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ABSTRACT

During the period 7th September, 1978 to 6th September, 1979, the Bauhinia Joint Venture undertook an office assessment of the Barney Creek and Buffalo Lagoon Basins. Recommendations were made for gravity and I.P. surveys within the respective basins. Field work carried out during the year centred on the Myrtle Creek and Berjaya Prospect areas. Several basins containing geochemically anomalous Barney Creek Formation have been identified in the Myrtle Creek area and the recommendation made for the implementation of a gravity survey during the 1979/1980 season. The gravity survey at Berjaya failed to locate meaningful anomalies while the mapping along 5E has resulted in a repositioning of the proposed diamond drillhole to 1200N, 50E.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PLANS

LIST OF APPENDICES

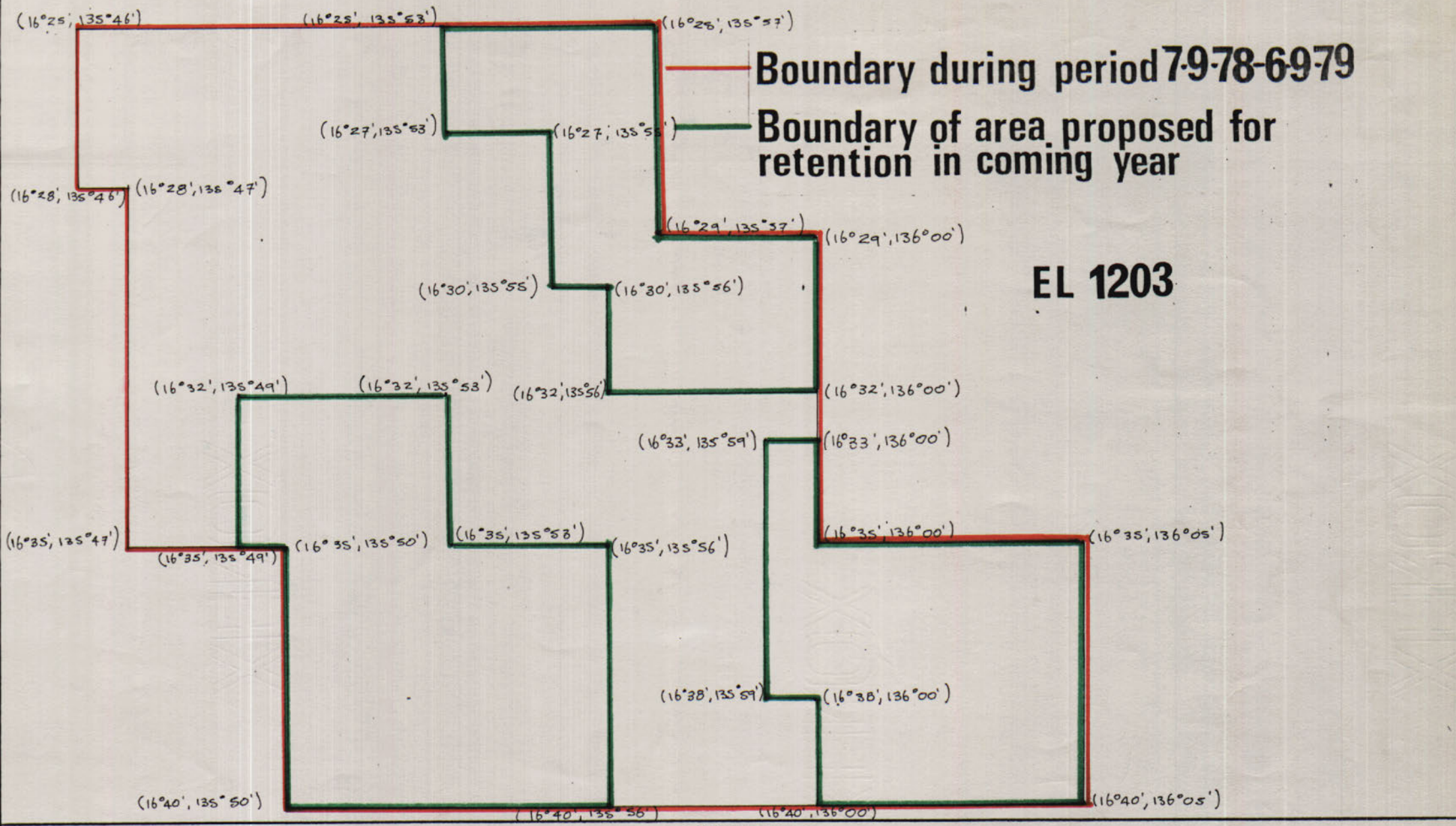


FIGURE 1

BAUHINIA JOINT VENTURE

JANUARY, 1980

1.00 INTRODUCTION

Exploration Licence 1203 was granted to A.O. (Australia) Pty. Ltd. on 7th September, 1976, and was renewed on the 7th September, 1977. In accordance with Section 38B(11) of the Mining Ordinance, E.L. 1203 was reduced to an area of 248.14 square miles following the 1978 field year. An outline of the licence effective during the current year of tenure is given in Figure 1 and the area fully described below:

> Commencing at the intersection of latitude 16 degrees 25 minutes with longitude 135 degrees 46 minutes thence proceeding to the intersection of latitude 16 degrees 25 minutes with longitude 135 degrees 57 minutes thence proceeding to the intersection of latitude 16 degrees 29 minutes with longitude 135 degrees 57 minutes thence proceeding to the intersection of latitude 16 degrees 29 minutes with longitude 136 degrees 00 minutes thence proceeding to the intersection of latitude 16 degrees 35 minutes with longitude 136 degrees 00 minutes thence proceeding to the intersection of latitude 16 degrees 35 minutes with longitude 136 degrees 05 minutes thence proceeding to the intersection of latitude 16 degrees 40 minutes with longitude 136 degrees 05 minutes thence proceeding to the intersection of latitude 16 degrees 40 minutes with longitude 135 degrees 50 minutes thence proceeding to the intersection of latitude 16 degrees 35 minutes with longitude 135 degrees 50 minutes thence proceeding to the intersection of latitude 16 degrees 35 minutes with longitude 135 degrees 47 minutes thence proceeding to the intersection of latitude 16 degrees 28 minutes with longitude 135 degrees 47 minutes thence proceeding to the intersection of latitude 16 degrees 28 minutes with longitude 135 degrees 46 minutes thence proceeding to the intersection of latitude 16 degrees 25 minutes with longitude 135 degrees 46 minutes.

There are no known mining tenements within the licence.

An application was lodged in August, 1979, for the further reduction of the licence into three discrete areas, the outlines of which are shown in Figure 1.

Exploration Licence 1203 is one of a number of licences in the McArthur River region which are the subject of the Bauhinia Joint Venture in which the following companies are participants:

A.O. (Australia) Pty. Ltd.
Electrolytic Zinc Company of Australia Ltd.
Penarroya (Australia) Pty. Ltd.
Preussag Australia Pty. Ltd.

The Joint Venture was formed in November 1976 with the aim of locating economic lead-zinc mineralization of the H.Y.C.-type within the McArthur River region. The Agreement was approved and registered under the Northern Territory Mining Ordinance on the 28th January, 1977, with A.O. (Australia) Pty. Ltd. as Manager. On 9th July, 1979, Shell Company of Australia Ltd. entered into an agreement with the four abovementioned companies by which it can earn a fifty percent interest in the Bauhinia Joint Venture.

During various stages, the Joint Venture has held and investigated a total of 3,463 square miles. A wide range of techniques have been employed including -

(a) INPUT Surveys
(b) photogeological and ERTS studies
(c) induced polarization/resistivity surveys
(d) gravity surveys
(e) ground magnetic traversing
(f) diamond drilling
(g) geological reconnaissance
(h) detailed geological mapping
(i) geochemical programs - rock and soil
(j) literature reviews

As at November 1979, a total of nearly one million dollars had been expended on the McArthur River Project. This represents major exploration effort by the Bauhinia Joint

Venture which remains committed to maintain the momentum of its exploration during the coming tenure of its licence.

Previous investigations specifically within E.L. 1203 carried out by the Bauhinia Joint Venture have included literature reviews, airphoto interpretation studies, detailed geological mapping and associated rock chip sampling programs, geophysical surveys (INPUT,I.P., ground magnetics) and diamond drilling and geophysical drill hole logging (I.P., resistivity and S.P.). The majority of the ground follow-up after the implementation of the regional INPUT survey centred on the Berjaya Prospect.

The Bauhinia Joint Venture program completed in E.L. 1203 during the period 7th September, 1978 to 6th September, 1979, is the subject of the present report. Work carried out included:

(a) detailed assessment of the Barney Creek and Buffalo Lagoon Basins based on all available, previous exploration data

(b) mapping, geochemical rock chip sampling, a structural assessment and drill-hole interpretation of the Myrtle Creek area in the south-eastern corner of the licence

(c) a study of the fault-slice gossans, gravity surveying along former I.P. lines 5E and 7E and detailed mapping along Line 5E at the Berjaya Prospect.

A statement of expenditure covering the period 7th September, 1978 to 6th September, 1979, is included in the report.

2.00 BASIN STUDY

2.10 General

This chapter gives details of an office assessment of two basins which were not the subject of field investigation during the 1979 program. The basins under consideration are the Barney Creek Basin and the Buffalo Lagoon Basin.

2.20 Data Sources

2.21 Introduction

Three main sources of information have been used in presentation of Chapter 2.00 of this report and these are listed below:

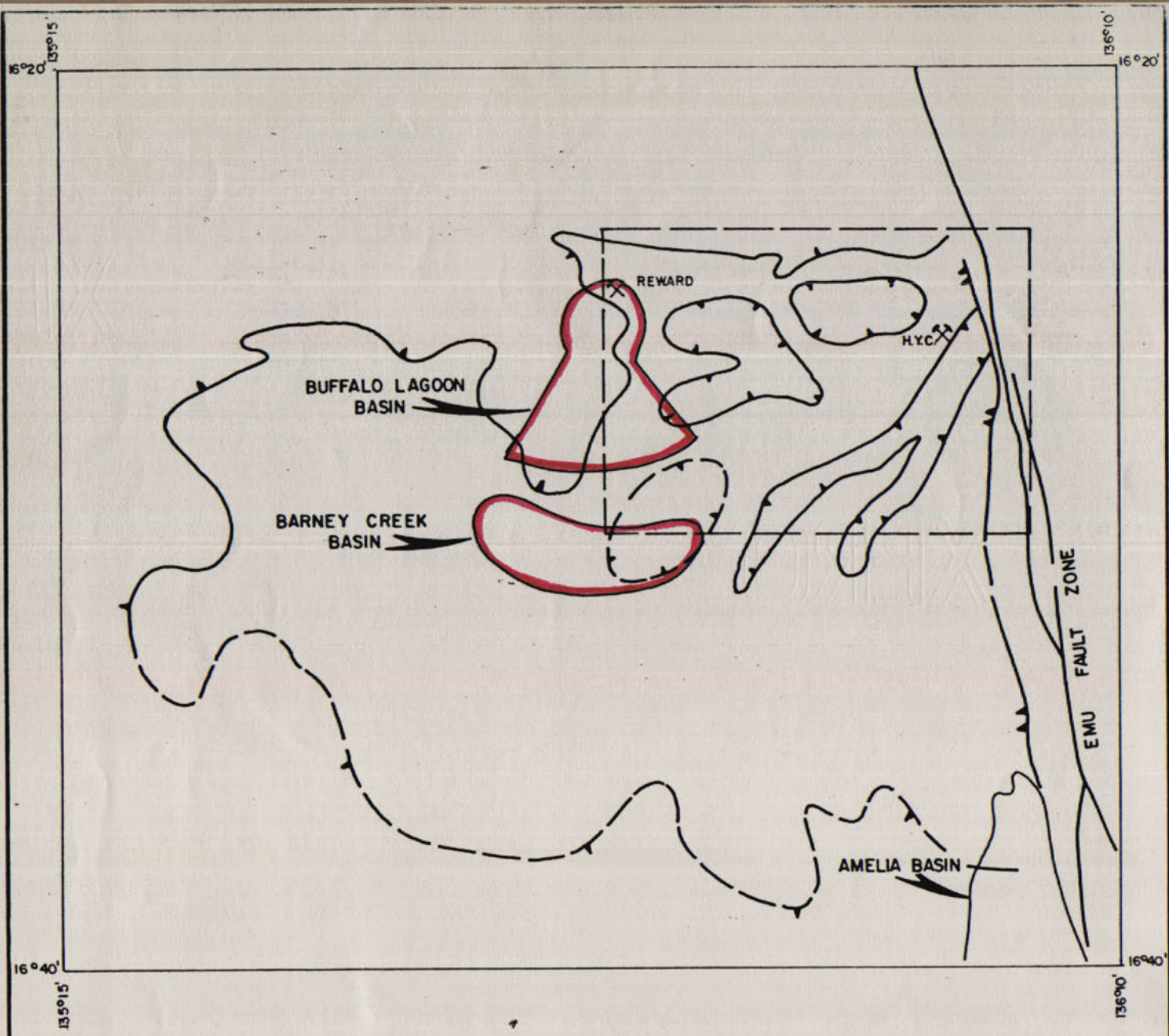
(a) regional geophysical surveys by the B.M.R.
(b) previous exploration data by C.E.C.
(c) results of Bauhinia Joint Venture field investigations.

Aspects of sources (a) and (b) above which are relevant to the two basins under consideration are discussed in the sub-sections to follow.

2.22 Regional B.M.R. Geophysical Surveys

2.221 Gravity Survey. The bouguer anomalies map for the Bauhinia Downs 1:250,000 sheet area is presented as Figure 2, on which are marked the outlines of the Barney Creek and Buffalo Lagoon Basins and the location of the H.Y.C. deposit.

2.222 Aeromagnetic Surveys. The most recent aeromagnetic survey undertaken by the B.M.R. in the McArthur River region was conducted in 1977. The location of the two basins under consideration and relevant data acquisition and pro-



GEOPHYSICAL LEGEND

CHANGE IN LEVEL OF T.M.I GREATER THAN 5 GAMMAS

CHANGE IN LEVEL OF T.M.I LESS THAN 5 GAMMAS

PROBABLE CHANGE IN LEVEL OF T.M.I LESS THAN 5 GAMMAS

DETAILED SURVEY AREA FLOWN IN 1964 BY B.M.R.

OUTLINE OF BASIN

FIGURE 4

DETAILED B.M.R. AEROMAGNETICS

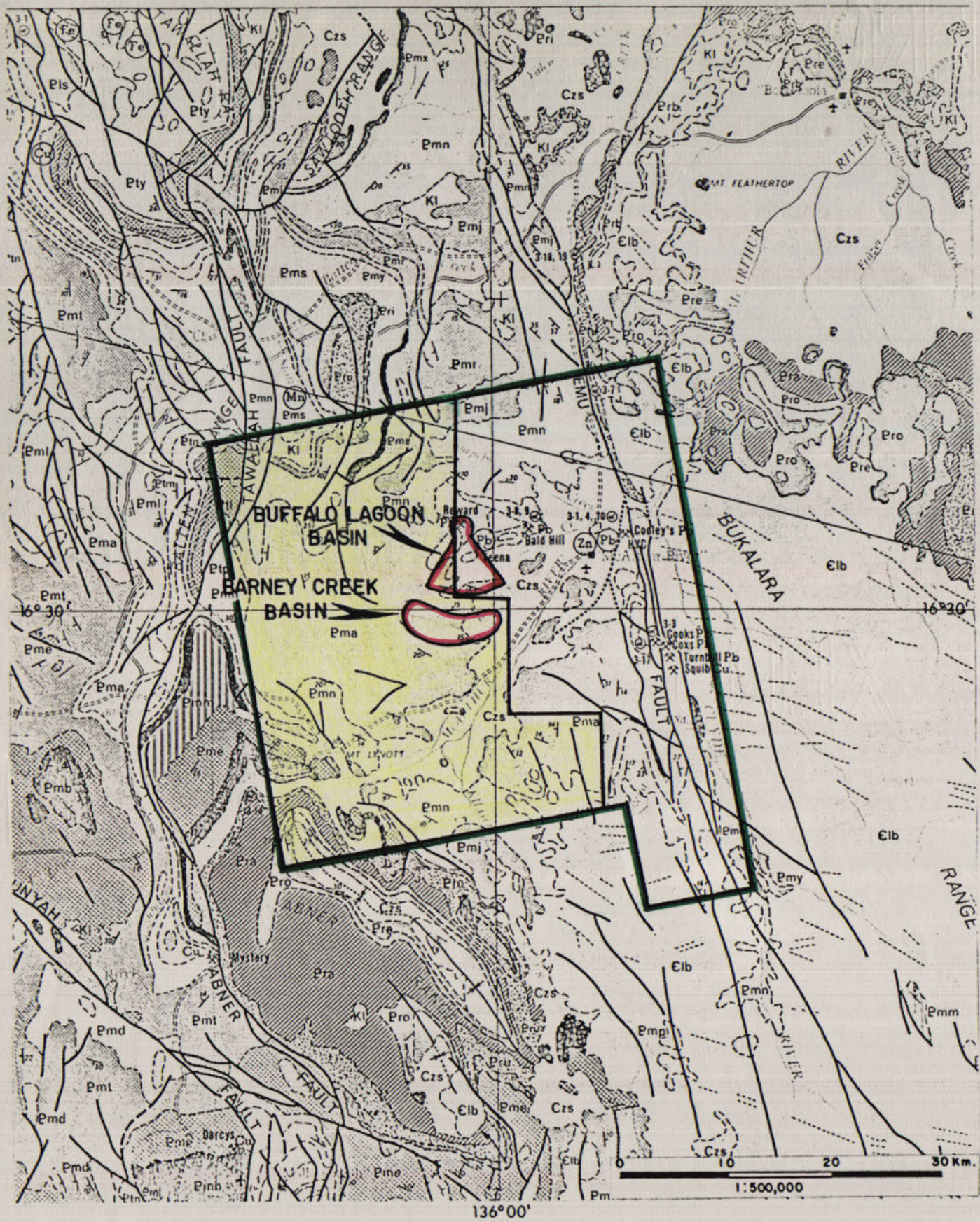
BAUHINIA JOINT VENTURE

JANUARY, 1980

cessing details are given in Figure 3 .

Part of the Bauhinia Downs 1:250,000 sheet area had been previously flown for the B.M.R. in 1963 by Adastra Hunting Geophysics Pty. Ltd. A similar T.M.I. contour pattern was obtained to that presented in Figure 3 . An interpretation of the 1963 survey by Young (1965) concluded that several zones of contrasting susceptibilities within the basement existed and that the most significant boundaries of these zones are roughly equivalent to the Emu Fault and part of the Tawallah Fault, indicating that these faults are structurally related to magnetic basement. The position of the Emu Fault Zone has been presented on Figure 3.

The magnetic contours drawn from the 1963 regional survey did not indicate any detailed structural information regarding the H.Y.C. Basin. An inspection of the original survey records by Young (op. cit.) however, revealed the presence of minor flexures in the magnetic profiles. An initial study of these flexures, which had amplitudes of between 1 and 4 gammas resulted in the discovery of three magnetic 'lows'. Consequently further aeromagnetic surveying at a lower altitude was conducted by the B.M.R. in 1964 over the H.Y.C. area (refer to Figure 4). With the greater resolution possible, these magnetic lows were confirmed and were attributed as due to small basins of Barney Creek Formation. A minor magnetic feature, coincident with the contact of the Batten and Umbolooga Sub-Groups was identified from the 1963 and 1964 surveys, and was interpreted as a contrast in magnetic susceptibility between these groups. This feature is also shown in Figure 4 .



OUTLINE OF AREA FOR WHICH 1:62,000 SCALE C.E.C. MAPPING AVAILABLE

OUTLINE OF AREA FOR WHICH 1:19,200 SCALE C.E.C. MAPPING AVAILABLE

FIGURE 5

BASIN LOCATION RELATIVE TO C.E.C. MAPPING

BAUHINIA JOINT VENTURE

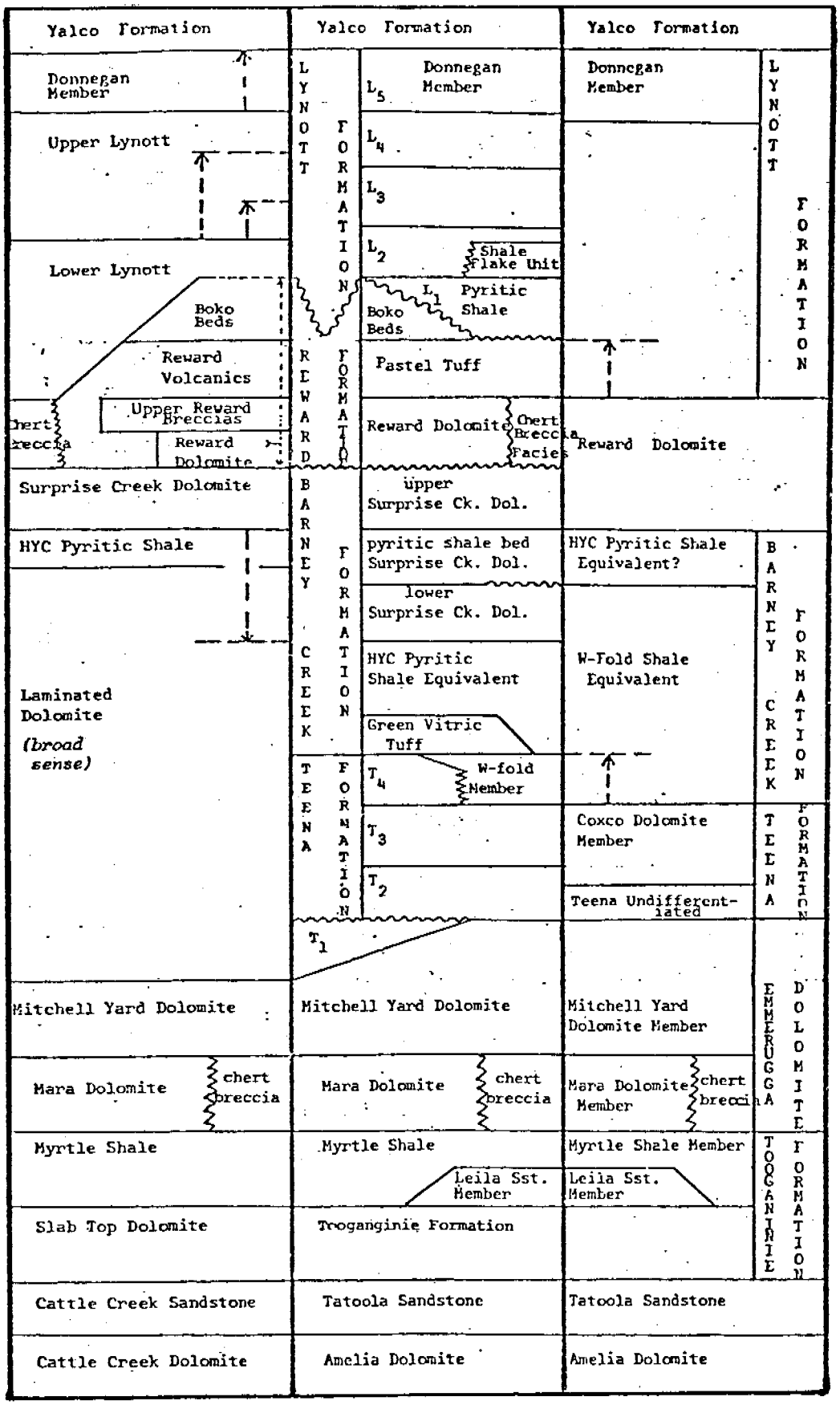
JANUARY, 1980

2.23 Previous Exploration by C.E.C.

2.231 General. Information relating to the work carried out by C.E.C. in the Barney Creek and Buffalo Lagoon Basins has been based on the available open file reports and is detailed in the Sub-sections to follow.

2.232 Mapping. Semi-regional mapping at a scale of 1 inch = 1600 feet was commenced in 1964 at the H.Y.C. and continued westward towards the Tawallah Fault until 1967. Figure 5 gives an outline of the mapped area for which plans at a scale of 1:19,200 (1 inch = 1600 feet) have been released in relation to the basins under study. The figure also illustrates the area for which a reduced composite geological plan at a scale of approximately 1:62,500 is on open file. No other mapping in the Barney Creek and Buffalo Lagoon Basins is known to have been undertaken by C.E.C.. These plans provide the basis for the presentation of data compiled on the two basins under consideration.

As a consequence of the development of C.E.C's mapping program, their stratigraphic nomenclature was devised at the H.Y.C. deposit and environs and subsequently extended westwards. This caused some difficulty away from the H.Y.C. area with regard to mapping the Barney Creek Formation and units immediately above and below the formation. In the vicinity of the H.Y.C. deposit, the Barney Creek Formation was divided, in ascending order, into the Laminated Dolomite, Basal Tuffs Beds and H.Y.C. Pyritic Shales. Away from the H.Y.C. area, C.E.C. admitted that it was "virtually impossible"



COMPARISON A.O., C.E.C. AND B.M.R. NOMENCLATURE.

East of Tawallah Fault and excluding environs of H.Y.C. deposit.

FIGURE 6

COMPARISON OF STRATIGRAPHIC NOMECLATURE

BAUHINIA JOINT VENTURE

JANUARY, 1980

to separate the Laminated Dolomite and Basal Tuff Beds and the two units were mapped under the name Laminated Dolomite. However it is the opinion of A.O. field geologists, that C.E.C. often mapped the sequence from above the Mitchell Yard Dolomite to below (and partly including) the pyritic shale bed of the Surprise Creek Dolomite as Laminated Dolomite (refer to Figure 6). This fact should be borne in mind when interpretating the data presented in Plans 1 and 2.

2.233 Geochemical Surveys. Limited data is available on open file regarding geochemical programs undertaken by C.E.C. in the basins under review. The data consists solely of plans which give locations and values obtained along regional soil traverses. The plans, dated 1971 are not accompanied by a text and hence details of sampling and analytical techniques as well as interpretation of the data are unavailable for assessment.

C.E.C. would have been aware that in areas of deep alluvial cover, auger drilling close to bedrock was necessary if buried mineralized horizons were to be detected. Whether auger sampling was undertaken along the regional soil traverses is not known and hence the effectiveness of the geochemical surveys, as outlined on Plans 1 and 2 can only be conjectural. The sampling interval used was 150 metres, except in the Buffalo Lagoon area where a sampling interval of 60 metres was employed.

2.234 I.P. Survey. A regional I.P. survey was undertaken by C.E.C., with traverses being conducted on a square grid pattern of one mile length using 400 foot spacing. The extent of this grid within each basin studied is shown on the relevant plan for the basin. By 1967, C.E.C. believed that all areas with pyritic shale potential had been covered by the regional I.P. grid.

Only generalized results of the regional survey have been released on open file. One such report stated:

> " The H.Y.C. Pyritic Shales being moderately to highly induced polarization responsive can be readily located even beneath thick alluvial cover. As the Pyritic Shales rarely outcrop in the field, being easily weathered, this type of work was invaluable in accurately delineating the H.Y.C. Pyritic Shales at the surface and in pin pointing and partially evaluating newly discovered occurrences of the shales indicated by the geological mapping.
>
> The majority of the dolomite-sandstone sequence at McArthur River have very low induced polarization responses and high resistivities. The pyritic shale unit on the other hand gives a characteristic strong induced polarization response with a corresponding low resistivity. The plotted results on graphs of pyritic shale anomalies give curves which are almost diagnostic of the unit. Experience has shown that any responses of 5 mv/v or above [equivalent to 7.5 milliseconds] is anomalous in the McArthur River area and that responses of 10 mv/v [equivalent to 15 milliseconds] or above are generally associated with at least a trace of mineralization in the form of bedded sphalerite and galena. This is not a hard and fast rule, just an indication obtained from work done to date. Apparently a very strong development of overlying pyritic shale occurs in areas of economic bedded mineralization; where pyritic shales are weakly developed so is the associated mineralization. "

In a plan giving the results of the regional I.P. survey, C.E.C. has classified anomalies as significant, minor or doubtful, but the basis on which this classification was made has not been specified. The only anomalies classified as significant were in the H.Y.C. and W-Fold/Wicken's Hill

TABLE 1 - SUMMARY DRILL HOLE DATA BASIN STUDY

BASIN	DIAMOND DRILL HOLE	YEAR DRILLED	INCLINATION	DEPTH HOLE TERMINATED	H. Y. C. INTERSECTED AT	H. Y. C. WIDTH OF INTERSECTION	PYRITIC AVERAGE CBA	SHALE CORRECTED THICKNESS	COMMENTS
BARNEY CREEK	Barney Creek #3	1976	Vertical	353m	127m	184m	40°	118m	Averaged 0.08% Pb and 0.28% Zn over 47.6m
BUFFALO LAGOON	Buffalo Lagoon #1	1967	Vertical	206m	Ground Level	30m	Log Not Available	-	6m of 3.22% Pb intersected in Mitchell Yard Dolomite. H.Y.C. shales contain only rare fracture fillings of sphalerite and galena
	Buffalo #2								Existence unknown
	Buffalo #3	1976	Vertical	327m	195m	119m	80°	117m	Averaged 109 ppm Pb, 553 ppm Zn over 119m. Basal section averaged 224 ppm Pb, 0.11% Zn over 11m
	Boko #1								Location and results unknown
	Boko #2								Location and results unknown
	Boko #3	1978		631m	440m	156m			No assays available
	Reqard #10	1962	- 75°	332m	119m	14m	90°	14m	No assays available. Pyrite occurred in All stratigraphic units intersected (Teena Dolomite - Reward Dolomite) as fracture fillings or in breccia. No bedded pyrite observed. No lead or zinc mineralized recorded

areas. Minor and doubtful anomalies were located within the basins under consideration and these have been marked on Plans 1 and 2.

2.235 Drilling. An overview of the situation regarding C.E.C. drilling within the Barney Creek and Buffalo Lagoon Basins is presented in Table 1. All measurements have been converted to metric. Results are discussed in detail in the relevant sub-sections.

2.30 Barney Creek Basin

2.31 Configuration

The Barney Creek Basin is elongated in an east-west direction along Barney Creek. The basin measures approximately 2.5 x 8 kilometres, of which the majority lies within E.L. 1203 held by the Bauhinia Joint Venture. An outline of the basin is given in Plan 1.

2.32 Regional B.M.R. Geophysical Surveys

A study of Figures 2 and 3 reveals that the Barney Creek Basin is situated marginal to a north-south line of gravity highs, (in one of which is located the H.Y.C. deposit) and within a broad, regional magnetic anomaly reflecting susceptibilities within the basement. The more detailed aeromagnetic survey flown by the B.M.R. indicated the presence of a basin containing Barney Creek Formation (refer to Figure 4 and Plan 1).

2.33 C.E.C. Investigations

2.331 Mapping. With the exception of two areas of

outcrop, one in the central portion of the basin and the other to the north of Buffalo Lagoon, the basin is covered by extensive alluvium which masks its structural control.

Outcrops of Reward Dolomite and Lower Lynott Formation have been mapped by C.E.C. in the central part of the basin. Dips recorded are 15° to 20° to the north and north-west. Diamond drillhole Barney Creek No.3 was drilled adjacent to this outcrop and intersected 183.9 metres of H.Y.C. Pyritic Shale, which using an average CBA measurement of 40° gives a corrected thickness of 118 metres.

North of Buffalo Lagoon, C.E.C. has mapped an incomplete section of steeply dipping Basal Tuff Beds (equivalent to the W-Fold Shale). The indicated thickness of the W-Fold Shale exposed is 120-130 metres which represents a substantial thickness of the order recorded in the environs of the H.Y.C. as illustrated by the following table:

Unit	Wicken's Hill No.1	W-Fold No.3	H.Y.C. Deposit	Reward No. 10
Surprise Creek Dolomite	34+ m	130+ m		
H.Y.C. Pyritic Shales	182 m	166 m	490 m	14 m
W-Fold Shales	50 m	180 m	150 m	168 m

2.332 Geochemistry. A number of regional soil lines, spaced approximately 540 metres apart and with a sampling interval of 60 metres impinge on the northern edge of the basin where Basal Tuffs and Laminated Dolomite have been mapped. These lines appear to have been designed to test a sequence, from the Mara Dolomite to the Surprise Creek

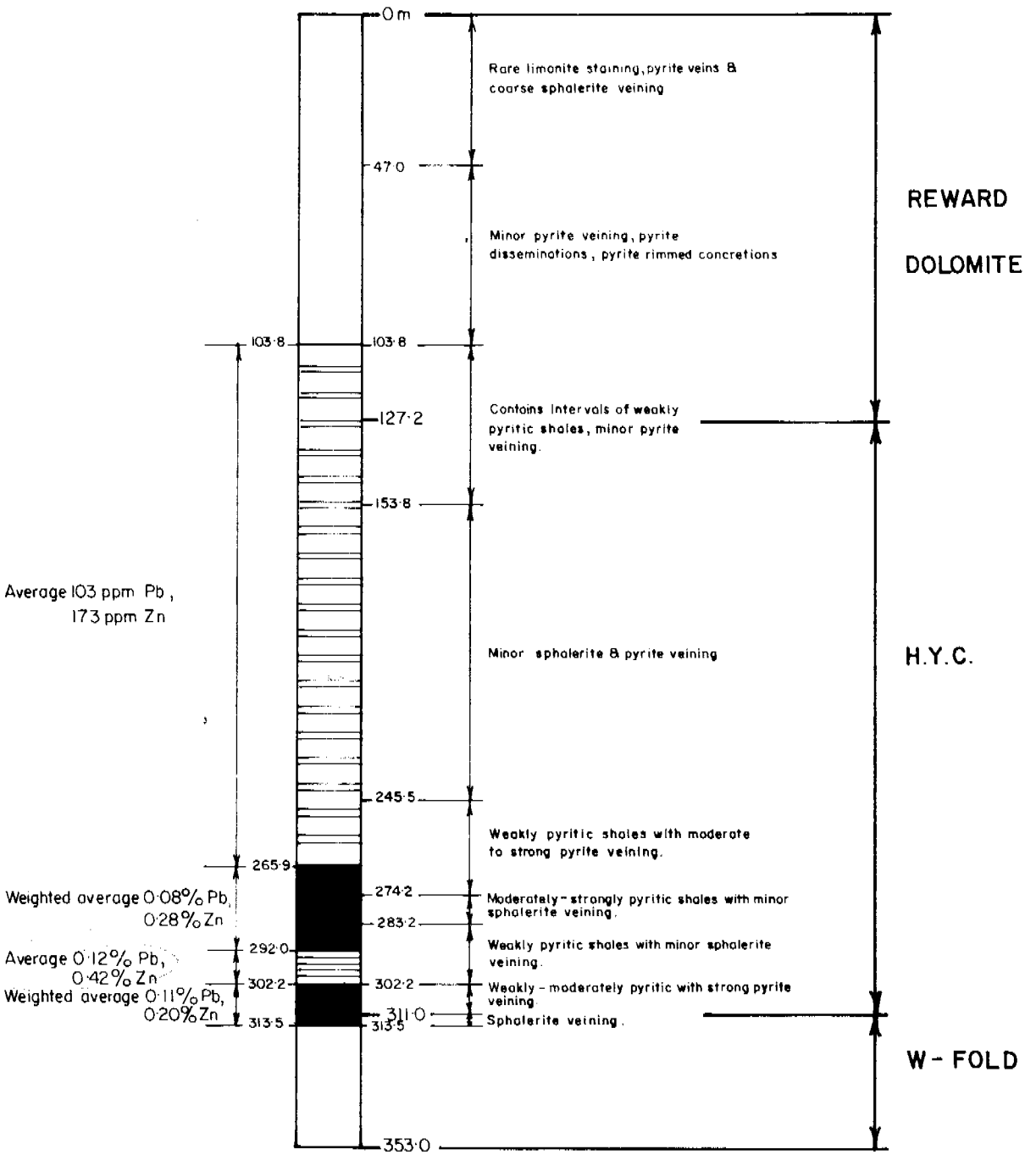
Dolomite, which is masked by alluvial cover in the Buffalo Lagoon Basin. No copper lead or zinc values greater than 100 ppm were recorded from these lines within the Barney Creek Basin.

Although several of the soil lines traversed the mapped outcrop of Barney Creek Formation north of Buffalo Lagoon, it is considered that they cannot be regarded as downgrading the potential of the Barney Creek Formation to host mineralization within the basin under consideration, in view of the limited data available concerning these soil lines (see sub-section 2.233).

2.333 Regional I.P. Survey. The Barney Creek Basin was included in C.E.C's regional I.P. grid (refer to Plan 1) and two I.P. anomalies classified as "doubtful" by C.E.C., were located within the basin. The anomalies occur on the same E-W grid line, have an on-ground separation of approximately 520 metres and lie to the southeast of the Reward Dolomite-Lower Lynott Formation outcrop area. No follow-up of these anomalies by C.E.C. is known.

2.334 Drilling. C.E.C. had documented in open file reports that a broad magnetic low with an associated resistivity low occur near Barney Creek. It was considered that, as these geophysical conditions were similar to those occurring over the three main structural basins around the H.Y.C., the area represented an attractive exploration target. In addition the area consisted of wide black soil plains where outcrop was non-existent and geological interpretation impossible.

BARNEY CREEK No.3



Core not assayed

10 cm of every 2m section of core assayed

10 cm of every 1m section of core assayed

Complete intersection assayed

Vertical Scale = 1 : 2,000

FIGURE 7

CROSS SECTION - BARNEY CREEK No.3

BAUHINIA JOINT VENTURE

JANUARY, 1980

Barney Creek No.I, drilled in 1966 was proposed to 450 metres to gain stratigraphic and geological information to assist in interpretation of geophysical results. Rocks intersected were green and purple silty dolomites and thin-bedded dolomitic shales considered to be part of an abnormally thick sequence of Myrtle Shale. The hole was stopped at 236 metres when it was clear that the succession below the H.Y.C. Pyritic Shale was being intersected. The rig was shifted to an alternate site about 1.6 kilometres to the southwest, where similar geophysical conditions occurred. This was the location of Barney Creek No. 2. The only information released on open file concerning this hole is that the sole lithology encountered before drilling was abandoned was 183 metres of barren massive, grey algal dolomite. It would appear that both holes were drilled outside the limits of the basin.

In 1976 C.E.C. drilled Barney Creek No.3 within the same magnetic low as Barney Creek No.1 and No.2. The hole is positioned in the central part of the interpreted Barney Creek Basin near the mapped outcrop of Reward Dolomite - Lower Lynott Formation. The intersections recorded in the hole are summarized below:

Barney Creek No. 3 (1976)

0 - 127m Reward Dolomite
127 - 311m H.Y.C. Pyritic Shale Member
311 - 353m W-Fold Shale Member

The CBA readings documented for the hole varied both between and within the above stated stratigraphic units. As indicated earlier, using an average CBA measurement of 40^{o} gives an

estimated thickness of H.Y.C. Pyritic Shale of 118 metres. It is of additional interest to note that the basal section of H.Y.C. Pyritic Shale recorded in the hole from 310.6 to 311.1 was highly sheared (at approximately 20° to the core) and it may be possible that this represents a fault with a subsequent loss in the lowermost H.Y.C. Pyritic Shale. Tectonic brecciation and contorted shales are present in the preceeding section from 298.1 - 310.6 metres and a dramatic change in CBA from an average of 40° to zero was recorded at 308.7 metres.

Asays are available in addition to the lithological log for the hole and a summary of the assay results is presented in Figure 7. The section from 0-103.8 metres was not assayed and from 103.8 - 265.9 metres, ten centimetres of every two metre section was assayed for lead, zinc and iron content. Slightly elevated lead and zinc values were recorded throughout this section, both in the Reward Dolomite and H.Y.C. Pyritic Shale, and of the eighty-three samples assayed the average value was 103 ppm Pb and 173 ppm Zn.

The complete intersection in Barney Creek No.3 from 265.9 - 292.0 metres was assayed with a resultant weighted average for lead and zinc of 837 ppm and 0.28% respectively. From 292.0 - 302.2 metres only ten centimetre samples of every one metre were assayed with the section returning, for the ten samples taken, an average of 0.12% Pb and 0.42% Zn.

2.34 Bauhinia Joint Venture Investigations

2.341 Input Survey. Three anomalous zones were originally outlined by Geoterrex falling partly or wholly within the

Barney Creek Basin. These anomalous zones were B30, B31 and B32 which are outlined on Plan 1.

During the 1977 field follow-up program, the B30-B31-B32 zone was designated as a Category 1 anomaly, based on the original priorities assigned to it by Geoterrex and the fact that the zone lay within the Barney Creek Basin. The INPUT anomalies on flight line 260N between fiducial 122.95 and 123.92 were tested with a north-south I.P. line using 100 metre dipoles and 2.5 kilometres in length. The position of the line is given in Plan 1. The three airborne responses were all considered to be related to surficial material.

2.342 I.P./Resistivity. The results of the I.P. traverse referred to in the preceeding sub-section are presented in Figure 8. In addition to attributing the INPUT responses to surficial sources, the I.P. survey indicated the presence of near surface chargeable material between 350N and 750N, coinciding with the outcropping hill of Lynott Formation. Apparent chargeabilities of 5 to 6 milliseconds above background were recorded with slightly higher values noted possibly at depth between 700N and 900N.

2.343 Mapping. No field mapping has been undertaken by the Bauhinia Joint Venture in the Barney Creek Basin. However the area was part of a region which was assessed photogeologically by Loxton, Hunting and Associates. One structural feature of possible significance to the basin was identified. This is a northwest-trending linear feature,

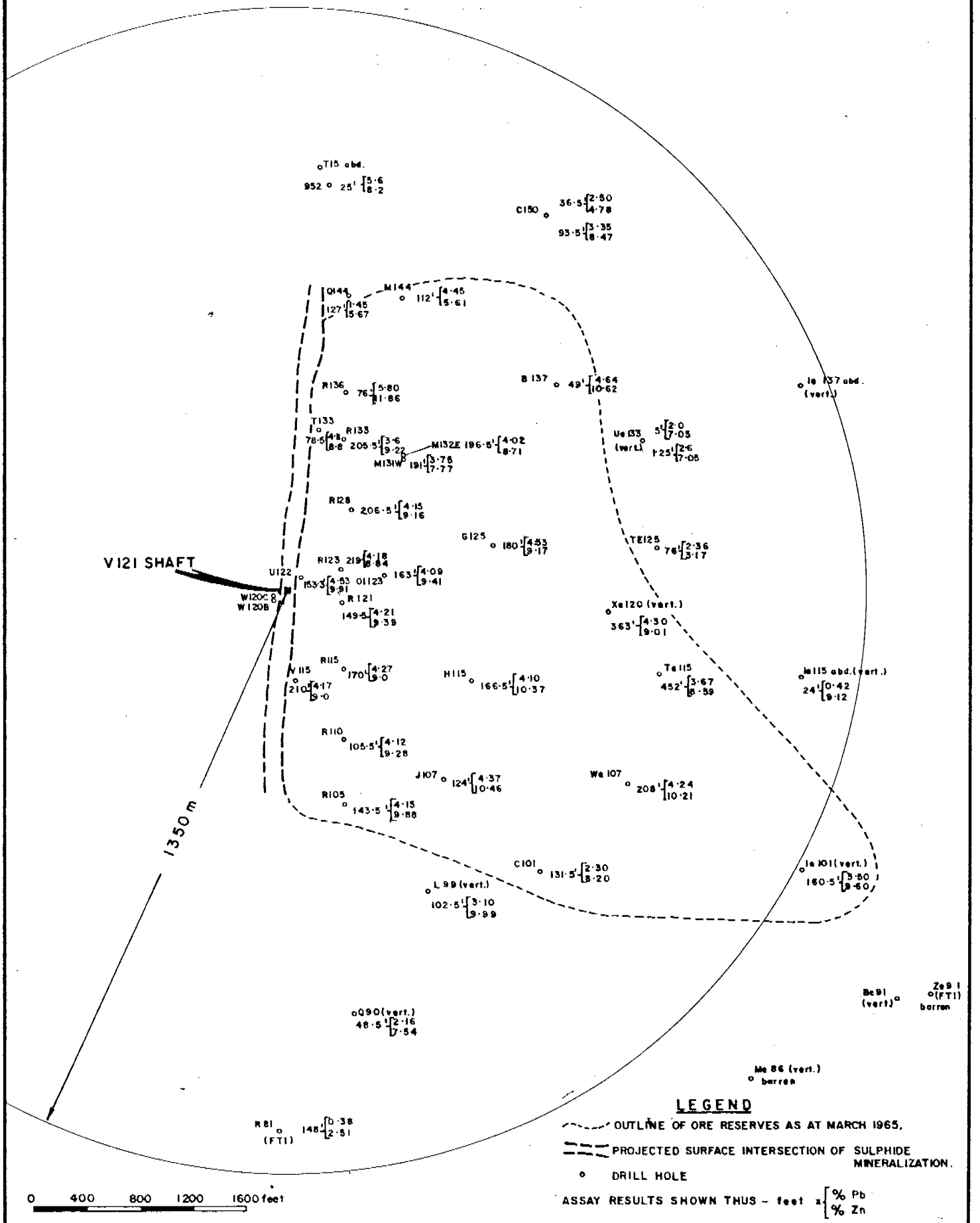


FIGURE 9

DRILLING RESULTS H.Y.C.

BAUHINIA JOINT VENTURE

JANUARY, 1980

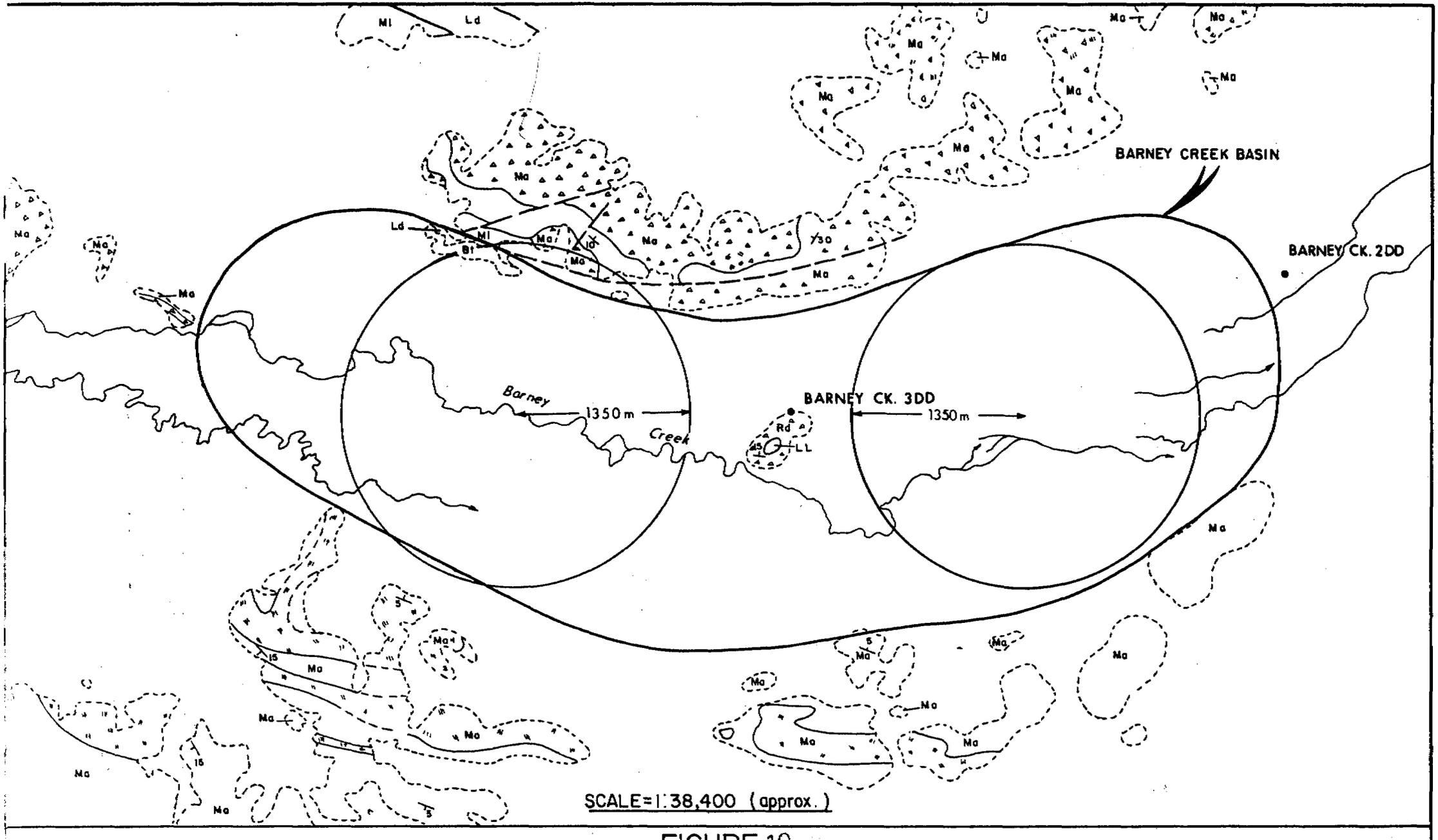


FIGURE 10

POSITION OF BARNEY CK.-3DD IN RELATION TO THEORETICAL HYC SIZED BASINS

BAUHINIA JOINT VENTURE

JANUARY, 1980

some thirty-two kilometres in length which follows one of the three 'fundamental' structural trends in the McArthur River area - the Calvert Fault trend. The north-western (see Plan 1) and southwestern extremities of this linear feature have been mapped as faults.

2.35 Conclusions and Recommendations

The Barney Creek Basin merits further investigation. The results of diamond drillhole Barney Creek No.3 do not negate the potential of the area to host lead-zinc mineralization of a H.Y.C.-scale and grade. Figure 9 gives some known drilling results for the H.Y.C. within a 1,350 metre radius of the V121 shaft. To the south in hole R81 the mineralization is becoming visibly depleted with 45 metres of 0.38% Pb and 2.51% Zn. While this is four times and eight times the value of lead and zinc respectively obtained over a similar intersection in Barney Creek No.3, elsewhere to the southeast of the H.Y.C. deposit within the 1,350 metre radius, barren holes have been recorded. A comparision of Figure 9 and 10 illustrates the possibility that Barney Creek No.3 could represent the outer fringe mineralization in a deposit of dimensions similar to the H.Y.C.. However an assessment of this assertion is hindered by the present lack of information regarding the configuration and structural setting of the basin.

It is therefore recommended that a program initially involving geological mapping, rock chip sampling and gravity surveying be implemented. Three N-S gravity lines spaced approximately 2.5 kilometres apart and totalling 11 kilometres in length are recommended as illustrated on Plan 1.

2.40 Buffalo Lagoon Basin

2.41 Configuration

The Buffalo Lagoon Basin together with the "Reward Sub-Basin" is approximately triangular in shape. The major portion of the basin lies within M.R. 581 held by C.E.C. (refer to Plan 2). That portion of the basin which does lie within E.L. 1203 covers about six square kilometres.

2.42 Regional B.M.R. Gravity Surveys

Figures 2 and 3 show that the Buffalo Lagoon Basin is situated marginal to a north-south line of gravity highs (in one of which is located the H.Y.C. deposit)and within a broad, regional magnetic anomaly reflecting susceptibilities within the basement.

2.43 C.E.C. Investigations

2.431 Mapping. The Buffalo Lagoon Basin together with the "Reward Sub-Basin" are outlined on Plan 2. The basin is approximately triangular in shape, being fault bounded along the northeastern and northwestern margins. The base and perpendicular height of this "triangle" measure approximately 8 km and 6 km respectively. Less than one-third of the Buffalo Lagoon Basin lies within E.L. 1203.

The western part of the basin, which is the portion lying within E.L. 1203, consists of a gently dipping sequence from the Mitchell Yard Dolomite up to the Reward Volcanics. Recorded dips vary mostly from 3° to 15°NW. The sequence is truncated by the northwestern marginal fault. Drilling by C.E.C. in this region (refer to Buffalo No.3, sub-section

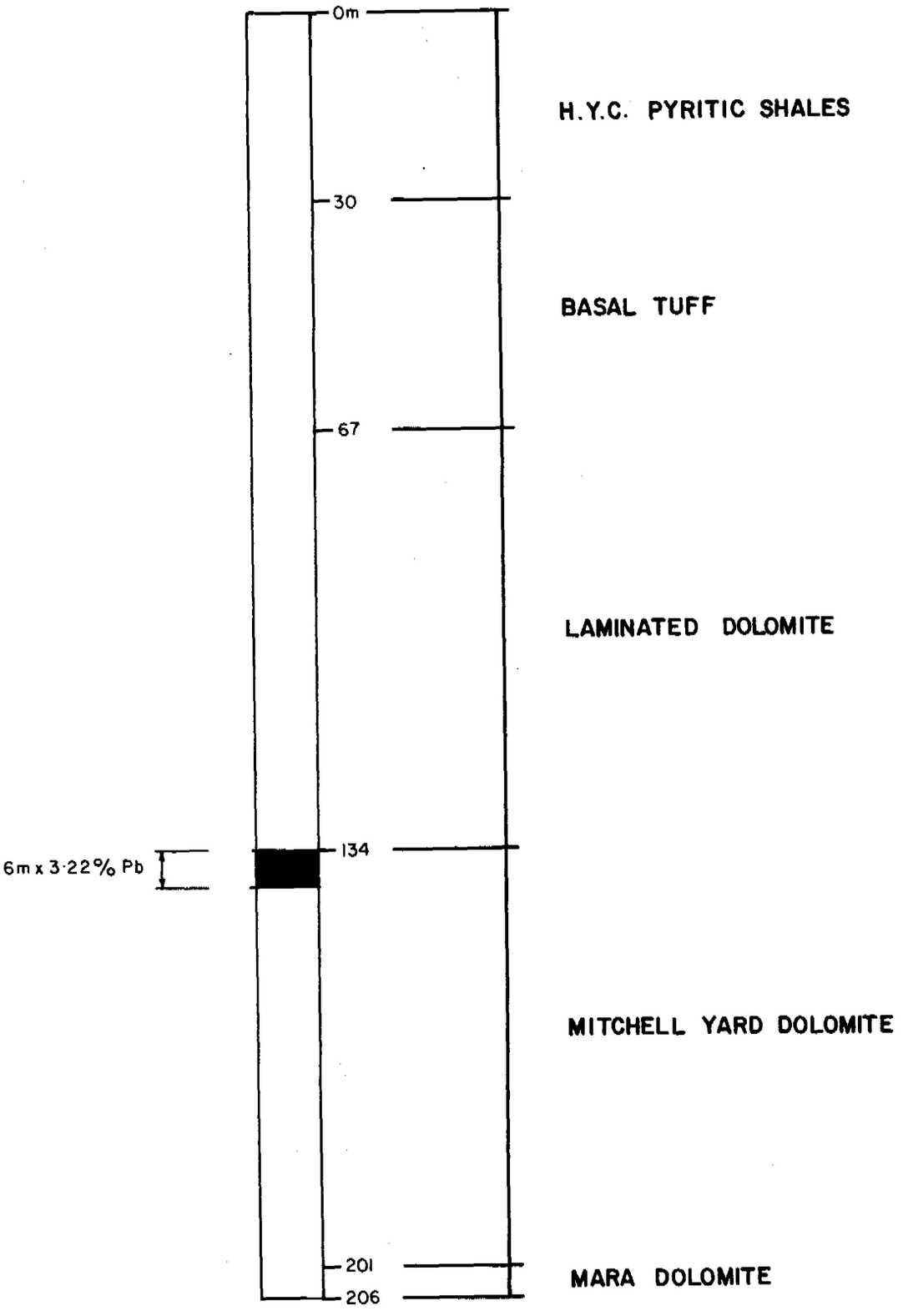
2.435) has indicated the H.Y.C. Pyritic Shales are of the order of 120 metres thick.

An extensive area of alluvium occurs in the eastern portion of the basin. To the north in the region of the "Reward Sub-Basin", a series of gentle folds trending E-W in Lynott Formation rocks and some faulted blocks of Reward Dolomite are present. One hundred and fifty-six metres of H.Y.C. Pyritic Shale were intersected in Boko No.3.

2.432 Geochemistry. (see geochem.) A program of regional soil sampling was undertaken to test the sequence Mara Dolomite to Surprise Creek Dolomite in the southern part of the basin. Lines were spaced approximately 540 metres apart with a sampling interval of 60 metres being used. Minor lead and zinc values were recorded (see Plan 2).

2.433 Regional I.P. Survey. Only that portion of the basin which lies outside E.L. 1203 was tested by C.E.C's regional I.P. survey. Within the area tested, anomalies classified as minor were recorded at the Reward Prospect, in an area of alluvium to the south of Boko Waterhole, over Reward Dolomite on Line L as well as over a section comprising outcropping Reward Dolomite, Surprise Creek Dolomite and non-outcropping H.Y.C. Pyritic Shales - this section being later tested by drilling Buffalo Lagoon No.1. C.E.C. considered that the I.P. response was attributable to disseminated pyrite in the Laminated Dolomites intersected from 78 metres to 134 metres (refer to Figure 11, sub-section 2.435).

BUFFALO LAGOON No.1



Core not assayed

Complete intersection assayed

Vertical Scale = 1 : 1,000

FIGURE 11

CROSS SECTION - BUFFALO LAGOON No.1

BAUHINIA JOINT VENTURE

JANUARY, 1980

Two anomalies classified as "doubtful" occur in the northern part of the basin over alluvial areas, possibly covering Lynott Formation rocks.

2.434 Detailed I.P. Survey. In 1971 a detailed I.P. survey was conducted by Scintrex in the Buffalo Lagoon area. The only information released regarding this survey is a contoured plan showing a maximum contour of 14 milliseconds. A gradient array and electrode spacing of 200 feet were used. No other information regarding exact location, interpretation or follow-up has been released.

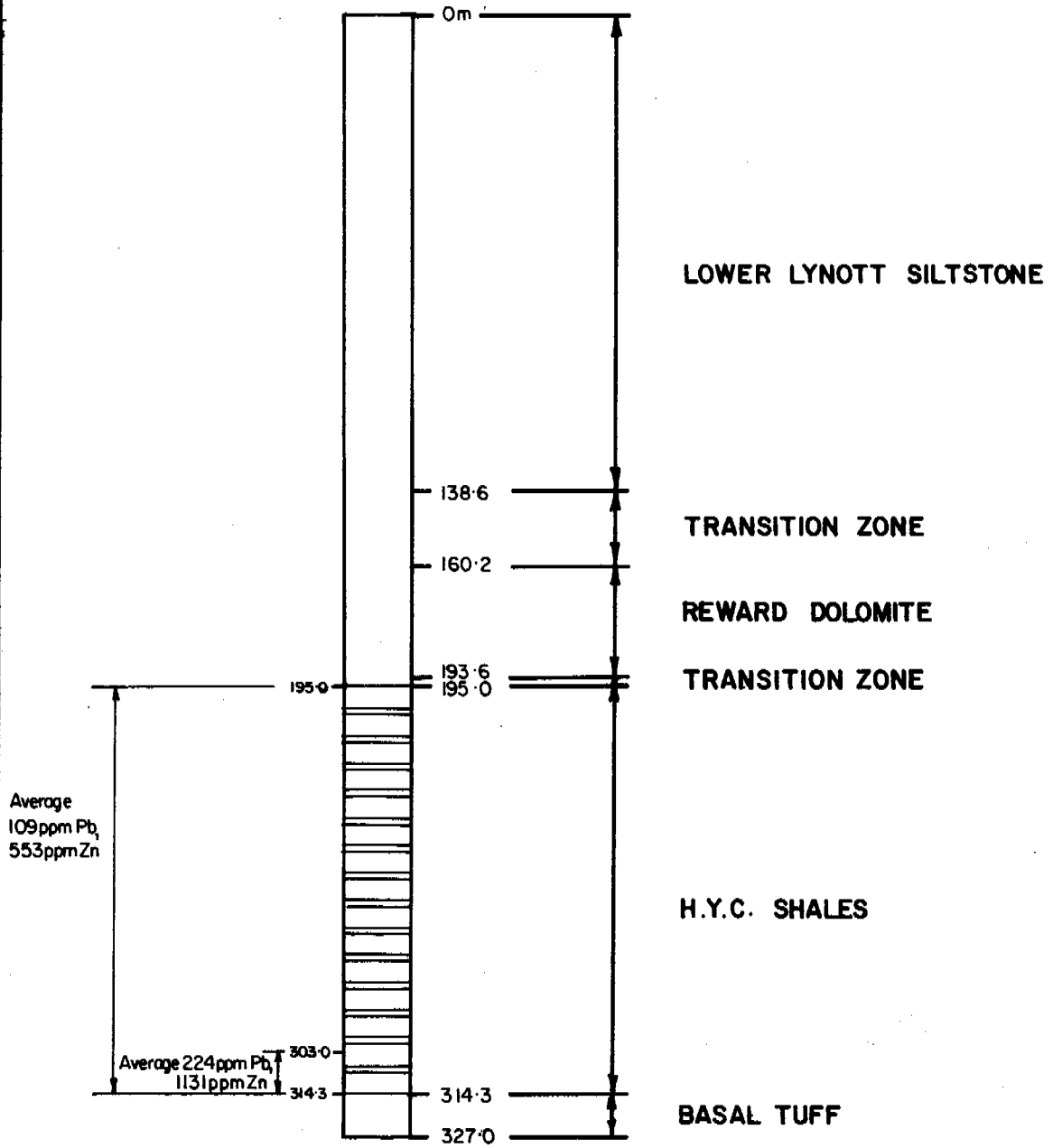
2.435 Drilling. Data are available for three holes, Buffalo Lagoon No.1, Boko No.3 and Buffalo No.3 drilled directly into the basin and for a fourth hole, Reward No.10 drilled at an angle of 75° which intersected H.Y.C. Pyritic Shale in the northern limb of an anticline at the margin of the basin. Plan 2 shows where it is believed these holes and Boko No.2 are located.

The results of the four holes for which information is available are summarized below. No detailed lithological assays have been released for Buffalo Lagoon No.1, Boko No.3 or Reward No.10.

Reward No.10 (1962)	0 - 20m	Alluvium
	20 - 119m	Reward Dolomite
	119 - 133m	HYC Pyritic Shale Equivalents
	133 - 301m	W-Fold Shale
	301 - 332m	Teena Dolomite Member

No assay log has been sighted. C.E.C. report that the hole did not record any lead or zinc mineralization.

BUFFALO No.3



Vertical Scale = 1 :2,000

FIGURE 12

CROSS SECTION - BUFFALO No.3

BAUHINIA JOINT VENTURE

JANUARY, 1980

Boko No.3 (1978)

0 - 80m	Lynott Formation
80 - 440m	Reward Dolomite
440 - 596m	HYC Pyritic Shale Equivalent
596 - 606m	W-Fold Shale
606 - 631m	Coxco Dolomite Member

No assay log is available.

Buffalo Lagoon No.1 (1967)

0 - 30m	HYC Pyritic Shale Equivalent
30 - 67m	W-Fold Shale
67 - 134m	Teena Dolomite
134 - 201m	Mitchell Yard Dolomite
201 - 206m	Mara Dolomite Member

No full assay log is available. The interval of 134m - 140m assayed 3.22% lead.

Buffalo No.3 (1976)

0 - 139m	Lower Lynott Siltstone
139 - 160m	Transition Zone
160 - 194m	Reward Dolomite
194 - 195m	Transition Zone
195 - 314m	HYC Pyritic Shale Equivalents
314 - 327	W-Fold Shale

Only weakly pyritic shales were recorded in H.Y.C. Pyritic Shales and for the interval from 195.1 to 314.3 metres, ten centimetres of every two metre section was assayed for lead and zinc. Results are presented in Figure 12. The average value obtained over the whole section of H.Y.C. Pyritic Shales was 109 ppm Pb and 553 ppm Zn. Slightly elevated values were recorded in the basal section and the interval 303-314.3m returned an average of 224 ppm Pb and 0.11% Zn.

2.44 Bauhinia Joint Venture Investigations

2.441 Input Survey. The western portion of the Buffalo Lagoon Basin which lies within E.L. 1203 was flown in a north-

south direction at a line spacing of one kilometre. No anomalous zones were detected and the reappraisal of the INPUT data by Geoterrex failed to locate targets within the western section.

2.442 Mapping. A small section of the northwestern part of the basin was included in the 1:5000 scale mapping at the Berjaya Prospect. Four rock sample of Lower Lynott (L_2 units) were collected and assayed for Cu, Pb, Zn, As. Locations are given on Plan 2. Lead and arsenic values from two of the samples are marginally elevated.

2.45 Conclusions and Recommendations

The portion of the Buffalo Lagoon Basin lying within E.L.1203 covers approximately six square kilometres. One diamond drillhole has been located within, and two positioned close to, the boundary of E.L. 1203. These holes all tested the H.Y.C. Pyritic Shales and the table below summarizes the results:

DDH	HYC Inter-section	Assays/Comments on Mineral-ization
Buffalo Lagoon No.1	30+ m	Assays not available. Rare fracture fillings of sphalerite & galena between 0-30m.
Buffalo No.3	119 m	Averaged 109 ppm Pb, 553 ppm Zn over 119m. Basal section averaged 224 ppm Pb, 0.11% Zn over 11m.
Boko No.3	156 m	Assays not available.

The low levels of mineralization intersected in Buffalo Lagoon 1 and Buffalo 3 are not encouraging. However the holes are sufficiently removed, by 2.5 kilometres, from the southwestern corner of the basin, that this region may warrant further

investigation. It is recommended that two I.P. lines, approximately one kilometre apart and at least one kilometre removed from Buffalo Lagoon No.1 be run across the non-outcropping sequence of H.Y.C. Pyritic Shale in the southern part of the basin within E.L. 1203. Tentative locations are given on Plan 2.

3.00 MYRTLE CREEK AREA

3.10 Introduction

The initial investigation by the Bauhinia Joint Venture in the Myrtle Creek region was achieved by the implementation of an INPUT survey during the first year of tenure of E.L.1203. A large broad zone (B-53) registering medium amplitudes was recorded in the area. The INPUT anomaly was considered most likely to have a surficial source, but the Myrtle Creek area (or G.T.2 area as it was then called), was thought to warrant ground geological, geochemical and geophysical follow-up during the second year's exploration, based on the following criteria.

(a) the area was considered, at that stage, to represent a broad basinal feature which was largely alluvial covered and hence held potential for the development of Barney Creek Formation beneath the alluvium or under a cover of Reward Formation and higher units

(b) additional outcrops of Barney Creek Formation had been photo interpreted in the area

(c) few previous geochemical surveys known to have been undertaken by C.E.C. were conducted in the area

(d) the region had been covered by C.E.C's reconnaissance 1 mile by 1 mile I.P. grid and several minor anomalies were located.

One I.P. line (Line 2E), five kilometres in length was positioned in a north-south direction to test the geological sequence on G.T.2. The I.P. data was generally in the background range. Geological reconnaissance and rock chip sampling located H.Y.C. Pyritic Shales in the area and anomalous geochemistry (maximum 140 ppm Pb and 530 ppm Zn).

During the period which is the subject of this report, namely 7th September 1978 to 6th September 1979, a program of 1:50,000 scale mapping was undertaken in conjunction with rock chip sampling. Results are presented in Plan 3, Table 3 and are discussed in detail in sub-sections 3.20, 3.30 and 3.40 to follow. In addition, the opportunity was extended to Bauhinia Joint Venture geologists to examine C.E.C. diamond drill core from Myrtle No.1, No.2 and No.3. This proved an invaluable aid in the interpretation of the area and an assessment of the data in relation to Bauhinia Joint Venture mapping is given in sub-section 3.60.

3.20 Structural Setting

The mapped area contains seven basinal centres along a general southeast trend. The Myrtle Basin (*senu stricto*) is the largest of these. For convenience, the basins have all been given names. Starting in the northwest and moving in a clockwise direction they are, respectively, Myrtle NW, Leached Knob, Breccia Ridge, Myrtle, Cliffs, Myrtle SE and Shale Cave Basins. These are shown on Plan 3.

The basins are approximately circular to oval in shape and were presumably caused by local subsidence contemporaneous with sedimentation, though not necessarily during deposition of the Barney Creek Formation. For example, a basin developing mainly during Reward-time would, of necessity produce a basin in the underlying formation. This appears to have happened in the case of the Shale Cave Basin, for instance.

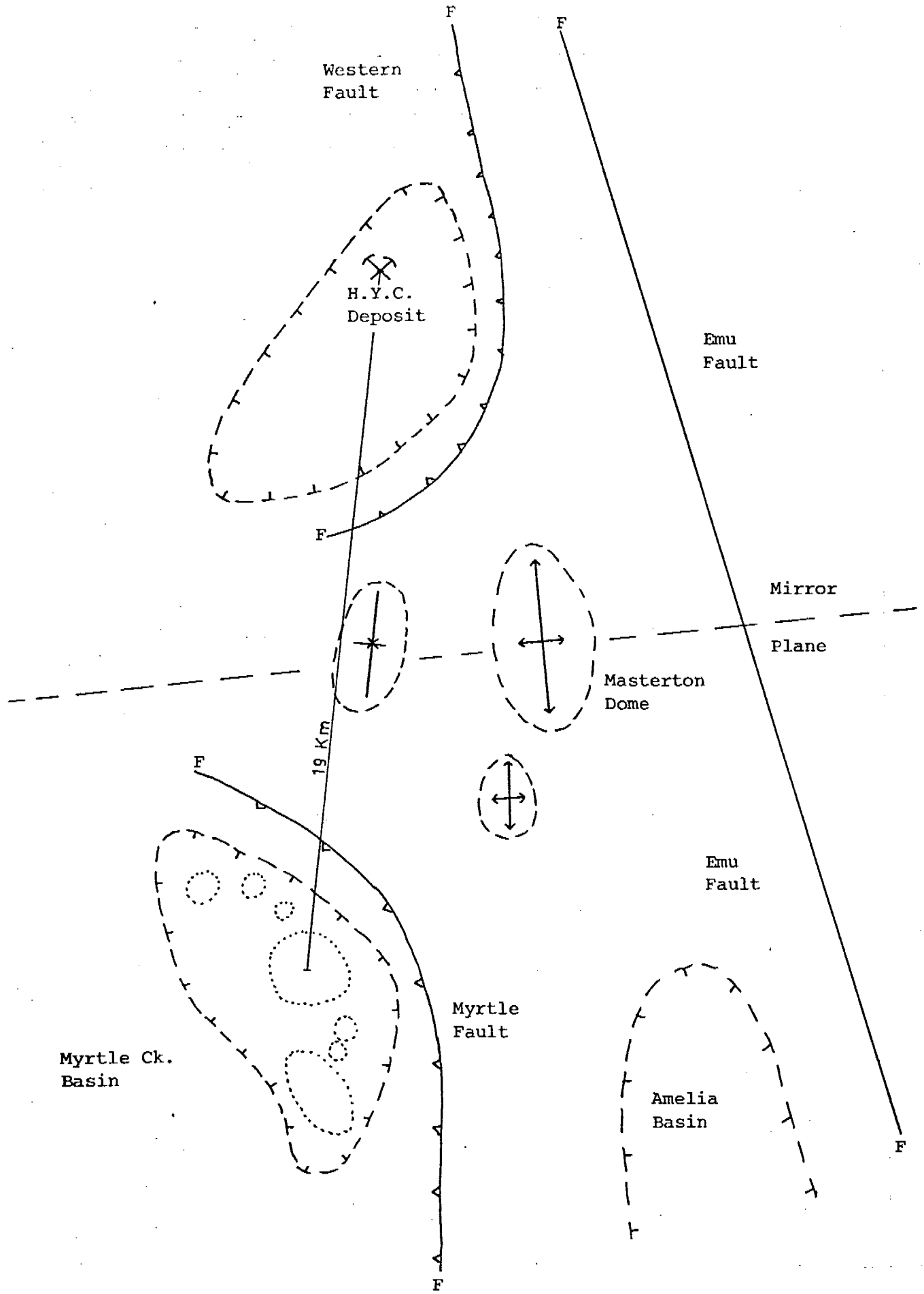


FIGURE 13

SYMMETRY OF STRUCTURAL ELEMENTS - MYRTLE CK. - H.Y.C. AREA

BAUHINIA JOINT VENTURE

JANUARY, 1980

There seems to be a good correlation between mineralization and those basins with accelerated subsidence in Barney Creek Formation time. However, to firmly establish this, it would be necessary to show that the Barney Creek Formation itself is thickened beyond 60-70 metres which is the usual thickness of the formation in the platform area. The Myrtle drill holes do give some indication of this thickening of the Barney Creek Formation especially Myrtle No.2 (refer to sub-section 3.60).

The present centres of the basins do not necessarily coincide with the original centres. This is shown elsewhere in the McArthur River area where the W-Fold deposit is considered to be situated on a truncated anticline that has been unwarped on the site of an original basin centre. Something similar may have happened with the Myrtle I.P. anomaly which is also situated in an anticlinal area. Nevertheless it is thought that, in general, each of the present basin centres was the original site of increased deposition of Barney Creek Formation, with correspondingly better prospects for mineralization.

There also appears to be a marked trend towards thicker deposition as the Myrtle Fault is approached. This is mainly indicated by the tuff members. There is some indication that the Myrtle Fault is analogous to the Western Fault in the H.Y.C. area. There appears to be some symmetry between the two areas which is best illustrated schematically in Figure 13.

The tuff members on the east side of the Cliffs Basin structure are sharply deformed especially those close to the Myrtle Fault where overturning occurs. The style of folding in this area suggests gravity gliding into the downthrown area to the west of the fault. This implies that the fault was active during deposition. If this is the case, there may be a lithological equivalent of the Cooley Dolomite adjacent to the Myrtle Fault.

3.30 Stratigraphy

3.31 Teena Formation

Outcrops of typical T_3 (massive dolomite) and T_4 divisions were observed in the Shale Cave Basin and the thickness of the underlying divisions, inferred from the gap across to the Mitchell Yard outcrop in the southwest corner of Plan 3 is approximately 140 metres. Along the eastern margin of Cliffs Basin, outcrops were observed of T_3 type dolomite with brown "ferroan" weathering surface and with characteristic pseudomorphs in a position which indicates that the outcrop is overturned. Further to the north in the Tuff Mesa Syncline region, sandstone lenses delineate the top of the T_3 unit. The Myrtle NW Basin is the only other area where the Teena Formation has been identified. In the northern part of the basin, a thick section of typical T_4 has been mapped, with white clay and gossan veins at the highest stratigraphic level thought to represent Barney Creek Formation. In contrast the T_4 in the southeast is extremely thin.

3.32 Barney Creek Formation

Barney Creek Formation outcrops occur sporadically in the

in the Myrtle Creek area, with only the strata near the top and bottom of the formation being well exposed. Outcrops are primarily concentrated along the eastern edge of the mapped area and to a lesser extent along the southern margin. The central area is virtually without outcrop of Barney Creek Formation.

The base of the H.Y.C. shale equivalent is exposed in the Shale Cave Basin. Although the thickness of the unit is only about 35 metres in this area, the basal 8 metres have elevated zinc values (R7601 contained 165 ppm Zn). The tuff marker beds, prevalent elsewhere in the Myrtle Creek area are absent in the Shale Cave Basin.

On the eastern side of the Myrtle Creek region, the tuff markers outcrop strongly and some of the ordinary carbonaceous dolomitic siltstones also outcrop. The northern cluster of outcrops defines a narrow syncline which, at the north end, outcrops as a mesa in which the rocks are leached. Unequivocal tuff and siltstones are found at valley level.

The Lower Surprise Creek Dolomite has not retained its identity in the Myrtle Creek area but has apparently merged into the upper part of the H.Y.C. Pyritic Shale equivalent. Some dolomite beds do occur and these are fairly common in the Shale Cave Basin. However, they have ferroan surface staining and do not have the typical shale structure of the Lower Surprise Creek Dolomite. It is also possible that the unit has been eroded in this region.

TABLE 2: MEASURED SECTION MYRTLE CREEK AREA

	UNIT	SECTION A (metres)	SECTION B (metres)	SECTION C (metres)
LYNOTT FM.	Hard Shale Marker (lower half)	7.5		
	L_2	109.5		
	L_1	4.5		
REWARD FM.	R_2 (upper)	8.0		
	R_2 (lower)	56.0 *		
	R_1	60.0 *	F	
			133.0	*removed by fault*
	Upper Surprise Creek Dolomite	38.0	F	
BARNEY CREEK FM.	Undifferentiated Barney Ck. Fm. to base of main tuff marker	114.5*		73.0*
	Main tuff marker	7.5	13.0	5.5
	Undifferentiated Barney Ck. Fm. below main tuff marker	36.0	57.0	33

* *indicates the inclusion of an estimated non-outcropping interval.*

The Surprise Creek Pyritic Shale Bed is best exposed in the Shale Cave Basin in the southwest but is also detectable as float and rare outcrop below cliffs of Upper Surprise Creek Dolomite in the Myrtle Basin, Cliffs Basin and Myrtle SE Basin. In the eastern areas the thickness of the unit appears to be about two metres.

Most exposures of the Upper Surprise Creek Dolomite occur as cliffs in the east of the mapped area. Exposures are typically massive, yellow to black in colour, with shale partings between beds regularly spaced at approximately 20 centimetres.

During the course of mapping, three measured sections, which included the Barney Creek Formation were prepared using the best of the available outcrop. Estimates of the non-outcropping intervals have been included in the sections, details of which are presented in Table 2. The location of the sections is given in Plan 3.

Section A was positioned across the eastern edge of the main Myrtle Basin and extends from the top of the L_2 unit in the Lynott Formation to below the base of the Barney Creek Formation. Characteristic lithologies of the Lynott Formation were encountered. At the base of the formation, an interval containing distinctive dolomite bed with regularly spaced chert and dolomite breccias is regarded as the equivalent of the Boko Beds. A distinguishing feature of the Reward Dolomite in the section is the preponderance of coarse dolarenite and the presence of beds of pelletal dark grey

dolomite set in a dolomitic matrix.

The Barney Creek Formation along Section A includes a thick Upper Surprise Creek Dolomite which is cliff forming, and consequently tends to obscure the underlying pyritic shale bed. The lower Surprise Creek Dolomite is not well developed.

In the three sections undertaken, the interval below the Surprise Creek down to the major tuff beds is generally non-outcropping, but in Section A two small tuff beds are present in the middle of this weak interval, from which dip estimations could be taken.

Prior to the last phase of the mapping program, difficulty had been encountered in determining the exact stratigraphic position of the strongly outcropping tuffs in the Myrtle Fault area. However this problem has now been resolved by the location and identification of small outcrops of underlying Teena Formation.

One further point of significance to the discussion and interpretation of the drillhole data, (refer to sub-section 3.60) is the observation that, in Section C, tuff-type outcrop has been found grading into dolomite.

3.33 Reward Formation

The base of the Reward Dolomite is marked by the sudden appearance of a rough-weathering, grey dolomite which is studded with abundant ovoids of yellow-weathering dolomite

up to three centimetres across. As one moves up the sequence, chert laminae and nodular concretions rapidly become more common. These basal beds are succeeded by coarse dolarenites with abundant quartz sand and larger concretions of material cemented by chert. This is, in turn, followed by a heterogeneous assemblage of dolomites, some of which are silty while others contain material with chert balls.

The next prominent marker is a persistant bed of brown-weathering dolomite breccia, in which chert ball dolomite is abundant in the matrix and in some of the clasts. It is followed by silty dolomites and breccias.

3.34 Lynott Formation

The basal bed of the Lynott Formation is readily leached 10 metre siltstone bed with abundant liesegang banding. This is considered to be the "weakly pyritic shales of the base of the Lynott" referred to in C.E.C. reports. It is provisionally equated with the pyritic beds below the shale flake unit in the Bauhinia Joint Venture drill holes at the Berjaya Prospect.

The basal bed is followed by a succession of very impure silty dolomites, with some shale flake and chert-ball bearing beds. Brecciated equivalents occur in the Myrtle SE Basin. At the top of the succession, a dolomite containing silty nodules occurs. This corresponds to a similar bed below the hard shale marker at Berjaya. The Berjaya shale flake unit was not observed but may be present immediately above the leached

21 samples

TABLE 3

ROCK GEOCHEMSTRY MYRTLE CREEK AREA

63 total samples.

Unit	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm	Sample Description
LYNOTT FORMATION						
L_2	7586	10	10	40	-	Leached shale with liesegang banding
L_1	7590	20	15	15	-	Leached pyritic shale
	7592	15	80	15	-	Leached shale with liesegang banding
REWARD FORMATION						
R_2	1790	40	400	0.26%	-	Liesegang banded shale in the Reward Dolomite breccia
	7595	10	70	20	-	Gossan? in veins and vughs with Reward Dolomite breccia
	7598	10	60	40	-	Limonite with calcite veining occurring as massive, irregular veins in dolorudite
R_1	1870	5	110	165	175	Siliceous gossan at the base of the Reward Formation
	1871	50	55	260	640	Limonitic gossan
	7593	35	110	110	-	Gossan vein 1cm thick in dolorudite
	7594	2	10	50	-	Thin bedded dolomite with red alteration
BARNEY CREEK FORMATION						
Surprise Creek Pyritic Shale	7597	10	60	30	-	Liesegang branded ex-pyritic shale
Below the Surprise Creek	1780	70	270	50	-	Thin bedded fractured tuff
	1781	35	90	55	-	Greenish tuffaceous shale
	1782	40	230	105	-	Shale and tuff
	1783	2	10	55	-	Sandstone below tuff marker
	1784	25	35	30	-	Shale between two main tuff beds
	1785	15	20	45	-	Flinty top of lower tuff marker
	1786	5	20	175	-	Purple shale between sandstone and lower tuff bed
	1787	5	20	20	-	Mauve shale with slickensides
	1788	25	120	50	-	Ferrugenous purple shale 2-3m thick between T_3 and lower tuff bed. W-Fold shale?
	1789	40	80	620	-	Liesegang banded shales between 2 lower tuff beds. Purple flinty patches on corners of outcropping boulders

22 samples

TABLE 3 (cont'd)

Unit	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm	Sample Description
	1791	50	320	920	-	Gossanous(?) float - white clay with limonite veins
SECTION	1798	5	20	20	-	Ferruginous sandstone varying fromfriable to quartz cemented with chert chips
SECTION	1799	10	20	35	-	Float consisting of chocolate, purple and white mottled, lie segang banded, iron oxide spotted "siltstone"
SECTION	1800	10	20	10	-	Flinty mudstone, purple surface, rhythmic bedding probably tuffaceous
SECTION	1801	5	15	90	-	Hard purple mudstone with pronounced shale break
SECTION	1802	5	20	100	-	Grey shale with pink tuff band at top
SECTION	1803	10	20	65	-	Remainder of grey shale to base of lower and thicker bed of lower tuff marker
SECTION	1804	2	10	50	-	Lower tuff marker 10m section
	1805	25	25	20	-	Leached beds between two main tuff markers
	1806	40	30	0.12%	-	Green shaly tuff below lower tuff marker
	1807	15	25	320	-	Float - fractured tuff with limonite on joints
	1808	2	20	175	-	Float - thin bedded, impure (tuffaceous?) dolomite with brown powdery weathering rim
	1809	2	15	270	-	As for R1807
	1811	20	90	10	-	Flinty purple rock (W-Fold?) - 1cm exposed
	1814	30	75	10	-	Float - iron oxide rock with box work
SECTION	1819	10	20	25	-	Purple and grey shales below main tuff bed
SECTION	1820	40	20	220	-	Grey dolomitic shale below next tuff
SECTION	1821	5	20	90	-	Purple and grey mudstone (W-Fold shale?)
	1825	75	720	0.24%	210	Basal Barney Creek Fm. with clots of limonite pyrite
	1826	40	350	280	165	As for R1825
	1827	45	35	35	20	Chert float with cavities, possibly after pyrite. Sample collected from above the near-basal BCF flinty tuff
	1828	25	50	115	40	Dolomitic shale between second and third tuff bedds

(20) samples

TABLE 3 (cont'd)

Unit	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm	Sample Description
	1829	35	0.14%	840	40	Ex-pyritic mudstone lens below the near basal BCF flinty tuff and apparently unconformably above T_4 and/or possible W-Fold ex-pyritic shale
	1830	30	100	460	55	Shales between flinty tuff and next tuff bed
	1831	25	55	660	45	Shales higher in the sequence than R1830
	7601	20	30	165	-	Basal 8m tuffaceous dolomitic siltstone
TEENA FORMATION						
T_4	1792	30	25	35	-	Chert boulder float
	1810	30	55	10	-	Laminated dolomite/tuff float
	1822	40	25	75	-	Laminated tuff/dolomite
T_3	1795	5	15	15	-	Sandstone float
	1796	5	35	10	-	Dolomite float
	1797	35	55	50	-	Purple flinty rock
	1812	420	115	10	-	Fractured and veined dolomite, selected for vugh fillings
	1813	260	95	15	-	Representative T_3 with pseudomorphs. Prominent brown surface weathering
MARA DOLOMITE						
	1793	15	20	15	-	Chert /ex-dolomitic float
	1794	20	40	20	-	Chert/ex-dolomitic float
	1816	15	10	10	-	Gossanous? breccia
	1817	2	15	10	-	Chert float
	1818	5	15	20	-	Chert float
	1823	10	30	5	-	Chert/ex-dolomitic float
	1832	5	20	10	3	Chert with some jasper
MYRTLE SHALE						
	1815	10	20	15	-	Red dolomitic siltstone breccia

liesegang-banded bed. The shale flake unit appears to be a facies variant, or channel filling in the "chert ball dolomites" of the L_2 division.

The hard shale marker of the Berjaya area is present as a prominent cliff-forming, thin-bedded siltstone. The diagnostic mudcracks are not always present. Dolomitic sandstones become common just above this marker and there is a well-developed, striped, sandy dolomite bed. The nature of the rocks higher up the sequence is somewhat obscured by leaching but there are two stromatolitic chert beds. As the white sandstone marker is not present, all the beds above the base of the hard shale equivalent are designated L_3 on Plan 3.

3.40 Geochemistry

A number of anomalous values were recorded from the Barney Creek Formation, principally from samples collected along the southeastern edge of the Myrtle NW Basin and from the eastern margin of Cliffs Basin.

In the former basin, a lead value of 0.14% (R1829) was recorded from an ex-pyritic mudstone lens which is apparently unconformable above T_4. The sample represents basal Barney Creek Formation below the lower flinty tuff marker. The accompanying zinc value for the sample is 840 ppm while arsenic registered the comparatively low level of 40 ppm. Slightly further to the north, an anomalous lead value of 720 ppm, coupled with zinc at 0.24% (R1825) was located in the same stratigraphic level. Similarly, R1788 further to

the southwest of the maximum lead value site (R1829) recorded an elevated lead content of 120 ppm in the same stratigraphic interval. Other samples of Barney Creek Formation higher in sequence in this region of the Myrtle NW Basin also recorded anomalous values as can be seen in the summary below:

Approximate Stratigraphic Level	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm
Below lower tuff marker	1825	75	720	0.24%	210
	1826	40	350	280	165
	1829	35	0.14%	840	40
	1788	25	120	50	
	1789	40	80	620	
	1827	45	35	35	20
Above lower tuff marker	1828	25	50	115	40
	1830	30	100	460	55
	1831	25	80	660	45

Float samples considered to represent the basal Barney Creek Formation was also sampled along the northern edge of the Myrtle NW Basin. Sample R1791 returned lead and zinc values of 320 ppm and 920 ppm respectively.

Only two other samples were collected from lithologies other than from the Barney Creek Formation in the Myrtle NW Basin. One sample was chert float from the T_4 and had low associated geochemistry, the other sample R1790 was a liesegang banded shale in the Reward Formation containing 400 ppm Pb and 0.26% Zn.

In Cliffs Basin, three samples representing basal Barney Creek Formation recorded elevated levels in lead and zinc, the maximum values being 270 ppm and 105 ppm respectively. Samples of the formation higher in the sequence registered

low lead levels but anomalous zinc contents (maximum 0.12%).

One outcrop of the T_3 unit of the Teena Formation in Cliffs Basin contained an anomalous copper-lead content (R1813: 260 ppm Cu, 95 ppm Pb).

Elsewhere in the Myrtle Creek area, anomalous lead(plus zinc and arsenic) values were recorded in the Reward Formation at the margin of the Myrtle SE Basin as follows:

	Pb ppm	Zn ppm	As ppm
R1870	110	165	175
R1871	55	260	640

3.50 Geophysics

The one mile I.P. grid conducted by C.E.C. in the McArthur River region covered the Myrtle Creek area and a detailed follow-up grid of the resultant Myrtle anomaly was undertaken. Plan 4 shows the coverage of the regional and detailed grids in relation to Bauhinia Joint Venture mapping. An assessment of C.E.C.'s data was considered warranted in the light of the new mapping undertaken by the Bauhinia Joint Venture.

Many of the anomalies lie in and around the inferred positions of the tuff marker beds. This implies the presence of a chargeable horizon extending into the Myrtle NW, Leached Knob and Breccia Ridge Basins. Anomaly peaks probably represent structural high points on the conductor rather than the maximum development of the conducting material.

At first sight, the lack of I.P. response on the eastern side of the area is discouraging. However, this may be accounted for in several ways. Firstly, the Myrtle Creek valley has extensive sand development so that ground contact may be inadequate. Secondly, it is considered that neither of the regional N-S lines was suitably located. Although the E-W lines are considered to be adequate in this regard, the Myrtle Fault may have displaced the base of the Barney Creek Formation beyond contact, or a lithological equivalent of the Cooley Dolomite may have had the same effect. Thirdly, the C.E.C. electrode spacing of 400 ft. (approx. 130 metres) is considered to have shallower resolution than the 200 metres spacing which is usually employed by the Bauhinia Joint Venture in regional I.P. work. A fourth potential problem is implied by the recent C.E.C. drill hole Amelia Basin No.2. In this hole, which was collared in flat-lying chert breccia equivalents of the Reward Dolomite, the entire section of Barney Creek Formation had been leached to white kaolin with consequent destruction of any potentially chargeable material. This section may originally have contained a high proportion of sulphides.

3.60 Drillhole Data, C.E.C. Myrtle 1-3.

3.61 General

An interpretation of the three holes drilled by C.E.C. into the basins in the Myrtle Creek area is essential in determining (in conjunction with Bauhinia Joint Venture mapping and sampling) which of the basins holds the best potential for the development of H.Y.C.-type mineralization and hence may represent a drilling target.

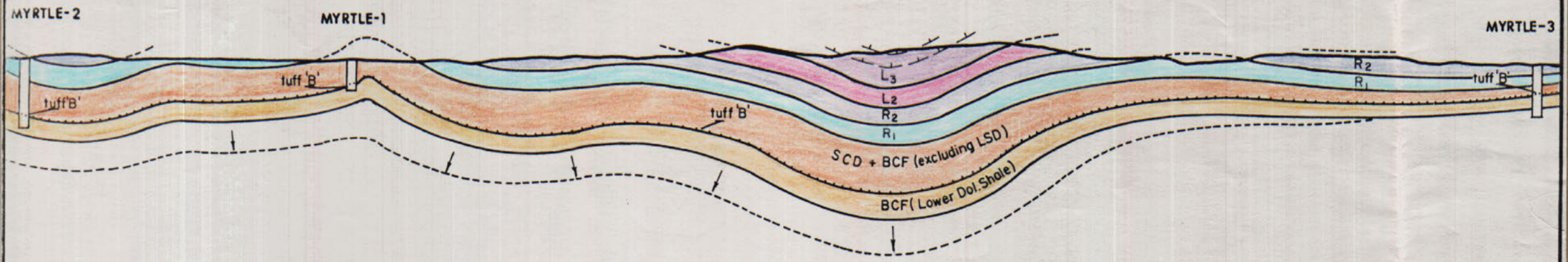
TABLE 4: MYRTLE DRILLHOLE CORRELATION DATA

STRATIGRAPHIC UNIT	MYRTLE 1 (converted to metres)	MYRTLE 2 (log in metres)	MYRTLE 3 (log in metres)
Reward Dolomite	-	0- 89.3	0-116
Upper Surprise Creek Dolomite	-	89.3-105.7	116-129
Surprise Creek Pyritic Shale Bed	-	105.7-113	129-135.5
Lower Surprise Creek Dolomite + Barney Creek Fm. to base of "upper tuff stringers"	0- 30	113 -228.6	135.5-151.5
"tuff free zone" of Barney Creek Fm.	30- 85	228.6-282.3	115.5-166.65
Middle Tuff Markers			
Tuff 'A'	85-85.5	282.3-282.7	166.65-166.7
Tuff 'B'	92.5-102.5*	287.6-298.9	171.4 -171.8
Tuff 'C'		319.6-324.5	177.6 -178
Tuff 'D'		347.6-348.6	187.7 -187.9
Remainder of Barney Creek Fm.		348.6-355.7*	187.9 -233.1
Teena Dolomite Members			
T_4			not present
T_3			233.1 -242.9
T_2			242.9 -273.4*

* *indicates the end of the hole before the unit finishes.*

SCALE=1:25,000

$\frac{V}{H}=1$



LYNOTT FORMATION

L_3	Muddy dolomites etc. with sandstone, stromatolitic chert indicated by symbol
L_2	Muddy dolomites etc., chert ball dolomite, basal pyritic section (L_1) included

REWARD DOLOMITE

R_2	Dolomite breccia, dolarenite, bedded dolomite with chert at top
R_1	Dolomite, dolomitic shale, dolarenite

BARNEY CREEK FORMATION

B_2	Carbonaceous and pyritic shale, dolomite etc. above tuff 'B' marker – includes Surprise Creek Dolomite
B_1	Dolomitic shale, tuff etc. below tuff 'B' marker – pessimistic boundary (assumes surface section thickness for constructing base of formation)
↓	As above, optimistic boundary (assumes ratio of strata above and below tuff 'B' in Myrtle-3 for constructing base of formation)

FIGURE 14.

CROSS SECTION - MYRTLE BASIN AREA

BAUHINIA JOINT VENTURE

JANUARY, 1980

Although lithological and assay logs are available for the three C.E.C. drillholes, an opportunity was extended to Bauhinia Joint Venture geologists to examine the core of Myrtle 1,2 and 3. The logs compiled are given in Appendices 1 and 2 and the interpreted correlation between the holes is shown in Figure 14.

The core of Myrtle 2 and Myrtle 3 is of conventional size and in a good state of preservation. Core/bedding angles are high throughout both holes. In contrast, the core of Myrtle 1 is unusually thin with core sizes decreasing to about two centimetres and core/bedding angles are relatively low, from 50° - 60° in the upper part to 20° - 40° at the bottom of the holes. Preservation of Myrtle 1 is comparatively poor, particularly where the core was split for assay.

3.62 Interpretation

Myrtle 2 and 3 commence in the Reward Formation with the base of the Reward Dolomite and Surprise Creek Pyritic Shale being readily identified (refer to Table 4) although in Myrtle 3 a fine dolorudite occurs at the base of the Reward instead of the normal thinbedded dololutite. The Barney Creek Formation is penetrated fully in Myrtle 3 only. Myrtle 1 commences within the Barney Creek Formation, the first strata penetrated appear to be dolomitic but below the Surprise Creek Pyritic Shale Bed, representing development of Lower Surprise Creek Dolomite.

A peculiar dolomite/tuff lithology present in all of the holes provides the basis for their sub-division. The rock may

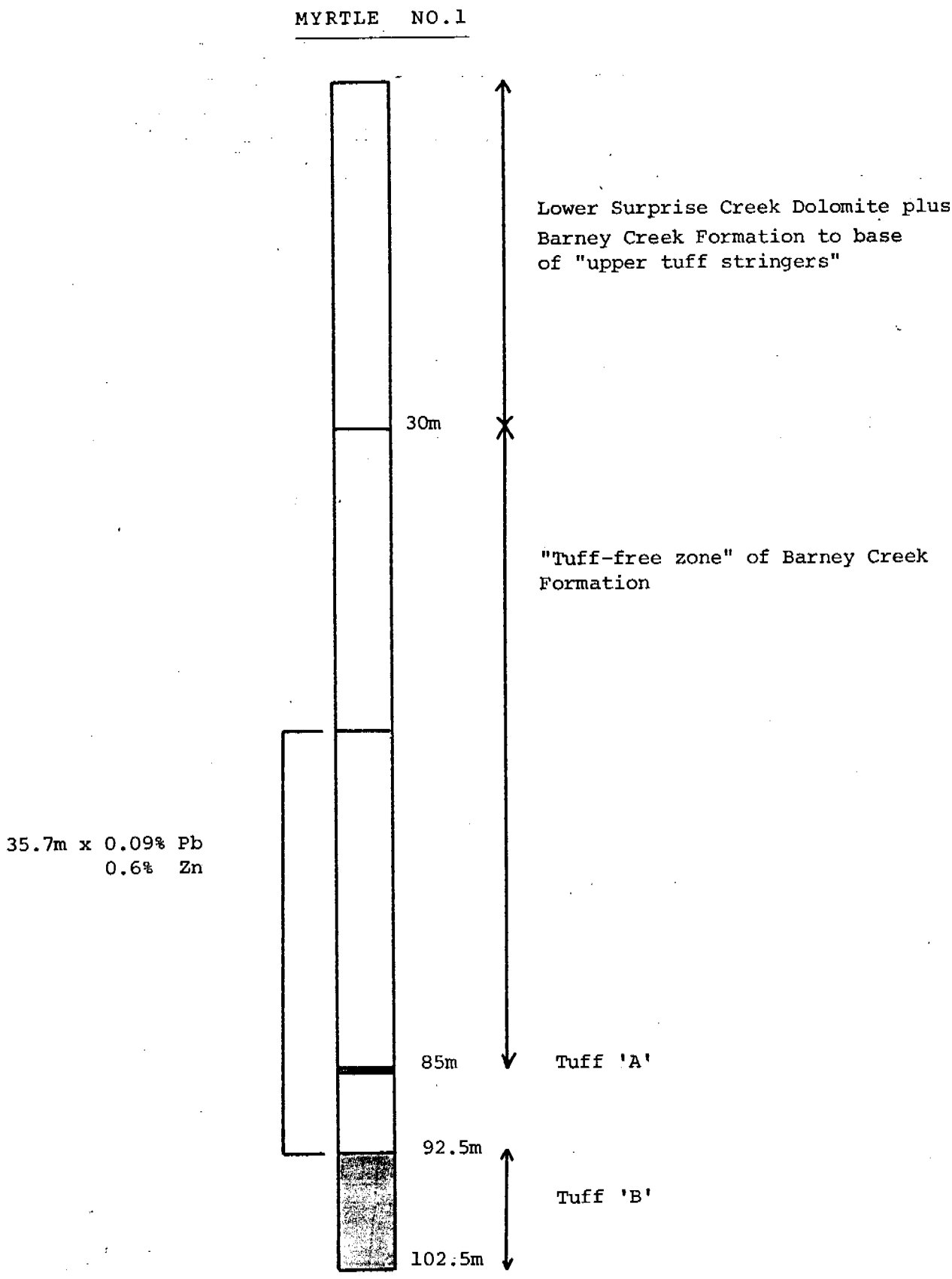


FIGURE 15

CROSS SECTION MYRTLE NO.1

BAUHINIA JOINT VENTURE

JANUARY, 1980

represent carbonate replacement of original tuffaceous sediment. It is the only rock in the Barney Creek Formation section which has the appearance of coarse grainsize and hence can be matched with the "pink tuffs" in surface outcrop.

The dolomite/tuff occurs as numerous thin beds in the upper quarter of the formation and as a cluster of thick beds a little below the mid point of the unit in the Myrtle 3 section. Myrtle 2 terminates a little below this zone and Myrtle 1 within it. The beds between the two developments of dolomite/tuff are pyritic in Myrtle 1 and have associated anomalous geochemistry (see Figure 15) but this is not the case in the two other two holes.

The marker provided by the tuff beds makes it possible to estimate the depth of Barney Creek Formation in Myrtle 1 and 2, by making the assumption that the proportions of the formation above and below the tuff marker zone are the same as in Myrtle 3. Figures thus obtained for the whole of the Barney Creek Formation are of the order of 500 metres (see Figure 14).

3.63 Comparison to Surface Data

When the surface and underground sections are compared, it is obvious that drill core sections are thicker than surface estimations would indicate. It is thought that part of the discrepancy stems from underestimating the section covered in non-outcropping intervals. In addition the fault located in measured Section C (refer to Table 2 and Plan 3) is probably

only one of several arcuate strike - following faults which accentuate the basins and direct thickening of the section inside the basins.

One incidental effect of basin thickening is that measured surface sections understate the proportion of strata in the lower part of the section, as these are necessarily part of a section which was originally thinner than the part measured further into the basin.

The most complete surface section, Section A has two groups of tuff beds. If the upper group is matched with Tuff B (see Figure 16) in the drillholes, it implies that there is a considerable amount of Barney Creek Formation below where Myrtle 1 and 2 were discontinued. The major tuffs in the surface section would not have been reached and these may then be matched with the Lower Dolomitic Shale of the H.Y.C. area; the zone of the H.Y.C. deposit lying immediately above it, in an area of virtually no outcrop.

The difficulties with this hypothesis are that it involves extreme basinal thickening and also requires that the lower tuff beds disappear or at least become less conspicuous in Myrtle 3. It may be the case in fact that the grey dolomite beds below 219.7 metres in Myrtle 3 are these tuff beds. Although there are no distinct tuff beds in the basal Barney Creek Formation in the outcrop 2.5 kilometres WSW of Myrtle 3, there is some brown dolomite similar to the rock that grades into dolomite in the Section C outcrop (refer to sub-section 3.32). Thickness of tuff beds in Myrtle 3 is similar to

that of the upper tuffs in Section A and the expression of the tuff beds in Myrtle 1 and 2 can be attributed to relative thinning of the section.

An alternative possibility is that the upper tuffs of Section A are part of the upper group of tuffs in the drillholes and that the thick tuffs in the core correspond to the thick tuffs on the surface rather than those in Myrtle 3, which can then be viewed as a local anomaly. This alternative hypothesis produces a much thinner Barney Creek Formation and implies that Myrtle 2 is just short of bottoming in the Barney Creek Formation and the mineralization in Myrtle 1 is more likely to be in the H.Y.C. horizon than the pyritic zone higher in the sequence.

Perhaps the most tenable correlation is that between the three drillholes, yet the matching of the thickest tuff beds in the core with the thickest tuff beds on surface is desirable. One way this can be made compatible with the Myrtle 3 log is to allow major basinward thickening of the surface tuff section so that extrapolations from Myrtle 3 remain valid.

3.70 Ongoing Programs

During the coming year of tenure, the Myrtle Creek area will be the subject of a regional gravity survey involving six east-west lines totalling approximately 40 kilometres. It is hoped that this survey will provide additional information on the structure of the area which can be integrated with the mapping, geochemistry and drillhole interpretation data

from the 1978/1979 season to delineate further drilling targets.

TABLE 5

ROCK GEOCHEMISTRY BERJAYA GOSSANS

AREA	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm	REMARKS
TANK LINE GOSSAN	1833	10	140	860	0.16%	Basal part of zinc-bearing jasper
	1834	20	150	0.68%	960	Haematite impregnated, leached siltstone
	1835	25	115	0.26%	0.18%	Leached siltstone, haematite stained
	1836	45	300	0.12%	0.11%	Haematite impregnated siltstone
	1837	10	260	0.11%	920	Jasper sub-outcrop
	1838	2	130	680	130	Jasper/chert outcrop
	1839	60	80	100	14	Leached clay rock
	1840	110	480	440	30	Secondary gossan?
	1841	350	160	920	35	Secondary gossan?
	1842	5	0.15%	400	70	Banded jasper
	1843	10	75	0.20%	130	Chert breccia with limonitic chert
LINE 5E GOSSAN	1857	190	0.36%	420	160	Sandstone impregnated with limonite
	1858	25	200	180	35	Slightly gossanous chert
	1859	60	0.18%	500	170	Banded limonite gossan
	1860	140	230	0.20%	100	Earthy limonite float
	1861	65	920	860	45	Gossan float with subspherical limonite concretions
	1862	20	145	170	30	Banded haematite
	1863	45	170	0.10%	30	Thin bedded limonite rock
	1864	10	520	105	185	Multi-coloured banded chert
JASPER ANTICLINE	1844	50	165	0.20%	130	Pink sandstone impregnated with limonite and pyrolusite - base of Barney Creek Formation?
	1845	5	170	65	135	Red banded jasper
	1846	5	230	35	130	Purple/red/white chert with concretions of limonite after pyrite
	1847	5	45	10	40	Purple and white banded chert
	1848	5	560	40	95	White chert with interbeds of thin-bedded cherty limonite
	1849	20	400	240	150	Purple, earthy material
	1850	10	230	105	120	Yellow, earthy material

TABLE 5 (cont'd)

AREA	Sample Number	Cu ppm	Pb ppm	Zn ppm	As ppm	REMARKS
EASTERN GOSSAN	1851	30	310	0.13%	145	Limonite gossan
	1852	10	130	580	125	Sandstone with gossan attached
	1853	10	140	0.22%	90	Purple weathering banded limonite rock
	1854	5	680	45	360	Soft earthy limonite with concretionary band of light grey mineral
	1855	5	360	25	210	Hard green band in gossan with associated earthy gossan
	1856	20	320	540	240	Limonite/earthy gossan associated with 2cm bed of white weathering clayey sandstone

4.00 BERJAYA PROSPECT

4.10 General

During the period under review from 7th September, 1978 to 6th September, 1979, a number of investigations were undertaken at the Berjaya Prospect. These included a geochemical/petrographic study of gossan areas associated with the NW-SE fault zone, gravity surveys along I.P. Lines 5E and 7E and detailed mapping along Line 5E. The various phases of the Berjaya Prospect program are discussed in the sub-sections to follow.

4.20 Gossan Study

4.21 Introduction

Three gossan areas in the Berjaya fault slice were studied. These were the Tank Line Gossan, the Line 5E area and the Jasper Anticline area. Comparative data was provided by the Eastern Gossan just to the east of the Berjaya Prospect. Location of the gossans is given in Plan 5 and geochemical results listed in Table 5.

Interest in the gossan areas centres on assessing the nature of the material from the fault slice. Each of the three gossans at Berjaya is more or less isolated by faults or alluvium and consequently their exact stratigraphic position cannot be determined by field relationships.

The three gossans are sufficiently alike to make it reasonably certain that they overlap in their stratigraphic section. The problem is that there are three possible positions in the overall stratigraphy in which their common horizon could be

located. These are:

(a) the base of the Barney Creek Formation which is represented by similar material at Teena Hill

(b) the base of the Reward Dolomite as represented at the Reward Prospect (C.E.C.'s traditional interpretation of this area)

(c) the base of the Lynott Formation as represented in the Eastern Gossan; and extending to include the degenerate form of the Reward Dolomite.

The Teena and Reward prospect material look somewhat alike and this may mean that the Reward prospect horizon is, in fact, basal Barney Creek Formation. The fault slice outcrops appear to resemble the Teena Hill situation.

An additional piece of information which supports Proposal (a) above is the discovery of a sandstone closely resembling that in the fault slice occurring at the base of the Barney Creek Formation in the Myrtle Creek area. On the other hand, one outcrop of multicoloured chert has been found in the fault slice outcrops which is most likely from the Reward Formation but there is no Reward Formation outcrop between Line 3E and the Eastern Gossan, unless the three outcrops of the fault group are considered Reward Formation.

It was concluded that petrographic examination of samples of the gossans may provide a clue as to which stratigraphic level the gossans should be assigned. The base of the Barney Creek Formation has a tuffaceous component (but consists mainly of dolomitic shale) while the Reward Formation lacks discrete tuff beds, although its non-carbonate section has been said to contain much albite of ultimately volcanic origin. Hence if the silicified material, by means of petrographic examination could be called a former tuff, it would probably indicate

Barney Creek Formation, whereas a former dolomite would more likely indicate the Reward Formation. In this regard it should also be noted that pervasive, fine lamination, tending to become lenticular is characteristic of the more highly dolomitic shales of the Barney Creek Formation.

4.22 Tank Line Gossan

The geochemical results of the eleven samples collected in this area are given in Table 5 from which it is seen that the maximum lead value obtained was 0.15% (R1842) and the highest zinc 0.68%(R1834). The average lead and zinc values computed for the eleven samples were 308 ppm and 0.15% respectively. Copper values were generally low but arsenic levels were high (maximum 0.18%) in samples with high zinc content.

A.W.G. Whittle and Associates carried out a petrogrphic study of six samples from the Tank Line Gossan and their findings are given below:

1833 - Carbonaceous chert and silty (arenaceous) argillite, with sparse fine syngenetic sulphides and some exotic oxyzinc.

There are very fine laminations in this sample; part of which is simple chert, while the remainder is a highly ferruginised silty argillite. In the latter, all of the fine clays were impregnated by exotic limonite.

That portion of the sample which is chert derives it finely laminated structure from the variations in the content of extremely fine carbonaceous material in the successive layers. In addition, these layers contain 5 - 10% clastic quartz of silt-grade sizes, and 1 - 2% oxidised fine sulphides of 0.03 mm maximum size.

There is mild slump structure in the chert layers; and stronger slumping in the ferruginised argillite layers. The latter contain, within a highly ferruginised clay mineral matrix, 15 - 20% silt-grade quartz grains. Only sparse oxidised replicas of fine sulphides may be distinguished in this argillite.

Sinuous open spaces between portions of the slumped lamellae, and narrow fractures through the rock, contain fillings of supergene hyalite and colloform goethite. Exotic secondary zinc compounds are most probably occluded in the colloform goethite; but some indigenous oxyzinc and probably all of the oxylead originate from the sparse oxidised syngenetic sulphides.

1834 - Non-gossanous siltstone and argillite, with an exotic zinc content.

Slump folding and microfaulting structures exist in the highly ferruginised sequence of argillaceous siltstone and arenaceous (silty) argillite. Thin quartz veinlets, and thinner black manganiferous goethite veinlets followed irregular courses through the rock. From both thin and polished section observations, no evidence for oxidised indigenous sulphides was obtained.

The minute goethite replicas of fine grained carbonates are complexed with the manganiferous goethite fillings in fractures. These were probably zinc carbonates of exotic origin which, with the manganiferous goethite, migrated into the ferruginised rock from an outside source. This, and the widespread goethite throughout the rock, are the only visible source for the zinc content [0.68%] of the sample. Accordingly, this is regarded as a non-gossanous rock.

1837 - Ferruginised arenaceous argillite with minor syngenetic sulphides, and accumulated exotic zinc oxysalt.

This is a fractured, but regularly bedded ferruginised

arenaceous argillite which contains about 20% quartz grains of silt-grade size. The fractures were filled by fine grained quartz and minor goethite.

The presence of about 5% oxidised fine sulphides of syngenetic origin can be ascertained from the thin section; but the original species of the sulphides cannot be determined. These oxidised fine sulphides, which are dispersed through the ferruginised clay, minor sericite matrix of the rock, appear from their shapes to be oxidised pyrites.

In the absence of any boxwork and presuming some 5% oxidised syngenetic pyrite, the zinc content of this rock [0.11%] appears to be essentially due to the accumulation of exotic zinc oxysalts in the secondary limonite.

1840 - Goethite - cemented chert fragments

The small and larger fragments which make up the rock are all portions of chert. This is either chert breccia, or a cemented mass of weathered residual chert fragments.

Barren vein quartz is present in many of the chert fragments; but quartz is not present amongst the fragments. Only colloform goethite which is devoid of sulphide replicas or boxwork, exists amongst the chert fragments; hence the cementing medium is an exotic component of the rock. This medium originated in ground or surface waters.

While some exotic metal oxysalts were probably introduced with the colloidal goethite cementing medium; an indigenous source for part of the metal contents is in the oxidised fine sulphides contained within the chert fragments. These fragments contain 2 - 3% oxidised sulphides of less than 0.03 mm size. Individual sulphide species cannot be identified from the goethite replicas.

1842 - Arenaceous - argillaceous chert, with oxidised fine sulphides and sparse galena.

The fine lamellae in this impure chert are distinguished by their

varying degrees of ferruginisation. The extent of ferruginisation depends upon changes in the content of clay in the successive layers. Both the clay content within the microcrystalline silica component of the chert; and the proportion of silt-grade clastic quartz, vary from one thin lamella to another. Some contain 50% clastic quartz; others contain only 10%.

In most lamellae there are 5 - 7% oxidised syngenetic pyrite granules of 0.02 - 0.05 mm grain size. The detailed examination of the polished section revealed in addition, about 0.5% finer oxidised sulphides of 0.001 - 0.005 mm size. Amongst these there are sparse unoxidised galena granules of the same minute size. It is feasible to conclude that the oxidised minute sulphides were formerly syngenetic galena particles which, together with the sparse unoxidised galena granules, account for the lead content of this sample. Positive evidence for a source for the zinc content does not remain in the rock; but since galena is present, minor oxidised zinc sulphide may also exist amongst the minute goethite replicas.

1843 - Goethite and siliceous goethite - bonded silicified dolomite and chert fragments.

Some of the fragments consist of layered accumulations of microcrystalline silica; some consist of massive microcrystalline silica; and others consist of minute silicified rhombic forms through which minutely granular carbonates are dispersed. The former are varieties of chert; whereas the latter is extensively silicified fine grained dolomite. The rock may therefore be the secondarily bonded breccia of a composite chert - dolomite sequence.

Those fragments which consist of silicified dolomite also contain 1 - 2% oxidised minutely granular sulphides of a few microns size. For this reason, such fragments are brownish through ferruginisation from the indigenous sulphides.

The breccia was not examined in polished section; but the

presence of the oxidised fine sulphides indicates that at least some of its zinc content may have a source in these sulphides. The ferruginised siliceous matrix of the breccia may also embody some exotic zinc of supergene origin.

4.23 Line 5E Area

Geochemical sampling of the Line 5E gossan gave anomalous lead and zinc values. The maximum lead content was 0.36% (R1857) and the highest zinc value 0.20% (R1860). Average Cu, Pb, Zn and As contents computed for the eight samples from the gossan were (in ppm): 57 Cu, 948 Pb, 654 Zn and 94 As.

The results of the petrographic study by Whittle of three of the samples is given below:

1857 - Ferruginised oxidised pyritic siltstone with sparse residual galena.

This rock exhibits a vague aspect of bedding in those areas where there are slight variations in the content of oxidised sulphides. For the most part, the rock consists of 60% clastic quartz of the upper silt-grade size range, 10 - 15% oxidised stratiform sulphides of similar size, and a matrix medium of highly ferruginised clays and decomposed fine micas. Narrow fractures were partly filled by colloform hyalite and goethite.

The polished section of this rock exhibits the oxidised stratiform pyrite as goethite replicas of 0.03 mm maximum size. Examination at high magnification disclosed sparse unoxidised galena granules of 0.001 - 0.005 mm size; and also equally small goethite replicas which are surely the oxidised equivalents of other galena particles. This observation proves the indigenous source of the lead content.

1859 - Ferruginised oxidised intercalated highly pyritic shale, arenaceous shale and chert.

Several contrasting facies exist in this mildly slump structured rock. There are truncated portions of light coloured chert which consists mainly of microcrystalline silica, sparse fine sericite, and less than 5% oxidised stratiform pyrite of 0.005 mm grain size. In some layers within the blocks of chert there is 5% or more minutely granular carbonate.

The principal mass of the rock is made up of layers of oxidised highly pyritic ferruginised shale, and arenaceous shale. At wide intervals there are thin pyritic chert intercalations. These three facies all exhibit large proportions of isometric goethite replicas of pyrite grains of 0.02 - 0.03 mm size. In some layers there are 50 - 60% of these goethite replicas.

In the examination of the polished section, residual unoxidised pyrite grains, as well as sparse galena particles of 0.001 - 0.005 mm size, were observed. The minute goethite granules of less than 0.005 mm size indicate the former presence of other galena granules.

The indigenous origin of the lead content is therefore established.

1863 - Ferruginised oxidised pyritic - argillaceous siltstone.

Throughout the succession of thin layers in this rock, the proportions of clastic quartz of coarse silt-grade size are variable. The quartz grains are contained in a completely ferruginised clay matrix.

Small amounts of oxidised stratiform sulphides are visible in the lighter brown layers; and larger amounts exist in the darker brown layers.

Most of the dark coloured layers are thin; but they contain more than 50% oxidised fine stratiform sulphides.

The goethite replicas of the sulphides appear to be mainly those of pyrite; but on the basis of observations on the polished sections of other samples, it is feasible to assume the coexistence of a small proportion of finer oxidised base metal sulphides.

4.24 Jasper Anticline Area

The levels of lead and zinc recorded in this area were considered low relative to the Tank Line Gossan and Line 5E Gossan and hence no samples from the Jasper Anticline area were submitted for petrographic study.

The average lead and zinc values for the seven samples collected were 257 ppm and 356 ppm respectively. The maximum lead content was 560 ppm and apart from R1844, which recorded 0.20% Zn, the highest zinc value was 240 ppm. Associated copper and arsenic values in all seven samples were comparatively low.

4.25 Eastern Gossan

A study of the Eastern Gossan was undertaken in conjunction with fault slice gossans to provide comparative data on Proposal (c) of sub-section 4.21 (i.e. base of the Lynott Formation). Six samples were collected of which two were examined petrographically.

The geochemical results are presented in Table 5 from which it is noted that the maximum lead content was 680 ppm (R1854) and the highest zinc value recorded was 0.22% (R1853).

All copper values were low while most arsenic values are elevated. The average lead and zinc contents were computed at 323 ppm and 782 ppm respectively.

The results of the work carried out by A.W.G. Whittle and Associates is as follows:

1851 - Ferruginised oxidised pyritic argillite.

Incipient secondary silicification was incident in some parts of the argillite where microcrystalline silica was deposited in open leach voids. The rock itself consists of a succession of thin slump folded lamellae; some of which consist of extremely fine clays and a few % silt-grade clastic quartz; while others consist of clays and large proportions of oxidised minutely granular stratiform sulphides. The ferruginisation was indigenous from these fine sulphides; and where large amounts were present, leach voids formed along bedding planes.

The oxidised sulphide granules have a size of 0.01 mm. The goethite replicas are not distinguishable one from another; hence the range and types of the original sulphides cannot be ascertained. It is presumed that minute pyrites were dominant; and that small numbers of sphalerite and occasional grains of galena and chalcopyrite coexisted with the pyrite.

With progressive oxidation of the stratiform sulphides, all of the lead oxysalts, and at least a proportion of the copper and zinc oxysalts would have been retained by the indigenous goethite.

This would have ensued through co-precipitation of the metal oxides with goethite, as ferric sulphate was progressively hydrolysed.

1853 - Ferruginised oxidised pyritic argillite.

There is little difference between this rock and 1851, apart from the absence of slump folding, and the presence of manganese oxide infiltrations along cracks and some bedding planes.

Stratiform fine pyrite, as well as smaller amounts of other sulphides, were present along those lamellae which presently exhibit brownish ferruginisation. Sphalerite can be presumed to have coexisted with the dominant pyrite; and because manganese oxides are present, a larger proportion of the zinc oxysalts was retained through the period of slow progressive leaching, as the pyrite oxidised.

4.26 Conclusion

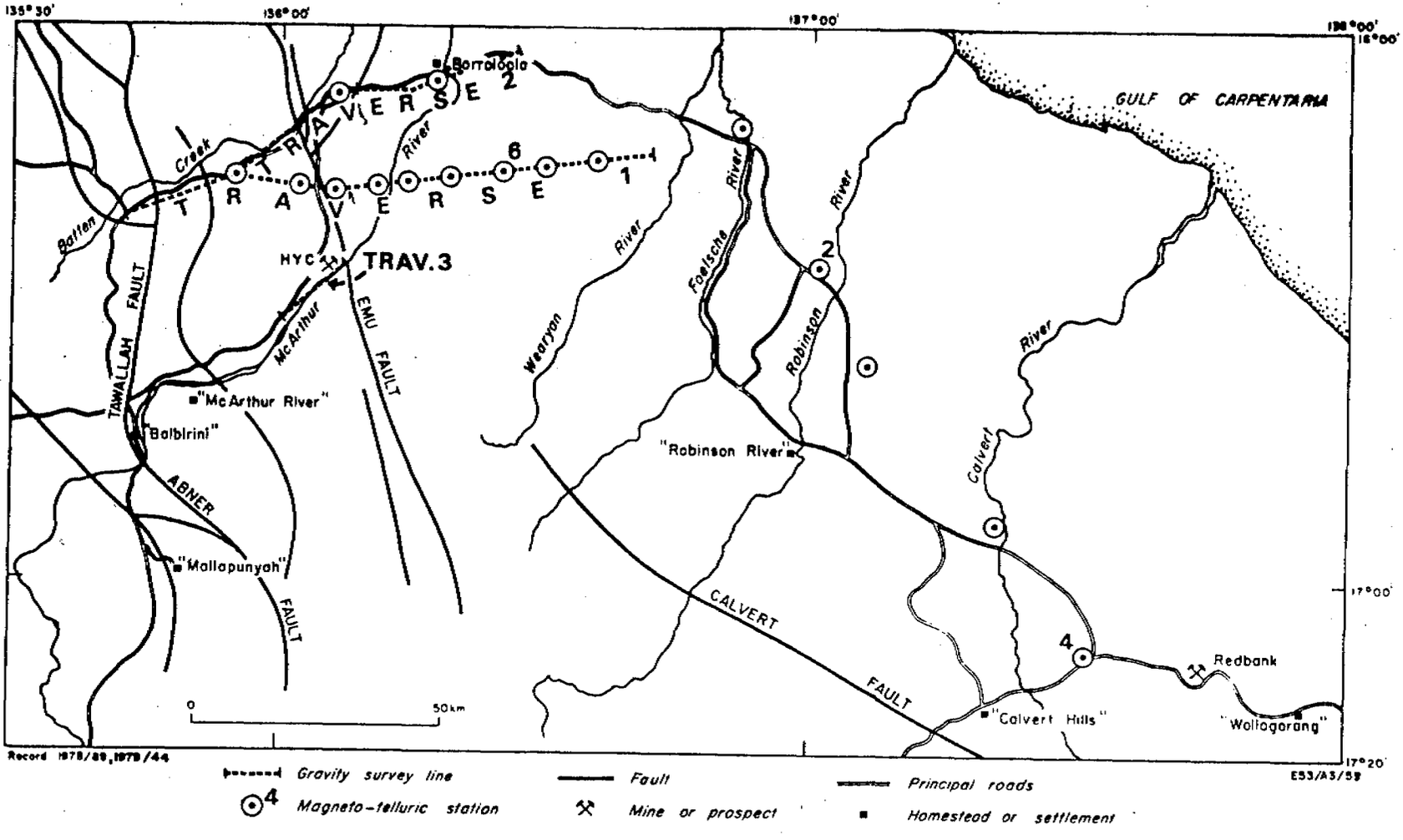
The inference drawn from the study by A.W.G. Whittle and Associates is that the most likely stratigraphic position of the gossans in the Berjaya Prospect fault-slice is the base of the Barney Creek Formation. In addition the petrographic study has shown that, at the Tank Line Gossan most samples have at least some indigenous metal content and that in several samples syngenetic sulphides were identified. Similarly an indigenous metal content was confirmed for the Line 5E samples with residual galena being identified in two of the three specimens from this locality.

4.30 Gravity Survey

4.31 Introduction

A regional gravity survey totalling approximately 457 kilometres was performed in a number of licences held by the Bauhinia Joint Venture during the 1979 field season. Two lines of 2.2 kilometres and 2.0 kilometres were surveyed in

LOCALITY MAP — BMR GRAVITY SURVEY 1978



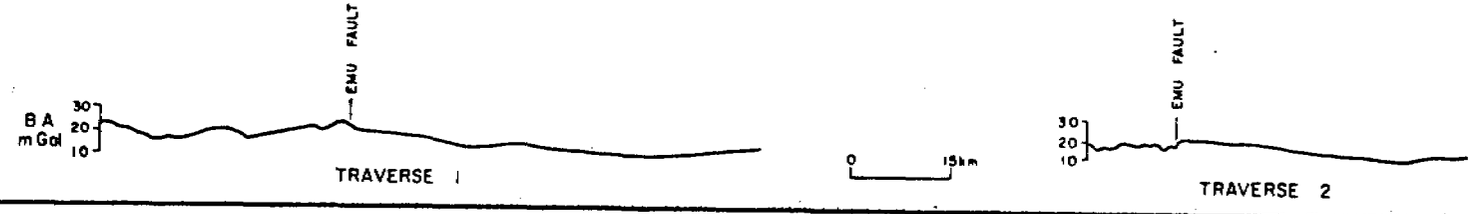


FIGURE 17

BAUHINIA JOINT VENTURE

JANUARY, 1980

the Berjaya area. A gravity survey was performed by the B.M.R. in 1978 within the Batten Trough and Wearyan Shelf of the McArthur Basin, including one traverse over the H.Y.C. ore body. A number of anomalous gravity features were delineated and it was found that these could be interpreted in the context of ore bodies and mineralized zones (Anfiloff, 1979). The gravity survey, undertaken by A.O. (Australia) Pty. Ltd. on behalf of the Joint Venture, was carried out on the basis of the B.M.R. results in the hope of delineating a drilling target.

4.32 B.M.R. Gravity Surveys

Figure 17 illustrates the location and extent of gravity surveys conducted by the B.M.R. in the McArthur Basin.

The 1978 survey was performed at 500 metre spacing and consisted of two long and one short traverse, all totalling 185 kilometres (refer to Figure 17). Traverses 1 and 2 crossed large areas of the Batten Trough and Wearyan Shelf, and Traverse 3 crossed the H.Y.C. ore body. Traverses 1 and 2 crossed more than 30 ridges, with an advanced 2-D processing method enabling observations made over ridges to be reduced directly to Bouguer gravity values, without applying a separate terrain correction (Anfiloff & Flavelle, 1979). There was, therefore, no need to avoid steep topography.

Important gravity features were delineated in the Emu Fault zone on all three traverses. Traverse 3 crossed the H.Y.C. ore body and detected an anomaly with a width of 6 kilometres

and an amplitude of 5 mGal. A similar anomaly was detected on Traverse 1 suggesting that the mineralized zone extends to the north along the Emu Fault. The gradients associated with this anomaly indicate a near-surface source, and the anomaly corresponds to a shallow mineralized body. On Traverse 2 there is a distinct transition between a smooth field in the east, and a more irregular field to the west which does not coincide with the main escarpment, possibly suggesting another mineralized zone.

The B.M.R. observed that the size of some important anomalies was less than 5 mGal and recognized three sources, these being:

(a) buried valleys filled with low density alluvium producing very sharp, narrow gravity lows

(b) a shallow dense body producing steep gradients on an abrupt localized gravity high next to the Emu Fault

(c) a broad basin or gradual lateral density changes in sediments or basement producing broad gravity lows east of the Emu Fault and fault-induced lateral density variations in sediments producing moderately broad anomalies west of the Emu Fault.

The lack of offset in gravity level across the Emu Fault when considered in conjunction with source (c) previously tends to suggest that major displacement has not occurred across the fault. The B.M.R. concluded that the faults positioned near the top of the basement arch favours dilation of the fault plane and the passage of mineralizing fluids to form the dense shallow body.

4.33 Bauhinia Joint Venture Gravity Survey

4.331 Instrumentation and Proceedures. The 1979 regional gravity survey was performed with the use of a Worden Master 806 Gravity Meter. The meter is exceptionally accurate and incorporates a low-powered temperature stabilizer system which maintains a nearly constant internal temperature. Each line was accurately levelled prior to commencement of the survey. Temperature readings were taken at each station and, in order to account for drift, base stations were reoccupied and the gravity readings retaken a number of times for each line.

Lines 5E and 7E of the former I.P. survey were the two lines surveyed by gravity at the Berjaya Prospect. The gravity survey on Line 5E was carried out at 200 metre spacing between stations 00 and 600N and between stations 1,400N and 2,000N. A spacing of 100 metres was used between stations 600N and 1,400N. Line 7E was surveyed at 100 metre spacing between stations 200S and 800N and at 200 metre spacing between stations 800N and 2,000N.

Reduction of the gravity data was carried out by Wongela Geophysical Pty. Ltd. and the resulting profiles are presented in Plan 6. The data forwarded by Wongela Geophysical has been the subject of a preliminary examination by staff of A.O. (Australia) Pty. Ltd. and observations made are detailed in the following sub-section.

4.332 Results. A study of the Bouguer Anomaly profile of Line 7E has revealed the presence of two gravity lows:

(i) between station 100N and 500N and (ii) between station 1,400N and 2,000N.

The gravity low between stations 1,400N and 2,000N appears to be a reflection of the variation in topography and thus of a comparatively greater thickness of lighter material. The second gravity low, between stations 100N and 500N, occurs in the vicinity of the fault slice. The down faulted block produces anomalies of low magnitude, a result of the presence of denser material at a greater comparative depth.

Diamond drillhole Berjaya 1 and 2 (BJ1 and BJ2) are located at stations 700N and 1,700N respectively on Line 7E. BJ1 is located at the southern margin of a relatively flat-lying Bouguer Anomaly Plateau. BJ2 is positioned over the gravity low in the extreme north of the line. A study of Berjaya drillhole correlation (presented in a previous annual report) justified the respective Bouguer Anomaly values. Erosion in the BJ1 area has removed a large thickness of Lynott Formation. As a result of this erosion, it is expected that denser material would be at a shallower level here than in the BJ2 area where erosion has not been as extensive. A comparative gravity high is thus resultant in the BJ1 erosional area.

A broad gravity low region occurs on the profile of Line 5E between stations 600N and 1,400N. This region is in the general vicinity of the fault slice and, in a similar manner to the southern gravity low as Line 7E, coincides with the down-faulted block. The profile, in general appears to be

independent of topography.

4.40 Mapping Line 5E

4.41 Rationale

A site for a drillhole had been previously proposed at peg 1,100N along Line 5E to test the northwestern extension of the I.P. anomalous area. As this site is in a structurally complex area, it was decided that detailed mapping should be undertaken along the line in order to assist the possible drillhole location. Results are presented in Plan 7 and discussed below.

4.42 Geology

Along the line itself exposure is restricted to areas north of 1,100N. The first outcrops are the upper part of L_2 followed by unequivocal outcrops of the hard shale with mudcracks marker and the overlying sandy beds of L_3. These dolomitic sandstones can be traced west then south around the nose of a very sharp anticline until they are cut off along a WNW trending fault. There is some silicifation of the sandstones next to the fault.

Across the fault, which is the northern boundary of the postulated fault slice at Berjaya is an area of poorly outcropping, but gossanous rock, thought to be from the base of the Barney Creek Formation, or possibly from basal Lynott Formation.

The sharp fold appears likely to have an axial fault, adjusting the volume difficulty in the anticlinal core. The natural

position to place the hypothetical fault is at peg 1,100N which means this area is best avoided for drilling purposes.

4.43 Correlation with I.P. Data

Because of problems of non-outcrop, the section, as drawn in Plan 7 utilizes data from the Berjaya 1-3 drillholes for the rocks below the hard shale marker. An interesting feature of the interpretation of the section is that rocks from below the Lynott Formation are at surface in the vicinity of the I.P. maximum (refer to Figure 18). This opens up the possibility that the I.P. source is different to, and lower than, the basal Lynott L_2 to uppermost Barney Creek Formation source interpreted in the Berjaya drillholes, although with 200 metre dipole spacing the detailing of the anomaly is poor.

4.44 Conclusion

As indicated previously, the initial site recommended for diamond drilling at 1100N is, on the basis of more detailed mapping, not considered suitable due to the presence of an inferred fault.

The mapping in conjunction with a review of the I.P. data indicates that the drillhole would be better sited at 1200N, 50E.

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APPENDIX 1.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG				Mine Code	Ms Code	Page 1
Mine/Prospect:			Name: MYRTLE No. 1		core	
Level:	Northing:		Easting:		Collar R.L. ground/pipe:	
Bearing M/T/G:		Incline:	Length:	Started:		Finished:
Hole/Core size:	HQ:	NQ:	BQ	Intervals assayed:		

Interval			Recov.y	Down Hole Survey - Method:	date:	by:	Logged by:C.H.SHANNON
from	to	length	M/kg	DESCRIPTION			
0'	21'	21'		No core.			
22'	24'	2'		Calcrete, broken core. Some leached dolomitic shale.			
24'	28'	4'		Leached ochre dolomitic siltstone, calcrete filled vein, fine spindle lamination at 27', possible dolomite bed 5 cm.			
28'	30'	2'		Leached ochre dolomitic siltstone, with lighter bands to 5-10mm. The lighter bands appear to be the top sections of graded units; in the darker units spindle lamination becomes finer upwards, and in the lighter units lamination is very faint or undetectable.			
30'	38'	8'		Leached ochre and grey fresh dolomitic siltstone, spindle lamination throughout except in light bands 1-10mm thick spaced 2-10cm apart.			
38'	38.3'	.3'		Dark grey shale.			
38.3'	39.5'	1.2'		Leached ochre and grey fresh dolomitic siltstone with spindle lamination throughout except in light bands 1-10cm thick spaced 2-10cm apart.			
39.5'	49.5'	10'		Leached dolomitic siltstone with rare light bands; spindle lamination throughout but not prominent.			
49.5'	51.5'	2'		Grey dolomitic siltstone with spindle lamination with numerous light grey bands to 1cm thick which lack spindle lamination.			
51.5'	54'	2.5'		Core loss - chips as above.			
54'	61'	7'		Grey dolomitic siltstone with spindle lamination and some regular lamination; some ochre leached material. Light bands rare. 2cm unlaminated bands at 60' and at 61'. Occasional laminae of coarse carbonate (tuff?).			

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 2
Mine/Prospect:	Name: MYRTLE No. 1		core
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by:C.H.SHANNON

from	to	length	M/kg	DESCRIPTION
61'	74.5'	13.5'		Mainly grey dolomitic siltstone, some leached, frequent lighter lutaceous bands up to 1cm thick, and coarse carbonate bands to 2cm thick which are generally in groups spanning 1-3cm. (tuff?). Dark grey almost unlaminated bands to 5cm thick at 65', 67', 68.5', 71' some with pyrite blebs.
74.5'	74.75'	.25'		Uniform dark grey shale.
74.75'	75.5'	.75'		Grey dolomitic siltstone with spindle lamination etc.
75.5'	78.5'	3'		Grey dolomitic siltstone with thin light lutaceous bands and spindle lamination 10cm dark grey shale at top.
78.5'	79'	.5'		Dark grey shale, pyrite in central 1cm.
79'	82.25'	3.25'		Grey dolomitic siltstone with spindle lamination interspersed with frequent light bands 1-6mm thick rare coarse carbonate 1-2mm thick usually in clusters (tuffs?)
82.25'	82.5'	.25'		Dark grey shale.
82.5'	85'	2.5'		Grey dolomitic siltstone etc as above.
85'	85.5'	.5'		Dark grey shale.
85.5'	94'	8.5'		Grey dolomitic siltstone etc as above.
94'	94.5'	.5'		Dark grey shale.
94.5'	100'	5.5'		Grey dolomitic siltstone, etc as above at 95' vein with sphalerite.
100'	100.25'	.25'		Dark grey shale.
100.25'	119'	18.75'		Grey dolomitic siltstone etc as above: at 107', 2cm dark grey shale, at 111.5' 3cm dark grey shale.
119'	119.5'	.5'		Very dark grey shale, pyritic 119.1' - 119.4'.
119.5'	120'	.5'		Grey dolomitic siltstone etc as above.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 3
Mine/Prospect:	Name: MYRTLE No. 1	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: H.SHANNON

from	to	length	M/kg	DESCRIPTION
120'	120.25'	.25'		Very dark grey shale.
120.25'	123.5'	3.25'		Grey dolomitic siltstone with spindle lamination and light bands becoming rare.
123.5'	124.5'	1'		Dark grey shale and grey dolomitic siltstone.
124.5'	127'	2.5'		Grey dolomitic siltstone.
127'	129'	2'		Dark grey dolomitic siltstone (without spindle lamination).
129'	129.25'	.25'		Very dark grey shale.
129.25'	130.5'	1.25'		Dark grey dolomitic siltstone (without spindle lamination).
130.5'	131'	.5'		Slightly pyritic very dark grey shale ("blue shale").
131'	133'	2'		Dark grey dolomitic siltstone with lighter bands which are deformed with "flame-like" boundaries; without spindle lamination.
133'	133.25'	.25'		Black shale (as above).
133.25'	136.25'	3'		Dark grey dolomitic siltstone - as above.
136.25'	136.75'	.50'		Black shale - as above.
136.75'	137.75'	1'		Dark grey dolomitic siltstone - as above.
137.75'	138'	.25'		Black shale - as above.
138'	145'	7'		Dark grey dolomitic siltstone - as above. Pyrite clot along bedding at 142'.
145'	146'	1'		Grey sand size turbidite (greywacke) of intraclasts of dolomitic siltstone in dolomite matrix? Possibly a tuff. ---- core split and difficult to log ----
146'	149'	3'		Dark grey dolomitic siltstone, as above, with pyrite blebs.
149'	160'	11'		DArk grey dolomitic siltstone, veins of pyrite and veins of carbonate/sphalerite.
160'	169'	9'		Very dark grey shale, tends to crumble on exposure with white efflorescence at 161' preumably pyritic. Small black pellets (2cm) may indicate turbidite

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG				Mine Code	Ms Code	Page 4
Mine/Prospect:			Name: MYRTLE No. 1		core	
Level:	Northing:		Easting:		Collar R.L. ground/pipe:	
Bearing M/T/G:		Incline:	Length:	Started:		Finished:
Hole/Core size:	HQ:	NQ:	BQ	Intervals assayed:		

Interval			Recov.y	Down Hole Survey - Method:	date:	by:	Logged by: H.SHANNON
from	to	length	M/kg	DESCRIPTION			
				environment. Sparse veins of carbonate with sphalerite and some galena. Thin			
				carbonate bands in clusters persist but not the discrete pale bands common			
				higher in the section.			
169'	169.5'	.5'		Very dark grey shale with 5mm pyrite bed/clot and carbonate veins with minor			
				sphalerite.			
169.5'	172'	2.5'		Very dark grey shale with carbonate/sphalerite veins and white efflorescences			
				indicating pyrite over about 20%.			
172'	178'	6'		Very dark grey shale, generally with fine grained pyrite visible but without white			
				efflorescence. Some pyrite veins, some carbonate/sphalerite veins.			
178'	180.5'	2.5'		Very dark grey pyritic shale with efflorescence common.			
180'	181.5'	1.5'		Pyritic shale microbreccia, carbonate/sphalerite veins.			
181.5'	200'	18.5'		Very dark grey pyritic shale with carbonate/sphalerite veins.			
200'	216'	16'		Pyritic shale as above, carbonate/sphalerite veins rare.			
216'	224'	8'		Pyritic shale as above with carbonate/sphalerite galena veins.			
224'	247'	23'		Pyritic shale.			
247'	249'	2'		Pyritic shale microbreccia? (core granulated).			
249'	257'	8'		Pyritic shale, (some core granulated) some galena veins.			
257'	258.5'	1.5'		Pyritic shale microbreccia.			
258.5'	271'	12.5'		Pyritic shale.			
271'	284'	13'		Pyritic shale with galena veins and carbonate/sphalerite veins.			
284'	285'	1'		Pyrite shale microbreccia.			

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 5
Mine/Prospect:	Name: MYRTLE No. 1	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: H.SHANNON

from	to	length	M/kg	DESCRIPTION
285'	286'	1'		Pyritic shale.
286'	295'	9'		Granulated material - pyritic shale microbreccia?
295'	353'	58'		Pyritic shale, some pyrite blebs towards base.
353'	353.5'	.5'		Pyritic shale microbreccia.
353.5'	358'	4.5'		Pyritic shale, some sphalerite. ---- (approx base of split core - not noted) ----
358'	360'	2'		Grey shale with carbonate veins.
360'	365'	5'		Grey shale and dark grey pyritic shale with abundant carbonate veins and sphalerite.
365'	368'	3'		Grey shale with abundant carbonate/sphalerite veins and some pyrite blebs.
368'	370'	2'		Dark grey pyritic shale and breccia of same.
370'	378.5'	8.5'		Grey "shale" (possibly fine grained tuff) and dark grey pyritic shale, brecciated in places with carbonate/sphalerite vein fill.
378.5'	379.25'	.75'		Brecciated tuff with sand-sized granular texture with larger white grains interspersed with smaller black grains, probably with some carbonate matrix - "pepper and salt" texture.
379.25'	380.5'	1.25'		Pale grey fine grained "tuff"? (possibly dolomitic shale).
380.5'	381.5'	1'		Coarse grained, Laminated to thinbedded tuff overall grey colour - "pepper and salt" texture.
381.5'	392'	10.5'		Pale grey fine-grained tuff? (possibly dolomitic shale) with some carbonate veins and minor sphalerite.
392'	394'	2'		Grey shale, some pyritic.
394'	396'	2'		Pale grey fine-grained tuff? Bedding 3mm, faint, distorted.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 6
Mine/Prospect:	Name: MYRTLE No. 1	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: H.SHANNON

from	to	length	M/kg	DESCRIPTION
396'	396.25'	.25'		Grey dolomitic siltstone with spindle lamination.
396.25'	398'	1.75'		Pale grey fine-grained tuff? (as above).
398'	402'	4'		Grey dolomitic siltstone.
402'	402.5'	.5'		Grey dolomitic siltstone breccia with galena and sphalerite.
402.5'	403'	.5'		Black shale breccia/coarse galena rock.
403'	406'	3'		Brecciated black shale with abundant carbonate/sphalerite veins and some galena.
406'	407'	1'		Carbonate vein, black shale.
407'	411.25'	4.25'		Pale grey fine-grained tuff? (as above), minor sphalerite in isolated crystals.
411.25'	412'	.75'		Grey dolomitic siltstone, minor sphalerite in isolated crystals.
412'	420'	8'		Pale grey fine-grained tuff? (as above), minor sphalerite in isolated crystals.
420'	426.5'	6.5'		Grey laminated dolomitic siltstone.
426.5'	435'	8.5'		Grey coarse-grained tuff with "pepper and salt" texture.
435'	435.25'	.25'		Grey fine-grained tuff.
435.25'	435.5'	.25'		Grey laminated dolomitic siltstone.
435.5'	440'	4.5'		Grey medium grained tuff.
440'	444'	4'		Grey dolomitic siltstone (possibly tuff).
444'	464.75'	20.75'		Grey to brownish grey dolomitic siltstone. Well laminated to spindle laminated.
464.75'	465'	.25'		Grey coarse-grained tuff with "pepper and salt" texture.
465'	469'	4'		Pale grey tuff (or possibly dolomite) with wavy bedding 3-5mm.
469'	470'	1'		Slightly brecciated turbidite? black flecks 2mm. tuff (or possibly dolomite).
470'	470.75'	.75'		Well bedded. Fine-grained rock, tuff?

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 7
Mine/Prospect:	Name: MYRTLE No. 1	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: H.SHANNON

from	to	length	M/kg	DESCRIPTION
470.75'	492.5'	21.75		Laminated to thin bedded pale grey tuff? Bedding faint and indistinct; bands with black flecks.
492.5'	493'	.5'		Coarse sand-sized grey tuff; "pepper and salt" texture.
493'	493.25'	.25'		Pale grey fine-grained tuff?
				E N D H O L E

NOTES

Core/bedding angle decreases from around 70° near the top of the hole to around 30° in the section below 400'. Thus the true thickness in the lower part of the section is much less than the log thickness.

APPENDIX 2.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG				Mine Code	Ms Code	Page 1
Mine/Prospect:			Name: MYRTLE 2 DDH - LOG		core	
Level:	Northing:		Easting:		Collar R.L. ground/pipe:	
Bearing M/T/G:		Incline:	Length:	Started:		Finished:
Hole/Core size:	HQ:	NQ:	BQ	Intervals assayed:		

Interval		(metres)	Recov.y	Down Hole Survey - Method:	date:	by:	Logged by: C.H.C.Shannon
from	to	length	M/kg	DESCRIPTION			
0	15m	15m		No core available			
15	25.1	10.1m		Interbedded seguence: dominently grey dolomitic siltstone turbidite indicated by graded units with shale chips concentrated at the base, and thinner interbeds of dark carbonaceous dolomitic shale. The shale is mostly formed in the matrix of brecciated bed. There is also some carbonate fill in the breccias. Minor beds are of coarse grey dolarenite up to 25 cm, dark laminated dolomitic siltstone and a little thinbedded dolomite (often brecciated). The dolarenite has oolites.			
25.1	58.4	33.3		Mainly pale grey dolomite in beds less than 30 cm with interbeds up to 4 cm thick of grey laminated dolomitic siltstone. Turbidite character of the dolomite beds usually apparent by concentration of black shale flakes at the base of a unit and small chips in the remainder. Carbonate veins abundant, large concretions to 5 cm.			
58.4	59	.6		Grey dolomite turbidite unit with oolites.			
59	68	9m		Pale grey dolomite turbidites interbedded with grey, thinner, laminated dolomitic shale. Chert balls common ; with pyrite veins.			
68	79.5	11.5		Black shale with pyrite clots.			
79.5	83.8	4.3		Roughly equal proportions of light grey dolomite turbidite and laminated dark grey dolomitic siltstone/dolomite.			
83.8	89.3	5.5		Thinbedded light grey dolomite, coarsely crystalline with black carbonaceous laminae between beds.			
89.3	105.7	16.4		Dark grey dolomite/dolomitic shale beds to 20 cm alternating with grey dolomite/dolomitic shale beds to 2 cm. turbidites in both types. Lighter interbeds rare towards base.			
105.7	113	7.3		Pyritic very dark grey shale			

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 2
Mine/Prospect:	Name: MYRTLE 2 DDH - LOG	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval (metres)	Recov.y	Down Hole Survey - Method: / date: / by:	Logged by: C.H.C.Shannon

from	to	length	M/kg	DESCRIPTION
113	121.8	8.8		Very dark grey shale.
121.8	178.9	57.1		Dark grey shale; some turbidite: interbeds to 1 cm grey shale.
178.9	187.0	8.1		Dark grey shale etc. (as above) with lighter interbeds common and better defined.
187.0	200.6	12.6		Dark grey dolomitic shale in units 3-10cm thick with light grey interbeds up to 1 cm.
200.6	200.7	.1		Light grey sandy tuff (crystal tuff?)
200.7	214.4	13.7		Dark grey dolomitic shale with light grey interbeds, as above.
214.4	214.6	.2		Tuff (fine grained?)
214.6	219.3	4.7		Mostly laminated grey shale, lighter, greenish interbeds may be tuffaceous.
219.3	221.2	1.9		Light grey to pinkish sandy tuff (crystal tuff?)
221.2	222	.8		Poorly laminated to laminated grey shale with light bands
222	222.3	.3		Laminated 'sandy' band possibly tuff
222.3	227.3	5m		Laminated and massive grey shale.
227.3	228.6	1.3		Light grey to pinkish sandy tuff (crystal tuff?)
228.6	256.1	27.5		Mainly poorly laminated grey shale, with intervals with prominent, regularly spaced lighter interbeds.
256.1	256.3	.2		Breccia; well laminated grey dolomitic shale clasts in darker shale matrix.
256.3	282.3	26m		Rather uniform grey shale with light interbeds up to 3mm thick.
282.3	282.7	.4		Sandy and/or laminated tuff.
282.7	287.6	4.9		Rather uniform grey shale, as above; prominently laminated at top, greenish bands in bottom metre.
287.6	292.3	4.7		Broken core: 0.3m prominently laminated tuff? at top, remainder pale grey or greenish flinty tuff (or dolomite) slickensides common.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 3
Mine/Prospect:	Name: MYRTLE 2 DDH - LOG		core
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		

Interval			Recov.y	Down Hole Survey - Method:	date:	by:	Logged by: C.H.C.Shannon
from	to	length	M/kg	DESCRIPTION			
292.3	298.9	6.6		Light grey massive and laminated sandy tuffs interbedded with greenish muddy tuff which crumbles on exposure.			
298.9	319.6	20.7		Grey shale with occasional thin lighter bands.			
319.6	324.5	4.9		Sandy, light grey laminated and flinty fine grained tuff.			
324.5	336	1.5		Grey shale with thin lighter bands - some pink and greenish interbeds probably tuffs.			
336	338.5	2.5		Light grey sandy, massive to prominently laminated tuff with "pepper and salt" texture, with minor green bands and shale interbeds.			
338.5	347.6	9.1		Grey dolomitic shale with thin lighter interbeds.			
347.6	348.6	1m		Sandy and laminated light green tuff with 10 cm interbeds of grey dolomitic shale at 347.9 and at 348.2.			
348.6	349.9	1.3		Grey dolomitic shale.			
349.9	350.0	.1		Light grey sandy tuff.			
350	355.7	5.7		Grey dolomitic shale			
				END OF MYRTLE 2 DDH.			

APPENDIX 3.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 1
Mine/Prospect:	Name: MYRTLE 3 DDH LOG	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		

Interval (Metres)			Recov.y	Down Hole Survey - Method:	date:	by:	Logged by: C.H.C.Shannon
from	to	length	M/kg	DESCRIPTION			
0	14.2	14.2		no core available.			
14.2	34.5	20.3		Light grey silty dolomite generally with turbidite texture indicated by shale chips.			
				Breccia beds common with light grey dolomite clasts in darker matrix, a few large			
				concretions. Rare thin dark grey dolomitic mudstone beds.			
34.5	34.6	.1		Light grey dolarenite.			
34.6	45.3	10.7		Light grey silty dolomite generally fine grained with turbidite texture indicated by			
				shale chips, numerous thin dolarenite beds 3-10cm.			
45.3	45.6			Dolomite breccia.			
45.6	49.6	4m		Interbedded grey and pale grey fine grained dolomite with dolarenite beds 1-20cm.			
49.6	51.0	1.4		Coarse dolarenite bed (light grey)			
51.0	54.7	3.7		Light grey dolarenite; some interbeds grey fine grained dolomite.			
54.7	61.4	6.7		Dark grey dolomitic siltstone/dolomite disjunct breccia; - isolated light grey dolomite			
				clasts 10%, matrix 90% including common shale flakes.			
				BASE R2 sub-unit.			
61.4	63.6	2.2		TOP OF R1 sub-unit.			
				Light grey very coarse dolarenite with intervals of laminated dolomitic siltstone/			
				dolomite with shale chips.			
63.6	69.8	6.2		Mainly grey fine grained dolomite with interbedded thin layers of light grey and of dark			
				grey dolomite; also 3 dolarenite beds to 4 cm thick.			
69.8	79.9	10.1		Coarse light grey dolarenite with intervals to 0.3m of laminated to 1-2 cm bedded			
				dolomite and/or dolomitic siltstone.			
79.9	80.4	.5		Laminated dolomite/dolomitic siltstone.			

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 2.
Mine/Prospect:	Name:	core	
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval (metres)	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: C.H.C.Shannon

from	to	length	M/kg	DESCRIPTION
80.4	86.2	5.8		Coarse dolarenite etc.
86.2	93.5	7.3		Grey laminated to 1-2 cm bedded dolomitic siltstone/dolomite with lighter and darker interbeds.
93.5	98.5	5m		Dark grey dolomitic siltstone with some thin coarse sandy interbeds (possibly tuffs) and light fine grained bands probably dolomite.
98.5	103.4	4.9		Interbedded black carbonaceous shale and thinbedded (3mm - 5mm) dolomite with black shale partings.
103.4	103.7	.3		Dolarenite.
103.7	108.8	5.1		Dark grey to very dark grey shale with intervals of thin bedded dolomite with black shale partings and minor dolarenite.
108.8	116.0	7.2		Medium to coarse light grey dolarenite, with some intervals of grey laminated dolomitic siltstone near top and breccia about 110.5.
116.0	128.9	12.9		Grey dolomitic shale/dolomite with occasional dark or light bands to 5 mm, intervals thinbedded dolomite with black shale partings.
128.9	135.5	6.6		Dark grey and grey shale with few light bands, some pyritic shale in the darker material.
135.5	151.5	16m		Grey to dark grey dolomitic shale/siltstone with frequent light bands and intervals of thinbedded light grey material with dark partings (tuff or dolomite).
151.5	166.65	15.15		Laminated grey dolomitic siltstone with frequent interbeds of light grey finely laminated dolomitic siltstone.
166.65	166.7	.05		Light grey sand-sized crystal? tuff
166.7	171.4	4.7		Laminated grey dolomitic siltstone, etc, as above.

A.O.(AUSTRALIA) PTY LTD

GEOLOGICAL LOG	Mine Code	Ms Code	Page 3.
Mine/Prospect:	Name: MYRTLE 3 DDH LOG		core
Level:	Northing:	Easting:	Collar R.L. ground/pipe:
Bearing M/T/G:	Incline:	Length:	Started: / Finished:
Hole/Core size: HQ: NQ: BQ	Intervals assayed:		
Interval (metres)	Recov.y	Down Hole Survey - Method:	date: / by: / Logged by: C.H.C.Shannon

from	to	length	M/kg	DESCRIPTION
171.4	171.8	.4		Light grey coarse sand-sized crystal? tuff with "pepper and salt" texture and sedimentary lamination.
171.8	177.6	5.8		Laminated grey dolomitic siltstone, etc, as above.
177.6	178.0	.4		Light grey fine grained tuff (or possibly dolomite) thinbedded, distorted bedding.
178.0	187.7	9.7		Laminated grey dolomitic siltstone, etc, as above.
187.7	187.9	.2		Light grey fine grained tuff, etc, as above.
187.9	218.9	31m		Laminated grey dolomitic siltstone, etc. as above (pyrite bleb at base)
218.9	231.7	12.8		Grey to dark grey uniform dolomitic shale with some blebs of pyrite and of sphalerite.
231.7	231.8	.1		White dolomite.
231.8	232.6	.8		Grey dolomitic siltstone with pyrite flecks.
232.6	233.1	.5		Light grey sand sized tuff with "pepper and salt" texture.
233.1	242.9	9.8		White brecciated coarsely crystalline dolomite, rare ghost bedding in some clasts.
242.9	266.6	23.7		Pale grey fine grained dolomite, generally brecciated, ghost bedding at approx. 1 cm intervals marked by blurry grey blebs.
266.6	273.4	6.8		Pale brownish grey dolomite microbreccia.

APPENDIX 4.

BAUHINIA JOINT VENTURE

EXPLORATION LICENCE No. 1203

Expenditure 7th September, 1978 to 6th September, 1979

	$
Salaries & Wages	12,079
Field Expenses	12,124
Miscellaneous	6,359
Expenditure for the period 7th September 1978 to 6th September 1979	$ 30,562

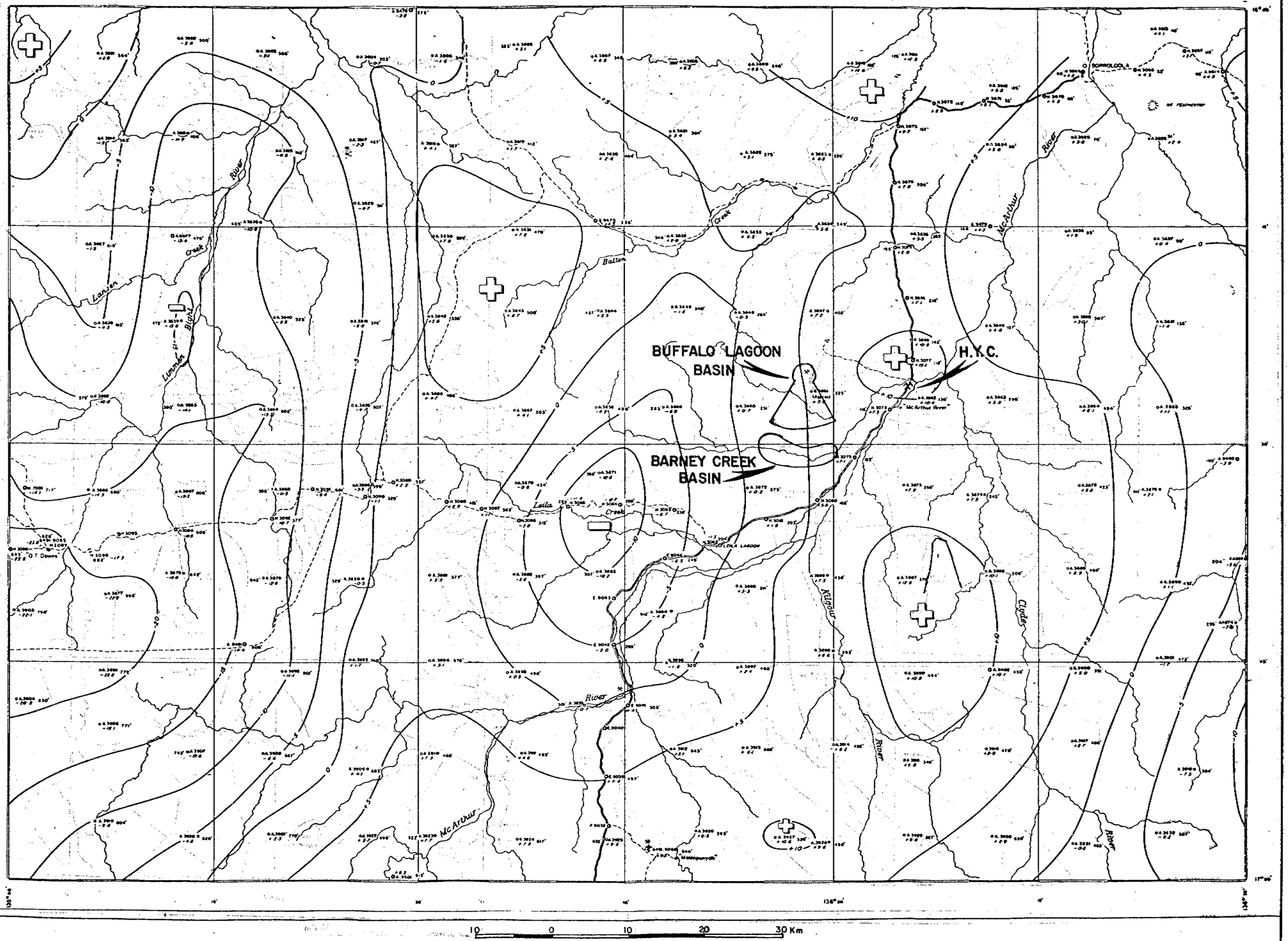
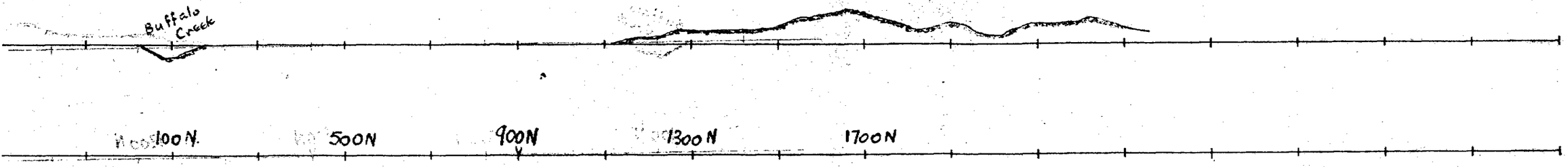


FIGURE 2

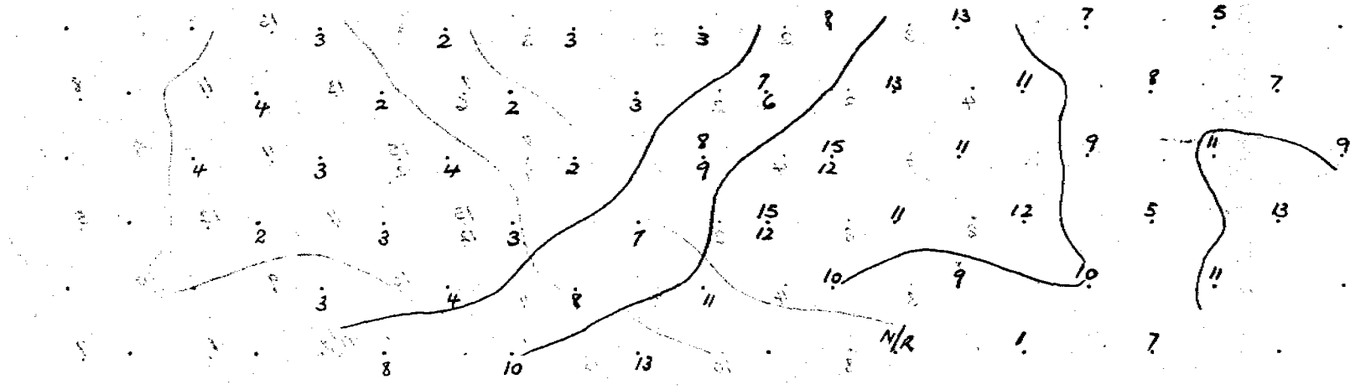
BOUGUER ANOMALIES - BAUHINIA DOWNS

BAUHINIA JOINT VENTURE

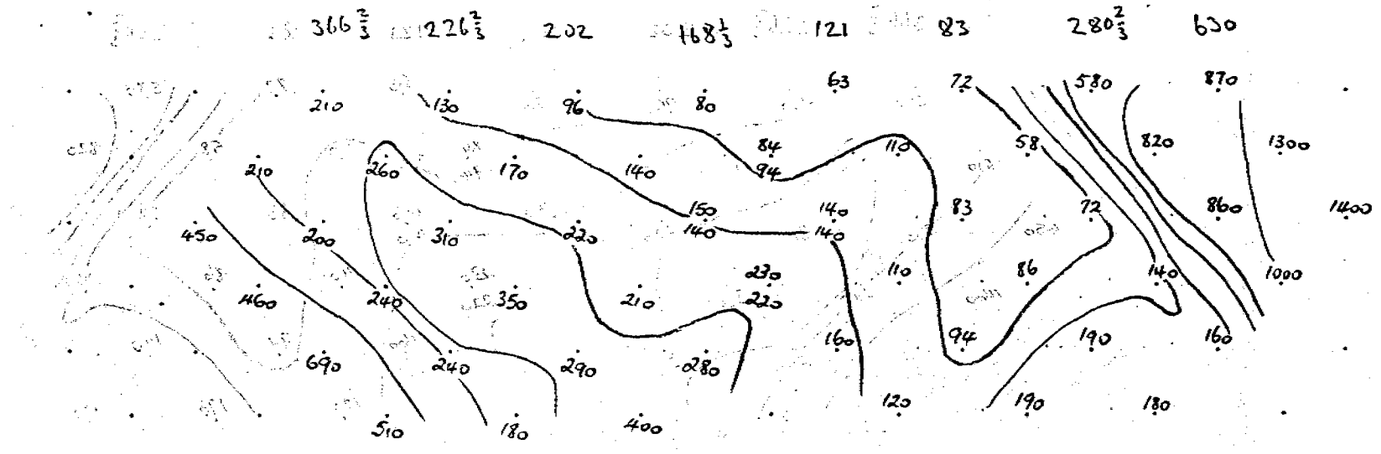
JANUARY, 1980



Culture Plan



Apparent Chargeability (msecs)



Apparent Resistivity (ohm m)

SURVEYED COMPILED & INTERPRETED BY
geoterrex limited
SYDNEY

A.O. (AUSTRALIA) PTY LTD

INDUCED POLARIZATION and RESISTIVITY SURVEY

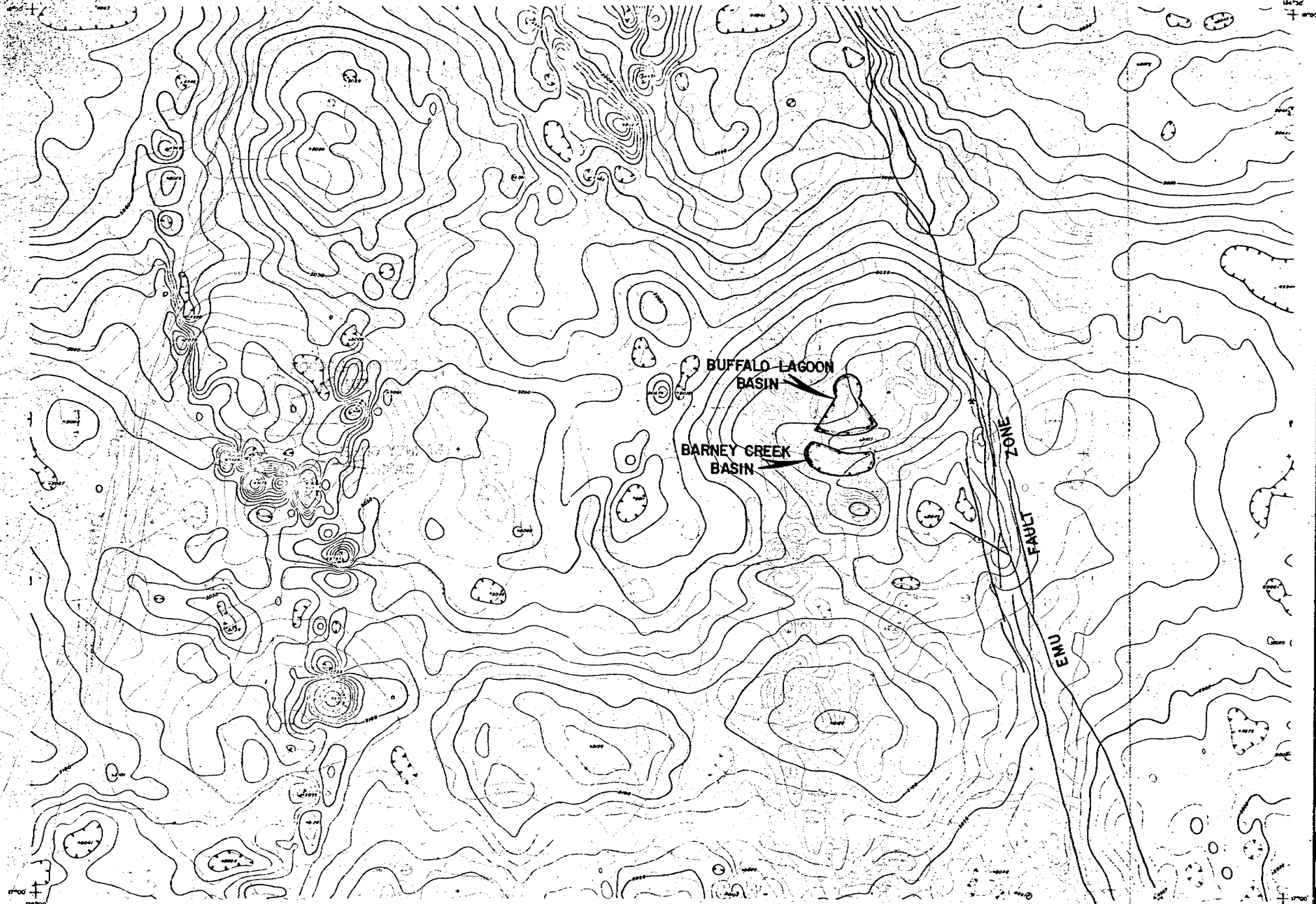
BAUHINIA JOINT VENTURE

AREA B36

LINE: 5E FIGURE 18

Array Dipole - Dipole		Dipole length 200 metres
Date 22 Oct 1977	Job No [illegible]5	Scale 1 - 10,000

BAUHINIA DOWNS



DATA ACQUISITION

DATA PROCESSING AND PRESENTATION

TOTAL MAGNETIC INTENSITY

SCALE 1:200,000

FIGURE 3

BAUHINIA JOINT VENTURE

JANUARY, 1980

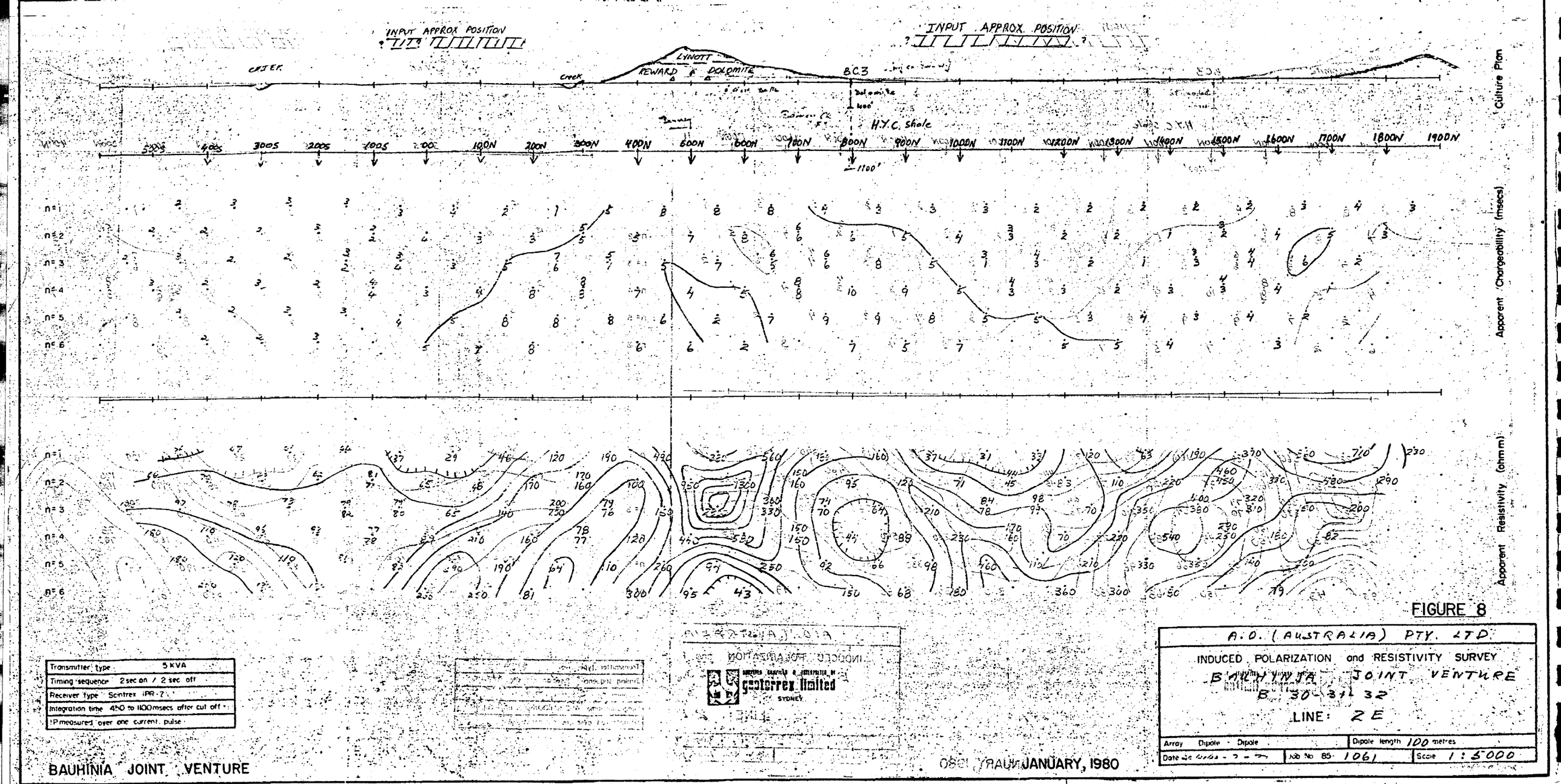


FIGURE 8

Transmitter type	5 kVA
Timing sequence	2 sec on / 2 sec off
Receiver type	Scintrex IPR-2
Integration time	480 to 1100 msecs after cut off *
* Pm measured over one current pulse	

geoterrex limited
SYDNEY

A.O. (AUSTRALIA) PTY. LTD.

INDUCED POLARIZATION and RESISTIVITY SURVEY

BAUHINIA JOINT VENTURE

B.30-31.32

LINE: 2E

Array: Dipole - Dipole		Dipole length: 100 metres
Date: [illegible]	Job No: 85-1061	Scale: 1:5000

BAUHINIA JOINT VENTURE

JANUARY, 1980

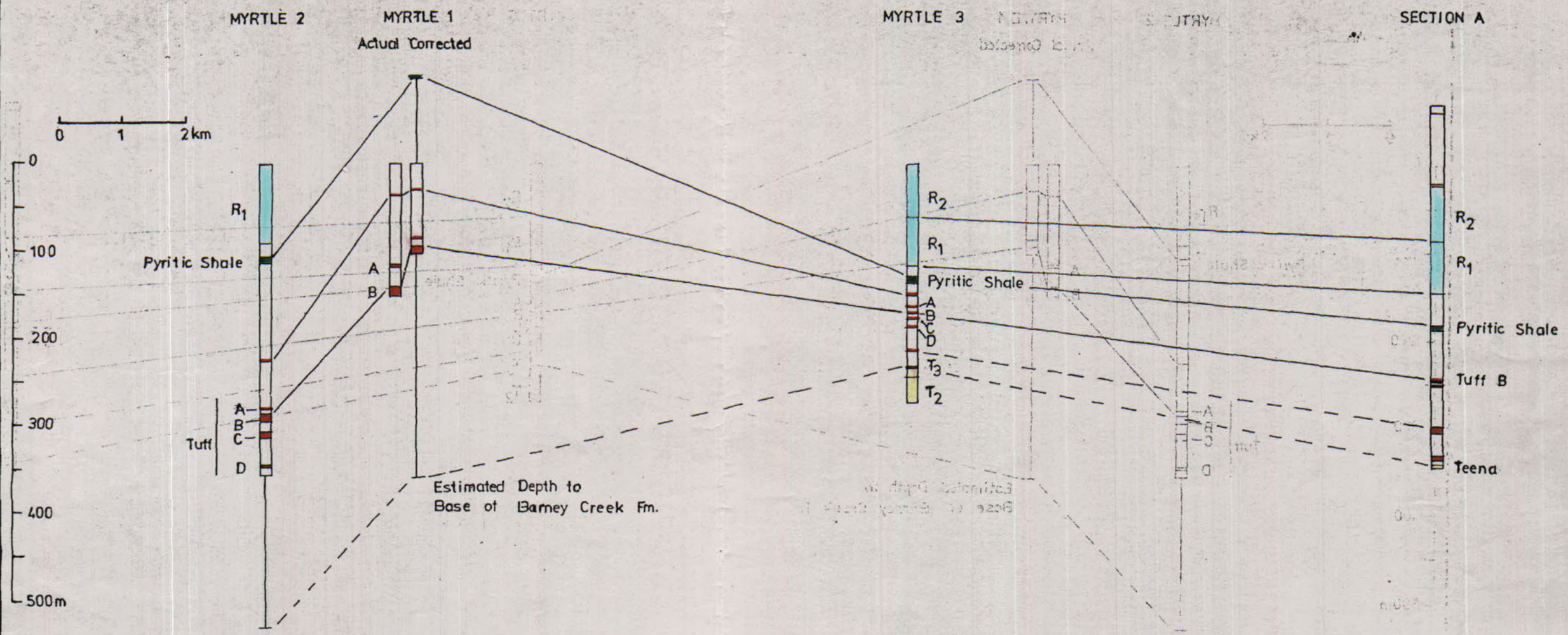


FIGURE 16

BAUHINIA JOINT VENTURE

JANUARY, 1980

Buffalo Creek

Hot Spring Creek

Burney Creek

Barney Creek

Buffalo Lagoon

BARNEY CREEK-1DD

BARNEY CREEK-2DD

BARNEY CREEK-3DD

B 27

B 28

B 30

B 31

B 32

E.L. 1203

Mitchell Yard

McARTHUR RIVER

to Daly Waters and Beauty Springs

Dw Cw Bw Aw M L K R J I H T S Q P O N Z

LEGEND

LOWER CRETACEOUS — KL

LOWER CAMBRIAN ? BUKALARA SANDSTONE — ElB

PROTEROZOIC

ROPER GROUP
- BESSIE CREEK SANDSTONE — Mbs
- TOROWAN FORMATION — Mtp
- ABNER SANDSTONE — Mab
- CRAWFORD FORMATION — Mcr
- MAINORU FORMATION — Mm
- AMMEN SANDSTONE — Ma

BATTEN SUB GROUP
- STOTT FORMATION — Pmt
- SMYTHE SANDSTONE — Pms
- LOOKING GLASS FORMATION — Pmk
- STRETTON SANDSTONE — Pmr
- YALCO FORMATION — Pm
- DONNEGAN MEMBER — Pmn
- UPPER LYNOTT FORMATION — Ll
- LOWER LYNOTT FORMATION — Ll

MCARTHUR GROUP

AMELIA DOLOMITE
- REWARD DOLOMITE — Mr
- REWARD VOLCANICS — Mv
- UPPER BRECCIAS — Mbr
- SURPRISE CREEK DOLOMITE — Ms

BARNEY CREEK MEMBER
- HYC PYRITIC SHALE — Hy
- BASAL TUFF BEDS — Mv
- LAMINATED DOLOMITE — Ml
- MITCHELL YARD DOLOMITE — Mc
- MARA TRANSITIONAL SERIES — Mt
- MARA DOLOMITE — Mu
- BASAL MARA DOLOMITE BRECCIA — Mb
- MYRTLE SHALE — Mz
- SLAB TOP DOLOMITE — M
- CATTLE CREEK BEDS — Cc
- MALLAPUNYAH FORMATION — Mn

TAWALLAH GROUP
- MASTERTON FORMATION — Pm
- WOLLOGORANG FORMATION — Pw

GRANITIC INTRUSIONS — Gr

SILICIFICATION — CHERT

REFERENCE

BEDDING
- GEOLOGICAL BOUNDARY
- STRIKE AND DIP OF STRATA
- VERTICAL STRATA
- HORIZONTAL STRATA
- OVERTURNED STRATA

FAULTS
- ESTABLISHED FAULT-POSITION ACCURATE
- ESTABLISHED FAULT-POSITION APPROXIMATE
- INFERRED FAULT
- BASIN OUTLINE

C.E.C. DATA
- REGIONAL I.P. GRID WITH LINE NUMBERS

REGIONAL I.P. ANOMALY
- SIGNIFICANT
- MINOR
- DOUBTFUL

REGIONAL SCR TRAVERSE
- SAMPLE INTERVAL 60 m
- SAMPLE INTERVAL 150 m
- DIAMOND DRILL HOLE

BAUHINIA JOINT VENTURE DATA

INPUT
- 6 CHANNEL ANOMALY
- 5 CHANNEL ANOMALY
- 4 CHANNEL ANOMALY
- 3 CHANNEL ANOMALY
- CONDUCTOR OUTLINE
- I.P. LINE
- ROCK SAMPLE LOCATION AND Cu-Pb-Zn Assay
- LOXTON HUNTING & PHOTO INTERPRETED CALVERT FAULT TREND
- B.M.R. AEROMAGNETIC LOW
- TENEMENT BOUNDARY (W 1923/1920)
- SECTION FOR WHICH THICKNESS ESTIMATED FROM C.E.C. MAPPING DATA
- PROPOSED GRAVITY LINE
- PROPOSED I.P. LINE

BAUHINIA JOINT VENTURE

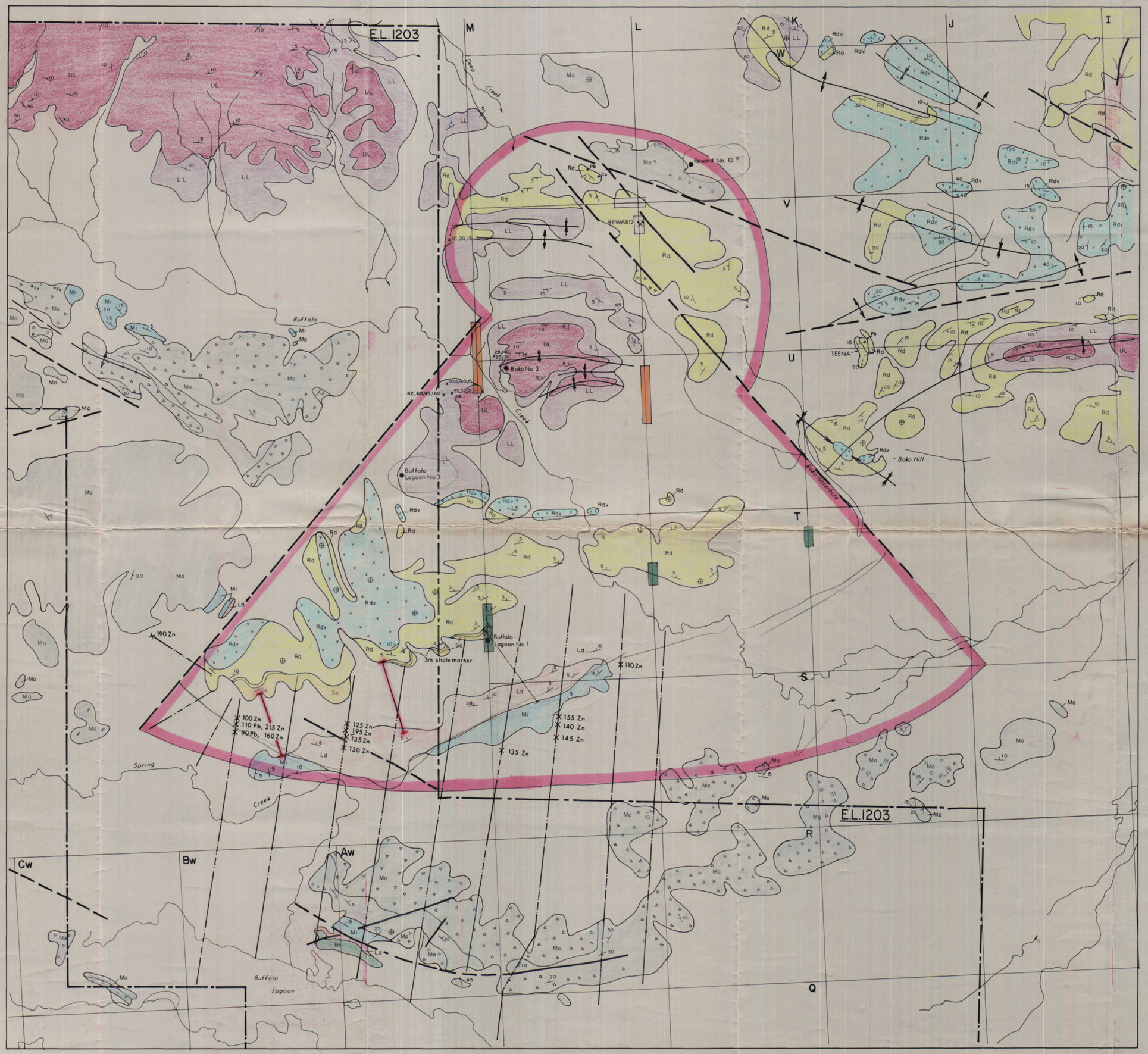
BARNEY CREEK BASIN

PLAN 1

SCALE = 1 : 19,200 approx.

GEOLOGY : C.E.C. DATA

DATE : JANUARY, 1980



LEGEND

- LOWER CRETACEOUS — KL
- LOWER CAMBRIAN ? BUKALARA SANDSTONE — €lb

PROTEROZOIC ?

- ROPER GROUP
  - BESSIE CREEK SANDSTONE — Prb
  - CORCORAN FORMATION — Prc
  - ABNER SANDSTONE — Pra
  - CRAWFORD FORMATION — Pr
  - MAINORU FORMATION — Prm
  - LIMMEN SANDSTONE — Pri
- McARTHUR GROUP
  - STOTT FORMATION — Pms
  - SMYTHE SANDSTONE — Pmy
  - BATTEN SUB-GROUP
    - LOOKING GLASS FORMATION — Pmo
    - STRETTON SANDSTONE — Pmr
    - YALCO FORMATION — Pmj
    - DONNEGAN MEMBER — Pmnd
    - UPPER LYNOTT FORMATION — UL
    - LOWER LYNOTT FORMATION — LL
  - AMELIA DOLOMITE
    - REWARD DOLOMITE — Rd
    - REWARD VOLCANICS — Rdv
    - UPPER BRECCIAS — Ucv
    - SURPRISE CREEK DOLOMITE — Sc
    - BARNEY CK MEMBER
      - HYC PYRITIC SHALE — Py
      - BASAL TUFF BEDS — Br
      - LAMINATED DOLOMITE — Ld
      - MITCHELL YARD DOLOMITE — Mi
      - MARA TRANSITIONAL SERIES — Ts
      - MARA DOLOMITE — Ma
      - BASAL MARA DOLOMITE BRECCIA — Mb
      - MYRTLE SHALE — My
      - SLAB TOP DOLOMITE — Sl
      - CATTLE CREEK BEDS — Cc
    - MALLAPUNYAH FORMATION — Pml
- TAWALLAH GROUP
  - MASTERTON FORMATION — Ptm
  - WOLLOGORANG FORMATION — Ptg
- GRANITIC INTRUSIONS — Pg
- SILICIFICATION
- CHERT

REFERENCE

- GEOLOGICAL BOUNDARY
- BEDDING — STRIKE AND DIP OF STRATA
- VERTICAL STRATA
- HORIZONTAL STRATA
- OVERTURNED STRATA
- FAULTS — ESTABLISHED FAULT-POSITION ACCURATE
- ESTABLISHED FAULT-POSITION APPROXIMATE
- INFERRED FAULT
- BASIN OUTLINE

C.E.C. DATA

- REGIONAL I.P. GRID WITH LINE NUMBERS

REGIONAL I.P. ANOMALY

- SIGNIFICANT
- MINOR
- DOUBTFUL

REGIONAL SOIL TRAVERSE

- SAMPLE INTERVAL 60 m.
- SAMPLE INTERVAL 150 m.
- DIAMOND DRILL HOLE

BAUHINIA JOINT VENTURE DATA

INPUT

- 6 CHANNEL ANOMALY
- 5 CHANNEL ANOMALY
- 4 CHANNEL ANOMALY
- 3 CHANNEL ANOMALY
- CONDUCTOR OUTLINE
- I.P. LINE
- x42,60,45,160 — ROCK SAMPLE LOCATION AND Cu, Pb, Zn, As (p.p.m)
- TENEMENT BOUNDARY
- SECTION FOR WHICH THICKNESS ESTIMATED FROM C.E.C. MAPPING DATA
- PROPOSED GRAVITY LINE
- PROPOSED I.P. LINE

BAUHINIA JOINT VENTURE

BUFFALO LAGOON BASIN

PLAN 2

SCALE = 1:20,800 approx.

GEOLOGY : C.E.C. DATA

DATE : JANUARY, 1980

136°00'

Myrtle NW Basin

Leached Knob Basin

Breccia Ridge Basin

Tuff Mesa Syncline

Myrtle Basin

Cliffs Basin

Shale Cave Basin

Myrtle SE Basin

MYRTLE-2 D.D.H.

MYRTLE-1 D.D.H.

MYRTLE-3 D.D.H.

EL 1203

16°35'

136°05'

GEOLOGICAL EXPLANATION

Qa — Alluvium, Colluvium

LYNOTT FORMATION

L_3 — muddy dolomites with sandstone and minor stromatolitic chert - indicated by symbol — str. cht.

L_2 — muddy dolomites, some with chert balls; basal pyritic mudstone (L_1)

REWARD FORMATION

R_2 — dolomite breccia, muddy dolomite, dolarenite, distinctive dolomite breccia at base & distinctive regularly spaced chert intercalations near top; chert balls common

R_1 — dolomite with chert nodules, dolorudite & dolarenite, minor dolomitic shale; chert balls common except near base

BARNEY CREEK FORMATION

USCD — UPPER SURPRISE CREEK DOLOMITE member; yellow weathering dolomite with regular bedding

B — carbonaceous dolomite siltstone with "tuff" beds; some dolorudite near top (Lower Surprise Creek Dolomite) & pyritic shale (py.sh.) at top; principal tuff beds indicated by symbol ·····

TEENA DOLOMITE

T_4 — interbedded contorted dolomite & "tuff" grading to ochre weathering mudstone "W-Fold" member

T_3 — massive white to pink crystalline dolomite, acicular gypsum pseudomorphs common in some outcrops

MITCHELL YARD DOLOMITE

Mi — grey, blocky weathering dolomite, minor chert

MARA DOLOMITE

Ma — grey to yellow cherty dolomite, often stromatolitic

MYRTLE SHALE

Ms — purple shale

"SLAB TOP DOLOMITE" TOOGANGINIE FORMATION

St — yellow stromatolitic & massive dolomite interbedded with dololutite, some sandstone, gypsum pseudomorphs common

MISCELLANEOUS LEGEND

GEOLOGICAL BOUNDARY

FAULT

FAULT - projected below cover

TREND LINE

STRIKE & DIP OF BEDDING — REVERSE DIP

E.L. BOUNDARY

× 1795 GEOCHEMICAL SAMPLE LOCATION

BASIN STRUCTURE

MEASURED SECTION

BAUHINIA JOINT VENTURE

E.L.1203-MYRTLE BASIN AREA

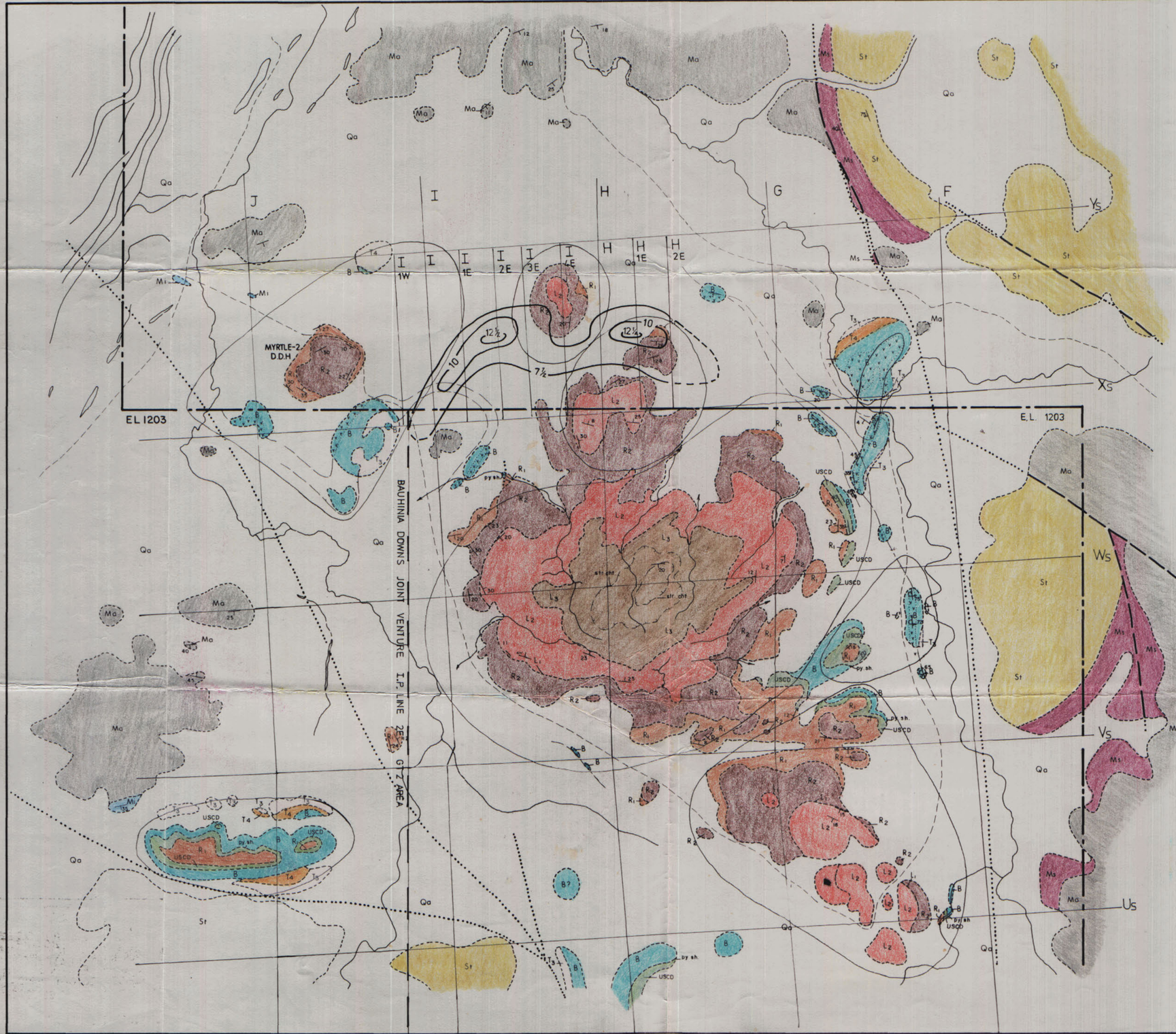
PLAN 3

0 1000 2000 3000 4000 5000m

SCALE = 1:50,000

AUTHOR: C.H.C. SHANNON

DATE: JANUARY, 1980



GEOLOGICAL EXPLANATION

Qa — Alluvium, Colluvium

LYNOTT FORMATION

L_3 — muddy dolomites with sandstone and minor stromatolitic chert - indicated by symbol — — — str. cht.

L_2 — muddy dolomites, some with chert balls ; basal pyritic mudstone(L_1)

REWARD FORMATION

R_2 — dolomite breccia, muddy dolomite, dolarenite, distinctive dolomite breccia at base & distinctive regularly spaced chert intercalations near top ; chert balls common

R_1 — dolomite with chert nodules, dolorudite & dolarenite, minor dolomitic shale; chert balls common except near base

BARNEY CREEK FORMATION

USCD — UPPER SURPRISE CREEK DOLOMITE member; yellow weathering dolomite with regular bedding

B — carbonaceous dolomite siltstone with "tuff" beds ; some dolorudite near top (Lower Surprise Creek Dolomite) & pyritic shale (py. sh.) at top ; principal tuff beds indicated by symbol ˙˙˙˙˙

TEENA DOLOMITE

T_4 — interbedded contorted dolomite & "tuff" grading to ochre weathering mudstone "W-Fold" member

T_3 — massive white to pink crystalline dolomite, acicular gypsum pseudomorphs common in some outcrops

MITCHELL YARD DOLOMITE

Mi — grey, blocky weathering dolomite, minor chert

MARA DOLOMITE

Ma — grey to yellow cherty dolomite , often stromatolitic

MYRTLE SHALE

Ms — purple shale

"SLAB TOP DOLOMITE" TOOGANGINIE FORMATION

St — yellow stromatolitic & massive dolomite interbedded with dololutite, some sandstone, gypsum pseudomorphs common

MISCELLANEOUS LEGEND

- GEOLOGICAL BOUNDARY
- FAULT
- FAULT - projected below cover
- TREND LINE
- STRIKE & DIP OF BEDDING — REVERSE DIP
- E.L. BOUNDARY
- BASIN STRUCTURE
- I.P. GRID
- 10 — I.P. RESPONSE INDICATOR CONTOURS (mv/v) (from C.E.C. Reports)

BAUHINIA JOINT VENTURE

E.L.1203-MYRTLE BASIN AREA

PLAN 4

0 1000 2000 3000 4000 5000m

SCALE = 1:50,000

AUTHOR: C.H.C. SHANNON

DATE: JANUARY, 1980

CR80/19.

A.O. (AUSTRALIA) PTY. LTD.

BAUHINIA JOINT VENTURE

"BERJAYA PROSPECT"

Mc ARTHUR RIVER — NORTHERN TERRITORY

PLAN 5

SURFACE GEOLOGY, GRID LINES, I.P. RESPONSES AND GEOCHEMISTRY

0 50 100 200 300 400 500 metres

Compiled by C.H.C. Shannon

Drafted by G.D. Hoffer

Date JANUARY 1980

LINE 5E GOSSAN 1857–1864

1844–1850 JASPER ANTICLINE

1833–1843 TANK LINE GOSSAN

LINE 0-45N EASTERN GOSSAN 1851–1856

DDH BERJAYA-1

DDH BERJAYA-2

DDH BERJAYA-3

DDH BERJAYA-4

DEEP CK. No.1 305'

E.L. 1437

E.L. 1203

M.R.581

Base of "Hard Shale" marker

White ss.

White ss(M2)

White sandstone bed (M2)

Base of "Hard Shale"

Base of "Hard Shale" marker

Laminated dolomite with chert balls

Interbedded dolomitic siltstone and dolomite

Laminated dolomite with chert balls and laminae

Dolomitic siltstone, black shale

breccias

Yellow tuff bed

Laminated dolomite with chert balls

Buffalo Creek

Rdb (chert only)

Rdo dolomite

Rdo dolomite ?

hard tuff + shale

"Albitic" tuff and dolomite

cherty tuffs etc

Md chert breccia

Mara dolomite & chert breccia

LINE 3E

LINE 4E

LINE 4.5E

LINE 5E

LINE 5.5E

LINE 6E

LINE 6.5E

LINE 7E

LINE 7.5E

LINE 8E

LINE 8.25E

LEGEND

Qa Alluvium

L4 / L4b LYNOTT FORMATION, UNIT 4
Grey & white stromatolitic chert breccia, shale. Minor resistant shale siltstone, felsite tuff & minor dolomite breccia. White qtz sandstone bed at base (originally termed M2) is shown separately.

L3 / L3b LYNOTT FORMATION, UNIT 3
Resistant shale siltstone, dolomitic sandstone, dolomite, dolomite/sandstone breccia. Minor shale, felsite tuff, fissile dolomite, stromatolitic chert breccia, chert fissile sandstone. Basal shaly siltstone (originally termed hard shale marker) shown separately.

L2 / L2d / L2b LYNOTT FORMATION, UNIT 2
Dolomitic siltstone, dolomite, dolomite/siltstone breccia, laminated dolomite with chert balls (bed shown separately) massive dolomitic albite tuff, pyritic shale. Minor felsite tuff near base.

L1 / L1b LYNOTT FORMATION, UNIT 1
Felsite tuff, shale, pyritic shale. Shale/gossan lens at base shown separately

Disconformity

Rbb "Reward Formation"
"pastel tuff beds" (Reward Volcanics of C.E.C.)
Dolomitic albite tuff, minor yellow dolomite with silty concretions

Rdo / Rdd REWARD DOLOMITE
(a) standard form: yellow dolomite with chert nodules, thin mudstones interbedded
(b) degenerate form: chert breccia, bone clayey, some with stromatolites, ferricrete

Disconformity ?

Brt BARNEY CREEK FORMATION
Well bedded magnetite

Brt BARNEY CREEK FORMATION
Silicified rocks

Disconformity

Md MARA DOLOMITE
Massive & stromatolitic chert breccia, massive dolomite, stromatolitic dolomite & chert.

NOTE: * Unit identification uncertain in isolated or fault bounded outcrops.

Creek

Road

Grid line

Geological boundary - definite

" " inferred

" " conjectural

Fault

Strike & dip

17·0 I.P. response indicator: average of $n_1 n_2$ & n_3 values 100m dipole-dipole traverses.

(5·8) I.P. response indicator: average of $n_1 n_2$ & n_3 values 200m dipole-dipole traverses.

15 Contour of 100m indicator

(5) Contour of 200m indicator

* 1222 23, 95, 195, 30 Rock chip sample location & number showing assay results for Cu, Pb, Zn, As

DRILL HOLE LOCATION

PROPOSED DRILL HOLE LOCATION

1840 Samples Collected during 1978/79 for the Gossan Study

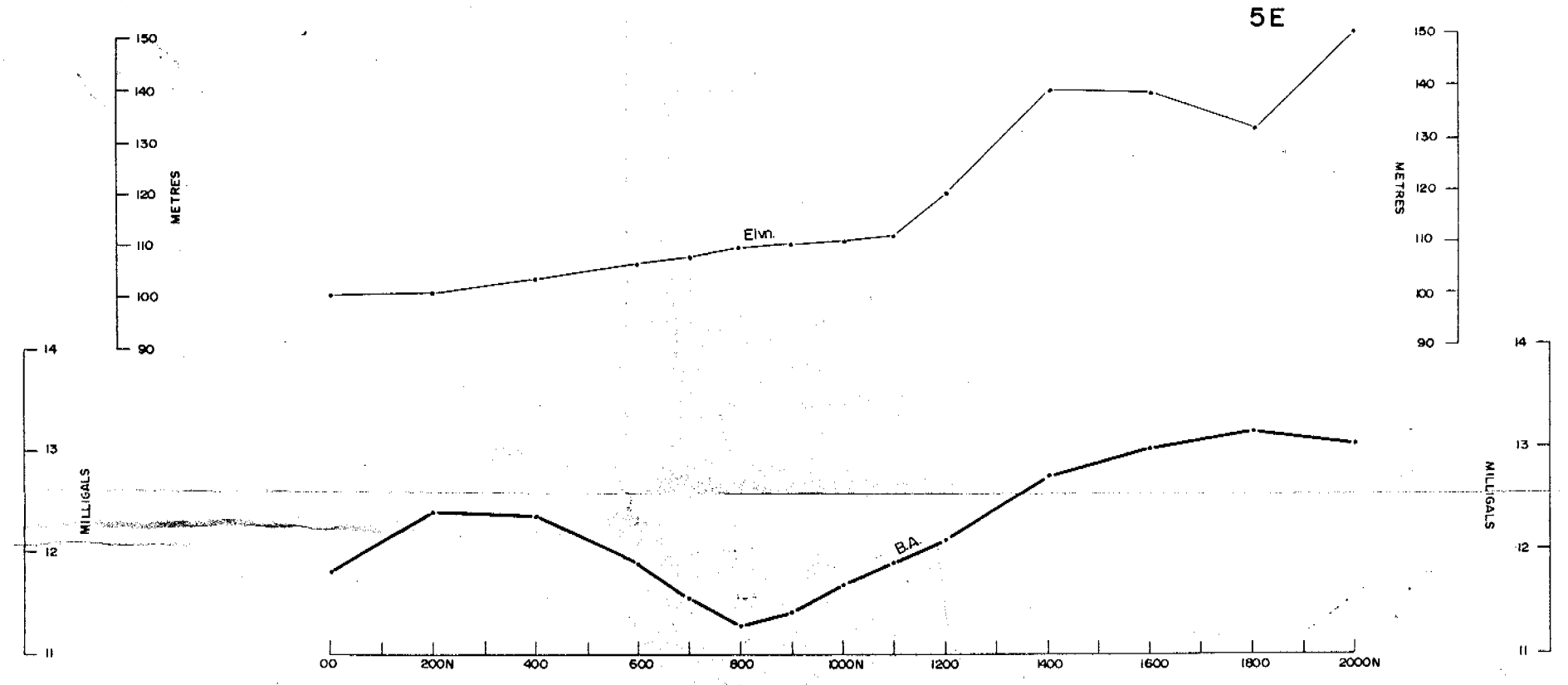
NOTE: Accurate location of the polarizable source should be taken from geophysicists interpretation of the pseudosections.

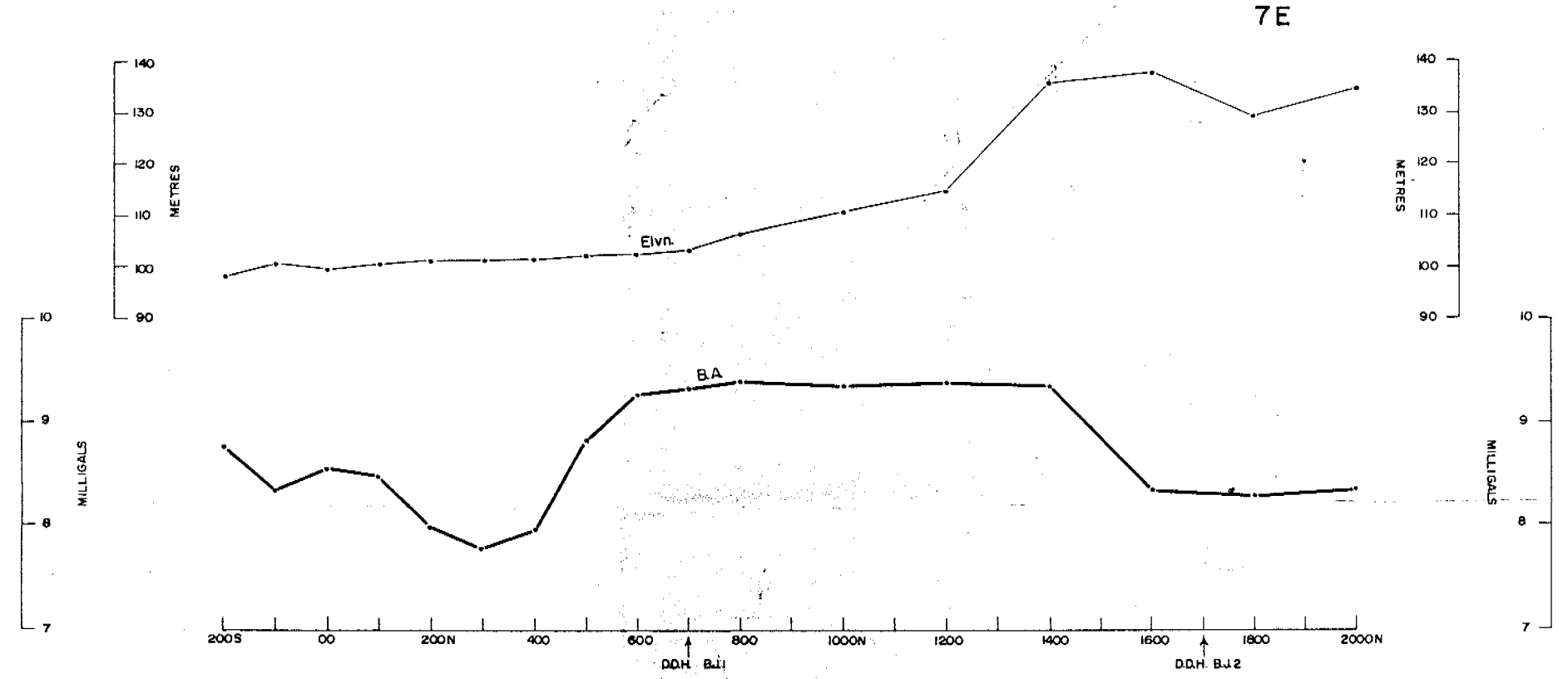
GRAVITY SURVEY

100 metre spacings

200 metre spacings

C.E.C. Drillhole





PLAN 6

A.O. AUSTRALIA PTY. LTD.

BERJAYA PROSPECT

NORTHERN TERRITORY

BOUGUER ANOMALY and ELEVATION PROFILES LINES 5E and 7E

Horizontal Scale 1:10,000

Vertical Scale 20mm = 1 Milligal

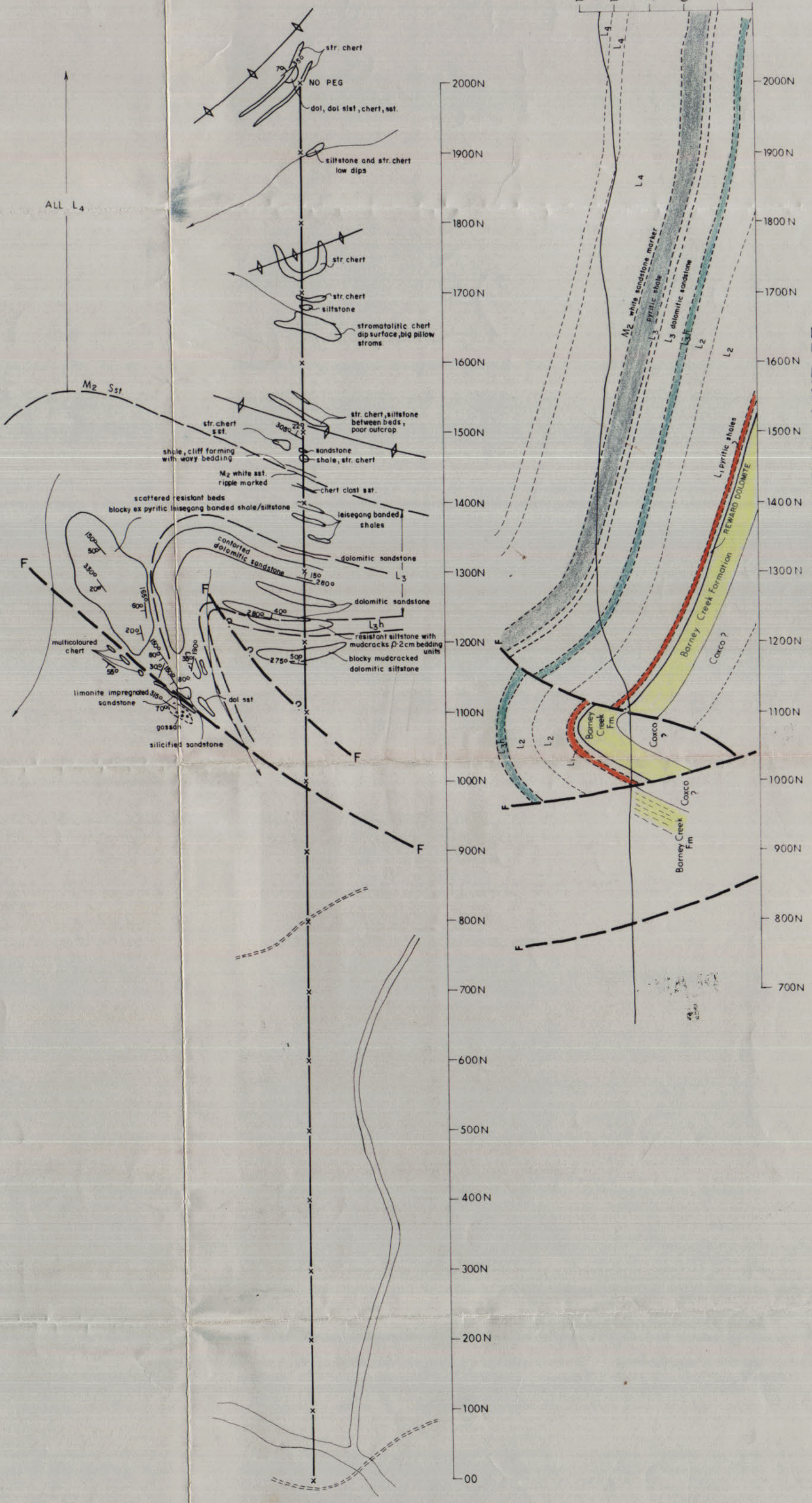
10 mm = 10 Metres

DENSITY : 2·5 gm/cm^3

DATUM : Arbitrary

Drafted by : WONGELA GEOPHYSICAL PTY. LTD. JANUARY, 1980

CR 80/19



BERJAYA - SECTION LINE 5E

BERJAYA - PLAN LINE 5E

BAUHINIA JOINT VENTURE

EL 1203 - BERJAYA PROSPECT

PLAN & SECTION - LINE 5E

PLAN 7

0 100 200 300m

SCALE = 1:5,000

AUTHOR: C.H.C. SHANNON

DATE: JANUARY, 1980