ANNUAL REPORT

E.L.109/87 - MT FAULKNER

for

C.S.R.- READYMIX

by Vic Threader

May 1990

Vic Threader and Associates Pty. Ltd.
Kingston Beach.

CONTENTS

Introduction

This report details a ground magnetometer survey and follow-up diamond drilling which were undertaken to determine the nature of the dolerite contacts.

Ground Magnetometer Survey

The complete report (Leaman 1989) is given in this report as Appendix I. The following is a summary of Leaman's interpretation:

1) both contacts dip steeply (70°) towards the south.

2) a band of low magnetic intensity in the centre of the dyke and roughly parallel to its margins could be due to:

   (i) a zone of deep weathering (as its location is in part co-incident with a stream valley) or

   (ii) compositional variation within the body of the dyke occasioned by chilled margins at intrusive contacts between separate phases of intrusion.

   Weathering was virtually ruled out as the cause of the zone of low magnetic intensity because the zone departs from the axis of the valley at its eastern end and also the change (loss) appears to be systematic within the body of rock. Leaman recommended diamond drilling in order to resolve the problem.

3) the southern boundary of the intrusion "skimmed the hillside very close to the surface".

4) the volume of dolerite is very large and the site could be operated to any depth considered economic. The width of the dolerite dyke would, however, limit depths of working to the 130m level, i.e. ground level at the eastern end of the block.

Diamond Drilling

Two diamond holes were drilled in the low magnetic zone, a vertical hole (No.1) to a depth of 74.80m and an inclined hole (No.2) at -60° to the northwest to a depth of 86.9m (see borehole logs).

These holes were both drilled in hard unweathered dolerite with mean rock densities of 2.93 and 2.92 and standard deviation of 0.06 and 0.03, indicating only very minor deviations from the mean.

A study of a 294m thick dolerite sill by the Department of Mines* gave comparable results: mean 2.91 and standard deviation 0.08. These samples were obtained from a diamond drill hole in Chapel Street Glenorchy about 6km S.E. of the No.1 hole of this report.

In microscopic thin section the dolerite showed a range of textural and compositional variations but none that could be considered detrimental in a crushed rock usage.

Both holes were located in the low magnetic zone but due to the awkwardness of the site it was not possible to direct hole No.2 in a northerly direction. The lateral coverage of the low magnetic zone was 45m in the direction of the hole or 30m to the north i.e. in the line of the section.

Two bands (50 and 60mm) of extremely fine grained chloritised dolerite occurred at depths of 53.70 and 67.00 in B.H.2. The 53.70m occurrence had a density of 2.64 (probably less because the specimen was composite, being in part coarse grained). This material, if it was present in greater amount below the depth drilled, may be the cause of the low magnetic zone.

*Everard G.B. (1976) Chapel Street Borehole in Geological Survey Explanatory Report. Leaman D.E., Dept.Mines Tas.

A third hole was drilled near the top of the ridge in order to locate the southern sedimentary/dolerite contact (B.H.3). This hole was drilled about 15m south of the contact and was abandoned at 55m without reaching the contact. This would indicate that the contact dips at about 80° to the south and the dolerite is not therefore of quarriable depth. Leaman indicated that the dolerite occurs at moderate depth on this slope and his suggestion that the contact "skimmed the hillside" in that context probably means that it parallels the hillside at a depth of 100m+. This indicates that most of the southern slope is in mudstone and the top bench of a south quarry face would be near the crest of the ridge. (See sections through diamond drill hole - inset, figure 1).

Reserve Estimate

Three calculations of reserves have been made:

1) a 22 bench configuration from a top bench of 490m.

2) 14 benches from 325m and

3) 12 benches from 295m

(see also figures 1 and 2).

These calculations were based on alternate benches because the scale of the map (1 : 5000) was too small for measuring each 15m bench area. The volume factor is therefore x 30 (instead of 15) and the tonnage factor used was x 2.9.

The tonnages are only approximate at this stage and can be recalculated when larger scale maps are available.

The estimated tonnages were determined on an in situ basis. If these figures were reduced by 25% to allow for losses due to inferior material, they would still represent reserves of 500, 200 and 75 years respectively at a production rate of 250 000 t.p.a.

It should be possible to prepare a management plan for area 3 while developing either 1 or 2 as a longer term project.

It is not anticipated that such losses would be experienced but the seismic survey has indicated a 20m thickness of overburden on the lower slopes and so area 3 would be the most affected.

The location of the northern dolerite boundary is not fixed with any certainty at its eastern extremity and additional hammer drilling would be useful in area 3 to confirm the seismic interpretation.

Mt. Faulkner Reserve Estimate

Bench	No.1 Area (x 1000m²)	No.1 Tonnage (x 10⁶)	No.2 Area (x 1000m²)	No.2 Tonnage (x 10⁶)	No.3 Area (x 1000m²)	No.3 Tonnage (x 10⁶)
490						
460	25	2.2				
430	74	6.4				
400	106	9.2				
370	119	10.3	9	0.8		
340	144	12.5	41.7	3.6		
310	197	17.1	108	9.4		
280	209	18.2	134.5	11.7	6.2	0.5
250	261	22.7	186	16.2	27	2.3
220	243	21.1	183.7	16.0	48.7	4.2
190	225.2	19.6	171.7	14.9	56.7	4.9
160	193.7	16.8	153.7	13.4	66.0	5.7
130	179.5	15.6	153.4	13.3	89.7	7.8
		172*		71		25

*The preliminary estimate (Annual Report 1989) was 167.5×10^6 in situ tonnes

Quarry Proposal

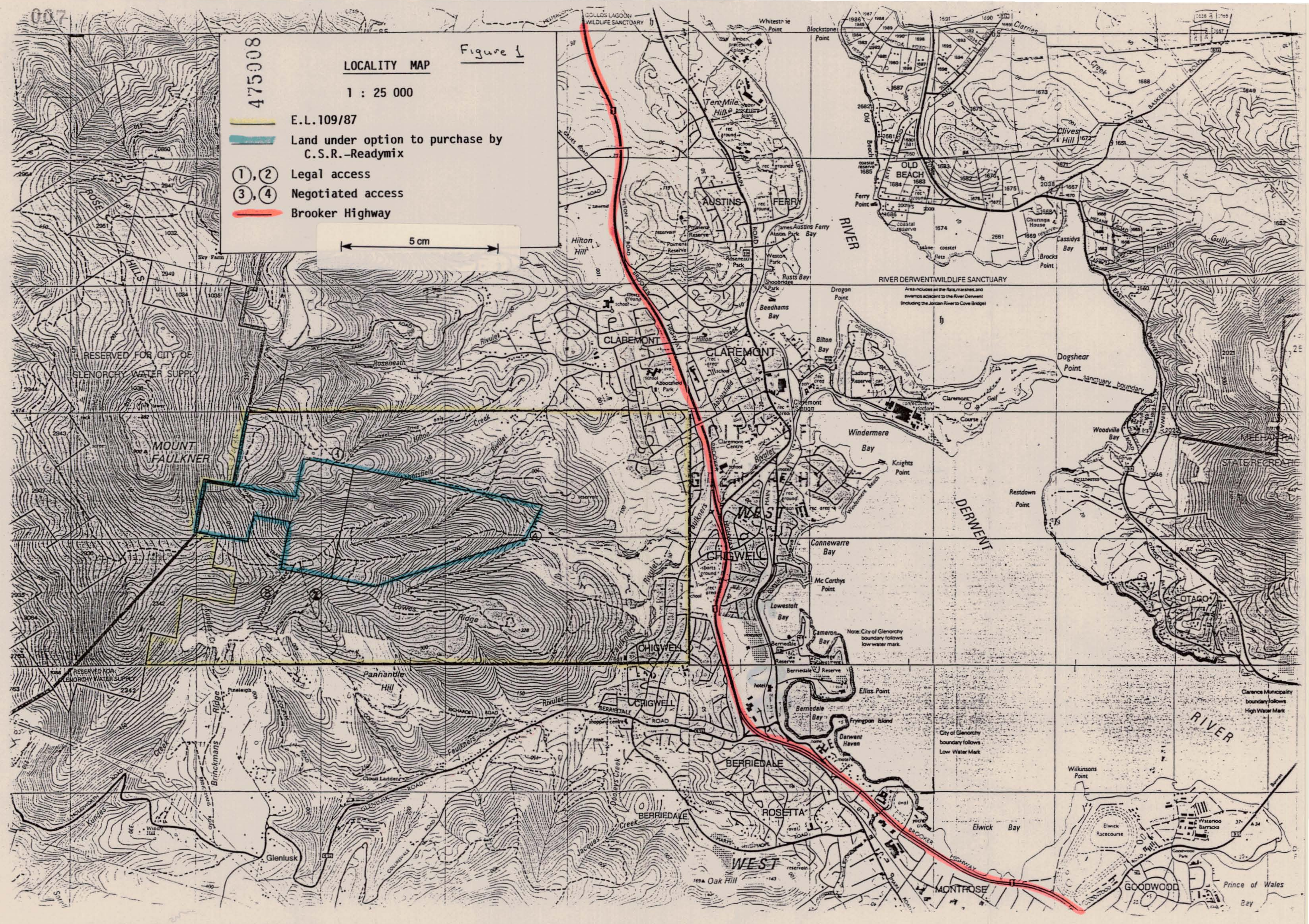
Access to the site can only be obtained from the east, which would necessitate a haul road of 2.5km to the top of area No.1 reserve area. This assumes that Strickland's land (2361) will be the point of access to the property but a better haul road could be designed if access to Jay's land (2358) could be negotiated. These block numbers are shown on figure 2, inset map.

Reserve areas Nos.1 and 2 would be costly to establish and the most difficult to conceal at least in the initial stages.

Conclusion

The dolerite body is relatively narrow and, topographically, a challenging one to develop. The reserve estimate of 172 million tonnes (in situ) represents a huge resource and it is believed that an economic operation is achievable.

The site cannot be described as ideal, but its disadvantages are offset by its location close to industry and highway. Further exploration on the lower slopes at the eastern end of the proposed site is required to determine the location of the dolerite contact and obtain more data on the depth of overburden.


007
475008
Figure 1
LOCALITY MAP
1 : 25 000
E.L.109/87
Land under option to purchase by C.S.R.-Readymix
①,② Legal access
③,④ Negotiated access
Brooker Highway
5 cm
MOUNT FAULKNER
RESERVED FOR CITY OF GLENORCHY WATER SUPPLY
CLAREMONT
AUSTINS FERRY
OLD BEACH
RIVER DERWENT WILDLIFE SANCTUARY
GLENORCHY
CHIGWELL
BERRIEDALE
ROSETTA
MONTROSE
GOODWOOD
RIVER DERWENT
Elwick Bay
Prince of Wales Bay
Windermere Bay
Pannantile Hill
Lowes Ridge

008

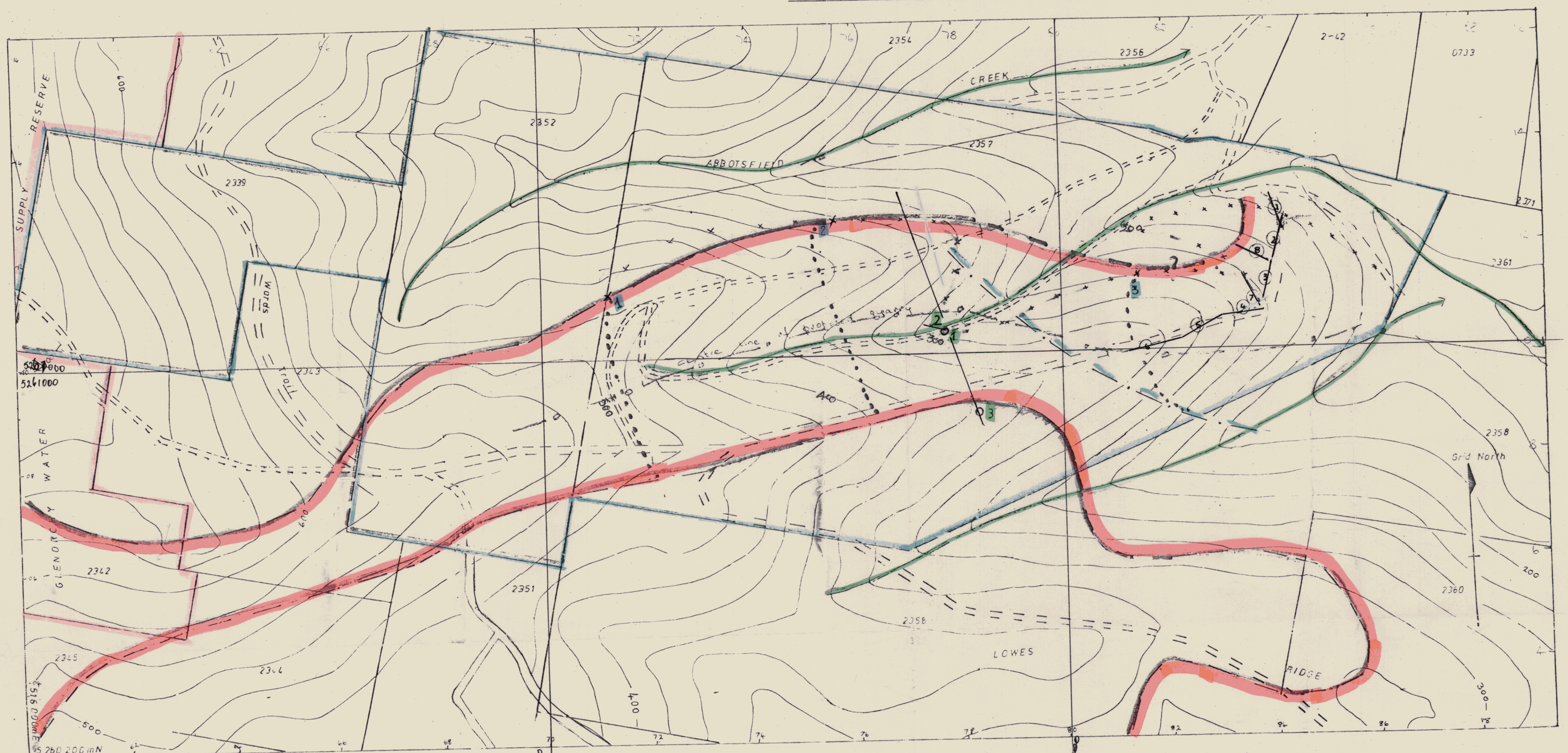
475009

Figure 1

EXPLORATION LICENCE 109/87 MT FAULKNER

For THE READYMIX GROUP

GEOLOGICAL MAP AND SECTION OF PROPOSED QUARRY

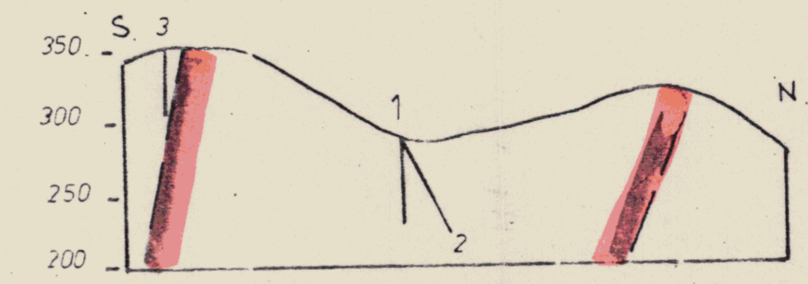


LEGEND

- 2352 Land Tenement (UPI No.)
- Western boundary of E.L.
- 500 Surface Contour (25m interval)
- Public road
- 4WD track
- Watercourse
- Limits of dolerite
- 1 : 10 gradient
- 1km radius from nearest dwelling
- Quarry proposals 1, 2, 3.
- 200m Grid (AMG)
- Seismic survey line
- 1 2 3 Boreholes

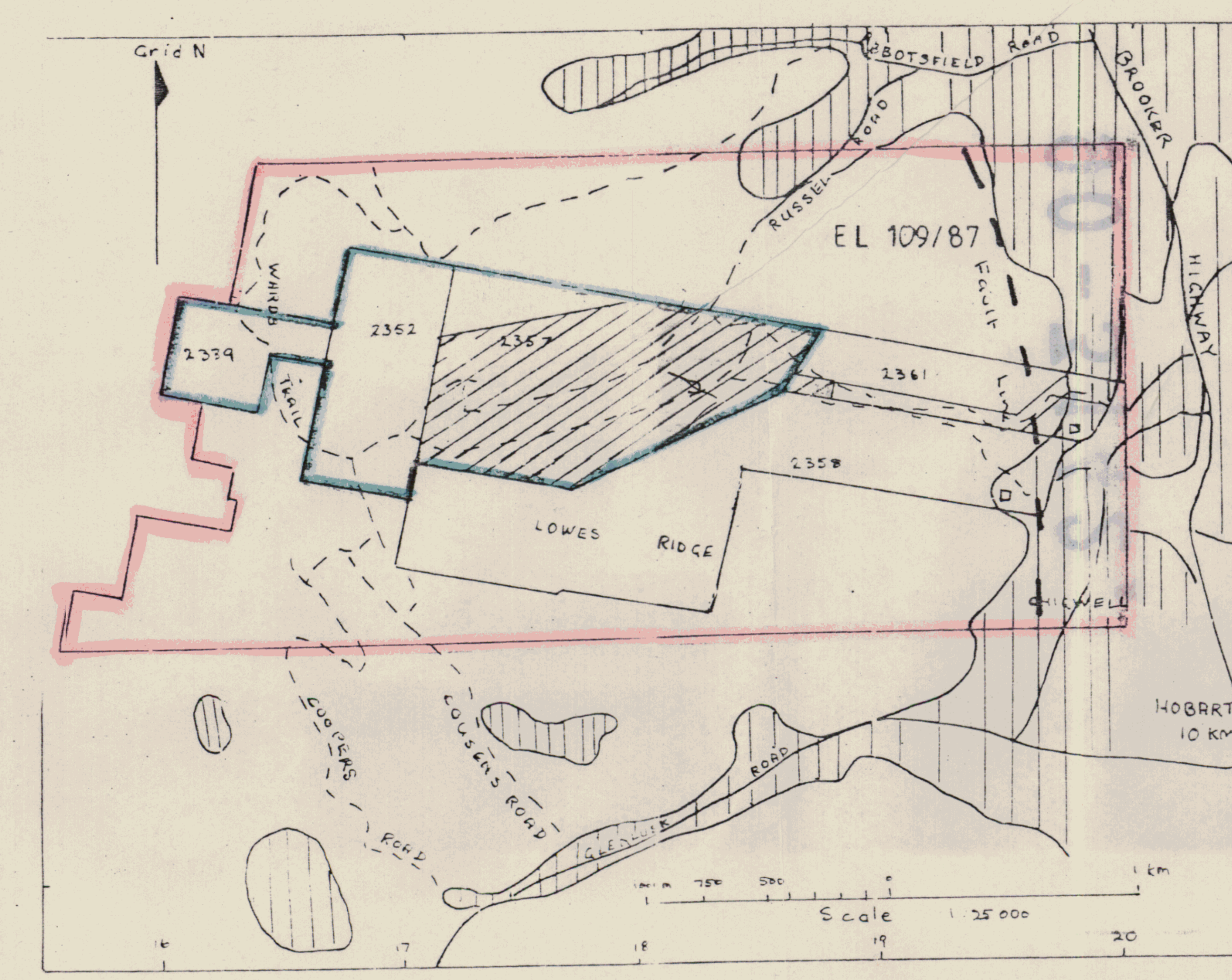
LOCALITY MAP

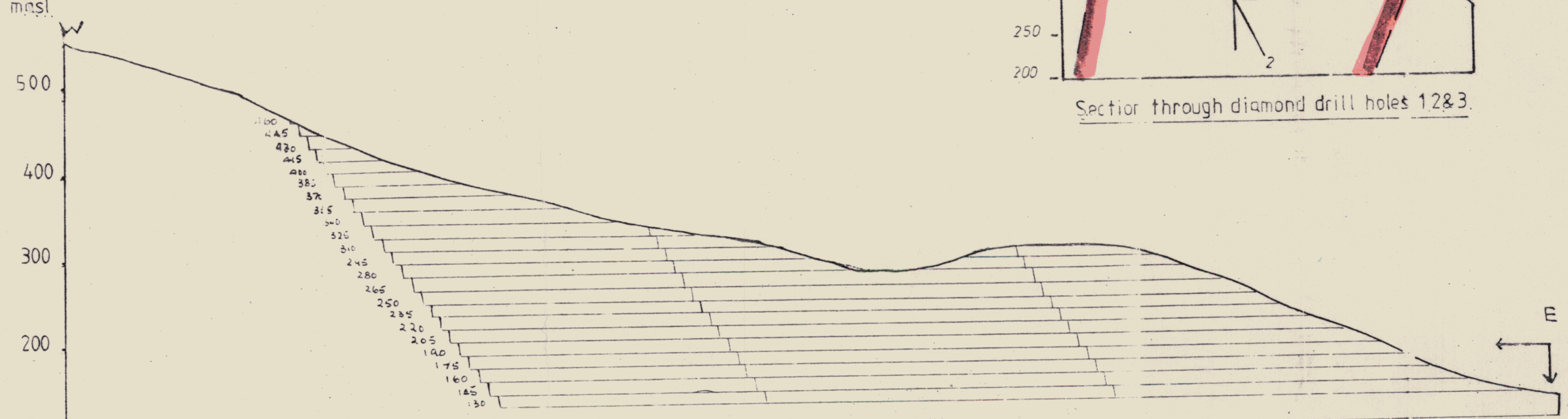
- EL Boundary
- Property of E. & G. Deakes
- Residential areas
- Recommended lease area



Section through diamond drill holes 1,2&3.

5 cm





Section through ℄ of proposed quarry

1: 5000

0 100 200 300 400 500m

Scale V and H

MAY 1989 (amended Nov 1990)

VIC THREADER AND ASSOCIATES PTY LTD

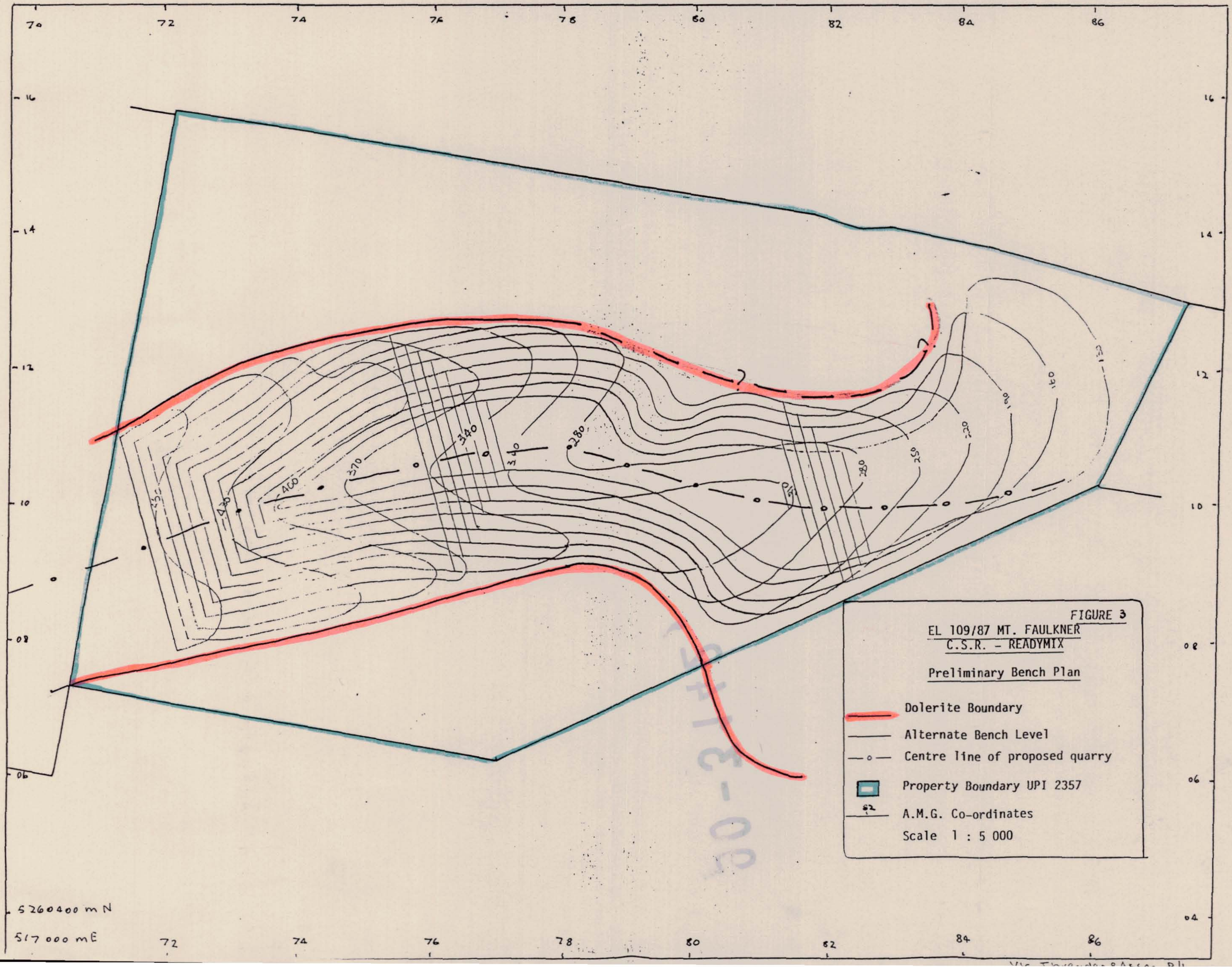


FIGURE 3
EL 109/87 MT. FAULKNER
C.S.R. - READYMIX
Preliminary Bench Plan
Dolerite Boundary
Alternate Bench Level
Centre line of proposed quarry
Property Boundary UPI 2357
A.M.G. Co-ordinates
Scale 1 : 5 000
5260400 m N
517000 mE

010

475011

APPENDIX 1

QUARRY SITE INVESTIGATION

MAGNETIC ASSESSMENT OF DOLERITE FORM AND CHARACTER

by D.E. Leaman B.Sc.(hon.) Ph.D.

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Wide Experience Most Methods
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QUARRY SITE INVESTIGATION MAGNETIC ASSESSMENT OF DOLERITE FORM AND CHARACTER EL 109/87 MT FAULKNER

by
Dr. D.E. Leaman

for
CSR (Readymix Group)

SUMMARY

The dolerite intrusion west of Chigwell, a northern suburb of Hobart, has been assessed magnetically. The dyke-like extension containing the proposed quarry site dips at about 75 degrees to the south. This means that the intrusion base is at least 300 m below surface and the resource is not volume limited.

The vertical component magnetic data do, however, indicate some variation in quality or composition. The glassy contact zone is irregular and perhaps more than 50 m thick. Zones within the intrusion are variably magnetic and may represent altered or fractured rock although the inferred form is also consistent with intrusive banding and dolerite-dolerite contacts. Such an interpretation is compatible with implications drawn from regional assessments of the nature of the intrusion.

Critically oriented drilling is required to allow resolution of the quality issue. It may be commented that if the loss of magnetic contrast does in fact reflect changes in rock texture rather than alteration then a varied mix of material will be produced from this site.

INTRODUCTION

The dolerite intrusion studied extends E-W from Chigwell toward the crest of Mt Faulkner (see Figure 1, Leaman, 1972a).

Leaman (1972b) and Leaman (1975) suggested that this feature was an integral part of the Collinsvale intrusion with a feeding point a little to the southeast, near the Cascades Fault. Another feeding point was identified high on Mt Faulkner near its western end.

The quarry site proposed by the Readymix Group lies in the heart of the transgressive limb across the face of Mt Faulkner.

Several concerns have been expressed in regard to this site. It is of high topographic relief and effective working of the site compatible with modern environmental land use standards, including visual concealment, requires that any quarry be based on the central valley. Given the suggestion of southerly dips, from the regional studies, the volume of dolerite could be limited if the dips are shallow. The irregular topography may also disguise variations in quality.

This report describes recconaissance magnetic surveys directed toward resolution of the contact dips and some indication of the proportion and location of material of lower quality. Other methods may be quantitatively more effective for the quality information (seismic refraction) but are not as easily or economically applied at such a site and are not justified for a preliminary assessment. No other method could evaluate the contact dips as effectively.

MAGNETIC SURVEY

Observations were acquired by V.M. Threader on behalf of CSR (Readymix Group) using an M700 McPhar fluxgate magnetometer.

The general distribution of observations was as advised by the writer. The aim was not to produce a rigorous and detailed survey of the entire EL, but to confirm the general character of the dolerite and establish the viability of the method for its assessment. This approach minimised the cost of the tests and exploration given the difficult terrain in the area.

The results of traversing along available access routes with minimal cross terrain effort are shown in Figure 2. The field values are referred to an arbitrary base value and are vertical component measurements. The data has been corrected for base value and diurnal drift.

The survey was undertaken in three stages.
Some initial traverses were completed across the dolerite contact in order to confirm that sufficient information could be

recorded in order to define anomaly tails (outside the dolerite) and thus resolve dips of the contact.
When it was clear that meaningful results could be obtained in such difficult circumstances (high relief terrain) the initial traverses were extended and additional profiles observed.
This data was then interpreted in terms of contact dips and general structure. As described in the first part of the interpretation discussion (below) it then became evident that some responses within the dolerite mass were anomalous and could be related to either weathering-alteration or marked changes in texture implying multiple intrusion.

An infill survey was then undertaken of the quarry site in order to define any systematic relationships in internal anomalous character. The interpretation of this review is described in the second part of the interpretation discussion (below). The infill was specified as a general coverage of observations sufficient to establish whether the responses were due to point and probably alteration sources or were due to two-dimensional and therefore structural sources.

INTERPRETATION

As indicated above the interpretation of the vertical component magnetic field data has been undertaken in two parts; the first directed toward shape of dolerite body, the second toward variations in character within it.

Six test profiles were used to evaluate dips of the contacts of the intrusion. Their position is shown in Figure 2.

These profiles have also been used to confirm the likely location of the dyke boundaries.

Figures 3 to 9 present samples of the interpretation undertaken. No attempt was made to resolve all the character of the profiles since there is some doubt about the exact location and positioning of the traverses and some minor variations in the magnetic field may have been induced by orientation variations of the observer and instrument. In addition the datum adjustment between survey days is approximate only. For this reason the profiles modelled were selected on a basis of internal consistency from sets of observations acquired on the same day. These minor deficiencies do not affect the conclusions offered but they do limit the integration of the data. For example, a contour map should not be prepared from this data. Further, the limitations are acceptable in view of the relatively simple geological objectives under evaluation.

Figure 3 suggests a skeletal interpretation of line 1. It shows that if the dolerite is anywhere near its mapped and observed position then the contact dolerite is glassy and non magnetic over a width of about 150 m. The form of the massive and probably medium grained dolerite is indicated by the abrupt change in profile whereas the actual contact displays a very subtle response (dotted lines). The implied contrast is consistent with rock of reasonable to good quality, but not coarse-grained.

Figures 4 and 5 examine aspects of line 2. Figure 4 is comparable to Figure 3 and line 1 but the contact zone is much thinner. The broken character of the complete profile pattern reveals much variation in either the structure or composition of the dolerite dyke. Various attempts were made to assess this but none were definitive. Figure 5 offers one possibility.
The irregular field pattern could be generated in three ways; weathering and alteration in a localised fracture system, magnetisation changes in the rock mass, or significant changes in texture of the dolerite. The property change implied is major but consistent with any of these options. Its depth range would indicate that weathering may not be the origin. See also below.

Figure 6 presents a solution for line 3. In this case the profile samples both sides of the intrusion and the full model (only the central portion is reproduced here) suggests that the dolerite skims the hillside to the south very close to the surface. The northern contact is not glassy for any thickness but is strongly magnetised. This suggests that variable magnetisations or compositions are present in this intrusion. Note that a similarly shaped slab in the centre of the dyke with a reversed magnetisation (quite possible) would generate the negative heart of the profile just as extra contrast at the northern margin produces an extreme positive edge.

Figure 7 examines line 4. Much of this profile is beyond the southern edge of the dyke but it does enable location of the boundary position as well as suggest the nature of the intrusion to the south. Further east, the top of this intrusion is exposed at a lower topographic level.

Figure 8 suggests a regional interpretation for line 5. It has many of the characteristics discussed for line 1 (Figure 3).
The model shown examines the character of the field north of the dyke. Several other profiles observed suggest some erratic character on this side of the intrusion. This model indicates that another dolerite body is present but at depth. This is consistent with deep drilling around the northern face of Mt Faulkner.

Figure 9 presents a solution for line 6 across the heart of the proposed quarry site. It reflects many of the characteristics noted for other lines and integrates them. The general shape of the dolerite is confirmed as is the requirement for significant variations within the intrusion. The volume of rock affected seems to be consistent in form and depth with property or texture changes. While weathering and alteration may play some part near the stream it seems unlikely that this is of the same order of magnitude as the more fundamental variations in the dolerite.

The location of the interpreted contact positions is shown in Figure 2 and contrasted with the suggestion of position based on the regional geological maps. Differences were to be expected upon detailed examination but they are not significant overall. Observations of the location of dolerite outcrops and hornfels float made by V. M. Threader are also shown.
All this information suggests that the southern face of the intrusion lies close to the surface on the southernmost hill face and dips in the same direction. The contact appears to be very close to the top of the ridge; an implication supported by observations on hornfels float.

Detailed observations within the intrusion suggest that the change in properties is systematic within the centre of the dyke. Since the loss in field intensity occurs near the stream and along the axis of the central valley it is tempting to ascribe the effect to weathering. However, as indicated above, this is not particularly likely and, further east, the axis of apparent property change lies some distance from the valley axis. The valley could be the result of selective erosion of dolerite of different texture or composition and, also, different magnetic properties.

Consideration of the overall structural patterns and relationships between the intrusions to north and south it is possible that the valley and low magnetic field values reflect an contact between two intrusions within the dyke. Such a zone might be glassy or finer-grained.

Although the survey is somewhat patchy there is no evidence of deep soil or talus cover, or weathering, and perhaps a maximum of 10 m is general. Many gradients imply a cover thickness of 3 to 6 m on rock of high magnetic contrast. This material can be considered to be of quarrying interest although the magnetic method cannot quantify rock quality in the same way as seismic methods.

CONCLUSIONS

The relatively simple field and interpretation procedures undertaken on the Mt Faulkner quarry site indicate that

1 the form of the local dolerite is very much as mapped,

2 both faces of the intrusion dip steeply to the south and do not limit the operation of the site.

3 the northern face is further north than anticipated and very variable; locally being chilled over a wide band.

4 the southern face is also further north than mapped and may lie close to the southern ridge top. Some mudstone may be encountered in the south face of the site upon opening.

5 the volume of dolerite present is very large and the site could be operated to any depth considered economic.

6 the range in field characteristics and patterns indicates a mix of rock properties and textures. If these prove to be due only to textural or magnetisation variations then the site will yield a range of product types.

7 the properties inferred indicate that the dolerite is never especially coarse grained or differentiated. No granophyric compositions are implied in the present data. Dolerite glass to medium grained rock can be expected.

8 the apparent alteration zone in the heart of the site must be examined. Present evidence suggests an internal contact within the intrusion or a local change in magnetisation accounts for the change in magnetic field but weathering might also do so.
A borehole angled across this zone is advised. Any site selected must allow drilling at 60 to 70 degrees toward the north in order to intersect any south facing dips associated with the sought zone. Such a hole may be lengthy and awkward to locate.
An alternative solution might be to drill three or four quite shallow vertical holes in the base of the valley and examine the textures of the fresh rock.

REFERENCES

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Leaman, D.E., 1972 b. Gravity Survey of the Hobart District. Bull. geol. Surv. Tasm. 52.

Leaman, D.E., 1975. Form, mechanism and control of dolerite intrusion near Hobart, Tasmania. J. geol. Soc. Aust., 22, 175-186.

LINE PARAMETERS ORIGIN/LIMIT/INCR : 0 500 10

MT FAULKNER DOLERITE DYKE LINE 1 N-S
ELBOW TO SOUTH

475018

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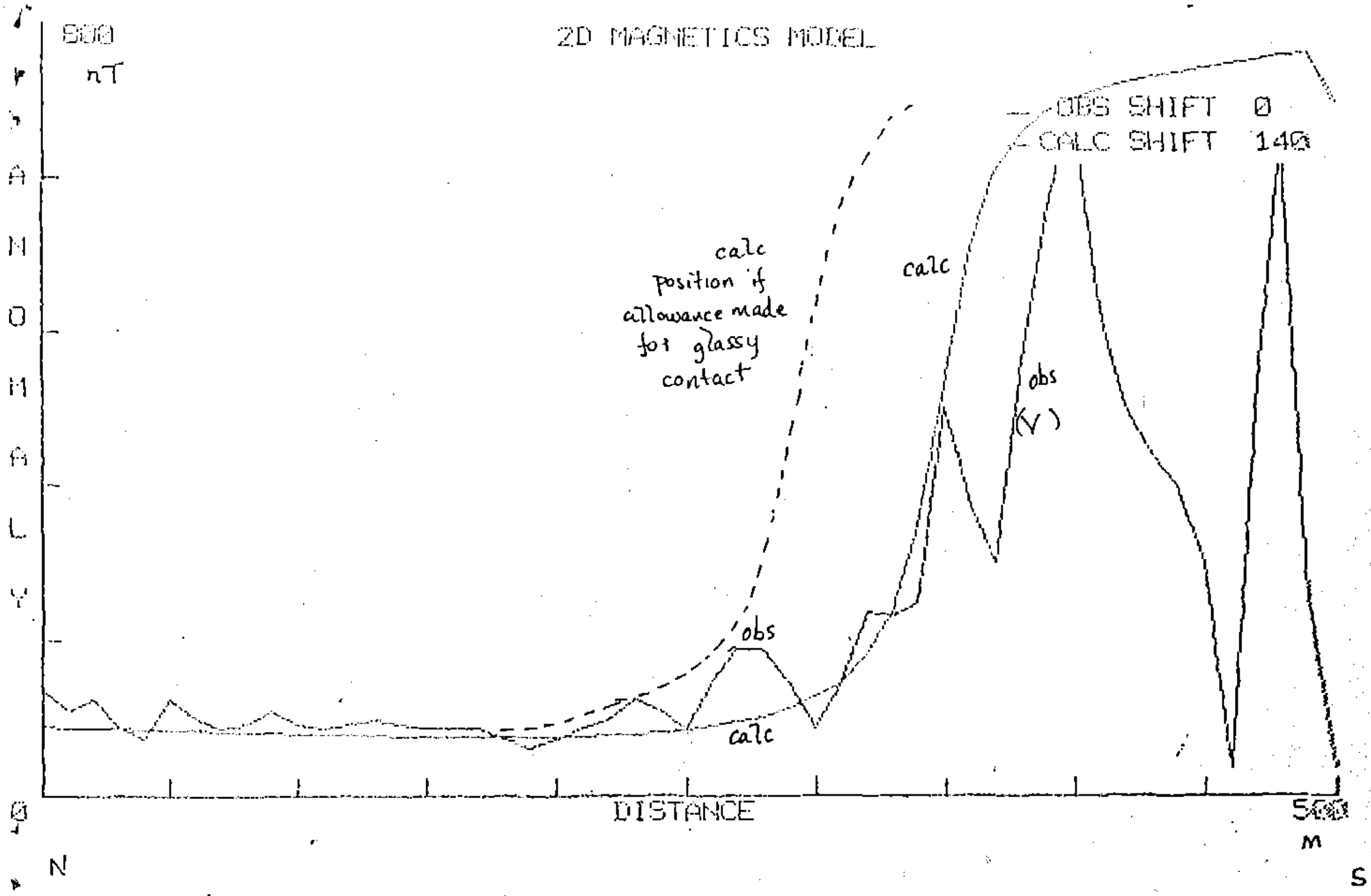
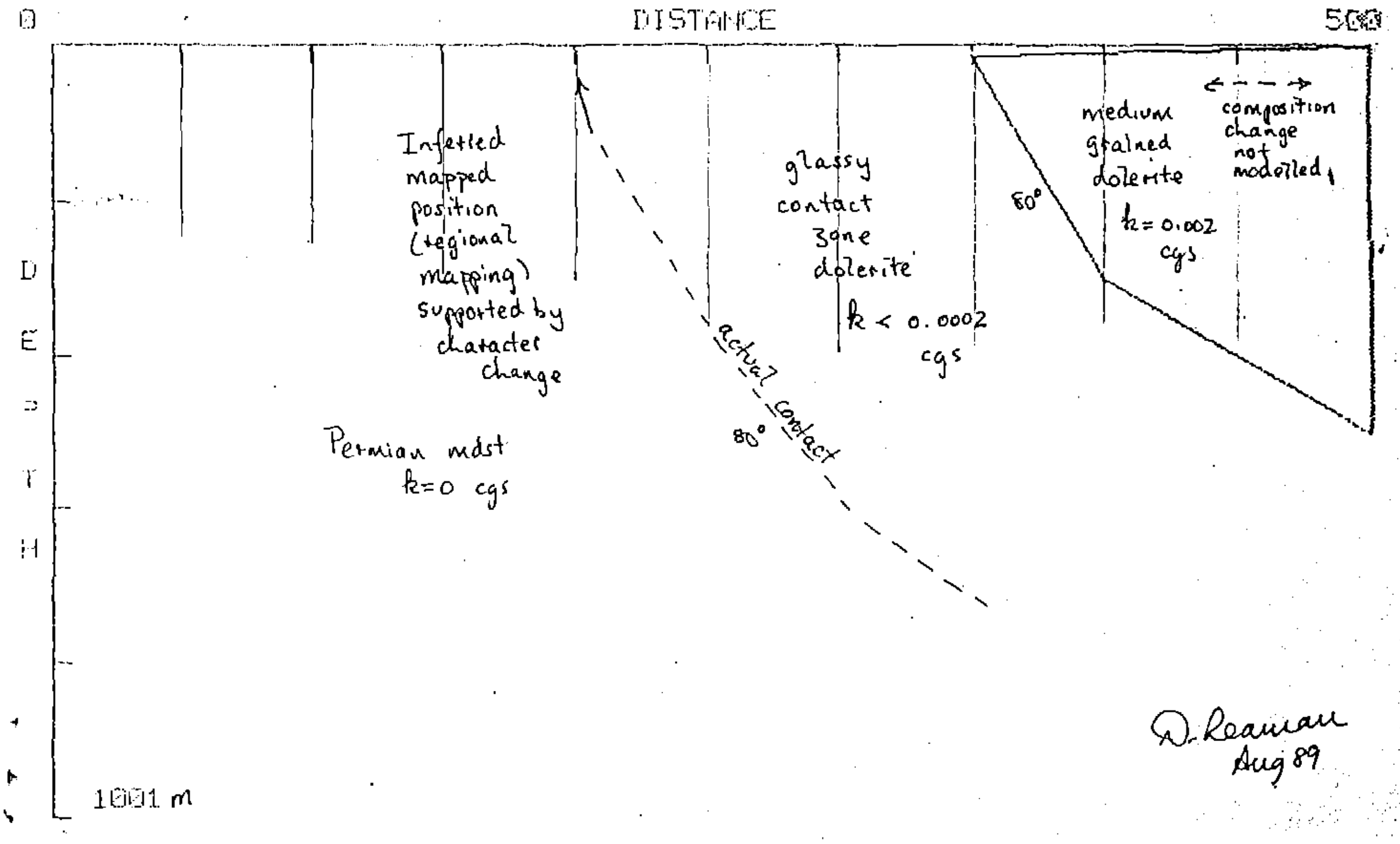


MT FAULKNER DOLERITE DYKE LINE 1 N-S
ELBOW TO SOUTH



D. Leaman
Aug 89

MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE

LINE 1 FIGURE 3

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LINE PARAMETERS - ORIGIN,LIMIT,INCR : 0 800 20

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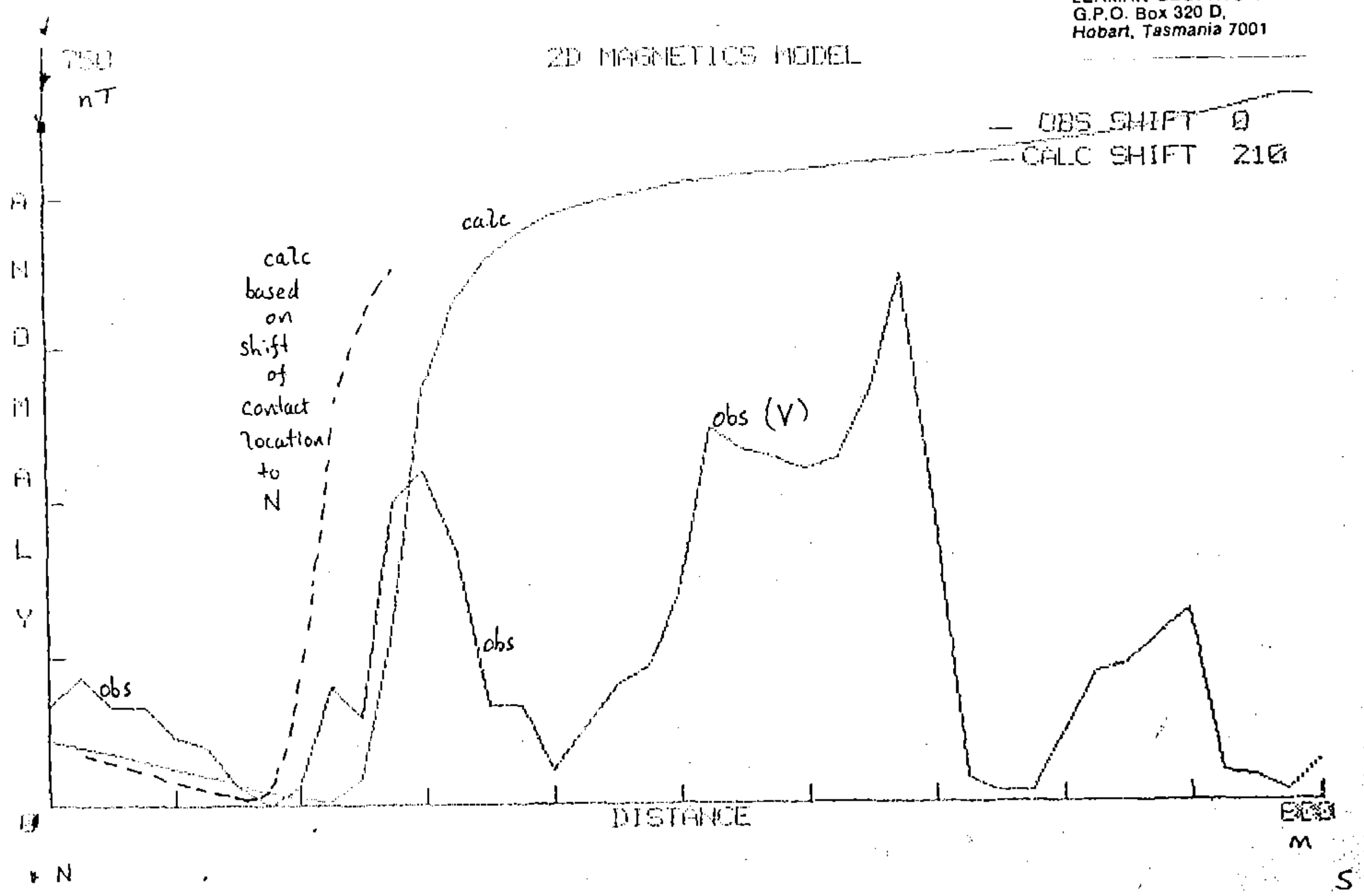
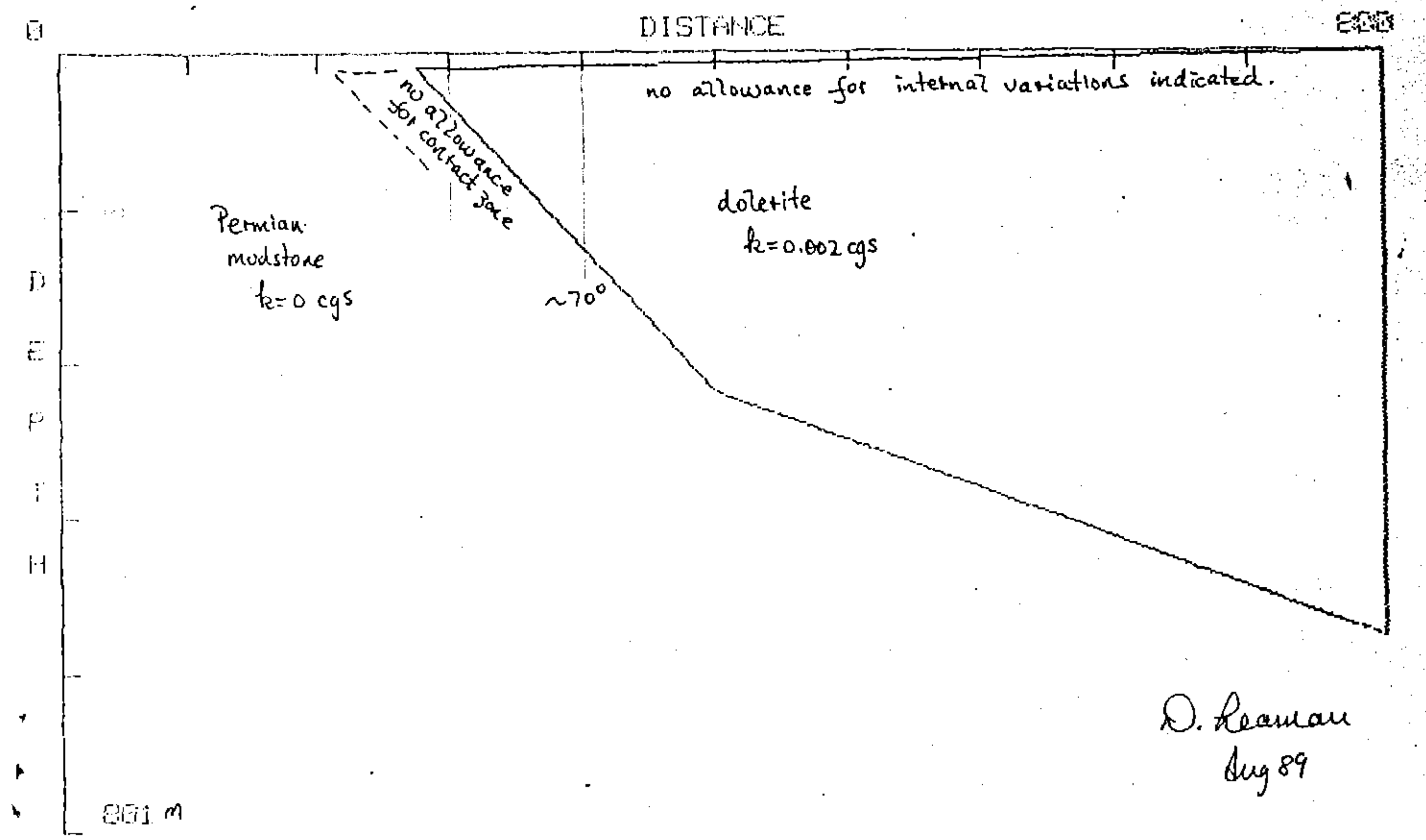


MT FAULKNER DOLERITE DYKE LINE 2 N-S
ELBOW TO SOUTH



MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE (BASIC FORM) LINE 2 FIGURE 4
EL 109/87

475020

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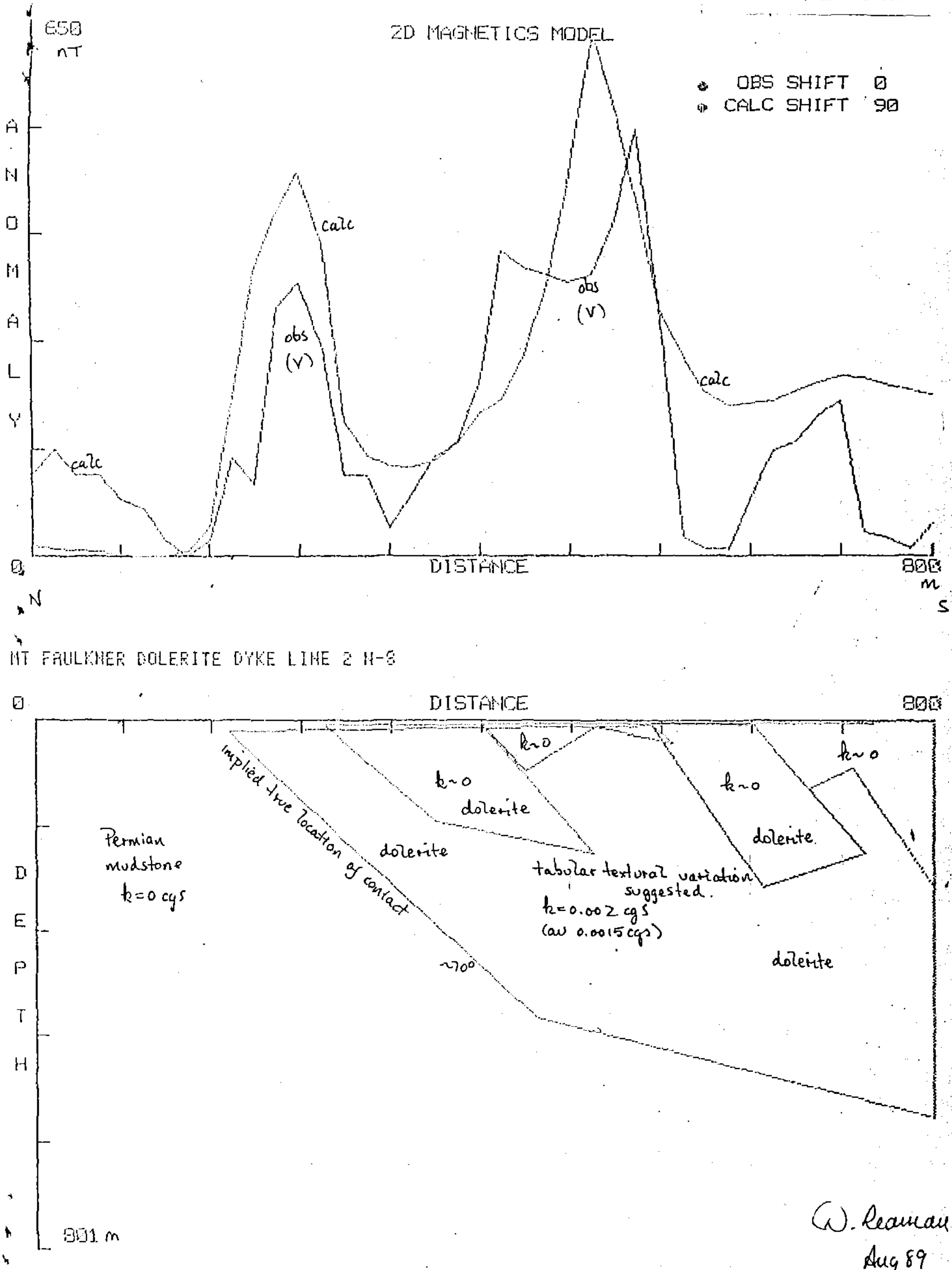
Hobart, Tasmania 7001

LINE PARAMETERS - ORIGIN/LIMIT/INCR : 0 800 20



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Aug 89

MAGNETIC INTERPRETATIN (VERTICAL COMPONENT)
MT FAULKNER DYKE (WITH PROPERTY CHANGES) LINE 2
EL 109/87

FIGURE 5

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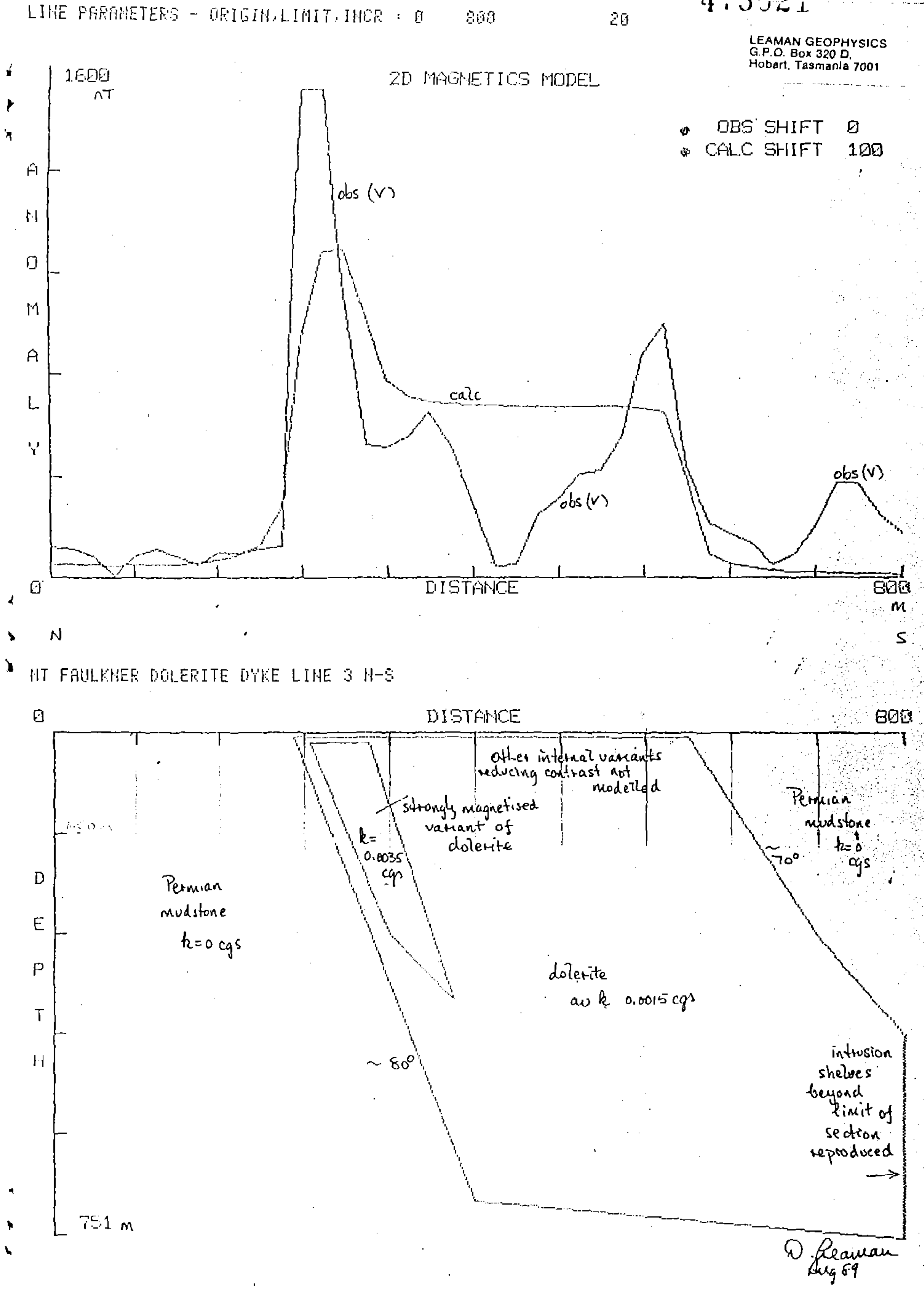

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Hobart, Tasmania 7001

MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE EL 109/87 LINE 3 FIGURE 6

092

475022

LINE PARAMETERS - ORIGIN,LIMIT,INCR : 0 400 10

MT FAULKNER DOLERITE DYKE LINE 4 N-S

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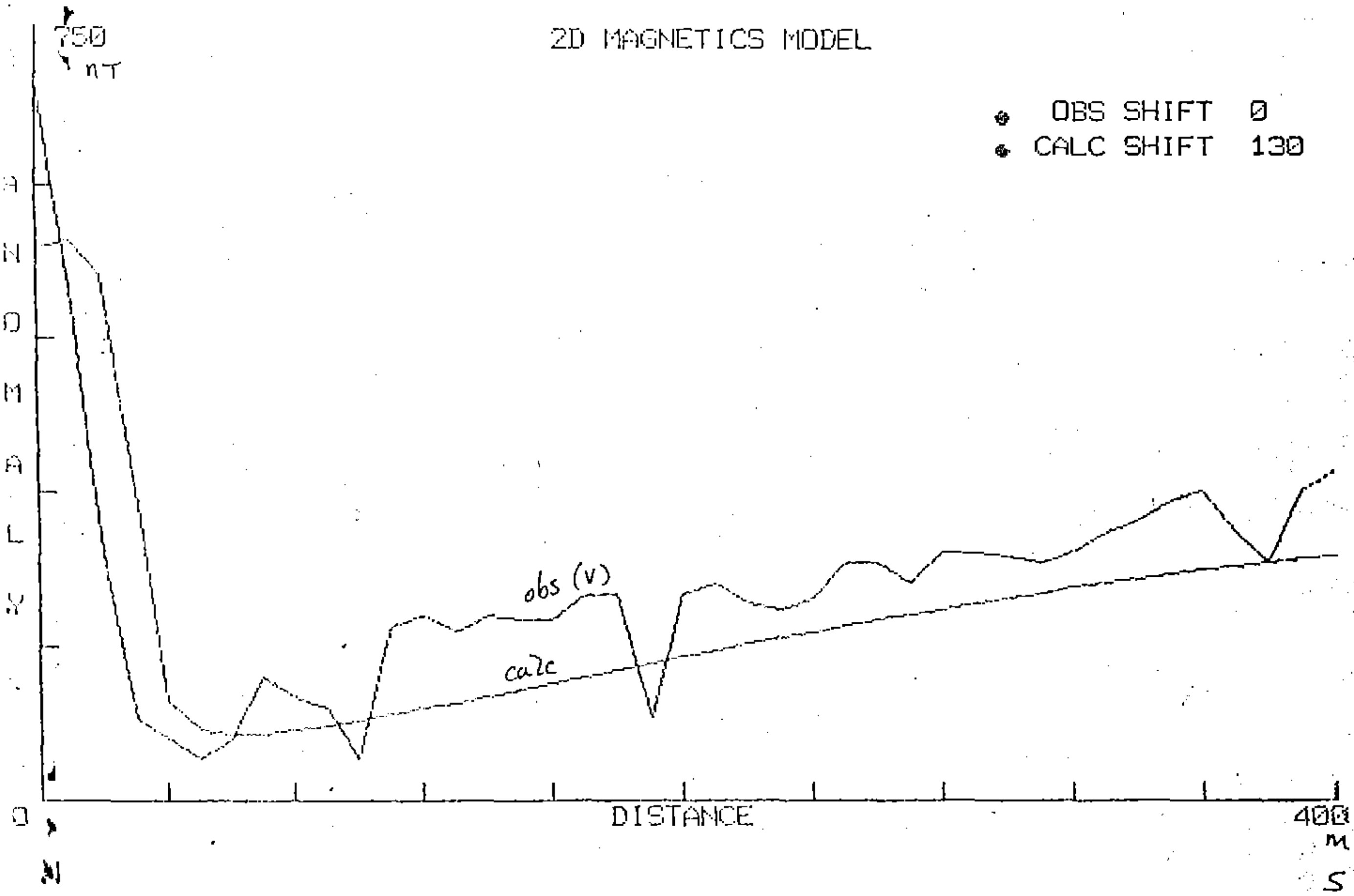
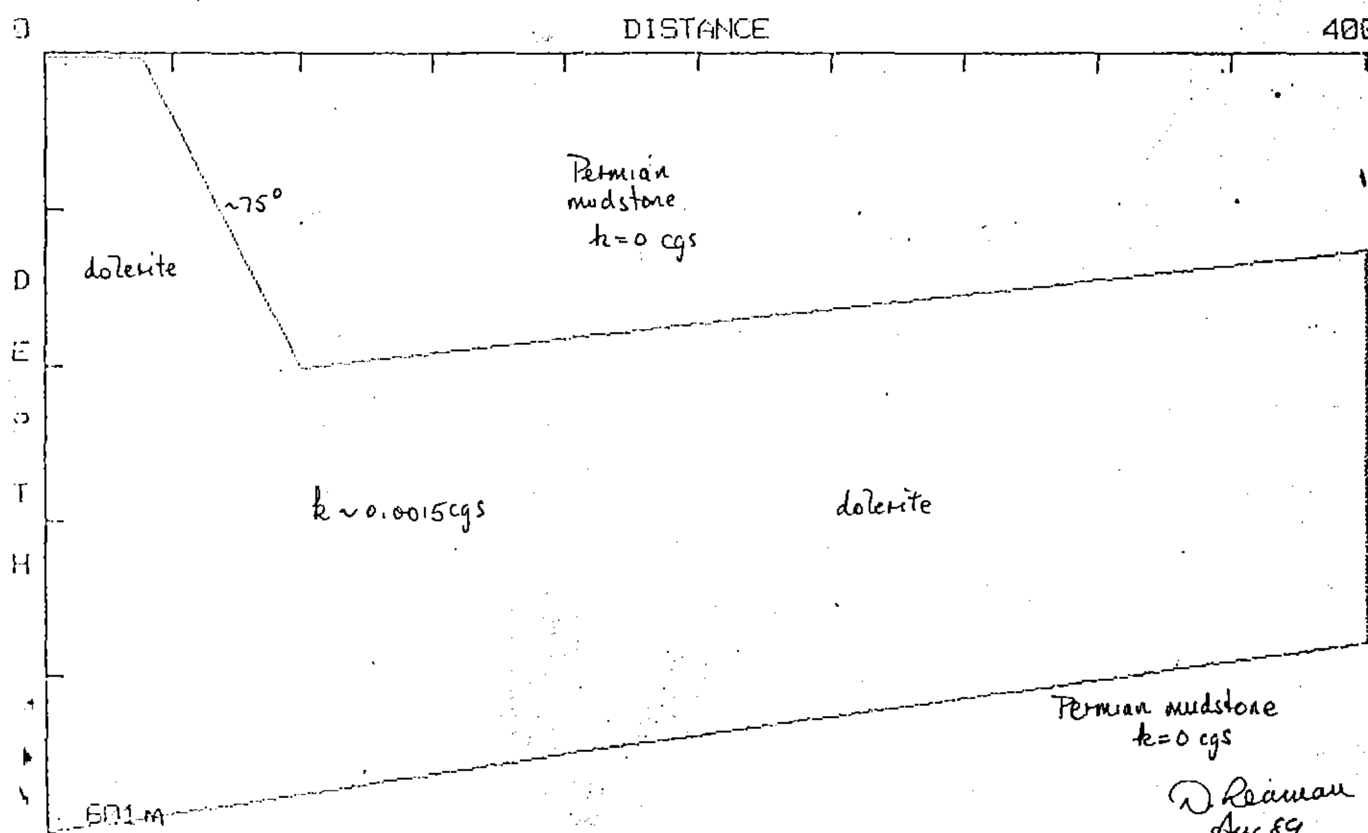


MT FAULKNER DOLERITE DYKE LINE 4 N-S



MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE EL 109/87 LINE 4 FIGURE 7

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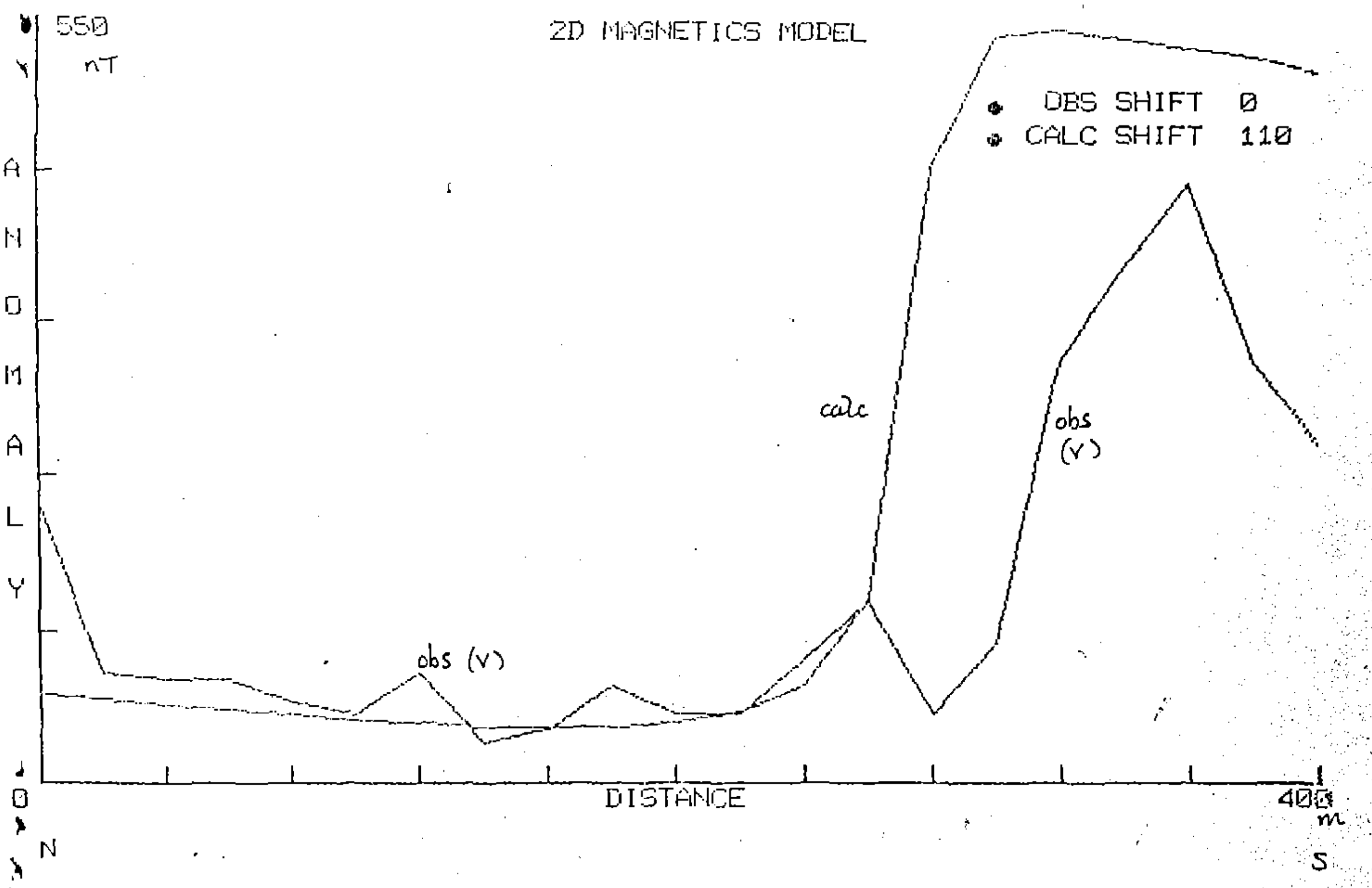
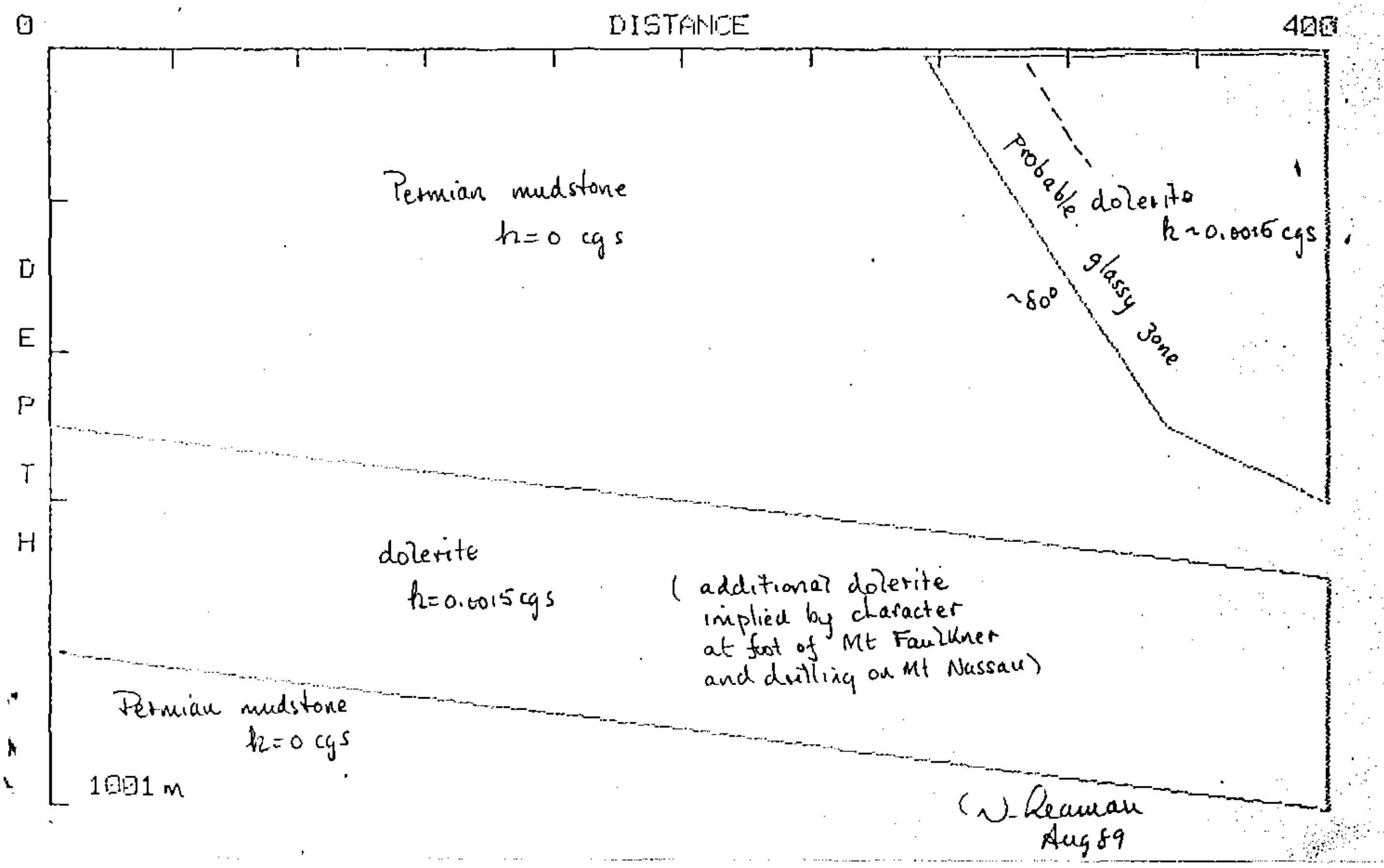
Hobart, Tasmania 7001

LINE PARAMETERS - ORIGIN,LIMIT,INCR : 0 400 20



MT FAULKNER DOLERITE DYKE LINE 5 N-S



MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE EL 109/87 LINE 5 FIGURE 8

LINE PARAMETERS - ORIGIN,LIMIT,INCR : 0 700 20

475024

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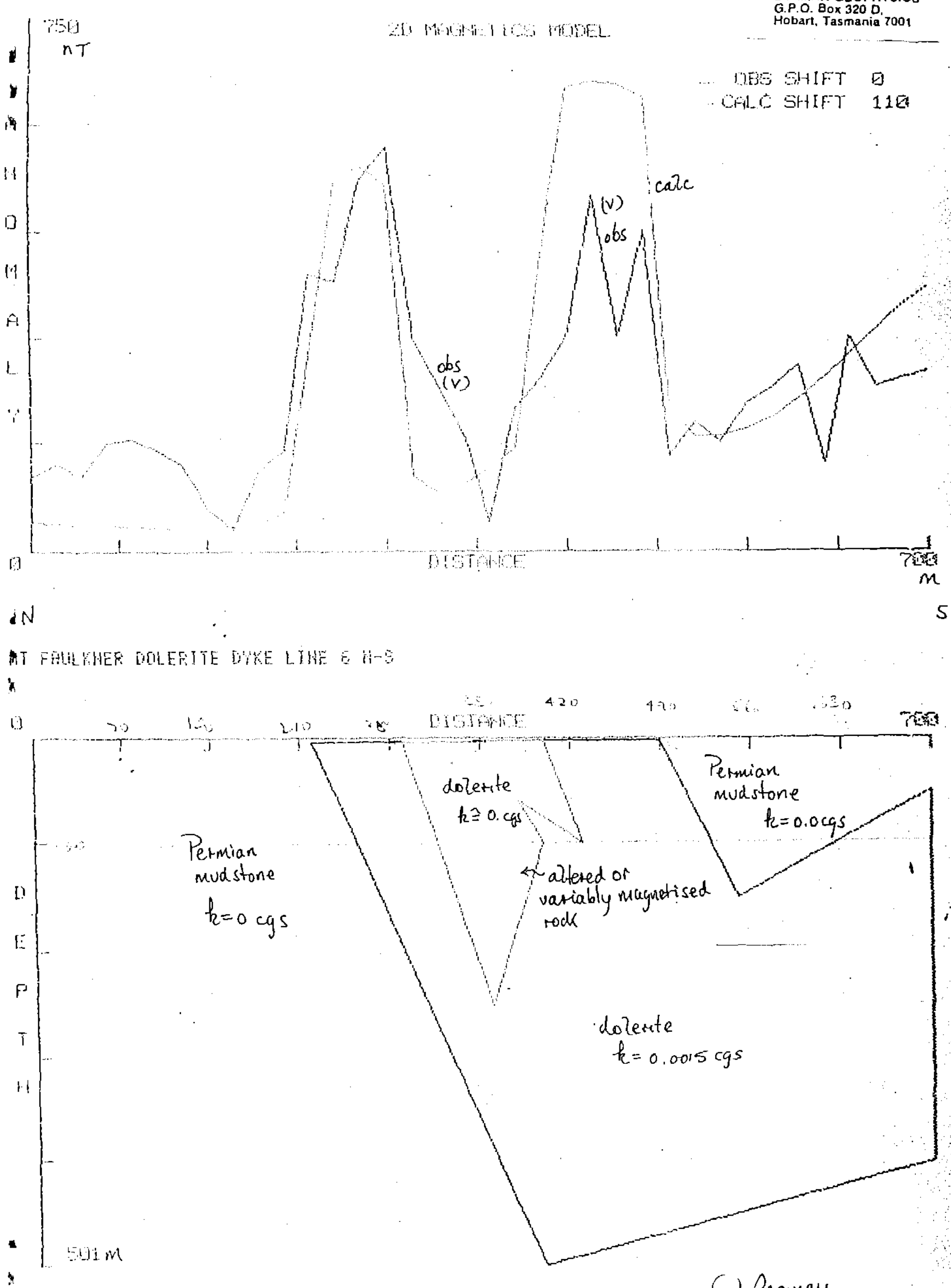

W. Leaman
Aug 89

MAGNETIC INTERPRETATION (VERTICAL COMPONENT)
MT FAULKNER DYKE EL 109/87 LINE 6 FIGURE 9

024
Figure 3
watercourse
track
dam
cliff
Interpreted position of dolerite contact
Dips also indicated
dolerite sheet at great depth
PROFILE 1
PROFILE 2
PROFILE 3
PROFILE 4
PROFILE 5
PROFILE 6
POSSIBLE QUARRY SITE
RIDGE
VALLEY
zone of possible alteration
internal intrusive contact
glassy dolerite?
mudstone
dolerite
boulder scree
Permian mdst/slst
Jurassic Dolerite
Inferred approx position of dolerite contact based on regional mapping
5261 000 mN
517 000 mE
518 000 mE
Interpreted position and dip of contact
hornfels o/c
upslope limit of Permian hornfels 'float'
dolerite talus
dolerite outcrop
Probable mudstone bedrock – dolerite talus
regional inference
Inferred approx position of contact based on regional mapping
Dolerite sheet at depth
dolerite sheet at moderate depth
dolerite body presents quasi-concordant sheet roof in the region east and south of the location of this comment
EL 109/87
MT FAULKNER
MAGNETIC SURVEY
Vertical component fluxgate magnetometer observations by V.M. Threader
Interpretation by D.E. Leaman
(All values -ve, S. hemisphere)
N. hemisphere instrument setting
Scale
0
100 m
(1:2000)
5 cm
Aug 1989
FIGURE

475026

APPENDIX 2

DIAMOND DRILLING

a. Logs

b. Density determinations

c. Microscopic examination of
   thin sections

Appendix 2a

Diamond Drill Logs

No.	Depth From (m)	Depth To (m)	Thickness (m)	% Core Recovery	Log
1	0	1.44	1.44	50	Very broken dolerite max. core length 50mm
	1.44	2.80	1.36	100	Less broken " " " " 200mm
	2.80	74.80	46.00	100	Continuous fresh (unweathered) dolerite with variations: 36.70-37.00 broken core (faulted?) 39.70-40.20 very fine grained 40.80-40.85 chloritised 41.80-42.50 very coarse grained 48.00-49.00 very fine grained otherwise medium to coarse grained throughout hole. Joint spacing varies between 300mm and lm.
2	0	2.50	2.50	50	weathered dolerite
	2.50	86.90	84.40	100	Unweathered dolerite similar to above BH.1) Textural variations: coarse grained sections at 28.30-28.90m (600mm) 67.40-67.46m (60mm) very fine grained at 53.70 and 67.00mm.
3	0	24.50	24.50	100	Weathered mudstone, broken core.
	24.50	38.50	14.00	100	Grey mudstone, in part pyritised
	38.50	42.00	3.50	100	Soft green mudstone.
	42.00	55.60	13.60	100	Grey mudstone pyritised on joint planes. Indurated, appears close to dolerite contact.

Appendix 2b

Rock Density Determinations

Mt. Faulkner B.H.1 Depth	R.D.	Mt. Faulkner B.H.2 Depth	R.D.
2.80	2.94	2.90	2.90
5.80	2.95	5.90	2.91
8.80	2.91	8.90	3.02
11.80	2.95	11.90	2.95
14.80	2.95	14.90	2.95
17.80	2.83	17.90	2.95
20.80	2.93	20.90	3.10
23.80	2.88	23.90	2.94
26.80	2.94	26.90	2.95
29.80	2.91	29.90	2.95
32.80	2.95	32.90	2.95
35.80	2.95	35.90	2.94
38.80	2.95	28.90	2.85
41.80	2.92	38.90	2.95
44.80	2.93	41.90	2.94
47.80	2.91	44.90	2.94
50.80	2.93	47.90	2.93
53.80	2.87	50.90	2.93
56.80	2.93	53.70	2.64
59.80	2.92	53.90	2.92
62.80	2.90	56.90	2.90
65.80	2.92	59.90	2.93
68.80	2.91	62.90	2.93
71.80	2.89	65.90	2.98
74.80	2.93	68.90	2.95
		71.90	2.95
		74.90	2.96
		77.90	2.97
		80.90	2.94
		83.90	2.94
		86.90	2.94
Mean	2.93		2.92
Std Dev.	0.06		0.08

Appendix 2c

Microscopic Examinations (Thin Sections)

B.H.No.	Depth (m)	Grain Size (mm) Pyroxene	Feldspar	
1	2.00	2.0	0.4	Coarse grained
	23.80	1.0	0.3	Medium "
	32.80	2.0	0.6	Coarse
	43.80	2.0-4.0	0.3	Medium-coarse
	47.80	5.0	0.4	Coarse grained augites
	65.80	2.0	0.4	Coarse grained
	74.80	1.5	0.5	Medium grained
2	20.90	1.0	0.4	Medium grained
	28.90	2.0	4.0	Very coarse grained feldspars
	53.70	0.5-0.8	0.1-0.2	Very fine grained and chloritised
	77.90	1.0	0.6	Medium grained
	80.90	1.0	0.3	Medium grained
	86.90	3.0	0.4	Coarse grained

All thin sections showed ophitic texture (pyroxene enclosing feldspar, which is typical of dolerite). In the coarse grained varieties the texture was sub-ophitic. Iron oxides and biotite in varying amounts were also present and the alteration products of chlorite, calcite and zeolites. Glass was present in minor amounts in some sections but not in sufficient quantity to affect rock density. No evidence of inferior rock quality was found in these thin sections.