

1945/64
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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF SUPPLY AND SHIPPING.
MINERAL RESOURCES SURVEY.

REPORT No. 1945/64 .
(Plans numbered 1289 & 1290.)

RE NAVAL DEGAUSSING OPERATIONS.
REPORT ON MAGNETIC INVESTIGATIONS IN THE VICINITY
OF DARWIN OPEN MAGNETIC PROVING RANGE

By

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CANBERRA.

22nd August, 1945.

DEPARTMENT OF SUPPLY & SHIPPING,

Mineral Resources Survey Branch.

Report No. 1945/64.
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REPORT ON MAGNETIC INVESTIGATIONS IN THE VICINITY OF
DARWIN OPEN MAGNETIC PROVING RANGE.

The position of the Darwin Harbour Degaussing Range Hut and Coils is shown on the accompanying plan.

Magnetic observations were made in the vicinity of the Range for the purpose of determining the probable normal values of the vertical (Z) and horizontal (H) force components of the Earth's magnetic field in that part of the harbour which would be occupied by a ship in passing over the coils.

The equipment used for the survey consisted of -

- (1) Theodolite-magnetometer and Earth Inductor No. 18 (obtained from the Carnegie Institution of Washington) for the absolute determinations of the magnetic elements.
- (2) Vertical Force Variometer No. 15887 for measurement of variations in the vertical force component.
- (3) Horizontal Force Variometer No. 16165 for measurement of variation in the horizontal force component.

These instruments are designed for accurate determination of the magnetic elements on land.

The survey was made with the assistance of G.H. Rance, B.Sc.

The accompanying plan shows the position of all field stations where variometer observations were made to test the homogeneity of the magnetic field in the vicinity of the Range. The stations are represented by small circles and have their identity numbers alongside.

At these field stations, Z and H, variometer observations were made and the results referred to a base station near Mindil Beach where absolute values of Z and H were determined using the Theodolite Magnetometer and Earth Inductor. Particulars of these observations are given at the end of this report.

The variometer results are shown plotted as profiles along three lines, one along the foreshore and two from positions near the D.G. Hut to Cullen Beach. These profiles indicate the order of uniformity in Z and H along these lines. It will be noticed that at points 27 and 34 marked irregularities occur. These are due to artificial causes. Otherwise irregularities are present with a range of nearly 2 milligauss in Z and H and are chiefly due to rock magnetism.

Assuming average values for Z and H along the profiles and applying these values to the absolute value of the profile datum, determined by variometer connection with the Mindil Beach Station, values are obtained which may be regarded as approximate average values of Z and H for the area under survey and it is likely that these figures would be applicable to the position occupied by the D.G. detector coils.

Applying the above treatment, details are -

	Z Gauss.	H Gauss.
Mean of day absolute value at Mindil Beach Station. Measured on 25th June 1945.	.28860	.36085
Absolute value of profile datum based on variometer connections to Mindil Beach Station	.28660	.35820
Average variometer values relative to profile datum taken from profiles	+.00100	+.00300
Deduced average values for the area	.28760	.36120

The values recommended for use in the Degaussing operations are therefore -

Z = -288 milligauss
H = 361 "

Particulars of observations made at Darwin Mindil Beach Station.

Description of Station.

Near north end of Mindil Beach, on small open piece of ground 60 feet southerly from the road running parallel with the beach and about 300 feet westerly from the road leading to the north end of Mindil Beach from the main road, marked with a 4" square concrete block containing a .303 cartridge case embedded in the centre.

Observation Results.

Date.	Declination.		Horizontal Intensity.		Inclination.	
	L.M.T.	Value	L.M.T.	Value	L.M.T.	Value
25/6/45	9.46	3°46'.2E	10.04	.36087	9.32	-38°39.2
	10.51	44'.9	10.35	80	11.12	39.2
	13.34	45'.5	13.49	88	13.22	39.4
	14.36	47'.4	14.20	83	14.51	38.8

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Canberra.
22nd August, 1945.

DARWIN HARBOUR DEGAUSSING RANGE

To accompany Report No. 1945/64

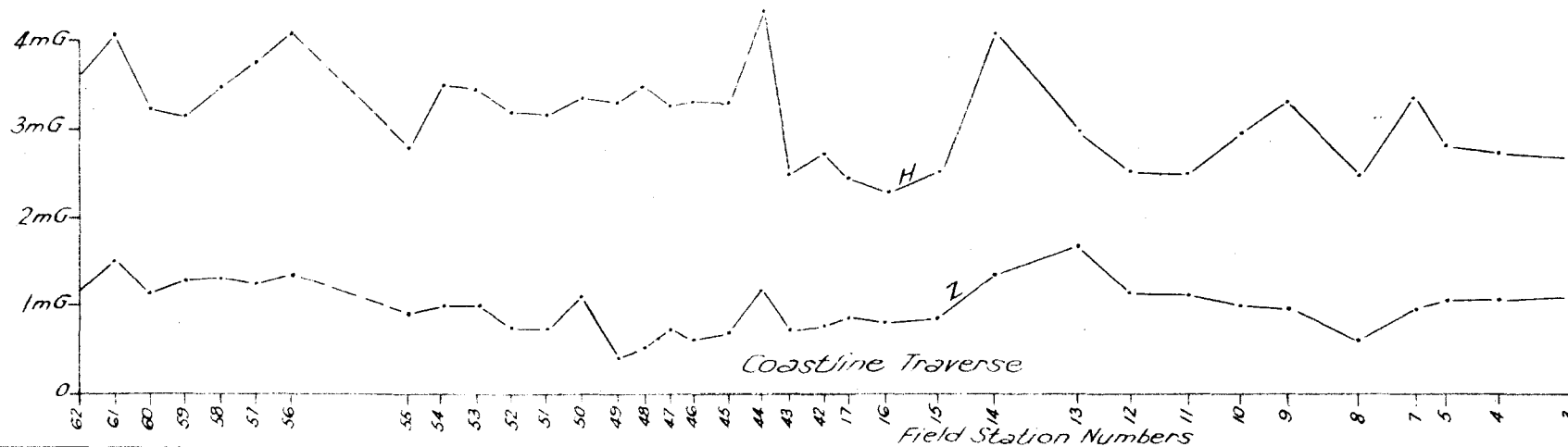
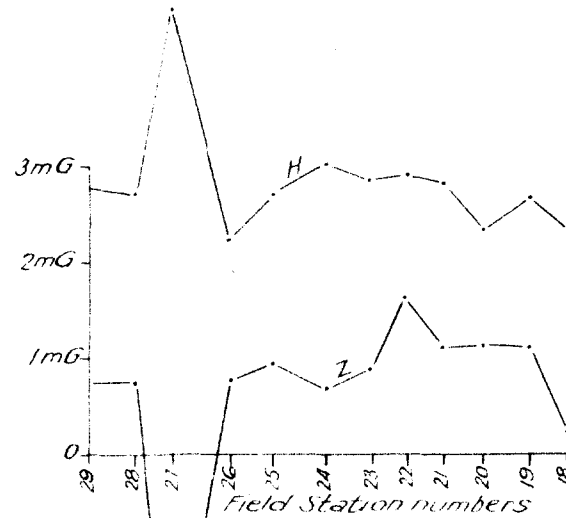
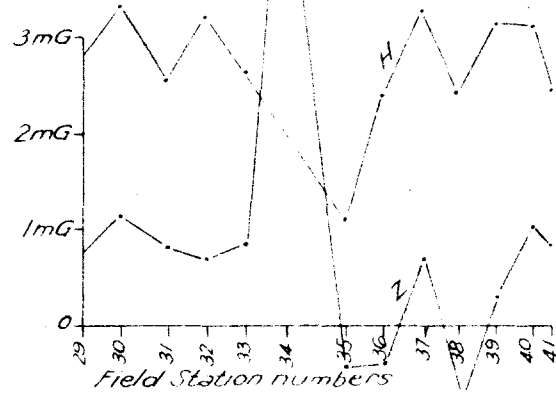
Profiles showing Z & H variations at field stations shown numbered on accompanying plan.

Scales: - Hor. 1" = 1000 ft.

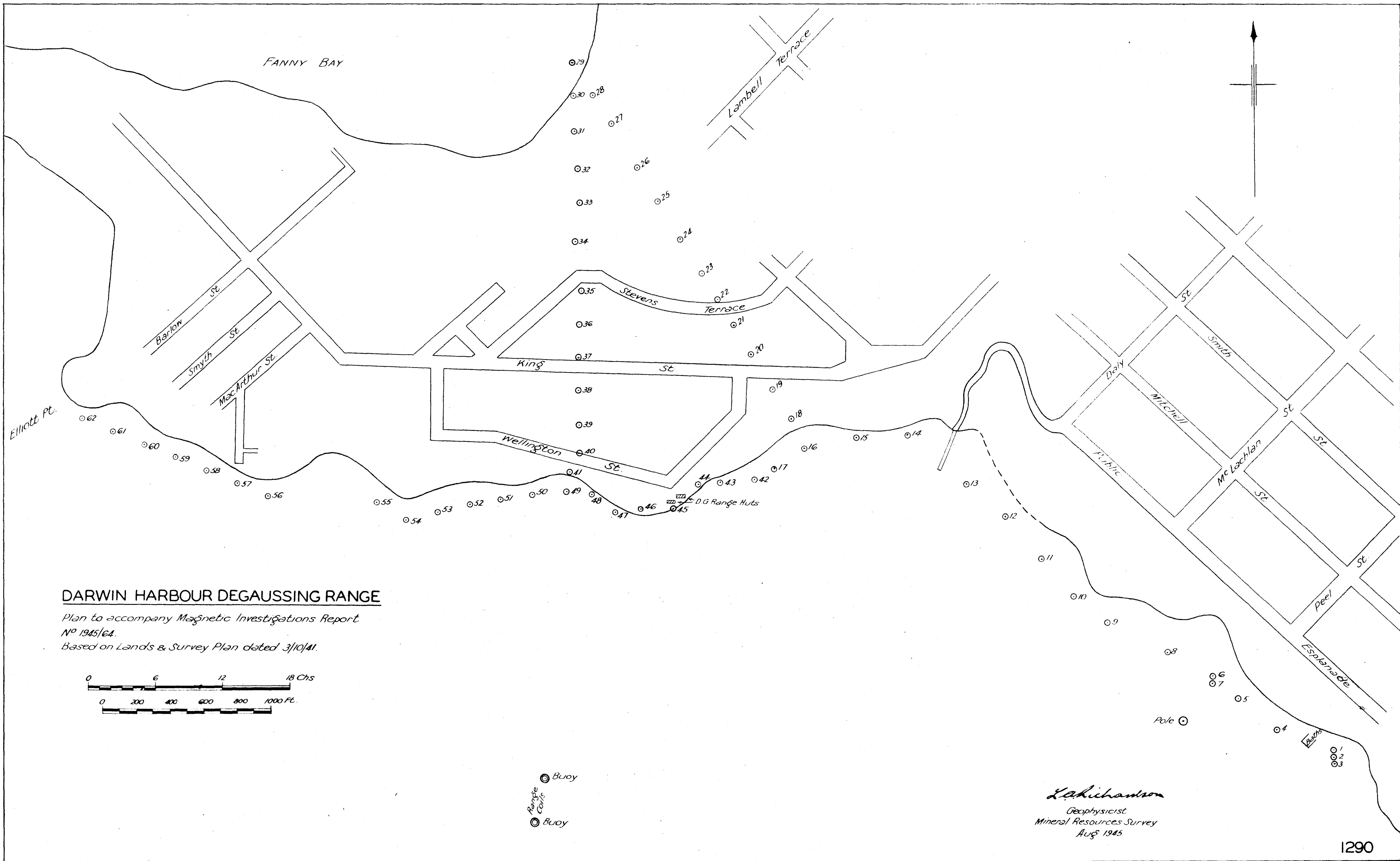
Vert. 1" = 2 Milligausses.

Absolute value of Profile Datum Line for Z = 286.6 Milligausses

" " " " " " " " H = 358.2 "

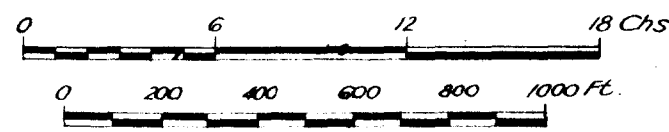


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 Aug. 1945



DARWIN HARBOUR DEGAUSSING RANGE

Plan to accompany Magnetic Investigations Report
 No 1945/64.
 Based on Lands & Survey Plan dated 3/10/41.



● Buoy
 Range Course
 ● Buoy

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