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1962/31

NOTES ON PROPOSED DIAMOND DRILLING AT CORONET HILLS, NORTHERN TERRITORY

by

B.P. Ruxton and J.W. Shields

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SUMMARY

A plane table survey of the lode system at the abandoned Coronet Hills copper mine in the Northern Territory was carried out together with a theodolite survey of the accessible underground workings. There are several sulphide-bearing lodes in a fracture system on the south-western margin of an arched, north-west striking, anticlinorium. The core of the anticlinorium is occupied by chert beds which are conformably overlain by siltstone and greywacke. The lodes are mineralised with copper, lead, and arsenic minerals. Assays of samples from the dumps and underground workings show sporadic values for copper and lead and the ubiquitous presence of arsenic. The deposits appear to be too small to be of much economic interest. However if it is decided to investigate them further six drill holes have been sited to test the extension of three swells in the lodes below the old workings.

INTRODUCTION

Coronet Hills Mine is situated near the headwaters of the Little Mary River in the Northern Territory. It is about 200 miles by road south-east of Darwin and access is by all-weather road through Pine Creek to Moline and thence by bush track for about 20 miles (Plate I). The mine area is inaccessible during the wet season.

Mineralization at Coronet Hills has been known since the late nineteenth century when the area was worked for silver. Copper was mined between 1916 and 1918. Since then only minor prospecting work has been done. Tin was mined from an area just to the north of the Coronet Hill Mine.

During May and June 1961 B.P. Ruxton and J. Shields carried out a plane table survey of the area covered by the old mining leases, and a theodolite survey of the accessible underground workings in order to plan a diamond drilling programme to test the lodes. Samples from the mine dumps and underground workings were collected for assay.

GENERAL GEOLOGY

An isoclinally folded and recumbent arched anticlinorium trending north-west, is cut by a fan of cross joints and transected by a pivotal fault which separates east-south-east plunging folds from north-west plunging folds (Plate 1). The chert outcrop representing the core of the anticlinorium is widest in the centre of the structure and narrows in steps south-east and north-west, where individual anticlines of chert plunge beneath greywacke.

Greywacke crops out on either side of the north-west trending belt of chert, and a thin band of siltstone 50 to 150 feet thick, forms a transitional layer between them. The sequence - chert, siltstone and greywacke - is conformable and facing and structure prove the chert to be the oldest. The chert is part of the Golden Dyke Formation and the siltstone and greywacke are part of the Burrell Creek Formation both of Lower Proterozoic age. Beds dip steeply and consistently south-west and the south-western limbs of the synclines are overturned.

In general the south-western contact zone between chert and greywacke is straight and regular (Plate 1, fig. 2) but in detail it is made up of a series of closely spaced reverse faults dipping steeply south-west which cause some repetition of the sequence and slight shearing of the adjacent beds (Plate 2). South-east of the pivotal fault the contact zone swings to a more easterly direction and the trend lines of the bedding and fold axes in the chert diverge from those of the greywacke (Plate 1, fig. 2). Some of the fold limbs dip north-east in this area of divergent trends (Plates 2 and 5).

The reversed fault belt is crossed by small cross faults most of which combine to form a stepped pattern, the movement on which is east block south.

THE GENERAL LODE SYSTEM

Two outer sets of quartz-tourmaline veins, the "Eastern and Western Lodes", converge north-west towards the pivotal fault and enclose a central set of sulphide-bearing veins. Five of the sulphide-bearing veins overlap each other and are arranged en echelon over a length of three miles (Plate 1, fig. 2). The sulphide-bearing veins also converge north-west and just beyond the pivotal fault the "Main Lode" and "Kelly's Lode" join into a composite quartz-tourmaline, sulphide-bearing vein here termed "North Lode" (Plate 1, fig. 1). With few exceptions all the mineral veins dip steeply in a south-westerly direction.

The quartz-tourmaline veins are commonly less than 12 inches thick and carry minor arsenopyrite and chalcopyrite in outcrop. Two shafts and a crosscut sited on quartz-tourmaline veins on the north-eastern chert-greywacke contact are believed to be old tin workings.

The sulphide-bearing veins were examined over a length of 2½ miles, covering the area of previously held mineral leases (Plate 1, fig. 1). For the most part these veins occur in the reversed fault belt. Much of the North Lode is in siltstone, Kelly's Lode is on the boundary between siltstone and chert, while most of the Main Lode, Coronet Hill Lode and South Lode are within chert. These veins are usually straight and regular, consisting of silicified chert (or siltstone) and vein quartz with local developments of massive scorodite or gossan.

Past production of copper ore came entirely from Coronet Hill Lode; 220 tons of 22% copper from a swell in the lode at No. 2 Adit, and 27½ tons of 18% copper from a swell in the lode at South Extended Shaft. In outcrop the longest lengths of rich gossan and massive scorodite are found on the Coronet Hill Lode and work has been concentrated on it in the present survey. As far as is known the 783 feet of underground workings at the No. 1 Adit on Kelly's Lode failed to produce any ore.

SOUTH EXTENDED LEASE (PLATE 5)

Between 1916 and 1918 a prospecting shaft and a haulage shaft were sunk to a depth of 64 feet on South Extended Lease. A lode four feet wide was intersected and 27½ tons of ore assaying 18% copper were raised and shipped. A selected sample (No. 195310) from the dump of this shaft has been assayed. The level of the dry season water table corresponds closely with the base of these shafts. The shafts are sited on a local thickening of the Coronet Hill Lode where rich gossan and massive scorodite attain outcrop widths of over six feet. The average width of the lode over a length of 480 feet is about 4 feet.

Westerly dipping (25° to 70°) cross leaders, north-westerly plunging (30° to 35°) dragfolds adjacent to the lode, and north-westerly plunging (15°) fold structures in the gossan seem to indicate a north-westerly pitch for the thickened lode. The amount of pitch is probably similar to the plunge of the associated structures, that is 15° to 45°. The lode dips between 75° and 80° south-west near the shafts, but the dip decreases south-eastwards towards the cross-fault. Dips of less than 60° are thought to be of local significance only as the lode outcrop is very nearly straight across the contours. Four proposed drill holes, A, B, C and D have been designed to strike the thickened lode at 65 feet below creek level to the north-west of the surface lode outcrop.

TABLE I - ASSAYS OF SAMPLES FROM CORONET HILLS MINE

Number	Locality	Type of ore (Oxidised or Sulphide, etc.)	Ore minerals present (see Appendix)	Assay Results (from A.M.D.L.)							
				Cu(%)	As(%)	Pb(%)	Sb(%)	Bi(%)	Ag oz	Ag dwt	Au dwt
195310	Extended Shaft - On dump	Sulphide	Arsenopyrite, chalcopyrite; minor digenite, bornite and pyrite.	7.4	32.7	0.40	0.018	0.22	8	8	Nil
195311	Lode near Extended Shaft	Oxidized	Scorodite, Leucoxene (?).	0.04	11.8	0.07	-	-		8	-
195312	No. 3 South Extended - Dump	Sulphide	Arsenopyrite, pyrite.	0.65	26.7	-	-	-	1	9	0.6
195313	No. 1 Adit - Main Shaft - Dump	Sulphide		0.645	27.2	-	-	-	-		-
195314	No. 1 Adit - 48' from Portal - Footwall	Sulphide	Pyrite, arsenopyrite, covellite and digenite.	9.65	7.75	-	-	-	2	9	1.0
195315	No. 1 Adit - Dump at entrance	Sulphide	Arsenopyrite; minor sphalerite	0.31	24.6	1.62	0.024	0.11	10	2	0.2
195316	No. 1 Adit - 170' from Portal - Back	Sulphide	Arsenopyrite, covellite; minor pyrrhotite, pyrite, chalcopyrite.	16.4	5.9	-	-	-		3	0.8
195317	No. 1 Adit - 56' from Portal - Footwall	Sulphide		6.1	5.9	-	-	-	-		-
195318	No. 1 Adit - 56' from Portal - Footwall	Sulphide		0.58	3.5	-	-	-	3	5	0.3
195319	No. 1 Adit - 56' from Portal - Footwall	Sulphide		1.07	4.9	-	-	-	-		-
195320	No. 1 Adit - ' from Portal - Footwall	Sulphide		1.50	5.7	-	-	-	-		-
195321	No. 2 Adit - Dump	Sulphide	Galena, chalcopyrite, marcasite, pyrite, arsenopyrite and sphalerite.	-	-	-	-	-	-		-
195322	No. 2 Adit - 10' along N drive - Back	Gossan and oxidized		3.85	50.3	-	-	-	27	3	0.4
195323	No. 2 Adit - 30' along N drive - Back	Oxidized and sulphide	Pyrite, arsenopyrite, marcasite, chalcopyrite, minor sphalerite.	7.3	5.15	4.15	0.022	0.27	14	0	0.3
195324	No. 2 Adit - 50' along N drive - Back	Oxidized and sulphide		0.84	9.75	-	-	-	16	7	1.0
195325	No. 2 Adit - 70' along N drive - Back	Oxidized		0.25	1.55					15	Nil
195326	No. 2 Adit -220' along S drive (end) Hanging Wall	Gossan		0.47	8.45	-	-	-	9	8	0.4
195327	No. 2 Adit -190' along S drive - Back	Gossan		10.95	3.35	-	-	-	-		-
195328	No. 2 Adit -215' along S drive - Back	Oxidized and sulphide		9.50	20.1	-	-	-	8	10	0.5
195329	No. 2 Adit -150' along S drive - On floor	Oxidized and sulphide		9.7	9.15	1.25	0.013	0.24	12	15	Nil
195330	No. 2 Adit -125' along S drive - Hanging Wall	Gossan and oxidized		6.42	15.8	1.36	0.025	0.36	20	15	Nil
195331	No. 2 Adit - 92' along S drive - Back	Gossan and country rock		0.35	5.65	3.90	0.032	0.44	16	18	Nil
195332	No. 2 Adit - 85' along S drive - Back	Gossan and country rock		4.2	3.5	4.2	0.03	0.31	32	2	0.2
195333	No. 2 Adit - 64' along S drive - Back	Gossan and oxidized		0.66	2.95	-	-	-	21	17	0.2
195334	No. 2 Adit - 52' along S drive - Back	Gossan		1.87	3.7	-	-	-	26	8	0.2
195335	No. 2 Adit - 46' along S drive - Back	Sulphide and oxidized		7.75	6.55	0.90	0.017	0.21	9	8	Nil
195336	No. 2 Adit - 29' along S drive - Back	Oxidized and sulphide		4.87	16.6	-	-	-	9	13	0.2
195337	No. 2 Adit - 12' along S drive - Back	Oxidized and sulphide		7.3	9.65	-	-	-	30	8	0.3
195338	No. 2 Adit - 72' along S drive - Back	Oxidized and gossan		2.9	5.20	1.30	0.035	0.70	29	15	0.3
195339	No. 2 Adit - 77' along S drive - Back	Oxidized		0.90	6.15	4.2	0.035	0.35	16	6	Nil
195340	Dump - South Shaft	Sulphide		13.2	5.10	17.0	0.038	0.12	36	16	Nil
195341	Surface - Main Lode - N.W. Gorge Creek	Oxidized	Scorodite and grey mineral	0.06	3.12	0.27	-	-		7	2.4
195342	Dump - No. 1 Adit - Main Shaft	Gossan		1.64	7.37	15.5	-	-	8	10	1.6
195343[1]	Near Eastern Lode - in creek	Quartz-Tourmaline		-	-	-	-	-		1	2

1. Sample [illegible] assayed 0.01% Sn and less than 0.01% Ta.

Towards the south-western end of Coronet Hill Lode a local swell on the lode is composed of massive scorodite (sample No. 195311) up to 10 feet in width. A north-trending quartz vein intersects the lode at this point. South Lode commences at the southern end of this quartz vein and several local swells occur along it (Plates 1, fig. 1 and 5). On the No. 3 South Extended Lease a 38 foot shaft in a small creek intersected an 18 inch sulphide vein. Sample No. 195312 was selected from the dump of this shaft and assayed.

NO. 2 ADIT (PLATE 3)

This first paragraph summarises the records of Mines Branch, Northern Territory Administration. In 1916 a five foot lode carrying 5% copper was intersected at the end of a crosscut 206 feet in length. The lode was opened by drives from the crosscut level 47 feet north-west and 176 feet south-east. The lode averaged 4 feet in width throughout. The north drive was in sulphide carrying 5% copper with oxidised ores a few feet overhead. The south drive was in oxidised ore which averaged 16% copper across the face of the drive. Three stopes were taken off from the south drive near the airshaft. 62 tons of hand picked ore were raised and shipped assaying 22% copper and 15 ounces of silver per ton. By 1918 further stoping from near the base of the airshaft produced 158 tons of hand picked ore assaying 22% copper which was shipped to Port Kembla. The south drive was advanced to 220 feet where the lode was only 12 inches wide at the face and averaged 13% copper. Moreover the leached zone (gossan) was struck in the back of the drive. North drive was extended to 169 feet but the lode was small and the country rock distorted. A crosscut put out west from near the end of the drive for 32 feet did not intersect lode. The main crossout was extended 100 feet to intersect the "Parallel Lode" but this proved to be barren. No further work was done until in 1951 the present lease holders, Young and Mazlin, deepened the shallow winze in the south drive by 12 inches over a 4 foot width and forwarded a sample to Melbourne University Ore-Dressing Laboratory. The head assay showed 10% copper, 14% arsenic and 18 ounces of silver per ton. The mineral association was very complex and included chalcopyrite, covellite, chalcocite, enargite, cuprite, arsenopyrite, pyrite, pyrrhotite and tetrahedrite. Galena was not reported but it is a major constituent of the sulphide vein in the north drive. The Laboratory reported that the production of a high grade copper concentrate with good recovery would not be easy.

The present underground survey was carried out with a theodolite and tied into the surface stations. Geological detail was projected to eye level above the floor of the mine. Sample localities and sample notes are shown on Plate 3 and on the appended table. The end 100 feet of north drive and the crosscut from it are blocked off by a heavy fall of rubble.

The ore shoot partially stoped out in the south drive pitches at about 50° south-south-east. The outcrop of this ore shoot is twisted in an anticlockwise direction and it lies above a flat-lying thrust fault of small displacement seen at the Adit entrance and in south drive. It is also in line with a north-trending zone of brecciation and dragfolds south of the lode outcrop (Plate 2). The outcrop of the ore shoot is composed largely of vein quartz and massive scorodite with some poor gossan and silicified chert. The airshaft is inclined along the lode at 76° south-west. D.D. "E" is designed to cut this ore shoot at 92 feet below creek level.

The small swell in the lode in the north drive may represent the larger swell on the surface north of the cross-fault. No drill-hole is proposed to test this swell at this stage, partly because most of the north drive is inaccessible and partly because a long drill hole would be required.

Twenty feet from the end of south drive the lode pinches down to 2 inches and swells out to 17 inches on the face. On the surface the lode also pinches down to 9 inches south-eastwards and then a discontinuous outcrop indicates a 500 foot length of rich gossan 2 to 4 feet wide. D.D. "F" and D.D. "G" are designed to cut this part of the lode at 92 feet below creek level.

Further south-eastwards (Plate 3) the lode is intermittent and irregular for 200 feet and then (beyond Plate 3) becomes a straight 700 foot length of rich gossan 2 to 3 feet wide which extends 250 feet beyond South Shaft (Plate 1, fig. 1). Sample 195340 was selected from the dump at South Shaft.

SHEAR LINK AREA AND NO. 1 ADIT

"Shear Link Area" is 800 feet north-west of the No. 2 Adit (Plate 2). Here the Coronet Hill Lode turns northwards and connects up with the Main Lode. Some 350 feet of rich gossan averages over 3 feet in width and dips eastwards at 70° to 80°. No drill holes are proposed at this stage partly because of lack of any clear indications of pitch and partly because an access track would be very difficult to prepare.

No. 1 Adit was driven for 264 feet in 1912-13 to test two pods of rich gossan on Kelly's Lode (Plate 4). The drive connected with the main shaft which had been commenced in the 1890's. The main shaft followed one pod of gossan and within 80 feet of the surface it was said to contain 30 to 40 ounces of silver per ton. A sample (No. 195342) of this gossan from the dump of the main shaft has been assayed. The winze was sunk in 1914 beneath the main shaft to 24 feet below the Adit level. Sulphides were struck halfway down and in 1951 a sample collected from a portion of the lode at the base of the winze by Young and Mazlin showed 10% copper. At present the winze is half full of water and no samples of sulphides could be obtained. Samples were taken across the lode at water level in the gossan but have not been sent for assay. Samples 195313 from the dump of the main shaft and 195315 from the dump at the Adit entrance are believed to have originated from the base of the winze and they have been assayed. Between 1914 and 1918 a prospecting shaft (No. 1) was sunk to 120 feet to test the pod of gossan near the

entrance of the drive and a haulage shaft (No. 2) was sunk to 78 feet nearby. We have no other details of these shafts. No drill holes are recommended at this stage because the pods of rich gossan are small. Samples 195314 and 195316 at 48 and 170 feet from the portal were taken from small stringers of rich sulphides in otherwise barren quartz. Samples 195317-18-19-20 were taken to test the footwall of the lode 56 feet from the portal where sulphides occur in the vein quartz.

Both pods of gossan pitch at about 85° southwards and the adjacent dragfolds in the country rocks plunge at from 25° to 80° south-east. The southerly twists of the lode where the swells occur are parallel to several small cross leaders which dip 70° to 80° east.

CONCLUSIONS AND RECOMMENDATIONS

The low grade and small size of the mineralised lodes do not appear to warrant further investigation. However if a decision is made to test the economic status of these lodes further, the following drilling recommendations are made:

1. Six diamond drill holes are recommended to test the unoxidised portions of two separate lengths of the "Coronet Hill Lode"; three near the No. 2 Adit and three near South Extended Shaft.

2. Details of the proposed drill holes are:-

	DD A	DD B	DD C	DD D	DD E	DD F	DD G
Magnetic Bearing	38°	38°	38°	38°	216°	212°	212°
Depression	29°	40°	44°	26°	32°	36°	32°
Length in feet	180	150	130	220	210	190	210
Target Zone from	100'	50'	40'	125'	140'	150'	125'

3. A, B, C and D are sited near South Extended Shaft to test a long swell in the lode (Plate 5). A and B are to be drilled first and either C or D depending on the results e.g. if B strikes better material than A then C will be drilled, but if A strikes better material than B then D will be drilled. The long swell in the lode appears to be pitching between 15° and 45° north-west and dipping between 70° and 80° south-west. The drill-holes are designed to strike the lode at 65 feet below creek level. Deeper holes are not recommended because, if the pitch of the long swell in the lode is less than 30°, they might miss the target.

4. E, F and G are sited near No. 2 Adit (Plate 3) to test swells in the lode and should be drilled in alphabetical order. The swells in the lode pitch at about 50° south-east and the lode dips at about 75° south-west. The drill holes are designed to strike the lode at 92 feet below creek level. They are not sited on the south-western side of the lode outcrop because very long drilling lengths would be required.

5. In the event of drill holes A, B, E or F not striking the lode in the specified length each should be extended by a maximum of 75 feet. These extensions are mentioned because flat-lying thrust faults cause visible displacements north-eastwards of up to 8 feet and displace the lode up to 20 feet from the general line.

6. Provided no drill hole is extended beyond the specified length the six holes total 1,070 feet of drilling if C is drilled, or 1,160 feet of drilling if D is drilled. If it is decided to delete one drill hole werecommend that this be G.

7. All seven sites and access tracks to them, have been prepared for the drilling equipment by bulldozer. Star pickets mark the site of each proposed drill hole and wooden pegs are aligned along the magnetic bearing in each case.

8. Water for drilling is obtainable from pools in the Little Mary River about one mile from the drill sites. If these fail much larger pools occur about 1½ miles upstream in the bed of the Little Mary River, though as yet no access track has been prepared to them.

9. Should drilling not commence until after the 1961/62 wet season it will be necessary to repair the access tracks and drilling sites and check the orientation pegs.

APPENDIX

MINERAGRAPHIC NOTES ON SELECTED SAMPLES OF ARSENIC - LEAD - COPPER ORES FROM CORONET HILLS, NORTHERN TERRITORY

by

G.J.G. Greaves

A group of specimens from the Coronet Hills Area were submitted by B.P. Ruxton for examination. The collection was a random one and the selection for study was left to the discretion of the microscopist.

The specimens selected are described below under the heading of their field numbers.

No. 195312: Sulphides from the dump at No. 3 South Extended Shaft.

The hand specimen is massive and consists mainly of metallic grey sulphide, pale brassy yellow sulphide, greenish-white oxidation products, and white vein quartz.

Sulphides form about 95% of the specimen; they consist of 90% arsenopyrite and 10% pyrite. The arsenopyrite grains are subhedral and have been shattered and partly recrystallised as shown by the mosaic intergrowth of small crystals being in random optical arrangement. The whole has been subsequently recemented by quartz. The measured diameter of the arsenopyrite grains in optical continuity vary from 0.02 m.m. up to 2 m.m. Pyrite grains form masses measuring up to 3 mm. in diameter; the individual pyrite grains have an average diameter of 1 mm.

No. 195310: Sulphides from the dump at "Extended" Shaft.

The hand specimen is massive and consists of metallic grey sulphide, minor brassy yellow sulphide and green surface staining.

Sulphides form about 85% of the specimen: they consist of 90% arsenopyrite, roughly 5% chalcopyrite, with minor digenite, bornite and pyrite together forming less than 5% of the total. The arsenopyrite is massive and contains inclusions of chalcopyrite which range up to 1.5 mm. in diameter; these inclusions have been altered around their margins and along fractures to digenite, containing small particles of bornite. Some pyrite is present in the chalcopyrite where it forms small grains. In places arsenopyrite is fractured and recemented with quartz and digenite.

No. 195314: Sulphides from stringers in the footwall of the lode at No. 1 Adit 48 feet from the portal.

The hand specimen is a massive dark grey to black rock with green and brown surface stainings. Milky quartz and minor sulphides are dispersed throughout the specimen and some irregular boxworks are evident.

Sulphides form about 5% of the specimen; they consist of 60% pyrite, 10% arsenopyrite, 20% covellite and 10% digenite and are concentrated along a fissure 1 mm. wide. In the vein, pyrite forms grains up to 0.3 mm. in diameter and covellite forms irregular grains varying in size from 0.015 mm. to 0.2 mm. Randomly distributed throughout the body of the specimen are small grains of pyrite and covellite the largest of which measures 0.05 mm. across.

No. 195315: Sulphides from the dump at entrance of No. 1 Adit (probably from the base of winze).

The hand specimen is massive and consists of metallic grey sulphides and milky white quartz. Sulphides form about 70% of the specimen; they consist of 98% of arsenopyrite and minor sphalerite. Arsenopyrite forms equidimensional grains up to 1 cm. in diameter. These are fractured and recemented with quartz containing minor sphalerite. In places the sides of the fractures do not match and in addition the embayment along the edges of the crystals suggest that replacement of the arsenopyrite by quartz has taken place.

No. 195316: Sulphides from stringers in the back of No. 1 Adit. Adit 170 feet from the portal.

The hand specimen is a massive melanocratic rock containing a small amount of randomly distributed milky quartz.

Sulphides form about 60% of the specimen; they consist of 65% arsenopyrite, 30% covellite and very minor pyrrhotite, pyrite and chalcopyrite. The original rhomb-shaped arsenopyrite crystals up to 4 mm. across have been largely altered to fine grained covellite and a dark grey mineral which could not be identified in polished section. Rounded grains of pyrrhotite and chalcopyrite which range up to 0.04 mm. in diameter form small inclusions in arsenopyrite.

No. 195321: Selected specimens of sulphide ore from the dump at No. 2 Adit.

The five hand specimens are all massive, consisting of varying proportions of metallic grey, silver and brassy yellow sulphides and quartz.

Sulphides form 50% to 90% of the specimens and consist of varying proportions of galena, chalcopyrite, marcasite, pyrite, arsenopyrite and sphalerite. Galena forms irregular equidimensional grains which measure about 6 mm. in diameter. The grains are enclosed by quartz and they contain small quartz inclusions. Galena is also present in quartz-filled fractures and forms small inclusions in arsenopyrite. Chalcopyrite in places forms a groundmass, over an area 6 mm. in diameter, for grains of arsenopyrite and pyrite; irregular grains of this mineral up to 5 mm. in diameter occupy positions between quartz grains and also form inclusions in arsenopyrite. Marcasite forms a very fine grained groundmass for the other sulphides. Arsenopyrite and pyrite have the same habit as the previously described specimens but are less abundant. Sphalerite is associated with chalcopyrite as small rounded areas and as larger irregular grains containing exsolution lamellae of chalcopyrite.

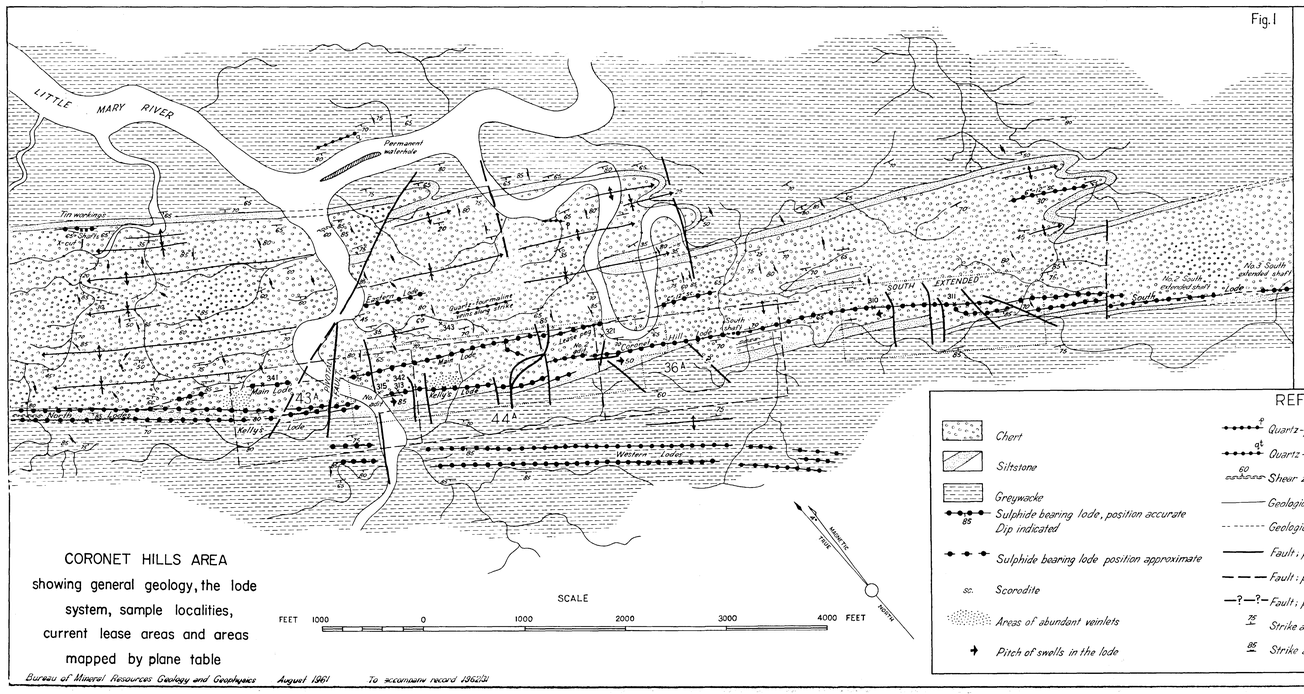
No. 195323: Sulphides from the lode 30 feet along North Drive in No. 2

The hand specimen is extremely friable. It is banded with alternating glassy yellow and black sulphides.

Sulphides form roughly 90% of the specimen; they consist of 40% pyrite, 20% arsenopyrite, 20% marcasite, % chalcopyrite and minor sphalerite, which all tend to be segregated into bands. Arsenopyrite grains which measure 1.5 mm. in diameter have been fractured and recemented with quartz. Chalcopyrite forms irregular masses in pyrite measuring up to 3 mm. in diameter. The pyrite and fine grained marcasite form the groundmass for the other minerals. Sphalerite is a minor constituent forming irregular inclusions in the pyrite.

PLATE 1

Fig.1

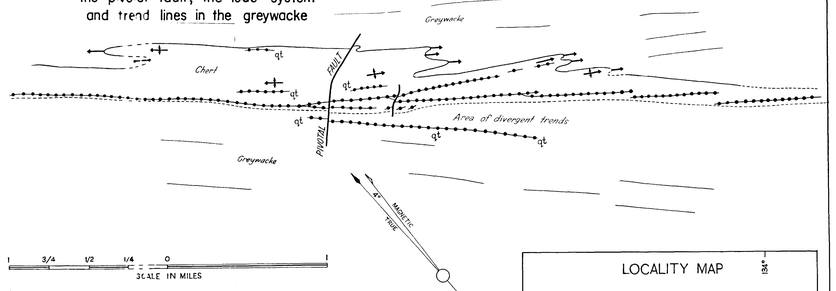


CORONET HILLS AREA
showing general geology, the lode system, sample localities, current lease areas and areas mapped by plane table

Bureau of Mineral Resources Geology and Geophysics August 1961 To accompany record 1962/31

Fig.2

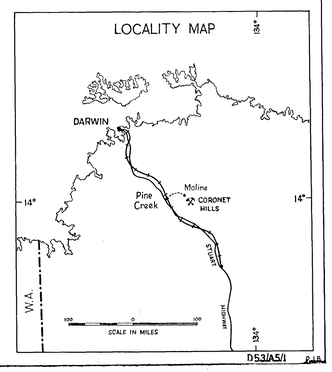
CORONET HILLS AREA
showing the arched anticline of chert in greywacke the pivotal fault, the lode system and trend lines in the greywacke



REFERENCE

- Chert
- Siltstone
- Greywacke
- Sulphide bearing lode, position accurate. Dip indicated (85)
- Sulphide bearing lode position approximate
- sc. Scorodite
- Areas of abundant veinlets
- Pitch of swells in the lode
- Quartz-porphyry dyke (q)
- Quartz-tourmaline vein (qt)
- Sheur zone; dip indicated (60)
- Geological contact: position accurate
- Geological contact: position approximate
- Fault: position accurate
- Fault: position approximate
- Fault: position inferred
- Strike and dip of bedding (75)
- Strike and dip of jointing (85)
- Anticline with plunge indicated
- Syncline with plunge indicated
- Direction of plunge of folds
- Trend lines
- ×313 Sample locality
- 36A Current Mineral lease boundary
- Area mapped with plane table

LOCALITY MAP

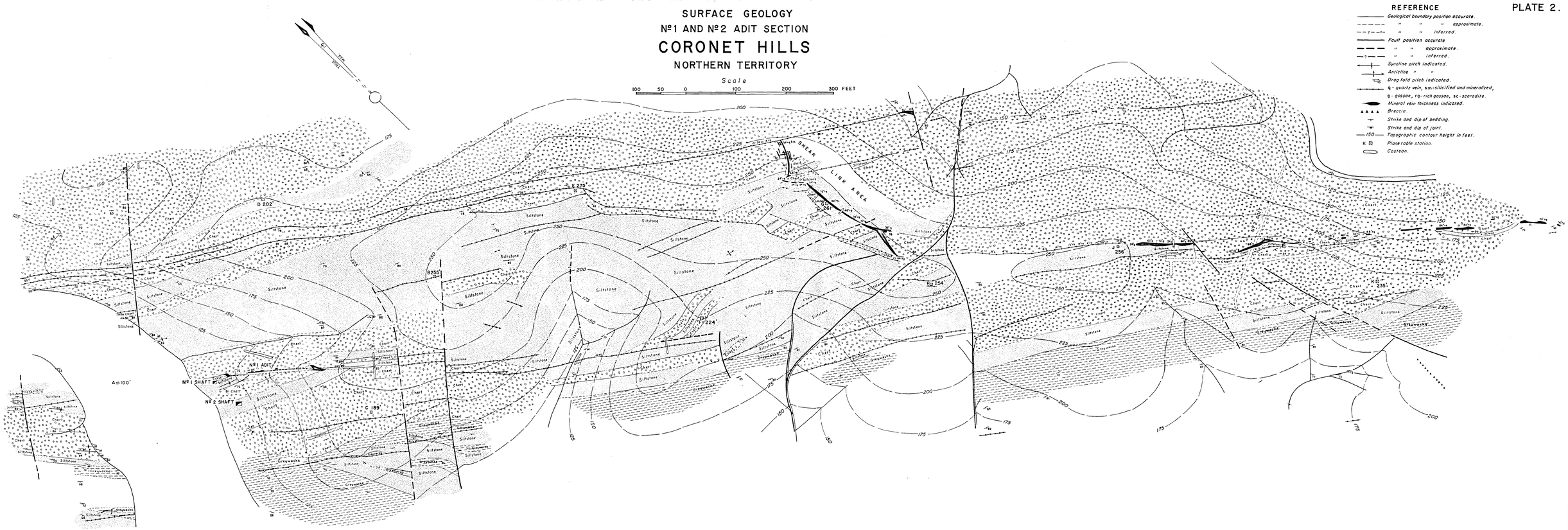


D53/A5/1 P4B

PLATE 2.

SURFACE GEOLOGY
Nº1 AND Nº2 ADIT SECTION
CORONET HILLS
NORTHERN TERRITORY

Scale 100 50 0 100 200 300 FEET



REFERENCE

- Geological boundary position accurate.
- " " " approximate.
- " " " inferred.
- Fault position accurate
- " " approximate.
- " " inferred.
- Syncline pitch indicated.
- Anticline " " (35)
- Drag fold pitch indicated.
- q - quartz vein, sm-silicified and mineralized, g - gossan, rq-rich gossan, sc-scorodite.
- Mineral vein thickness indicated.
- Breccia.
- Strike and dip of bedding.
- Strike and dip of joint.
- 150 Topographic contour height in feet.
- K ⊡ Plane table station.
- Costean.

Bureau of Mineral Resources, Geology and Geophysics. August 1961. To accompany Record 1962/31.

D53/5/2 E3

PLATE 3

DRAFT COMPILATION

CORONET HILLS Nº2 ADIT

Plans and section with proposed sites for Diamond Drill holes E F and G

Underground workings projected onto surface geological plan

SCALE 20 0 20 40 60 80 100 120 140 Feet

· Reference ·

- Geological boundary, position accurate
- Geological boundary, position approximate
- Geological boundary, concealed
- Strike and dip of beds
- Strike and dip of joints
- Anticline, pitch indicated
- Syncline
- Fault position accurate dip indicated
- Fault position approximate upthrow indicated
- Fault inferred
- Quartz vein dip and thickness indicated
- Mineral vein dip and thickness indicated
- Drag folds with pitch indicated
- Surface traverse station
- Subsurface traverse station
- Surface fixed point
- Subsurface fixed point
- Progressive drill holes and proposed holes (as horizontally projected) showing hole number and reduced level of collar. Datum = RL 1000 ft at Plane Table Station A outside Nº2 Adit (Plate 2)

Datum = RL 1000 ft at Plane Table Station A outside Nº2 Adit (Plate 2)

Sample Notes

Fw Hanging wall
Fw Footwall
mc Mineralized chert

195322	over	48°	12°	of Fw
195323	"	40°	10°	mc
195324	"	60°	32°	mc
195325	"	30°	24°	mc
195326	"	22°	5°	Fw
195327	"	8°		
195328	"	30°		
195329	"	45°		
195330	"	39°	of 54° hole on Fw side	
195331	"	54°	26°	of mc
195332	"	60°	30°	mc
195333	"	24°		
195334	"	18°		
195335	"	57°	of 38	of mc
195336	"	13°		
195337	"	20°		
195338	"	36°	16°	of mc
195339	"	54°	24°	mc

Projected onto Surface Geology Plan

PLAN Showing subsurface geology

PLAN Showing surface geology

LONGITUDINAL SECTION OF MAIN DRIVE Showing sample localities

Bureau of Mineral Resources, Geology & Geophysics, Canberra A.C.T. August 1961 — To accompany Record 1962/31 — D53/5/3

Plate 4.

No. 1 ADIT - CORONET HILLS
NORTHERN TERRITORY

SCALE 20 0 20 40 60 Feet

Magnetic North

Fig 1. SURFACE GEOLOGY

Fig 2. SUBSURFACE GEOLOGY

AIRSHAFT — MAIN SHAFT — MAIN SHAFT AND WINZE CHAMBER — No. 1 SHAFT — Portal — Siltstone — Chert — Silicified — Sr'stone — Zig Zag Folds — (Fault) — (Adit)

Sample 195314 — Samples 195317 195318 195319 195320 — Sample 195316

12' BELOW FLOOR OF ADIT X CUT 6' HIGH

200N — 100N — 00 — 100W — 200W

Reference

- Geological Boundary, position accurate
- Geological Boundary, position inferred
- Syncline, position accurate
- Syncline, position inferred
- Anticline, position accurate
- Anticline, position inferred
- Strike and dip of beds
- Strike and dip of joints
- Mineral Vein
- Quartz Vein "rg" - rich gossan, "g" - gossan
- Drag Fold pitch indicated
- Costean
- 100' Spot height

Bureau of Mineral Resources, Geology and Geophysics, August 1961 — To Accompany Record No 1962/31 — R.C. D53/5/4

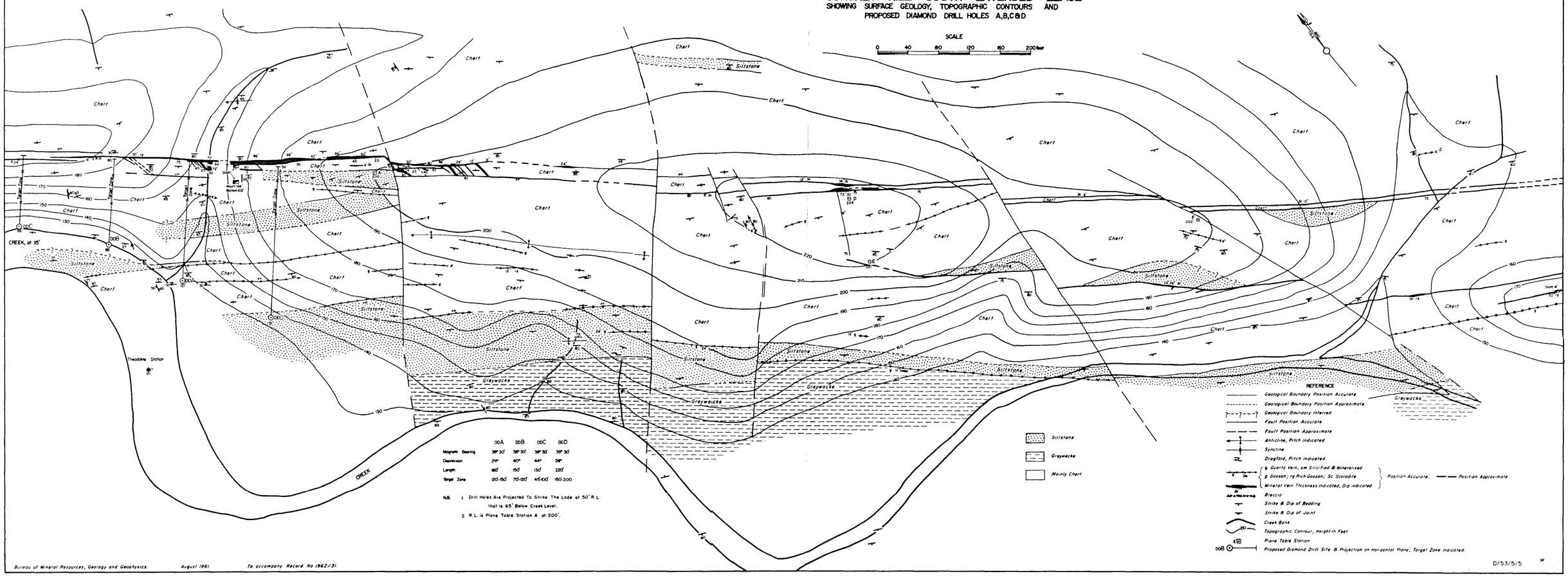
PLATE 5

CORONET HILL "SOUTH EXTENDED" LEASE

SHOWING SURFACE GEOLOGY, TOPOGRAPHIC CONTOURS AND PROPOSED DIAMOND DRILL HOLES A,B,C & D

SCALE

0 40 80 120 160 200 Feet



Bureau of Mineral Resources, Geology and Geophysics. August 1961. To accompany Record No 1962/31.

D/53/5/5