

Magnetic Anomalies Pt Davey - Bathurst
Harbour - S.W. Cape Area
L.E.E. 15/1/58
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REPORT ON EXAMINATION OF
MAGNETIC ANOMALIES
53/2, 53/4, 53/6, 75/2, 75/4, 98/2
Pt. Davey - Bathurst Harbour - S.W Cape

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January 15th

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Report on examination of Magnetic Anomalies

53/2, 53/4, 53/6, 73/2, 73/4, 93/2

Pt. Davey - Bathurst Harbour - S.W. Cape Area

INTRODUCTION

During November and December, 1957, the above serial anomalies were examined by a ground party. All anomalies are now known to be situated over black graphitic schists equivalent to the Long Bay and Bathurst Shales of Baker (U. of Tas. 1957). The schists at each anomaly site are pyritic and magnetite was found on 53/4 and 93/2. No economic mineralisation was seen on the surface.

Dates of Examination:

Commenced 26th Nov., 1957 and completed 20th Dec., 1957.

Party Leader:

S.B. Warne.

Personnel Employed:

J. White (Bushman)

C. Clayton (Master of small ship "Stormalong").

F. Edwardson (Crew Member).

Man Days in Field:

67

Location of Camps:

53/4 - "Stormalong", Payne Bay.

53/6 - "Stormalong", Payne Bay and also a temporary camp near origin peg.

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7S/2 - "Stormalong", Long Bay.

7S/4 - Temporary camp at origin peg.

9S/2 - "Stormalong", New Harbour.

Means of Transport:

By fishing vessel "Stormalong".

Means of Supply:

Initial supplies carried on ship and two perishable food drops by Southern Aero Club, one at Bond Bay and the other West of Swan Island, Bathurst Harbour.

General Topography of area:

High, sharp peaked barren quartzite ranges separated by wide valleys. A drowned river system forms the water of Pt. Davey, The Narrows and Bathurst Harbour.

Anomaly 5S/6 - Payne BayLocation:

On the western shore of Payne Bay in heavy timber marking the eastern boundary of Wild Horse Plain. The area is displayed on aerial photograph 33/893/131.

Geophysical Work:

Magnetometer readings were taken at 100 ft. intervals along traverse lines as shown on the plan. As with all the anomalies the medium auxiliary magnet with the South end upwards, in the 28 cm. position, was used. This arrangement allowed a wide range of scale readings to be taken on all anomalies without changing the magnet or its vertical distance from the instrument head. No corrections were made for diurnal variations, temperature etc. since the purpose of traverses were merely to locate the aerial

anomaly on the ground. The anomaly centre of 55/6 was found to coincide with that predicted by aerial work.

The scale readings when plotted show that traverse lines 14S, 10S and 08S cut a well defined magnetic high with an elongated ellipsoidal shape, striking at 342° .

Other traverses encountered smaller, less intense magnetic highs striking in approximately the same direction. A section along 08S shows the main anomaly high terminating in a sharp well defined peak at 03W with a pronounced low on its western edge followed by a smaller, rounded high.

A section along 00W illustrates another less intense magnetic high but with a well defined peak and an associated low.

Geochemical:

Samples numbers 155 to 170 were taken from 08S 05E to 08S 03 + 50W at 50 ft. intervals and numbers 171 to 180 from 10S 02 + 50E, again at 50 ft. intervals. The soil in general was peaty, tinged a bluish colour by black schist fragments. Samples were taken from 6" to 1' below the surface and in several instances outcrop was encountered at a shallow depth.

Geology:

The anomaly is situated on black graphitic schists which are well exposed along the shore line where they are cut by numerous irregular veinlets of quartz and contain pyrite along shears, in pods and as platy films and crusts on cleavage surfaces. The rocks have been tightly folded and sheared producing strikes from N-S to E-W and dips from 10° S to 50° E. However, the general strike of the schist appears to be 340° to 350° and cleavage dipping $40 - 60^{\circ}$ E.

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Pyrite appears to have been introduced along shears and passed into joints and along cleavage surfaces producing small lenses in favourable loci. Pyrite was found very occasionally in the quartz veinlets.

A lamprophyne dyke containing approx. 10% FeS and following the schist cleavage, was found at the low tide level at approximately 00N02E. (Spec. LE302).

A pit 2' deep was sunk near 08S03W and the black schist encountered showed minor pyrite stains.

A creek encountered on the 10S traverse line cut tightly folded black schist containing plates of pyrite on cleavage surfaces and as a dissemination throughout the rock at 01W (Spec. LE 303).

Of additional interest was a pyrite show in Bond Bay not far W of Carvers Point (See photograph 34/905/68) Here black schists (Spec. LE294) contain large quartz lenses, several feet in length, carrying an abundance of pyrite. The lenses follow the strike and have within them small xenoliths of schist (Spec. LE245). The pyritic quartz lenses outcrop for about 200' - 300' along the shore which runs at right angles to the strike of the schist at this point. A magnetometer reading of 50 scale division was recorded over the area. This occurrence is probably a southern extension of 5S/6.

Area of Mineralisation

Disseminated pyrite and quartz-pyrite mineralisation occurs within an area 6000' north-south and a minimum of 700' east-west. The percentage of pyrite over the area would be approx. 0.5%.

Anomaly 5B/4Location

On the W bank of Davey river, north of Settlement Point as shown on aerial photograph 33/892/131.

Geophysics

Traverses showed the aerial anomaly to be displaced approximately 800 ft. in an E-W direction in the case of the 5400 gamma contour line but the 5100 gamma contour appeared to coincide with ground work.

A section through traverse number 1 shows a sharp peak 825' from the origin peg and does not show any relation to the topography plotted on the same section. Readings tell immediately the high quartzite ridge was reached flanking the W side of the anomaly.

Traverses 2 & 5 show a peak immediately E of the high quartzite ridge again and the high no doubt corresponds with a large shear between quartzite and black schist, striking N-S.

At the 600' mark on traverse 5 the 5200 gamma contour was apparently reached which re-appeared again around the 4500' mark. The intervening highs between 2000 and 3000' do not appear to have been located by the aerial magnetometer.

Traverse No. 6 was done to check the southern extent of the anomaly and the reading showed that here the magnetic high was fading out. The anomaly peak was found to be 800 ft. E of the large N - W shear thus suggesting a general strike of approximately 330° for the anomaly.

Geochemistry

Geochemical samples were collected at 50 ft. intervals

along traverses 1, 2 & 3 (Nos. 114 to 152).

Soils were of two kinds; those directly derived from the weathering of the underlying rock and silts deposited by the river in flood times. Because of the two types, unsatisfactory or irregular results can be expected from spectrographic assays of samples taken nearer the river bank.

Black schist fragments were encountered in several holes denoting outcrop at shallow depth.

Sample No. 152 collected 120' from the river bank on traverse 2 was of a brown limonitic earth.

Geology

The anomaly is situated over black graphitic schists (LE288) faulted against quartzite (LE291) to the W and E (See LEE Q 13). No pyrite was found in the schists but weathered magnetite octahedra were found in a white, fine grained, sericite schist (LE 290) near the beginning of traverse 6.

The magnetic anomaly appears to arise at the junction of two shears near the W end of traverses 1 & 2 and thereafter strike southwards at 150° which is approximately the strike of the schist cleavage.

The small magnetic highs on traverse 5 are probably associated with shearing or bands of schists within quartzite.

Very little outcrop was seen in the area, except weathered rocks along the river banks. The schists appear to be fairly free of severe disturbance as in the case of SS/6, striking 150° - 160° and dipping steeply to the E or vertical.

Area of Mineralisation

Magnetite was only observed at one point approximately

2500' from the anomaly centre (825' mark on traverse No. 1).

Anomaly 7S/4

Location

Western shore of Nth. Bathurst Harbour, near Swan Island.

See aerial photograph 36/892/90.

Geophysics

The scale readings when plotted (See LEE Q 12) show a broad weak anomaly which is especially apparent on examining the section along 08S (See LEE Q 30). A very weak high was located with its centre at 04S 02W striking at 5° .

The 150 scale contour line indicates a change in strike to 20° at the N. end of the anomaly area.

A short traverse along the N. Shore of Swan Island indicates a stronger magnetic high located over the harbour.

Geochemistry

Samples 151 to 227 were collected along 00N, 04S and 06S.

However, the samples were collected from fluvio-glacial quartz gravels overlying the anomaly, the schist bedrock being at too great a depth to sample. As a consequence, the samples will probably not yield results having a bearing on the buried anomaly.

Geology

The anomaly is over black graphitic schists striking at approximately 5° and varying to 25° at the northern extremity. This strike co-incides with that of the anomaly strike. Dips vary from 80° W to vertical.

Small shears with up to a few feet displacement are infilled with pyrite and appear to have introduced pyrite

disseminations throughout the schist for at least small disturbances away from the shear. Extreme weathering of the rocks by the sea and air & peaty solutions made the tracing of mineralisation difficult.

Folding and faulting was in greater evidence at the northern part of the anomaly where the strike swings to the E, however this did not produce any magnetic high as may have been expected. In general shears were noted to be at right angles to the strike or at a sharp angle to it.

Swan Island was found to be composed of smokey sericite schists which were in contrast to the darker and more quartose schists on the main anomaly area. (LEE 306).

Area of Mineralisation

Pyrite probably occurs throughout the black schists and shales of the anomaly area with a concentration within the 5100 gamma line. The 5100 line ^{encloses} ~~concludes~~ an area 500' north-south and 500' east-west.

Anomaly 7S/2

Location

On the side of Spring River approx. 3 miles N. of the river mouth into Long Bay. See aerial photograph 34/892/117.

Geophysics

A single traverse line was run through the centre of the anomaly indicated by aerial work. The section (See LEE P33) indicates a very weak and broad magnetic high with no real anomaly peaks.

Geochemistry

No samples were collected as an anomaly peak could not be located and also the scrub was so dense that soil was seen only rarely. Most of the traverse was over horizontal and rotting fallen spars.

Geology

The creek on the S. side of the anomaly indicated that the anomaly was again over black schists with some dark shale bands striking at 350° and dipping $80^{\circ}E$ to $80^{\circ}W$ and bounded on the E & W by quartzite and conglomerate.

The schists contained plentiful pyrite and pyrite was also prominent on the bedding planes of shale pebbles washed down the creek from the E (LE309).

As shown on the section Fe⁵⁵, the schists are thought to be the core of an eroded anticline but this could be incorrect since dips could not be taken for the full length of the traverse. It is possible that the W junction of quartzite and schists is faulted but no evidence was seen for this.

Note that to the E, as soon as quartzite was reached (LE 311) readings fell.

Area of Mineralisation

Pyrite mineralisation occurs weakly over an area 3000' north-south and 1000' east-west.

Anomaly 98/2Location:

Amy Harbour. As shown on aerial photograph 42/892/2

Due to the rugged nature of the anomaly area and the difficulty encountered in getting ashore, no geophysical or geochemical work was done on this anomaly.

Geology

Aerial work indicated quite a strong anomaly at Amy Harbour and prospecting was confined to the anomaly centre in order to ascertain its cause.

This anomaly was again situated on pyritic graphite schists.

The anomaly seems to have been caused by magnetite disseminated through a chloritic sheared zone at the junction of schist with a quartzite ridge forming the E limb of Amy Harbour. (LE314). The magnetite is abundant in this zone and forms up to 90% of the schist in extreme cases. Large well developed pyrite cubes occur in this zone also and very large lenses of quartz are common, containing minor pyrite and pockets of lt. brown siderite. (LE 312).

Black pyrolusite stains are found throughout some horizons (LE316) and limonite weathering from pyrite (LE 313) can be found commonly along the shore as sea transported pebbles or as crusts and pods in the black schists.

On the E side of the quartzite point (facing Ketchikan Bay) basic intrusives have been introduced as sills along bedding and joint surfaces.

No mineralisation was found to the W of the above zone; the schist being quite normal, without any sign of chlorite or magnetite.

Area of Mineralisation

Pyrite occurs throughout all black schists and shales

outcropping in the area with an above average amount associated with magnetite, quartz and siderite in the chlorite zone of the anomaly. This zone is at least 500' long (north-south) but only 100' wide.

Anomaly 5S/2

Not visited, but pyrite and traces of Cu (?) have been reported found in vicinity of Hell's Gates.

CONCLUSIONS

The anomalies are all associated with graphitic schists containing pyrite and/or magnetite.

Shearing & cleavage play an important part in control of mineralisation.

Anomalies 7S/4 and 7S/2 are very weak and do not warrant further work.

Anomalies 5S/4, 5S/6 and 9S/2 are interesting. Although no trace of economic mineralisation was found favourable geochemical assays could make them worthy of further thought.

Of the three, 5S/6 would be the most likely for the following reasons:

1. It is the most easily accessible.
2. It has the largest amount of pyritic material associated with it.
3. No indication of magnetite was seen on the surface.
4. The highest scale readings for the area were obtained over this anomaly.
5. It occurs persistently over a much larger area than any other examined.

APPENDIX

Notes on Rutile and Tin occurring in Pt. Davey and Bathurst Harbour.

1. Rutile

Conglomerate Creek Several hundred yards N of Clayton's Residence in Bond Bay. The creek follows an old river channel 400' - 500' wide containing deep quartzite gravels. Panning of the upper gravels yielded anything up to an ounce of rutile to the dish ranging from sugary grains to small crystals 7 mm. long. The concentrate also contained quartz, feldspar, muscovite and minor black schist fragments. The creek has been fossicked for gold by fisherman sheltering in Bond Bay for many years. Only small amounts of Au have been won.

The old river gravels are coarse, mainly composed of small boulders and small quartz pebbles with minor fragments of schist.

River Bed W. of Conglomerate Creek

An identical occurrence with that described above with bluish twinned feldspar in the concentrate. (LE 319).

There is no creek flowing in this river bed. The former rivers appear to have flowed from the W.

Kelly Basin

Clayton reported rutile occurring in a bank on the W shore of the basin and can be seen as black specks in the soil. This locality however was not visited.

Settlement Point

15 years ago a party panning for alluvial tin on the point opposite Settlement Point, and bounded to the north by deep-water Creek found large amounts of alluvial rutile.

012

Their workings were searched for but could not be located in the time available. They are alleged to have panned up to a pound or more of rutile per dish.

Bond Bay

Beach sands contain patches of darker rutile bearing sands (LE 318) in the vicinity of Conglomerate Creek.

2. Tin

King's Workings - Melaleuca Creek

The workings are on the edge of an old river valley and tin is won from 6" - 12" of poorly rounded quartzite gravels covered by 1' - 3' of peaty soil.

The river gravels lie on quartzite cut by sparse stringers of quartz containing cassiterite and pyrite.

The poorly rounded gravels and cassiterite occurring in the bedrock suggest that the tin has not been transported for any distance. Only slightly rounded crystals of cassiterite and groups of crystals showing little or no rounding in the wash support this idea.

The tin bearing gravels no doubt occur throughout the river valley but are too deep in the central portion (90' beneath muds) to be worked. However, there is ample country still to be prospected for shallow alluvial wash between King's and the Cox's Bright Granite.

Fine cassiterite sands occur along the banks of Melaleuca Creek N. of King's workings and on the old river flats either side.

Gold is not common in the gravels and when found in the sluices, kept by the workers as a curio.

Anomaly 75/4

A creek flowing into Bathurst Harbour a little to the S of the origin peg of the anomaly grid yielded tin when panned (LE 320). The creek flows through quartz gravels (0" - 6" deep) overlying the anomaly area and the concentrate also contained pyrite pebbles similar to those found at King's Workings.

It is therefore thought that tin bearing gravels are likely to be found along the shores of Bathurst Harbour as a northern extension of the gravels at King's Workings.

L. J. J. J.



Anom. photo
 55/6 + 55/4
 892-181, R. 184

55/4 + 55/6

33 '892/131

58-1914

Area: 75/2
Photo: 892-117 R-54



75/2
34/892/117

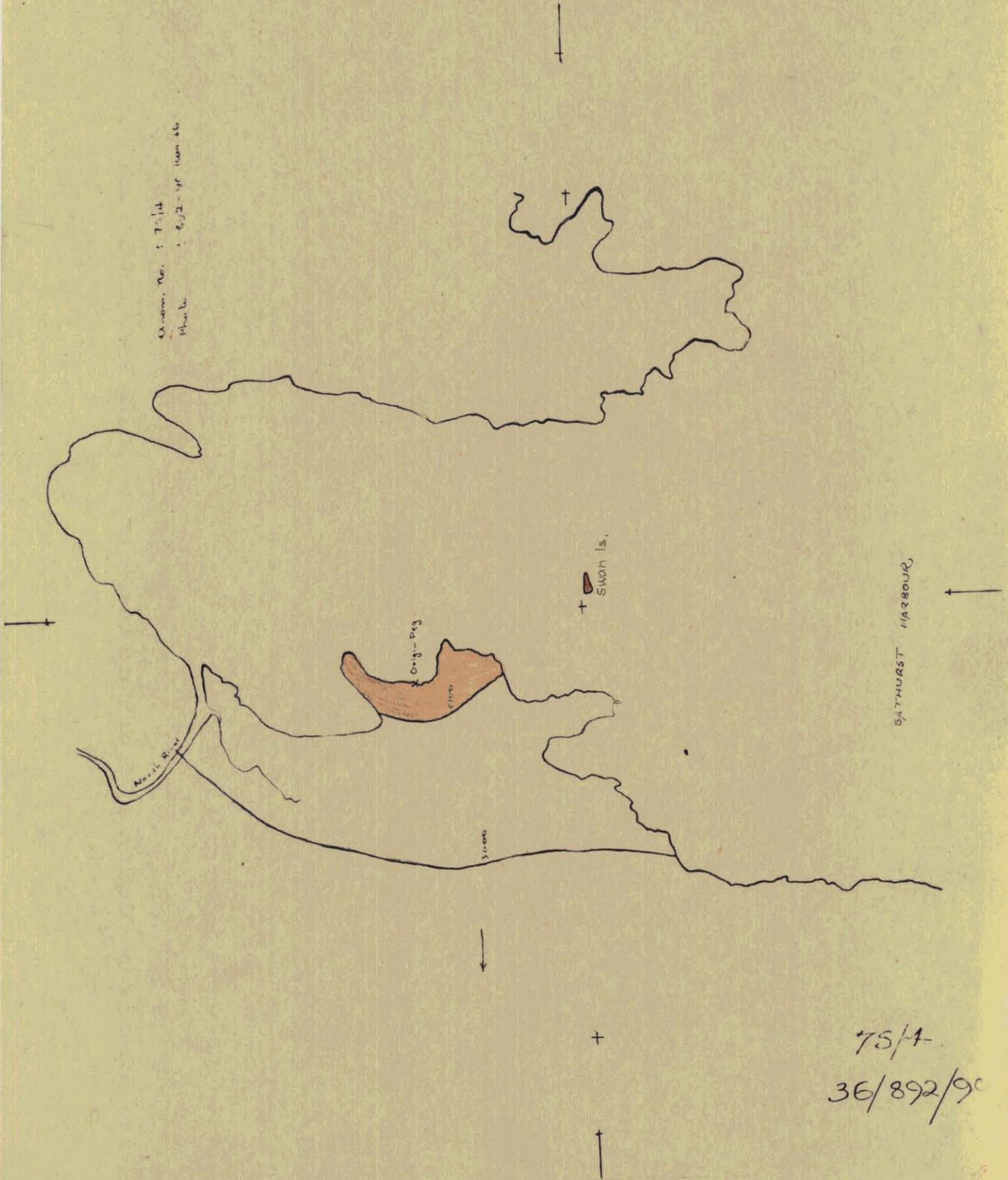
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Q92

Quarry No. : 75/4
Place : 8, 12 - 40 km. ab.



75/4
36/892/90

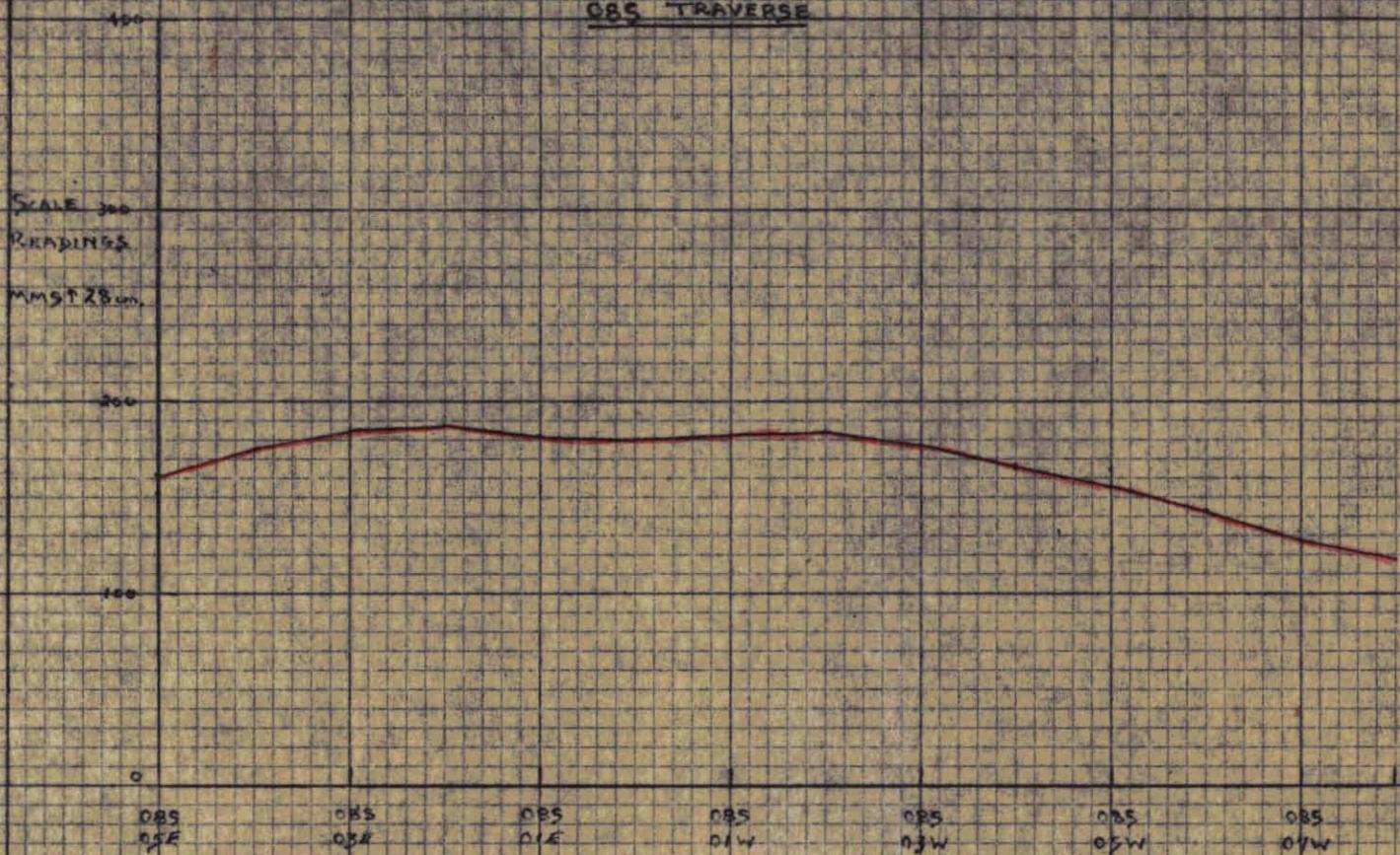
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092

ANOMALY 73/4

NORTH BATHURST HARBOUR

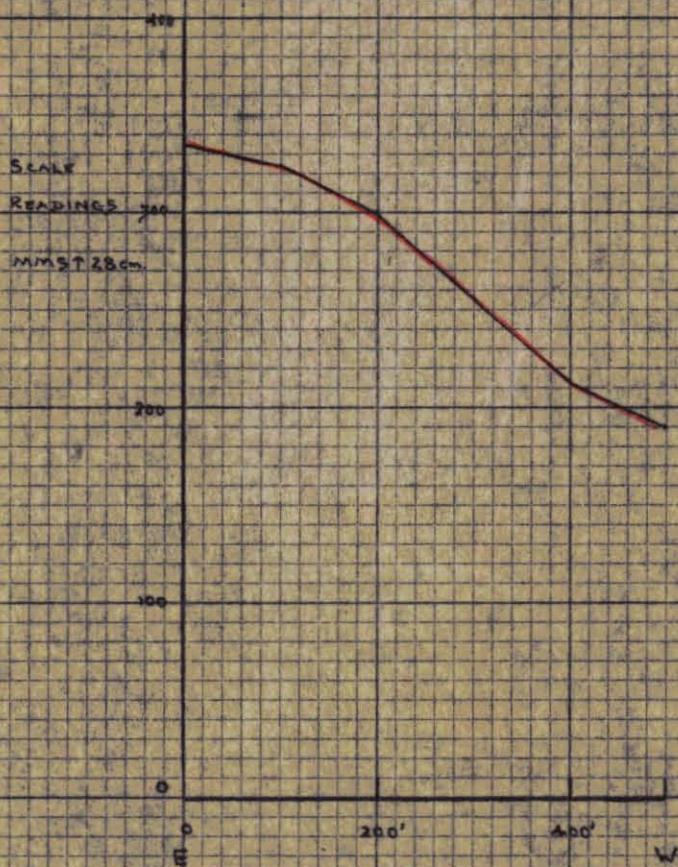
OBS TRAVERSE



ANOMALY 75/4

NORTH BATHURST HARBOUR

SWAN ISLAND TRAVERSE



L.E.E.

P30

01A

131
195
115
38
79
78
66
56
44
62
120
611
798
95
6
111
27
49
85
133
158
235
294
253
218
75

N

ANOMALY 55/4

LOCATION OF TRAVERSE LINES

Scale 1" = 1000'

SETTLEMENT POINT

ORIGIN PER.

DAVEY RIVER

20
207
259
284
320
339
340
382
389
392
378
373
368
361
348
349
301
266
TG

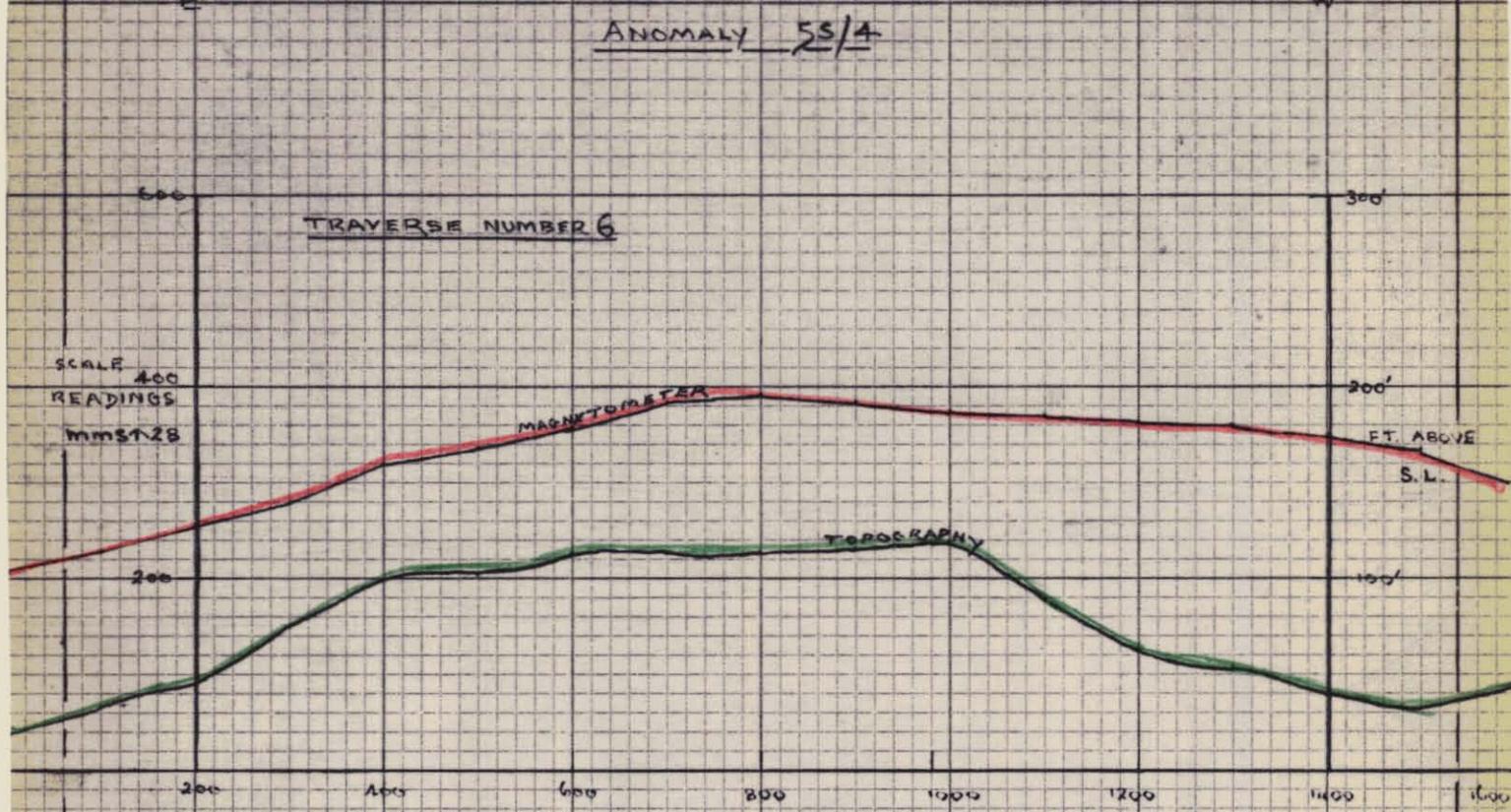
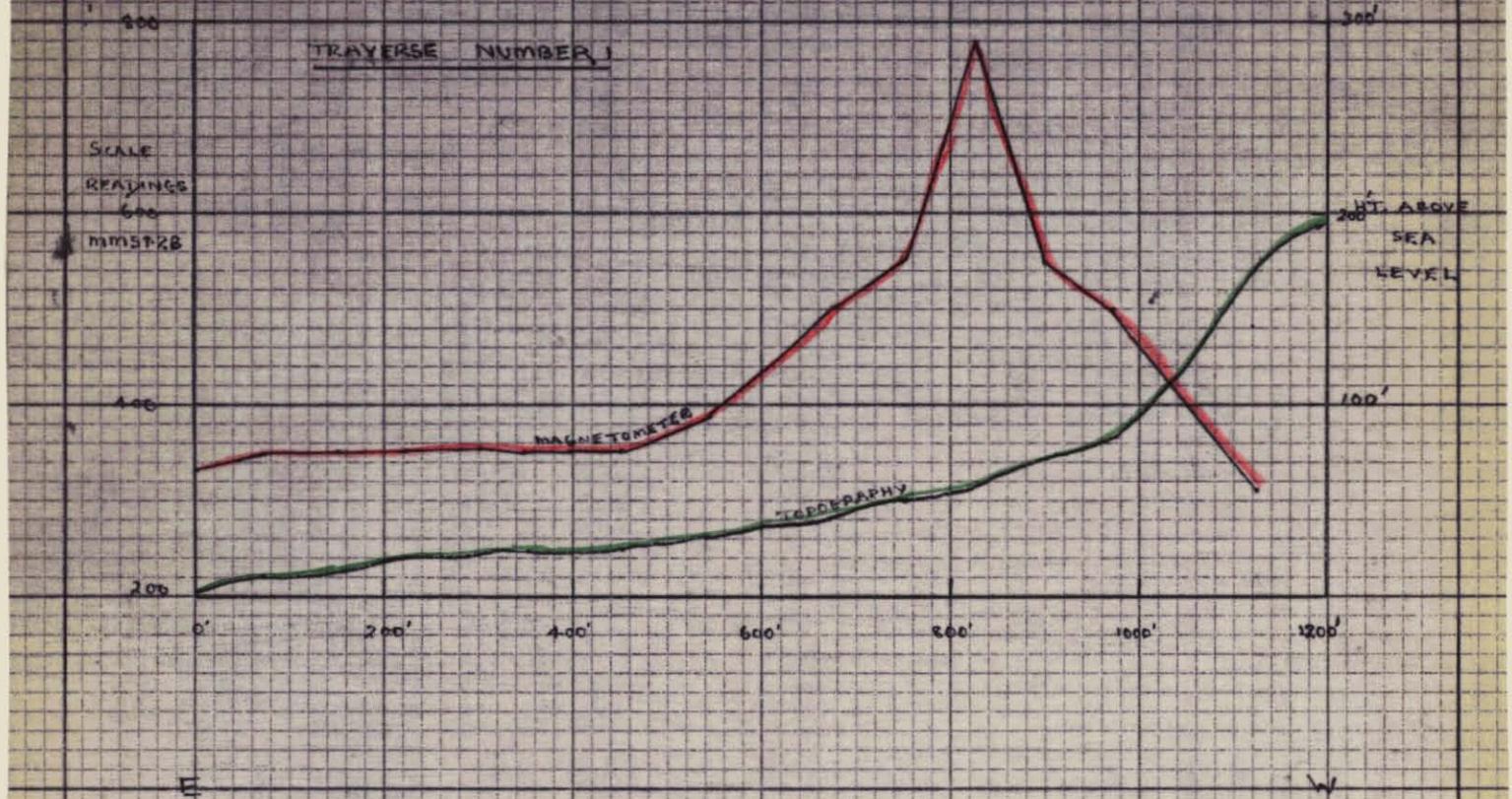
T2
322
321
342
341
361
362
378
379
397
421
520
650
520
520
521
T3
T4
T1

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ANOMALY 5S/4
SETTLEMENT POINT - DAVEY RIVER



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092

ANOMALY 75/2 SPRING RIVER

092

MAGNETOMETER
SCALE
READINGS
MMST 28 CM

300

200

100

0

200'

400'

600'

800'

1000'

1200'

1400'

1600'

1800'

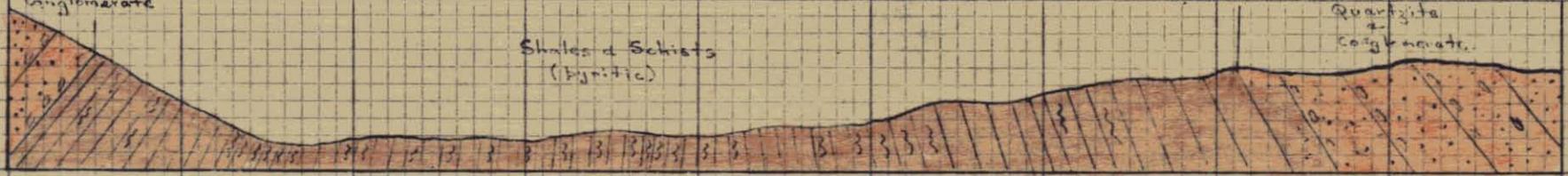
E

W

Quartzite
+
Conglomerate

Shales & Schists
(Bryozoa)

Quartzite
+
Conglomerate



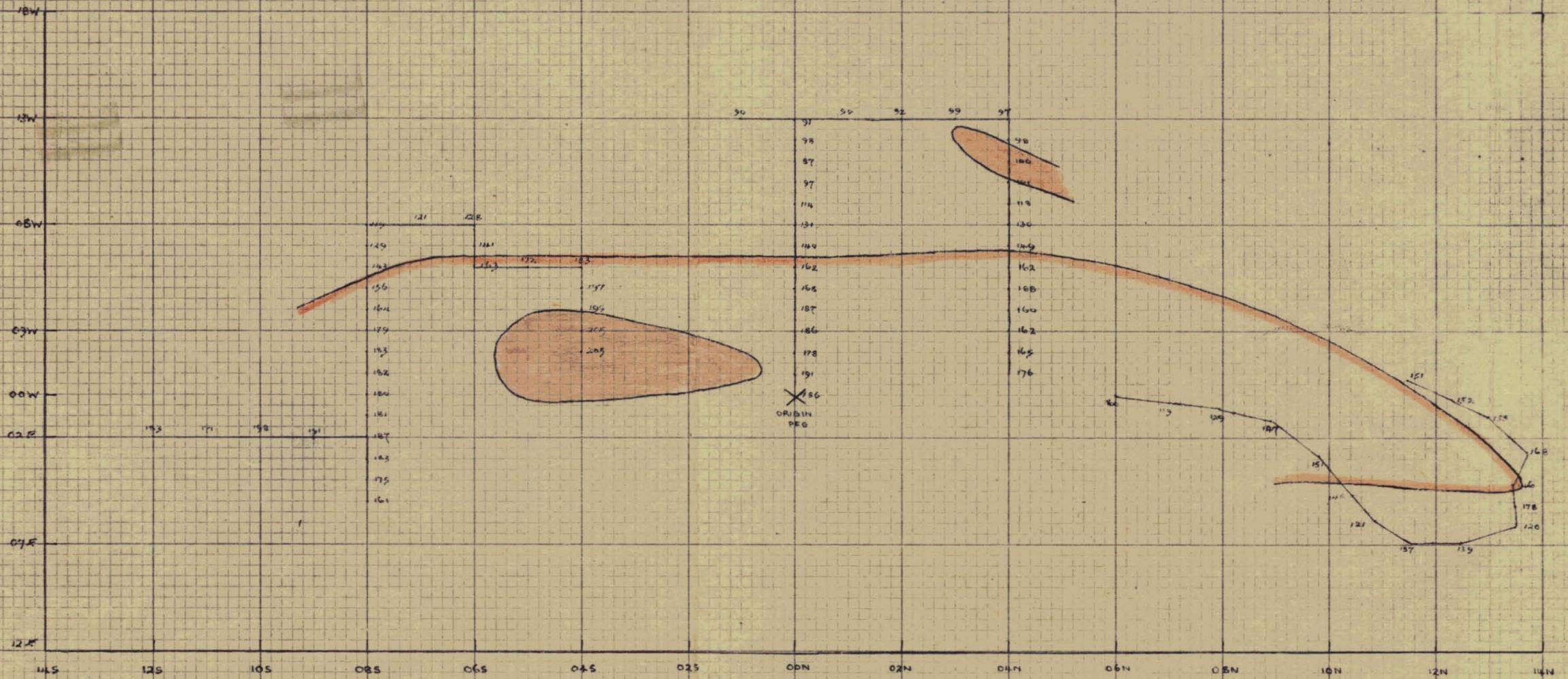
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ANOMALY 75/4
NORTH BATHURST HARBOUR.



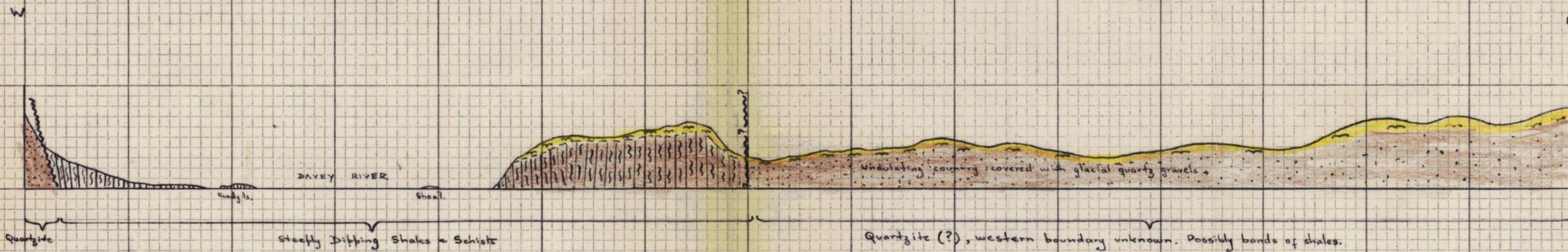
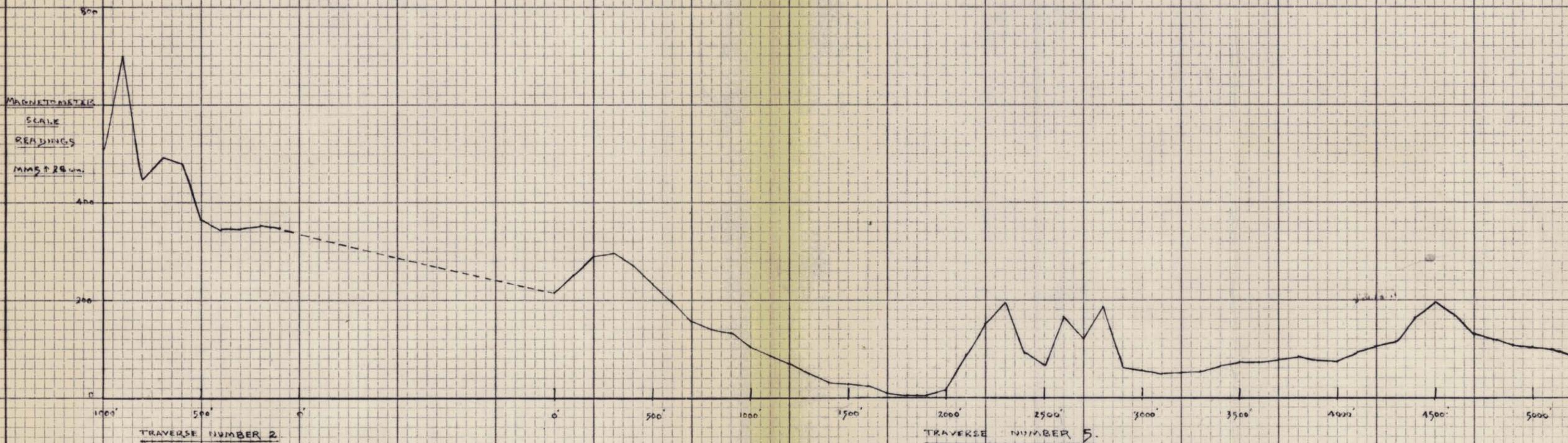
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LEE Q12

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ANOMALY 55/4

SETTLEMENT POINT - DAVEY RIVER



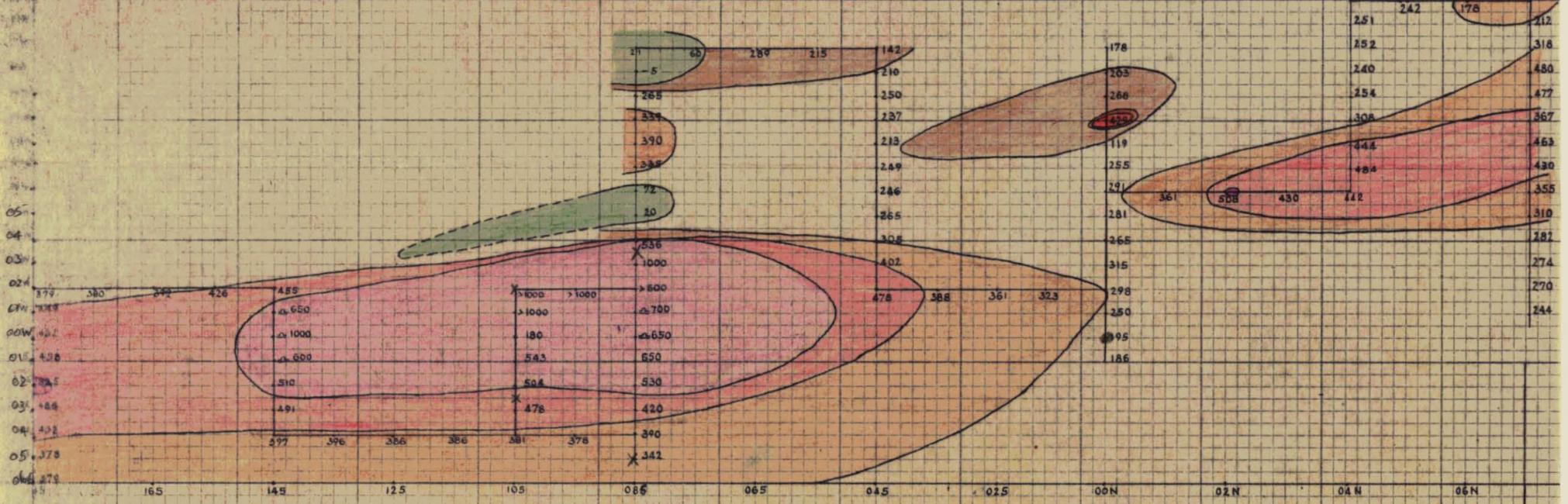
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L.E.E. Q13

4263

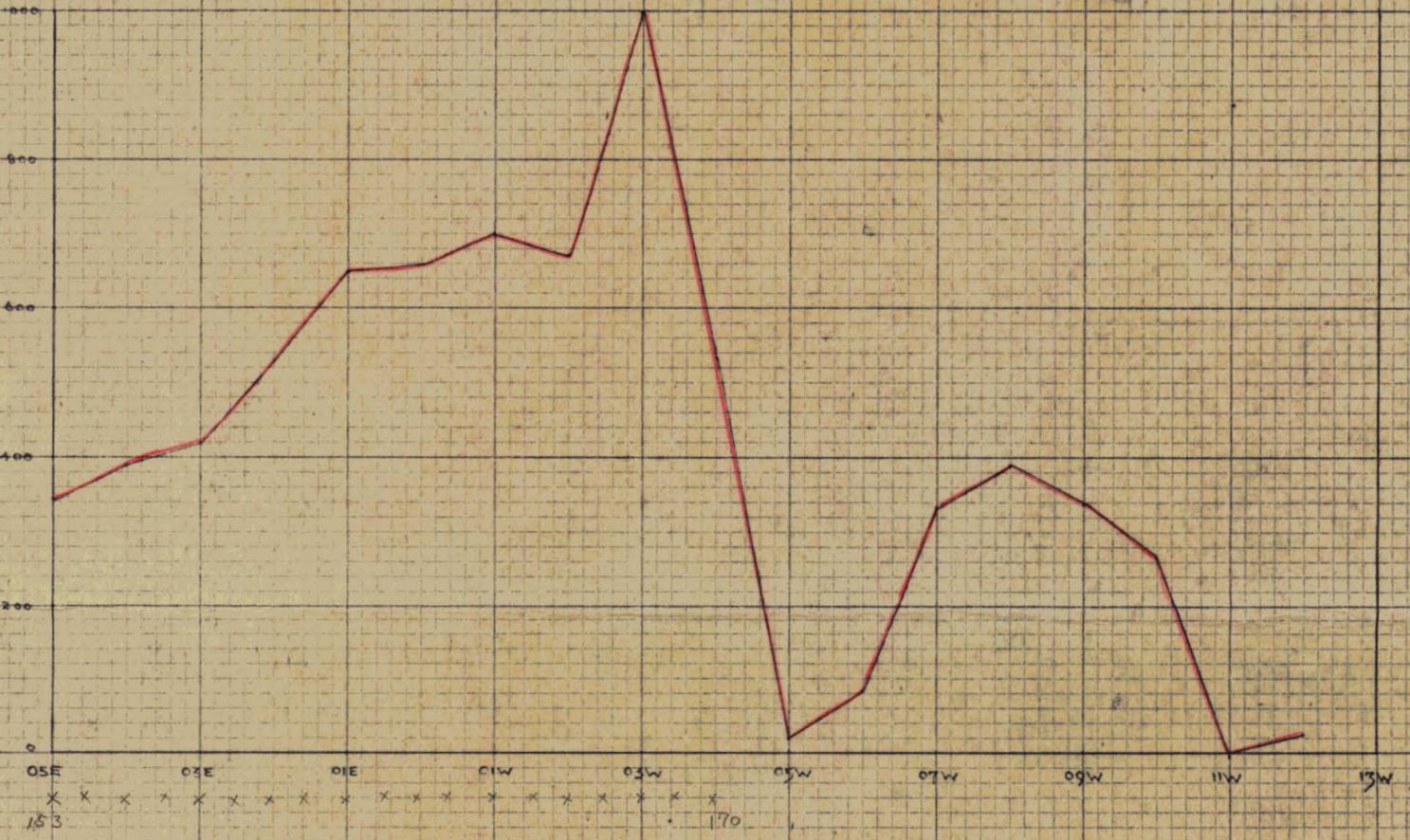
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ANOMALY 55/6 - PAYNE BAY - PLAN



ANOMALY 55/6 - SECTION ALONG OBS TRAVERSE

SCALE READINGS MMS ± 28 cm



ANOMALY 55/6 - SECTION ALONG OON TRAVERSE

SCALE READINGS MMS ± 28 cm



LEE Q14