COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Petroleum Search Subsidy Acts

PUBLICATION No. 58

SUMMARY OF DATA AND RESULTS

SURAT BASIN, QUEENSLAND

P-S-Q.A. Durabilla No. 1

P-S-Q.A. Kogan No. 1

P-S-Q.A. Kogan South No. 1

OF

PHILLIPS PETROLEUM COMPANY

SUNRAY DX OIL COMPANY

AND

QUEENSLAND AMERICAN OIL COMPANY

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 three drilling operations undertaken in the Surat Basin, Queensland: Phillips-Sunray - Queensland American Durabilla No. 1, Phillips-Sunray-Queensland American Kogan No. 1, and Phillips-Sunray-Queensland American Kogan South No. 1. The information has been abstracted by the Petroleum Exploration Branch of the Bureau of Mineral Resources from well completion reports furnished by Phillips Petroleum Company.

J.M. RAYNER
DIRECTOR

CONTENTS

ILLUSTRATIONS

PHILLIPS-SUNRAY - QUEENSLAND AMERICAN DURABILLA NO. 1

of

PHILLIPS PETROLEUM COMPANY

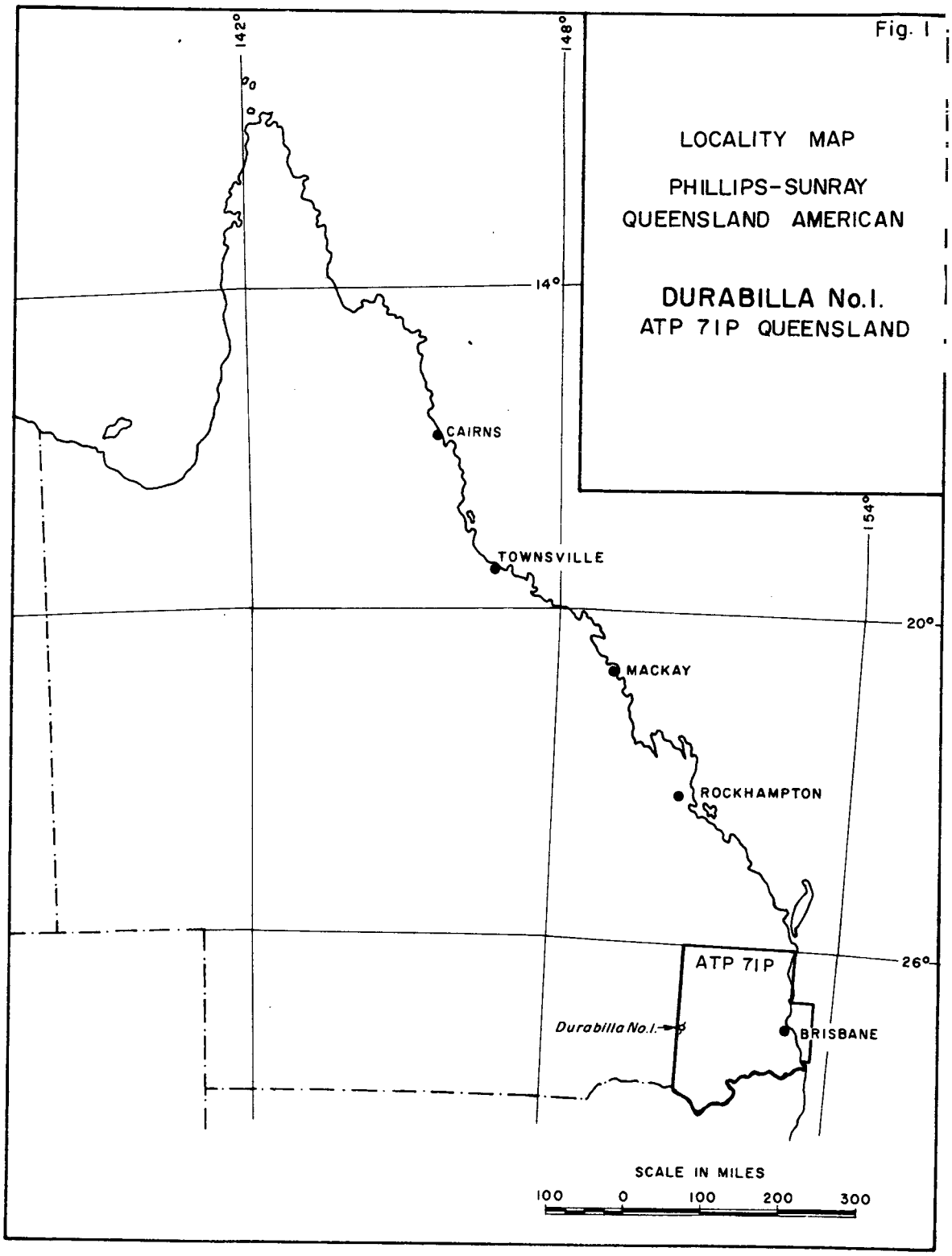
SUNRAY DX OIL COMPANY

and

QUEENSLAND AMERICAN OIL COMPANY

SUMMARY OF DATA AND RESULTS

Fig. 1


LOCALITY MAP
PHILLIPS-SUNRAY
QUEENSLAND AMERICAN
DURABILLA No.1.
ATP 71P QUEENSLAND
142°
148°
154°
14°
20°
26°
CAIRNS
TOWNSVILLE
MACKAY
ROCKHAMPTON
BRISBANE
ATP 71P
Durabilla No.1
SCALE IN MILES
100 0 100 200 300

PHILLIPS-SUNRAY - QUEENSLAND AMERICAN DURABILLA NO. 1

SUMMARY OF DATA AND RESULTS*

SUMMARY

Phillips-Sunray - Queensland American Durabilla No. 1 Well, located 20 miles west of Cecil Plains in Authority to Prospect 71P, south-east Queensland, was drilled by Oil Drilling and Exploration Limited for Phillips Petroleum Company to a total depth of 4358 feet. Drilling commenced on 16th June, 1962 and was completed on 31st July, 1962. A full programme of logging, testing, and coring was undertaken.

The well spudded in Lower Cretaceous-Jurassic Blythesdale Formation and successively penetrated the Jurassic Walloon Formation at 1275 feet; the upper and middle members and part of the lower member of the Lower Jurassic Bundamba Formation**, and entered indurated clastic Carboniferous sediments at 3744 feet. The well was primarily a test of Bundamba sandstone members. The lowermost sandstone unit, equivalent to the producing zone at Moonie, was absent over a Carboniferous basement "high".

Durabilla No. 1 was drilled to test a subsurface feature on the Durabilla Anticline which was outlined by photogeological mapping and subsequently investigated in more detail by a seismic survey. The subsurface feature is one of three small domes on the main anticline and has a closure of 250 feet over an area of about four square miles.

Two open hole formation tests, each of 60 minutes duration, were run over the intervals 3026 to 3113 feet (Bundamba Formation, upper member), and 3607 to 3665 feet (Bundamba Formation, lower member). The first test recovered 1916 feet of fresh water, and the second recovered 40 feet of watery drilling fluid.

Fifteen cores were cut and the well was logged with wireline tools by Welex Incorporated. No evidence of oil or gas was found during drilling nor in the two successful drillstem tests. The well was plugged and abandoned as a dry hole.

The stratigraphic drilling operation at Phillips-Sunray - Queensland American Durabilla No. 1 was subsidized under the Petroleum Search Subsidy Act 1959-1961, from surface to total depth.

---

* Abstracted from: Well Completion Report, Phillips-Sunray - Queensland American Durabilla No. 1, by Phillips Petroleum Company, November, 1962.

** After the drilling of the wells described in this report, the Bundamba Formation was discarded as a stratigraphic unit in the Surat Basin. In subsequent wells drilled by the company in this area, the terms Hutton Sandstone, Evergreen Shale, and Precipice Sandstone are used in place of the Upper Sandstone, Middle Shale, and Lower Sandstone members of the Bundamba.

WELL HISTORY

General Data

Well name and number:	Phillips-Sunray - Queensland American Durabilla No. 1
Location:	Latitude: 27° 33' 00" S.
	Longitude: 150° 51' 45" E.
Name and address of joint Tenement Holders:	Phillips Petroleum Company, Sunray DX Oil Company and Queensland American Oil Company, 30 Tank Street, Brisbane, Queensland.
Details of Petroleum Tenement:	Authority to Prospect 71P
Total Depth:	4358 feet
Date drilling commenced:	16th June, 1962
Date drilling completed:	31st July, 1962
Date well abandoned:	1st August, 1962
Date rig released:	3rd August, 1962
Elevation (ground):	1257 feet
Elevation (K.B.):	1268 feet (datum for depths)
Status:	Dry hole; plugged and abandoned
Cost:	£83,852

Drilling Data

Drilling Plant:	
Make:	National
Type:	T-32
Hole sizes and depths:	17 1/2" to 795 feet
	8 3/4" to 4358 feet

Casing details:

Size (in.):	13 3/8
Weight (lb./ft):	48
Grade:	H.40
Range:	2
Setting depth (ft):	790

Logging and Testing

Ditch Cuttings:

Interval:	Ten feet from surface to total depth
Coring:	A total of 105.5 feet was cored in fifteen runs. The overall recovery was 89.9 feet or 85%. Cores 1-11 were cut with a Hughes "J" Type conventional core barrel and hard formation cutter heads. Cores 12-15 were cut with a Drilling and Service 6 7/8" OD core barrel and a Truco 8 9/16" diamond-set core head. Core recovery with the conventional barrel was 74.6% and with diamond barrel was 96.1%.
Sidewall Cores:	No sidewall cores were taken.

Wireline Logging:

Wireline logs run by Welex Incorporated were as follows:

Log	Run 1 (feet)	Run 2 (feet)	Run 3 (feet)	Run 4 (feet)
Induction-Electric	50- 790	790-2789	2789-3781	3781-4305
Guard	100- 789	789-2790	2790-3780	
Contact-Caliper	50- 791			
FoRxo-Caliper	789-2792	2792-3782		
Radioactivity	50-4309			
Caliper	50- 791	791-4306		
Acoustic Velocity	100- 790	790-2792	2792-3781	3781-4305

Drilling time and gas logs:

A portable gas detection unit supplied by Core Laboratories Incorporated was used during drilling from the bottom of the surface pipe at 790 feet to basement rock at 3744 feet. Drilling time was recorded by a Geolograph mechanical recorder.

Formation Testing:

Two formation tests were run by Halliburton Company. The first yielded appreciable water but the second gave only a negligible recovery.

Test	Depth (feet)	Formation	Results
D.S.T. No. 1	3026-3113	Upper Bundamba	Recovered 1916 feet of fresh water in one hour.
D.S.T. No. 2	3607-3665	Lower Bundamba	Recovered 40 feet of watery drilling fluid in one hour.

Velocity Survey:

At total depth, a well geophone velocity survey was run over the interval 850 to 4300 feet by Petty Geophysical Engineering Company under direction of Phillips Petroleum Company geophysicists.

GEOLOGY

Stratigraphy

General:

At U.K.A. Cabawin East No. 1, the Mesozoic sequence has a thickness of 10,558 feet. This section thins progressively by basement onlap eastward into ATP 71P and is 3733 feet thick at Durabilla No. 1. In western ATP 71P, the Mesozoic formations in outcrop are Blythesdale, Walloon, and Bundamba in descending order, progressively succeeding and over-lapping each other eastward toward the granite and metamorphic area of the Texas "High". Pre-Bundamba Mesozoic and Permian strata penetrated in the U.K.A. Cabawin No. 1 and Cabawin East No. 1 wells are not present in the Durabilla section nor in outcrop, although pre-Bundamba reflections mapped seismically in western ATP 71P may represent equivalents.

The stratigraphic sequence encountered in Durabilla No. 1 is shown in the Table below:

Age	Formation	Depth Intervals (feet)	Thickness (feet)
Lower Cretaceous-Jurassic	Blythesdale Formation	11-1275	1264 +
Jurassic	Walloon Formation	1275-2528	1253
Lower Jurassic	Bundamba Formation	2528-3744	1216
Carboniferous	Unnamed	3744-4358	614 +

Detailed:

Blythesdale Formation (Lower Cretaceous-Jurassic): 11 to 1275 feet (1264 feet+)

Interbedded sandstone, siltstone and shale. The sandstone and siltstone beds are light grey to buff, non-porous (having white clay matrix) to porous (unconsolidated). The shale is medium grey, soft, and poorly fissile.

Walloon Formation (Jurassic): 1275 to 2528 feet (1253 feet)

Medium to dark grey, soft shale. Carbonaceous in many places, with some coal beds.

Bundamba Formation (Lower Jurassic): 2528 to 3744 feet (1216 feet)

This formation has been subdivided into upper and lower sandstone members and a middle shale member.

Upper Sandstone member: 2528 to 3300 feet (772 feet)

Light grey, fine-grained to pebbly, (having angular to rounded grains), loosely cemented with clay matrix, porous and water bearing quartz sandstone. Subordinate grey shale and mudstone beds occur. The shale is silty and carbonaceous with coal laminae.

Middle Shale member: 3300 to 3590 feet (290 feet)

Predominantly dark grey, carbonaceous shale, grading in places into grey mudstone. The shale contains coal laminae. Subordinate sandstone beds occur, consisting of light grey, medium to fine-grained, quartz sandstone, having a clay matrix and traces of coal.

Lower Sandstone member: 3590 to 3744 feet (154 feet)*

Interbedded, light grey, soft to firm, fine to coarse-grained, slightly glauconitic, quartzose sandstone and light grey siltstone. Traces of coal occur throughout.

Carboniferous sediments: 3744 to 4358 feet (614 feet+)

Mostly white to dark grey quartz sandstone, having subangular to subrounded grains, poorly sorted, and highly indurated. Subordinate conglomerates and shales occur. The conglomerates are medium grey, dense, poorly sorted rocks containing subrounded boulders more than five inches in diameter. The shales are black and highly indurated. The sequence contains a spore and pollen assemblage of Carboniferous age.

---

* In late 1963, additional study of palynological material from this well suggested Evergreen age for the interval previously assigned to the Lower Sandstone member. With subsequently obtained well control the company revised the top of the Evergreen Shale upward to 3150 feet, discarded the Lower Sandstone member used in the well report, and placed the base of the Evergreen Shale at the basement contact.

Structure

The Durabilla Anticline was located by seismic reconnaissance and defined by subsequent seismic mapping. It is located on the eastern flank of the Surat Basin in a region of gentle north-westerly dip interrupted by numerous shallow en echelon folds trending east-north-east. These folds form a 10-mile wide belt traceable on the surface for 60 miles from near the Moonie Field to Cecil Plains.

As mapped on the lower Bundamba seismic horizon, or top of the middle Bundamba in the well section, the Durabilla Anticline is a south-west plunging nose eight miles long and three miles wide. The anticline consists of three individual structural closures of which the structurally highest north-easternmost of the three was chosen for testing. Closure amounts to 250 feet over approximately four square miles. Structural shape and trend persist in the upper horizons although with diminished area and with closure of less than 100 feet on the horizon near the top of the Walloon Formation. Subdued structural expression on the Walloon horizon as compared with the Bundamba horizon suggests drape and compaction over the Carboniferous "high".

Oil and Gas Indications and Potential

The stratigraphic interval at the base of the Bundamba Formation, which includes the oil bearing sandstone reservoirs of the Moonie Field, is absent in the Durabilla No. 1 Well. Review of seismic data after drilling suggests that this situation is local and due to non-deposition of these basal beds over the crest of a topographic ridge which existed at the time of initiation of Bundamba deposition. The absence of oil or gas in Durabilla No. 1 is assumed to be due to the absence of porous sandstone immediately overlying the unconformity at the base of the Bundamba Formation. More favourable off-structure prospects are expected in the Durabilla area where seismic evidence suggests both the presence of Permian strata and thicker Bundamba development.

Analyses of cores from the Bundamba Formation indicate very good porosities varying between 19% and 28%, but with the exception of one reading of 112 millidarcys, permeabilities are very low at 3 to 4 millidarcys.

The Carboniferous strata penetrated in the bottom 614 feet are dense and strongly indurated, but are not metamorphosed and are nearly horizontal in attitude. They are similar in general aspect to the younger strata in outcrop in the Texas area. It is not inconceivable that marine facies of this sequence (known to be present in outcrop in the Texas-New England area) could be potential source beds for oil.

REFERENCES

HILL, D., DENMEAD, A.K., et al, 1960: The geology of Queensland. J. geol. Soc. Aust., 7.

MACK, J.E., Jr, 1963: Reconnaissance geology of the Surat-Basin, Queensland and New South Wales. Bur. Min. Resour. Aust. Petrol. Search Subs. Acts Publ. 40.

REFERENCES (Cont'd)

PHILLIPS PETROLEUM COMPANY,	1962:	Well Completion Report, Phillips-Sunray -Queensland American Durabilla No. 1 (Unpubl.).
WHITEHOUSE, F.W.,	1955:	The geology of the Queensland portion of the Great Australian Artesian Basin, Appendix G to report on Artesian Water Supplies in Queensland, Department of Co-ordinator-General of Public Works, Queensland.

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Phillips-Sunray-Queensland American Durabilla No. 1 have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference :

(i) Well Completion Report — 12 pp.

Appendix 1A :	Palaeontological and Palynological reports by N.J. de Jersey and J.T. Woods	5 pp.
Appendix 1B :	Palynological report by P.R. Evans	1 p.
Appendix 2:	Petrological report by B.R. Houston	4 pp.
Appendix 3:	Core descriptions	6 pp.
Appendix 4:	Core analyses by B.M.R.	2 pp.
Appendix 5:	Water analyses by Queensland Government Chemical Laboratory	2 pp.

(ii) Daily drilling reports for period 9th June, 1962 to 9th August, 1962.

(iii) Well logs including the following:

(a) Induction-Electric Log

Run 1, 50- 790 feet (2", 5" = 100 ft)

Run 2, 790-2789 feet (2", 5" = 100 ft)

Run 3, 2789-3781 feet (2", 5" = 100 ft)

Run 4, 3781-4305 feet (2", 5" = 100 ft)

(b) Guard Log

Run 1, 100- 789 feet (2", 5" = 100 ft)

Run 2, 789-2790 feet (2", 5" = 100 ft)

Run 3, 2790-3780 feet (2", 5" = 100 ft)

(c) Contact-Caliper Log

Run 1, 50- 791 feet (2", 5" = 100 ft)

(d) FoRxo-Caliper Log

Run 1, 789-2792 feet (2", 5" = 100 ft)

Run 2, 2792-3782 feet (2", 5" = 100 ft)

(e) Radioactivity Log (Gamma Ray - Neutron)

Run 1, 50-4309 feet (2", 5" = 100 ft)

(f) Caliper Log

Run 1, 50- 791 feet (5" = 100 ft)

Run 2, 791-4306 feet (5" = 100 ft)

(g) Acoustic Velocity Log

Run 1, 100- 790 feet (2", 5" = 100 ft)

Run 2, 790-2792 feet (2", 5" = 100 ft)

Run 3, 2792-3781 feet (2", 5" = 100 ft)

Run 4, 3781-4305 feet (2", 5" = 100 ft)

(h) Dip Log

Run 1, 2000-4306 feet

(iv) Regional geological index map

(v) Structure contour map, lower Bundamba horizon

(vi) NW-SE structure section, before drilling

(vii) NW-SE structure section, after drilling

(viii) Velocity survey report, Phillips-Sunray-Queensland American Durabilla No. 1, by C.R. Fjelstul and R.E. Beck

(ix) Drillstem test data and pressure charts.

PHILLIPS-SUNRAY - QUEENSLAND AMERICAN KOGAN NO. 1

of

PHILLIPS PETROLEUM COMPANY

SUNRAY DX OIL COMPANY

and

QUEENSLAND AMERICAN OIL COMPANY

SUMMARY OF DATA AND RESULTS

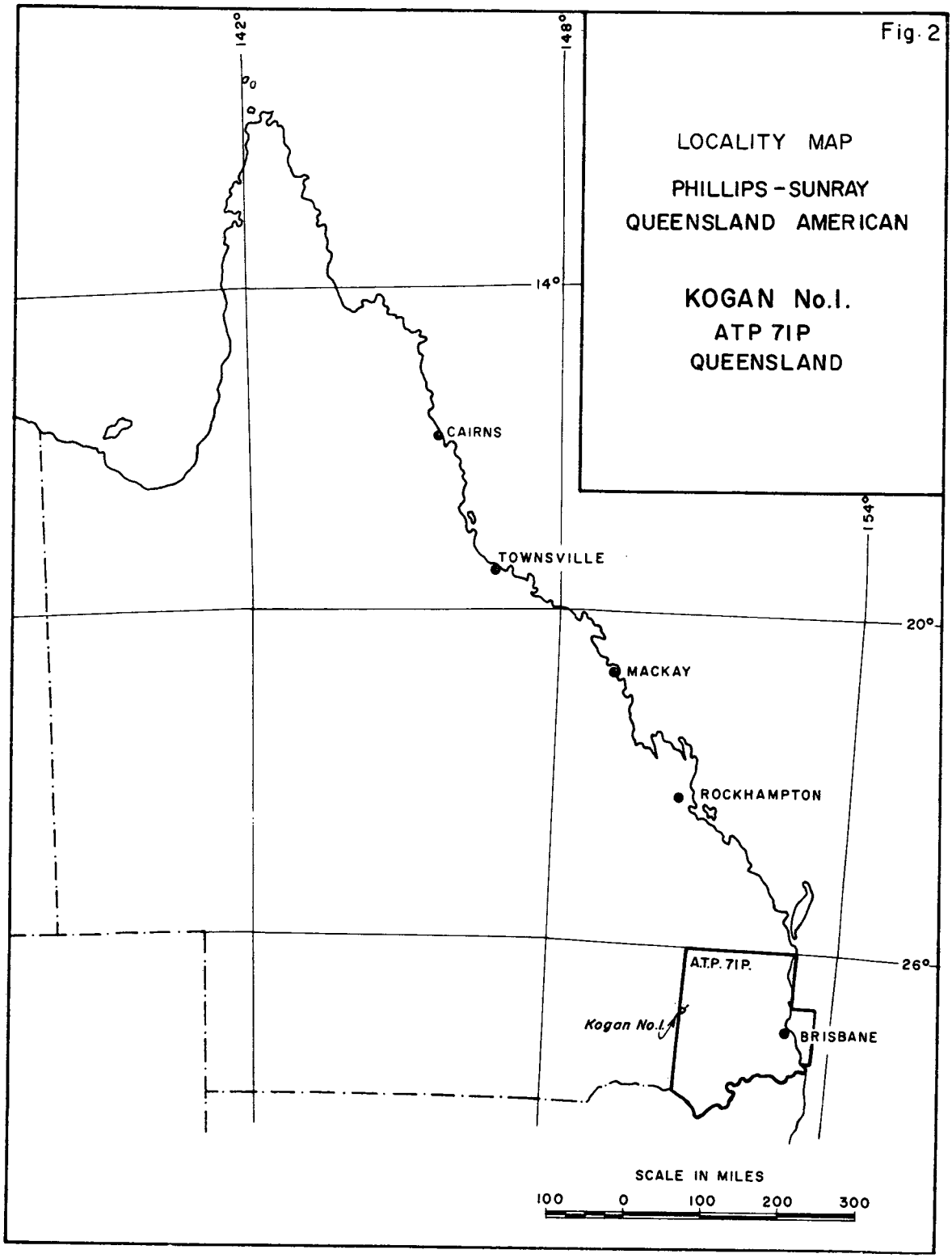


Fig. 2
LOCALITY MAP
PHILLIPS - SUNRAY
QUEENSLAND AMERICAN
KOGAN No.1.
ATP 71P
QUEENSLAND
142°
148°
154°
14°
20°
26°
CAIRNS
TOWNSVILLE
MACKAY
ROCKHAMPTON
A.T.P. 71P.
Kogan No.1
BRISBANE
SCALE IN MILES
100 0 100 200 300

PHILLIPS-SUNRAY - QUEENSLAND AMERICAN KOGAN NO. 1

SUMMARY OF DATA AND RESULTS *

SUMMARY

Phillips-Sunray-Queensland American Kogan No. 1 Well, located six miles south-east of Kogan township and approximately 32 miles north of Durabilla No. 1, in Authority to Prospect 71P, Queensland, was drilled by Oil Drilling and Exploration Limited for Phillips Petroleum Company to a total depth of 3437 feet. Drilling commenced on 12th August, 1962 and was completed on 30th August, 1962. A full programme of logging, testing, and coring was undertaken.

The well penetrated 309 feet of the Lower Cretaceous-Jurassic Blythesdale Formation; 1433 feet of Jurassic Walloon Formation; 1587 feet of the Lower Jurassic Bundamba Formation; and entered basalt of pre-Bundamba age at 3340 feet.

The well was drilled to test the porous beds in the lower part of the Bundamba Formation in a local structure on the Kogan Anticline. The structure, which was detected by a seismic survey, is an easterly elongated dome which has a closure of 100 feet over an area of six square miles.

Dull yellow fluorescence in Core No. 2 from 1746 to 1766 feet was attributed to the limy nature of the cementing material. The absence of hydrocarbons was confirmed by three open hole formation tests, over the intervals 1886 to 2092 feet, 2889 to 2961 feet, and 3247 to 3407 feet, that yielded only fresh water and mud. The middle and lower Bundamba, with the exception of the basal sand, are tight. There were no hydrocarbon shows and the well was abandoned as a dry hole.

The stratigraphic drilling operation at Phillips-Sunray-Queensland American Kogan No. 1 was subsidized under the Petroleum Search Subsidy Act 1959-1961, from surface to total depth.

---

* Abstracted from: Well Completion Report, Phillips-Sunray-Queensland American Kogan No. 1, by N. Kyranis, Phillips Petroleum Company, February, 1963.

WELL HISTORY

General Data

Well name and number:	Phillips-Sunray-Queensland American Kogan No. 1
Location:	Latitude 27° 05' 16" S.
	Longitude 150° 47' 55" E.
Name and address of joint Tenement Holders:	Phillips Petroleum Company, Sunray DX Oil Company, 30 Tank Street, Brisbane; Queensland American Oil Company, 134 Adelaide Street, Brisbane, Queensland.
Details of Petroleum Tenement:	Authority to Prospect 71P
Total Depth:	3437 feet
Date drilling commenced:	12th August, 1962
Date drilling completed:	30th August, 1962
Date well abandoned:	1st September, 1962
Date rig released:	5th September, 1962
Elevation (ground):	1226 feet
Elevation (K.B.):	1237 feet (datum for depths)
Status:	Dry hole; plugged and abandoned
Cost:	£38,222

Drilling Data

Drilling Plant:	
Make:	National
Type:	T-32
Hole sizes and depths:	17 1/2" to 698 feet 8 3/4" to 3437 feet

Casing details:

Size (in.):	13 3/8
Weight (lb./ft):	48
Grade:	H.40
Range:	2
Setting depth (ft):	692.60

Logging and Testing

Ditch Cuttings:

Interval:	Ten feet from surface to total depth
Coring:	Six cores were cut using a conventional core barrel. A total of 65 feet was cored and 58 feet (89.2%) recovered.
Sidewall Cores:	No sidewall cores were taken.

Wireline Logging:

Wireline logs run by Welex Incorporated were as follows :

Log	Run 1 (feet)	Run 2 (feet)	Run 3 (feet)	Run 4 (feet)	Run 5 (feet)
Induction-Electric	50- 696	696-2076	2076-2956	2956-3402	3402-3434
Guard	686-3433				
Contact-Caliper	50- 697	697-2076	2957-3403	2076-2957	
Radioactivity	50-3437				
Caliper	50- 696	2050-2957			
Acoustic Velocity	50- 696	696-3433			

Drilling time and gas logs:

Drilling time was recorded by a Geograph mechanical recorder, and penetration rate was plotted in feet per hour, averaging ten-foot intervals.

A Core Laboratories portable gas detection unit was used from below surface casing to total depth. Fairly high gas readings recorded in the Walloon Formation, correlative with coal seams, were the only gas shows encountered during drilling.

Formation Testing:

Three open hole drillstem tests were made by Halliburton Company during the drilling of the well. Summaries of the tests are given below:

Test	Depth (feet)	Formation	Results
D.S.T. No. 1	1886-2092	Upper Bundamba	Recovered 270 feet of water-cut mud and 1385 feet of fresh water.
D.S.T. No. 2	2889-2961	Lower Bundamba	Recovered 3 feet of mud.
D.S.T. No. 3	3247-3407	Lower Bundamba	Recovered 180 feet of mud and 2227 feet of fresh water.

Velocity Survey:

On completion of bottom hole logging, a conventional seismic velocity survey was made by Petty Geophysical Engineering Company, supervised by Phillips Petroleum Company geophysicists.

GEOLOGY

Stratigraphy

General:

The Kogan Anticline lies in a shelf position in the eastern structural embayment of the Surat Basin, and is 31 miles north of Durabilla No. 1. The Blythesdale Formation outcrops in the Kogan area, and consequently is only partially represented in Kogan No. 1 Well. The thicknesses of Walloon Formation, upper Bundamba member and middle Bundamba member seem to be fairly consistent between Durabilla No. 1 and Kogan No. 1. The lower Bundamba member, however, is represented by 451 feet of sediments in the Kogan area, the lower 300 feet of which are absent in Durabilla No. 1. Triassic and Permian sediments, which are present in wells drilled in the deeper parts of the Surat Basin, are absent over the Kogan structure.

The stratigraphic sequence encountered in Kogan No. 1 is shown in the Table below:

Age	Formation	Depth Intervals (feet)	Thickness (feet)
Lower Cretaceous-Jurassic	Blythesdale Formation	11- 320	309 +
Jurassic	Walloon Formation	320-1753	1433
Lower Jurassic	Bundamba Formation	1753-3340	1587
	"Basement" basalt	3340-3437	97 +

Detailed:

Blythesdale Formation (Lower Cretaceous-Jurassic): 11 to 320 feet (309 feet +)

White to grey, fine to coarse-grained, quartz sandstone, argillaceous and carbonaceous in places. Minor coal seams occur.

Walloon Formation (Jurassic): 320 to 1753 feet (1433 feet)

Grey-brown, carbonaceous shale with thin interbeds of fine to coarse-grained, carbonaceous and slightly calcareous sandstone. Coal seams up to 20 feet thick occur in the middle part of the coal measures.

Bundamba Formation (Lower Jurassic): 1753 to 3340 feet (1587 feet)

This formation has been subdivided into upper and lower sandstone members and a middle shale member.

Upper Sandstone member: 1753 to 2550 feet (797 feet)

White, brown, and grey, fine to very coarse-grained, slightly calcareous, quartz sandstone with interbeds of grey shale and minor coal seams. Sandstone is predominant in the top and bottom sections but carbonaceous shale is dominant in the middle section.

Middle Shale member: 2550 to 2889 feet (339 feet)

Light grey and brown, soft, slightly calcareous shale becoming very carbonaceous with coal streaks below 2787 feet.

Lower Sandstone member: 2889 to 3340 feet (451 feet)*

This member consists of two sandstone units, each about 50 feet thick, separated by about 300 feet of carbonaceous shale, and underlain by a basal carbonaceous shale bed 45 feet thick. The upper sandstone is white, silty, fine to medium-grained and has white clay in the matrix. The lower sandstone is light grey, massive, medium to coarse-grained, with conglomerate bands, and has a clay matrix.

"Basement" basalt: 3340 to 3437 feet (97 feet +)

Grey amygdaloidal basalt containing possible xenoliths of grey-green basalt. A pre-Bundamba age is indicated by its presumed extrusive nature and by the type and degree of alteration.**

Structure

The Kogan structure is a southward plunging anticline approximately 18 miles long and 6 miles wide, containing several minor closures along the axis. The Kogan No. 1 test is on the largest and northernmost culmination, which develops approximately 100 feet of structural closure over an area of six square miles at the middle Bundamba seismic horizon. As a result of drilling, Kogan No. 1 was found to be 925 feet higher structurally than Durabilla No. 1 Well, at the top of the Walloon Formation.

---

* With subsequently obtained well control the company revised the top of the Precipice Sandstone downward to 3053 feet.

** A radioactive age determination of the basalt made after the writing of the well completion report indicated an early Carboniferous age.

Oil and Gas Indications and Potential

In the Moonie Field, 55 miles to the south-west of Kogan No. 1, two sandstone units in the lower member of the Bundamba are productive of oil. The sandstone topped at 2889 feet in Kogan No. 1 is believed to be correlative to the upper pay sand of the Moonie Field, and is clay-filled and tight. The basal sandstone of Kogan No. 1, in the interval 3238 to 3295 feet, is considered correlative to the main oil reservoir of the Moonie Field, and it also has good porosity and permeability. No oil or gas shows were found in either sand, and a drillstem test of the basal sandstone (D.S.T. No. 3, 3247-3407 feet) recovered 2227 feet of fresh water. The fresh water has a substantial bicarbonate and sulphate content, but only a moderate chloride content is shown on analysis. The water composition suggests that the sandstone has been flushed by meteoric waters. The results of the Kogan No. 1 Well are considered to be favourable insofar as they indicate the presence of a potential reservoir for oil in this area if a more suitable trap for accumulation can be found.

REFERENCES

BELL, D.W., 1962: Photogeology of the western half of ATP71P, Queensland. Unpubl. report for Phillips Petroleum Company.

KYRANIS, N., 1963: Well Completion Report, Phillips-Sunray-Queensland American Kogan No. 1 (Unpubl.).

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Phillips-Sunray-Queensland American Kogan No. 1 have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i) Well Completion Report, by N. Kyranis — 11 pp.

Appendix 1:	Core descriptions	2 pp.
Appendix 2:	Petrographic report by B.R. Houston	2 pp.
Appendix 3:	Water analyses by Queensland Government Chemical Laboratory	2 pp.

(ii) Daily drilling reports for period 10th August, 1962 to 5th September, 1962.

(iii) Well logs including the following:

(a) Induction-Electric Log

Run 1, 50- 696 feet (2", 5" = 100 ft)

Run 2, 696-2076 feet (2", 5" = 100 ft)

Run 3, 2076-2956 feet (2", 5" = 100 ft)

Run 4, 2956-3402 feet (2", 5" = 100 ft)

Run 5, 3402-3434 feet (2", 5" = 100 ft)

(b) Guard Log

Run 1, 686-3433 feet (2", 5" = 100 ft)

(c) Contact-Caliper Log

Run 1, 50- 697 feet (2", 5" = 100 ft)

Run 2, 697-2076 feet (5" = 100 ft)

Run 3, 2957-3403 feet (2", 5" = 100 ft)

Run 4, 2076-2957 feet (2", 5" = 100 ft)

(d) Radioactivity Log (Gamma Ray-Neutron)

Run 1, 50-3437 feet (2", 5" = 100 ft)

(e) Caliper Log

Run 1, 50- 696 feet (2", 5" = 100 ft)

Run 2, 2050-2957 feet (2", 5" = 100 ft)

(f) Acoustic Velocity Log

Run 1, 50- 696 feet (2", 5" = 100 ft)

Run 2, 696-3433 feet (2", 5" = 100 ft)

(g) Dip Log

Run 1, 2250-3435 feet

(iv) Regional geological index map

(v) Structure contour map, middle Bundamba horizon

(vi) Cross sections through well before and after drilling

(vii) Velocity survey report, Phillips-Sunray-Queensland American Kogan No. 1, by C.R. Fjelstul and R.E. Beck

(viii) Halliburton drillstem test reports.

PHILLIPS-SUNRAY-QUEENSLAND AMERICAN KOGAN SOUTH NO. 1

of

PHILLIPS PETROLEUM COMPANY

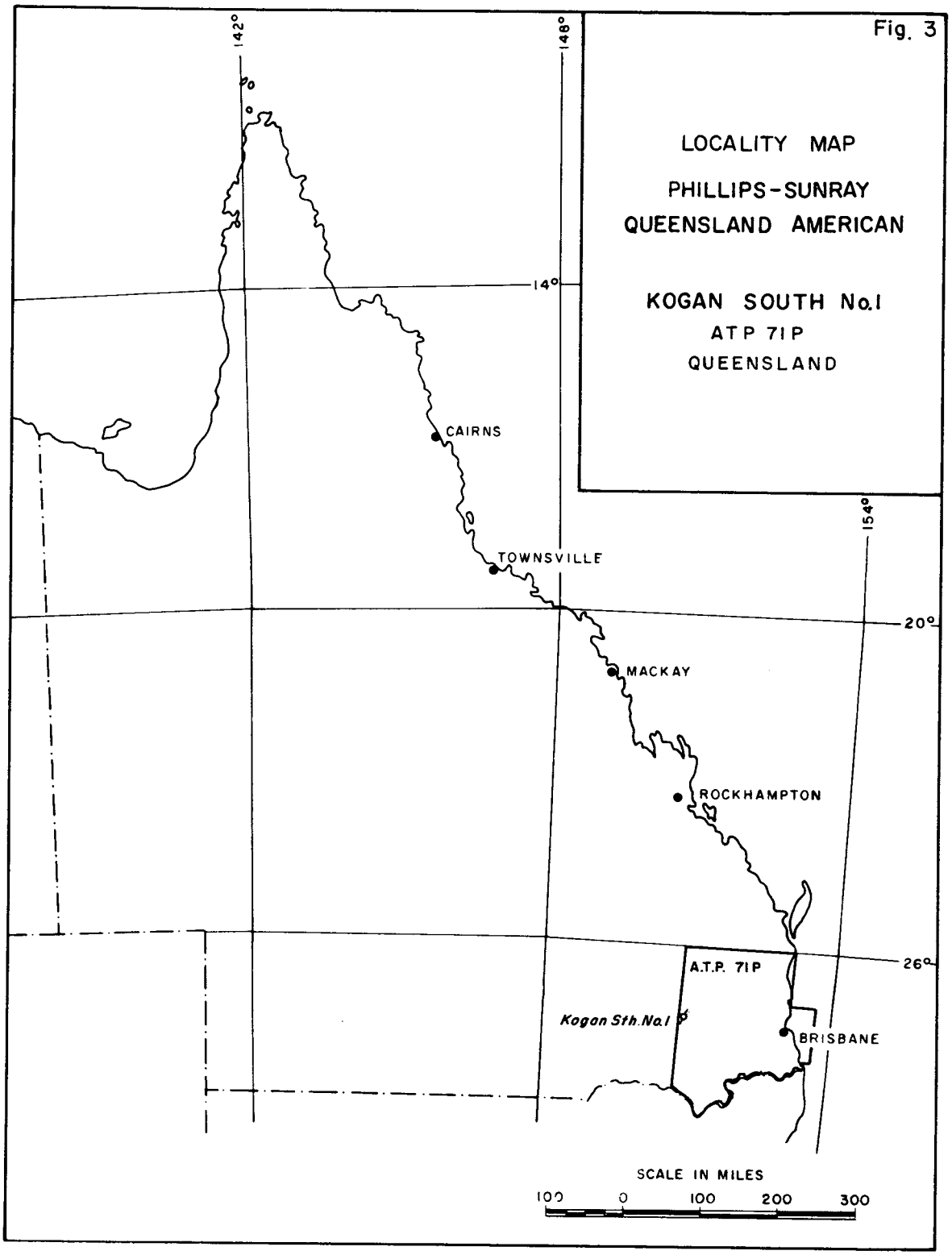
SUNRAY DX OIL COMPANY

and

QUEENSLAND AMERICAN OIL COMPANY

SUMMARY OF DATA AND RESULTS

Fig. 3


LOCALITY MAP
PHILLIPS-SUNRAY
QUEENSLAND AMERICAN
KOGAN SOUTH No.1
ATP 71P
QUEENSLAND
142°
148°
154°
14°
20°
26°
CAIRNS
TOWNSVILLE
MACKAY
ROCKHAMPTON
A.T.P. 71P
Kogan Sth. No.1
BRISBANE
SCALE IN MILES
100 0 100 200 300

PHILLIPS-SUNRAY-QUEENSLAND AMERICAN KOGAN SOUTH NO. 1

SUMMARY OF DATA AND RESULTS*

SUMMARY

Phillips-Sunray-Queensland American Kogan South No. 1 Well, located 7 1/2 miles south-south-east of Kogan township, and four miles south of Kogan No. 1, in Authority to Prospect 71P, Queensland, was drilled by Oil Drilling and Exploration Limited for Phillips Petroleum Company to a total depth of 3519 feet. Drilling commenced on 19th September, 1962 and was completed on 6th October, 1962. A full programme of logging, testing, and coring was undertaken.

A Mesozoic section of Blythesdale, Walloon and Bundamba Formations was penetrated to an unconformity at 3428 feet, beneath which volcanic rocks of pre-Bundamba age were encountered.

The well was drilled on the upthrown southern side of a minor fault trending east-north-east across the southward plunging Kogan Anticline, to test the lower part of the Bundamba Formation in a local structure on the anticline. The structure, detected by a seismic survey, is a small dome, having a closure of 200 feet over an area of 2 1/2 square miles.

The important lower Bundamba reservoir was cored and tested, and the well was logged with wireline tools. No hydrocarbon shows were encountered during drilling and the well was plugged and abandoned as a dry hole.

The test drilling operation at Phillips-Sunray-Queensland American Kogan South No. 1 was subsidized under the Petroleum Search Subsidy Act 1959-1961 from surface to total depth.

---

* Abstracted from: Well Completion Report, Phillips-Sunray-Queensland American Kogan South No. 1, by D.C. Green, Phillips Petroleum Company, March, 1963.

WELL HISTORY

General Data

Well name and number:	Phillips-Sunray-Queensland American Kogan South No. 1
Location:	Latitude 27° 08' 40" S.
	Longitude 150° 48' 08" E.
Name and address of joint Tenement Holders:	Phillips Petroleum Company, Sunray DX Oil Company, 30 Tank Street, Brisbane; Queensland American Oil Company, 134 Adelaide Street, Brisbane, Queensland.
Details of Petroleum Tenement:	Authority to Prospect 71P
Total Depth:	3519 feet
Date drilling commenced:	19th September, 1962
Date drilling completed:	6th October, 1962
Date well abandoned:	8th October, 1962
Date rig released:	8th October, 1962
Elevation (ground):	1198 feet
Elevation (K.B.):	1209 feet (datum for depths)
Status:	Dry hole; plugged and abandoned
Cost:	£39,935

Drilling Data

Drilling Plant:	
Make:	National
Type:	T-32
Hole sizes and depths:	17 1/2" to 790 feet
	8 3/4" to 3519 feet

Casing details:

Size (in.):	13 3/8
Weight (lb./ft):	48
Grade:	H.40
Range:	2
Setting depth (ft):	781.57

Logging and Testing

Ditch Cuttings:

Interval:	Ten feet from surface to total depth
Coring:	Seven cores were cut using a conventional core barrel. A total of 89 feet was cored and 74.2 feet (83.4%) recovered.
Sidewall Cores:	No sidewall cores were taken.

Wireline Logging:

Wireline logs run by Welex Incorporated were as follows:

Log	Run 1 (feet)	Run 2 (feet)	Run 3 (feet)	Run 4 (feet)
Induction-Electric	50- 642	500-784	779-2392	2300-3514
Guard	779-3514			
Contact-Caliper	50- 644	500-784	779-2393	2300-3518
Radioactivity	50-3519			
Caliper	10- 786			
Acoustic Velocity	779-3514			

Drilling time and gas logs:

Drilling time was recorded by a Geolograph mechanical recorder. Penetration rate, in feet per hour, was plotted at five-foot intervals.

A Core Laboratories portable hotwire gas detector continuously recorded total hydrocarbon gas in the drilling mud discharged from the flowline. Minor gas readings, directly correlative with coal seams in the Walloon Formation, were the only gas shows recorded.

Formation Testing:

Two open hole drillstem tests were conducted with Halliburton Hydro-Spring Tester during the drilling of the well. Summaries of the tests are given below:

Test	Depth (feet)	Formation	Results
D.S.T. No. 1	1851-2054	Upper Bundamba	Recovered 180 feet mud, 1350 feet fresh water in 1 hour.
D.S.T. No. 2	3332-3391	Lower Bundamba basal sand	Recovered 50 feet mud, 2800 feet fresh water in 1 hour.

Velocity Survey:

A seismic well velocity survey to total depth was made by Austral Geo Prospectors Pty Ltd under the direction of Phillips Petroleum Company geophysicists.

GEOLOGY

Stratigraphy

General:

The formations penetrated in Kogan South No. 1 are Mesozoic terrestrial deposits lying in a structural embayment on the eastern flank of the Surat Basin, and consist of the Lower Cretaceous-Jurassic Blythesdale, Jurassic Walloon and Bundamba Formations, comparable in thickness to those encountered in Kogan No. 1. Neither Triassic nor Permian strata encountered in the Union-Kern-A.O.G. Cabawin No. 1 and Cabawin East No. 1 wells, 50 miles south-west of Kogan, are present over the Kogan Anticline.

Basement rock in both Kogan South No. 1 and Kogan No. 1 is an altered basalt, not identical in both wells but considered to be products of the same volcanism. No age has been assigned to these volcanics.*

Correlation of Kogan South No. 1 with Kogan No. 1 is presented in the Table below:

Formation	Kogan South No. 1		Kogan No. 1	
	Depth (feet) Datum: 1209' ASL	Thickness (feet)	Depth (feet) Datum: 1237' ASL	Thickness (feet)
Blythesdale	15	449	11	309 +
Walloon	464	1393	320	1433
Bundamba (upper)	1857	773	1753	797
Bundamba (middle)	2630	337	2550	339
Bundamba (lower)	2967	461	2889	451
"Basement"	3428	91 +	3340	97 +

* An early Carboniferous radioactive age determination has since been made on the basalt in Kogan No. 1.

Detailed:

Surficial cover (Recent): 11 to 15 feet (4 feet)

Dark grey to black, clayey sandy soil.

Blythesdale Formation (Lower Cretaceous-Jurassic): 15 to 464 feet (449 feet)

Interbedded, light to medium grey, quartz sandstone and subordinate dark grey shale with thin coal seams.

Walloon Formation (Jurassic): 464 to 1857 feet (1393 feet)

Interbedded, grey, carbonaceous shale and white to light grey, calcareous, fine to medium-grained sandstone. Abundant thin coal seams occur throughout the sequence and thick seams occur between 660 and 710 feet.

Bundamba Formation (Lower Jurassic): 1857 to 3428 feet (1571 feet)

Upper Sandstone member: 1857 to 2630 feet (773 feet)

Mostly white to brown, medium to coarse-grained sandstone with a few interbeds of brown, carbonaceous shale. Several thin coal seams occur near the base.

Middle Shale member: 2630 to 2967 feet (337 feet)

Interbedded, light grey shale and dark grey, carbonaceous shale with subordinate light grey, medium-grained, argillaceous sandstone and soft, white, sandy claystone.

Lower Sandstone member: 2967 to 3428 feet (461 feet)*

This member consists of an upper sandstone 43 feet thick and a lower sandstone 68 feet thick, separated by 313 feet of interbedded, dark grey, carbonaceous shale and sandstone, and underlain by 37 feet of dark grey, carbonaceous shale interbedded with sandstone and siltstone. The sandstones are light grey, fine to coarse-grained, quartzose, and have a clay matrix.

"Basement" basalt: 3428 to 3519 feet (91 feet +)

The Bundamba Formation rests unconformably upon a fine-grained, grey to green, altered basalt considered to be the correlative of the basalt at the bottom of Kogan No. 1. The exact age has not been determined.

Structure

The Kogan Anticline is a south plunging fold which has been described in the previous report (See p. 15). The faulted closure at Kogan South No. 1 is the central one of three small structural "highs" on the Kogan Anticline. It develops about 200 feet of independent closure covering a 2 1/2 square-mile area mapped seismically on a horizon near the top of the middle Bundamba. The closure is separated from Kogan No. 1 by an east-north-east trending transverse fault of about 100 feet displacement.

---

* With subsequently obtained well control the company revised the top of the Precipice Sandstone downward to 3128 feet.

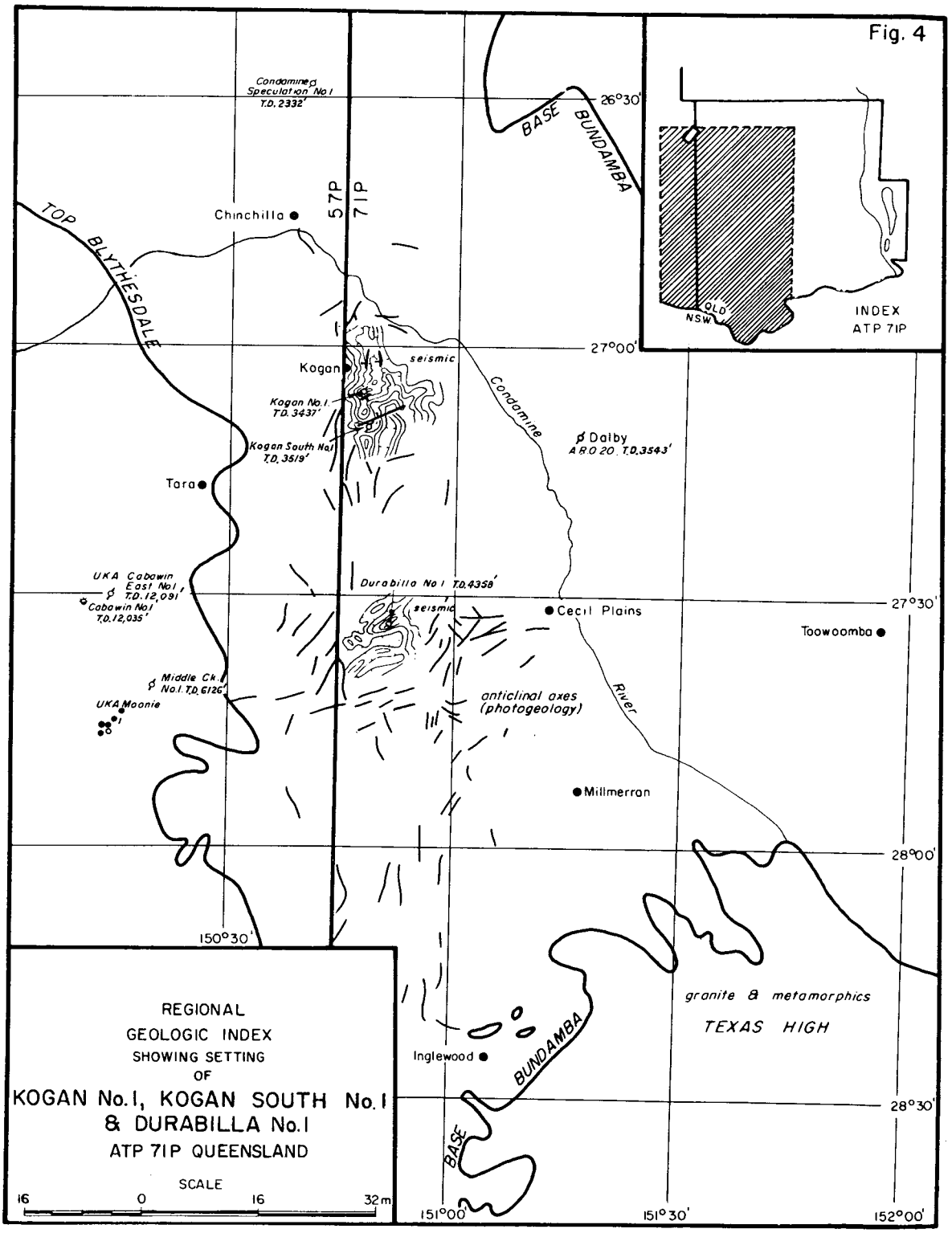
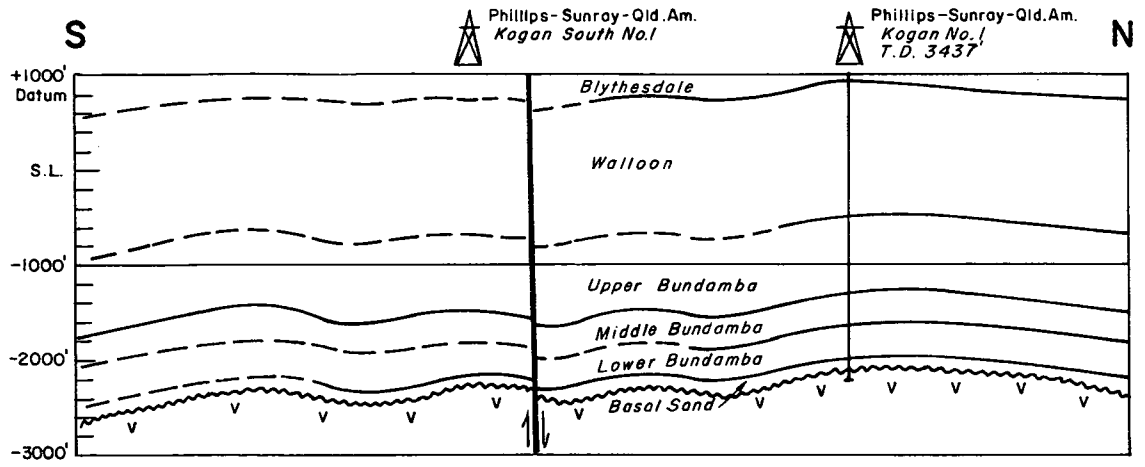
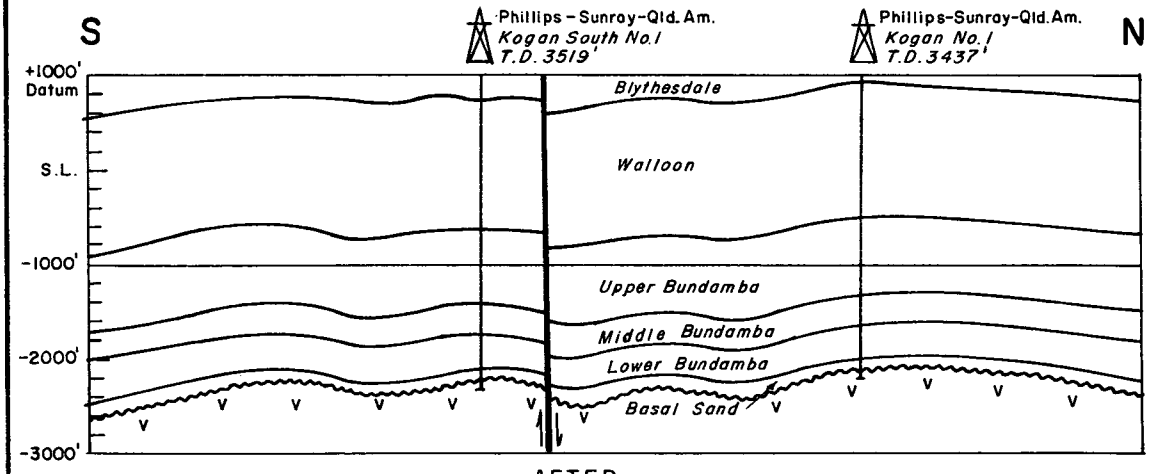


Fig. 4
Condamine Speculation No 1 T.D. 2332'
26°30'
BASE BUNDAMBA
57P
71P
Chinchilla
TOP BLYTHESDALE
INDEX ATP 71P
QLD
NSW
27°00'
Kogan
seismic
Kogan No.1 T.D. 3437'
Kogan South No1 T.D. 3519'
Condamine
Dalby A.R.O. 20. T.D. 3543'
Tara
UKA Cabawin East No1, T.D. 12,091'
Cabawin No1 T.D. 12,035'
Durabilla No 1 T.D. 4358'
seismic
Cecil Plains
27°30'
Toowoomba
Middle Ck. No1. T.D. 6126'
UKA Moonie
anticlinal axes (photogeology)
River
Millmerran
28°00'
150°30'
granite & metamorphics
TEXAS HIGH
Inglewood
BUNDAMBA
BASE
28°30'
151°00'
151°30'
152°00'
REGIONAL
GEOLOGIC INDEX
SHOWING SETTING
OF
KOGAN No.1, KOGAN SOUTH No.1
& DURABILLA No.1
ATP 71P QUEENSLAND
SCALE
16 0 16 32m

Fig. 5

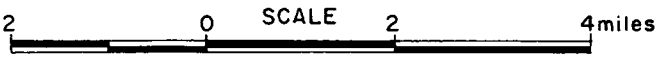


BEFORE



AFTER

NORTH-SOUTH
CROSS SECTIONS
THROUGH WELL AS CONCEIVED
BEFORE & AFTER DRILLING.



Oil and Gas Indications and Potential

No indications of hydrocarbons were encountered in Kogan South No. 1. All porous sandstones contained fresh water of meteoric origin, suggesting that hydrocarbon accumulation has been prevented or dispersed by flushing. Pressures recorded during formation testing indicate very little, if any, hydrodynamic gradient between Kogan South No. 1 and Kogan No. 1 in the porous Bundamba sandstones. The fault between the two wells apparently is not an effective permeability barrier.

The excellent reservoir characteristics of the porous basal Bundamba sandstone in Kogan South No. 1 suggest a blanket sandstone deposit in this area, although it may be missing over local "highs" as at Durabilla No. 1. The porosity of this sandstone between 3327 and 3371 feet calculated from the Acoustic Log, averaged 19.6% over the interval. This is somewhat less than the measured porosities of Cores 5 and 6 (3323-3363 feet). The measured porosities and permeabilities of these core samples, as reported by Core Laboratories, ranged between 20.4 and 26.1%, and 32.2 and 2500 millidarcys respectively.

REFERENCES

FJELSTUL, C.R., and BECK, R.E., 1963: Reconnaissance and detailed seismograph survey of western ATP 71P, Queensland. Unpubl. report for Phillips Petroleum Company.

GREEN, D.C., 1963: Well Completion Report, Phillips-Sunray-Queensland American Kogan South No. 1 (Unpubl.).

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Phillips-Sunray-Queensland American Kogan South No. 1 have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i) Well Completion Report, by D.C. Green — 12 pp.

Appendix 1:	Core descriptions	3 pp.
Appendix 2:	Water analyses by Queensland Government Chemical Laboratory	2 pp.
Appendix 3:	Core analyses by Core Laboratories Australia (Qld) Limited	1 p.
Appendix 4:	Petrological report by B.R. Houston	1 p.

(ii) Daily drilling reports for period 17th September, 1962 to 8th October, 1962.

(iii) Well logs including the following:

(a) Induction-Electric Log

Run 1, 50- 642 feet (2", 5" = 100 ft)

Run 2, 500- 784 feet (2", 5" = 100 ft)

Run 3, 779-2392 feet (2", 5" = 100 ft)

Run 4, 2300-3514 feet (2", 5" = 100 ft)

(b) Guard Log

Run 1 779-3514 feet (2", 5" = 100 ft)

(c) Contact-Caliper Log

Run 1, 50- 644 feet (5" = 100 ft)

Run 2, 500- 784 feet (5" = 100 ft)

Run 3, 779-2393 feet (2", 5" = 100 ft)

Run 4, 2300-3518 feet (2", 5" = 100 ft)

(d) Radioactivity Log (Gamma Ray-Neutron)

Run 1, 50-3519 feet (2", 5" = 100 ft)

(e) Acoustic Velocity Log

Run 1, 779-3514 feet (2", 5" = 100 ft)

(iv) Structure contour map, middle Bundamba horizon

(v) Velocity survey report, Phillips-Sunray-Queensland American Kogan South No. 1,by C.R. Fjelstul

(vi) Halliburton drillstem test reports.

COMPOSITE WELL LOG

PHILLIPS-SUNRAY-QUEENSLAND AMERICAN

DURABILLA NO 1

AUTHORITY TO PROSPECT 71P QUEENSLAND 4MILE SHEET 12 GREAT ARTESIAN BASIN WELL STATUS: ABANDONED

LOCATION - Lat. 27°33'00"S. Long 150°51'45"E.
ELEVATION - R.K.B 1268 A.S.L.
Ground 1257 A.S.L.

Date Spudded 16 June 1962
Date Drilling Stopped 31 July 1962
Date Rig Off 3 Aug. 1962
Total Depth Driller 4358

Well Head Fittings Nil
Drilled by Oil Drilling & Exploration
Drilling method Rotary
Logged by Welex
Mud logging by Core Lab
Cemented by Oil Drilling & Exploration

RESISTIVITY LOG DATA

TYPE OF LOG	INDUCTION — ELECTRIC			
RUN NUMBER	1	2	3	4
DATE	20-6-62	2-7-62	13-7-62	27-7-62
FOOTAGE LOGGED	740	1999	992	524
LOGGED FROM	790	2789	3781	4305
LOGGED TO	50	790	2789	3781
TOTAL DEPTH - ELECTRIC LOG	794	2793	3785	4309
TOTAL DEPTH - DRILLER	595	2799	3785	4310
CASING SHOE - ELECTRIC LOG		790		
CASING SHOE - DRILLER		790		
BIT SIZE	12 1/4	8 3/4	8 3/4	8 3/4
MUD - KIND	Water-Base	Water-Base	Water-Base	Water-Base
- TREATMENT	Gel	Gel	Gel	Gel
WATER LOSS ccs/30min	14	4·2	3·8	4·4
WEIGHT lbs/gal (US)	9·0	11·4	11·9	11·5
VISCOSITY (Marsh) sec	60	44	48	50
pH	9·0	9·5	9·0	9·5
RESISTIVITY Ω m²/m Rm	6·8 @ 80°F	2·18 @ 80°F	1·95 @ 70°F	2·1 @ 70°F
Rmf	6·6 @ 80°F	2·03 @ 80°F	1·75 @ 70°F	1·65 @ 70°F
Rmc	7·3 @ 80°F	2·7 @ 80°F	2·33 @ 70°F	2·67 @ 70°F
MAX TEMPERATURE	98	109	117	131
RECORDED BY	A.C.Bracke	A.C.Bracke	A.C.Bracke	A.C.Bracke

RADIOMETRIC LOG DATA

TYPE OF LOG	GAMMA RAY-NEUTRON
RUN NUMBER	One
DATE	27-7-62
TOTAL DEPTH - DRILLER	4310
TOP OF LOGGED INTERVAL	50
BOTTOM OF LOGGED INTERVAL	4309
TYPE OF FLUID IN HOLE	Fresh Mud
FLUID LEVEL	Surface
MAXIMUM RECORDED TEMPERATURE	131
NEUTRON SOURCE, STRENGTH	RaBe/400 mg
SOURCE SPACING - IN	19
LENGTH OF MEASURING DEVICE - IN	28/14
OD OF INSTRUMENT - IN	3 5/8
TIME CONSTANT - SECS	2
SENSITIVITY REFERENCE	90/500
RECORDED BY	A C Bracke

Hole size (in)	From	To
17 1/2"	0'	795'
8 3/4"	795'	4358'

LITHOLOGIC REFERENCE

SYMBOLS

- 13 — Core Number, Recovery
- I — Formation test in open hole
- Plugged Interval
- Fossils: Spores, pollen; Macro
- C — Carbonaceous

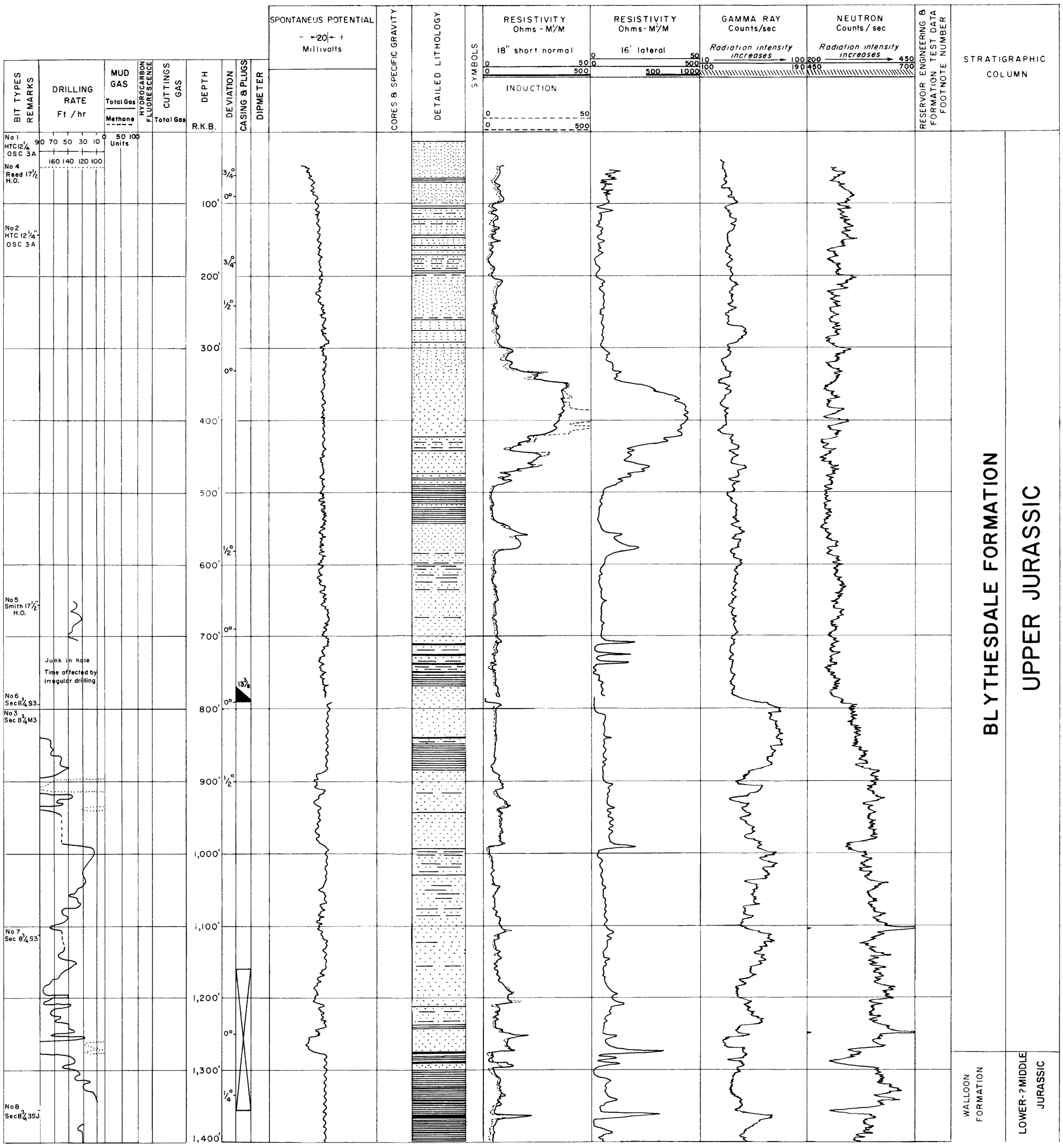
- Sandstone
- Shale
- Coal
- Conglomerate

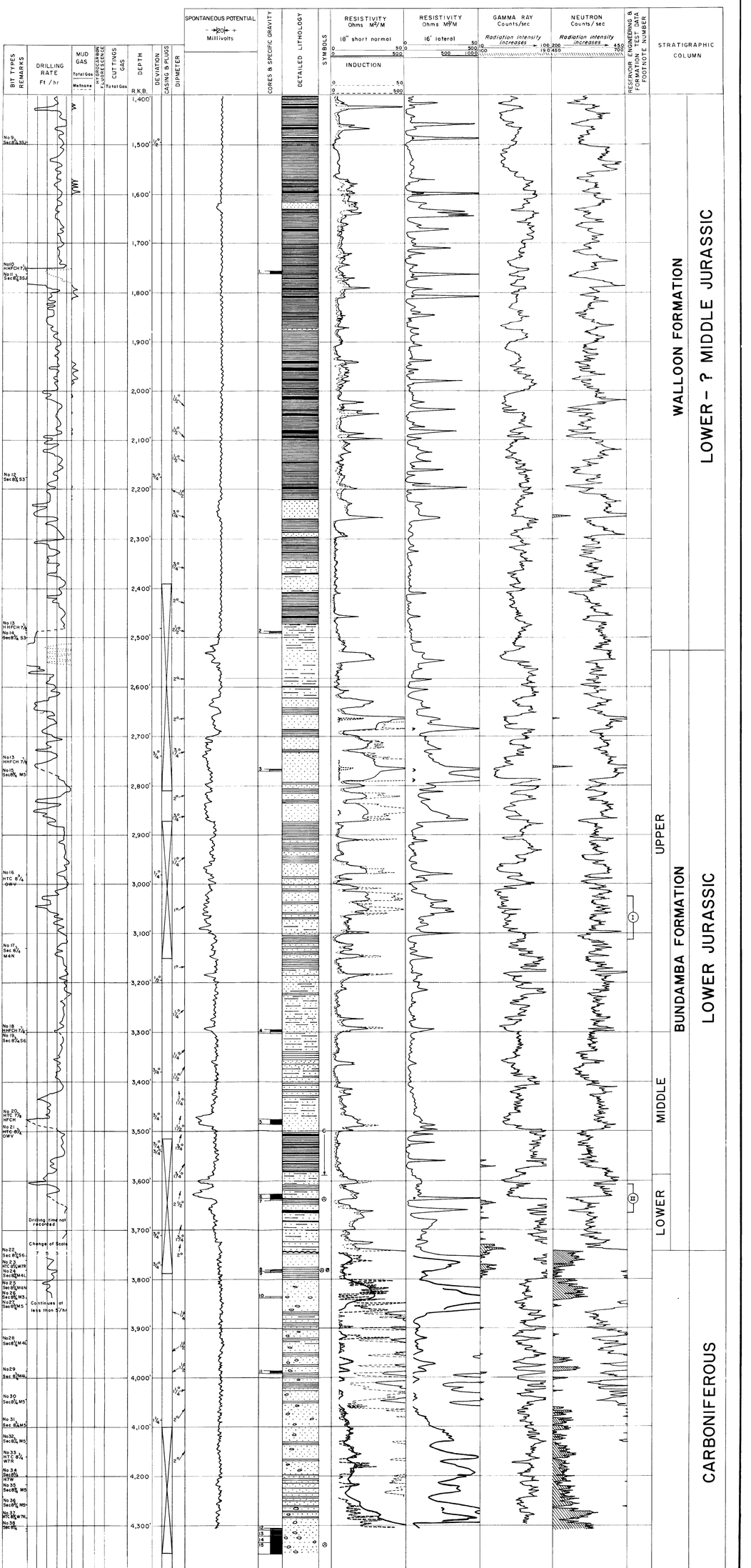
Casing

In.	Wt	Gr.	Depth	Cmt	Cmt'd to
13 3/8	48	H40	790'	750'	Surface

Cement Plugs	From	To	Sacks
	4356'	4100'	100
	3787'	3515'	100
	3150'	2870'	100
	2810'	2390'	150
	1355'	1160'	80
	1089'	742'	150

Other Bore-Hole Logs: Acoustic Caliper FoRxo Guard Dipmeter





FORMATION TESTS

Pressures as recorded by bottom blanked off bomb

I DST. No.1 3026–3113 Initial shut in pressure 48 min. Final shut in pressure 45 mins. Tool open 1 hour. Medium blow of air decreased to slight, continued throughout test. Recovered 1916' muddy water. 375 ppm chlorides, no oil orgas. ISIP 1293, FSIP 1242 IFP 263, FFP 937, IHP 1987, FHP 1960

II DST. No.2 3607–3665 Initial and final shut in pressure 45 min. Tool open1 hour Very weak blow of air throughout test. Recovered 40' water cut mud. ISIP 763, FSIP 1436, IFP 87, FFP 120, IHP 2313, FHP 2313.

COMPOSITE WELL LOG

PHILLIPS-SUNRAY-QUEENSLAND AMERICAN

KOGAN No 1

AUTHORITY TO PROSPECT 71P, QUEENSLAND 4 MILE SHEET 12 GREAT ARTESIAN BASIN WELL STATUS ABANDONED

LOCATION - Lat. 27°05'16"S. Long. 150°47'55"E.
ELEVATION - R.K.B 1237' A.S.L.
Ground 1226' A.S.L.

Date Spudded 12 August 1962
Date Drilling Stopped 30 August 1962
Date Rig Off 5 September 1962
Total Depth Driller 3437

Well Head Fittings Nil
Drilled by Oil Drilling & Exploration
Drilling method Rotary
Logged by Welex
Mud logging by Core Lab
Cemented by Oil Drilling & Exploration

RESISTIVITY LOG DATA

TYPE OF LOG	INDUCTION—ELECTRIC				
RUN NUMBER	1	2	3	4	5
DATE	13/8/62	20/8/62	24/8/62	28/8/62	31/8/62
FOOTAGE LOGGED	646	1380	880	446	32
LOGGED FROM	50	696	2076	2956	3402
LOGGED TO	696	2076	2956	3402	3434
TOTAL DEPTH - ELECTRIC LOG	700	2080	2960	3406	3438
TOTAL DEPTH - DRILLER	703	2073	2961	3407	3437
CASING SHOE - ELECTRIC LOG		686			
CASING SHOE - DRILLER		693			
BIT SIZE	12¼	8¾	8¾	8¾	8¾
MUD - KIND	Water Base	Water Base	Water Base	Water Base	Water Base
- TREATMENT	Gel Chem	Gel Chem	Gel Chem	Gel Chem	Gel Chem
WATER LOSS ccs/30min.	8·0	7·8	4·6	4·8	4·8
WEIGHT lbs/gal (U.S.)	9·3	9·8	11·4	11·3	11·3
VISCOSITY (Marsh) sec	60	56	61	48	48
pH	9	9	8	9	9
RESISTIVITY Ω m²/m Rm	6·0 a 92°F	3·1 a 102°F	2·5 a 108°F	2·0 a 114°F	2·0 a 114°F
RESISTIVITY Ω m²/m Rmf	9·6 a 70°F	4·3 a 73°F	3·65 a 70°F	2·85 a 70°F	2·85 a 70°F
RESISTIVITY Ω m²/m Rmc	5·2 a 70°F	4·9 a 70°F	3·83 a 70°F	3·9 a 70°F	3·9 a 70°F
MAX TEMPERATURE	92°F	102°F	108°F	114°F	114°F
RECORDED BY	A.C.Bracke	A.C.Bracke	A.C.Bracke	C.M.Myers	C.M.Myers

RADIOMETRIC LOG DATA

TYPE OF LOG	GAMMA RAY — NEUTRON
RUN NUMBER	One
DATE	31/8/62
TOTAL DEPTH - DRILLER	3437
TOP OF LOGGED INTERVAL	50
BOTTOM OF LOGGED INTERVAL	3437
TYPE OF FLUID IN HOLE	Water Base Mud
FLUID LEVEL	Surface
MAXIMUM RECORDED TEMPERATURE	114°
NEUTRON SOURCE, STRENGTH	RaBe/400mg
SOURCE SPACING - IN.	19
LENGTH OF MEASURING DEVICE - IN	28/14
O.D. OF INSTRUMENT - IN	3⅝
TIME CONSTANT - SECS.	2
SENSITIVITY REFERENCE	90/500
RECORDED BY	C.M.Myers

Hole size (in)	From	To
17½	0'	698'
8¾	698'	3437'

Casing

In.	Wt.	Gr.	Depth	Cmt.	Cmt'd. to
13⅜	48lbs	H40	693	403 Sacks	Surface

Cement Plugs	From	To	Sacks
	3200	3000	75
	2750	2550	75
	2200	2000	75
	1700	1500	75
	750	590	98

Other Bore-Hole Logs
Acoustic Contact Caliper Guard Dipmeter

LITHOLOGIC REFERENCE

SYMBOLS

- Core Number, Recovery
- Formation Test in open hole
- Plugged Interval

- Sandstone
- Shale
- Clay
- Coal
- Basalt

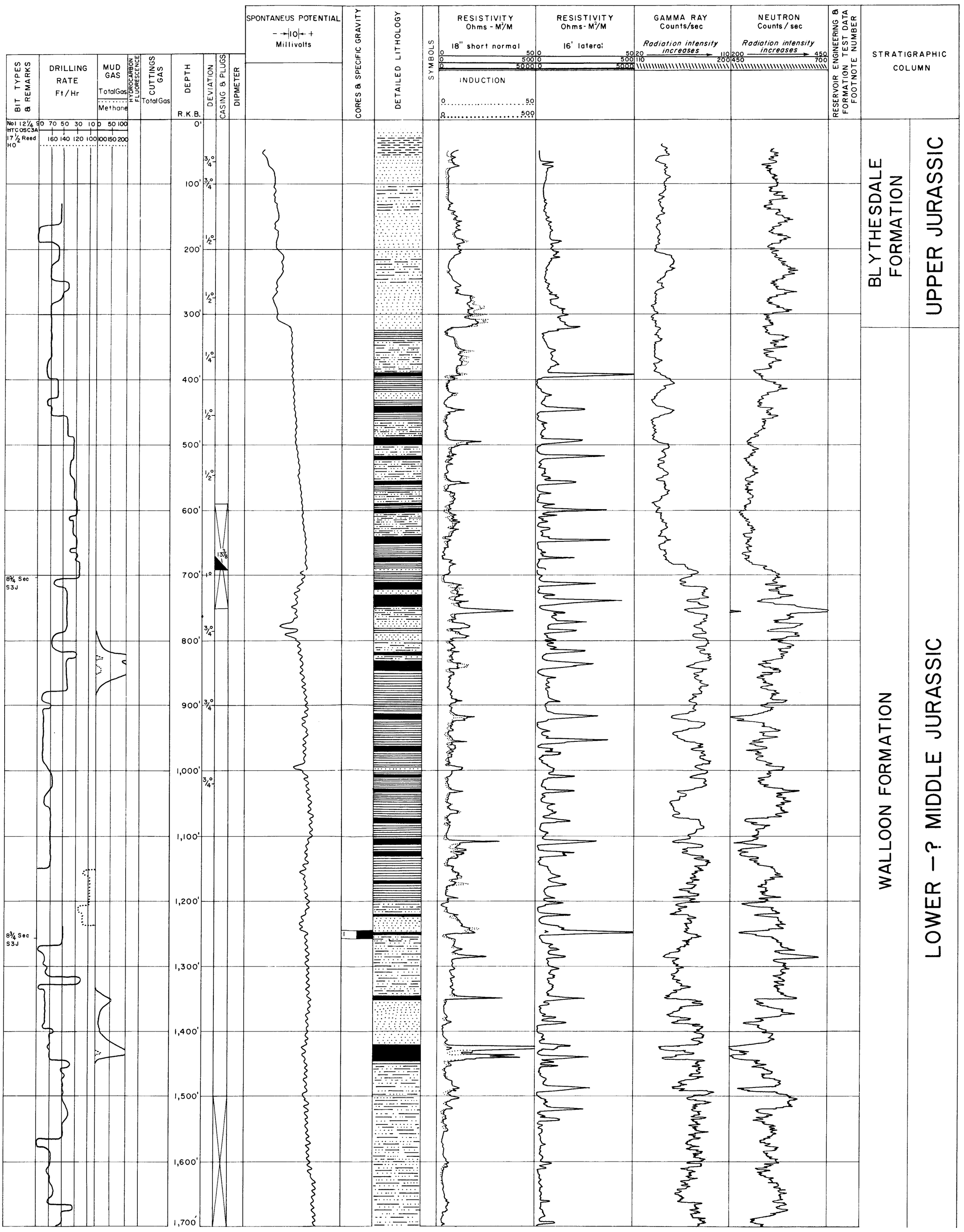
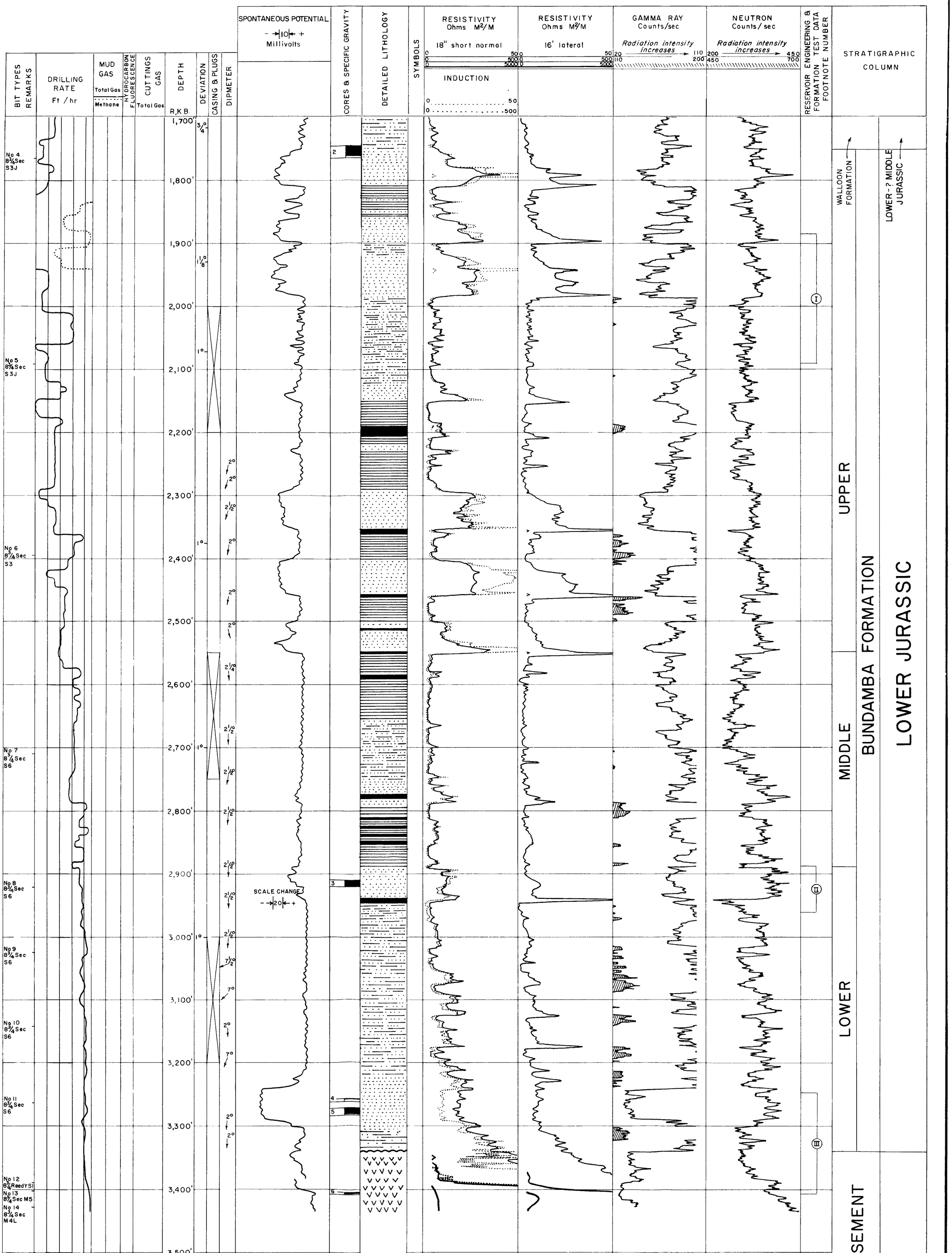


PLATE 2
SHEET 2



FORMATION TESTS

Pressures as recorded by bottom blanked off bomb

I D.S.T. No.1 1886–2092 Initial and final shut in periods 45 mins. Tool open 1 hour. Immediate strong blow of air, decreasing during test. Recovered 270' mud, 1385' water, no oil or gas. ISIP 839, FSIP 842, IFP 792, FFP 842, IHP 1197, FHP 1164.

II D.S.T. No 2 2889–2961 Initial and final shut in periods 30 mins. Tool open 45 mins. No blow of air. Recovered 3' of mud. ISIP 66, FSIP 66, IFP 66, FFP 66, IHP 1728, FHP 1714.

III D.S.T. No.3 3247–3407 Initial and final shut in periods 45 mins Tool open 1 hour. Immediate strong blow of air, decreasing slowly, died in 42 mins. Recovered 180' of mud, 2227' of water, no oil or gas. ISIP 1321, FSIP 1326, IFP 1296, FFP 1326, IHP 2032, FHP 2016.

COMPOSITE WELL LOG

PHILLIPS-SUNRAY-QUEENSLAND AMERICAN

KOGAN SOUTH No 1

AUTHORITY TO PROSPECT 71P QUEENSLAND **4MILE SHEET 21** **GREAT ARTESIAN BASIN** **WELL STATUS ABANDONED**

LOCATION - Lat. 27°08'40"S Long. 150°48'08"E
ELEVATION - R.K.B 1209·65' A.S.L.
Ground 1198·2 A.S.L.

Date Spudded 19 September 1962
Date Drilling Stopped 6 October 1962
Date Rig Off 8 October 1962
Total Depth Driller 3519

Well Head Fittings Nil
Drilled by Oil Drilling & Exploration
Drilling method Rotary
Logged by Welex
Mud logging by Core Lab
Cemented by Oil Drilling & Exploration

RESISTIVITY LOG DATA

TYPE OF LOG		INDUCTION—ELECTRIC			
RUN NUMBER		1	2	3	4
DATE		20 September 1962	21 September 1962	29 September 1962	6 October 1962
FOOTAGE LOGGED		592'	284'	1613'	1214'
LOGGED FROM		642'	784'	2392'	3514'
LOGGED TO		50'	500'	779'	2300'
TOTAL DEPTH - ELECTRIC LOG		646'	788'	2396'	3518'
TOTAL DEPTH - DRILLER		649'	800'	2400'	3519'
CASING SHOE - ELECTRIC LOG		—	—	779'	779'
CASING SHOE - DRILLER		—	—	781'	781'
BIT SIZE		12 1/4	12 1/4	8 3/4	8 3/4
MUD	- KIND	Water Base	Water Base	Water Base	Water Base
	- TREATMENT	Gel	Gel	Gel	Gel
	WATER LOSS ccs/30min.	7·4	4·8	2·4	2·0
	WEIGHT lbs./gal (U.S.)	9·2	9·2	11	11
	VISCOSITY (Marsh) sec.	57	59	53	50
	pH	9·2	9·2	10·0	8·0
RESISTIVITY Ω m²/m	Rm	4·90@82°F	4·80@81°F	2·40@84°F	2·00@78°F
	Rmf	6·50@82°F	6·60@81°F	1·80@84°F	1·70@78°F
	Rmc	3·80@82°F	3·70@81°F	3·20@84°F	2·20@78°F
MAX TEMPERATURE		87°	88°	103°	115°
RECORDED BY		C.Myers	C.Myers	C.Myers	C.Myers

RADIOMETRIC LOG DATA

TYPE OF LOG	GAMMA RAY — NEUTRON
RUN NUMBER	ONE
DATE	7 October 1962
TOTAL DEPTH - DRILLER	3519'
TOP OF LOGGED INTERVAL	40/50
BOTTOM OF LOGGED INTERVAL	3509/3519
TYPE OF FLUID IN HOLE	Water Base Mud
FLUID LEVEL	Surface
MAXIMUM RECORDED TEMPERATURE	115°F
NEUTRON SOURCE, STRENGTH	RaBe/400mg
SOURCE SPACING - IN.	12
LENGTH OF MEASURING DEVICE	28/14
O.D. OF INSTRUMENT - IN	3 5/8
TIME CONSTANT - SECS.	2
SENSITIVITY REFERENCE	100/500
RECORDED BY	C.Myers

Hole size (in)	From	To
17 1/2	0'	790'
8 3/4	790'	3519'

Casing

In.	Wt.	Gr.	Depth	Cmt.	Cmt'd. to
13 3/8	48	H40	781·57'	625 Sacks	Surface

Cement Plugs	From	To	Sacks
	3300'	3100'	75
	2980'	2780'	75
	2250'	2050'	75
	1850'	1650'	75
	850'	700'	96

Other Bore-Hole Logs
Acoustic Caliper Contact Caliper Guard

LITHOLOGIC REFERENCE

SYMBOLS
- Core Number, Recovery
- Formation test in open hole
- Plugged Interval

- Sandstone
- Shale
- Coal
- Limestone
- Claystone
- Volcanics

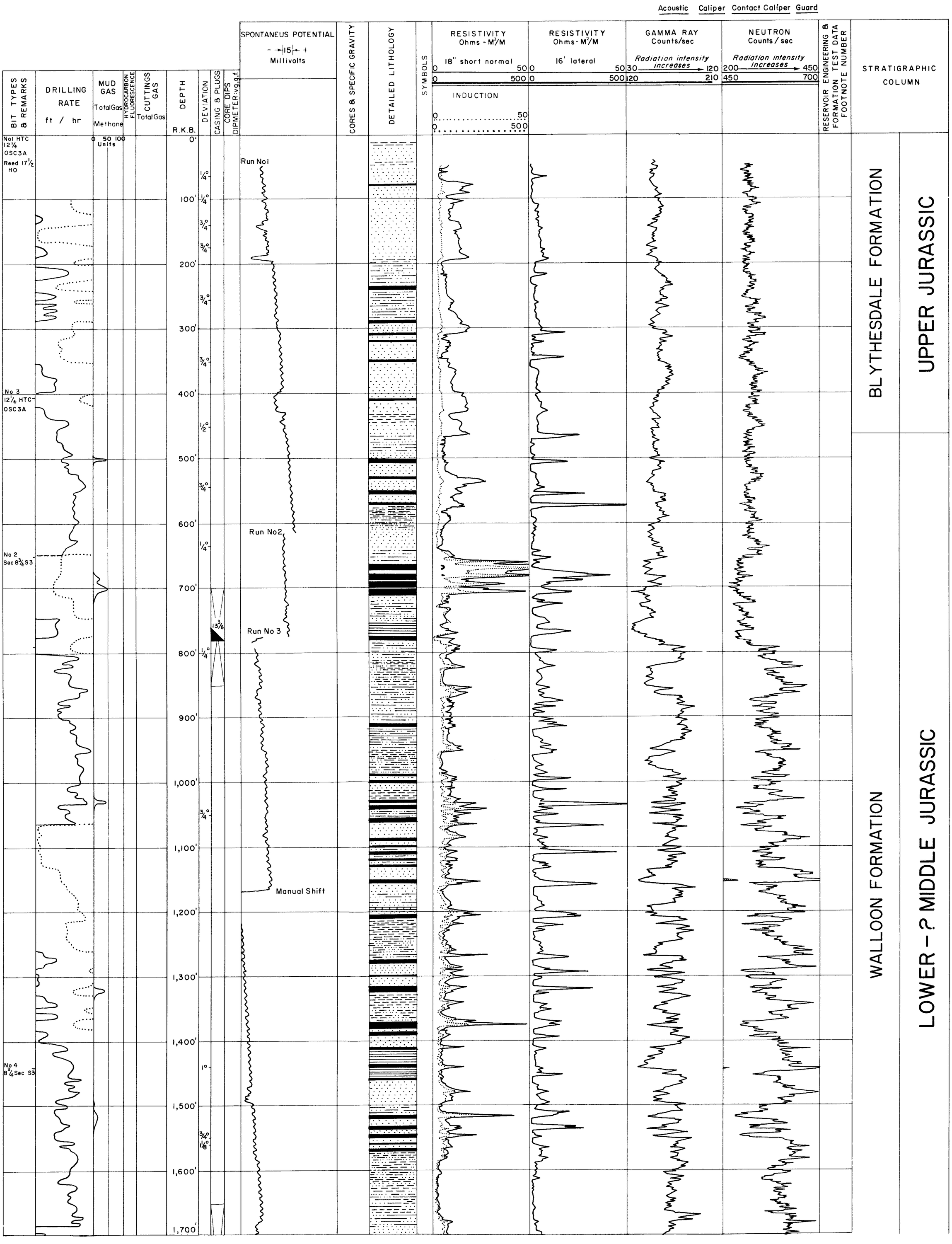
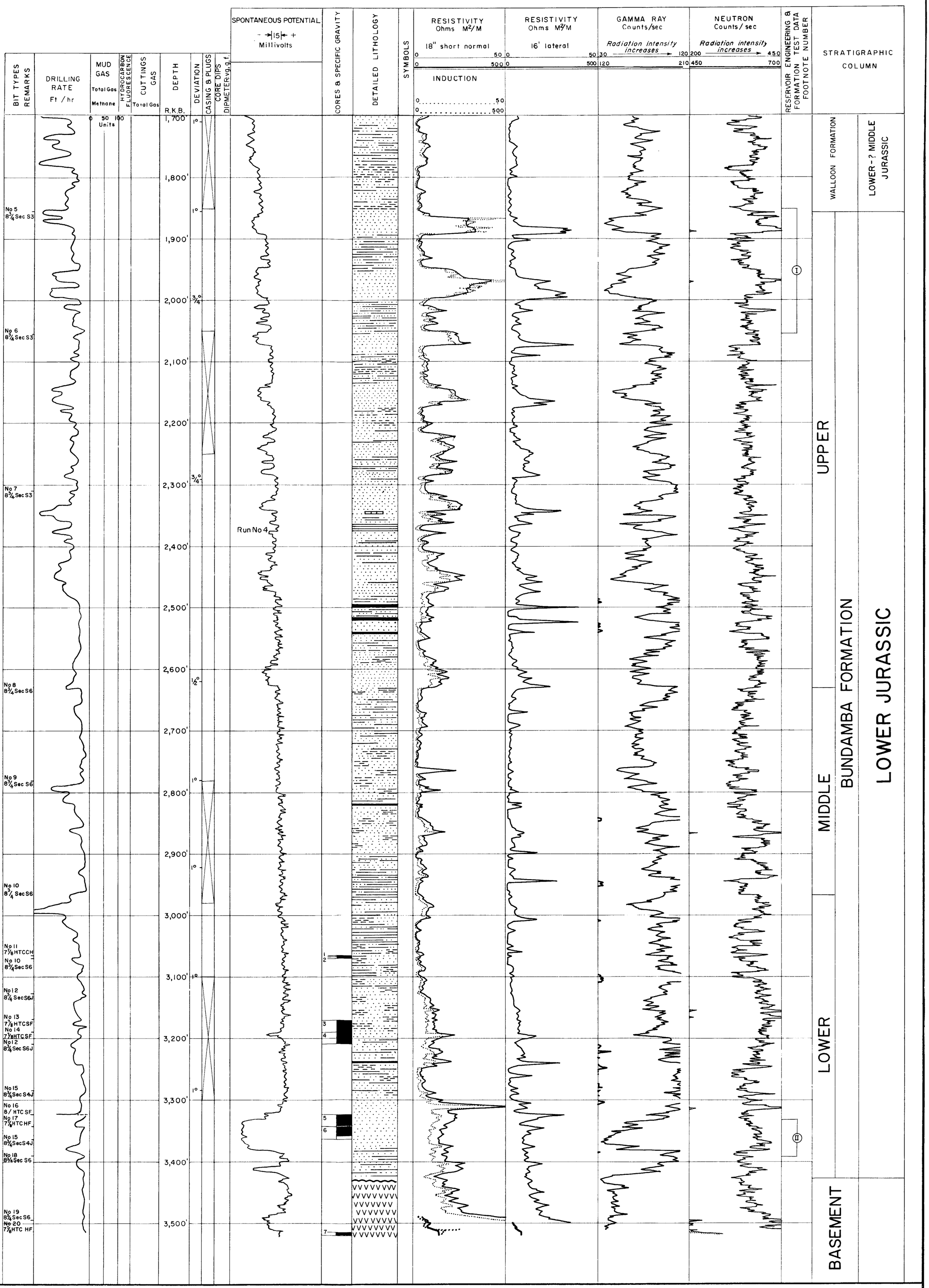


PLATE 3
SHEET 2



FORMATION TESTS

Pressures as recorded by bottom blanked off bomb

I D.S.T. No 1 1851′ – 2054′ Initial shut in pressure 45 mins. Final shut in pressure 30 mins. Tool open 1 hour. Strong blow of air, decreasing to dead in 30 mins. Recovered 180′ of mud and 1350′ of fresh water. 225 ppm chlorides. No oil or gas. ISIP 850, FSIP 850, IFP 800, FFP 850, IHP 1234, FHP 1210.

II D.S.T. No 2 3332′ – 3391′ Initial shut in pressure 45 mins. Final shut in pressure 30 mins. Tool open 1 hour. Immediate strong blow of air decreasing to dead in 20 mins. Recovered 50′ of mud and 2800′ of fresh water, 950 ppm chlorides. No oil or gas. ISIP 1288, FSIP 1288, IFP 1239, FFP 1288, IHP 1988, FHP 1930.