10. QUARTZ RIDGE (EL 2366 and 2367)

10.1 Introduction

The Quartz Ridge area of interest is located eight kilimetres north-west of the Ivy exploration camp and straddles the boundary of EL 2366 and 2367. Much of the prospective stratigraphy is covered by recent alluvial deposits.

Previously, most of the outcrop was mapped as unprospective Madigan Beds greywacke. Since this study, dolerite intrusives and ?garnet-bearing metacherts have been identified, which in several instances coincide with an indicated fault disrupted magnetic horizon. As a package, these intercalated siltstone and metachert units could be a representative of a silty variant of the Davidson Beds. The indicated upper greenschist metamorphic grades and the presence of chemical sediments as cherts is the association.

Gold and arsenic anomalism was detected at separate and localised sites. This may reflect the wide 0.8 kilometre spacing of the RAB traverses. The elevated gold values (12ppb) are confined to a silty variation of the Davidson Beds or the (graphitic) basal shale of the Madigan Beds. It is speculative that along strike the gold and arsenic anomalism is coincident with the same stratigraphic horizon.

Magnetic anomalies at Quartz Ridge have similarities with other prospects with confirmed mineralised potential. The Magellan prospect, for example, has mineralised Davidson Beds (with a 200nT magnetic signature) surrrounded by an envelope of Madigan Beds; the Anomaly 2 prospect hosts gold mineralised quartz veined shears within iron-rich Madigan Beds (with a 80-100nT magnetic signature).

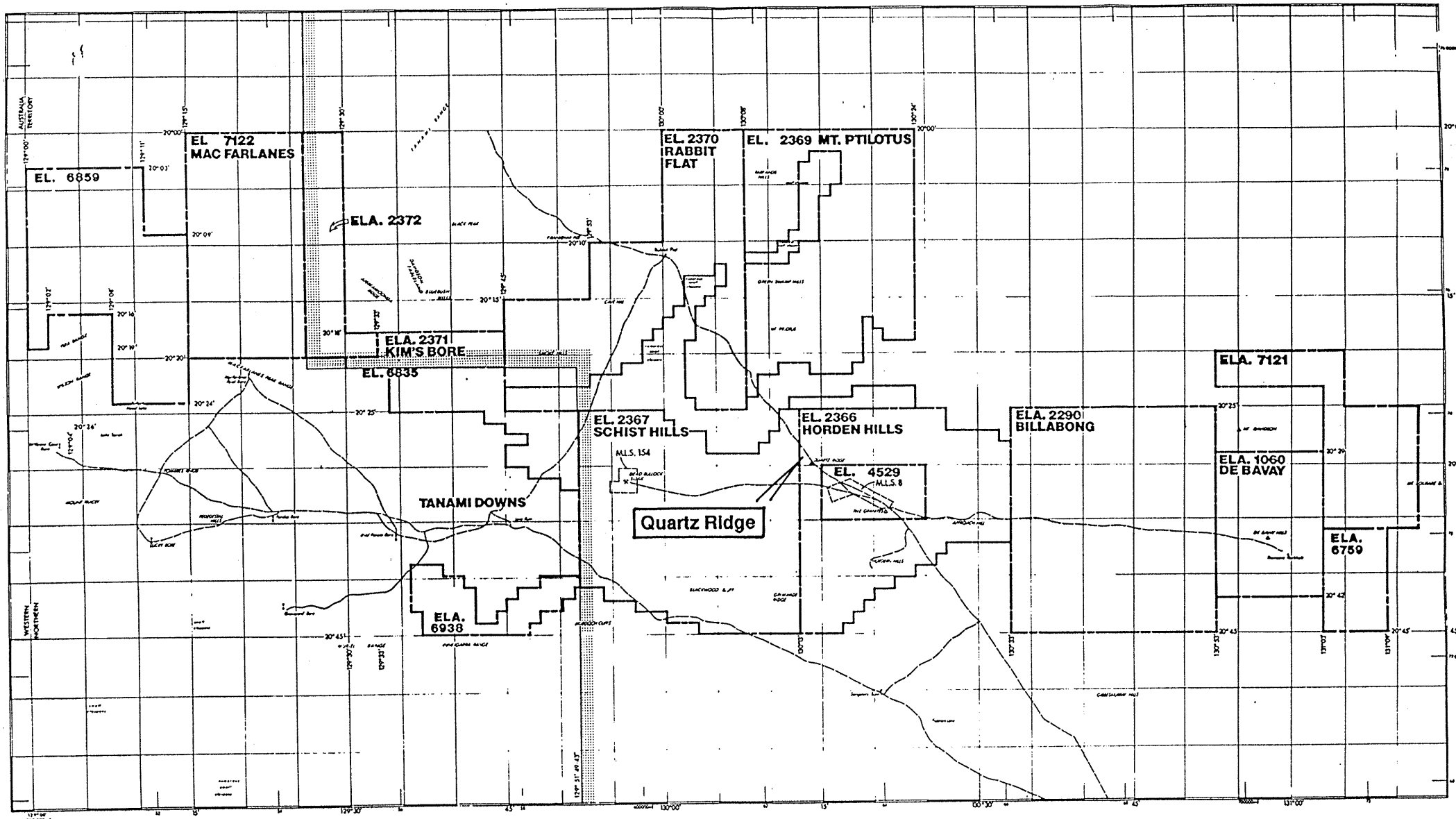
The structural setting is also attractive, with the extrapolated strike of the Granites Fault tracing along the southern margin of the magnetic anomaly. Confirmation of Davidson Beds juxtaposed to this fundamental decollement zone is analogous to the geology of the Granites Mine, only ten kilometres to the south east.

10.2 Work Undertaken

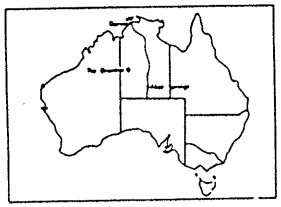
During 1991 the airborne magnetics data was interpreted and used to plan 4 ground magnetic traverses (16.0 line kilometres) to detail iron-rich horizons. The southern sections of three of these traverses were tested by 49 RAB drill holes for a total of 1777 metres and 360 assay samples. 2.6 line kilometres of the traverses were drilled. Colluvium depths of over 25 metres were encountered.

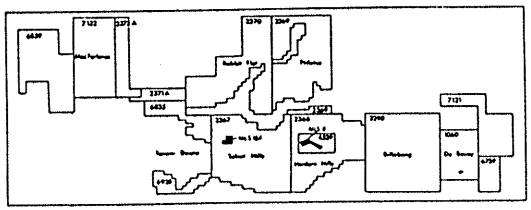
A summary of the work undertaken appears below -

Traverse	EL	Magnetics	Drillholes		Samples	
		(line km)	Nos.	Meterage	Assays	Petrology
626500E	2367	4.6	16	289	91	5
627200E	2366	2.6	16	358	114	2
628000E	2366	5.9	-	-	-	-
628700E	2366	2.9	17	1130	155	4
	TOTAL	16.0	49	1777	360	11



LOCATION MAP





LEGEND

NORTH FLINDERS MINES LIMITED

Tanami Reconnaissance : Northern Territory

EL LAYOUT

1:250 000

KILOMETRES

DATA BY			AMENDED	
DRAWN	MARCH '89		CHKD	Drg. No. 20-1

10.3 Results

From previous reconnaissance mapping, the geology was regarded as an undifferentiated greywacke facies of the Madigan Beds, with a distinctive four kilometre long quartz vein striking oblique to the bedrock but parallel to the north-west trending regional structures.

The response shown by the airborne magnetic survey indicated a series of disjointed anomalies with amplitudes in the 100-200nT range. Recent computer modelling of the magnetics has developed a more reliable interpretation. The result is the identification of two separate magnetic horizons which represent a single lithological unit, folded into an anticline and disrupted by a later fault. The susceptibility value of 0.0017e.m.u. is fairly low and consistent with the low magnetic content expected of iron-rich metasediments.

The southern magnetic horizon appears to have two distinct members, with the dip of the horizon ranging from 45 to 65 degrees south. The northern horizon, an anomaly that is clear of interference from other features, also indicates a south dip of 45 degrees. The deepest magnetic sources were in the centre, which implies that between the two bounding north-south faults the block was down thrown, i.e. a small rift of 1.5 to 2 kilometre width. There is an apparent displacement north of the horizons, which would indicate a wrench component in this north-north east fracture zone.

The Madigan Beds of the southern magnetic horizon are dominated by a sandstone-shale facies, which is either in transition or intercalated with a silty variant of the Davidson Beds. The metamorphic grade of these rocks ranges up to biotite grade, localised in the east as a narrow contact aureole to a granite.

It is indicated that the silty or chemical sediments of the Davidson Beds are of upper greenschist facies, whereas the turbidites of the Madigan Beds are nowhere higher than biotite grade, except in the contact aureoles. The suggestion is that the Madigan Beds were not adjacent to the Davidson Beds during peak metamorphism. A model discussed by Purvis (internal report 1991) is one involving extension during late D1. This would not disrupt the stratigraphy of the Davidson Beds. The development of deformed slates in the Madigan Beds appears to be restricted to zones which may be related to this detachment model, as at Approach Hill. The higher metamorphic grade indicated in the south west by drillhole QRRB047 may suggest a structural contact zone and not a regional event. The well-layered nature of the sediments and the clearly ductile behaviour of many of these layers would favour structural models involving thin-skinned tectonics. Such fractures with initially horizontal structural elements are common in Proterozoic terrains.

The diffuse geochemical values east of Quartz Ridge reveal anomalism in the transported surficial cover alone. Although bedrock depth is between five and ?seven metres, the BOH bedrock assay results do not support a host source nearby. The source of the gold and arsenic could be up to ten kilometres distant as apparently is the case downstream of the DBS mine. The tin values could probably reflect the post tectonic granites known east of Quartz Ridge.

A table of geochemical anomalies located since 1989 appears below -

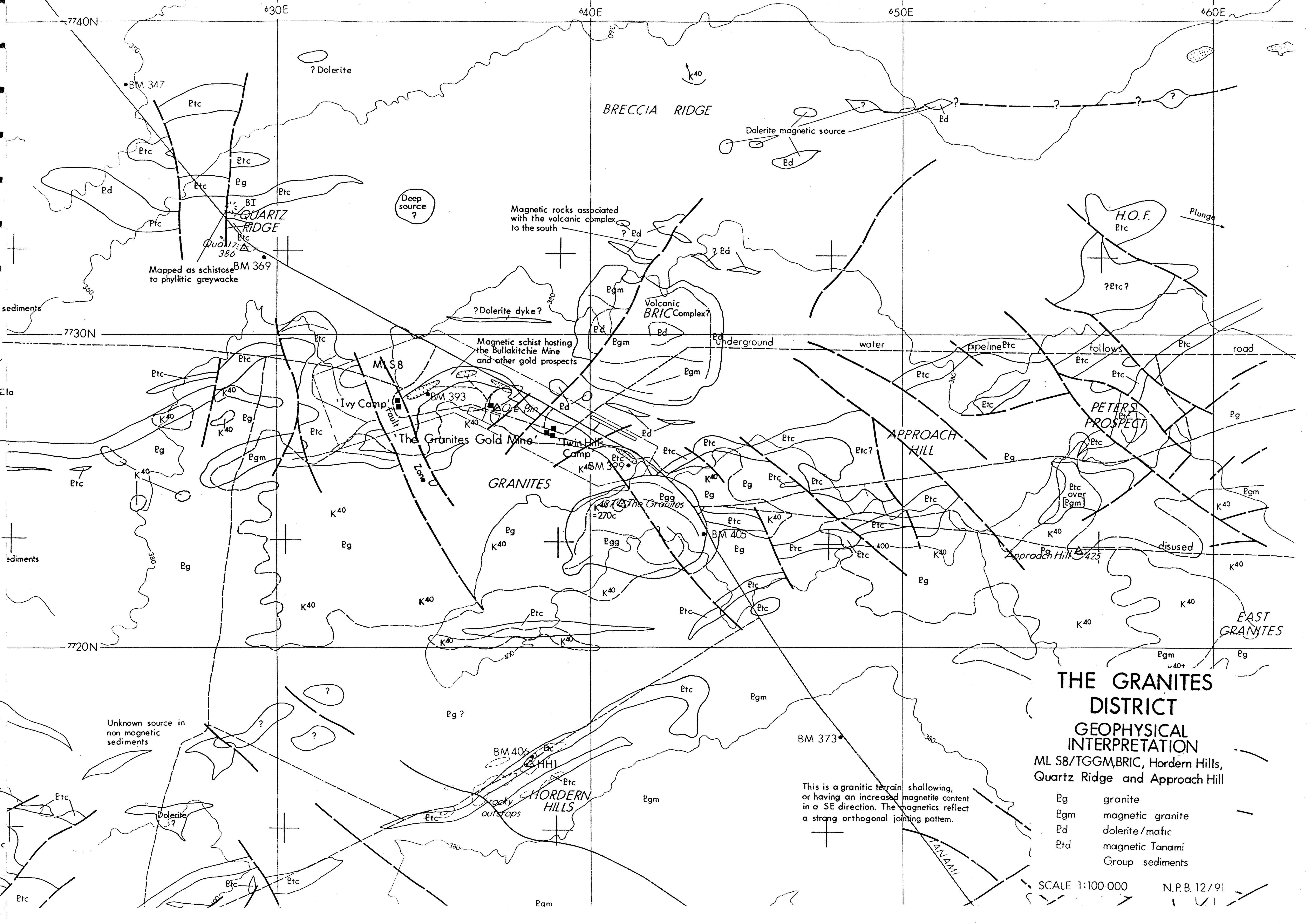
TABLE: GEOCHEMICAL ANOMALIES SINCE 1989

Area	Drillholes Samples	Sample Type	Depth (m)	Au (ppb)	As (ppm)	Ag (ppb)	CHI*6	Geology
Central	GRRB008	drillhole	28-30	12	x			metapelite
	GRRB017	drillhole	13-16	13	30			(graph) pelite +geothitic qtz
	GRRB051	drillhole	10-25	x	70			(graph) pelite
	GRRB049	drillhole	13-19	x	90			lim-alluv
East	281979	BCL	0-1	1.43		19.1		lat pisolite
	281968	BCL	1-2	2.00		5.95		lat pisolite
	LSV720	BCL	1-3	1.28		28.7		silts
	LSV721	lat	1-2		64			loose pisolite
	LSV755	BCL	2-3	1.36		17.0		lat.silts
	282094	BCL	1-2	2.65		87.5		silts
	LSV719	lat	1-3	12	100		451	loose pisolites
	281966	BCL	0-1	6.25		9.25		loose pisolite
	281964	BCL	1-3	8.83		33.3		lateritic pisolite
	LSV717	BOH	5-6	4				saprolitic givche

BCL - Bulk Cyanide Leach
lat - Laterite

10.4 Plans

Drawing No	Title	Scale
50-102	Regional Map J16 - Geophysical Interpretation	1:25000
60-300	Regional Map J16 - Fact Geology	1:25000
2500-1345	Quartz Ridge RAB Cross Section 626500, Traverse 1	1:500
2500-1346	Quartz Ridge RAB Cross Section 627200, Traverse 2	1:500
2500-1347	Quartz Ridge RAB Cross Section 628700, Traverse 3	1:500



THE GRANITES DISTRICT
GEOPHYSICAL INTERPRETATION
ML S8/TGGM,BRIC, Hordern Hills, Quartz Ridge and Approach Hill
Ꝑg granite
Ꝑgm magnetic granite
Ꝑd dolerite/mafic
Ꝑtd magnetic Tanami Group sediments
SCALE 1:100 000
N.P.B. 12/91
630E
640E
650E
660E
7740N
7730N
7720N
? Dolerite
BM 347
BRECCIA RIDGE
Dolerite magnetic source
Deep source ?
QUARTZ RIDGE
Quartz 386
BM 369
Mapped as schistose to phyllitic greywacke
Magnetic rocks associated with the volcanic complex to the south
H.O.F.
Plunge
?Ꝑtc?
? Dolerite dyke ?
Volcanic BRIC Complex?
Magnetic schist hosting the Bullakitchie Mine and other gold prospects
ML S8
'Ivy Camp'
Fault Zone
BM 393
Ore Bin
'The Granites Gold Mine'
Twin Hills Camp
BM 399
GRANITES
The Granites
BM 405
underground water pipeline follows road
APPROACH HILL
PETERS PROSPECT
Ꝑtc over [Ꝑgm]
Approach Hill 425
disused
EAST GRANITES
Unknown source in non magnetic sediments
BM 406
HH1
rocky outcrops
HORDERN HILLS
BM 373
This is a granitic terrain shallowing, or having an increased magnetite content in a SE direction. The magnetics reflect a strong orthogonal jointing pattern.
TANAMI
Dolerite ?
sediments

QUARTZ RIDGE

Residual Magnetic Contours

Scale 1 : 25000

N.B. 1986

7738000N

7736000N

7734000N

624E

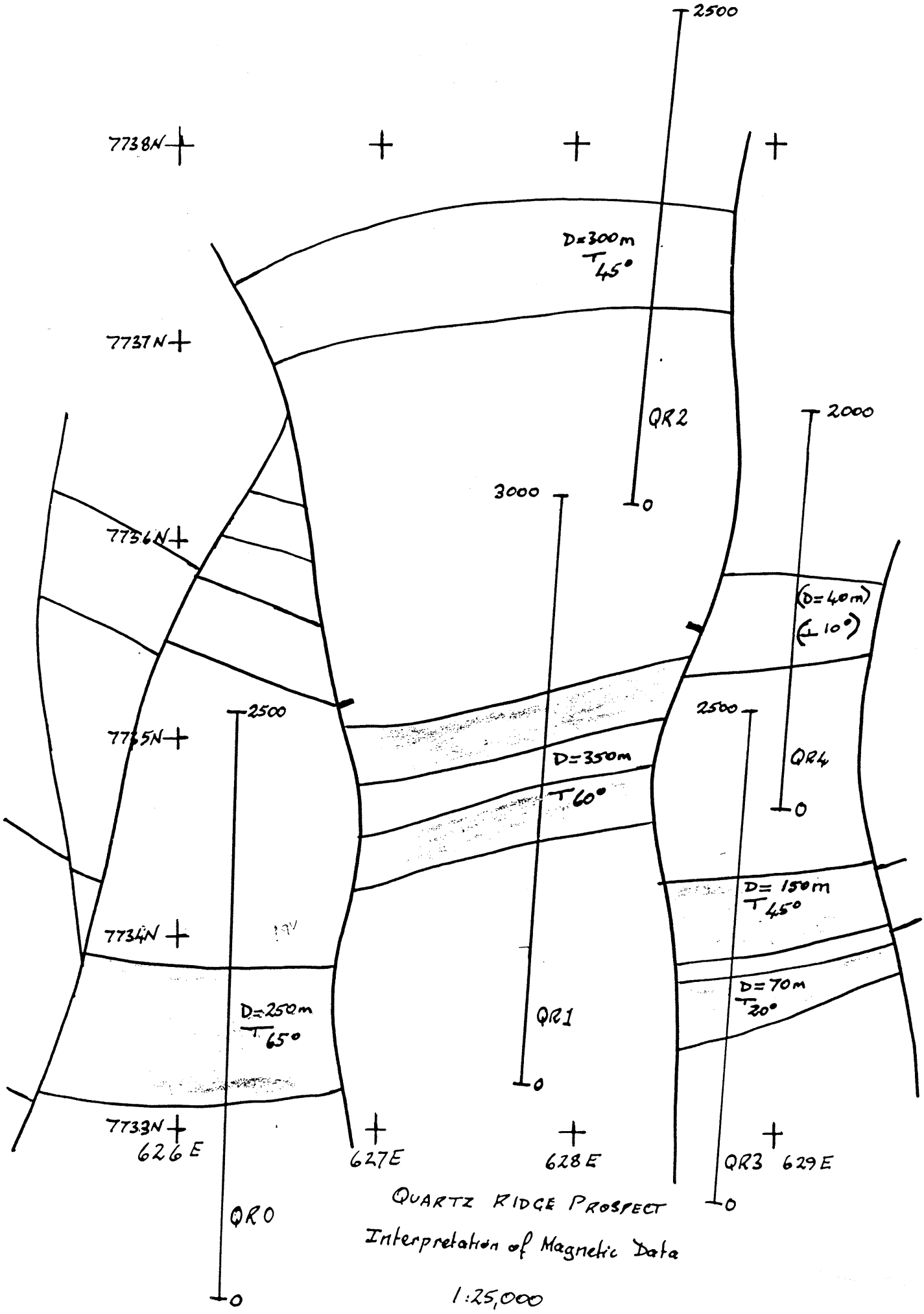
626E

628E

630E

632E

Quartz Ridge



QUARTZ RIDGE PROSPECT

Interpretation of Magnetic Data

1:25,000

Hunter Dickinson Inc. 1991

QUARTZ RIDGE PROSPECT

Interpretive Geology

SCALE 1:25000

Lateritic capped
? Dolerite

G±(qV)

Jr1

turbiditic sandstone + shale

intercalated or transitional Davidson-Madigan zone

G
Greyw
pel
G
BSc
G
? Fech
Greyw

F

Tr 2

Greyw
Greyw
q dolerite
BI

Sub o/c ?CSc
TI
? BI

Metapelite +ch
q

q breccia

Interturoiditic

shale

Coll covered granite

Subcropping G

Tr 3

BSc+Fe ch
mica metased
graph shale +ch
BI
G

Contact aureole

? F

Lat
G

? F

Metapelite
G
G

QUARTZ RIDGE

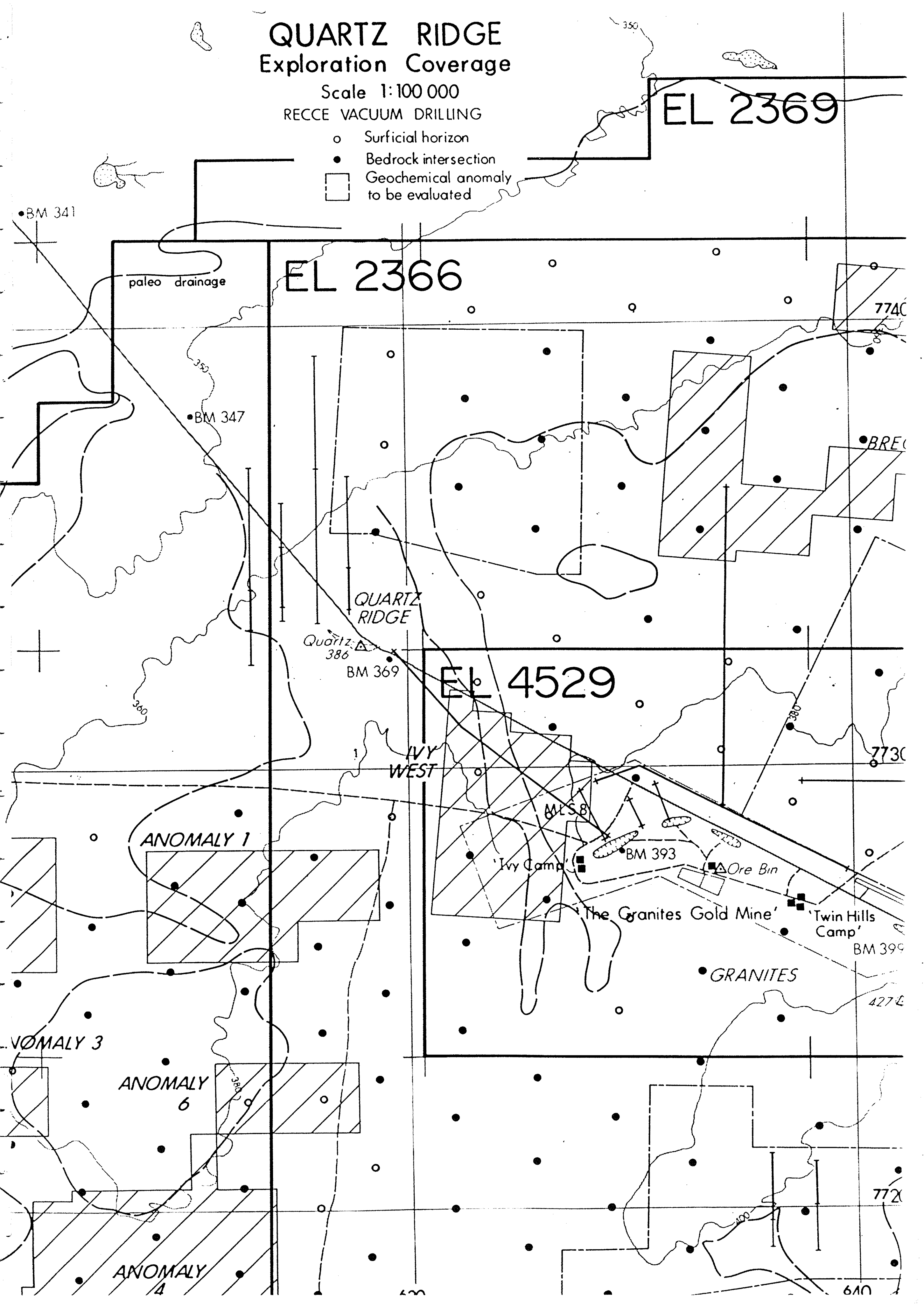
Drainage

was

G
70

q greyw

Lat


QUARTZ RIDGE
Exploration Coverage
Scale 1:100 000
RECCE VACUUM DRILLING
Surficial horizon
Bedrock intersection
Geochemical anomaly
to be evaluated
EL 2369
EL 2366
EL 4529
BM 341
BM 347
paleo drainage
350
360
380
400
7740
7730
7720
QUARTZ
RIDGE
Quartz 386
BM 369
IVY
WEST
MLS 8
BM 393
'Ivy Camp'
Ore Bin
'The Granites Gold Mine'
'Twin Hills
Camp'
BM 399
GRANITES
ANOMALY 1
ANOMALY 3
ANOMALY
6
ANOMALY
4
640