

DEPARTMENT OF MINES AND ENERGY  
SOUTH AUSTRALIA

REPT.BK.NO. 839  
POST CRETACEOUS STRUCTURE OF  
THE COOPER BASIN REGION IN S.A.  
& ITS RELEVANCE TO PETROLEUM  
MIGRATION AND ENTRAPMENT

OIL, GAS AND COAL DIVISION

by

J.G.G. MORTON

SEPTEMBER, 1987

DME.81/83

CONTENTSPAGE

|                                 |   |
|---------------------------------|---|
| INTRODUCTION                    | 1 |
| SOURCES AND LIMITATIONS OF DATA | 1 |
| Seismic                         | 1 |
| Well logs                       | 1 |
| Surface Data                    | 2 |
| INTERPRETATION AND CONCLUSIONS  | 2 |
| REFERENCES                      | 4 |

## APPENDIX: List of Formation Tops.

| <u>List of Figures</u> |                                                                | <u>Plan No.</u> |
|------------------------|----------------------------------------------------------------|-----------------|
| Fig. 1.                | Structure map. Top Cadna-owie.                                 | 86-326          |
| Fig. 2.                | Structure map. Top Winton Formation.                           | 86-328          |
| Fig. 3.                | Regional Topography.                                           | 86-327          |
| Fig. 4.                | West-East Section, Cadna-owie to Surface,<br>Toolachee Field.  | 86-329          |
| Fig. 5.                | West-East Section, Cadna-owie to Surface,<br>Tirrawarra Field. | 86-330          |
| Fig. 6.                | Stratigraphic Nomenclature.                                    | S19489          |

DEPARTMENT OF MINES AND ENERGY  
SOUTH AUSTRALIA

Rept.Bk.No. 839  
D.M.E. No. 81/83  
Env. No. 4955  
Disk No. 187

POST CRETACEOUS STRUCTURE OF THE COOPER BASIN REGION  
IN S.A. AND ITS RELEVANCE TO PETROLEUM  
MIGRATION AND ENTRAPMENT

INTRODUCTION

The Cooper Basin region has had a long structural history, reflected in different structural styles ranging from thrust faults, extensional 'horst and graben' to wrenching (Kuang, 1985). The timing of this structuring in relation to the main period of oil generation in the Eromanga Basin is critical in assessing the prospectivity of different areas of the Basin (Pitt, 1986).

The purpose of this investigation was to map and model the amount of structuring that has taken place since oil generation in the Mesozoic sequence is thought to have begun in the Late Cretaceous/Early Tertiary.

SOURCES AND LIMITATION OF DATA

Seismic

There is little correlatable seismic data above the "C" reflector (near base cretaceous). Some recent seismic lines (mainly over the Murta block) show a reflector that is probably equivalent to the base Eyre Formation. However, structure seen on these lines may be artificial due to the sections being processed for reflectors below the top Cadna-owie Formation. Because of this and the fact that such seismic data are limited in extent anyway, they were not used in this study.

Well logs

Gamma ray and sonic logs were examined over the interval down to top Cadna-owie section in the Tirrawarra and Toolachee fields (Figs. 4,5) in an attempt to find suitable petrophysical markers that could be mapped basinwide. Only one horizon between

quiet tectonic activity in the Tertiary. This may explain why oil exploration on such 'young' features has been conspicuously unsuccessful compared to older features such as the GMI trend or the Murteree Horst. However, very few structures have so far been adequately tested, as structural culminations are usually very small and close to the resolution limits of seismic mapping, so that it is not possible to draw any statistical conclusions at present. It is hoped that the maps presented in this report will provide the basis for future conclusions, once more Eromanga Basin targets have been adequately tested.

the Top Cadna-owie and ground level was found that was probably time equivalent and consistent enough to map; top Winton Formation/Base Eyre Formation (approx. the Late Cretaceous/Early Tertiary boundary). Most other markers recognised on logs showed evidence of diachroneity and facies variations or could not be mapped regionally hence were not suitable for this study. Lack of palynological control in the Early Cretaceous-Tertiary section also hindered mapping and timing of structure. Fig. 6 summarizes the stratigraphic nomenclature used in this study.

### Surface Data

Spot elevation data was available for the 100 000 sheets that comprise the STRZELECKI and INNAMINCKA 1:250 000 sheets; in addition there exists surveyed ground level elevations for all wells in the region, and ground level elevations from gravity and seismic survey stations. As sand dune elevations range from 10 to 20 m, and the regional ground level changes elevation by 10 m in approx. 20-30 km; some method was needed to 'smooth' out local effects. This was achieved successfully by using the spot heights on the 1:250 000 topographic sheets, with ground level elevations of all wells, and contouring by hand these points only. More detailed contours of ground levels would only complicate contours to such a degree that the regional trends would be obscured.

The areas of the Strzelecki and Innamincka 1:250 000 geological sheets were visited in September, 1985 to complement geological mapping already completed by the Geological Survey. The additional outcrops recorded are shown on the contour maps.

### INTERPRETATION AND CONCLUSIONS

From examination of the 3 maps (ground level, base Eyre/top Winton, top Cadna-owie Formation) it would appear that structural movements in the Tertiary and Quaternary in general were reactivations of earlier features. However most uplift appears to have occurred along the Qld./S. Aust. border where features such as the Innamincka Dome and Della-Nappacoongee high are apparently still active. If these are similar to the Dalhousie anticline (Krieg, 1986) then most of these movements may have taken place in the late Pleistocene to Holocene, with relatively

## REFERENCES

- Krieg, G.W., 1986. Stratigraphy and Tectonics of the Dalhousie Anticline, southwest Eromanga Basin contrib. to the Geol. & Hydrocarb. Pot. of the Eromanga Basin, GSA spec. Pub. 12:175-182.
- Kuang, K.S., 1985. History and style of Cooper-Eromanga Basin Structures. 4th ASEG Conf. pp.245-248.
- Pitt, G.M., 1986. Geothermal Gradients, geothermal histories, and the timing of thermal maturation in the Eromanga-Cooper Basins. Contrib. to the Geol. & Hydrocarb. Pot. of the Eromanga Basin, GSA Spec. Pub. 12:323-352.

# Appendix: List of Formation Tops

| Well        | KB  |     | GL | KB         |                | Subsea     |                |
|-------------|-----|-----|----|------------|----------------|------------|----------------|
|             |     |     |    | Top Winton | Top Cadna-owie | Top Winton | Top Cadna-owie |
| Alwyn 1     | 113 | 100 |    | 500        | 3703           | 387        | 3590           |
| Andree 1    | 114 | 94  |    | 341        | 5647           | 227        | 5533           |
| Andree 2    | 147 | 125 |    | 837?       | 5708           | 690?       | 5561           |
| Aroona 1    | 215 | 195 |    | 404        | 4490           | 189        | 4275           |
| Bagundi 1   | 214 | 194 |    | 383        | 4464           | 169        | 4250           |
| Barratta 1  | 190 | 175 |    | 493        | 4590           | 303        | 4400           |
| Barcooloo 1 | 192 | 178 |    | 340        | 4352           | 148        | 4160           |
| Beanbush 1  | 162 | 148 |    | 795        | 6388           | 633        | 6226           |
| Biala 1     | 149 | 131 |    | 536?       | 3758           | 387?       | 3609           |
| Biala 2     | 164 | 150 |    | 498        | 3766           | 334        | 3602           |
| Big Lake 1  | 137 | 107 |    | 827        | 5367           | 690        | 5230           |
| " 2         | 122 | 105 |    | 1023?      | 5240           | 901?       | 5118           |
| " 3         | 139 | 120 |    | 903        | 5373           | 764        | 5234           |
| " 4         | 128 | 111 |    | 950        | 5318           | 822        | 5190           |
| " 5         | 138 | 118 |    | 823        | 5267           | 685        | 5129           |
| " 6         | 154 | 136 |    | 607        | 5310           | 761        | 5156           |
| " 7         | 138 | 123 |    | 940        | 5335           | 802        | 5197           |
| " 8         | 122 | 107 |    | 870        | 5287           | 748        | 5165           |
| " 9         | 133 | 118 |    | 866        | 5253           | 733        | 5120           |
| " 10        | 126 | 111 |    | 981        | 5321           | 855        | 5195           |
| " 11        | 139 | 124 |    | 946        | 5285           | 807        | 5146           |
| " 12        | 124 | 110 |    | 850?       | 5261           | 726?       | 5137           |
| " 13        | 147 | 132 |    | 941        | 5386           | 794        | 5239           |
| " 14        | 117 | 103 |    | 934        | 5378           | 817        | 5261           |
| " 15        | 137 | 120 |    | 806?       | 5283           | 669?       | 5146           |
| " 16        | 122 | 108 |    | 874        | 5276           | 752        | 5154           |
| " 17        | 122 | 107 |    | 915        | 5288           | 793        | 5166           |
| " 18        | 122 | 107 |    | 880        | 5248           | 758        | 5126           |
| " 19A       | 124 | 118 |    | -          | 5284           | -          | 5160           |
| " 20        | 120 | 106 |    | 837        | 5297           | 717        | 5177           |
| " 21        | 140 | 125 |    | 922        | 5335           | 782        | 5195           |
| " 22        | 115 | 100 |    | 944        | 5326           | 829        | 5211           |
| " 23        | 118 | 104 |    | 931?       | 5357           | 813?       | 5239           |
| " 24        | 131 | 115 |    | 997        | 5373           | 866        | 5242           |
| " 25        | 119 | 104 |    | 918        | 5337           | 799        | 5218           |
| " 26        | 139 | 108 |    | 870        | 5287           | 731?       | 5148           |
| " 27        | 138 | 127 |    | 844        | 5278           | 706        | 5140           |
| " 28        | 127 | 112 |    | 900        | 5280           | 773        | 5153           |
| " 29        | 125 | 105 |    | 928        | 5312           | 803        | 5187           |
| " 30        | 139 | 119 |    | 914        | 5400           | 775        | 5261           |
| " 31        | 155 | 130 |    | 900        | 5352           | 745        | 5197           |
| " 32        | 133 | 108 |    | 866        | 5235           | 733        | 5162           |
| " 33        | 141 | 116 |    | 972        | 5421           | 831        | 5280           |
| " 34        | 139 | 116 |    | 875        | 5289           | 736        | 5150           |
| " 35        | 161 | 136 |    | 950        | 5316           | 789        | 5155           |
| " 36        | 127 | 108 |    | 840        | 5267           | 713        | 5140           |
| " 37        | 127 | 108 |    | 850        | 5260           | 723        | 5133           |
| " 38        | 137 | 118 |    | 920        | 5666           | 783        | 5529           |
| " 39        | 130 | 108 |    | 860        | 5220           | 730        | 5090           |
| " 40        | 122 | 108 |    | 850        | 5286           | 728        | 5164           |

| Well          |    | KB  | GL  | Top Winton | KB   |            | Subsea     |                |
|---------------|----|-----|-----|------------|------|------------|------------|----------------|
|               |    |     |     |            | Top  | Cadna-owie | Top Winton | Top Cadna-owie |
| Bookabourdie  | 1  | 151 | 133 | 630        | 5545 |            | 479        | 5394           |
| "             | 2  | 155 | 135 | 588        | 5570 |            | 433        | 5415           |
| "             | 3  | 164 | 142 | 572?       | 5634 |            | 408?       | 5470           |
| "             | 4  | 159 | 137 | 745        | 5850 |            | 586        | 5691           |
| "             | 5  | 155 | 135 | 840?       | 5548 |            | 685?       | 5393           |
| Boxwood       | 1  | 91  | 75  | 740        | 4133 |            | 649        | 4042           |
| "             | 2  | 98  | 79  | 714        | 4013 |            | 616        | 3915           |
| Brolga        | 1  | 128 | 112 | 866        | 5659 |            | 738        | 5531           |
| "             | 2  | 110 | 93  | 824        | 5676 |            | 714        | 5566           |
| Brumby        | 1  | 277 | 261 | 324        | 4272 |            | 47         | 3995           |
| "             | 2  | 266 | 246 | 342        | 4342 |            | 76         | 4076           |
| "             | 3  | 290 | 270 | 350        | 4340 |            | 60         | 4050           |
| Buckina       | 1  | 158 | 143 | 406        | 3830 |            | 248        | 367            |
| Burke         | 1  | 279 | 273 | 565?       | 4717 |            | 286?       | 4438           |
| "             | 2  | 301 | 294 | 460        | 4729 |            | 159        | 4428           |
| "             | 3  | 299 | 275 | -          | 4754 |            | -          | 4455           |
| "             | 4  | 287 | 269 | 387        | 4708 |            | 100        | 4421           |
| "             | 5  | 274 | 257 | 495        | 4772 |            | 221        | 4498           |
| Burley        | 1  | 173 | 157 | 340        | 5429 |            | 167        | 5256           |
| "             | 2  | 179 | 157 | 274?       | 5412 |            | 95?        | 5233           |
| Burrunga      | 1  | 225 | 210 | 510        | 4041 |            | 285        | 3816           |
| Charo         | 1  | 100 | 80  | <600       | -    |            | <500       | -              |
| Childe        | 1  | 177 | 157 | 392        | 4294 |            | 215        | 4117           |
| Cherri        | 1  | 117 | 101 | 650        | 3082 |            | 533        | 2965           |
| Coochilara    | 1  | 260 | 236 | 488        | 4655 |            | 228        | 4395           |
| Coonatie      | 1  | 150 | 137 | 897        | 5956 |            | 747        | 5806           |
| "             | 2  | 173 | 150 | 1003       | 5902 |            | 830        | 5729           |
| Coongie       | 1  | 111 | 93  | 495?       | 5045 |            | 384?       | 4934           |
| Coopers Creek | 1  | 127 | 104 | 673        | 5440 |            | 546        | 5313           |
| Corkwood      | 1  | 315 | 302 | 390        | 4158 |            | 75         | 3843           |
| Cowan         | 1  | 122 | 101 | 955        | 4796 |            | 833        | 4674           |
| Cowralli      | 1  | 116 | 100 | 750        | 5452 |            | 634        | 5336           |
| Cuttapirrie   | 1  | 125 | 109 | 695?       | 5760 |            | 570?       | 5635           |
| Daer          | 1  | 115 | 93  | 270?       | 4013 |            | 155?       | 3898           |
| Daralingie    | 1  | 104 | 85  | 984        | 4642 |            | 880        | 4538           |
| "             | 2  | 90  | 74  | 865        | 4745 |            | 775        | 4655           |
| "             | 3  | 91  | 81  | 831        | 4791 |            | 740        | 4700           |
| "             | 4  | 109 | 93  | 912        | 4809 |            | 803        | 4700           |
| "             | 5  | 145 | 130 | 922        | 4635 |            | 777        | 4490           |
| "             | 6  | 180 | 160 | 931        | 4779 |            | 751        | 4599           |
| "             | 7  | 110 | 89  | 910        | 4766 |            | 800        | 4656           |
| "             | 8  | 109 | 88  | 917        | 4774 |            | 808        | 4665           |
| "             | 9  | 95  | 79  | 877        | 4735 |            | 782        | 4640           |
| "             | 10 | 133 | 113 | 935        | 4722 |            | 802        | 4589           |
| "             | 11 | 118 | 100 | 842        | 4792 |            | 724        | 4674           |
| "             | 12 | 145 | 129 | 932        | 4828 |            | 787        | 4683           |
| "             | 13 | 113 | 98  | 729        | 4028 |            | 616        | 3915           |
| "             | 14 | 90  | 75  | 848        | 4778 |            | 758        | 4688           |
| "             | 15 | 113 | 98  | 846        | 4784 |            | 733        | 4671           |
| Della         | 1  | 205 | 190 | 237        | 4325 |            | 32         | 4120           |
| "             | 2  | 149 | 131 | 325        | 4486 |            | 176        | 4337           |
| "             | 3  | 222 | 210 | 160?       | 4363 |            | +62?       | 4141           |
| "             | 4  | 196 | 210 | 143        | 4254 |            | +53        | 4058           |

| Well         | KB  | GL  | Top Winton | KB   |            | Subsea     |                |
|--------------|-----|-----|------------|------|------------|------------|----------------|
|              |     |     |            | Top  | Cadna-owie | Top Winton | Top Cadna-owie |
| Della 5      | 166 | 154 | 199?       | 4246 |            | 33?        | 4080           |
| " 6          | 165 | 160 | 187        | 4376 |            | 22         | 4211           |
| " 7          | 179 | 168 | 289        | 4330 |            | 110        | 4151           |
| " 8          | 199 | 186 | 146        | 4259 |            | +53        | 4060           |
| " 9          | 178 | 163 | 177        | 4283 |            | +1         | 4105           |
| " 10         | 173 | 159 | 200        | 4276 |            | 27         | 4103           |
| " 11         | 197 | 186 | 157        | 4247 |            | +40        | 4050           |
| " 12         | 187 | 174 | 231        | 4293 |            | 44         | 4106           |
| " 13         | 188 | 176 | -          | 4332 |            | -          | 4144           |
| " 14         | 182 | 168 | 246        | 4320 |            | 64         | 4138           |
| " 15         | 195 | 181 | 286        | 4270 |            | +91        | 4075           |
| " 16         | 184 | 169 | 185        | 4318 |            | +1         | 4134           |
| " 17         | 194 | 178 | 225        | 4270 |            | 31         | 4076           |
| Dilchee 1    | 265 | 245 | 467        | 4740 |            | 202        | 4475           |
| Dirkala 1    | 97  | 77  | 805        | 4306 |            | 708        | 4209           |
| Dullingari 1 | 300 | 285 | 405        | 4512 |            | 105        | 4212           |
| " 2          | 310 | 299 | 454?       | 4535 |            | 144?       | 4225           |
| " 3          | 275 | 264 | 428        | 4610 |            | 153        | 4335           |
| " 4          | 289 | 274 | 457        | 4602 |            | 168        | 4313           |
| " 5          | 259 | 249 | -          | 4550 |            | -          | 4291           |
| " 6          | 313 | 308 | 355        | 4589 |            | +42        | 4276           |
| " 7          | 260 | 246 | 262        | 4574 |            | 2          | 4314           |
| " 8          | 298 | 288 | 305        | 4574 |            | 7          | 4276           |
| " 9          | 260 | 251 | 399        | 4560 |            | 139        | 4300           |
| " 10         | 296 | 284 | 442        | 4646 |            | 146        | 4350           |
| " 11         | 277 | 266 | 475        | 4688 |            | 198        | 4411           |
| " 12         | 290 | 281 | 470        | 4644 |            | 180        | 4354           |
| " 13         | 274 | 261 | 352        | 4578 |            | 78         | 4304           |
| " 14         | 272 | 261 | 365        | 4568 |            | 93         | 4296           |
| " 15         | 265 | 252 | 260        | 4549 |            | +5         | 4284           |
| " 16         | 285 | 271 | 440        | 4504 |            | 155        | 4219           |
| " 17         | 303 | 273 | 454        | 4640 |            | 151        | 4337           |
| " 18         | 313 | 300 | 447        | 4539 |            | 134        | 4226           |
| " 19         | 307 | 286 | 459        | 4541 |            | 152        | 4234           |
| " 20         | 259 | 247 | 429        | -    |            | 170        | -              |
| " 21         | 255 | 243 | 453?       | -    |            | 198?       | -              |
| " 22         | 292 | 298 | 403        | 4474 |            | 111        | 4202           |
| " 23         | 313 | 294 | 385        | 4521 |            | 72         | 4208           |
| " 24         | 307 | 285 | 445        | 4891 |            | 138        | 4584           |
| " 25         | 289 | 291 | 430        | 4532 |            | 141        | 4243           |
| " 26         | 267 | 254 | 360        | 4527 |            | 93         | 4260           |
| " 27         | 317 | 291 | 481        | 4606 |            | 164        | 4289           |
| " 28         | 281 | 261 | 400        | 4554 |            | 119        | 4273           |
| " 29         | 292 | 279 | 402        | 4479 |            | 110        | 4187           |
| " 30         | 304 | 289 | 378?       | 4509 |            | 74?        | 4205           |
| " 31         | 297 | 283 | 401?       | 4490 |            | 104?       | 4193           |
| " 32         | 307 | 287 | 449        | 4498 |            | 142        | 4191           |
| " 33         | 286 | 267 | -          | -    |            | -          | -              |
| " 34         | 257 | 241 | -          | 4657 |            | -          | 4400           |
| " 35         | 290 | 271 | 420        | 4600 |            | 130        | 4310           |
| " 36         | 311 | 293 | 477        | 4590 |            | 166        | 4279           |
| " 37         | 285 | 266 | 350        | 4766 |            | 65         | 4481           |

| Well              | KB  | GL  | Top Winton | KB   |            | Subsea     |                |
|-------------------|-----|-----|------------|------|------------|------------|----------------|
|                   |     |     |            | Top  | Cadna-owie | Top Winton | Top Cadna-owie |
| Dullingari 38     | 303 | 289 | 416        | 4494 |            | 113        | 4191           |
| " 39              | 300 | 280 | 398        | 4696 |            | 98         | 4396           |
| " 40              | 308 | 292 | 332        | 4597 |            | 24         | 4265           |
| Dullingari Nth. 1 | 268 | 252 | 429        | 4565 |            | 161        | 4297           |
| " " 2             | 283 | 274 | 464        | 4839 |            | 181        | 4556           |
| " " 3             | 288 | 271 | 459        | 4600 |            | 171        | 4312           |
| Dunoon 1          | 107 | 92  | 161        | 3561 |            | 54         | 3454           |
| Fly Lake 1        | 115 | 96  | 732        | 5524 |            | 617        | 5409           |
| " 2               | 132 | 115 | 859?       | 5605 |            | 727?       | 5473           |
| " 3               | 122 | 102 | 752        | 5998 |            | 630        | 5476           |
| " 4               | 113 | 99  | 738        | 5594 |            | 625        | 5481           |
| " 5               | 114 | 98  | 784        | 5538 |            | 670        | 5424           |
| " 6               | 115 | 97  | 804        | 5552 |            | 689        | 5437           |
| Garanjanie 1      | 114 | 94  | 825        | 4306 |            | 711        | 4192           |
| Gidgealpa 1       | 129 | 113 | 688        | 5212 |            | 559        | 5083           |
| " 2               | 126 | 110 | 588        | 4677 |            | 462        | 4551           |
| " 3               | 124 | 108 | 615        | 4880 |            | 491        | 4756           |
| " 4               | 115 | 100 | 580        | 4742 |            | 465        | 4627           |
| " 5               | 114 | 99  | -          | 4770 |            | -          | 4656           |
| " 6               | 125 | 109 | -          | 5000 |            | -          | 4875           |
| " 7               | 116 | 100 | -          | 4784 |            | -          | 4668           |
| " 8               | 147 | 131 | 533        | 4778 |            | 386        | 4631           |
| " 9               | 140 | 140 | 616        | 4797 |            | 476        | 4657           |
| " 10              | 125 | 108 | 590        | 4767 |            | 465        | 4642           |
| " 11              | 125 | 109 | 576        | 4692 |            | 451        | 4567           |
| " 12              | 139 | 123 | 621        | 4658 |            | 482        | 4519           |
| " 13              | 146 | 134 | -          | 4781 |            | -          | 4635           |
| " 14              | 121 | 106 | 562        | 4596 |            | 441        | 4475           |
| " 15              | 122 | 107 | 578?       | 4597 |            | 456?       | 4475           |
| " 16              | 116 | 100 | 669        | 4726 |            | 553        | 4610           |
| " 17              | 114 | 98  | 628        | 4720 |            | 514        | 4606           |
| " 18              | 129 | 109 | 567        | 4633 |            | 438        | 4504           |
| " 19              | 117 | 101 | 634        | 4722 |            | 517        | 4605           |
| " 20              | 107 | 91  | 608        | 4714 |            | 501        | 4607           |
| " 21              | 118 | 99  | 626        | 4725 |            | 508        | 4607           |
| " 22              | 113 | 98  | 676        | 4734 |            | 563        | 4621           |
| Gidgealpa 23      | 114 | 98  | 666        | 4738 |            | 552        | 4624           |
| " 24              | 114 | 98  | -          | 4708 |            | -          | 4594           |
| " 25              | 114 | 98  | -          | 4740 |            | -          | 4626           |
| Gooranie 1        | 131 | 109 | 600        | 5434 |            | 469        | 5303           |
| Gurra 1           | 116 | 103 | 590        | 3158 |            | 474        | 3042           |
| Innamincka 1      | 413 | 401 | eroded     | 3958 |            | eroded     | 3545           |
| " 4               | 334 | 361 | eroded     | 3879 |            | eroded     | 3545           |
| Jack Lake 1       | 110 | 91  | 773        | 5460 |            | 663        | 5350           |
| Jena 1            | 116 | 97  | 547        | 3702 |            | 431        | 3586           |
| Kalanna 1         | 129 | 112 | 722        | 4739 |            | 593        | 4610           |
| Kalladeina 1      | 108 | 92  | ?          | 4235 |            | ?          | 4127           |
| Kanowana 1        | 118 | 129 | 578        | 5506 |            | 460        | 5388           |
| " 2               | 151 | 129 | 750        | 5515 |            | 599        | 5364           |
| Keeto 1           | 196 | 180 | 526        | 4365 |            | 330        | 4169           |
| Kenry 1           | 194 | 176 | ?          | 4360 |            | ?          | 4166           |
| Kerinna 1         | 177 | 162 | 329        | 3997 |            | 152        | 3820           |

| Well            | KB  |      | GL | Top Winton | KB             |      | Top Winton | Subsea         |  |
|-----------------|-----|------|----|------------|----------------|------|------------|----------------|--|
|                 |     |      |    |            | Top Cadna-owie |      |            | Top Cadna-owie |  |
| Kerna 1         | 285 | 264  |    | 454        |                | 4729 | 169        | 4444           |  |
| " 2A            | 287 | 251  |    | 438        |                | 4817 | 151        | 4530           |  |
| " 3             | 288 | 275  |    | 428        |                | 4736 | 140        | 4448           |  |
| Kidman 1        | 240 | 221  |    | 430        |                | 4341 | 190        | 4101           |  |
| " 2             | 255 | 239  |    | 325        |                | 4515 | 70         | 4260           |  |
| " 3             | 254 | 236  |    | 223        |                | 4432 | +31        | 4178           |  |
| " 4             | 241 | 221  |    | 333        |                | 4383 | 92         | 4142           |  |
| Kirby 1         | 335 | 313  |    | -          |                | 5210 | -          | 4875           |  |
| Kiwarrick 1     | 129 | 114  |    | 466        |                | 3847 | 337        | 3718           |  |
| Kobari 1        | 133 | 113  |    | -          |                | 3800 | -          | 3667           |  |
| Kudrieke 1      | 133 | 122  |    | 725?       |                | 5930 | 592?       | 5797           |  |
| Kumbarie 1      | 90  | 77   |    | 645        |                | 3507 | 555        | 3417           |  |
| Lake Hope 1     | 52  | 39   |    | 600        |                | 4667 | 548        | 4615           |  |
| Lamdina 1       | 166 | 144  |    | 990        |                | 6074 | 824        | 5908           |  |
| Leleptian 1     | 108 | 88   |    | 770        |                | 5620 | 662        | 5512           |  |
| Limestone Ck. 1 | 154 | 138  |    | 583        |                | 3731 | 129        | 3577           |  |
| " " 2           | 146 | 128  |    | 546        |                | 3734 | 400        | 3588           |  |
| " " 3           | 132 | 113  |    | 580        |                | 3726 | 448        | 3594           |  |
| " " 4           | 146 | 127  |    | 480        |                | 3732 | 334        | 3586           |  |
| " " 5           | 150 | 131  |    | 500        |                | 3760 | 350        | 3610           |  |
| " " 6           | -   | 133  |    | -          |                | -    | 351        | 3616           |  |
| Lowanna 1       | 135 | 114  |    | 884        |                | 5347 | 749        | 5212           |  |
| Marabooka 1     | 182 | 160  |    | 247        |                | 4357 | 65         | 4175           |  |
| " 2             | 201 | 179  |    | 265        |                | 4401 | 64         | 4200           |  |
| " 3             | 194 | 178  |    | 260        |                | 4360 | 66         | 4166           |  |
| " 4             | 195 | 178  |    | 277        |                | -    | 82         | -              |  |
| Marana 1        | 214 | 201  |    | 462        |                | 4346 | 248        | 4132           |  |
| McKinlay 1      | 140 | 130  |    | 454        |                | 3730 | 314        | 3590           |  |
| " 2             | 136 | 125  |    | 462        |                | 3719 | 326        | 3594           |  |
| " 3             | 153 | 138  |    | 443        |                | 3702 | 290        | 3549           |  |
| McLeod 1        | 241 | 220  |    | 132        |                | 5350 | +109       | 5109           |  |
| Meranji 1       | 135 | 115  |    | 646        |                | 5302 | 511        | 5167           |  |
| " 2             | 136 | 114  |    | 733        |                | 5350 | 597        | 5214           |  |
| Merrimelia 1    | 139 | 116  |    | 544?       |                | 5164 | 405?       | 5025           |  |
| " 2             | 162 | 146  |    | 640        |                | 5172 | 478        | 5010           |  |
| " 3             | 194 | 140? |    | 600?       |                | 5122 | 406?       | 4928           |  |
| " 4             | 158 | 142  |    | -          |                | 5087 | -          | 4929           |  |
| " 5             | 133 | 116  |    | -          |                | 5007 | -          | 4874           |  |
| " 6             | 131 | 113  |    | 603        |                | 4832 | 472        | 4701           |  |
| " 7             | 148 | 126  |    | 634        |                | 4942 | 486        | 4794           |  |
| " 8             | 154 | 136  |    | 514        |                | 4876 | 360        | 4722           |  |
| " 9             | 156 | 134  |    | 664        |                | 5612 | 508        | 4792           |  |
| " 10            | 137 | 115  |    | 573        |                | 4852 | 436        | 4715           |  |
| " 11            | 131 | 109  |    | 622        |                | 4865 | 491        | 4734           |  |
| " 12            | 137 | 114  |    | -          |                | 4941 | -          | 4804           |  |
| " 13            | 159 | 137  |    | 604        |                | 4966 | 445        | 4807           |  |
| " 14            | 136 | 116  |    | -          |                | 4926 | -          | 4790           |  |
| " 15            | 141 | 125  |    | 685        |                | 4906 | 544        | 4765           |  |
| " 16            | 148 | 136  |    | -          |                | 4874 | -          | 4726           |  |
| " 17            | 244 | 137  |    | 681        |                | 5010 | 437        | 4766           |  |
| " 18            | 174 | 156  |    | 662        |                | 4940 | 488        | 4766           |  |
| " 19            | 139 | 119  |    | -          |                | 5142 | -          | 5003           |  |
| " 20            | 144 | 125  |    | -          |                | 5008 | -          | 4864           |  |
| " 21            | 130 | 110  |    | 605        |                | 4837 | 475        | 4707           |  |

| Well      |     |     | KB         |                  | Subsea     |                |
|-----------|-----|-----|------------|------------------|------------|----------------|
|           | KB  | GL  | Top Winton | - Top Cadna-owie | Top Winton | Top Cadna-owie |
| Mina 1    | 137 | 122 | 372        | 4657             | 235        | 4520           |
| Mingana 1 | 118 | 97  | 774        | 5660             | 656        | 5542           |
| Minkie 1  | 145 | 125 | 660        | 4993             | 515        | 4848           |
| Mitchie 1 | 148 | 128 | 770        | 5937             | 622        | 5789           |
| Moolion 1 | 146 | 126 | 874        | 5824             | 728        | 5678           |
| Moomba 1  | 129 | 113 | 850        | 5305             | 721        | 5176           |
| " 2       | 116 | 100 | 856        | 5258             | 740        | 5142           |
| " 3       | 158 | 142 | 580?       | 5449             | 422?       | 5291           |
| " 4       | 125 | 109 | 960        | 5444             | 835        | 5319           |
| " 5       | 166 | 150 | 895        | 5669             | 729        | 5503           |
| " 6       | 141 | 125 | -          | 5498             | -          | 5357           |
| " 7       | 144 | 128 | 842        | 5394             | 698        | 5250           |
| " 8       | 121 | 104 | 885        | 5345             | 764        | 5224           |
| " 9       | 132 | 120 | 924        | 5427             | 792        | 5295           |
| " 10      | 132 | 117 | 904        | 5345             | 772        | 5213           |
| " 11      | 138 | 122 | 918        | 5444             | 780        | 5306           |
| " 12      | 116 | 101 | 979        | 5403             | 863        | 5287           |
| " 13      | 131 | 114 | 849        | 5453             | 718        | 5322           |
| " 14      | 115 | 99  | 930        | 5312             | 815        | 5197           |
| " 15      | 145 | 130 | -          | 5423             | -          | 5278           |
| " 16      | 122 | 107 | -          | 5353             | -          | 5231           |
| " 17      | 123 | 108 | -          | 5387             | -          | 5264           |
| " 18      | 122 | 107 | 932        | 5405             | 810        | 5283           |
| " 19      | 119 | 105 | 936        | 5416             | 817        | 5297           |
| " 20      | 121 | 105 | 915        | 5336             | 794        | 5215           |
| " 21      | 150 | 135 | 945        | 5414             | 795        | 5264           |
| " 22      | 123 | 107 | 891        | 5414             | 768        | 5291           |
| " 23      | 186 | 170 | 950        | 5412             | 764        | 5226           |
| " 24      | 122 | 106 | 882        | 5344             | 760        | 5222           |
| " 25      | 110 | 95  | 904        | 5332             | 794        | 5222           |
| " 26      | 133 | 118 | 869        | 5457             | 736        | 5324           |
| " 27      | 176 | 161 | 891        | 5552             | 715        | 5376           |
| " 28      | 155 | 141 | 895        | 5355             | 740        | 5200           |
| " 29      | 120 | 104 | 920        | 5322             | 800        | 5202           |
| " 30      | 118 | 104 | 948        | 5389             | 830        | 5271           |
| " 31      | 139 | 125 | 949        | 5405             | 810        | 5266           |
| " 32      | 159 | 137 | 920        | 5382             | 761        | 5223           |
| " 33      | 115 | 101 | 900        | 5380             | 785        | 5265           |
| " 34      | 154 | 138 | 930        | 5385             | 776        | 5231           |
| " 35      | 134 | 119 | 922        | 5356             | 788        | 5222           |
| " 36      | 108 | 94  | 857        | 5317             | 749        | 5209           |
| " 37      | 135 | 114 | 924        | 5361             | 789        | 5226           |
| " 38      | 121 | 107 | 878        | 5358             | 757        | 5237           |
| " 39      | 131 | 114 | 900        | 5339             | 769        | 5208           |
| " 40      | 125 | 109 | 892        | 5377             | 767        | 5252           |
| " 41      | 137 | 123 | 895        | 5333             | 758        | 5196           |
| " 42      | 127 | 111 | 817        | 5277             | 690        | 5150           |
| " 43      | 133 | 117 | 862        | 5293             | 729        | 5160           |
| " 44      | 132 | 115 | 859        | 5390             | 727        | 5258           |
| " 45      | 137 | 124 | 977        | 5412             | 840        | 5275           |
| " 46      | 141 | 128 | 919        | 5328             | 778        | 5187           |
| " 47      | 145 | 126 | 922        | 5453             | 777        | 5308           |
| " 48      | 130 | 110 | -          | 5426             | -          | 5296           |

| Well           | KB  | GL  | Top Winton | KB   |            | Subsea     |                |
|----------------|-----|-----|------------|------|------------|------------|----------------|
|                |     |     |            | Top  | Cadna-owie | Top Winton | Top Cadna-owie |
| Moomba 49      | 129 | 110 | 838        | 5341 | 709        | 5212       |                |
| " 50           | 136 | 114 | 904        | 5545 | 768        | 5409       |                |
| " 51           | 165 | 145 | 862        | 5568 | 697        | 5403       |                |
| " 52           | 142 | 125 | 883        | 5375 | 741        | 5233       |                |
| " 53           | 171 | 155 | -          | -    | -          | -          |                |
| Moomba North 1 | 182 | 164 | 924        | 5484 | 742        | 5302       |                |
| " " 2          | 144 | 122 | 867        | 5495 | 723        | 5351       |                |
| Moomba South 1 | 124 | 99  | 993        | 5433 | 869        | 5309       |                |
| Moorari 1      | 142 | 125 | 768        | 5715 | 626        | 5573       |                |
| " 2            | 135 | 118 | 867        | 5818 | 32         | 5683       |                |
| " 3            | 174 | 158 | 926        | 5715 | 752        | 5541       |                |
| " 4            | 163 | 147 | 796        | 5746 | 633        | 5583       |                |
| " 5            | 155 | 135 | 925        | 5705 | 770        | 5550       |                |
| " 6            | 150 | 130 | 782        | 5771 | 632        | 5621       |                |
| " 7            | 167 | 150 | 976?       | 5753 | 809?       | 5586       |                |
| Mudera 1       | 147 | 125 | 316        | 4548 | 169        | 4401       |                |
| " 2            | 145 | 135 | 322        | 4561 | 177        | 4416       |                |
| " 3            | 146 | 126 | 278        | 4528 | 132        | 4382       |                |
| Mudalee 1      | 182 | 163 | 315        | 4130 | 133        | 3948       |                |
| " 2            | 202 | 186 | ?          | 3999 | ?          | 3797       |                |
| Mudrangie 1    | 145 | 128 | 773        | 5713 | 628        | 5568       |                |
| " 2            | 155 | 137 | 733        | 5693 | 578        | 5538       |                |
| Mulga 1        | 150 | 134 | 563        | 3980 | 413        | 3830       |                |
| " 2            | 178 | 164 | 636        | 3902 | 458        | 3724       |                |
| Munkarie 1     | 294 | 271 | 390        | 4235 | 96         | 3941       |                |
| " 2            | 298 | 274 | 370        | 4222 | 72         | 3924       |                |
| " 3            | 269 | 248 | 400        | 4265 | 131        | 3996       |                |
| " 4            | 304 | 289 | 415        | 4186 | 111        | 3882       |                |
| " 5            | 298 | 282 | 380        | 4305 | 82         | 4007       |                |
| " 6            | 284 | 269 | 304        | 4200 | 20         | 3916       |                |
| Murteree 1     | 154 | 138 | 366        | 4196 | 212        | 4042       |                |
| " 1A           | 207 | 101 | 568?       | 3786 | 361?       | 3579       |                |
| " 1C           | 117 | 106 | 573?       | 4311 | 456?       | 4194       |                |
| " 2            | 181 | 166 | 354        | 4186 | 173        | 4005       |                |
| Muteroo 1      | 153 | 87  | 694        | 4556 | 541        | 4403       |                |
| " 2            | 129 | 110 | 636        | 4535 | 507        | 4406       |                |
| " 3            | 109 | 87  | 591        | 4411 | 482        | 4302       |                |
| Namur 1        | 136 | 121 | 776        | 5090 | 640        | 4954       |                |
| " 2            | 176 | 161 | 834        | 4993 | 658        | 4817       |                |
| " 3            | 164 | 148 | 805        | 5160 | 641        | 4996       |                |
| Nappacoongee 1 | 282 | 266 | ?          | 4068 | ?          | 3786       |                |
| " 2            | 301 | 285 | 353        | 4005 | 52         | 3704       |                |
| " 3            | 288 | 272 | 200        | 4142 | +88        | 3854       |                |
| Narcoonowie 1  | 183 | 169 | 474        | 4128 | 291        | 3945       |                |
| " 2            | 186 | 169 | 503        | 4068 | 317        | 3882       |                |
| " 3            | 190 | 171 | 505        | 4133 | 315        | 3943       |                |
| Packsaddle 1   | 480 | 464 | -          | 5075 | -          | 4595       |                |
| " 2            | 310 | 294 | -          | 4808 | -          | 4498       |                |
| " 3            | 437 | 421 | 133        | 4513 | +304       | 4076       |                |
| " 4            | 379 | 360 | 127        | 4475 | +252       | 4096       |                |
| " 5            | 434 | 415 | 108        | 4497 | +326       | 4063       |                |
| Pando 1        | 98  | 82  | 680        | 4048 | 582        | 3950       |                |
| " 2            | 141 | 125 | 755        | 4137 | 614        | 3996       |                |

| Well           | KB  | GL - | Top Winton | KB  |            | Subsea     |                |
|----------------|-----|------|------------|-----|------------|------------|----------------|
|                |     |      |            | Top | Cadna-owie | Top Winton | Top Cadna-owie |
| Pando North    | 125 | 112  | 786        |     | 4293       | 661        | 4168           |
| Paning 1       | 302 | 286  | 153        |     | 5344       | +149       | 5042           |
| Pelketa 1      | 182 | 163  | 535        |     | 4295       | 353        | 4113           |
| Pinna 1        | 112 | 96   | 654        |     | 4368       | 542        | 4256           |
| Pira 1         | 275 | 255  | 382        |     | 4672       | 107        | 4397           |
| Pondrinie 1    | 355 | 338  | 96         |     | 4565       | +259       | 4210           |
| " 2            | 386 | 364  | 136        |     | 4707       | +250       | 4321           |
| Pooraka 1      | 250 | 229  | 170        |     | 4350       | +80        | 4100           |
| Rakoona 1      | 122 | 102  | 788        |     | 5639       | 666        | 5517           |
| Snake Hole 1   | 143 | 121  | 599        |     | 5124       | 456        | 4981           |
| Spectre 1      | 125 | 103  | 944?       |     | 5722       | 819?       | 5597           |
| Spencer 1      | 123 | 107  | 591?       |     | 4356       | 468?       | 4233           |
| " 2            | 128 | 108  | 561        |     | 4111       | 433        | 3983           |
| " 3            | 102 | 82   | 560        |     | 4198       | 458        | 4096           |
| " 4            | 131 | 111  | 590        |     | 4312       | 459        | 4181           |
| Strzelecki 1   | 201 | 184  | 327        |     | 4371       | 126        | 4170           |
| " 2            | 187 | 175  | 337        |     | 4314       | 150        | 4127           |
| " 3            | 196 | 180  | 359        |     | 4217       | 163        | 4021           |
| " 4            | 232 | 221  | 372        |     | 4241       | 140        | 4009           |
| " 5            | 208 | 188  | 391        |     | 4234       | 183        | 4026           |
| " 6            | 212 | 192  | 371        |     | 4213       | 159        | 4001           |
| " 7            | 209 | 189  | 346        |     | 4259       | 137        | 4050           |
| " 8            | 209 | 189  | 378        |     | 4224       | 169        | 4015           |
| " 9            | 208 | 188  | 405        |     | 4221       | 197        | 4013           |
| " 10           | 217 | 202  | 428        |     | 4345       | 211        | 4128           |
| " 11           | 198 | 184  | 349        |     | 4195       | 151        | 3997           |
| " 12           | 220 | 206  | 347        |     | 4273       | 127        | 4053           |
| " 13           | 203 | 189  | 354        |     | 4225       | 151        | 4022           |
| " 14           | 211 | 200  | 364        |     | 4239       | 153        | 4028           |
| " 15           | 199 | 184  | 402        |     | 4262       | 203        | 4063           |
| " 16           | 222 | 201  | 387        |     | 4300       | 165        | 4078           |
| " 17           | 212 | 191  | 346        |     | 4241       | 134        | 4029           |
| " 18           | 212 | 195  | 365        |     | 4245       | 153        | 4033           |
| " 19           | 199 | 179  | 404        |     | 4216       | 205        | 4017           |
| " 20           | 211 | 193  | 366?       |     | 4218       | 155?       | 4007           |
| " 21           | 198 | 180  | 374        |     | 4206       | 176        | 4008           |
| " 22           | 205 | 187  | 360        |     | 4198       | 155        | 3993           |
| " 23           | 210 | 192  | 380        |     | 4224       | 170        | 4014           |
| " 24           | 224 | 208  | 353        |     | 4343       | 129        | 4119           |
| " 25           | 190 | 174  | 385        |     | 4301       | 195        | 4111           |
| Three Queens 1 | 313 | 297  | 258        |     | 4502       | +55        | 4189           |
| Tilparee 1A    | 151 | 139  | 504        |     | 4178       | 353        | 4027           |
| Tindilpie 1    | 173 | 160  | 888        |     | 5615       | 715        | 5442           |
| " 2            | 121 | 99   | 850        |     | 5584       | 729        | 5463           |
| Tingatingana 1 | 101 | 82   | -          |     | 3494       | -          | 3393           |
| Tirrawarra 1   | 128 | 111  | 579        |     | 5365       | 451        | 5237           |
| " 2            | 121 | 104  | 606        |     | 5391       | 485        | 5270           |
| " 3            | 130 | 113  | ?          |     | 5569       | ?          | 5439           |
| " 4            | 128 | 111  | ?          |     | 5419       | ?          | 5291           |
| " 5            | 129 | 112  | ?          |     | 5469       | ?          | 5340           |
| " 6            | 127 | 111  | ?          |     | 5465       | ?          | 5338           |
| " 7            | 130 | 113  | ?          |     | 5510       | ?          | 5380           |
| " 8            | 126 | 109  | ?          |     | 5403       | ?          | 5277           |

| Well            |    | KB- | GL  | Top Winton | KB   |            | Subsea     |                |
|-----------------|----|-----|-----|------------|------|------------|------------|----------------|
|                 |    |     |     |            | Top  | Cadna-owie | Top Winton | Top Cadna-owie |
| Tirrawarra      | 9  | 128 | 109 | ?          | 5456 | ?          | ?          | 5328           |
| "               | 10 | 129 | 111 | 659?       | 5510 | 530?       | ?          | 5381           |
| "               | 11 | 151 | 113 | ?          | 5423 | ?          | ?          | 5272           |
| "               | 12 | 184 | 135 | ?          | 5529 | ?          | ?          | 5345           |
| "               | 13 | 184 | 167 | 665        | 5453 | 481        | ?          | 5269           |
| "               | 14 | 136 | 119 | 602?       | 5359 | 466?       | ?          | 5223           |
| "               | 15 | 132 | 116 | 609?       | 5378 | 477?       | ?          | 5246           |
| "               | 16 | 138 | 120 | 697?       | 5487 | 559?       | ?          | 5349           |
| "               | 17 | 139 | 123 | 616        | 5430 | 477        | ?          | 5291           |
| "               | 18 | 118 | 101 | 593        | 5457 | 475        | ?          | 5339           |
| "               | 19 | 143 | 123 | 643        | 5452 | 500        | ?          | 5309           |
| "               | 20 | 139 | 123 | 610        | 5389 | 471        | ?          | 5250           |
| "               | 21 | 168 | 148 | 644        | 5430 | 476        | ?          | 5262           |
| "               | 22 | 140 | 123 | 659        | 5525 | 519        | ?          | 5385           |
| "               | 23 | 169 | 149 | ?          | -    | ?          | ?          | -              |
| "               | 24 | 129 | 105 | 618        | 5421 | 489        | ?          | 5292           |
| "               | 25 | 170 | 152 | 654        | 5389 | 484        | ?          | 5219           |
| "               | 26 | 138 | 118 | 595        | -    | 457        | ?          | -              |
| "               | 27 | 163 | 119 | 627        | 5484 | 464        | ?          | 5321           |
| "               | 28 | 131 | 110 | 615        | 5430 | 484        | ?          | 5299           |
| "               | 29 | 164 | 143 | 601        | 5400 | 437        | ?          | 5236           |
| "               | 30 | 113 | 113 | 552        | 5391 | 439        | ?          | 5278           |
| "               | 31 | 127 | 113 | 593        | 5410 | 466        | ?          | 5283           |
| "               | 32 | 118 | 102 | 594        | 5435 | 476        | ?          | 5317           |
| "               | 33 | 129 | 115 | 606        | 5387 | 477        | ?          | 5258           |
| "               | 34 | 143 | 123 | 627        | 5412 | 404        | ?          | 5269           |
| "               | 35 | -   | -   | -          | -    | ?          | ?          | -              |
| "               | 36 | 120 | 104 | 620        | -    | 500        | ?          | -              |
| "               | 37 | -   | -   | -          | -    | -          | ?          | -              |
| "               | 38 | 146 | 129 | 692        | -    | 546        | ?          | -              |
| "               | 39 | 130 | 114 | 660        | -    | 530        | ?          | -              |
| "               | 40 | 215 | 114 | -          | -    | -          | ?          | -              |
| "               | 41 | 118 | 102 | 626        | -    | 508        | ?          | -              |
| "               | 42 | 145 | 125 | 610        | -    | 465        | ?          | -              |
| "               | 43 | 207 | 187 | 646        | -    | 439        | ?          | -              |
| "               | 44 | 113 | 113 | ?          | -    | ?          | ?          | -              |
| "               | 45 | -   | -   | -          | -    | -          | ?          | -              |
| Tirrawarra      | 46 | 131 | 112 | -          | -    | -          | ?          | -              |
| "               | 47 | 122 | 102 | 577        | -    | 455        | ?          | -              |
| "               | 48 | 131 | 114 | 529?       | -    | 398?       | ?          | -              |
| "               | 49 | 131 | 114 | 577        | -    | 446        | ?          | -              |
| "               | 50 | 134 | 114 | -          | -    | ?          | ?          | -              |
| "               | 51 | 131 | 114 | ?          | -    | ?          | ?          | -              |
| "               | 52 | 124 | 104 | 660        | -    | 536        | ?          | -              |
| "               | 53 | 134 | 117 | 575        | -    | 441        | ?          | -              |
| "               | 54 | 131 | 114 | ?          | -    | ?          | ?          | -              |
| "               | 55 | 121 | 104 | ?          | -    | ?          | ?          | -              |
| "               | 56 | 130 | 114 | ?          | -    | ?          | ?          | -              |
| "               | 57 | 187 | 170 | -          | -    | -          | ?          | -              |
| "               | 58 | 131 | 114 | 615?       | -    | 484?       | ?          | -              |
| Tirrawarra Nth. | 1  | 159 | -   | 715        | -    | 556        | ?          | -              |
| Tirrawarra West | 1  | 122 | 102 | -          | 5538 | -          | ?          | 5416           |
| Titan           | 1  | 105 | 83  | ?          | -    | ?          | ?          | -              |

| Well           |    | KB  | GL  | Top Winton | KB  |            | Subsea     |                |
|----------------|----|-----|-----|------------|-----|------------|------------|----------------|
|                |    |     |     |            | Top | Cadna-owie | Top Winton | Top Cadna-owie |
| Toolachee      | 1  | 185 | 178 | 341        |     | 4200       | 156        | 4015           |
| "              | 2  | 237 | 224 | 271?       |     | 4241       | 34?        | 4004           |
| "              | 3  | 221 | 204 | 455        |     | 4327       | 234        | 4106           |
| "              | 4  | 205 | 191 | 447        |     | 4335       | 242        | 4130           |
| "              | 5  | 221 | 189 | 474        |     | 4404       | 253        | 4183           |
| "              | 6  | 238 | 217 | 366        |     | 4373       | 128        | 4135           |
| "              | 7  | 221 | 209 | 466        |     | 4373       | 245        | 4152           |
| "              | 8  | 201 | 190 | 400        |     | 4321       | 199        | 4120           |
| "              | 9  | 243 | 227 | 361        |     | 4333       | 118        | 4090           |
| "              | 10 | 213 | 200 | 430        |     | 4329       | 217        | 4116           |
| "              | 11 | 225 | 203 | 402        |     | 4345       | 177        | 4120           |
| "              | 12 | 181 | 159 | 435        |     | 4330       | 254        | 4149           |
| "              | 13 | 251 | 231 | 370        |     | 4354       | 119        | 4103           |
| "              | 14 | 237 | 215 | 414        |     | -          | 177        | -              |
| "              | 15 | 198 | 184 | 410        |     | -          | 212        | -              |
| "              | 16 | 210 | 188 | 420        |     | 4260       | 210        | 4050           |
| "              | 17 | 240 | 227 | 420        |     | 4373       | 180        | 4133           |
| "              | 18 | 211 | 186 | 415        |     | 4297       | 204        | 4086           |
| "              | 19 | 269 | 246 | 435        |     | 4359       | 166        | 4090           |
| "              | 20 | 247 | 227 | 500        |     | 4377       | 253        | 4130           |
| "              | 21 | 212 | 196 | 320        |     | 4359       | 108        | 4147           |
| "              | 22 | 246 | 230 | 272?       |     | -          | 26?        | -              |
| "              | 23 | 203 | 185 | 368        |     | -          | 165        | -              |
| "              | 24 | 220 | 202 | ?          |     | -          | ?          | -              |
| "              | 25 | 229 | 215 | 480        |     | -          | 251        | -              |
| "              | 26 | 190 | 174 | 364        |     | -          | 174        | -              |
| "              | 27 | 204 | 188 | 398        |     | -          | 194        | -              |
| "              | 28 | 207 | 191 | 398        |     | -          | 191        | -              |
| "              | 29 | 203 | 187 | 390        |     | -          | 187        | -              |
| "              | 30 | 234 | 214 | 448        |     | -          | 214        | -              |
| "              | 31 | 179 | 163 | 476        |     | -          | 297        | -              |
| "              | 32 | 193 | 177 | 386        |     | -          | 193        | -              |
| "              | 33 | 212 | 197 | 426        |     | -          | 214        | -              |
| Toolachee East | 1  | 236 | 221 | 455        |     | 4463       | 259        | 4227           |
| "              | 2  | 267 | 252 | 519        |     | -          | 252        | -              |
| Toorman        | 1  | 137 | 117 | 947        |     | -          | 810        | -              |
| Topwee         | 1  | 109 | 96  | 872        |     | 4797       | 763        | 4688           |
| Walkillie      | 1  | 169 | 149 | 800?       |     | -          | 631?       | -              |
| Wanara         | 1  | 216 | 196 | ?          |     | 4314       | ?          | 4098           |
| Wancoocha      | 1  | 124 | 105 | 852        |     | 4229       | 728        | 4105           |
| "              | 2  | 92  | 76  | 872        |     | 0          | 780        | -              |
| "              | 3  | 89  | 73  | 818        |     | -          | 729        | -              |
| "              | 4  | 104 | 85  | 824        |     | -          | 720        | -              |
| "              | 5  | 93  | 24  | 790        |     | -          | 697        | -              |
| "              | 6  | 90  | 74  | 857        |     | -          | 767        | -              |
| Wantana        | 1  | 158 | 142 | 490        |     | 5321       | 332        | 5163           |
| Weena          | 1  | 100 | 87  | -          |     | 3272       | -          | 3172           |
| Welcome Lake   | 1  | 94  | 76  | -          |     | 5394       | -          | 5300           |
| Wilpinnie      | 1  | 260 | 243 | -          |     | 4392       | -          | 4132           |
| Wimma          | 1  | 142 | 120 | 775        |     | 6354       | 633        | 6212           |
| Wirrarie       | 1  | 96  | 83  | -          |     | 4548       | -          | 4452           |
| Woolkina       | 1  | 134 | 112 | 765        |     | 3730       | 631        | 3596           |
| Wooloo         | 1  | 119 | 103 | 954        |     | -          | 835        | -              |

| Well       | KB  |     | GL | Top Winton | KB             |      | Top Winton | Subsea         |      |
|------------|-----|-----|----|------------|----------------|------|------------|----------------|------|
|            |     |     |    |            | Top Cadna-owie |      |            | Top Cadna-owie |      |
| Yalcumma 1 | 121 | 105 |    | 1046       |                | 5248 |            | 925            | 5127 |
| Yanpurra 1 | 372 | 354 |    | 160        |                | 5341 |            | +212           | 4969 |
| Yapeni 1   | 100 | 82  |    | -          |                | 4647 |            | -              | 4547 |
| " 2        | 113 | 94  |    | 814        |                | -    |            | 701            | -    |

| AGE                   | BASIN MARGIN            | BASIN CENTRE             |
|-----------------------|-------------------------|--------------------------|
| RECENT<br>PLEISTOCENE |                         |                          |
| LATE<br>TERTIARY      | ETADUNNA FORMATION      |                          |
| EARLY<br>TERTIARY     | EYRE FORMATION          |                          |
| LATE<br>CRETACEOUS    | WINTON FORMATION        |                          |
|                       | MACUNDA FORMATION       |                          |
| EARLY<br>CRETACEOUS   | ALLARU MUDSTONE         |                          |
|                       | OODNADATTA<br>FORMATION | TOOLEBUC FORMATION       |
|                       | COORIKIANA SST          |                          |
|                       | BULLDOG<br>SHALE        | WALLUMBILLA<br>FORMATION |
|                       | CADNA-OWIE FORMATION    |                          |

COOPER BASIN — SOUTH AUSTRALIA

TIRRAWARRA FIELD — STRATIGRAPHIC NOMENCLATURE

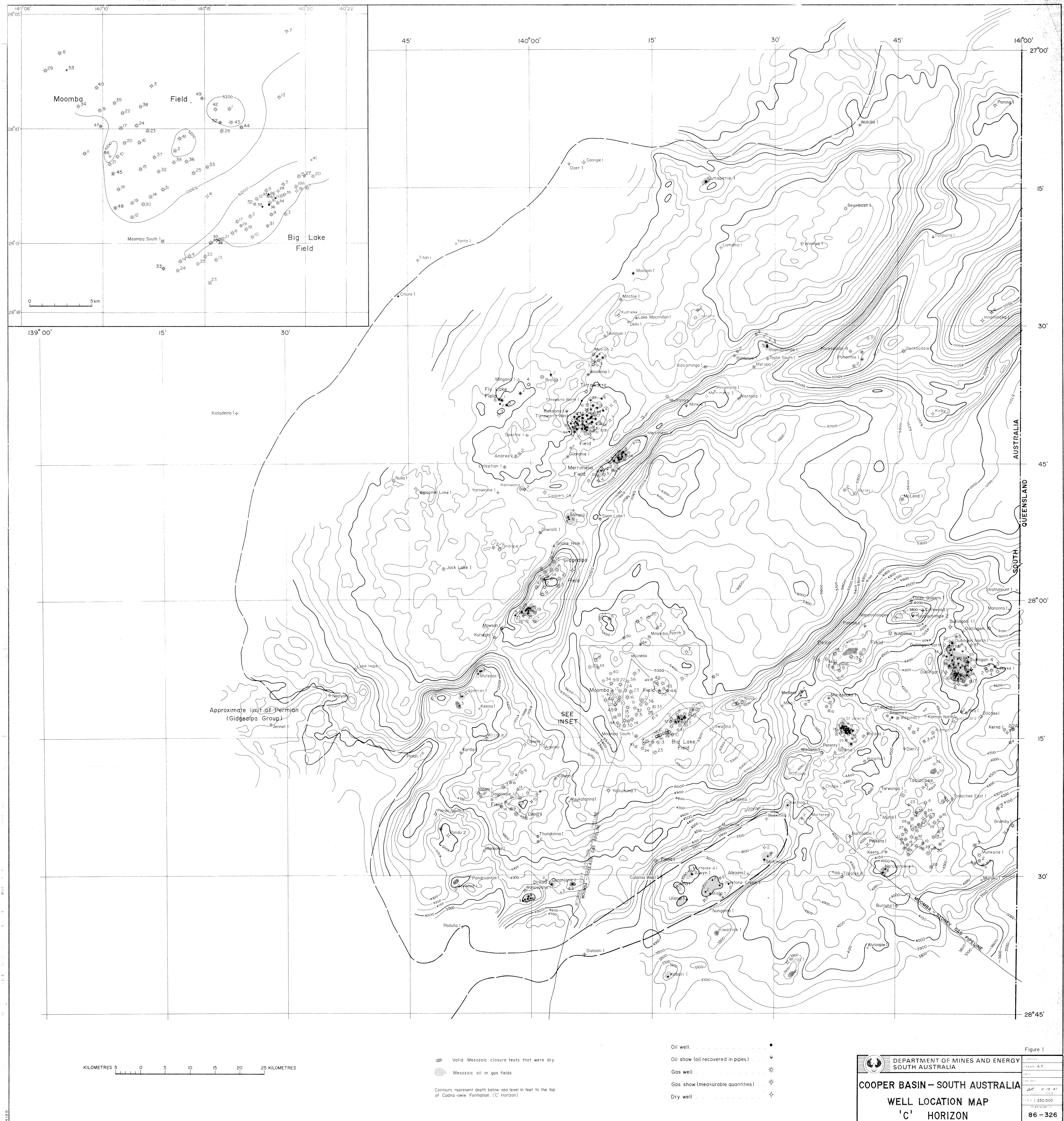


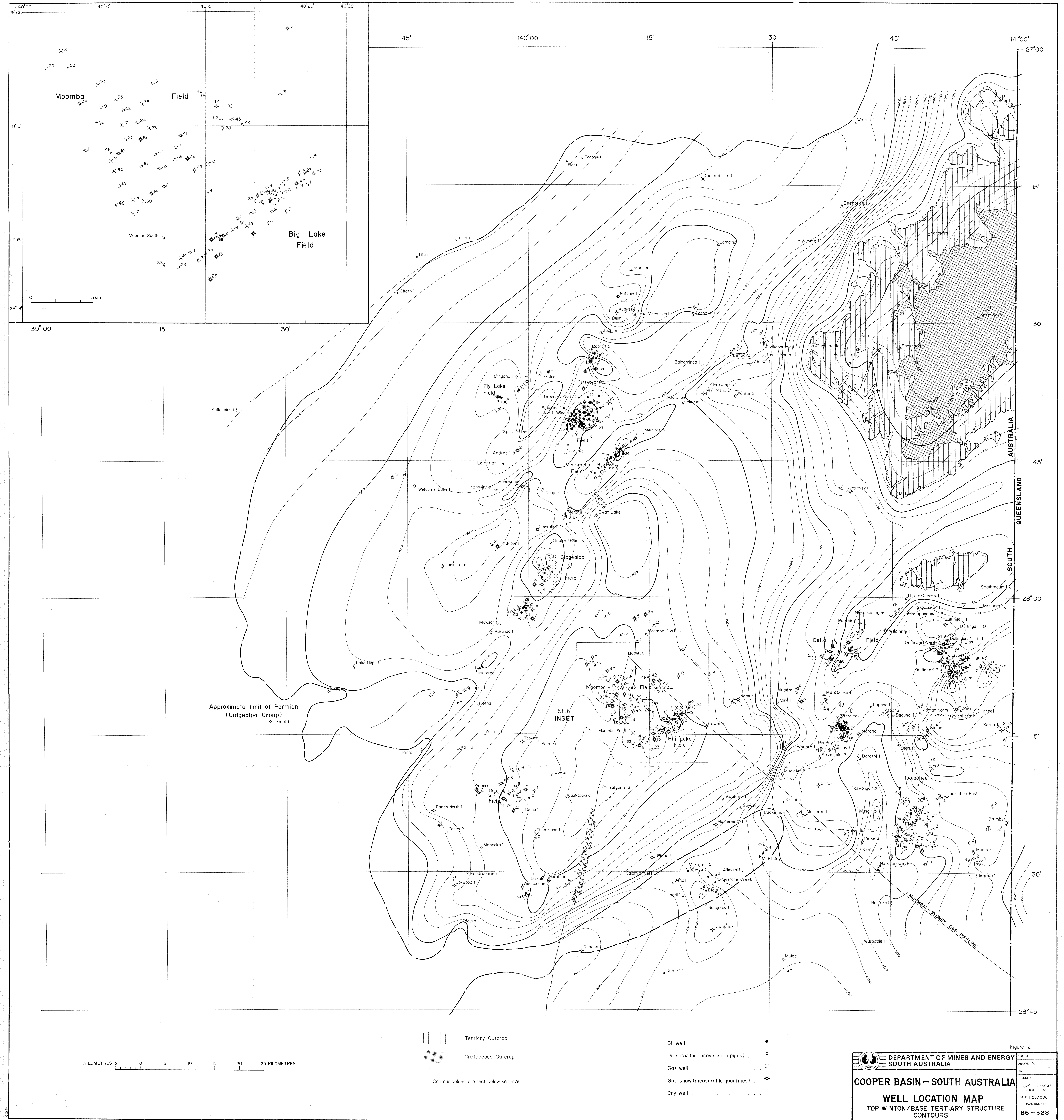
Figure 1

|  |                                                   |
|--|---------------------------------------------------|
|  | DEPARTMENT OF MINES AND ENERGY<br>SOUTH AUSTRALIA |
|  | COOPER BASIN - SOUTH AUSTRALIA                    |
|  | WELL LOCATION MAP<br>'C' HORIZON                  |
|  | Scale 1:250 000                                   |

|                        |
|------------------------|
| COMPILER<br>PRANA A.F. |
| DRAWN<br>A.F.          |
| DATE<br>11/12/87       |
| PLAN NUMBER<br>86-326  |

Valid Mesozoic closure tests that were dry  
Mesozoic oil or gas fields  
Contours represent depth below sea level in feet to the top of Cadna-owie Formation ('C' Horizon)

- Oil well
- Oil show (oil recovered in pipes)
- Gas well
- Gas show (measurable quantities)
- Dry well



Tertiary Outcrop  
Cretaceous Outcrop

Contour values are feet below sea level

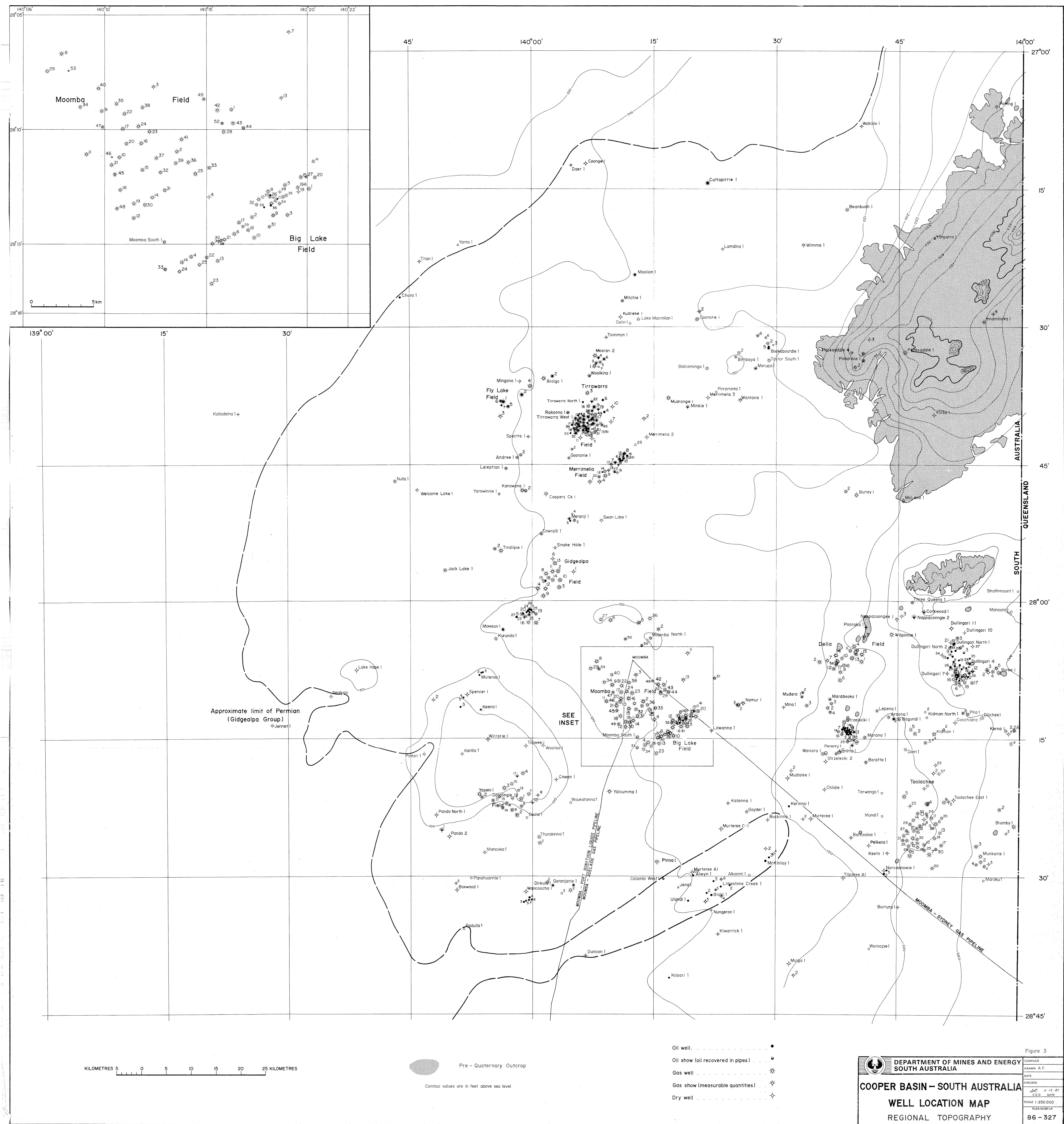
Oil well.  
Oil show (oil recovered in pipes)  
Gas well.  
Gas show (measurable quantities)  
Dry well.

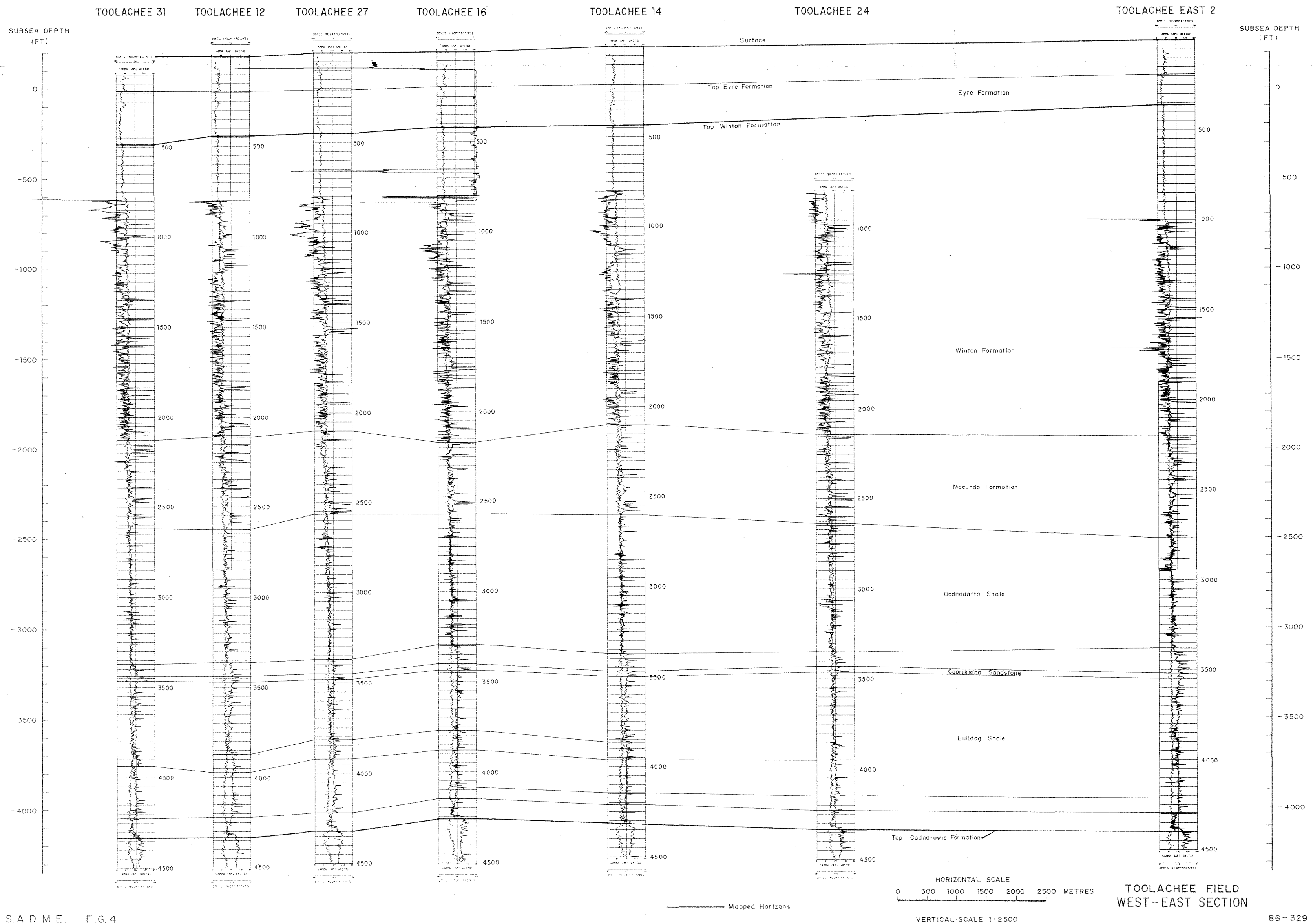
DEPARTMENT OF MINES AND ENERGY  
SOUTH AUSTRALIA

COOPER BASIN - SOUTH AUSTRALIA

WELL LOCATION MAP  
TOP WINTON/BASE TERTIARY STRUCTURE  
CONTOURS

Figure 2  
COMPILED  
DRAWN A.F.  
DATE  
CHECKED  
DATE  
SCALE 1:250 000  
PLAN NUMBER  
86-328

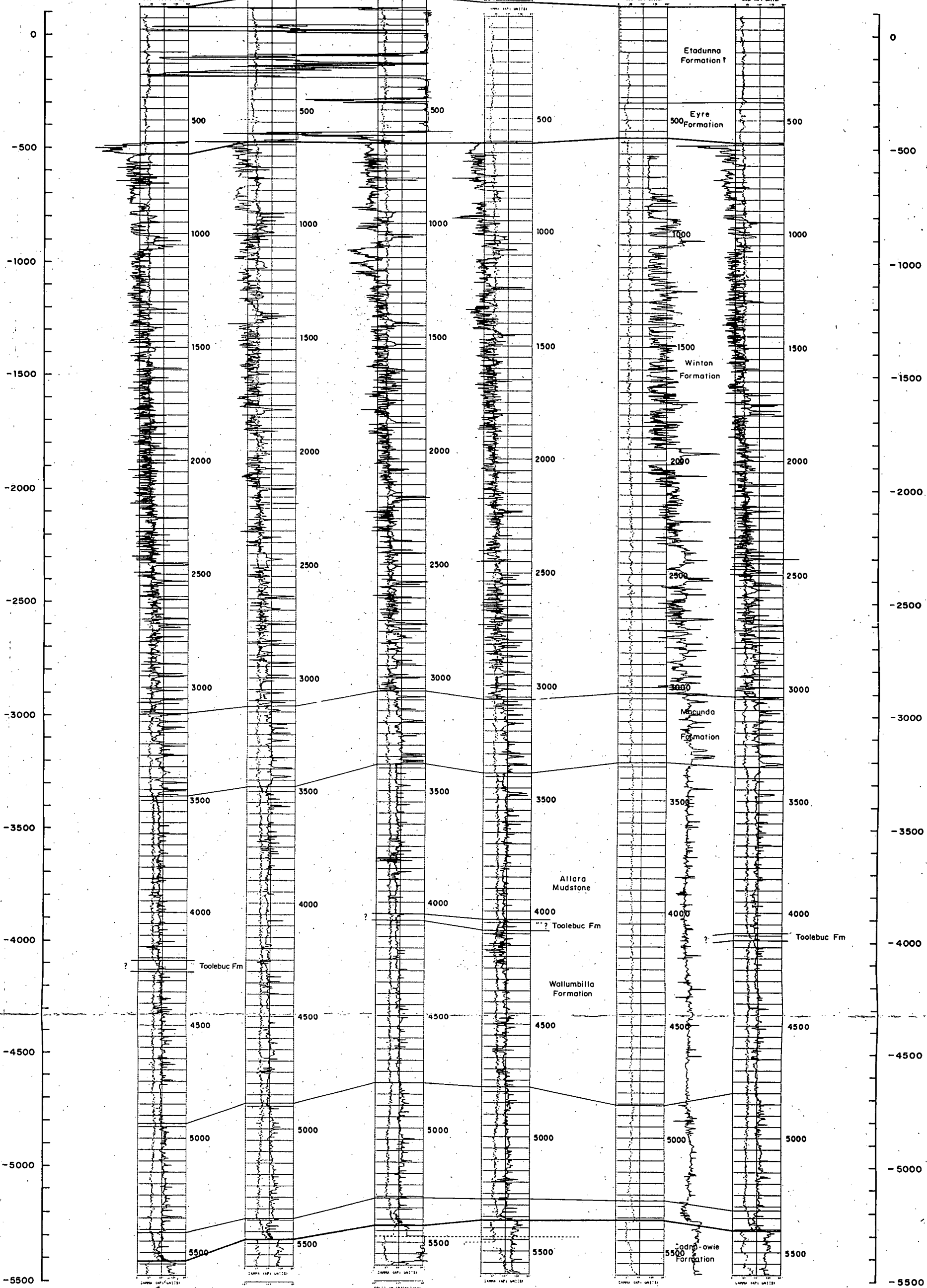




TIRRAWARRA WEST 1 TIRRAWARRA 27 TIRRAWARRA 23 TIRRAWARRA 15 TIRRAWARRA 1 TIRRAWARRA 31

SUBSEA DEPTH  
(FT)

SUBSEA DEPTH  
(FT)



TIRRAWARRA FIELD  
WEST-EAST SECTION

Mapped Horizons