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REPORT ON  
GEOLOGICAL RECONNAISSANCE  
OF  
E.L. 11/69

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REPORT ON GEOLOGICAL RECONNAISSANCE OF EL 11/69

A geological compilation of EL 11/69 was prepared from Mines Department one-mile series maps. Rio Tinto geological maps, Mines Department small scale survey maps and University Geology Department material (Plate I). Most of the licence area is covered by airborne magnetics (Rio Tinto and some BMR) with the exception of a triangular area near the eastern margin.

It was decided that the initial reconnaissance would consist of ground magnetics, in the Tewkesbury area and near Edith Creek in an attempt to locate -

- (a) any magnetite bodies
- (b) any extension of the Housetop Granite to the west.

Iron ore bodies in the Natone - Hampshire area have presented a problem in that most are hematite-limonite which is not magnetic. Eadie (1964) reported difficulty in correlating magnetics with the known geology. However as magnetic anomalies in basalt covered areas have a characteristic 'spiky' appearance (i.e. high rapidly changing anomalies of small areal extent with extremely high gradients) magnetite or granite would probably show as a high or low respectively of relatively large areal extent.

The result of the Tewkesbury magnetic survey is attached. Magnetic lows on the map appear to reflect areas of their basalt cover on Precambrian rocks.

No work was carried out in the Edith Creek area as the landowner, Mr. Ling, on whose property an iron ore outcrop exists consistently refused access and no sensible arrangement could be arrived at. The limits of Mr. Ling's property have now been obtained and it is proposed to carry out reconnaissance on adjoining properties and obtain legal entry to Ling's property under the relevant provisions of the Mining Act.

During the Tewkesbury magnetic survey twelve river sand samples were collected and these were analysed by the Mines Department. The samples are Reg. Nos. 691934-691945 inclusive. Most samples showed traces of ilmenite but no significant values were obtained.

The geology in the Tewkesbury area was slightly modified by remapping of the basalt contacts. Some basalt as shown on the geological map was considered to be pyroclastic material but this is not significant in this context.

The area near Douglas Brook was inspected as vein mineralisation was reported in an old shaft. The area is covered with dense scrub and access is restricted. Arrangements have been made with the Forestry Department to burn off this area to permit easy access.

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A preliminary reconnaissance was made in the Boat Harbour area as pyrochlore and zircon have been reported. A field program of sampling and scintillometer surveying has been planned for this area. An outcrop of iron ore was examined on the property of Hamilton Bros. but this was a lateritic limonite-hematite developed on the basalt. Most of the outcrop has been removed during construction of a dam. A spotted quartzite from this area is at present being examined.

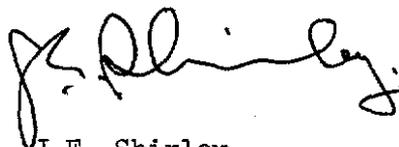
Torbanite was recorded on an old lease map near an outcrop of coal west of West Takone, in a tributary of Foy Creek. This area was inspected and scintillometer readings indicated an increased count. The scintillometer was damaged before sufficient readings could be obtained and dense scrub impeded field work. This area is currently being cleared with a locally hired bulldozer.

Investigation of beach sands has not yet commenced due to lack of suitable staff. It is intended that this sampling program will be commenced after the completion of University examinations.

#### Planned Program.

1. Investigation of the radioactive prospect near Foy Creek after the bulldozer stripping is complete.
2. Geological and magnetic survey of the iron ore in the Edith Creek area.
3. Reconnaissance survey of beach sands along the coast.
4. Geological reconnaissance of Douglas Brook area after burning off is completed by the Forestry Department.
5. Geological investigation of the pyrite near Hampshire.
6. Sand sampling and scintillometer survey in the Boat Harbour area.

7th November 1969



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EL 11/69

### 1. Introduction.

The preliminary work in this lease has been concentrated in the Tewkesbury Area. The details of a magnetic survey are attached. Mapping has modified the geological boundaries in some areas.

Field inspections have been made in the West Takone, Meunna and Boat Harbour areas and a further program for work in these areas is attached.

### 2. Tewkesbury Magnetic Survey.

This is attached as Appendix A.

### 3. Sand Samples.

Twelve sand samples were sent to the Mines Department, Launceston for analysis. The distribution of the samples (Reg. Nos. 691434 to 691945 inclusive) is shown on the geological map with the respective magnetic and non magnetic fractions. Most samples contained some ilmenite, but no significant values were obtained. Two samples (69136/7) showed some cassiterite but this is not regarded as significant as it is probably due to contamination from Mt. Bischoff.

4. A preliminary examination of the Boat Harbour area indicates the need for further work in this area. Extensive river gravels should be tested for heavy minerals, as zircon has been reported from this area. No scintillometer was available during the visit so reported radioactive minerals could not be detected. The haematite-limonite outcrop examined is probably a lateritic iron deposit common in basalt areas and hence of little interest.

Some quartzites with hematite are being examined.

### 5. Recommendations. EL 11/69

The following list indicates areas of immediate interest which should be investigated.

(1) *Pyrite at Anomaly A near Tewkesbury.*

Petrographic examination will indicate if minerals other than pyrite are present and determine whether the pyrite is sedimentary or has been introduced, with other minerals, during mineralisation associated with, say, the Husetop granite.

(2) *Beach sands.*

A program of beach sand sampling should be commenced as soon as possible.

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(3) *Boat Harbour area.*

This area warrants a program of river sampling to see if economic concentrations of zircon are present. Radioactive surveying is also recommended as pyrochlore has been reported.

(4) *Douglas Brook.*

The area along Douglas Brook, south of the junction with the East Cam River should be burnt out to provide easy access. Some detailed investigation of the location of early gold mines can then be pursued.

(5) *Torbanite - West Takone.*

This area warrants examination. The recorded coal should be found and used as the marker for a radioactive and geological survey to determine the existence or otherwise of the torbanite.

(6) *Edith Creek area.*

This core of Precambrian should be examined for iron ore deposits. The obvious starting point is the known outcrop on Ling's property. (If Ling still refuses to allow access, then access by court order with police attendance if necessary may be required).

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## 2. Tewkesbury Magnetic Survey.

A magnetic survey was carried out in the Tewkesbury area of E1 11/69 from 16th August 1969 to 7th September 1969. The survey consisted of about 400 stations in a reconnaissance survey extending over the area south east of the Cam River south to the 920 grid line and east to the 380 grid line. The readings were obtained using a hand held Jalander fluxgate magnetometer.

The accuracy of the readings was between 10-30 gammas depending on the measuring range in use (Ranges 1 or 2 only were used) No diurnal corrections were made as the nature of the survey did not warrant this precision.

The reconnaissance survey was carried out over deeply dissected Tertiary basalts which form a superficial cover on basal Permian with some outcrop of Precambrian Burnie Quartzite and Slate. An aerial magnetic survey east of the Tewkesbury area shows a positive anomaly of the order of 500 gammas over a known magnetite body, (BMR G 212-3). (This anomaly would be approximately equivalent to 2500 gammas at ground level). The generally disturbed anomaly pattern is characteristic of a basalt terrain and it is not possible to indicate economically interesting areas by magnetics alone. The field program consisted of magnetic traverses in conjunction with geological mapping to determine the basalt contact. Any magnetically interesting areas were investigated by detail mapping and further magnetics.

The magnetic survey results were characteristic of a basalt covered area i.e. rapidly varying values of small real extent. No attempt was made to contour this map but rather the results were used to indicate areas of high anomaly of sufficient area such that the anomaly, if due to a mineral deposit, would be of the order of an economical size. This procedure allowed the very high anomalies of very small areal extent, due to terrain or body edge effects of the basalt to be discarded. Should one of the high anomalies of small areal extent be due to a mineral concentration, then the exclusion from consideration is not serious as the size of the body would necessarily be small.

The areas A, B and C shown shaded on the magnetic map were considered of further interest and detail traverses were measured in these areas.

The detail magnetics are shown on enclosed maps.

### *Anomaly A.*

This anomaly occurs south east of an area of Precambrian recently uncovered during roadmaking operations. The negative anomaly is probably due to thin basalt cover over Burnie Quartzite and Slate. The rock is a dark fine grained slate with pyrite in joints. This pyrite is probably original sedimentary pyrite which has been re-mobilised and concentrated by the regional metamorphism.

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A preliminary examination indicates less than 5% pyrite with a trace of copper (chalcopyrite) being indicated by mass spectrographic examination.

*Anomalies B, C.*

No outcrop was evident near these anomalies which could be due to thin basalt cover on Precambrian or possibly Permian rocks.

## Maps

1. Tewkesbury magnetic survey
2. Anomaly A
3. ' B
4. ' C

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# TEWKESBURY MAGNETIC SURVEY



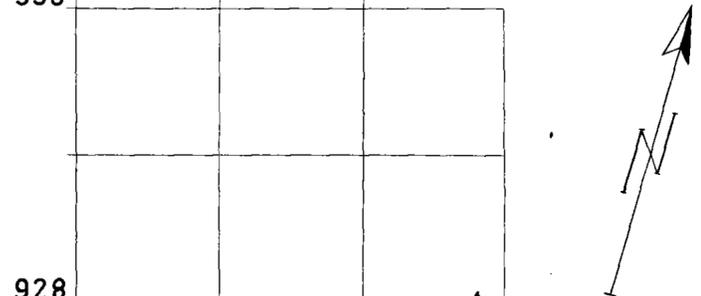
Base: Lands & Surveys 1:31,680  
Henrietta 8015-IV-S  
Natone 8015-I-S

\* Magnetic Station

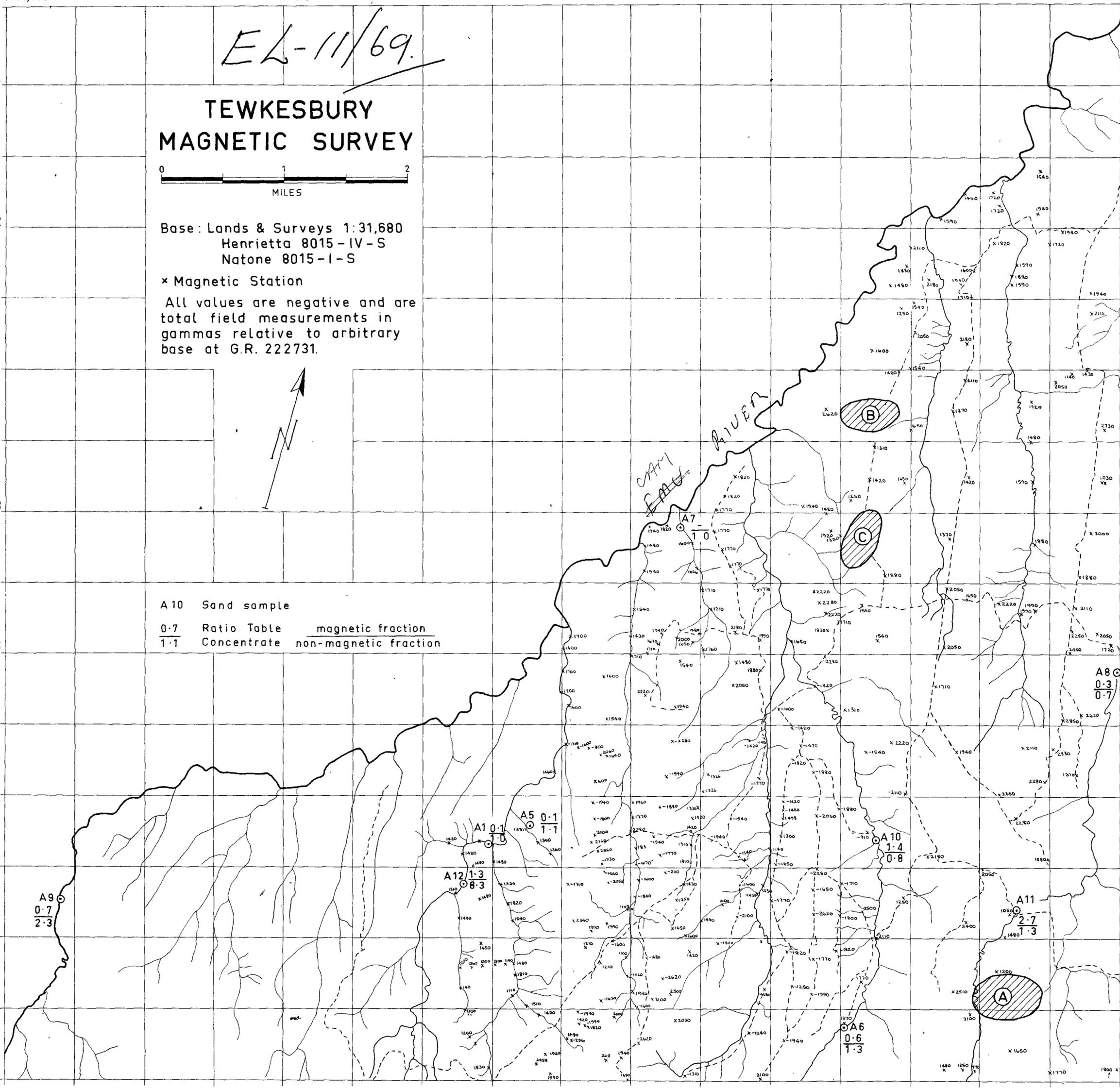
All values are negative and are total field measurements in gammas relative to arbitrary base at G.R. 222731.

934  
932  
930  
928  
926  
924  
922  
920

364 366 368 370 372 374 376 378 053008 380



A10 Sand sample  
0.7 Ratio Table magnetic fraction  
1.1 Concentrate non-magnetic fraction



A8  
0.3  
0.7

EL-11/69 Anomaly B

Sketch map only.  
 ALL VALUES ARE NEGATIVE  
 AND ARE TOTAL FIELD  
 MEASUREMENTS IN GAMMAS  
 RELATIVE TO ARBITRARY  
 BASE AT G.R. 222731  
 o Magnetic Station.

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Road 2420 O

2510 O  
 2000 O  
 O  
 2510 O  
 2400 O  
 2280 O

Plantation Tree,  
 Rows  
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

3100/32600

2940 O  
 2950 O  
 3450 O  
 3800 O

3280 O  
 3280 O  
 3450 O  
 3450/32800

3100 O  
 2940 O  
 3100 O  
 3620 O  
 3280 O  
 3100 O  
 3100 O  
 3280 O  
 3100 O  
 2940 O

3450 O  
 3100 O  
 3450 O  
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 3280 O  
 3100 O  
 2760 O  
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 2340 O  
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02620

02420

02570

02400

02510

02500

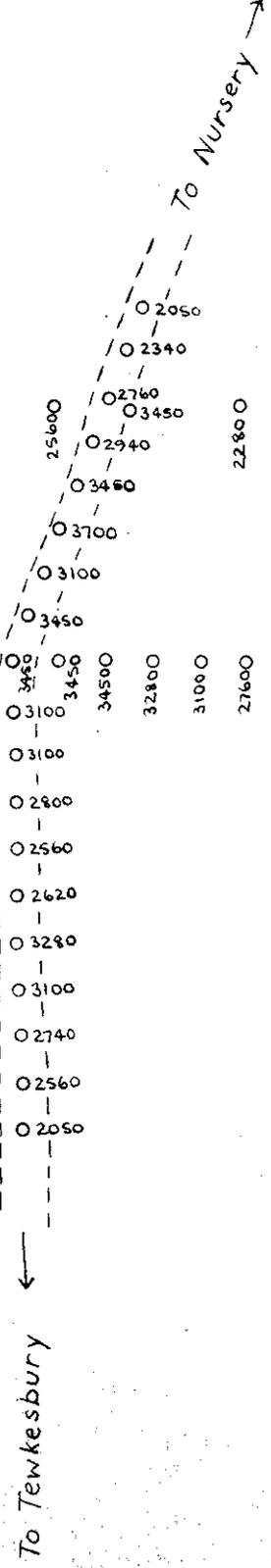
02280

01850

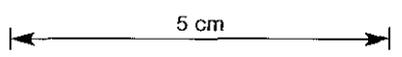
02670

02170

02160



APPROXIMATE SCALE  
 80 YARDS : 1 INCH



053009

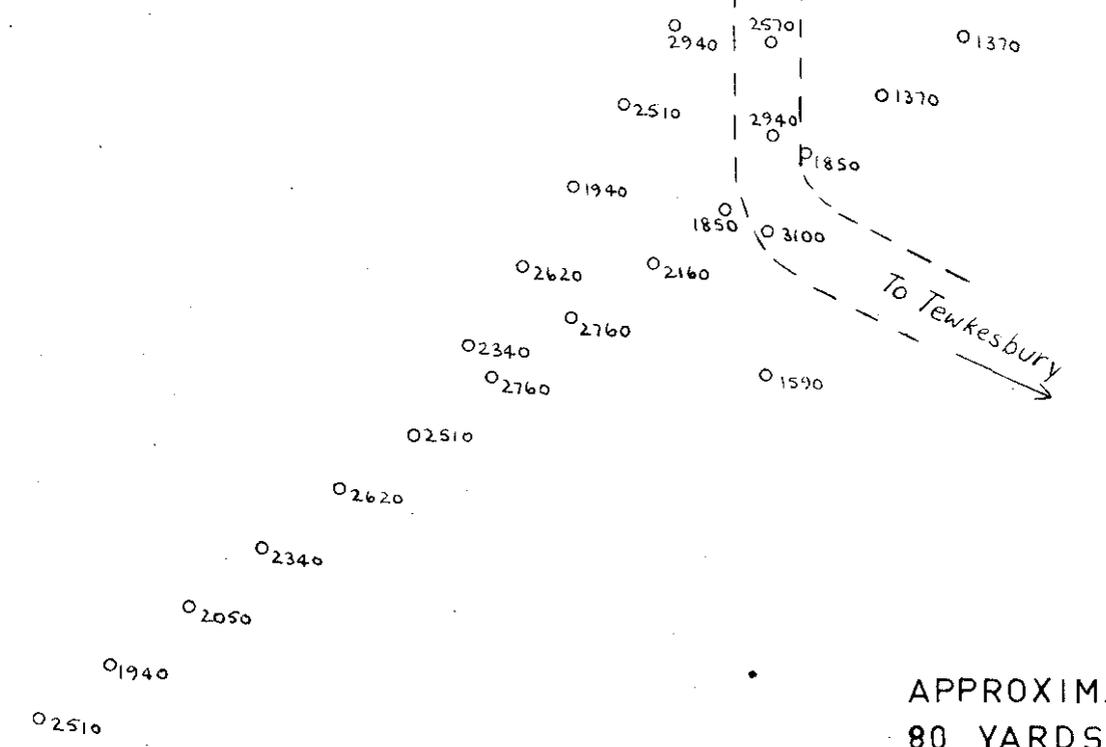
EL-11/69

Anomaly C

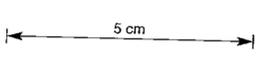


Sketch map only.  
ALL VALUES ARE NEGATIVE  
AND ARE TOTAL FIELD  
MEASUREMENTS IN GAMMAS  
RELATIVE TO ARBITRARY  
BASE AT G.R. 222731

o Magnetic Station.



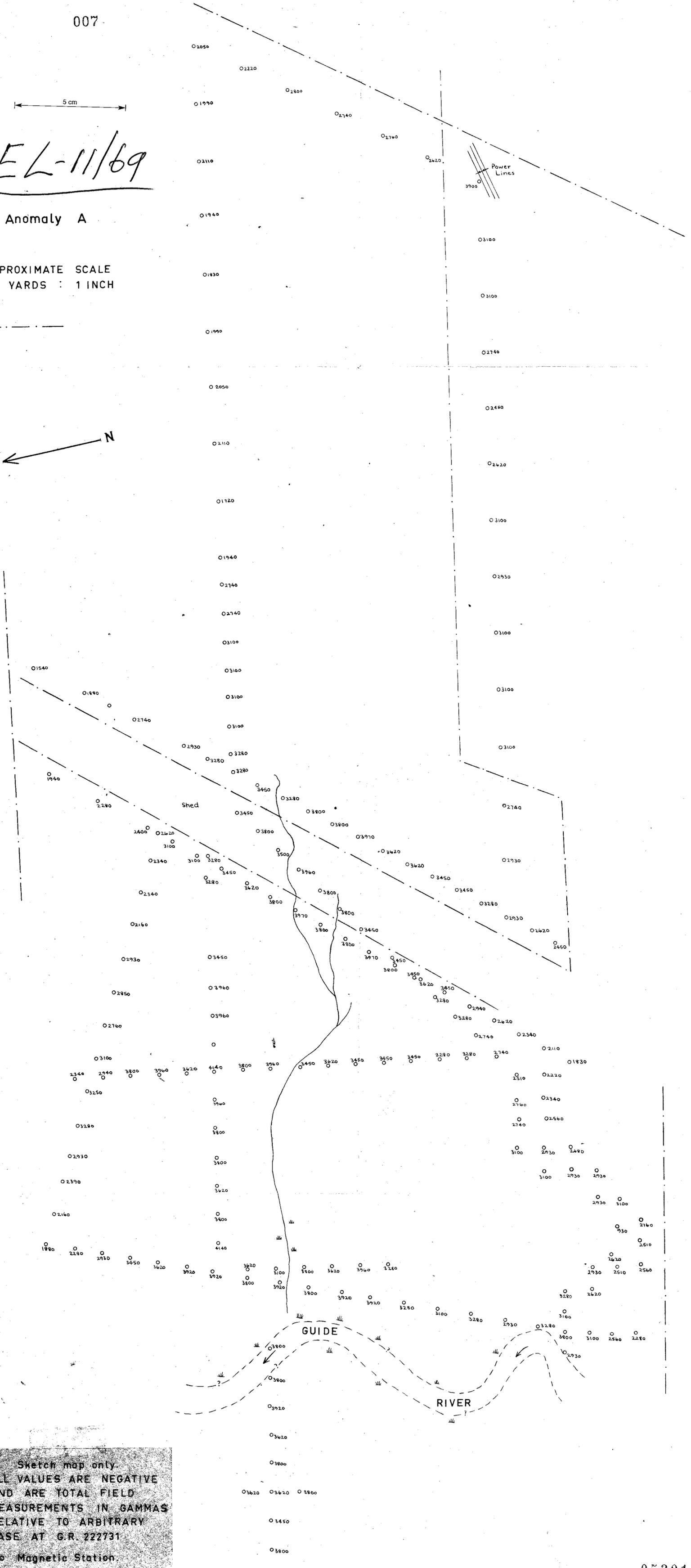
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Anomaly A

APPROXIMATE SCALE  
40 YARDS : 1 INCH



Sketch map only  
ALL VALUES ARE NEGATIVE  
AND ARE TOTAL FIELD  
MEASUREMENTS IN GAMMAS  
RELATIVE TO ARBITRARY  
BASE AT G.R. 222731  
o Magnetic Station