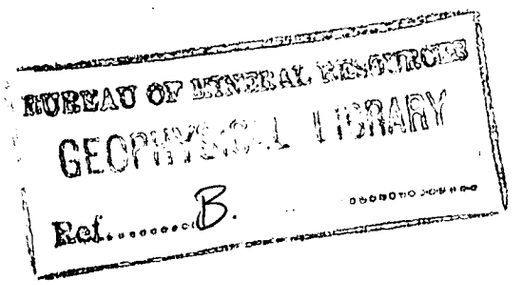
COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD No. 1963/103

GREAT ARTESIAN BASIN EXPERIMENTAL BORE LOGGING, SOUTH-WEST QUEENSLAND 1960



by

E.E. JESSON, A. RADESKI and F. JEWELL

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ILLUSTRATIONS

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SUMMARY

An experimental programme of gamma-ray logging of water bores in the Queensland portion of the Great Artesian Basin was undertaken by the Bureau of Mineral Resources in 1960.

The results show that correlation between widely-spaced bores is difficult owing to lenticularity of the beds. The suggested correlations are guided by contour maps of the area which were compiled from drillers' logs of varying quality.

Where the bores are close together the correlations are more reliable.

1. INTRODUCTION

The Great Artesian Basin of eastern Australia covers a land area exceeding 670,000 square miles, of which approximately 430,000 square miles lie in the state of Queensland. Within the Queensland portion of this basin approximately 2600 artesian water bores have been drilled during a period of some 75 years. In addition, an average of 22 new bores are drilled each year. Of the 2600 bores drilled, approximately 250 are deeper than 3000 ft, and 1200 are between 1000 ft and 3000 ft deep.

These bores, together with a greater number of sub-artesian bores, represent a valuable source of information relating to the artesian aquifer system and subsurface geology within the Mesozoic sediments. Moreover, because in this region structural features in the pre-Mesozoic sediments and in the bedrock are frequently reflected in the Mesozoic sediments, the bores may represent a source of information useful in the search for oil. At present, the only information available from most of these bores is the drillers' logs, of which many are incomplete and of doubtful reliability.

During the early part of 1960, discussions were held between the Department of Development and Mines (Queensland), the Irrigation and Water Supply Commission (Queensland), the Queensland Petroleum Exploration Group, and the Bureau of Mineral Resources, Geology and Geophysics, to consider means whereby an investigation of the water bores could be made. As a result of these discussions, the Bureau of Mineral Resources undertook an experimental gamma-ray logging programme comprising about 20 bores in south-west Queensland. The results of this logging are the subject of this Record.

The field work was done by the authors, with the assistance of the Commission's officers, during the periods 3rd September to 3rd October and 21st October to 7th November 1960. During the survey, 22 bores were logged including one oil well, one oil scout-bore, and three sub-artesian water bores. For these bores a total of 42,504 ft of gamma log and 11,139 ft of temperature log were obtained. In addition most of these bores were tested with a dummy probe to a total of 36,321 ft, and other bores, which were not logged because of blockages or high temperatures, were also tested.

The following bores, which were on the original programme, were not logged for the reasons given:

Bore	IWSC Registered No.	Reason
Ashling	4	Owner's permission refused
Bonus Downs	1601	" " "
Blythesdale	4990	Blocked at 56 ft
Darrawong No. 1	4531	" " 8 ft
Tallyabra	7311	" " 13 ft
Windorah	154	" " 0 ft
Toledo	5096	Reported collapsed
Middleton	4533	Headwork unsafe
Noondoo	13,820	Exceeds temperature limit of probe

2. GEOLOGY

The geology of the Queensland portion of the Great Artesian Basin has been described in detail (Whitehouse, 1954) and is only briefly discussed here.

The boundary of that part of the basin lying in south-west Queensland is shown on Plate 1. The basin assumed its basic form early in the Mesozoic era and is filled with Mesozoic sediments consisting mainly of calcareous clay formations and non-calcareous, arenaceous beds which contain the aquifers. A generalised cross-section (after Whitehouse, 1954) through the beds of the eastern part of the basin is shown in Plate 2.

Aquifers within the Blythesdale Group are the upper of the important aquifers, but the Bundamba-Group sandstone delivers the greatest supply of water. Minor aquifers occur higher in the series, mainly in the Winton Formation, and are a useful source of water for sub-artesian bores.

By studying the drillers' logs, Whitehouse (1954) prepared cross-sections (verified independently by W.D. Mott, then of the Geological Survey of Queensland) and structural contour plans for bedrock, the base of the Rolling Downs Group, and the topography.

For the purpose of this Record, the Commission's definition of artesian and sub-artesian bores is accepted. An artesian bore is one which flows on completion whereas a sub-artesian bore does not flow although water rises in the bore. As the number of bores tapping the artesian water supply has increased, the available water has decreased, causing many bores to cease flowing. These bores, which are now equipped with pumps of various types, are still classified as artesian bores.

3. METHODS AND EQUIPMENT

Logging

After a bore has been cased, information on the types of formations penetrated can only be obtained by means of instruments lowered within the casing. This prevents the use of electrical or sonic velocity logging. The majority of new bores are drilled by cable-tool methods and are cased progressively; consequently, apart from the taking of samples during drilling, the same limitations apply from the start. Three logging methods are available under these conditions:

(a) gamma-ray logging, in which the natural radioactivity of the formations is measured,

(b) neutron logging, in which a high-energy neutron source is introduced into the bore, and the interaction of the surrounding formations and the radiation is measured,

(c) temperature logging, in which the temperature of the fluid inside the casing is measured.

Of these methods, neutron logging might be dangerous if the radioactive source was lost in a bore. This is an important consideration when logging old productive water bores of doubtful physical condition. Temperature logging is not of great value, but may indicate major formation changes and the presence of aquifers by their different temperature gradients. Gamma-ray logging is a safe and useful method in an experimental programme of this type.

In gamma-ray logging, a conventional radiation counter, either a Geiger-Muller tube or the more sensitive scintillation crystal, responds to a proportion of the gamma rays from the nearby formations. By various electronic devices a D.C. voltage is produced which is proportional to the intensity of radiation at the counter.

For this experimental logging survey, a scintillation-type counter was used. The scintillometer, together with the electronic counting circuitry, is enclosed in a watertight 2-in.-diameter steel tube about 6 ft long. This gamma-ray 'probe' or 'tool' is connected to a recorder through a three-conductor armoured cable contained on a winch drum. While the probe is lowered or raised in the bore by the winch, a continuous log is made of the radioactivity of the formations through which the probe passes (Kokesh, 1951; Schlumberger, 1958).

For the first part of the survey a Widco 4000-ft logger, converted to a 10,000-ft logger, was used; for the latter part, a Failing Logmaster with about 6000-ft of cable was used. Failing gamma-ray and temperature probes were used throughout the survey. The gamma-ray probes have a maximum operating temperature of 140°F.

The logs made by means of the Failing temperature probe, of which the sensitive element was a thermistor, were checked, usually at three depths, against temperatures recorded by conventional maximum thermometers tied to the logging cable.

In equipment of this type, it may be expected that the strain exerted on the logging cable, while logging up the hole, will cause the cable to stretch. It is found by experience that with the type of cable used, the stretch amounts to about 1 ft per 1000 ft of cable in the hole. With the Widco logger, an additional error resulted from the use of a cable of different size from the one for which the measuring device was constructed. This error amounts to an increased depth measurement of 8 ft per 1000 ft. The logs presented in this Record have been adjusted to eliminate these depth errors.

Elevations

To obtain structural information, the surface elevation at each bore site is required. The Commission has details for elevations for many of the bores, but not for all of them.

Because the bores are widely spaced, high-accuracy elevation control is not necessary. A simple method is to measure the barometric pressure at each site and to compare these values with the routine daily meteorological observations of barometric pressure at stations of known elevation. From this information the elevation of the bore site can be computed (Brombacher, 1944 and Table 1). Alternatively, barometric readings may be made at the bore site and at an adjacent bench mark if available. For this purpose two 2½-in. pocket aneroid barometers were used.

Control data for height computation were obtained from the daily pressure and temperature observations of the Bureau of Meteorology. The elevations of the bores were related to meteorological stations in the area, e.g., the group of bores No. 20 to 24 were related to stations at Quilpie, Windorah, and Thargomindah.

A comparison of a computed elevation with the known elevation at three stations indicates that the computed values are too low by an average of 90 ft. The elevations of all the bores calculated by this manner have been corrected to allow for the discrepancy. These adjusted elevations, as well as the surface elevations for the other bores, are shown on the relevant log heads (Plates 9 to 20). All elevations are referred to mean sea level as datum.

4. INTERPRETATION

General introduction

Apart from the bores logged by the authors, gamma-ray logs of one other oil well (A.A.O., in preparation) and one other water bore are included and used in this Record. The oil-well information is included to give lithological and stratigraphic control from a well which has been drilled and sampled with additional checks made by cutting cores.

For reference each of the bores is given a number (apart from the Irrigation and Water Supply Commission Registration number), which is used in the text and plates of this Record. Where space permits, the bore registration number is also shown on the plates.

For reference purposes, Table 1 shows the bores logged, with some data relating to the bores. Complete data relating to each bore are tabulated on the log head for that bore (Plates 9 to 20).

Correlation of logs

A study of the gamma-ray logs independently of other data shows that correlation with reasonable reliability is virtually impossible, except in regions where the bores are close together. Even in the group of closely-spaced bores, viz. No. 11, 12, and 13, the correlation is not entirely certain. The suggested stratigraphy in each bore is shown along with the gamma-ray log (Plates 9 to 20), the stratigraphic sequence in AAO Latemore No. 1 and Timbury Hills No. 2 having been used as a basis. No attempt has been made to differentiate the cover of Cainozoic sediments where it is present.

The difficulty of correlation is illustrated in Plate 3 in which the gamma-ray log of the South Plains bore has been drawn at several elevations. Apparent correlations are shown exhibiting only gentle dips, whereas the true correlation would correspond to a much larger dip. The supposed correlations are not perfect, nor would they be expected to be perfect, for it is known from outcrops that the various sandstones are not continuous but lenticular.

Only five of the 24 bores, viz. No. 6, 7, 17, 20, and 23, were in a static state when logged. Temperature logs of only two of these, viz. No. 6 and 20, were obtained. In the other three, breakdown of the probe prevented the logs being made. Consequently the temperature logs cannot be expected to help with the correlation of the gamma-ray logs.

The only remaining source of data is the lithologic logs which, if they exist, are commonly incomplete or doubtful. The reliability of the lithologic logs has been discussed and illustrated in the report of a committee set up by the Queensland Government to investigate certain aspects relating to the Queensland portion of the Great Artesian Basin (Co-ordinator-General's Department, 1954). Plate 4, illustrating the varying quality of the lithologic logs, is taken from the committee's report which states (p. 21) 'Occasional great contrasts between adjacent bores, as expressed by the logs, are as often as not an indication of nothing more than differences in observation and interest of the operators'.

Subsurface contour maps were compiled by Whitehouse (1954) after a study of the lithologic logs of numerous bores in the Artesian Basin. These maps have been used as a guide in correlating the gamma-ray logs (Plates 5 to 7), but the reliability of the correlations is not considered to be very high. The most satisfactory correlations are those between the closely-spaced group of bores, viz. No. 8 to 13 (Plates 5 and 8). Several zones on these logs show similar patterns that can be correlated with reasonable certainty. The water-bearing sandstones do not correspond here to the same zones in each bore; consequently correlations based on the water horizons would be in error.

The subsurface contour maps do not aid the correlation of Bores No. 20 to 24 because either the maps do not extend as far west as these bores or the bores are not deep enough to penetrate the formation boundaries contoured. However, a contour map (Whitehouse, op. cit.) of two water-bearing horizons within the Rolling Downs Group, for the region bounded approximately by longitude 143° to 146° east and latitude 24½° to 27° south, serves as a rough guide. According to the contour maps, Bores No. 20 to 24 penetrate formations about 2000 ft higher in the sequence than those penetrated by Bores No. 18 and 19. As Bores No. 20 to 24 are shallow, correlation with Bores No. 18 and 19 is not possible.

Temperature logs

The temperature logs are subject to errors on account of the unknown effect of pressure on the mercury thermometers used for calibrating the probe. The logs have been corrected by subtracting 5°F per 1000 ft increase in depth from the temperatures read on the mercury thermometers, following the experience of Ogilvie (1954), but the accuracy of the logs is doubtful. Therefore no detailed discussion of the temperature gradient recorded is warranted.

In most cases the temperature logs do not give the static temperature gradient within the formations. Where the bore was flowing, the recorded gradient would depend on the temperature of the water at the point of entry and on the rate of flow. Where a pumped bore was logged soon after the pump was stopped, the water in the bore would not have had time to attain temperature equilibrium with the formations. Thus, in either type of bore, the measured gradient would be smaller than the static temperature gradient in the formations. Only in the case of a standing bore would the static gradient be recorded.

The Yunnerman bore (Plate 14) is peculiar in showing a local decrease in temperature at approximately 1330 ft, opposite what appears to be a sandstone bed. No water flow was logged at this depth at the time of drilling, indicating that the bed is not in contact with pressure water. The high thermal conductivity shown by the temperature anomaly seems to indicate, however, that the bed is a porous, water-bearing sandstone. Presumably it is a sand lens.

5. CONCLUSIONS

The interpretation of the gamma-ray logs leans heavily on Whitehouse's geological work, which is based on not-very-reliable drillers'-logs. Where the bores are closely spaced, however, the gamma-ray logs indicate the dip of the strata even though the geological formations cannot be picked on the logs without reference to Whitehouse's work.

6. FURTHER WORK

Following discussions with the various organisations concerned with this work (see Introduction), it was agreed that an extension of the experimental logging programme should be done in 1961.

In particular, areas to be investigated are in the region of known basement ridges and the object will be to determine whether the deeper sediments wedge out against these ridges. The emphasis is to be on logging groups of closely-spaced bores.

To assist the extension of the programme, an experimental thermally-insulated outer case, for use with the scintillation-type gamma-ray probe, has been constructed. This will enable bores to be logged in which the temperatures exceed the present permissible maximum, viz. 140°F.

7. ACKNOWLEDGEMENTS

The authors wish to acknowledge the invaluable assistance given to the party by the Irrigation and Water Supply Commission of Queensland. In particular, thanks are due to the field officers from the Charleville and St George district offices, who were made available to locate, prepare, and reinstate the bores that were logged.

Thanks are also due to the Department of Development and Mines of Queensland (Geological Survey) for supplying the lithological logs and for early preparation and distribution of the logs, to the Queensland Petroleum Exploration Group for insuring the bores against damage, to Associated Australian Oilfields N.L. for permission to use data from Latemore No. 1 and Timbury Hills No. 2, and to L.H. Smart Oil Exploration Company for permission to log and to use data from SOE Scout No. 3 bore.

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GAMMA—RAY LOGGING, GREAT ARTESIAN BASIN, QUEENSLAND

TABLE 1

INDEX OF BORES

LOG NUMBER	IWSC REG. NO.	NAME	4-MILE MAP REFERENCE		LOCATION				DEPTH DRILLED	DEPTH LOGGED	ELEVATION OF LOG REF. LEVEL	BMR DRAWING NUMBER	REMARKS
			QUEENSLAND	MILITARY	LAT.	MILES NORTH	LONG.	MILES EAST					
1	406	ARO No.19 Wallumbilla Town	22	Roma	27° 00'	28.5	149° 00'	11.2	4959	1834	1046	G55/B6-26	obstruction at 1840 ft
2	-	AAO Latemore No.1	22	Roma	27° 00'	29.0	149° 00'	5.0	4775	4370	1075	G55/B6-27	temperature limit of probe at 4400 ft
3	-	AAO Timbury Hills No.2.	22	Roma	27° 00'	30.6	148° 30'	20.6	4400	4304	1110	G55/B6-27	AAO (in preparation)
4	303	Roma Railway (Roma No.4)	22	Roma	27° 00'	30.2	148° 30'	17.1	3705	1290	1037	G55/B6-26	obstruction at 1310 ft
5	13951	Mitchell No.2	23	Mitchell	26° 30'	0.0	147° 30'	29.0	2920	2910	1111(e)	G55/B6-32	Jewell & Jesson (1961)
6	1610	Cytherea No.2	23	Mitchell	27° 00'	4.0	147° 30'	15.5	3408	3075	1204	G55/B6-32	obstruction at 3100 ft
7	2975	Homeboin No.2	14	Homeboin	28° 00'	30.6	147° 30'	2.2	2322	2281	852	H55/B6-2	
8	1483	Binda No.2	14	Homeboin	28° 00'	16.9	147° 00'	20.6	1952	1835	688	G55/B6-28	
9	168	Yunnerman	14	Homeboin	28° 00'	9.9	147° 00'	0.6	2231	2002	779	H55/B6-3	obstruction at 2010 ft
10	2686	Queen's Birthday	14	Mirranbandi	28° 15'	11.9	147° 00'	1.4	2102	2064	568	H55/B6-3	
11	4532	Darrawong No.2	5	Cunnamulla	29° 00'	19.8	146° 30'	7.4	1800	[illegible]	533(b)	G55/B6-28	
12	13599	South Plains	6	Cunnamulla	29° 00'	19.9	146° 00'	29.4	1545	1508	516(b)	H55/B6-4	
13	10641	Barrygowan	6	Cunnamulla	29° 00'	6.1	146° 00'	19.5	1570	1548	472(b)	H55/B6-4	
14	59	Geralda	4	St George	28° 30'	11.9	149° 00'	16.1	3965	3174	807	H55/B6-5	temperature limit of probe at 3200 ft
15	4399	Boombah	13	St George	28° 15'	11.7	148° 30'	11.2	3024	2182	650	H55/B6-2	obstruction at 2200 ft
16	97	Mona Trust	14	Homeboin	28° 00'	7.8	147° 30'	14.7	2778	1984	704(b)	H55/B6-5	temperature limit of probe at 2000 ft
17	2512	Elverston No.2	15	Wyandra	27° 30'	16.8	146° 00'	24.8	2050	2050	871	G55/B6-29	
18	3854	Mount Alfred	24	Toompine	27° 15'	13.6	145° 00'	15.3	2253	2222	964	G55/B6-29	
19	12028	Yarronvale	24	Charleville	27° 00'	13.0	145° 30'	1.5	2430	1401	924(b)	G55/B6-30	temperature limit of probe at 1400 ft
20	-	SOE Scout No.3, (Gumbla)	26	Eromanga	27° 00'	9.2	143° 00'	3.8	1835	1375	565	G54/B6-2	obstruction at 1440 ft

GAMMA—RAY LOGGING, GREAT ARTESIAN BASIN, QUEENSLAND

TABLE 1

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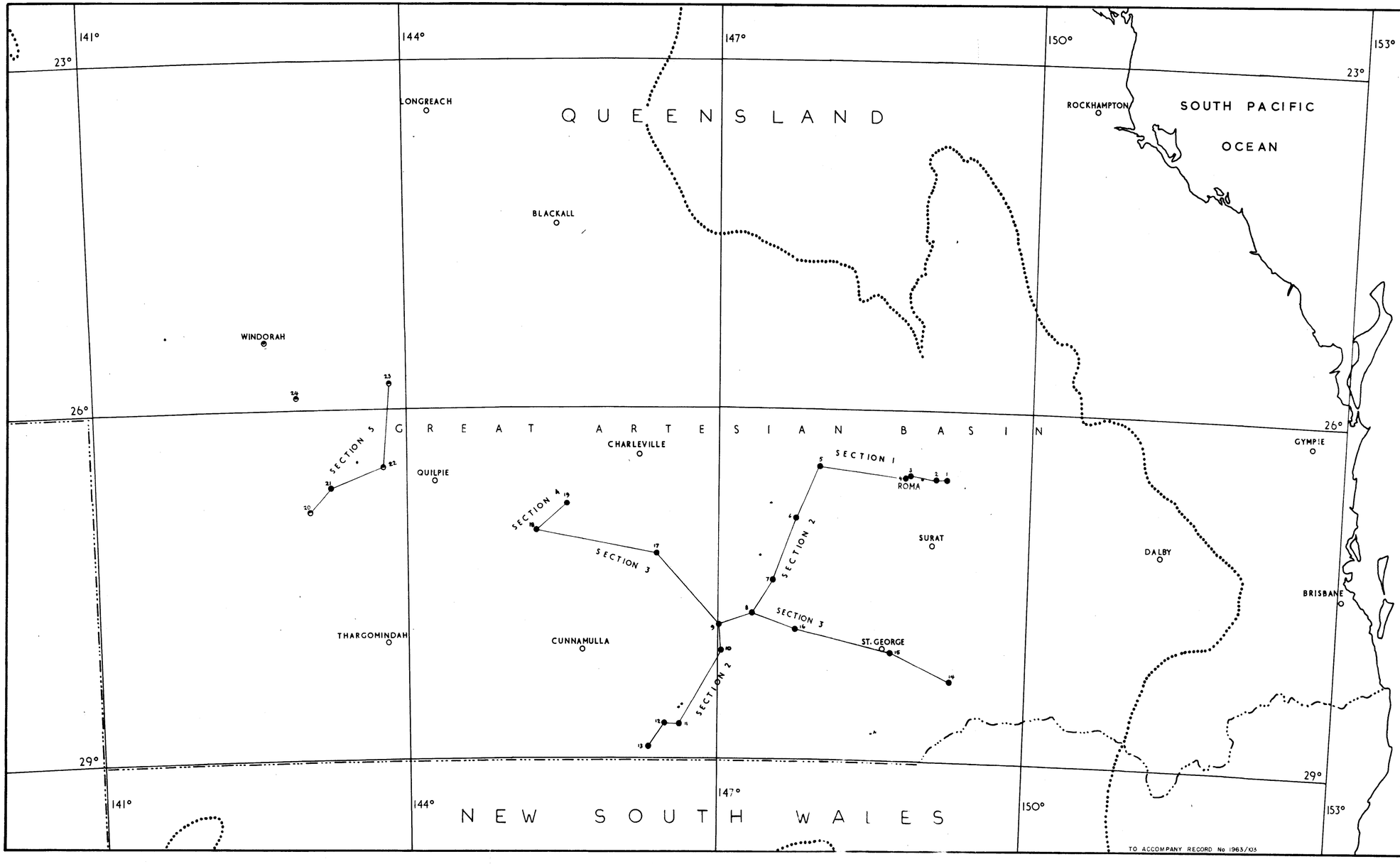
INDEX OF BORES

LOG NUMBER	IWSC REG NO.	NAME	4-MILE MAP REFERENCE		LOCATION					DEPTH DRILLED	DEPTH LOGGED	ELEVATION OF LOG REF. LEVEL	BMR DRAWING NUMBER	REMARKS
			QUEENSLAND	MILITARY	LAT	MILES NORTH	LONG	MILES EAST						
21	357	Eromanga	26	Eromanga	27° 00'	22.3	143° 00'	16.2		2612	1375	510(b)	G54/B6-2	obstruction at 1390 ft
22	6452	Opal Creek	25	Eromanga	27° 00'	33.9	143° 30'	16.8		1448	1426	693(b)	G55/B6-30	sub-artesian bore
23	13925	Bulgroo No.19	34	Windorah	26° 00'	14.5	143° 30'	20.5		1472	1451	762(b)	G54/B6-3	sub-artesian bore
24	12138	Lula	35	Windorah	26° 00'	6.7	142° 30'	28.0		1067	931	523(b)	G54/B6-3	sub-artesian bore, obstruction at 940 ft

elevations by barometric levelling shown thus: (b)

elevation by estimation shown thus : (e)

PLATE 1



LEGEND

- STATE BOUNDARY
- ARTESIAN BORE, LOGGED
- " " , PROGRAMMED BUT NOT LOGGED
- SUB-ARTESIAN BORE, LOGGED
- APPROXIMATE LIMIT OF GREAT ARTESIAN BASIN
- LINE OF CROSS-SECTIONS PLATE 5,6,7
- 15 BORE NUMBER, SEE TABLE 1

MILES

40 30 20 10 0 40 80

GREAT ARTESIAN BASIN SOUTH-WEST QUEENSLAND EXPERIMENTAL BORE LOGGING PROGRAMME 1960

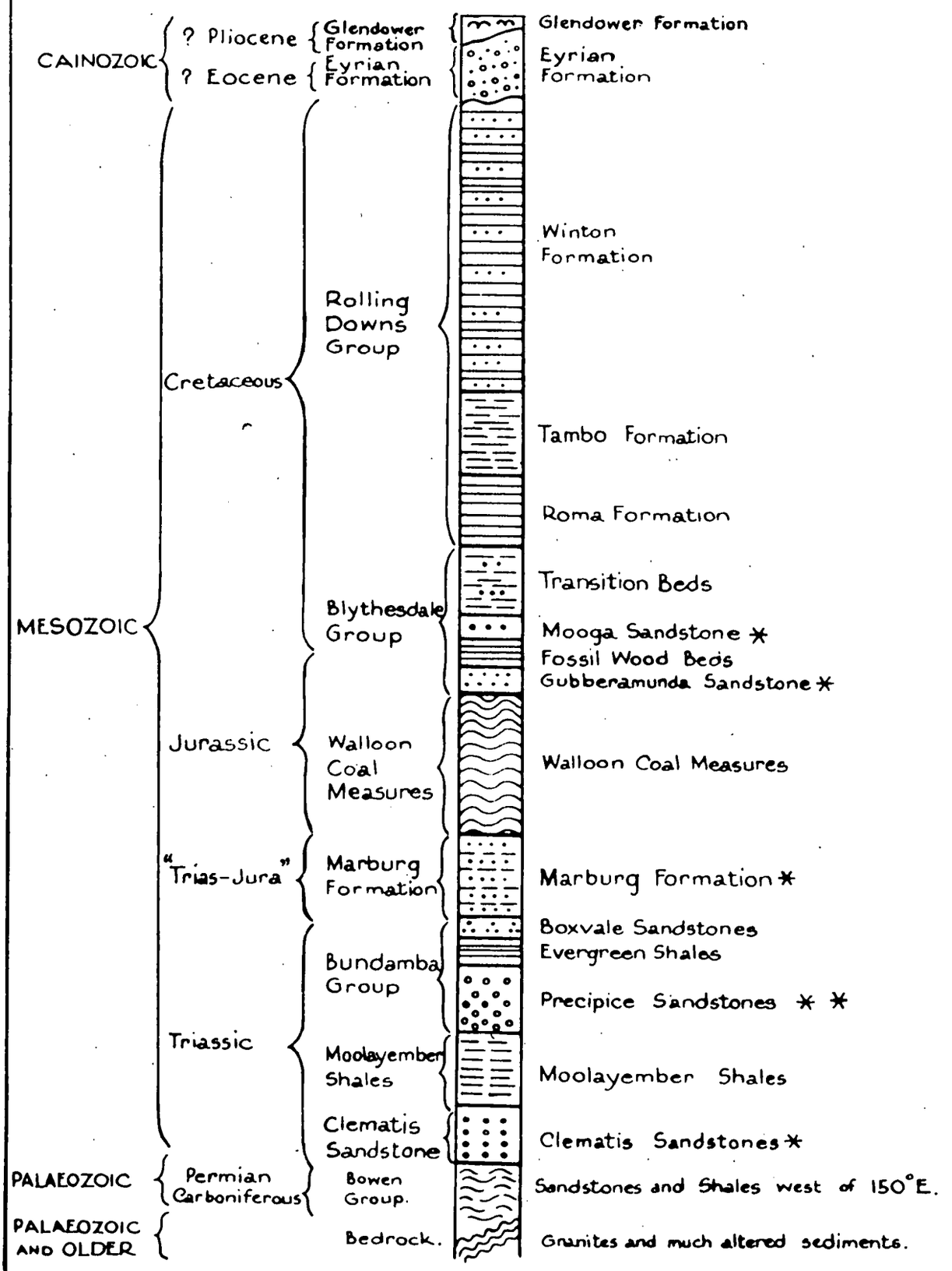
LOCALITY MAP

TO ACCOMPANY RECORD No 1963/103

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G 295 – 21

GREAT ARTESIAN BASIN SW QLD 1960

PLATE 2



GENERALISED VERTICAL SECTION THROUGH THE BEDS OF THE EASTERN REGION OF THE GREAT ARTESIAN BASIN

AFTER: WHITEHOUSE, (1954)

* Chief aquifer formations

No one formation keeps strictly the same thickness.

In this column an attempt has been made to show types of lithology — dots for sandy beds, lines for shales.

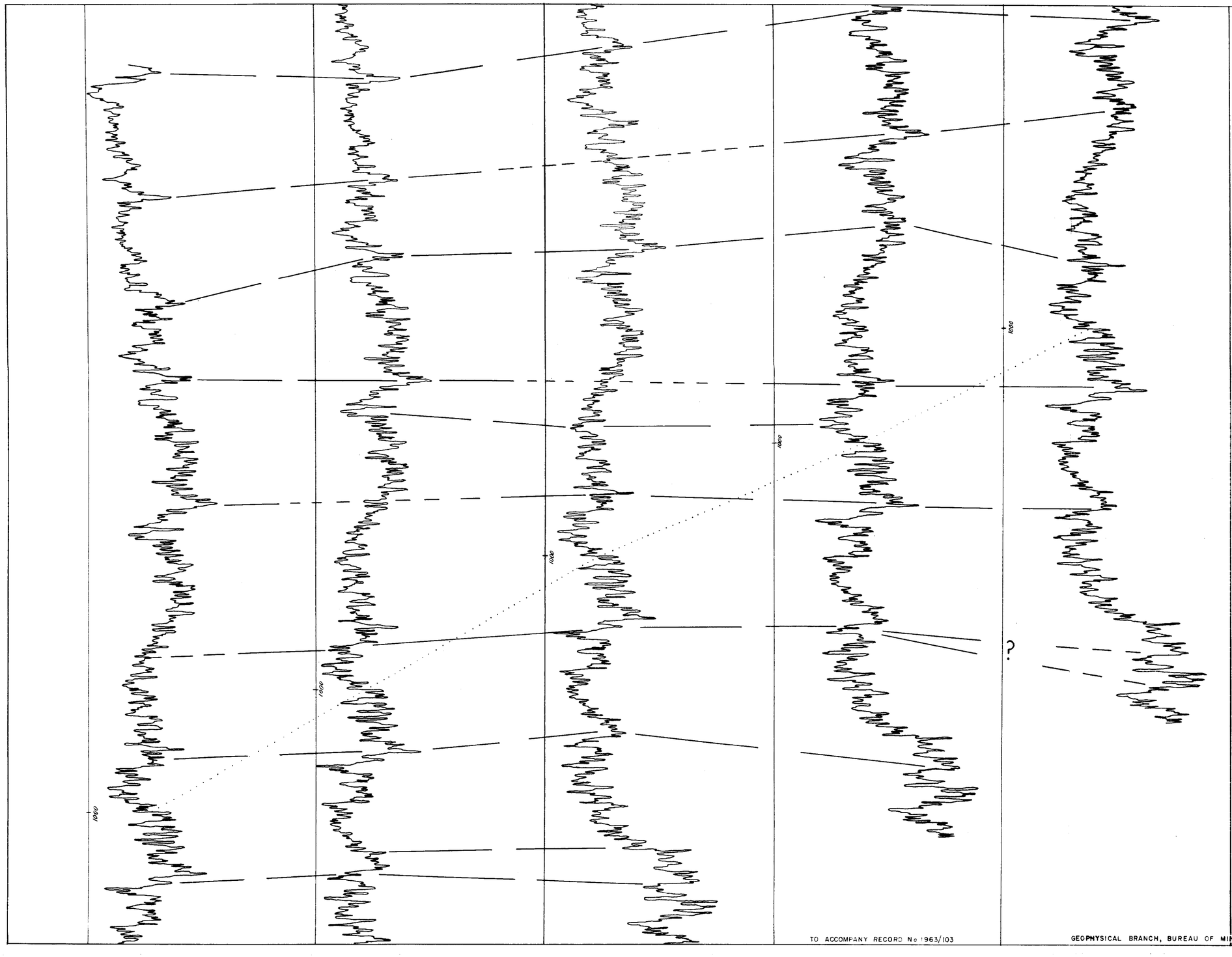
All Mesozoic formations are freshwater sediments except the Tambo, Roma, and part of the Blythesdale (Transition beds) which are of marine origin.

Vertical Scale 1000 ft

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G 295-16

TO ACCOMPANY RECORD No 1963/103

GREAT ARTESIAN BASIN, SW QLD 1960



APPARENT CORRELATION

DOUBTFUL APPARENT CORRELATION

TRUE CORRELATION

0 100 200 300

VERTICAL SCALE IN FEET

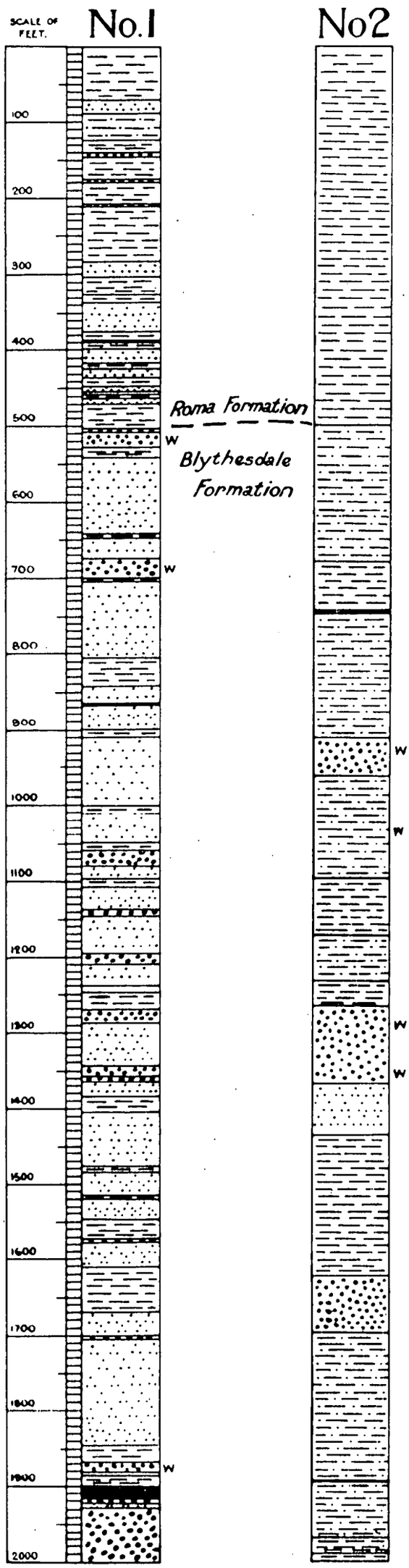
ILLUSTRATION OF DIFFICULTIES OF CORRELATION OF GAMMA-RAY LOGS WITHOUT OTHER INFORMATION. APPARENT AND TRUE CORRELATIONS ARE SHOWN FOR SOUTH PLAINS GAMMA-RAY LOG WITH ITSELF AT VARIOUS VERTICAL DISPLACEMENTS.

TO ACCOMPANY RECORD No 1963/103

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS H55/B6-1

GREAT ARTESIAN BASIN SW QLD 1960

PLATE 4



COMPARISON

OF THE FIRST 2000 Ft. OF TWO BORE RECORDS IN THE ROMA DISTRICT.

No.1 AN OIL BORE
ROTARY DRILLED TO 3,600 FT.
(THE WALLUMBILLA TOWN BORE)

No.2 THE DRILLER'S LOG OF A PERCUSSION BORE
(ROMA No.2 BORE)

LEGEND

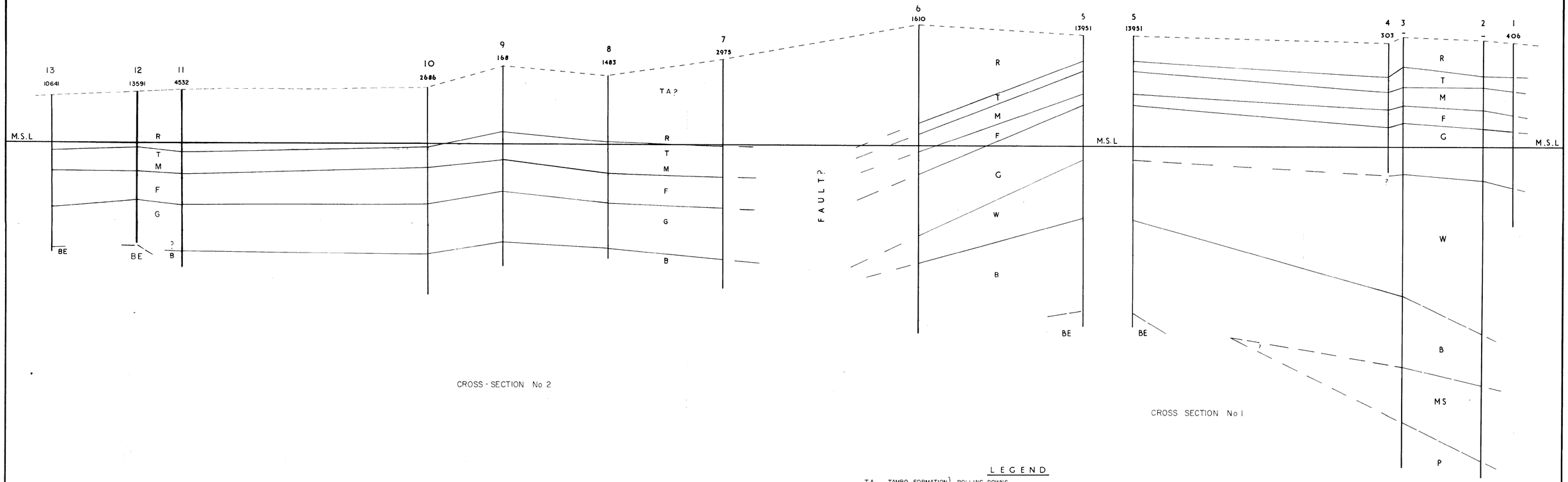
- SHALE
- SANDY SHALE
- SANDSTONE
- COAL & COALY SHALE
- SHALE & SANDSTONE.

NOTE:- *The record of the Oil Bore has been greatly simplified by grouping various kinds of shale that were distinct in the Log*
W *Indicates water bearing sand.*

AFTER: DEPARTMENT OF THE CO-ORDINATOR - GENERAL OF PUBLIC WORKS, Q'LAND. 1954

GREAT ARTESIAN BASIN, SW QLD 1960

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G55/B6-22
TO ACCOMPANY RECORD No 1963/103



CROSS - SECTION No 2

CROSS SECTION No 1

LEGEND

TA	TAMBO FORMATION } ROLLING DOWNS GROUP	
R	ROMA FORMATION }	
T	TRANSITION BEDS	
M	MOOGA SANDSTONE	
F	FOSSIL WOOD BEDS	
G	GUBBERAMUNDA SANDSTONE	
W	WALLOON COAL MEASURES	
B	BUNDAMBA GROUP	
MS	MOOLAYEMBER SHALE	
P	PERMIAN SEDIMENTS	
BE	BEDROCK	

5 — REFERENCE No (TABLE 1)

13951 — I.W.S.C. REGISTRATION No.

– – – – – SURFACE

——— BOUNDARY BETWEEN FORMATIONS

SCALES:

HORIZONTAL 0 10 20 30 MILES

VERTICAL 0 500 1000 1500 FEET

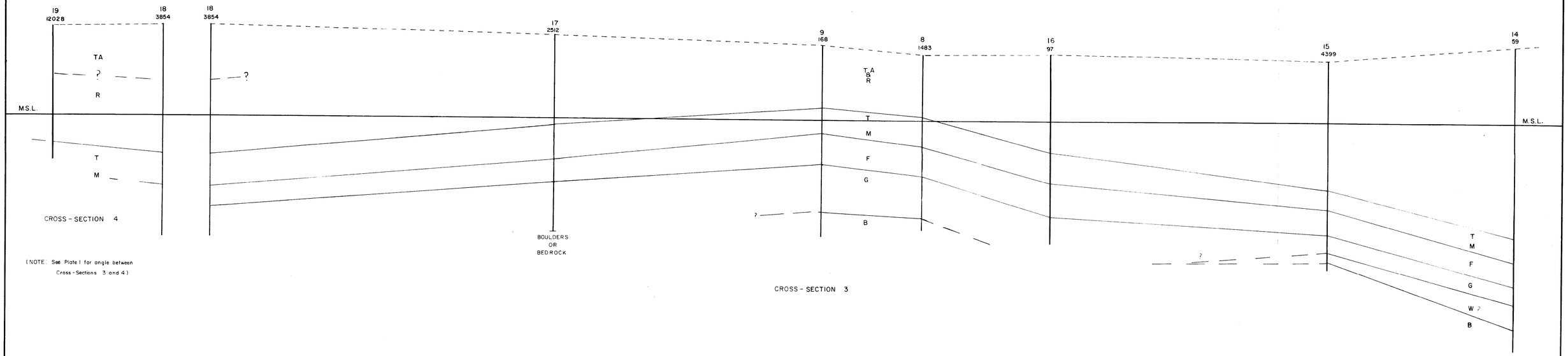
CROSS-SECTIONS 1 AND 2

(from correlation of gamma-ray logs)

TO ACCOMPANY RECORD No 1963/103

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics. G 55/B 6-23

GREAT ARTESIAN BASIN, SW QLD 1960



(NOTE: See Plate I for angle between Cross-Sections 3 and 4)

CROSS-SECTIONS 3 AND 4

(from correlation of gamma-ray logs)

LEGEND

TA	TAMBO FORMATION	ROLLING DOWNS GROUP
R	ROMA "	
T	TRANSITION BEDS	
M	MOOGA SANDSTONE	
F	FOSSIL WOOD BEDS	
G	GUBBERAMUNDA SANDSTONE	
W	WALLOON COAL MEASURES	
B	BUNDAMBA GROUP	
9	REFERENCE No. (TABLE I)	
168	I.W.S.C. REGISTRATION No.	
----	SURFACE	
———	BOUNDARY BETWEEN FORMATIONS	

SCALES

HORIZONTAL 10 0 10 20 30 MILES

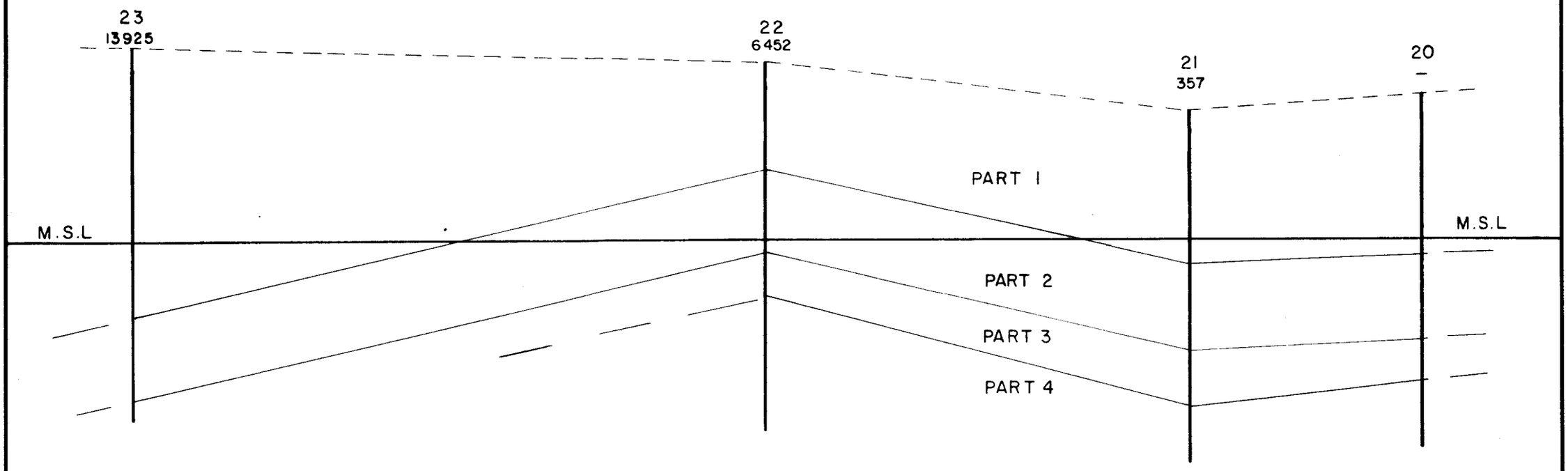
VERTICAL 500 0 500 1000 1500 FEET

GREAT ARTESIAN BASIN, SW QLD 1960

TO ACCOMPANY RECORD No 1963/103

Geological Survey, Bureau of Mineral Resources, Geology & Geophysics 655/B6-24

PLATE 7



LEGEND

22	REFERENCE No. (TABLE 1)
6452	IWSC REGISTRATION No.
– – –	SURFACE
———	CORRELATIONS

NOTE PARTS 1—4 SHOWN IN THE ROLLING DOWNS GROUP HAVE NO PHYSICAL SIGNIFICANCE.

CROSS-SECTION 5

(from correlation of gamma-ray logs)

SCALES

HORIZONTAL	10	0	10	20	30 MILES
VERTICAL	500	0	500	1000	1500 FEET

TO ACCOMPANY RECORD No 1963/103

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G54/B6-1

GREAT ARTESIAN BASIN SW QLD 1960

PLATE 8

8 BINDA Nº 2 | 9 YUNNERMAN | 10 QUEEN'S BIRTHDAY | 11 DARRAWONG Nº 2 | 12 SOUTH PLAINS | 13 BARRYGOWAN

SEA LEVEL

ROMA FORMATION

Transition beds and Mooga sandstone

Fossil wood beds

Gubberamunda sandstone

BUNDAMBA GROUP

DEPTH BELOW SEA LEVEL IN FEET

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300

NO NOTE OF WATER HORIZONS

WATER

GRANITE

GRANITE ?

Logging Speed 40 ft/min

Time Constant 1 sec

0·005 mr/hr

CORRELATION OF GAMMA-RAY LOGS
BORES 8 to 13

GREAT ARTESIAN BASIN S.W. QLD 1960

TO ACCOMPANY RECORD Nº 1963/103

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics G55/B6-25

PLATE 9

ARO No.19 (WALLUMBILLA)

IWSC REGISTERED No: 406
OWNER: BENDEMERE SHIRE COUNCIL
DRILLED: 1934
DEPTH, DRILLER 4959'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 27°00' S, 28·5 MILES NORTH
149°00' E, 11·2 MILES EAST
ELEVATION: GROUND 1044
REF. LEVEL 1046
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	26-9-1960		26-9-1960
FIRST READING	35'		1834'
LAST READING	1841'		35'
FOOTAGE LOGGED	1806		1799

REMARKS DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR. STRATIGRAPHY BY CORRELATION

1

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC
TEMPERATURE
0·005 MR/HR INCREASE

CASING | STRATIGRAPHY | LITHOLOGY

11 3/4-IN. & 8 5/8-IN. CASING

ROMA FORMATION
- CLAY, yellow
- SHALE, blue
- SHALE, hard, sandy
- SHALE with streaks of SANDSTONE
- SHALE, brown
- SANDSTONE, hard
- SHALE, blue
- SHALE, sandy
- SANDSTONE, hard
- SHALE, blue
- SANDSTONE, hard
- SHALE, sandy
- SHALE, sticky blue
- SHALE, tough, blue
- Hard shell
- SHALE, sandy
- SHALE, tough, brown
- SHALE, sandy with hard streaks

TRANSITION
- SHALE, sandy
- SHALE, tough, brown
- SHALE, sandy
- SHALE, sticky blue
- SANDSTONE, hard
- SHALE, sticky blue
- SHALE, sandy
- SHALE, sticky
- SHALE, sandy
- SHALE, sticky
- SHALE, sandy
- SANDSTONE, hard
- SHALE, sandy
- SHALE, grey
- SHALE, hard
- SHALE, tough
- SANDSTONE, hard

8 5/8-IN. CASING

MOOGA SANDSTONE
- SAND, water
- SHALE, tough
- SHALE, sandy
- SHALE, brown
- SHALE, sandy
- SAND, water
- SHALE, hard

FOSSIL WOOD BEDS
- SHALE, sandy
- SHALE, sticky
- SHALE, sandy
- SHALE hard
- SHALE, sandy
- SHALE, hard
- SHALE, sandy
- Shell formation
- SHALE, sandy
- SHALE, tough
- SHALE, sandy
- SHALE, tough
- SANDSTONE
- SHALE, sandy
- SHALE, tough
- SHALE, sandy
- SANDSTONE
- SHALE, sandy
- SANDSTONE
- SHALE, sandy
- SHALE, sticky
- SANDSTONE

GUBBERAMUNDA SANDSTONE
- SHALE, sandy
- SANDSTONE
- SANDSTONE, hard
- SHALE, sandy
- SHALE, sticky
- SHALE, sandy
- SHALE, sticky

WALLOON COAL MEASURES
- SHALE, sandy
- SHALE, sticky
- SHALE, sandy
- SHALE, tough, brown
- SANDSTONE, hard
- SHALE, sandy
- SHALE, tough, brown
- SHALE, brown
- SHALE, sandy
- SANDSTONE, hard
- SHALE, sandy; coal showed on slush ditch

OPEN HOLE? 8 5/8-IN. CASING

0 | 500 | 1000 | 1500 | 2000
HOT F

HOLE BLOCKED.

TO ACCOMPANY RECORD No 1963/103

PLATE 9

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

ROMA RAILWAY

IWSC REGISTERED No: 303
OWNER: QUEENSLAND RAILWAYS
DRILLED: 1921
DEPTH, DRILLER: 3705'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 27°00' S, 30·2 MILES NORTH
148°30' E, 17·1 MILES EAST
ELEVATION: GROUND 1037'
REF. LEVEL 1037'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	27-9-1960		27-9-1960
FIRST READING	35'		1290'
LAST READING	1307'		35'
FOOTAGE LOGGED	1272		1255

REMARKS DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR. STRATIGRAPHY BY CORRELATION

4

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC
TEMPERATURE
0·005 MR/HR INCREASE

CASING | STRATIGRAPHY | LITHOLOGY

12 6-IN. CASING

ROMA FORMATION
- Surface SOIL and yellow SHALE
- SHALE, yellow
- SHALE, black, hard; seepage water at 50'
- SAND, blue with salty water
- SHALE, blue
- SANDSTONE, fine, grey
- Streaks or bands of SAND
- SHALE, hard, blue
- SANDSTONE, fine
- SHALE, blue
- SHALE, black sandy (coaly?-L.C.B)

6-IN. CASING

TRANS.
- SHALE, brown with fine SANDSTONE
- SHALE, black
- SHALE, brown with streaks of fine white SANDSTONE

MOOGA SANDSTONE
- SHALE
- SAND; 4640 gal/day of brackish water
- SHALE, grey, sandy; 620'-810', streaks of LIGNITE and COAL

FOSSIL WOOD BEDS
- SHALE, blue
- SHALE, grey and fine SAND
- CLAY, blue, with streaks of COAL
- ROCK, grey, sandy

GUBBERAMUNDA SANDSTONE
- SHALE, grey
- SHALE, brown
- CLAY
- SANDROCK; increase of water at 960'
- SHALE, hard
- SANDROCK; increase of water at 1000'
- SHALE, hard, brown
- SHALE, grey, sandy
- SANDSTONE, soft
- SANDSTONE and SHALE, grey
- SANDSTONE, soft
- SHALE, brown
- SHALE, grey and SANDROCK with streaks of brown SHALE
- SANDROCK
- SAND, soft
- SANDROCK

97°F

0 | 500 | 1000 | 1500 | 2000

HOLE BLOCKED.

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS G 55/B6-26

GREAT ARTESIAN BASIN, S.W. Q'LD 1960

PLATE 10

ASSOCIATED AUSTRALIAN OILFIELDS N.L.

GREAT ARTESIAN BASIN, S.W. QUEENSLAND

EXPERIMENTAL BORE LOGGING PROGRAMME 1960

(BUREAU OF MINERAL RESOURCES.)

AAO LATEMORE No. 1

WSC REGISTERED No. : —
OWNER AAO
DRILLED 1960
DEPTH, DRILLER 4775'
BORE CONDITION STANDING, MUD
LOGGING EQUIPMENT WILCO

COORDINATES 27°00' S, 29·0 MILES NORTH
149°00' E, 5·0 MILES EAST
ELEVATION GROUND 1085'
REF. LEVEL 1075'
LOGGED BY E.E. JESSON & A. RADEKI
LITHOLOGY BY V. SWINDON

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE			4-9-1960
FIRST READING			4370'
LAST READING			40'
FOOTAGE LOGGED			4330

REMARKS DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR. STRATIGRAPHY BY AAO

2

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC

TEMPERATURE
0·01 MR/HR INCREASE

CASING
STRATIGRAPHY

LITHOLOGY

OPEN HOLE 9 5/8 IN.

ROMA FORMATION
SAND with interbedded SHALE
SHALE
SAND, minor SHALE

TRANSITION BEDS
SAND, with minor thin SHALE

MOOGA SANDSTONE
SAND, with several thick SHALE bands

FOSSIL WOOD BEDS
SHALE and minor SAND

SANDSTONE
SAND, minor SHALE bands 1000'-1100'

GUBBERAMUNDA
SHALE
SAND, with several SHALE bands

MEASURES
SHALE
SAND and SHALE interbedded
SHALE and minor SAND
SAND, minor SHALE bands

COAL

WALLOON GROUP
SHALE, minor SAND, numerous thin coal bands
SAND, thin SHALE bands
SHALE
SAND and SHALE, thick interbeds 10'-20'
SAND, minor thin SHALE bands
SHALE, minor SAND
SAND, white, silty, calcareous

BUNDAMBA SHALE
SHALE, dark grey with SAND, white quartzitic. Some thin coal bands below 3700'
SHALE, dark grey

MOOLAYEMBER
interbedded SHALE, grey-brown, slightly micaceous SAND, white-grey, fine, quartzitic SILTSTONE, white-grey

PICKANJINNIE FMN
SAND, grey-green, minor SHALE

TEMPERATURE LIMIT OF PROBE

TO ACCOMPANY RECORD No 1963/103

PLATE 10

ASSOCIATED AUSTRALIAN OILFIELDS N.L.

GREAT ARTESIAN BASIN, S.W. QUEENSLAND

EXPERIMENTAL BORE LOGGING PROGRAMME 1960

(BUREAU OF MINERAL RESOURCES.)

AAO TIMBURY HILLS No. 2

WSC REGISTERED No. : —
OWNER AAO
DRILLED 1960
DEPTH, DRILLER 4400'
BORE CONDITION STANDING, MUD
LOGGING EQUIPMENT FAILING LOGMASTER

COORDINATES 27°00' S, 30·6 MILES NORTH
149°30' E, 20·6 MILES EAST
ELEVATION GROUND 1100'
REF. LEVEL 1110'
LOGGED BY F.E. BURBURY (MINAD)
LITHOLOGY BY S.S. DERRINGTON & M.J. MAHONEY

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE			4-9-1960
FIRST READING			4304'
LAST READING			35'
FOOTAGE LOGGED			4269

REMARKS NOT CORRECTED FOR CABLE STRETCH. STRATIGRAPHY BY AAO

3

GAMMA-RAY
LOGGED UPHOLE AT 9 FT/MIN
TIME CONSTANT 2 SEC

TEMPERATURE
0·01 MR/HR INCREASE

CASING
STRATIGRAPHY

LITHOLOGY

OPEN HOLE 9 5/8 IN.

ROMA FORMATION
Interbeds SANDSTONE, grey, fine-grained, calcareous quartzose and SHALE, dark grey

TRANSITION BEDS
SANDSTONE, grey, fine, very minor SHALE beds

MOOGA SANDSTONE

FOSSIL WOOD BEDS
Interbeds SANDSTONE, grey, fine, and SHALE, dark grey, and carbonaceous grading to coal

SANDSTONE
SANDSTONE, grey, medium, very minor interbeds SHALE, dark grey

GUBBERAMUNDA
SHALE, dark grey, micaceous and SANDY SHALE, very minor interbeds, SANDSTONE

MEASURES
Interbeds SHALE, dark grey to black, micaceous, SANDY SHALE, grey to dark grey, micaceous and SANDSTONE, fine-to-medium grey.

COAL

WALLOON GROUP
SHALE, dark grey to black, micaceous, beds of SANDY SHALE, grey to dark grey, micaceous Minor interbeds SANDSTONE
Interbeds, SANDSTONE, fine to medium, grey, and SHALE, dark grey, or brown, and SANDY SHALE
SANDSTONE, fine. Interbeds minor SHALE, dark grey to black and SANDY SHALE

BUNDAMBA SHALE
SHALE, medium to dark grey, in part sandy, SHALE, dark grey to black, carbonaceous, MUDSTONE, light brown, soft. Minor interbeds SANDSTONE, SILTSTONE

MOOLAYEMBER
Interbeds SHALE, dark grey and SILTSTONE white-grey
Interbeds SANDSTONE, light grey, fine and SHALE, dark grey micaceous
SILTSTONE, grey-green, minor SHALE dark grey-green and SANDSTONE
SILTSTONE, grey, green, argillaceous. Minor interbeds SHALE & MUDSTONE, grey & brown

PLATE II

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

GREAT ARTESIAN BASIN, S.W. QUEENSLAND.
EXPERIMENTAL BORE LOGGING PROGRAMME 1960.

CYTHEREA No. 2

IWSC REGISTERED No.: 1610
OWNER: PRIVATE
DRILLED: 1915
DEPTH, DRILLER 3408'
BORE CONDITION: STANDING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 27°00' S 4·0 MILES NORTH
147°30' E 15·5 MILES EAST
ELEVATION: GROUND 1204'
REF. LEVEL 1204'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE		8-9-60	8-9-60
FIRST READING		35'	3075'
LAST READING		3102'	35'
FOOTAGE LOGGED		3067'	3040'

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR.
STRATIGRAPHY BY CORRELATION

6

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC
TEMPERATURE
0-005 MR/HR INCREASE
60°F 70°F 80°F
REBASE 90° 100°
SCALE CHANGE 100° 115°
REBASE 115° 130°
REBASE 145° 150°
OPEN HOLE
HOLE BLOCKED

LITHOLOGY

CASING
STRATIGRAPHY
8-IN. & 6-IN.
6-IN.
ROMA FORMATION
MOOGA SANDSTONE
TRANS.
FOSSIL WOOD BEDS
GUBBERAMUNDA SANDSTONE
WALLOON COAL MEASURES
6-IN. GROUP
BUNDAMBA
SHALE, brown

0
500
1000
1500
2000
2500
3000

MITCHELL No. 2

IWSC REGISTERED No.: 13951
OWNER: MITCHELL SHIRE COUNCIL
DRILLED: 1960
DEPTH, DRILLER: 2920'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 26°30' S 0·0 MILES NORTH
147°30' E 29·0 MILES EAST
ELEVATION: GROUND 1110'
REF. LEVEL 1111'
LOGGED BY: F. JEWELL & N.D. JACKSON
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE		24-3-60	24-3-60
FIRST READING		45'	2910'
LAST READING		2910'	45'
FOOTAGE LOGGED		2865'	2865'

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH
STRATIGRAPHY BY CORRELATION

5

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 2 SEC
TEMPERATURE
0-01 MR/HR INCREASE
120°F 125°F 130°

LITHOLOGY

CASING
STRATIGRAPHY
ROMA FORMATION
MUDSTONE, grey, with trace of gypsum. Slightly calcareous in some bands
TRANS.
MUDSTONE, grey, sandy
MOOGA SANDSTONE
SANDSTONE, light grey
SANDSTONE, medium grey with some CLAY and SILT
FOSSIL W.B.
MUDSTONE, grey to brown; with some calcareous or sandy bands
SANDSTONE, pale grey, clayey
MUDSTONE, grey-brown, trace of sand
MUDSTONE, grey, sandy
SANDSTONE, grey, clayey
MUDSTONE, grey, sandy
8-IN. SAND STONE
SANDSTONE, grey, clayey or with calcareous clay/silt
6-IN. GUBBERAMUNDA
?
WALLOON COAL MEASURES
MUDSTONE, brown-grey, slightly sandy
?
MUDSTONE, grey, coal fragments
?
MUDSTONE, trace of sand
?
GROUP
SANDSTONE, light grey and buff, fine, quartz
BUNDAMBA
?
BASEMENT
SCHIST, light grey, fine grained

0
500
1000
1500
2000
2500
3000

TO ACCOMPANY RECORD No 1963/103

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS G55/B6-32

GREAT ARTESIAN BASIN S.W. QLD 1960

PLATE 12

BINDA No. 2

IWSC REGISTERED No.: 1483
OWNER: PRIVATE
DRILLED: 1912
DEPTH, DRILLER: 1952'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

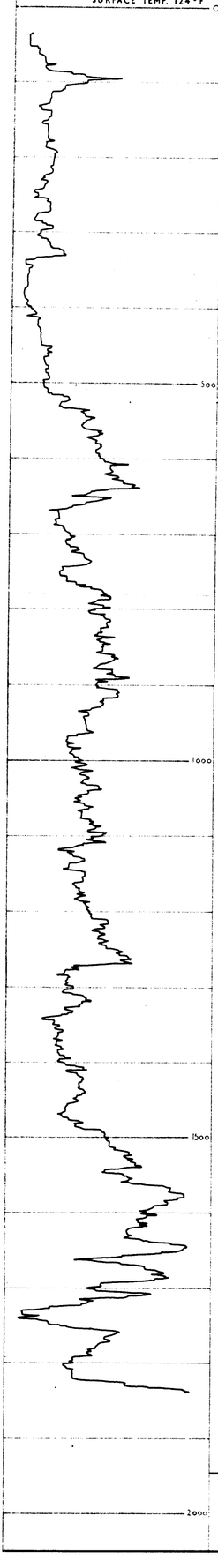
COORDINATES: 28°00'S, 16·9 MILES NORTH
147°00'E, 20·6 MILES EAST
ELEVATION: GROUND 688'
REF. LEVEL 688'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	9-9-60	9-9-60	9-9-60	
FIRST READING	35'	35'	1835'	
LAST READING	1840'?	1835'	35'	
FOOTAGE LOGGED	1805	1800	1800	

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR.
TEMPERATURE PROBE FAILED, NO LOG.
STRATIGRAPHY BY CORRELATION

8

GAMMA-RAY
LOGGED UPHOLE AT 30 FT/MIN
TIME CONSTANT 1 SEC
TEMPERATURE
0·005 MR/HR INCREASE
SURFACE TEMP. 124°F



CASING	STRATIGRAPHY	LITHOLOGY
		CLAY, red
		SAND and GRAVEL
		CLAY, hard, sandy
10, 8, 6"		
8, 6-IN.	ROMA AND TAMBO ? FORMATIONS	CLAY, grey and yellow
		CHALK, white or PIPE CLAY
		CLAY, yellow
		SHALE, grey
6"-IN.		SHALE, blue
	TRANS.	SAND, black
		SHALE, blue, sandy
	MOOGA SANDSTONE	
	FOSSIL WOOD BEDS	SHALE, blue
	GUBBERAMUNDA	SHALE, grey
		SHALE, grey
		SANDROCK
	BUNDAMBA GROUP	SANDSTONE
		SHALE, grey
		SANDSTONE
		SHALE, sandy, grey
		SANDSTONE
		SHALE, grey
		SANDSTONE
	BEDROCK	GRANITE
		2398' SCHIST ?

TO ACCOMPANY RECORD No 1963/103

PLATE 12

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

DARRAWONG No. 2

IWSC REGISTERED No.: 4532
OWNER: PRIVATE
DRILLED: 1933
DEPTH DRILLER: 1800'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

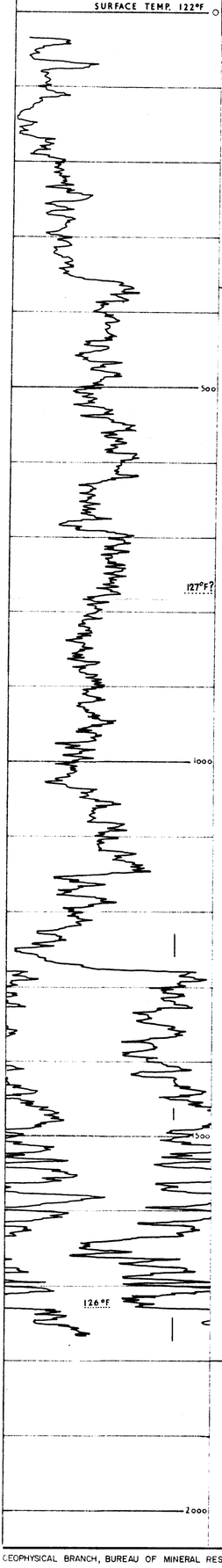
COORDINATES: 29°00'S, 19·8 MILES NORTH
146°30'E, 7·4 MILES EAST
ELEVATION: GROUND 530'
REF. LEVEL 533'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	21-9-60		21-9-60	
FIRST READING	35'		1766'	
LAST READING	1767'		35'	
FOOTAGE LOGGED	1732		1731	

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR.
STRATIGRAPHY BY CORRELATION

11

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC
TEMPERATURE
0·005 MR/HR INCREASE
SURFACE TEMP. 122°F



CASING	STRATIGRAPHY	LITHOLOGY
		SOIL, surface
		SANDSTONE, hard, grey
		SANDSTONE, hard, brown and boulders
		SANDSTONE, hard, grey and boulders
		CLAY, red, sandy
		SANDROCK, hard and boulders
		SANDSTONE, red
6 6 5-IN.	ROMA FORMATION	CLAY, yellow
		SHALE, grey
		SANDSTONE, blue, sticky
		ROCK, grey
		SANDSTONE, blue
5-IN.		SHALE, black
		SHALE, blue; 650' brackish water, 3000 gal / day
	MOOGA SANDSTONE TRANS.	SANDSTONE, water-bearing
		ROCK, hard
		SHALE, brown
		ROCK, hard
		SANDSTONE, brown
		SHALE, brown
	FOSSIL WOOD BEDS	SHALE, brown, sandy
		SHALE, black puggy
		SHALE, brown, sandy
		SHALE, grey, sticky
	GUBBERAMUNDA	SANDSTONE, brown
		SAND, water-bearing
		SANDSTONE, grey
		SHALE, grey, sticky
		Water-bearing strata
		SHALE, grey, sticky
		SHALE, grey, sandy
		SANDSTONE, grey, sticky
		SANDSTONE, hard, blue
		SHALE, brown, sandy
		SANDSTONE, hard, blue with hard streaks
		SANDSTONE, blue
		SHALE, brown, sandy
		ROCK
		SANDSTONE, blue
		Water-bearing strata
		SANDSTONE, blue
		ROCK
		SANDSTONE, hard
		Water-bearing strata
	BUNDAMBA GROUP	SHALE, blue
		SHALE, blue

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS G55/B6-28

GREAT ARTESIAN BASIN S.W QLD 1960

PLATE 13

BOOMBAH

IWSC REGISTERED No.: 4399
OWNER: PRIVATE
DRILLED: 1908
DEPTH DRILLER: 3024'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 28°15'S, 11·7 MILES NORTH
148°30'E, 11·2 MILES EAST
ELEVATION: GROUND 648'
REF. LEVEL 650'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	12-9-60		12-9-60	
FIRST READING	35'		2182'	
LAST READING	2201'		35'	
FOOTAGE LOGGED	2166		2147	

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR. STRATIGRAPHY BY CORRELATION

15

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC

TEMPERATURE
0·005 MR/HR INCREASE

SURFACE TEMP. 132° F

HOLE BLOCKED

CASING: 8·66-IN, 6-IN

STRATIGRAPHY: ROLLING DOWNS GROUP; MOOGA S/S; TRANS.; FOSSIL WOOD BEDS; GUBB; WALLOON; BUNDAMBA P

LITHOLOGY
CLAY and SANDSTONE, hard
CLAY, sandy
SHALE, blue
SHALE, grey
SHALE, grey
SAND
SHALE, black
SHALE, brown
SHALE, grey
SHALE, sandy

PLATE 13

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

HOMEBOIN No. 2

IWSC REGISTERED No.: 2975
OWNER: PRIVATE
DRILLED: 1910
DEPTH DRILLER: 2322'
BORE CONDITION: STANDING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 28°00'S, 30·6 MILES NORTH
147°30'E, 2·2 MILES EAST
ELEVATION: GROUND 852'
REF. LEVEL 852'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	3-9-60		3-9-60	
FIRST READING	35'		35'	
LAST READING	2284'		2281'	
FOOTAGE LOGGED	2249		2246	

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR. CABLE FAILED ON UP RUN. STRATIGRAPHY BY CORRELATION

7

GAMMA-RAY
LOGGED DOWNHOLE AT 70 FT/MIN.
TIME CONSTANT 1 SEC

TEMPERATURE
0·005 MR/HR INCREASE

126° F

CASING: 6-IN, 6-IN?

STRATIGRAPHY: ROLLING DOWNS GROUP; MOOGA SANDSTONE; TRANS.; FOSSIL WOOD BEDS; GUBBERAMUNDA; BUNDAMBA

LITHOLOGY
NO LITHOLOGIC LOG AVAILABLE

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS H55/B6-2

TO ACCOMPANY RECORD No 1963/103

GREAT ARTESIAN BASIN, SW QLD 1960

PLATE 14

QUEEN'S BIRTHDAY

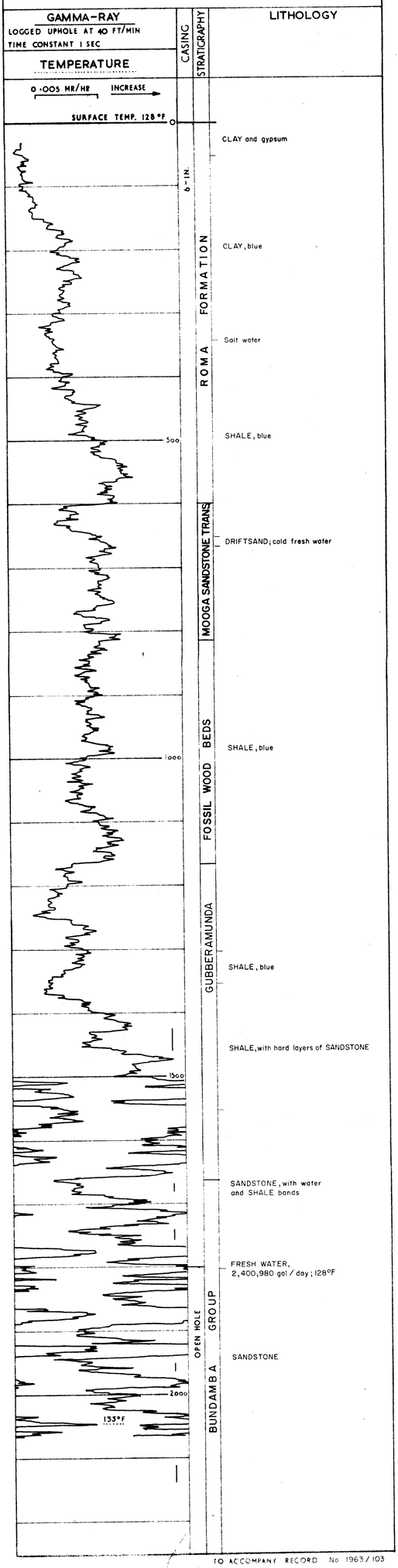
IWSC REGISTERED No.: 2686
OWNER: TRUST
DRILLED: 1893
DEPTH, DRILLER: 2102'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 28° 15'S, 11.9 MILES NORTH
147° 00'E, 1.4 MILES EAST
ELEVATION: GROUND 564'
REF. LEVEL 568'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	GAMMA-RAY
DATE	3-10-60		3-10-60	3-10-60
FIRST READING	0'		2064'	2064'
LAST READING	2080'		1500'	35'
FOOTAGE LOGGED	2080		564	2029

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR. STRATIGRAPHY BY CORRELATION

10



TO ACCOMPANY RECORD No 1963/103

PLATE 14

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

YUNNERMAN

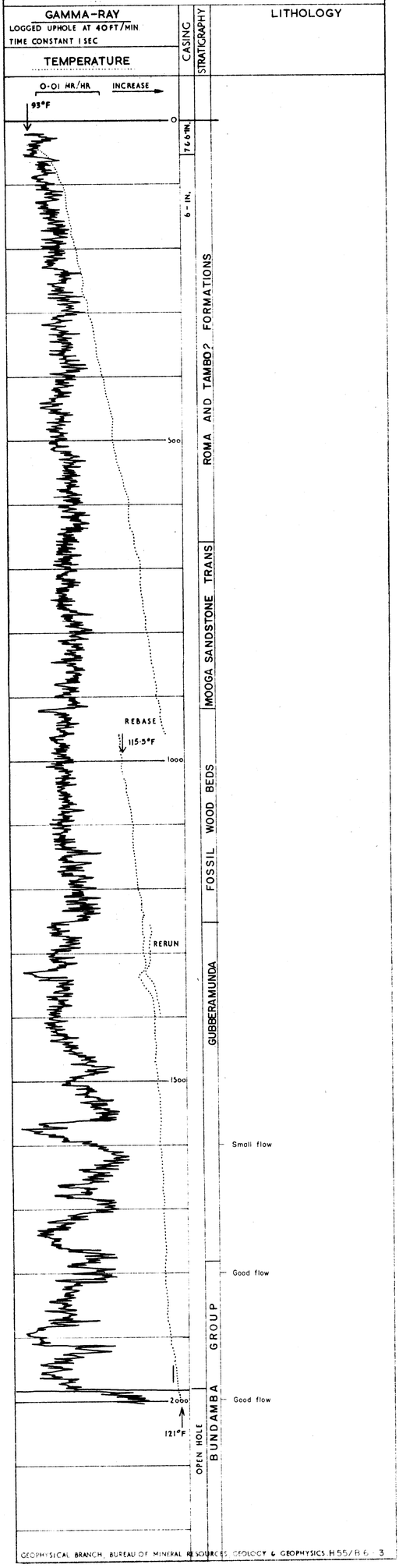
IWSC REGISTERED No: 168
OWNER: PRIVATE
DRILLED: 1909
DEPTH, DRILLER: 2231'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 28°00'S, 9.9 MILES NORTH
147°00'E, 0.6 MILES EAST
ELEVATION: GROUND 779'
REF. LEVEL 779'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	TEMPERATURE
DATE	21-10-60	21-10-60	21-10-60	21-10-60
FIRST READING	0'	38'	2002'	1400'
LAST READING	2008'	2002'	20'	1250'
FOOTAGE LOGGED	2008	1964	1982	150

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH. STRATIGRAPHY BY CORRELATION

9



GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS. H55/H6-3

GREAT ARTESIAN BASIN S.W. QUE. 1960

PLATE 15

BARRYGOWAN

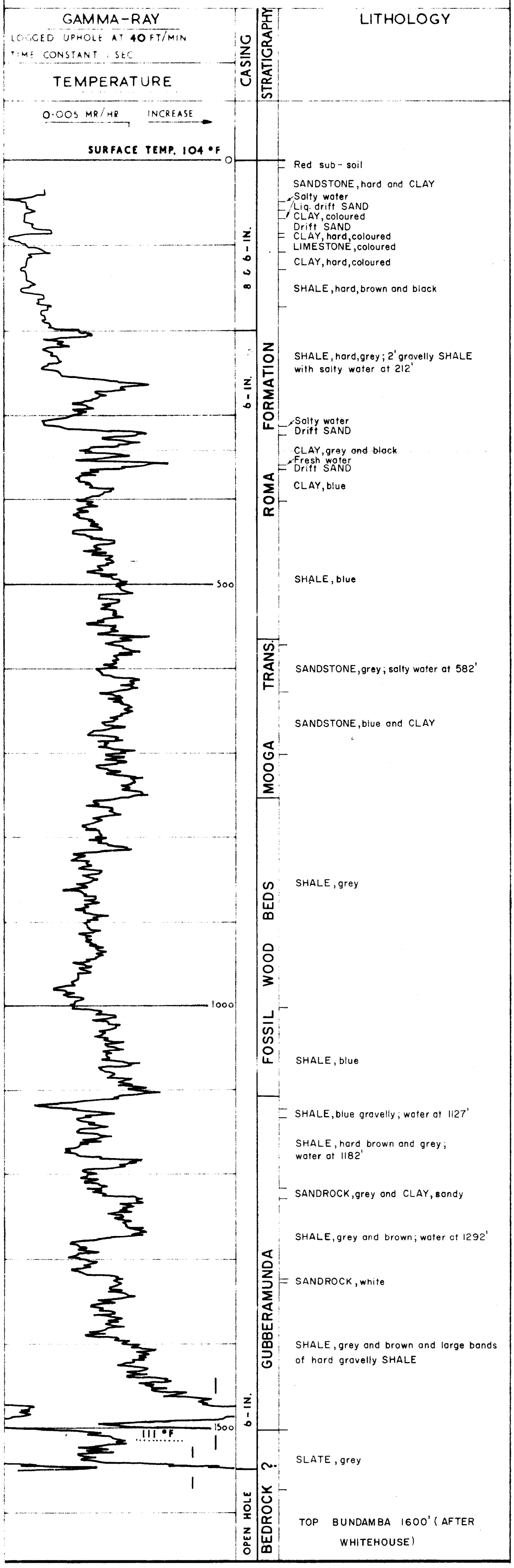
IWSC REGISTERED No.: 10641
OWNER: PRIVATE
DRILLED: 1946
DEPTH, DRILLER: 1570'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 29°00'S, 6·1 MILES NORTH
146°00'E, 19·5 MILES EAST
ELEVATION: GROUND 470'
REF. LEVEL 472'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	22-9-60		22-9-60
FIRST READING	35'		1548'
LAST READING	1548'		35'
FOOTAGE LOGGED	1513		1513

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR.
GAMMA LOG 1480'-1560' COMPOSITE OF TWO RUNS.
STRATIGRAPHY BY CORRELATION

13



TO ACCOMPANY RECORD Nº 1963/103

PLATE 15

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

GREAT ARTESIAN BASIN, S.W. QUEENSLAND.
EXPERIMENTAL BORE LOGGING PROGRAMME 1960.

SOUTH PLAINS

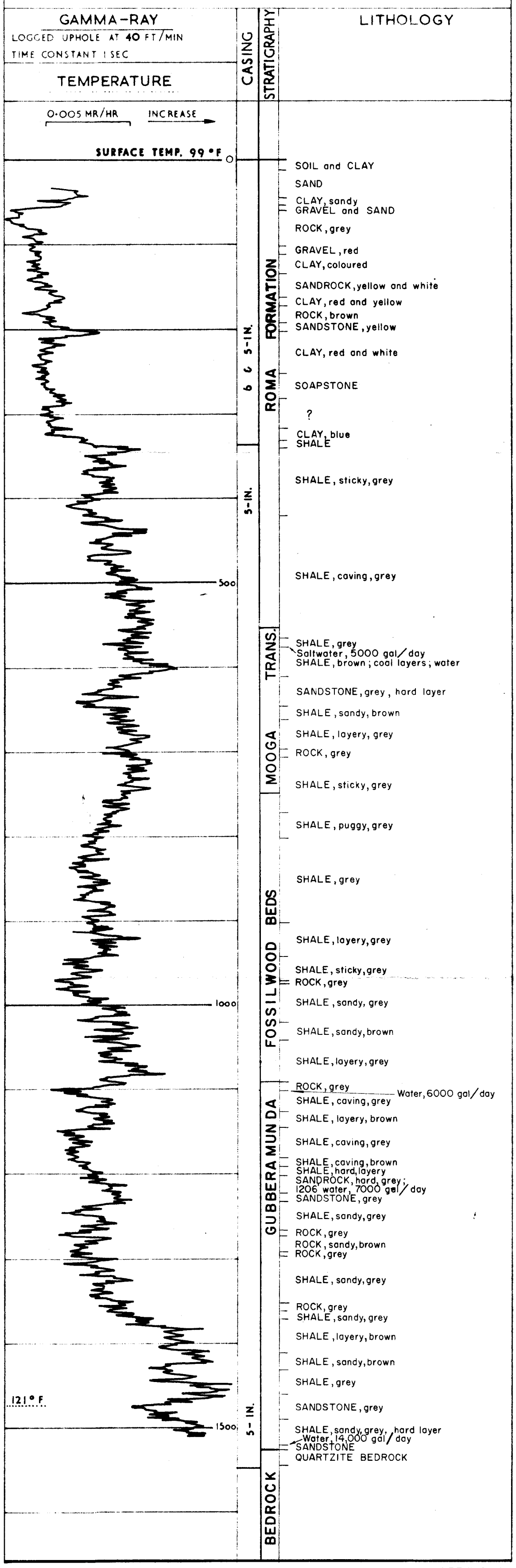
IWSC REGISTERED No.: 13599
OWNER: PRIVATE
DRILLED: 1958
DEPTH, DRILLER: 1545'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 29°00'S, 19·9 MILES NORTH
146°00'E, 29·4 MILES EAST
ELEVATION: GROUND 515'
REF. LEVEL 516'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE			22-9-60
FIRST READING			1508'
LAST READING			35'
FOOTAGE LOGGED			1473

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING DEVICE ERROR.
STRATIGRAPHY BY CORRELATION

12



GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS H55/B6-4

GREAT ARTESIAN BASIN SW QLD 1960

PLATE 16

GERALDA

IWSC REGISTERED No.: 59
OWNER: PRIVATE
DRILLED: 1920
DEPTH, DRILLER: 3965'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 28°30' S, 11·9 MILES NORTH
149°00' E, 16·1 MILES EAST
ELEVATION: GROUND 805'
REF. LEVEL 807'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	14-9-60	14-9-60	14-9-60
FIRST READING	35'	35'	3174'
LAST READING	3869'	1550'	35'
FOOTAGE LOGGED	3834	1515	3139

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR.
RELIABILITY OF TEMPERATURE LOG DOUBTFUL.
STRATIGRAPHY BY CORRELATION

14

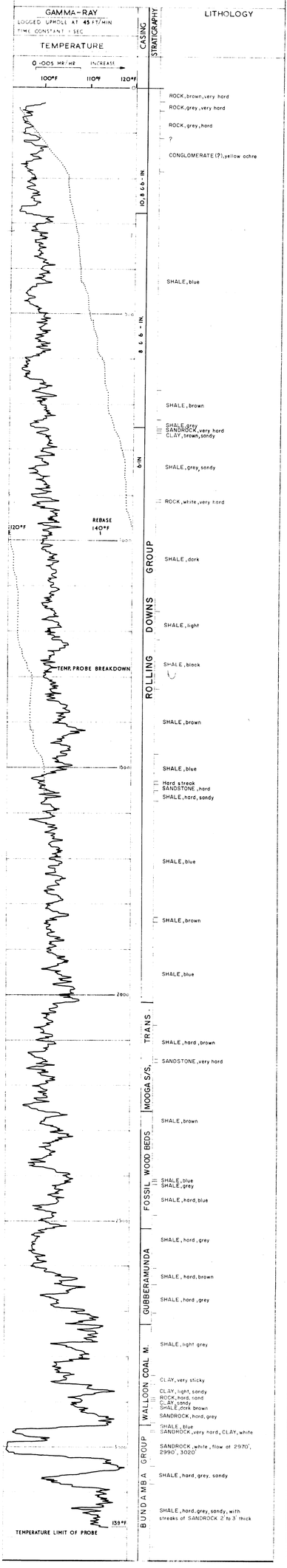


PLATE 16

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

MONA TRUST

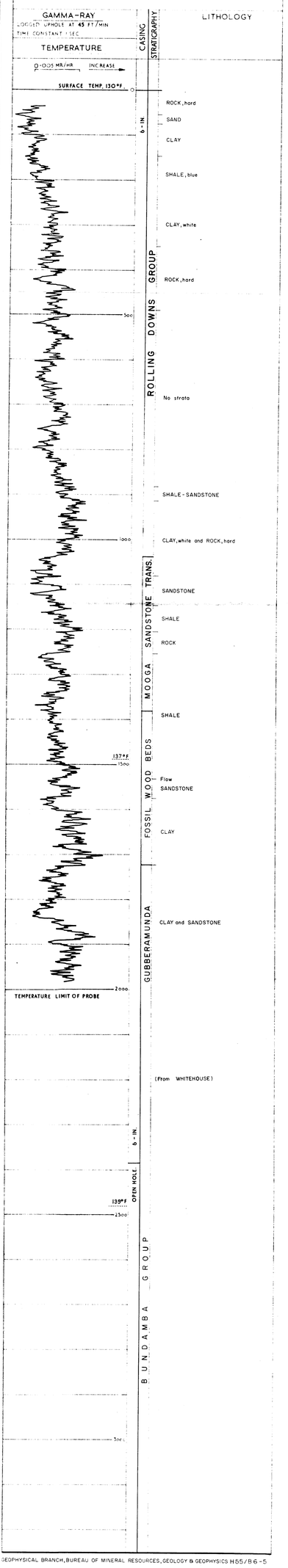
IWSC REGISTERED No.: 97
OWNER: TRUST
DRILLED: 1900
DEPTH, DRILLER: 2778'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: WIDCO

COORDINATES: 28°00' S, 7·8 MILES NORTH
147°30' E, 14·7 MILES EAST
ELEVATION: GROUND 700'
REF. LEVEL 704'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	17-9-60		17-9-60
FIRST READING	35'		1984'
LAST READING	2515'		35'
FOOTAGE LOGGED	2480		1949

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH AND MEASURING-DEVICE ERROR
STRATIGRAPHY BY CORRELATION

16



TO ACCOMPANY RECORD No. 1963/103

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS. H55/B.6-5.

GREAT ARTESIAN BASIN, S.W. QLD. 1960

PLATE 17

ELVERSTON No. 2

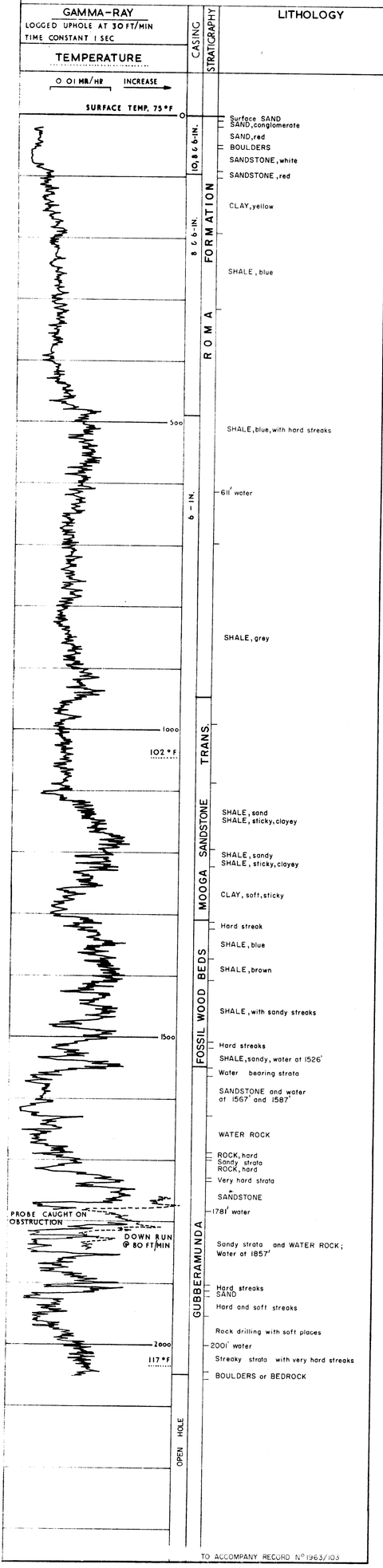
IWSC REGISTERED No.: 2512
OWNER: PRIVATE
DRILLED: 1923
DEPTH, DRILLER: 2050'
BORE CONDITION: STANDING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27° 30'S, 16·8 MILES NORTH
146° 00'E, 24·8 MILES EAST
ELEVATION: GROUND 870'
REF. LEVEL 871'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	22-10-60	22-10-60	22-10-60	
FIRST READING	0'	0'	2032'	
LAST READING	2058'	1436'	20'	
FOOTAGE LOGGED	2058	1436	2032	

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH
TEMPERATURE LOG UNRELIABLE, WATER ENTERED PROBE
STRATIGRAPHY BY CORRELATION

17



TO ACCOMPANY RECORD No 1963/103

PLATE 17

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

MOUNT ALFRED No. 1

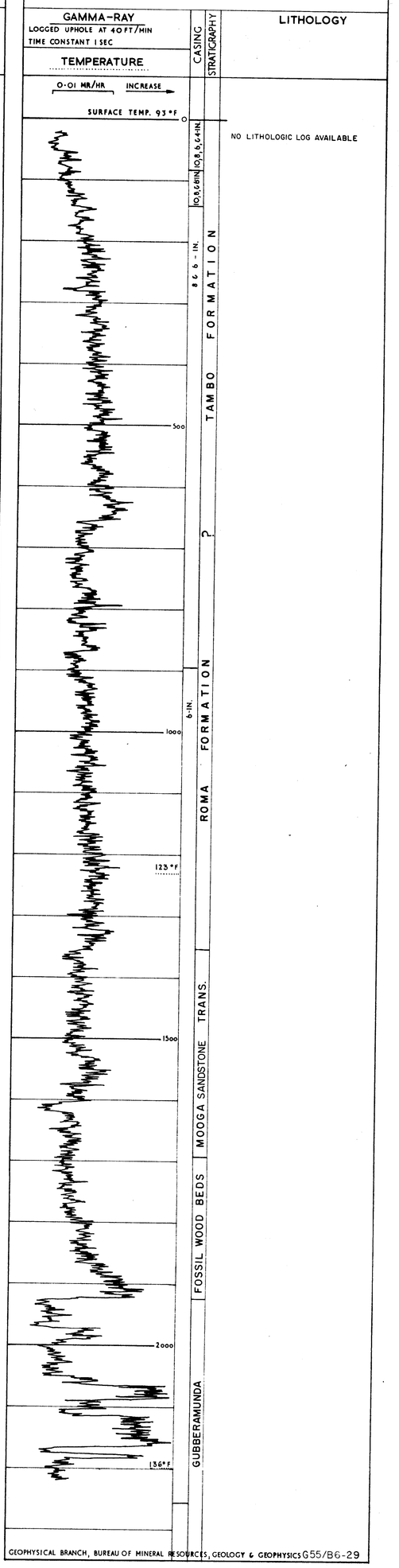
IWSC REGISTERED No.: 3854
OWNER: PRIVATE
DRILLED: 1910
DEPTH, DRILLER: 2253'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27° 15'S, 13·6 MILES NORTH
145° 00'E, 15·3 MILES EAST
ELEVATION: GROUND 961'
REF. LEVEL 964'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	27-10-60		27-10-60	
FIRST READING	0'		2222'	
LAST READING	2232'		20'	
FOOTAGE LOGGED	2232		2202	

REMARKS: DEPTHS CORRECTED FOR CABLE STRETCH
STRATIGRAPHY BY CORRELATION

18



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GREAT ARTESIAN BASIN S.W. QLD 1960

PLATE 18

OPAL CREEK

IWSC REGISTERED No.: 6452
OWNER: PRIVATE
DRILLED: 1931
DEPTH, DRILLER: 1448'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27°00'S, 33.9 MILES NORTH
143°30'E, 16.8 MILES EAST
ELEVATION: GROUND 690'
REF. LEVEL 693'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	7-11-60		7-11-60	
FIRST READING	0'		1426'	
LAST READING	1433'		20'	
FOOTAGE LOGGED	1433		1406	

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH.

22 SUB-ARTESIAN BORE.
PARTS OF ROLLING DOWNS GROUP AS SHOWN HAVE NO PHYSICAL SIGNIFICANCE

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC

TEMPERATURE

0·01 MR/HR INCREASE →

SURFACE TEMP. 98 °F

500

112 °F

1000

121 °F

1500

CASING

STRATIGRAPHY

NO CASING DATA AVAILABLE

ROLLING DOWNS GROUP
PART 2
PART 3
4
PART

LITHOLOGY

NO LITHOLOGIC LOG AVAILABLE.

TO ACCOMPANY RECORD No 1963/103

PLATE 18

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

YARRONVALE

IWSC REGISTERED No.: 12028
OWNER: PRIVATE
DRILLED: 1954
DEPTH, DRILLER: 2430'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27°00'S, 13·0 MILES NORTH
145°30'E, 1·5 MILES EAST
ELEVATION: GROUND 940'
REF. LEVEL 942'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	26-10-60		26-10-60	
FIRST READING	0'		1401'	
LAST READING	2425'		20'	
FOOTAGE LOGGED	2425		1381	

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH.

19 STRATIGRAPHY BY CORRELATION

GAMMA-RAY
LOGGED UPHOLE AT 40 FT/MIN
TIME CONSTANT 1 SEC

TEMPERATURE

0·01 MR/HR INCREASE →

SURFACE TEMP. 139 °F

500

1000

140°F

TEMPERATURE LIMIT OF PROBE

TEMP. 141°F @ 2405'

1500

CASING

8 6 6-IN.

6-IN.

STRATIGRAPHY

LITHOLOGY

SOIL, surface
ROCK, white and pink
CLAY, white and pink
CLAY, white
CLAY, yellow
CLAY, grey
CLAY, yellow
SHALE, grey, sandy
SHALE, grey
ROCK, grey
SHALE, grey
ROCK, grey
SHALE, grey
SHALE, deep blue
Water
SANDSTONE, fine, grey
SANDSTONE, grey and brown SHALE
SHALE, grey, sandy with SANDSTONE bands
SANDSTONE, fine, green
SHALE, grey, sandy
SHALE, grey with thin hard bands
SHALE, hard, blue
SHALE, blue
SHALE, hard, blue

ROMA AND TAMBO FORMATIONS
MOOGA S/S TRANS.

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS. G55/B6-30

GREAT ARTESIAN BASIN SW QLD 1960
G55

PLATE 19

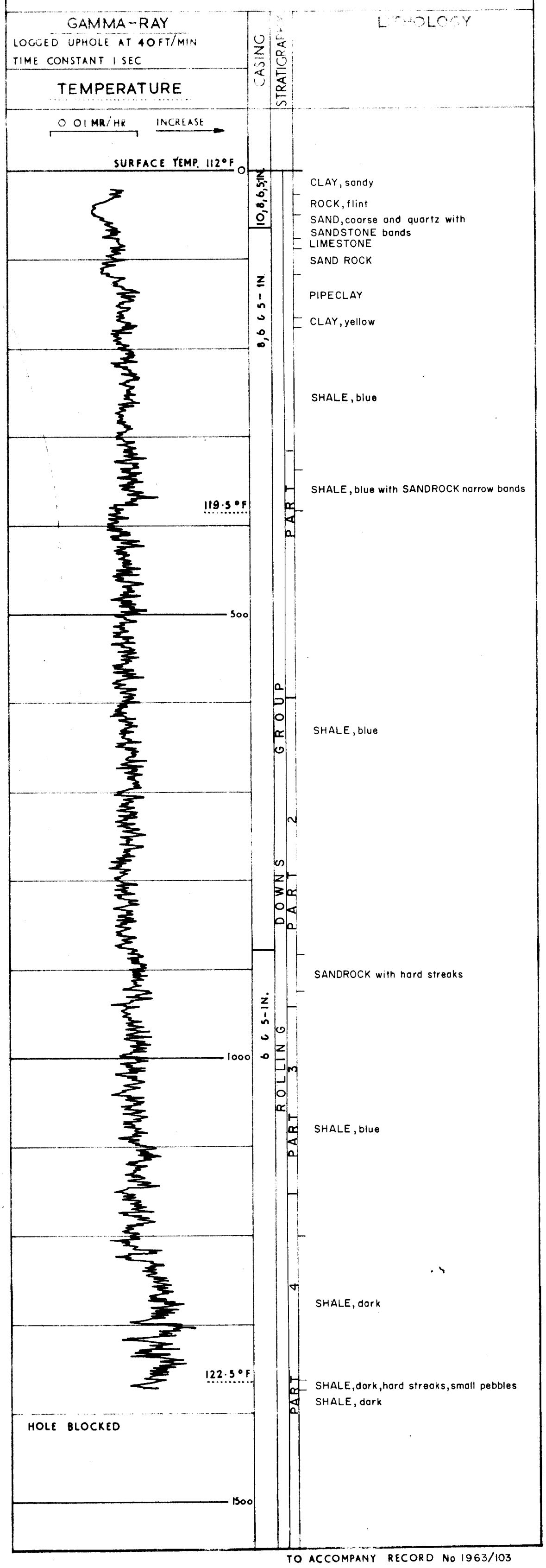
EROMANGA

IWSC REGISTERED No.: 357
OWNER: TOWN
DRILLED: 1906
DEPTH, DRILLER: 2612'
BORE CONDITION: FLOWING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27°00'S, 22·3 MILES NORTH
143°00'E, 16·2 MILES EAST
ELEVATION: GROUND 510'
REF. LEVEL 510'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	1-11-60		1-11-60
FIRST READING	0'		1375'
LAST READING	1385'		20'
FOOTAGE LOGGED	1385		1355

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH
21 PARTS OF ROLLING DOWNS GROUP AS SHOWN HAVE NO PHYSICAL SIGNIFICANCE



TO ACCOMPANY RECORD No 1963/103

PLATE 19

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

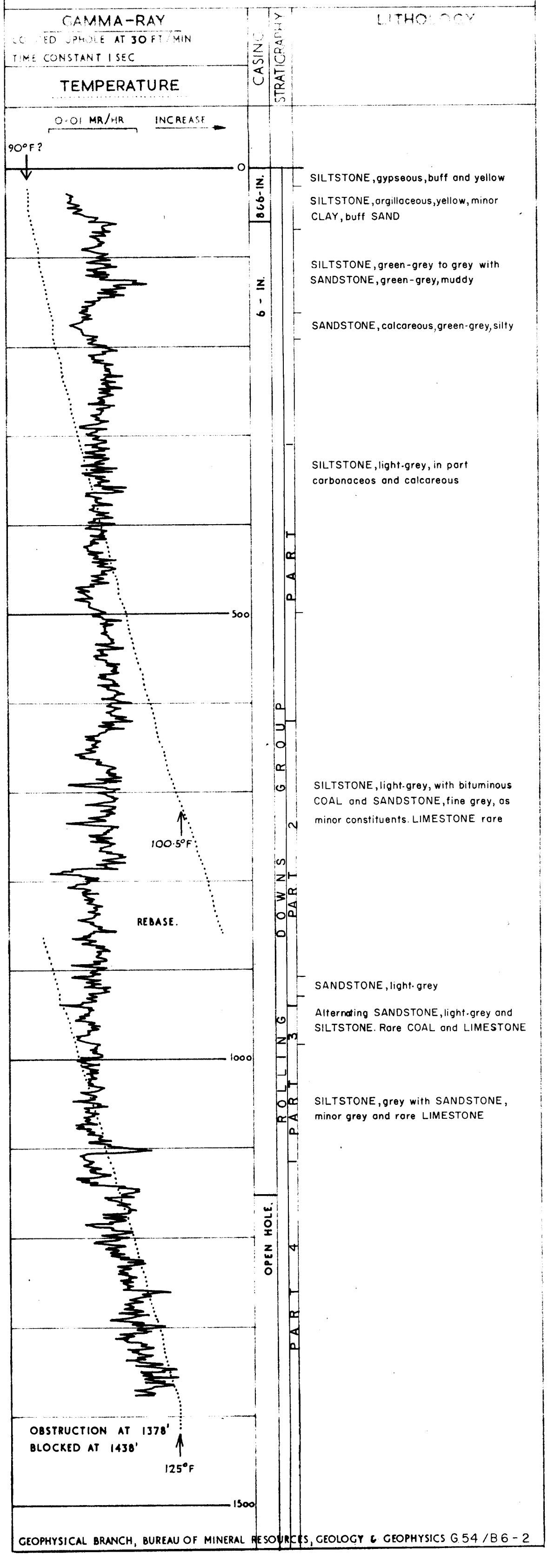
SOE SCOUT No.3 (GUMBLA)

IWSC REGISTERED No.: —
OWNER L.H. SMART OIL EXPLORATION CO.
DRILLED: 1959
DEPTH, DRILLER: 1835'
BORE CONDITION: STANDING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 27°00'S, 9·2 MILES NORTH
143°00'E, 3·8 MILES EAST
ELEVATION: GROUND 565'
REF. LEVEL 565'
LOGGED BY: E.E. JESSON & A. RADESKI
LITHOLOGY BY: GEOL. SURV. QLD.

RUN	DUMMY	TEMPERATURE	GAMMA-RAY
DATE	31-10-60	31-10-60	31-10-60
FIRST READING	0'	20'	1375'
LAST READING	1438'	1378'	30'
FOOTAGE LOGGED	1438	1358	1345

REMARKS. DEPTHS CORRECTED FOR CABLE STRETCH
20 PARTS OF ROLLING DOWNS GROUP AS SHOWN HAVE NO PHYSICAL SIGNIFICANCE



GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS G 54/B6-2

GREAT ARTESIAN BASIN, SW QLD 1960

PLATE 20

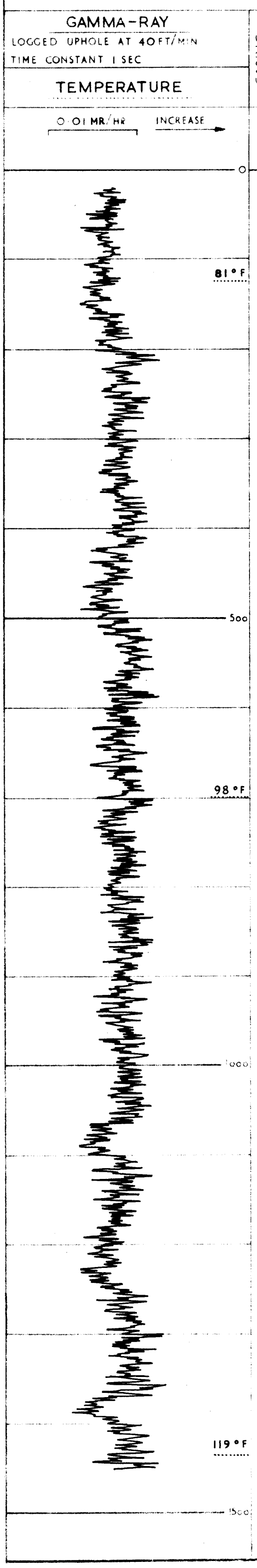
BULGROO No. 19

I.W.S.C. REGISTERED No.: 13925
OWNER: PRIVATE
DRILLED: 1959
DEPTH, DRILLER: 1472'
BORE CONDITION: STANDING, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 26°00'S, 14·5 MILES NORTH
143°00'E, 20·5 MILES EAST
ELEVATION: GROUND 760'
REF. LEVEL 762'
LOGGED BY: E.E. JESSON &
A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	GAMMA-RAY
DATE	2-11-60		2-11-60	3-11-60
FIRST READING	0'		20'	1451'
LAST READING	1466'		700'	20'
FOOTAGE LOGGED	1466		680	1431

REMARKS DEPTHS CORRECTED FOR CABLE STRETCH.
SUB-ARTESIAN BORE, ABANDONED.
23 PARTS OF ROLLING DOWNS GROUP AS SHOWN HAVE NO PHYSICAL SIGNIFICANCE



CASING: 6-IN.

STRATIGRAPHY / LITHOLOGY:
- SOIL, black
- SHALE, brown with hard bands
- SHALE, grey with hard bands
- SHALE, sandy
- SHALE, grey
- SHALE, brown
- SHALE, grey
- SHALE, sandy
- SHALE, grey
- SHALE, sticky, grey
- SHALE, grey
- GREASE
- SHALE, grey
- SHALE, gritty, grey
- SHALE, grey
- ROCK
- SHALE, grey
- SHALE, grey, sandy, ROCK seams
- SHALE, grey
- SHALE, grey
- SANDSTONE and water
- SHALE, sandy
- ROCK
- SHALE, sandy and water
- SHALE, brown and grey
- SHALE, black and grey
- SHALE, sandy and hard bars
- SHALE, grey, sandy
- SHALE, grey

PART 1 — DOWNS GROUP
PART 2 — ROLLING DOWNS GROUP
PART 3 — ROLLING DOWNS GROUP

TO ACCOMPANY RECORD No 1963/103

PLATE 20

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

GREAT ARTESIAN BASIN, S.W. QUEENSLAND
EXPERIMENTAL BORE LOGGING PROGRAMME 1960

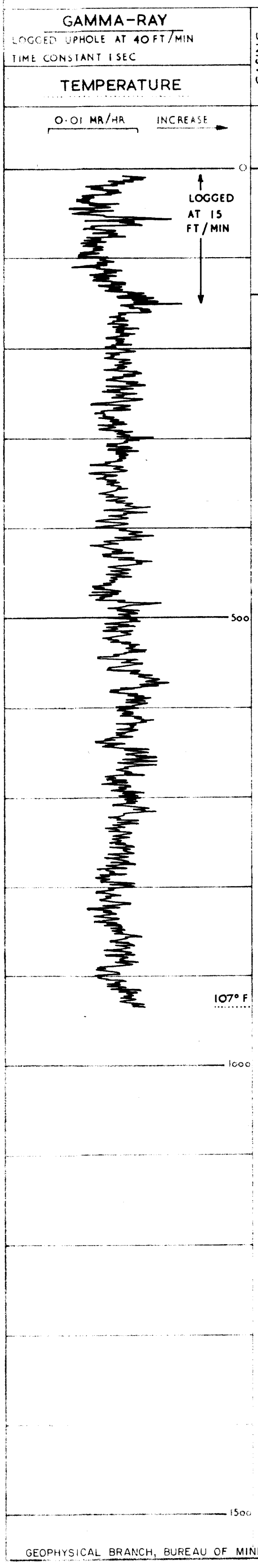
LULA

I.W.S.C. REGISTERED No.: 12138
OWNER: PRIVATE
DRILLED: 1952
DEPTH, DRILLER: 1067'
BORE CONDITION: PUMPED, WATER
LOGGING EQUIPMENT: FAILING LOGMASTER

COORDINATES: 26°00'S, 6·7 MILES NORTH
142°30'E, 28·0 MILES EAST
ELEVATION: GROUND 520'
REF. LEVEL 523'
LOGGED BY: E.E. JESSON &
A. RADESKI
LITHOLOGY BY: DRILLER

RUN	DUMMY	TEMPERATURE	GAMMA-RAY	
DATE	5-11-60		5-11-60	
FIRST READING	0'		931'	
LAST READING	943'		8'	
FOOTAGE LOGGED	943		923	

REMARKS DEPTHS CORRECTED FOR CABLE STRETCH.
SUB-ARTESIAN BORE.
24



CASING: 5 & 4-IN.; 5-IN.

STRATIGRAPHY / LITHOLOGY:
- CONGLOMERATE
- CLAY ROCK
- CLAY, yellow
- ROCK, red
- PUG, white
- PUG, blue
- SHALE, grey, blue-green, sandy with MUDSTONE
- ROCK
- SHALE, grey, green, sandy

DOWNS GROUP — ROLLING

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