EXPLORATION LICENCE 23/79

WYNYARD, TASMANIA

PROGRESS REPORT ON EXPLORATION TO 1st DECEMBER, 1981

including

REPORT FOR THE SIX MONTHS ENDED 1st DECEMBER, 1981

001

842002

CONTENTS

APPENDICES

FIGURES

EXPLORATION LICENCE 23/79

WYNYARD, TASMANIA

PROGRESS REPORT ON EXPLORATION TO 1st DECEMBER, 1981

including REPORT FOR THE SIX MONTHS ENDED 1st DECEMBER, 1981

1. GENERAL

Exploration Licence 23/79 of 715 square kilometres was granted to The Broken Hill Proprietary Company Limited on 14th December, 1979. An application for renewal from 1st December, 1981 has been submitted.

2. EXPLORATION PHILOSOPHY

The principal target within the licence area is a skarn or massive sulphide hosted tin-tungsten deposit of the Renison or Moina type. Deposits of this type may be present in Cambrian or Precambrian sediments which,in the licence area, are overlain by an extensive cover of Permian sediments, Jurassic dolerite and Tertiary basalt.

3. SUMMARY OF WORK COMPLETED

1. Literature study and evaluation of relevant exploration and other geological data pertaining to the area;
2. Reconnaissance geological mapping at 1:50,000 scale;
3. Forty-seven line kilometres of Dighem II airborne EM surveying to evaluate the technique in deeply covered terrain;
4. Preliminary photogeological study and preparation of Landsat image of the area;
5. Orientation stream geochemical sampling;
6. Preparation of 1:25,000 photomosaics for airborne magnetic surveying.

4. SUMMARY OF WORK IN PROGRESS

1. Extension of stream sampling programme;
2. Preparation for airborne magnetic surveying.

5. RESULTS

5.1 Geology

Within the area, extensive flows of Tertiary basalt and Permian sediments overlie a basement consisting largely of Precambrian and Cambrian rocks which form a major structural extension of sequences in the Mt. Bischoff, Cleveland area to the south west.

cont./..

The oldest rocks present are the Precambrian Keith Metamorphics which occur in a belt 8-15 km wide trending north east from Savage River to Wynyard. Rocks in this belt include pelitic schist, quartzite and minor amphibolite. Younger Precambrian rocks of the Burnie Quartzite and Slate Formation flank the Keith Metamorphics in the lower Cam River. Dolomite has not been recorded in the Precambrian rocks of the Wynyard area.

Cambrian sediments are exposed in a large window in Tertiary basalt, in the Hellyer River upstream from the Murchison Highway crossing. Rocks in the area include red-brown lithicwacke, red shale and pyrite bearing chert.

Ordovician sediments have not been located within the area. They flank a major anticline at Companion Hill to the east of the southern portion of the licence area.

Permian sediments, up to 300 metres thick, consist of a basal tillite unit, siltstone with thin oil shale and coal horizons, and sandstone.

Jurassic dolerite is exposed in the central part of the licence area where it invades both tillite and siltstone.

Tertiary rocks include basalt of highly variable thickness (locally believed to be up to 350 metres), as well as marine sediments, lacustrine clays, sands and gravels up to 60 m in thickness.

5.2 Geophysics

5.2.1 Aeromagnetics

Available aeromagnetic data for the area in the form of contour maps of total field intensity has been compiled. In some instances trends due to major structures in basement rocks can be traced beneath the basalt and sedimentary rock cover.

An aeromagnetic survey covering the entire E.L. with east-west lines spaced at 250 metres and a sensor terrain clearance of 90 metres is planned to be carried out early in 1982.

5.2.2 Dighem II

Four test lines of Dighem II were flown in the southern part of the licence area in early 1981. The location of the lines is shown on Figure 2.(a 4).

cont./..

Dighem II is a helicopter borne, frequency EM system which measures the In Phase and Quadrature EM response in both a coaxial (standard) and coplanar (whaletail) pair of coils mounted in a 9 metre boom. The boom is towed at a nominal height of 36 metres at a speed of around 120 km/hr. A total field magnetometer is also carried with the system, the sensor being suspended at a height of around 50 metres.

Profiles of the measured data plus Dighem's computer generated interpretation functions are presented in Figure 4. The profiles contain the following information.

Channel Number	Parameter	Scale units/mm	Noise
20	Magnetics	10 nT	2 nT
21	Altitude	3 m	2 m
22	Standard coil-pair inphase	1 ppm	1-2 ppm
23	Standard coil-pair quadrature	1 ppm	1-2 ppm
24	Whaletail coil-pair inphase	1 ppm	1-2 ppm
25	Whaletail coil-pair quadrature	1 ppm	1-2 ppm
28	Ambient noise monitor (standard receiver)	1 ppm	1-2 ppm
29	Ambient noise monitor (whaletail receiver)	1 ppm	1-2 ppm
33	Difference function inphase	1 ppm	1-2 ppm
34	Difference function quadrature	1 ppm	1-2 ppm
35	First anomaly recognition function	1 ppm	1-2 ppm
37	Conductance	1 mho	
40	Log resistivity	.03 decade	
41	Apparent depth to conductive half space	3 m	

Note: Each set of profiles has been reduced to A4 format for this report and the 1 cm squares of the original appear as approximately half centimetre squares on the copy.

5.3 Geochemistry

5.3.1 Stream Sampling

Sixteen stream samples were collected from streams draining basement rocks in the area. Samples were sieved to minus 40 mesh and analysed for tin, tungsten, molybdenum, arsenic, gold, silver, copper, lead, zinc, nickel, cobalt, chromium, barium, strontium and antimony. One

cont./..

sample from the Hellyer River area (HEL 1) was anomalous with respect to gold (170 ppb), and another from the West Ridgely area (HEL 16) was anomalous with respect to antimony (50 ppm). Results are in Appendix 1.

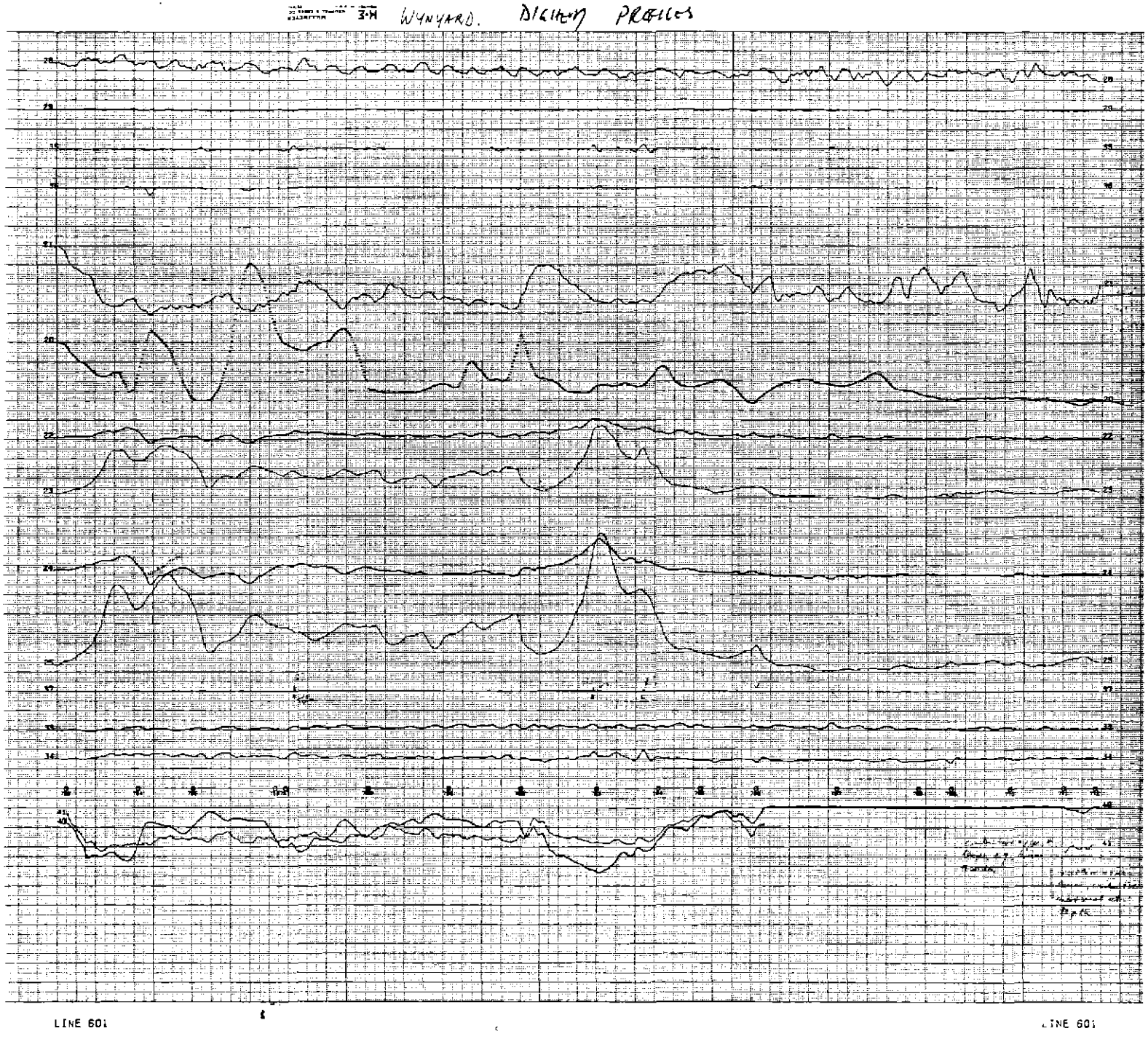
5.3.2 Rock Sampling

Rock sample WYN 1, a pyrite rich chert collected in a tributary of Lockwood Creek (Fig. 3) was anomalous with respect to lead (70 ppm), silver (4 ppm), gold (45 ppb), arsenic (10 ppm) and antimony (115 ppm). A sample of amphibolite (WHY A1-1) with minor quartz veins, in the Calder area, returned low values for gold (50 ppb), base metals and tin.

6. WORK PROPOSED

1. Airborne magnetic survey;
2. Completion of stream geochemical survey;
3. Follow-up anomalous rock chip results;
4. Follow-up airborne magnetic anomalies;
5. Carry out drilling programmes on selected targets.

Fig. 4a

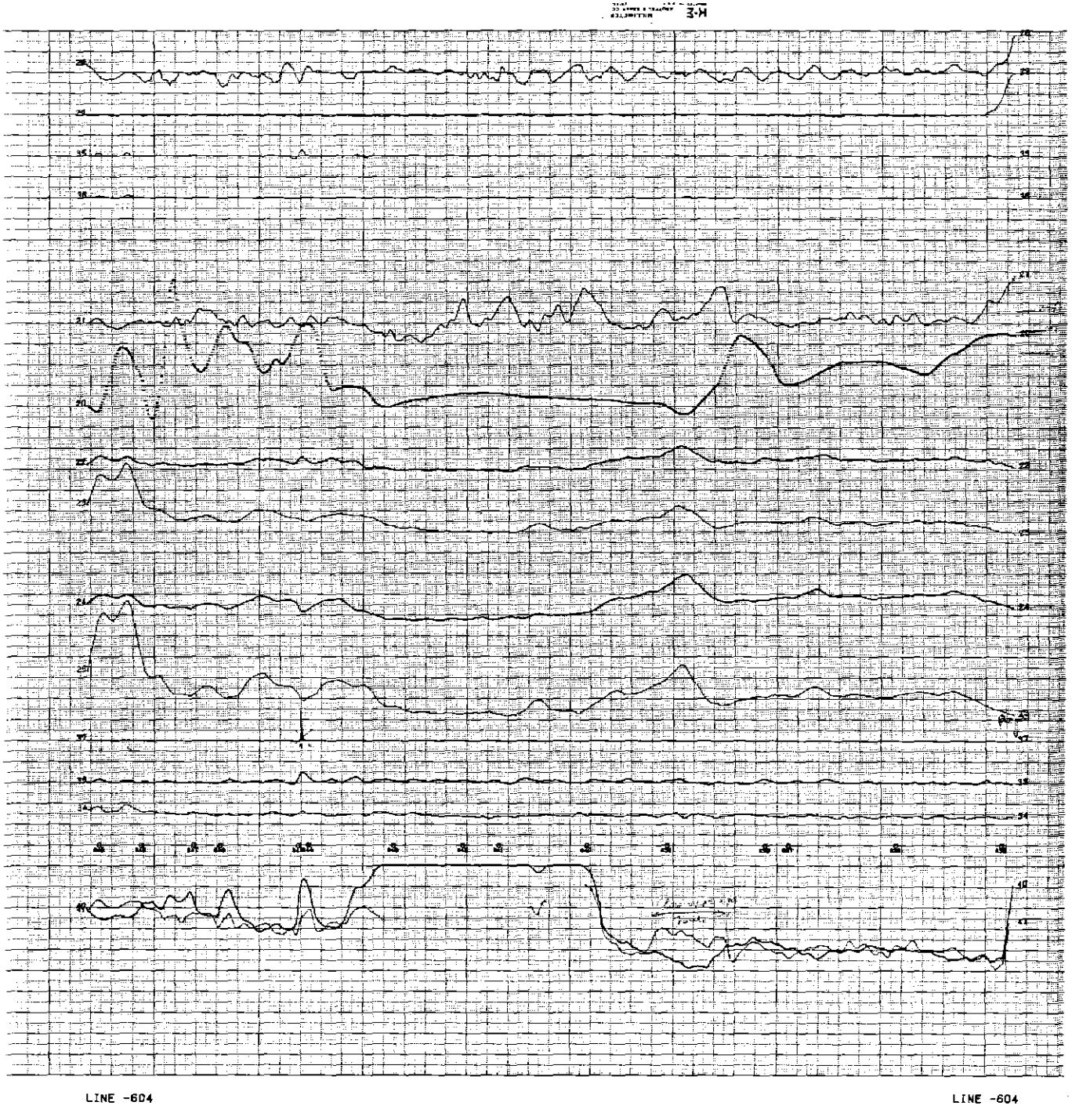


842007

FIG. 4b

Fig. 4c

Fig 4 d.



APPENDIX 1

Geochemical Results

REQ. F NW TAS

T No. T640

LINE/ZONE

THE BROKEN HILL PROPRIETARY CO. LTD.

1	2	3	HEADER SHEET No. 4	5	6	7	8	9	10	11	12	13	14
8	3	5									1	0	2

PUNCH IN EVERY CARD

GENERAL SAMPLE DESCRIPTION

SAMPLE NUMBER			EASTING		NORTHING		REDUCED LEVEL OF SAMPLE	FOR CHANNEL SAMPLES Etc.			Information Available	Duplicate samples	ROCK TYPE	Sample Type	SAMPLE DESCRIPTION
ALPHA PREFIX	NUMERICAL VALUE	Suf.	LONGITUDE MIN	LONGITUDE SEC.	LATITUDE MIN	LATITUDE SEC.		ORIENTATION BEARING	ORIENTATION DEP.	SAMPLE LENGTH					
15 16 17	18 19 20 21 22 23	24	25 26	27 28 29 30 31	32 33	34 35 36 37 38	39 40 41 42 43 44 45	46 47 48	49 50	51 52 53 54	55	56	57 58 59 60	61	
HEL	1														~ 40 meth stream sed.
	2														
	3														
	4														
	5														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
WYN	1														Rock sample

REMARKS – Wynyard area stream samples

Date 13/3/81

Logged or sampled by R.H.

Form No. 477

SHEET No 42698

012

842012

015

PROJECT No. T640

THE BROKEN HILL PROPRIETARY CO. LTD.

HEADER SHEET No.												
1	2	3	4	5	6	7	8	9	10	11	12	13
8	4	2										0

PUNCH IN EVERY CARD

ANALYSIS

14	SAMPLE NUMBER: ALPHA PREFIX (15-17)	NUMERICAL VALUE (18-23)	Suf. (24)	Sn (25-27)	W (28-30)	Mo (31-33)	As (34-36)	Au ppb (37-39)	Ag (40-42)	Cu (43-45)	Pb (46-48)	Zn (49-51)	Ni (52-54)	Co (55-57)	Cr (58-60)	Ba (61-63)	Sr (64-66)	Sb (67-69)	70-72
2	HEL	1		<5	<10	<2	9	170	2	30	35	100	80	30	100	420	100	25	
2		2		"	"	"	7	10	1	25	30	85	70	5	95	430	65	25	
2		3		5	"	"	4	10	1	20	35	105	85	40	115	320	120	20	
2		4		<5	"	"	5	5	1	10	15	40	15	10	85	400	55	<10	
2		5		"	"	"	3	5	<1	5	10	35	20	10	95	340	55	30	
2		6		"	"	"	4	5	1	15	15	70	70	35	115	250	60	20	
2		7		"	"	"	9	10	1	15	20	130	60	25	65	430	35	20	
2		8		"	"	"	9	5	2	20	20	95	95	45	55	520	125	25	
2		9		"	"	"	4	10	2	40	20	120	185	65	130	215	166	20	
2		10		"	"	"	5	10	1	20	15	95	85	35	120	315	140	<10	
2		11		5	"	"	3	5	1	10	15	55	50	5	125	235	65	"	
2		12		<5	"	"	5	5	1	10	10	55	60	25	135	320	60	10	
2		13		5	"	"	4	5	1	15	15	75	85	30	135	160	80	20	
2		14		<5	"	"	3	5	<1	5	15	30	15	10	85	415	55	15	
2		15		"	"	"	6	10	1	35	20	100	125	5	165	255	70	25	
2		16		"	"	"	4	10	2	40	25	110	180	80	140	410	285	50	
2																			
2																			
2																			
2																			
2	WYN	1		<5	<10	<2	10	45	4	15	70	10	20	25	135	170	5	115	
2																			

14	DATE ANALYSED Day (15-16)	Month (17-18)	Year (19-20)	PLACE ANALYSED (21-29)
1	4	3	81	ALS

PPM — M / WT % — W (30): M

SAMPLING METHOD (31 32 33) 1 2 3

SAMPLE PREPARATION (34 35) 1 2

ANALYSIS SCHEME (36 37)

FRACTION SCHEME (38 39)

Form No. 473

SHEET NO. 426[illegible]

842013

REGION: NW TAS PROJECT No.: T640 PROSPECT: WYNYARD GENERAL GRID CO-ORDS.: LOCAL A.M.G.

DESCRIPTION Sample Type: Rock Rock Type: Soil/Sediment Size Fraction:

WYN 1: lt. grey, pyrite rich chert (petrographic description available); float sample only

WYNA1-1: lt green, emg, amphibolite, schistose texture, cut by qtz vnlts ± mino limonite dissem. magnetite.

ANALYSIS Laboratory ALS Batch No G219 Date Analysed 19/10/81

Element / Method / sample #	Sn	W	Mo	As	Au*	Ag	Cu	Pb	Zn	Ni	Co	Cr	Ba	Sr	Sb		
	XRF	XRF															
WYN 1	<5	<10	<2	10	45	4	15	70	10	20	25	135	170	5	115		
WYNA1-1	<5	<10	2	3	50	1	15	20	15	30	15	30	N.R.	N.R.	<10		

REMARKS: * Au in ppb ; N.R – no result.

Logged or Sampled by: R. HINE Date:

THE BROKEN HILL PROPRIETARY CO. LTD.

GENERAL SAMPLE DESCRIPTION

Project No: T640 Drawing No: A4-

Date: 19/11/81

APPENDIX 2

PETROLOGICAL REPORT

(Central Mineralogical Services)

WYN1 (MRL 12870): Quartz-Pyrite Rock:

Composition: Fine to microgranular, incipiently sericite-stained quartz (60%), evenly disseminated fine sub- to euhedral pyrite. Sparse irregular quartz veinlets; sericite clots.

Fabric: Fractured/quartz-healed massive quartz-pyrite rock. Incipiently re-crystallized quartz. Pyrite mean 100 microns.

Accessories: Semi-pervasive, ultrafine, cloudy ?rutile.

Comments: Sinter-like facies (mildly recrystallized "pyritic chert").

Location: Float in stream between HEL 4 and HEL 5 sites.

CP1 (MRL 12871): Lithic Arkose:

Composition: Framework of angular to sub-angular quartz, subordinate oligoclase-albite, orthoclase, microcline; greenschist metapelite, chert-metaquartzite clasts. Sericitic, quartzo.

Fabric: Poorly sorted, essentially unbedded, silty fine to medium psammite.

Accessories: Conspicuous detrital biotite, garnet (almandine). Minor graphite, muscovite.

Comments: Polymictic sand with granitic and metasedimentary source, apparently weakly volcanomict, but ?felsite clasts sericitic, poorly resolved.

Location: Roadcut below basalt contact on South Basils Road.

CP2 (MRL 12872): Arkose:

Composition: Framework of splintery to angular quartz, alkali feldspar, subordinate metapelite, metagranite, ?metarhyolite clasts, biotite flakes. Sericitic, chloritic quartzofeldspathic.

Fabric: Similar to CP 1, but relatively well-bedded with silty partings, partly slumped.

Accessories: Detrital almandine, minor muscovite graphite flakes, rare cloudy rutile.

Comments: Similar and closely related to CP 1. Slightly finer-grained, relatively feldspathic. Similarly essentially unmetamorphosed. Weakly volcanomict.

Location: Exposure in small creek, 200m downstream from HEL 6.

CP3 (MRL 12873): "Vitric tuff" or "devitrified obsidian":

Composition: Frequent K-feldspathic spherulites in silicified, felsitic matrix with patchy microcrystalline albite, minor sericite.

Fabric: Spherulites mean 500 microns. Weakly flow-structured with faint relict ?eutaxitic microtextures.

Accessories: Sparse degraded/Fe-stained chlorite. Rare, very fine oxidised pyrite.

Comments: Conceivably a devitrified, thoroughly welded vitric tuff, but dependant on field relationships. Mildly altered (quartz-sericite-chlorite), unstressed.

Location: Float sample in Lockwood Creek downstream from CP2.

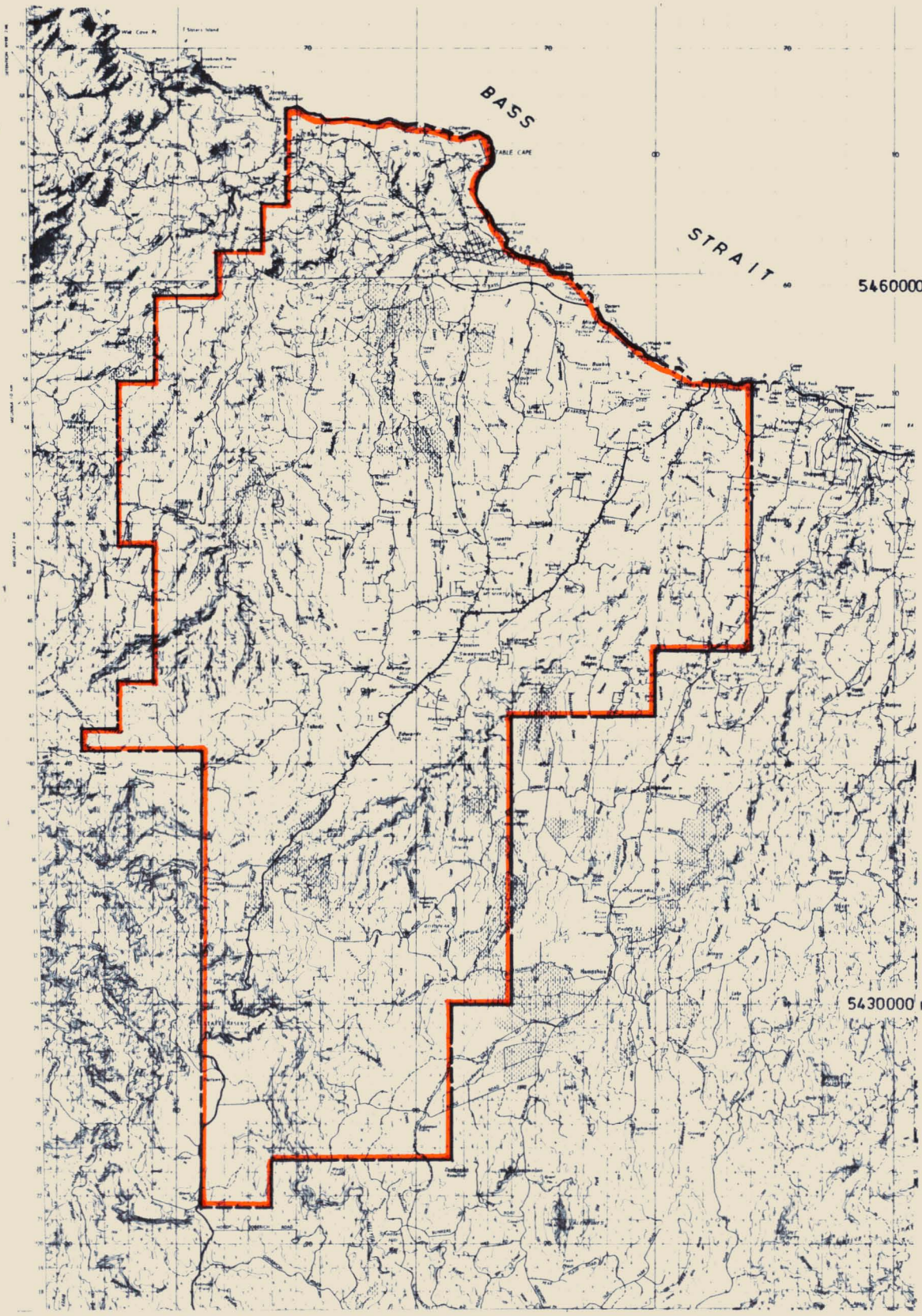
FIG. 1

5 cm

400000.m.E.

842018

002



This map accompanies an application dated .....
by The B.H.P. Co.Ltd.

Area applied for.

Scale 1: 250,000.

0 5 10 15 20 Km

This map photo copied from reduction of 1:100,000 Sheets : Table Cape, Hellyer

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. APPLICATION FOR EXPLORATION LICENCE WYNYARD AREA-TASMANIA	Project Nº
Date 10 : 8 : 79		Drawing Nº A4-1995

3034

TABLE CAPE

Flowerdale

Wynyard

Somerset

Preolenna

Calder

Oldina

Elliot

Yolla

Takone

Tewkesbury

Oonah

Parrawe

HELLYER GORGE

EL 33/79

TRUE NORTH

390000mE

380000mE

400000mE

5460000mN

5450000mN

5440000mN

5430000mN

BASS HIGHWAY

ROAD

CALDER ROAD

WEST CALDER ROAD

OLDINA ROAD

MURCHISON HIGHWAY

CAM RIVER

HELLYER RIVER

EMU BAY RWY

BASILS RD

LEGEND

QUATERNARY	Qa	alluvium
	Ts	sediments, silt, sand, conglomerate
TERTIARY	Tp	pyroclastics
	Tb	basalt
JURASSIC	Jdl	dolerite
PERMIAN	Pu	undifferentiated sediments
	Ptl	tillite, associated glacial sediments
CAMBRIAN	€gs	greywacke, minor shale, chert
PRECAMBRIAN	p€s	quartzite, shale
	p€k	Keith River Metamorphics – quartzite; pelitic, calcic, basic schists; amphibolite (am)

strike and dip of beds, facing unknown

+9/72 Aerial Photograph Centre F564 Hellyer Series.

Prominent Photo lineament.

CF Circular feature

SCALE 1:50,000

0 1 2 3 4 5 6 7 8 km

Geology — R. Hine, R. Lockwood, A. Djakic with compilation from Tas. Mines Dept. 1:63,360 Burnie sheet and unpublished maps (Hellyer area) by P. Williams & P. Lennox.

TASMANIA

LOCALITY MAP

ELA 23/79

0 20 40 60 80 100kms

Smithton, Table Cape, Burnie, Devonport, Launceston, Queenstown, HOBART

145° 146° 147° 148° 41° 42° 43°S 43°

BASE MAP KEY

ROADS

VEHICULAR TRACKS

STREAMS

Revisions:

O.I.C:

Checked:

Traced: J.E.H.

Drawn: R.H. Date: 4-2-81

Project No: T640 Centre: HOBART

Drawing No: AO-23/79-1

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 23/79 WYNYARD, N.W. TASMANIA

GEOLOGY

3034

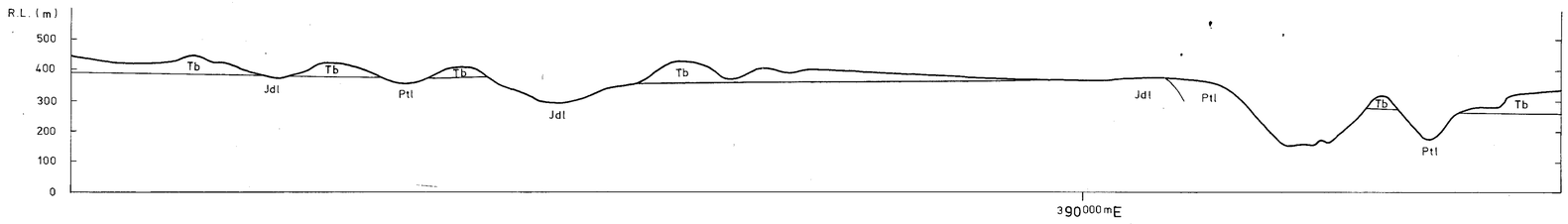
842019

82-1687

5cm

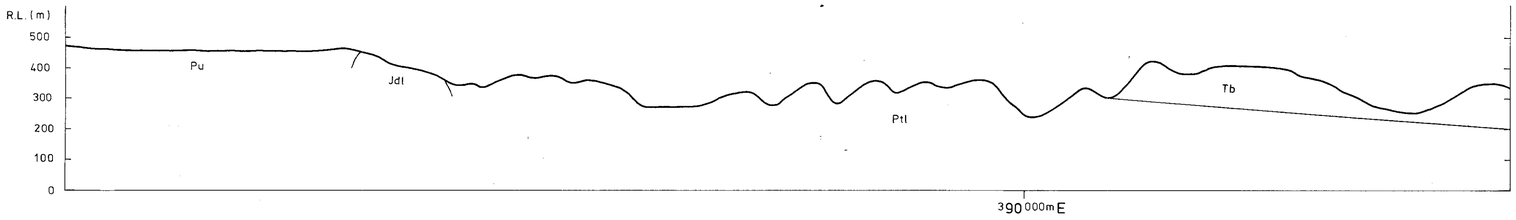
FIG. 2

A



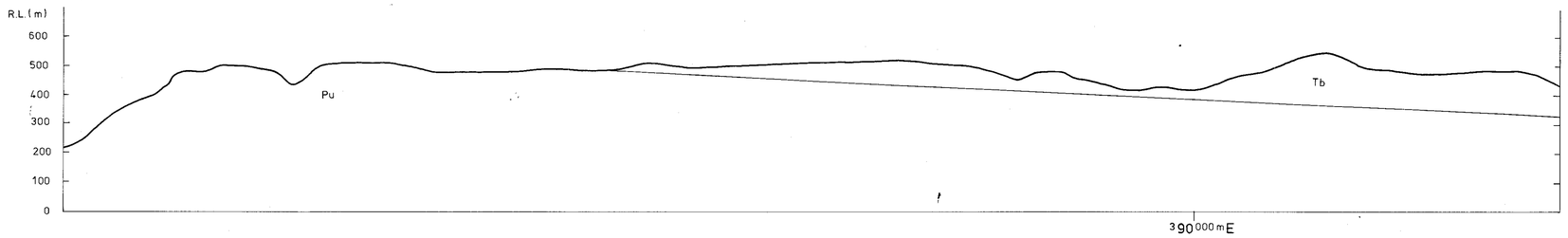
B

C



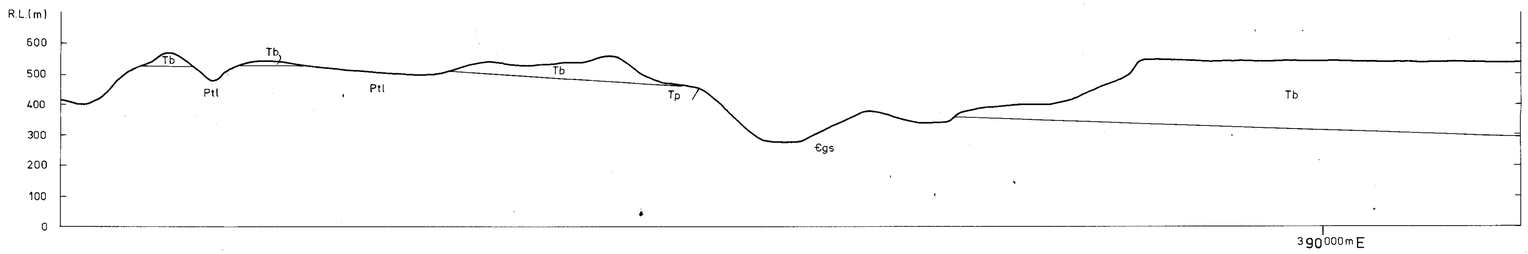
D

E



F

G



H

LEGEND

TERTIARY	Tp	Pyroclastics
PERMIAN	Pu	Undifferentiated sediments
	Ptl	Mainly tillite, some varves and related sediments
CAMBRIAN	€gs	Greywacke, minor shale, chert

IGNEOUS ROCKS

TERTIARY	Tb	Olivine basalt
JURASSIC	Jdl	Dolerite

5 cm

HORIZONTAL SCALE 1:25,000

0 1 2 3 Km

VERTICAL SCALE 1:10,000

842020 82-1687

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 23/79 WYNYARD, N.W. TASMANIA

3035

GEOLOGICAL CROSS SECTIONS

Revisions:	Drawn: K.K.	Date: 23-2-81	Centre: HOBART
	Traced: J.E.H.	Project No: T640	Drawing No: A1-23/79-2
	Checked:		

3036

GEOLOGY

3036

EL 23/79 WYNYARD, N.W. TASMANIA

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

842021

Revisions:				
O.I.C.		Drawn: R.H	Date: 4-2-81	Centre: HOBART
Checked: J.E.H		Traced:	Project No.: T640	Drawing No.: AO-23/79-1

TABLE CAPE
Wynyard
Somerset
Flowerdale
Preolenna
Calder
Oldina
Yolla
Elliot
Tewkesbury
Oonah
Takone
Parrawe
EL 33/79
HELLYER GORGE
HELLYER RIVER
BASS HIGHWAY
WEST CALDER ROAD
MURCHISON HIGHWAY
EMU BAY RWY
BASILS RD
CAM RIVER
DIGHEM LINE 601
DIGHEM LINE 602
DIGHEM LINE 603
DIGHEM LINE 604

LEGEND

QUATERNARY	Qa	alluvium
	Ts	sediments, silt, sand, conglomerate
TERTIARY	Tp	pyroclastics
	Tb	basalt
JURASSIC	Jdl	dolerite
PERMIAN	Pu	undifferentiated sediments
	Ptl	tillite, associated glacial sediments
CAMBRIAN	€gs	greywacke, minor shale, chert
PRECAMBRIAN	p€s	quartzite, shale
	p€k	Keith River Metamorphics – quartzite; pelitic, calcic, basic schists; amphibolite (am)

strike and dip of beds, facing unknown

+9/72 Aerial Photograph Centre F564 Hellyer Series.

Prominent Photo Lineament.

CF Circular feature

A — B Section line

SCALE 1:50,000

0 1 2 3 4 5 6 7 8 km

5 cm

Geology — R. Hine, R. Lockwood, A. Djakic with compilation from Tgs. Mines Dept. 1:63,360 Burnie sheet and unpublished maps (Hellyer area) by P. Williams & P. Lennox.

TASMANIA
LOCALITY MAP
ELA 23/79
0 20 40 60 80 100kms

Smithton, Table Cape, Burnie, Devonport, Launceston, Queenstown, HOBART

145° 146° 147° 148° 41° 42° 43°S

5 cm

BASE MAP KEY
ROADS
VEHICULAR TRACKS
STREAMS

DAM F16 4