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Proposal for Diamond Drill test - Cutty Sark Prospect -
Rosebery East Project EL 1/62
Getty Oil Development Co Ltd*
Fitzgerald, F.G. EL1/62

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PROPOSAL FOR DIAMOND DRILL TEST

CUTTY SARK PROSPECT

ROSEBERY EAST PROJECT EL 1/62

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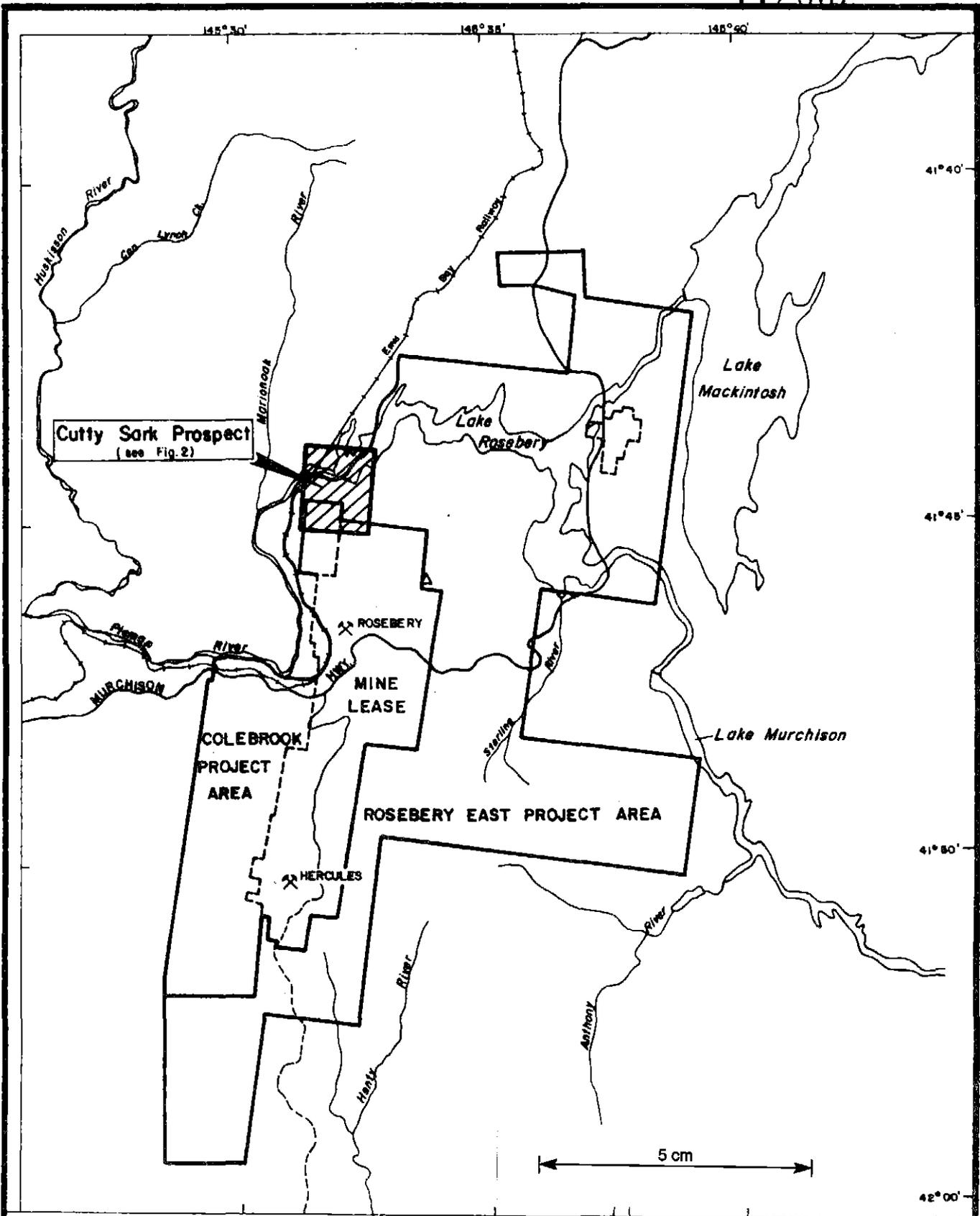
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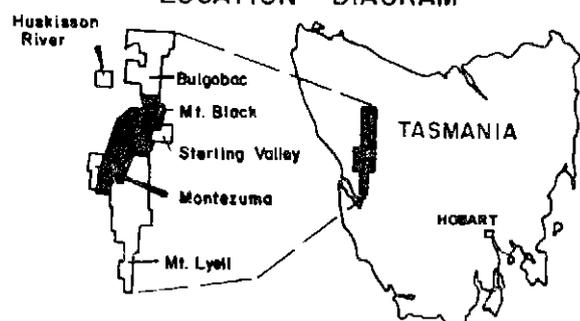
F. G. FitzGerald
February, 1984.

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LEGEND

LOCATION DIAGRAM



Getty AUSTRALASIA	
TASMANIA	
DUNDAS PROJECT	
ROSEBERY EAST (part of E.L.1/62)	
CUTTY SARK PROSPECT LOCATION	
Author: P.G.P.	Scale: 1:100 000
Drawn: T.G.D.S.	Date:
Revised: Feb. 1994	File No:
	Figure No: 1

SUMMARY

One diamond drill hole of 450 metres is proposed to test lead/zinc in soil and IP anomalies on line 11,500N of the Cutty Sark Prospect in the Rosebery East Project area. A second hole of 350 metres is proposed to test a similar lead/zinc soil anomaly 500 metres along strike to the south on line 9,900N. Both holes are designed to traverse a prospective horizon, approximately 300 metres wide, composed of dacitic lithic pyroclastics or mass-debris flows and intercalated sedimentary lenses. The sequence contains clasts of massive sulphide up to 2 metres in diameter and appears to lie directly along strike from the Rosebery orebody 3km to the south and the Chester massive sulphide deposit 2.5km to the north. The geological environment has some marked similarities to Kuroko massive sulphide deposits and is very favourable for the occurrence of economic mineralization.

INTRODUCTION

During a visit to workings in the Bastyan Dam area of the Hydro Electric Commission Pieman Project in August, 1983, clasts of massive sulphide were examined within coarse pyroclastic-epiclastic rocks. The clasts were exposed by a dam construction road cutting inside the Rosebery East Project area, part of EL 1/62 (See Fig.1.). Immediate geological mapping and lithochemical sampling was carried out just prior to inundation by the newly formed Lake Rosebery. The results of this work and a study of the data from earlier exploration by the EZ Company were sufficiently encouraging to warrant more detailed investigation, including geological mapping, sampling and a UTEM ground EM survey.

The area, known as the Cutty Sark Prospect after the name of old mineral workings nearby, is bounded by the Rosebery Mine Lease to the south, the exploration licence boundary (now effectively the south shore of Lake Rosebery) to the north, and in part by the 2 sq.km exclusion zone over the Bobadil Soil Anomaly to the west. The prospect encompasses approximately 2 sq.km area with a maximum strike extent of 1km (See Fig.2.).

PREVIOUS WORK

Numerous old prospects and workings are known within the area, the most prominent being the Cutty Sark group where pits, trenches and two adits up to 100m long occur. Much of this activity was focused on disseminated and vein chalcopyrite mineralization within a generally massive andesitic sequence. However, galena and sphalerite mineralization was reported

from several old sections to the west of the occurrences. Old records suggest that there was little, if any, production from these workings.

The Chester massive sulphide deposit lies 2.5km along strike to the north of this area. Modern exploration by Rio Tinto Australia, Comstaff Pty. Ltd. and the Tasmanian Mines Department have indicated a resource of 2.8MMt of 20% S as massive pyrite. However, one of the Comstaff exploration holes, CP3, intersected 2.4m of 22.3% Zn, 5.2% Pb, 65 g/t Ag and 8.5 g/t Au approximately 600m south of the main deposit. The area is currently held by Comstaff as part of EL 5/63.

The EZ Company carried out sporadic exploration over the Cutty Sark area of EL 1/62 between 1970 and 1983. Their activity included scattered stream sediment sampling, geological mapping (predominantly along grid lines and the Pieman River), soil geochemical sampling (at 50ft. intervals along 800 to 400ft. spaced lines, with limited in-fill lines), gradient array IP and ground magnetic surveys along all grids and a restricted dipole-dipole IP survey along specific lines.

The EZ Company geological mapping noted the widespread occurrence of sulphide mineralization, particularly within and to the north of the Pieman River gorge. A broad zone, up to 600m wide, of chloritic alteration was identified centred on the Cutty Sark workings. Moderate geochemical and IP anomalies were delineated within this zone, but were not drill tested. Another IP anomaly was located on line 11,500N 25W in 1974/75 and confirmed in 1983 and a drill test recommended by Bishop (Sept. 1983).

Two significant zinc, with minor lead in soil anomalous zones, were outlined by the EZ Company surveys. The stronger one, known as the Bobadil Soil Anomaly was covered, in part, by the 2 sq.km exclusion zone. Subsequent investigation by EZ concluded that the anomaly was hydromorphic in origin, displaced downslope from the mine lease. The weaker anomaly, which lies along strike to the south of the massive sulphide clasts, remains untested.

GEOLOGY

Interpretation of recent geological mapping and petrographic study by GODC has outlined five principal units in the area. Figure 2. shows the areal distribution of these units and has brief descriptions of the main features of each.

The most prospective unit identified is the dacitic lithic tuff which contains the clasts of massive sulphide. The sequence is approximately 500m thick and is made up of a series of ash-flows (ignimbrites) which are separated by thin horizons of epiclastic detritus and appears to strike 340 - 355° AMG and dip steeply east. It is suggested that the lithic clasts are probably hydrothermally disrupted fragments of a formerly massive rock. The sulphidic clasts, which form up to 40% of the lithics, are either pyrite or sphalerite rich, fine-grained massive, occasionally show subtle banding and are quite similar to parts of the Rosebery orebody in appearance and grade. Moderate pervasive sericitic alteration and moderate to strong chlorite, sericite, ankerite and quartz veining encloses the clasts. The intensity of alteration appears strongest towards the north of the sequence where the energy of deposition is also inferred to be highest.

Sedimentary lenses are widespread throughout the dacitic unit but are mostly only a few metres in extent. The principal lens is centred around the grid base line, is at least 50m thick and 500m long, and is composed of black and grey shales and coarser tuffaceous material. Previous workers (eg. Smith 1898) have correlated this with the Rosebery Mine black slate. Most of the sediments appear to be epiclastic mudstones and siltstones deposited within either lacustrine or off-shore environments without direct air-fall (pyroclastic) contribution. However, one sample was interpreted as a siliceous exhalite after probable dolomite (Joyce, 1983) which would favour a depositional model of shallow, restricted (flanking) basins within the volcanic belt.

The massive, dark green volcanic unit immediately east of the dacitic tuffs is composed of porphyritic andesites which appear to be mostly extrusive lavas in origin. These rocks are hydrothermally altered by pervasive chlorite and sericite and commonly contain coarse disseminated pyrite ± minor chalcopyrite mineralization. The geological setting and mineralization style of this unit appears to have little economic potential. However, the petrographic interpretation of one sample from the Cutty Sark Mine dump suggested that the interstitially sulphide-mineralized rock which is composed of silicified ("cherty") clasts in a chloritic matrix may have formed within a hydrothermal vent (Joyce, op.cit.). The close spatial and possible genetic relationship between these rocks and the massive sulphide clasts may be important.

The eastern-most unit mapped in the area is a welded ignimbrite of intermediate composition that shows little evidence of hydrothermal alteration and is unmineralized. The western-most unit is made up of massive andesitic lavas and possible sub-volcanic intrusives which are texturally and compositionally similar to the eastern andesites. However, the pervasive chloritic/sericitic alteration and the minor disseminated pyrite appears much weaker than in the eastern horizon.

Glacially derived deposits have been mapped in some parts of the prospect. The only extensive and probable thick cover occurs within the exclusion zone and in the north west corner of the area (See Fig. 2.).

In summary, it appears that the geology of the Cutty Sark Prospect was formed by pulses of extrusive andesitic volcanism separated by intermediate ignimbritic eruptions. Hydrothermal alteration and mineralization accompanied phases of this activity with the possible development of vent breccias. Fine epiclastic detritus accumulated in restricted shallow basins during periods of volcanic quiescence which may have been accompanied by the formation of massive sulphide bodies. Renewed volcanicity apparently disrupted some of these beds with fragments being caught up in more felsic (dacitic) mass-debris type deposits or lag-fall breccias. Such features are typical of the geology in the vicinity of many Kuroko deposits in Japan (Clark, 1983, Franklin et al 1981, G. R. Green, pers.comm.).

GEOCHEMISTRY

A moderately weak but persistent soil geochemistry anomaly was delineated by EZ Company within the dacitic lithic tuff (See Fig. 2.). The anomaly lies along the eastern contact with the andesitic lavas and defines a zone sub parallel to strike approximately 120m wide and 800m long. The maximum values are 800ppm Zn and 200ppm Pb against a background of 10ppm Pb and Zn. It should be noted that the survey coverage is far from uniform, varying from 800ft. (244m) spaced lines to limited 200ft. (61m) spaced in-fill lines.

Stratigraphically the soil anomaly is located in a favourable position lying between the pervasively chlorite altered andesites and the main shale lens, both of which contain minor visible mineralization but give no significant soil geochemical response. The clasts of massive sulphide exposed in the cutting lie directly along strike from the anomaly.

Additional, possible power auger, soil sampling could be carried out to complete the geochemical coverage to a minimum of 400ft. (122m) to more closely define the anomaly, however, it is felt that the present data is sufficient to locate the drill hole.

Lithochemical sampling of numerous outcrops within the prospect has tended to confirm the prospectivity of the dacitic tuff (and related sediments) unit and emphasised the dominance of zinc over the other base and precious metal mineralization. This is clearly evidenced in assays of the massive sulphide clasts. Some of the more significant results are summarized in Table 1. below:

<u>Sample No.</u>	<u>Assay (in ppm unless shown)</u>					<u>Comments</u>
	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ag</u>	<u>Au</u>	
3006	970	2750	30.0%	21.0	0.14	massive sphalerite, clast approx. 2m
3007	1050	775	7.5%	11.5	0.77	massive sulphide clast/lens? approx. 1.5m
3005	1050	1150	2.8%	27.5	0.74	massive pyrite clast/lens? approx. 1m
3012	85	345	6350	1.5	0.04	dacitic lithic pyroclastic (host rock)
3026	180	10	4300	<0.5	0.01	dacitic lithic pyroclastic minor sulphide clast
3011	50	325	5250	4.0	0.05	black shale lens within dacitic unit
3030	10	10	1.5%	<0.5	<0.005	Fe/Mn oxide wad west sulphide clasts
3019	10	50	4750	<0.5	0.01	Fe oxide ooze in creek west sulphide clasts.

GEOPHYSICS

(a) Induced Polarization

Four lines of dipole-dipole IP survey were completed over the Cutty Sark Prospect early in 1983 as part of the Rosebery Mine Lease survey.

The lines surveyed were 9,100N, 10,300N, 11,500N and 12,300N. Discrete chargeability responses were identified on the last two lines above centred around the base-line OOE. Bishop (Sept. 1983) identified a potential drill target 100 to 150m below the surface on line 11,500N based on this survey, but recommended more detailed IP coverage prior to drill testing. An earlier gradient array IP survey appears to have located the same anomaly which may be related to the main sedimentary lens mapped in this area. However, the IP anomaly and the shale occur in close proximity to the massive sulphide clasts and still warrant further investigation.

Another gradient array IP survey centred over the Cutty Sark workings located a moderate chargeability high (36m sec) on lines 13,100N and 13,500N approximately 100m east of the base line in the vicinity of a reported old lead-zinc prospect. The area is now inundated by Lake Rosebery but appears to lie along strike from the soil geochemistry anomaly and is therefore of interest.

(b) Electromagnetics

The widely-spaced dipole-dipole IP survey was carried out at a semi-reconnaissance scale, the lines being either 800 feet (244m) or 1,200 feet (366m) apart. Rather than in-fill this coverage with additional IP, a UTEM ground EM survey was carried out for GODC. (Such a survey was recently instrumental in locating the Hellyer massive sulphide mineralization just north of Que River.) A total of 12 line kilometres were read at 100 feet (30m) stations, the lines 9,100N to 12,700N being spaced 400 feet (122m) apart (See Fig.2.).

No major anomalies were located by the survey which covered the whole of the Cutty Sark Prospect area. The only significant feature detected was a weak and wide conductive unit which lies along the western margin of the main eastern andesitic sequence and which appears to strengthen to the south. This zone may be related to a more altered/weakly mineralized horizon or alternatively simply indicate a conductivity contrast with the adjacent dacitic lithic tuff unit (Staltari, 1984). This result is still of interest as it lies on the possible footwall side of the prospective unit.

CONCLUSIONS AND RECOMMENDATIONS

The Cutty Sark Prospect has considerable potential for the discovery of economic massive sulphide mineralization for the following reasons:

1. Stratigraphically, the area lies along strike between the Rosebery and Chester ore bodies.
2. A prospective dacitic lithic tuff ("mass-debris") unit has been identified which contains clasts of massive sulphide. Such features are similar to some Kuroko deposits.
3. Sedimentary horizons occur within the dacitic sequence which appear to have been deposited in restricted basins suitable for the accumulation of massive sulphides.
4. A moderately weak but coherent zinc (\pm lead) soil geochemistry anomaly one kilometre long has been delineated along strike from the sulphide clasts.
5. A distinct IP anomaly has been located just west of the soil anomaly and although it may be related to graphitic shales, its position within the prospective sequence is of considerable interest.

The only major apparently negative features of the prospect are:

1. The restricted strike length available, being one kilometre maximum between the Rosebery Mine Lease and the EL boundary (Lake Rosebery), and;
2. The lack of significant UTEM responses over the area.

It is recommended that a minimum two diamond drill hole test be carried out to evaluate the potential of the prospect. The initial holes should be sited on lines 11,500N and 9,900N as follows:

Hole A (See Fig.3.)

To test the weak UTEM conductor, Zn (\pm Pb) soil anomaly and IP anomaly and to traverse the prospective dacitic lithic pyroclastic unit.

Collar co-ordinates: 11,500N, 900E (Cutty Sark Grid)
Azimuth: 262° AMG (250° Mag)
Dip: -65°
Length of Hole: 450 metres

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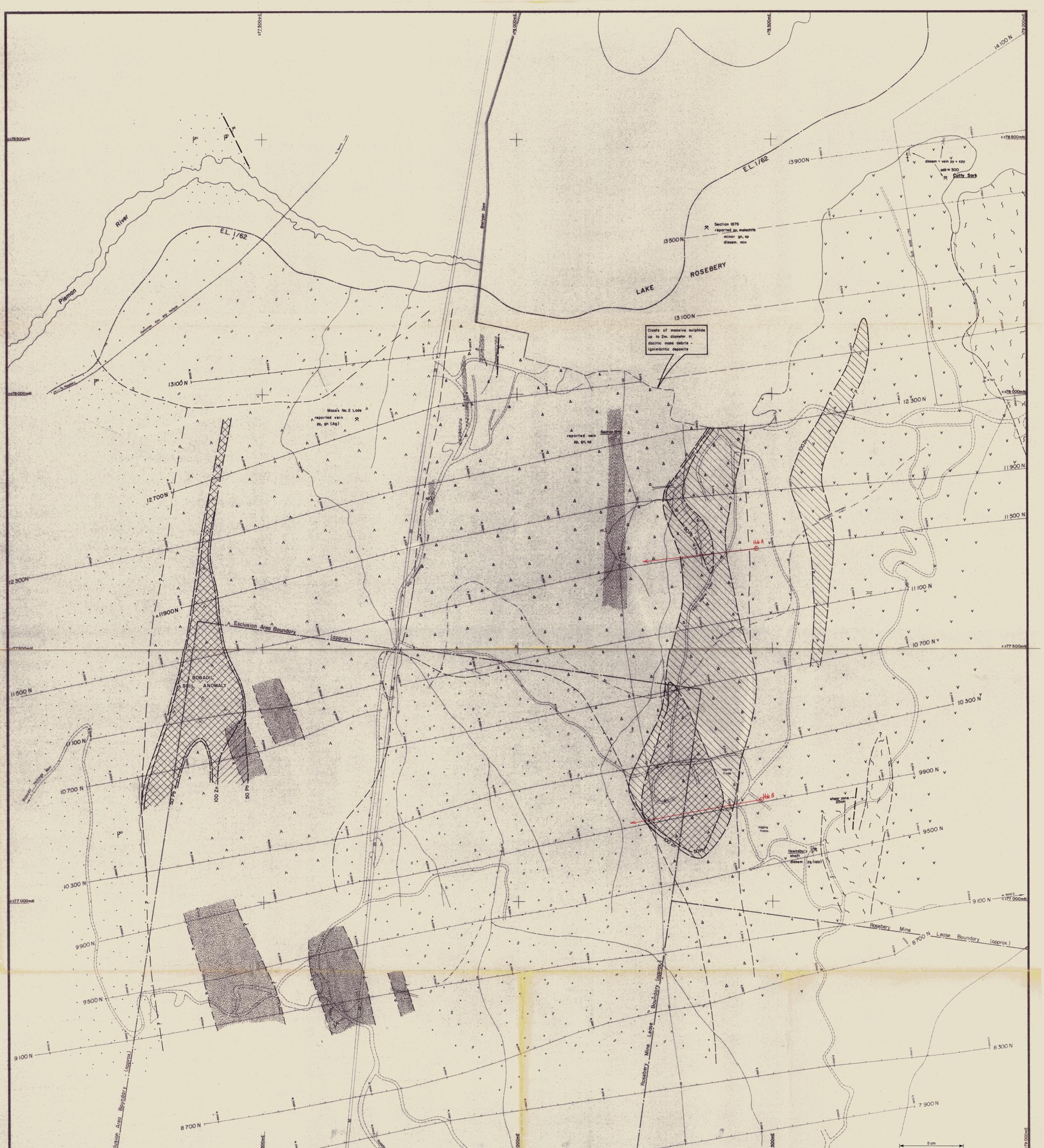
Hole B (See Fig.4.)

To test the Zn (\pm Pb) soil anomaly and the prospective dacitic lithic pyroclastic unit from the andesitic lava contact to the down dip extension of the area covered by glacial deposits.

Collar co-ordinates: 9,900N, 700E (Cutty Sark Grid)
Azimuth: 258° AMG (246° Mag)
Dip: -60°
Length of Hole: 350 metres

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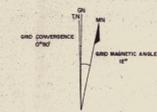
GEOLOGICAL LEGEND

- QUATERNARY**
- FLUVIO - GLACIAL DEPOSITS
unconsolidated, estimate 6-20m thick
- CAMBRIAN (MT READ VOLCANICS)**
- WESTERN ANDESITIC LAVAS
porphyritic andesite, sometimes vesicular, sometimes possible subvolcanic intrusive
weak chlorite - sericite ± disseminated pyrite and minor epidote.
 - DACITIC LITHIC CRYSTAL TUFFS - IGIMBRITES
mass debris type deposits containing clasts massive sulphide (schalenite, pyrite,
minor galena) up to 2m diameter in eastern zone, prominent quartz crystals,
some clearly welded ignimbrites, quartz-chlorite-carbonate veins (minor stockwork)
± disseminated pyrite
 - SEDIMENTARY LENSES - EPICLASTICS
black shale - grey silty-sandstone/sandstone, minor dolomitic siliceous exhalite (?)
minor quartz - chlorite ± sulphide veins
- CAMBRIAN (ROSEBERY GROUP)**
- STITT QUARTZITE
interbedded quartz wacke turbidites, siltstones, fine sandstones
and minor black shale bands, disseminated pyrite

- Strike and dip of bedding
- Strike and dip of volcanic foliation
- Strike and dip of cleavage
- Old prospects and workings (located)
- Old prospect (reported, not located)

SOIL GEOCHEMISTRY
(data from E.Z.Co.)

- 100 ppm Zn contour
- 150 ppm Pb contour



TCR 99-4399

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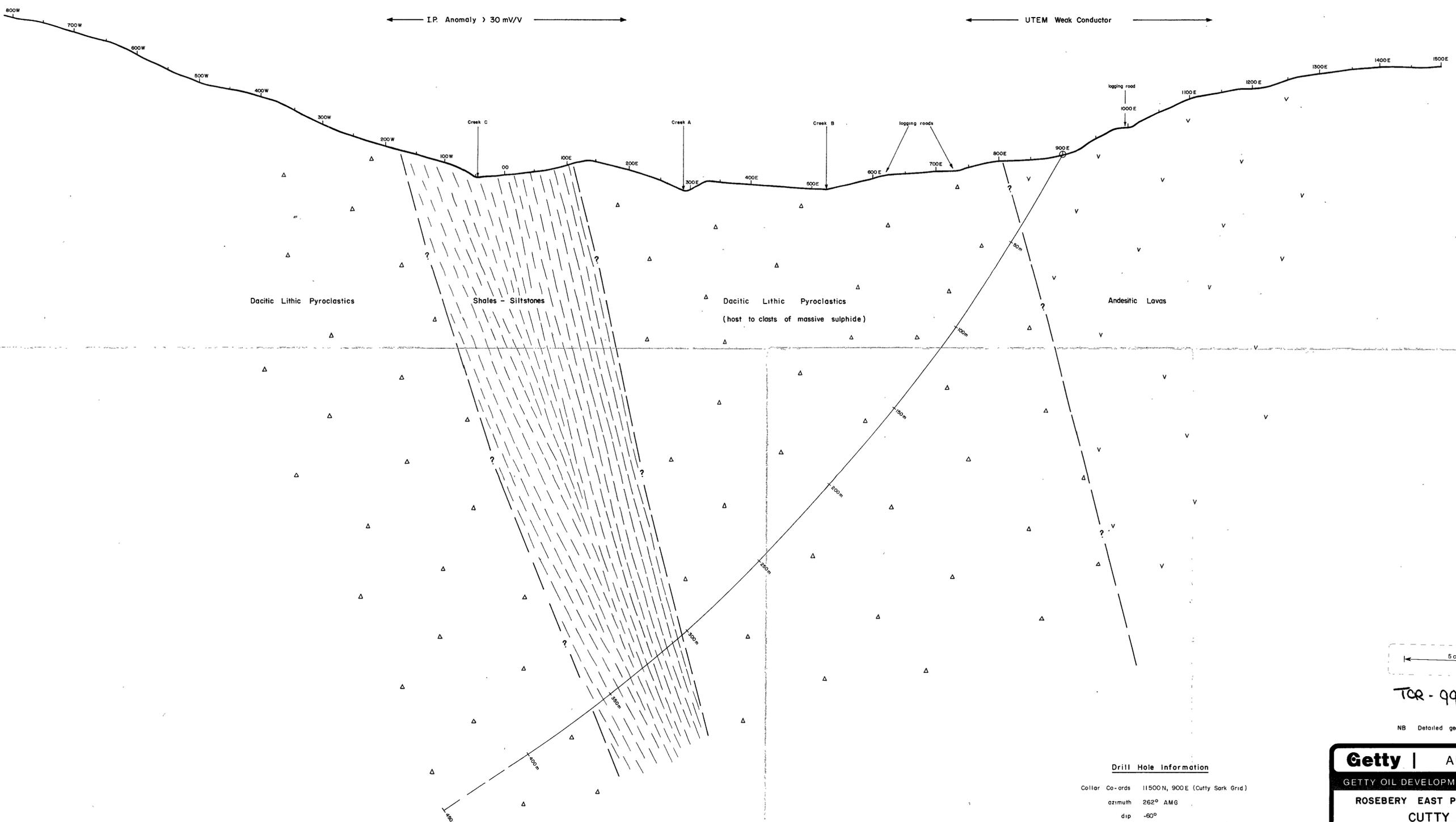
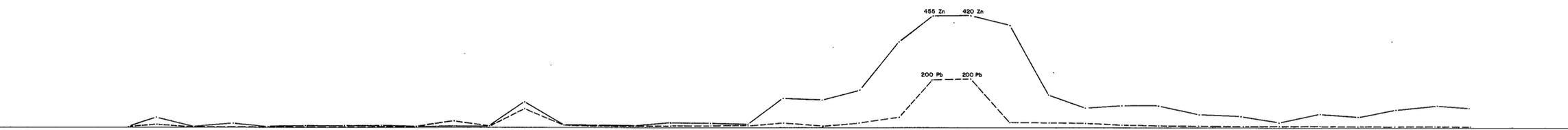
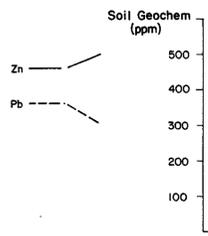
GETTY OIL DEVELOPMENT COMPANY LIMITED

ROSEBERY EAST PROJECT, TASMANIA
CUTTY SARK

GEOLOGY - INTERPRETATION
172011

Author: FGR	Scale: 1:5000
Drawn: T.G.S.	Date: Feb 1984
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Figure No. 2



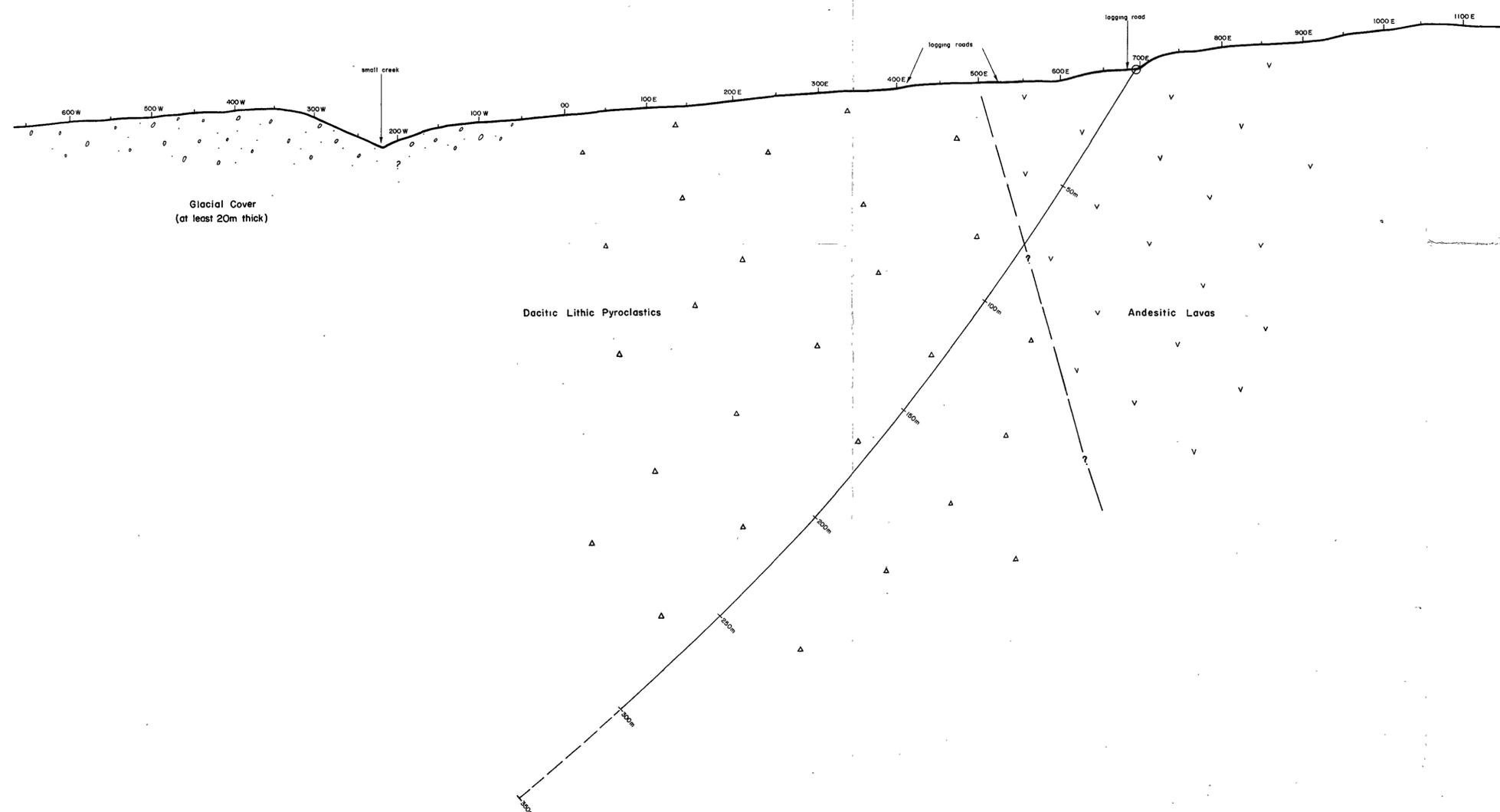
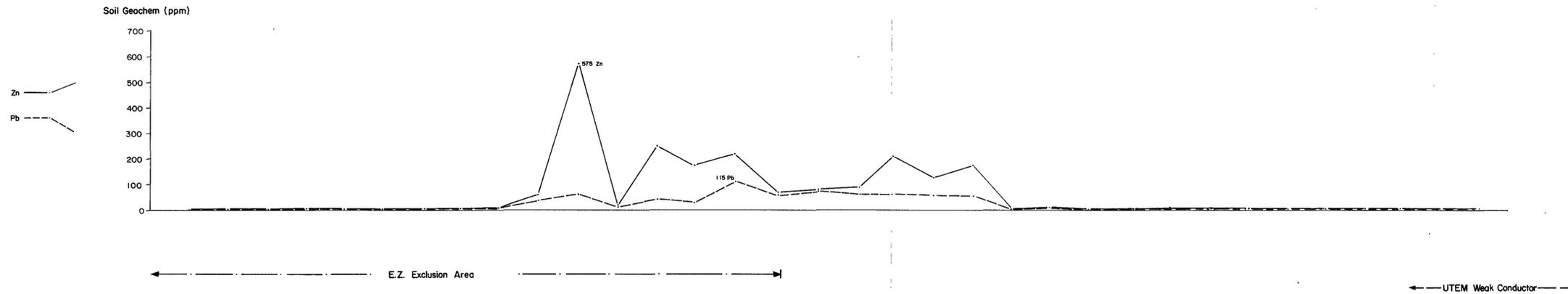
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NB Detailed geological legend, see Fig 2

Drill Hole Information

Collar Co-ords 11500 N, 900 E (Cutty Sark Grid)
 azimuth 262° AMG
 dip -60°
 length of hole 450 metres

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GETTY OIL DEVELOPMENT COMPANY LIMITED	
ROSEBERY EAST PROJECT, TASMANIA	
CUTTY SARK	
DRILL PROPOSAL SECTION	
11500 N 172012	
Author: F.G.F.	Scale: 1:1000
Drawn: T.G.D.S.	Date: Feb 1984
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Figure No 3	



NB: Detailed geological legend, see Fig. 2

Drill Hole Information
 Collar Co-ords: 9900 N, 700 E (Cutty Sark Grid)
 azimuth: 258° AMG
 collar dip: -60°
 length of hole: 350 metres

Getty AUSTRALASIA	
GETTY OIL DEVELOPMENT COMPANY LIMITED	
ROSEBERY EAST PROJECT, TASMANIA	
CUTTY SARK	
DRILL PROPOSAL SECTION	
9900 N 172013	
Author: F.G.F.	Scale: 1:1000
Drawn: T.G.D.S.	Date: Mar 1984
Revised:	File No: Figure No. 4