

1963/165

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:



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1963/165

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011088

COMPILATION AND REVIEW OF THE GEOPHYSICS OF THE
BONAPARTE GULF BASIN.

GRAVITY COMPILATION

(Volume IV, Part 1)


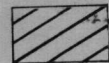

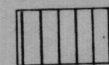
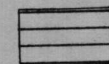
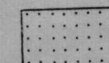
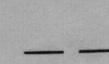
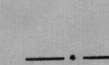

by

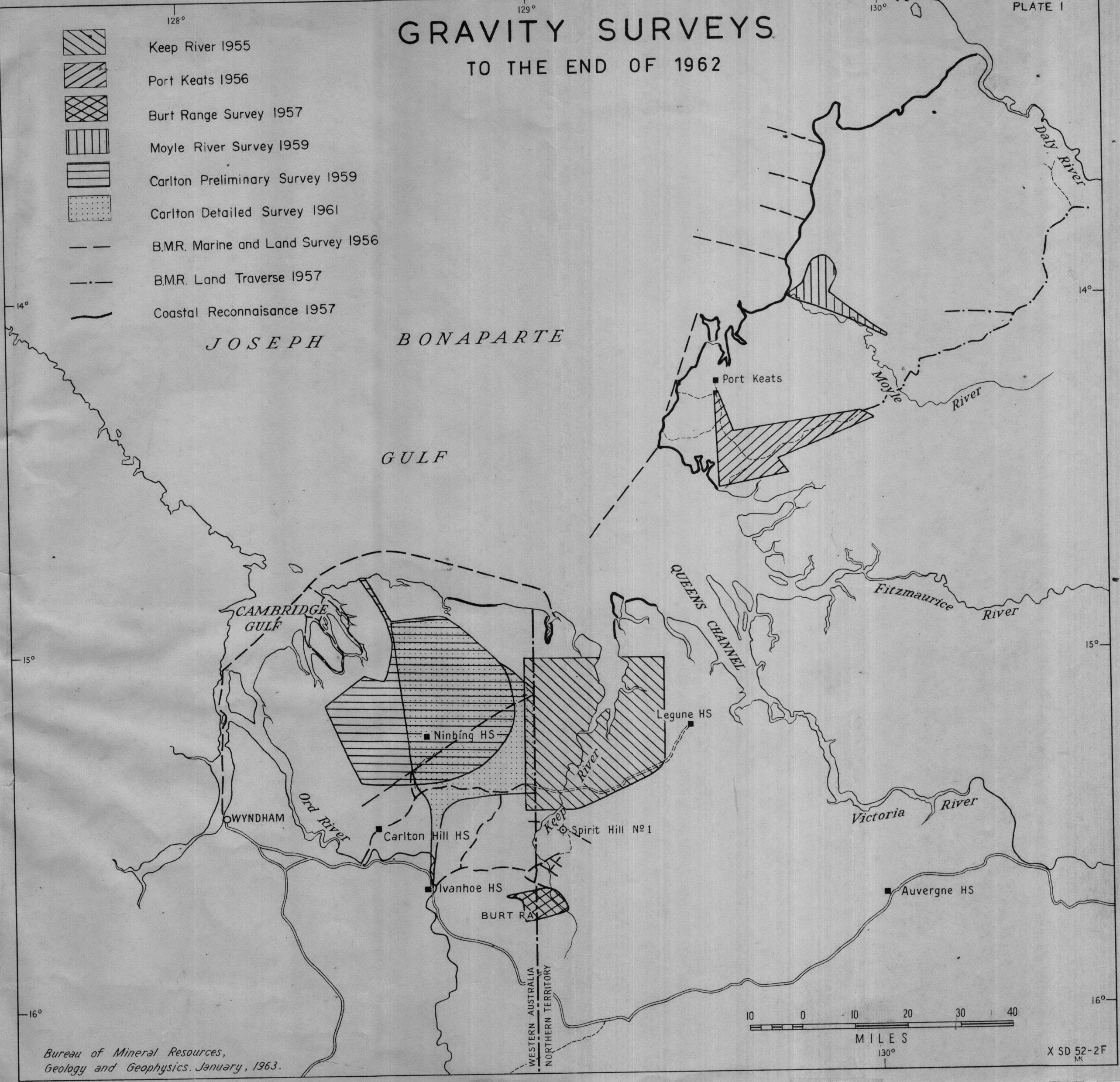
A.L. Bigg-Wither

PART 8
of 11

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

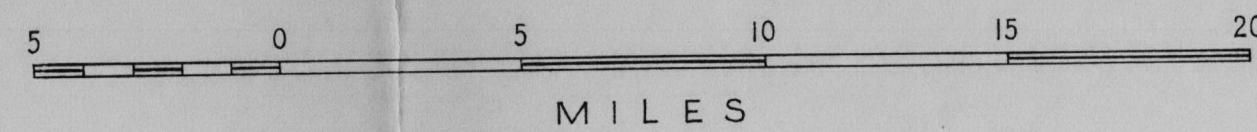
GRAVITY SURVEYS TO THE END OF 1962

-  Keep River 1955
-  Port Keats 1956
-  Burt Range Survey 1957
-  Moyle River Survey 1959
-  Carlton Preliminary Survey 1959
-  Carlton Detailed Survey 1961
-  B.M.R. Marine and Land Survey 1956
-  B.M.R. Land Traverse 1957
-  Coastal Reconnaissance 1957



BONAPARTE GULF BASIN

BOUGUER GRAVITY ANOMALIES



- | | | | | | |
|--|---------------------|--|-----------------------------|--|-------------------------------|
| | Built-up area | | River or creek | | Isogal interval - 5 milligals |
| | Homestead | | Hill feature | | Low anomaly |
| | Highway | | Swamp | | High anomaly |
| | Secondary road | | Mine | | |
| | Minor road or track | | Aerodrome or landing ground | | |

Data sources shown on Fig. 12.

Bouguer anomalies are based on observed gravity values at B.M.R. pendulum station:
No 30 Wyndham 978,415.9 milligals

For the calculation of Bouguer anomalies 2.1 g/cm^3 has been adopted as an average rock density.
Water density for underwater gravity reductions: 1.03 g/cm^3

Elevation control by Department of Interior

Projection: Transverse Mercator, Australia Series, Zones 3 and 4
Control and detail after National Mapping 1960 provisional
4-mile planimetric map

Bureau of Mineral Resources, Geology and Geophysics, February, 1963.
To accompany Record N° 1965/165

X SD 52-10

J O S E P H

B O N A P A R T E

G U L F

T I M O R S E A

A N S O N B A Y

H y l a n d B a y

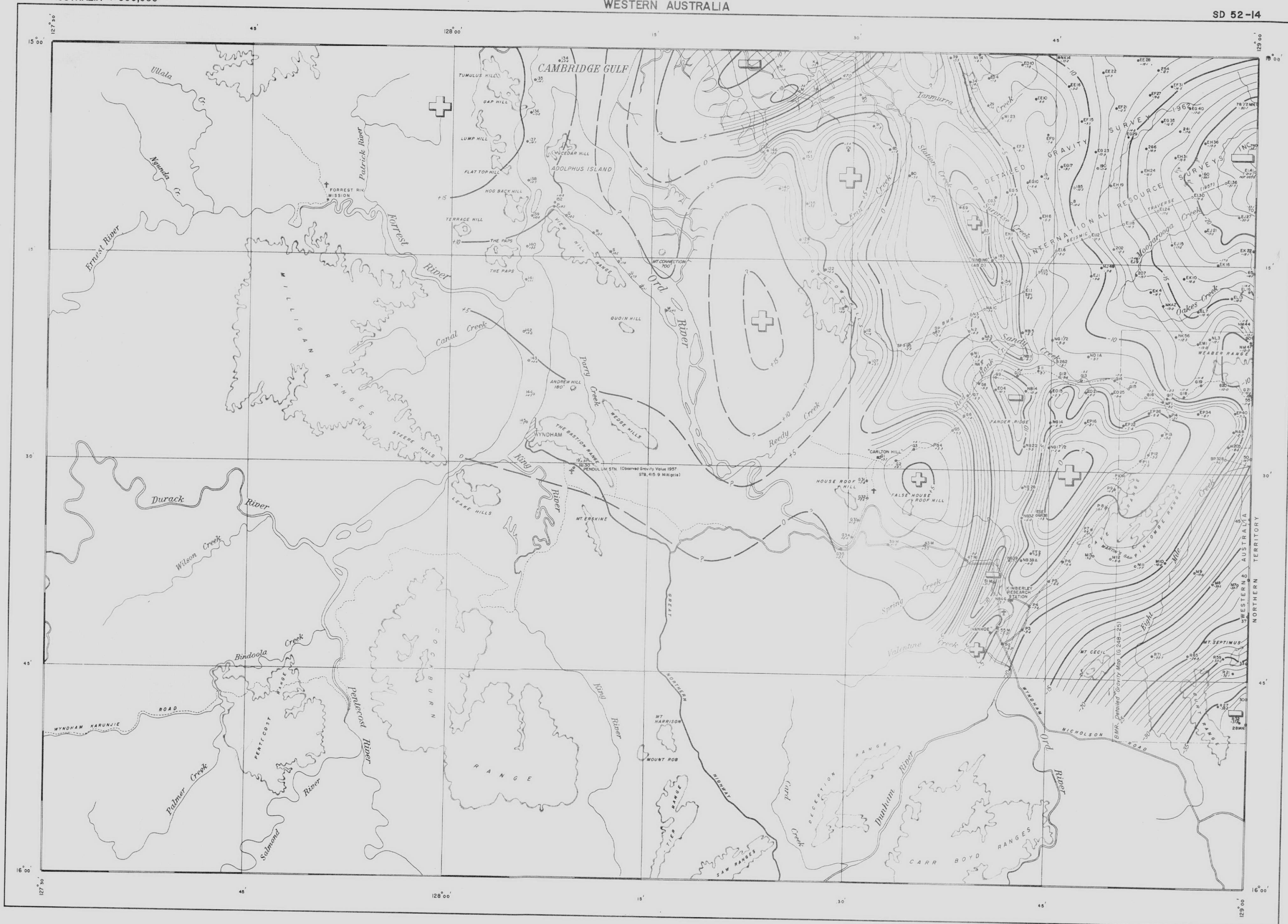
M o y l e



AUSTRALIA 1:500,000

CAMBRIDGE GULF WESTERN AUSTRALIA

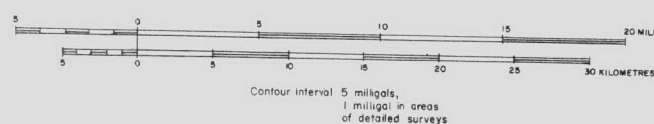
SD 52-14



INDEX		
DRYSDALE	MEDUSA BANKS	PORT KEATS
ASHTON	CAMBRIDGE GULF	AUVERGNE
MOUNT ELIZABETH	LISSADELL	WATERLOO

Projection: Transverse Mercator, Australia Series, Zones 3 and 4
Control and detail after: Royal Australian Survey Corps 1959
1:250,000 topographic map
Elevation datum: L.W.M. Wyndham + 78.6 ft. (Mines Administration Datum)
Reliability: planimetric - good
gravity - gravity reconnaissance

BOUGUER ANOMALIES



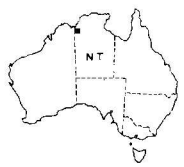
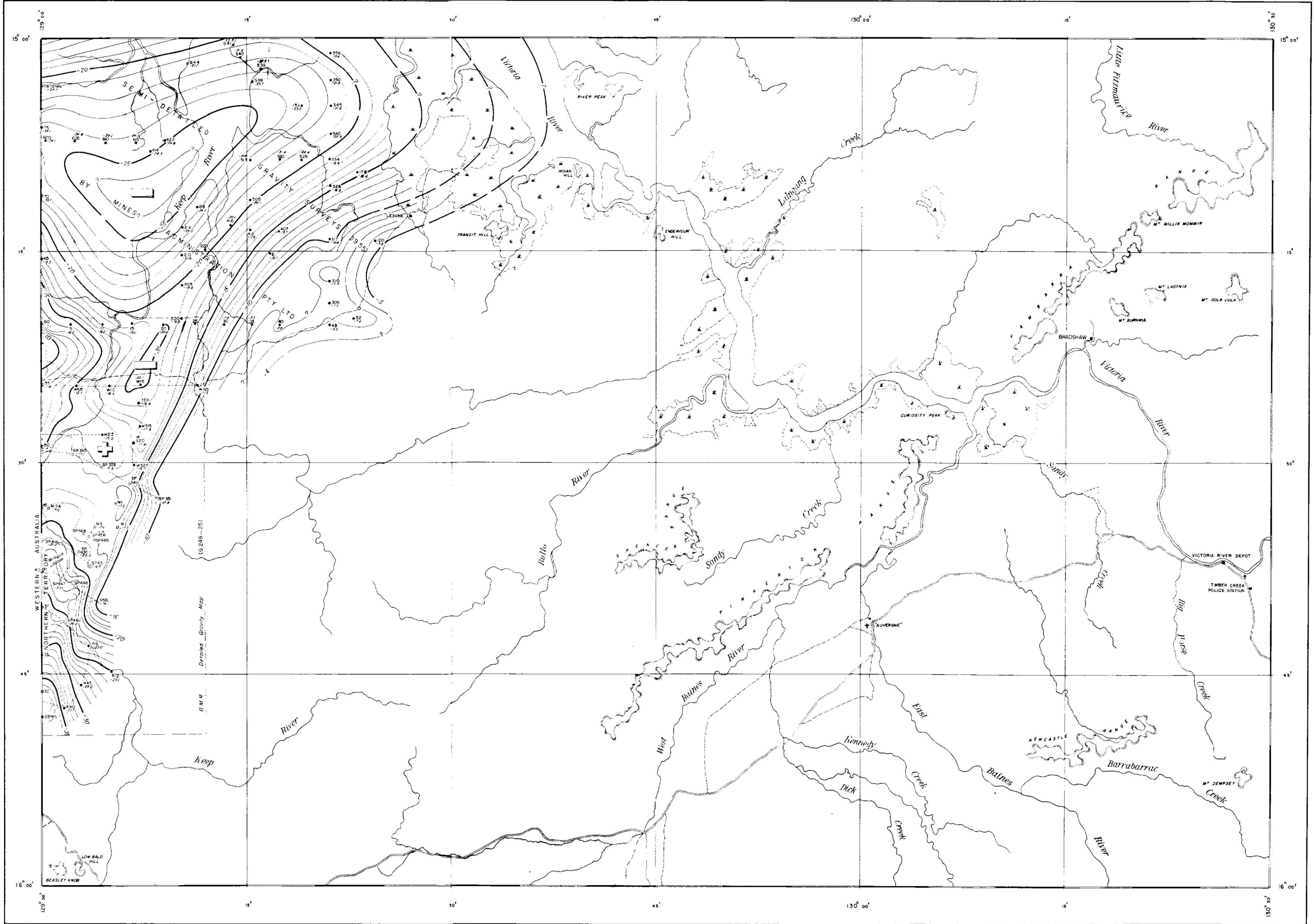
- TOPOGRAPHY**
- Build-up area
 - Homestead
 - Railway
 - Drainage
 - Principal road
 - Minor road
 - Track
 - Horizontal control point
 - Major
 - Minor
 - Centrifuge
 - 40 ft. Mile post on State boundary
- GRAVITY**
- BMR
 - Private company
 - Gravity station
 - 1/26 Bouguer anomaly (milligals)
 - 704' Elevation (feet)
 - Isogals
 - High anomaly
 - Low anomaly

Bouguer anomalies are based on the observed gravity values at BMR pendulum station:
N° 30 Wyndham 978,415.9 milligals
For the calculation of Bouguer anomalies 2.1 g/cm³ has been adopted as an average rock density
Water density for underwater gravity reductions: 1.03 g/cm³
Geophysical field data from BMR ground and underwater gravity surveys (1957, 1959), Mines Administration Pty Ltd. (1955) and International Resource Surveys Inc. USA (1962)
Elevation control by Department of the Interior levelling.

AUSTRALIA 1:500,000

AUVERGNE NORTHERN TERRITORY

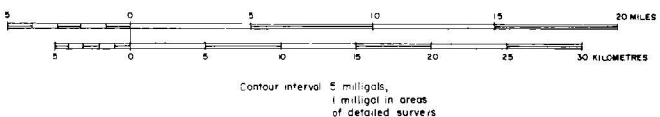
SD 52-15



INDEX			
MEDUSA BANKS	PORT KEATS	PERSUSSION RIVER	
CAMBRIDGE GULF	AUVERGNE	DELANERE	
LISSADELL	WATERLOO	VICTORIA RIVER DOWNS	

Projection: Transverse Mercator, Australian Series, Zone 4
Control and detail after National Mapping 1960 provisional 4-mile planimetric map
Elevation datum: L.W.M. Wyndham + 78.6 ft (Mines Administration Datum)
Reliability: planimetric—good
gravity—gravity reconnaissance

BOUGUER ANOMALIES



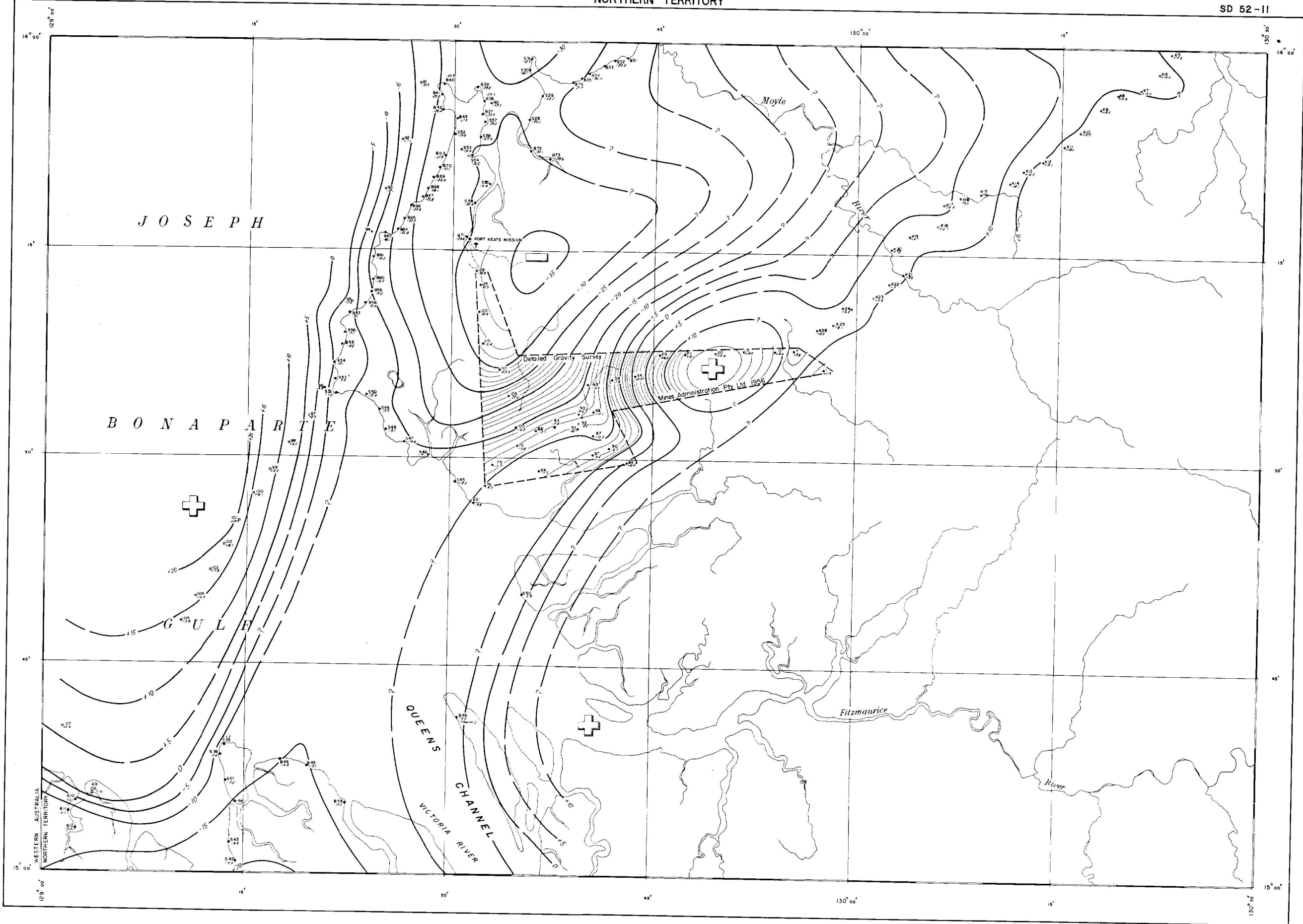
- TOPOGRAPHY**
- Built-up area
 - Homestead
 - Railway
 - Drainage
 - Principal road
 - Minor road
 - Track
 - Horizontal control point
 - major
 - minor
 - astrofix
 - Mile post on State boundary
- GRAVITY**
- BMR
 - Private company
 - Gravity station
 - Bouguer anomaly (milligals)
 - 204' Elevation (feet)
 - Isogals
 - High anomaly
 - Low anomaly

Bouguer anomalies are based on the observed gravity values at BMR pendulum station: NP 30 Wyndham 978,415.9 milligals
For the calculation of Bouguer anomalies 2.1 g/cm^3 has been adopted as an average rock density
Water density for underwater gravity reductions: 1.03 g/cm^3
Geophysical field data from BMR ground and underwater gravity surveys (1957, 1959) and Mines Administration Pty Ltd (1955)
Elevation control by Department of the Interior: levelling

AUSTRALIA 1:500,000

PORT KEATS NORTHERN TERRITORY

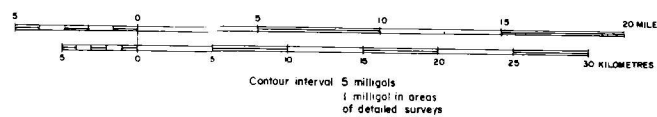
SD 52-11



INDEX			
CAPE SCOTT	PINE CREEK		
MEDUSA BANKS	PORT KEATS	FERGUSON RIVER	
CAMBRIDGE GULF	AUVERGNE	DELMERE	

Projection: Transverse Mercator, Australia Series, Zone 4
Control and detail after National Mapping 960 provisional 4-mile planimetric map
Elevation datum: L.W.M. Wyndham + 78.6 ft. (Mines Administration Datum)
Reliability: planimetric - good
gravity - gravity reconnaissance

BOUGUER ANOMALIES



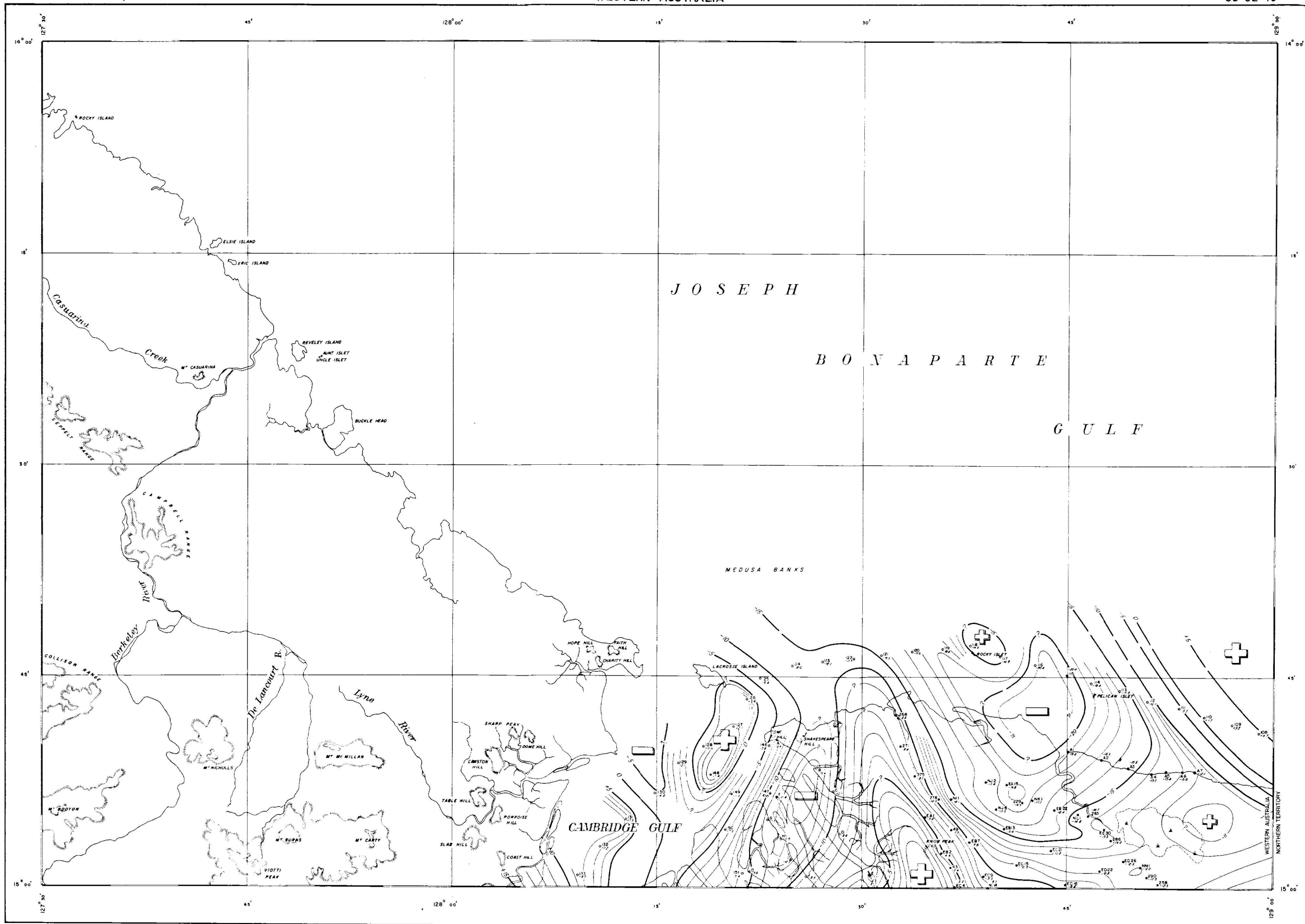
- TOPOGRAPHY**
- Built-up area
 - Homestead
 - Railway
 - Drainage
 - Principal road
 - Minor road
 - Track
 - Horizontal control point: major, minor, astralix
- GRAVITY**
- BMR Gravity station
 - Private company
 - Bouguer anomaly (milligals)
 - 204' Elevation (feet)
 - Isogals
 - High anomaly
 - Low anomaly

Bouguer anomalies are based on the observed gravity values at BMR pseudum station N° 30 Wyndham 978,415.9 milligals
For the calculation of Bouguer anomalies 2.1 g/cm³ has been adopted as an average rock density
Water density for underwater gravity reductions: 1.03 g/cm³
Geophysical field data from BMR ground and underwater gravity surveys (1957, 1953) and Mines Administration Pty Ltd (1956/1957)
Elevation control by Department of the Interior levelling

AUSTRALIA 1:500,000

MEDUSA BANKS WESTERN AUSTRALIA

SD 52-10



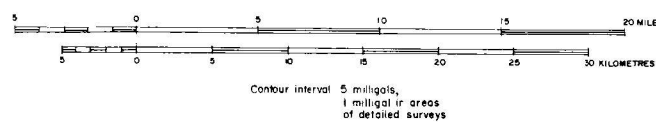
INDEX		
LONDON- DERBY	CAPE SCOTT	
DRYSDALE	MEDUSA BANKS	PORT KEATS
ASHTON	CAMBRIDGE GULF	AUVERGNE

Projection: Transverse Mercator, Australia Series, Zones 3 and 4
Control and detail after Royal Australian Survey Corps 1959
1:250,000 topographic map.

Elevation datum: L.W.M. Wyndham = 78.6 ft. (Mines
Administration Datum)

Reliability: planimetric - good
gravity - gravity reconnaissance

BOUGUER ANOMALIES



TOPOGRAPHY

- Built-up area
- Principal road
- Minor road
- Track
- Drainage
- △ Horizontal control point
- major
- minor
- astralix

GRAVITY

- BMR Gravity station
- Private company
- + Bouguer anomaly (milligals)
- 20' Elevation (feet)
- Isogals
- + 'High' anomaly
- 'Low' anomaly

Bouguer anomalies are based on the observed gravity values at BMR pendulum station.
NP 30 Wyndham 978,415.9 milligals

For the calculation of Bouguer anomalies 2.1 g/cm³ has been adopted as an average rock density.
Water density for underwater gravity reductions: 1.03 g/cm³

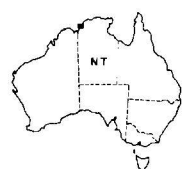
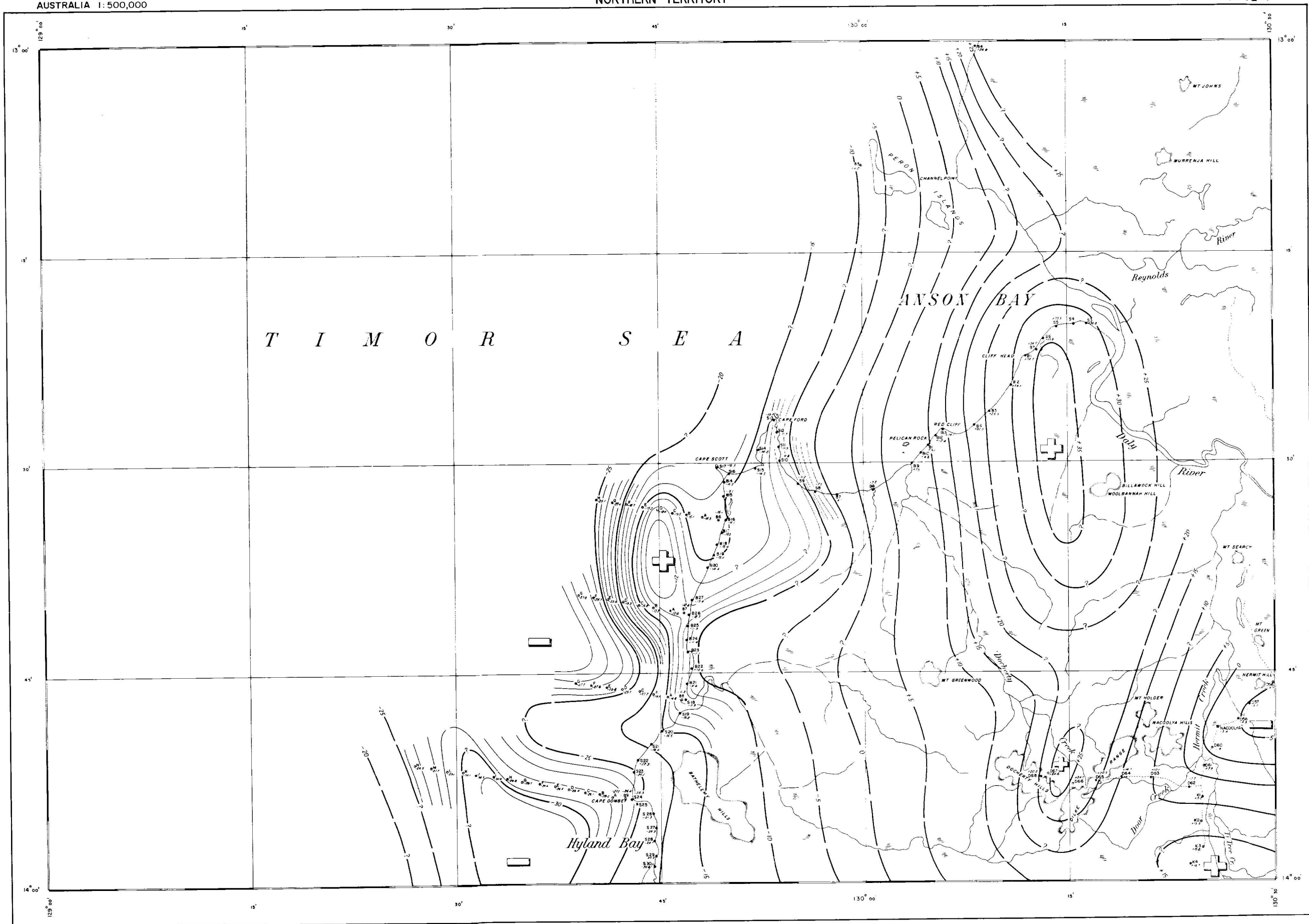
Geophysical field data from BMR ground and underwater gravity surveys (1959), Mines Administration Pty Ltd (1956, 1957) and International Resource Surveys Inc. U.S.A. (1962)

Elevation control by Department of the Interior levelling.

CAPE SCOTT NORTHERN TERRITORY

AUSTRALIA 1:500,000

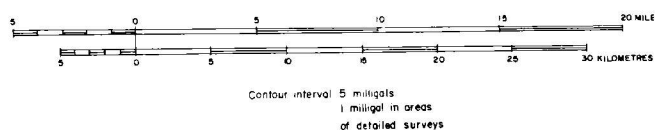
SD 52-7



INDEX			
POG BAY	DARWIN		
CAPE SCOTT	PINE CREEK		
MEDUSA BANKS	PORT KEATS	FERGUSON RIVER	

Projection: Transverse Mercator, Australia Series, Zone 4
Control and detail after National Mapping 1960 provisional 4-mile planimetric map
Elevation datum: L.W.M. Wyndham + 78.6 ft. (Mines Administration Datum)
Reliability: planimetric—good
gravity—gravity reconnaissance

BOUGUER ANOMALIES



- TOPOGRAPHY**
- Built-up area
 - Homestead
 - Railway
 - Drainage
 - Principal road
 - Minor road
 - Track
 - Horizontal control point: major, minor, astrofix
- GRAVITY**
- BMR Gravity station
 - Private company
 - Bouguer anomaly (milligals)
 - 20' Elevation (feet)
 - Isogals
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 - Low anomaly

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Water density for underwater gravity reductions: 1.03 g/cm³
Geophysical field data from BMR ground and underwater gravity surveys (1957, 1959) and Mines Administration Pty Ltd (1957)
Elevation control by Department of the Interior levelling

WESTERN AUSTRALIA
NORTHERN TERRITORY

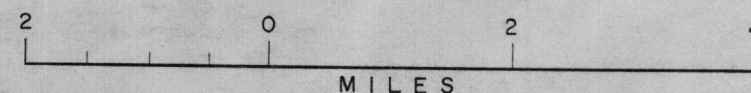
The positions of Keep River and
tributaries are approximate

WEABER RANGE

GRAVITY SURVEY
ANOMALY CONTOUR MAP

KEEP RIVER AREA

CONTOUR INTERVAL = 0.5 MILLIGALS



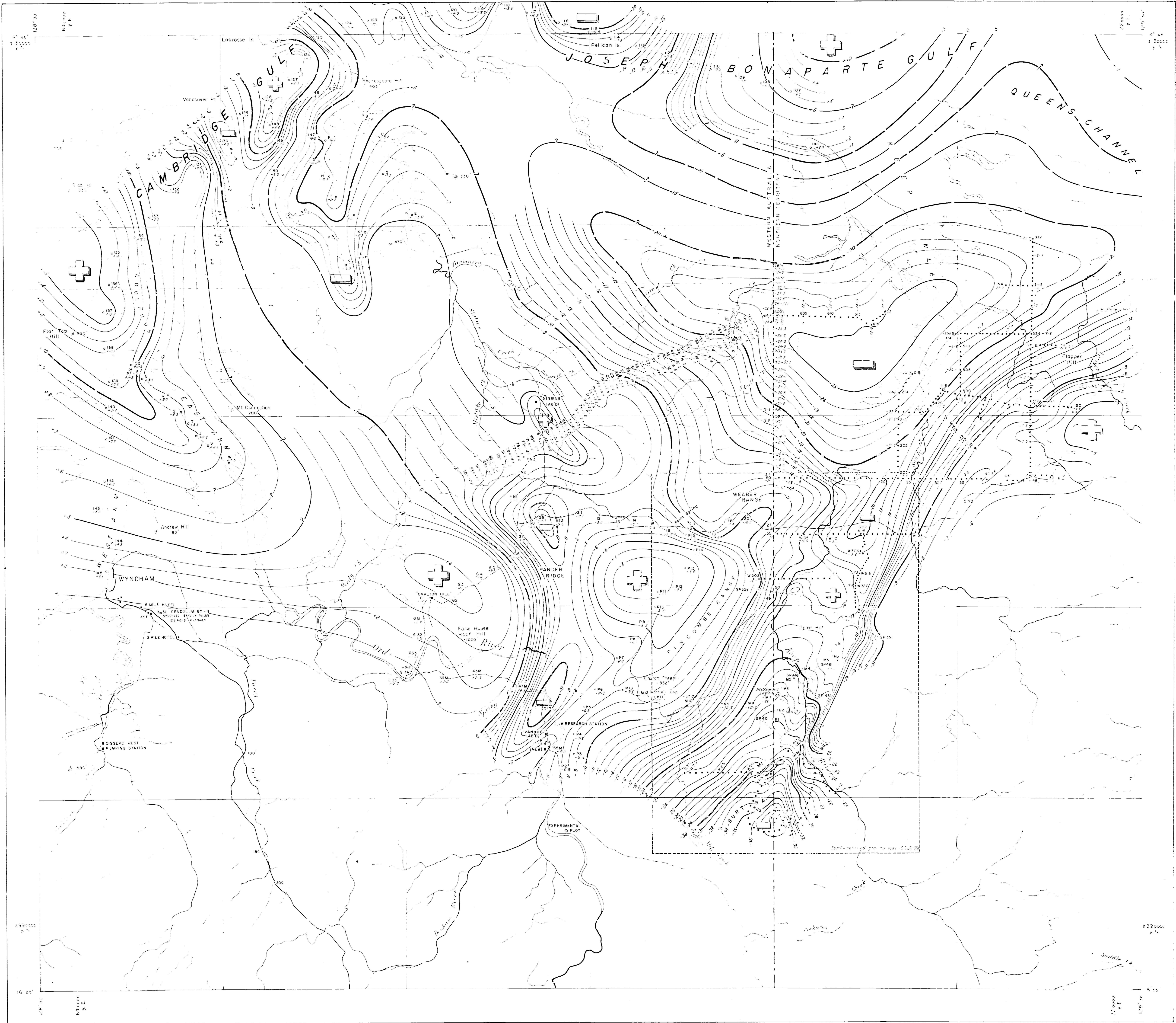
MINES ADMINISTRATION PTY. LTD.

BONAPARTE GULF BASIN (SPECIAL)
WESTERN AUSTRALIA AND NORTHERN TERRITORY

PLATE 211

AUSTRALIA 1:253,440

D52/10,11,14,15, ZONES 3 & 4



LOCATION

MAP DATA

RECONNAISSANCE GRAVITY SURVEY (1957-58)
BONAPARTE GULF BASIN, W.A./N.T.
BOUGUER ANOMALIES

LEGEND

TOPOGRAPHY

- WATERCOURSE
- HOMESTEAD
- GRAVITY
- ANOMALY ISOLINES IN MILLIGALS
- HIGH ANOMALY
- LOW ANOMALY

EXPLANATION

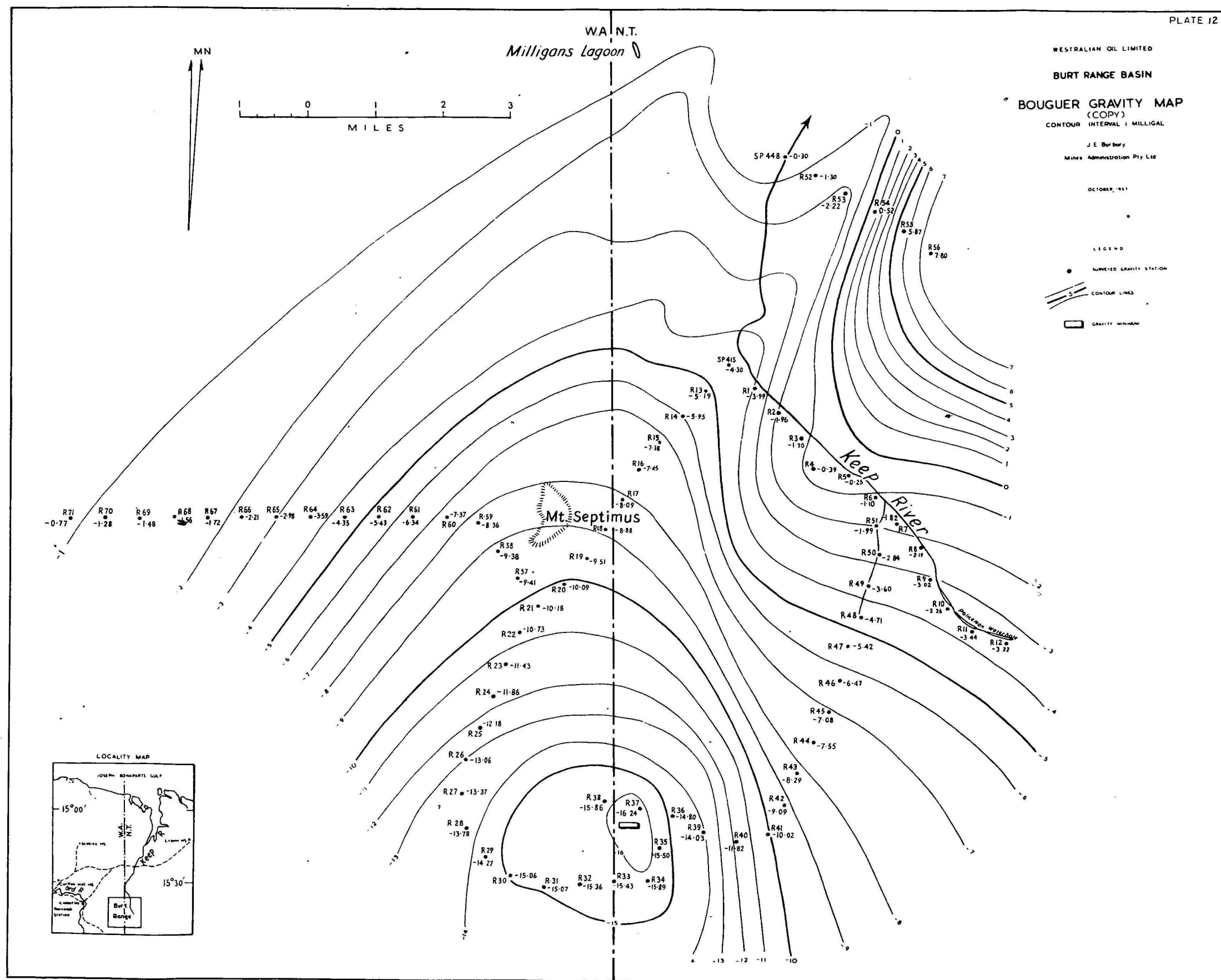
RELATIVE BOUGUER ANOMALIES ARE PLOTTED ON THE
CONTINUED GRAVITY VALUE OF 979.816 MGALS
AT B.M. 103 PENDULUM STATION WYNDHAM.
AN AVERAGE DENSITY OF 2.67 HAS BEEN ASSUMED FOR
ROCKS BETWEEN STATION SITE AND SEA LEVEL IN
REDUCTION OF GRAVITY VALUES.
ELEVATION DATUM - LWM WYNDHAM
(LWM WYNDHAM - 115.5 MGALS)
PLANIMETRIC DATA IS TAKEN FROM 1:253,440 SCALE
GEODESIC DATA
ON 1:253,440 SCALE OF PHOTOGRAPHIC GRAVITY
RECONNAISSANCE

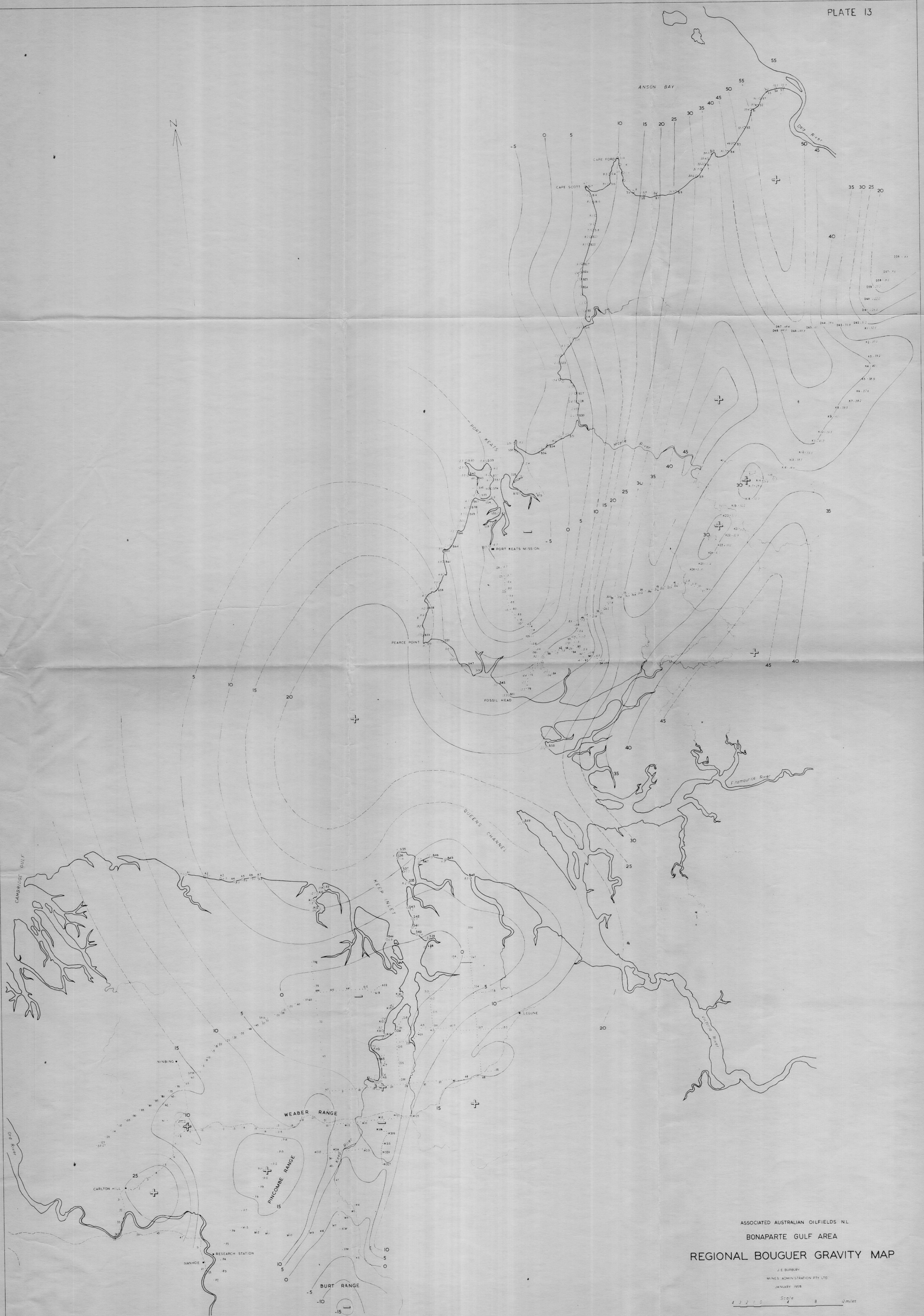
SCALE IN MILES



REFERENCE TO AUSTRALIAN NATIONAL 4 MILE MAP SERIES

C. Newman
GEOPHYSICIST





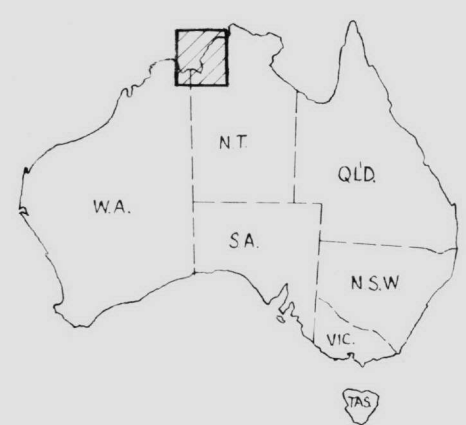
ASSOCIATED AUSTRALIAN OILFIELDS N.L.
BONAPARTE GULF AREA

REGIONAL BOUGUER GRAVITY MAP

J. E. BURBURY
MINES ADMINISTRATION PTY. LTD.
JANUARY 1958



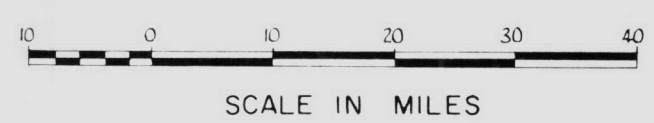
LOCATION



REGIONAL (UNDERWATER) GRAVITY SURVEY (1958)

DARWIN — WYNDHAM, N.T., W.A.

LOCATION OF GRAVITY STATIONS



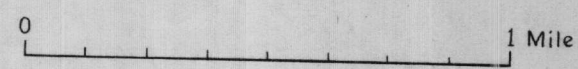
MAP DATA

MAP BASED ON ADMIRALTY CHART N°1047
AT THE MEAN SCALE 1:1,000,000
MERCATOR PROJECTION

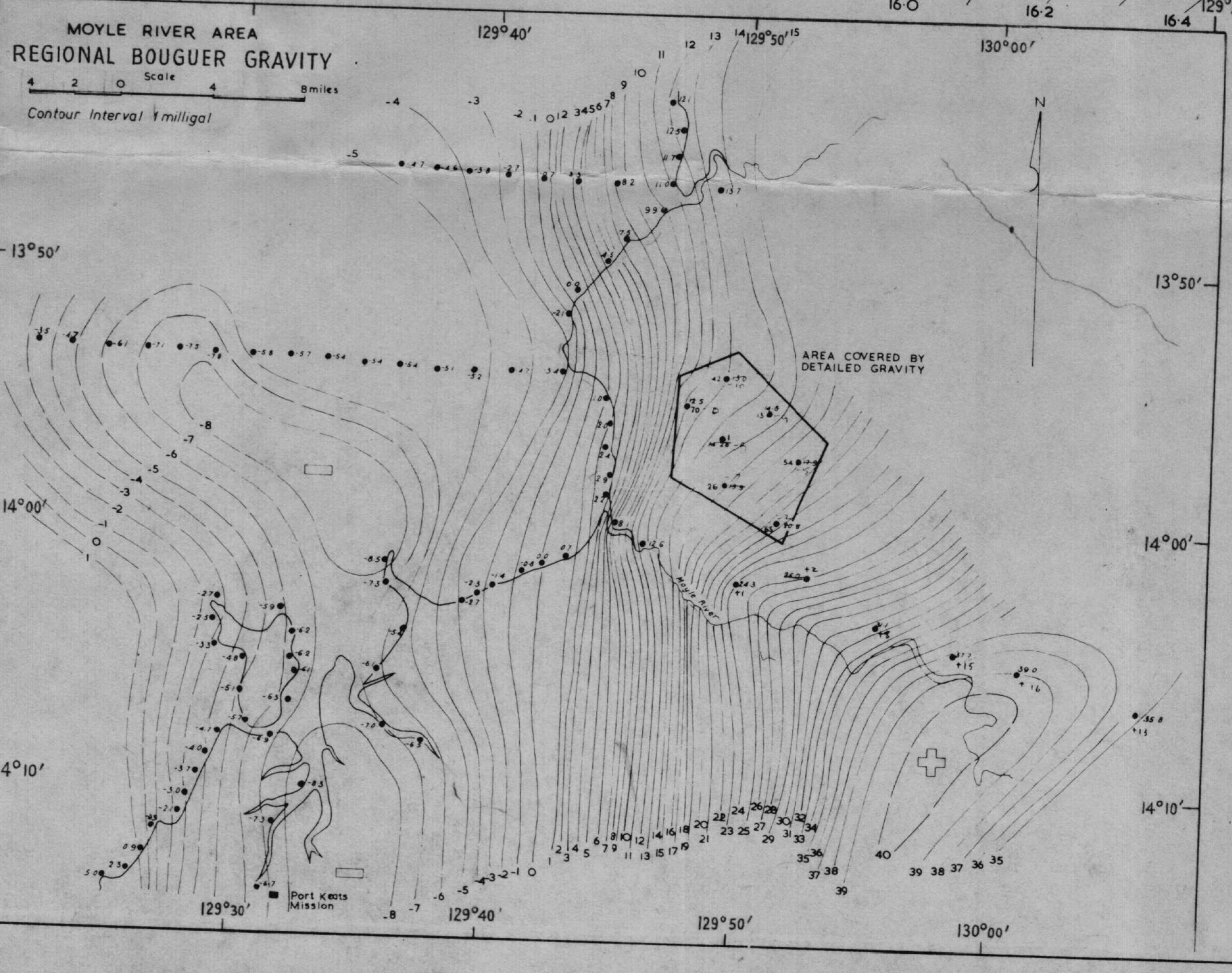
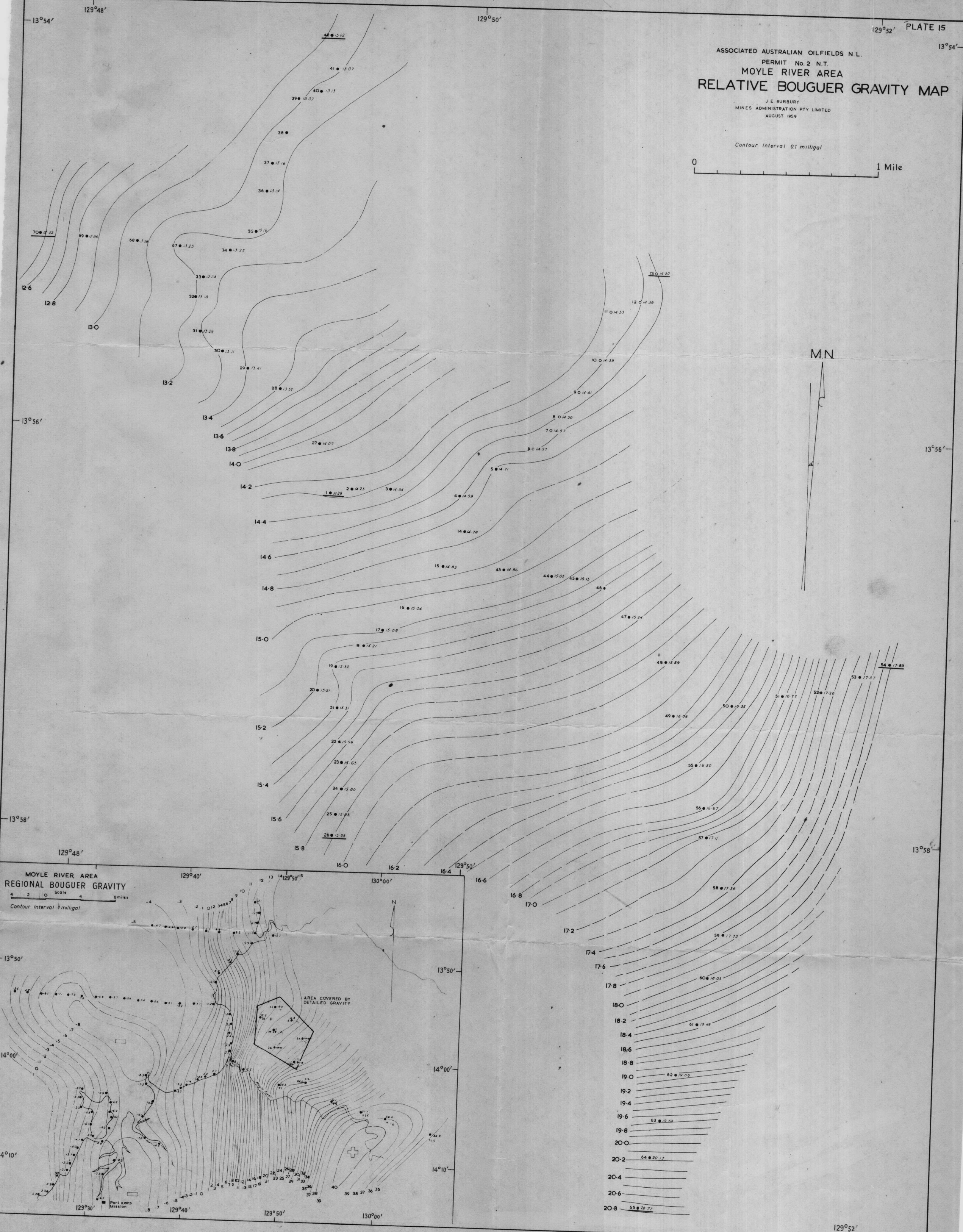
ASSOCIATED AUSTRALIAN OILFIELDS N.L.
PERMIT No. 2 N.T.
MOYLE RIVER AREA
RELATIVE BOUGUER GRAVITY MAP

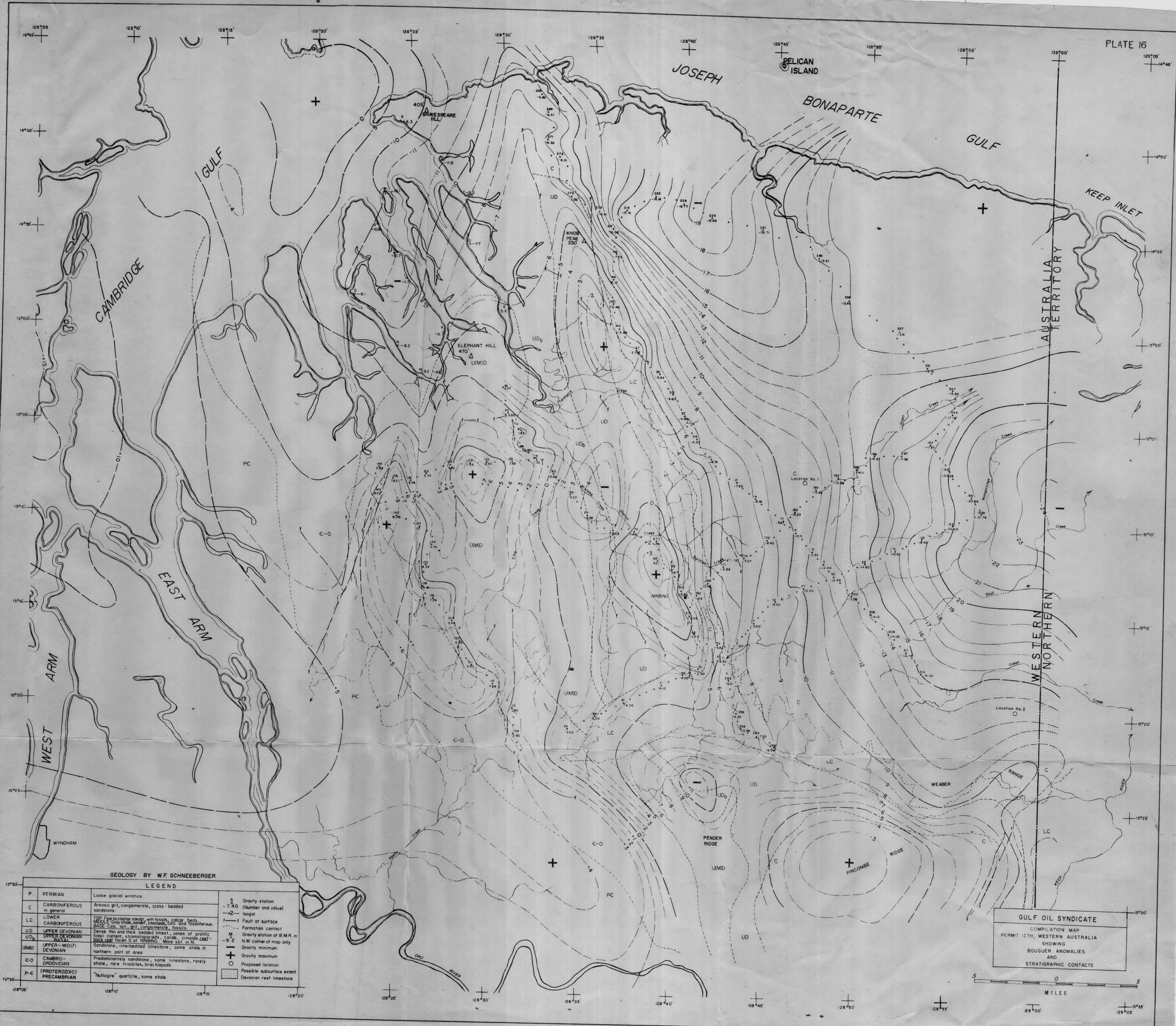
J. E. BURBURY
MINES ADMINISTRATION PTY. LIMITED
AUGUST 1959

Contour Interval 0.1 milligal



M.N.





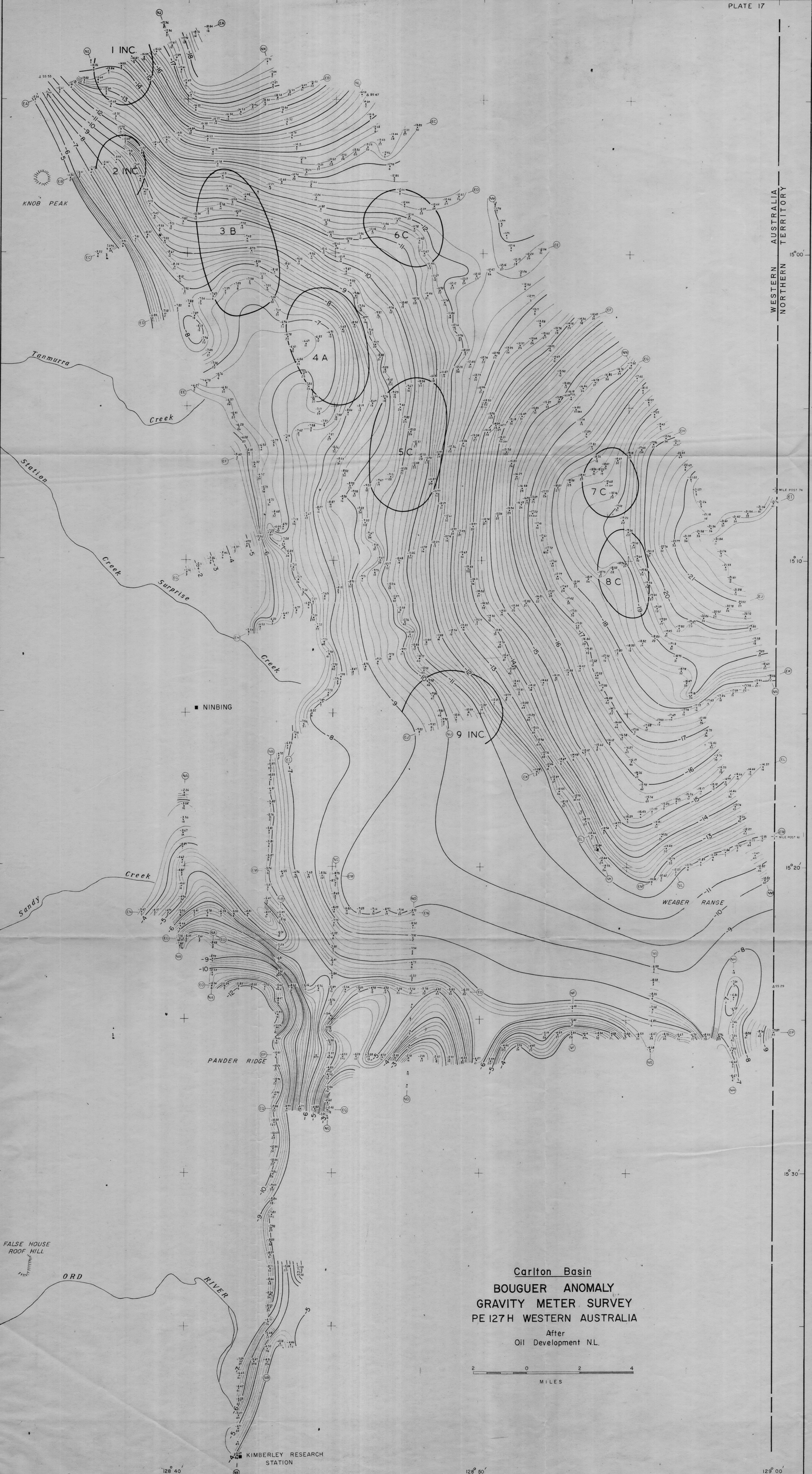
GEOLOGY BY W.F. SCHNEEBERGER

LEGEND

P	PERMIAN	Loose glacial erratics.	5	Gravity station (Number and value)
C	CARBONIFEROUS in general	Arkasic grit, conglomerate, cross-bedded sandstone.	-7.40	Isogal
LC	LOWER CARBONIFEROUS	TOP: Fine to coarse sandst. with fossils, calc. beds. MIDDLE: Gray shale, siltstone, interbeds, calc. and fossiliferous. BASE: Calc. sst. grit, conglomerate, fossils.	-2	Fault at surface
UD	UPPER DEVONIAN	Dense thin and thick bedded limest., zones of prolific fossil content, stromatolites, corals, crinoids, reef-back reef faces S. of NINING. More sst. in N.	—	Formation contact
UD _b	UPPER DEVONIAN BASAL	Sandstone, interbedded limestone, some shale in northern part of area.	M	Gravity station of B.M.R. in N.W. corner of map only
UMD	UPPER-MID(?) DEVONIAN	Predominantly sandstone, some limestone, rarely shale, rare trilobites, brachiopods.	-9.2	Gravity minimum
C-O	CAMBRO-ORDOVICIAN	"Nullagine" quartzite, some shale.	+	Gravity maximum
P-C	(PROTEROZOIC) PRECAMBRIAN		○	Proposed location
			□	Possible subsurface extent
			▨	Devonian reef limestone

GULF OIL SYNDICATE
COMPILATION MAP
PERMIT 127H, WESTERN AUSTRALIA
SHOWING
BOUGUER ANOMALIES
AND
STRATIGRAPHIC CONTACTS

5 0 5
MILES



Carlton Basin

BOUGUER ANOMALY
GRAVITY METER SURVEY
PE 127H WESTERN AUSTRALIA

After
Oil Development NL.

2 0 2 4
MILES

KIMBERLEY RESEARCH
STATION

FALSE HOUSE
ROOF HILL

ORD

RIVER

PANDER RIDGE

WEABER RANGE

Creek

Creek

Surprise

Creek

Station

Tanmurra

KNOB PEAK

1 INC.

2 INC.

3 B

4 A

5 C

6 C

7 C

8 C

9 INC.

