SOUTH AUSTRALIA

DEPARTMENT OF MINES AND ENERGY

OPEN FILE ENVELOPE NO. 8412

EL 1686, BELTON

PROGRESS AND FINAL REPORTS FOR THE PERIOD
12/11/90 TO 11/11/91

Submitted by

Aztec Mining Company Ltd

1992

ENVELOPE 8412

TENEMENT: EL 1686, Belton

TENEMENT HOLDER: Aztec Mining Company Ltd

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MINERALS EXPLORATION REPORT

EXPLORATION LICENCE 1686
BELTON AREA
ADELAIDE GEOSYNCLINE, SOUTH AUSTRALIA

1st Quarterly Report
for the Period ending 11 February 1991

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Victoria Park, Western Australia, 6100

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EXPLORATION MANAGER: Aztec Mining Company Limited
99 Shepperton Road, Victoria Park, Western Australia 6100

DATE: 15 March 1991

DISTRIBUTION: Dept of Mines and Energy(1), Aztec Mining Company Limited (2), Oxford Resources Pty Limited (2).

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PLANS

Base and Location Plan 1:50 000 scale (pocket)

First Quarterly Report
for the period ending11 February 1991

Belton Area
Exploration Licence 1686
Adelaide Geosyncline, South Australia

SUMMARY

This report presents the results of work carried out on EL 1686 during the three-month reporting period ending 11 February 1991. Activities have concentrated on property owner/manager interviews, literature research, aerial photographic studies and commencement of reconnaissance geologic mapping/geochemical sampling.

INTRODUCTION

This report presents the results of initial research and field reconnaissance geological mapping and geochemical sampling carried out within EL 1686. The tenement comprises an area of 1,567 sq km in the moderately rugged terrain of the South Flinders Ranges. Referred to as the Minburra Area, work here is concentrating on the search for open-cuttable gold and/or lead-zinc-silver in the form of sediment hosted massive sulphide deposits.

Aztec Mining Company Limited, an AMAX-controlled miner, has extensive operative expertise in the exploration for and mining of base and precious metals. It is currently the 3rd largest zinc and 25th largest gold producer in Australia with substantial involvements in Europe and North America.

Exploration work in South Australia is being carried out by Oxford Resources Pty Limited, a minerals exploration company with over 30 years operating experience throughout North and South America and Southwest Pacific Basin.

LOCATION AND ACCESS: The Licence area is located in the Orroroo Province of South Australia approximately 40 km north of the small town of Orroroo (Fig 1). The town is serviced by the Australian National

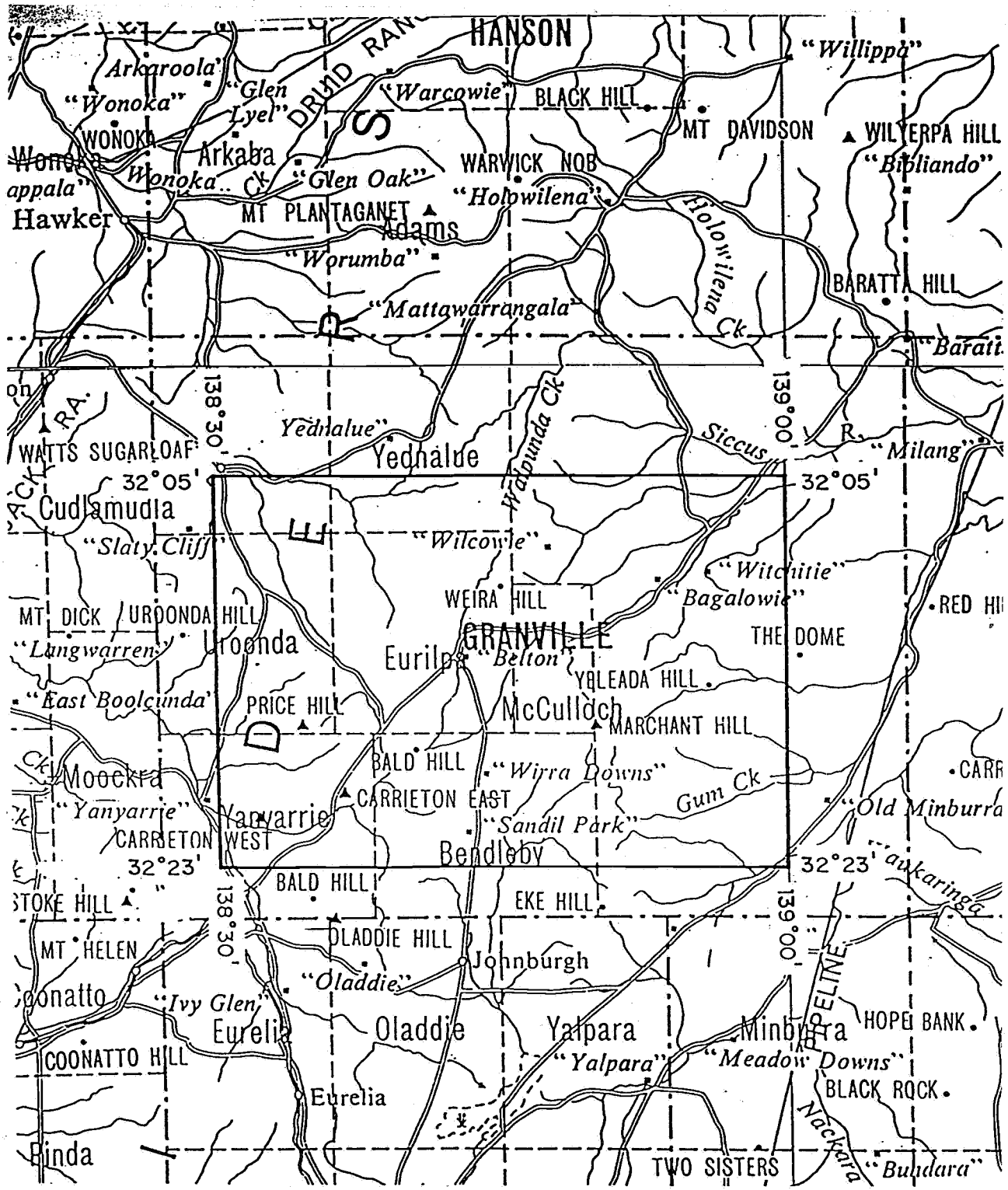

Figure 1. Belton Area (EL 1686) Location Plan, Adelaide Geosyncline, South Australia

Railways' Indian-Pacific Route and provides country-style accommodation and small engineering services.

TENEMENT: Exploration Licence 1686 was granted on 12 November 1990 for a period of one year. The tenement's total area is 1,567 sq km (Fig 2).

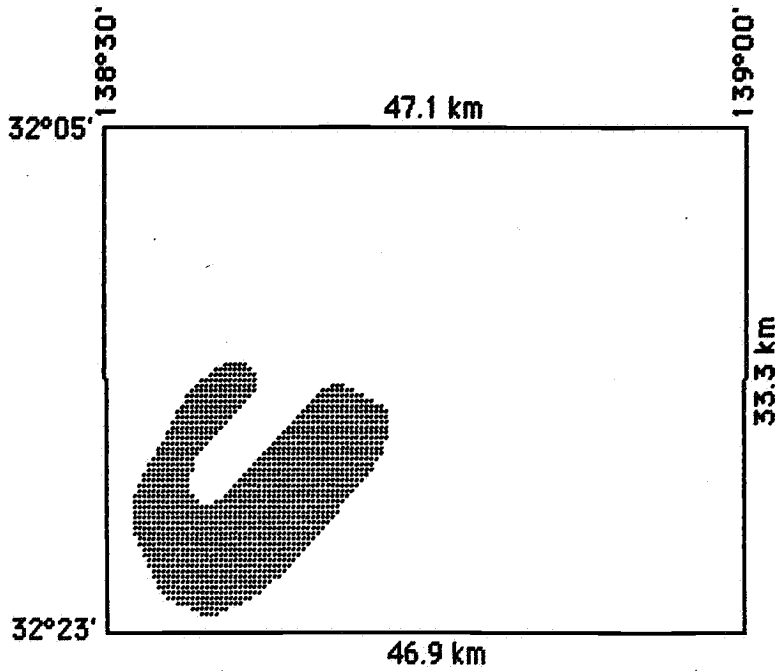

Figure 2. Belton area (EL 1686) showing coordinates and area (shaded) where reconnaissance geologic mapping and geochemical sampling has been carried.

Interviews have been held with property owners/managers in compliance with Part IX (Entry Upon Land), Regulations of the Mining Act, 1971.

PHYSIOGRAPHY

LAND FORMS: The area's terrain is characterised by moderately rugged hills and ridges of the northeasterly trending South Flinders Ranges. Principal drainages include Buckalowie, Wanyarrie and Weira Creeks.

CLIMATE: Rainfall is greatest in the winter months (June, July, August) although heavy thunder storms are common during December thru January (Table 1). Mean maximum temperature variations of 5° to 40°C occur between July and February respectively.

EL 1686

SOUTH FLINDERS RANGES

WEIRA PLAIN

MINBURRA PLAIN

LEGEND:

32 Station location and number

AMG ZONE 54

AZTEC MINING COMPANY LIMITED

BELTON SA

BASE AND LOCATION PLAN

EXPLORATION LICENCE 1686

DATE: 5-APR-91

SCALE: 1:50000

Compiled by F.F. GREENE

8412-1

Table 1. Rainfall statistics. Monthly and yearly average precipitation rates to the nearest whole millimetre, Northeast Province, South Australia.

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Orroroo	26	20	16	23	34	39	35	40	32	29	25	22	341
Carrieton	23	19	14	19	31	36	32	36	27	25	22	23	307
Hawker	19	20	16	20	32	41	33	33	27	21	22	20	304

EXPLORATION PROGRESS

The principal data are presented in the form of actual field notes (Appendix A), a geochemical summary (Appendix B) and field station location map (Plan 01).

GEOLOGIC RECONNAISSANCE: Work to date has involved property owner and/or manager interviews, a preliminary literature search, aerial photographic study and commencement of reconnaissance geologic mapping and geochemical sampling.

Activities scheduled for the 1991 field season will include a remote (thermal mapping) study and continuation of the reconnaissance mapping program.

APPENDIX A

1990 GEOLOGIC FIELD NOTES

BELTON AREA, EL 1686
Adelaide Geosyncline

01 274000/643040. Ridge crest. ABC Range Quartzite. Quartzite lt gray. Bed: 35/65SE (II). Jointing: 125/85SW, 10/m. Bed measured 150 m N35E on ridge crest: 30/50SE (I).

02 275695/6430790. Shale, reddish-gray to purplish, Bunyeroo Formation (Pwb). Fracture cleavage: 25/85NW, well-developed. Jointing: 120/85SW, 2/m.

03 275335/6431060. Large road metal quarry, down 4 m. Shale, rd brown. Bed: 35/65SE (I). Very finely laminated. Jointing: 115/85SW, 10/m. Fracture cleavage: 30/80NW, well-developed.

04 273525/6432455. Sandstone, fine grained, rd brown on exposed surfaces, gray to slightly purplish on fresh. Highly calcareous. Fracture cleavage: 50/90. Jointing: 145/85SW, 5/m.

05 272415/6433030. Siltstone, lt to med gray-green, weakly reactive to HCl, produces reddish brown soils and prominent hilly o/c's. Fracture cleavage: 45/90. Bed: 35/80SE (?).

Approx 100 m bearing 230°, hill top, siltstn, gray. Bed: 50/70NW (I); 50/90. Jointing: 135/80NE, 3/m.

Approx 1000 m N15E from Sta 05 Old shepherd's ruin, chimney is only remaining portion.

06 271350/6432215. Ridge crest. Siltstone, green gray, micaceous.

07 271910/6430900. Shale, maroon colored, highly reactive to HCl. Fracture cleavage: 30/85NW. Bed: 35/85NW (dip ?).

08 270910/6432250. Siltstone, med to dark gray, trace mica. Well developed bed: 45/75SE. Fracture cleavage: 45/75NW, well-developed.

09 271485/6429500. Siltstone, finely laminated, lt gray-green, non-reactive to HCl. Bed: 40/65SE. Fracture cleavage: 35/80NW, highly developed.

10 271230/6431310. Sandstone, ferruginous, generally broken, crushed, mod rotation, widespread limonite and FeO, numerous, multi-directional quartz/ferruginous veinlets. Suspect must FeO products leached from country rock, locally bleached to near white. Sample **BL01R** Au <.001, As 20, Cu 105, Pb 15, Zn 305, Ag <1 ppm.

70 m S15W in creek draining S60W, multi-colored silty sediments, yellow, brown, rd, maroon, all somewhat bleached and smoothly weathered. Very finely laminated. Bed: 30/85SE (I). Scattered occurrence ferruginous veins to 3 cm, gen following bedding. In places rock shows extensive breakage and crushing, often bleached near white, faint foliation running thru crushed material: 70/85SE to 5 m width

11 270330/6430990. Sandstone, coarse grained, locally gritty angular clasts, mod reactive to HCl, lt maroon color, prominent ridge former. Bed: 45/70SE. Fracture cleavage: 35/90.

12 270435/6430600. Creek. Exposed vertical rock face (NW side of creek). Sandstone, highly ferruginous, pinkish brown, yellowish, leached, liesegang banding. All fractures with FeO and/or limonite fillings. Bed: 35/80SE (I); 40/80SE (I).

85 m bearing 95°, old vertical shaft, now caved to within 3 m of surface, probably a hand-dug well site, no productive-type rock in mullock.

13 269525/6429915. Hill top. Sandstone, ferruginous, rusty rd brown. Bed: 40/75SE (I).

14 268990/6429520. Sandstone, fine grained, non-calcareous, buff-brn, slightly FeO-stained. Bed: 35/80SE. Jointing: 140/85NE, 3/m.

15 268505/6429380. Hill top. Sandstone, fine grained carrying coarser gritty to pebble-size constituents, slightly reactive to HCl. Fracture cleavage: 40/90.

16 268075/6428470. Sandstone, silty, variegated color; reddish/gry-brn, highly reactive to HCl. Bed: 30/70SE. Fracture cleavage: 25/90.

17 267480/6427115. Creek. Siltstone, gray-green, very finely laminated, strongly reactive to HCl, slightly sandy. Bed: 25/40SE (I). Fracture cleavage: 25/90, well developed. Old shepherd's ruin.

18 267100/6427250. Ironstone, 60 cm width, hosted by ferruginous sandstone. Attitude (ironstone): 35/60SE, conforms to bedding. **BL02R**, coarse (0.5-1.0 mm) sandstone, quartz, black flossy substance and clay products derived from decomposed feldspars, non-calcareous, non-magnetic.

19 265915/6426915. Siltstone, medium brown on exposed, lt gray on fresh surfaces, calcareous, extremely tough, breaks with conchoidal fracture. Fracture cleavage: 30/80SE.

20 265585/6425850. Shaft, down about 5 m, caved. Material in mullock includes a dark gray MnO/FeO composite. Country rock is siltstn, very finely laminated, bleached yel-brn. Bed: 20/70SE. Sample **BL03R** comprises dense black, dull lustre decomposed manganiferous/ferruginous impregnated sandstone. Local carbonate beds, dolomitic.

21 265815/6424705. Siltstone, calcareous, lt to med gray. Fracture cleavage: 30/80NW, well-developed.

22 266750/6424210. Creek. Sandstone, med to dark gray, produces ragged o/c's. Fracture cleavage: 40/85NW, well developed. Jointing: 135/80NE, 5/m. Bed: 40/50NW, dip ?

23 266920/6423685. Siltstone, med gray-green, calcareous, finely laminated with light and dark layers (o.5 and 1.0 cm respectively). Bed: 16/20NE (I). Fracture cleavage: 25/80NW.

24 275170/6425365. Siltstone, finely bedded. Bed: 45/65NW.

25 274515/6424605. Siltstone, gray. Fracture cleavage: 35/75NW, well developed, non-calcareous. Bed: 35/50NW (I).

26 274920/6424335. Siltstone, lt gray, manganese dendrites. Bed: 30/75NW. Fracture cleavage resembles bedding.

27 274000/6424375. Siltstone, lt gray. Fracture cleavage: 35/45NW.

28 273890/6423880. Hill top. Siltstone, gray, very finely laminated. Non-calcareous. Bed: 30/70NW (I).

29 274525/6423895. Hill top. Sandstone, quartzose, gry-brn, forms prominent and rugged outcrops. Bed: 35/40NW. Jointing: 120/90. Fracture cleavage: 35/90. Locally rock exhibits pinkish color, very finely bedded, med-grained, equi-granular, carries minor disseminated black metallic mineral. Laced with thin quartz veins, milky white.

30 273315/6424410. Siltstone, med gray. Fracture cleavage: 10/85SE. Non-calcareous. Bed: 20/65NW.

31 272950/6423875. Siltstone, med gray. Bed: 30/60NW. Fracture cleavage: 30/80NW.

32 272050/6423250. Siltstone, gry-brn, very finely laminated. Bed: 40/70SE (I). Fracture cleavage: 20/75NW.

33 271445/6423495. Siltstone, med gray. Bed: 40/30NW. Fracture cleavage: 25/80NW.

34 271785/6423035. Siltstone and sandstone interbedded. Sandstone strongly ferruginous. Fracture cleavage: N/90.

35 271400/6423040. Yackara Creek. Siltstone, med gray. Bed: 40/40NW. Fracture cleavage: 20/80NW.

270710/6422780. Relatively large stone building (ruin), north side Yackara Creek. Well constructed from local stone, appears to have been a school.

36 266745/6422075. Yackara Creek. Siltstone, lt gray, very fine grained, locally very massive, forms prominent outcrops, highly calcareous, small scale cross-bedding. Jointing: 115/90, 5/m. Fracture cleavage: 30/85NW. Aboriginal petroglyphs.

50 m bearing 205 (downstream), SE side Yackara Creek. Sandstone, non-calcareous, produces rugged, prominent outcrops. Bed: 30/65SE; 20/50SE (I).

37 265570/6421845. Siltstone, highly calcareous. Bed: 120/10NE. Fracture cleavage: 35/90, well developed. Jointing: 135/85SW, 2/m. Locally siltstn exhibits slight greenish color.

38 265575/6421500. Siltstone, lt gray, highly calcareous, finely laminated. Bed: 110/20NE. Fracture cleavage: 35/80NW, well developed.

39 266790/6421415. Hill top (elev 508 m). Very rugged and irregular o/c's. Sandstone, quartzo-feldspathic (65/35). Bed: 125/30NE. Fracture cleavage: 35/90. Jointing: 95/75SW, 3/m.

40 267445/6420915. Siltstone, slight pinkish gray. Fracture cleavage: 30/80NW.

41 267650/6421545. Siltstone, lt gray. Bed: 135/10NE. Jointing: 40/90. Fracture cleavage: 135/80NE.

42 268875/6422610. Hill top (elev 500 m). Siltstone, very finely laminated, non-calcareous, lt gray, slightly greenish. Bed: 95/30NE (I). Fracture cleavage: 20/90.

43 269315/6422595. Siltstone, gray-green, very light. Fracture cleavage: 20/85SE. Bed: 100/20NE.

44 269495/6421910. Siltstone, lt gray-green. Fracture cleavage: 15/90. Bed: 105/25NE (I).

45 270610/6421785. Siltstone, lt gray-green, finely laminated with lt and dark layers. Bed: 40/35NW (II).

46 271045/6421490. Siltstone, gray-green, finely laminated, non-calcareous. Bed: 25/40NW (I).

47 270890/6420395. Saddle point on rugged ridge prominent relief. Sandstone, pinkish-gry, quartzose, fine to med grained. Bed: 60/25NW. Jointing: 115/85NE, 10/m. Fracture cleavage: 10/90.

48 289390/6445260. Prince Alfred (Cu) Mine. Probably one of best examples of stratabound copper mineralisation in the Orroroo Province. Discovered in 1866, total production estimated at 40,000 t of (min) 5% Cu ore to a depth of 170 ft (approx 52 m) (Wade ML and Wegener CF, 1954, pp 82-92).

Rock type is siltstone, finely laminated, lt to med gray, well developed fissility parallel to bedding planes, strongly reactive to HCl. Bed (80 m bearing 210° from sta): 355/55SW (I). Beds to 1 m thickness comprising varied XX particles, angular, to 2-3 mm diameter, strongly indurated. Finely laminated black shales occur immediately east of mine area, underlain by about 1 m tillite

which in turn overlies conspicuous angular unconformity on underlying calcareous siltstone of Burra Group.

Mine is located on west flank of SW plunging Yudnalue Anticline immediately adjacent to the angular unconformity separating Burra from overlying Umberatana Groups. The hiatus developed during a mild tectonic event initiating diapirism in the Adelaide System. (Coats RP 1965. Diapirism in the Adelaide Geosyncline. J Aust Pet Engineers Assoc, pp 198-102).

Principal mineralised structure is fault fissure, developed parallel to bedding, to 6 m width in central mining area, exploited over length 150 M: North/50W. Footwall appears to be well preserved, smooth, calcrete coated, footwall highly broken. Most productive material removed, observe densely compacted mixture siltstn, limonite, siderite, Cu oxide plus malachite, trace amount chalcopyrite, laced with calcite veinlets, minor pyrite.

Well exposed stope immediately south of stone buildings. Sample **BL04R** (Au 0.025, As 260, Cu 18.10%, Pb 135, Zn 460, Ag 6 ppm) from within 1.5 m of footwall at portal, comprises dense mixture ferruginous limonites, cellular structure from former suphides, coarse breccia gangue with calcite clots and veinlets, siderite clots, azurite, malachite, minor anhedral chalcopyrite

200 m bearing due South on strike line of lode, inclined shaft (Main Shaft): 10/50NW. Rock in mullock is siltstn, very finely laminated, dark blue gray, strongly calcareous, tends to weather to dull yellowish-brown (buff) color. Numerous well-indurated breccia. Bed: 185/50NW.

APPENDIX B

1990 GEOCHEMICAL SUMMARY

BELTON AREA, EXPLORATION LICENCE 1657
Adelaide Geosyncline

ROCKCHIP SAMPLING

SAMPLE NUMBER	SAMPLE STATION	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	SAMPLE DESCRIPTION
BL 01R	10	<1	<1	20	105	15	305	Sandstn, FeO, bleached
02	18	<1	<1	<20	900	<5	1475	Ironstn, argillic fillings
03	20	<1	<1	<20	35	10	155	Sandstn, ferruginous
04	48	25	6	260	18.10%	135	460	Main vn, lim, CuO, SiO_2

APPENDIX C

EXPENDITURE STATEMENT

EXPENDITURE STATEMENT
EXPLORATION LICENCE 1686
FOR THE PERIOD 12 NOVEMBER 1990 TO 11 FEBRUARY 1991

	$
Personnel	260
Administration	594
Geological Consultants	2,275
Motor Vehicles	318
Tenement Costs	3,999
TOTAL	$7,446

Aztec Mining Company Limited

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Reply to Perth Office

CONFIRMATION
Facsimile Sent
DATE: 19 June 1991
TIME: 4.10 pm

19 June 1991

Mr R.K. Johns
Director General
Department of Mines and Energy
191 Greenhill Road
PARKSIDE SA 5063

Our Ref: 0645hll/1.174/179.58

Dear Sir,

QUARTERLY REPORTING FOR EXPLORATION LICENCES

Tenement	Name	Area (km^2)	Report Period Ending
EL 1657	Nilpena Hill	440	16/05/91
EL 1686	Belton	1,567	11/05/91
EL 1690	Minburra	1,648	22/05/91

Work carried out during the reporting periods shown for the above-listed exploration licences has involved a special remote sensing imagery study supervised by Mr H. Davies of Remote Sensing and Geological Services, Kingsley, Western Australia.

The Orroroo-Olary remote sensing project covers a substantial segment of the central-eastern region of the Adelaide Geosyncline wherein this company's exploration licences are situated. It also covers the Adelaidean sediments of the Nackara Arc hinge zone, the Houghton Anticlinal Zone and older sediments of the Willyama Inlier.

The study is Thematic Mapper satellite-based involving processing and enhancement of over 50% of Thematic Mapper image scene 97/82-83. This provides data covering a 100 x 180 kilometre area containing all tenements currently held by Aztec Mining Company Limited.

Image processing of the TM computer compatible tapes was undertaken at the Department of Lands Administration Remote Sensing Centre in Perth, WA. All but the thermal band (Band 6) of the TM imagery has been used to generate three sets of colour images. These were written as two overlapping negatives on a scale of 50 microns = 1 pixel. The negative images thus generated were used to produce positive enlargements at 1:100,000 scale.

These imagery, used in conjunction with each other, yield spectral information that allow the mapping of iron oxide-rich material together with quartz and clay mineralised areas. The resolution (30 metre pixel size) of the satellite imagery is adequate to detect gossan-size and quartz vein and stockwork targets in areas where low backgrounds of the material render such targets spectrally anomalous. Exploration targets of this type have already been defined over much of the region. A number of structures of possible diapiric origin have also been mapped.

In addition to this work, classic photo interpretation techniques are being applied to the imagery to map stratigraphic units and the structural features that transect them.

At present, this work is insufficiently advanced to allow final conclusions to be drawn on the stratigraphic relationships of the various units. However, preliminary results indicate that the accepted interrelationships of certain stratigraphic members may require modification. In addition, the major structural components of the Delamerian fold belt have been confirmed and closely defined. Numerous structural features have also been mapped in a number of areas that suggest folding is more intricate than previously thought.

The mapping on Thematic Mapper imagery linear features has defined major corridor-like structures that are believed to be the surface expression of deep crustal fracture zones. Fault systems and lesser linear features probably related to shallow brittle fracturing have also been mapped. These structures are currently being synthesised to determine which may be metallogenetically important.

We will be pleased to provide you with any further information you may require.

Yours faithfully

R L Humberston
Tenement Manager

MINERALS EXPLORATION REPORT

EXPLORATION LICENCE 1686
BELTON AREA
ADELAIDE GEOSYNCLINE, SOUTH AUSTRALIA

3rd Quarterly Report
for the Period ending 11 August 1991

Aztec Mining Company Limited
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99 Shepperton Road, Victoria Park, Western Australia 6100

DATE: 21 August 1991

DISTRIBUTION: Dept of Mines and Energy(1), Aztec Mining Company Limited (2), Oxford Resources Pty Limited (2).

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PLANS

Base and Location Plan 1:50 000 scale	(pocket)

Third Quarterly Report
for the period ending 11 August 1991

Belton Area
Exploration Licence 1686
Adelaide Geosyncline, South Australia

SUMMARY

This report presents the results of work carried out within the Belton Area (EL 1686) during the three-month reporting period ending 11 August 1991. Work has emphasized reconnaissance geologic mapping and geochemical sampling with special attention to JETREX and TM anomalies identified in earlier special studies.

Property owner/manager interviews, literature research and vertical aerial photographic studies have been an on-going part of the exploration program.

INTRODUCTION

Primary purpose of this report is to provide a comprehensive document listing all pertinent field data relating to the exploration of EL 1686 during the period 6 June thru 14 August 1991. To this end all data are presented in the form of actual field notes (Appendix A), geochemical analytical results (Appendix B) and field station location map (Plan 01).

TENEMENT

The tenement, granted 12 November 1990 for a period of twelve months, covers some 1,567 sq km in the moderately rugged terrain of the South Flinders Ranges. Referred to as the Belton Area, work here has concentrated on the search for open-cuttable gold and/or lead-zinc-silver in the form of sediment hosted massive sulphide deposits.

Aztec Mining Company Limited, an AMAX-controlled miner, has extensive operative expertise in the exploration for and mining of base and precious metals. It is currently the 3rd largest zinc and

25th largest gold producer in Australia with substantial involvements in Europe and North America.

Exploration work in South Australia is being carried out by Oxford Resources Pty Limited, a minerals exploration company with over 30 years operating experience throughout North and South America and Southwest Pacific Basin.

LOCATION AND ACCESS: The Licence area is located in the Orroroo Province of South Australia approximately 40 km north of the small town of Orroroo (Fig 1). The town is serviced by the Australian National Railways' Indian-Pacific Route and provides country-style accommodation and small engineering services.

LAND STATUS: Interviews have been held with property owners/managers in compliance with Part IX (Entry Upon Land), Regulations of the Mining Act, 1971.

PHYSIOGRAPHY

The area's terrain is characterised by moderately rugged hills and ridges of the northeasterly trending South Flinders Ranges. Principal drainages include Buckalowie, Wanyarrie and Weira Creeks.

EXPLORATION PROCEDURE

Exploration activities have involved reconnaissance geological mapping, detailed prospect and special anomaly investigations and geochemical sampling. Time has also been devoted to literature reviews utilizing SADME open file reports.

The work has employed a geologist (FF Greene) and technical assistant (CL Thomas). Control of field work utilized 1/40,000 scale color aerial photography. Recorded observation points were later transfered to 1/50,000 scale topographic maps by means of a vertical sketch master.

Field work was facilitated by establishing tent camps central to about a 30-km operating radius. Agricultural-type motorcycles were used where terrain conditions permitted and in transporting geochemical/geological samples.

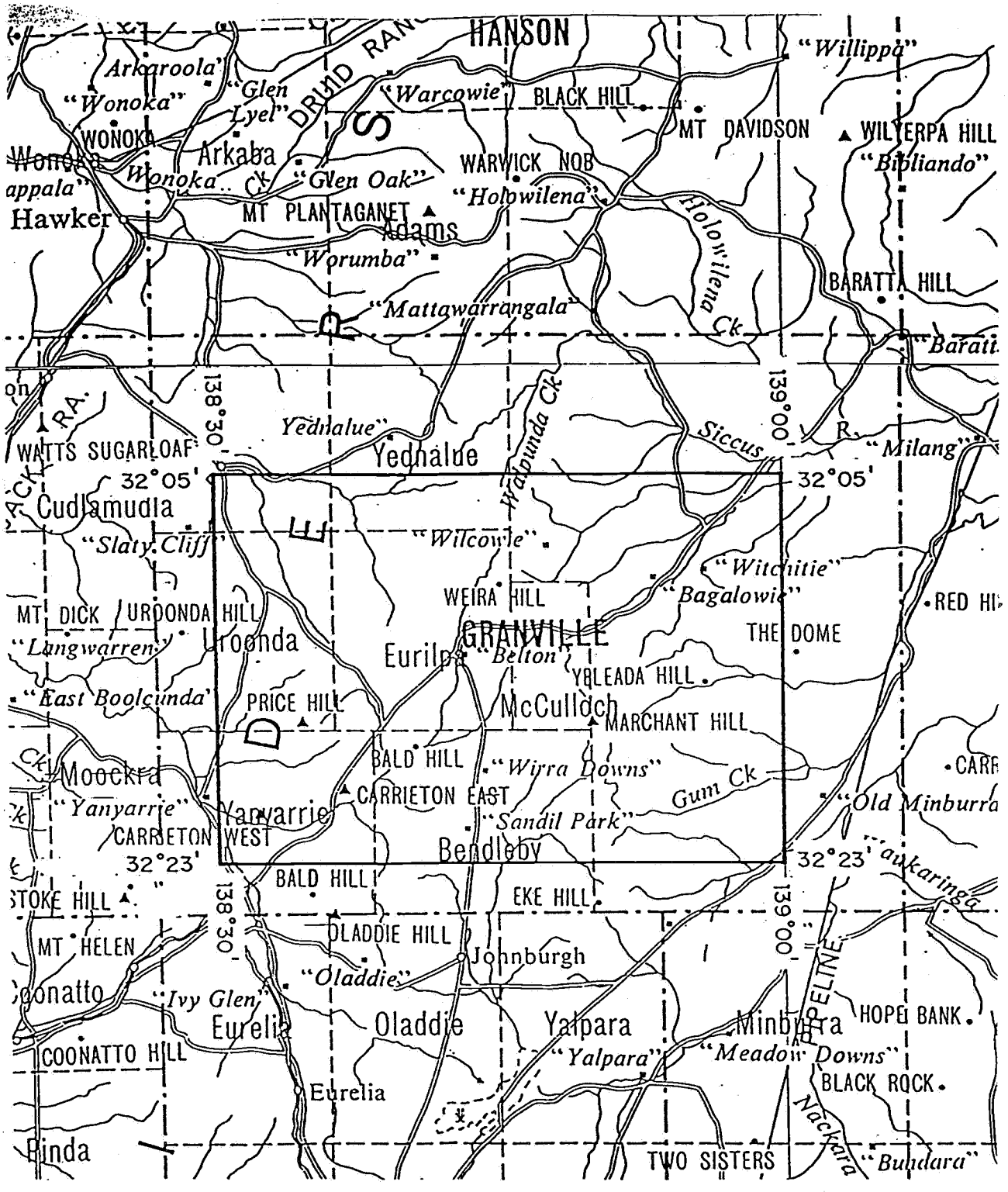

Figure 1. Belton Area (EL 1686) Location Plan, Adelaide Geosyncline, South Australia

Four field camps were established to facilitate fast and easy access to areas of operation. Property owners/managers Mick Schmidt at Witchitie, Richard Clarke at Toronga and Pine Grove and Bill Turner at Minburra provided water and certain amenities that were greatly appreciated.

Anomalous areas identified by special thematic mapper (Davies, 1991) and aerial observation (Thompson, 1985) studies were investigated. Basic geologic information relied on PJ Binks' (1971) and WV Wolfgang Preiss' comprehensive maps and publications.

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APPENDIX A

The following field notes (Stations 49 thru 378) are continuous with those found in the 1st Quarterly Report (Greene, 1991). Unlike that initial document, however, this report retains original field abbreviated writing.

Many of the notes presented herein conclude with the bracketed initials "(CLT)". These are the observations recorded by the geologist's able technical assistant, CL Thomas.

1991 GEOLOGIC FIELD NOTES

BELTON AREA, EL 1686
Adelaide Geosyncline

49 307335/6440300. T(g)5 anomaly (Siccus 1/50 000 sheet). No o/c. Surface littered with cobble dimension qtzose sandstn, heavily impregnated with FeO, in places laced with limonite veinlets. Some with leached bedding and/or heavily FeO-stained. Disseminated FeO spots indicate former sulphides. Some clasts with diss and veined hematite. Sample **A318101**, hematite saturated sandstn.

T(g)5 anomaly (Siccus 1/50 000 sheet) area characterised by slight (5-10 m) relief, surface blanketed with FeO-stained cobbles/pebbles. FeO/hematite-bearing sandstn, minor vein qtz, milky white, area of interest trends N50E, about 50-75 m in width by 300 m length.

170 m bearing S30W creek draining N75E, 4 m wide. Gry-grn siltstn. Fract cleav: 60/80NW. Bed: 350/30SW (II). Jointing: 345/85E, 3/m. Stream sed sample **A318102** consists hematite-bearing, FeO-rich pebbles recovered from natural riffles.

50 306795/6439100. Jetrex anomaly 166. Ridge trending N10E, area conspicuous for dk rd-brn to rd-blk ferruginous sandstn. Bedding planes saturated with FeO and limonite. Diss FeO and fine hematite specks. Fract cleav: 50/80NW, well-devel'd. Bed: E/10S; 65/25SE; 75/25SE (I). Rockchip sample **A318103**, brn-blk silty sandstn, heavy FeO and less hematite specks.

Locally rock is completely replaced by hematite. Bedding accentuated by heavy concentration FeO. Sandy bands usually dk rd-brn.

51 306920/6438300. Siltstn, lt gry-brn, Ulupa Siltstn. Fract cleav: 55/85NE, well-devel'd. Bed: 340/20SW (I); 320/20SW (I).

52 307130/6437625. Ridge crest trending 235° mag. Ulupa Siltstn. Fract cleav: 60/90. Bed: 25/15NW (III).

53 308715/6434020. Sandstn, silty, maroon-colored. Fract cleav: 60/90, well-devel'd. Gen inspection shows rocks vary in color from lt gry-grn to maroon. Bed: 70/45SE.

54 307810/6433310. Graywacke with interbedded siltstn. Fract cleav: 75/90. Bed: 90/60N (III).

55 308850/6436365. Creek. Siltstn, gry-grn. Fract cleav: 80/60NW. Bed: 55/75SE. Joints: 330/90, 5/m.

56 308830/6436050. T(g)7 spectral anomaly (Siccus 1/50 000 sheet). Siltstn, grey. Surface float (cobbles, pebbles) comprise silty sandstn, heavily FeO-stained. Sample **A318104** consists of -2 mm fract'n stream sed. Area relatively flat, min veg cover, hourglass shaped with wider areas supporting turpentine bush and very slightly elev'd ground. Rock type is sandstn, silty, rd-brn, FeO-stained. Minor amts qtz, milky white. Soils and reddish-brown, sandy.

57 309760/6440275. T(g)6 spectral anomaly (Siccus 1/50,000 scale sheet). Loc'd across a N10E draining creek. Minimal relief. Stream sed sample **A318105** from creek draining anomaly. Other than occupying low ground between NE descending ridges, area soils slightly rd-brn but not excessive. Fract cleav: 55/80NW, well-devel'd. Joints: 350/75SW, 3/m. All fracts non-FeO. Minor milky white qtz float.

58 313900/6440300. Creek, drains N25W. Siltstn, lt gry to lt maroon color. Thin (3-5 cm) sandstn lenses. Fract cleav: 50/70NW well-devel'd. Stream sed sample **A318106.**

59 314380/6440800. Creek, drains N50E. Siltstn, gry-grn. Fract cleav: 35/70NW. Bed: 75/25SE (I). Stream sed sample **A318107.**

60 301275/6440015. Creek, 8 m width draining 105° mag. Sandstn, graywacke, lt to med gry. Fract cleav: 40/85SE, fault-related, 3 m width. Bed (SE side of fault): 15/20NW; (on NW side) 45/85SE.

61 300435/6440430. Creek (as at Sta 60). Graywacke, prominent outcrop on north side of creek, very massive. Densely spaced fracts: 55/75SE across 1.5 m width. Jointing: 315/75SW, 5/m. Bed: 45/85SE (I), partings along

bedding planes contain compact hematite to 2 cm thickness. Rockchip sample **A318108** consists of vein hematite collected from bedding plane partings to 5 cm thickness, central portion of hem veins very crystalline with minor open spaces.

62 299825/6439855. Creek (as at Sta's 60, 61) drains N45E. SE bank, o/c graywacke, finely lam'd. Beds exhibit platy cleavage. Bed: 45/55SE. Jointing: 120/85NE, 10/m.

63 298930/6439885. Graywacke, med to lt gry, slight greenish color. Calcrete smears on most fract surfaces. Bed: 40/75SE (I). Jointing: 90/75S, 10/m; 155/75NE, 5/m.

64 298575/6440180. Graywacke, platy cleavage, pale yel-gry. Fract cleav: 210/90. Bed: 210/85SE.

65 298400/6440405. Station occupies T-junction of ridge crests. Top ridge trends N55E, stem-ride: due east. Jetrex anomaly 162. Several shallow prospect pits. Mining cut bearing 300° mag for 6 m. Originally down 4-5 m, now caved to w/in 3 m of surface.

Host rock is yellowish-brn graywacke, massive. Footwall of mineralised structure: 295/85NE. Rockchip sample **A318109** from mullock, a well-indurated breccia, trace amts malachite, CuO, good limonite-goethite, minor siderite and thin (0.5-1 mm) hematite veinlets, trace turquoise.

60 m brg N15E, prospect pit, originally down 2-3 m. Rock in mullock is coarse (5-10 cm clasts) breccia, heavy limonite-goethite intersticial fillings, reactive to HCl, at least 50 cm width, indurated with dense, rd-brn ferruginous pitch. CuO and malachite diss throughout, good remnant sulphide cellular structure often filled with yel-brn limonite, minor anhedral chalcopyrite. Hand specimen A110 taken. Probable attitude of fault breccia: 45/80NW. Rockchip sample **A318110** min'z brx.

150m brg N40E, prospect pit. Mullock is heavily FeO-stained graywacke, calcareous, trace CuO-stain on fract planes, multi-directional qtz/hem veinlets, str'ly leached. Workings down, originally 2-3 m, trends N50E.

205 m brg N40E, two shallow prospect pits, down originally 2-3 m, caved. No visible mineralized structure. Fract cleav:

50/90, heavily CuO/FeO stained. Mullock comprises coarse fault breccia with calcite fillings. Trace amts malachite. Sample **A318111** from coarse fault breccia in mullock.

66 298725/6440515. Prospect, vertical shaft, down 5-6 m, now caved to within 4 m of surface. Mineralized structure exposed in walls is highly fract'd linear: 95/90 to 40 m width, heavily FeO-stained. Mullock is crackled or crushed with minimal clast rotation, laced with numerous, thin (1-5 mm) limonite-hematite veinlets, multi-directional, some to 4 cm thickness. Sample **A318112** from thin, multi-directional veinlets.

Sample **A318113** stream sed from creek located 15 m north (down slope) from station. This creek would be collecting agent for prospects at stations 65 and 66. Hand lens insp'n shows FeO-stained lithic particles, minor qtz particles and black mins resembling hematite and much limonite pseudomorphs after pyrite, euhedral. Sample **A318114** is -2 mm fraction collected from mullock, a deep, dk brown lithic material with limonite.

Rock o/c exposed in creek directly below station exhibits tight, drag-like folds; plung: 220/25SW. Bed: 215/85SE

Approx 50 m brg S25E from Sta 66, find frequent occurrence hematite veinlets, from 3-5 cm thickness, attitude: 80/85SE; 95/80SE. Rockchip sample **A318115** comprises hematite vein fillings.

67 298770/6440370. Same hill as Sta 66 only south side. Fault fissure, highly brecciated graywacke host rock, weakly FeO-stained walls. Breccia well-indurated, lace with thin hematite veinlets. Fissure: 30/80NW, pinches and swells 30-60 cm width. Sample **A318116** from breccia. Hand specimen A116.

68 298695/6440415. Same hill. Graywacke. Fract cleav: 30/80SE. Sample **A318117** comprises float chips and plates vein hematite collected within radius 25 m.

69 298870/6440500. Prospect pit. Originally down 3-4 m, now caved to within 1 m of surface. Material in mullock is crushed and indurated from fault fissure: 45/85SE. Cementing medium is siliceous/ferruginous pitch. Fracts and small (-3 cm) open spaces filled with productive-

appearing limonite-goethite, some former sulphide cellular str. Trace CuO and malachite, 15-30 cm thickness. Sample **A318118**.

70 298670/6440795. Conglomerate, polymictic, siliceously indurated. Clasts rounded to sub-rounded, consist of blu-gry to gry-grn qtzite, yel-grn felsite, med grained granitic type, chert, and vein quartz. Blk metallic substance intersticial to clasts. Rockchip sample **A318119**. Hand specimen A119.

Sample **A318120** from same gen loc'n, is dense, gry, siliceous. Breaks with choncoidal fract'r, about 1% diss anhedral pyrite, small glass shards, and dk clots, 1-2 cm diam. In places rk resembles a welded tuff.

Rockchip sample **A318121** from large qtzite boulder, a constituent of the conglomerate, slightly purplish in color, med to fine grained. On freshly broken surfaces exhibits diss specks and cavity fillings (.5-1 mm) CuO green. Hand specimen A121 taken.

71 298935/6440675. Prospect pit, trend N45E. Rockchip sample **A318122** from dense, choc-brn ferruginous vein material, with 40-50% clots and fract stringers malachite, mullock, brecciated, 50 cm width. Good red-brn limonite-goethite, minor hematite. Hand specimen A122. Attitude of fault fissure 45/70SE, opened by two small pits. Fract cleav: 40/80SE well-devel'd in fine, slaty siltstn.

72 300330/6441490. Quartz-hematite vein material, rockchip sample **A318123**.

73 303285/6444970. Red Hill copper mines area. Dozer cut trending 120° mag for 30 m. Rock exposed in cut thoroughly oxidised, punky, silty sandstns, siltstns. Bed: 45/70SE. Yel-grn siltstn, choc-brn mudstn interbeds to 1 m thickness, and lt gry-grn siltstn. Latter rock prone to CuO, with all fracts heavily CuO-stained.

Gouge rock, (mullock), indurated breccia, comprising angular vein qtz clasts, dense limonite-goethite, calcite, malachite filling open spaces and fracts. Sample **A318124** from breccia. Hand specimen A124. Inspection of larger (20-30 cm) vein material shows distinctive banding, light/dark parallel to walls (2 -5 cm). Alignment of old mine and

prospect workings: N35E.

115 m brg 205° mag from sta, another dozer cut trending 115° mag for 40 m, down originally 3-4 m, 3 m width. Rock is finely lam'd siltstn with interbedded mudstn. Non-reactive to HCl. Bed: 45/80SE (I). In places rocks are thoroughly bleached to off-white with slight pastel grn color. Excessive breakage and parting along bedding planes.

155 m brg 205° mag from sta, find vertical shaft, est depth 30 m. Rock is lt pastel gry, yel-brn siltstn and mudstn of Tapley Hill Fm. Fracts coated with azurite, malachite and CuO. Vein material is qtz/siliceous/ferruginous mixture with open space and fine vein fillings, chalcocite, azurite, malachite and CuO. Sample **A318125** from vein material, dense siliceous, carbonate type, speckled with chalcocite, azurite and malachite, siderite.

250 m brg 205° mag, SW-most mine workings. Shallow shaft down 3.5 m with drift bearing 130° mag, dense fract system parallels this trend (130/80SW). Rock is siltstn/mudstn/silty sandstn. None reactive to HCl. Entire rock exposure appears to have suffered strong inplace crushing with negligible to slight clast rotation. Fracturing is multi-directional, where fracts intersect gen find irreg clots limonite-goethite, malachite, often find fine, former sulphide cellular strcuture.

74 303590/6445150. Large dozer opencut. Expose finely lam'd siltstn, mudstn, med-brn, non-reactive to HCl. Bed: 45/75SE (I). Chalcocite, malachite, etc show preference for fracts and open spaces in crushed host rock. Joint: 305°/90 heavily laden with secondary Cu minerals. Multi-directional qtz-calcite veining. Joint: 35/80SE; 305/85NE. Fracturing with Cu products: 275/70SW; 360/85E. Find large blocks to 1 m diam dense ferruginous material, leached with cavities filled with malachite.

75 300545/6447350. Brady Creek. Siltstn, olive-brn, prominent, tough o/c. Wavy bedding planes. Bed: 160//90, dolomitic limestn. Jointing: 75/90, 20/m. Rocks belong to River Wakefield Group.

76 300775/6447715. Ridge crest trending N15E. Rock o/c is gry dolomite, weakly responsive to HCl. Carries minor vein qtz, milky white. Bed: 20/80SE (I). Interbedded, reddish-

gry, hematite maghemite bands, in places strongly magnetic, often cut by fine (1-2 mm) qtz veinlets. Sample **A318126.**

77 301325/6449180. Northeast end of spectral anomaly T(g)4 located on the Siccus 1/50 000 topographic sheet (Photo 01). A massive siltstone with inter-bedded mudstone, Very fine-grained, non-magnetic, weakly reactive to HCl. Dk rd-blk to dk rd-brn with 50-60% diss euhedral hematite.

Rockchip sample **A318127** from blk fine-grained rk (meta mudstn) with hematite as described, very dense blackish-red. Non-reactive to HCl, non-magnetic.

120 m brg 205° mag from Sta 77. Rd-blk ironstn. Outcrop twisted in to S-shaped beds. Sample **A318128** from dense reddish-blk ironstn, magnetic.

Photo 01. Spectral anomaly T(g)4 encompasses a N10E-trending ridge of Holowilene Ironstone roughly 30 m in width by 190 m in length. View 215° mag. Located on the Siccus 1/50,000 topo sheet.

78 301105/6448800. Ironstn, reddish-blk, extl'y fine grained. Banded reddish and black ironstone laced with milky white irregular qtz veins which tend to parallel banding. Attitude of banding: 35/85SE. Jointing;125/80 SW, 5/m. Rockchip sample **A318129** from slightly magnetic outcrop.

79 300955/6448170. Ridge, 5-7 m above adjacent lands, trends N15E. Ironstn, blk, hematite-rich, slightly magnetic, lacks distinguishing reddish banding. Fract cleav: 45/70NW. Bed: 5/70SE (III); 10/85SE (I).

80 299210/6447365. Quartzite, feldspathic constituents altered to white clays to 25%, blk glassy specks appear to be fine anhedral hematite xtls. Fract cleav: 35/90. Jointing: 95/85NE, 5/m.

81 299295/6447700. Quartzite, feldspathic, pinkish alteration product, blk specks appear to be hematite. Sample **A318130** rockchip comprising some 40% argillic products filling pinhead size cavities, very responsive to HCl, approx 1-2% diss specks hematite, reddish alteration stain. Massive o/c. Joints: 5/75SE, 2/m, often with thin smears hematite; 100/85SW, 3/m. Fract cleav: 330/80SW hematite bearing and thin (2-5 mm) discontinuous qtz veins. Hematite specks to 3%. Bed: 335/75NE.

Vein slabs, float, comprised of hematite magnetite, minor broken qtz fragments w/in slabs, 1-3 cm thickness, xtln. Sample **A318132.**

82 299325/6448175. Ridge, highest point, trends N05W. Quartzite abundant white calcareous material. Abundance of multi-directional, FeO streaks (or stains) lacking fracture control. Includes hematite and rd-brn limonite.

Spectral anomaly T(g)3 (Siccus 1/50000 topo sheet). Sample **A318131**, a rockchip from o/c, quartzite with diss white calcareous specks, FeO-stained, multi-directional fracturing bearing limonite pitch, note presence cellular structure along fractures, rock has been mod leached. Fract cleav: 125/75SW, well-devel'd, FeO-bearing. Bed: 5/40SE. Jointing: 70/80SE, 5/m. Fract cleav: 5/65NW dense spacing. Hand specimen A131. Gash veins, en echelon to 1 m length 2-3 cm thickness filled with dense, dk rd-brn limonite-hematite: 75/85SE, 10/m.

83 298465/6445875. Brady Creek, 35 m width, draining N60E. Float, ironstn boulder, 50 cm diam, dk brn-gry, yellowish FeO inclusions and staining, replaced med-grained sandstn. Sample **A318133.** Other alluvial products include chert-

like meta sediment, grey limestn, quartzite, finely lam'd sandstn, blu-gry slate, silcrete, calcareous siltstn.

84 297685/6445400. Brady Creek. Meta sediment, very fine grained, slightly reactive to HCl especially along hairline fractures, lt gry on exposed surfaces, med to dk gry on fresh. Bed: 145/60SW (I). Well defined foliation: 55/85SE. Jointing: 65/80SE, occupied by milky-white qtz veins to 50 cm thickness.

50 m brg S10W (upstream), fine-grained and lam'd sediment. Bed: 70/70SE (I). Very twisted and distorted bedding, drag folds, weakly reactive to HCl.

85 296205/6442780. Slight topo rise. Carbonate rk, yel-gry, laced with thin calcite veinlets. Fract cleav: 40/90. Bed: 320/30SW (I). Fract cleav: 260/80NW, fault zone, 2 m width, follows creek channel. This area comprises spectral anomaly T(di)2 (Siccus 1/50 000 topo sheet), a circular feature 250 m in radius with an outer rim to 500 m radius.

86 296060/6442485. Carbonate, dense, blu to dk gry. Carries diss pyrite, very minute, euhedral, <0.5%. Bed: 95/55SW; 80/60SE.

87 296505/6442970. Stream sed sample **A318134.**

88 298045/6442790. Gossanous outcrop, 5 m wide, trends N55E. Rockchip sample from o/c **A318135.**

89 298800/6442215. Creek, drains N50E. Outcrop, a meta-sediment, tough, well-indurated, finely laminated, lt gry to lt lt gry, wk'ly reactive to HCl. Bed: 40/85-90SE. Laminations alternate from brick rd to orange, yellowish-brown and lt gry. Abundant ironstn occurring as float in creek.

90 300890/6442525. Stream sed sample **A318136.** Siltstn, yellowish, leached and bleached, finely lam'd. Bed: 35/85SE. Fracturing: 85/70SE filled with dense limonite, 10/m.

91 313715/6443180. Hill 327. Sandstn, qtz, mica, dk min resembling amphibole. Lam'd. Med rd-brn on exposed surfaces, med gry on fresh. Fract cleav: 65/90. Jointing: 345/85NE, 10/m. Bed: 50/45SE. Trace amts vein qtz, milky white.

92 314250/6442830. Hill 320. Siltstn, med to lt gry, slightly FeO-stained. Bed: 90/35S (I). Fract cleav: 55/90, well-devel'd. Ulupa Siltstn.

93 314815/6442100. Hill 317. Ulupa Siltstn, finely lam'd. Bed: 100/30SW. Fract cleav: 55/90, well-devel'd.

94 315595/6446380. Tarcowie Siltstn, lt gry. Sandy limestn interbeds.

95 319600/6447575. Limestn, sandy, silty, finely bedded, brn to yel-brn on exposed surfaces, lt to med gry on fresh. Bed: 65/45SE.

96 320125/6446075. Spectral anomaly T(s)2 (Orama 1/50 000 topo sheet). Highly gossanous exposure on SE creek bank (Photo 02).

Photo 02. Dark reddish-brown and bleached gossanous outcrop. Rock is a quartzose sandstone, extensively leached with numerous cavities, exhibits layered structure made conspicuous by variable yellowish, reddish, orange, dk brown coloring. View S20W.

Sample **A318137** from rd-brn, leached gossan (from site where hammer occurs in photo 02). A sandy textured rock,

quartzose. Loaded with ferruginous pitch, probably a transported (exotic) material. Leaching tends to produce elongate cavities parallel to layering of gossan as well as various spheroidal features (Photo 03). Attitude of layering: 105/40SW; 105/25SW.

Photo 03. Spheroidal erosional cavity 1.4 m horizontal diameter x 80 cm vertical. Concentric banding amplified by variable yellowish, orange, reddish FeO-staining and hardened limonite rind. Inner core (position of hammer) encircled by dark red-brown rind to 3 cm thickness (Sample **A318138**). Bedding traced through spheroidal feature: 80/35SE. View S10E mag.

Sample **A318139** from face thoroughly FeO-saturated sandstn layers to 3 cm thickness. Attitude bleached layering: 250/45SE.

100 m brg 45° from sta, gossanous o/c, 40 m width. Appear to be FeO-saturated sandstn beds. Outcrop exhibits unique weathering pattern of spheroidal cavities 10-50 cm diam, irregular oval-shaped with tough hardened limonite rinds. Bed: 270/55S (I). Originally finely lam'd siltstns and sandstns alternating with selectively FeO-saturated layers which have been subjected to subsequent leaching and devel't of oval-shaped cavities. Sample **A318140** from blk,

dense ferruginous rinds, hand lens shows botryoidal structure typical of precipitated iron-rich solutions.

97 315930/6441100. Spectral anomaly T(s)3 (Orama 1/50,000 topo sheet). Siltstn, gry-grn, produces on weathering reddish-brown soils. Adjacent low foothills this area exhibit distinctive rd-brn color due to, not lithology, but flora, is a dense cover of last year's dead, rust-covered onion weed. Fract cleav: 240/85NW. Jointing: 200/90, 5/m. Surface carries minor milky-white qtz float. Bed: 60/80SE.

98 293980/6451130. Sandstn, qtz/lithic, trace amts diss pyrite, very weakly responsive to HCl. Bed: 175/75SW.

99 293610/6451100. Siltstn, finely bedded, characterised by large o/c's. Platy cleav parallel to bedding, gry-grn. Bed: North/50W. Jointing: 295/55NE, 10/m. Calcite vein, coarse xtl'n, 5 cm wide: 65/70SE.

Photo 04. Sandstone dike cutting River Wakefield Group sediments. The dike, a pinkish quartzose sandstone (quartzite) cross-cuts and parallels the bedding in gray-green siltstone. Bed: North/50W. Layer of quartzite directly beneath hammer is 12 cm thick. A large, massive bed of quartzite occurs 20 m upstream (S60W). View N75W.

293560/6451555. Small tributary. Stream sed sample **A318144.**

100 292875/6451210. Small tributary to main creek. Siltstn, gry with sandstn interbeds. Bed: 10/65NW. Fault: 160/80SW, 75 cm wide, wall rock thoroughly comminuted. Non-mineral. Stream sed sample **A318141** from tributary.

Stream sed sample **A318142** from main creek loc'd about 35 m east of tributary. Boulder float in main channel comprises lt gry, med gry to reddish siltstns, large milky white qtz, limestn, dolomite, lt gry massive sandstn and rare ferruginous vein material.

101 293100/6451395. Stream sed sample **A318143** from small tributary to main drainage. Rock o/c is green siltstn. Bed: North/70W.

102 294150/6450750. Creek. Stream sed sample **A318145.** Rock o/c is gry siltstn, interbedded sandstn. Bed: 140/35SW. Jointing: 110/70NE, 20/m.

103 294290/6450620. Fault gouge, silicified: 60/80SE. Rockchip sample **A318146**, blk to brn-blk MnO/FeO-bearing breccia. Host rock is dense meta-limestn which has suffered considerable crushing and twisting. Bed: North/45W (I).

104 294225/6450355. Prominent diapiric outcrop, 4 m relief x 50 m length trending N40E, 90 (Photo 05). Intensely silicified, comprising a variety of cobbles and boulders, angular to well-rounded with silicic binding substance, rd-brn to gry-brn exhibiting a fludial-flow lamination and leached cellular structure (Photo 06). Host sediments themselves are deformed (twisted, distorted, locally brecciated) and carry ironstone layers. Bed: 360/45W, abuts the diapir. Rockchip sample **A318147.**

105 293875/6449580. Prominent ridge, quartzite, feldspathic, olive-gry, locally reddish-gry due to contained FeO. Bed: 15/65NW (I); 15/65NW, measured 40 m southeast of first bed. Fractures frequently filled with thick (1-3 mm) smears limonite and less common hematite. Rockchip sample **A318148**, FeO-stained qtzite, diss pyrite, leached.

Photo 05. Diapiric emplacement cutting gray laminated siltstone and dolomitic beds of the River Wakefield Group along western flank of the Wilcowie Anticline. View 100°.

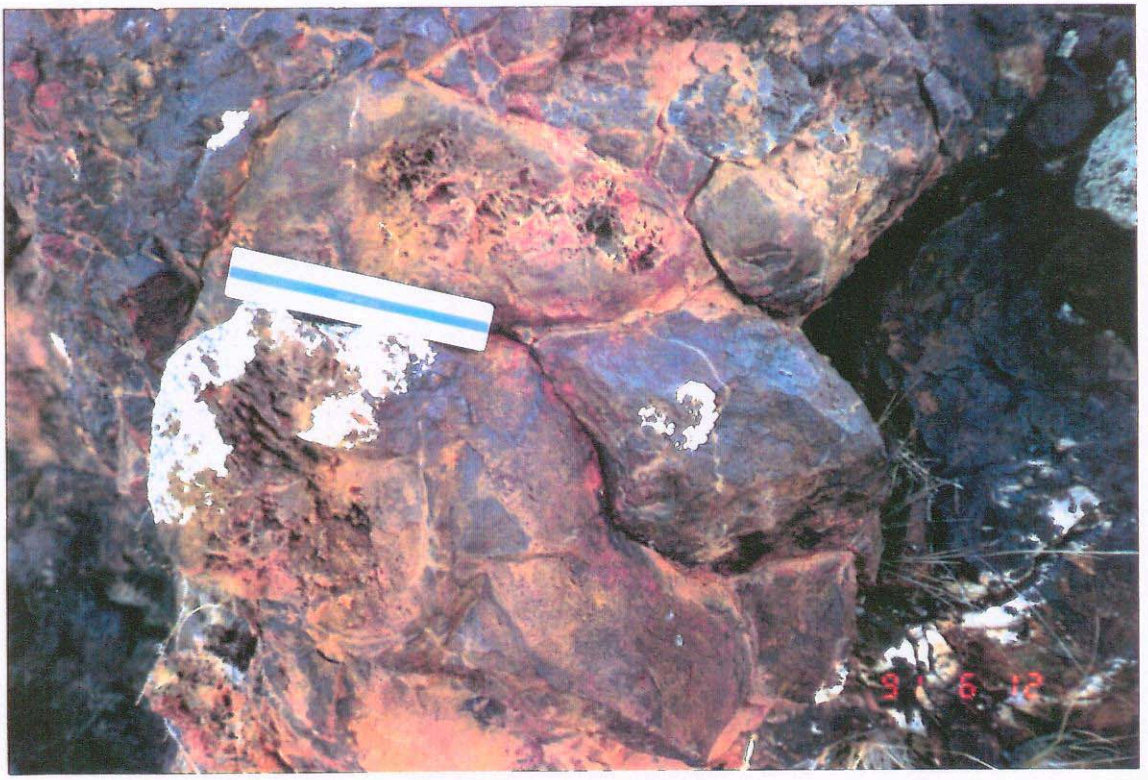

Photo 06. Disoriented cobbles set in ferruginous-siliceous matrix. Minor quartz injections cross-cut constituent blocks and itself broken and pulled apart, brecciated. Note relatively large rectangular cellular structure resembling former crystalline carbonate blocks. View N80W. Ruler is 17 cm length.

106 294090/6449215. Stream sed sample **A318149**. Rock float in creek comprises yel-gry limestn, feldspathic sandstn, gry-grn siltstn.

107 292695/6447820. Creek at major fork. Siltstn, sandy, pale-gry, leached and bleached, finely lam'd with well-devel'd platy cleavage parallel to bedding. Strongly reactive to HCl. Stream sed sample **A318150** from SW fork. Sample **A318151** from NE fork channel. Bed: 5/85NW (I); 5/60NW (I).

120 m downstream on SW bank find old prospect pit, originally down about 3 m in perched gravels. Suspect alluvial gold. Lithics comprising mullock mostly rounded to sub-rounded gry siltstn, sandstn and limestn, trace amts ironstn, hematite with caliche coatings.

108 292820/6447805. Creek, SW bank, intensely broken rock, shear fracts: 170/80NE, numerous parallel breaks. Rock is totally comminuted over width 10 m. Yellowish FeO-stain. Latter fracting probably represents shearing sympathetic to principal direction of break, ie 140° mag (Photo 07).

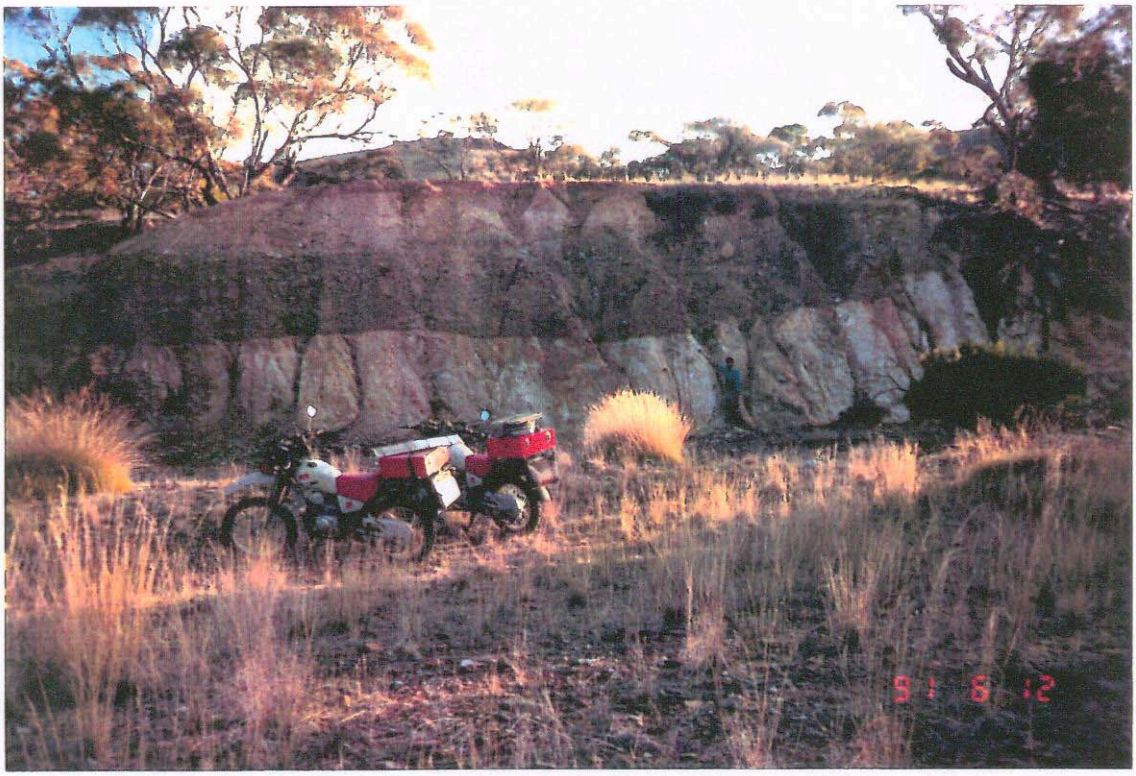

Photo 07. Sheared and bleached calcareous wall rock to S40E fault occupying creek. Overlying low-angle gravels are Recent deposit on sharp, slightly oxidized contact. View 250°.

Sample **A318152** from rd-brn ferruginous portion of fault, some limonite deep rd-brn with minute cellular structure. Displacement is left lateral.

109 292435/6446800. Creek. Stream sed sample **A318153**. Siltstns, alternating lt and dk gry with interbedded sandstn, both finely lam'd. Bed: 20/70NW (I).

Large collieform carbonate blocks in creek, quartzite, gry and redddish siltstn, minor ferruginous material, often brecciated but well-indurated. Rock o/c excessively broken, leached and bleached. Fault: 120/80NE. Fault: 45/55NW.

Highly polished and striated fault footwall in silty sandstn suggests hanging wall is down relative to footwall, ie normal displacement: 45 @ 320. Footwall heavily FeO-stained.

110 292090/6446000. Creek. Stream sed sample **A318154** from natural riffle. Siltstn o/c, calcareous and dolomitic limestn. All very finely lam'd. Bed: North/75W (I). Float in creek includes qtzite, gry-brn siltstn, dolomitic limestn, silty sandstn, lt to med gry. Bed (20 m downstream): 170/85SW. Sandstn exhibits graded bedding.

111 292300/6445545. Foothills on west flank of anticline. Ferruginous fissure, vuggy, heavy limonite, 30 cm thickness: 15/90. Sample **A318155** from o/c, very porous, cavities, good rd-brn limonite, remainder is brn-blk, dense ferruginous pitch. Outcrops smeared with calcrete coatings. Host rock is calcareous siltstn with interbedded quartzose, pyritic sandstn. Numerous 2-3% cubic cavities former pyrite. Sandstn is predominant rock type this loc'n. Bed: 10/85NW.

30 m to west, silty sandstn, very finely lam'd, non-reactive to HCl. Bed: 30/80NW (I).

24 m brg 280° mag, another linear outcrop kernally textured fault fissure filling, 60 cm width: 35/90 (dip ?). Rockchip sample **A318156** from fissure.

200 m brg due south, prospect pit, originally about 1 m deep, exploits another ferruginous fissure filling, 60-70 cm wide: 200/90. Material in mullock comprises ferruginous breccia, well-indurated, cavities. MnO/FeO. Limonite is yellowish-brn, probably exotic. Sample **A318157** from

fissure. Host rock is silty sandstn grey with reddish surface oxide coating, pyritic. Bed: 355/85-90SW.

112 290765/6445700. Creek, draining east. Shale, calcareous, black, finely laminated. Exhibits alternating reddish and lt brn beds (2-4 mm), yellowish FeO-staining. Silty and sandy limestn, dolomitic limestn to 1 m thickness. Bed: 170/80NW (I). Dolomitic limestn, on weathered surfaces, exhibits half circular etchings 3-5 cm width, concave down, outline accentuated by wk FeO-stain (Photo 08). Stream sed sample **A318158.**

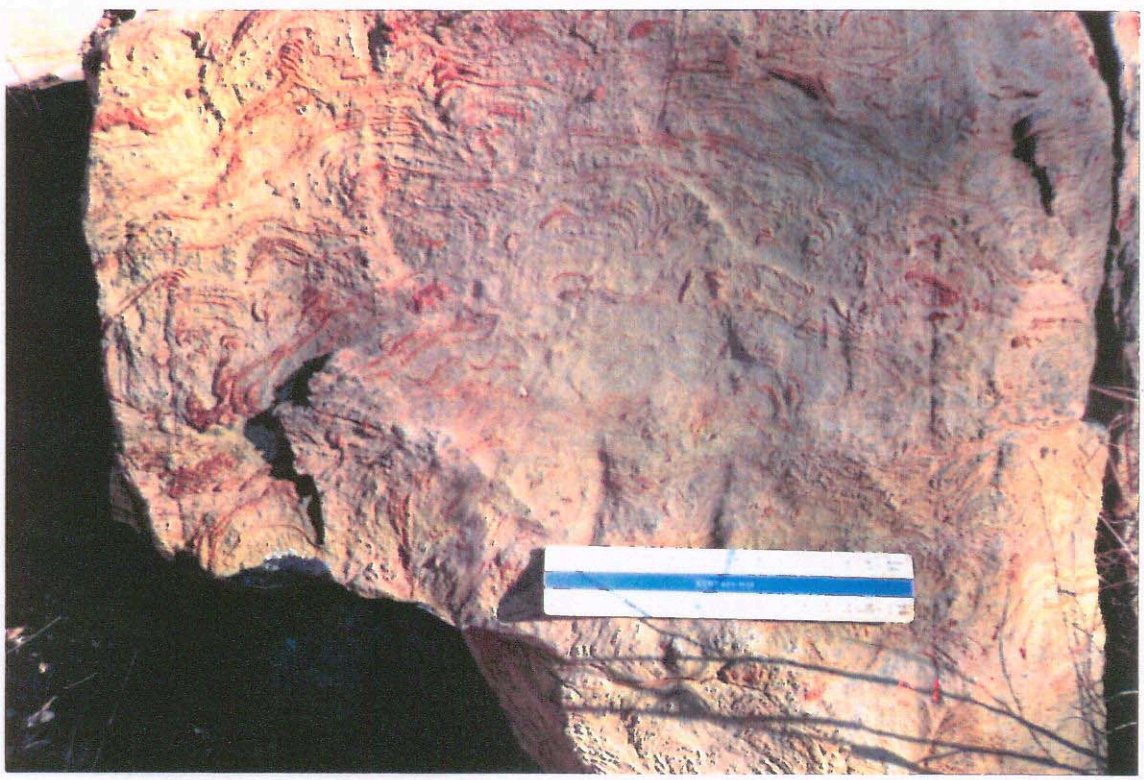

Photo (08) Stromatolites in Skillogalee Dolomite. Bedding: 175/75SW. Top of photo due west. Full length of ruler 17 cm.

Vertical shaft between creek and old mine road. Water at about 5 m depth. Suspect that commodity sought was carbonate used in smelting Cu ores from Prince Alfred mine.

150 m downstream brg 90° mag find circular distribution of comminuted mullock, 8 m diam. Outer mullock ring is shale, rd-brn, grey. An inner ring of less amount (height/width) mullock is decomposed limestn. Resembles circular arrasta-like operation. Inner ring of limestn is 4 m diam.

113 289130/6445555. Limestn, silty, brn on exposed surfaces, blu-gry on fresh, str'ly reactive to HCl. Bed: 25/80NW.

114 291530/6443100. Creek, drains N65E. Siltstn, calcareous, gry. Bed: 130/75SW (I). Finely lam'd with parting parallel to bedding planes. Stream sed sample **A318159.**

115 290585/6441715. Stream sed sample **A318160.** Rock o/c is feldspathic quartzite, weathers white on exposed surfaces. Bed: 165/75SW.

[Samples **A318161** and **A318162** assigned to Teetulpa].

116 289510/6440790. Ridge crest. Quartzite, porous. Bed: 160/50SW. Weathers to rd-brn soil.

117 289765/6449815. Limestn, silty, strongly cleaved parallel to bedding: 10/90. Regional bed: N/65W. Well-bedded foothills: 25/45NW.

118 290090/6450075. Side hill overlooking (to south) H Davies' anomaly T(di)1 (Siccus 1/50,000 topo sheet), which he has picked as a diapiric emplacement. About the only significant feature here is the alignment of relatively large rabbit warrens, trending N10W in rocks belonging to the Tapley Hill Formation. Rocks at station are highly cleaved parallel to bedding, silty limestons, calcareous siltstn. Bed: 15/65NW. In area of anomaly, bed: 10/60NW (I).

200 m brg S60W from sta, small tributary draining T(Di)1 take stream sed sample **A318163.** Outcrop in gully comprise lt gry, finely lam'd calcareous siltstn. Bed: 30/55NW (I).

119 289840/6439810. Limestn, coarse-crystalline, massive, prominent o/c to 8 m relief, 20 m width trends 345° mag. Fract cleav: 50/65SE. Bed: 70/65SE (a very faint planar str). Highly broken but rehealed with $CaCO_3$, principal fracturing: 330/60SW, a zone of breakage, distributive over width 4 m.

120 289070/6439575. Ridge crest, trends N15E mag. Limestn, siltstn beds, both finely lam'd (Nackara Dolomite? Umberatana Group). Bed: 25/70NW (I). Purplish slaty siltstn.

190 m brg S60E, ridge trending N15E, finely bedded dolomitic siltstn and purplish slaty siltstn. Bed: 15/85-90SE (!). Fract cleav: 80/85NW.

121 289455/6439605. Creek, drains 105° mag thru relatively rugged terrain on west flank "Wilcowie" anticline. Siltstn, gry-greenish-gry. Non-reactive to HCl. Bed: 60/60NW; 40/65NW. Weathering to conspicuous reddish soil. Stream sed sample **A318164.**

122 289295/6439080. Creek, drains 140° mag. Limestn, sandy, well-bedded, locally quite coarse, pinkish. Bed: 30/65NW. Stream sed sample **A318165.** Jointing: 310/60NE, 5-10/m.

200 m brg S25E. Sandstn, quartzose, str'ly ferruginous. Bed: 210/60NW. Rockchip sample **A318166**, a coarse, porous sandstn, saturated with FeO (probably transported), slightly feldspathic.

123 289765/6438920. Graywacke, finely bedded: 40/70NW. Bedding plane parting (fault?) filled with pinkish siliceous material with irregular clots and stringers hematite, minor fine cellular str. Note minute tabular crystals, off-white, euhedral resembling barite. Host rock non-reactive to HCl. Rockchip sample **A318167.**

124 289575/6438680. Breccia, siliceous cement, o/c trends N30E connecting with Sta 123. Probable fault zone, 3 m width. Rockchip sample **A318168**, a thoroughly comminuted sandstn, densely rehealed, shows internal slickenside structure, FeO-stained, yellowish and rd-brn.

60 m brg S45E, small hill, silty sandstn, finely bedded: 155/50SW. Regional structural trend of beds this general area should be close to N40W. 155° (S25E) trend, if having been influenced by faulting, suggests right lateral displacement.

125 289625/6438555. Slight topo relief. Breccia or crush zone: 335° mag. Rock is quartzite, leached and slightly bleached but retaining reddish residue of FeO. Bed: 110/25SW. Sample **A318169.**

126 290265/6438375. Ridge, trend N25E. Sandstn, fn to med grained, yel-brn, qtzo-feldspathic, diss pyrite now altered to

limonite specks, 1-2%. Reactive to HCl. Outcrop exhibits crush structure with minor clast rotation. Rockchip sample **A318170**, sandstn exhibiting dk rd-brn diss specks limonite, productive appearing.

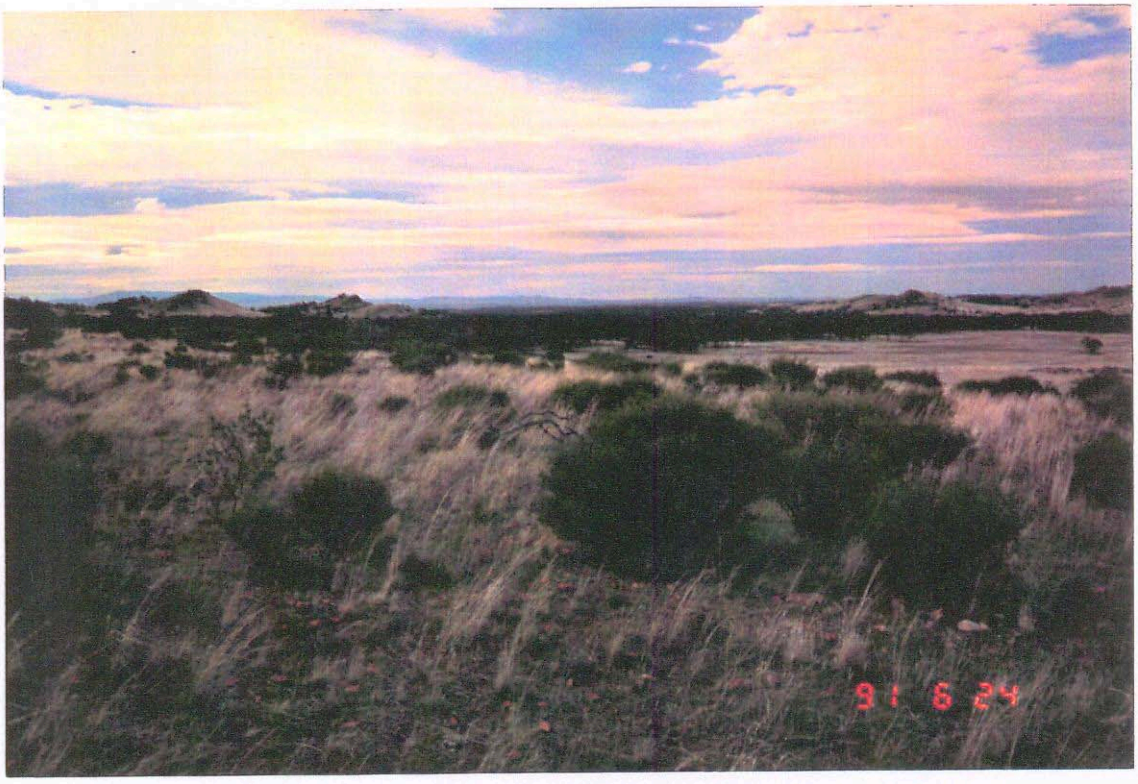

Photo 09. View N45E from a point near the "nose" of the Wilcowie Anticline. Both limbs of the structure are shown; on the right beds dip south, on left to northwest. Central (axial) portion of anticline is densely covered by mallee scrub.

127 290295/6437215. Creek, drains 105° mag. Sandstn, punky, qtzose, good cross-bedding, finely lam'd. Bed: 70/85-90SE; 65/85SE. Jointing: 315/75NE, 10/m. Stream sed sample **A318171**.

128 290450/6437580. Sandstn, qtzo-felds, nearly white on freshly broken surfaces due to argillic alter'n of felds. Bed: 60/75SE (I). Jointing: 330/75NE, 5/m, minor FeO-smears.

129 290600/6438065. Gully, small, drains 125° mag. Surface debris about 1 m thick, comprising thoroughly FeO-stained siltstn and sandstn fragments, have productive appearance. Includes speck hematite on multi-directional fractures. In places rock thoroughly bleached, off-white. Rock o/c beneath eluvial debris excessively broken, show rotation of clasts. Principal trend of fracturing: 145/60NE, carry infiltrated argillic products gen FeO-stained and blk-brn

ferruginous pitch. Some fracts with protruding plates (1-2 cm thick) ironstn, non-magnetic. Rockchip sample **A318172.**

110 m brg N40W, good o/c where creek bends to SW, qtzo-felds sandstn. Bed: 30/85SE. Jointing: 130/80SW, 10/m, usually FeO-stained. Sandstn is yellowish to pastel greenish, bleached. Stream sed sample **A318173.**

130 291790/6438420. Ridge crest. Quartzite (? Ingomar Qtzite), prominent ridge-former, feldspathic now mostly argillic products. Slt FeO-staining on exposed surfaces. Bed: 65/65SE.

131 291385/6437910. Siltstn, yel-orange stained. Interbedded sandstn. Surface littered with blk-brn ferruginous clasts or plates derived from vein sites. Fract cleav: 50/90. Rockchip sample (float) **A318174.**

132 291080/6437695. Sandstn, qtzo-felds, heavily impregnated with FeO, locally with clots rd-brn limonite. Very shallow topo rise trending 175° mag. Surface littered with sub-rounded ironstn pebbles. Rockchip sample **A318175** of ironstn pebbles.

133 290895/6437185. Creek. Quartzite. Bed: 50/80SE. Shearing parallel to bedding planes. Jointing: 160/75NE, 20/m.

90 m brg S30W, creek draining 80°, good o/c whitish quartzose sandstn, cross-bedded. Interbedded silty layers often FeO-stained which, where densely so, produces an ironstn-like layer. Bed: 50/75SE (I). Jointing: 230/80NE, 5/m, may be occupied by thin qtz veins. Beds amplified by dk gry to black, thin (1-2 mm) discontinuous heavy mineral bands. Stream sed sample **A318176.**

134 291005/6437500. Prospect pit, originally 1 m deep. Mullock comprises dense ferruginous sediment, siltstn and sandstn, numerous elongate openings to 1-2 mm width, discontinuous. Much yel clay in mullock. Principal rock is qtzose sandstn. Bed: 50/70SE. Jointing: 155/75NE, 15/m. Rockchip sample **A318177**, mullock.

135 291920/6437700. Area devoid of veg'n. Characterised by ironstn clasts and sub-rounded magnetic particles. Rockchip **A318178** float.

136 291910/6441005. creek. Sandstn, qtzo-fleds, porous. Bed: 130/40SW (I). Stream sed sample **A318179.**

137 291220/6440875. Sandstn, quartzose, Bed: 350/60SW. Interbedded yellowish and reddish silty sandstn. Finely lam'd. Bed: 330/35SW. Often with thin dk rd-brn limonite pitch to 1-3 mm on bed planes. Stream sed sample **A318180.**

138 286645/6444205. Ironstn outcrop, 3 m relief, 20 m length: 135°. Prospect pit loc'd on west side. Internal foliation: 345/75SW. Originally a silty sandstn, now saturated with FeO. East side exhibits fol'n in coarse sandy facies.

139 286695/6444440. Creek. Sandstn, siltstn, yellowish, reddish due bleaching and heavy impregnation FeO, locally dk rd-brn forming tough ferruginous exposures. Bed: 190/70NW. Fracts and bedding planes filled with hardened ferruginous ppt (Photo 10).

140 287370/6444225. Prospect pit (limestn quarry ?) 2 m x 2 m, down about 2 m. Limestn, lt gry, breccia, well-healed. Intersticial calcite as fillings and discontinuous veins, carries chalcopyrite with associated CuO staining. Limestn exhibits faint foliation: 25/65SE (?). Extensive outcrop.

141 286185/6444300. Siltstn, gry-grn, finely lam'd. Bed: 25/65NW.

142 285820/6444885. Creek. Siltstn exposed in north bank, purplish, reactive to HCl. Fract cleav: 40/90; 15/80NW older set. Bed: 40/40NW. Jointing: 315/75NE, 3/m.

143 285205/6444275. Siltstn, gry-grn, well-devel'd platy cleavage parallel to bedding. Bed: 20/40NW (I).

144 284580/6443085. Creek. Siltstn, lt brn on exposed surfaces, medium gry on fresh, finely lam'd. Bed: 180/60W (I). Jointing: 95/80NW, 5/m.

145 283830/6443510. Prominent linear o/c rd siltstn. Bed: 25/5NW. Jointing: 315/80NE, 3/m. Bedding locally

accentuated by heavy impregnations FeO. Some beds exhibit soft rock deformation features. Non-reactive to HCl.

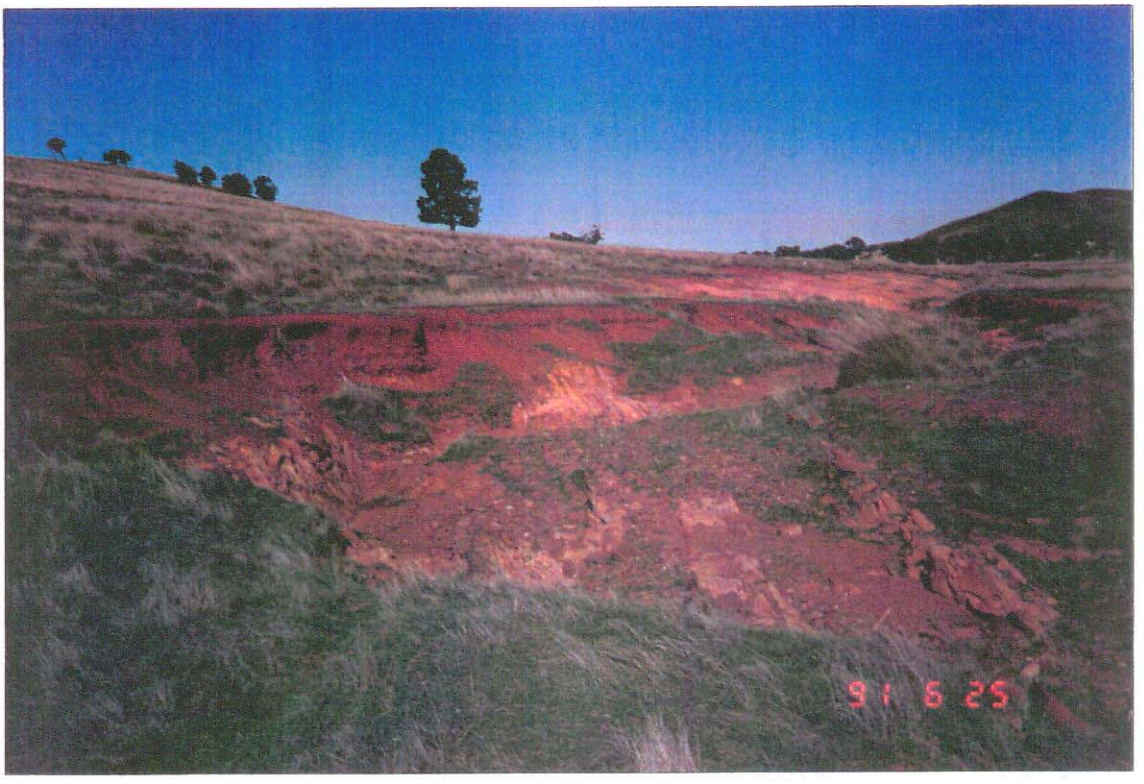

Photo 10. Conspicuous ferruginous staining and bleaching in siltstones and sandstones of either the Tarcowie Siltstone or overlying (intertounging) Etina Formation. Large ironstone outcrop (sta 138) at centre skyline. View 190°.

146 283250/6443220. Creek drains 115° mag. Siltstn, gry-brn, locally slightly reddish. Bed: 70/45SE. Fract cleav: 35/90.

147 283870/6442400. Creek confluence, principal creek drains 115° mag. Siltstn, purplish, shale-like appearance. Bed: 15/60NW. Fract cleav: 45/90. Bed: 15/60NW (I). Finely lam'd with fine sandy layers. Gry-brn on exposed surfaces, lt olive-gry on fresh. Non-reactive to HCl.

148 285205/6442210. Sandstn, qtzo-felds, pinkish, fine to med grained, form prominent linear o/c's. Non-reactive to HCl. Bed: 15/75NW. Jointing: 55/80SE, 3/m.

149 284925/6440080. Creek draining 105° mag. Siltstn, dk gry, punky, well-devel'd platy cleavage parallel to bedding. Bed: 30/80NW (I). Jointing: 120/70NE, 3/m. Site known as Gilliards Well.

150 285410/6438975. Limestn, blu-gry (? Brighton Limestn equivalent), fairly massive but shows faint foliation: 115/85SW, about 70 m wide at this site.

100 m brg 140° mag, SE side principal drainage, Weira Creek, o/c gry-brn silty sandstn. Bed: 200/65NW.

151 285860/6438215. Hill (578 m). Siltstn, gry-grn, reactive to HCl. Bed: 25/50NW (I).

152 285000/6437870. Creek drains 135° mag at junction with main drainage, Weira Creek. Siltstn, gry-grn, finely laminated, strongly reactive to HCl. Bed: 25/60NW (I). Overlain by 100 m (slope distance) blu-gry limestn which in turn o/lain by beige-colored silty dolomitic limestn (20 m) which grades up into gry-brn calcareous siltstn-sandstn, highly cleaved: 30/90. Blu-gry limestn exhibits pebble-like texture, flattened, that parallel bedding, 2-4 cm length, 1-2 cm width.

153 287000/6444815. Ridge, trends N20E mag. Rock is siltstn, brn on exposed surfaces, lt gry-brn on fresh. Non-reactive to HCl. Bed: 10/80W. Fract cleav: 10/80W. Joint: 130/60NE (CLT).

154 285575/6443130. Top of Yacko Hill just off crest. Rock is siltstn, brn on exposed surfaces, gry on fresh. Reactive to HCl. Bed: 180/50W. Fract cleav: 195/40W (CLT).

155 285290/6443475. Siltstn, finely laminated. Non-calcareous. Brn on exposed surfaces, lt gry to brn on fresh. Bed: 160/60SW. Fract cleav: 05/70W (CLT).

156 286230/6436615. Ramsay's Bore. Highly altered ferruginous quartzose sandstn and siltstn, str'ly reactive to HCl. with large clasts of milky quartz. Appears to be a crush zone or fault occupied by quartz veins, multi-directional, locally broken with indurated clasts, orange-mustard color. Vein walls case-hardened. Sample **A318181** (CLT).

On ridge trending N10E. Rock is very finely laminated, slightly calcareous siltstn with minor milky quartz veinlets. Bedding characterized by swirly configurations. Bed: 10/75NW. Fract cleav: 15/70NW (CLT).

On ridge trending N20E. Rock is brown on exposed surfaces

to blu-gry on fresh. Adjacent rock is limestn, brn on exposed surfaces. blu-brn on fresh. Bed: 130/65W. Fract cleav: 30/85NW (CLT).

157 287295/6436675. Creek fork. Siltstn, yellowish, well-cleaved parallel to bedding: 10/70NW. Jointing: 285/70NE, 10/m.

158 287310/6437665. Creek. Limestn, silty, alternating blu-gry, off-white. Exhibits conglomeritic texture with numerous isolated pebbles throughout. Bed: 20/75NW. Jointing: 100/80SW, 5/m. Decomposed, punky sediments, broken.

159 287715/6437360. Siltstn, calcareous with interbedded silty limestn, also massive blu-gry limestn. Bed: 10/70NW. Jointing: 90/70N, 5/m.

160 288490/6436500. Creek, drains 145°, 1.5 m thick alluvial overburden. Siltstn, calcareous, med gry, finely bedded. Bed: 175/50SW. Jointing: 190/80SE, 20/m, filled with caliche. Stream sed sample **A318182.**

161 288775/6436400. Siltstn, silty sandstn, punky, bleached, pastel gry with yellowish FeO-stain. Finely lam'd. Non-reactive to HCl. Bed: 45/80NW; 55/80SE (I).

50 m brg N10E, quartzite, feldspathic now altered to argillic products, diss black spots (magnetite ?). Bed: 45/75SE. Rockchip sample **A318183** from FeO-stained, decomposed qtzite. Sample site precisely within nose of "Wilcowie" anticline.

50 m brg N25W, gully. Rockchip sample **A318184**, qtzite, felds altered to clays. Highly fractured with thin qtz veinlets including dk rd-brn productive-appearing limonite-goethite.

162 288590/6436680. Ridge trend 355° mag. West flank of Wilcowie anticline near axial zone. Quartzite, feldspathic, latter altered to clays. Bed: 355/70SW (I).

163 289175/6436800. Gully draining 110° mag. Siltstn, very finely lam'd, thoroughly leached and bleached, reactive to HCl. Bed: 55/85SE (I).

75 m brg 120° mag, nick point in drainage. Quartzite, feldspathic, reactive to HCl. Bed: 55/80SE. Underlain by finely lam'd yellowish siltstn. Bed: 55/80SE (I).

150 m downstream, quartzite, feldspathic, reactive to HCl. Fract cleav: 130/85NE, well-developed, appears to be due to local deformation, fract surfaces filled with FeO.

164 289410/6437310. Gully, narrow and deep (2.5 m). 1.5 m alluvial overburden. Siltstn, very fine grained and lam'd, bleached, leached, has slight silicified character. Rockchip sample **A318185**, a crackled siltstn, intersticial openings filled with dk rd-brn limonite-goethite. Bedding planes carry thin (1-2 mm), discontinuous qtz veinlets. Principal fract system: 305/70SE, obvious in o/c and micron dimension under hand lens inspection.

100 m upstream, at fork in gully, quartzite, very fine tex'd, finely lam'd. Bed: 40/85-90SE. Cut by dense fract system: 130/80NE (? fault zone), coated and stained with FeO, some deep rd-brn, well represented on bedding planes.

165 289115/6437085. Isolated o/c, appears to be a ferruginous fault fissure filling, 40 cm wide, trending N55E. Heavily laden with broken vein qtz, crushed rock and ironst. Sample **A318186**.

166 286305/6435730. Ridge trending 355° mag. Limestn, lt brn on exposed surfaces, blu-gry on fresh. Slightly reactive to HCl. Bed: 36/50W (I).

167 286180/6435110. Creek draining 165°. Stream sed sample **A318187**.

168 285525/6434580. Ridge crest trending N15E. Siltstn, lt to med gry, very finely lam'd. Non-reactive to HCl. Bed: 15/40NW. Fract cleav: 45/85NW, very well devel'd.

169 285410/6433500. Siltstn, mottled brn on exposed surfaces, gry on fresh. Non-reactive to HCl. Bed: 150/70SW; 150/55SW (I). Fract cleav: 40/90, well devel'd.

170 286690/6434315. Gully, down 2 m, drains 140° mag. Limestn, silty. Bed: 55/85SE. Lt blu-gry.

171 286200/6434775. Limestn, occurs as well-devel'd linear o/c, lt blu-gry. Bed: North/65W (I). Fract cleav: 60/80SE.

172 286305/6434185. Prospect pits, each down about 1 m originally. Limestn, blu-gry. Bed: 355/55SW. Fract cleav: 60/90.

173 286160/6433300. Grass-covered plain, gentle SE slope. Supports numerous barren, windswept patches, littered with sub-rounded to sub-angular ironstn particles, some of which are magnetic, others with fine cellular str. Rockchip sample **A318188**.

174 285380/6432410. Sandstn, silty, olive-gry, cross-bedded, very finely lam'd. Bed: 65/70SE (I). Fract cleav: 55/80NW. Stream sed sample **A318189**, magnetic products include limonite pseudomorphs after pyrite, about 1 mm diam, euhedral.

175 285600/6430210. Grassy plain. Rockchip sample **A318190** from windswept surface, comprises Fe-rich lithic products, possibly siltstn but with accreted FeO, sub-rounded, shiny blk pebbles, slightly magnetic. Rd-brn soils.

176 286460/6430400. Grassy plain, Rockchip sample **A318191**, another windswept patch where collect ironstn and iron-rich pebbles 2-3 cm diam, sub-rounded and sub-angular.

177 287080/6430195. Grassy plain, Rockchip sample **A318192** from ironstn and iron-rich siltstn pebbles surface. Care is taken to select the shiny-black pebbles that appear to have at least a partial accreted FeO coating. Other obvious qtzose sandstn products are not included in sample.

178 290415/6441595. Vertical shaft, down 15-20 m, very dangerous, CLT nearly fell in when mullock about collar caved. Timbered with local mulga. Siltstn, yellowish, thoroughly ox'd, porcelain-like texture, FeO-stained but not productive appearing, very slightly reactive to HCl. Bed: 340/60SW (I). Sample **A318193** comes from mullock fines concentrated at base of dump. Inspection fails to find any vein-like or other mineralized material in mullock.

179 293480/6440205. Anesbury's Cu Diggings occupies hill top (Photo 11). Four dozer cuts, 15-20 years old. SW cut 20 m

in length driven N20E, 3 m wide, down about 3 m at face (north end). Rock is sandstn, silty, variegated yellowish, reddish, brn, olive grn due FeO and CuO-staining on all fracts and bedding planes. Bed: 280/35SW (I).

Mineralised fault fissure: 10/80NW, measured on left (west) wall, where most productive rock appears to have been mined. Remaining fissure filling comprises rich rd-brn limonite-goethite. Rockchip sample **A318194** this material. Footwall probably included a mineral-bearing dense fracture system possible a metre or more in width that included cross-cutting fract's. In places rock shows coarse (5-10 cm) brecciation, very tough rock, slight silicification. CuO occurs in patches where heavily concentrated, especially where fracturing and crushing evident.

Photo 11. Anesbury's copper diggings. Situated within the axial section near the "nose" of the Wilcowie Anticline. Widespread CuO staining and minor malachite occupy a number of narrow fault fissures and adjacent fractured and leached lithic sandstone and siltstone wallrocks. View 340°.

85 m brg 90° mag to SE opencut. Sample **A318195** taken from tight (3-4 cm) fissure: 30/65NW exposed in face of working. Paralled by distributive breaks to 30 cm either side of fissure, carries dk rd-brn limonite-goethite. Host

rock is dk gry siltstn with slaty fissility parallel to bed: 85/25SE. Jointing: 150/60NE, 10/m, non-mineral. Opencut 16 m length driven N15W, 2 m wide, down 3.5 m at face. Very little CuO showing.

20 m brg N05E from face of SE cut, across top of hill, another cut, driven S05W for 12 m, 2 m wide, down 3 m at face. Sample **A318196** from face, a heavily limonite-goethite bearing fracture: 30/35NW, width of fract zone 1.5 m, numerous distributive breaks and minor brecciation. Minor CuO. Bed: 60/60SE (I). Minor bedding plane displacements, locally with well-devel'd gouge to 10 cm width. Prominent fracture system: 165/75NE, 30-40/m, non-mineral. Calcrete-rich soil horizon covering area. Rocks however are not strongly reactive to HCl.

Material in mullocks is a coarse, well-healed breccia with abundant intersticial cellular structure filled with ocherous limonite-goethite. Breccia and attached rock including cellular structure strongly reactive to HCl.

All of the workings are situated just off the crest of the ridge which trends N75E mag.

180 293610/6439885. Hill top. 370 m S20E of workings. Rock type is sandstn, med grained, well fract'd, multi-directional, filled with rd-brn limonite-goethite to 1-2 mm, less frequent sulphide cavities, disseminataed and in clots or stringers. Rockchip sample **A318197**. Bed: 75/75SE (I).

181 293805/6440050. Sandstn, quartzose, reddish-brown, extensively broken, brecciated, rehealed with limonite. Intersticial fillings include comminuted sandstn heavily impregnated with FeO as well as fine cellular structure of previous sulphides. Prominent fact cleav: 325/85NE (bedding ?). Sample **A318198** crushed and limonite-goethite sandstn.

182 294300/6440250. Ridge crest trending 60° mag. Sandstn, quartzose, fine to med grained, heavily laden with FeO including limonite-goethite clots. Bedding: 50/80SE; 55/75SE (I). Jointing: 150/85NE, 10/m, coated with FeO and limonite fillings. Bedding planes equally saturated with FeO. Some sandstn very vuggy with rd-brn limonite fillings. Weak to mod silicification. Heavy limonite-goethite, or

gossanisation, zone about 5 m wide but continuous of several 100 m.

Sample **A318199** is qtzose sandstn heavily impregnated with limonite-goethite, slightly silicic, locally brecciated. Sample **A318200** is dense gossanous material, brecciated with clasts suspended in hard rd-brn siliceous-ferruginous material. Vugs filled with rd-brn and yel-brn limonite-goethite. Hand specimen A200.

110 m brg 125° mag from Sta 182, ridge crest. Rock is sandstn, qtzose, with minor argillic products derived from alteration of feldspar. Slaty cleavage parallel to bedding: 60/80SE (III), cross-bedded, slt'ly pyritic, ferruginous cementing medium.

183 294595/6440250. Gossanous zone, continuation with that at Sta 183. Tends to stand in slight relief, trending N85E. Quartzose sandstn, locally thoroughly saturated with FeO. Bed: 55/80SE.

184 294880/6440385. Ridge crest, trending N85E. Sandstn, slightly feldspathic. Bed: 65/70SE. Fractures filled with speck hematite. Abundant fine qtz veinlets, cross-cut ferruginous and hematite veins! Limonite-goethite impregnates bedding planes and all fractures. Rockchip sample **A318201**.

130 m brg N15E, barren (veg free), windblown surface covered with blk and dk brn ferruginous chips including magnetic products, ironstn plates derived from veins to 2-3 cm thickness and dense hematite plates. Sample **A318202** of pebble-size.

220 m brg N10E mag. Heavily gossanised area, greater than 50 m diam. Outcrops qtzose sandstns saturated with limonite-goethite, occupy hill top, hard, appear to have suffered brecciation. Ferruginous o/c's stand slt relief, linear, attitude: 100/80SW. Hand lens inspection shows qtzose sandstn tex, with irregular silica clots. Sample **A318203**.

185 295290/6441335. Hill, trends N65E. Sandstn, quartzose, FeO ubiquous, in fracts and bedding planes. Sample **A318207** from sandstn o/c. Fine to med grained, laced

with multi-directional limonite veinlets, minor crush structure, intersticial ferruginous/siliceous filling, thin (1-3 mm) qtz veinlets, discontinuous. Bed: 30/80SE.

120 m brg N15W, near base of hill. Rockchip sample **A318206**, comprises ferruginous sandstn, intensely fract'd, fillings of limonite-goethite, hematite. Weakly silicic.

186 293605/6440625. Densely wooded (mulga) area. Prospect pit, obviously blasted open (hand-drilled powder hole). Rock is sandstn. Disseminated limonite pseudomorphs after pyrite, cubic, euhedral 0.5-1 mm. Fracts with well devel'd cellular structures from leached sulphides. Some limonite clots retain yel pyrite in centres. Extensive o/c, at least 50 cm diam, greater strike length. Classed as coarse sandstn, or gritstn, locally to 50% hematite, very fine platy type. Sample **A318204**.

187 294050/6440765. Creek. Sandstn, fine grained. Multi-directional limonite veining. Dark brn on exposed surfaces due FeO. Rockchip sample **A318205**, breccia. Bed: 55//75NW (I). Other rock types include silty limestn, blu-gry massive limestn. Creek alluvium carries abundant chips (plates) to 3-4 cm width ironstn, magnetic also hematite, obviously of vein origin. Bed: 25/80SE (I). Much shearing and devel't fault gouge parallel to bedding. Area should be noted for extensive breakage, shearing, leaching and ferruginous impregnations.

300 m upstream N20E from Sta 187, find creek boulder of dense gossan, hard, originally a fine grained sandstn followed by brecciation, limonitisation and lastly laced with gry-brn silica veinlets and discontinuous streaks. Hand specimen A208.

Rockchip sample **A318208**, visible cellular structures derived from former sulphides, very productive looking. Creek alluvium continues to comprise abundant ferruginous chips, maghemite (?) and hematite. Also large boulders ferruginous sandstn/siltstn with faces well devel'd slickensides. Large boulders milky-wht quartz studded with lithic inclusions.

Sample **A138209** from quartz float in creek, boulder 1 m diam, angular, carries anhedral pyrite clots and euhedral pyrite cubes and pyritohedral crystals, disseminated

limonite pseudomorphs after pyrite to 3%. Hematite, specular, thin plates, subhedral, generally w/in open spaces. Quartz sub-translucent, greasy-gry coloration. Hand specimen A209. Hand lens inspection of pyritohedral xtl's reveal silvery tint (As ?).

Continuing upstream additional 40 m, creek float, boulder, blk mottled dk-brn, dense, hard, reactive to HCl, slt'ly siliceous gossanous product. Qtzose sandstn originally as indicated by small unreplaced patches, angular boulder 50 cm diam. Rockchip sample **A318210.** Hand specimen A210.

188 293960/6440390. Quartz vein: 345/80NE, 30 to 60 cm width, hosts clasts of reddish sandstn. This would be source of float sample A318209. Vein produces natural riffle containing abundant ferruginous chips, sample **A318211,** as previously described. Also CuO-stained siltstn, siliceous.

30 m upstream, large qtz vein, 1.3 m width, hosts large (5-10 cm) clasts sandstn. Attitude: 165/85NE. Sample **A318212** from centre of creek where vein crosses same, here 65 cm wide. Hand specimen A212. Est original pyrite content 5-6%. Quartz itself is yellowish-greenish, greasy lustre, sub-translucent.

189 292015/6439000. Very thick veins of hematite at 90° angle to bedding. Host rock is bleached calcareous siltstn. Beds are very wavy, swirly, with crossbedding apparent. Multi-directional veining. Bed: 60/75SE. Hematite up to 7 cm thickness. Attitude of magnetite veining 10/25E. Rockchip sample **A318213,** comprises magnetic material, metallic lustre with remnant limonite (CLT).

190 292855/6439575. On ridge trending west. Rock is a non-calcareous sandstn with ferruginous clasts. Brn on exposed surfaces, beige to purple on fresh. Magnetite veinlets running throughout. Rockchip sample **A318214.** Remnants of limonite in vein material (CLT).

Sample **A318215** is a standard.

191 276715/6444170. Sandstn, pebbly also angular grit size clasts, some particles calcareous, brown, slightly ferruginous matrix. Constituents comprise fine, gneissic-like texture, slightly reactive to HCl, lt brn sandstn, quartz, clear or glassy

and sub-translucent. Outcrop rubbly, rd-brn, lt to med grey on fresh. Interbedded dolomitic beds. Bed (regional): 360/30E.

192 277320/6444270. Prospect pit, down 2 m originally 2 m radius. Siltstn, slightly pyritic, very fine-grained, finely lam'd. Diss pyrite less than 0.5%, euhedral. Quartz vein supports rafts of wall rock, sharp contacts, coarse crystalline clots and veins calcite. Calcite veining post-dates quartz. Minor CuO stain, malachite, azurite. Locally very productive rd-brn limonite-goethite: 330/65SW to 30 cm thickness. Host rock cut by sub-parallel gash veins calcite and rd-brn limonite-goethite. Bed: 10/45SE (I). Joint: 100/85SW. Fract cleav: North/85E. Gry-grn siltstn, non-reactive to HCl. Rockchip sample **A318216.**

193 278515/6445285. Very finely laminated non-calcareous siltstn. Brn on exposed surfaces. Gry to lt brn on fresh. Bed: 5/80E. Fract cleav: 40/40NW (CLT).

194 277325/6445495. Siltstn, gry-brn, reactive to HCl, finely laminated. Bed: North/65E (III). Fract cleav: North/85E, well-devel'd.

195 279935/6446085. Finely laminated non-calcareous siltstn. Gry brn on exposed surfaces. Darker gry on fresh. Bed: 175/35SE. Fract cleav: 20/65NW highly cleaved. Joint: 105/40S one to 1.5 m. Resembles Ulupa Siltstn (CLT).

196 280175/6446790. Creek. Sandstn, silty, finely lam'd, gry, well-devel'd cross-bedding. Bed: 295/10SW. Bedding plane displacements. Fault 2 m brecciated gouge: 170/85-90SW. Hematite vein: 235/80SE, 3 cm. Sample **A138217,** lies in footwall of side fault, gry silty sandstn. As indicated by bedding drag structure, fault is right lateral, ie, west block displaced north relative to east block. A very conspicuous structure with gry silty sandstn in footwall and light colored, highly crackled sandy limestn in hanging wall.

197 277380/6442725. Hill top, trends N10E. Siltstn, gry, reactive to HCl. Bed: 20/15NW (I). Finely lam'd. Lt brn on exposed surfaces.

198 278075/6444515. Total absence of exposed reef, impossible to get bedding. Float on surface is finely laminated

calcareous siltstn. Lt brn on exposed surfaces, gry brn on fresh (CLT).

199 278080/6443085. Ridge crest, trends N30E. Siltstn, gry, calcareous, lt brn on exposed surfaces. Bed: 05/85NW.

200 279830/6443275. Sandstn, qtzo-felds, gry on fresh, brn-gry on exposed surfaces. Fract cleav: 10/85NW, well-devel'd. Weakly responsive to HCl; 2nd fract system: 20/45NW. Bed: 10/85NW (I).

201 279980/6444150. Rock is non-calcareous siltstn. Bed: 175/85E. Fract cleav: 15/45NW (CLT).

202 280530/6442775. Hill top. Siltstn, med to lt brn, slt'ly reddish olive-grn on fresh surfaces. Non-reactive to HCl. Fract cleav: 30/60NW, well-devel'd; 2nd fract system: 25/85NW.

280715/6442700. Sandstn, fine-grained, ferruginous. Bed: 30/80SE (I). Lt and dk banding, function of graded bedding.

203 280510/6443925. Rock is weakly calcareous siltstn. Brn on exposed surfaces, gry on fresh. Bed: 15 vertical. Fract cleav: 15/45NW. Joint: not able to distinguish. On ridge trending N55W overlooking Wild Dog Bore. Much milky qtz float on surface with minor hematite in float.

204 281000/6443450. Siltstn, gry-brn, olive-grn on freshly broken surfaces. Non-reactive to HCl. Bed: 30/45SE (I). Ripple marks developing 225°.

205 280550/6444680. Creek, drains 325° mag. Sandstn, silty, bluish-gry. Calcrete coatings. Finely laminated. Locally purplish. Bed: 10/85SE (I). Joint: 85/90.

206 281300/6445920. Pendowaga Well, a natural spring. Sandstn, silty, gry-grn. Ulupa Siltstn. Asymmetrical ripple marks preserved on bedding plane: 35/35SE (Photo 12). Fract cleav: 25/70NW. Joint: 305/85NE, 10/m.

207 281555/6446970. Creek, drains 260° mag. Siltstn, gry-grn to silt'ly bluish-grn. Very finely lam'd. Bed: 25/55SE. Joint: 120/75NE, 5/m. Bed: 30/50SE (I). Stream sed sample **A318218**, mostly fine platy particles greenish and reddish siltstn.

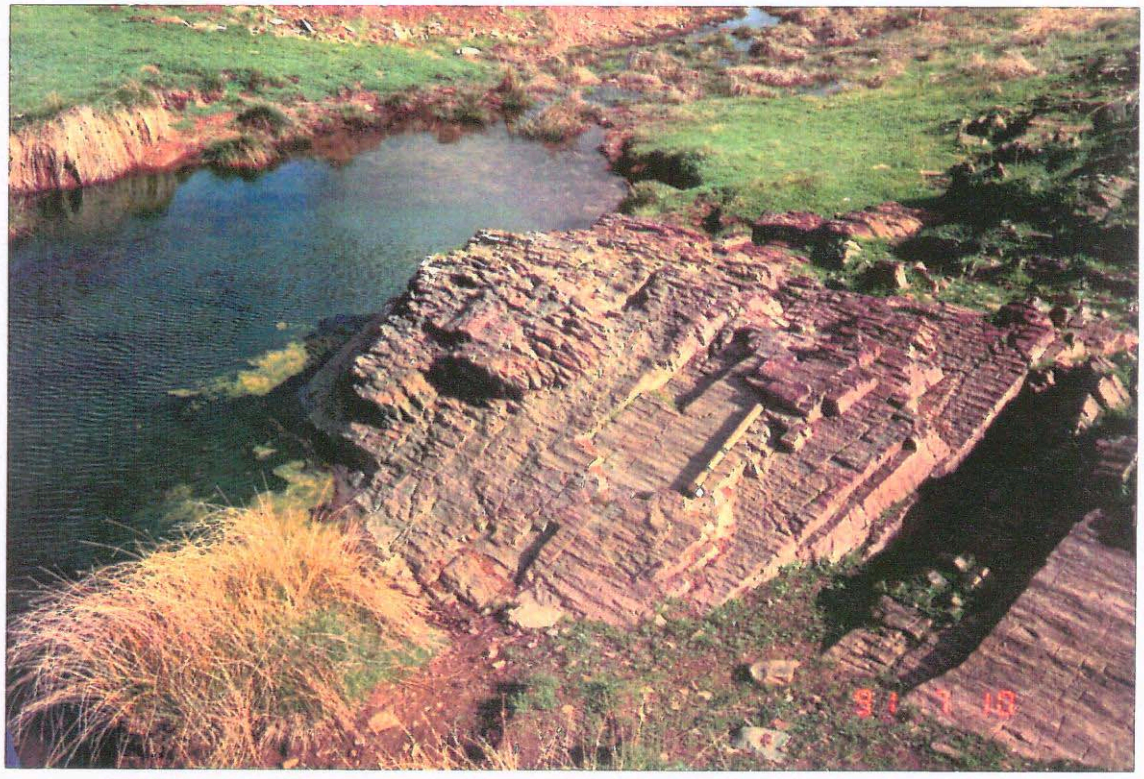

Photo 12. Sinuous, asymmetrical ripple marks preserved in southeasterly inclined (35/35SE) sediments of the Ulupa Siltstone, Pendowaga Well. Lee side progresses S60E with variable, in places discontinuous, crest development. View 245°.

208 282685/6447000. Creek, tributary to main channel, drains 315°. Siltstn, gry-grn to yel-grn. Fract cleav: 35/90, well-devel'd. Bed: 40/70SE (II); 40/50SE (I).

209 282755/6448015. Hill top, dilapidated cairn. Gry-grn siltstn. Fract cleav: 30/85SE, well-devel'd. Bed: 25/55SE.

210 282230/6449175. Hill crest, trends N30E. Sandstn, ferruginous, qrtzose, dk metallic specks. Fract cleav: 20/85NW, well-devel'd. Forms prominent, jagged outcrops. Numerous fine qtz veinlets, milky white, parallel to fract cleav. Outcrops are deformed. Beds very distorted. Regional attitude measured on right is 25/40SE.

211 282165/6450150. Sandstn, fine to med grained, brn-red, ferruginous matrix, carries metallic-blk smears on fract surface: 290/90. Fract cleav: 25/85NW, well-devel'd. Joint: 290/90, 10/m. Exhibit thin selvages comminuted rock along bedding and fracture planes due tectonic activity. Bedding 35/70NW; 30/75NW. Outcrops blocky, bedding attitudes not easily measured. Bedding, by observation

across drainage to SW: 25/65SE, complicated by superimposed (drag) folding (Photo 13).

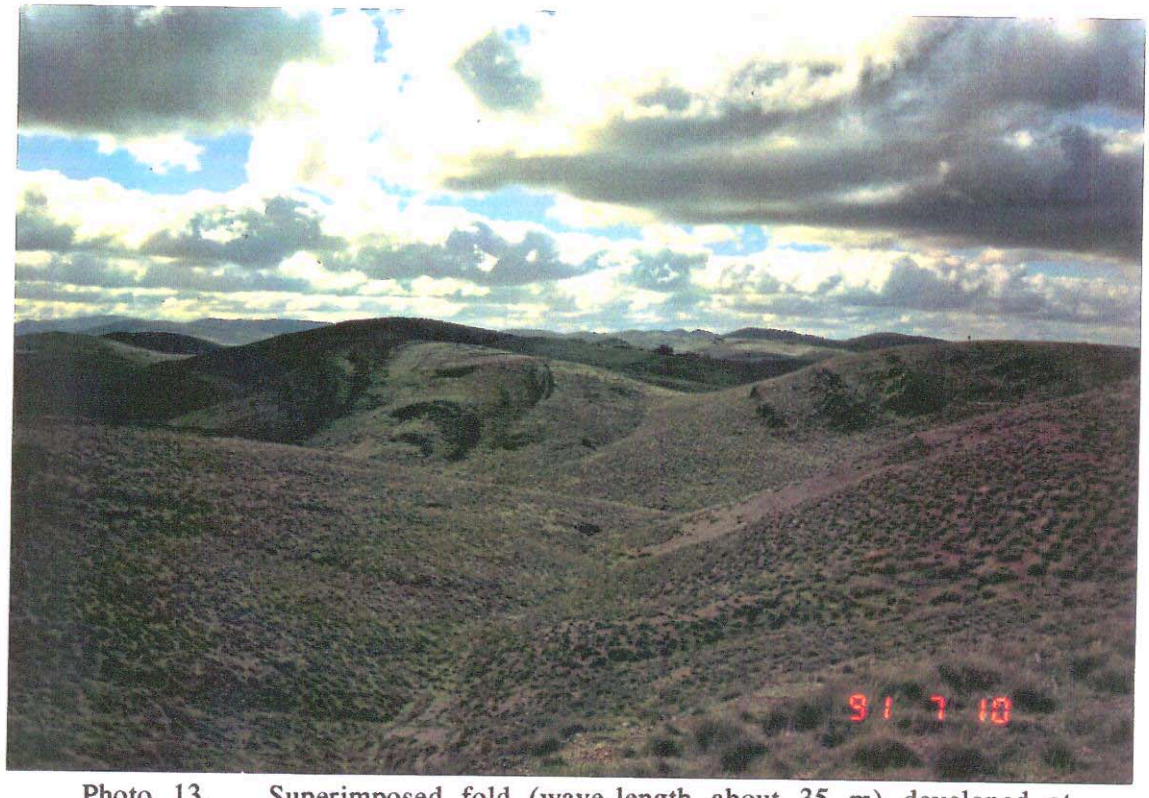

Photo 13. Superimposed fold (wave-length about 35 m) developed at the contact between incompetent Enorama Shale and competent sandstones of the Elatina Fm (outcrop at right): 25/45SE. View 360°.

212 283885/6450075. Spring. Creek drains N35E. Siltstn, gry-grn. Bed: 70/15SE. Joint: 135/80NE, 10/m. Fract cleav: 30/90, well-devel'd. Bed: 55/10SE.

213 282390/6451615. Hill top. Mudstn, silty, gry. Bed: 20/40SE. Fract cleav: 35/85NW, well-devel'd.

214 282050/6452115. Rock is finely laminated calcareous siltstn, brn on exposed surfaces. Dk gry on fresh. Bed: 30/25SE. Fract cleav: 10/70W. Joint: 180 vertical (CLT).

215 281580/6452400. Small hill, trends 295° mag. Siltstn, lt gry, mod reactive to HCl. Bed: 15/30NE (I). Fract cleav: 20/75NW, well-devel'd.

281465/6451880. Hill top. Siltstn, gry, mod reactive to HCl. Fract cleav: 20/50NW. Bed: 20/40SE.

216 281800/6451420. On ridge trending S10W. Rock is finely laminated calcareous siltstn. Brn on exposed surfaces. Gry

on fresh. Bed: 20/10SE. Fract cleav: 20/75NW. Joint: 90 vertical, one metre (CLT).

217 281615/6450880. On hill overlooking old hut. Rock is very finely laminated calcareous siltstn. Brn on exposed surfaces, gry on fresh. Bed: 20/30SE. Fract cleav: 30/65NW. Joint: 115 vertical (CLT).

218 281185/6451380. Creek confluence. Siltstn/sandstn, bright yellow. Bed: 20/30SE (I). Yellowish discoloration, leaching and bleaching, continues up creek easterly, very soft, decomposed (Photo 14).

Photo 14. Bleaching and variegated iron oxide staining combine to produce attractive color anomalies in sediments of the Tarcowie Siltstone or overlying (intertonguing) Etina Formation. Tributary streams to Urripie Creek, Southern Flinders Range. View 190°.

281020/6451275. Creek as previous. Beds continue with yellowish discoloration, in places pinkish, very finely lam'd. Bed: 5/45SE (I).

280825/6451150. Rock quarry, circular 25 m radius, down 2.5 m. Siltstn, pinkish-yellowish varied hues. Soft. Finely lam'd. Bed: 25/20SE (I).

219 281215/6450635. Finely laminated non-calcareous siltstn, brn on exposed surfaces, gry on fresh. Bed: 15/15SE. Fract cleav: 30/75NW. Joint: 120/70NE. On ridge trending S20W, approx 350 m bearing N5W find creek. Rock is very finely laminated calcareous siltstn. Dk gry to brn on exposed surfaces, lt gry on fresh. Bed: 15/35SE. Fract cleav: 15/70NW. Joint: 105/75N, 2 m. Creek trending N70E (CLT).

220 281615/6450715. Vertical shaft, down 15-20 m. Siltstn, gry-grn. 30 m down creek (at junction): yel/pink punky, siltstn, finely lam'd. Bed: 5/25SE. Joint: 120/80NE, 3/m; 20/65NW, 20/m. Sample **A318219** comprises fines screened from base of mullock heap.

221 278515/6446675. Limestn, coarse sandy, yel-FeO staining. Calcite veinlets. Swirly foliation, massive. Fol: 85/85SE; 85/75SE; 20 m easterly, 70/85-90SE.

222 279025/6446810. Hill top (30 m relief). Limestn, silicified, matrix weakly reactive to HCl, supports granular (0.5-1 mm) well-rounded qtz. Outcrops are ragged with 2-4 m relief. Soils brownish red. Coarse breakage widespread, suspect brecciation with minimal block rotation. Laminar flow-type foliation, very swirly. Fol (SE cor): 225/75SE; (SW cor): 275/75SW; (NW cor): 180/30E. Black reddish, siliceous material, numerous limonite-filled cavities, yellowish-orange. Rockchip sample **A318220**. Some limonite dk rd-brn very productive appearing. Foliation here (NW side): 35/70NW; (NE cor): 85/65NW. Considerable variation in attitude of flow-like banding. Suspect diapiric emplacement.

At NE corner of hill note domal feature 3 m radius exhibiting quaquaversal dip, NW side: 70/70NW;

100 m brg N12W, adjoining hill, cherty limestn interbedded with massive calcite veinlets. Fol (SE side): 35/75SE. NE side rock is gry-grn calcareous siltstn, strongly reactive to HCl. Bed: 55/75SE, very finely lam'd. Fract cleav: 35/55NE, well-devel'd. Joint: 155/70NE, 2/m, some with hematite selvages to 2 cm thickness. Sample **A318221** comprises hematite vein pieces.

SW-most tip of hill comprises calcareous silty-sandstn. Bed: 40/85SE (I); 45/60SE (I).

279010/6446915. Hilltop. Sandy limestn, highly siliceous, pale yel-org. Carries distinct rounded quartz grains to 0.5-1 mm. Matrix slt'ly reactive to HCl. Bed: 80/55SE; 85/75SE; 70/75SE; 80/75SE (I).

223 279810/6447070. Limestn, dolomitic, salmon-pink, weakly reactive to HCl, manganese dendrites. East top of hill, small stone quarry for limestn. Bed: 85/75NW; 70/75NW; 45/80NW.

224 279990/6447475. Erosional gully, drains 250° mag. Siltstn, gry. Excessively sheared parallel to bedding: 50/50SE. Second set distributive displacements: N/85W, shows across face of o/c (20 m), generally fracts carry a white, punky gouge. Rocks are str'ly weathered, soft. Tectonic deformation. Bed (downstream 30 m): 210/50SE; (additional 25 m downstream): 225/55SE, rocks (siltstn) distinctly less weathered and broken. Joint: 125/80NE, 35/m.

225 280180/6447430. Gully (as at Sta 224). Siltstn, mottled reddish orange, brownish, str'ly decomposed. Subjected to severe deformation. Stream sed sample **A318222**, very damp, minor amts hematite.

130 m brg 210° mag. Prominent outcrops gry-grn siltstn. Bed: 190/50SE. Fract cleav: 30/60NW, well-devel'd.

226 280175/6447875. Creek, drains 245° mag. Siltstn, gry-grn. Bed: 35/40SE. Fract cleav: 35/80NW, well-devel'd. Joint: 230/85SE, 5/m.

227 280370/6448165. Limestn, med gry, highly reactive to HCl, 30 m thick. Bed: 30/75NW. Slt'ly wavy bedding.

228 280260/6448280. Hill top, trends N31E. Ridge trends N40E. Rock is limestn or finely laminated calcareous siltstn. Brn on exposed surfaces, dk gry on fresh. Bed: 20/35SE. Fract cleav: 15/55NW. Joint: 150/85NE. Highly cleaved. Hill stands out in relief to surrounding countryside.

229 280880/6448100. Siltstn, gry-grn, slt'ly reactive HCl, produces reddish-brn soil. Bed: 20/40SE (I).

230 281410/6448615. Creek drains generally 275° mag. Siltstn, gry-grn. Bed: 20/35SE. Fract cleav: 30/75NW, well-devel'd.

231 280805/6450165. Creek, drains 235° mag. Sandstn, silty, finely laminated. Bed: 10/25E. Joint: 195/85NW, 10/m, walls often leached and bleached, may carry FeO-MnO fillings. All rocks excessively fract'd and broken with bedding planes leached and bleached producing a variegated yellowish and reddish coloration. Also decomposed, soft. Fault found at SE end of o/c: 25/75NW, 2 m wide gouge zone, rocks either side thoroughly fract'd and broken. Fract cleav: 20/80NW, well-devel'd.

232 277125/6449590. Creek, drains 235° mag. All rocks excessively ox'd and decomposed, variegated discoloration, yel-brn, reddish. Bleached. Few resistant beds: coarse cobble breccia, resembles reconstituated fault gouge to 1 m thickness, very tough, exhibits an internal laminar flow: N/70E. Weakly responsive to HCl. Rocks on either side of linear outcrop decomposed.

Tough,ferruginous fault gouge o/c loc'd approx 90 m brg 250° mag downstream from station. Rockchip sample **A318223**.

Traversing downstream find numerous blocks (30-40 cm diam) hematitic ironstn and abundant lesser size same material. Find float cobble, decomposed, resembling garnet schist!? Outcrop continues as yellowish, orange, rd-brn punky siltstn breccia, very coarse breakage. Diapiric emplacement.

Abundant chips through cobble dimension hematite ironstn in (Yednalue) Creek.

At this loc'n (aerial photo BL 01/066) rock is recent consolidated stream run gravels cemented with ferruginous material derived from altered diapiric outcrops. These recent sediments dip about 30° to SW.

Rockchip sample **A318224** comprises ironstn chips and pebbles concentrated in stream-run gravels, often with rd-brn limonite-goethite fract fillings. Rockchip sample **A318225** consists of hematitic ironstone from creek gravels.

Continuing back upstream (aerial photo BL01/066). Outcrop exhibits an internal, swirly laminar flow structure, thoroughly bleached and leached. Rockchip sample **A318226** from linear outcrop: 160/25NE.

Sample **A318227** from hematitic ironstn veins, lacing intensely bleached and leached silty sandstn (?) sediments at Sta 232. Med to dk brn, punky gossanous bed laced with irregular hematite veinlets, discontinuous, to 3-4 mm thickness also large (3-5 cm) clots. Dk brn gossanous horizons about 1 m thick: 170/30SW.

75 m upstream brg N45E, distinguishable siltstn/silty sandstn/gry mudstn outcrop. Bed: 80/20SE, vari-colored. Obviously subjected to compressional defor'n with minor bedding plane and cross-fracture displacements.

Continuing upstream (aerial photo BL01/066). Altered outcrop, bright yellowish, reddish discoloration in Yednalue Creek (Photo 15). Sample **A318228** from beneath CLT.

Photo 15. Conspicuous iron oxide staining and bleaching in siltstones and sandstones caught up in the Yednalue diapir. Upper Yednalue Creek, Southern Flinders Range. View 205°

500 m brg N53°E, creek junction. East fork continues to

support excessively altered, decomposed, leached and bleached sediments. Find yel flagging attached to limb over creek, reads "2541934", presumable a CRA stream sed sample site.

Continuing up east fork, rocks continue with ferruginous alter'n as previously described, very decomposed and vari-colored with FeO. Faintly defined planar str: 160/10SW.

233 277880/6449755. Broad topo rise between two gullies. Limestn, coarsely brecciated and reconstituted, trends 310° mag. Some outcrops completely altered to punky, decomposed yellowish to pinkish lithic material. Leached with devel'd open spaces (3-4 cm) carrying med to dk brn earthy limonite.

Highest point of hill, siliceous breccia trends N30E, consists of angular to sub-rounded, off-white porcelain-like clasts suspended in matrix of similar composition. Brecciated limestn on either side of siliceous breccia, in places exhibits sandy texture. Rockchip sample **A318229** from siliceous breccia. Hand specimen A229 taken.

234 278630/6449710. Well site, disused. Rock in mullock is siltstn, gry, finely laminated. Bed: 190/60E (I). Joint: 120/85SW, frequently parallel and/or passing into shear fractures, 50/m. Gry on fresh surfaces. Reactive to HCl. Find second shaft (well) down about 15 m with water.

235 276415/6451170. Slight topo rise. Supports diapiric rubble, coarse breccia blocks 10-50 cm diam. Fracts and intersticial cavities with yellowish-brown limonite. Rocks are decomposed, exhibit sandy texture often with fine diss hematite. Non-reactive to HCl. Rockchip sample **A318230**, a diapiric product, heavily FeO-stained, leached and bleached, numerous multi-directional limonite pitch veinlets, speckled with fine hematite to 30%.

236 275870/6451815. Diabase, medium grained, equigranular, comprised of hornblende partially altered to chlorite and intermediate feldspar, slightly argillised. Matrix of similar mineralogy, greenish due pervasive chloritisation. Rockchip sample **A318231** and **A318269** (duplicate).

237 275815/6445290. Rise trends N20E. Rock is extremely finely laminated siltstn with clasts of milky qtz. Non-

calcareous. Beige on exposed surfaces, gry on fresh. Limestn texture to exposed rock. Very massive rock. Regional bedding 305/25NW. Seems to be multi-directional jointing. Hand specimen A237 taken (CLT).

238 274145/6444105. Slight topo rise. Siltstn, fine grained, rd-brn, calcrete coatings, blu-gry on freshly broken surfaces, str'ly reactive to HCl, silty limestn. Bed: 170/45SW (I). Fract cleav: 185/80NW, poorly devel'd.

239 274000/6443500. Road cut, originally a borrow source for building stone. Siltstn, gry-brn, finely laminated, str'ly reactive to HCl. Bed: N/40W. Joint: 55/80SE, 5/m. Fract cleav: 120/70NE, filled with caliche.

240 275715/6445750. Ridge trending S05E. Rock is calcareous, probably siltstn. Bedding is very wavy, interlaced with veinlets of milky qtz and veins of ferruginous material. Vry dk choc brn on surface, purplish brn on fresh. Hand specimen A240 taken. Also sample **A318232** rockchip, very siliceous material. Reef trends S30E. Suspect rock is igneous, not able to determine bedding. Reef is 400 m S10E from Pendowaga Creek. Measurement taken from fork of creek (CLT).

241 273330/6442975. Hilltop. Siltstn, calcareous (silty limestn?) str'ly reactive to HCl. Brn-gry on exposed surfaces, dk gry on fresh. Finely lam'd. Bed: 180/20W (I). Fract cleav: 15/85SE. Joint: 110/80NE, 3/m.

242 272890/6442675. Slight topo rise. Limestn, silty, beige-colored, dk gry on freshly broken surfaces. Str'ly reactive to HCl. Very finely lam'd. Bed: 180/15W (I). Fract cleav: 20/85SE, a well-devel'd local system.

243 274650/6447945. Ridge trends N15W. Sandstn, quartzose, non-calcareous. Lt brn on exposed surfaces, beige on fresh. Bed: 170/40W. Milky quartz on surface (CLT).

244 270795/6442490. Creek, small drains N85E. Sandstn, silty, very fine grained and interbedded siltstn, str'ly reactive to HCl. Beige to slightly pinkish coloration, equally on fresh surfaces. Forms resistant outcrops. Bed: 350/45NE (I). Joint: 65/75NW, 3/m gen filled with calcrete.

245 269515/6442715. Site of old copper mine. Workings trend 175°. North end marked by vertical shaft, timbered, down 25-30 m, collar measures 1m x 2m. Length of workings 48 m with second vertical shaft at south end, down originally about 10 m, now caved. Rockchip sample (mullock) **A318233** vein material comprising intergrown siderite/hematite with intersticial malachite and limonite.

Workings follow a fissure vein: 175/80NE, that is discontinuously exploited by short trenches and prospect pits.

118 m brg 175° mag (strike of fissure) find another vertical shaft down 3.5 m. Material in mullock is massive (vein) blocks FeO-stained calcite with intergrown siderite, specular hematite, angular quartz clasts and minor CuO-staining. Host rock is sandstn, coarse granular with brownish, slightly calcareous matrix.

Fract zone exposed in shaft wall: 175/85NE, 50 cm width of close-spaced fractures carrying discontinuous fillings as described from mullock. Bed: 330/15SW (II); 30/15NW, measured approx 30 m south of south vertical shaft; 285/15SW at south edge of south vertical shaft (I).

Rockchip sample **A318233** from mullock at North vertical shaft. Consists of dense intergrown mass of siderite, specular hematite and calcite. Malachite shows preference for margins of platy hematite crystals. Cavities filled with yellowish-orange limonite-goethite which also attractive to malachite and CuO-staining.

246 269425/6441900. Sandstn, silty, poor outcrop. Surface littered with large weathered blocks, appear to have been derived as result of coarse brecciation. Find large (20-40 cm diam) block ironstn. Bed: 110/25SW (II). Northeast side of hill, sandstn non-brecciated, becoming broken and coarsely brecciated with ironstn bands on SW side of hill. Trend of breakage: 320° mag at 10 m width.

90 m brg 300° mag from top of hill (Sta 246), find heap of large ironstn blocks 50-200 cm diam. Farmers have stacked other cobbles siltstn, sandstn, ironstn about large insitu ironstn blocks. Also large boulders brecciated sandstn, rehealed with FeO, some clasts rotated, others with separation partings now filled with dense ferruginous pitch

and limonite. Rockchip sample **A318235** from ironstn, non-magnetic.

247 268680/6442700. Hilltop. Siltstn, gry on fresh, lt orange-brn on exposed surfaces. Wk'ly reactive to HCl. Bed: 280/20SW. Joint: 45/85SE, 5/m.

248 268220/6443000. Hilltop. Siltstn, beige-colored, finely lam'd. Fractures gen coated with FeO. Bed: 115/20SW. Joint: 320/90, 5/m, well-devel'd with 1-2 cm parting. Outcrops exhibit coarse blocky character due tectonic activity, no clast rotation.

249 269235/6443200. Approx 1 km N20W from diggings on top of ridge, rock is non-calcareous qrtzo-sandstn. Orange brn on exposed surfaces, orange on fresh. Bed: 40/30NW, very massive rock, unsure of bedding (CLT).

250 267875/6443240. Slt topo rise, an extension of previous hill. Siltstn, beige-colored, poor outcrop. Surface float shows considerable FeO-staining and limonite veining (fract'r fillings). Coarsely brecciated. Fract'r cleav: 80/85SE. Rockchip sample **A318236**.

Sample **A318237** is a standard.

251 267575/6443615. Slt topo rise. Continuation of Sta 250. Siltstn, fine-grained, finely laminated, FeO-stained with wk ferruginous cementing medium. Bed: 125/20SW (?). Limonite veinlets (0.5-1.0 mm thickness) and calcite veins. Rockchip sample **A318238** a coarsely brecciated siltstn, fract'd non-rotated clasts, extremely tough with numerous hair-like veinlets limonite and calcite.

252 268055/6443930. Small topo rise. Silcrete-like rock. Only moderately siliceous. Comprises well-rounded pebbles and small (1-5 mm) grains of quartz, pinkish fine-grained qtzite. Matrix is buff yellow, wk'ly reactive to HCl in places otherwise non-reactive. Some constituent grains str'ly reactive to HCl. Rockchip sample **A318239** is silcrete-like rock with blk matrix. Carries limonite-filled cavities.

253 266850/6444380. Hill. Silcrete as at Sta 252. Black matrix variety very predominant. Carries granules, rounded and angular, tough siliceous siltstn, rounded qtz, glassy to 1 mm and less, minor fine-grained qtzite. Fract: 300/45SW. Find

large cobbles to 50 cm diam qtzite with ferruginous matrix, well-rounded. Find equally large rounded cobbles ironstn. Rockchip sample (float) **A318240** hematite vein material.

254 279400/6441805. Creek, drains 195° mag. Shale, highly devel'd platy cleav: 20/85NW. Bed (east side of creek): 20/80SE; (west side of creek): 20/80NW, overturned as indicated by graded bedding. Reactive to HCl. Joint: 110/80NE, 3/m.

255 280630/6442390. Rock is non-calcareous finely laminated siltstn. Dk brn on exposed surfaces, lt brn on fresh. Bed: 30/65SE. Joint: 100/85NE. Fract cleav: 25/75SE (CLT).

256 280780/6441710. Creek, drains 245° mag. Siltstn, gry-grn, in places grades to pinkish hues. Graded bedding, slt'ly wavy. Bed: 40/40SE, crinkled bedding planes (ie, very fine chevron folding). Laminations accentuated by silty (dk) and sandy (lt) bands to 5-6 mm that thicken and thin due to stretching or differential (soft rock) compaction. Bed: 40/45SE. Joint: 315/75SW, 2/m. Non-reactive to HCl.

257 281415/6441195. Creek, drains north. Sandstn, graywacke, lt rd-brn on exposed surfaces, grey to olive-grn on fresh. Minor thin qtz veining. Joint: 115/85NE, 20/m. Coarse sandy horizons, very tough, like qtzite, exhibit excellent cross-bedding. Bed: 15/70NW (I).

258 280720/6441950. Top of hill. Rock is finely laminated non-calcareous siltstn. Much ferruginous content. Dk brn on exposed surfaces. Dk gry brn on fresh. Rock is flecked with mica. Bed: 40/50SE. Fract cleav: 50/50NW. 20 m N20W from badly damaged cairn (CLT).

259 281370/6440785. Saddle point between two opposing drainages. Siltstn, sandy, gry-grn, calcareous, diss yel-org specks form diss pyrite (?), to 20%. Fract cleav: 30/90, well-devel'd. Minor qtz veining, slt'ly yellowish due FeO. Bed: 30/40SE (I). Fract cleav: 35/90, well-devel'd.

260 281400/6440085. Creek, drains gen 15° mag. Siltstn, rd-brn, sandy, locally leached and bleached rendering a conspicuous yellowish-orange color anomaly. Fract cleav: 25/90, well-devel'd. Bed: 180/50E, excellent cross-bedding.

261 281880/6439500. Creek, drains gen 255° mag. Sandstn, silty, crinkled bedding. Bed: 160/20SW. Joint: 295/85NE, 3/m. uniformally spaced with 2-3 cm partings. Fract cleav: 25/85SE, well-devel'd. Rocks are locally bleached producing yellowish-brn discoloration.

262 281210/6439080. Hilltop. Sandstn, qtz-lithic, finely laminated, rd-brn on exposed surfaces, gry to olive-grn on fresh. Laced with numerous thin (1-5 mm) qtz veinlets. Bed: 15/70NW; 180/45W (I); 20 m east of last measurement: 30/45SE (I). Note cavities often lined with fine (1-2 mm) euhedral qtz xtls comb-in-comb sructure. Fract cleav: 30/90; 25/90. Diss spots (pinhead dimension) tough limonite, less than 1%.

Rockchip sample **A318241** from sandstn o/c, shows slt leaching with intersticial fillings of clay derived from decomposition of feldspars. Laced with qtz veinlets (to 1 cm) some with comb-in-comb qtz xtl display. Limonite appears to be transported variety. Hand specimen labelled A241.

263 281155/6441185. Rock is finely laminated non-calcareous sandy siltstn. Bed: 20/60E. Fract cleav: 20/75W. Joint: 110 vertical.

264 280920/6438410. Ridge crest, trends 360° mag. Sandstn, lithic, brn to lt brn, finely bedded with dk gry to blk laminations, possibly heavy mineral concentrations. Fract cleav: 30/90, well-devel'd. Bed: 25/35SE.

265 280200/6439690. Rockchip sample **A318242** taken of brecciated material. Much hematite, milky quartz and limonite, non-calcareous. Surrounding rock is quartzose sandstn with ferruginous staining on surface. Relatively massive. Bed: 30/70NW. Joint: 120 vertical. Minor quartz float on surface (CLT).

266 280940/6437760. Hilltop. Sandstn, quartzose, med to dk brn, carries disseminated blk-brn spots (1-3 mm) with most concentrated parallel to bedding. Argillic products fill intersticial openings (ie, between qtz grains), rock appears to have been leached leaving porous tex. Wavy bedding planes on small scale (0.5-1.0 m). Abundant qtz veining. Bed: 30/60SE (I).

Locally heavily FeO-stained and limonitic which appears insitu. Rockchip sample **A318243** is quartzose sandstn carrying irregular clots milky-white qtz and limonite veining (1-5 mm) as irregular and discontinuous stringers. Some qtz veins centrally occupied by minute (1-2 mm) limonite fillings. Recognise at least two generations of silicic emplacement, first being larger irregular qtz veins and clots which in turn are cut by clear, thin (0.5-1 mm) qtz veinlets. Fract cleav: 45/90. Bed: 45/35SE (I).

267 280290/6437275. Sandstn, predominantly lithic composition. Develops reddish-brn soils. Rd-brn on exposed surfaces, med gry on fresh. Bed: 30/25SE (II). Fract cleav: 35/85SE.

268 279015/6439600. Small topographical rise next to road, rock is finely laminated non-calcareous siltstn. Brn on exposed surface, dk gry on fresh. Bed: 30/65NW. Fract cleav: 30/65NW.

269 279710/6436810. Symmetrical round, peaked hill. Siltstn (shale) reddish to maroon colored. Fract cleav: 25/75NW well-devel'd.

279915/6436595. Another hilltop. Reddish siltstn (shale), gry-grn on fresh. Fract cleav: 25/90; 25/30NW, well-devel'd.

279520/6436430. Hilltop. Reddish-brn siltstn, weakly reactive to HCl. Fract cleav: 20/80NW, well-devel'd. Note that reaction to HCl a function of intersticial bedding plane fillings, not the actual siltstn.

270 278420/6438685. Situated on top of hillock, rock is finely laminated non-calcareous siltstn. Brn on exposed surface, gry on fresh. Bed: 30/80NW. Fract cleav: 30/55NW. Minor quartz float on suface. Well cleaved (CLT).

271 278315/6437750. Top of hillock overlooking Cameron Creek crutching shed, approx 600 m due South of Sta 271. Rock is finely laminated non-calcareous siltstn, brn on exposed, lt brn on fresh. Bed: very swirly. Bed: 40/80SE. Fract cleav: 20/70NW (CLT).

272 279495/6440630. Symmetrical hill. Siltstn, reddish-brn on exposed surfaces, gry on fresh, calcareous, very reactive to

HCl. Fract cleav: 25/90, well-devel'd; 25/65NW. Bed: 25/35NW.

273 278800/6440685. Slight topo rise. Sandstn, quartzose with ferruginous cementing medium. Laced with numerous, multi-directional qtz veinlets. Rockchip sample **A318244.** Non-reactive to HCl. Fract cleav: 25/90. Bed: 25/80SE (III).

274 275125/6442425. Slight topo rise, trends 355° mag. Limestn, coarse xtl'n, gry, weakly reactive to HCl. Bed: 10/30SE (?). Joint: 295/90, 5/m.

275 274135/6442090. Slt topo rise. Rock is finely laminated weakly calcareous siltstn. Brn on exposed surfaces, dk gry on fresh. Bed: 170/70SW. Fract cleav: 10/80E (CLT).

276 274300/6440900. Ridge, trends N20E. Sandstn, qtzose, lt rd-brn on exposed surfaces, same on fresh. Porous with some cavities filled or lined with limonite. Cross-bedded. Bed: 15/60NW (III); North/65W (II).

274090/6440500. Quartzose sandstn, brownish. Laced with many thin (1-5 mm) milky-wht qtz veinlets probably sweated from rk itself. Bed: 20/70NW (I). Joint: 275/75SW, 10/m, uniform spacing and 2-3 cm parting.

277 273030/6442000. Top of small hillock close to series of old ruins. Finely lam'd, wk'ly calcareous siltstn. Bed: 60/30NW. Fract cleav: 30/90. Joint: 145/85SW (CLT).

278 273890/6440085. Sandstn, lithic, grn-brn, fine to med grained. FeO-stained on exposed surfaces. Non-reactive to HCl. Interbedded with qtzose sandstn. Rockchip sample **A318245** a float sample but derived locally, sandstn, rd-brn limonite staining throughout and diss pinpoint cavities lined with FeO (former diss pyrite). Slt'ly to mod silicic, extremely tough.

279 271110/6440650. Top of hill 500 approx 2 km from Tyeka. Rock is non-calcareous finely laminated siltstn. Brn on exposed surface, dk gry on fresh. Bed: 100/10N. Fract cleav: 10/85W. Joint: 160/80NE (CLT).

280 273530/6439765. Sandstn, qtzose, brownish, cross-bedded. Bed: 25/65NW.

281 270800/6441765. Roadside quarry on Tyeka to Avondale Road. Rock is very finely laminated non-calcareous siltstn, beige to lt brn on exposed surface, lt orange on fresh. Bed: 145/20NE. Joint: 170 vertical, approx 8 m (CLT).

282 272000/6441470. Hill top (480 m) stands in slight relief to surrounding countryside. Rock is very finely laminated sandy siltstn. Brn on exposed surface, dk gry on fresh. Bed: 40/45NW. Fract cleav: 20/85W. Joint: 160 vertical (CLT).

283 273380/6438615. Ridge crest trending 10° mag. Sandstn, qtzose, lt reddish-brn on exposed surfaces, nearly white on fresh, quite porous, finely and cross-bedded. Diss pinhead size FeO-lined cavities to 1%. Slt feldspathic fraction. Find old prospect cut 1 m x 3 m length. Suspect for building stone. Bed: 15/55NW (?).

284 270750/6438925. Quarry, road metal. Purplish slate or shale, a very fine-grained platy rock. Bed: 75/35NW (I).

285 278090/6436000. Sandstn, lithic/feldspathic, wk'ly ferruginous matrix, laced with numerous fine qtz veinlets (0.5-1.0 mm), multi-directional. Bed: 185/70NW. Find some qtz veins to 1 cm thickness, often central part with open spaces filled with rd-brn limonite derived from alteration of sulphides. Rockchip sample (outcrop) **A318246**, brn lithic sandstn, 3-5% diss limonite spots, thin discontinuous quartz veins.

40 m brg 155° mag, in main drainage, cross-bedded sandstn, lithic quartz and feldspathic composition. Bed: 20/70NW (I), amplified by lt and dk layers where lighter constituents are the coarse qtzose grains. Few cross-cutting qtz veins (3-5 mm) with central portion occupied by limonite. Rocks are non-reactive to HCl.

286 277595/6436115. Rockchip sample **A318247**. Rock sampled is non-calcareous altered siltstn. Dk brn on exposed surface, lt brn to motley orange on fresh. Bed: 30/35NW. Fract cleav: 30/85NW. Vein of quartz-sandstn running through it, too massive to ascertain bedding, however trending S30W.

287 277005/6436180. Rockchip sample **A318248**. Rock samples quartz-sandstn with multi-directional veining of

milky qtz, heavily stained with ferruginous substance. Dk brn to blk on exposed surface, lt motley beige on fresh. Bed: 30/65SE. Fract cleav: 35/80SE. Rock is siltstn finely laminated and non-calcareous. Dk brn on exposed surface, vry dk gry brn on fresh.

288 277365/6435270. Ridge crest trending 130° mag. Sandstn quartz/lithic/feldspathic constituents. Non-reactive to HCl. Well broken outcrops but rehealed and hard. Slightly silicic. FeO-stained laced with thin (1-3 mm) quartz veinlets. Diss pinhead sized FeO-lined cavities. Minor clast rotation. Quartzite bed on west side of ridge. Fract cleav: 35/90. Bed: 35/80SE; 35/70SE (I).

Note that the lighter colored layers (1-2 cm) tend to pinch and swell rythmically. Joint: 50/85NE, 5/m, very tight. Rockchip **A318249**, sandstn, coarse brecciation, minor clast rotation, wk to mod silicification, disseminated FeO-lined cavities (1-2 mm) and FeO-filled fractures.

289 276390/6435300. Small rise above old ruins. An old well (with water) and small dam near ruins. S85W from Sta 288. Rock is finely laminated non-calcareous siltstn. Brn on exposed surface, gry on fresh. Bed: 20/75NW. Fract cleav: 20/75NW (CLT).

290 276720/6434840. Top of hill 570. Ridge trends S20E. Rock is finely laminated non-calcareous siltstn. Beds slightly wavy. Rock is brn on exposed surfaces, gry brn on fresh. Bed: 20/85SE. Fract cleav: 20/70NW. Joint: 130 vertical, approx 5 m (CLT).

291 277735/6433740. Hilltop, ridge trending 170° mag. Siltstn, maroon-colored, shale-like texture and fissility. Fract cleav: 25/80NW, very well-devel'd.

292 275620/6434395. Siltstn, reddish, dk rd-brn on freshly broken surfaces. Fract cleav: 25/80NW. Bed: 25/80NW (II).

293 275280/6434380. Site of old well, est depth at 6 m. Now used as disposal pit for old fencing materials. Rock in mullock is thoroughly oxidised, yellowish siltstn, very finely lam'd. Fract cleav: 10/80SE, may be partings along bedding planes.

294 275515/6433830. Small ridge due east of ruin (approx 250-300 m). Rock is finely laminated non-calcareous siltstn. Purple to brn on exposed surface, purple-gry on fresh. Bed: 30/70SE. Fract cleav: 30/90 (CLT).

295 274515/6433820. Sandstn, med to dk brn, silty. Small stone quarry on top of ridge, elongate 210° mag. fract cleav: 20/85NW, well-developed.

274310/6433595. Creek draining 300° mag. Rock variegated yellowish, brownish, finely lam'd siltstn. Bed: 30/80SE (I).

30 m brg 20° upstream, sandstn, chocolate-brn sandstn. Bed: 30/80SE (I).

296 273570/6433920. Graywacke, gry, slt'ly brownish due FeO. Non-reactive to HCl. Fract cleav: 35/85NW. Bed: 35/85NW. Form massive, fairly rugged outcrops, with surface littered with large (20-50 cm) blocks. Joint: 300°/80SW.

297 273890/6434495. Hilltop, trends N25E. Graywacke, tends to weather out into large (20-100 cm) elongate blocks. Rd-brn on exposed surfaces, gry-brn on fresh. Non-calcareous. Bed: 30/85NW (I). Joint: 310/90, 1/m.

298 272590/6435070. Hilltop. Sandstn, silty, brownish-gry. Fract cleav: 350/75SW. Bed: 350/80NE (II); 5/90; 20/75NW (I). Regional bed: 30/70NW.

299 273285/6436095. Hilltop. Siltstn, gry-brn, very hard, breaks with choncoidal fracture. Cut by numerous fine (1-2 mm) discontinuous veinlets laden with FeO and spotted with pinhead size former pyrite cavities. Slightly leached and bleached. Bed: 45/85NW (I); 50/85NW.

Trend of rubble strewn ridge 210° mag, dip appears (?) to be 70NW as viewed regionally. Sample **A318250**, ironstn with well-devel'd cellular structure filled with ocherous rd-brn limonite-goethite including vein quartz pieces.

273280/6436270. Qtzo/felds'c rock, very porous, leached carries diss rd-brn limonite and limonite pitch. Extensive outcrop. Rockchip sample **A318251**. Bed: 30/85NW. Approx 3 m width, ironstn. Rocks bordering on SE comprise

reddish-brn siltstn which is also laced with multi-directional quartz veinlets. The veins frequently show centrally loc'd open spaces occupied by former sulphides. On NW side of 3 m ironstn is silty sandstn, punky and FeO-stained.

300 273025/6436990. Hilltop. Siltstn, sandy, gry-grn. Reactive to HCl. Fract cleav: 75/80SE. Carries elongate slivers 5-15 mm, a dk-gry mineral (mafic of some sort?), also quartz slivers or shards 2-3 mm in length by 0.5 mm wide. Rock float exhibits good bedding. Outcrop bed: 50/85NW (II); 20/70NW; North/75W. Locally rock is quite massive. Str'ly reactive to HCl. Joint: 35/80SE, 10/m, evenly spaced and gen open 2-3 cm.

301 272560/6436415. Hilltop. Small stone quarry. Near top, rock is quartzite, fine-grained, slt pinkish coloration on exposed surfaces, off-white on fresh. Bed: 5/75NW. Multi-directional qtz veining, probably sweated from host quartzite. Fract cleav: 80/70SE, bears a close resemblance to sheet jointing. Bed: 20/40NW (III).

302 271295/6437450. Erosional gully approx half-way down from top of hill, northeast side. Conspicuous for its brilliant yellowish and orange coloration, due leaching. Bedding planes show heavy concentration pinhead size limonite-filled cavities from former pyrite. Quartz veining, multi-directional, both fine and coarse veining, limonite-bearing. Joint: 140/80SW, 20/m generally filled with limonite and/or stained with FeO and caliche. Fract cleav: 30/85NW also FeO-stained. Quartz vein, 1 cm, 125/85NE; qtz vein filled with limonite 125/80NE, 1 cm. Rock is silty sandstn, leached and bleached, quite coarse granular with silty layers. Bed: 110/25NE; 90/25N. Limonite-filled fractures: 70/85SE with strong FeO-stained walls. Overlain by quartzite, med-brn slightly felds'c. Rockchip sample (o/c) **A318252**, pyritic siltstn, wk'ly siliceous, qtz veining.

Rockchip sample **A318254** comprises crushed quartz vein products from several such structures in altered siltstn wallrock, 2-4 cm thickness carrying productive-appearing ocherous limonite-goethite, limonite pitch and fine cellular boxwork of former sulphide cavities filled with limonite. Host rock is an altered, leached and bleached, locally gossanous siltstn.

271185/6437390. Top of hill, sandstn, quartzose slightly

feldspathic. Rubble-strewn surface, large (0.5-2.0 m) blocks. Laced with qtz veinlets, med rd-brn on exposed surfaces, lt brn on fresh. Measurable trend of rubble: 300° mag, dip (as indicated by similar outcrop opposite side of valley) 85NE.

303 270990/6437115. Erosional gully down 2 m, drains 200° mag. Highly conspicuous for its bright yellowish and reddish coloration, in places bleached nearly white (Photo 16). Inspection of leached gully walls (near vertical) shows gossan devel't comprising dk rd-brn, ocherous limonite-goethite also earthy limonite. Remnants of multi-directional qtz veins (2-4 cm) as broken stringers w/in bleached and gossanous walls of gully. Finding small 0.5-1.0 cm euhedral qtz xtls. Color anomaly shows on aerial photo.

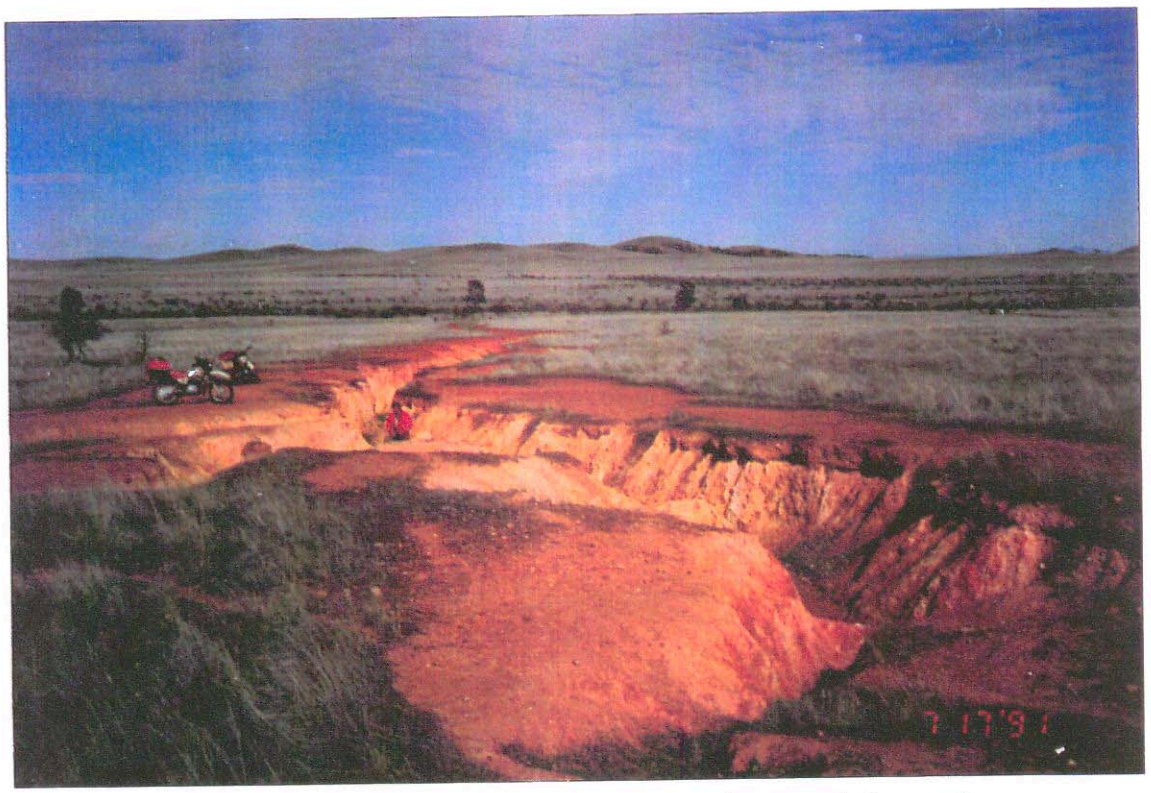

Photo 16. Salient yellowish color anomaly developed in sandy siltstones of the River Wakefield Group. View 200°.

Rocks appear to be sandy siltstn. Cut by numerous, multi-directional qtz veins: 120/60SW, 3 cm thickness; 315/70NE, 2 cm with FeO-lined cavities; 30/30NW, 3-5 cm. All veins broken.

Stream sediment sample **A318255** collected 180 m brg 200° mag near mouth of gully.

304 270765/6437935. Hilltop. Conglomerate, coarse sandy and pebbly interbedded with tough qtzose-felds'c sandstn 20 m to SW and siltstn to NE followed by qtzite beds. Bedding in latter qtzite: 140/45NE (I). Bed in sandy/pebbly conglomerate: 140/60NE (I). Matrix in conglomerate lt beige, slt'ly pinkish and reactive to HCl. Rockchip sample **A318253** (outcrop), coarse sandy conglomerate.

305 270640/6438285. Erosional gully, draining generally 295° mag. Bedrock overlain by 35-40 cm caliche-cemented slope gravels. Rock is excessively FeO-stained, leached and bleached producing a conspicuous color anomaly confined to the gully as at Sta 303. Bed: 250/35NW. Fract cleav: 40/75NW. Bed (measured down gully approx 20 m): 245/50NW (I).

200 m down gully, 295 mag. Stream sed sample **A318256** where outrop alteration diminishes. Rock is gry-grn siltstn. Fract cleav: 50/80SE, well-devel'd.

306 267625/6439320. Hilltop, trends N15E. Siltstn, gry-grn, str'ly reactive to HCl. Fract cleav: 45/90. Bed: 20/30NW (III).

267510/6439475. Small hill. Rock is gry siltstn, reactive to HCl. Strikes due north. Unable to pick dip.

307 267920/6440085. Rock is finely laminated non-calcareous sandy siltstn. Brn on exposed surface, gry on fresh (graywacke ?). Bed: 45/45E (?). Fract cleav: 50/80SE. Joint: 145/80SW (CLT).

308 266720/6439795. Siltstn, gry-gry, calcareous. Bed: 350/20SW (I). Fract cleav: 30/90, poorly-devel'd.

309 267090/6441270. Top small topo rise, trends N60W. Siltstn, very finely laminated, calcareous. Brn to choc brn on exposed surfaces, lt gry on fresh. Bed: 140/35SW. Joint: 110 vertical. Fract cleav: 30/85NW? (CLT).

310 266570/6441000. Hilltop. Siltstn, gry-grn, calcareous, faint banding appearance produced by alternating lt gry and dk grn lithic layers. Strongly reactive to HCl. Bed: 320/40SW (I).

311 266880/6441810. Ridge top. Siltstn, gry-grn, calcareous. Bed: 320/30SW. Very coarse fract cleav: 40/80NW.

312 265975/6441395. Hilltop. Siltstn, gry-grn, calcareous. Exposed surfaces with reddish FeO-stain. Bed: 325/30SW (I). Fract cleav: 45/90. Bed: 330/25SW (I).

313 266095/6439790. Roadside quarry on Hawker Road. Bottom of quarry has been freshly ripped. Rock is very finely laminated siltstn of chalky texture. Gry on exposed surface, vry lt gry-brn on fresh. Bed: 130/25SW. Non-calcareous (CLT).

314 266065/6442405. Siltstn, gry-grn, calcareous. Bed: 320/30SW. Joint: 55/80NW, 3/m.

266385/6442885. Blu-gry silty limestn, str'ly reactive to HCl. Bed: 305/50SW (I); 305/40SW (I). Finely laminated. Weathers out in quite large, smooth plates parallel to bedding.

315 264380/6440650. Siltstn, finely lam'd, non-calcareous, sandy. Choc brn on exposed surfaces, gry on fresh. Bed: 100/15SW. Joint: 65/75NW, 2/m. Fract cleav: 150/80SW (CLT).

316 264670/6441920. Top of hill not far from Hawker Road. Rock is FeO stained non-calcareous silty sandstn. Bed: 95/75SW; 25/25E; 40/50SE (CLT).

317 265000/6442715. Quarry, road metal. Siltstn, gry-grn, calcareous. Bed: 285/45SW (I). Very decomposed with MnO staining in fract surfaces. Joint: 130/80SW, 10/m, smeared with calcrete and MnO.

318 264200/6444855. Quarry, very old. Siltstn, finely laminated, rd-brn. Bed: 95/40SW.

319 264960/6445125. Tillite, cobbles and pebbles, comprising gry felsite, blu-gry quartzite, diabase with diss pyrite (1-2%). Fract cleav: 20/80NW.

320 267230/6447305. Quartzite, nearly white. Intersticial clay. Bed: 130/35SW. Fract cleav: 160/60NE. Prominent ridge - former. Joint: 40/80SE. Bed: 125/20NE (?).

321 275865/6438300. Hilltop. Siltstn, gry, calcareous, finely laminated. Tends to weather out as platy blocks. Bed: 20/90 (I); 20/80NW (I). Joint: 280/85SW, 3/m.

322 275510/6437365. Creek, drains 20° mag. Sandstn, silty, finely lam'd, rd-brn on exposed surfaces, buff yellowish on fresh. Oxidised. Bed: 25/80NW (I).

323 270050/6434650. Hilltop. Siltstn, gry, non-reactive to HCl, includes thin sandy lenses. Fract cleav: 30/25NW, well devel'd. Bed: 40/65SE (II); 45/55SE; 50/60SE (I).

324 270030/6434125. Top of hill. Rock is very finely laminated non-calcareous siltstn. Bed: 30/25SE (?). Fract cleav: 10/60NW. Joint: 185/85W. Find small reef of tillite 60 m N45E from station, also some sandstn on NW side of ridge trending N40E. Attitude: N40E also (CLT).

325 269745/6434585. Site of old copper mine workings. SW end of workings marked by inclined shaft which follows a faulted qtz vein in hanging wall about 30 cm thickness, highly crackled, followed by intensely sheared and broken rock, thence a distinctive gouge zone 30 cm thickness in footwall.

Total width of structure is about one metre. Attitude of mineralised structure is 30/40SE. Host rock is buff-colored silty sandstn. Non-reactive to HCl, but most fracts smeared with caliche. Rockchip sample (mullock) **A318257** comprises fault gouge of reconstituted siltstn wallrock, broken vein quartz pieces and siderite. Cavities lined with fine, euhedral hexagonal quartz xtl's.

9 m brg N35E mag from SW inclined shaft, same attitude as previous. Mineralised structure indicates thinning of hanging wall qtz vein to 20 cm width. Rockchip sample (mullock) **A318258** brecciated vein material consisting of crushed siltstn wallrock, vein quartz and siderite. Intersticial openings filled with productive-appearing ocherous limonite-goethite, fine cellular structure and malachite.

5 m brg N38E mag, opencut 10 m in length, SW end has a SE undercut following mineralised structure down dip.

10 m brg N48E mag, probably the main inclined shaft.

Northeast wall of incline highly crumpled and sheared, over width approx 2 m, a bedding plane structure. Bed: 40/50SE (measured from walls of main incline). Rickchip sample (mullock) **A318259** comprising brecciated vein quartz with intergrown chalcocite and ubiquous malachite. Good rd-brn limonite-goethite in association with fine cellular structure.

6.5 m brg S05E from main inclined shaft, vertical shaft, down about 4 m. Bed: 40/55SE. Fract'r set (in NW well): 315/80SW, 5-/m, non-mineral.

Main incline mullock includes gry-grn siltstn, with pinching/swelling thin sandy lenses. Reactive to HCl. Coarse granular rock, appears to be breccia, well healed, matrix slightly reactive HCl. siderite xtls, some vugs lined with euhedral quartz crystals 1-2 m length. Hand lens inspection shows finely crushed quartz, siltstn clasts, siderite crystals with finely comminuted rock matrix.

Proceeding 16 m brg N50E from main inclined shaft, prospect cut 2 m length. Bed: 50/50SE.

9 m brg N50E, collar inclined shaft, mostly caved, 2 m length x 1.5 m wide.

6 m brg N50E, prospect pit, caved.

4 m brg N50E, prospect pit, caved.

4 m brg N50E, prospect pit, elongate 2 m, caved.

6 m brg N50E, prospect pit, 6 m length, caved.

8 m brg N50E, inclined shaft, originally down 8-10 m as indicated by mullock heap. Rock exposed in back is finely lam'd siltstn, sandy. Bed: 50/45SE. Well defined gouge zone shows in floor of incline, mostly concealed by caved walls.

30 m brg N50E, vertical shaft, probably originally about 4 m deep as indicated by mullock heap. Measures 2 x 2 m at collar. Rock exposed in walls is finely lam'd siltstn, highly crackled and slightly arched. Bed: 35/55SE. Gouge zone shows near collar. Bedding drag structure suggests displacement in fault was in part right lateral.

Geologic map identifies River Wakefield Group sediments.

325 m brg N38E in creek draining copper workings. Stream sed sample **A318260**. Rock outcrop is lam'd siltstn, sandy, small scale wavy bedding. Bed: 45/55SE. Caliche coated. Bed (measured 20 m down stream): 45/55SE (I).

100 m brg N36W, quartzite, diss pinpoint, FeO-lined cavities 2-3%. Very tough rock, med brn. Most fracts stained with FeO. Bed: 45/60SE (III). Cross-bedded. Bed: 40/50SE (II)>

326 269300/6434400. Sandstn, fine silty, dk gry on fresh surfaces. Strongly reactive to HCl. Massive outcrops. Bed: 45/30SE (I). Joint: 135/80SW, 5/m, very tight. Stream sed sample **A318261**.

327 268450/6434320. Quartzite, med gry, very massive. Trace amts diss pyrite, anhedral. Joint: 55/65SE, 4/m; 340/45NE, 2/m well-defined. Stream sed sample **A318262** consists of qtz grains, lithics and to 10% magnetic products. Lithic material reactive to HCl.

328 267990/6433890. Quartzite, slt'ly oxidised, diss pinpoint size limonite. Fracts lined with limonite and FeO, also high concentration limonite specks derived from original pyrite. Fract cleav: 30/75SE, actually this attitude is well devel'd bedding plane partings. Creek channel shows a well defined fracture or fault zone 170/70SW, at least 1 m width. Joint: 55/65SE, 5/m.

20 m upstream, walls of creek on west thoroughly sheared and comprise reconstituted fault gouge: 190/65NW, at least 1 m wide. Bed: 45/45SE (I). Stream sed **A318263**.

329 267370/6433520. Creek, drains 325° mag. Quartzite. Most fracts carry productive-appearing limonite. Rock med brn, slt'ly ox'd. Fresh surfaces lt gry. Joint: 115/65SW, 20/m; 185/75NW, 5/m. Bed: 45/80SE (I). Stream sed sample **A318264**.

330 267115/6433200. Hilltop. Quartzite, fine grained, very tough, nearly white, slt'ly pinkish on fresh surfaces. Bed: 40/55SE, a regional measurement. Cross-bedded. Bed: 35/85SE; 35/65SE (I).

331 267280/6433235. Top of hill. Rock is quartzo-sandstn. Brn on exposed surface, beige on fresh. Bed: 30/80NW. Joint: 125/55SW. Fract cleav: 20 vertical.

332 267175/6433090. Quartzite, near white. Bed: 20/80NW. Joint: 60/70SE, 5/m. Stream sed sample **A318265.**

333 267180/6432735. Creek, drains 290° mag. Siltstn, gry, with interbedded limestn. Bed: 30/85NW; 25/85NW. Stream sed sample **A318266.**

334 266480/6431480. Creek, drains 255° mag. Sandstn, fairly decomposed. Bed: 20/65NW (I). Joint: 305/80SW, 5/m. Stream sediment sample **A318267.**

Sample **A318268** is a standard.

335 266175/6429850. Siltstn, pebbly, gry-grn. Constituent pebbles include qtz, qtzite, gry siltstn, some reactive to HCl, matrix non-reactive. Bed: 350/30SW (I).

336 267950/6431335. Limestn, silty, blu-gry. Bed: 35/80SE (I). Fract cleav: 25/60NW.

337 301285/6415120. Hilltop. Sandstn, quartzose, bleached nearly white on freshly broken surfaces. On exposed surfaces lt rd-brn. Minburra Quartzite weathers out as rubble-strewn surfaces blocks 20-30 cm diam. Jointing: 185/90, sheeted. Bed: 55/15SE (III).

338 300890/6416205. Hilltop. Sandstn, quartzose, reddish-brn soils with numerous cobbles and boulders. Freshly broken surfaces nearly white, slt'ly porous with minor argillic fillings. Jointing: 300/85SW, 5-10/m. Fract cleav: 35/90. Bed: 75/20SE (III).

100 m brg N13W, creek. Good o/c qtzose sandstn. Bed: 55/20NW (I). Fract: 295/90, well-devel; 50/90, often occupied by milky-wht qtz, discontinuous.

302890/6419375. Site of old stone building. Beltimore Hut, loc'd on Gum Creek. A farming family indicated by relic mouldboard plow.

339 On top of ridge trending N50E. Not far from Minburra's No. 3 bore. Rock is non-calcareous quartzo-sandstn. Bed:

60/30SE (regional) this bedding is doubtful. Very massive rock. Joint: 115/75SW. Rock is brn on exposed surfaces, beige on fresh. Small amt of milky quartz float on surface (CLT).

340 300230/6419800. Creek drains gen 100° mag. Prominent o/c quartzose sandstn (Photo 17) with minor lithic fraction which renders slt greenish-brn color on exposed surfaces, off-wht on fresh. Bed: 30/15NW (I). Joint: 35/75SE, 5/m, equally spared; 110/90, 10/m. Excellent cross-bedding. Locally coarse sandy texture. Stream sed sample **A318277**.

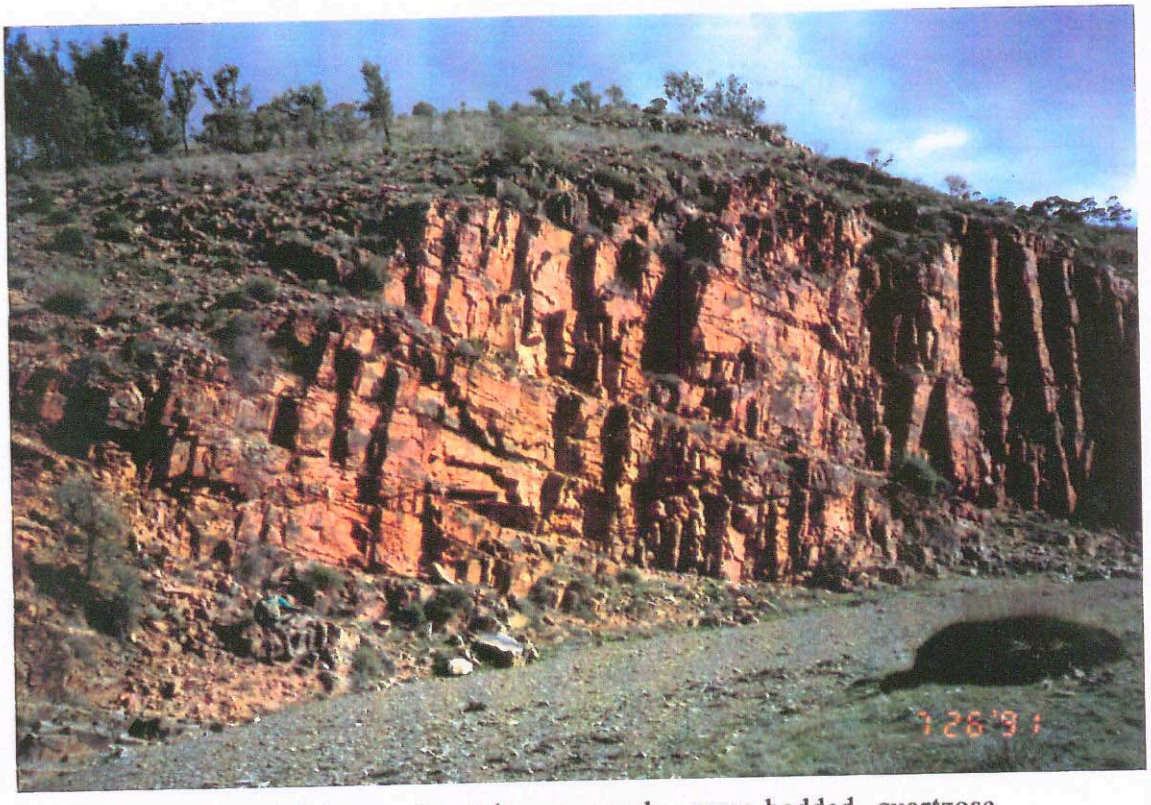

Photo 17. Minburra Quartzite, a tough, cross-bedded quartzose sandstone, erodes as a prominent ridge former. Upper Gum Creek, South Flinders Ranges. View 250°.

341 298310/6420215. Siltstn, calcareous, str'ly reactive to HCl. Dk brownish-gry on exposed surfaces, med gry-brn on fresh, includes sandy horizons. Bed: 210/30NW (I). Stream sed sample **A318278.**

342 297985/6421420. Limestn, silty, str'ly reactive to HCl. Fract cleav: 40/90, well-devel. Bed: 25/70NW (I).

343 297100/6421035. Creek, drains gen 355° mag. Limestn, silty, very finely lam'd. Bed: 20/55NW (I). Fract cleav: 45/90, well-devel. Joint: 125/85NE, 5/m.

344 296075/6421130. Vertical shaft, probably sunk as well. Caved around collar, timbering starts at 3 m depth. From amount mullock est depth to 25 m. Material in mullock is silty sandstn, finely bedded, med brn, also reddish. Suspect Tarcowie Siltstn. Reactive to HCl. Outcrop in creek is less weathered, same rock type. Bed: 25/60NW (I). Joint: 130/80NE, 10/M. Fract cleav: 40/90.

345 297400/6424585. Anomaly 181. Aerial observation by JET describes "Yellow weathering portion of sedimentary sequence --- black outcrop on hill".

397390/6424590. Ground examination identified a quartzose sandstn, fine to medium grained. Suppports about 20% diss limonite specks, thin (1-3 mm) multi-directional quartz veinlets. Occasional clots (2-5 mm) dense FeO impregnations and staining, conspicuous for its dk org-brn coloration. Surface of outcrop, which stands in marked relief (2-3 m), is black or nearly so. Generally about 1 mm thick mixture FeO/MnO. Rockchip sample **A318279**, qtzose sandstn with multi-directional quartz veinlets (1-2 cm). Trend of ridge: N35E. Joint: 105/85NE. Bed: 40/20SE (?).

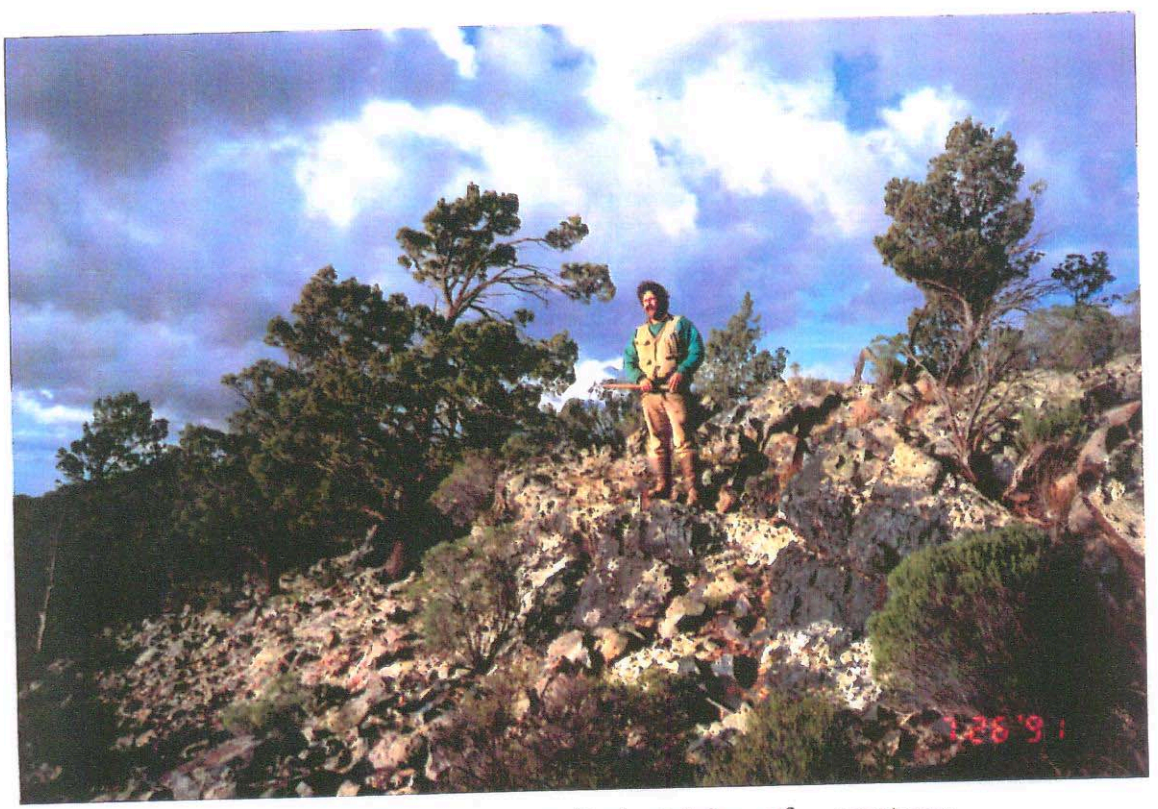

Photo 18. Black, ferruginous surfical staining of quartzose sandstone produces a conspicuous ridge-forming color anomaly. Internally, the rock is bleached nearly white except for some 15-20% disseminated limonoite specks. View N50E.

100 m brg 250° mag. Silty sandstn. Bed: 15/70NW; 30/60NW (I).

346 303610/6416185. Ridge trending N55E mag. Quartzite, rd-brn, fine-grained. Fresh broken surfaces lt pinkish. Fracts coated with FeO. Bed: 45/40SE. Joint: 120/80NE.

303620/6416590. 400 m brg north. Hilltop (366 m). Minburra Qtzite. Surface exposures rusty-brn with abundant qtz veining 3-5 cm thickness which probably sweated from qtzite host. Bed: 65/50NW (II). Joint: 320/90, 5/m, gen open 2-3 cm.

347 304315/6415780. Very unusal looking rock, maybe in tillite. Mass of rounded cobbles, glued together by a cream colored matrix. Some cobbles are pink quartzite. Very massive rock, matrix is actually silcrete (CLT).

348 306615/6417400. On top of elevation point 306. Approx (due east of No. 3 Bore) 3 kms. Rock is non-calcareous quartzite. Lt cream beige on exposed surfaces, cream on fresh, little FeO-stained. Bed: 135/65SW. Joint: 10/85E 4/m. 2nd joint: 105/85NE, 10/m (CLT).

349 306925/6419785. Hilltop, a broad topo rise, 15-20 m relief. No reliable o/c. Surface littered with rounded cobbles, gry qtzite and a mottled gry and blk chert-like rock.

665 m brg N70E, broad hilltop. Surface littered with many well-rounded cobbles gry qtzite. Obviously weathered from Appila Tillite.

350 308990/6419215. Rock is calcareous FeO-stained quartzite. Med brn on exposed surfaces, beige to lt brn on fresh. Bed: 55/60SE. Joint: 160/85SW 4/m. Second rock type finely laminated non-calcareous sandy siltstn, highly fractured. Suspect bed is 60/85SE. Fract cleav: 60 vertical. Green on exposed surfaces, lt gry on fresh. Whole hill may be tillite with giant dropstones of quartzite (CLT).

351 308185/6420750. Hilltop. Tillite, pebbly, med-brn on exposed surfaces slt'ly lighter on fresh. Reactive to HCl. Prinicipal constituent is gry qtzite cobbles. Fract cleav: 45/85NW.

352 309520/6420555. Tillite, heavily endowed with gry qtzite cobbles and boulders, less dk and lt gry to blk mottled chert-like rock. Fract cleav: 50/90. Note peculiar linear o/c trends: 105° mag with about 15-18 m separation between "beds".

309225/6420230. 450 m brg S35W. Massive qtz vein, milky wht, to 1 m thickness, brecciated. Trends: 05/30NW, about 60 m in length. Host rock is tillite, med rd-brn. Also thin, discontinuous qtzite horizons to 3 m thickness. Bed: 35/85SE.

353 307490/.6422275. Hilltop trends N60E mag. Tillite country rock, loaded with gry qtzite pebbles with less common granitics, leucocratic; mottled blk and white chert-like rock. Fract cleav: 45/90.

Numerous linear, paralleling fracture zones, very minimal relief trending 110° mag; 105° mag to 1 m width, spaced about 20 m apart. Probable tectonic origin similar to hardened, meridonal fractures comprising the Teelulpa Fracture Zone. Rockchip sample **A318342,** case-hardened sandstne.

Central portion marked by channel-like depression often with one or both walls being, in part at least, a flat surface with heavy FeO coatings. Rockchip sample **A318343**, case-hardened sandstn. Note faint lamination to the channels which on close inspection resemble an FeO banding feature: 105/85SW (Photo 19).

354 310145/6421715. Top of elevation point 287. Approx 3 km N30E from corner bore (Minburra shearing shed). Rock is tillite with quite large cobbles of quartzite. Fract cleav: 50 vertical (CLT).

355 312215/6429650. Sandstn, quartzose, weakly reactive to HCl, bedding planes (if that is what they are?) stand 3-5 mm relief. Pyrite, now limonite, concentrated along bedding planes, in places quite densely. Limonite, yellowish-brn permeates rock contributing to its lt brn color. Bed: 20/40NW. Joint: 295/75NE. Rockchip sample **A318344**, sandstn, coarsely bedded, wk'ly reactive to HCl, lt org-brn discoloration on exposed surfaces, nearly white on fresh. Pyritic, now limonite in cubes concentrated along bedding planes. In places, outcrops are kernally (1-3 cm) but well-

healed suggesting some brecciation.

311895/6429800. Hilltop. Siltstn, gry-grn. Non-reactive to HCl, very fine-grained, banded to 1 cm width heavy limonite staining. Disseminated limonite cubes after pyrite to 2%. Fract cleav: 50/80SE.

312575/6430200. Ridge. Siltstn, gry-grn, thoroughly brecciated and/or crushed with clast rotation, Intersticial fracts filled with specular hematite. Sample **A318345** hematite-bearing breccia. Bed: 30/50SE.

Photo 19. Hardened fracture zone developed in pebbly sediments of the Appila Tillite. Width of outcrop at hammer is 80 cm. Fracture cleavage : 35/90. View 105° mag.

311675/6429325. Southwest limit of ridge. Sandstn, quartzo-feldspathic. Crushed, brecciated and, where bedding preserved, show distorted stratification. Rocks are beige to slt'ly grey on exposed surfaces. Sample **A318346**, sandstn, diss pyrite as pyriteahedrons, dense, hard rd-brn limonite. Non-reactive to HCl. Some portions of matrix exhibit pale yellowish discoloration. Find fragments (3-10 cm) gry-grn siltstn suspended in quartzo-felds'c matrix.

Entire terrain, outcrops and rocks exhibit features similar to

those found in and adjacent to diapiric emplacements. Some of the hardened, rib-like bedding planes, for example, suggest that they have suffered fluidal flowing especially where contorted. Rock outcrops are blocky and kernally suggesting breakage with intrusion of fine siliceous material between clasts. I do not believe the contorted bedding is a product of soft rock deformation.

356 312930/6430780. Orama 1/50 000 sheet. Creek drains N50E, on north bank. Grey siltstn, crushed and brecciated with clast rotation, rehealed with calcite fillings to 3 cm thickness, predominant attitude: 310/50SW. Grey siltstn is non-reactive to HCl. Fract: North/85E, wall-rocks show gouge devel't, post-mineral breakage. Huge calcite emplacement 1.5 m thickness with large (5-10 cm) rhonbohedral crystals, trace amts CuO, cut by thin hematite veinlets, engulfs blocks of gry-grn siltstn (to 30 cm diam). Calcite vein: North/30 west, very irregular as it intrudes the gry siltstn. Bed: 85/35NW, fairly consistent,. However, some bedding horizons (2-3 m width) exhibit convolute distortions. Bed: 50/30 NW (I). Rockchip **A318347.**

313080/6430725 130 m brg S75E, SE side of creek. Silty limestn, leached and bleached and subjected to considerable compressional defor'm, primarily crushing. Bed: 15/35NW (I). Rocks appear to exhibit a wavy foliation resembling that characteristic of fludial flowage. Note presence of large angular blocks (30 cm) siltstn caught up in fluidal flow structure. Rockchip sample **A318348.**

357 318270/6429325. Hill, oval-shaped, 25 m relief. Siltstn, gry, cut by thin (0.5-1.5 mm) veinlets FeO, exotic, ubiquous. Bed: 55/50NW (I). Fract cleav: 55/85SE. Rockchip sample **A318349.** Lt gry siltstn, irregularly stained with FeO. Finely lam'd. Non-reactive to HCl.

358 317850/6429700. Hilltop, 20 m relief. Siltstn, gry-brn, finely lam'd. Str'ly reactive to HCl. Bed: 40/50NW; 50/60NW (I). Joint: 130/90, 3/m.

T Davies spectral anomaly T(S)1 on the Carrick 1/50 000 sheet. The only significant feature here is the med brn surface coloration derived from oxid'n of diss pyrite. On freshly broken surfaces the rocks are med to dk gry.

Rockchip sample **A318350**. Fract cleav: 45/90, well-devel'd.

359 318485/6430650. Top of elevation point (hill) 240. Now on Orama 1/50 000 topo sheet. Rock is very finely laminated calcareous siltstn (suspect Tapley Hill Formation). Brn on exposed surfaces, dk gry on fresh. Bed: 55/60NW. Joint: 110 vertical 2/m (CLT).

360 320560/6431370. Rockchip sample (float) **A318351**. Top of steep hill, cairn on top. Orama sheet. Rock is finely laminated calcareous siltstn. Dk brn on exposed surfaces, dk gry on fresh. Bed: 65/45NW. Joint: 168/80NW 1/m. Situated 350 m N80E of Sta 360. Sample A318351 rockchip taken of magnetic material, probably maghemite, has good looking limonite. Vein material follows bedding plane. Bed: 110/35NE. Second bed: 95/50N. Host rock is very finely laminated siltstn. Cubes of pyrite present. Med brn on exposed surfaces, lt brn on fresh (non-calcareous). Sampled material is in veins of 2 cm thickness (CLT).

361 322930/6429920. Ridge, trends 45° mag. Quartzite felds'c with the latter thoroughly argillised. Joint: 310/85SW, 5/m. Bed: 40/80NW (I).

362 322275/6429290. Ridge (as above). Quartzite, pinkish, felds'c. Bed: 45/85NW. Joint: 310/85SE, 20/m, generally characterised by 2-3 cm partings. Minor milky-wht qtz veins to 5 cm thickness, pinch and swell, multi-directional, product of sweating.

SW end of ridge is marked by a relatively large (4 m relief x 5 m radius) quartzite o/c. Bed: 45/85NW. Joint: 325/90, 3/m.

200 m brg S82E, approx centre of T Davies T(g)1 anomaly on the Carrick 1/50 000 sheet. Rock is yel-brn silty limestn, quite resistant to erosion, forms slt topo hump on SE side of main ridge. The area (anomaly) might be regarded conspicuous for yel coloration and slt relief. Bed: 35/75NW (I). Fract cleav: 05/75SE.

322830/6429505. 610 m brg N70E. Irregular o/c dk rd-brn, dense ferruginous vein material, supports vein qtz clasts (1-2 cm). Siderite. Reactive to HCl. Vugs filled with

yellowish limonite as well as dense rd-brn limonite-goethite. Trend of o/c: N85E mag. Rockchip sample **A318354.**

363 321750/6430510. Slt topo rise trending 225° mag, capped by 1 m wide quartz vein. Three prospect pits test vein but do not appear to have loc'd productive material. Largest pit (2 m x 2 m, down 2.5 m) loc'd at NE end of quartz vein where exposes massive ferruginous material. Vein itself varies from 1-2 m and carries chunks of gry siltstn. Fol: 30/80SE. It is about 75 m length pinching out at both ends. Ferruginous structure is 30-40 cm thick: N/50E. Rockchip sample **A318353** from ferruginous str (CLT).

322520/6428465. Small erosional gully that drains 155° mag directly through the T(g)1 anomaly. Rock is gry siltstn, reactive to HCl. Most fracts carry thin selvages limonite. Bed: 35/80NW (I). Joint: 85/85NW, 3/m. Stream sed sample **A318352,** pinkish and reddish stained quartz, quartzite, grn siltstn and minor sub-angular magnetic products.

290 m brg N80E. Rockchip sample **A318355,** vein quartz, intensely crushed. Rehealed. Supports ferruginous clasts and yel-brn limonite fillings.

364 323280/6429705. Massive quartz body, thoroughly fract'd and brecciated. Rehealed. Supports considerable (40-50%) amts ferruginous material. Trend: N40E for dist of 60 m. Widest portion 3 m. Fol: 25/65SE. Rockchip sample **A318356** from ferruginous-rich portion of quartz.

323485/6429730. 210 m brg N82E, slt elongate topo rise supporting dense growth bullock bush. Elevated ground due to quartz veining paralleling beds. Dolomitic limestn, lt to med brn on exposed surfaces, mottled brown and gry on fresh. Bed: 70/65SE (I). Very massive-appearing quartz, brecciated, poorly rehealed, carries minor amts ferruginous material.

365 323510/6430690. Hill top (268 m). Rockchip sample **A318357** from finely lam'd non-calcareous, sandy siltstn. FeO-stained, vry dk brn on exposed surfaces, sometimes almost blk to lt gry with patches of brn and red. Limonite specks visible, multi-directional qtz/FeO veining. Bed: 30/65NW. Fract cleav: 100/60SE.

Approx 500 m N40E of 365. Siltstn, slightly banded, non-calcareous, speckled with fine reddish dots, resembles diss sulphides. Drk purple on exposed surfaces, lt purple to beige to gry on fresh. Bed: 55/60NW. Joint: 155/85NE. Sample **A318358** rockchip taken of above described material (CLT).

366 324275/6431360. Scott Hill, highest point. Central to T Davies T(g)4 anomaly on the Orama 1/50 000 sheet. Rock o/c is fine-grained siltstn, chalk-like tex. Non-reactive to HCl. Silty sandstn interbeds. Bed: 60/55NW (I). Ripple marks, a symmetrical, direction of foreset beds: 155° mag. Quartzose sandstns are slt'ly felds'c, carry diss pyt (limonite) to 3-4%. Most fracts with limonite smears. Interbedded qtzite to 1 m thickness, 20-30 m length.

Sample **A318359** is a standard.

367 319940/6431595. Sandstn, ferruginous ground mass. Diss limonite specks, less than 1%. Non-reactive to HCl. Bed: 55/85NW; 35/80NW.

75 m brg 155° mag. Maghemite veins cut sandstn, to 5 cm thickness, highly magnetic. Bed: 45/80SE; 45/85NW (I). Maghemite veins associated with greasy-lustred quartz, very irregular. Rockchip sample **A318360**, ferruginous vein material, very dense, hard, rd-brn, 5 cm thickness, 15-20% anhedral pyrite, canary-yellow, in places 60-70% anhedral pyrite, also angular clasts (2-3 cm) quartz.

80 m brg S60E. Rockchip sample **A318361**, comprised of maghemite vein "slabs" to 3 cm thickness. Hosted by ferruginous sandstn. Associated with thin (1-2 cm) qtz veins, greasy lustre, discontinuous, yel-brn limonite fill open spaces.

95 m brg S55W. Prospect pit. Workings caved, no productive rock found. Country rock is sandstn, gry-brn, ferruginous. Bed: 50/80NW (II). Likely that diggings are involved with stone recovery for buildings.

50 m brg S50W. Rockchip sample (float) **A318362** comprised of maghemite vein slabs (2-3 cm thick) collected within 10 m radius. Strongly magnetic, cut by greasy-lustred quartz veins.

790 m brg N58E. Rockchip sample (float) **A318364** comprises maghemite vein chips collected within a 10 m radius.

368 319900/6432600. Sandstn, silty, pyritic, med brn. Pyrite altered to limonite, less than 1%. Bed: 50/85NW. Bed: 50/85NW. Quartz vein, 35 cm thick, crushed and rehealed, intergrown with dense rd-brn ferruginous material: 50/90, parallels bedding. Rockchip sample **A318363**.

70 m brg N40W, hilltop. Ferruginous sandstn. Bed: 50/70NW. Str'ly reactive to HCl. Very finely bedded with bedding laminae accentuated by dk limonitic films.

369 321025/6432700. Rockchip sample **A318365** taken of some very dense looking material. Hematite with large clots of good colored limonite (good structure). Vein trends N65E. Bed: 65/85NW. This vein approx 10 cm in width, non-magnetic. Frac t cleav: 65/85NW. Hand specimen 265 taken (CLT).

370 320296/6433210. Saddle point. Axis trends N60E. Rock on SE side is gry-brn, finely laminated silty sandstn. Non-reactive to HCl. Bed: 50/80NW (I). On NW side rock is med gry silty sandstn, finely lam'd. Bed: 50/35NW (I). Saddle area covered with slope debris. However, resistant quartz/siliceous ferruginous vein: 40/80SE, 5-7 cm thick. Rockchip sample **A318366** . Quartz carries anhedral pyrite clots, a wire-like form.

320385/6433365. 175 m brg N30E at NE end of hill. Sandstn, silty, gry. Bed: 50/35NW (I).

320600/6433660. 560 m brg N45E, ridge crest trending 55° mag. Sandstn, brn, silty. Bed: 55/45NW. Joint: 325/90, 2/m.

320700/6433600. 550 m brg N34E. Large, massive quartz vein, approx 100 m in length, 1.5 m max thickness, pinches out at both ends: 50/75SE. Host rock is gry-brn silty sandstn. Bed: 235/50NW. Joint: 350/90.

371 320955/6433005. Sample **A318367** rockchip taken of hematitic material. It has dark clots of limonite, host rock is finely laminated non-calcareous, FeO-stained sandy siltstn, with small specks of limonite. Sample material is approx 12

cm in width (vein) and is striking N40E and a length of approx 60 m (exposed). This material is paralleling the bedding plane. Bedding of host rock: 55/85N. Fract cleav is along bedding plane. Host rock is beige on exposed surfaces (vry FeO-stained in places) and lighter beige on fresh.

Approx 250 m N45E from Sta 371 have taken sample **A318368**. Maybe see copper-oxide staining on this material. More brecciated material still with hematite and masses of limonite and some crushed quartz. Have taken hand specimen and labelled it A368. Host rock is non-calcareous sandy siltstn. There is little waviness in bedding, however, the norm is 60/85NW. Sampled material is boudinaged and up to 34 cm in width. Fract cleav along bedding planes. Vein material sampled has a strike of 60 and an approx length of 180 m (CLT).

372 320985/6433640. Actually, quartz vein is much longer than originally noted. Although tends to pinch right out, the emplacement reappears within 30-40 m along strike (S55W). Width is consistent 10-20 cm with internal banding parallel to strike. A second quartz vein, 10 cm, about 8-10 m separation parallels first vein, exhibits a distinctive wavy lamination accentuated by FeO-staining and limonite stringers.

565 m brg N36E. Sandstn, gry-brn. Fract cleav: 55/90. Bed: 60/65NW. Cut by two qtz veins (as previously described), one 30 cm, other 10 cm: 55/75SE. Rockchip sample **A318369**. Host rock is gry-brn silty sandstn. Bed: 60/45NW. Quartz vein: 45/85SE, 34 cm width.

373 322050/6433750. Hilltop. Sandstn, fine silty, quartzose. Minute limonite veinlets, multi-directional. Lt brn on exposed surfaces, vry lt to off-wht on fresh. Minute veins (0.5-1.0 cm) are qtz and intergrown siliceous ferruginous material, dk gry-brn, shiny, very dense and hard. Suspect that hill existence is function of numerous such siliceous veins. Bed: 75/30NW (I).

Rockchip sample **A318370**, qtz and intergrown siliceous ferruginous material. Joint: 145/75SW, 10/m, occupied by thin qtz veins with rd-brn limonite-goethite fillings; 20/75SE qtz-ferrug's-bearing, 2-3 cm thickness, 3/m; 80/80SE, 1-3 cm thick qtz-ferrug's vein. Intersection of veins produces thick (5-10 cm) zones qtz-ferrug's material.

Surface float includes numerous blocks (10-15 cm) massive hematite.

322470/6433990. 490 m brg N59E, ridge, trends 245°. Sandstn, med to dk brn, due heavy impregnations FeO. Bed: 80/40NW, very wavy (small scale), accentuated by FeO and limonite concentrations.

374 322805/6434050. Ridge, trending 55° mag. Sandstn, fine-grained, gry-brn. Bed: 70/90, small-scale waviness. Quartz-siliceous ferrug's veins parallel bedding to 3-6 cm thickness.

375 322010/6434460. Top of hill 270 rock is very finely laminated non-calcareous siltstn. Brown on exposed surfaces, dk beige, lt brn on fresh. Bed: 55/45 NW. Fract cleav: 55/50NW. Approx 150 m N20E from Sta 375 have sub-station. Rockchip sample **A318371** taken of some crushed quartz material with masses of limonite. Have taken hand sample and labelled it A371. Attitude of vein N40E and is exposed for approx 50 m. Very similar material sampled at Sta 370. Heading towards Helene Shaft find claim peg inscribed "A, 7, 9, 11, 28, 70" possibly no more than 15 years old (CLT).

376 322565/6434650. Hilltp. Sandstn, silty slt'ly reddish gry-brn. Fract cleav: 65/90. Bed: 50/50SE (III); 60/35SE (III); 30/30SE (I); 35/20SE (I).

265 m brg N10W. Sandstn, lt reddish-brn, silty quartzose, finely bedded. Bed: 55/65NW (I).

XX m brg N21W. Limestn, forms very slight, linear topo rise 15-18 m width. Dirty gry on exposed surfaces, lt gry on fresh. Finely bedded. Bed: 240/85NW (I).

640 m brg N36W. Ironstn outcrop, lies about 80 m north of above limestn. Contact relationships concealed by low-angle slope gravels. Very porous, appears large (5-15 cm) angular lithic (?) blocks have been weathered out of surface leaving voids. Foliation: 60/75SE, 5-8 m width, 2 m relief.

377 321170/6435300. Approx loc'n. Isolated occurrence ironstn. Outcrop 2 m relief by 5 m length trends S65W. Rockchip sample **A318372**, ironstn outcrop.

378 320850/6435240. Helene Shaft. Vertical (3 sec) with probably some incline at bottom followed by water. Timbered down 3 m from collar. Single compartment 80 cm x 155 cm. Sunk on east side large ironstn o/c. (Bearing on last station is N62E mag). Rockchip sample **A318373** from ironstn outcrop.

APPENDIX B

All analytical work presented in this report has been carried out by Analabs Adelaide.

Sample numbers shown identify with identical boldface numbers found in the preceding Field Notes of Appendix A.

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	1 OF 6

TYPE No.	SAMPLE No.	Au	Au	Sb	Sn	W	Cu	Cu:1	Pb	Zn
1	A318101	0.001	–	4.35	1.58	3.50	6	–	25	52
2	A318102	0.001	–	4.73	2.20	9.54	6	–	35	44
3	A318103	0.001	–	3.26	1.84	6.51	4	–	25	40
4	A318104	0.001	–	0.66	2.80	2.18	20	–	15	72
5	A318105	0.001	–	0.84	2.17	3.57	34	–	10	96
6	A318106	0.001	–	0.66	3.11	2.05	54	–	30	96
7	A318107	0.001	–	0.52	2.71	1.90	34	–	10	102
8	A318108	0.001	–	2.65	12.80	6.47	106	–	5	16
9	A318109	0.038	–	4.09	5.70	3.40	>10000	4.08	10	26
10	A318110	0.015	–	3.23	3.44	8.58	5006	–	5	30
11	A318111	0.040	–	1.77	2.59	1.45	>10000	10.44	10	42
12	A318112	0.008	–	11.70	3.69	3.86	3652	–	10	28
13	A318113	0.003	–	2.73	2.91	2.10	700	–	25	34
14	A318114	0.013	–	19.20	7.25	2.63	9816	–	20	48
15	A318115	0.002	–	0.91	2.76	14.10	132	–	20	20
16	A318116	0.002	–	0.73	3.11	3.61	60	–	<5	8
17	A318117	0.001	–	2.74	9.22	7.84	322	–	10	30
18	A318118	0.006	–	1.64	3.91	3.68	>10000	1.63	10	10
19	A318119	0.002	–	1.44	1.26	2.72	50	–	5	6
20	A318120	0.001	–	2.02	3.18	8.74	22	–	5	4
21	A318121	0.001	–	0.76	0.82	2.79	26	–	<5	2
22	A318122	0.012	–	0.75	1.76	2.60	>10000	3.36	20	10
23	A318123	0.002	–	1.01	1.40	27.40	184	–	<5	4
24	A318124	>0.100	0.24	2.89	0.71	1.76	>10000	1.53	65	12
25	A318125	>0.100	1.56	12.90	1.02	2.72	>10000	11.90	40	4

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
– = element not determined

AUTHORISED OFFICER D.K.Rowley

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	2 OF 6

TUBE No.	SAMPLE No.	Au	Au	Sb	Sn	W	Cu	Cu:1	Pb	Zn
1	A318126	0.003	-	0.57	1.09	2.49	270	-	5	6
2	A318127	0.004	-	3.95	1.00	4.04	124	-	20	50
3	A318128	0.002	-	3.04	<0.50	4.84	12	-	5	8
4	A318129	0.001	-	1.41	<0.50	3.27	42	-	<5	6
5	A318130	0.001	-	0.90	0.61	2.59	22	-	50	8
6	A318131	0.001	-	0.62	<0.50	2.26	100	-	5	30
7	A318132	0.001	-	0.37	7.94	3.10	8	-	15	22
8	A318133	0.003	-	4.33	<0.50	0.99	1404	-	20	1028
9	A318134	0.001	-	0.34	2.05	1.83	32	-	10	70
10	A318135	0.001	-	1.40	<0.50	0.91	30	-	15	74
11	A318136	0.001	-	1.43	1.65	1.81	38	-	10	32
12	A318137	0.002	-	3.48	<0.50	3.15	4	-	20	516
13	A318138	0.001	-	2.78	1.97	4.79	18	-	25	510
14	A318139	0.001	-	1.40	0.82	2.90	16	-	40	456
15	A318140	0.001	-	0.69	0.93	1.17	6	-	15	102
16	A318141	0.031	-	0.55	2.14	1.73	6	-	15	54
17	A318142	0.002	-	0.55	1.83	0.95	10	-	20	54
18	A318143	0.002	-	0.96	2.38	2.28	18	-	20	60
19	A318144	0.002	-	0.92	2.60	1.11	26	-	15	40
20	A318145	0.002	-	1.31	2.63	1.78	18	-	10	34
21	A318146	0.001	-	3.83	<0.50	3.77	54	-	5	80
22	A318147	0.022	-	9.32	<0.50	4.74	360	-	85	768
23	A318148	<0.001	-	0.82	1.36	2.76	2	-	<5	8
24	A318149	<0.001	-	1.69	2.36	2.50	30	-	25	44
25	A318150	0.002	-	0.77	1.87	2.73	20	-	20	60

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	3 OF 6

No.	SAMPLE No.	Au	Au	Sb	Sn	W	Cu	Cu:1	Pb	Zn
1	A318151	<0.001	-	0.54	1.84	1.73	16	-	20	54
2	A318152	0.010	-	2.29	<0.50	1.83	62	-	55	192
3	A318153	0.001	-	0.71	3.36	1.48	16	-	25	74
4	A318154	0.001	-	0.80	2.21	1.57	14	-	20	62
5	A318155	0.001	-	3.21	<0.50	1.92	96	-	15	252
6	A318156	<0.001	-	24.60	0.62	3.87	316	-	85	164
7	A318157	<0.001	-	34.30	<0.50	5.56	116	-	30	602
8	A318158	0.005	-	1.19	5.21	6.44	9586	-	30	128
9	A318159	<0.001	-	1.08	2.20	3.95	48	-	15	42
10	A318160	<0.001	-	1.16	1.98	1.85	40	-	15	36
11	A318161	<0.001	-	1.66	<0.50	1.82	238	-	65	10
12	A318162	>0.100	42.00	29.60	13.50	2.90	1980	-	1050	1210
13	QCA318120	0.001	-	0.44	2.81	3.08	16	-	<5	4
14	QCA318140	0.010	-	0.53	1.12	0.84	4	-	20	104
15	QCA318160	0.001	-	0.83	2.02	0.84	48	-	15	36
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.001	0.02	0.05	0.50	0.10	2	0.01	5	2
24	UNITS	PPM	PPM	ppm	ppm	ppm	PPM	%	PPM	PPM
25	METHOD	GG334	GG329	GI222	GI222	GI222	GA140	GA140	GA140	GA140

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	4 OF 6

TUBE No.	SAMPLE No.	As
1	A318101	10
2	A318102	<10
3	A318103	10
4	A318104	10
5	A318105	<10
6	A318106	<10
7	A318107	<10
8	A318108	10
9	A318109	20
10	A318110	10
11	A318111	10
12	A318112	160
13	A318113	90
14	A318114	480
15	A318115	20
16	A318116	20
17	A318117	50
18	A318118	20
19	A318119	10
20	A318120	10
21	A318121	<10
22	A318122	<10
23	A318123	<10
24	A318124	280
25	A318125	50

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	5 OF 6

TI E No.	SAMPLE No.	Au								
1	A318126	<10								
2	A318127	<10								
3	A318128	<10								
4	A318129	<10								
5	A318130	10								
6	A318131	20								
7	A318132	<10								
8	A318133	30								
9	A318134	<10								
10	A318135	10								
11	A318136	10								
12	A318137	10								
13	A318138	<10								
14	A318139	<10								
15	A318140	10								
16	A318141	<10								
17	A318142	10								
18	A318143	<10								
19	A318144	10								
20	A318145	10								
21	A318146	<10								
22	A318147	30								
23	A318148	<10								
24	A318149	10								
25	A318150	10								

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06589	16/07/91	53602	6 OF 6

BE No.	SAMPLE No.	As
1	A318151	10
2	A318152	20
3	A318153	10
4	A318154	10
5	A318155	30
6	A318156	80
7	A318157	60
8	A318158	50
9	A318159	10
10	A318160	10
11	A318161	70
12	A318162	80
13	QCA318120	10
14	QCA318140	<10
15	QCA318160	10
16		
17		
18		
19		
20		
21		
22		
23	DETECTION	10
24	UNITS	PPM
25	METHOD	GA115

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
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00107

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06656	25/07/91	53603	1 OF 3

TUBE No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Sb	W	Sn
1	A318163	0.002	10	30	–	55	120	1.53	4.12	2.39
2	A318164	<0.001	<10	10	–	20	30	1.44	2.74	1.02
3	A318165	<0.001	10	28	–	15	42	0.73	2.57	1.06
4	A318166	<0.001	20	2	–	<5	4	3.37	2.03	<0.50
5	A318167	<0.001	10	172	–	<5	6	0.82	8.14	2.73
6	A318168	<0.001	10	6	–	<5	6	0.50	1.45	0.68
7	A318169	<0.001	30	76	–	10	20	1.00	1.47	0.98
8	A318170	<0.001	10	8	–	10	6	0.82	0.80	0.75
9	A318171	<0.001	10	28	–	10	20	2.94	2.67	0.76
10	A318172	<0.001	50	28	–	5	40	4.56	3.56	<0.50
11	A318173	0.003	10	14	–	15	40	1.10	3.02	1.54
12	A318174	<0.001	10	22	–	25	20	4.72	51.20	21.50
13	A318175	0.001	20	32	–	20	18	2.97	27.50	19.40
14	A318176	<0.001	10	20	–	20	26	1.15	3.34	1.89
15	A318177	0.003	110	446	–	50	150	4.40	2.13	0.55
16	A318178	0.001	20	34	–	95	94	11.90	3.17	1.90
17	A318179	<0.001	20	36	–	10	30	0.32	1.52	1.10
18	A318180	0.001	10	46	–	10	24	1.45	2.94	1.87
19	A318181	0.004	30	800	–	15	912	2.70	3.98	<0.50
20	A318182	0.004	20	24	–	10	32	1.49	1.86	1.38
21	A318183	<0.001	<10	6	–	5	8	0.92	2.22	<0.50
22	A318184	0.002	20	52	–	10	40	0.74	0.83	<0.50
23	A318185	0.001	<10	<2	–	<5	10	1.68	2.94	3.03
24	A318186	0.001	10	<2	–	15	18	1.66	10.60	38.90
25	A318187	<0.001	10	26	–	30	116	1.10	1.13	2.55

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06656	25/07/91	53603	2 OF 3

TUBE No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Sb	W	Sn
1	A318188	<0.001	10	88	–	30	46	1.23	60.30	6.88
2	A318189	0.001	10	36	–	25	92	1.53	4.10	4.25
3	A318190	<0.001	10	52	–	30	110	3.10	4.05	1.60
4	A318191	0.001	10	12	–	30	82	2.08	3.41	2.60
5	A318192	0.001	10	20	–	30	82	1.95	3.21	2.41
6	A318193	0.001	10	26	–	40	50	0.71	1.80	2.78
7	A318194	0.015	10	>10000	1.01	50	18	3.97	1.80	5.19
8	A318195	0.044	70	>10000	2.12	30	26	4.25	0.80	1.15
9	A318196	0.036	30	3414	–	10	16	2.29	3.23	2.39
10	A318197	0.003	10	168	–	5	14	0.64	1.79	1.69
11	A318198	<0.001	20	42	–	10	42	1.95	0.68	0.72
12	A318199	0.007	200	1860	–	10	52	3.90	2.63	0.68
13	A318200	0.003	110	2284	–	15	76	21.40	2.58	<0.50
14	A318201	0.001	50	116	–	20	30	0.24	3.47	0.62
15	A318202	<0.001	10	134	–	25	64	4.13	35.40	11.10
16	A318203	0.001	10	766	–	25	150	1.34	0.77	<0.50
17	A318204	0.006	10	4156	–	15	56	0.89	3.65	1.18
18	A318205	0.001	50	1424	–	115	2928	5.29	1.57	1.22
19	A318206	0.001	110	88	–	20	192	14.90	1.22	1.76
20	A318207	0.002	70	62	–	50	35	3.77	0.48	<0.50
21	A318208	<0.001	30	10	–	10	14	2.11	2.66	<0.50
22	A318209	0.003	<10	10	–	<5	8	2.16	3.00	<0.50
23	A318210	0.002	10	634	–	5	128	1.71	1.54	<0.50
24	A318211	0.001	30	84	–	20	30	4.75	39.30	14.80
25	A318212	0.001	10	10	–	10	22	1.71	1.44	0.51

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER D.K.Rawley

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06656	25/07/91	53603	3 OF 3

TUBE No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Sb	W	Sn
1	A318213	0.001	10	120	-	30	24	6.64	19.40	21.80
2	A318214	0.002	10	6	-	10	20	2.62	58.20	8.83
3	A318215	0.001	<10	12	-	5	102	0.24	4.14	0.95
4	QCA318180	<0.001	10	50	-	10	28	0.88	1.59	0.84
5	QCA318200	0.001	120	2344	-	15	76	18.70	1.20	<0.50
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.001	10	2	0.01	5	2	0.05	0.10	0.50
24	UNITS	PPM	PPM	PPM	%	PPM	PPM	ppm	ppm	ppm
25	METHOD	GG334	GA115	GA140	GA140	GA140	GA140	GI222	GI222	GI222

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER D.K.Rowley

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06713	30/07/91	53604	1 OF 3

JBE No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Zn:1		
1	A318216	0.004	180	>10000	4.79	575	>10000	9.87		
2	A318217	0.001	10	210	–	25	470	–		
3	A318218	<0.001	10	438	–	35	930	–		
4	A318219	0.002	10	136	–	35	290	–		
5	A318220	0.008	60	118	–	20	258	–		
6	A318221	0.001	10	12	–	20	28	–		
7	A318222	0.001	10	56	–	15	160	–		
8	A318223	0.001	10	248	–	95	362	–		
9	A318224	0.043	30	586	–	20	280	–		
10	A318225	0.002	10	12	–	15	16	–		
11	A318226	0.008	<10	144	–	35	174	–		
12	A318227	0.001	20	198	–	10	22	–		
13	A318228	0.001	20	128	–	195	202	–		
14	A318229	0.001	<10	564	–	<5	18	–		
15	A318230	0.015	30	232	–	30	430	–		
16	A318231	0.001	<10	102	–	10	26	–		
17	A318232	<0.001	<10	210	–	5	10	–		
18	A318233	0.003	<10	>10000	5.52	15	12	–		
19	A318234	0.002	<10	>10000	5.21	10	24	–		
20	A318235	<0.001	30	882	–	10	40	–		
21	A318236	<0.001	20	346	–	5	34	–		
22	A318237	<0.001	<10	110	–	10	74	–		
23	A318238	<0.001	50	116	–	60	28	–		
24	A318239	<0.001	<10	38	–	10	8	–		
25	A318240	<0.001	80	124	–	20	60	–		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER D.K.Rawley

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06713	30/07/91	53604	2 OF 3

TUBE No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Zn:1		
1	A318241	<0.001	<10	20	–	10	22	–		
2	A318242	<0.001	20	560	–	4400	864	–		
3	A318243	<0.001	<10	28	–	40	26	–		
4	A318244	<0.001	<10	34	–	25	58	–		
5	A318245	<0.001	<10	26	–	10	30	–		
6	A318246	<0.001	<10	62	–	5	115	–		
7	A318247	<0.001	10	14	–	40	80	–		
8	A318248	<0.001	<10	20	–	15	42	–		
9	A318249	<0.001	40	102	–	<5	28	–		
10	A318250	0.001	10	704	–	10	68	–		
11	A318251	<0.001	<10	70	–	5	24	–		
12	A318252	<0.001	30	52	–	30	16	–		
13	A318253	<0.001	<10	10	–	10	4	–		
14	A318254	0.001	80	122	–	115	112	–		
15	A318255	<0.001	20	22	–	20	46	–		
16	A318256	<0.001	20	40	–	20	64	–		
17	A318257	<0.001	30	1014	–	15	16	–		
18	A318258	<0.001	30	>10000	6.94	20	42	–		
19	A318259	<0.001	10	>10000	4.99	5	16	–		
20	A318260	<0.001	<10	800	–	20	72	–		
21	A318261	0.003	20	436	–	30	88	–		
22	A318262	0.001	20	114	–	30	74	–		
23	A318263	<0.001	10	70	–	15	58	–		
24	A318264	0.001	<10	42	–	15	30	–		
25	A318265	0.001	10	38	–	15	48	–		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
– = element not determined

AUTHORISED OFFICER D.K.Rowley

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06713	30/07/91	53604	3 OF 3

No.	SAMPLE No.	Au	As	Cu	Cu:1	Pb	Zn	Zn:1		
1	A318266	0.001	10	44	-	20	86	-		
2	A318267	0.001	<10	42	-	20	64	-		
3	A318268	0.001	<10	36	-	20	124	-		
4	A318269	0.001	<10	116	-	10	16	-		
5	QCA318220	0.008	50	114	-	20	252	-		
6	QCA318240	<0.001	60	110	-	20	52	-		
7	QCA318260	<0.001	<10	796	-	15	66	-		
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.001	10	2	0.01	5	2	0.01		
24	UNITS	PPM	PPM	PPM	%	PPM	PPM	%		
25	METHOD	GG334	GA115	GA140	GA140	GA140	GA140	GA140		

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
-- = element not determined

91

AUTHORISED OFFICER D.K.Rowley

ANALABS ADELAIDE

PRELIMINARY ANALYTICAL DATA

CLIENT PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06792	21/08/91	53605	1 OF 5

TUBE	SAMPLE	Au	Au	As	Cu	Pb	Zn	Ag
1.	A318270	0.002	-	20	74	45	94	<1.0
2.	A318271	<0.001	-	10	70	45	86	<1.0
3.	A318272	<0.001	-	20	88	60	114	<1.0
4.	A318273	<0.001	-	30	12	120	48	<1.0
5.	A318274	0.001	-	30	48	25	1198	<1.0
6.	A318275	<0.001	-	50	50	65	484	<1.0
7.	A318276	<0.001	-	<10	12	5	32	<1.0
8.	A318277	<0.001	-	10	40	20	102	<1.0
9.	A318278	<0.001	-	10	30	10	92	<1.0
10.	A318279	<0.001	-	10	32	<5	38	<1.0
11.	A318280	<0.001	-	20	20	185	106	<1.0
12.	A318281	<0.001	-	50	44	55	56	<1.0
13.	A318282	0.001	-	40	20	20	118	<1.0
14.	A318283	<0.001	-	<10	40	5	82	<1.0
15.	A318284	<0.001	-	<10	16	5	92	<1.0
16.	A318285	0.001	-	20	8	10	10	<1.0
17.	A318286	<0.001	-	<10	18	20	58	<1.0
18.	A318287	0.001	-	<10	32	5	64	<1.0
19.	A318288	<0.001	-	10	30	5	40	<1.0
20.	A318289	<0.001	-	<10	28	10	56	<1.0
21.	A318290	<0.001	-	20	34	10	26	<1.0
22.	A318291	0.002	-	290	22	20	78	<1.0
23.	A318292	0.001	-	100	26	15	342	<1.0
24.	A318293	<0.001	-	30	172	5	40	<1.0
25.	A318294	<0.001	-	520	88	5	12	<1.0

ANALABS ADELAIDE

PRELIMINARY ANALYTICAL DATA

IENT PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06792	21/08/91	53605	2 OF 5

E	SAMPLE	Au	Au	As	Cu	Pb	Zn	Ag
.	A318295	<0.001	–	190	108	<5	18	<1.0
.	A318296	<0.001	–	30	10	10	48	<1.0
.	A318297	<0.001	–	20	28	155	110	<1.0
.	A318298	<0.001	–	10	20	20	56	<1.0
.	A318299	<0.001	–	20	16	145	60	<1.0
.	A318300	0.001	–	10	34	25	86	<1.0
.	A318301	<0.001	–	20	26	160	86	<1.0
.	A318302	0.001	–	10	36	25	100	<1.0
.	A318303	0.001	–	10	28	25	54	<1.0
.	A318304	<0.001	–	<10	24	15	134	<1.0
1.	A318305	0.001	–	10	40	20	128	<1.0
.	A318306	<0.001	–	10	36	75	142	<1.0
3.	A318307	<0.001	–	20	74	175	208	<1.0
.	A318308	<0.001	–	20	94	80	120	<1.0
.	A318309	<0.001	–	60	178	150	140	<1.0
.6.	A318310	<0.001	–	60	116	65	304	1.0
.	A318311	<0.001	–	20	86	100	122	<1.0
18.	A318312	<0.001	–	<10	26	45	50	<1.0
.	A318313	<0.001	–	<10	22	5	12	<1.0
.	A318314	<0.001	–	<10	30	25	60	<1.0
21.	A318315	0.003	–	<10	16	10	96	<1.0
.	A318316	0.001	–	20	78	55	84	<1.0
23.	A318317	0.001	–	<10	14	15	66	<1.0
.	A318318	<0.001	–	10	8	20	40	<1.0
.	A318319	<0.001	–	10	32	50	92	<1.0

ANALABS ADELAIDE

PRELIMINARY ANALYTICAL DATA

CLIENT PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06792	21/08/91	53605	3 OF 5

TUBE	SAMPLE	Au	Au	As	Cu	Pb	Zn	Ag
1.	A318320	0.001	-	<10	28	55	120	<1.0
2.	A318321	0.002	-	20	18	45	488	<1.0
3.	A318322	<0.001	-	10	36	65	70	<1.0
4.	A318323	0.001	-	170	22	55	128	<1.0
5.	A318324	<0.001	-	20	144	290	380	<1.0
6.	A318325	0.003	-	20	52	510	40	1.0
7.	A318326	0.061	-	30	144	565	188	1.0
8.	A318327	0.003	-	10	28	30	102	<1.0
9.	A318328	0.003	-	50	12	160	452	<1.0
10.	A318329	<0.001	-	10	30	50	78	<1.0
11.	A318330	0.001	-	10	34	35	120	<1.0
12.	A318331	0.003	-	<10	28	5	144	<1.0
13.	A318332	<0.001	-	10	42	25	70	<1.0
14.	A318333	0.001	-	10	38	20	64	<1.0
15.	A318334	0.003	-	500	466	45	518	<1.0
16.	A318335	0.001	-	40	40	135	1758	<1.0
17.	A318336	<0.001	-	30	22	155	160	<1.0
18.	A318337	<0.001	-	10	24	20	72	<1.0
19.	A318338	<0.001	-	40	42	10	86	<1.0
20.	A318339	<0.001	-	<10	20	5	130	<1.0
21.	A318340	0.001	-	10	10	<5	8	<1.0
22.	A318341	0.001	-	220	56	<5	4	<1.0
23.	A318342	<0.001	-	10	56	5	16	<1.0
24.	A318343	<0.001	-	20	396	<5	22	<1.0
25.	A318344	<0.001	-	<10	8	5	6	<1.0

ANALABS ADELAIDE

PRELIMINARY ANALYTICAL DATA

CLIENT PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	102080.35.06792	21/08/91	53605	4 OF 5

TUBE	SAMPLE	Au	Au	As	Cu	Pb	Zn	Ag
1.	A318345	<0.001	-	<10	46	10	6	<1.0
2.	A318346	<0.001	-	<10	10	10	36	<1.0
3.	A318347	<0.001	-	10	2	<5	8	<1.0
4.	A318348	0.003	-	<10	6	10	8	1.0
5.	A318349	<0.001	-	40	38	5	36	<1.0
6.	A318350	<0.001	-	<10	36	<5	38	<1.0
7.	A318351	0.001	-	10	68	20	24	<1.0
8.	A318352	<0.001	-	10	40	10	36	<1.0
9.	A318353	0.001	-	30	142	15	38	<1.0
10.	A318354	<0.001	-	80	54	5	22	<1.0
11.	A318355	0.002	-	10	24	5	10	<1.0
12.	A318356	<0.001	-	<10	20	<5	6	<1.0
13.	A318357	0.004	-	<10	20	<5	130	<1.0
14.	A318358	0.001	-	<10	42	<5	12	<1.0
15.	A318359	0.001	-	20	22	10	162	<1.0
16.	A318360	>0.100	0.42	210	9610	30	30	2.0
17.	A318361	0.006	-	10	236	10	30	<1.0
18.	A318362	0.011	-	10	128	15	28	<1.0
19.	A318363	0.003	-	30	54	5	20	<1.0
20.	A318364	0.006	-	20	76	20	54	<1.0
21.	A318365	0.007	-	10	10	15	104	<1.0
22.	A318366	0.001	-	30	34	45	58	<1.0
23.	A318367	0.001	-	20	8	10	30	<1.0
24.	A318368	0.011	-	10	42	15	44	<1.0
25.	A318369	0.001	-	20	10	10	28	<1.0

ANALABS ADELAIDE

PRELIMINARY ANALYTICAL DATA

CLIENT PREFIX | REPORT NUMBER 102080.35.06792 | REPORT DATE 21/08/91 | CLIENT ORDER No. 53605 |

TUBE	SAMPLE	Au	Au	As	Cu	Pb	Zn	Ag
1.	A318370	0.010	–	90	10	10	38	<1.0
2.	A318371	0.001	–	60	8	15	70	<1.0
3.	A318372	0.001	–	10	48	60	410	<1.0
4.	A318373	0.002	–	20	14	25	406	1.0
5.	QC318280	<0.001	–	10	22	175	98	<1.0
6.	QC318300	0.001	–	10	30	20	80	<1.0
7.	QC318320	0.001	–	10	28	60	120	<1.0
8.	QC318340	0.001	–	10	12	<5	4	<1.0
9.	QC318360	>0.100	0.47	180	9594	30	30	2.0
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21.								
22.								
23.	DETECTION	0.001	0.02	10	2	5	2	1.0
24.	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25.	METHOD	GG334	GG329	GA115	GA140	GA140	GA140	GA140

EXPENDITURE STATEMENT
EXPLORATION LICENCE 1686
PERIOD 12 FEBRUARY 1991 TO 11 AUGUST 1991

	$
Salaries	2,103
Wages	1,971
Administration	1,404
Maps and Publications	1,079
Prospecting	2,001
Assaying	5,716
Geological Consultants	27,899
Motor Vehicles	4,539
Field Equipment	3,664
TOTAL	$50,376

0658h6/1.174.58

MINERALS EXPLORATION REPORT

EXPLORATION LICENCE 1686
BELTON AREA
ADELAIDE GEOSYNCLINE, SOUTH AUSTRALIA

Final Quarterly Report
for the Period ending 11 November 1991

Aztec Mining Company Limited
99 Shepperton Road
Victoria Park, Western Australia, 6100

AUTHOR: Frank F Greene, Consulting Geologist
Oxford Resources Pty Limited, 9 MacPherson Street
Cremorne Junction, New South Wales 2090

EXPLORATION MANAGER: Aztec Mining Company Limited
99 Shepperton Road, Victoria Park, Western Australia 6100

DATE: 3 April 1992

DISTRIBUTION: Dept of Mines and Energy(1), Aztec Mining Company Limited (2), Oxford Resources Pty Limited (2).

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Plan 1 - Structural Map	(pocket)
Plan 2 - TM Image Interpretation	(pocket)

Final Quarterly Report
for the period ending 11 November 1991

Belton Area
Exploration Licence 1686
Adelaide Geosyncline, South Australia

SUMMARY

This Final Report for EL 1686 concludes 12 months of exploration in the search for base and precious metal deposits. Work has involved a comprehensive geomapping/sampling program aided by terrestrial and extraterrestrial remote sensing studies.

INTRODUCTION

This is the Final Report for the Belton Area located in the South Flinders Ranges, Orroroo Province, roughly 40 km north of Orroroo, South Australia (Fig 1).

The Licence, covering 1,567 sq km, was granted to Aztec Mining Company Limited on 12 November 1990 for a period of one year and surrendered on 15 October 1991.

Exploration objectives sought base and precious metals. Geologic factors favoring the area's discovery potential include base and precious metal mines and prospects in its vicinity, complex structural setting, favorable hostrocks and diapiric emplacements.

Search methodology involved a comprehensive reconnaissance geomapping/sampling program designed to locate areas warranting more detailed investigation. The work established 378 geo-observation points and the collection of 152 rockchip, 45 stream sediment, 4 magnetite and 4 standard samples.

A thematic mapper study was carried out by Davies (H, 1991) of Remote Sensing & Geological Services. Purpose of the work was to generate a set of stratigraphic and structural maps from which a variety of structural targets were selected.

Items relating to the Licence area's physiography, history and geology have been presented in earlier reports (Greene, 1991a and

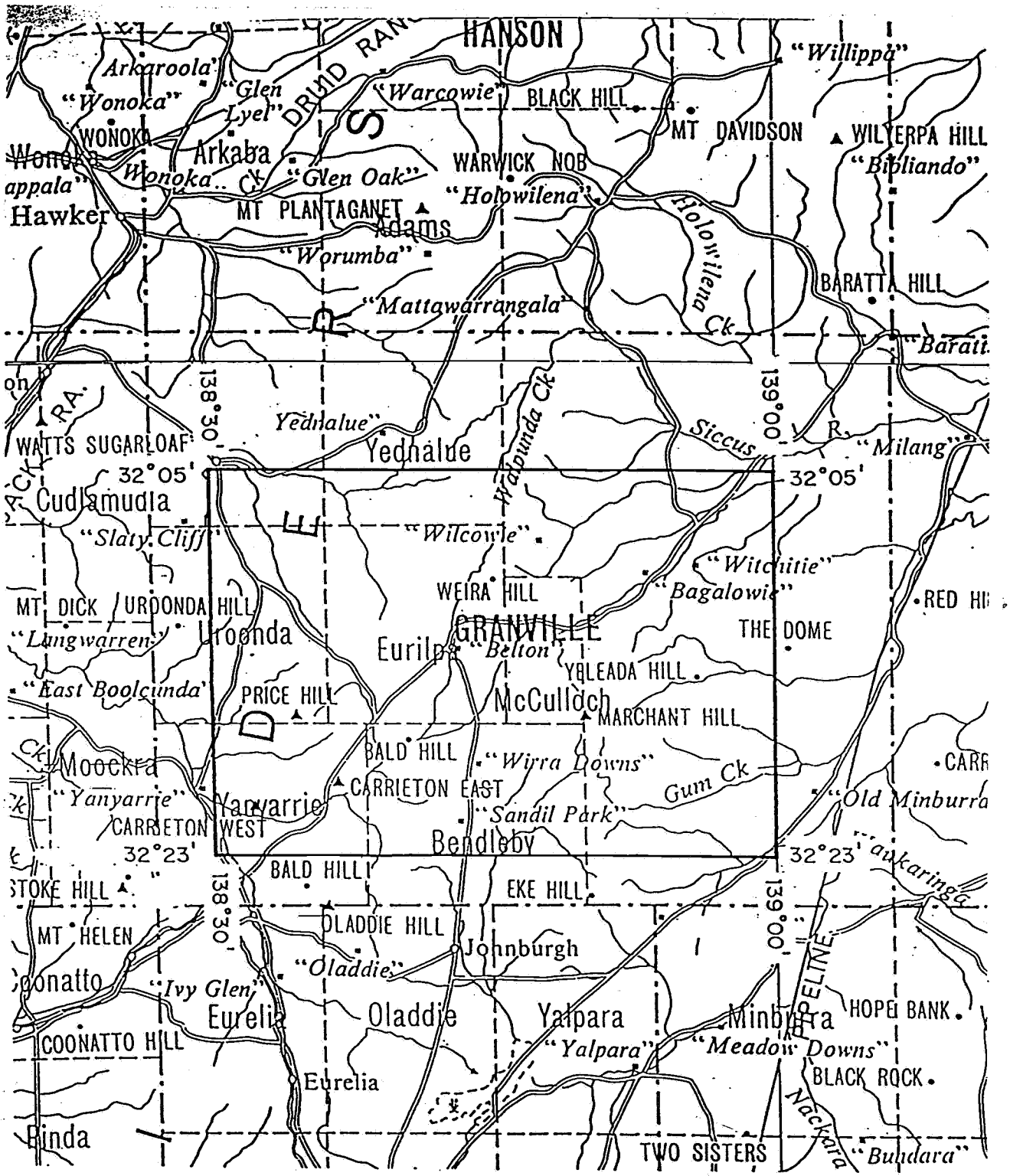
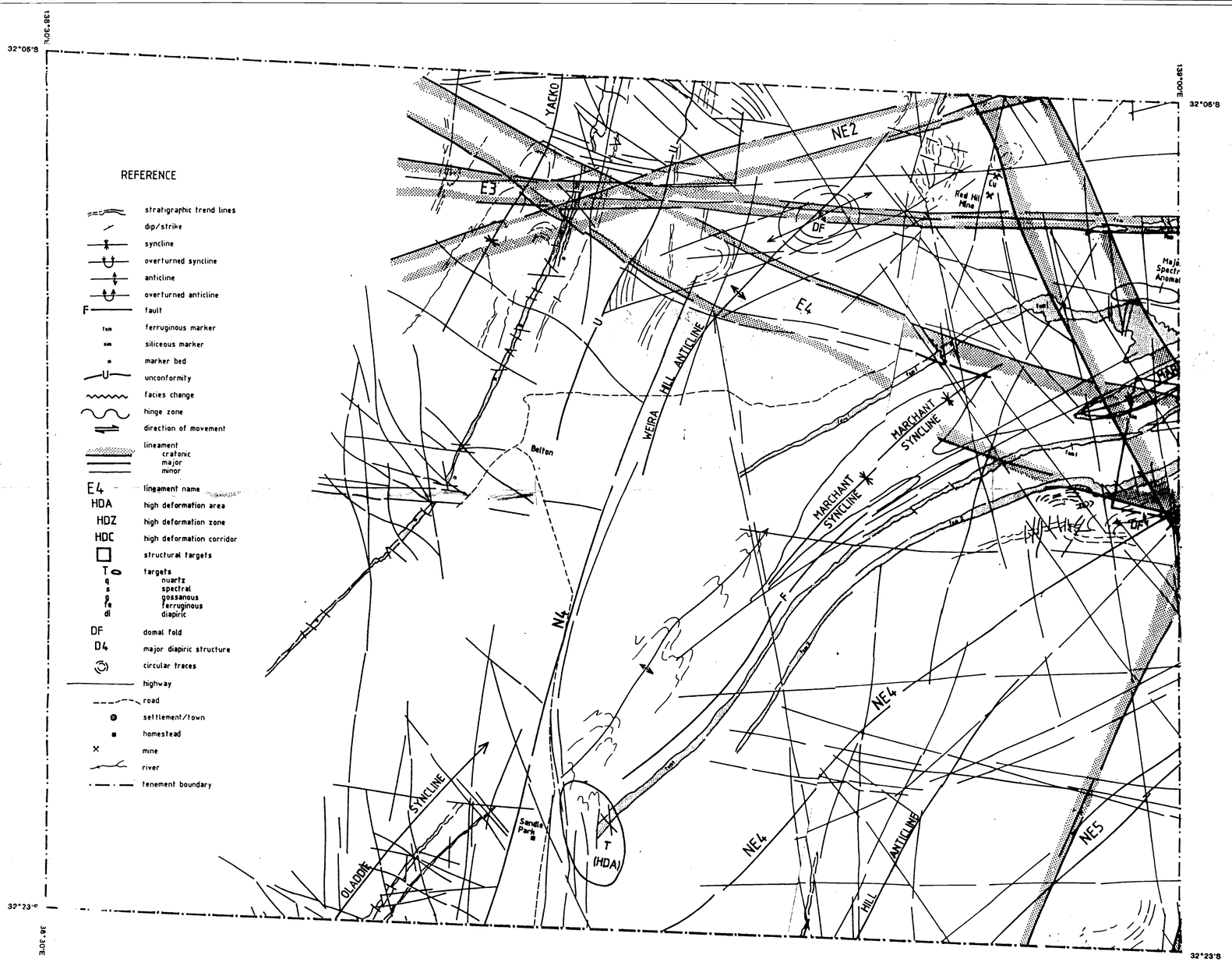


Figure 1. Belton Area (EL 1686) Location Plan, Adelaide Geosyncline, South Australia



Remote Sensing & Geological Services
Compiled by H. Davies Drawn by M G Davies

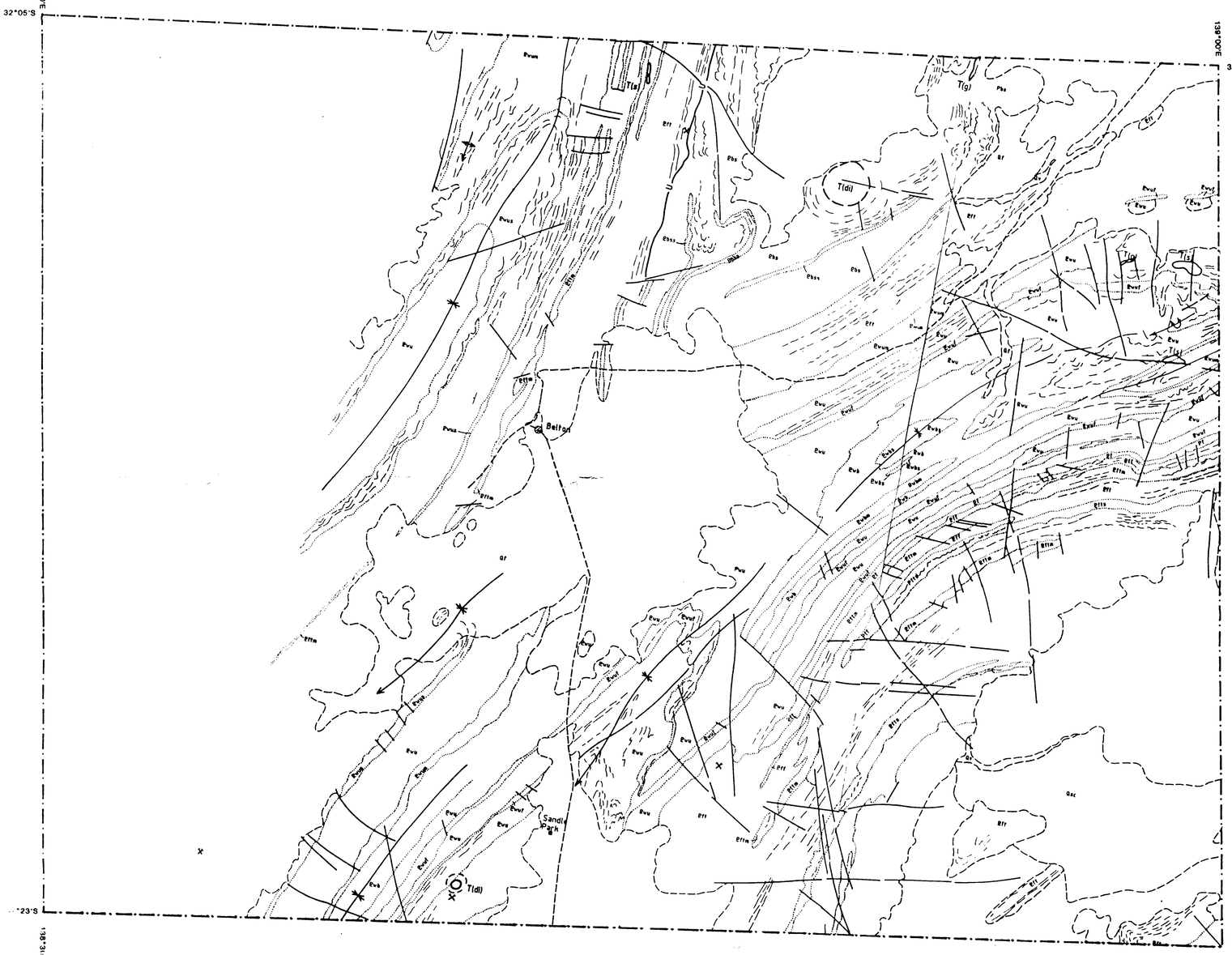
Scale 1:98583
0 1.97 3.94 5.91 7.89 km

AZTEC MINING COMPANY LIMITED

STRUCTURAL MAP
EXPLORATION LICENCE 1686
BELTON AREA
ONNOROO PROVINCE, SOUTH AUSTRALIA
ENCLOSURE 1

DATE 12-JUN-91	Compiled by H. Davies
SCALE: 1:98583	PLAN NO 174/03-4

8412-2



CAINOZOIC

- Qv alluvium, valley fill
- Qs sand plain
- Qf regolith, shallow soil cover
- Qaf broad areas of transported eluvium
- Qsc scree/deltaic fans
- Qh_1 quartz gravel gilgai fan deposits
- Qh_1f as Qh with ferricrated surface

LOWER PALAEOZOIC

- EOγ granites

PROTEROZOIC

WILPENA GROUP

- Ewp Pound Quartzite
- Eww Wonoka Formation: banded carbonated sediments
- Ewb Bunyeroo Formation
- Ewbf ferruginous facies
- Ewbs siliceous resistant member
- Ewbsm distinct siliceous/quartzite marker
- Ewu Utupa Siltstone
- Ewus siliceous facies
- Ewum distinct stratigraphic subunit
- Ewuf ferruginous subunit
- Ewucb possible carbonaceous facies
- Ews Seacliff Sandstone

UMBERATANA GROUP

- Ee Yeratina Sub-group: tillite-arkose
- Eef ferruginous facies
- Ees siliceous-quartzitic facies
- Ef Farina Sub-group: mapped as dolomites, siltstones and shales
- Eff ferruginous subunit
- Efm spectrally distinct marker bed
- Eft Tapley Hill Formation:siltstones,dolomitic siltstones and shales
- Efm distinct marker
- Efts siliceous/quartzite marker
- Eua Appila Tillite
- Euaf ferruginous subunit
- Euw Wilyerpa Formation
- Ey Yudnamutana Sub-group
- Eye Benda Siltstone
- Eyer resistant subunit
- Eyp Pualco Tillite
- Eyps siliceous/quartzitic member
- Eyf Braemar Iron Formation
- Eys siliceous member
- Eb Belair Sub-group: siltstones, sandstones, minor dolomites
- Ebs Saddleworth Formation: shales, siltstones, carbonaceous member, minor dolomites
- Ebsm marker bed
- Ebss siliceous resistant marker
- Ebu Undalya Quartzite
- Ebh Woolshed Flat Shale

- do dolerite plug
- cl clay-rich area

- Ec Callanna Group: carbonate breccias
- Ek Curdimurka Sub-group: siltstones, carbonates, evaporites
- Ea Arkaroola Sub-group

ARCHAEAN/ EARLY PROTEROZOIC

- pE Archaean to early Proterozoic basement of the Olary Inliers
- pEf ferruginous enclave within basement
- pEm resistant marker

TARGETS

- T(g) Gossan-like, ferruginous lens
- T(q) Silica-rich area: possible quartz vein/reef
- T(s) Spectral anomaly
- T(di) Circular or concentric structure, possibly of diapiric origin

- geological boundary
- geomorphological boundary
- bedding traces
- dip/strike
- syncline
- overturned syncline
- anticline
- overturned anticline
- F fault
- lineament
- U unconformity
- circular traces
- ridge
- ferruginised structures
- highway
- road
- settlement/town
- homestead
- mine
- river
- tenement boundary
- target

Remote Sensing & Geological Services
Compiled by H Davies Drawn by M G Davies

Scale 1:98583
0 1.97 3.94 5.91 7.89 km

AZTEC MINING COMPANY LIMITED

TM IMAGE INTERPRETATION

EXPLORATION LICENCE 1686

BELTON AREA

ORROROO PROVINCE, SOUTH AUSTRALIA

ENCLOSURE 2

DATE: 17-JUN-91	Compiled by H. Davies
SCALE: 1:98583	PLAN NO 174/09-5

8412-3

1991b). This information remains essentially unchanged and will not be further discussed.

The writer gratefully acknowledges the help and friendly hospitality received from station owners and managers of Belton, Pat Smith; Montana, Bob and Jean Fisher; Pamatta, Edith and son James Clark; Shadow Vale, John Smith; Tyeka, Lew and Ada Cox and Witchitie, Mick Schmidt. Elders Pastoral of Peterborough, manager Bill Napier, for logistical back-up and the Royal Flying Doctor Service of Port Augusta, manager Tony Wade and radio operators, for safety logging and communications, many thanks.

CONCLUSIONS

Although two remote sensing mineral search techniques, terrestrial aerial reconnaissance/photography and extraterrestrial thematic mapper study, were used to augment discovery, the best and likely the most useful technique employed involved the reconnaissance mapping/sampling program. This work was both appropriate and productive because of the area's relatively good outcrop exposure and easily traversable terrain.

The southwest-plunging nose section of the Yednalue Anticline attracted initial attention. Outstanding features comprise complexly distorted sediments of the Burra and Umberatana Groups including the unconformity that separates them and diapiric activity.

The area's known mining activity includes the Red Hill (Cu) mine on the anticline's east flank and the Prince Alfred (Cu) mine on the west flank. Less well known are the Buckalowie (Cu) mine and Anesbury (Cu) diggings, both of which were carefully examined.

BUCKALOWIE (Cu) MINE. Initially spotted as Jetrex Anomaly 162 (Stations 65-69), it is located in the Buckalowie Hills about 5 kilometres west of Witchitie station. Comprises a cluster of abandoned prospect pits and shafts sunk in Appila Tillite near the rocks contact with overlying Tindelpina Shale. Structural setting is the east flank of the Yednalue Anticline in an area of meridonal faulting (Binks, 1971).

Mineralization involves prolific copper oxides and carbonates occupying thin shear and brecciated fault zones. The most prominent being a S85°E, vertical fault about 40 cm in width. Careful reconnaissance examination and sampling (Table 1) in the

surrounding area located several lesser copper-stained structures as well as an abundance of maghemite veins.

Table 1. Results of geochemical rockchip sampling at Jetrex 126 (cu) anomaly, Yednalue Anticline, Belton Area (EL 1686), South Australia.

SAMPLE	Au	Sb	Sn	Cu	Pb	Zn	DESCRIPTION
A318109	0.038	4.09	5.70	4.08%	10	26	Vein breccia, CuO, turquoise
A318110	0.015	3.23	3.44	5006	5	30	Brecciated fault gouge, CuO
A318111	0.040	1.77	2.59	10.44%	10	42	Brecciated fault gouge, CuO
A318112	0.008	11.70	3.69	3652	10	28	Thin, multi-directional veins
A318113	0.003	2.73	2.91	700	25	34	Stream sediment
A318114	0.013	19.20	7.25	9816	20	48	Limonitic vein material
A318115	0.002	0.91	2.76	132	20	20	Maghemite
A318116	0.002	0.73	3.11	60	<5	8	Fault breccia, hematite
A318117	0.001	2.74	9.22	322	10	30	Maghemite
A318118	0.006	1.64	3.91	1.63%	10	10	Fault gouge, trace CuO

All elements reported in ppm excepting copper being reported in percent.

ANESBURY (Cu) DIGGINGS (Stations 179-190). The workings are cut into a N80°E trending ridge of moderate (25-30 m) relief. Three dozer excavations expose thin (2-5 cm) gossanous shear zones where the wall rocks are slightly silicified and extensively CuO-stained. Host rock is a dark gray fissile siltstone or shale and a dark gray lithic sandstone, both units belonging to the River Wakefield Group.

Surrounding area examination and sampling located some very productive-appearing quartz veins, pervasive silicification and ferruginous fault zones. But, analytical results returned negligible base and precious metal values (Table 2).

Table 2. Results of geochemical rockchip sampling at Anesbury's (Cu) Diggings, Yednalue Anticline, Belton Area (EL 1686), South Australia.

SAMPLE	Au	Sb	Sn	Cu	Pb	Zn	DESCRIPTION
A318194	0.015	3.97	5.19	1.01%	50	18	Gossanous fault gouge, CuO
A318195	0.044	4.25	1.15	2.12%	30	26	Brecciated fault gouge, CuO
A318196	0.036	2.29	2.39	3414	10	16	Limonite-goethite, fract filling
A318197	0.003	0.64	1.69	168	5	14	Sandstone, limonitic, sulfide cav
A318198	<0.001	1.95	0.72	42	10	42	Sandstone, brecciated, ferruginous
A318199	0.007	3.90	0.68	1860	10	52	Quartzose sandstone, limonitic
A318200	0.003	21.40	<0.50	2284	15	76	Breccia, gossanous
A318201	0.001	0.24	0.62	116	20	30	Sandstone, feldspathic, limonitic
A318202	<0.001	4.13	11.10	134	25	64	Maghemite
A318203	0.001	1.34	<0.50	766	25	150	Sandstone, quartzose, limonitic
A318204	0.006	0.89	1.18	4156	15	56	Gritstone, 50% hematite
A318205	0.001	5.29	1.22	1424	115	2928	Breccia, vein origin, hematite

SAMPLE	Au	Sb	Sn	Cu	Pb	Zn	DESCRIPTION
A318206	0.001	14.9	1.76	88	20	192	Sandstone, ferruginous
A318207	0.002	3.77	<0.50	62	50	35	Sandstone, quartzose, ferruginous
A318208	<0.001	2.11	<0.50	10	10	14	Sandstone, gossanous, hematite
A318209	0.003	2.16	<0.50	10	10	14	Quartz, pyrite clots, hematite
A318210	0.002	1.71	<0.50	634	5	128	Sandstone, silicious, gossanous
A318211	0.001	4.75	14.80	84	20	30	Ferruginous gravels, CuO-stained
A318212	0.001	1.71	0.51	10	10	22	Quartz vein, greasy lustre, 5% pyrite
A318213	0.001	6.64	21.80	120	30	24	Hematite-maghemite vein
A318214	0.002	2.62	8.83	6	10	20	Maghemite, limonite
A318215	0.001	0.24	0.95	12	5	102	Standard

All elements reported in ppm excepting copper being reported in percent.

DIAPIR (Station 104). A prominent outcropping diapiric body was found along the breached, west flank of the Yednalue Anticline. Although small by comparison with other such structures, much of the anticline'S core is believed occupied by this material (Binks, 1971). A single rockchip sample from this structure returned moderately anomalous antimony (9.32 ppm) and zinc (768 ppm).

THEMATIC MAPPER STUDY. Seven structural targets were selected within the Licence area. Their locations are shown on accompanying Structural Plan 1 (pocket) and TM Image Interpretation Plan 2 (pocket). Results of field examinations have been discussed in an earlier report (Greene, 1991b).

REFERENCES

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EXPENDITURE STATEMENT

EXPLORATION LICENCE 1686

PERIOD 23 FEBRUARY 1991 TO 5 NOVEMBER 1991

Personnel	$2,103
Administration	$2,269
Maps and Publications	$1,761
Labour (Field Assistants)	$3,825
Prospecting (Contractors)	$4,839
Assaying	$6,503
Consultants (Geological)	$26,946
Motor Vehicles	$5,657
Field Equipment	$4,488
TOTAL	$58,391