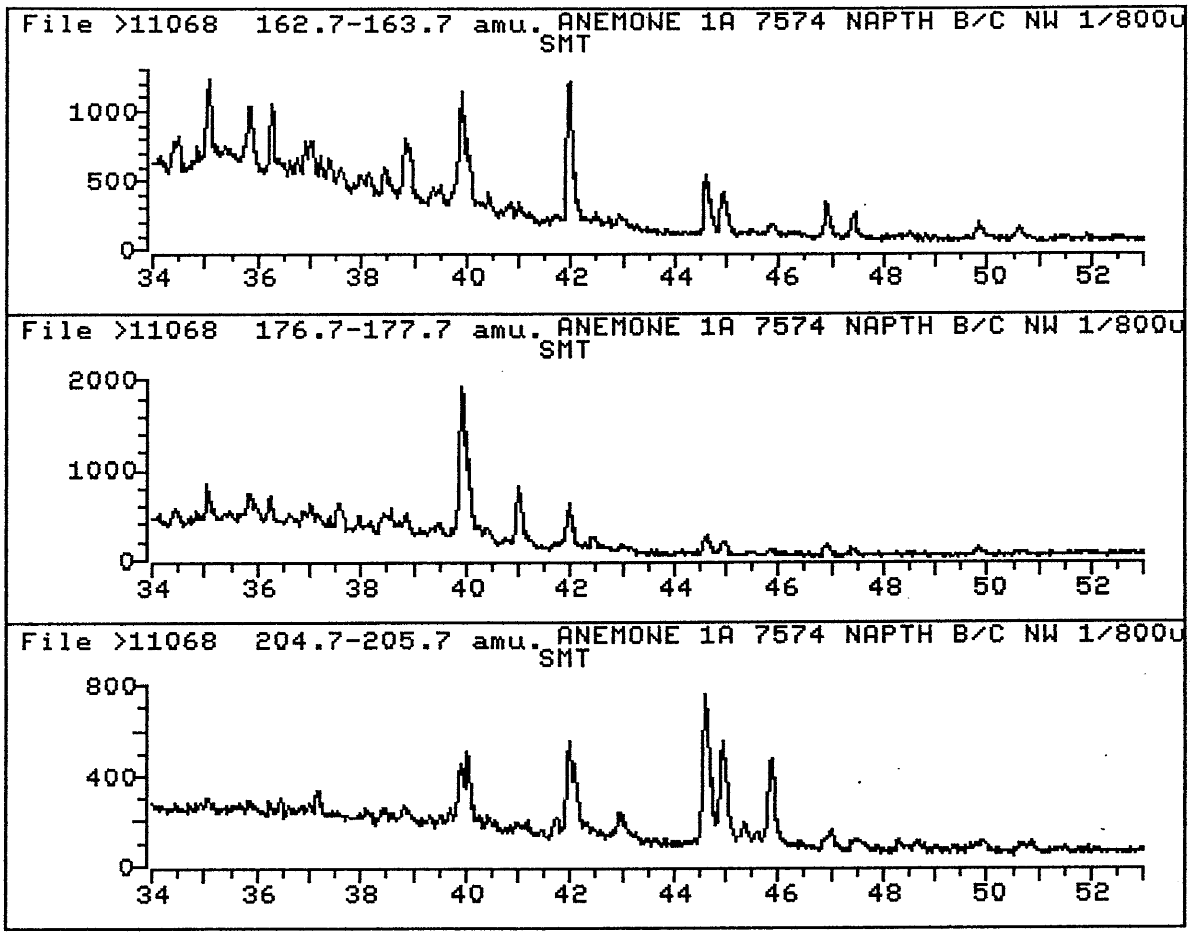
RFT SAMPLE

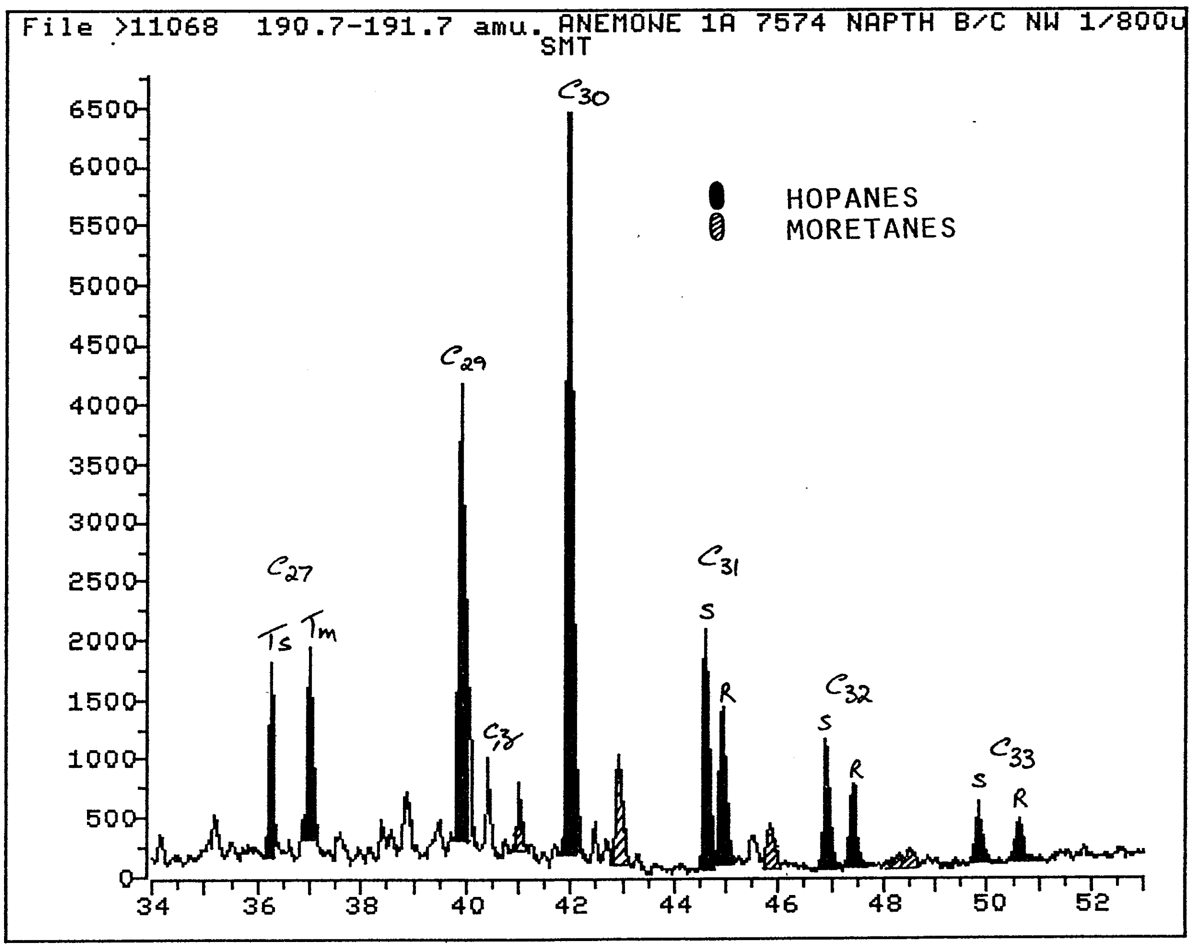


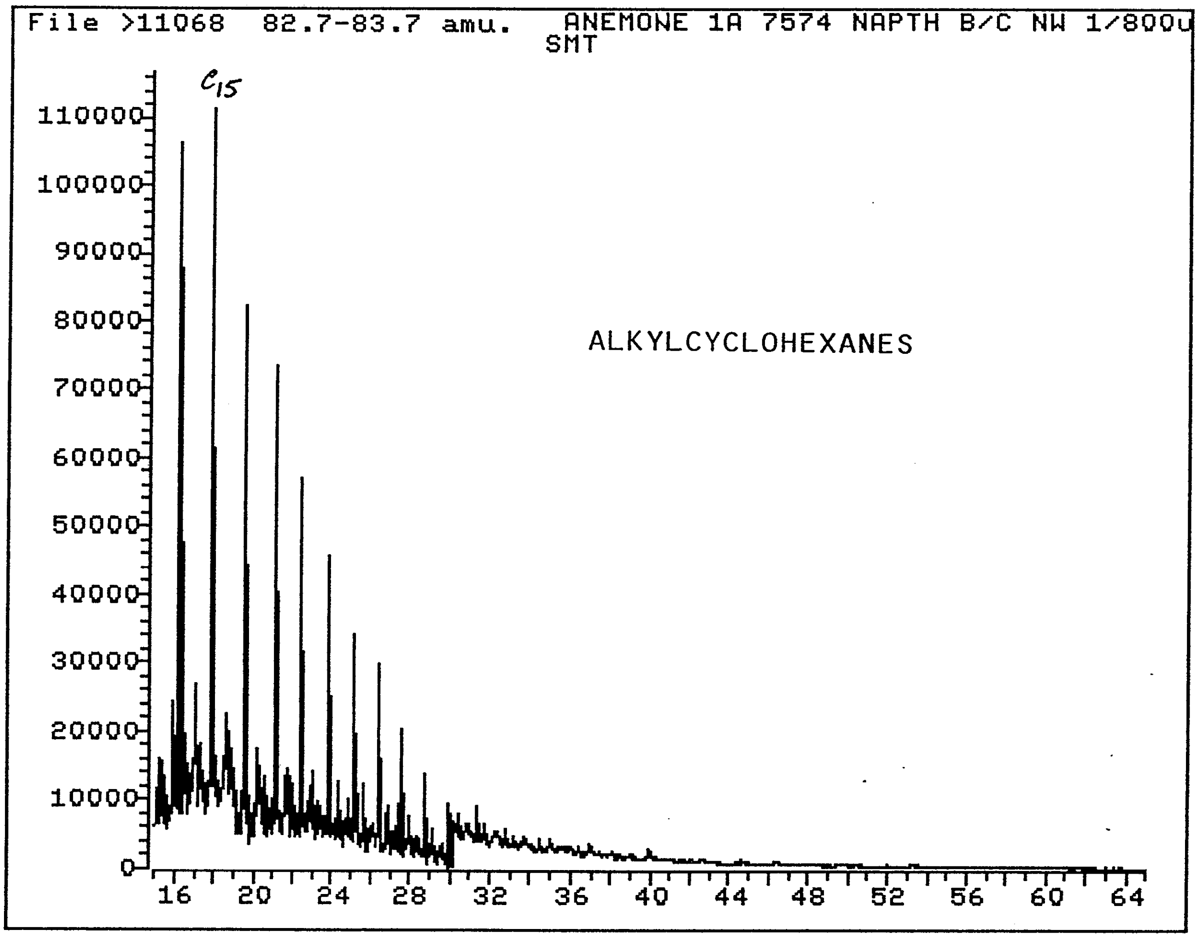
File >11068 258.7-259.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT
DIASTERANES
C27S
C27R
C28 diasteranes
C29S
C29R
File >11068 217.7-218.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT

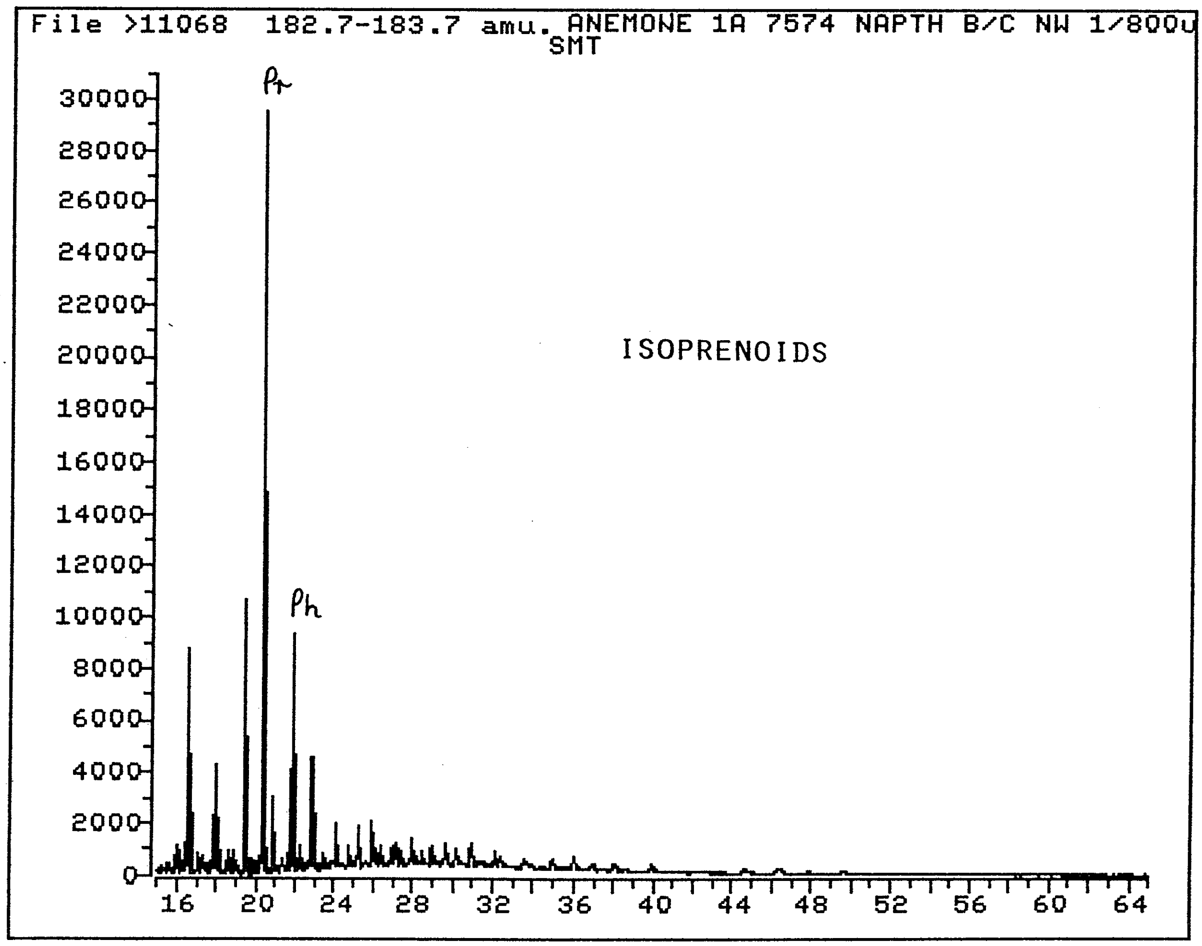


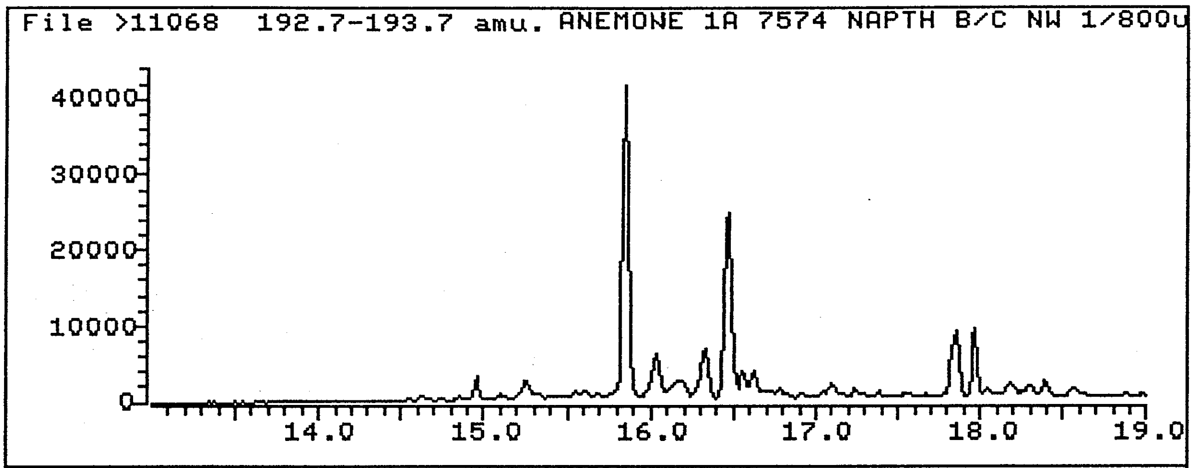
File >11068 216.7-217.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT
STERANES
ISOSTERANES
DIASTERANES
C27S
C27R
C29S
C29R
C27 R,S
C27S
C27R
C28 R,S
C28R
C29S
C29 R,S
C29R

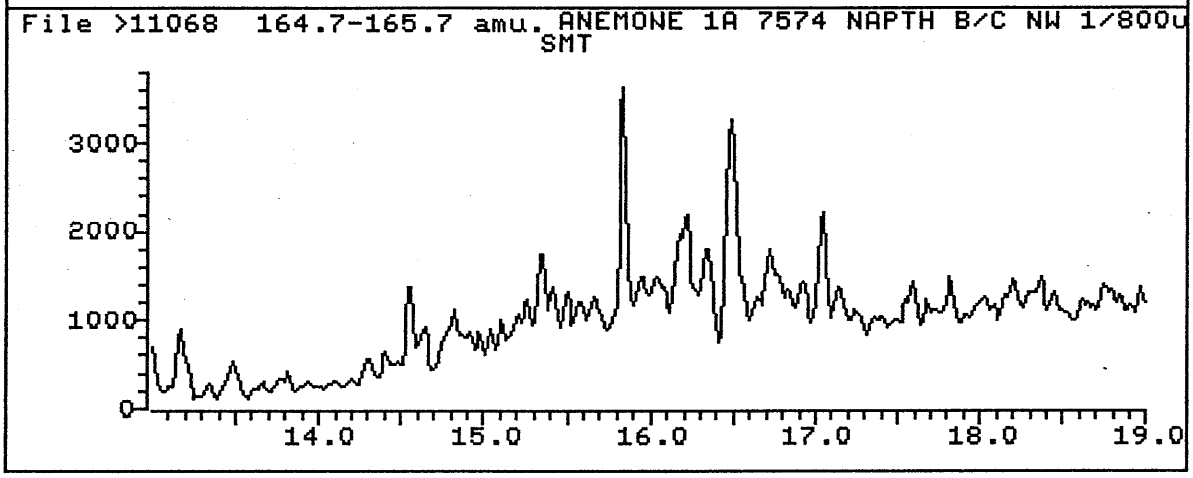

File >11068 162.7-163.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT
File >11068 176.7-177.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT
File >11068 204.7-205.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT

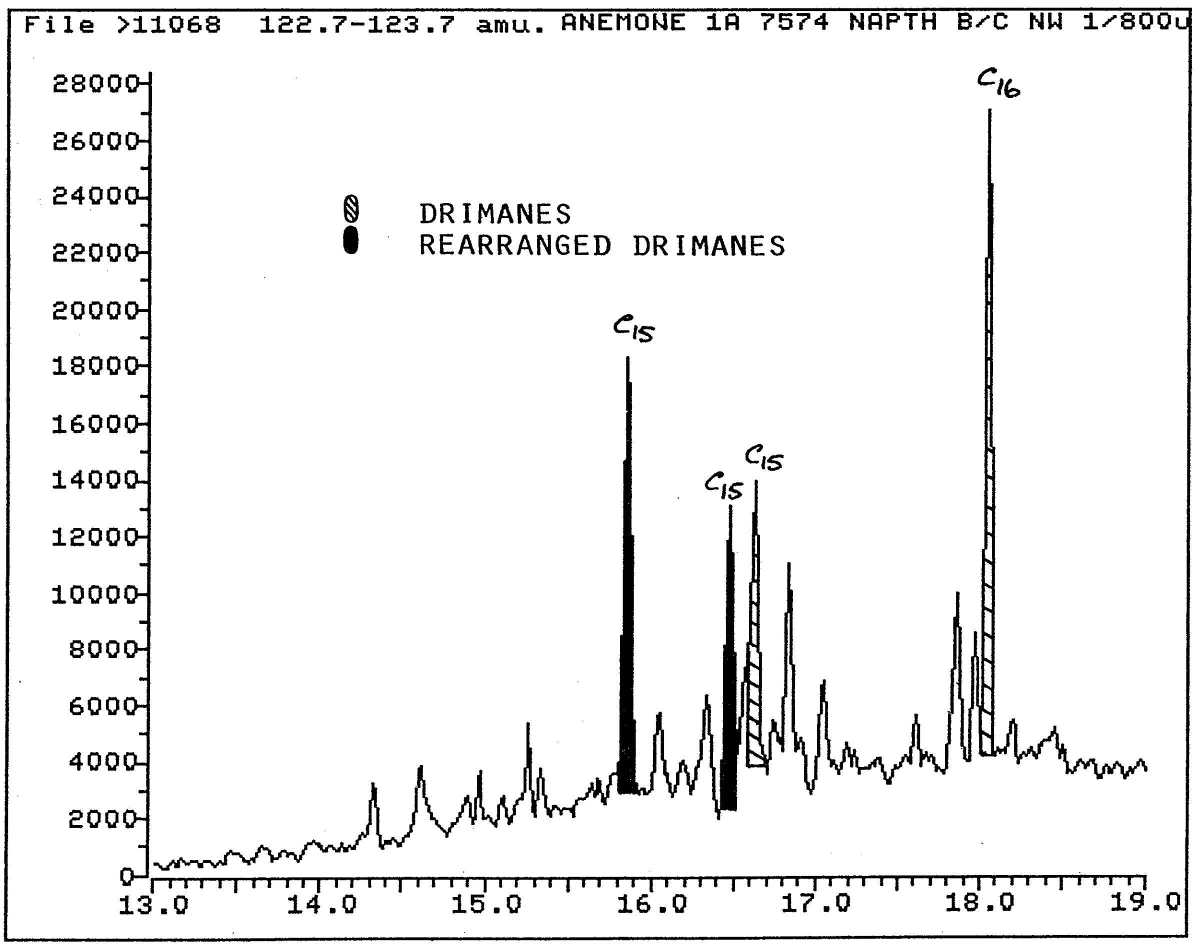

File >11068 190.7-191.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u SMT
HOPANES
MORETANES
C30
C29
C27
Ts
Tm
C31
S
R
C32
S
R
C33
S
R

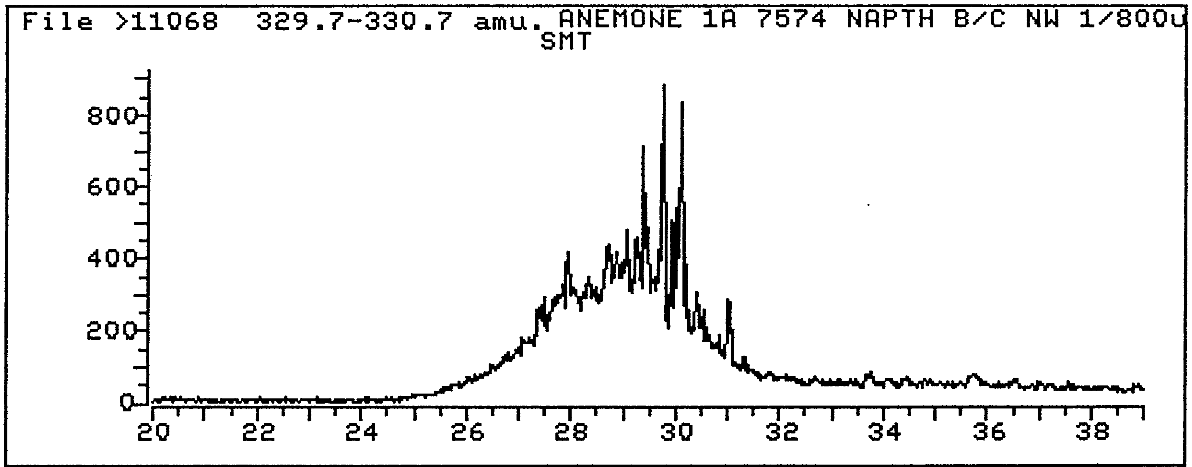

File >11068 82.7-83.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
C15
ALKYLCYCLOHEXANES
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
16 20 24 28 32 36 40 44 48 52 56 60 64

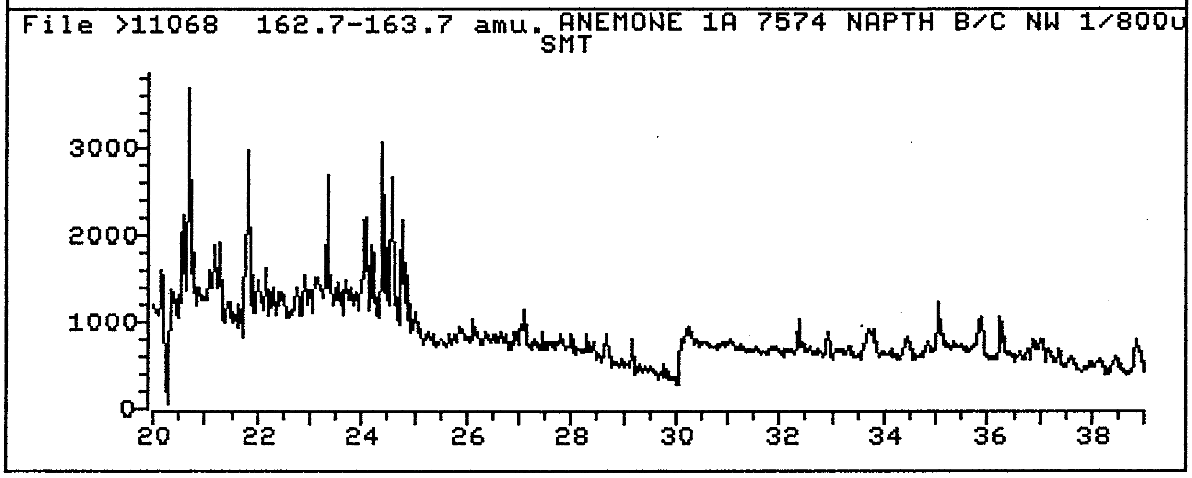

File >11068 182.7-183.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
Pr
Ph
ISOPRENOIDS
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
16 20 24 28 32 36 40 44 48 52 56 60 64

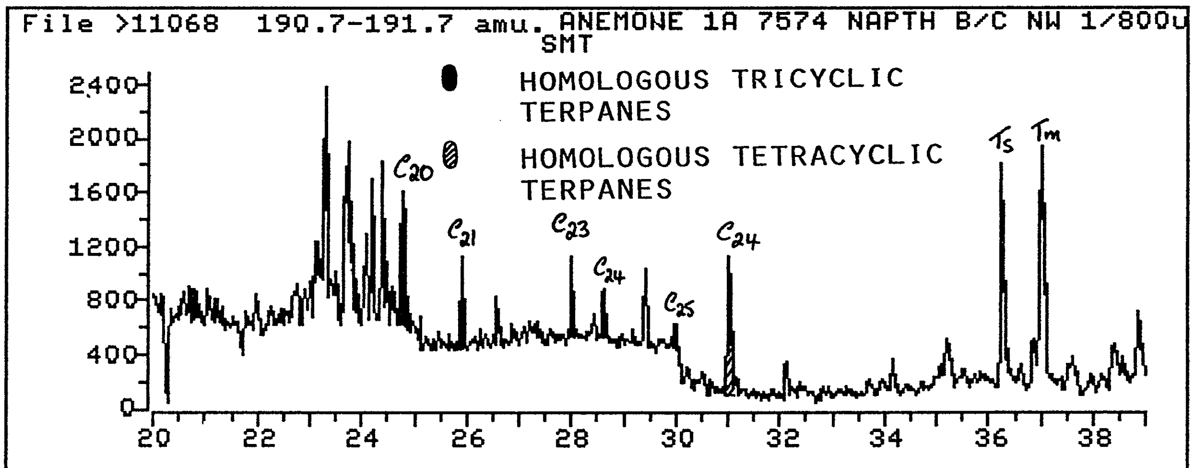

File >11068 192.7-193.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
40000
30000
20000
10000
0
14.0
15.0
16.0
17.0
18.0
19.0

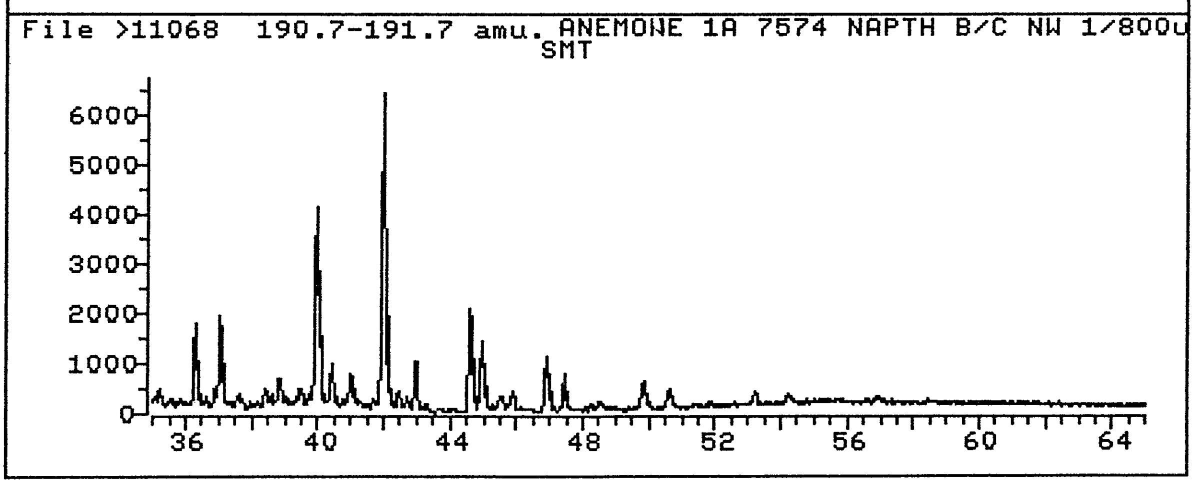

File >11068 164.7-165.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
3000
2000
1000
0
14.0
15.0
16.0
17.0
18.0
19.0

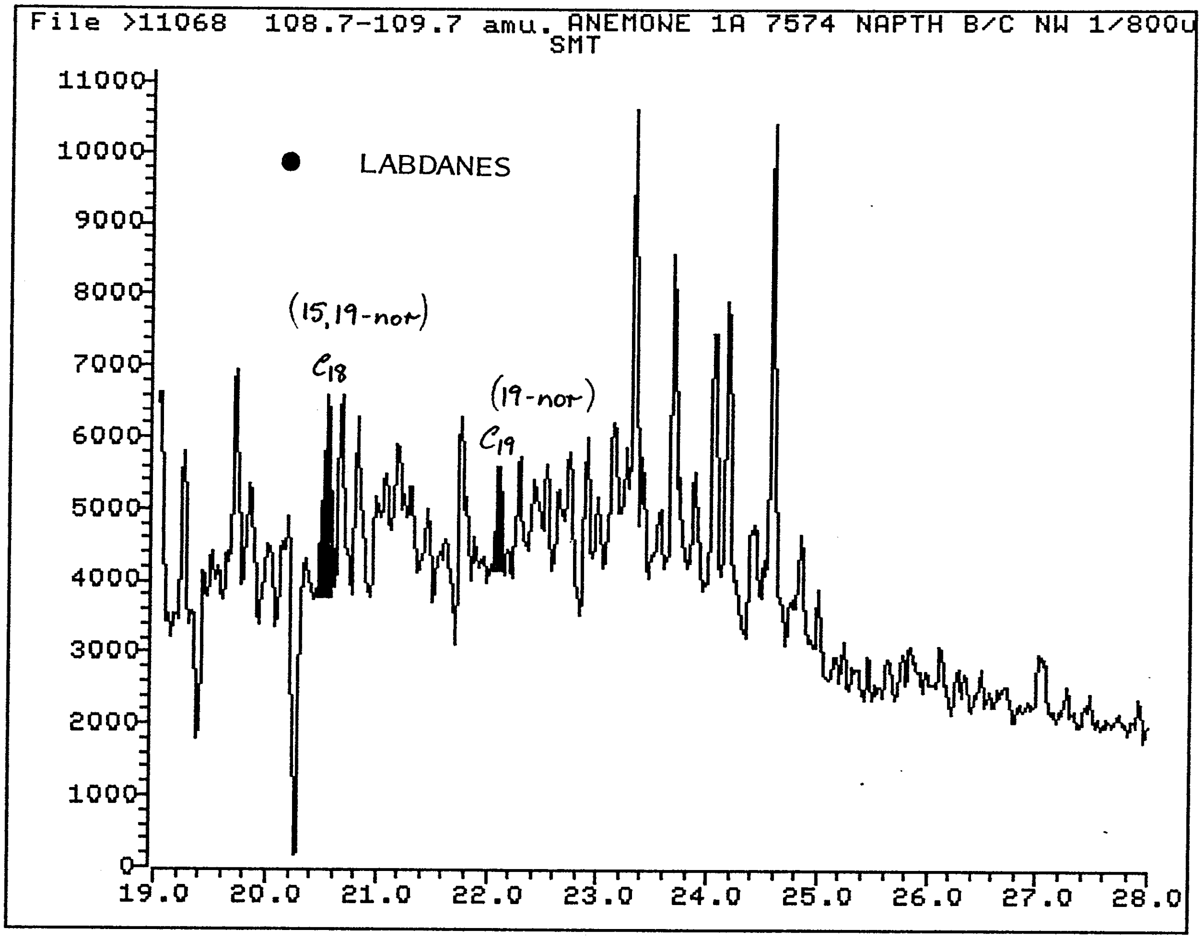

File >11068 122.7-123.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
DRIMANES
REARRANGED DRIMANES
C16
C15
C15
C15
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
13.0
14.0
15.0
16.0
17.0
18.0
19.0

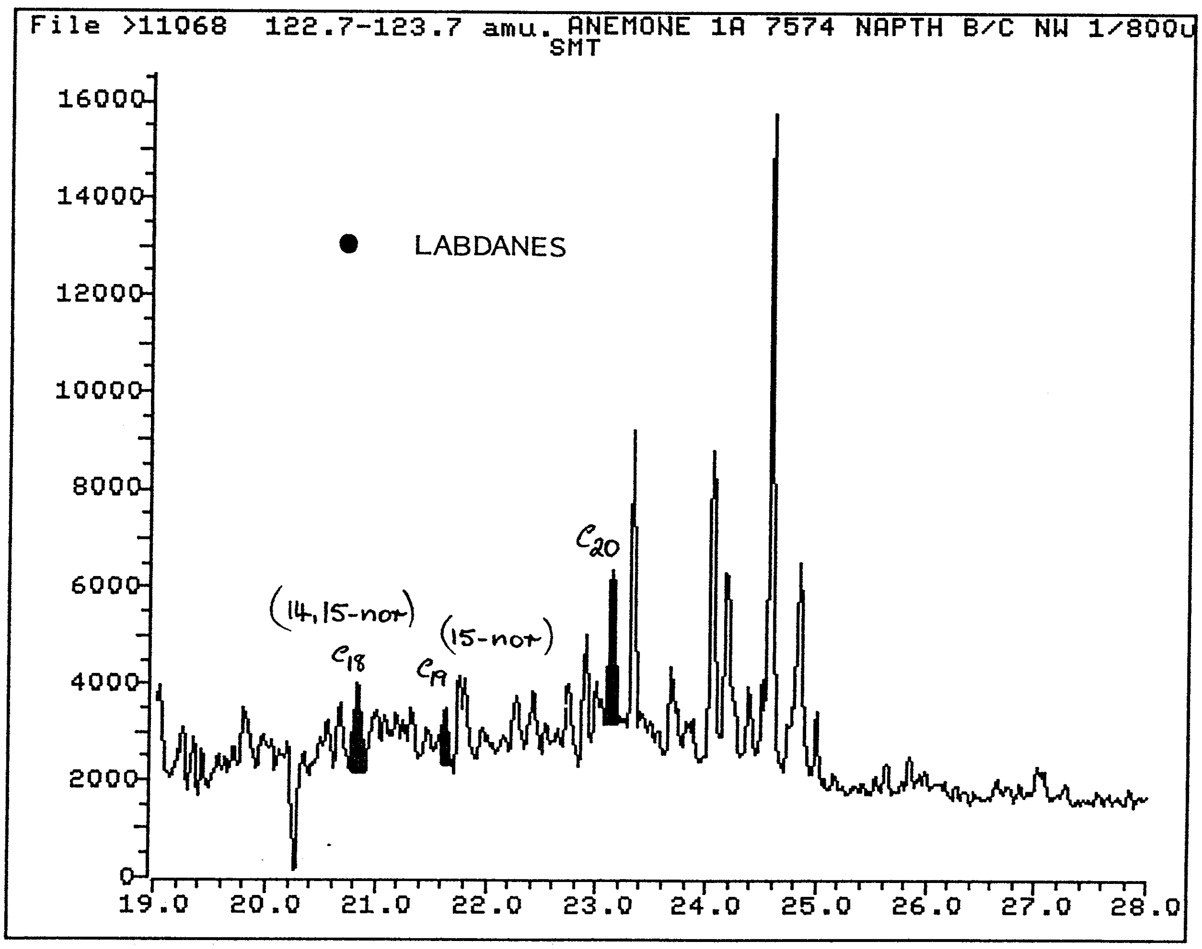

File >11068 329.7-330.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT

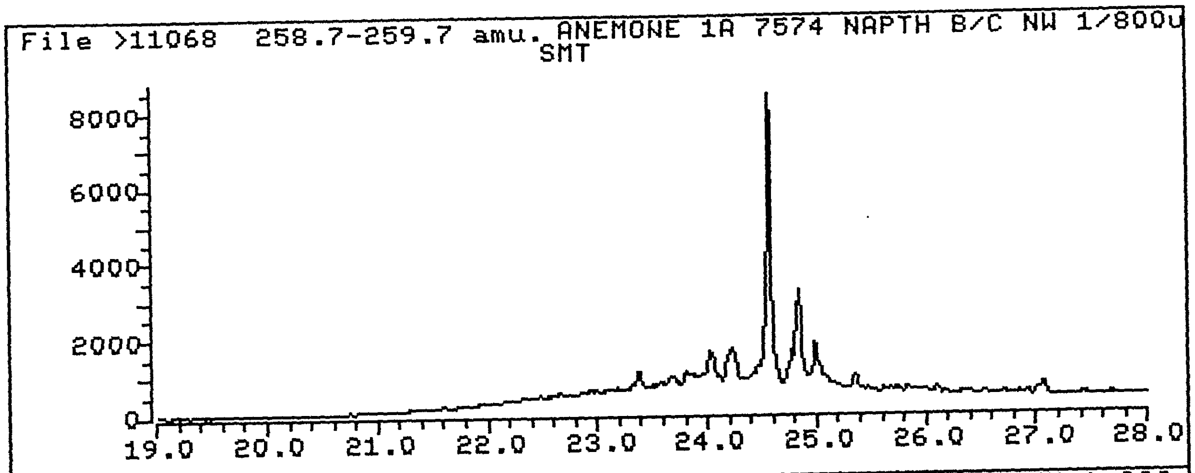

File >11068 162.7-163.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT

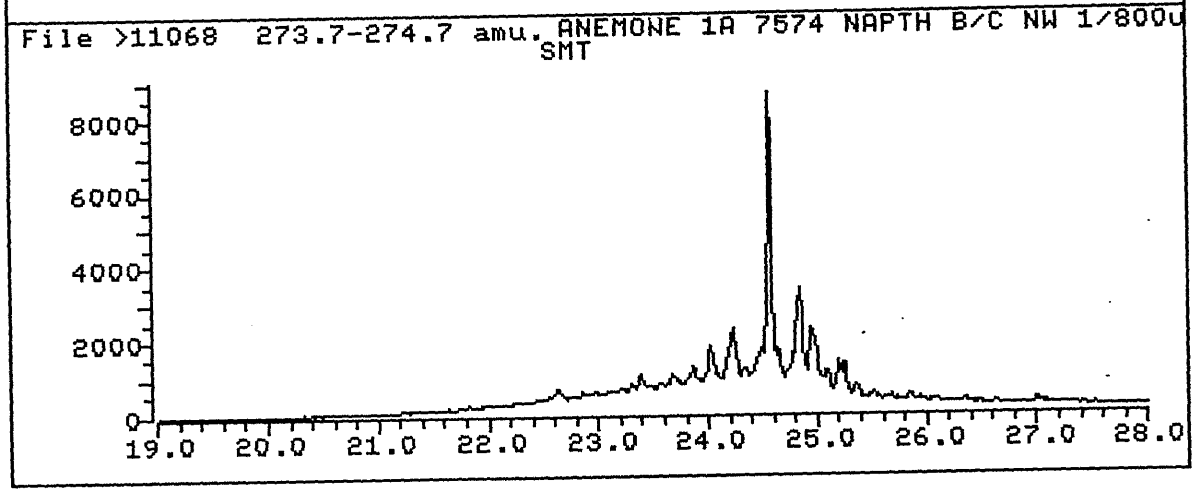

File >11068 190.7-191.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
HOMOLOGOUS TRICYCLIC TERPANES
HOMOLOGOUS TETRACYCLIC TERPANES
C20
C21
C23
C24
C25
C24
Ts
Tm


File >11068 190.7-191.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT


File >11068 108.7-109.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
LABDANES
(15,19-nor)
C18
(19-nor)
C19
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0


File >11068 122.7-123.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
LABDANES
C20
(14,15-nor)
C18
(15-nor)
C19
16000
14000
12000
10000
8000
6000
4000
2000
0
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
27.0
28.0


File >11068 258.7-259.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
8000
6000
4000
2000
0
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0


File >11068 273.7-274.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
8000
6000
4000
2000
0
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0

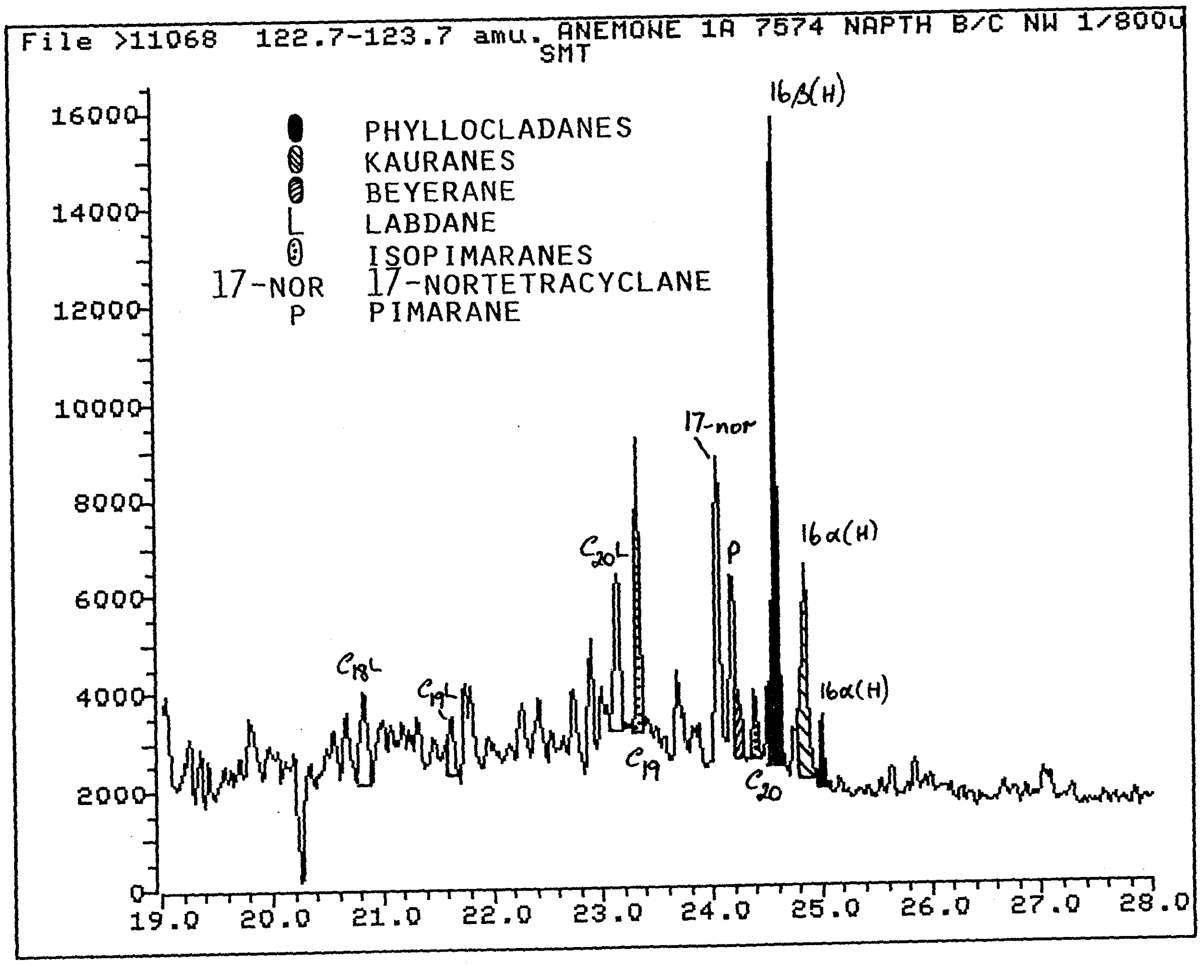
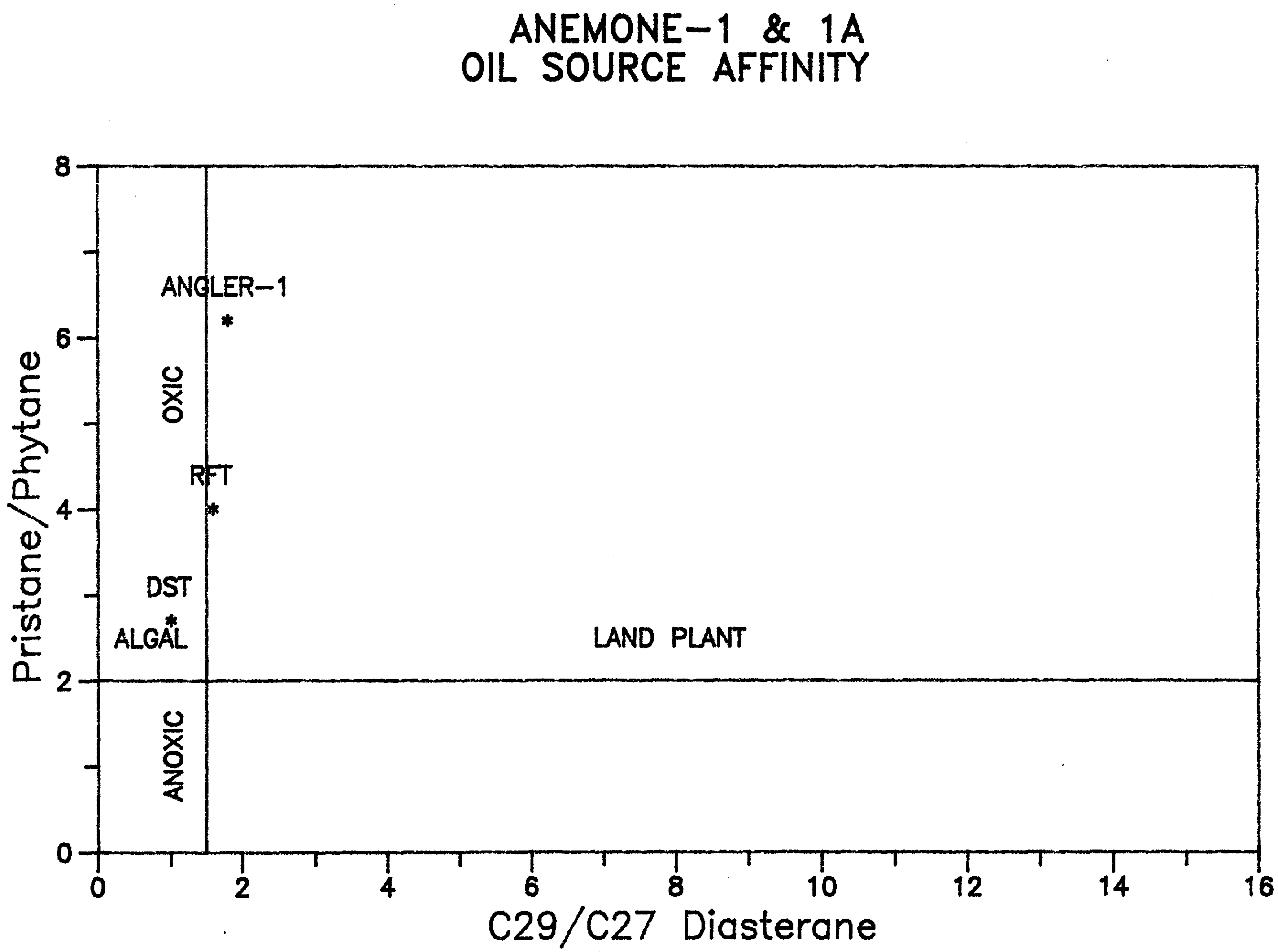

File >11068 122.7-123.7 amu. ANEMONE 1A 7574 NAPTH B/C NW 1/800u
SMT
PHYLLOCLADANES
KAURANES
BEYERANE
L LABDANE
ISOPIMARANES
17-NOR 17-NORTETRACYCLANE
P PIMARANE
16β(H)
17-nor
P
16α(H)
16α(H)
C20L
C18L
C19L
C19
C20
16000
14000
12000
10000
8000
6000
4000
2000
0
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0

FIGURE 30



ANEMONE-1 & 1A
OIL SOURCE AFFINITY
ANGLER-1
OXIC
RFT
DST
ALGAL
LAND PLANT
ANOXIC
Pristane/Phytane
C29/C27 Diasterane
0
2
4
6
8
10
12
14
16

FIGURE 31

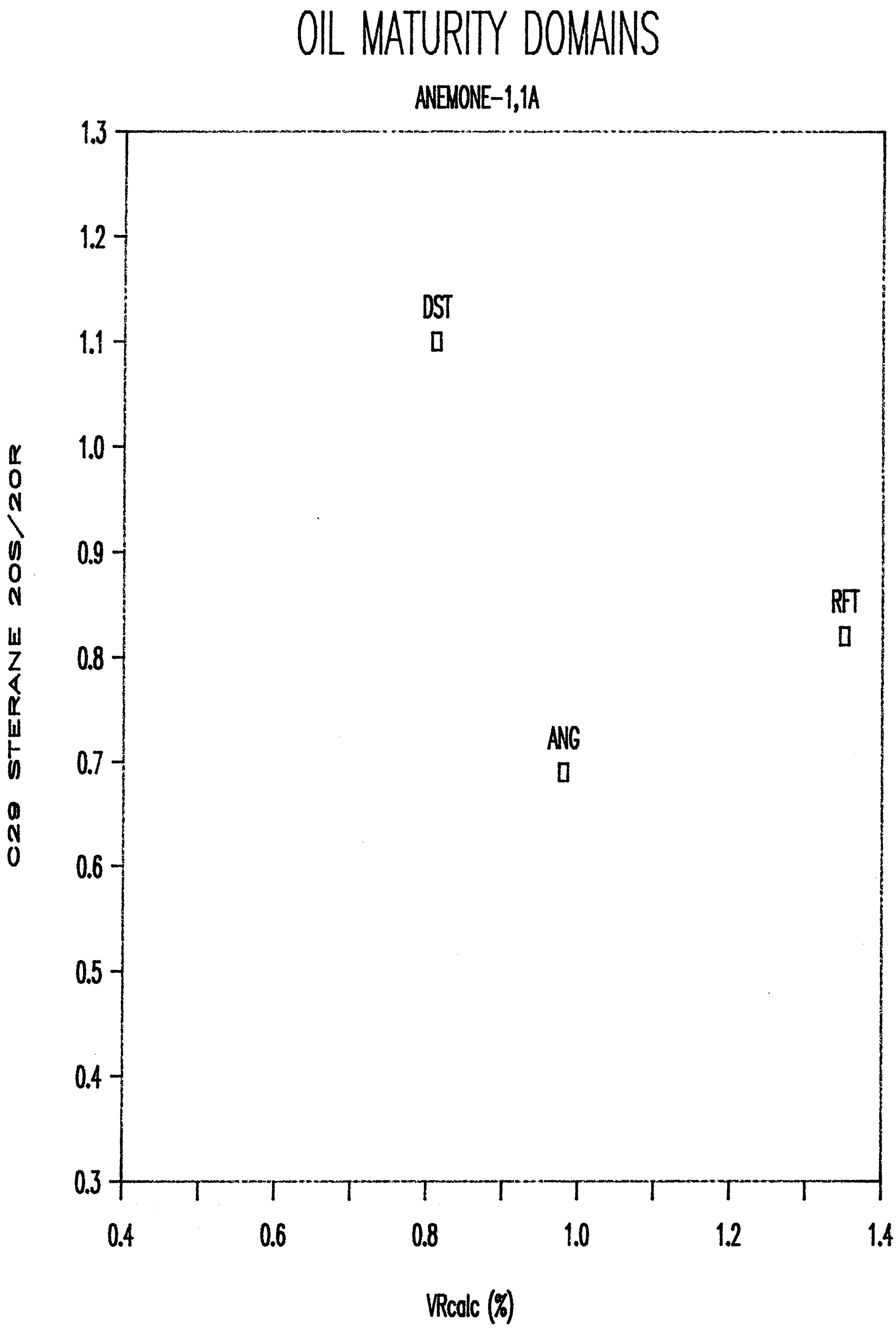
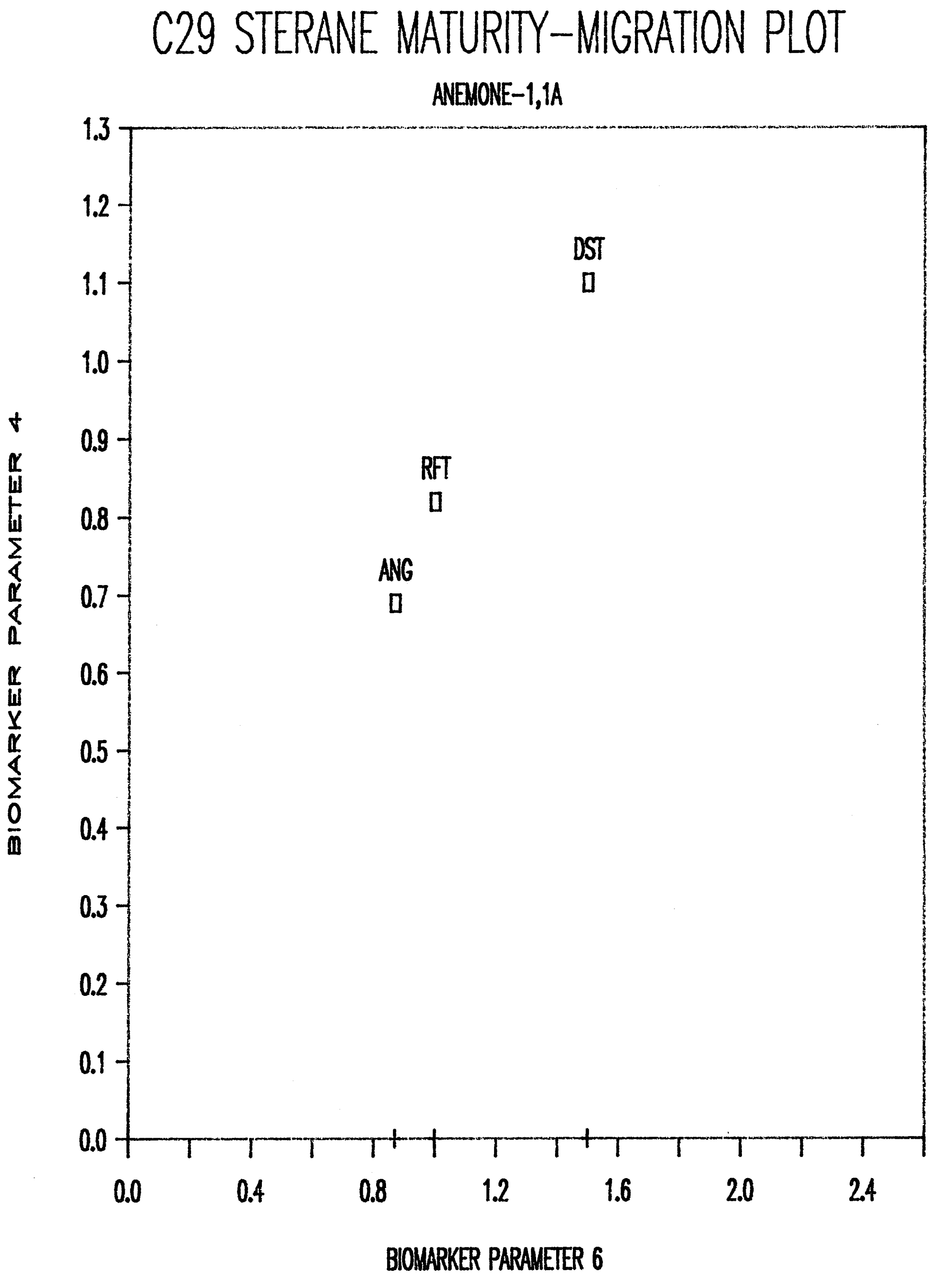

OIL MATURITY DOMAINS
ANEMONE-1,1A
C29 STERANE 20S/20R
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
DST
RFT
ANG
0.4
0.6
0.8
1.0
1.2
1.4
VRcalc (%)

FIGURE 32

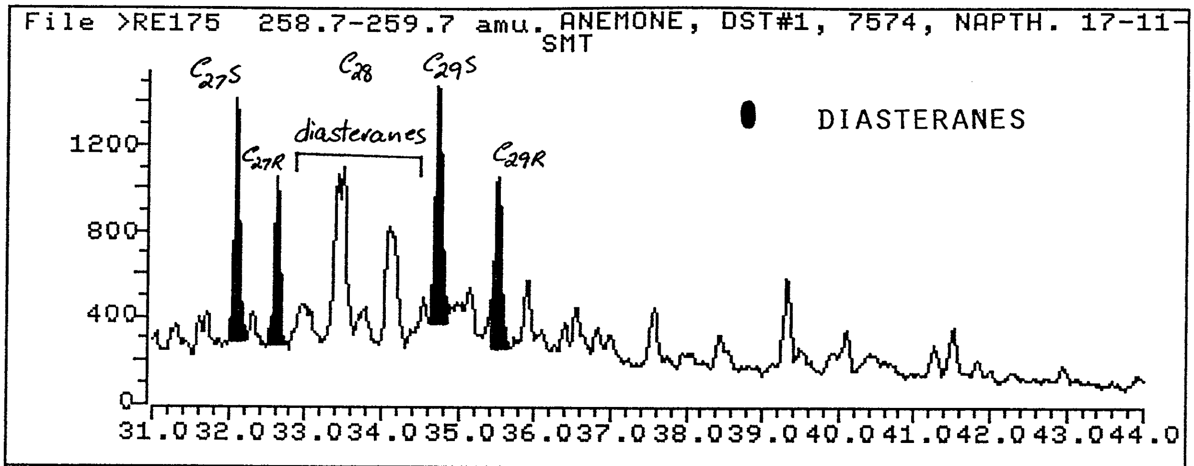


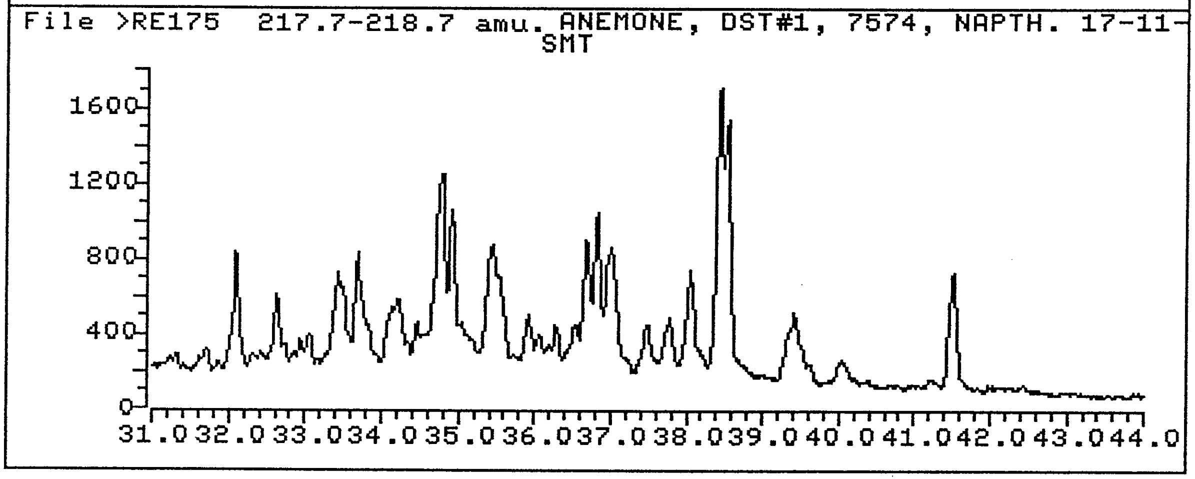
C29 STERANE MATURITY-MIGRATION PLOT
ANEMONE-1,1A
DST
RFT
ANG
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.4
0.8
1.2
1.6
2.0
2.4
BIOMARKER PARAMETER 4
BIOMARKER PARAMETER 6

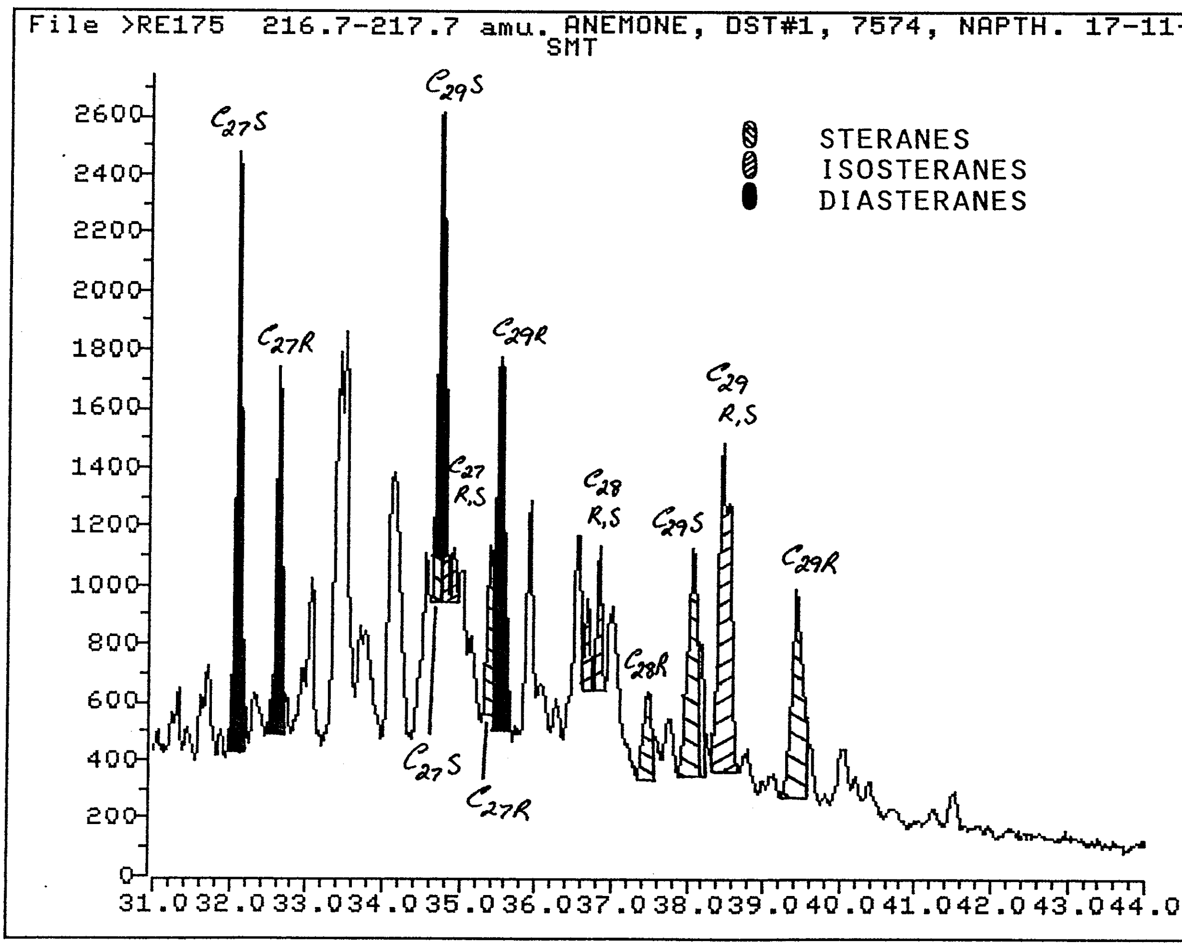
FIGURES 33 - 39

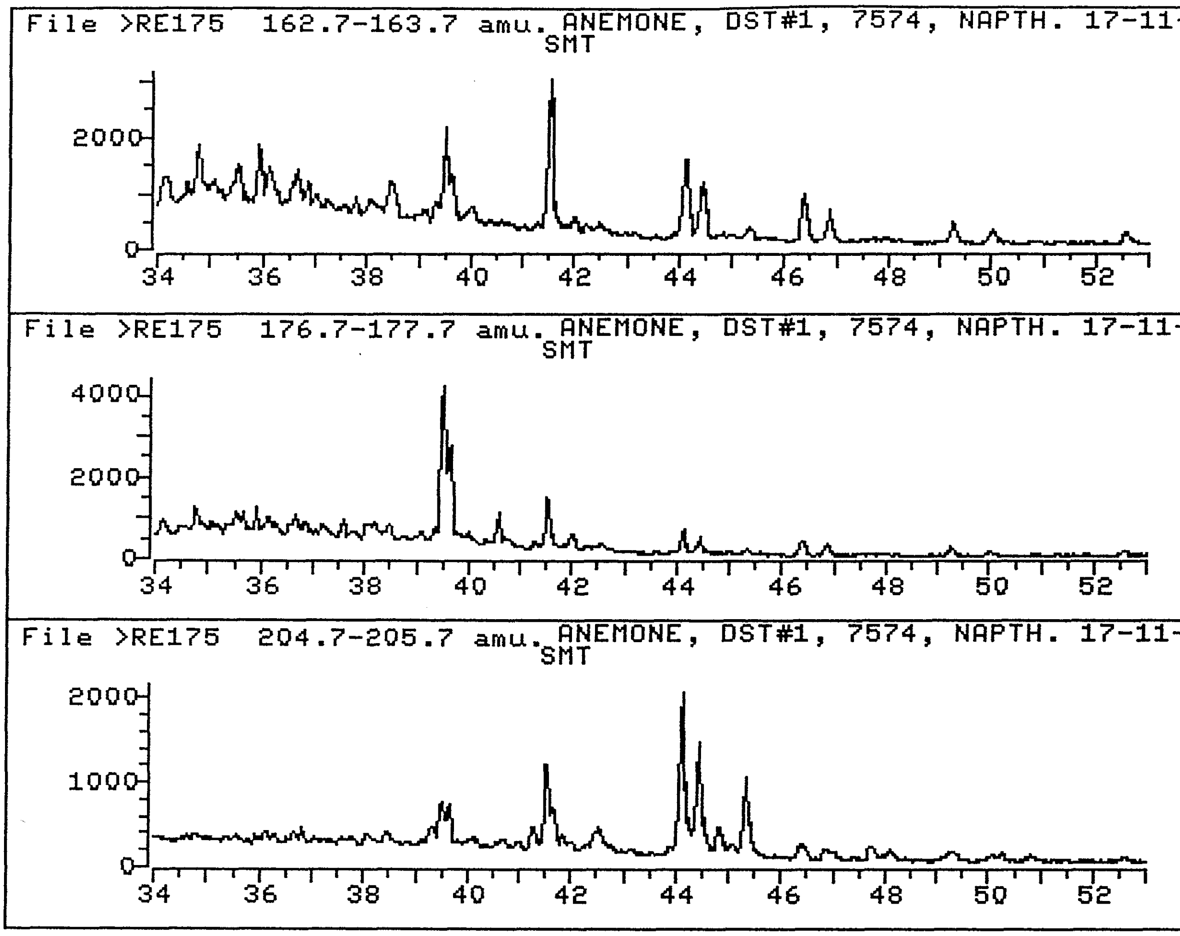
GC-MS OF BRANCHED/CYCLIC FRACTION

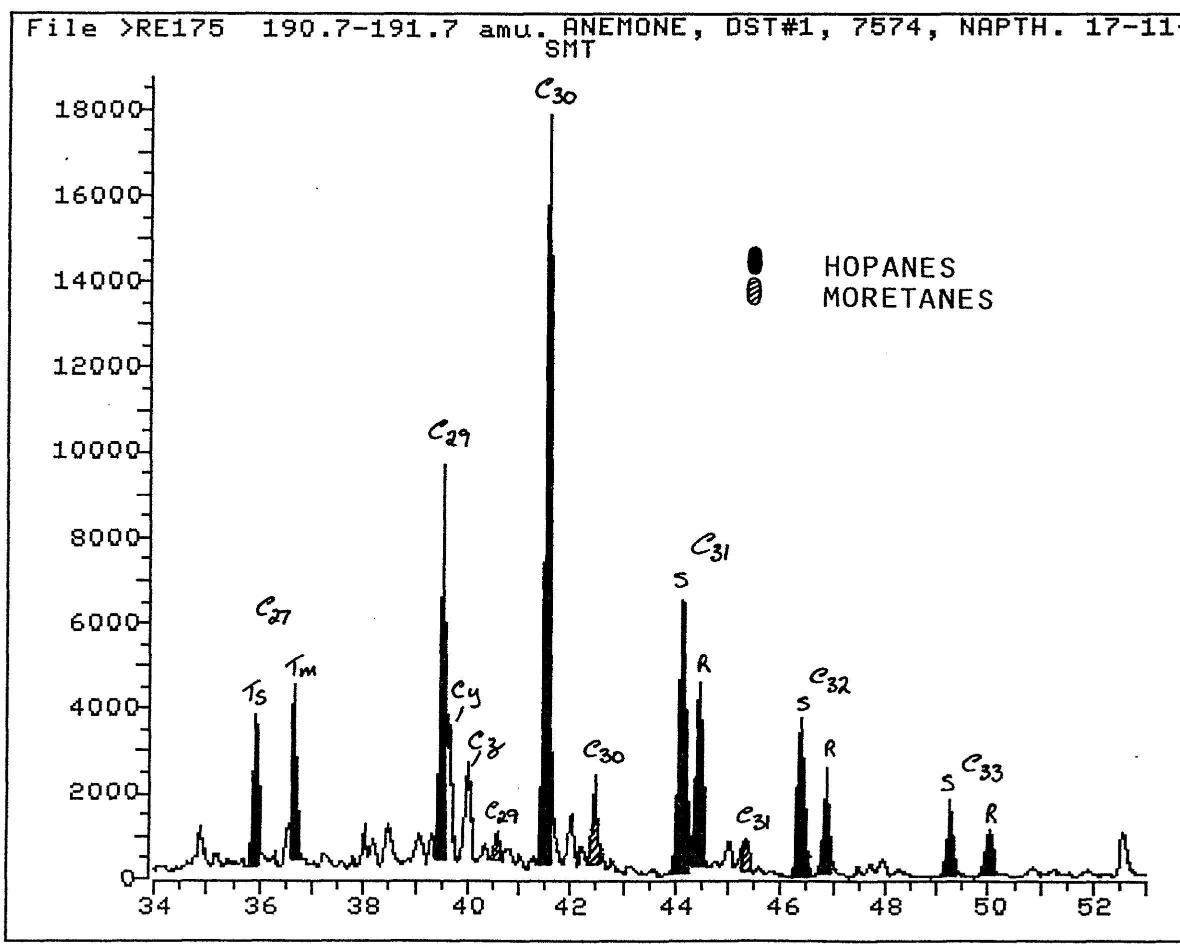
DST-1 SAMPLE

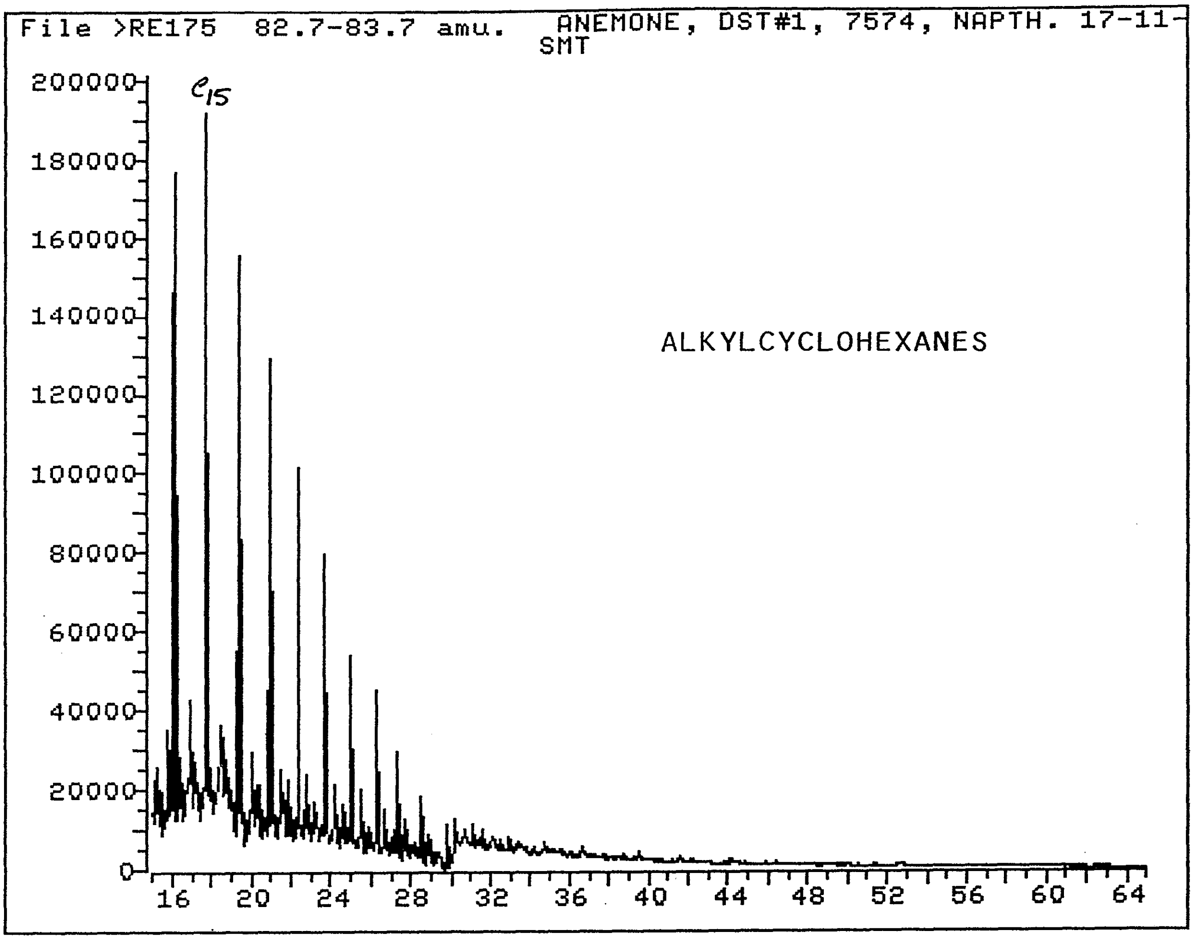

File >RE175 258.7-259.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
DIASTERANES
diasteranes
C27S
C27R
C28
C29S
C29R
0
400
800
1200
31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0

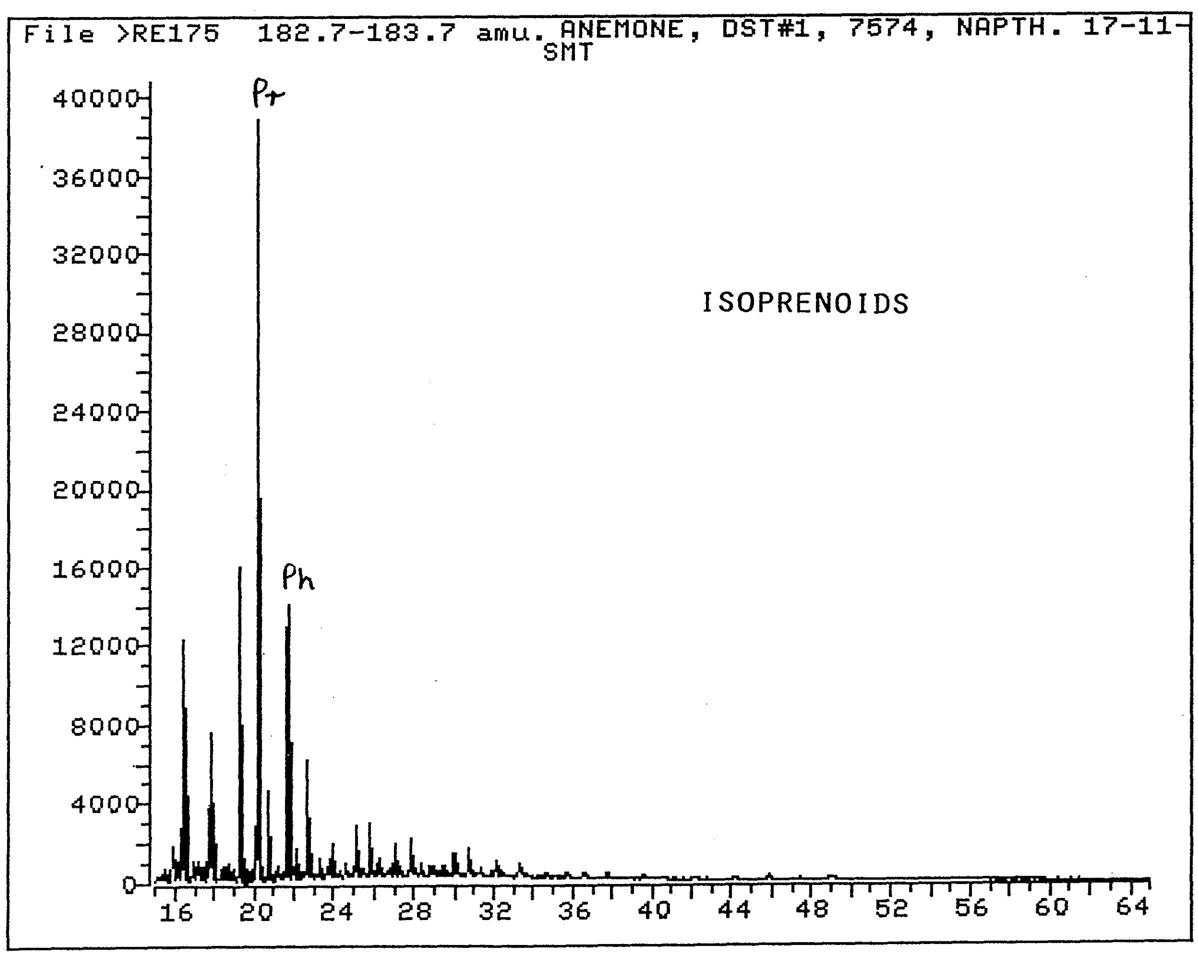

File >RE175 217.7-218.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
0
400
800
1200
1600
31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0

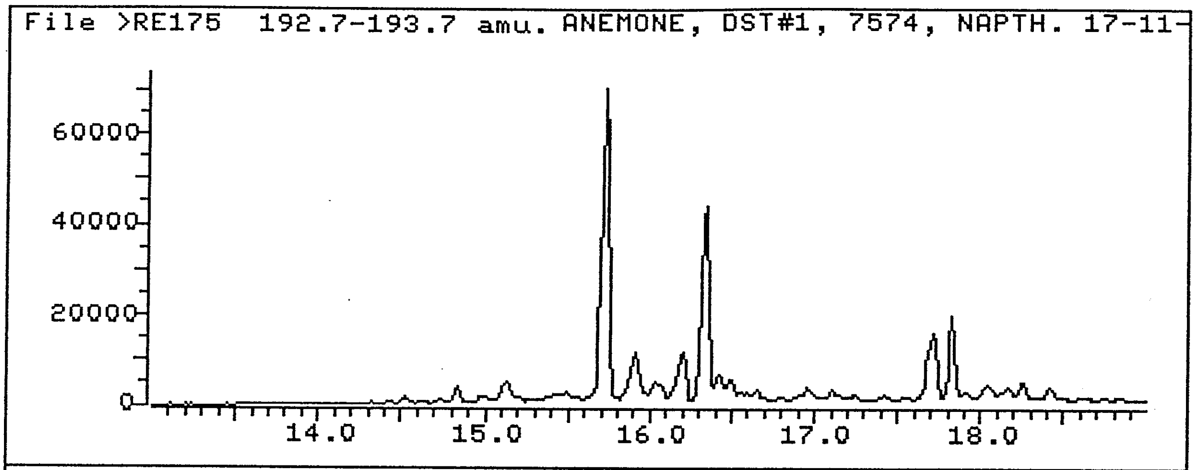

File >RE175 216.7-217.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
STERANES
ISOSTERANES
DIASTERANES
C27S
C27R
C29S
C29R
C27 R,S
C27S
C27R
C28 R,S
C28R
C29S
C29 R,S
C29R
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0

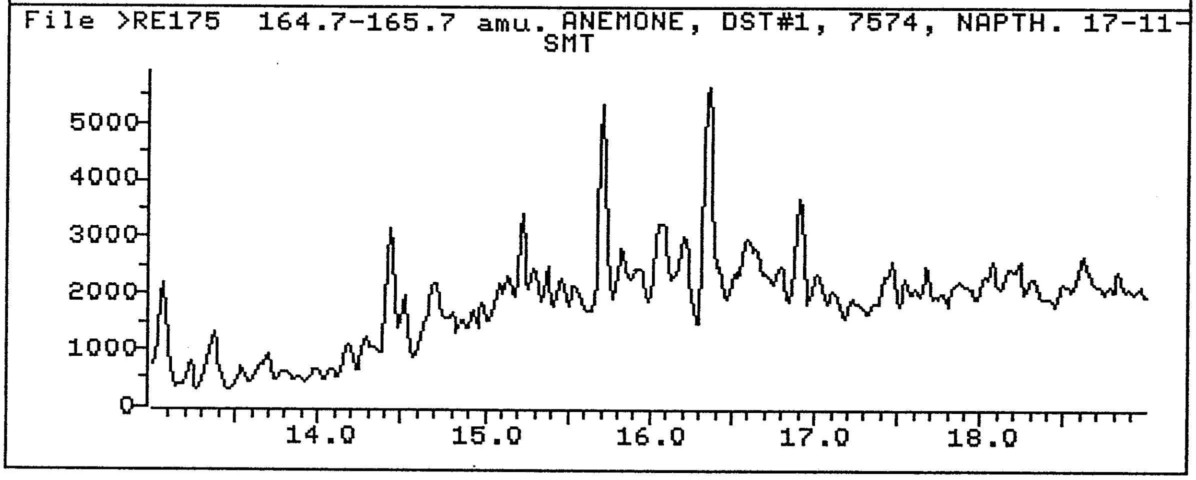

File >RE175 162.7-163.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
2000
0
34 36 38 40 42 44 46 48 50 52
File >RE175 176.7-177.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
4000
2000
0
34 36 38 40 42 44 46 48 50 52
File >RE175 204.7-205.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
2000
1000
0
34 36 38 40 42 44 46 48 50 52

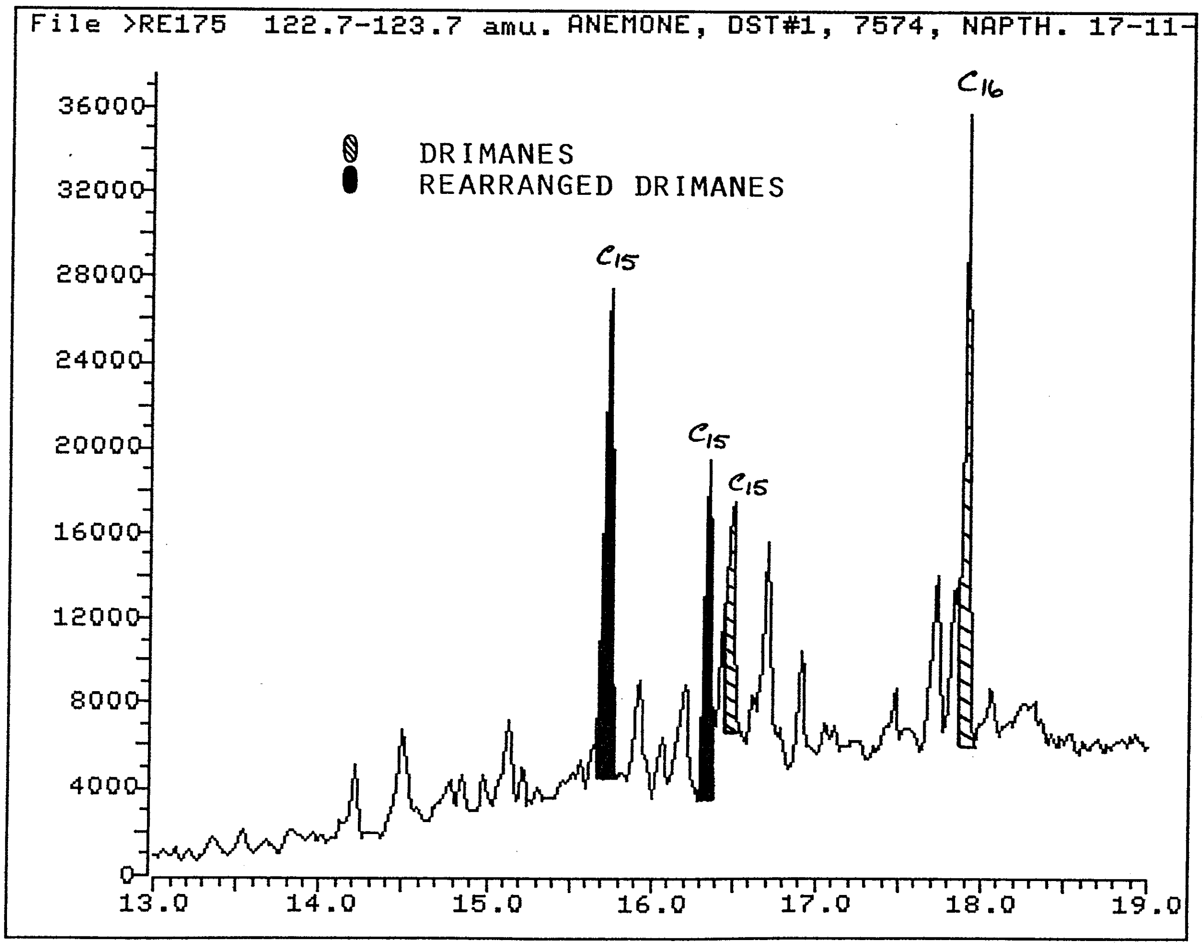

File >RE175 190.7-191.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
HOPANES
MORETANES
C30
C29
C27
Ts
Tm
C31
S
R
C32
C33
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
34 36 38 40 42 44 46 48 50 52

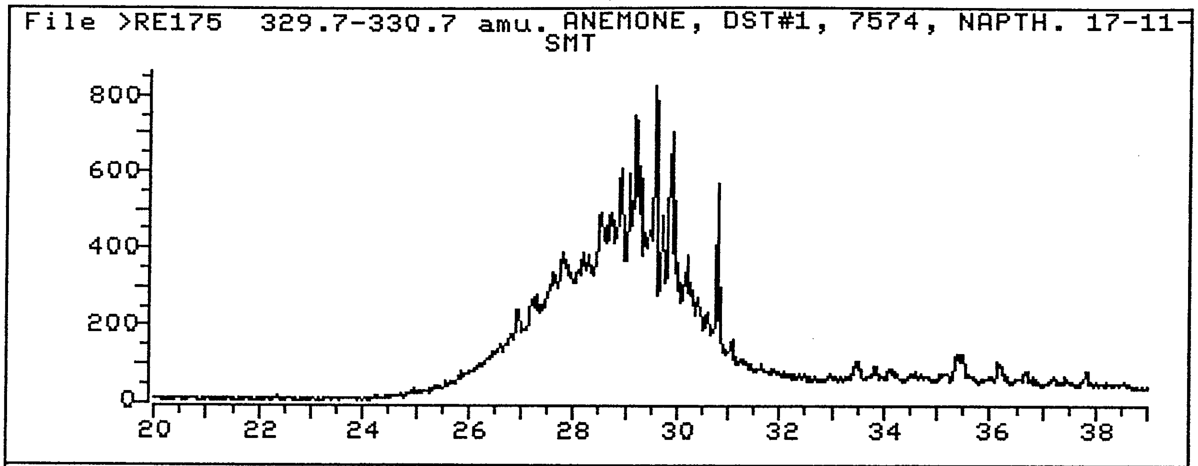

File >RE175 82.7-83.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
C15
ALKYLCYCLOHEXANES
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
16 20 24 28 32 36 40 44 48 52 56 60 64

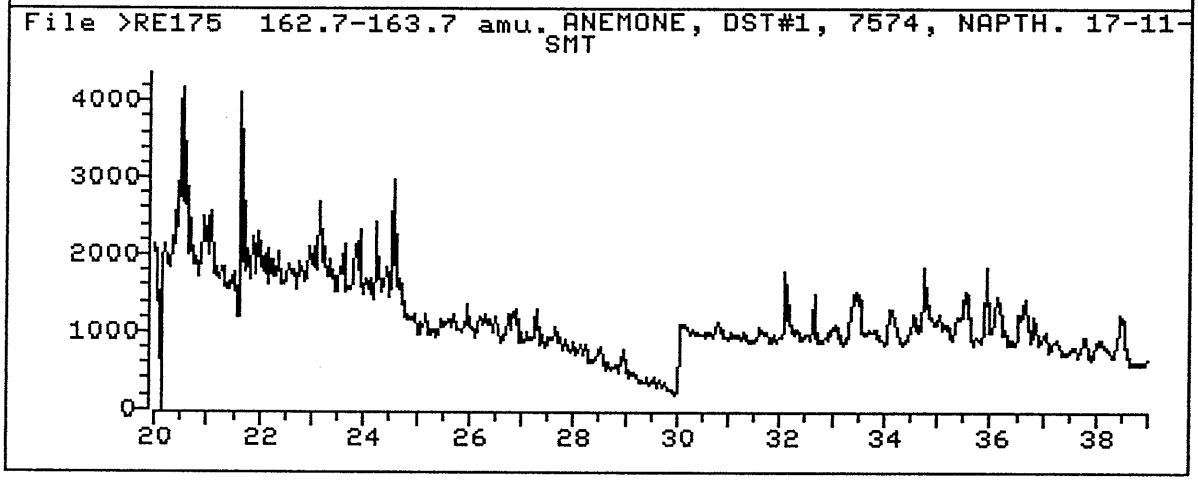

File >RE175 182.7-183.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
Pr
Ph
ISOPRENOIDS
40000
36000
32000
28000
24000
20000
16000
12000
8000
4000
0
16 20 24 28 32 36 40 44 48 52 56 60 64

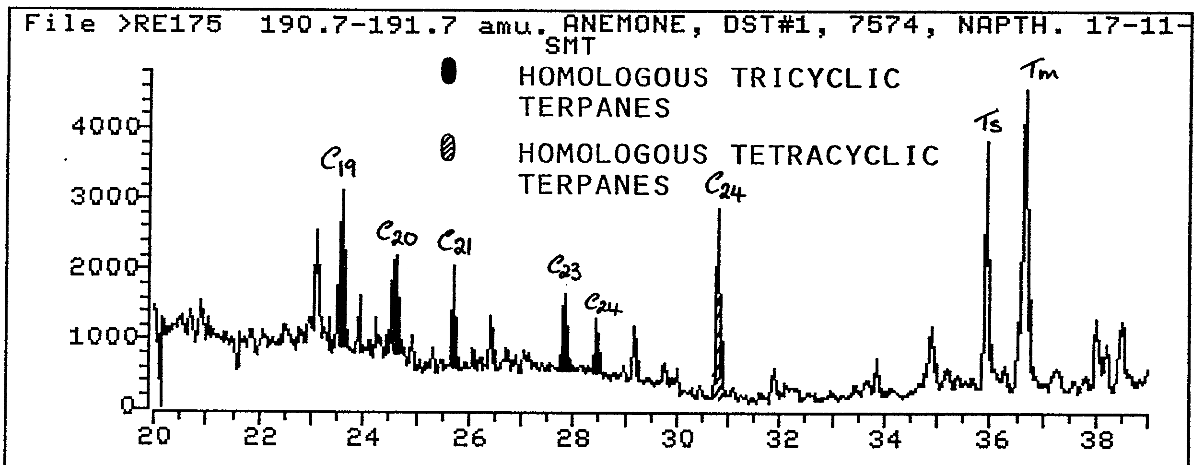

File >RE175 192.7-193.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
60000
40000
20000
0
14.0
15.0
16.0
17.0
18.0

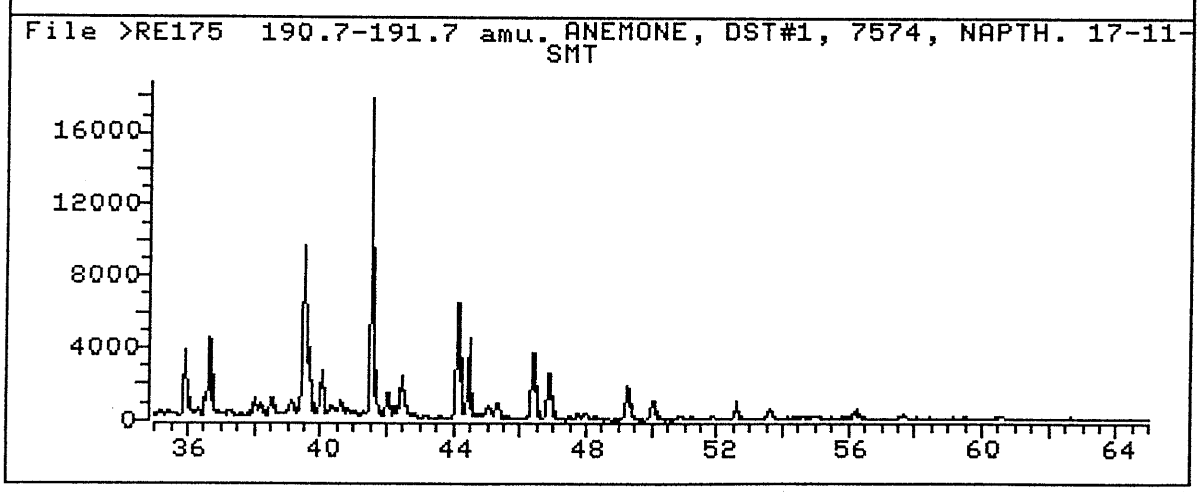

File >RE175 164.7-165.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
5000
4000
3000
2000
1000
0
14.0
15.0
16.0
17.0
18.0

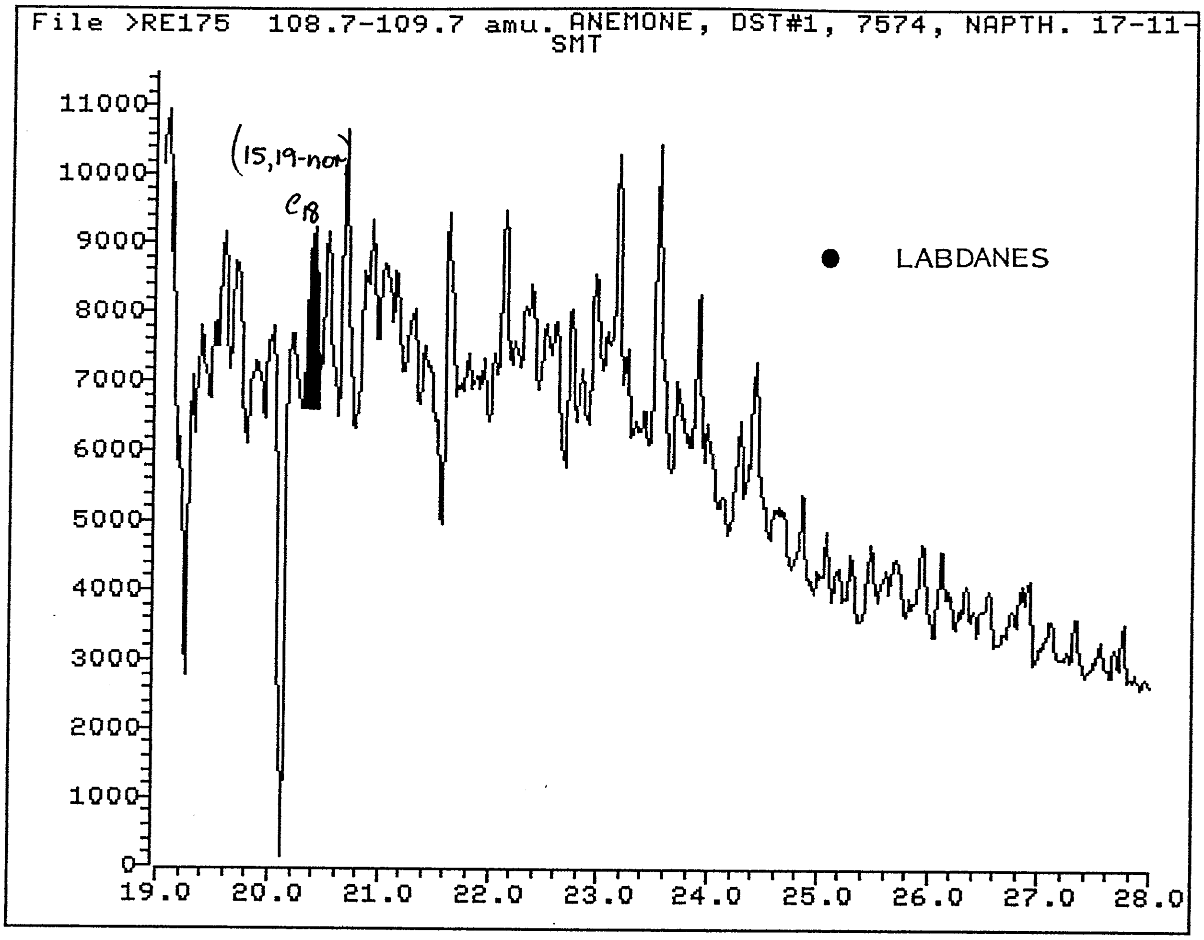

File >RE175 122.7-123.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
DRIMANES
REARRANGED DRIMANES
C15
C15
C15
C16
36000
32000
28000
24000
20000
16000
12000
8000
4000
0
13.0
14.0
15.0
16.0
17.0
18.0
19.0


File >RE175 329.7-330.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
0
200
400
600
800
20
22
24
26
28
30
32
34
36
38

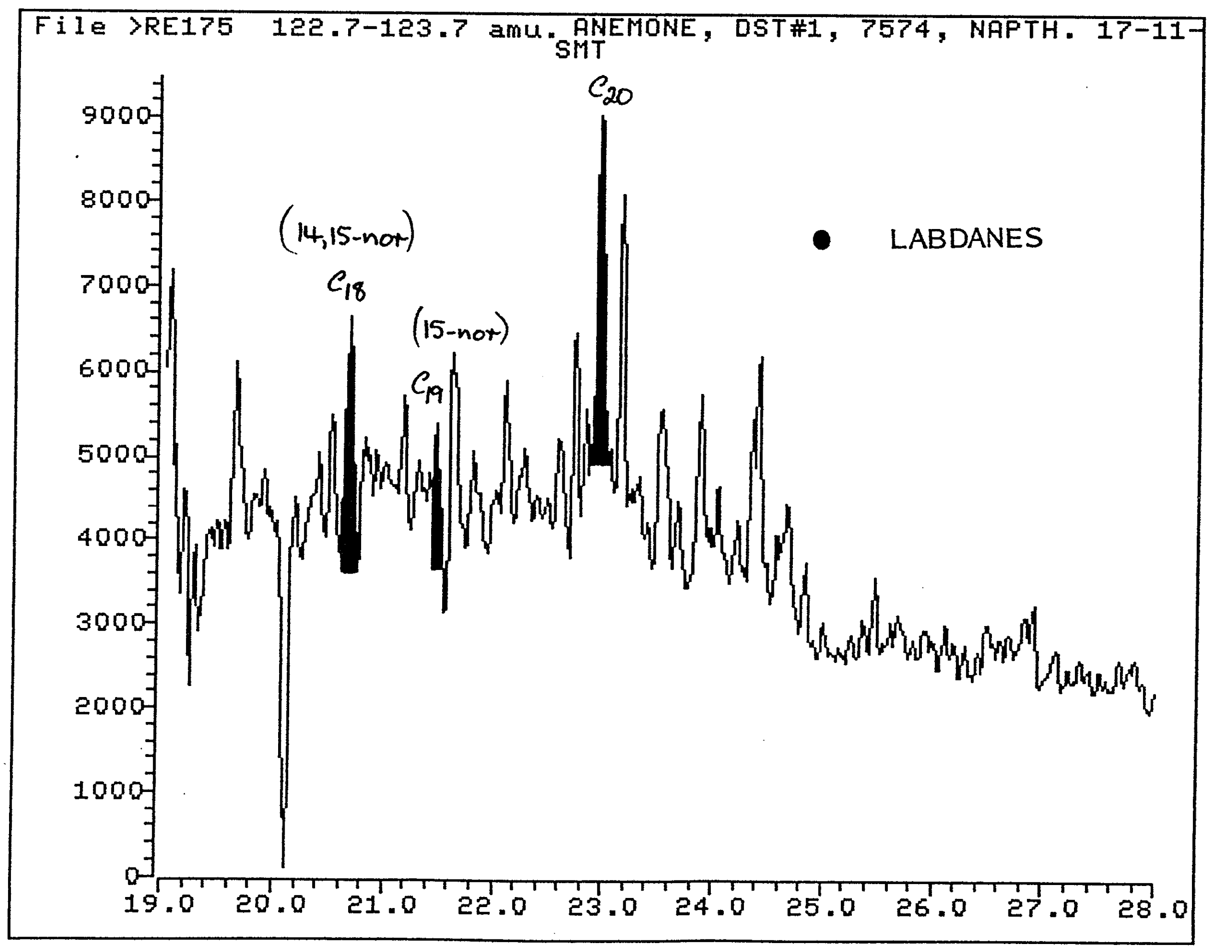

File >RE175 162.7-163.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
0
1000
2000
3000
4000
20
22
24
26
28
30
32
34
36
38


File >RE175 190.7-191.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
HOMOLOGOUS TRICYCLIC TERPANES
HOMOLOGOUS TETRACYCLIC TERPANES
C19
C20
C21
C23
C24
C24
Ts
Tm
0
1000
2000
3000
4000
20
22
24
26
28
30
32
34
36
38

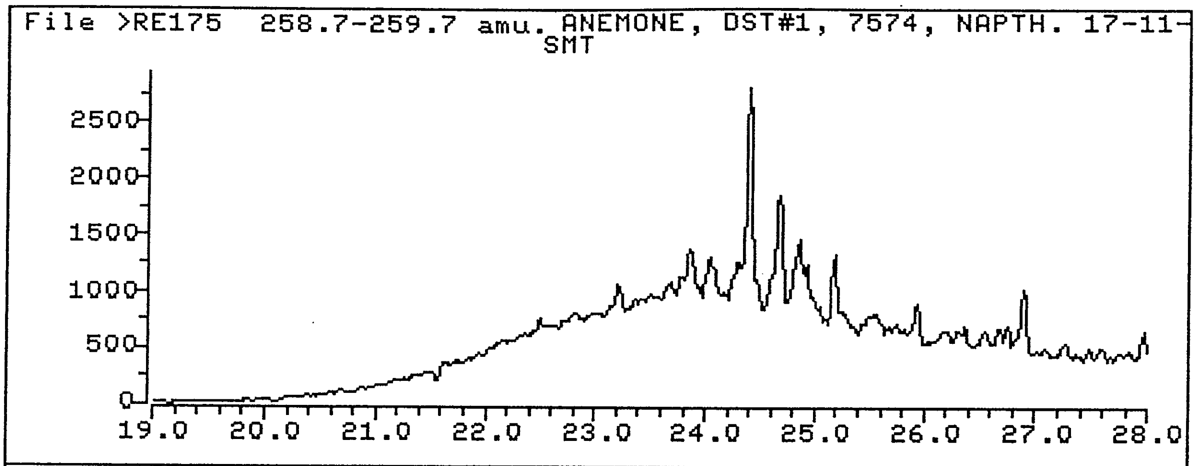

File >RE175 190.7-191.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-
SMT
0
4000
8000
12000
16000
36
40
44
48
52
56
60
64

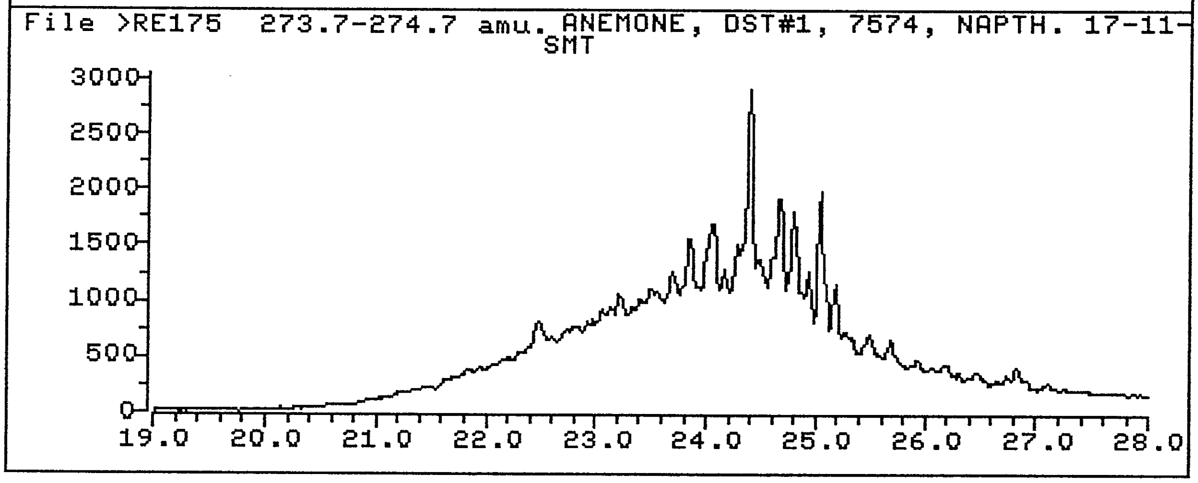


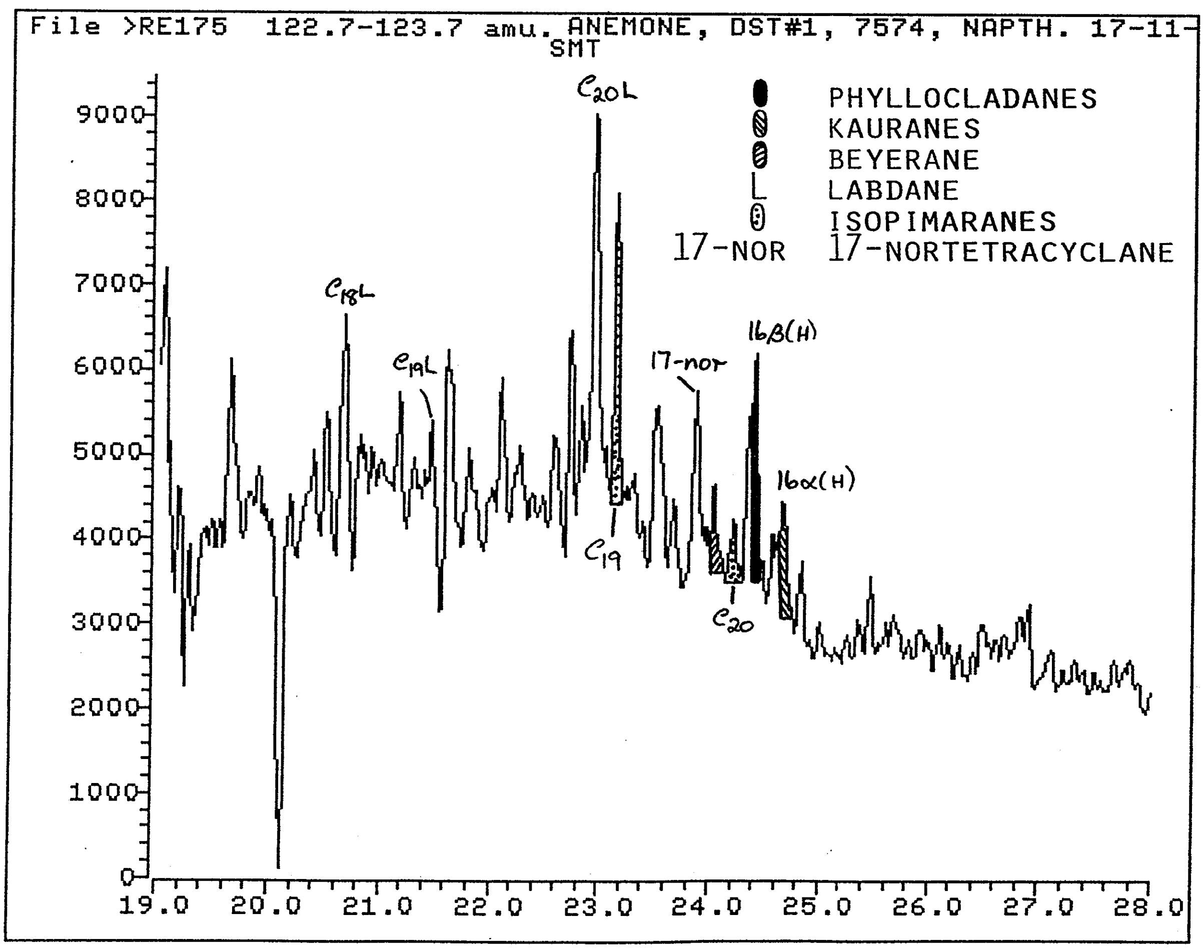
File >RE175 108.7-109.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
(15,19-nor)
C_{18}
LABDANES
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0



File >RE175 122.7-123.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
C_{20}
(14,15-nor)
C_{18}
(15-nor)
C_{19}
LABDANES
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0


File >RE175 258.7-259.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
0
500
1000
1500
2000
2500
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0


File >RE175 273.7-274.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
0
500
1000
1500
2000
2500
3000
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0


File >RE175 122.7-123.7 amu. ANEMONE, DST#1, 7574, NAPTH. 17-11-SMT
PHYLLOCLADANES
KAURANES
BEYERANE
L LABDANE
ISOPIMARANES
17-NOR 17-NORTETRACYCLANE
C20L
C18L
C19L
17-nor
16β(H)
16α(H)
C19
C20
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0

APPENDIX 1

ANALYTICAL METHODS

1. Total Organic Carbon (TOC)

Total organic carbon was determined by digestion of a known weight (≈0.2 g) of powdered rock in HCl to remove carbonates, followed by combustion in oxygen in the induction furnace of a Leco IR-12 Carbon Determinator and measurement of the resultant CO_2 by infra-red detection.

2. Rock-Eval Pyrolysis

A 100 mg portion of powdered rock was analysed by the Rock-Eval pyrolysis technique (Girdel IFP-Fina Mark 2 instrument; operating mode, Cycle 1).

3. Organic Petrology

Representative portions of the cuttings samples crushed to -14+35 BSS mesh) were obtained with a sample splitter and then mounted in cold setting Glasscraft resin using a 2.5 cm diameter mould. Each block was ground flat using diamond impregnated laps and carborundum paper. The surface was then polished with aluminium oxide and finally magnesium oxide.

Reflectance measurements on vitrinite phytoclasts, were made with a Leitz MPV1.1 microphotometer fitted to a Leitz Ortholux microscope and calibrated against synthetic standards. All measurements were taken using oil immersion (n = 1.518) and incident monochromatic light (wavelength 546 nm) at a temperature at 24±1°C. Fluorescence observations were made on the same microscope utilising a 3 mm BG3 excitation filter, a TK400 dichroic mirror and a K510 suppression filter.

4. Gasoline-Range Hydrocarbons

The RFT pre-test sample was analysed on a Perkin-Elmer 8500 Gas Chromatograph equipped with a 50 m, 0.2 mm i.d. HP PONA column.

5. Liquid Chromatography

Asphaltenes were not precipitated from the condensate prior to liquid chromatography. The condensate was separated into hydrocarbons (saturates and aromatics) and polar compounds (resins) by liquid chromatography on activated alumina (sample: adsorbent ratio = 1:100). Hydrocarbons were eluted with petroleum ether/dichloromethane (50:50) and resins with methanol/dichloromethane (65:35). The saturated and aromatic hydrocarbons were then separated by liquid chromatography on activated silica gel (sample: adsorbent ratio = 1:100) eluting in turn with petroleum ether and petroleum ether/dichloromethane (91:9).

6. Gas Chromatography

Whole oils and saturated hydrocarbons (alkanes) were examined by gas chromatography using the following instrumental parameters:

Gas Chromatograph:	Perkin Elmer Sigma 2 operated in the split injection mode
Column:	25 m x 0.3 mm fused silica, SGE QC3/BP1
Detector Temperature:	300°C

Column Temperature:	40°C for 1 minute, then 8° per min. to 300°C and held isothermal at 300°C until all peaks eluted
Quantification:	Relative concentrations of individual hydrocarbons were obtained by measurement of peak areas with a Perkin Elmer LCI 100 integrator. The areas of peaks responding to aromatic hydrocarbons were multiplied by appropriate response factors

7. <u>Thin Layer Chromatography (TLC)</u>

Aromatic hydrocarbons were isolated from the extracted oil by preparative TLC using Merck GF_{254} silica plates and distilled AR grade n-pentane as eluent. Naphthalene and anthracene were employed as reference standards for the diaromatic and triaromatic hydrocarbons, respectively. These two bands, visualised under UV light, were scraped from the plate and the aromatic hydrocarbons redissolved in dichloromethane.

8. <u>Gas Chromatography-Mass Spectrometry (GC-MS)</u>

The di- and triaromatic hydrocarbons isolated from the extracted oil by thin layer chromatography were analysed by GC-MS.

GC-MS analysis of the aromatic hydrocarbons was undertaken in the selected ion detection (SID) mode. The instrument and its operating parameters were as follows:

System:	Hewlett Packard (HP) 5790 GC coupled with a HP5970A mass selective detector and HP9816S data system
Column:	50 mm x 0.2 mm i.d. HP PONA cross-linked methylsilicone phase fused silica, interfaced directly to source of mass spectrometer
Injector:	Split injection (40:1)
Carrier Gas:	He at 1.2 kg/cm^2 head pressure
Column Temperature:	50-260°C @ 4°/min
Mass Spectrometer Conditions:	70 eV EI; 9-ion selected ion monitoring, 70 millisec dwell time for each ion

The following mass fragmentograms were recorded:

<u>m/z</u>	<u>Compound Type</u>
155 + 156	dimethylnaphthalenes
169 + 170	trimethylnaphthalenes
178	phenanthrene
191 + 192	methylphenanthrene

The area of the phenanthrene peak was multiplied by a response factor of 0.667 when calculating the methylphenanthrene index (MPI).

Naphthenes (branched/cyclic alkanes) were isolated from the oils by urea adduction of their saturates fractions.

GC-MS analysis of the naphthenes (urea non-adduct) was undertaken in the multiple ion detection (MID) mode. Instrumental conditions are given in the table above.

The following mass fragmentograms were recorded:

m/z	Compound Type
177	demethylated triterpanes
183	acyclic alkanes (incl. isoprenoids, botryococcanes)
191	triterpanes (incl. hopanes, moretanes)
205	methyltriterpanes
217	steranes
218	steranes
231	4-methylsteranes
259	diasteranes

9. Stable Isotopic Ratios

All stable isotope determinations were performed at the CSIRO Isotope centre in Sydney.

APPENDIX 2

HISTOGRAM PLOTS OF VITRINITE REFLECTANCE DETERMINATIONS

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3955 m

Sorted List

0.40	0.47	0.53	0.58	0.63
0.43	0.48	0.54	0.58	0.65
0.45	0.48	0.54	0.59	0.66
0.45	0.49	0.54	0.60	0.66
0.45	0.49	0.54	0.61	0.69
0.45	0.49	0.54	0.62	0.77
0.46	0.49	0.56	0.62	
0.46	0.50	0.56	0.62	
0.46	0.51	0.56	0.62	
0.47	0.53	0.57	0.63	

Number of values= 46

Mean of values 0.54
Standard Deviation 0.08

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
40-42    *
43-45    *****
46-48    *******
49-51    ******
52-54    **
55-57    *********
58-60    ****
61-63    *******
64-66    ***
67-69    *
70-72
73-75
76-78    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4155 m

Sorted List

0.51	0.59	0.62
0.52	0.59	0.63
0.54	0.59	0.65
0.54	0.59	0.66
0.54	0.59	0.66
0.54	0.60	
0.54	0.61	
0.55	0.61	
0.57	0.62	
0.58	0.62	

Number of values= 25

Mean of values 0.59
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
51-53    **
54-56    ******
57-59    *******
60-62    ******
63-65    **
66-68    **
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 2609 m

Sorted List

0.34	0.49
0.35	0.51
0.40	
0.41	
0.42	
0.42	
0.42	
0.44	
0.46	
0.49	

Number of values= 12

Mean of values 0.43
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

34-36	**
37-39	
40-42	*****
43-45	*
46-48	*
49-51	***

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 2820 m

Sorted List

0.29	0.37	0.41
0.29	0.37	0.42
0.31	0.37	0.43
0.32	0.38	0.46
0.32	0.38	0.48
0.32	0.39	0.49
0.32	0.39	
0.34	0.39	
0.35	0.40	
0.36	0.41	

Number of values= 26

Mean of values 0.38
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

29-31	***
32-34	*****
35-37	*****
38-40	******
41-43	****
44-46	*
47-49	**

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 2880.5 m

Sorted List

0.30	0.41	0.43	0.47
0.31	0.41	0.44	0.47
0.34	0.41	0.44	0.47
0.35	0.41	0.44	0.49
0.35	0.41	0.44	0.50
0.39	0.41	0.44	0.51
0.39	0.41	0.45	0.51
0.39	0.42	0.45	
0.40	0.42	0.46	
0.40	0.43	0.47	

Number of values= 37

Mean of values 0.42
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
30-32    **
33-35    ***
36-38
39-41    ************
42-44    *********
45-47    *******
48-50    **
51-53    **
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 2975 m

Sorted List

0.30	0.41	0.47
0.31	0.43	0.47
0.33	0.43	0.47
0.36	0.44	0.47
0.36	0.44	0.48
0.36	0.44	0.48
0.36	0.44	0.49
0.38	0.44	0.52
0.38	0.45	0.56
0.40	0.47	

Number of values= 29

Mean of values 0.43
Standard Deviation 0.06

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
30-32    **
33-35    *
36-38    ******
39-41    **
42-44    *******
45-47    ******
48-50    ***
51-53    *
54-56
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3040 m

Sorted List

0.31	0.41	0.44
0.31	0.41	0.45
0.36	0.42	0.46
0.36	0.42	0.47
0.38	0.42	
0.38	0.43	
0.39	0.43	
0.40	0.43	
0.40	0.43	
0.40	0.44	

Number of values= 24

Mean of values 0.41
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
31-33    **
34-36    **
37-39    ***
40-42    ********
43-45    *******
46-48    **
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3070 m

Sorted List

0.32	0.41	0.44
0.34	0.41	0.44
0.36	0.41	0.45
0.36	0.41	0.45
0.36	0.41	0.46
0.37	0.41	0.46
0.39	0.42	0.46
0.39	0.43	0.47
0.40	0.43	0.48
0.40	0.44	0.51

Number of values= 30

Mean of values 0.42
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
32-34    **
35-37    ****
38-40    ****
41-43    *********
44-46    ********
47-49    **
50-52    *
```

VITRINITE REFLECTANCE VALUES

Well Name:	ANEMONE-1
Depth:	3120 m

Sorted List

0.39	0.47
0.40	0.47
0.40	0.47
0.40	0.48
0.41	0.51
0.43	0.51
0.43	
0.43	
0.43	
0.44	

Number of values= 16

Mean of values 0.44
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

39-41	*****
42-44	*****
45-47	***
48-50	*
51-53	**

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3170 m

Sorted List

0.38	0.47	0.51
0.40	0.47	0.51
0.43	0.48	0.51
0.43	0.48	0.51
0.43	0.49	0.51
0.44	0.49	0.52
0.44	0.49	0.52
0.44	0.49	0.53
0.45	0.50	
0.46	0.50	

Number of values= 28

Mean of values 0.47
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
38-40    **
41-43    ***
44-46    *****
47-49    ********
50-52    *********
53-55    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3250 m

Sorted List

0.36	0.42	0.46
0.37	0.42	0.47
0.37	0.43	0.47
0.38	0.43	0.47
0.40	0.44	0.48
0.41	0.44	0.48
0.41	0.44	0.49
0.41	0.45	0.49
0.42	0.45	0.51
0.42	0.45	0.53

Number of values= 30

Mean of values 0.44
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
36-38    ****
39-41    ****
42-44    *********
45-47    *******
48-50    ****
51-53    **
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3300 m

Sorted List

0.43	0.48	0.50	0.55
0.44	0.48	0.51	0.56
0.44	0.48	0.51	0.58
0.46	0.48	0.51	0.58
0.46	0.48	0.52	
0.46	0.49	0.52	
0.47	0.49	0.52	
0.47	0.49	0.53	
0.47	0.49	0.53	
0.47	0.50	0.55	

Number of values= 34

Mean of values 0.50
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
43-45   ***
46-48   ************
49-51   *********
52-54   *****
55-57   ***
58-60   **
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3330 m

Sorted List

0.43
0.44
0.44
0.47
0.47
0.48
0.49
0.53

Number of values= 8

Mean of values 0.47
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

43-45 ***
46-48 ***
49-51 *
52-54 *

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3360 m

Sorted List

0.42	0.47	0.51	0.54
0.43	0.47	0.51	0.54
0.44	0.48	0.51	0.55
0.45	0.48	0.51	0.55
0.46	0.48	0.52	
0.46	0.49	0.52	
0.46	0.49	0.52	
0.46	0.50	0.53	
0.46	0.50	0.53	
0.46	0.50	0.53	

Number of values= 34

Mean of values 0.49
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
42-44   ***
45-47   *********
48-50   ********
51-53   **********
54-56   ****
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3450 m

Sorted List

0.53
0.53

Number of values= 2

Mean of values 0.53
Standard Deviation 0.00

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

53-55 **

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3510 m

Sorted List

0.45	0.53
0.46	0.54
0.48	0.55
0.49	0.55
0.49	0.63
0.49	0.67
0.49	
0.50	
0.50	
0.53	

Number of values= 16

Mean of values 0.52
Standard Deviation 0.06

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
45-47    **
48-50    *******
51-53    **
54-56    ***
57-59
60-62
63-65    *
66-68    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3570 m

Sorted List

0.47	0.62
0.47	0.63
0.49	0.63
0.50	0.68
0.51	
0.53	
0.54	
0.54	
0.56	
0.59	

Number of values= 14

Mean of values 0.55
Standard Deviation 0.06

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

47-49	***
50-52	**
53-55	***
56-58	*
59-61	*
62-64	***
65-67	
68-70	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3610 m

Sorted List

0.46	0.53
0.49	0.53
0.50	0.53
0.50	0.53
0.50	0.53
0.50	0.60
0.51	
0.51	
0.51	
0.51	

Number of values= 16

Mean of values 0.52
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
46-48    *
49-51    *********
52-54    *****
55-57
58-60    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3710 m

Sorted List

0.46
0.60
0.62
0.64

Number of values= 4

Mean of values 0.58
Standard Deviation 0.07

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

46-48	*
49-51	
52-54	
55-57	
58-60	*
61-63	*
64-66	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3840 m

Sorted List

0.44	0.54
0.47	0.56
0.48	
0.49	
0.49	
0.49	
0.50	
0.50	
0.52	
0.53	

Number of values= 12

Mean of values 0.50
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

44-46	*
47-49	*****
50-52	***
53-55	**
56-58	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3880 m

Sorted List

0.47	0.65
0.47	
0.48	
0.51	
0.53	
0.53	
0.53	
0.54	
0.56	
0.56	

Number of values= 11

Mean of values 0.53
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

47-49	***
50-52	*
53-55	****
56-58	**
59-61	
62-64	
65-67	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 3980 m

Sorted List

0.47	0.56
0.49	0.57
0.50	0.57
0.51	0.59
0.52	0.59
0.52	0.61
0.54	
0.54	
0.55	
0.56	

Number of values= 16

Mean of values 0.54
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
47-49   **
50-52   ****
53-55   **
56-58   *****
59-61   ***
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4040 m

Sorted List

0.48	0.71
0.49	0.76
0.52	
0.52	
0.53	
0.55	
0.56	
0.57	
0.64	
0.65	

Number of values= 12

Mean of values 0.58
Standard Deviation 0.09

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

48-50	**
51-53	***
54-56	*
57-59	**
60-62	
63-65	**
66-68	
69-71	*
72-74	
75-77	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4190 m

Sorted List

0.51	0.62	0.73
0.54	0.62	0.78
0.55	0.63	0.79
0.57	0.64	
0.58	0.64	
0.58	0.65	
0.59	0.67	
0.60	0.68	
0.61	0.68	
0.61	0.68	

Number of values= 23

Mean of values 0.63
Standard Deviation 0.07

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

51-53	*
54-56	**
57-59	****
60-62	*****
63-65	****
66-68	****
69-71	
72-74	*
75-77	
78-80	**

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4159 m

Sorted List

0.51	0.58	0.62	0.66
0.52	0.58	0.63	0.66
0.53	0.58	0.63	0.67
0.53	0.59	0.63	0.68
0.55	0.60	0.63	0.68
0.56	0.60	0.63	0.69
0.56	0.61	0.63	0.69
0.56	0.61	0.63	0.72
0.57	0.62	0.65	
0.58	0.62	0.66	

Number of values= 38

Mean of values 0.61
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
51-53    ****
54-56    *
57-59    *********
60-62    *******
63-65    ********
66-68    ******
69-71    **
72-74    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4200 m

Sorted List

0.51	0.64	0.68
0.57	0.65	0.68
0.57	0.65	0.71
0.57	0.65	0.71
0.58	0.65	0.74
0.59	0.65	0.77
0.62	0.67	
0.62	0.68	
0.64	0.68	
0.64	0.68	

Number of values= 26

Mean of values 0.65
Standard Deviation 0.06

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
51-53    *
54-56
57-59    *****
60-62    **
63-65    ********
66-68    ******
69-71    **
72-74    *
75-77    *
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4310 m

Sorted List

0.52	0.62	0.83
0.55	0.62	
0.56	0.65	
0.57	0.67	
0.57	0.67	
0.57	0.69	
0.60	0.69	
0.60	0.70	
0.61	0.73	
0.61	0.81	

Number of values= 21

Mean of values 0.64
Standard Deviation 0.08

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

52-54	*
55-57	*****
58-60	**
61-63	****
64-66	*
67-69	****
70-72	*
73-75	*
76-78	
79-81	*
82-84	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4360 m

Sorted List

0.52	0.62	0.68	0.85
0.56	0.63	0.68	0.86
0.57	0.63	0.70	
0.58	0.64	0.70	
0.58	0.64	0.73	
0.60	0.66	0.74	
0.61	0.66	0.74	
0.61	0.66	0.75	
0.62	0.66	0.78	
0.62	0.68	0.82	

Number of values= 32

Mean of values 0.67
Standard Deviation 0.08

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

52-54	*
55-57	**
58-60	***
61-63	*******
64-66	******
67-69	***
70-72	**
73-75	****
76-78	*
79-81	
82-84	*
85-87	**

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4400

Sorted List

0.51	0.60	0.69
0.52	0.60	0.70
0.52	0.62	0.72
0.54	0.64	0.75
0.56	0.64	0.76
0.56	0.66	0.76
0.56	0.67	0.77
0.57	0.68	
0.58	0.68	
0.60	0.69	

Number of values= 27

Mean of values 0.64
Standard Deviation 0.08

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
51-53    ***
54-56    *
57-59    *****
60-62    ****
63-65    **
66-68    ****
69-71    ***
72-74    *
75-77    ****
```

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4450 m

Sorted List

0.50	0.65
0.52	0.69
0.55	0.70
0.56	0.73
0.57	0.74
0.58	0.76
0.60	0.79
0.61	0.81
0.62	0.84
0.64	0.85

Number of values= 20

Mean of values 0.67
Standard Deviation 0.11

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

50-52	**
53-55	
56-58	****
59-61	**
62-64	**
65-67	*
68-70	**
71-73	*
74-76	**
77-79	*
80-82	*
83-85	**

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4490 m

Sorted List

0.56	0.68	0.75	0.84
0.57	0.68	0.75	0.85
0.58	0.70	0.77	0.86
0.61	0.70	0.78	0.87
0.64	0.70	0.79	0.91
0.65	0.71	0.80	
0.65	0.73	0.81	
0.66	0.73	0.81	
0.66	0.73	0.83	
0.67	0.74	0.83	

Number of values= 35

Mean of values 0.73
Standard Deviation 0.09

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

56-58	***
59-61	*
62-64	*
65-67	*****
68-70	*****
71-73	****
74-76	***
77-79	***
80-82	***
83-85	****
86-88	**
89-91	*

VITRINITE REFLECTANCE VALUES

Well Name: ANEMONE-1
Depth: 4520 m

Sorted List

0.63	0.80
0.67	0.81
0.70	0.81
0.71	0.81
0.72	0.82
0.74	0.84
0.74	0.86
0.75	
0.75	
0.77	

Number of values= 17

Mean of values 0.76
Standard Deviation 0.06

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

```
63-65    *
66-68    *
69-71    **
72-74    ***
75-77    ***
78-80    *
81-83    ****
84-86    **
```

APPENDIX 3

PLATES

PE905431

This is an enclosure indicator page.
The enclosure PE905431 is enclosed within the container PE902139 at this location in this document.

The enclosure PE905431 has the following characteristics:

ITEM_BARCODE = PE905431
CONTAINER_BARCODE = PE902139
NAME = Anemone 1-1A photomicrgraph (app 3, plate 1)
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/P20
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Anemone 1-1A photomicrograph, plate 1 appendix 3 of appendix 3 of WCR
REMARKS =
DATE_CREATED = 24/11/89
DATE_RECEIVED = 22/1/90
W_NO = W997
WELL_NAME = Anemone 1-1A
CONTRACTOR = Amdel Laboratory
CLIENT_OP_CO = Petrofina Exploration Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE905432

This is an enclosure indicator page.
The enclosure PE905432 is enclosed within the container PE902139 at this location in this document.

The enclosure PE905432 has the following characteristics:

ITEM_BARCODE =	PE905432
CONTAINER_BARCODE =	PE902139
NAME =	Anemone 1-1A photomicrograph (app 3, plate 2)
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/P20
TYPE =	WELL
SUBTYPE =	PHOTOMICROGRAPH
DESCRIPTION =	Anemone 1-1A photomicrograph, plate 2 appendix 3 of appendix 3 of WCR
REMARKS =	
DATE_CREATED =	24/11/89
DATE_RECEIVED =	22/1/90
W_NO =	W997
WELL_NAME =	Anemone 1-1A
CONTRACTOR =	Amdel Laboratory
CLIENT_OP_CO =	Petrofina Exploration Australia

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 4

APPENDIX 4

WELL COMPLETION REPORT

ANEMONE-1,1A

BASIC DATA

APPENDIX 4

FLUID ANALYSIS

47 Woodforde Road, Magill,
South Australia, 5072
P.O. Box 410,
Magill, South Australia, 5072

PETROLAB

Fax: 364 1500
Telex: AA88214
Tel: (08) 364 1500
(08) 333 0787

Reservoir Fluid and Core Services, Laboratory Consulting and Analysis

Adelaide, August 31 1989
P. O. Box 410
Magill
S. A. 5072

ANEMONE-1A RFT SAMPLE FROM 4230.5m

Petrofina Exploration Australia S. A.
Level 2
476 St. Kilda Road
Melbourne
Victoria, 3004

Subject: Reservoir Fluid Study
Well : Anemone # A-1
File : P - 89028

Attention: Mr. Brian Thurley

Dear Sirs,

On August 14 1989, Petrolab received a reservoir fluid sample from the subject well in Schlumberger's R F T chamber # R F S - AD 1182, which was transferred under pressure into laboratory storage cylinders.

Recoveries and other details of the transfer can be found in a summary on page 1.

We then proceeded with the determination of the extended composition of the bottom hole sample by flashing a small portion of the bottom hole sample at atmosferic conditions and analysing the flashed products for composition, by means of chromatography, density and molecular weight.

A mathematical recombination into their produced ratio resulted in the reservoir fluid composition, which has been reported on page 2.

At the reservoir temperature of 231 °F, the dew point pressure of the gas reservoir fluid, determined in a high pressure visual P V T cell during a constant composition expansion, was found to be 5180 psig.

Other data obtained during this Pressure - Volume relations experiment including relative volume versus pressure, gas compressibility, specific volume and gas expansion above the dew point and the distribution of retrograde liquid versus pressure below it, can be found on pages 3 and 4. The remainder of this report contains graphical presentations of the data.

The reservoir fluid properties found in this partial P V T study indicate the fluid to be a rich gas condensate. We would recommend a constant volume depletion study to be performed on this fluid in order to simulate the behaviour of the fluid during reservoir depletion. This experiment is designed to permit continuous accounting of the produced liquid and gas phases.
The resulting wellstream compositions can be directly used in surface recovery calculations.

We thank Petrofina Exploration Australia S. A. for the opportunity to be of service. If there remain any questions or if we can assist in any other way please do not hesitate in contacting us.

Yours sincerely,

Jan G. Bon
Manager

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1A File: P 89028

SUMMARY OF RESULTS

TRANSFER:

R F T Chamber # RFS - AD 1182 received August 14 1989 and transferred into Petrolab cylinders # 65, 66 and 48.

Opening pressure @ 19 deg C: 1600 psig.

Injected 90 cc's Hg in chamber to stir up hydrocarbons.

Compressed to 7000 psig with 1100 cc's of water behind piston.

Transferred three times 650 cc's into Petrolab cylinders at above 7000 psig.

Flashed remainder of sample to atmosphere recovering back the Hg Hg and approximately 1420 cc's of mud/filtrate/water mixture.

CONSTANT MASS:

SATURATED VAPOUR:

Reservoir Temperature (deg F)	:	231
Dew Point Pressure (psig)	:	5180
Gas Formation Volume Factor (Bg)	:	0.00330
Gas Expansion Factor (E)	:	0.00370
Gas Deviation Factor (Z)	:	269.97
Specific Volume (cft/lb)	:	0.04905
Density (gm/cc)	:	0.3266
Molecular Weight	:	28.67
Gas Gravity (Air = 1.000)	:	0.995
Gross Heating Value (BTU/ft3)	:	1633

Total Plant Products in Dew Point Fluid (GPMM)

Ethane	:	1089
Propane	:	179
Butanes	:	776
Pentanes Plus	:	5111

P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone 1A

File: P 89028

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE SAMPLE # 1

From RFT chamber # RFS - AD 1182

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.03	2.13	2.00
Nitrogen	N2	0.00	0.71	0.67
Methane	C1	0.51	84.40	79.35
Ethane	C2	0.16	4.33	4.08
Propane	C3	0.10	0.69	0.65
Iso-Butane	iC4	0.06	0.16	0.15
N-Butane	nC4	1.27	2.38	2.31
Iso-Pentane	iC5	1.77	1.22	1.25
N-Pentane	nC5	2.07	1.10	1.16
Hexanes	C6	7.93	1.26	1.66
Heptanes	C7	22.00	1.09	2.35
Octanes	C8	15.08	0.33	1.22
Nonanes	C9	14.35	0.14	1.00
Decanes	C10	8.71	0.05	0.57
Undecanes	C11	5.34	0.01	0.33
Dodecanes Plus	C12+	20.62	0.00	1.25
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio	:	0.0602	0.9398	1.0000
Mass Ratio	:	0.2742	0.7258	1.0000
Gas Liquid Ratio	:	1.0000 bbl @ SC	12250 SCF	--
Stream Properties				
Molecular Weight	:	130.6	22.14	28.7
Density obs. (gm/cc)	:	0.7706 @60F	--	--
Gravity (AIR = 1.000)	:	51.9 API @60F	0.767	1.002
GHV (BTU/scf)	:	--	1279	1643
Hexanes Plus Properties				
Mol %	:	94.03	2.88	8.38
Molecular Weight	:	134.9	94.1	121.5
Density (gm/cc @ 60 F)	:	0.7773	0.6810	0.7508
Gravity (API @ 60 F)	:	50.4	76.1	56.8
Heptanes Plus Properties				
Mol %	:	86.10	1.62	6.72
Molecular Weight	:	139.6	101.9	130.8
Density (gm/cc @ 60 F)	:	0.7831	0.6916	0.7653
Gravity (API @ 60 F)	:	49.0	72.9	53.2
Decanes Plus Properties				
Mol %	:	34.67	0.06	2.15
Molecular Weight	:	189.2	136.2	187.2
Density (gm/cc @ 60 F)	:	0.8213	0.7299	0.8194
Gravity (API @ 60 F)	:	40.6	62.2	41.0
Undecanes Plus Properties				
Mol %	:	25.96	0.01	1.58
Molecular Weight	:	207.7	147.0	206.3
Density (gm/cc @ 60 F)	:	0.8313	0.7400	0.8309
Gravity (API @ 60 F)	:	38.5	59.5	38.6
Dodecanes Plus Properties				
Mol %	:	20.62	0.00	1.25
Molecular Weight	:	223.4	--	221.9
Density (gm/cc @ 60 F)	:	0.8390	--	0.8390
Gravity (API @ 60 F)	:	37.0	--	37.0

* Sampled @ (P)ressure 6205 psia, (T)emperature 231 deg.F

CONSTANT MASS STUDY
@ 231 deg F

Pressure (psig)	Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)
7000	0.8916	0.00330	302.79	1.186	0.04374
6830	0.8988	0.00333	300.36	1.167	0.04409
6620	0.9082	0.00336	297.26	1.143	0.04455
6410	0.9179	0.00340	294.11	1.119	0.04503
6185	0.9291	0.00344	290.56	1.093	0.04558
5910	0.9437	0.00350	286.08	1.061	0.04629
5500	0.9701	0.00359	278.28	1.015	0.04759
5180 *	1.0000	0.00370	269.97	0.985	0.04905

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 deg.F.

(3) Cubic feet of gas at 14.696 psia and 60 deg.F per cubic foot at indicated pressure and temperature.

P E T R O L A B

Company: Petrofina Exploration Australia
Well : Anemone # 1A

File: P 89028

CONSTANT MASS STUDY
@ 231 deg F

Pressure (psig)	Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
5180 *	1.0000	0.00	0.00
5000	1.0149	12.20	1.85
4850	1.0292	22.82	3.46
4635	1.0535	37.53	5.69
4415	1.0815	56.32	8.54
4055	1.1399	85.80	13.01
3800	1.1901	106.05	16.08
3495	1.2661	121.55	18.43
3225	1.3496	135.60	20.56
2975	1.4483	141.81	21.50
2760	1.5475	145.43	22.05
2535	1.6788	146.12	22.16
2160	1.9583	143.52	21.76

* Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid.

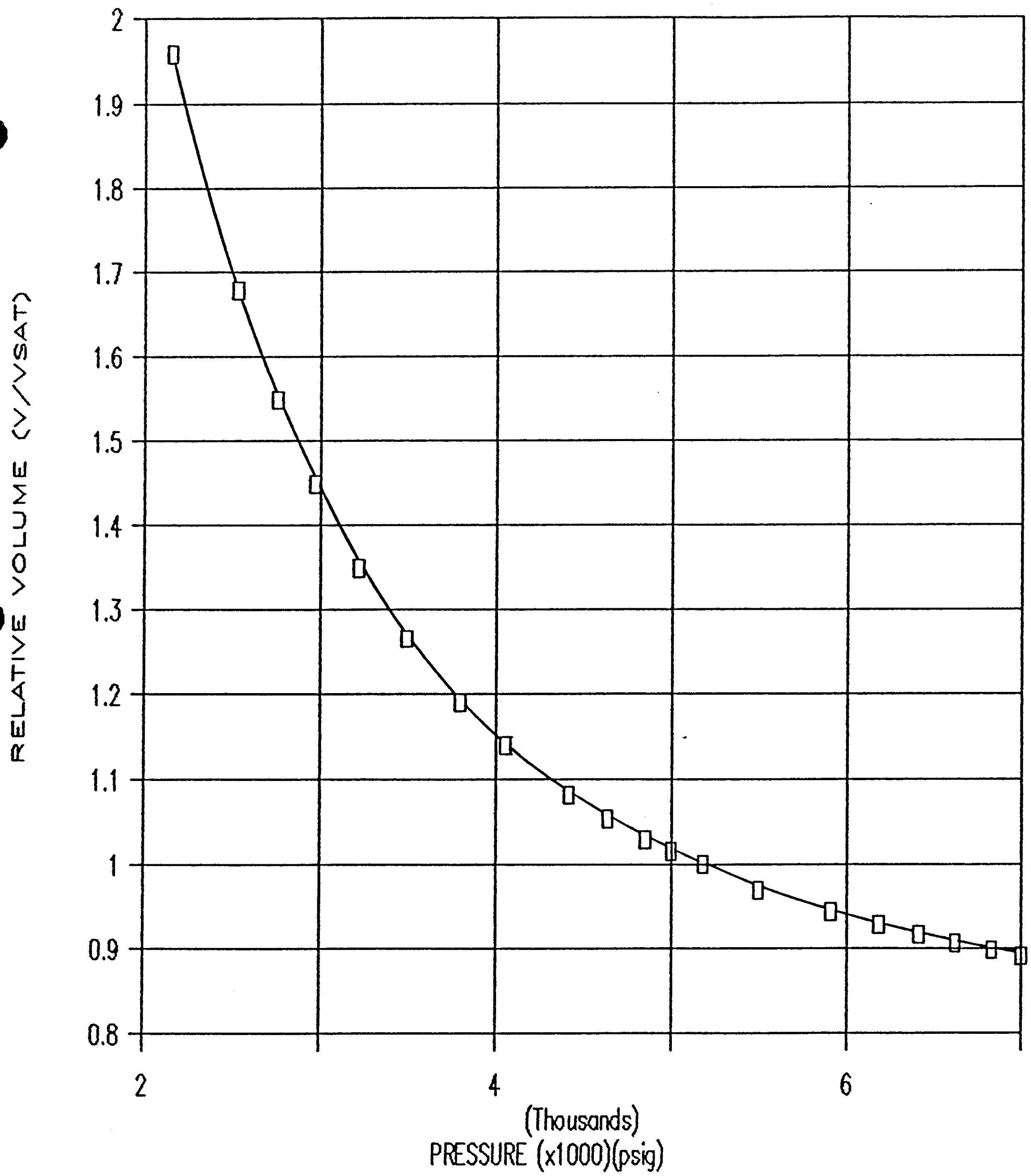
(3) Percent of reservoir hydrocarbon pore space at dew point.

P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1A

File: P 89028

RELATIVE VOLUME

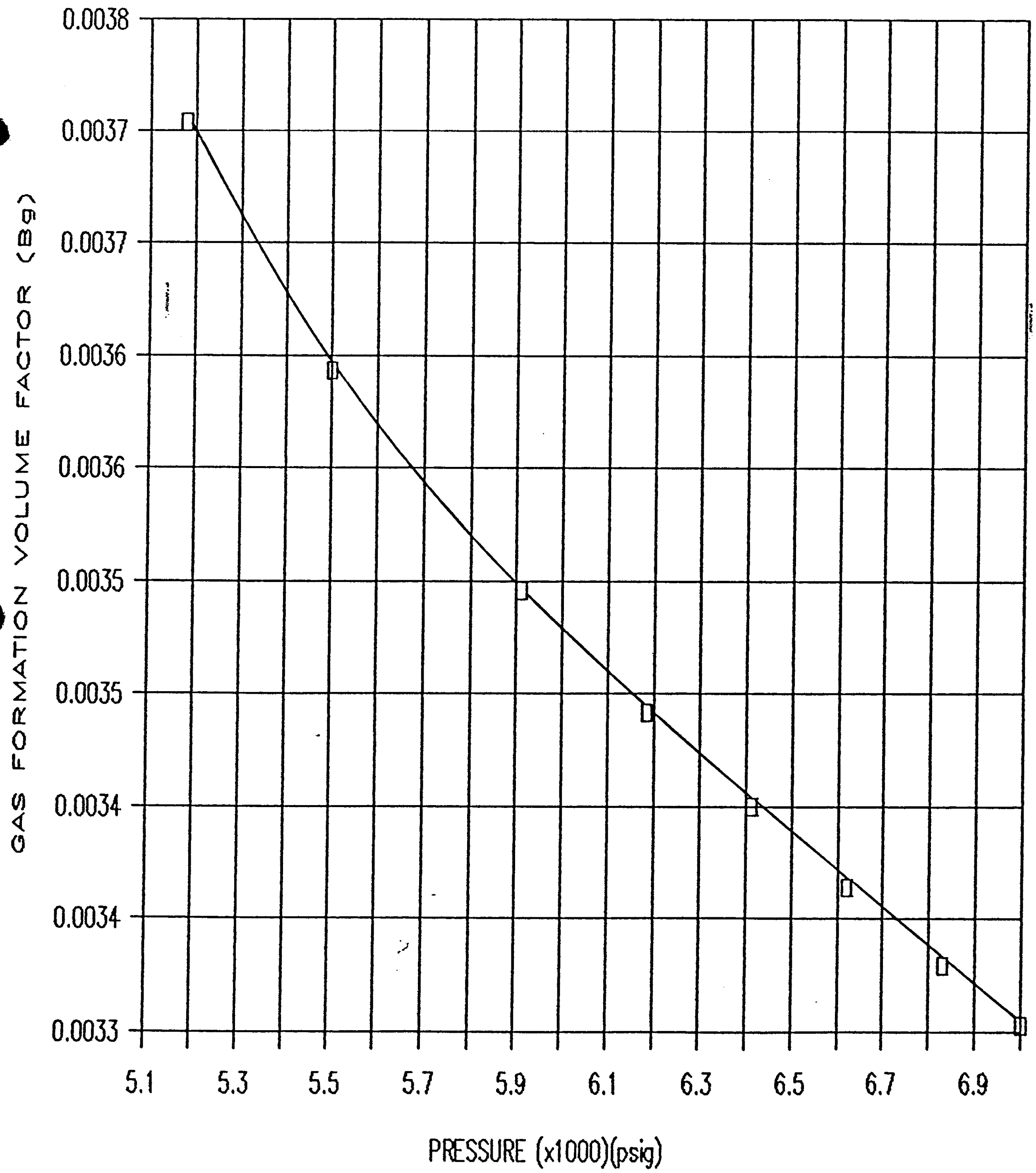


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1A

File: P 89028

GAS FORMATION VOLUME FACTOR

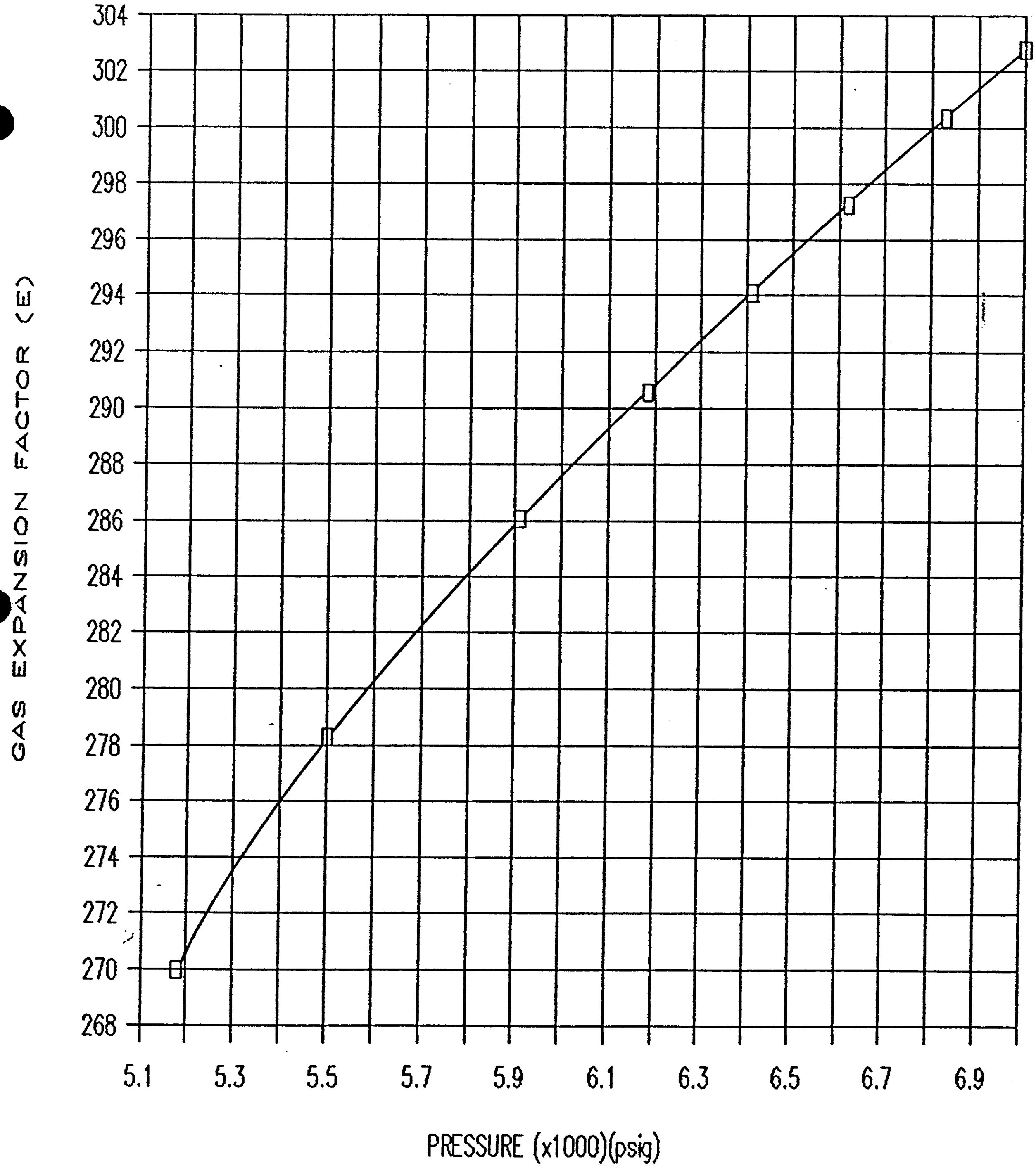


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1A

File: P 89028

GAS EXPANSION FACTOR

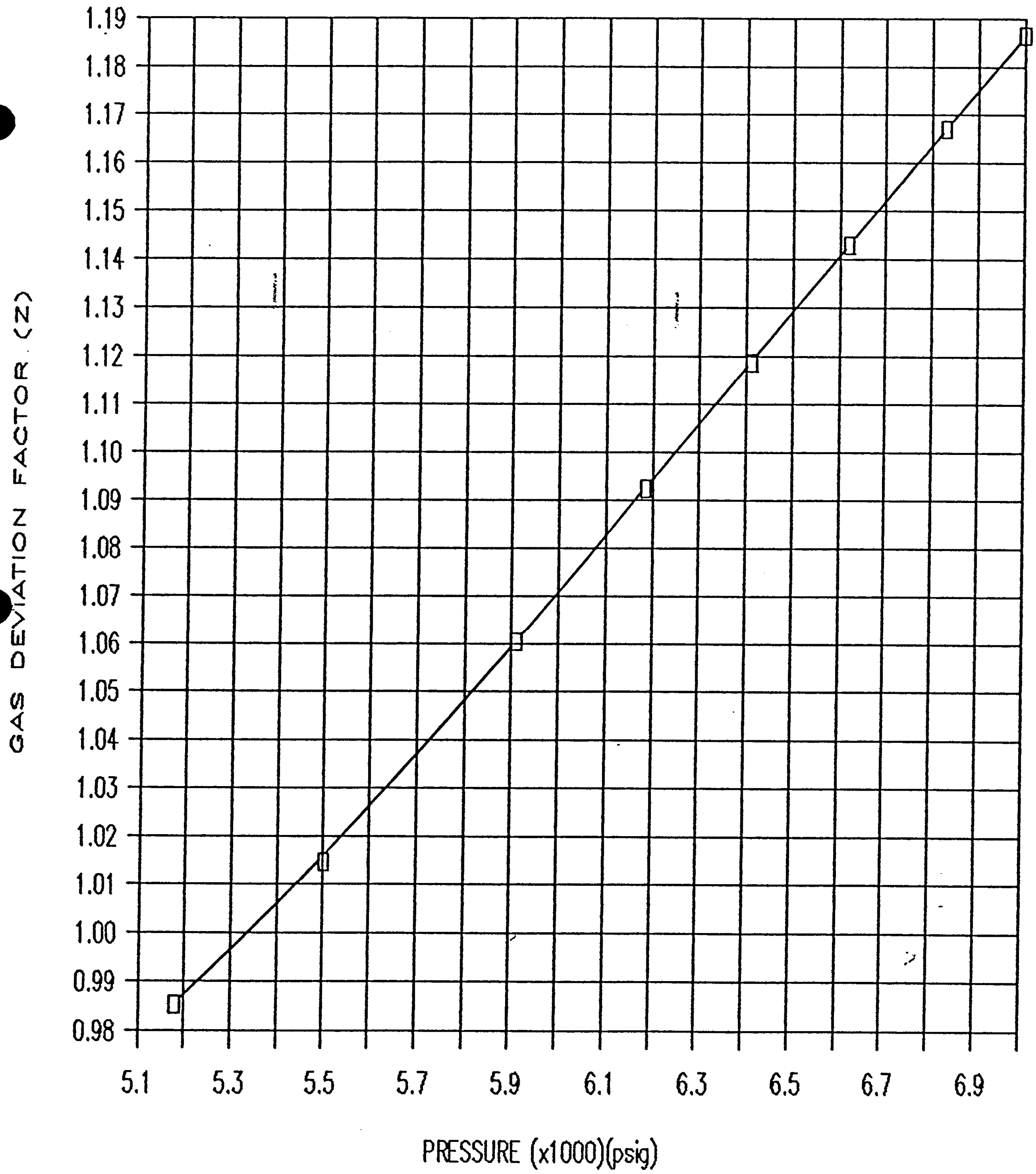


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1A

File: P 89028

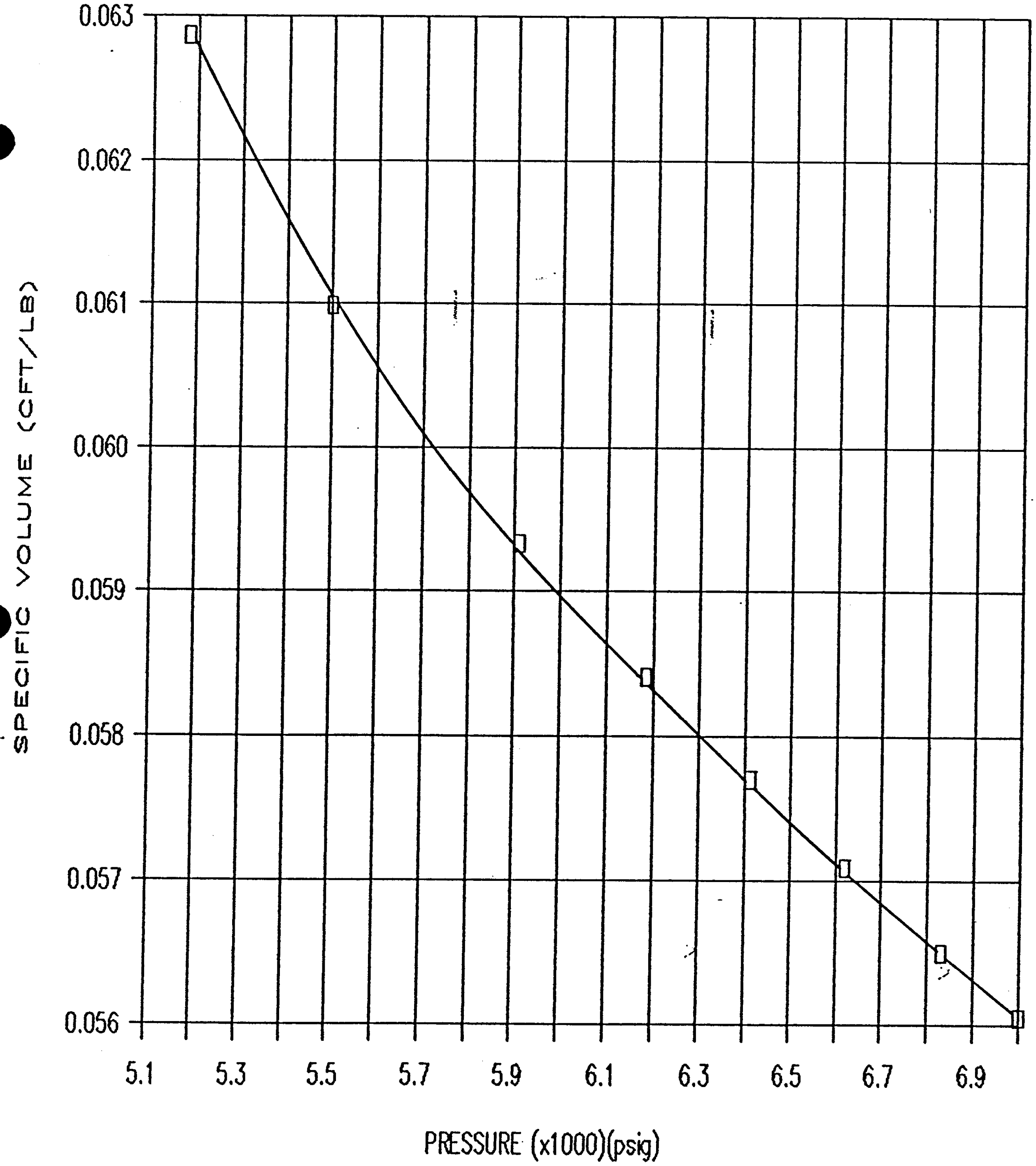
GAS DEVIATION FACTOR



P E T R O L A B

Company: Petrofina Exploration Australia S.A. Page: 9 of 10
Well : Anemone # 1A File: P 89028

RESERVOIR FLUID SPECIFIC VOLUME

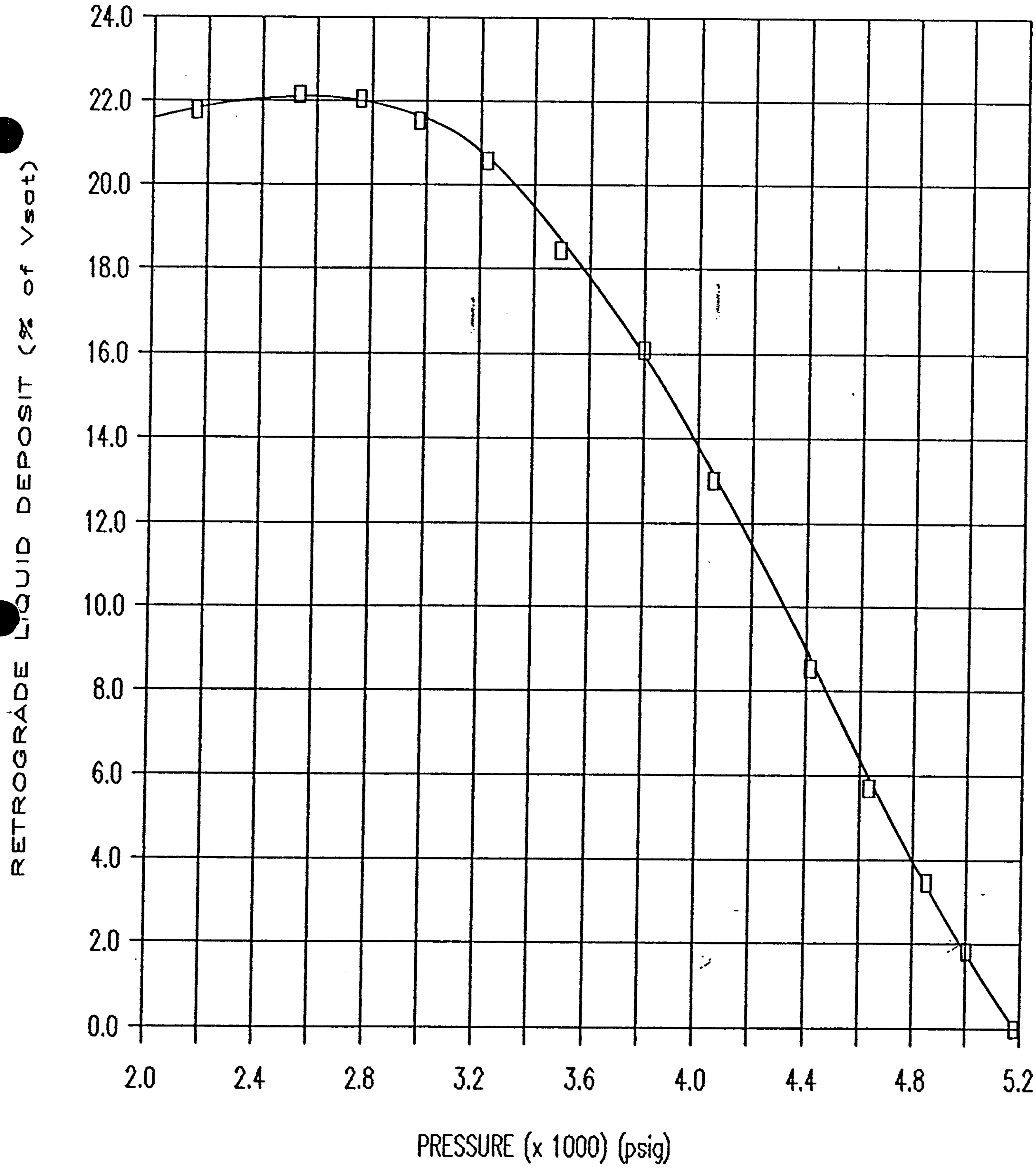


P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1A

File: P 89028

RETROGRADE CONDENSATION



47 Woodforde Road, Magill,
South Australia, 5072
P.O. Box 410,
Magill, South Australia, 5072

PETROLAB

Fax: 364 1500
Telex: AA88214
Tel: (08) 364 1500
(08) 333 0787

Reservoir Fluid and Core Services, Laboratory Consulting and Analysis

Adelaide, November 6 1989
P. O. Box 410
Magill
S. A. 5072

RECEIVED 15 NOV 1989

Petrofina Exploration
Australia S. A.
476 St. Kilda Road
Melbourne, Vic. 3004

Subject: Reservoir Fluid Study
Well : Anemone # 1-A
File : P - 89035

Attention: Mr. Brian Thurley

Dear Sirs,

Please find enclosed our results of reservoir fluid analyses performed on surface samples from the subject well.

Two sets of primary separator gas and liquid samples, two additional gas samples and eight water samples, taken while production testing two zones, were received in our laboratory in Adelaide and subjected to standard quality checks.

The single phase opening pressures of the gas samples were determined at approximately 10°C higher than separator temperature to see if any leakage had taken place during transportation prior to compositional analyses by means of gas chromatography.

The validity of the separator liquid samples was determined by measuring their bubble point pressures at room temperature and correlate these pressures with gas opening pressures and field separator pressure.

The best set of DST # 1 was used for extended compositional analyses, mathematical and physical recombination.

The composition of the high pressure separator liquid was determined with the help of an atmospheric flash. The evolved stock tank gas and liquid from each flash were then analysed for composition, some physical properties and the ratio in which they were produced. A mathematical recombination of these products resulted in the desired separator liquid composition.

The separator liquid composition was extended by means of a high temperature distillation of flashed stock tank liquid and a mathematical recombination of the separator products into their produced field ratios, resulted in the actual produced reservoir fluid composition.

We then continued with two physical recombinations using the best set of separator products and mixing them in different ratios.

Mixture # 1 was made using a gas liquid ratio of 8540 SCF / STBBL while the second mixture only contained 2506 standard cubic feet for every barrel of stock tank liquid produced.

On each mixture, we continued with a Constant Mass Study to identify the actual phase of the reservoir fluid and found the first mixture to be a gas condensate reservoir fluid with a dew point of 5550 psig, while the second mixture was an oil reservoir fluid, having a bubble point of 3010 psig.

We thank Petrofina Exploration Australia S. A. for the opportunity to be of service. If there remain any questions or if we can assist you in any other way please do not hesitate in contacting us.

Sincerely Yours,

Jan G. Bon
Manager.

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P - 89035

REPORT INDEX

Page

Summary Of Results.............................. 1

Room Temperature Validity Check.................. 2-3

Compositional Analyses........................... 4-11

Gas Reservoir Fluid GOR=8540 scf/stbbl

Constant Mass Study............................. 12-13

PLOTS:

- Relative Volume............................ 14
- Gas Formation Volume Factor................ 15
- Gas Expansion Factor....................... 16
- Z-Factor................................... 17
- Specific Volume of Reservoir Fluid......... 18
- Retrograde Liquid Deposit.................. 19

Oil Reservoir Fluid GOR=2506 scf/stbbl

Constant Mass Study............................. 20

PLOTS:

- Relative Volume............................ 21
- Oil Compressibility........................ 22
- Y-Function................................. 23
- Oil Thermal Expansion...................... 24
- Liquid Volume Percent...................... 25

D S T # 2

Water Analyses.................................. 26-33

P E T R O L A B

Company: Petrofina Exploration Australia S. A.		
Well : Anemone # 1-A		File: P 89035

SUMMARY OF RESULTS

D S T # 1

Date sampled	: October 1 1989
Average Condensate Rate (bbl/day)	: 44.5
Average GOR (scf/bbl)	: 2506
Average Water Rate (bbl/day)	: 44.6
Wellhead Temperature (deg C)	: 12
Wellhead Pressure (psig)	: 674
Separator Pressure (psig)	: 91
Separator Temperature (deg C)	: 8
Liquid Specific Gravity (gr/cc)	: 0.762
Gas Specific Gravity (air=1.000)	: 0.965
Static Reservoir Pressure (psig)	: 9600 to 9900 @ 4600 m.
(flowing) (psig)	: 5400 @ 4267 m.
	: 5700 @ 4600 m.
Surface Choke (inch)	: 8/64

G O R = 8540 scf / stbbl

SATURATED VAPOUR:

Reservoir Temperature (deg F)	: 260
Dew Point Pressure (psig)	: 5550
Gas Formation Volume Factor (Bg)	: 0.00366
Gas Expansion Factor (E)	: 272.98
Gas Deviation Factor (Z)	: 1.002
Specific Volume (CFT/LB)	: 0.04112
Density (gm/cc)	: 0.3896
Molecular Weight	: 33.82
Gas Gravity (Air = 1.000)	: 1.168

G O R = 2506 scf / stbbl

SATURATED OIL:

Reservoir Temperature (deg F)	: 260
Bubble Point Pressure (psig)	: 3010
Oil Compressibility (10^-6 / psi)	: 120.83
Oil Thermal Expansion (1 / deg C)	: 0.0129
Oil Thermal Expansion (1 / deg F)	: 0.0072
Specific Volume (CFT/LB)	: 0.03682
Density (gm/cc)	: 0.4350
Molecular Weight	: 47.3

P E T R O L A B

Company : Petrofina
Well : Anemone # 1-A
File : P-89035

Surface Samples Set # 1

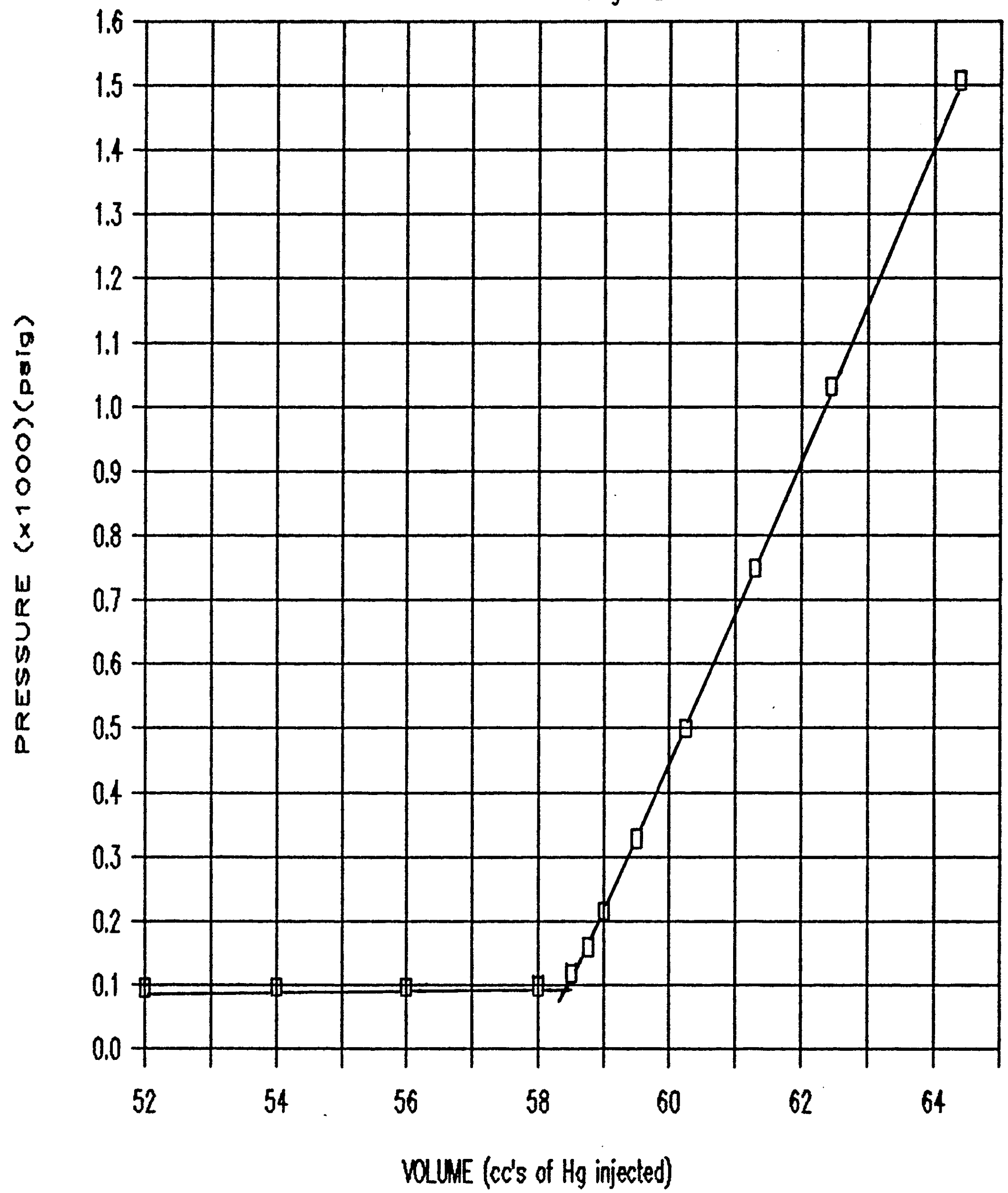
Sampling Conditions
Date : October 1 1989
Pressure : 85 psig
Temperature : 54 deg F

Cylinder # : A 12134 (gas)
Opening Pressure : 91 psig @ 72 deg F

Cylinder # : 12689/92 (liquid)
Opening Pressure : 86 psig @ 62 deg F

Volume (cc's)	Pressure (psig)
52.00	95
54.00	96
56.00	97
58.00	98
58.50	118
58.75	160
59.00	215
59.50	328
60.25	500
61.29	750
62.45	1031
64.39	1507

Saturation Pressure : 99 psig @ 63 deg F.



P E T R O L A B

Company : Petrofina
Well : Anemone # 1-A
File : P-89035

Surface Samples Set # 2

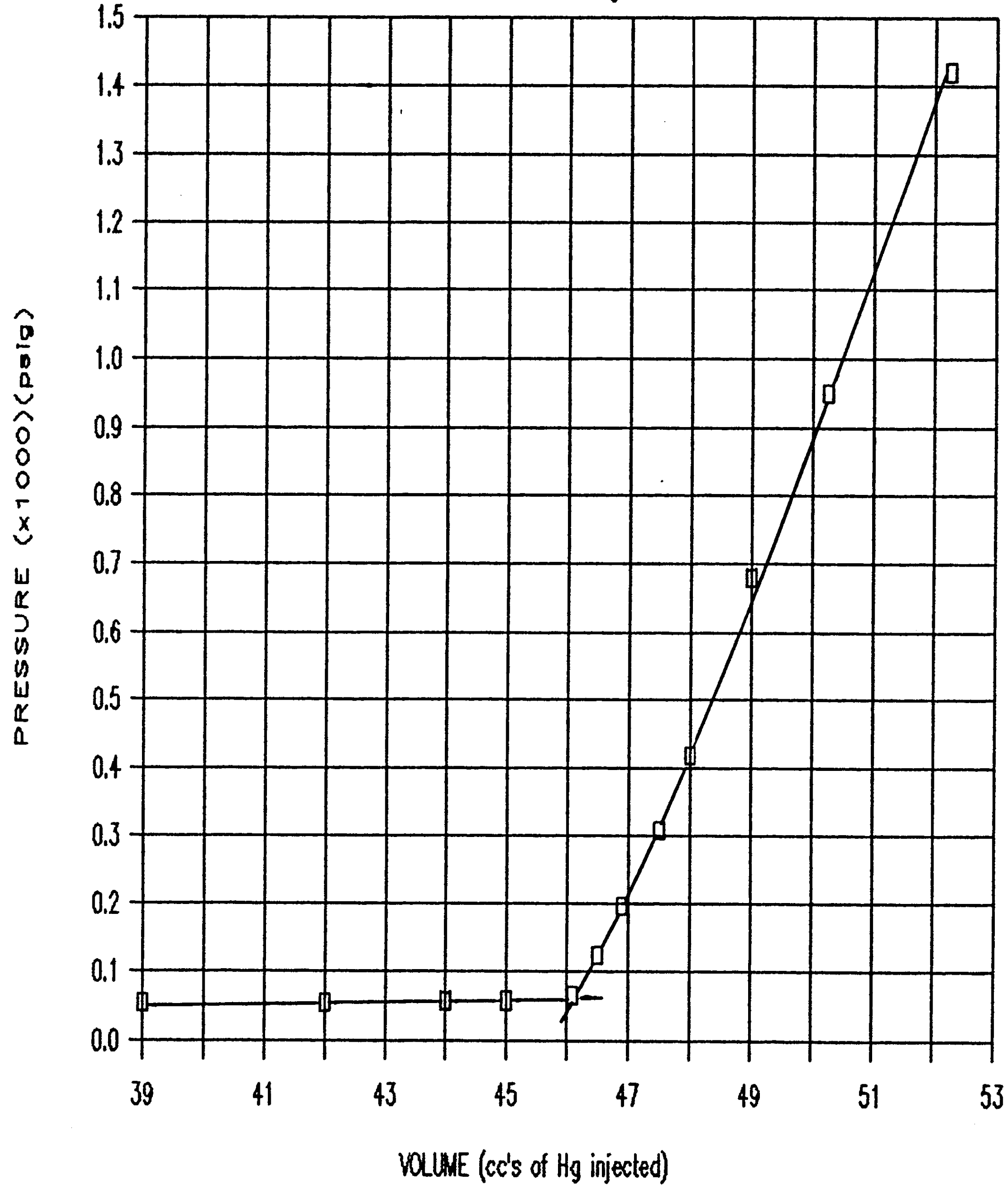
Sampling Conditions
Date : October 1 1989
Pressure : 90 psig
Temperature : 54 deg F

Cylinder # : A 13762 (gas)
Opening Pressure : 77 psig @ 72 deg F

Cylinder # : 80291/53 (liquid)
Opening Pressure : 40 psig @ 64 deg F

Volume (cc's)	Pressure (psig)
39.00	55
42.00	56
44.00	57
45.00	58
46.10	66
46.50	125
46.90	197
47.50	309
48.00	420
49.00	680
50.25	950
52.25	1420

Saturation Pressure : 58 psig @ 64 deg F.



P E T R O L A B

Company: Petrofina Exploration Australia S.A.
Well : Anemone # 1-A

File: E 88020

SEPARATOR GAS COMPOSITIONS

Cylinder #:	A-12134	A-13762	A-11924	A-13752
Component	Mol %	Mol %	Mol %	Mol %
Hydrogen Sulphide	0.00	0.00	0.00	0.00
Carbon Dioxide	14.33	14.54	14.59	15.24
Nitrogen	0.67	0.58	0.67	0.57
Methane	64.05	65.31	65.14	61.88
Ethane	9.70	9.49	9.26	10.57
Propane	6.72	6.08	6.34	7.42
Iso-Butane	1.00	0.94	0.94	1.10
N-Butane	2.02	1.91	1.79	2.10
Iso-Pentane	0.50	0.44	0.44	0.44
N-Pentane	0.41	0.34	0.35	0.33
Hexanes	0.32	0.20	0.25	0.20
Heptanes	0.20	0.11	0.18	0.11
Octanes	0.03	0.03	0.04	0.02
Nonanes	0.01	0.01	0.01	0.01
Decanes	0.01	0.01	0.00	0.01
Undecanes	0.02	0.01	0.00	0.00
Dodecanes Plus	0.01	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00
Stream Properties				
Molecular Weight :	25.63	25.14	25.23	25.98
Gravity (AIR = 1.000) :	0.889	0.871	0.875	0.901
Gross HV (BTU/SCF) :	1162	1132	1134	1160
Nett HV (BTU/SCF) :	1056	1027	1030	1054
Wobbe Index :	1233	1212	1212	1222
Critical Pressure (psia):	716.9	719.2	718.8	721.4
Critical Temperature (R):	434.2	429.5	430.0	438.7
G P M Content				
Ethane Plus :	5.979	5.548	5.567	6.302
Propane Plus :	3.391	3.016	3.096	3.482
Butanes Plus :	1.544	1.345	1.353	1.442
Pentanes Plus :	0.583	0.437	0.483	0.422
Hexanes Plus Properties				
Mol % :	0.60	0.37	0.48	0.35
Molecular Weight :	94.0	93.5	91.2	91.6
Density (gm/cc @ 60 F) :	0.734	0.733	0.730	0.731
Gravity (API @ 60 F) :	61.2	61.4	62.1	62.0
Heptanes Plus Properties				
Molecular Weight :	105.4	104.7	99.0	101.7
Density (gm/cc @ 60 F) :	0.747	0.746	0.740	0.743
Gravity (API @ 60 F) :	57.7	57.9	59.6	58.8

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

COMPOSITIONAL ANALYSIS OF RECOMBINED SEPARATOR LIQUID

Cylinder # 12689/92

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.11	7.33	1.33
Nitrogen	N2	0.00	0.08	0.01
Methane	C1	0.08	14.03	2.44
Ethane	C2	0.44	12.59	2.49
Propane	C3	3.98	31.26	8.59
Iso-Butane	iC4	2.47	7.67	3.35
N-Butane	nC4	7.60	16.36	9.08
Iso-Pentane	iC5	5.00	4.05	4.84
N-Pentane	nC5	5.03	3.17	4.72
Hexanes	C6	15.80	2.15	13.50
Heptanes	C7	20.30	1.16	17.06
Octanes	C8	11.26	0.14	9.38
Nonanes	C9	9.37	0.01	7.79
Decanes	C10	4.50	0.00	3.74
Undecanes	C11	3.11	0.00	2.58
Dodecanes Plus	C12+	10.95	0.00	9.10
TOTAL		100.00	100.00	100.00

	Stock Tank Liquid	Stock Tank Gas	Separator Liquid
Ratios			
Molar Ratio :	0.8310	0.1690	1.0000
Mass Ratio :	0.9189	0.0811	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ SC	--	1.0916 @ PT*
Gas Liquid Ratio :	1.0000 bbl @ SC	195 SCF	--
Stream Properties			
Molecular Weight :	104.4	45.33	94.4
Density obs. (gm/cc) :	0.7530 @ 60 F	--	0.7519 @ PT*
Gravity (AIR = 1.000) :	56.2 API @60F	1.594	--
GHV (BTU/scf) :	--	2443.0	--
Hexanes Plus Properties			
Mol % :	75.29	3.46	63.15
Molecular Weight :	118.7	89.1	118.5
Density (gm/cc @ 60 F):	0.7904	0.6738	0.7895
Gravity (API @ 60 F):	47.3	78.3	47.6
Heptanes Plus Properties			
Mol % :	59.49	1.31	49.65
Molecular Weight :	128.5	97.4	128.4
Density (gm/cc @ 60 F):	0.8133	0.6856	0.8128
Gravity (API @ 60 F):	42.3	74.7	42.4
Decanes Plus Properties			
Mol % :	18.57	0.00	15.42
Molecular Weight :	185.1	--	185.2
Density (gm/cc @ 60 F):	0.8814	--	0.8814
Gravity (API @ 60 F):	28.9	--	28.9
Undecanes Plus Properties			
Mol % :	14.06	0.00	11.68
Molecular Weight :	204.0	--	204.1
Density (gm/cc @ 60 F):	0.8982	--	0.8982
Gravity (API @ 60 F):	25.9	--	25.9
Dodecanes Plus Properties			
Mol % :	10.95	0.00	9.10
Molecular Weight :	220.4	--	220.5
Density (gm/cc @ 60 F):	0.9158	--	0.9158
Gravity (API @ 60 F):	22.9	--	22.9

* (P)ressure 85 psig, (T)emperature 54 deg.F

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

COMPOSITIONAL ANALYSIS OF
RECOMBINED SEPARATOR LIQUID

Cylinder # 80291/53

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.09	6.12	1.03
Nitrogen	N2	0.00	0.09	0.01
Methane	C1	0.05	8.96	1.45
Ethane	C2	0.46	12.97	2.41
Propane	C3	4.34	34.09	8.99
Iso-Butane	iC4	2.63	8.15	3.49
N-Butane	nC4	8.23	17.72	9.71
Iso-Pentane	iC5	5.39	4.37	5.23
N-Pentane	nC5	5.44	3.43	5.13
Hexanes	C6	15.40	2.32	13.35
Heptanes	C7	19.78	1.39	16.90
Octanes	C8	10.97	0.28	9.30
Nonanes	C9	9.13	0.08	7.71
Decanes	C10	4.39	0.02	3.70
Undecanes	C11	3.03	0.01	2.56
Dodecanes Plus	C12+	10.68	0.00	9.03
TOTAL		100.00	100.00	100.00

	Stock Tank Liquid	Stock Tank Gas	Separator Liquid
Ratios			
Molar Ratio :	0.8436	0.1564	1.0000
Mass Ratio :	0.9215	0.0785	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ SC	--	1.0855 @ PT*
Gas Liquid Ratio :	1.0000 bbl @ SC	179 SCF	--
Stream Properties			
Molecular Weight :	103.3	47.47	94.5
Density obs. (gm/cc) :	0.7498 @ 60 F	--	0.7509 @ PT*
Gravity (AIR = 1.000) :	57.0 API @60F	1.673	--
GHV (BTU/scf) :	--	2597.0	--
Hexanes Plus Properties			
Mol % :	73.37	4.10	62.55
Molecular Weight :	118.7	90.8	118.4
Density (gm/cc @ 60 F):	0.7904	0.6763	0.7894
Gravity (API @ 60 F):	47.3	77.5	47.6
Heptanes Plus Properties			
Mol % :	57.97	1.78	49.20
Molecular Weight :	128.4	99.6	128.2
Density (gm/cc @ 60 F):	0.8133	0.6885	0.8127
Gravity (API @ 60 F):	42.3	73.8	42.4
Decanes Plus Properties			
Mol % :	18.09	0.03	15.29
Molecular Weight :	184.8	138.3	184.5
Density (gm/cc @ 60 F):	0.8815	0.7320	0.8815
Gravity (API @ 60 F):	28.9	61.6	28.9
Undecanes Plus Properties			
Mol % :	13.71	0.01	11.59
Molecular Weight :	203.7	147.0	203.2
Density (gm/cc @ 60 F):	0.8984	0.7400	0.8984
Gravity (API @ 60 F):	25.9	59.5	25.9
Dodecanes Plus Properties			
Mol % :	10.68	0.00	9.03
Molecular Weight :	220.0	--	219.4
Density (gm/cc @ 60 F):	0.9161	--	0.9161
Gravity (API @ 60 F):	22.8	--	22.8

* (P)ressure 90 psig, (T)emperature 54 deg.F

HIGH TEMPERATURE DISTILLATION OF STOCK TANK LIQUID SAMPLE
(Hexanes to Eicosanes Plus)
Flashed from separator liquid sample in cylinder # 80291/53

	Cut (Deg C)	Mol %	Mol Weight	Weight %	Density (gm/cc)	Volume %	API Gravity
	IBP 28						
Hexanes	59 - 84	20.99	82	14.43	0.6779	16.83	77.0
Heptanes	85 - 112	26.96	96	21.78	0.7446	23.12	58.4
Octanes	113 - 138	14.95	105	13.20	0.7719	13.52	51.6
Nonanes	139 - 162	12.44	115	12.08	0.7969	11.99	45.9
Decanes	163 - 185	5.98	126	6.37	0.8053	6.25	44.0
Undecanes	186 - 206	4.13	146	5.08	0.8146	4.93	42.0
Dodecanes	207 - 227	3.62	153	4.65	0.8530	4.31	34.2
Tridecanes	228 - 246	2.75	171	3.97	0.8850	3.55	28.2
Tetradecanes	247 - 263	2.12	187	3.35	0.9040	2.93	24.9
Pentadecanes	264 - 280	0.63	203	1.07	0.9210	0.92	22.0
Hexadecanes	281 - 296	1.08	214	1.94	0.9260	1.66	21.2
Heptadecanes	297 - 312	0.95	220	1.76	0.9330	1.49	20.0
Octadecanes	313 - 322	0.61	238	1.23	0.9410	1.03	18.7
Nonadecanes	323 - 335	0.92	256	2.00	0.9550	1.65	16.5
Eicosanes Plus	> 336	1.87	450	7.09	0.9640	5.82	15.1
		100.00		100.00		100.00	

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

COMPOSITIONAL ANALYSIS OF SEPARATOR GAS

Cyl # A12134

Component	Mol %	GPM
Hydrogen Sulphide	0.00	
Carbon Dioxide	14.33	
Nitrogen	0.67	
Methane	64.05	
Ethane	9.70	2.588
Propane	6.72	1.847
Iso-Butane	1.00	0.326
N-Butane	2.02	0.635
Iso-Pentane	0.50	0.183
N-Pentane	0.41	0.148
Hexanes	0.32	0.124
Heptanes	0.20	0.084
Octanes	0.03	0.014
Nonanes	0.01	0.005
Decanes	0.01	0.005
Undecanes	0.02	0.012
Dodecanes	0.01	0.008
Tridecanes	0.00	0.000
Tetradecanes	0.00	0.000
Pentadecanes	0.00	0.000
Hexadecanes	0.00	0.000
Heptadecanes	0.00	0.000
Octadecanes	0.00	0.000
Nonadecanes	0.00	0.000
Eicosanes Plus	0.00	0.000
TOTAL	100.00	5.979

Pressure Base :	14.696
Zsc:	0.996
Mol Weight :	25.63
Gas Gravity:	0.889
Pc :	716.9
Tc :	434.2
Mol Weight C6+:	94.0
Density C6+:	0.6809
Mol Weight C7+:	105.4
Density C7+:	0.6960
Mol Weight C12+:	--
Density C12+:	--
Mol Weight C20+:	--
Density C20+:	--
Heating Value (BTU/ft3)	
Gross:	1162
Nett:	1056
Wobbe Index:	1233
Zpt:	0.973
Liquid Content (Bbl/MMSCF of Raw Gas):	
Ethane :	46.0
L P G :	64.4
Pentanes Plus:	13.9

Remarks: Laboratory Opening Pressure - 91 psig @ 72 deg.F
Sampled at 85 psig and 54 deg.F

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

COMPOSITIONAL ANALYSIS OF
RECOMBINED SEPARATOR LIQUID

Cylinder # 12689/92

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Separator Liquid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.11	7.33	1.33
Nitrogen	N2	0.00	0.08	0.01
Methane	C1	0.08	14.03	2.44
Ethane	C2	0.44	12.59	2.49
Propane	C3	3.98	31.26	8.59
Iso-Butane	iC4	2.47	7.67	3.35
N-Butane	nC4	7.60	16.36	9.08
Iso-Pentane	iC5	5.00	4.05	4.84
N-Pentane	nC5	5.03	3.17	4.72
Hexanes	C6	15.80	2.15	13.49
Heptanes	C7	20.30	1.16	17.07
Octanes	C8	11.26	0.14	9.38
Nonanes	C9	9.37	0.01	7.79
Decanes	C10	4.50	0.00	3.74
Undecanes	C11	3.11	0.00	2.58
Dodecanes	C12	2.73	0.00	2.27
Tridecanes	C13	2.07	0.00	1.72
Tetradecanes	C14	1.60	0.00	1.33
Pentadecanes	C15	0.47	0.00	0.39
Hexadecanes	C16	0.81	0.00	0.67
Heptadecanes	C17	0.72	0.00	0.60
Octadecanes	C18	0.46	0.00	0.38
Nonadecanes	C19	0.69	0.00	0.57
Eicosanes Plus	C20+	1.40	0.00	1.17
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio	:	0.8310	0.1690	1.0000
Mass Ratio	:	0.9189	0.0811	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	1.0916 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	195 SCF	--
Stream Properties				
Molecular Weight	:	104.4	45.33	94.4
Density obs. (gm/cc)	:	0.7530 @ 60 F	--	0.7519 @ PT*
Gravity (AIR = 1.000)	:	56.2 API @60F	1.594	--
GHV (BTU/scf)	:	--	2443.0	--
Heptanes Plus Properties				
Mol %	:	59.49	1.31	49.66
Molecular Weight	:	128.5	97.6	128.3
Density (gm/cc @ 60 F)	:	0.8133	0.6858	0.8128
Gravity (API @ 60 F)	:	42.3	74.6	42.4
Octanes Plus Properties				
Mol %	:	39.19	0.15	32.59
Molecular Weight	:	145.3	109.7	145.3
Density (gm/cc @ 60 F)	:	0.8398	0.7013	0.8397
Gravity (API @ 60 F)	:	36.8	70.1	36.8
Eicosanes Plus Properties				
Mol %	:	1.40	0.00	1.17
Molecular Weight	:	450.0	--	447.5
Density (gm/cc @ 60 F)	:	0.9640	--	0.9640
Gravity (API @ 60 F)	:	15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

COMPOSITIONAL ANALYSIS OF

RECOMBINED GAS RESERVOIR FLUID

Cyl.#12689/92 Cyl.#A12134

Component		Separator Liquid Mol %	Separator Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.33	14.33	12.78
Nitrogen	N2	0.01	0.67	0.59
Methane	C1	2.44	64.05	56.69
Ethane	C2	2.49	9.70	8.84
Propane	C3	8.59	6.72	6.94
Iso-Butane	iC4	3.35	1.00	1.28
N-Butane	nC4	9.08	2.02	2.86
Iso-Pentane	iC5	4.84	0.50	1.02
N-Pentane	nC5	4.72	0.41	0.92
Hexanes	C6	13.49	0.32	1.89
Heptanes	C7	17.07	0.20	2.21
Octanes	C8	9.38	0.03	1.15
Nonanes	C9	7.79	0.01	0.94
Decanes	C10	3.74	0.01	0.45
Undecanes	C11	2.58	0.02	0.33
Dodecanes	C12	2.27	0.01	0.28
Tridecanes	C13	1.72	0.00	0.21
Tetradecanes	C14	1.33	0.00	0.16
Pentadecanes	C15	0.39	0.00	0.05
Hexadecanes	C16	0.67	0.00	0.08
Heptadecanes	C17	0.60	0.00	0.07
Octadecanes	C18	0.38	0.00	0.05
Nonadecanes	C19	0.57	0.00	0.07
Eicosanes Plus	C20+	1.17	0.00	0.14
TOTAL		100.00	100.00	100.00

	Separator Liquid	Separator Gas	Reservoir Fluid
Ratios			
Molar Ratio :	0.1193	0.8807	1.0000
Mass Ratio :	0.3328	0.6672	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ PT*	--	4.9683 @ PT**
Gas Liquid Ratio :	1.0000 bbl @ PT*	7823 SCF***	--
Stream Properties			
Molecular Weight :	94.40	25.63	33.82
Density obs. (gm/cc) :	0.7519 @ PT*	--	0.4565 @ PT**
Gravity (AIR = 1.000) :	56.5 API @ 60	0.889	--
GHV (BTU/scf) :	--	1162.0	--
Heptanes Plus Properties			
Mol % :	49.66	0.28	6.19
Molecular Weight :	128.3	105.4	127.0
Density (gm/cc @ 60 F):	0.8128	0.6960	0.8083
Gravity (API @ 60 F):	42.4	71.6	43.4
Octanes Plus Properties			
Mol % :	32.59	0.08	3.98
Molecular Weight :	145.3	128.9	144.2
Density (gm/cc @ 60 F):	0.8397	0.7226	0.8376
Gravity (API @ 60 F):	36.9	64.1	37.3
Eicosanes Plus Properties			
Mol % :	1.17	0.00	0.14
Molecular Weight :	447.5	--	446.1
Density (gm/cc @ 60 F):	0.9640	--	0.9640
Gravity (API @ 60 F):	15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F
** (P)ressure 9900 psig, (T)emperature 260 deg.F
*** 7823 SCF / SEP BBL @ PT = 8540 SCF / ST BBL

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P 89035

COMPOSITIONAL ANALYSIS OF

RECOMBINED OIL RESERVOIR FLUID

Cyl.#12689/92 Cyl.#A12134

Component		Separator Liquid Mol %	Separator Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	1.33	14.33	10.23
Nitrogen	N2	0.01	0.67	0.46
Methane	C1	2.44	64.05	44.60
Ethane	C2	2.49	9.70	7.42
Propane	C3	8.59	6.72	7.31
Iso-Butane	iC4	3.35	1.00	1.74
N-Butane	nC4	9.08	2.02	4.25
Iso-Pentane	iC5	4.84	0.50	1.87
N-Pentane	nC5	4.72	0.41	1.77
Hexanes	C6	13.49	0.32	4.48
Heptanes	C7	17.07	0.20	5.53
Octanes	C8	9.38	0.03	2.98
Nonanes	C9	7.79	0.01	2.47
Decanes	C10	3.74	0.01	1.19
Undecanes	C11	2.58	0.02	0.83
Dodecanes	C12	2.27	0.01	0.72
Tridecanes	C13	1.72	0.00	0.54
Tetradecanes	C14	1.33	0.00	0.42
Pentadecanes	C15	0.39	0.00	0.12
Hexadecanes	C16	0.67	0.00	0.21
Heptadecanes	C17	0.60	0.00	0.19
Octadecanes	C18	0.38	0.00	0.12
Nonadecanes	C19	0.57	0.00	0.18
Eicosanes Plus	C20+	1.17	0.00	0.37
TOTAL		100.00	100.00	100.00

	Separator Liquid	Separator Gas	Reservoir Fluid
Ratios			
Molar Ratio :	0.3157	0.6843	1.0000
Mass Ratio :	0.6296	0.3704	1.0000
Liquid Ratio (bbl/bbl):	1.0000 @ PT*	--	2.1240 @ PT**
Gas Liquid Ratio :	1.0000 bbl @ PT*	2296 SCF***	--
Stream Properties			
Molecular Weight :	94.40	25.63	47.34
Density obs. (gm/cc) :	0.7519 @ PT*	--	0.5635 @ PT**
Gravity (AIR = 1.000) :	56.5 API @ 60	0.889	--
GHV (BTU/scf) :	--	1162.0	--
Heptanes Plus Properties			
Mol % :	49.66	0.28	15.87
Molecular Weight :	128.3	105.4	128.0
Density (gm/cc @ 60 F):	0.8128	0.6960	0.8114
Gravity (API @ 60 F):	42.4	71.6	42.7
Octanes Plus Properties			
Mol % :	32.59	0.08	10.34
Molecular Weight :	145.3	128.9	145.3
Density (gm/cc @ 60 F):	0.8397	0.7226	0.8391
Gravity (API @ 60 F):	36.9	64.1	37.0
Eicosanes Plus Properties			
Mol % :	1.17	0.00	0.37
Molecular Weight :	447.5	--	446.8
Density (gm/cc @ 60 F):	0.9640	--	0.9640
Gravity (API @ 60 F):	15.1	--	15.1

* (P)ressure 85 psig, (T)emperature 54 deg.F
** (P)ressure 9900 psig, (T)emperature 260 deg.F
*** 2296 SCF / SEP BBL @ PT = 2506 SCF / ST BBL

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P 89035

CONSTANT MASS STUDY @ 260 deg F

ON RECOMBINED GAS RESERVOIR FLUID

Pressure (psig)	Relative Volume (V/Vsat) (1)	Formation Volume Factor (Bg) (2)	Gas Expansion Factor (E) (3)	Deviation Factor (Z)	Specific Volume (CFT/LB)
9900 *	0.8533	0.00313	319.93	1.523	0.03509
9000	0.8707	0.00319	313.53	1.413	0.03581
8000	0.8927	0.00327	305.80	1.288	0.03671
7500	0.9077	0.00333	300.74	1.228	0.03733
7000	0.9257	0.00339	294.89	1.169	0.03807
6500	0.9464	0.00347	288.43	1.110	0.03892
6000	0.9725	0.00356	280.71	1.053	0.03999
5550 **	1.0000	0.00366	272.98	1.002	0.04112

* Reservoir Pressure
** Dew Point Pressure

(1) Cubic feet of gas at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Cubic feet of gas at indicated pressure and temperature per cubic foot at 14.696 psia and 60 deg.F.

(3) Cubic feet of gas at 14.696 psia and 60 deg.F per cubic foot at indicated pressure and temperature.

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P 89035

CONSTANT MASS STUDY @ 260 deg F

ON RECOMBINED GAS RESERVOIR FLUID

Pressure (psig)	Relative Volume (V/Vsat) (1)	Retrograde Liquid Deposit (Bbl/MMSCF) (2)	(Volume%) (3)
5550 *	1.0000	0.00	0.00
5260	1.0195	2.01	0.31
4975	1.0429	3.73	0.57
4490	1.0880	6.90	1.06
4025	1.1462	13.88	2.13
3615	1.2165	26.40	4.05
3190	1.3197	44.04	6.75
2680	1.5285	82.61	12.66
2220	1.8436	96.50	14.79
1880	2.2105	102.24	15.67
1560	2.7758	104.46	16.01

* Dew Point Pressure

(1) Cubic feet at indicated pressure and temperature per cubic foot at saturation pressure.

(2) Barrels of liquid at indicated pressure and temperature per MMSCF of original reservoir fluid.

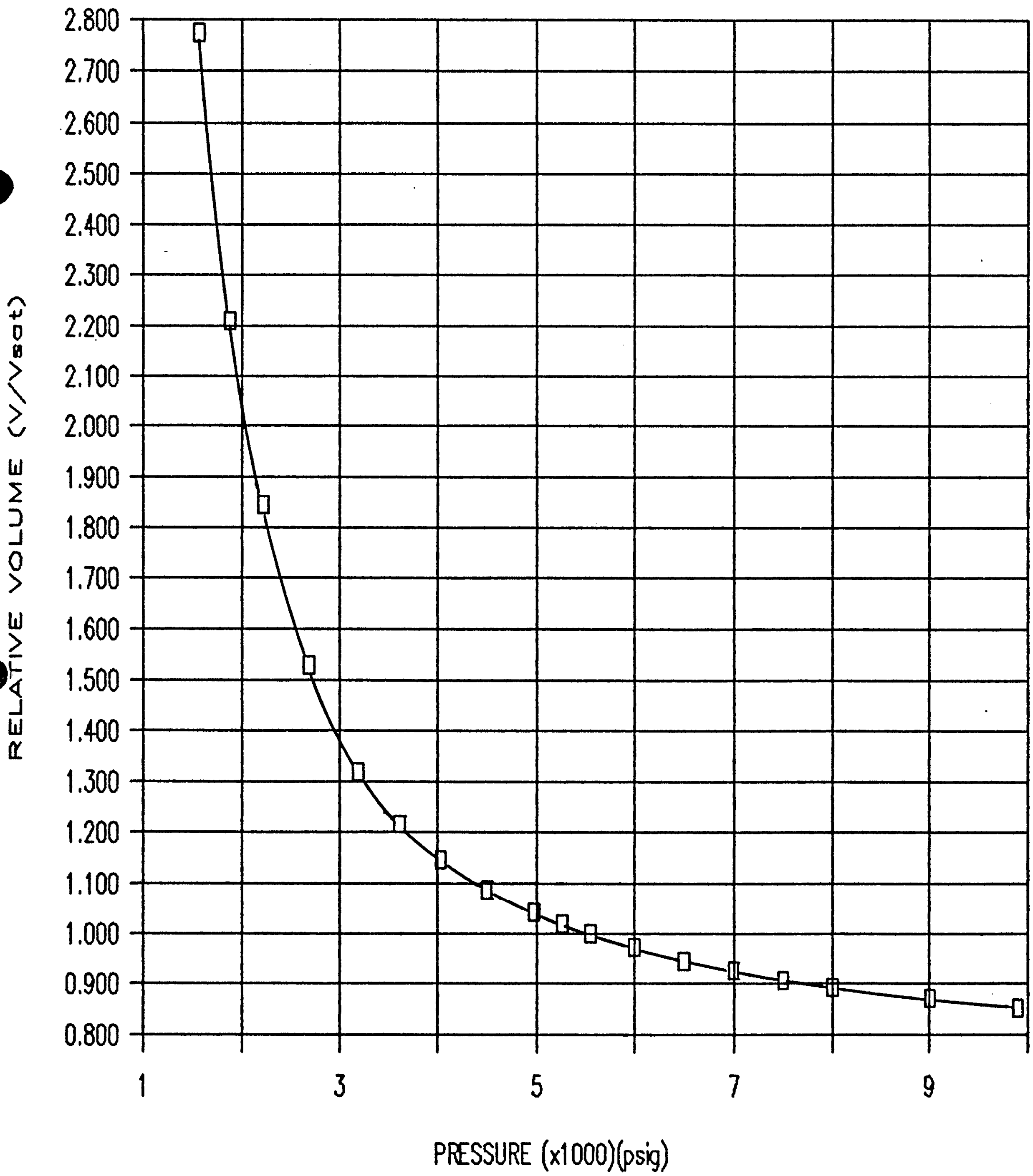
(3) Percent of reservoir hydrocarbon pore space at dew point.

P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A File: P 89035

GAS RESERVOIR FLUID

RELATIVE VOLUME



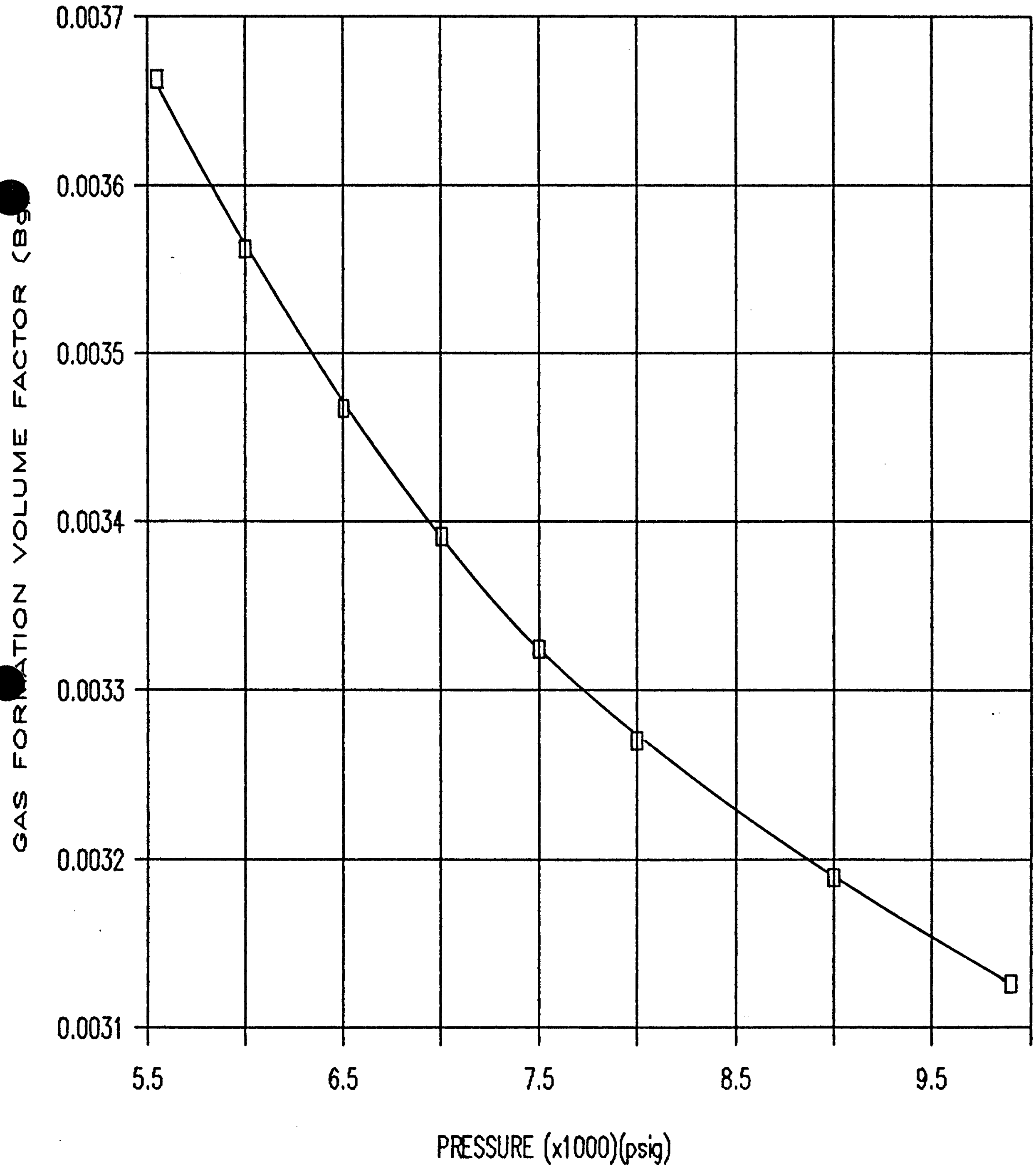
P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

GAS RESERVOIR FLUID

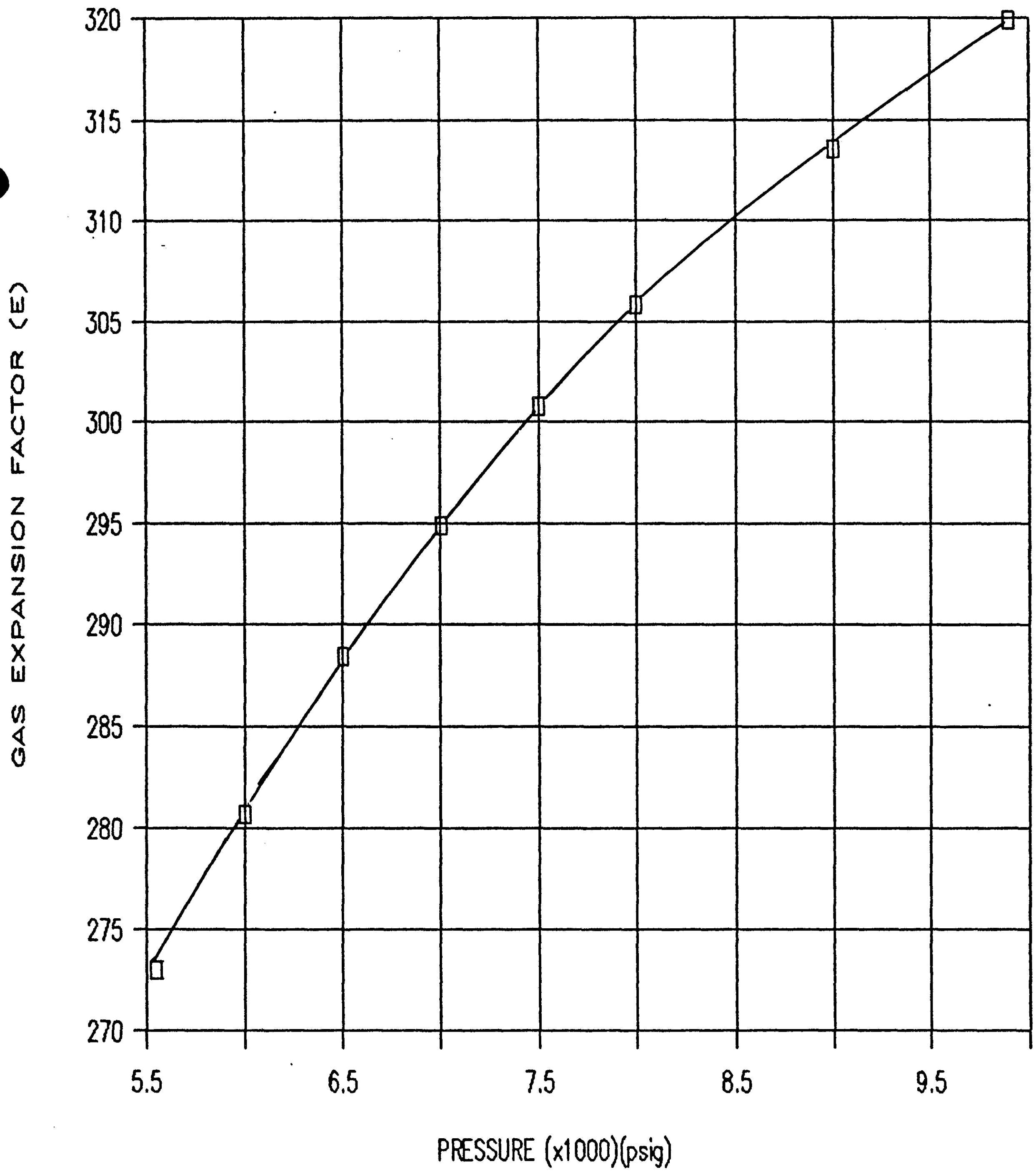
GAS FORMATION VOLUME FACTOR



Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

GAS RESERVOIR FLUID

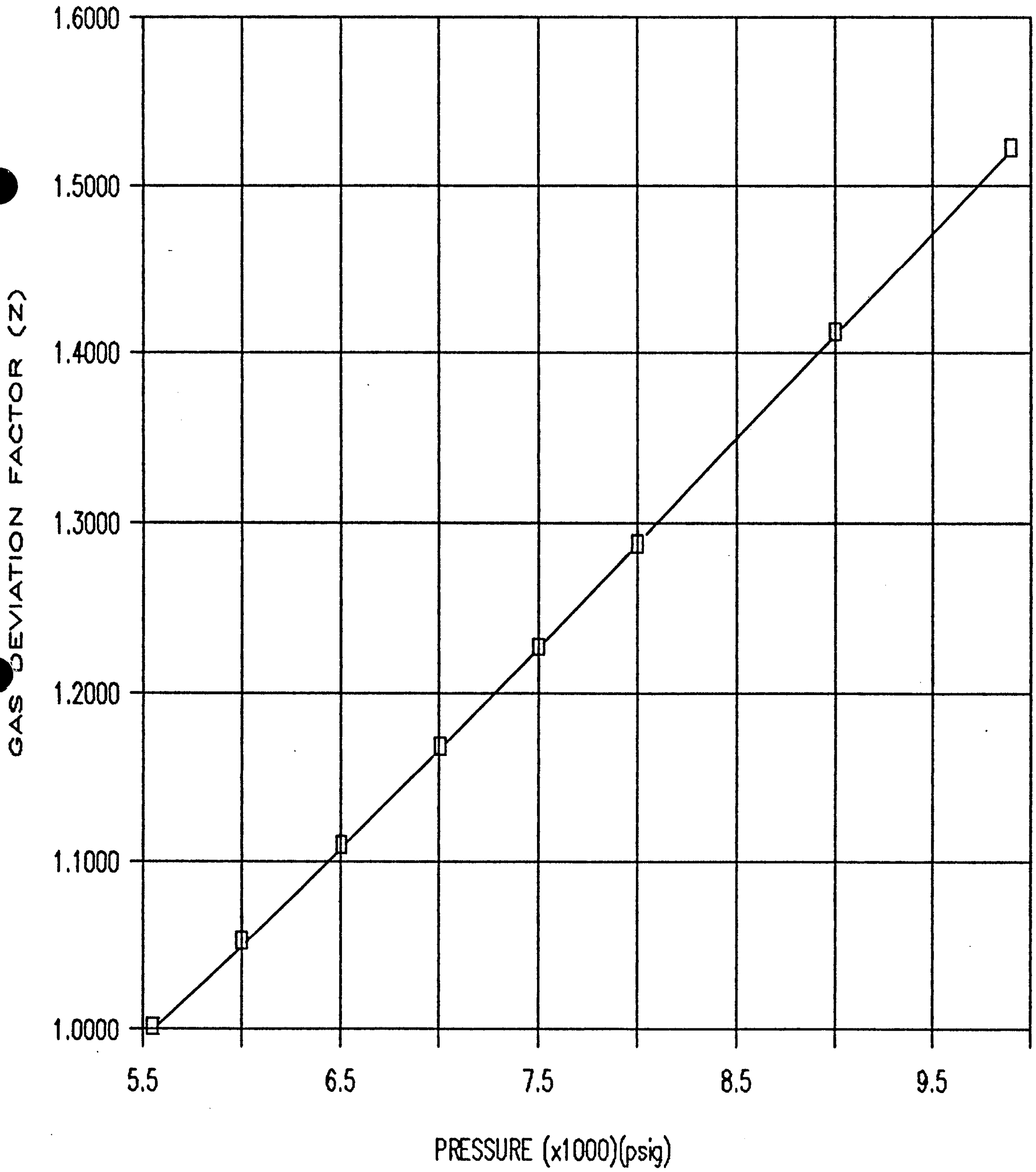
GAS EXPANSION FACTOR



P E T R O L A B

Company: Petrofina Exploration Australia S. A. Page: 17 of 33
Well : Anemone # 1-A File: P 89035

GAS RESERVOIR FLUID
GAS DEVIATION FACTOR

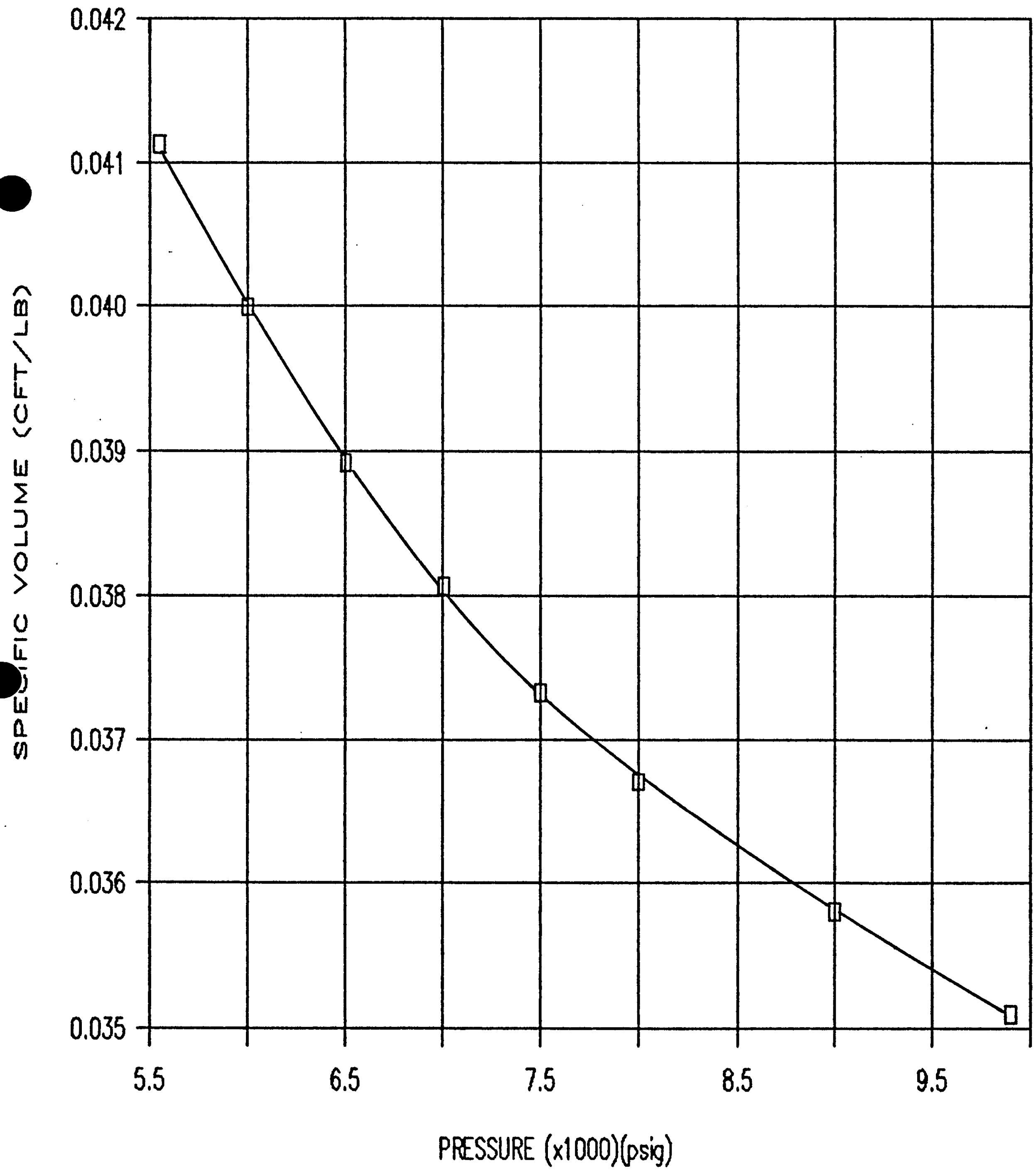


P E T R O L A B

Company: Petrofina Exploration Australia S. A. Page: 18 of 33
Well : Anemone # 1-A File: P 89035

GAS RESERVOIR FLUID

SPECIFIC VOLUME



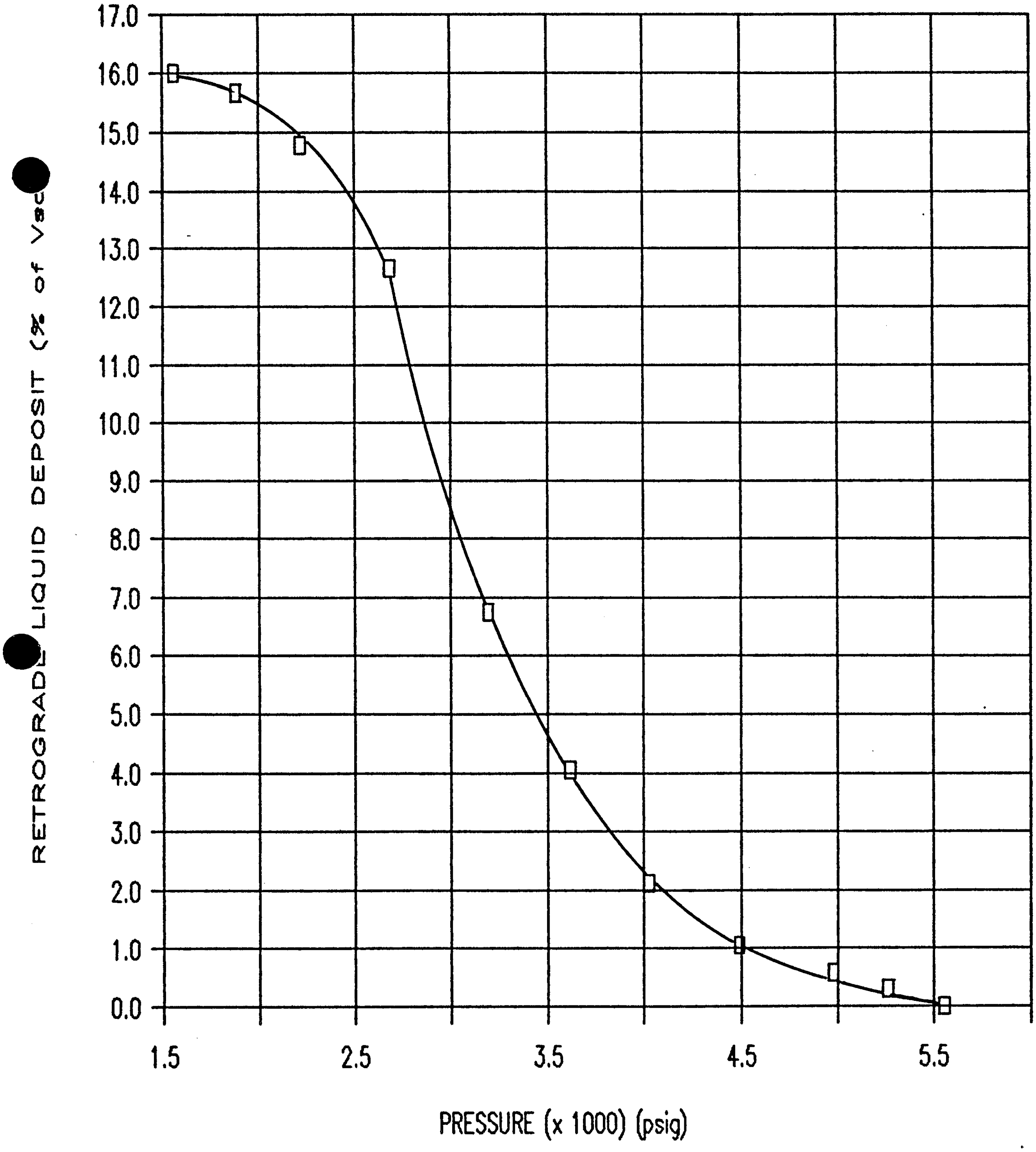
P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

GAS RESERVOIR FLUID

RETROGRADE LIQUID DEPOSIT



P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P-89035

CONSTANT MASS STUDY
@ 260 deg F

ON RECOMBINED OIL RESERVOIR FLUID

Pressure (psig)	Relative Volume (V/Vsat) (1)	Oil Compressibility (x 10^-6)(psig^-1) (2)	Y Function (3)	Thermal Expansion (x10^-4)(degF^-1) (4)	Liquid %
9900 *	0.7720	16.00		62.10	
9000	0.7842	17.31		62.62	
8000	0.7997	19.42		63.24	
7000	0.8186	23.08		63.98	
6000	0.8429	28.78		64.95	
5000	0.8757	37.47		66.32	
4000	0.9257	53.98		68.70	
3010 **	1.0000	120.83		72.52	100.00
2985	1.0047		1.791		96.25
2950	1.0131		1.553		90.70
2910	1.0233		1.472		85.16
2860	1.0372		1.408		79.89
2800	1.0553		1.356		74.53
2755	1.0698		1.326		71.15
2695	1.0897		1.303		67.02
2540	1.1443		1.282		63.07
2415	1.1948		1.265		60.62
2300	1.2468		1.251		58.65
2180	1.3085		1.234		57.05
2075	1.3696		1.219		55.55
1810	1.5590		1.186		51.88
1620	1.7397		1.160		49.44
1455	1.9433		1.133		47.18
1220	2.3278		1.105		44.18

* Reservoir pressure
** Saturation pressure

(1) Barrels at indicated pressure per barrel at saturation pressure.

(2) Oil Compressibility = - (1/V) * (dV/dP)

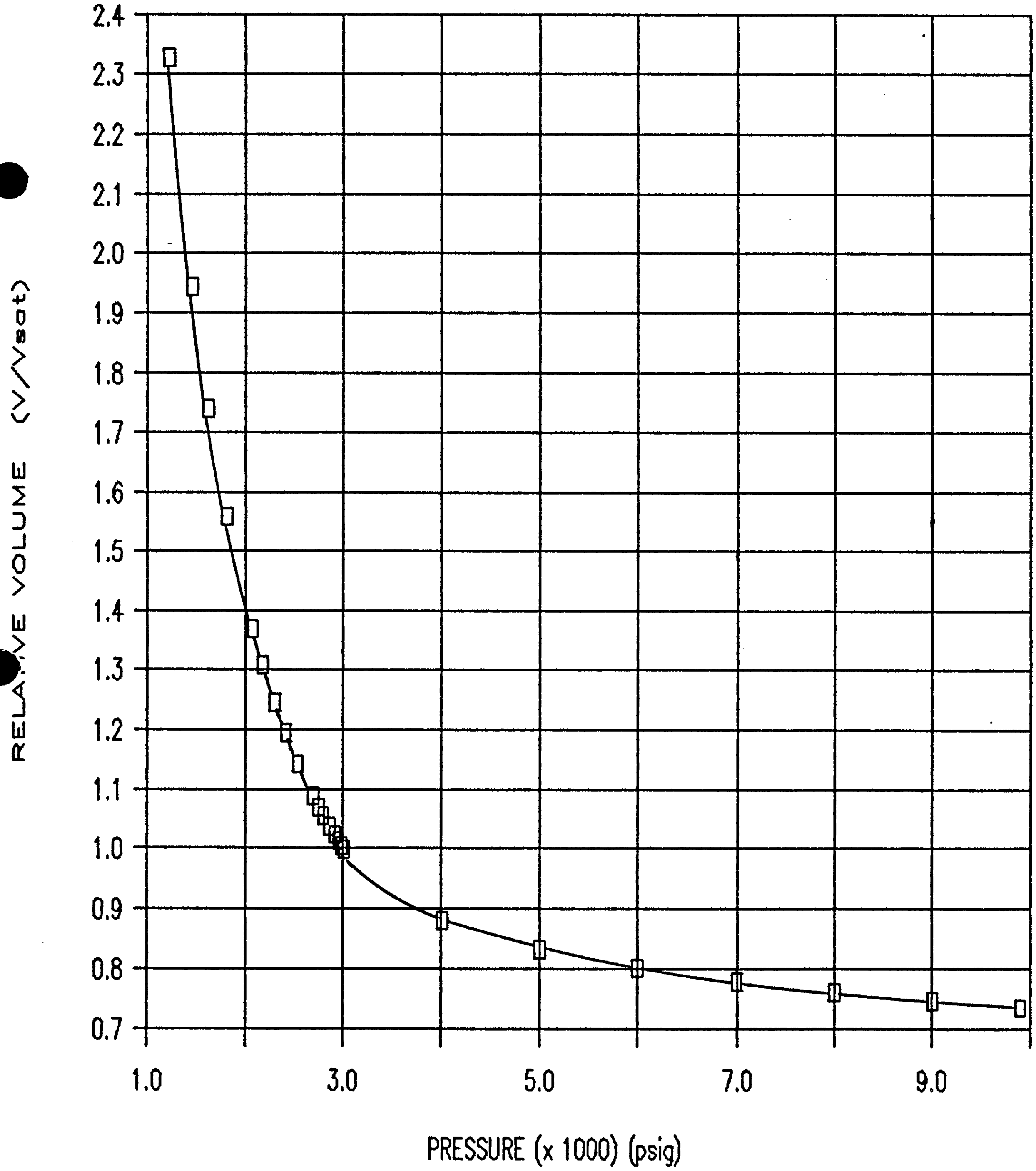
(3) Y Function = (Psat - P) / (P)*(V/Vsat-1)

(4) Thermal Expansion = - (1/V) * (dV/dT)

P E T R O L A B

Company: Petrofina Exploration Australia S. A. Page: 21 of 33
Well : Anemone # 1-A File: P 89035

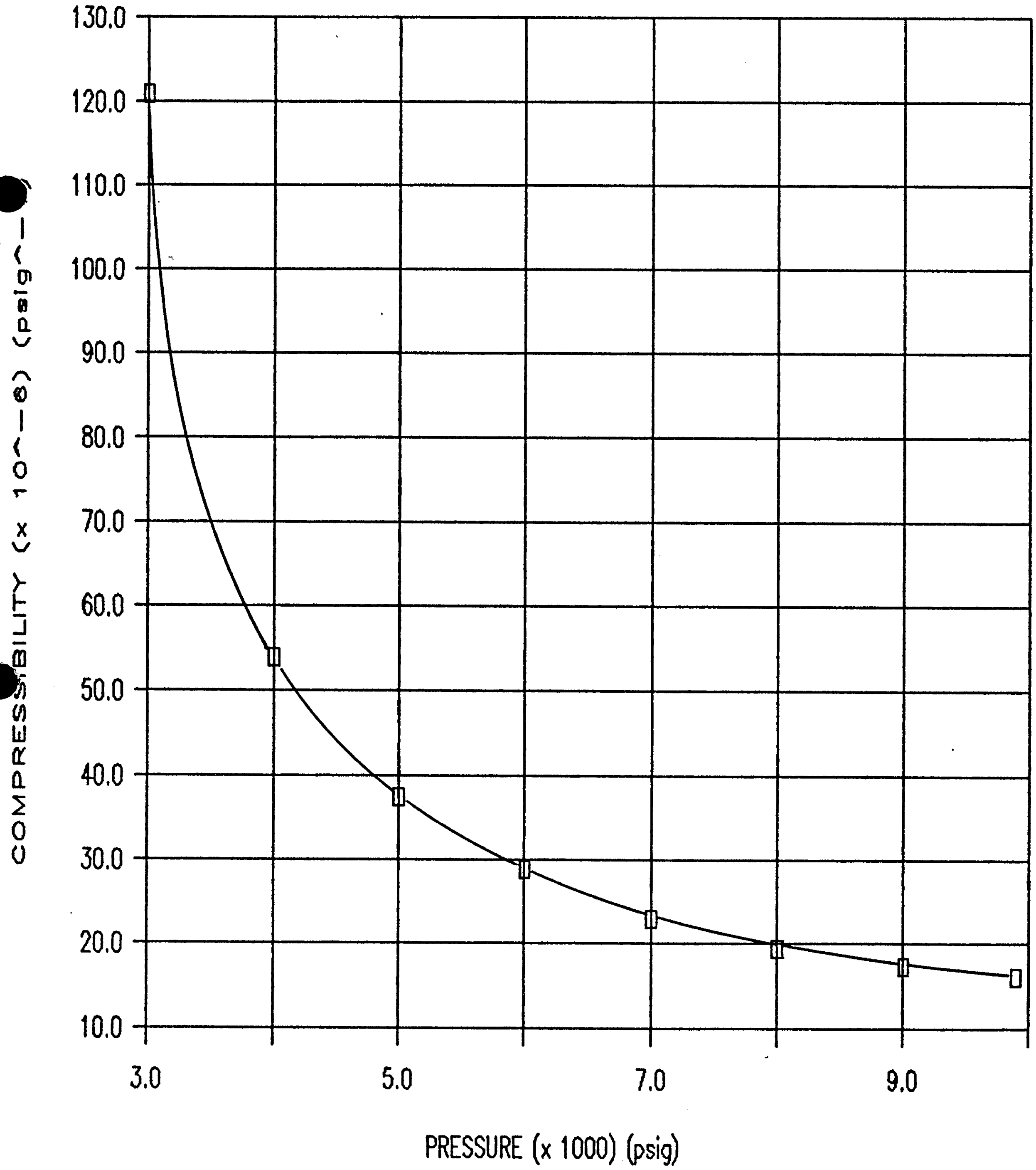
OIL RESERVOIR FLUID
RELATIVE VOLUME



P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

OIL RESERVOIR FLUID
OIL COMPRESSIBILITY

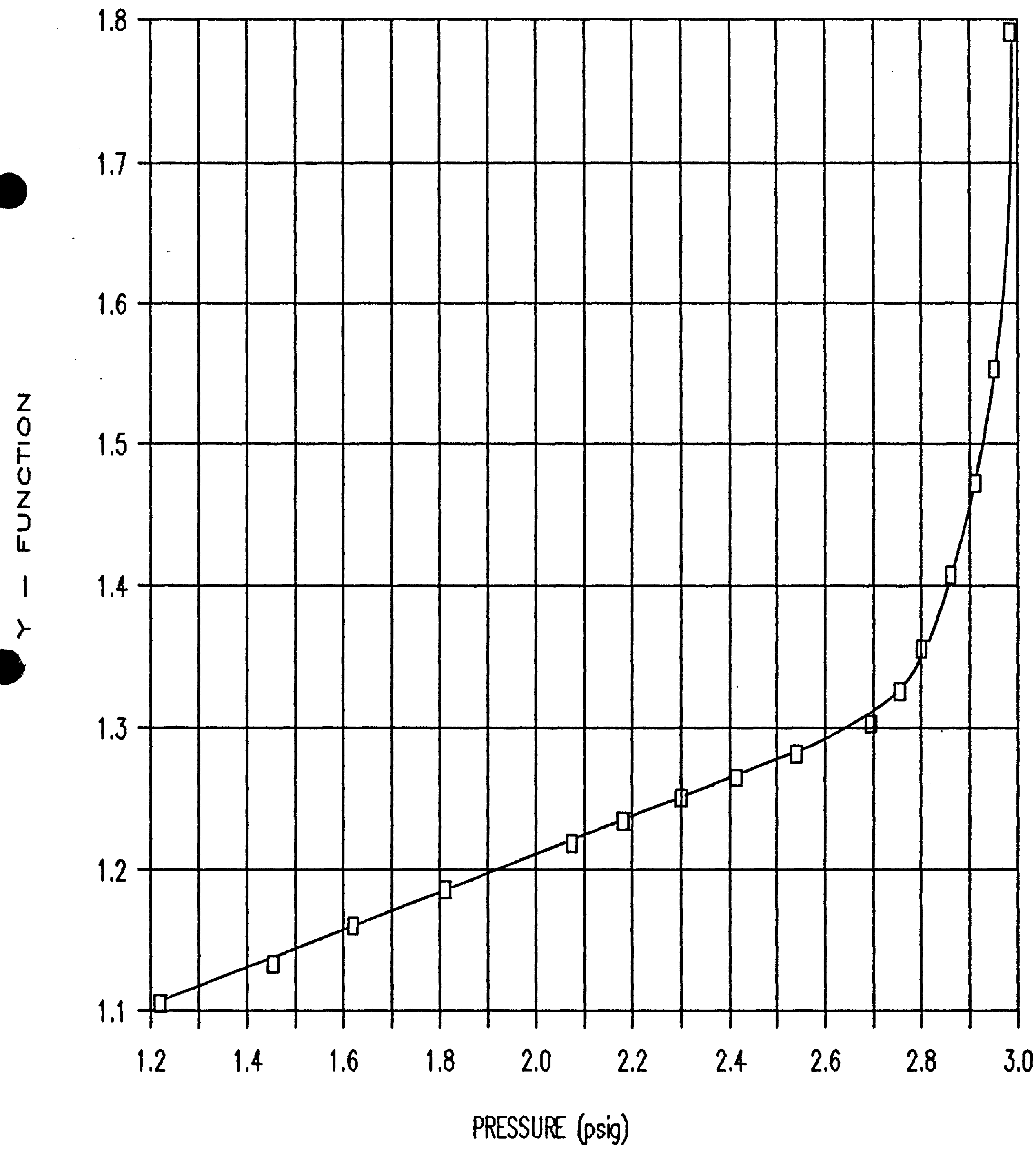


P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

OIL RESERVOIR FLUID
Y — FUNCTION

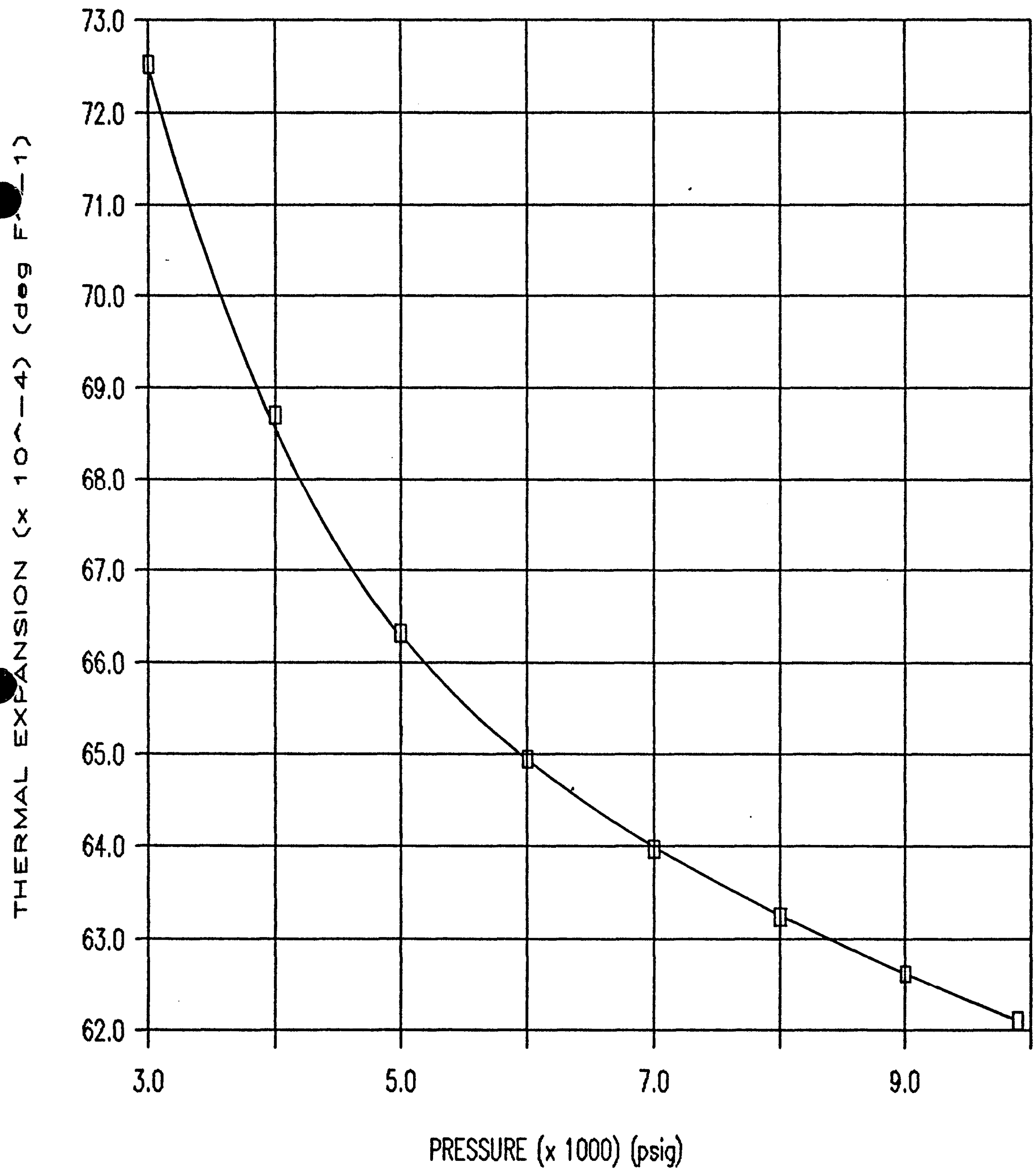


P E T R O L A B

Company: Petrofina Exploration Australia S. A.   Page: 24 of 33
Well : Anemone # 1-A   File: P 89035

OIL RESERVOIR FLUID

OIL THERMAL EXPANSION



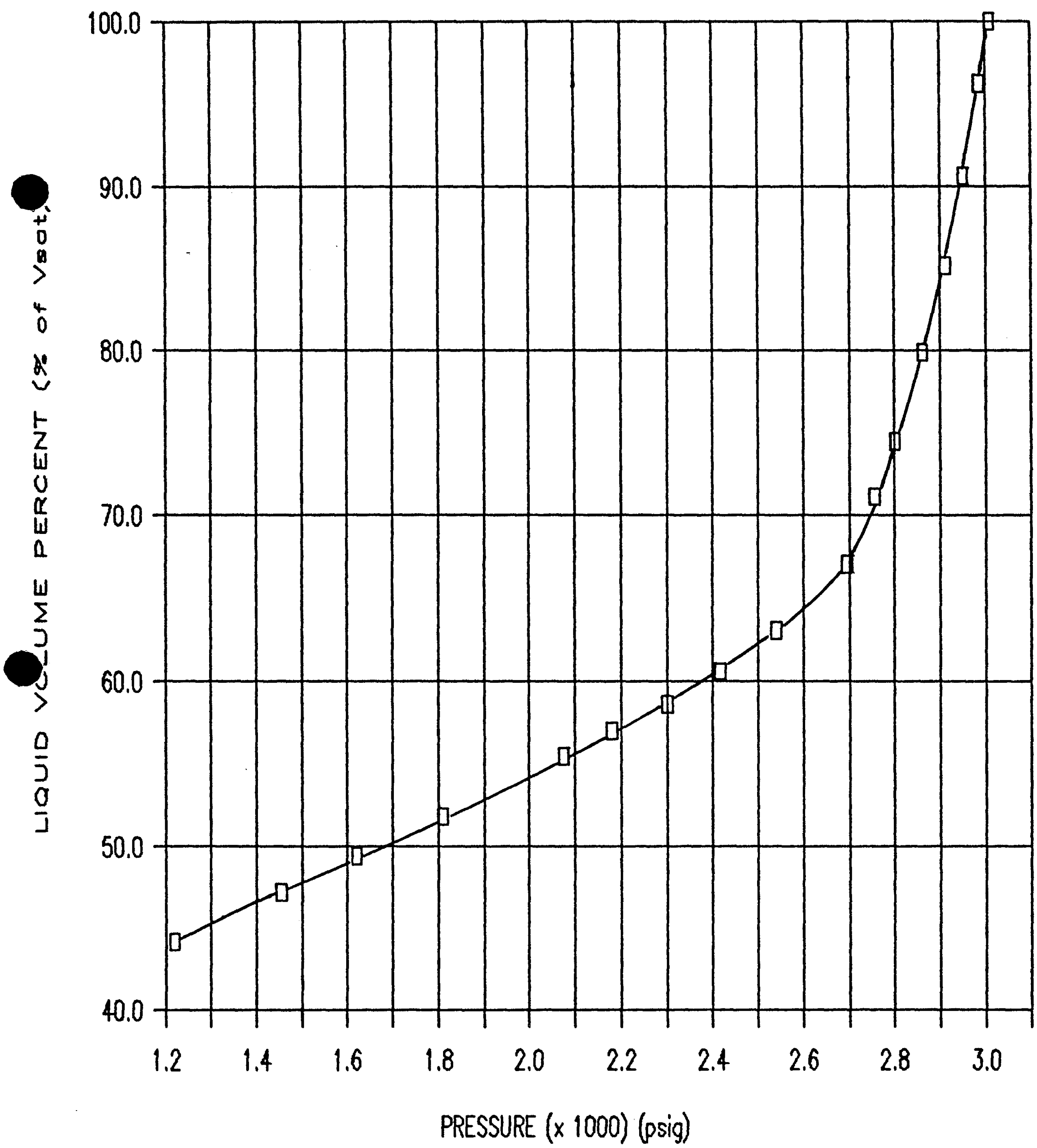
P E T R O L A B

Company: Petrofina Exploration Australia S. A.
Well : Anemone # 1-A

File: P 89035

OIL RESERVOIR FLUID

LIQUID VOLUME PERCENT



P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Sampled 9/10/89 @ 21.00 hrs. from choke manifold.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
1.397	7160	7.8

Cations:

		mg/l	meq/l
Calcium	(Ca):	57.0	2.84
Magnesium	(Mg):	92.3	7.60
Sodium	(Na):	1390.0	60.46
Potassium	(K):	63.0	1.61
Total cations			72.51

Anions:

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	291.1	4.77
Sulphate	(SO4):	277.0	5.77
Chloride	(Cl):	2134.0	60.11
Nitrate	(NO3):	10.2	0.17
Total anions			70.81

ION BALANCE: (72.51-70.81) / (72.51+70.81) * 100% = 1.19 %

SODIUM / CATION RATIO: 83.38 %

Total dissolved solids mg/l:

Calculated: 4169 From resistivity: 4254

Hardness:

Total: 522 Carbonate: 284 Non-Carbonate: 238

Total alkalinity: 284

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Bottom hole sample from 3904 mRT. Sampled 10/10/89.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.552	18100	7.5

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	54.0	2.70	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	3.2	0.26	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	5040.0	219.23	Bi-Carbonate	(HCO3):	6746.5	110.60
Potassium	(K):	124.0	3.17	Sulphate	(SO4):	140.0	2.92
				Chloride	(Cl):	3954.0	111.37
				Nitrate	(NO3):	< 0.1	< 0.10
Total cations			225.36	Total anions			224.88

ION BALANCE:(225.36-224.88) / (225.36+224.88) * 100% 0.11 %

SODIUM / CATION RATIO: 97.28 %

Total dissolved solids mg/l:

Calculated: 12688 From resistivity: 11776

Hardness:

Total: 148 Carbonate: 148 Non-Carbonate: 0

Total alkalinity: 6582

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Bottom hole sample from 4428 mRT. Sampled 10/10/89.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.559	17900	7.6

Cations:

	mg/l	meq/l
Calcium (Ca):	58.0	2.89
Magnesium (Mg):	1.6	0.13
Sodium (Na):	5100.0	221.84
Potassium (K):	112.0	2.86
Total cations		227.73

Anions:

	mg/l	meq/l
Hydroxide (OH):	0.0	0.00
Carbonate (CO3):	0.0	0.00
Bi-Carbonate (HCO3):	6551.8	107.41
Sulphate (SO4):	112.0	2.33
Chloride (Cl):	3788.0	106.69
Nitrate (NO3):	0.6	0.01
Total anions		216.44

ION BALANCE: (227.73-216.44) / (227.73+216.44) * 100% 2.54 %

SODIUM / CATION RATIO: 97.41 %

Total dissolved solids mg/l:

Calculated: 12448 From resistivity: 11627

Hardness:

Total: 151 Carbonate: 151 Non-Carbonate: 0

Total alkalinity: 6392

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 @ 06.00 hrs.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.410	24400	7.5

Cations:

		mg/l	meq/l
Calcium	(Ca):	42.0	2.10
Magnesium	(Mg):	21.0	1.73
Sodium	(Na):	6745.0	293.39
Potassium	(K):	163.0	4.17
Total cations			301.38

Anions:

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	5596.5	91.75
Sulphate	(SO4):	1002.0	20.86
Chloride	(Cl):	6443.0	181.51
Nitrate	(NO3):	< 0.1	< 0.10
Total anions			294.11

ION BALANCE:(301.38-294.11) / (301.38+294.11) * 100% 1.22 %

SODIUM / CATION RATIO: 97.35 %

Total dissolved solids mg/l:

Calculated: 17215 From resistivity: 16663

Hardness:

Total: 191 Carbonate: 191 Non-Carbonate: 0

Total alkalinity: 5460

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 @ 09.07 hrs.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.461	21700	7.1

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	37.0	1.85	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	13.0	1.07	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	6330.0	275.34	Bi-Carbonate	(HCO3):	5822.0	95.44
Potassium	(K):	151.0	3.86	Sulphate	(SO4):	603.0	12.56
				Chloride	(Cl):	5347.0	150.62
				Nitrate	(NO3):	< 0.1	< 0.10
Total cations			282.12	Total anions			258.62

ION BALANCE:(282.12-258.62) / (282.12+258.62) * 100% 4.35 %

SODIUM / CATION RATIO: 97.60 %

Total dissolved solids mg/l:

Calculated: 15392 From resistivity: 14519

Hardness:

Total: 146 Carbonate: 146 Non-Carbonate: 0

Total alkalinity: 5680

P E T R O L A B

Company: Petrofina Exploration Australia S. A Page: 31 of 33
Well : Anemone # 1-A, DST # 2 File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 70 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.562	17800	7.7

Cations:

	mg/l	meq/l
Calcium (Ca):	41.0	2.05
Magnesium (Mg):	2.4	0.20
Sodium (Na):	5000.0	217.49
Potassium (K):	124.0	3.17
Total cations		222.90

Anions:

	mg/l	meq/l
Hydroxide (OH):	0.0	0.00
Carbonate (CO3):	0.0	0.00
Bi-Carbonate (HCO3):	6129.5	100.48
Sulphate (SO4):	115.0	2.39
Chloride (Cl):	3757.0	105.84
Nitrate (NO3):	< 0.1	< 0.10
Total anions		208.72

ION BALANCE:(229.90-208.72) / (222.90+208.72) * 100% 3.29 %

SODIUM / CATION RATIO: 97.57 %

Total dissolved solids mg/l:

Calculated: 12105 From resistivity: 11553

Hardness:

Total: 112 Carbonate: 112 Non-Carbonate: 0

Total alkalinity: 5980

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 90 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.571	17500	7.7

Cations:		mg/l	meq/l	Anions:		mg/l	meq/l
Calcium	(Ca):	29.0	1.45	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	2.4	0.20	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	4980.0	216.62	Bi-Carbonate	(HCO3):	6311.9	103.48
Potassium	(K):	120.0	3.07	Sulphate	(SO4):	91.0	1.90
				Chloride	(Cl):	3622.0	102.02
				Nitrate	(NO3):	1.3	0.0
Total cations			221.33	Total anions			207.41

ION BALANCE:(221.33-207.41) / (221.33+207.41) * 100% 3.25 %

SODIUM / CATION RATIO: 97.87 %

Total dissolved solids mg/l:

Calculated: 12001 From resistivity: 11331

Hardness:

Total: 82 Carbonate: 82 Non-Carbonate: 0

Total alkalinity: 6158

P E T R O L A B

Company: Petrofina Exploration Australia S. A
Well : Anemone # 1-A, DST # 2

File: P-89035

WATER ANALYSIS

Wellhead sample taken 11/10/89 after 100 bbls. reverse circulation.

Resistivity:	Conductivity:	pH:
Ohm.M @ 25 deg C:	micro-S/cm @ 25 deg C:	
0.575	17400	7.3

Cations: / Anions:

Cations		mg/l	meq/l	Anions		mg/l	meq/l
Calcium	(Ca):	51.0	2.55	Hydroxide	(OH):	0.0	0.00
Magnesium	(Mg):	2.4	0.20	Carbonate	(CO3):	0.0	0.00
Sodium	(Na):	4960.0	215.75	Bi-Carbonate	(HCO3):	6432.9	105.46
Potassium	(K):	124.0	3.17	Sulphate	(SO4):	79.0	1.65
				Chloride	(Cl):	3659.0	103.08
				Nitrate	(NO3):	< 0.1	< 0.10
Total cations			221.66	Total anions			210.18

ION BALANCE:(221.66-210.18) / (221.66+210.18) * 100% 2.66 %

SODIUM / CATION RATIO: 97.33 %

Total dissolved solids mg/l:

Calculated: 12092 From resistivity: 11258

Hardness:

Total: 137 Carbonate: 137 Non-Carbonate: 0

Total alkalinity: 6276

APPENDIX 5

WELL COMPLETION REPORT

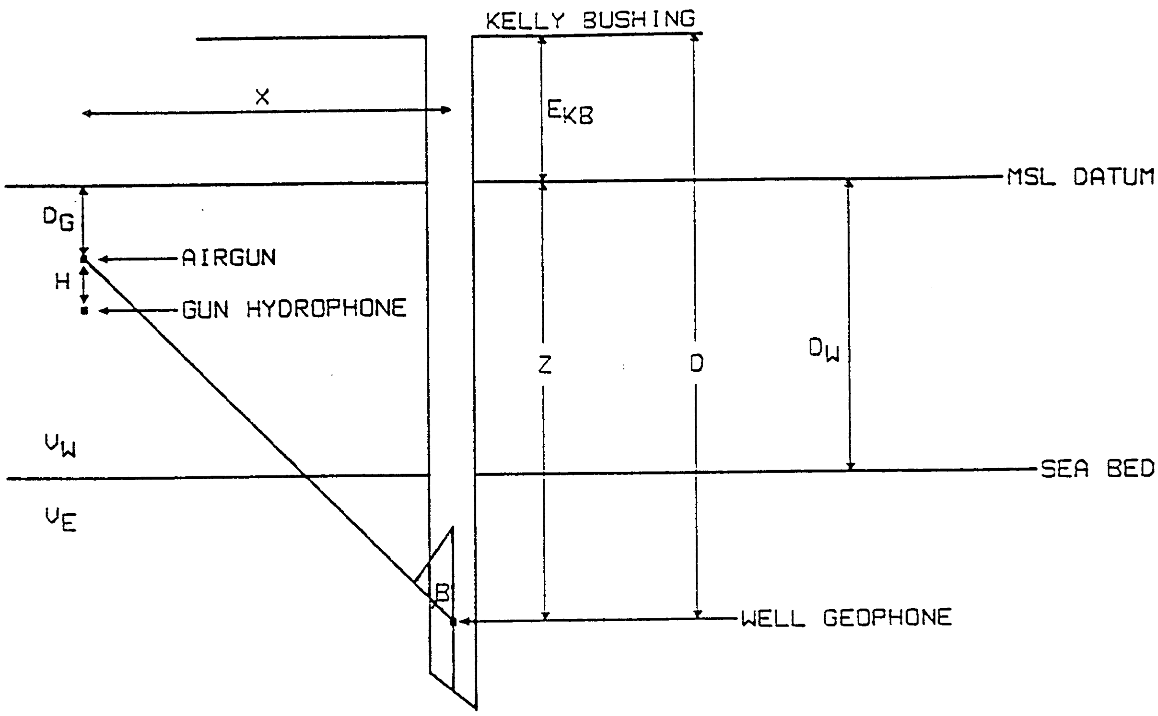
ANEMONE-1,1A

BASIC DATA

A P P E N D I X 5

VELOCITY SURVEY VSP RESULTS

SCHEMATIC CROSS-SECTION



KEY

KB - KELLY BUSHING

E_{KB} - ELEVATION OF KB ABOVE DATUM

D' - MEASURED DEPTH OF WELL GEOPHONE BELOW KB

D - VERTICAL DEPTH OF WELL GEOPHONE BELOW KB

Z - VERTICAL DEPTH OF WELL GEOPHONE BELOW DATUM

D_G - DEPTH OF GUN BELOW M.S.L.

H - DISTANCE BETWEEN GUN AND GUN HYDROPHONE

X - HORIZONTAL DISTANCE BETWEEN WELL GEOPHONE AND GUN

β - INCIDENT ANGLE AT WELL GEOPHONE LEVELS

T - TRAVEL-TIME FROM GUN HYDROPHONE TO WELL GEOPHONE

T_V - TIME FROM GUN TO WELL GEOPHONE CORRECTED TO VERTICAL

[1] BY ASSUMING STRAIGHT LINE TRAVEL PATHS $\left[\left[T + \frac{H}{V_W}\right]\cos\beta\right]$

OR [2] BY ESTIMATING THE TRUE REFRACTED TRAVEL PATHS

T_E - TIME CORRECTION FROM GUN TO DATUM $\left[= \frac{\text{GUN DEPTH}}{V_W}\right]$

T_C - CORRECTED TRAVEL-TIME BETWEEN DATUM AND WELL GEOPHONE = $T_V + T_E$

V_A - Z/T_C [AVERAGE VELOCITY]

V_I - $\Delta Z/\Delta T_C$ [INTERVAL VELOCITY]

D_W - DEPTH OF WATER

V_W - WATER VELOCITY

V_E - ELEVATION VELOCITY

SEISMOGRAPH SERVICE - BOREHOLE GEOPHYSICS DIVISION

COMPANY: PETROFINA EXPLORATION AUSTRALIA S.A.

WELL:ANEMONE -1 | EKB= 27.0 M | KB= 27.0 M AMSL | GUN DEPTH 4.0 M

AIRGUN COMPUTATION | VW= 1524 M/S | ED= MSL | GUN HYDROPHONE DEPTH 5.0 M

GUN OFFSET 60.0 M

T IS THE TIME MEASURED FROM THE FIRST BREAK ON THE GUN HYDROPHONE SIGNAL TO THE FIRST BREAK ON THE WELL GEOPHONE SIGNAL USING AN AUTOMATED TRACE ALIGNMENT PROCEDURE WHERE POSSIBLE; MANUALLY PICKED TIMES ARE MARKED X

A TIME CORRECTION FOR THE DISTANCE BETWEEN GUN AND GUN HYDROPHONE AT WATER VELOCITY IS ADDED TO T BEFORE CORRECTION TO THE VERTICAL

TV IS THE TIME FROM THE GUN TO THE WELL GEOPHONE CORRECTED TO THE VERTICAL

TE = GUN DEPTH/VW

RECORD NO	D' M	D M	Z M	X M	T S	TV S	TE S	TC S	AVERAGE VELOCITY M/S	INTERVAL DEPTH M	INTERVAL TIME S	INTERVAL VELOCITY M/S 1524
112	400.0	400.0	373.0	60.0	0.2180 X	0.2158	0.0026	0.2184	1708			
										180.0	0.0866	2078
111	580.0	580.0	553.0	60.0	0.3036 X	0.3025	0.0026	0.3051	1813			
										118.0	0.0444	2658
110	698.0	698.0	671.0	60.0	0.3476 X	0.3469	0.0026	0.3495	1920			
										299.0	0.1086	2753
109	997.0	997.0	970.0	60.0	0.4557 X	0.4555	0.0026	0.4581	2118			
										166.0	0.0535	3105
108	1163.0	1163.0	1136.0	60.0	0.5090 X	0.5089	0.0026	0.5115	2221			
107	1218.0	1218.0	1191.0	60.0	0.5310 X	0.5310	0.0026	0.5336	2232			
										154.0	0.0591	2606
106	1317.0	1317.0	1290.0	60.0	0.5680 X	0.5680	0.0026	0.5706	2261			
										267.0	0.1012	2638
105	1584.0	1584.0	1557.0	60.0	0.6691 X	0.6693	0.0026	0.6719	2317			
										258.0	0.0876	2946
104	1842.0	1842.0	1815.0	60.0	0.7566	0.7568	0.0026	0.7594	2390			
										196.0	0.0713	2751
103	2038.0	2038.0	2011.0	60.0	0.8278	0.8281	0.0026	0.8307	2421			
										99.0	0.0398	2490

Bullseye.

102	2137.0	2137.0	2110.0	60.0	0.8675	0.8678	0.0026	0.8704	2424			
101	2197.0	2197.0	2170.0	60.0	0.8900	0.8903	0.0026	0.8929	2430			
										173.0	0.0651	2657
100	2310.0	2310.0	2283.0	60.0	0.9326	0.9329	0.0026	0.9355	2440			
99	2400.0	2400.0	2373.0	60.0	0.9651	0.9654	0.0026	0.9680	2451			
98	2420.0	2420.0	2393.0	60.0	0.9720	0.9723	0.0026	0.9749	2455			
97	2440.0	2440.0	2413.0	60.0	0.9779	0.9783	0.0026	0.9809	2460			
										150.0	0.0521	2881
96	2460.0	2460.0	2433.0	60.0	0.9847	0.9850	0.0026	0.9876	2464			
95	2480.0	2480.0	2453.0	60.0	0.9917	0.9921	0.0026	0.9947	2466			
94	2500.0	2500.0	2473.0	60.0	0.9980	0.9983	0.0026	1.0009	2471			
93	2520.0	2520.0	2493.0	60.0	1.0052	1.0056	0.0026	1.0082	2473			
92	2540.0	2540.0	2513.0	60.0	1.0115	1.0118	0.0026	1.0144	2477			
										100.0	0.0331	3023
91	2560.0	2560.0	2533.0	60.0	1.0177	1.0181	0.0026	1.0207	2482			
90	2580.0	2580.0	2553.0	60.0	1.0225	1.0229	0.0026	1.0255	2490			
89	2600.0	2600.0	2573.0	60.0	1.0290	1.0293	0.0026	1.0319	2493			
88	2620.0	2620.0	2593.0	60.0	1.0355	1.0359	0.0026	1.0385	2497			
87	2640.0	2640.0	2613.0	60.0	1.0419	1.0423	0.0026	1.0449	2501			
										100.0	0.0309	3233
86	2660.0	2660.0	2633.0	60.0	1.0486	1.0490	0.0026	1.0516	2504			
85	2680.0	2680.0	2653.0	60.0	1.0550	1.0554	0.0026	1.0580	2507			
84	2700.0	2700.0	2673.0	60.0	1.0608	1.0612	0.0026	1.0638	2513			
83	2720.0	2720.0	2693.0	60.0	1.0675	1.0679	0.0026	1.0705	2516			
82	2740.0	2740.0	2713.0	60.0	1.0737	1.0741	0.0026	1.0767	2520			
										100.0	0.0311	3213
81	2760.0	2760.0	2733.0	60.0	1.0798	1.0802	0.0026	1.0828	2524			
80	2780.0	2780.0	2753.0	60.0	1.0858	1.0862	0.0026	1.0888	2528			
79	2800.0	2800.0	2773.0	60.0	1.0915	1.0919	0.0026	1.0945	2534			
78	2820.0	2820.0	2793.0	60.0	1.0975	1.0979	0.0026	1.1005	2538			
77	2840.0	2840.0	2813.0	60.0	1.1033	1.1037	0.0026	1.1063	2543			
										100.0	0.0288	3473
76	2860.0	2860.0	2833.0	60.0	1.1085	1.1089	0.0026	1.1115	2549			
75	2880.0	2880.0	2853.0	60.0	1.1145	1.1149	0.0026	1.1175	2553			
74	2900.0	2900.0	2873.0	60.0	1.1204	1.1208	0.0026	1.1234	2557			
73	2920.0	2920.0	2893.0	60.0	1.1273	1.1277	0.0026	1.1303	2559			
72	2940.0	2940.0	2913.0	60.0	1.1321	1.1325	0.0026	1.1351	2566			
										100.0	0.0298	3358
71	2960.0	2960.0	2933.0	60.0	1.1383	1.1387	0.0026	1.1413	2570			
70	2980.0	2980.0	2953.0	60.0	1.1432	1.1436	0.0026	1.1462	2576			
69	3000.0	3000.0	2973.0	60.0	1.1494	1.1498	0.0026	1.1524	2580			
68	3020.0	3020.0	2993.0	60.0	1.1550	1.1554	0.0026	1.1580	2585			
67	3040.0	3040.0	3013.0	60.0	1.1608	1.1612	0.0026	1.1638	2589			
										100.0	0.0284	3526
66	3060.0	3060.0	3033.0	60.0	1.1667	1.1671	0.0026	1.1697	2593			
65	3080.0	3080.0	3053.0	60.0	1.1729	1.1733	0.0026	1.1759	2596			
64	3100.0	3100.0	3073.0	60.0	1.1789	1.1793	0.0026	1.1819	2600			
63	3120.0	3120.0	3093.0	60.0	1.1845	1.1849	0.0026	1.1875	2605			
62	3140.0	3140.0	3113.0	60.0	1.1894	1.1898	0.0026	1.1924	2611			
										100.0	0.0288	3471
61	3160.0	3160.0	3133.0	60.0	1.1955	1.1959	0.0026	1.1985	2614			
60	3180.0	3180.0	3153.0	60.0	1.2016	1.2020	0.0026	1.2046	2617			
59	3200.0	3200.0	3173.0	60.0	1.2060	1.2064	0.0026	1.2090	2624			
58	3220.0	3220.0	3193.0	60.0	1.2122	1.2126	0.0026	1.2152	2628			
57	3240.0	3240.0	3213.0	60.0	1.2165	1.2169	0.0026	1.2195	2635			
										100.0	0.0278	3596
56	3260.0	3260.0	3233.0	60.0	1.2233	1.2237	0.0026	1.2263	2636			

55	328Ø.Ø	328Ø.Ø	3253.Ø	6Ø.Ø	1.228Ø	1.2285	Ø.ØØ26	1.2311	2642			
54	33ØØ.Ø	33ØØ.Ø	3273.Ø	6Ø.Ø	1.2344	1.2349	Ø.ØØ26	1.2375	2645			
53	332Ø.Ø	332Ø.Ø	3293.Ø	6Ø.Ø	1.2393	1.2397	Ø.ØØ26	1.2423	2651			
52	334Ø.Ø	334Ø.Ø	3313.Ø	6Ø.Ø	1.2451	1.2455	Ø.ØØ26	1.2481	2654			
										1ØØ.Ø	Ø.Ø277	3616
51	336Ø.Ø	336Ø.Ø	3333.Ø	6Ø.Ø	1.25Ø9	1.2514	Ø.ØØ26	1.254Ø	2658			
5Ø	338Ø.Ø	338Ø.Ø	3353.Ø	6Ø.Ø	1.2564	1.2569	Ø.ØØ26	1.2595	2662			
49	34ØØ.Ø	34ØØ.Ø	3373.Ø	6Ø.Ø	1.2632	1.2637	Ø.ØØ26	1.2663	2664			
48	342Ø.Ø	342Ø.Ø	3393.Ø	6Ø.Ø	1.267Ø	1.2675	Ø.ØØ26	1.27Ø1	2672			
47	344Ø.Ø	344Ø.Ø	3413.Ø	6Ø.Ø	1.2721	1.2726	Ø.ØØ26	1.2752	2676			
										1ØØ.Ø	Ø.Ø257	3895
46	346Ø.Ø	346Ø.Ø	3433.Ø	6Ø.Ø	1.2766	1.277Ø	Ø.ØØ26	1.2796	2683			
45	348Ø.Ø	348Ø.Ø	3453.Ø	6Ø.Ø	1.2817	1.2821	Ø.ØØ26	1.2847	2688			
44	35ØØ.Ø	35ØØ.Ø	3473.Ø	6Ø.Ø	1.2864	1.2869	Ø.ØØ26	1.2895	2693			
43	352Ø.Ø	352Ø.Ø	3493.Ø	6Ø.Ø	1.29Ø9	1.2914	Ø.ØØ26	1.294Ø	2699			
42	354Ø.Ø	354Ø.Ø	3513.Ø	6Ø.Ø	1.2967	1.2971	Ø.ØØ26	1.2997	27Ø3			
										1ØØ.Ø	Ø.Ø254	3937
41	356Ø.Ø	356Ø.Ø	3533.Ø	6Ø.Ø	1.3Ø2Ø	1.3Ø24	Ø.ØØ26	1.3Ø5Ø	27Ø7			
4Ø	358Ø.Ø	358Ø.Ø	3553.Ø	6Ø.Ø	1.3Ø62	1.3Ø67	Ø.ØØ26	1.3Ø93	2714			
39	36ØØ.Ø	36ØØ.Ø	3573.Ø	6Ø.Ø	1.3131	1.3135	Ø.ØØ26	1.3161	2715			
38	362Ø.Ø	362Ø.Ø	3593.Ø	6Ø.Ø	1.3174	1.3179	Ø.ØØ26	1.32Ø5	2721			
37	364Ø.Ø	364Ø.Ø	3613.Ø	6Ø.Ø	1.3229	1.3233	Ø.ØØ26	1.3259	2725			
										1ØØ.Ø	Ø.Ø262	3813
36	366Ø.Ø	366Ø.Ø	3633.Ø	6Ø.Ø	1.3282	1.3287	Ø.ØØ26	1.3313	2729			
35	368Ø.Ø	368Ø.Ø	3653.Ø	6Ø.Ø	1.3319	1.3324	Ø.ØØ26	1.335Ø	2736			
34	37ØØ.Ø	37ØØ.Ø	3673.Ø	6Ø.Ø	1.3358	1.3363	Ø.ØØ26	1.3389	2743			
33	372Ø.Ø	372Ø.Ø	3693.Ø	6Ø.Ø	1.3423	1.3428	Ø.ØØ26	1.3454	2745			
32	374Ø.Ø	374Ø.Ø	3713.Ø	6Ø.Ø	1.3486	1.3491	Ø.ØØ26	1.3517	2747			
										1ØØ.Ø	Ø.Ø244	4Ø97
31	376Ø.Ø	376Ø.Ø	3733.Ø	6Ø.Ø	1.3526	1.3531	Ø.ØØ26	1.3557	2754			
3Ø	378Ø.Ø	378Ø.Ø	3753.Ø	6Ø.Ø	1.3573	1.3578	Ø.ØØ26	1.36Ø4	2759			
29	38ØØ.Ø	38ØØ.Ø	3773.Ø	6Ø.Ø	1.36Ø6	1.3611	Ø.ØØ26	1.3637	2767			
28	382Ø.Ø	382Ø.Ø	3793.Ø	6Ø.Ø	1.3651	1.3656	Ø.ØØ26	1.3682	2772			
27	384Ø.Ø	384Ø.Ø	3813.Ø	6Ø.Ø	1.37Ø3	1.37Ø8	Ø.ØØ26	1.3734	2776			
										1ØØ.Ø	Ø.Ø224	4463
26	386Ø.Ø	386Ø.Ø	3833.Ø	6Ø.Ø	1.375Ø	1.3755	Ø.ØØ26	1.3781	2781			
25	388Ø.Ø	388Ø.Ø	3853.Ø	6Ø.Ø	1.3792	1.3796	Ø.ØØ26	1.3822	2787			
24	39ØØ.Ø	39ØØ.Ø	3873.Ø	6Ø.Ø	1.3833	1.3837	Ø.ØØ26	1.3863	2794			
23	392Ø.Ø	392Ø.Ø	3893.Ø	6Ø.Ø	1.3885	1.389Ø	Ø.ØØ26	1.3916	2798			
22	394Ø.Ø	394Ø.Ø	3913.Ø	6Ø.Ø	1.3934	1.3939	Ø.ØØ26	1.3965	28Ø2			
										1ØØ.Ø	Ø.Ø231	4337
21	396Ø.Ø	396Ø.Ø	3933.Ø	6Ø.Ø	1.398Ø	1.3985	Ø.ØØ26	1.4Ø11	28Ø7			
2Ø	398Ø.Ø	398Ø.Ø	3953.Ø	6Ø.Ø	1.4Ø36	1.4Ø41	Ø.ØØ26	1.4Ø67	281Ø			
19	4ØØØ.Ø	4ØØØ.Ø	3973.Ø	6Ø.Ø	1.4Ø88	1.4Ø93	Ø.ØØ26	1.4119	2814			
18	4Ø2Ø.Ø	4Ø2Ø.Ø	3993.Ø	6Ø.Ø	1.4133	1.4138	Ø.ØØ26	1.4164	2819			
17	4Ø4Ø.Ø	4Ø4Ø.Ø	4Ø13.Ø	6Ø.Ø	1.4178	1.4183	Ø.ØØ26	1.42Ø9	2824			
										1ØØ.Ø	Ø.Ø25Ø	4ØØØ
16	4Ø6Ø.Ø	4Ø6Ø.Ø	4Ø33.Ø	6Ø.Ø	1.423Ø	1.4235	Ø.ØØ26	1.4261	2828			
15	4Ø8Ø.Ø	4Ø8Ø.Ø	4Ø53.Ø	6Ø.Ø	1.4271	1.4276	Ø.ØØ26	1.43Ø2	2834			
14	41ØØ.Ø	41ØØ.Ø	4Ø73.Ø	6Ø.Ø	1.4319	1.4324	Ø.ØØ26	1.435Ø	2838			
13	412Ø.Ø	412Ø.Ø	4Ø93.Ø	6Ø.Ø	1.4371	1.4376	Ø.ØØ26	1.44Ø2	2842			
12	414Ø.Ø	414Ø.Ø	4113.Ø	6Ø.Ø	1.441Ø	1.4415	Ø.ØØ26	1.4441	2848			
										1ØØ.Ø	Ø.Ø219	456Ø
11	416Ø.Ø	416Ø.Ø	4133.Ø	6Ø.Ø	1.445Ø	1.4455	Ø.ØØ26	1.4481	2854			
1Ø	418Ø.Ø	418Ø.Ø	4153.Ø	6Ø.Ø	1.45ØØ	1.45Ø5	Ø.ØØ26	1.4531	2858			
9	42ØØ.Ø	42ØØ.Ø	4173.Ø	6Ø.Ø	1.455Ø	1.4555	Ø.ØØ26	1.4581	2862			
8	422Ø.Ø	422Ø.Ø	4193.Ø	6Ø.Ø	1.4592	1.4598	Ø.ØØ26	1.4624	2867			
7	424Ø.Ø	424Ø.Ø	4213.Ø	6Ø.Ø	1.4635	1.464Ø	Ø.ØØ26	1.4666	2873			

6	4260.0	4260.0	4233.0	60.0	1.4684	1.4689	0.0026	1.4715	2877	100.0	0.0235	4261
5	4280.0	4280.0	4253.0	60.0	1.4734	1.4739	0.0026	1.4765	2880			
4	4300.0	4300.0	4273.0	60.0	1.4778	1.4783	0.0026	1.4809	2885			
3	4320.0	4320.0	4293.0	60.0	1.4827	1.4832	0.0026	1.4858	2889			
2	4340.0	4340.0	4313.0	60.0	1.4876	1.4881	0.0026	1.4907	2893			
1	4360.0	4360.0	4333.0	60.0	1.4918	1.4923	0.0026	1.4949	2899	100.0	0.0233	4285

COMPUTE STOPPED: 18:39:57

****

PE603717

This is an enclosure indicator page.
The enclosure PE603717 is enclosed within the container PE902139 at this location in this document.

The enclosure PE603717 has the following characteristics:

ITEM_BARCODE =	PE603717
CONTAINER_BARCODE =	PE902139
NAME =	Anemone 1-1A two way travel time log
BASIN =	GIPPSLAND
PERMIT =	VIC/P20
TYPE =	WELL
SUBTYPE =	WELL_LOG
DESCRIPTION =	Anemone 1-1A two way travel time log
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	22/01/90
W_NO =	W997
WELL_NAME =	Anemone-1
CONTRACTOR =	Seismic Service Ltd
CLIENT_OP_CO =	Petrofina Exploration Australia

APPENDIX 6

WELL COMPLETION REPORT

ANEMONE-1,1A

BASIC DATA

APPENDIX 6

GEOCHEMICAL LOG

PE600987

This is an enclosure indicator page.
The enclosure PE600987 is enclosed within the container PE902139 at this location in this document.

The enclosure PE600987 has the following characteristics:

ITEM_BARCODE =	PE600987
CONTAINER_BARCODE =	PE902139
NAME =	Geochemical Log
BASIN =	GIPPSLAND
PERMIT =	
TYPE =	WELL
SUBTYPE =	WELL_LOG
DESCRIPTION =	Geochemical Log
REMARKS =	
DATE_CREATED =	31/12/1989
DATE_RECEIVED =	22/01/1990
W_NO =	W997
WELL_NAME =	Anemone-1
CONTRACTOR =	Petrofina Exploration
CLIENT_OP_CO =	Petrofina Exploration

(Inserted by DNRE - Vic Govt Mines Dept)

PE600988

This is an enclosure indicator page.
The enclosure PE600988 is enclosed within the container PE902139 at this location in this document.

The enclosure PE600988 has the following characteristics:

ITEM_BARCODE = PE600988
CONTAINER_BARCODE = PE902139
NAME = Geochemical Log
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = Geochemical Log
REMARKS =
DATE_CREATED = 31/12/1989
DATE_RECEIVED = 22/01/1990
W_NO = W997
WELL_NAME = Anemone-1
CONTRACTOR = Petrofina Exploration
CLIENT_OP_CO = Petrofina Exploration

(Inserted by DNRE - Vic Govt Mines Dept)