

BUREAU OF MINERAL RESOURCES

GEOPHYSICAL LIBRARY

Ref

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Petroleum Search Subsidy Acts

PUBLICATION No. 57

**SUMMARY OF DATA AND RESULTS
SURAT BASIN, QUEENSLAND**

U-K-A. Middle Creek No. 1

U-K-A. Southwood No. 1

OF

**UNION OIL DEVELOPMENT CORPORATION
KERN COUNTY LAND COMPANY**

AND

AUSTRALIAN OIL AND GAS CORPORATION LIMITED

*Issued under the Authority of the Hon. David Fairbairn
Minister for National Development*

1965

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

MINISTER: THE HON. DAVID FAIRBAIRN, D.F.C., M.P.

SECRETARY: SIR HAROLD RAGGATT, C.B.E.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

DIRECTOR: J. M. RAYNER

THIS REPORT WAS PREPARED FOR PUBLICATION IN THE PETROLEUM EXPLORATION BRANCH

ASSISTANT DIRECTOR: M. A. CONDON

*Published by the Bureau of Mineral Resources, Geology and Geophysics
Canberra A.C.T.*

FOREWORD

Under the Petroleum Search Subsidy Act 1959-1961, agreements relating to subsidized operations provide that the information obtained may be published by the Commonwealth Government six months after the completion of field work.

The growth of the exploration effort has greatly increased the number of subsidized projects and this increase has led to delays in publishing the results of operations.

The detailed results of subsidized operations may be examined at the offices of the Bureau of Mineral Resources in Canberra and Melbourne (after the agreed period) and copies of the reports may be purchased.

In order to make the main results of operations available early, short summaries are being prepared for publication. These will be grouped by area and date of completion as far as practicable. Drilling projects and geophysical projects will be grouped separately. In due course, full reports will be published concerning those operations which have produced the more important new data.

This Publication contains summaries of data and results of two drilling operations undertaken in the Surat Basin, Queensland: Union-Kern-A.O.G. Middle Creek No. 1, and Union-Kern-A.O.G. Southwood No. 1. The information has been abstracted by the Petroleum Exploration Branch of the Bureau of Mineral Resources from well completion reports furnished by Union Oil Development Corporation.

J.M. RAYNER
DIRECTOR

CONTENTS

	<u>Page</u>
<u>UNION-KERN-A.O.G. MIDDLE CREEK NO. 1</u>	
SUMMARY	1
WELL HISTORY	2
GEOLOGY	3
REFERENCES	5
ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES	6
<u>UNION-KERN-A.O.G. SOUTHWOOD NO. 1</u>	
SUMMARY	11
WELL HISTORY	12
GEOLOGY	13
REFERENCES	16
ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES	16

ILLUSTRATIONS

FIGURES

Figure 1:	Locality Map, U.K.A. Middle Creek No. 1	...	Frontispiece
Figure 2:	Locality Map, U.K.A. Southwood No. 1	...	10

PLATES

Plate 1:	Composite Well Log, U.K.A. Middle Creek No. 1	At back of report
Plate 2:	Composite Well Log, U.K.A. Southwood No. 1	At back of report

UNION-KERN-A.O.G. MIDDLE CREEK NO. 1

of

UNION OIL DEVELOPMENT CORPORATION

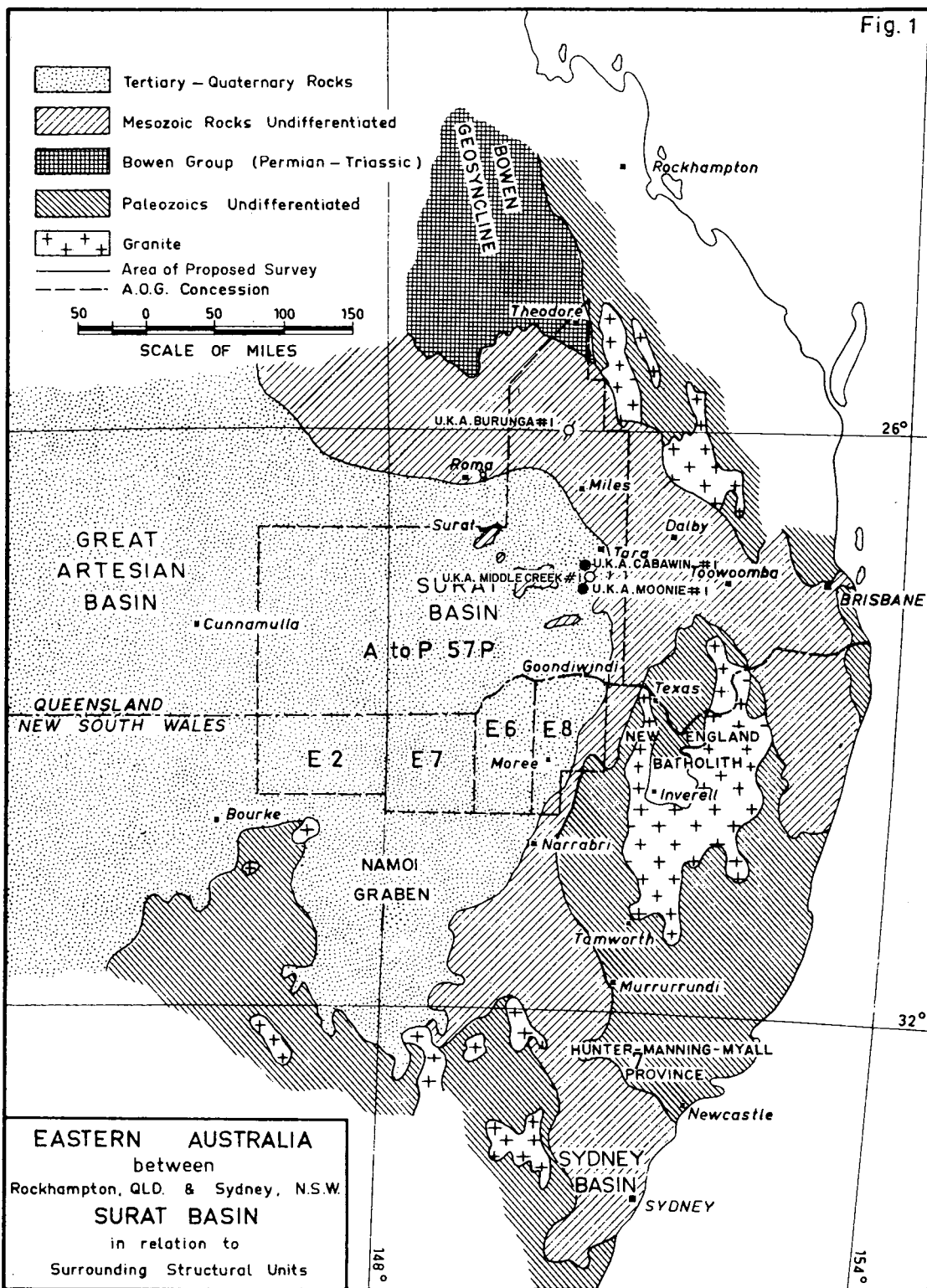
KERN COUNTY LAND COMPANY

and

AUSTRALIAN OIL AND GAS CORPORATION LIMITED

SUMMARY OF DATA AND RESULTS

Fig. 1



UNION-KERN-A.O.G. MIDDLE CREEK NO. 1

SUMMARY OF DATA AND RESULTS*

SUMMARY

Union-Kern-A.O.G. Middle Creek No. 1 was the fourth wildcat well drilled by Union Oil Development Corporation in the south-eastern part of the Surat Basin. The well, located approximately eight miles north-north-east of Union-Kern-A.O.G. Moonie No. 1, was drilled by Mines Administration Pty Limited for Union Oil Development Corporation to a total depth of 6126 feet. Drilling commenced on 19th May, 1962 and was completed on 8th June, 1962. A full programme of logging, testing, and coring was undertaken.

The well penetrated 118 feet of Quaternary-Tertiary sandstone and shale; 2153 feet of Lower Cretaceous Roma Formation; 1053 feet of Lower Cretaceous-Jurassic Blythesdale Formation; 1045 feet of Jurassic Walloon Formation; 639 feet of Hutton Sandstone; 540 feet of Evergreen Shale; and 352 feet of Jurassic-Triassic Precipice Sandstone. Below the unconformity at the base of the Precipice Sandstone at 5912 feet, the test entered volcanic conglomerates and siliceous sandstones of the Permo-Carboniferous Kuttung Formation in which the well bottomed at 6126 feet.

No drill stem test was carried out in the Precipice Sandstone but high resistivity on the electric log suggests freshwater saturation. A 60-minute open hole formation test was made of a sandstone interval (5240-5263 feet) within the Evergreen Shale. A net rise of 4790 feet of slightly gassy water (37 gr./gal.) was recovered on the test. In the absence of any significant shows, cement plugs were set and the well was abandoned on 10th June, 1962.

The test drilling operation at Union-Kern-A.O.G. Middle Creek No. 1 was subsidized under the Petroleum Search Subsidy Act 1959-1961, from surface to total depth.

* Abstracted from: Well Completion Report No. 4, Union-Kern-A.O.G. Middle Creek No. 1, by Union Oil Development Corporation, October, 1962.

WELL HISTORY

General Data

Well name and number:	Union-Kern-A.O.G. Middle Creek No. 1
Location:	Latitude 27° 38' 46"S. Longitude 150° 18' 45"E.
Name and address of Tenement Holder:	Australian Oil and Gas Corporation Limited, 261 George Street, Sydney, New South Wales.
Details of Petroleum Tenement:	Authority to Prospect 57P, Queensland (approximately 47,000 square miles)
Total Depth:	6126 feet
Date drilling commenced:	19th May, 1962
Date drilling completed:	8th June, 1962
Date well abandoned:	10th June, 1962
Date rig released:	10th June, 1962
Elevation (ground):	901 feet
Elevation (top K.B.):	913 feet (datum for depths)
Status:	Plugged and abandoned
Cost:	£48,946

Drilling Data

Drilling Plant:	
Make:	National-Ideal
Type:	55
Hole sizes and depths:	30" to 23 feet 17 1/2" to 514 feet 12 1/4" to 1141 feet 8 3/4" to 6126 feet

Casing details:

Size (in.):	20	13 3/8
Weight (lb./ft):	52	48
Grade:	10	H.40
Setting depth(ft):	23	507

Logging and Testing

Ditch Cuttings:

Interval: Ten feet from surface to total depth.

Coring: Ten cores were cut using a Hughes "J" Type core barrel and hard formation cutter heads. A total of 115 feet was cored and 95.3 feet (83%) recovered.

Sidewall Cores: No sidewall cores were taken.

Electric and other logging (Schlumberger):

Electrical Log: 508-6124 feet (3 runs)

Microlog: 4500-6124 feet (2 runs)

Sonic Log: 508-6100 feet (1 run)

Laterolog: 4300-6121 feet (1 run)

Continuous Dipmeter: 4200-6114 feet (1 run)

Velocity Survey: Ten horizons were tested at depths ranging from 650 to 6120 feet.

Drilling Rate, Oil, and Gas Log: Continuous drilling rate and hydrocarbon plots were recorded during drilling.

Formation Testing: Three Halliburton formation tests were carried out during the drilling operation.

GEOLOGY

Stratigraphy

General:

Union-Kern-A.O.G. Middle Creek No. 1 entered the Lower Cretaceous Roma Formation at 130 feet. The drill subsequently penetrated the Blythesdale and Walloon

Formations, the Hutton Sandstone, Evergreen Shale and the Precipice Sandstone, to an unconformity at the base of the Precipice Sandstone. Below the unconformity, the test entered the Permo-Carboniferous Kuttung Formation in which it bottomed at 6126 feet. The stratigraphic sequence encountered in the well is shown in the Table below:

<u>Age</u>	<u>Formation</u>	<u>Depth Intervals</u> (feet)	<u>Thickness</u> (feet)
Quaternary-Tertiary	Quat.-Tert. rocks	12- 130	118+
Lower Cretaceous	Roma Formation	130-2283	2153
Lower Cret.-Jurassic	Blythesdale Formation	2283-3336	1053
Jurassic	Walloon Formation	3336-4381	1045
Jurassic	Hutton Sandstone	4381-5020	639
Jurassic	Evergreen Shale	5020-5560	540
Jurassic-Triassic	Precipice Sandstone	5560-5912	352
Permo-Carboniferous	Kuttung Formation	5912-6126 (T.D.)	214+

Detailed:

Quaternary-Tertiary Rocks

The Quaternary-Tertiary rocks consist of 118 feet of coarse sandstone and lateritized shale lying unconformably on rocks of the Lower Cretaceous Roma Formation.

Roma Formation (Lower Cretaceous): 130 to 2283 feet (2153 feet)

Interbedded, grey, fine to coarse-grained, quartzose sandstone, grey siltstone and dark grey carbonaceous shale. Coal seams occur in the interval 615 to 915 feet.

Blythesdale Formation (Lower Cretaceous-Jurassic): 2283 to 3336 feet (1053 feet)

Mainly light grey, coarse-grained, quartzose sandstone with thin interbeds of grey carbonaceous shale.

Walloon Formation (Jurassic): 3336 to 4381 feet (1045 feet)

Interbedded grey, carbonaceous shale, siltstone and coal seams.

Hutton Sandstone (Jurassic): 4381 to 5020 feet (639 feet)

Interbedded, light grey, fine-grained, quartzose sandstone and siltstone with minor shale.

Evergreen Shale (Jurassic): 5020 to 5560 feet (540 feet)

Thinly bedded sequence of grey to brown siltstone and shale with some coal seams. Light grey, fine to coarse-grained, quartzose sandstone is present in the interval 5232 to 5262 feet.

Precipice Sandstone (Jurassic - Triassic): 5560 to 5912 feet (352 feet)

Mainly white to light grey, fine to very coarse-grained, quartzose sandstone.

Kuttung Formation (Permo-Carboniferous): 5912 to 6126 (T.D.) (214 feet +)

The interval 5912 to 6075 feet consists of white to greenish-grey, fine to coarse-grained, lithic sandstones. The interval 6075 to 6126 feet (T.D.) consists of silicified conglomerate comprising pebbles and cobbles of greenish, orange, and purple volcanic rocks.

Structure

The Middle Creek prospect is a south-west plunging Mesozoic fold separated by a saddle from the domal closure of the Moonie Field. The plunge of the feature is fairly gentle averaging approximately 70 feet per mile. The fold has fairly symmetrical flanks that have a dip to the north-west and south-east of approximately 320 feet per mile. This Mesozoic fold unconformably overlies a truncated and faulted sequence of rocks ranging in age from Carboniferous to Lower Triassic. The fold axis is parallel to a major north-east striking reverse fault in the underlying Palaeozoic beds.

Oil and Gas Indications and Potential

Cores from the Precipice Sandstone (5560 to 5912 feet), the primary target in Middle Creek No. 1 Well, were wet and showed no fluorescence, odour, stain, or cut. Porosities in the sandstone at the top of the formation (5560 to 5619 feet) range from 4.3% to 18.7% and permeabilities from 0 to 32 md. Porosities in the lower massive sandstone of the formation (5705 to 5912 feet) vary from 7.4% to 20.0% and permeabilities from 6 to 740 md.

An open hole formation test of the interval 5240 to 5263 feet recovered a net rise of 4790 feet of slightly gassy water (37 gr./gal.) from a sandstone within the Evergreen Shale. Porosities in this sandstone average 20% and permeabilities range from 557 to 1795 md.

REFERENCES

- | | | |
|------------------------------------|-------|---|
| HILL, D., DENMEAD, A.K., et al., | 1960: | The geology of Queensland. <u>J. geol. Soc. Aust.</u> , 7. |
| MACK, J.E., Jr, | 1963: | Reconnaissance geology of the Surat Basin, Queensland and New South Wales. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ.</u> 40. |
| UNION OIL DEVELOPMENT CORPORATION, | 1962: | Well Completion Report No. 4, Union-Kern-A.O.G. Middle Creek No. 1 (Unpubl.). |
| UNION OIL DEVELOPMENT CORPORATION, | 1963: | Union-Kern-A.O.G. Moonie No. 1, Queensland. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ.</u> 45. |

ADDITIONAL DATA FILED IN THE
BUREAU OF MINERAL RESOURCES

The following additional data relating to Union-Kern-A.O.G. Middle Creek No. 1, have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i) Well Completion Report

Part A	: Geology, by J.E. Mack, Jr, and A.S. Keller	16 pp.
Appendix A:	Prognosis	1 p.
Appendix B:	Description of cuttings	64 pp.
Appendix C:	Description of cores	10 pp.
Part B	: Engineering, by D.J. McGarry, and D.E. Pyle	6 pp.
Appendix D:	Mud Record	1 p.
Appendix E:	Drilling Record	7 pp.
Appendix F:	Electrical Logging	7 pp.
Appendix G:	Velocity Survey	1 p.

(ii) Daily drilling reports for period 8th May, 1962 to 10th June, 1962.

(iii) Well logs including the following:

(a) Electrical Log

Composite log, Runs 1 to 3 (2" = 100 ft)

Run 1, 508-4646 feet

Run 2, 4546-5198 feet

Run 3, 5098-6124 feet

Interpretive log, Runs 1 to 3 (2" = 100 ft)

(b) Microlog

Run 1, 4500 - 5198 feet (5" = 100 ft)

Run 2, 5098 - 6124 feet (2" = 100 ft)

Composite log, Runs 1 and 2 (2" = 100 ft)

(c) Sonic Log

Run 1, 508 - 6100 feet (2" = 100 ft)

(d) Laterolog

Run 1, 4300 - 6121 feet (2" = 100 ft)

(e) Continuous Dipmeter

Run 1, 4200 - 6114 feet (1.2" = 100 ft)

(f) Drilling rate, hydrocarbon analysis log (2" = 100 ft)

(iv) Seismic Structure Map, "L" Horizon (Permian)

(v) Seismic Structure Map, "G" Horizon (Bundamba)

(vi) Well correlation section: U.K.A. Moonie No. 1 and U.K.A. Middle Creek No. 1

(vii) Velocity Survey determination, U.K.A. Middle Creek No. 1.

UNION-KERN-A.O.G. SOUTHWOOD NO. 1

of

UNION OIL DEVELOPMENT CORPORATION

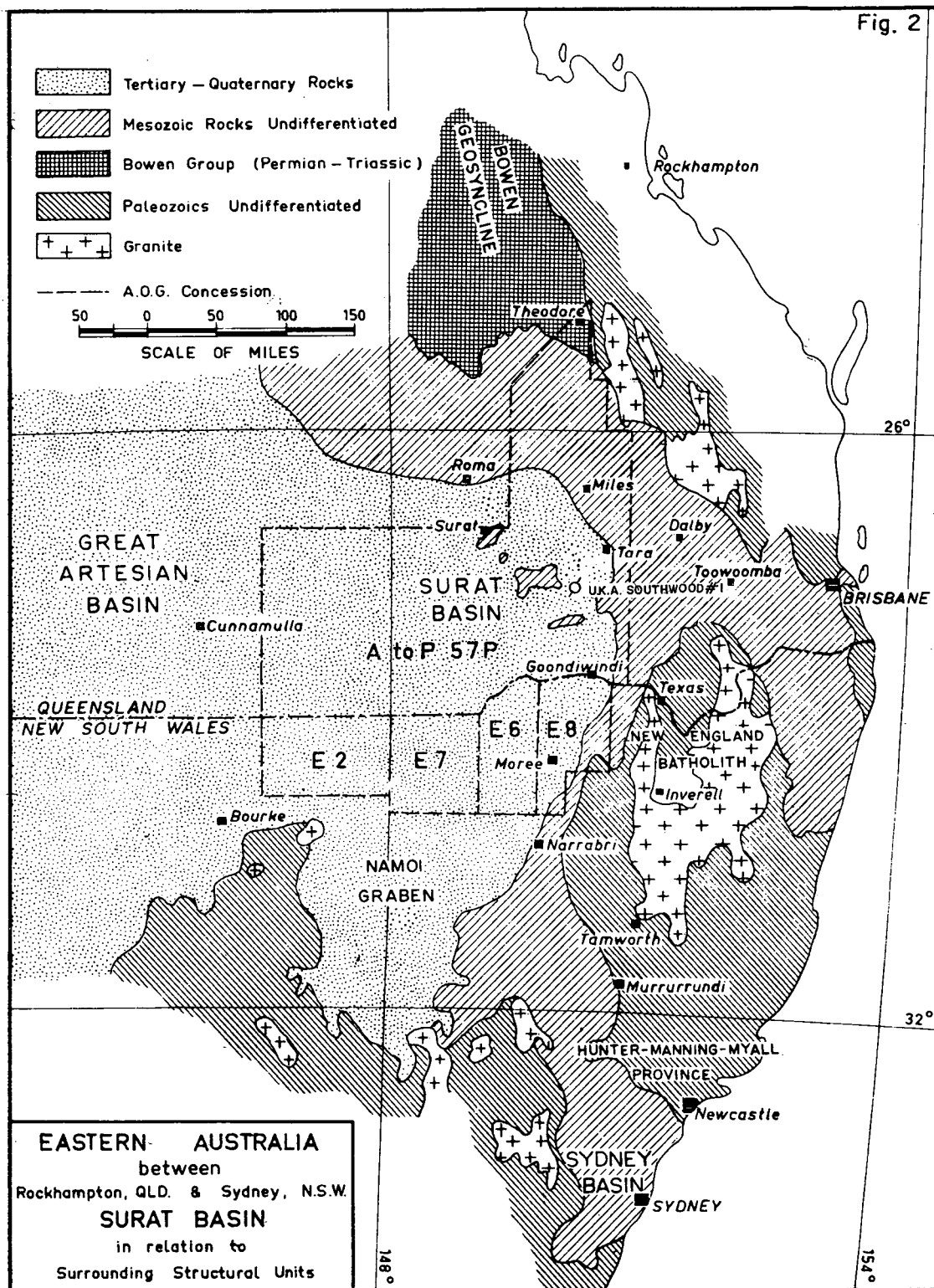
KERN COUNTY LAND COMPANY

and

AUSTRALIAN OIL AND GAS CORPORATION LIMITED

SUMMARY OF DATA AND RESULTS

Fig. 2



UNION-KERN-A.O.G. SOUTHWOOD NO. 1

SUMMARY OF DATA AND RESULTS*

SUMMARY

Union-Kern-A.O.G. Southwood No. 1 Well, located approximately six miles south-west of Middle Creek No. 1 and about 15 miles south of Union-Kern-A.O.G. Cabawin No. 1, was drilled by Oil Drilling and Exploration Limited for Union Oil Development Corporation to a total depth of 10,897 feet. Drilling commenced on 11th March, 1963 and was completed on 15th May, 1963. A programme of logging and coring was undertaken.

Southwood No. 1 was spudded in the Lower Cretaceous Roma Formation. The well then penetrated the Lower Cretaceous-Jurassic Blythesdale Formation at 1542 feet; the Jurassic Walloon Formation at 4065 feet; the Hutton Sandstone at 5118 feet; the Evergreen Shale at 5850 feet; the Jurassic-Triassic Precipice Sandstone at 6370 feet; the Triassic Cabawin Formation, unconformable beneath the Precipice Sandstone, at 6825 feet; the Permian Kiangra Formation at 7375 feet; and the Permian Back Creek Formation at 7995 feet. Because of drilling difficulties the hole was abandoned at 10,897 feet in the Back Creek Formation.

The well was drilled to test the hydrocarbon potential of a closed domal structure in Permian sediments in an area approximately three miles north-west of the Moonie Field. At the location of Southwood No. 1, the "L" Horizon structure map which represents the structure on the approximate top of the Permian Kiangra Formation, the producing section of Cabawin No. 1, indicates a faulted dome with 800 feet of vertical closure over an area of about 15 square miles. This closure is only one of a series of faulted domes paralleling the Moonie Field.

The Precipice Sandstone included potential reservoir beds but only a trace of blue fluorescence was noted. White fluorescence, gas shows, and oil odours were recorded from the Cabawin, Kiangra, and Back Creek Formations but all three formations were impermeable. The hole was abandoned as dry.

The stratigraphic drilling operation at Union-Kern-A.O.G. Southwood No. 1 was subsidized under the Petroleum Search Subsidy Act 1959-1961, from 6400 feet to total depth.

* Abstracted from: Well Completion Report No. 14, Union-Kern-A.O.G. Southwood No. 1, by Union Oil Development Corporation, June, 1963.

WELL HISTORY

General Data

Well name and number:	Union-Kern-A.O.G. Southwood No. 1
Location:	Latitude 27° 42' 40"S. Longitude 150° 13' 50"E.
Name and address of Tenement Holder:	Union Oil Development Corporation, and Kern County Land Company, 261 George Street, Sydney, New South Wales.
Details of Petroleum Tenement:	Authority to Prospect 57P, Queensland.
Total Depth:	10,897 feet
Date drilling commenced:	11th March, 1963
Date drilling completed:	15th May, 1963
Date well abandoned:	4th June, 1963
Date rig released:	4th June, 1963
Elevation (ground):	869 feet
Elevation (top K.B.):	883 feet (datum for depths)
Status:	Plugged and abandoned
Cost:	£170,312

Drilling Data

Drilling Plant:	
Make:	Ideco Hydrair Junior Super
Type:	7-11
Hole sizes and depths:	30" to 25 feet 17 1/2" to 1310 feet 12 1/4" to 2001 feet 9 7/8" to 10897 feet (T.D.)

Casing details:

Size (in.):	20	13 3/8
Weight (lb./ft):	52	48
Grade:	10	H.40
Setting depth (ft):	25	1287

Logging and Testing

Ditch Cuttings:

Interval: Ten feet from 1400 feet to total depth.

Coring: Eleven cores were cut using both Hughes "J" Type and D & S core barrels with hard formation and diamond cutter heads. A total of 106 feet was cored and 76.08 feet (71.7%) recovered.

Sidewall Cores: No sidewall cores were taken.

Electric and other logging
(Schlumberger):

Induction - Electrical Log: 1287 - 10085 feet (3 runs)

Microlog: 5650 - 7777 feet (2 runs)

Sonic Log: 1287 - 10075 feet (2 runs)

Velocity Survey: Twelve horizons were tested at depths ranging from 1572 to 8670 feet.

Drilling Rate, Oil, and Gas Log: Continuous drilling rate and hydrocarbon plots were recorded during drilling.

Formation Testing: None.

GEOLOGY

Stratigraphy

General:

Union-Kern-A.O.G. Southwood No. 1 was spudded in the Lower Cretaceous Roma Formation. The well then penetrated the Blythesdale and Walloon Formations, the Hutton Sandstone, Evergreen Shale, and the Precipice Sandstone to an unconformity at the base of the Precipice Sandstone. Below the unconformity, the well drilled 550 feet of the Triassic Cabawin Formation, 620 feet of the Permian Kiangra Formation, and 2902 feet of the underlying Permian Back Creek Formation, in which the well was bottomed at 10,897 feet. Logging of the well commenced at 1300 feet.

Tabled below is the stratigraphic sequence encountered in the well:

<u>Age</u>	<u>Formation</u>	<u>Depth Intervals</u> (feet)	<u>Thickness</u> (feet)
Lower Cretaceous	Roma Formation	1300 - 1542	242+
Lower Cret.-Jurassic	Blythesdale Formation	1542 - 4065	2523
Jurassic	Walloon Formation	4065 - 5118	1053
Jurassic	Hutton Sandstone	5118 - 5850	732
Jurassic	Evergreen Shale	5850 - 6370	520
Jurassic-Triassic	Precipice Sandstone	6370 - 6825	455
Triassic	Cabawin Formation	6825 - 7375	550
Permian	Kianga Formation	7375 - 7995	620
Permian	Back Creek Formation	7995 - 10897 (T.D.)	2902+

Detailed:

Roma Formation (Lower Cretaceous): 1300 to 1542 feet (242 feet +)

Interbedded, shallow water marine siltstone, sandstone, and shale with minor traces of coal. The siltstone and shale are grey, soft, and carbonaceous.

Blythesdale Formation (Lower Cretaceous-Jurassic): 1542 to 4065 feet (2523 feet)

From 1542 to 2858 feet, the sequence is transitional from the Roma Formation to a predominantly arenaceous section. The latter, from 2858 to 3415 feet, consists of coarse-grained, porous, quartzose sandstone. The lowest part of the formation, from 3415 to 4065 feet, consists of interbedded grey to brown, tuffaceous, carbonaceous shale and fine to medium-grained, light grey, quartzose sandstone.

Walloon Formation (Jurassic): 4065 to 5118 feet (1053 feet)

A fresh water sequence of siltstone, shale, and coal, with traces of sandstone. The siltstone and shale are light to dark brown, and carbonaceous.

Hutton Sandstone (Jurassic): 5118 to 5850 feet (732 feet)

Light grey, fine to coarse-grained, quartzose porous sandstone with interbedded siltstone and shale.

Evergreen Shale (Jurassic): 5850 to 6370 feet (520 feet)

Interbedded, tan to grey, carbonaceous siltstone, and dark grey to dark brown, carbonaceous shale with minor light grey to green, fine to medium-grained, quartzose sandstone intercalations.

Precipice Sandstone (Jurassic-Triassic): 6370 to 6825 feet (455 feet)

Quartzose, grey to green, porous, permeable sandstone with shale and siltstone in the upper part and 50 feet of conglomerate at the base.

Cabawin Formation (Triassic): 6825 to 7375 feet (550 feet)

Green and grey-green, tuffaceous, granule-pebble conglomerate and conglomeratic sandstone with minor interbeds of reddish-brown siltstone and shale.

Kianga Formation (Permian): 7375 to 7995 feet (620 feet)

Interbedded coal and tuff with minor tuffaceous sandstone, siltstone, and shale. The contact with the underlying Back Creek Formation is gradational.

Back Creek Formation (Permian): 7995 to 10,897 feet (2902 feet +)

Marine siltstone and shale with minor tuffaceous sandstone and conglomerate. Coal seams occur in the upper part of the sequence. Marine fossils are abundant throughout.

Structure

The structure is a faulted dome, located by seismic survey, having a vertical closure of 800 feet over an area of about 15 square miles in Permian sediments. These sediments occur in a complexly faulted belt to the north-west of the Moonie Field.

Oil and Gas Indications and Potential

No significant shows were logged in the section above the Cabawin Formation, except for a trace of blue fluorescence at the top of the major sandstone development of the Precipice Sandstone. Porosities in a portion of the upper sandstone unit of the Precipice between 6403 - 6432 feet ranged from 5.3% to 18.6% and permeabilities from 0 to 225 md; porosities in the top of the major Precipice sandstone development between 6521 - 6541 feet ranged from 7.5% to 20.1% and permeabilities from 0 to 219 md. Microlog indicated that the best continuous reservoir section in the Precipice Sandstone was between 6626 - 6764 feet.

Although traces of white fluorescence and methane gas shows were recorded in the Cabawin Formation, the sandstones and conglomerates of the formation are impermeable and show no reservoir potential.

The Permian Kianga and Back Creek Formations were the major targets of the Southwood test. Methane gas and traces to strong shows of bluish-white fluorescence were logged throughout the Kianga; however, the entire section was impermeable. Cores within the Back Creek Formation bled traces of gas and had a fleeting oil odour on fresh breaks. There were traces of white fluorescence and methane gas shows with traces of heavier hydrocarbon in the formation; however, as with the Kianga, the Back Creek Formation was impermeable with no reservoir potential.

REFERENCES

- | | | |
|--|-------|--|
| BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS, (Ed.), | 1964: | Summary of data and results: Union-Kern-A.O.G. Wandoan No. 1 and Union-Kern-A.O.G. Burunga No. 1, Queensland. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ. 53.</u> |
| UNION OIL DEVELOPMENT CORPORATION, | 1963: | Well Completion Report No. 14, Union-Kern-A.O.G. Southwood No. 1 (Unpubl.). |
| UNION OIL DEVELOPMENT CORPORATION, | 1964: | Union-Kern-A.O.G. Cabawin No. 1, Queensland. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ. 43.</u> |
| UNION OIL DEVELOPMENT CORPORATION, | 1964: | Union-Kern-A.O.G. Cabawin East No. 1, Queensland. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ. 44.</u> |
| UNION OIL DEVELOPMENT CORPORATION, | 1964: | Union-Kern-A.O.G. Moonie No. 1, Queensland. <u>Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ. 45.</u> |

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Union-Kern-A.O.G. Southwood No. 1, have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i) Well Completion Report

Part A	: Geology, by J.E. Mack, Jr, and A.R. Carey	21 pp.
Appendix A	: Prognosis	1 p.
Appendix B	: Description of cuttings	119 pp.
Appendix C	: Description of cores	11 pp.
Appendix D	: Palaeontology, by Dorothy Hill	3 pp.
Part B	: Engineering, by D.E. Pyle	5 pp.
Appendix E	: Mud Record	2 pp.
Appendix F	: Drilling Record	17 pp.
Appendix G	: Electrical Logging	5 pp.
Appendix H	: Velocity Survey	1 p.
Appendix I	: Core Analysis	2 pp.

- (ii) Daily drilling reports for period 7th March, 1963 to 5th June, 1963.
- (iii) Well logs including the following:
 - (a) Induction - Electrical Log
 - Run 1, 1287 - 6922 feet (5" = 100 ft)
 - Run 2, 6820 - 7777 feet (5" = 100 ft)
 - Run 3, 7677 - 10085 feet (5" = 100 ft)
 - Composite log, Runs 1 to 3 (2" = 100 ft)
 - Interpretive log, Runs 1 to 3 (2" = 100 ft)
 - (b) Microlog
 - Run 1, 5650 - 6850 feet (5" = 100 ft)
 - Run 2, 6750 - 7777 feet (5" = 100 ft)
 - Composite log, Runs 1 and 2 (2" = 100 ft)
 - (c) Sonic Log
 - Run 1, 1287 - 6910 feet (5" = 100 ft)
 - Run 2, 6810 - 10075 feet (5" = 100 ft)
 - Composite log, Runs 1 and 2 (2" = 100 ft)
 - (d) Drilling rate, hydrocarbon analysis log (2" = 100 ft)
- (iv) Well correlation section : U.K.A. Cabawin No. 1 and U.K.A. Southwood No. 1
- (v) Seismic Structure Map, "L" Horizon (Permian)
- (vi) Velocity Survey determinations, U.K.A. Southwood No. 1.

COMPANY: UNION OIL DEVELOPMENT CORPORATION

PETROLEUM TENEMENT: A. to P 57P
MILITARY 4-MILE SHEET: DALBY

WELL No.: UNION-KERN - A.O.G. MIDDLE CREEK No.1
BASIN: BOWEN-SURAT

STATE: QUEENSLAND
WELL STATUS: PLUGGED AND ABANDONED

ELECTRIC LOG DATA			
DATUM: K.B.	1	2	3
RUN NR			
DATE	26 May, 1962	29 May, 1962	8 June, 1962
FIRST READING	4646	5198	6124
LAST READING	508	4546	5098
INTERVAL MEASURED	4138	652	1026
Csg., Schlumberger	508	508	508
Csg., DRILLER	507	507	507
DEPTH REACHED	4647'	5199'	6125'
BOTTOM, DRILLER	4657'	5195'	6126'
MUD NATURE	Gel.	Gel.	Gel.
DENSITY - VISCOSITY	76.5 - 39	76 - 53	74.5 - 42
MUD RESISTIVITY	60 @ 77°F	66 @ 72°F	74 @ 69°F
MUD RESIST. B.H.T.	40 @ 120°F	44 @ 121°F	40 @ 128°F
FLUID LOSS	6cc 30 min.	6.3 cc 30 min.	10cc 30 min.
pH	9.4	9.5	9.5
R.M.F.	—	—	—
R.M.C.	—	—	—
BIT SIZE	1 12 1/4" to 11 1/4"	12 1/4" to 11 1/4"	12 1/4" to 11 1/4"
	2 8 3/4" to 4 1/2"	8 3/4" to 5 1/2"	8 3/4" to 6 1/2"
Csg. SIZE	13 7/8" c. 507'	13 7/8" c. 507'	13 7/8" c. 507'
OPR. RIG TIME	200	130	200
TRUCK NO	2513	2513	2513
RECORDED BY	A. B. DUDLEY	A. B. DUDLEY & OLIVER	OLIVER-DENNIS
WITNESS	E. Mack	D. Pyle	E. Mack

NAME OF WELL: Union-Kern - A.O.G. Middle Creek No.1
STATE: Queensland
COUNTRY: Australia
COUNTY: Ring
PARISH: Liddell
PORTION: Portion 2
LATITUDE: 27° 38' 46" S.
LONGITUDE: 150° 18' 45" E.
ELEVATION: K.B. 913'

T.D.: 6126'
DATE SPUDDED: 19 May, 1962
DATE T.D.: 8 June, 1962
DATE RIG RELEASED: 10 June, 1962
STATUS OF WELL: Plugged and abandoned
DRILLED BY: Mines Administration Pty Ltd
DRILLING METHOD: Rotary National 55
LOGGING: Schlumberger
CEMENTING: Halliburton
MUD LOGGING: Core Lab.

OTHER ELECTRICAL LOGS
SONIC LOG: 508' to 6100'
VELOCITY SURVEY: 650' to 6120'
MICROLOG: 4500' to 6124'
LATEROLOG: 4300' to 6121'

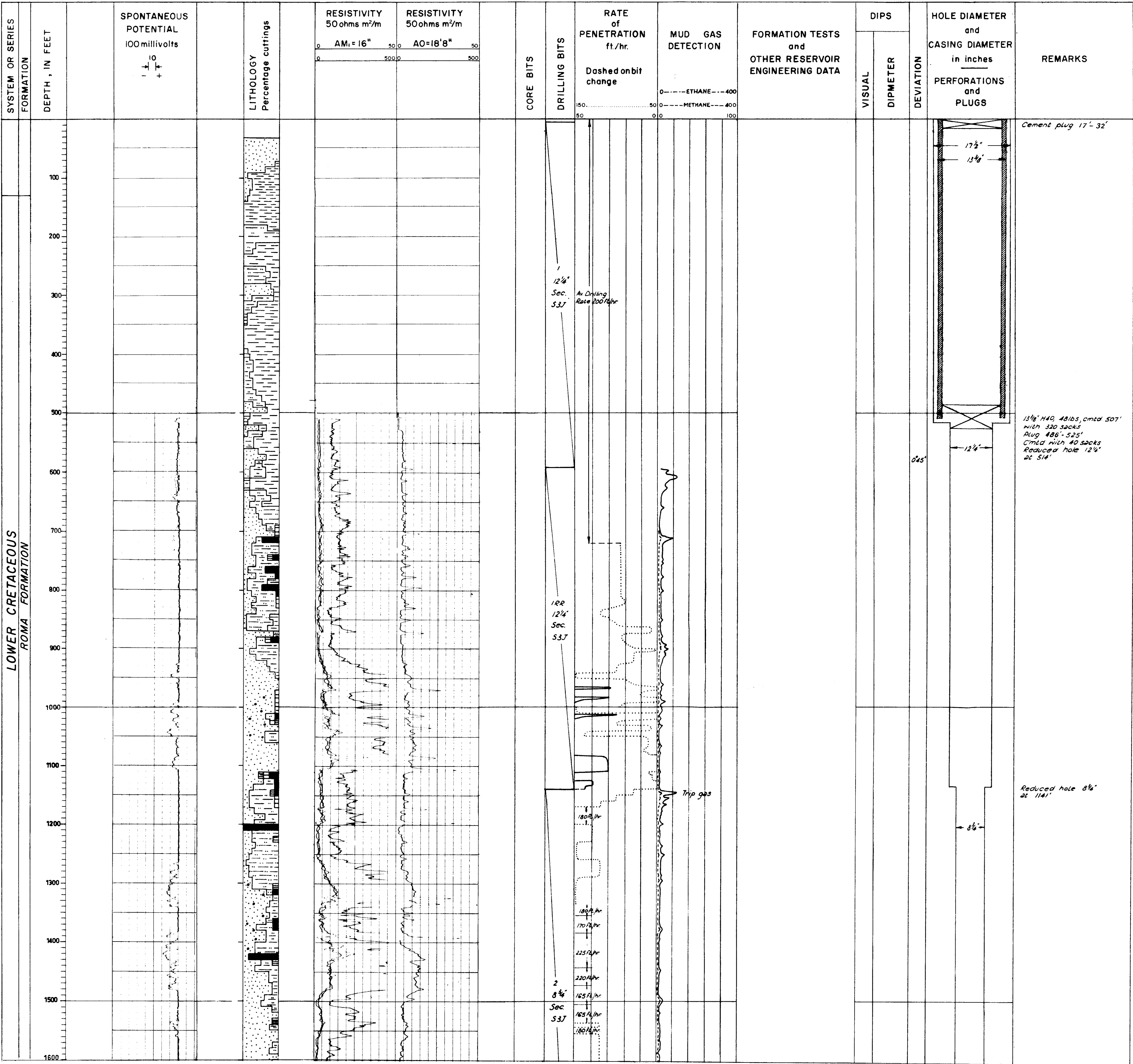
WELL SYMBOLS

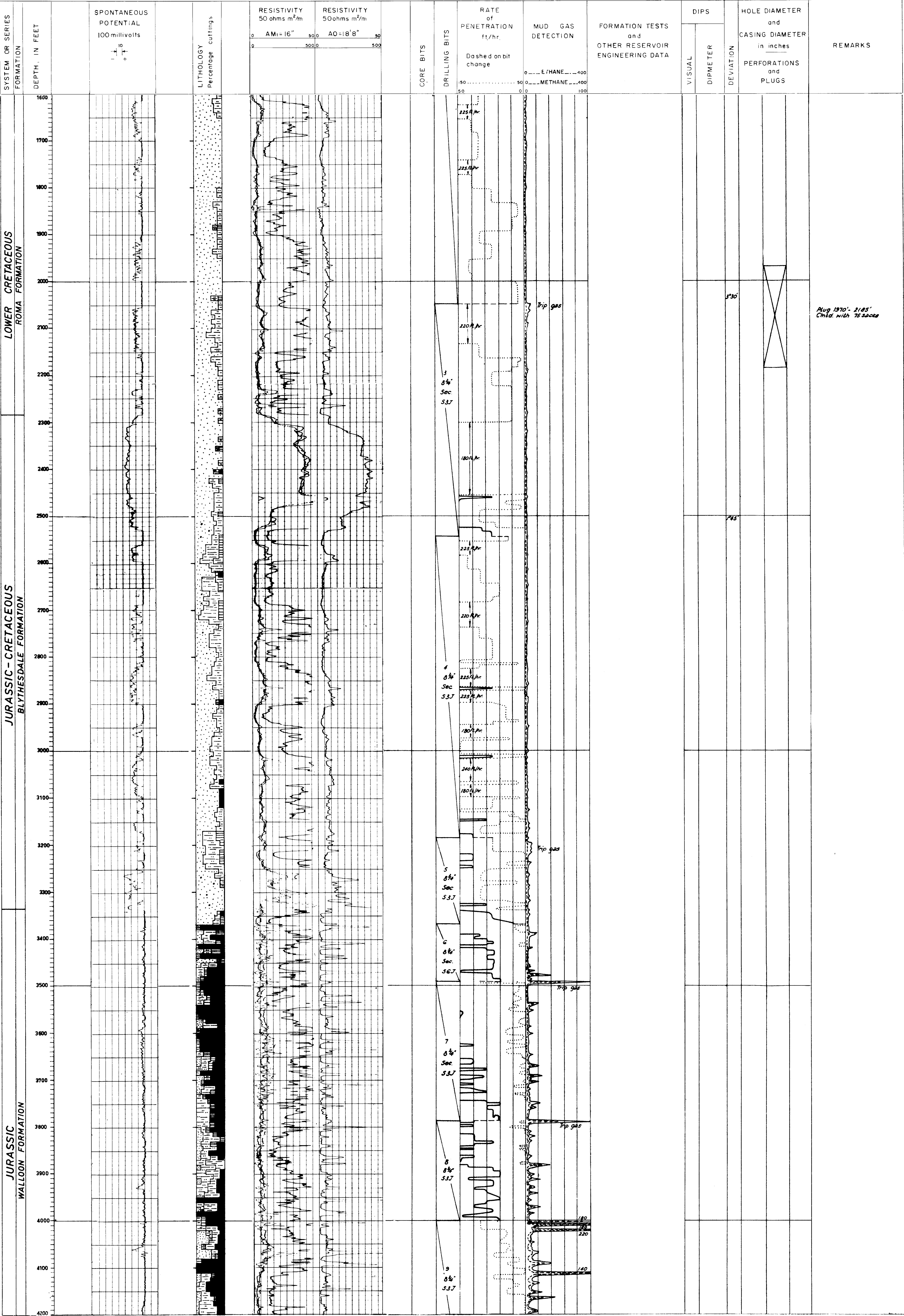
- Gas show slight
 - Gas show strong
 - Oil show slight
 - Oil show strong
 - Oil and gas show
 - Fluorescence
 - Blowout
 - Macrofossil
 - Spore, pollen
- Core interval, No. and recovery
 - Sidewall core
 - Perforated interval
 - Formation test or production test O.H. and in casing
 - Plugged interval

LITHOLOGIC REFERENCE

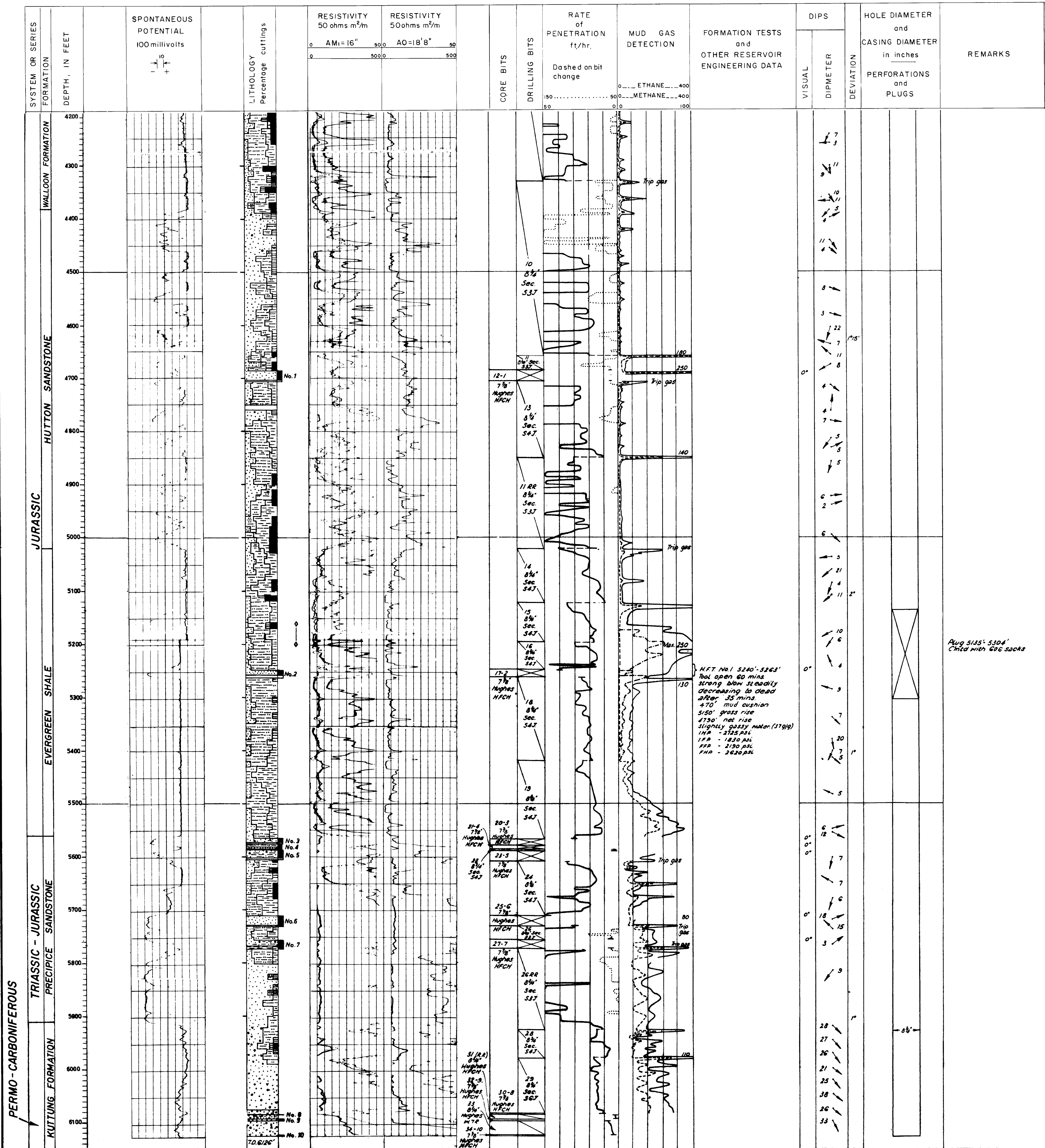
- Conglomerate
 - Sandstone
 - Limy Sandstone
 - Tuffaceous Sandstone
 - Tuff
- Shale or mudstone
 - Limy Shale
 - Siltstone
 - Coal or carbonaceous matter
 - Volcanic flows

Lithology by J.E. Mack, Jr.





UNION - KERN - A.O.G. MIDDLE CREEK No.1



COMPANY: UNION OIL DEVELOPMENT CORPORATION

PETROLEUM TENEMENT: A to P 57 P
MILITARY 4-MILE SHEET: DALBY

WELL No. UNION-KERN-A.O.G. SOUTHWOOD No.1
BASIN: BOWEN-SURAT

STATE: QUEENSLAND
WELL STATUS: PLUGGED & ABANDONED

DATUM: K.B. INDUCTION ELECTRIC LOG DATA

RUN No.	1	2	3	
DATE	April 5, 1963	April 14, 1963	May 6, 1963	
FIRST READING	6922'	7777'	10085'	
LAST READING	1287'	6820'	7677'	
INTERVAL MEASURED	5635'	957'	2408'	
Csg. SCHLUMBERGER	1287'	1287'	1287'	
Csg. DRILLER	1287'	1287'	1287'	
DEPTH REACHED	6923'	7778'	10086'	
BOTTOM DRILLER	6923'	7778'	10090'	
MUD NATURE	Gel	Gel	Gel: Superzene KP20	
DENSITY-VISCOSITY	78 - 44	81 - 55	83 - 48	
MUD RESISTIVITY	3.02 @ 72°F	2.43 @ 90°F	3.56 @ 72°F	
MUD RESIST. B.H.T.	1.4 @ 160°F	1.48 @ 148°F		
pH-FLUID LOSS	10-9 cc/30min	9-7.8 cc/30min	8-4 cc/30min	
ORIGIN OF SAMPLE	RMS	Flow-line	Circulation & Surface Press	
R.M.F.	2-28 @ 76°F	Char#	3.22 @ 78°F	
R.M.C.	2-20 @ 76°F			
BIT SIZE.....1	12 1/4" to 200'	9 3/8" to 7778'	9 3/8" to T.D.	
	9 3/8" to 6923'	9 3/8" to 7778'	9 3/8" to T.D.	
2				
Csg. SIZE	13 7/8"	13 7/8"	13 7/8"	
OPR. RIG TIME	5 1/2 hrs.	3 hrs.	5 hrs.	
TRUCK No.	2513	2513	2513	
RECORDED BY	Ollier	Ollier-Neville-Visage	Neville-Ollier	
WITNESSED BY		A.S. Keller	L. Kosmar	

NAME OF WELL: Union-Kern-A.O.G. Southwood No.1
STATE: Queensland
COUNTRY: Australia
COUNTY: Pring
PARISH: Tarfha
PORTION: 17
LATITUDE: 27° 42' 40" S.
LONGITUDE: 150° 13' 50" E.
ELEVATION: K.B. 882.5 ft

T.D.: 10,897'
DATE SPUDDED: March 11, 1963
DATE T.D.: May 15, 1963
DATE RIG RELEASED: June 4, 1963
STATUS OF WELL: Plugged & abandoned
DRILLED BY: Oil Drilling & Exploration Ltd.
DRILLING METHOD: 'deco Super Junior T-II'
LOGGING: Schlumberger
CEMENTING: Halliburton
MUD LOGGING: Union Oil Development Corporation

OTHER ELECTRICAL LOGS
SONIC LOG: 10,075' - 1287'
VELOCITY SURVEY: 8670' - 1572'
MICROLOG: 7777' - 5650'

LITHOLOGIC REFERENCE			
	Conglomerate		Shale or mudstone
	Sandstone		Limy shale
	Limy sandstone		Siltstone
	Tuffaceous sandstone		Coal and carbonaceous matter
	Tuff		Volcanic flows

WELL SYMBOLS	
	Gas show slight
	Gas show strong
	Oil show slight
	Oil show strong
	Oil and gas show
	Fluorescence
	Blowout
	Macrofossil
	Spore, pollen
	No.1 Core interval, No and recovery
	Sidewall core
	Perforated interval
	Formation test or production test
	O.H. and in csg
	Plugged interval

