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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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PRELIMINARY REPORT

OF

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UNDERWATER GRAVITY SURVEY
KEREMA AREA - GULF OF PAPUA

by

L. W. WILLIAMS

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PRELIMINARY REPORT
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UNDERWATER GRAVITY SURVEY
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ABSTRACT.

Bouguer Anomaly values have been listed for gravity stations read in the Gulf of Papua during a survey in March and April, 1959.

INTRODUCTION.

Mines Administration Pty. Ltd. requested that the Bureau of Mineral Resources carry out underwater gravity readings along several traverses off the coast of Papua.

Readings were taken along three traverses in May, 1958, but unfavourable weather prevented the completion of the survey at that time.

In March, 1959, the equipment was sent back to the area and between 27th. March and 1st. April readings were taken along four more traverses to complete the survey.

FIELD WORK.

Because of instrumental difficulties, this survey was not tied to the previous work. The Bouguer anomalies given are based on values supplied by Mines Administration Pty. Ltd. for stations at Kerema and Kukipi.

Stations were established at 2-mile intervals along the traverses, and their locations were determined by horizontal sextant, when possible, or by dead reckoning.

The drift of the gravimeter was controlled by repeating readings at a base station.

The results have been reduced to Mean Sea Level using an average rock density of 1.9 gm/cm^3 , and a density of 1.03 gm/cm^3 for sea water.

RESULTS.

The positions of the stations and traverses are shown on Plate 1.

South-west from Kerema Bay on traverse 1, the Bouguer anomaly values decrease sharply for the first 4 miles and then rise steadily.

Along traverse 2 the values increase to the south-east to a point approximately south of Two Tree Hill and then decrease to the intersection with the third traverse.

Traverses 3 and 4, normal to the coast at Karova Creek and Kukipi respectively, both show steady rises in Bouguer anomaly going away from the coast.

Principal facts for the gravity stations are listed in the attached table.

GRAVITY SURVEY

Station.	Latitude.	Longitude.	Depth Feet.	Observed Gravity	Normal Gravity.	Free Air Correction	Free Air Anomaly	Bouguer Correction	Terrain Corr.	Bouguer Anomaly
				978	978	-		+		
Kukipi	8° 11.8'	146° 07.9'	11.6	114.56	153.70	0.78	-39.92	0.13	-	-39.8
Kerema	7° 58.2'	145° 47.1'	10.3	143.05	147.90	0.70	-5.55	0.11	-	- 5.4
1K1	8° 00.5'	42.4'	40.4	142.58	148.87	2.74	-9.03	0.45	-	- 8.6
1K2	02.7'	41.8'	57.8	133.73	149.81	3.92	-20.0	0.64	-	-19.4
1K3	04.6'	41.2'	72.0	141.97	150.63	4.88	-13.54	0.80	-	-12.7
1K4	06.5'	40.5'	95.7	149.10	151.43	6.49	- 8.82	1.06	-	- 7.8
1K5	08.4'	40.5'	113.5	151.98	152.25	7.69	- 7.96	1.26	-	- 6.7
1K6	10.3'	40.5'	120.9	154.93	153.06	8.19	- 6.32	1.34	-	- 5.0
2K1	03.6'	42.5'	64.9	141.08	150.20	4.40	-13.52	0.72	-	-12.8
2K2	04.5'	44.6'	71.2	144.60	150.58	4.83	-10.81	0.79	-	-10.0
2K3	05.4'	46.7'	76.3	148.41	150.97	5.17	- 7.73	0.85	-	- 6.9
2K4	06.2'	48.8'	78.2	149.92	151.30	5.30	- 6.68	0.87	-	- 5.8
2K5	07.2'	50.9'	75.2	150.35	151.73	5.10	- 6.48	0.83	-	- 5.6
2K6	07.9'	53.0'	75.1	144.45	152.03	5.09	-12.67	0.83	-	-11.8
2K7	08.7'	55.0'	77.5	140.27	152.38	5.25	-17.36	0.86	-	-16.5
3K2	06.5'	55.8'	53.0	137.10	151.43	3.59	-17.92	0.59	-	-17.3
3K1	04.7'	56.4'	38.5	134.00	150.67	2.61	-19.28	0.43	-	-18.8

Station.	Latitude.	Longitude.	Depth Feet.	Observed Gravity.	Normal Gravity.	Free Air Correction	Free Air Anomaly	Bouguer Correction	Terrain Corr.	Bouguer Anomaly
				978	978	-		+		
3K3	8°10.6'	145°54.9'	105.3	143.70	153.19	7.14	-16.63	1.17	-	-15.5
3K4	12.3'	53.8'	121.5	148.61	153.92	8.24	-13.57	1.35	-	-12.2
3K5	14.2'	53.4'	142.5	153.49	154.72	9.66	-10.89	1.58	-	-9.5
4K1	14.2'	146°06.0'	56.1	124.03	154.72	3.80	-34.49	0.62	-	-33.9
4K2	15.9'	04.7'	99.5	130.45	155.45	6.74	-31.74	1.10	-	-30.6
4K3	17.7'	03.3'	129.8	134.83	156.22	8.80	-30.19	1.44	-	-28.8
4K4	19.2'	01.9'	162.2	141.68	156.86	10.99	-26.17	1.80	-	-24.4
4K5	21.1'	00.5'	205.5	148.72	157.67	13.93	-22.88	2.28	-	-20.6
4K6	22.6'	145° 59.3'	263.4	156.99	158.33	17.85	-19.19	2.92	-	-16.3

AREA: Gulf of Papua.

DATE OF SURVEY: 28.3.59 to 1.4.59.

METER: North American Underwater Meter.

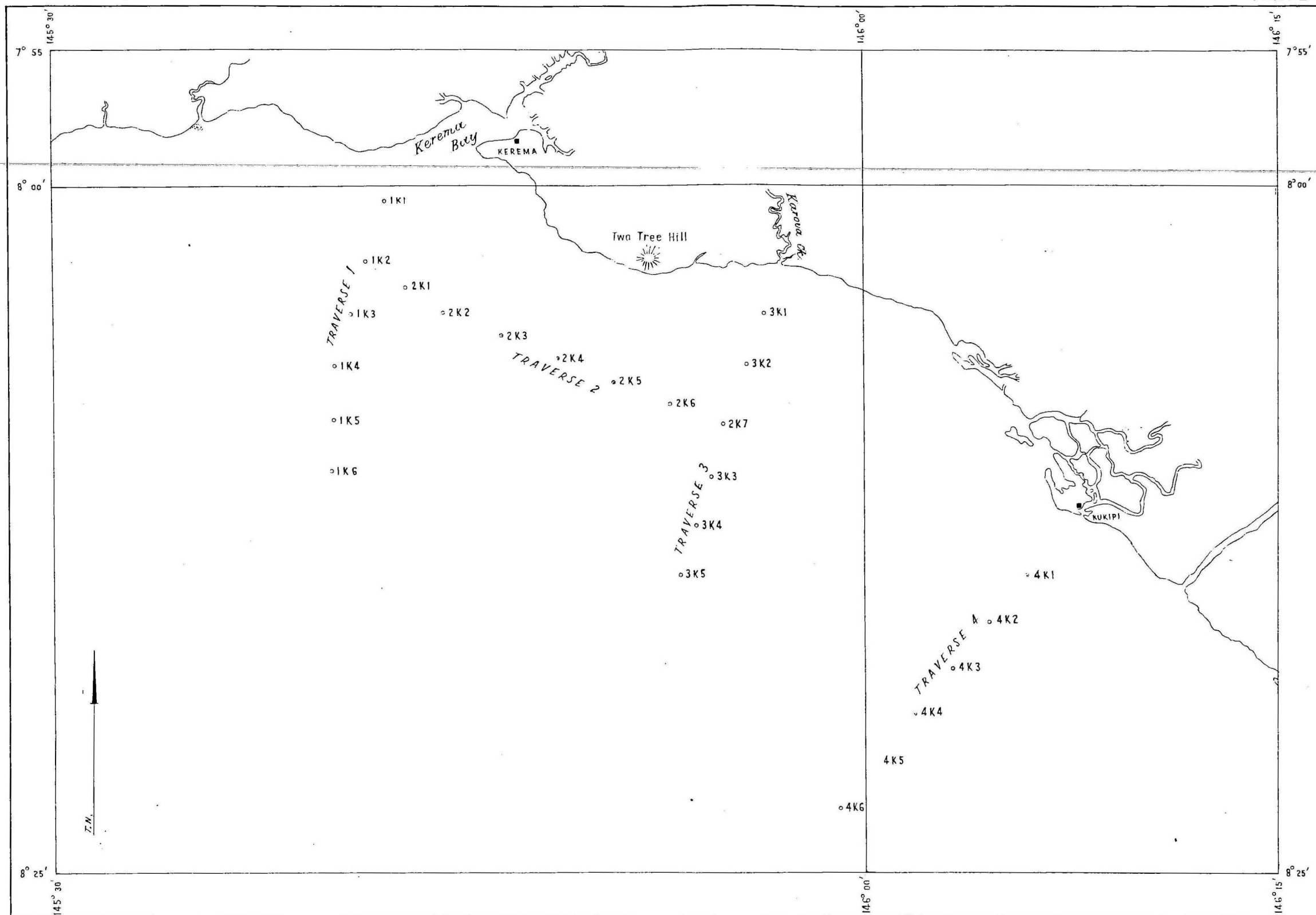
SENSITIVITY: 0.12665 mgsc.div.

DATUM: To fit company Bouguer anomaly values.

DENSITY FACTOR: 1.9; seawater 1.03.

MAP REFERENCE: Admiralty Chart No. 2120.

DATE: 29.4.59.



REFERENCE:
ADMIRALTY CHART 2120



UNDERWATER RECONNAISSANCE GRAVITY SURVEY (1959)
GULF OF PAPUA
GRAVITY STATIONS

GEOPHYSICAL SECTION, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS 6326-3
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