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ISLES OF SCILLY

REPORT ON GEOPHYSICAL SURVEYS, 1974

Report no. 38/74
Dates of surveys:
8-20 July and
27 Sept. - 8 Oct., 1974

It was the intention during these two visits first to investigate the possible value of geophysical methods to archaeology in the unusual conditions of the Scillies, and then to survey particular sites where appropriate. Observations and findings from the five sites visited are described below.

Former occupation sites typically occur at roughly the present sea level and a number have been exposed through erosion of coastal sand dunes. It was found that some use could be made of standard magnetic survey procedures to locate sites on beaches, but for those which extend inland the depth of overburden is often too great to be penetrated by any relevant geophysical method. An attempt was therefore made to test the extent of the Little Bay, St Martin's site by augering, and this approach could well be useful elsewhere.

In addition to the site investigations described in this report samples were collected for magnetic dating from the excavations on Nornour and at Little Bay. These are the subject of separate reports (1) and are not discussed further here.

1. EAST PORTH, SAMSON

NG ref. SV 878 128 Plan no 1

The object here was to test for any magnetic anomalies which might correspond to the known archaeology. Evidence of occupation around East Porth and stone structures which run into the sand dunes on the S side have been reported by Mr Alec Grey (2). In 1971 an area of 10m x 20m was excavated by Mr D S Neal and stone walls and early Christian graves were found. The dig was on the beach at the E end of a low ridge of blown sand which lies across the centre of the island. The site extends inland beneath the ridge which is cut away at the beach to form a steep bank 4-5m high. The survey included the beach below this bank and the area inland from it as marked on the plan.

The site was scanned with the magnetometer without the use of plotting equipment. Only a few very minor anomalies were found and these were tested with a hand auger. The auger showed only a clear sand except for hole 3 on the beach where there was dark grey sandy clay below 60cm, and hole 5 in the valley inland N of the ridge where topsoil was found at 90cm. This confirms the presence of the old ground surface visible on the exposed face of the ridge but in neither case was there any trace of archaeological disturbance in the augered soil.

This lack of significant magnetic response may be due both to the character of the remains and to the conditions of the site. Magnetic detection is most effective f naturally silted features in the presence of organic or burnt material. Stone wal and graves are rarely detectable and usually a site where they occur is identifiab only through the presence of other related features. Here any such response from the dig or from the occupation noted above is likely to be very weak because of th depth of burial. Walls were found in the excavation at 1m or more below the beach Resistivity surveying is commonly used to detect walls but it is of limited value for graves and unlikely to be effective at this depth, or in ground saturated by sea water. Archaeology inland beneath the ridge would be undetectable by any mean except deep drilling and results then might be doubtful if occupation debris is no present.

2. BAR POINT, ST MARY'S

NG ref. SV 916 129

An Iron Age hut was excavated here in 1972 by Miss S A Butcher, but again it is not known how far inland the site might extend beneath the rapidly eroding sandy promontory of Bar Point. The beach was found to be unsuitable for magnetic surveying because of the large amount of old iron which would be impossible to clear completely. Inland the depth of blown sand was, as on Samson, too great for investigation by any method other than drilling. This was not attempted but since this is an occupation site some information might be obtainable in this way.

3. NORNOUR, EASTERN ISLANDS

NG ref. SV 944 147 Plans 2 and

The area around the 11 circular huts which have been dug at the foot of the hill on the S side of the island was scanned with the magnetometer for evidence of further occupation. The ground rises steeply behind the site and auger tests at the E end of the settlement showed dark soil at a depth of 1m near the buildings but only clean sand uphill behind them. The only magnetic response was a medium anomaly on the beach below the site of houses 1-4. It was located by measurement to house 5 and to the projecting rock to the W of the site as shown on plan 3. Its archaeological signifance is uncertain. It is too diffuse to represent a single strongly magnetic feature such as a hearth but could perhaps represent a spread of burnt material or a midden.

4. PAR BEACH, HIGHER TOWN BAY, ST MARTIN'S

NG ref. SV 932 153 Plans 4 and

Several huts and a small cist were excavated at the top of the beach by B H St J O'Neil in 1949-50 (3), and other remains are known to lie below the present level of the beach where they have occasionally been exposed by storms.

Nothing was observed in magnetic scanning around the site of O'Neil's excavations, which is now covered by dunes, but on the beach features lie at no great depth and conditions are more favourable. A row of 30m squares was therefore marked out on the beach close to the known hut sites as shown on plan 4 and surveyed in detail at low tide. The traverses plotted by the recording system are shown in plan 5.

Much of the magnetic disturbance visible in the plot is due to buried iron, but a number of possibly more significant anomalies are outlined. Hearths and burnt stones have been found in the huts already dug and the magnetic response could indicate the presence of other such features. There is also some evidence of industrial activity on the site, and the stronger anomalies such as those outlined in square 1 might relate to this if they are not caused by recent iron,

5. LITTLE BAY, ST MARTIN'S

NG ref. SV 944 159 Plans 6, 7, Table 1

Here excavation was in progress and the site was investigated to test its extent and to locate any evidence of activity nearby. The remains of circular stone buildings lie just above high water and back on to a low sandy cliff with sand dunes above. It was therefore again only possible to attempt magnetic surveying on the beach, and a large auger was used inland.

One of the buildings contained a large hearth and quantities of occupation material Any other such remains should cause a significant anomaly and be detectable in a magnetometer scan. There was insufficient magnetic activity on the beach to justi detailed plotting as at Little Bay, but the anomalies detected were measured from

the site base line and are shown in plan 7. The ano_maly at A was later dug but produced only some red soil which according to Dr H M Keeley has probably been burnt. Could this (andanomalies elsewhere on the beaches) perhaps be a kelp burning pit? The other anomalies detected are small and weak and are unlikely to represent any substantial surviving features.

The inland extent of the site was tested by boring a series of holes from above the exposed face of the dunes using an auger with extension rods and a 4" bit. The positions of the holes are shown in plan 8 and notes on the soil profiles from each are listed in table 1. Samples were taken from a number of layers and these were later classified by Dr Keeley. Phosphate concentrations are also given for the samples (Schwarz test, 4). In other cases the layers are simply noted. There was found to be a clear layer of occupation material identifiable as a coarse black soil containing shell, burnt clay or charcoal and giving a positive phosphate result. This was found in holes 1-4 extending inland, but along the baseline to each side it appears only doubtfully in hole 5. A very approximate possible limit to the spread of occupation material based on these results is marked on plan 8. The line of holes 1-4 could not be extended further uphill because the depth of the deposits increases as the ground rises.

No investigation was attempted at site II 30m away to the N.

CONCLUSIONS

Geophysical detection is most effective for shallow clearly differentiated features beneath a uniform topsoil. Wherever such conditions obtain in the Scillies, as the do at least on certain beaches, geophysical techniques are applicable as elsewhere, and the local granite is not sufficiently magnetic to cause interference. In some cases the response from a site may be weakened if the fill of occupational debris has been washed away leaving only ruined stonework. The information obtainable also diminishes rapidly once the depth of burial exceeds roughly 1m, and for sites under any depth of blown sand only more direct sampling methods such as augering or trial excavation are likely to be useful.

REFERENCES

(1) E.g. A J Clark in Nornour report by S A Butcher in Cornish Archaeology, forthcoming.

(2) Paul Ashbee (ed), 'Prehistoric Habitation Sites on the Isle of Scilly by Alec Grey' Cornish Arch II (1972), 19-49

(3) B O'Neil, 'A Romano-British Hut in Scilly', Scillonian Magazine XXIV (1947), 164-5

(4) G T Schwarz, 'A Simplified Chemical Test for Archaeological Field Work'. Archaeometry 10 (1967) 57-63

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LITTLE BAY, ST MARTIN'S: AUGERING RESULTS

Table 1

No. of Borehole

Depth	1 Soil Description	1 P_2O_5	2 Soil Description	2 P_2O_5	3 Soil Description	3 P_2O_5	4 Soil Description	4 P_2O_5
1.5m	Sand		Sand		Sand		Sand	
2.0m								
	Coarse sandy loam ; yellow brown with black or dark grey (granite) mottle	weak	Brown soil		Brown soil		Brown soil	
2.5m			Loamy coarse sand; black (weathered granite with charcoal)	positive			Loamy coarse sand; black	positive
	Olive brown with white mottle (ie a large no. of limpet shell fragments)	positive	Lighter colour; some grey clay					
			Yellow clay + shell fragments		Coarse sandy clay loam; black + shell fragments	strong	Coarse sandy silt loam; black + trace of burnt clay	positive
3.0m					Stone		Weathered granite	

cont/

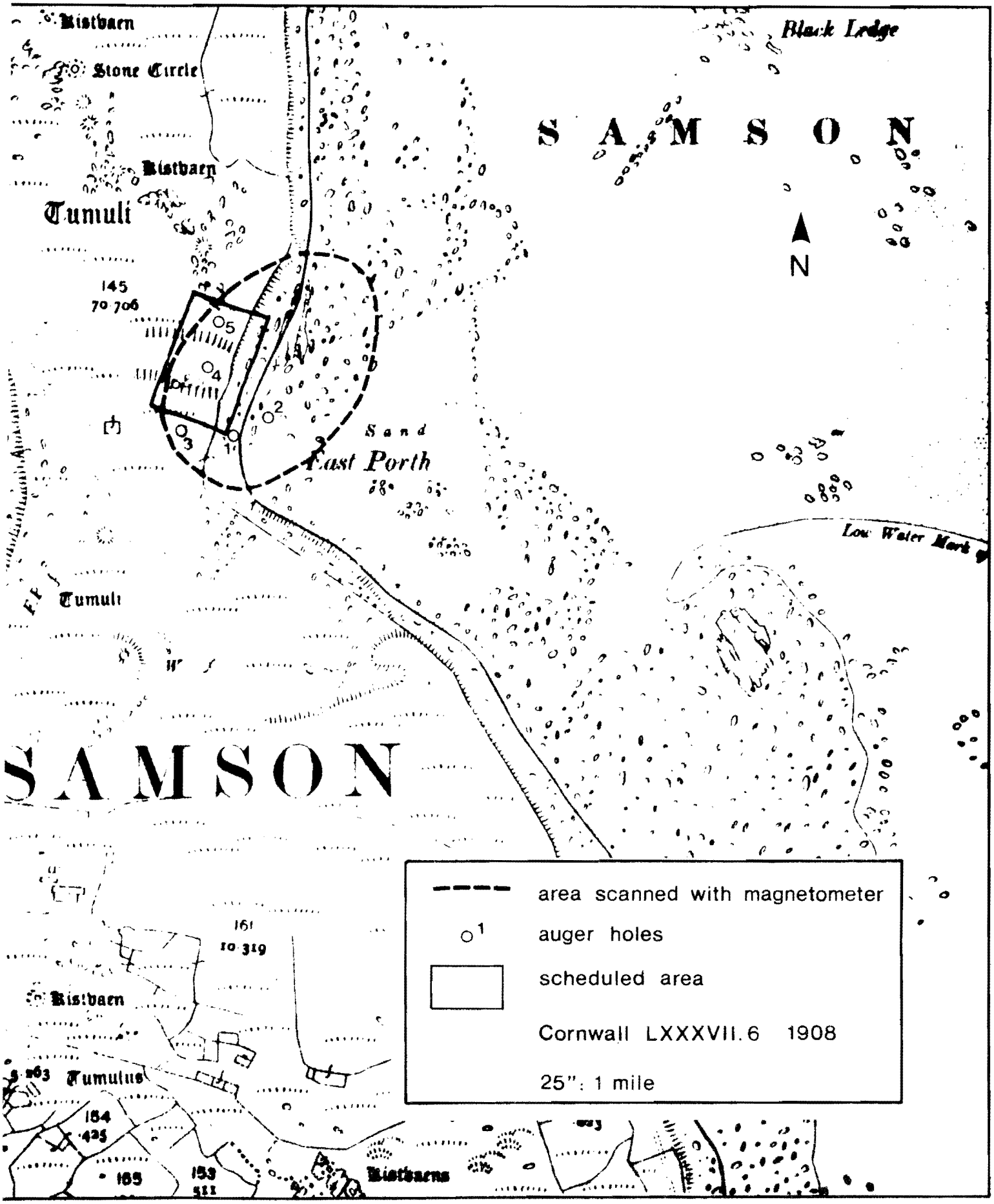
LITTLE BAY, ST MARTIN'S: AUGERING RESULTS

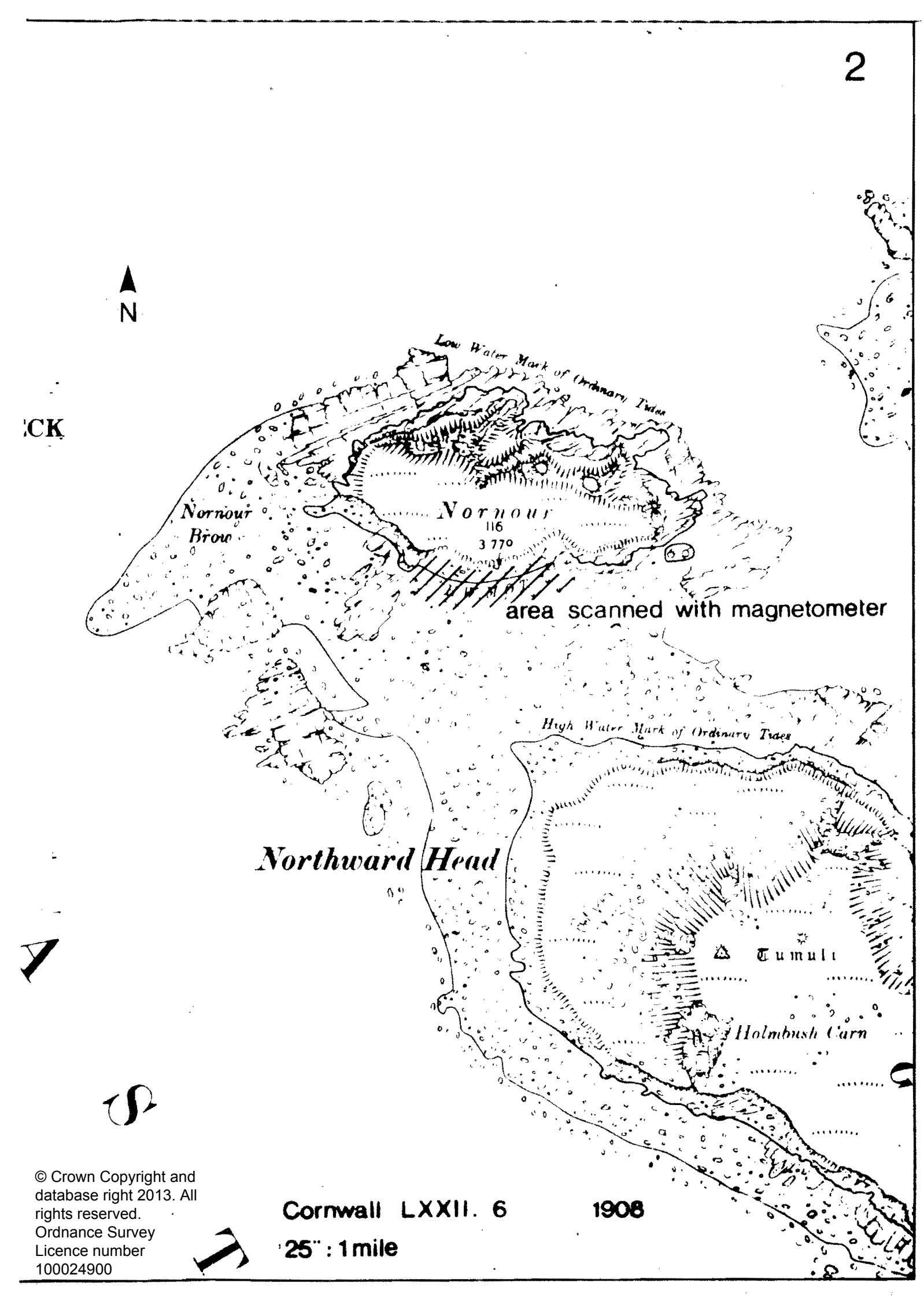
Table 1 (continued)

Depth	No. of Borehole 5 Soil Description	P_2O_5	6 Soil Description	P_2O_5	7 Soil Description	P_2O_5
1.5m	Sand		Sand		Sand	
					Loamy coarse sand; dark grey	negative
2.0m	Loamy coarse sand; very dark grey	negative	Loamy coarse sand; dark brown	negative		
2.5m	Loamy coarse sand; black	trace	Soil with weathered granite		Weathered granite	
3.0m	Grey soil with some weathered granite					

Phosphate concentrations: approx % P_2O_5

negative	less than 0.08%
trace	0.08–0.15%
weak	0.15–0.4%
positive	0.4 –0.8%
strong	more than 0.8%

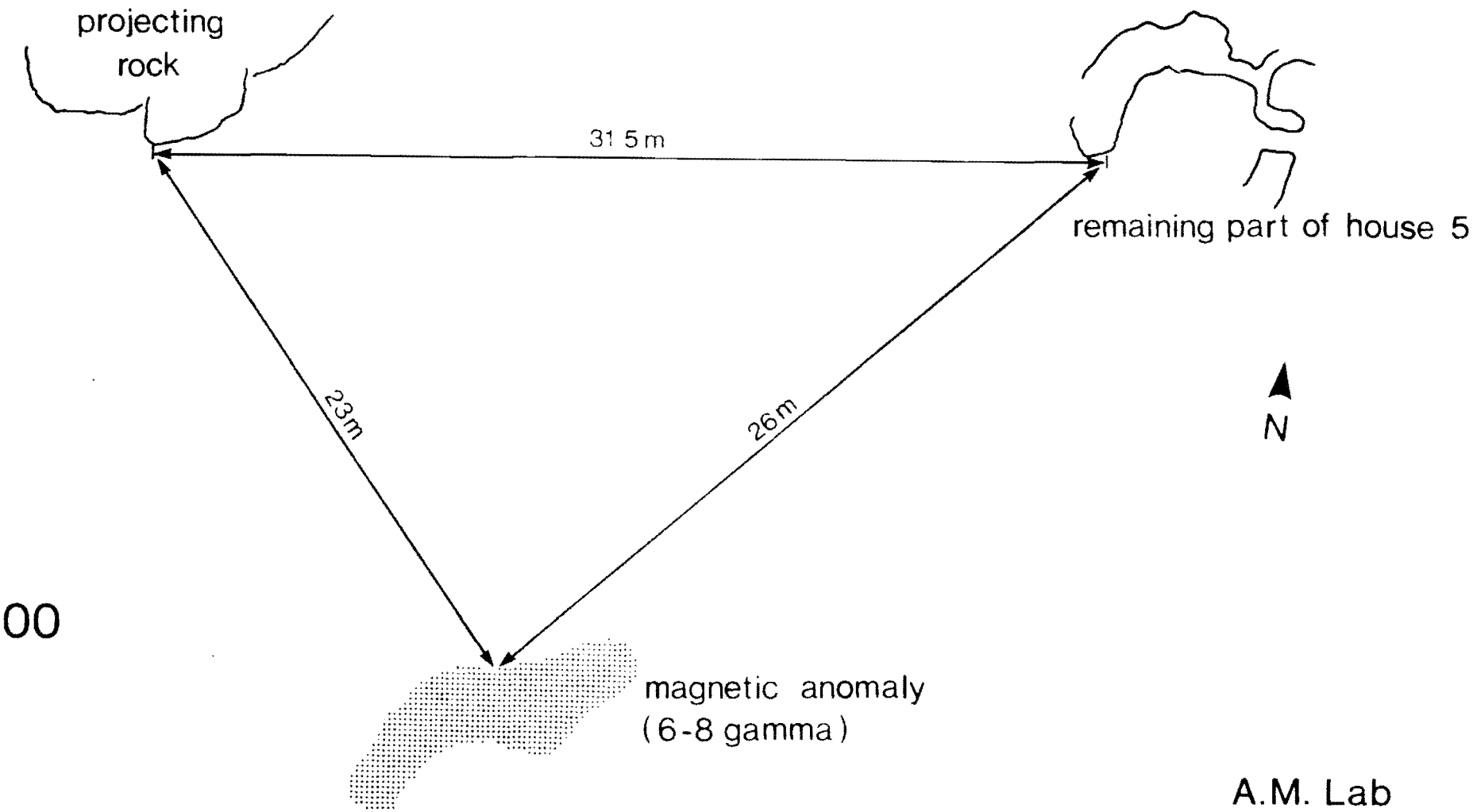




Cornwall LXXII. 6 1908

25" : 1 mile

Nornour: magnetic scan



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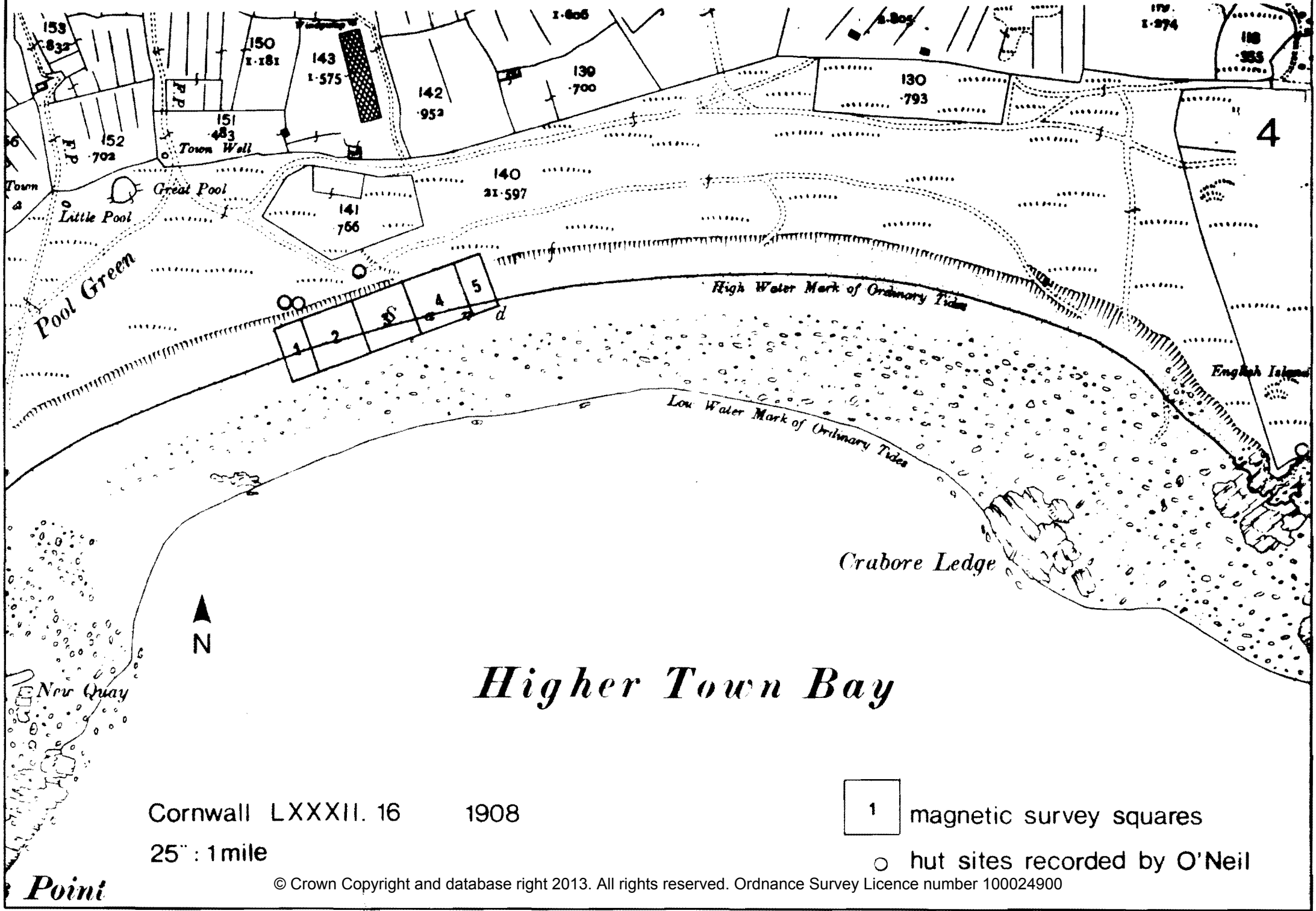
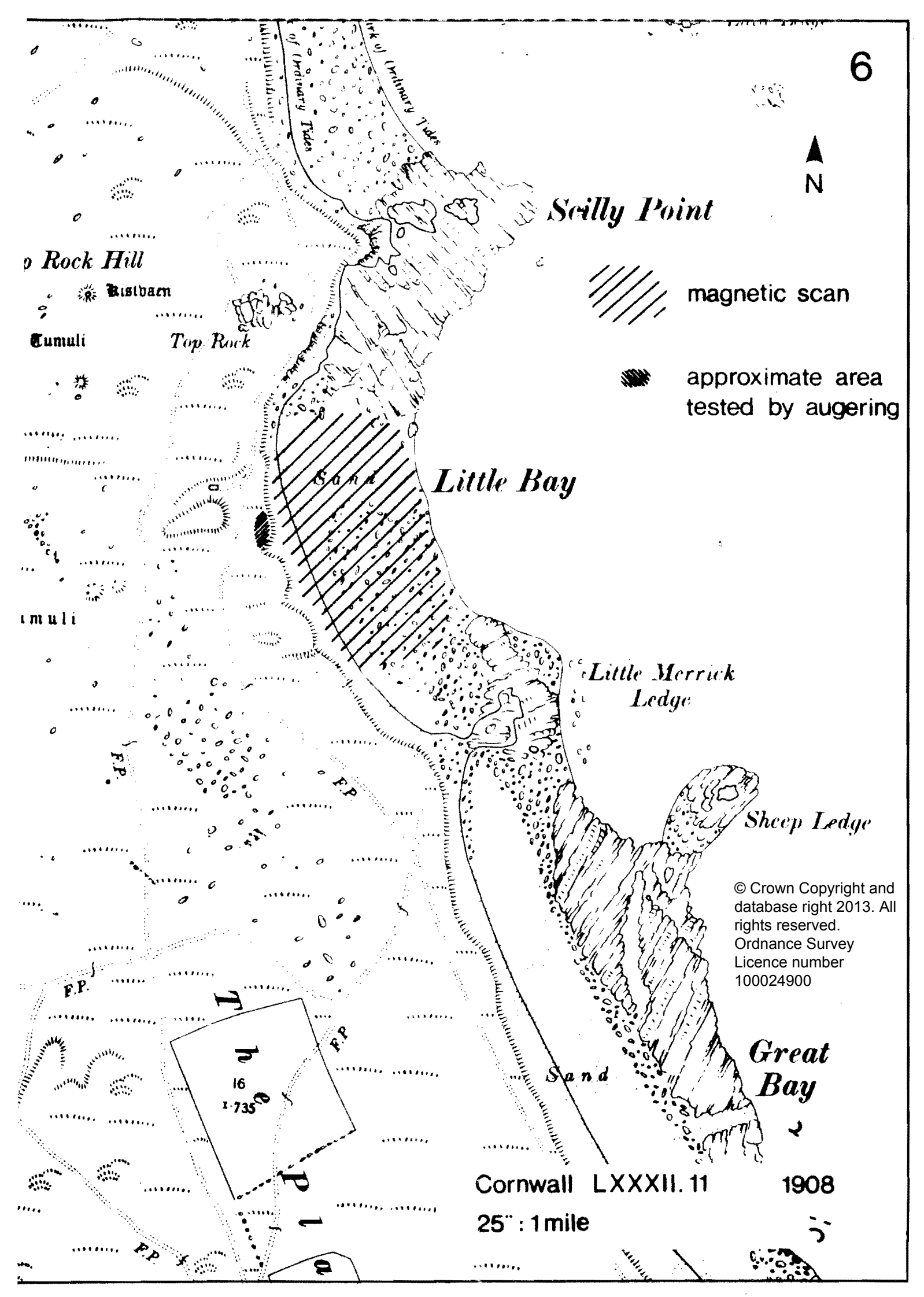
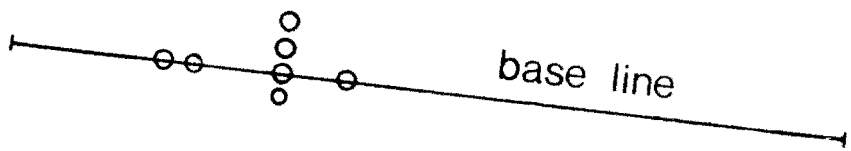
A.M. Lab





Little Bay, St. Martin's: magnetic scan



4

4

14

6

A

N

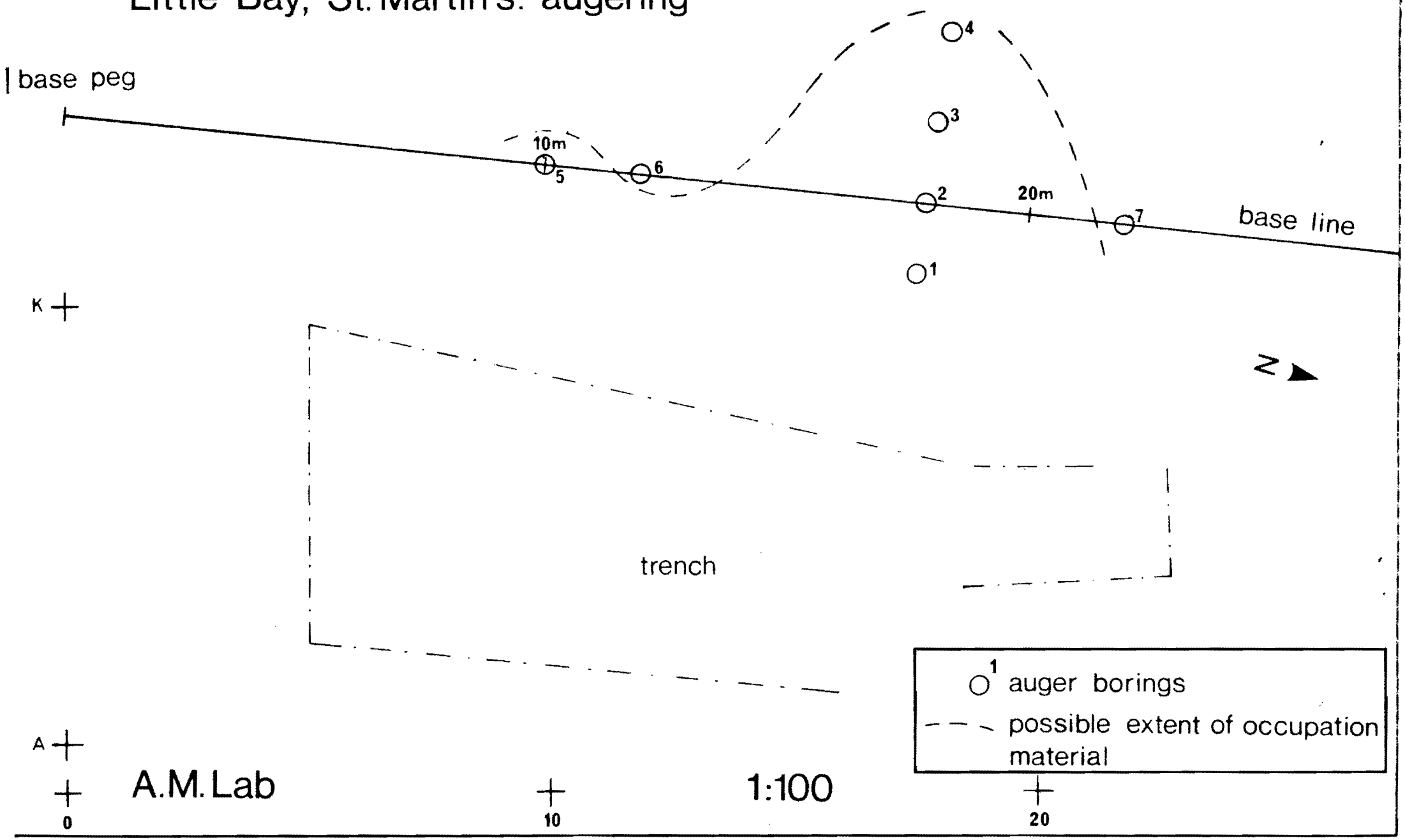
auger borings
magnetic anomalies
(strength in gammas)

4

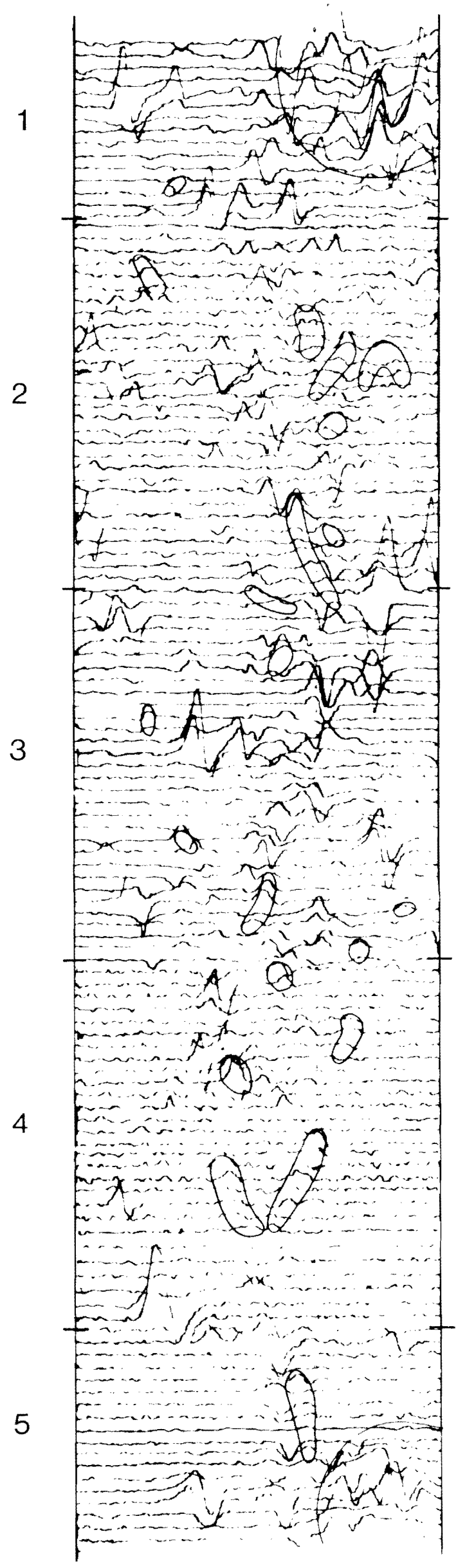
A.M. Lab

1:500

Little Bay, St. Martin's: augering



SCILLIES: Geophysical Survey



Par Beach, St. Martin's, Magnetometer Survey

A.M.Lab

1:200