13. SCHIST HILLS - SYMINGTON AREA (EL 2367)

13.1 Introduction

The Symington Magnetic Anomaly is coincident with a distinct geological feature five kilometres north of Dead Bullock Soak. It has a strike length of twenty kilometres, with exploration focused on a sigmoidal flexure where the indicated width is greatest. The amplitude of this magnetic anomaly is 2500nT above the background, which is significantly high even in the regional setting.

In 1990 a substantial orientation program was undertaken. Geophysical surveys, utilising horizontal loop electromagnetics and magnetics covered seven widely spaced traverses across the eastern and central sector of the feature. Four of those lines were subsequently RAB drilled. The drilling revealed a sequence of fine grained metasediments with fold repeated magnetite rich beds. Conformable metabasics intrude these sediments. Low grade contact metamorphism of restricted widths is recognised adjacent to mapped and inferred granites.

The dominance of magnetite rich metasediments marks a conspicuous difference to the chlorite chert-bearing bedrock of the equivalent Blake Beds at DBS.

13.2 Work Undertaken

During 1991 the western three kilometres of the fold axis associated with sygmoidal flexure were investigated. 7 north-south traverses spaced at intervals of 400 metres were tested by ground EM surveys (21.8 line kilometres). The magnetic survey covered these lines together with an additional 3 traverses for a total of 30.5 line kilometres.

Shallow vacuum drill holes sampled weathered bedrock on 5 lines of the grid. 99 holes were drilled for a total of 936 metres. 583 samples were collected for Au/As assay.

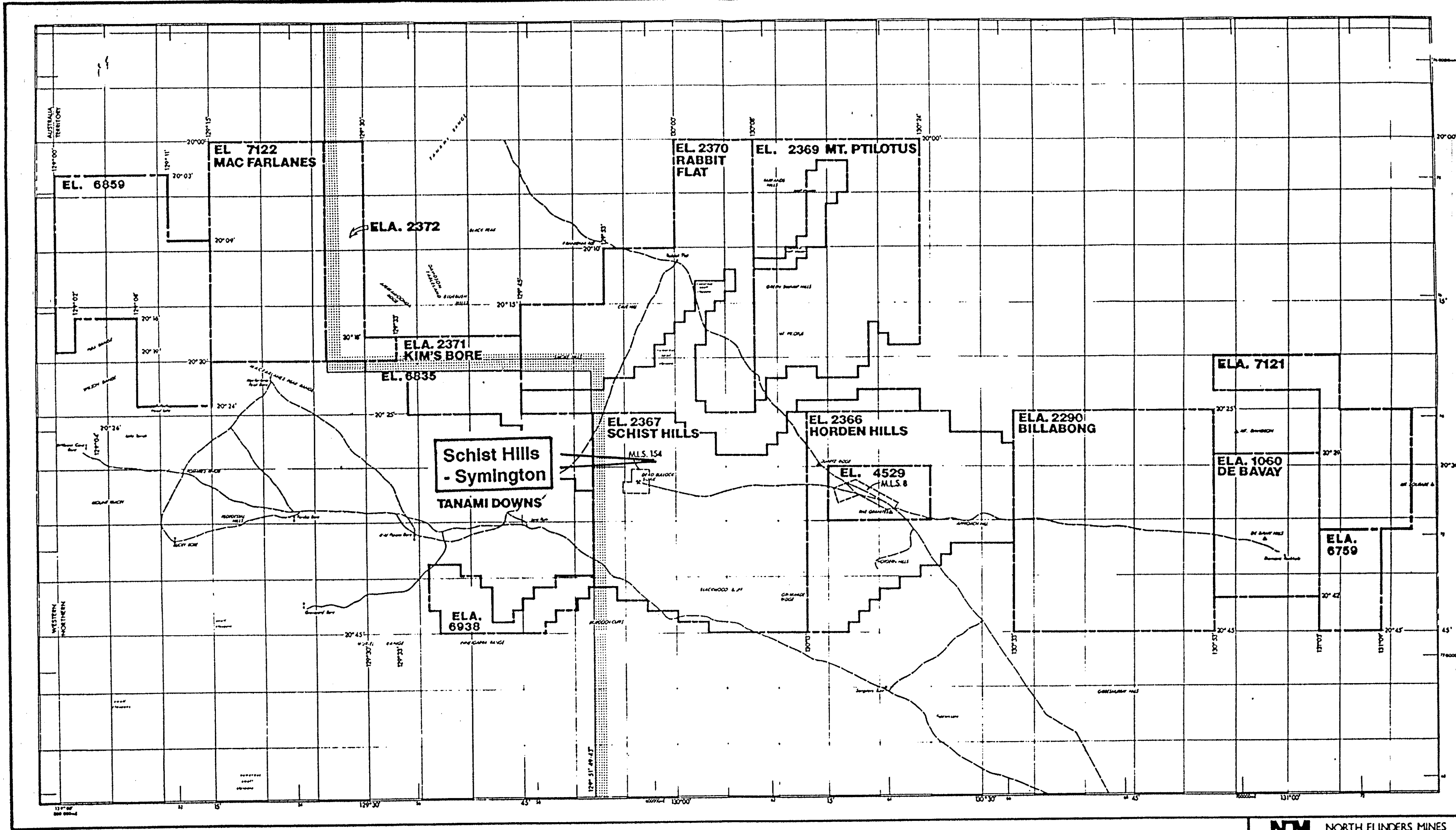
A statistical summary appears below -

Traverses AMG	Isobel	Length (km)	Geophys HLEM	Survey magnetics	Vacuum drillholes	Meterage	Assay Au/As
597000	NO	2.4	NO	completed	NO	NA	NA
597400	NO	2.5	NO	"	NO	NA	NA
597800	32	2.7	completed	"	16	207	131
598200	33	3.0	"	"	17	180	111
598600	34	3.2	"	"	23	206	127
59900	35	3.5	"	"	25	223	140
599400	NO	3.8	NO	"	NO	NA	NA
599800	36	3.4	completed	"	18	118	74
600600	NO	3.5	"	"	NO	NA	NA
601400	NO	2.5	"	"	NO	NA	NA
TOTAL10 Trv		30.5	7 Trv	10 Trv	99	936	583

13.3 Results

Geophysics

The HLEM (Max-Min) instrument successfully indicated the conductors, but was unable to differentiate the attributing rock units; whether by association the favoured graphitic/chlorite package or the broad deeply kaolinized dolerite intrusives. Within and adjacent to the conductor, narrow resistive units were identified, some of which were the target chert/quartz bearing horizons. To resolve the geology at Symington, the covered bedrock required drill intersections, albeit selective.



NORTH FLINDERS MINES LIMITED

Tanami Reconnaissance : Northern Territory.

EL LAYOUT

1:250 000

Drg. No. 20-1

An attempt to correlate the HLEM anomalies from line to line using the flow of the stratigraphy defined by the magnetic data was inconclusive. The reason is that the highly magnetic deeper massive rock units overwhelmed the shallower smaller signature magnetic horizon, ie the units possibly related to the iron rich targets. The structural complexity at Symington therefore precluded the option of computer modelling to separate the multiple components of the magnetic anomaly.

At the DBS prospect, the Max-Min system has clarified similar complexities. But at Symington the electrical proportion of the near surface material (and perhaps any perched water tables) are such that the HLEM is less effective. A time domain system is recommended at other highly prospective areas similarly affected.

The Sirotem or equivalent instrument would provide greater penetration with improved interpretability; surface effects would be identifiable and distinct from the response of an underlying conductor horizon.

Vacuum Drilling

No anomalous samples apart from an isolated 0.34 ppm value from colluvium were encountered. Wet holes precluded meaningful sampling in many cases.

General Discussion

The work completed on this project identified a structurally disrupted package of magnetic-rich Blake Beds within which is a localised weakly gold anomalous iron formation. This particular horizon is possibly part of a D2 structural repeat of the Revelation Ridge Schist Hills Formation.

Including the 1990 drilling program, no significantly anomalous results were obtained from the bedrock intersections; a peak value of only 48 ppb Au and 20 ppm As was returned. The rare gold results from the Davidson Beds (ie including the Orac and Callie equivalent Formations) were generally less than 15 ppb and seldom above 25 ppb. Arsenic results were pointedly below or at the detection limit of 10ppm (if quantifiable there is an even rarer occurrence of gold in the western sector).

The correlation of rock units has been reliant on several assumptions:

(i) that the essentially "dry" granite intrusions were emplaced diapirically, with the contacts essentially conformable to the strike of the metasediments, and with minimal consumption of the country rock;

(ii) the basic intrusives behaved as broadly conformable sills, and having a spatial but genetically unspecified relationship with the bedding-parallel shear zones; and

(iii) that a structural model of a series of east-west trending F2 folds is viable. The basis of such a fold pattern is similar to that recognised at Mt Neverest (Ding, 1990).

The structural model proposed at Symington has that between the Orac Fm of the Dromedaries and the Schist Hills Fm of Revelation Ridge, a major F2 anticline trends to the east and closes at the eastern extremity of Revelation Ridge. There is evidence for such a proposal at RAB traverse 18, which traversed the east toe of Revelation Ridge, and failed to intersect the SHFm. This anticline has a moderate dipping south limb - the Ridge, and a very steep north limb - the Dromedaries, which defines an isoclinal south dipping axial plane. The poorly exposed area between the Dromedaries and the granite stock of the Inspiration district is interpreted as a major F2 syncline, which opens to the east adjacent to Rob's Rise. The geological evidence remains, however, speculative.

The major sinuosoidal fold at the Symington Magnetic Anomaly (SMA) may represent a warping of the regional WNW extensional strain; a localised product of the two confining and resilient granites at 590E and 601E. In the central sector, north-west of the Dromedaries, the small elongate granite stocks and doleritic sills that intrude the Blake Beds suggest emplacement along the orthogonal tension fractures.

There are two dominant sedimentary facies; one of which is magnetite rich metasediments, including claystones and fine grained weakly feldspathic quartz sandstone. The other facies is represented by matrix-rich sericitic to chloritic (after biotite) metasiltstone and sandstone with both magnetite and leucoxene.

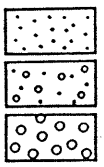
13.4 Plans

Drawing No	Title	Scale
500-3512	Fact Geology, Schist Hills	1:5000
500-354+355	Fact Geoloyg, Schist HIlls	1:5000
500-369	Geochem. Sampling, Schist Hills	1:5000
500-372+373	Geochem. Sampling, Schist Hills	1:5000
500-1359	RAB Drill Geol. + Assay Cross Sections 599000E + 599800E	1:500
500-1360	RAB Drill Geol. + Assay Cross Sections 598600E + 599000E	1:500
500-1361	RAB Drill Geol. + Assay Cross Sections 597800E + 599800E	1:500

STRATIGRAPHY FOR DEAD BULLOCK SOAK

FACT & INTERPRETED GEOLOGY
1:500 & 1:2 500

STRATIGRAPHY



Recent Colluvium

Lateritic Colluvium

Pisolitic / Nodular Laterite

MADIGAN BEDS

MB

DAVIDSON BEDS

SCHIST HILLS FORMATION

SSS — **SELDOM SEEN SCHIST :** Massive graphitic schist

MCH — **MANGANIFEROUS CHERT :** Interbedded manganiferous graphitic schist (variable accessory f.g. cummingtonite garnet) and white chert.

CS — **COLGATE SCHIST :** Massive graphitic schist containing thin chert marker horizon.

SHIM — **SCHIST HILLS IRON MEMBER :** Interbedded amphibolitic cherts and amphibole chlorite schists, variable limonite after magnetite and sulphide.

DBB — **DEAD BULLOCK BEDS :** Graphite, sericite quartz biotite schists with amphibolitic chert at base, usually in contact with Coora Dolerite.

CD — *COORA DOLERITE*

ORAC FORMATION

UOS — **UPPER SCHIST MEMBER :** Biotite and graphite schists

UOC — **UPPER CHERT MEMBER :** Banded cummingtonite chlorite schist and chert.

MOS — **MIDDLE SCHIST MEMBER :** Graphitic schists with minor andalusite rich bands, pelites and psammites.

LOC — **LOWER CHERT MEMBER :** Banded cummingtonite chlorite schist and chert.

EARLY PROTEROZOIC

BLAKE BEDS

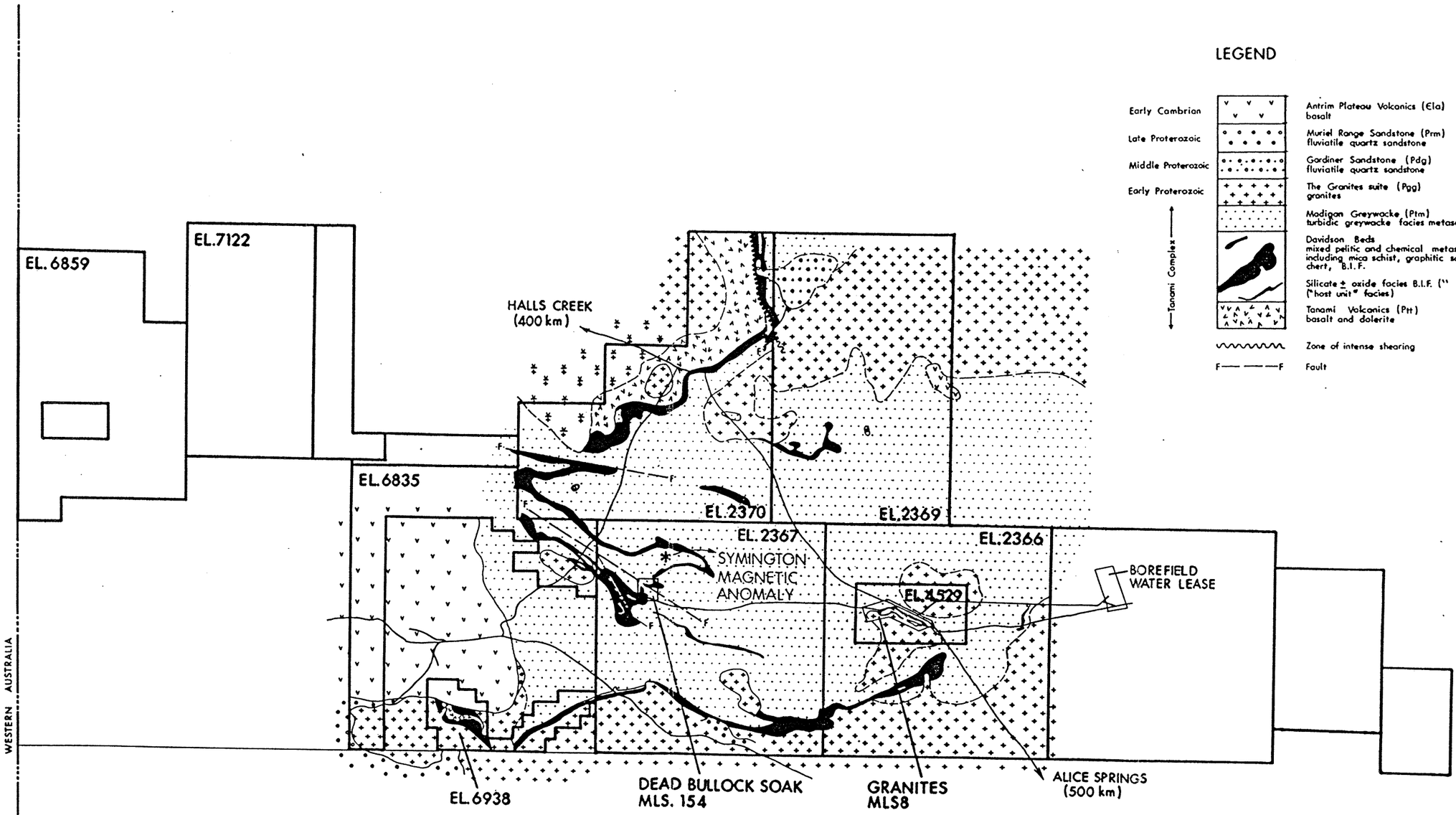
BB — Interbedded pelites and psammites grading to graphitic schist, with ferruginous boudin chert beds towards base of ORAC FORMATION

IGNEOUS ROCKS

Glimmerite

BI — Undifferentiated Basic Intrusion

Granite, Granodiorite



LEGEND

- Early Cambrian — Antrim Plateau Volcanics (Ela) basalt
- Late Proterozoic — Muriel Range Sandstone (Prm) fluviatile quartz sandstone
- Middle Proterozoic — Gardiner Sandstone (Pdg) fluviatile quartz sandstone
- Early Proterozoic — The Granites suite (Pgg) granites
- Madigan Greywacke (Ptm) turbidic greywacke facies metasediments
- Davidson Beds mixed pelitic and chemical metasediments including mica schist, graphitic schist, chert, B.I.F.
- Silicate ± oxide facies B.I.F. ("host unit" facies)
- Tanami Volcanics (Ptt) basalt and dolerite

Tanami Complex — Base Mt. Charles Beds

Zone of intense shearing

F——F Fault

10 0 10 20 30 40 50 Klm

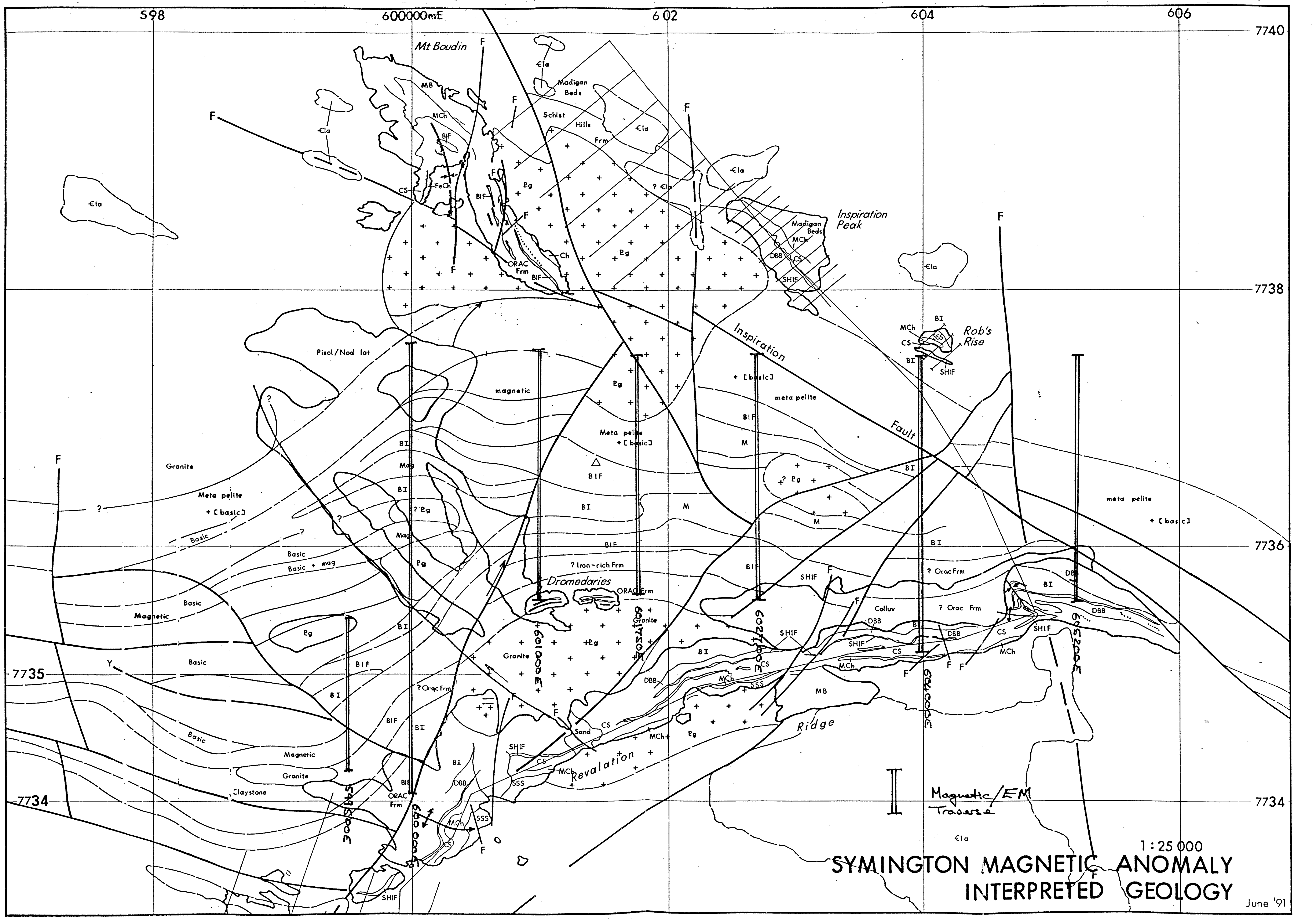
SCALE: 1:700,000 approx.

TN MN

mag. dec 3°45'

SIMPLIFIED INTERPRETIVE GEOLOGY SHOWING PROSPECT LOCATIONS

C. Giles, January 1990.



598
600000mE
602
604
606
7740
7738
7736
7735
7734
Mt Boudin
Madigan Beds
Schist Hills Frm
Inspiration Peak
Rob's Rise
Inspiration Fault
Pisol/Nod lat
magnetic
Meta pelite
+ [basic]
meta pelite
Granite
Basic
Basic + mag
Magnetic
Claystone
Dromedaries
? Iron-rich Frm
ORAC Frm
? Orac Frm
Colluv
Revalation
Ridge
Sand
599500E
600000E
601000E
601750E
602700E
604000E
605200E
Magnetic/EM Traverse
1:25 000
SYMINGTON MAGNETIC ANOMALY
INTERPRETED GEOLOGY
June '91

14. MADAM MARGI EAST (EL 2367)

14.1 Introduction

Between 1989 and 1991 an intense exploration program at Dead Bullock Soak (ML S154) has outlined mineable gold resources at Dead Bullock Ridge, Triumph Hill, Colliwobble Ridge/Sleepy Hollow, Villa, Fumarole and Callie. Exploration has followed out prospective lithologies and structural elements into the surrounding EL 2367. The as yet uncompleted vacuum drilling program at Madam Margi East is a part of this exploration effort.

14.2 Work Undertaken

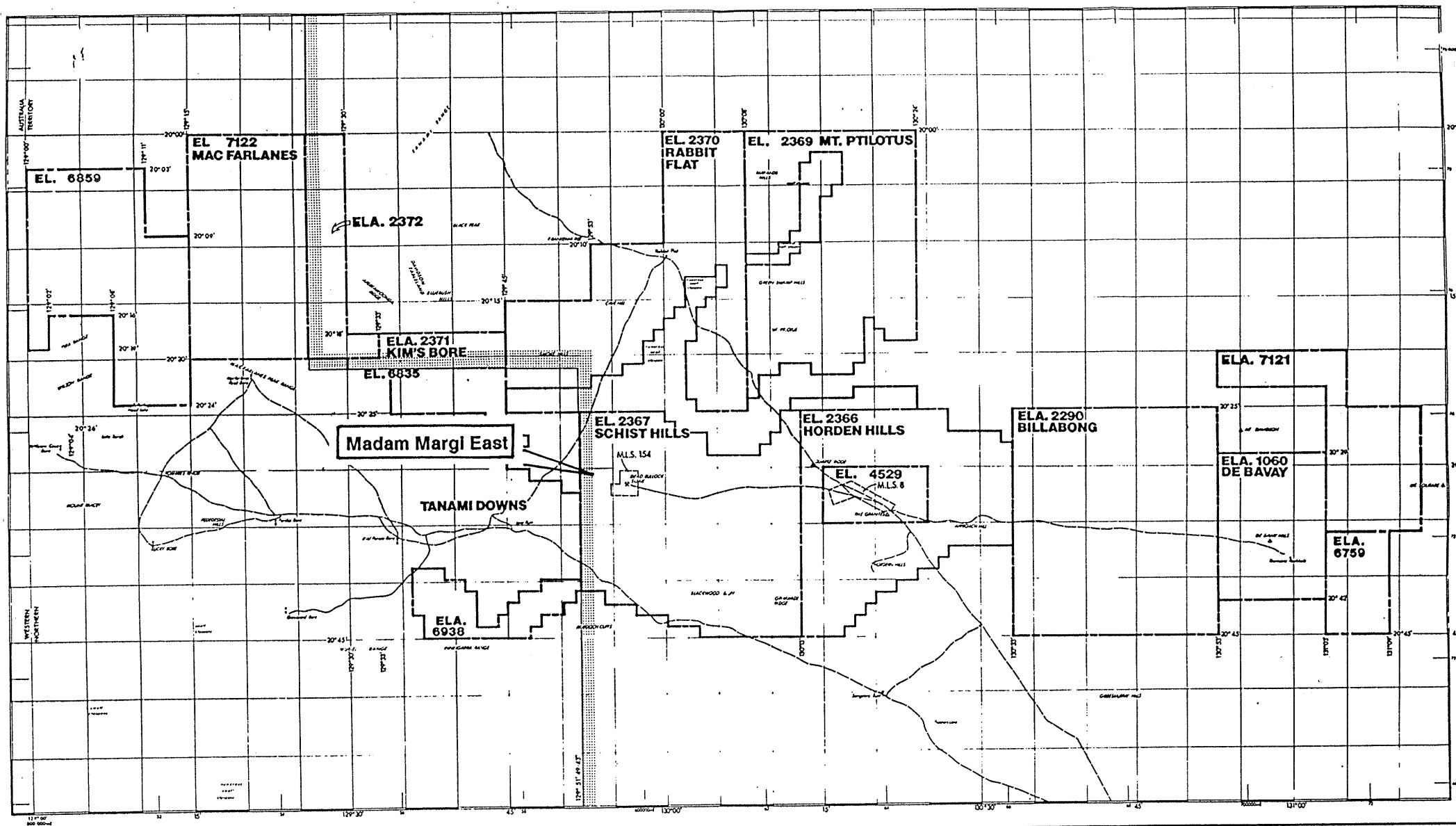
85 shallow vacuum holes were drilled on a single traverse (80550E, local grid) to test for gold/arsenic anomalies. Samples were taken over two metre intervals over the length of each hole, which ranged from 1.5 to 20 metres in depth. The program will be completed in 1992.

14.3 Results

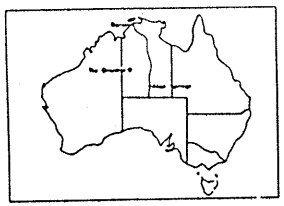
Results from this work have identified one weak gold and arsenic anomaly (9ppb Au, 160ppm As) in the vacinity of Dingo Dell. Host lithology for the anomalous results are fine grained schists with a trace of quartz veining and are situated just beneath the Boudin Chert horizon within the Blake Beds of the Dead Bullock Soak stratigraphy. The drill logs of the holes containing the anomalous results indicate colluvium contamination of the sample, hence these results may not indicate true bedrock anomalies. The vacuum programme designed for the remainder of the Madam Margi grid should be completed before any definite interpretation of results can occur.

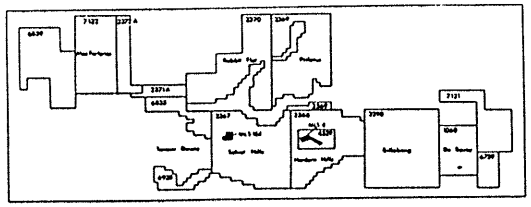
14.4 Plans

None presently available as survey incomplete.



LOCATION MAP





LEGEND

NORTH FLINDERS MINES LIMITED

Tanami Reconnaissance : Northern Territor

EL LAYOUT

1:250 000

KILOMETRES

DATA BY

DRAWN MARCH '89

AMENDED

Drg. No. 20-