DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

R/B 73/154

REPORT ON DRILLING OF THE KENMORE II COPPER PROSPECT

Kenmore

ALBERGA

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Rept.Bk.No.73/154
G.S. No.5159
DM.No.1273/71

22nd June, 1973

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ABSTRACT

Two jasper-capped bodies on Kenmore were investigated in the search for nickel during the period 1967-1969. Anomalous copper values from soil samples flanking one of them were investigated by a programme of geological mapping, geochemistry, geophysics, rotary-air drilling and diamond drilling.

Sub-economic sulphide mineralization, chiefly pyrite and chalcopyrite was discovered below a weathered zone containing malachite, chrysocolla and cupriferous biotite.

The mineralization is thought to have originated as a strata-bound deposit; it is the first reported occurrence of mineralization of this type in the Musgrave Block.

INTRODUCTION

After the discovery of chrysoprase in a jasper capping on Kenmore in 1967, two jasper-capped bodies were investigated by geochemical sampling and induced polarization. A diamond drilling programme on one of them (Kenmore I) revealed the presence of serpentinite, but no nickel sulphides were intersected.

The presence of anomalous copper values in soil samples flanking the jasper capped ridge at Kenmore II was noted in 1969, but detailed work on these was not commenced until October, 1971.

A programme of geophysics, geochemistry, geological mapping and drilling resulted in the discovery of sulphide mineralization, including chalcopyrite and minor molybdenite.

LOCATION, ACCESS & TOPOGRAPHY

The prospect lies on Kenmore in the eastern end of the Musgrave Ranges in the far north of the State (see plan 73-441). It is 16 miles by station track from Victory Downs Station which in turn is 15 miles west of the Adelaide-Alice Springs road at Mt. Cavenagh on the N.T. border. The proposed Tarcoola-Alice Springs railway will pass approximately 30 miles to the east, but the nearest siding will probably be that serving Kulgera, 42 miles by road from the prospect.

Kenmore II prospect is readily accessible to two-wheel drive vehicles.

In the immediate vicinity of the prospect, the country is flat with a good cover of mulga trees and native grasses. A low jasper-capped rise approximately 15 feet above the general plain level parallels the main mineralized zone 800 to 1 000 feet to the east.

Water has been intersected at approximately 65 feet in rotary holes; total salt contents range between 500 ppm and 800 ppm.

A reliable supply of water for all purposes is available from Chrysoprase Bore at Kenmore I Prospect, three miles west.

HISTORY AND PREVIOUS REPORTS

Anomalous copper values in soil samples were located at the prospect in 1969 by Departmental personnel while investigating the jasper-capped ridge in the search for nickel. Magnetic and induced polarization surveys carried out in 1969 were confined to the ridge (McPharlin, 1970).

Regional mapping and mineral prospecting were undertaken on Kenmore and Eateringinna during the 1970, '71 & '72 field seasons.

In October 1971, an exploratory programme of shallow drilling and geophysical investigations was commenced on a number of prospects in the area, including the copper anomaly at Kenmore No. 2 Prospect. Following the intersection of sulphide minerals, the shallow drilling programme was extended, and diamond drilling commenced in November, 1971.

Thirty six air-rotary holes totalling 2 892 feet were drilled with a Mayhew 1 000 rig equipped with a Holman down-hole hammer. Eight diamond drill holes totalling 2 497 feet were drilled between November, 1971 and March, 1972.

GEOLOGICAL SETTING

The area is underlain by a sequence of metamorphic rocks of upper amphibolite to lower granulite facies. These are referred to as the Mann Metamorphics (Thomson, 1970).

The rocks are described in Miller and Gerdes (1970) and have been the subject of a more intense study during the recent field mapping programme.

Quartz-feldspar-biotite gneisses predominate, but within the sequence interbands occur containing varying amounts of amphibole, pyroxene, garnet and sillimanite. Thin bands of pyroxene-quartzite and calc-silicate rocks also occur.

Some of the more mafic bands within the sequence have undergone deep weathering to form green clays which were subsequently silicified to form jasper. In many of the exposures, replacement by carbonate, chiefly dolomite, has preceeded silicification, which may be incomplete or entirely absent. Some jasper cappings were drilled to the south-east of Kenmore II Prospect; more details of these are given in Pain, 1973.

The ridge at Kenmore II Prospect is capped by siliceous jasper and dolomite. It occupies the core of a tight anticline with a gentle northerly plunge.

A period of anatexis post-dates the granulite metamorphism, and anatectic rocks, chiefly adamellite and gneissic granite, occur in a broad area a few miles north of the prospect. Swarms of basic dykes are common throughout the area.

The Marryat shear zone strikes ESE and passes a few miles south of the prospect. It is apparently the result of brittle fracturing. Pseudotachylite, mafic dyke material and epidote alteration are associated with it.

Aeolean sand covers much of the area.

Thin freshwater limestones flank some of the drainage channels.

KENMORE II PROSPECT

Geochemistry

In 1969 soil sample lines at 400' spacing with sample intervals of 100 feet along them were extended for several hundred feet either side of the jasper ridge. The samples returned anomalous copper values on both flanks of the ridge between 6 800N and 10 000N with the anomaly open to the north and west.

Subsequently, sampling during 1971 on lines 10 400, 10 600, 10 800, 11 200, 11 600, 12 000 and 12 400 north, at 100 ft. spacings, showed the anomaly to close around 10 800N. The shape of the geochemical anomaly is seen to follow closely the anticlinal structure deduced from drilling and detailed mapping (see plans 73-249 and 72-944). The overall configuration is quite clearly delineated by the 50 ppm copper contour. It is apparent that the anomaly on the western limb is both longer and broader and in addition carries higher copper values than that on the eastern limb.

The copper anomaly on the western limb was found to terminate at about 6 800N. Additional lines were sampled between this and 00N, but only a small anomalous zone, probably representing another thin copper-rich horizon, was located between 5 600 and 6 000N at about 300W.

The jasper-capped ridge at Eremophila Prospect is located about 1½ miles SSW along strike from the western limb of the jasper-capped structure at Kenmore II Prospect. The soil types between them are unsuitable for geochemical sampling, consisting mainly of deep aeolian sands and calcrete deposits. A soil sampling traverse was carried out across strike about 800 ft. south of 00N,

and a minor copper anomaly was found (90 ppm). However, the results of additional sampling and an IP traverse did not warrant further work on it.

Soil sampling proved so successful in defining the shape of the anomalous zone that another programme of more closely spaced sampling was devised to provide more detailed information. Sampling was carried out at intervals of 25 feet on lines 100 feet apart. Minus 80 mesh fractions were separated from samples taken at 18" depth using a hand auger. Contoured results can be seen on plan 73-271.

The main zone of the anomaly appears to have been displaced twice. It is suggested that faulting may have resulted in sinistral displacements of the main sulphide zone of up to 80 feet in the vicinity of 8 400N, and possibly 20 feet around 8 600N. This is discussed further in the section on structure.

Geophysics

In 1969, a series of I.P. profiles were run across the jasper capped ridge during its evaluation as a potential nickel prospect, but these did not cover the copper anomaly and no significant frequency effect anomalies were found (McPharlin, 1970).

The main area of the geochemical anomaly to the west of the ridge at Kenmore II was covered by I.P. in 1971; firstly using a 200 ft. dipole-dipole spacing and then with a spacing of 100 feet (Nelson and Taylor, 1972).

A low resistivity zone with no corresponding frequency effect anomalies was located beneath the jasper capped ridge. This is probably indicative of deep weathering, and is caused by the moist clays from which jasper is derived.

The mineralized zone west of the ridge was defined by a zone of low resistivity and accompanying high frequency effects of up to 5%, within a broad zone of high resistivity and low frequency effects representing relatively fresh acid gneiss. Only minor frequency effect anomalies were observed from the eastern limb.

Results of this survey were used to assist in defining drilling targets.

Additional I.P. work was carried out in 1972 over the nose of the structure between 10 000 and 12 000N. The results are presented in Wightman and Taylor, 1973. The occurrence of frequency effect anomalies to the north of the geochemical anomaly is consistent with a shallow northerly plunge.

I.P. traverses were used in an attempt to trace both limbs of the sulphide zone as far south as 00N, but no further significant anomalies were found.

It has already been noted that the western limb of the jasper-capped core of the Kenmore II structure lies along strike from the jasper occurrence at Eremophila, and that the soil between them is unsuitable for soil sampling. I.P. profiles were run on lines 800 feet apart across this zone without locating any southerly extensions of the major mineralized horizons.

Very low frequency electromagnetic methods were also used at Kenmore II; the first derivative values outline the main mineralized zone and the jasper capped ridge (Nelson and Taylor, 1972).

Total magnetic intensity measurements were also taken but no obvious trends could be discerned.

Rotary-Percussion Drilling

Thirty-six rotary-percussion holes totalling 2 892 feet were drilled with a Mayhew 1 000 drill rig during November 1971. Metal shields were used to deflect cuttings into a split annular tray which was placed on the ground around the drill rods. Samples were collected over 10 feet intervals except for the near surface zone. They were quartered and sent to AMDEL for atomic absorption analysis.

Locations of these holes can be seen on plan 72-944; detailed logs with assay values are shown in appendix I. Some holes have been plotted graphically on sections which are shown in plans 73-304 to 73-309.

Cuttings from holes on the western limb showed the presence of secondary copper minerals above the water table and sulphides below it. However, on the eastern limb high copper values appear restricted to the near-surface zone, and no sulphides were intersected at depth.

Assay values of up to 5 700 ppm copper were returned from rotary-percussion holes in the zone above the water table (K.M.4, 8400N, 900W). This is inconsistent with the observed amounts of malachite and chrysocolla, and laboratory investigation has shown that cupriferous biotite is present in this zone.

Traces of molybdenite were observed in some rotary drill cuttings (see Appendix I).

Assays of up to 7 100 ppm copper (KM14, 8 600N, 900W) and 75 ppm molybdenum (KM34, 7 200N, 1100W) were returned from the sulphide zone below the water table.

Nickel is uniformly low in all samples.

TABLE I

Hole No.	Coordinates	Depth	Inclination	Angle at which hole intersects sulphide zone	Depth of main sulphide zone		Intersection of main sulphide zone	True width of sulphide zone	Range of Cu assays in main sulphide zone %
					From	To			
K2D1	8400N 925W	180'1"	90°	-	-	-	Not intersected	-	-
K2D2	8600N 895W	125'3"	90°	31°	74'9"	107'0"	32'3" of 0.41% Cu	16'7"	0.02 - 1.05
K2D3	8600N 1000W	285'6"	60°	61°	148'0"	168'0"	20'0" of 0.23% Cu	17'6"	<0.01 - 2.0
K2D4	8000N 1150W	252'0"	60°	60°	175'2"	197'5"	22'3" of 0.25% Cu	19'3"	<0.01 - 1.09
K2D5	7200N 1215W	395'4"	50°	62°	144'4"	163'10"	19'6" of 0.21% Cu	17'3"	0.01 - 0.59
K2D6	7600N 1500W	542'11"	60°	61°	470'2"	488'4"	18'2" of 0.24% Cu	15'11"	<0.01 - 1.20
K2D7	10500N 330E	414'5"	50°	-	-	-	Numerous small intersections	-	- -
K2D8	10400N 680W	301'5"	50°	-	-	-	Not intersected	-	- -

Assay samples were taken over irregular intervals, depending on lithological and compositional variations.

Detailed descriptions and assays are included in the diamond drill logs in appendix II.

Diamond Drilling

Eight holes totalling 2 497 feet were drilled between November 1971 and March 1972.

Detailed logs with assays are presented in appendix II. Sections showing graphically all holes with the exception of K2D7 can be seen on plans 73-304 to 73-309.

Data summarizing drill hole locations and main sulphide intersections are shown in table 1.

Holes K2D1 to K2D6 were drilled on the western limb of the structure. All but K2D1 intersected the main sulphide zone. This is remarkably consistent in thickness and average grade over a strike length of 1 400 feet between 7 200N and 8 600N. Within the main zone individual bands contain relatively high chalcopyrite, as shown by assays in table I.

Hole No. K2D7 located on the eastern limb near the nose of the structure intersected numerous sulphide zones, the thickest of these measured 3'8" of 0.13% Cu.

K2D8 located near the nose on the western limb of the anomaly undercut secondary mineralization but failed to intersect sulphides.

Results of a petrological and mineralogical study of cores by Radke (1972) are discussed in a later section.

Geology

Petrology

Quartzo-feldspathic gneisses containing varying amounts of biotite, and small amounts of pyroxene or amphibole are the most common rock types in the area. Thin interbands containing garnet or sillimanite also occur and may be continuous along strike for some distance.

A detailed study of the mineral assemblages present in the core from diamond drill holes K2D1 to K2D5 is presented in Radke (1972). This work was undertaken with the purpose of classifying the rocks into recognizable units distinguishable in hand specimen.

Below are listed the major rock types which have been recognized in diamond drill core and used in surface mapping.

ACID GNEISS is a coarse-grained quartzo-feldspathic rock with granular texture. Biotite occurs in minor amounts only, foliation and banding are indistinct, and in places may be almost entirely absent. It occurs in drill core and surface exposures at Kenmore II.

BANDED GNEISS is a medium-grained quartz-feldspar-biotite rock, with distinct banding. It is generally finer grained and contains more biotite than acid gneiss. Minor amounts of hypersthene occur in some places. It has been recognised in drill core at Kenmore II.

GARNETIFEROUS ACID GNEISS and GARNETIFEROUS BANDED GNEISS are variants of the above rock types which contain fine to medium grained subhedral pinkish-red garnet grains in amounts generally less than 5% but reaching local concentrations of up to 10%. These rocks occur in drill core at Kenmore II.

BIOTITIC GNEISS is a medium grained dark grey-brown rock consisting largely of biotite with some quartz, feldspar and in places hypersthene. It occurs in drill core at Kenmore II.

DOLERITE DYKES have been recognized in diamond drill core, rotary cuttings and surface exposures. They are fine grained hard dense dark grey rocks which intrude the folded gneiss sequence.

SILLIMANITE GNEISS has not been observed in drill core but forms a prominent low ridge extending northwards from the north-eastern part of the mapped area. Sillimanite float has also been found south of this ridge (see plan 72-944). It is a medium to coarse-grained rock with sillimanite-rich laminations up to 4 mm thick, and displays tight isoclinal folding on hand-specimen scale.

BASIC GRANULITE is a coarse-grained dark grey to black rock with a granular texture. It consists predominantly of pyroxene and plagioclase with some amphibole. It has only been recognised in small outcrops and occurrences of float on the jasper-capped ridge. A broad band underlies the jasper-capped ridge at Eremophila Prospect, about 1½ miles south.

ALTERATION ZONES characterized by epidote are common in surface exposures and in diamond drill core. Coarse cloudy pink and white feldspar is also a common alteration product.

QUARTZITE. In places along the jasper capped ridge there are bands up to about 10 feet wide of glassy bluish quartzite containing pyroxene and magnetite grains.

The JASPER capped ridge at Kenmore II prospect rises about 15 feet above the surrounding plain. Brown siliceous jasper and dolomite occurs at the surface, but no drill holes have undercut this zone and the nature of the underlying rock is uncertain. A drill hole undercutting a jasper-capped ridge at Kenmore I Prospect, three miles west, revealed the presence of serpentinite, but on Eremophila prospect a thick band of basic granulite outcrops northwards along strike from the jasper capping; some basic granulite was exposed in a bulldozer trench near the crest of the jasper-capped ridge.

Similar jasper occurrences were drilled in the "Eastern Zone Prospects" 10-15 miles to the south-east. (Pain, 1973). From this drilling it was concluded that jasper can form over a variety of the more mafic bands within the metamorphic sequence, such as basic granulite or biotitic gneiss.

The processes of metamorphic segregation have been important factors in modifying the mineralogy and textures of rocks in the area. Coarse white quartzo-feldspathic segregations and associated segregations of biotite are common throughout the core.

It is likely that this process was active during both the granulite metamorphism and the following period of anatexis which resulted in the formation of adamellites and migmatites a few miles to the north. Consequently many of the characteristics, particularly textural features, which are visible in the drill core and which have been used in logging, may not bear any obvious or direct relationships to the original nature of the sediments.

Structure

During the 1972 field season, a programme of detailed mapping at a scale of 1" rep. 400 feet was carried out in the vicinity of the Kenmore II Prospect (see plan 72-944).

It can be seen that the jasper-capped horizon has been tightly folded about an axis trending approximately 005° from grid north. It has a northerly closure about 8 600N, and is closely paralleled by the geochemical anomaly.

Outcrops in the area are small and generally protrude less than a foot above the sandy plain. Consequently, detailed mapping is time consuming, and reliable dips on the gneissic banding are difficult to measure, but there is sufficient information to indicate that the banding on the eastern limb is near vertical.

Data from the diamond drilling and geochemistry (see plans 73-304 to 73-309) indicate that the dip of the western limb between 7 200N and 8 400N is between 68°W and 60°W. Thus it appears that the Kenmore II structure is a northerly plunging anticline. A systematic shallowing of dips of the sulphide zone from 68° at 7 200 to 60° at 8 400N is consistent with closure around the nose of a northerly-plunging anticline. Intersection angles of the gneissic banding and core axis in hole No. K2D7 are also consistent with this interpretation.

Examination of aerial photographs shows a well defined set of lineaments which have been plotted on plan 73-101. They have maxima at approximately 015°, 060°, 110° and 130° from grid north. Detailed mapping and study of the drill core indicates that these are the surface expressions of a network of closely spaced brittle fractures, some of which show small-scale displacements. They represent a late stage of tectonic adjustment during which dolerite dykes were intruded over much of the Kenmore and Eateringinna sheet areas, and intense fracturing took place in the Marryat Shear Zone approximately three miles north. These fracture sets control the courses of creeks in the vicinity of Kenmore II Prospect, just as the course of the Marryat River is controlled by the direction of the Marryat Shear.

Dolerite dykes intrude some fractures; in places these appear to have suffered minor displacement by later fracturing. Widespread alteration to epidote accompanied this phase. Epidotized gneiss is well exposed on the ridge approximately 1 500 feet east of the jasper capped zone, and epidotized alteration zones have been intersected in diamond drilling. Fresh green, and weathered brown, ferruginous epidote float is ubiquitous. Zones of cloudy, altered, white plagioclase and pink potash feldspar are common in the core; pseudotachylite has been observed both in outcrop and drill core.

The westerly-dipping dolerite dyke at approximately 9 000N, 1 200E has apparently been displaced sinistrally by a north-easterly fracture set. It can be seen from the detailed geochemical plan that there are also sinistral displacements of the main westerly-dipping sulphide body of possibly 80 feet and 20 feet at around 8 400N and 8 600N respectively. It is likely that the same fracture set is responsible for all of these displacements, and it could also account for the lack of a sulphide intersection in K2D1 at 8 400N, 925W.

Mineralization

Sulphide minerals, chiefly pyrite and chalcopyrite, occur in one main band approximately 17 feet thick. Other thin sulphide-bearing bands also occur.

The main band is conformable with the fold structure and intersections over a strike length of 1 400 feet on the western limb are very consistent in both width and grade. This mode of occurrence suggests that sulphide was present in a bed in the premetamorphic sequence, and was largely retained within the bed during metamorphism with only small scale redistribution.

Coincident geochemical and induced polarization anomalies of similar magnitude to those at Kenmore II have been discovered near the Kenmore I Prospect three miles to the west. They have an average width of about 100 feet and can be traced for 7 000 feet along an arcuate trend parallel to the strike of the gneissic banding. The occurrence of these anomalies lends additional support to the hypothesis that sulphide mineralization in the area was originally strata-bound.

From his study of sulphides in polished sections, Radke (1972) recognised pyrite and chalcopyrite as the two main sulphide phases with pyrite more abundant than chalcopyrite. Minor pyrrhotite occurs in most samples, and some have minor sphalerite. The sulphides generally occur as disseminated grains, but display crude alignment parallel to banding. Occasional thin sulphide veinlets and fracture fillings occur.

In some samples, Radke observed textural evidence of a paragenetic sequence, with early deposition of subhedral to enhedral pyrite, followed by chalcopyrite, with a final stage of deposition of magnetite or porous colloform pyrite. Similar sequences were observed during field logging of core. (e.g. K2D6 @ 481'7").

In his study of holes K2D1 to K2D5, Radke notes that "In some samples (e.g. P1049/72) the biotite associated with the mineralization has a paler colour and is less pleochroic than the biotite in non-mineralized zones". He considers that hydrothermal solutions could have been involved in ore deposition and alteration of the biotite. The authors feel this is not necessarily evidence for a hydrothermal origin of the ore. Small scale redistribution and recrystallization has apparently taken place, and it seems likely that

biotite in equilibrium with sulphide phases would differ slightly from biotite occurring outside the sulphide zone. Radke suggests from his study of drill holes K2D1 to K2D5, that the mineralization could be controlled by shearing; this was not confirmed by the subsequent drill holes.

Sulphide minerals are generally absent above the water table which lies at about 65 feet below the surface. Chrysocolla and some malachite were found in most of the air-rotary holes located within the geochemical anomaly, and these minerals were observed on a few joint facings in the upper parts of some of the diamond drill holes.

The visible secondary copper minerals are not sufficient to account for some of the assay values obtained in the air-rotary holes (up to 5 800 ppm copper). A sample of selected cuttings was submitted to AMDEL and electron probe analyses revealed the presence of cupriferous biotite. (AMDEL Report MP1/16/0). The sulphide intersection in hole No. K2D2 is at shallow depth (see plan 73-308), and the core shows signs of slight weathering. This intersection also has a higher grade than the others, probably due to secondary enrichment of copper in the biotite. Cupriferous biotite has recently been reported from weathered rocks in other localities in South Australia, for example Ukaparinga (AMDEL Report 1/31/10).

CONCLUSIONS AND RECOMMENDATIONS

Drilling of eight diamond drill holes and thirty-six rotary-percussion holes has revealed the presence of subeconomic sulphide mineralization, predominantly pyrite and chalcopyrite, below a weathered zone containing malachite, chrysocolla and cupriferous biotite.

Despite some unexplained features the mode of occurrence favours the hypothesis that the sulphide was deposited in a bed in the original premetamorphic sequence, and was largely retained within the bed during metamorphism.

This is the first reported occurrence of mineralization of such type in the Musgrave Block and is an unusual phenomenon for metasediments of their age.

No further work appears warranted on this particular prospect, but a programme of exploration to locate more strata-bound deposits of similar type in the Musgrave Block could prove fruitful.

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APPENDIX I

Logs of Rotary-Percussion Drill-Holes
Kenmore II Prospect

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : N.W. Survey
FEATURE : KENMORE-II
LOCATION : KENMORE PARK
INCLINATION : 90°
AZIMUTH :
HOLE NO. : KM1
COORDINATES : 8800N 7004W
DEPTH : 81 feet

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil - red brown, sandy		G3618/71	25	25	3		
		Weathered zone & calcrete. Highly weathered fragments of acid gneiss & nodular calcrete, becoming less abundant with depth.		19	15	50	<3		
	10	Banded Gneiss - feldspar, quartz, biotite & hornblende, medium grained grey, moderately weathered.		20	20	35	<3		
5		Acid Gneiss - coarse grained with epidote. Less weathered.							
	20	Banded Gneiss - in hornblende. Thin veins of epidote, carbonate. Fresh.		21	50	25	<3		
	30			22	780	10	5		
10	40	Very weathered, altered zone; soft, clayey. Gneiss almost completely altered with chlorite, epidote & haematite. Slightly damp.		23	1,000	10	5		
15	50	Banded Gneiss - with hornblende & small grains of magnetite		24	260	20	<3		
	60			25	380	30	<3		
20		Weathered, altered zone - much altered gneiss & numerous inclusions of dark fine grained dolerite. Soft, damp.							
	70			G3626/71	160	50	<3		
	80	Banded gneiss & hornblende & magnetite. Hard fresh.							

WATER CUT : 78ft
STATIC LEVEL : 66ft

PLAN REF : 72-944
SAMPLE SHEET REF. AN2374/72
SAMPLE Nos. G3618/71 TO G3626/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pignitter
START : 5/10/71
FINISH : 5/10/71

LOGGED BY : D.C. Scott
DATE : 8/12/71
ORG NO.
SHEET 1 OF 2

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : NW. SURVEY
FEATURE : KENMORE II
LOCATION : KENMORE PK.
INCLINATION : 90°
AZIMUTH : -
HOLE NO. : KM1
COORDINATES : 8800N 700W
DEPTH : 81 feet

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
60	Banded gneiss - as before		As before					
	81' Foot of Hole							
90								
120								

WATER CUT : 78ft.
STATIC LEVEL : 66ft.

PLAN REF : 72-944
SAMPLE SHEET REF. AN.2374/72
SAMPLE Nos. G.3618/71 TO G.3626/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pignitter
START : 5/10/71
FINISH : 5/10/71

LOGGED BY : D.C.Scott
DATE : 8.12.71
DRG NO.
SHEET 2 OF 2

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : N.W. SURVEY
FEATURE : KENMORE II
LOCATION : KENMORE PK
INCLINATION : 90°
AZIMUTH :
HOLE NO. : KM2
COORDINATES : 8800N, 600W
DEPTH : 50'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil - red-brown sandy							
10	Weathered zone & calcrete - Highly weathered fragments of Acid Gneiss & white nodular calcrete		G3253/71	140	50			
5 20	Banded Gneiss - hornblende rich bands moderately weathered becoming fresher at depth		54	550	40			
			55	1350	30			
10 30 40	Altered weathered zone - soft clayey with chlorite, epidote, biotite. Slightly damp	Traces of copper staining, chrysocolla in upper parts of this zone	56	310	25			
15 50	Acid Gneiss - with few hornblende rich bands. Becoming hard, fresh past 45' with grains of magnetite.		G3257/71	90	10			
	50' Foot of Hole							
20 60 70 80								

WATER CUT : Dry
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF AN. 1893/72
SAMPLE Nos. G3253/71 TO G3257/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pignitter
START : 5.10.71
FINISH : 6.10.71

LOGGED BY : D.C. Scott
DATE : 8.12.71
DRG NO.

SHEET 1 OF 1

RF. No. 810216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N-W SURVEY
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : -

HOLE NO. : K M 3
COORDINATES : 8,800N,500W
DEPTH : 100'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 – 5	Topsoil - red brown, sands.							
5 – 10	Weathered zone + calcrete. Highly weathered fragments of Acid Gneiss.		G3258/71	25	10			
10 – 20	Acid-Gneiss - with some hornblende. Moderately weathered, becoming hard, fresh past 16'. Occasional thin (<6")weathered band with epidote, chlorite, iron staining.		59	75	10			
			60	85	20			
20 – 30			61	85	20			
30 – 40	Softer, altered zone - partly weathered with epidote chlorite.		62	90	20			
40 – 50	Acid Gneiss - as above + small amount of magnetite. Very hard, fresh, with few narrow amphibole rich bands up to 6".		63	110	35			
50 – 60	Banded Gneiss - with few biotite rich bands & fine grained magnetite.	Very occasional small specks of pyrite.	64	15	55			
60 – 70	Softer, altered zone - slightly damp. Somewhat weathered.							
70 – 80	Banded Gneiss - as above.							
	Softer, altered zone - damp clayey.							
	Banded Gneiss - as above - magnetite fairly abundant. Hard, fresh.		G3265/71	10	30			

WATER CUT : Dry
STATIC LEVEL : -

PLAN REF : 72-944 *
SAMPLE SHEET REF. AN1893/71
SAMPLE Nos. G3258/71 TO G3267/71

DRILL NO. : 63 *
TYPE : Mayhew
DRILLER : F. Pignitter
START : 6/10/71
FINISH : 7/10/71

LOGGED BY : D.C. Scott
DATE : 9.12.71
ORG NO.

SHEET 1 OF 2

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Pk.
INCLINATION : 90°
AZIMUTH : –
HOLE NO. : KM4
COORDINATES : 8,400N, 900W
DEPTH : 75'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil & some grit & gravel		G3268/71	1350	10			
10	Weathered zone & calcrete - Highly weathered Banded Gneiss with hornblende. Some iron stained gravel in upper part.	Occasional green blue copper stained fragments occur throughout this zone. Malachite chrysocolla & possibly azurite in parts	69	1850	5			
5 20	Micaceous Zone - altered, weathered flakes of biotite very abundant & epidote, chlorite, fragments of silicified Gneiss & chert.		70	3700	10			
30	Micaceous Zone - as above. Biotite less abundant. Large iron stained fragments of quartz, feldspar. Traces of manganese, black fine grained. Still highly weathered, red brown clayey in part, very soft.							
15	Acid Gneiss - altered, weathered, fairly soft, with epidote, chlorite yellow quartz.		71	1600	5			
40	Micaceous zone - as before. Highly micaceous large flakes up to ½". Clay in part	Copper staining - as above	72	5700	5			
15 50			73	2850	5			
60	Acid Gneiss - quartz rich & minor biotite. Altered, moderately weathered.							
	Micaceous zone - as before	Copper staining as above	74	1650	40			
20 70	Banded Gneiss - with hornblende. Little alteration, hard past 70'.		G3275/71	500	65			
80	75' Foot of hole							

WATER CUT : 64'
STATIC LEVEL : 61'

PLAN REF : 72-944
SAMPLE SHEET REF AN. 1893/72
SAMPLE Nos. G. 3268/71 TO G. 3275/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pigmitter
START : 7.10.71
FINISH : 7.10.71

LOGGED BY : D.C. Scott
DATE : 10.12.71
DRG NO.
SHEET 1 OF 1

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT :N.W.Survey ---
FEATURE Kenmore II ---
LOCATION :Kenmore Pk ..

INCLINATION :..90°..... AZIMUTH :.....

HOLE NO. :KM5 .....
COORDINATES :8,400N,1000W
DEPTH :..67'.....

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 / 0	Topsoil with some grit & gravel past 3'		G3276/71	50	20			
10	Weathered zone & minor calcrete in upper part - mainly coarse grained acid gneiss with iron staining		77	55	20			
5 / 20								
30	Acid Gneiss - still somewhat weathered, iron stained & small amounts of epidote & fine grained magnetite	Very occasional small specks of pyrite	78	120	20			
15			79	95	10			
40	Acid Gneiss - as above. Softer slightly weathered band. Magnetite more abundant		80	60	25			
50	Acid Gneiss - as before. Becoming harder, fresh.		81	10	30			
60								
20	Slightly altered weathered zone - softer with some epidote, yellow brown quartz		G3282/71	10	20			
	Banded Gneiss - Hard, fresh.							
	67' Foot of hole							
70								
80								

WATER CUT :..64'....
STATIC LEVEL :..60'....

PLAN REF :..72-944....
SAMPLE SHEET REF. - AN.1893/72-
SAMPLE Nos. G.3276/71 TO G.3282/71

DRILL NO. :...63.....
TYPE :Mayhew.....
DRILLER :F.Pignitter
START :8.10.71....
FINISH :8.10.71....

LOGGED BY :.D.C.Scott
DATE :.10.12.71.
DRG No.

SHEET 1 OF 4

RF. No. 810216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Pk
INCLINATION : 90°
AZIMUTH :
HOLE NO. : KM6
COORDINATES : 8,400N, 1,100W
DEPTH : 70'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil & some grit & gravel near 4'		G3283/71	25	30			
10	Weathered zone & minor calcrete. Mainly weathered acid gneiss with carbonate coating, iron stained & epidote.		84	15	45			
5	Weathered zone – as above & manganese staining & some nodular calcrete & chert fragments up to ¾"							
20	Acid gneiss & minor chlorite, magnetite locally abundant. Becoming hard, fresh at depth with little alteration. Light grey; ocassional coarse grained feldspar crystals.	Very ocassional small specks of pyrite through out this zone	85	10	30			
30			86	15	40			
15 40			87	30	25			
50			88	50	30			
60			G3289/71	25	30			
20	Softer, altered zone with yellow quartz, feldspar. Some epidote chlorite.							
70	Acid Gneiss – as before. Hard.							
	70' Foot of Hole.							

WATER CUT : 66'
STATIC LEVEL : 59'

PLAN REF : 72-944
SAMPLE SHEET REF. AN.1893/72
SAMPLE Nos G3283/71 TO G3289/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pignitter
START : 8.10.71
FINISH : 9.10.71

LOGGED BY : D.C. Scott
DATE : 10.12.71
DRG NO.

SHEET 1 OF 1

REF. No. 810216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT :N-W SURVEY

FEATURE :KENMORE II

LOCATION :KENMORE PARK

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. :KM7

COORDINATES :8400N, 800W

INCLINATION :90°

AZIMUTH :

DEPTH :90'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil - red-brown, sandy							
		Weathered zone ± calcrete - white nodular calcrete ± highly weathered gneiss fragments, carbonate coated.		G3290/71	100	20			
	10	Weathered zone - Altered Acid Gneiss fragments with chlorite, carbonate ± biotite rich Gneiss fairly abundant Traces of manganese - dark, fine grained.		91	250	20			
5	20	Banded Gneiss - biotite rich ± hornblende. Still partly weathered Dark grey.	Occasional small specks of pyrite	92	140	20			
	30	Bended Gneiss - with Hornblende & coarse grained feldspar, quartz bands slightly weathered with thin carbonate, chlorite veins.		93	760	20			
10	40	Altered, weathered zone - soft, dark yellow-brown. Gneiss completely weathered in part to clay epidote, chlorite, iron stained + traces of manganese; some fragments slightly damp.		94	1850	20			
	50	Banded Gneiss - with hornblende, magnetite medium grained, grey. Less altered, becoming hard, fresh.	Occasional specks of pyrite.	95	480	30			
15	60			96	140	30			
20	70	Altered zone - Gneiss as above yellow-brown softer. Partly altered with minor epidote, chlorite. Damp.		G3297/71	55	30			
	80	Banded Gneiss - with hornblende, magnetite coarse grained feldspar-quartz bands.							

WATER CUT :78'

STATIC LEVEL :62'

PLAN REF :72-944

SAMPLE SHEET REF. AN 1893/72

SAMPLE Nos G3290/71 TO G3298/71

DRILL NO. :63

TYPE :Mayhew

DRILLER :F. Pigmitter

START :9.10.71

FINISH :9.10.71

LOGGED BY :D.C. SCOTT

DATE :10.12.71

DRG NO.

SHEET 1 OF 2

RF. No. 810216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.T. Survey

FEATURE : Kenmore-II

LOCATION : Kenmore-1K

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : 1K7

COORDINATES : 34006, 3080

INCLINATION : 90°

AZIMUTH :

DEPTH : 90'

METRES	SCALE	FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
		80	(continued). Partly altered with yellow brown feldspar-quartz, epidote. Becoming harder, less altered past 85'.		G3298/71	160	30			
		90	90' Foot of Hole Note: Water fairly abundant past 80'							

WATER CUT : 78'

STATIC LEVEL : 62'

PLAN REF : 72-044

SAMPLE SHEET REF. AN. 1293/72

SAMPLE Nos G3220/71 TO G3298/71

DRILL NO. : 65

TYPE : Gardner

DRILLER : R. Fitnitter

START : 8.10.71

FINISH : 8.10.71

LOGGED BY : D.C.

DATE : 10.12.71

DRG. NO.

SHEET 2 OF 2

RF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : U.M. Survey

FEATURE : Kenmore II

LOCATION : Kenmore Pk.

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : -60° AZIMUTH : ..... DEPTH : 78'

HOLE NO. : K8

COORDINATES : 4[illegible], 7[illegible]

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil - red brown, sandy.		[illegible]/71	45	35			
	Calcrete & weathered zone, [illegible] nodular calcrete & highly [illegible] Gneiss & dolerite fragments [illegible] grained		799	100	65			
10	Weathered zone - [illegible] blue-grey Dolerite, weathered on surface with carbonate & iron staining; traces of manganese. Minor inclusions of weathered gneiss.		01	25	40			
5	Banded Gneiss - with [illegible] magnetite, garnets, small pink abundant in parts. Becoming less weathered at depth. Very [illegible] point 25'. Dolerite [illegible] between 16' & 20', [illegible]. Few narrow biotite pegmatites, <6".		02	30	25			
20			03	45	30			
10	Softer, partly altered zone with epidote		04	55	25			
	Banded gneiss - as above, garnets rarer, medium grained, grey, little alteration.		05	75	25			
15	Altered zone - softer with epidote, chlorite.		06	35	30			
25	Acid gneiss - medium grained, [illegible] grey with some coarse grained feldspar. Abundant magnetite		33307/71	75	10			
70	Altered zone - as before. Becoming damp.							
	Acid gneiss - as above. Partly altered, softer with epidote, chlorite							
80	78' Foot of Hole							

WATER CUT : Not Obs

STATIC LEVEL : 65'

PLAN REF : 72-944

SAMPLE SHEET REF. A[illegible]

SAMPLE Nos. 8[illegible] TO 3[illegible]

DRILL NO : [illegible]

TYPE : [illegible]

DRILLER : [illegible]

START : [illegible].10.71

FINISH : 11.10.71

LOGGED BY : J.F. Scott

DATE : 14.12.71

CHECKED

SHEET 1 OF 1

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : NW Survey.....
FEATURE : Kenmore Pl...
LOCATION Kenmore..... INCLINATION : 90° ..... AZIMUTH : .....

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : 339
COORDINATES : 63008, 5003
DEPTH : 102'

METRES / SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil - red brown sandy grit & gravel near 3'		33308/71	60	25			
10	Calcrete & weathered zone - white nodular calcrete & very weathered banded gneiss & large feldspar grains, only larger fragments showing relic gneiss structure.		09	55	20			
5			10	25	30			
20	Weathered zone - coarse grained, much altered acid gneiss. light grey, green with carbonate coating. Magnetite common occasional biotite rich bands <6".							
30	Acid Gneiss - with some hornblende magnetite. Light grey with minor alteration - carbonate, epidote, chlorite in upper part. Becoming very hard, fresh rock 32'		11	30	35			
40			12	50	40			
	Altered zone - soft, gneiss completely altered in part, olive grey Inclusions of dark, fine grained dolerite.		13	70	50			
50	Acid Gneiss - as before, very hard in lower part of this section		14	50	35			
60								
	Altered zone - as before. Minor dolerite, abundant yellow-brown quartz, feldspar.		15	10	25			
70	Acid Gneiss - as before. Occasional large flakes of biotite, up to ¼". Some coarse grained feldspar. Becoming very hard past 70' with a few narrow softer bands <9" - joints?		33316/71	15	25			
80								
90								

WATER CUT : 77'
STATIC LEVEL : 67'

PLAN REF : 72.844
SAMPLE SHEET REF. : 1695/72
SAMPLE Nos. 33308/71 TO 33316/71

DRILL NO : 2
TYPE : Reyhow
DRILLER : E. Pigotte
START : 14.10.71
FINISH : 12.10.71

LOGGED BY : D.J. Scott
DATE : 14.12.71
DRST O.
SHEET 1 OF 2

RF No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : M.I. Survey

FEATURE : Kanmare II

LOCATION : Kenmore Pk.

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : [illegible]

COORDINATES : [illegible]

INCLINATION : -90° AZIMUTH : ..... DEPTH : 100'

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Acid Gneiss - as before		[illegible] 71	5	25			
30			23318/ 71	5	30			
100	100' Foot of Hole							

WATER CUT : ....Tr...

STATIC LEVEL : ....67'...

PLAN REF : ....73-9-11...

SAMPLE SHEET REF. ...D.1093/72...

SAMPLE Nos. ...23308/71 TO ...23318/71

DRILL NO : ...63.....

TYPE : ...Mayhew.....

DRILLER : ...P. Ignitter

START : ...11.10.71...

FINISH : ...12.10.71...

LOGGED BY : ...B.C. Scott

DATE : ...14.12.71...

DRG. NO.

SHEET ...2... OF ...2...

REF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : ..M. Survey.... LOG OF ROTARY – AIR DRILL HOLE HOLE NO. :DH10 .....

FEATURE : ..Renmore II... COORDINATES : 8200E, 6091

LOCATION : ..Renmore... INCLINATION : ....-60°..... AZIMUTH : ....-.... DEPTH : ..90'.....

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil - red-brown, [illegible] & minor gravel near 3'		3319/71	[illegible]	25			
10	Calcrete & very weathered banded gneiss. Calcrete white-buff nodular & weathered - gneiss with epidote, chlorite, clay. Light grey-green. Also inclusions of white quartz. Traces of manganese.	Common staining & small fracture coatings of chrysocolla & malachite observed in this zone. Becoming less frequent east 20'.	20	950	10			
			21	940	30			
5 20	Weathered zone - banded gneiss & Quartz rock, much altered, broken. Epidote. Carbonate still common. Rock becoming harder.		22	300	20			
	Acid Gneiss - with hornblende. Medium-grained, light grey-brown. Slightly weathered in part, with yellow-brown feldspar. [illegible] white, grains relatively fresh out.		23	200	35			
10			24	100	50			
	Dolerite-fine grained, [illegible] altered.							
	Acid Gneiss - as above still slightly altered, soft near contact with Dolerite		25	35	35			
			26	90	75			
30 20	Altered zone - softer. Acid gneiss & inclusions of dolerite. Gneiss altered, clayey in part.							
		Very light copper staining observed.	3327/71	70	15			
	Altered zone - fairly soft altered gneiss & some inclusions of dolerite & large flakes							

WATER CUT : ..77'...

STATIC LEVEL : ..66'...

PLAN REF : ..72-944...

SAMPLE SHEET REF. : ..1393/72...

SAMPLE Nos : 3319/71... TO 3328/71...

DRILL NO. : ....63.....

TYPE : ..Gardner...

DRILLER : ..Lightfoot

START : ..12.10.71...

FINISH : ..13.10.71...

LOGGED BY : D.B. Scott

DATE : ..14.12.71..

DRS No.

SHEET ..1... OF ...2..

R.F. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : NW. Survey.... LOG OF ROTARY – AIR DRILL HOLE HOLE NO. : [illegible]10.....

FEATURE : Kenmore II.. COORDINATES : 8800E, 6000N

LOCATION : Kenmore Lk... INCLINATION : 90° ..... AZIMUTH : ..... DEPTH : ... 90'.....

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm.	Ni ppm.	Mo ppm.	Pb ppm.	Zn ppm.
30	(cont) of biotite. Abundant chlorite carbonate. Becoming damper, more highly altered near 90'.		95323/71	160	15			
90	90' Foot of hole							
100								

WATER CUT : ...77'..

STATIC LEVEL : ... 66'..

PLAN REF : 72-044....

SAMPLE SHEET REF. No. 1893/72..

SAMPLE Nos. 95319/71 TO 95323/71

DRILL NO : ....63.....

TYPE : Mayhew....

DRILLER : F. Hignitter

START : 12.10.71..

FINISH : 13.10.71...

LOGGED BY : D.C. cott.

DATE : 14.12.71.

DRG NO.

SHEET 2 ... OF 2

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : NW Survey

FEATURE : Kenmore II

LOCATION : Kenmore ...k...

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90°

AZIMUTH : .....

HOLE NO. : ...[illegible]11.....

COORDINATES : [illegible],700S

DEPTH : ...[illegible]!.....

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 – 10	Topsoil; red brown sandy [illegible] zone grit		3557/71	20	15	<3		
	Weathered zone & calcrete. Gneiss completely altered to quartz, feldspar grains&chlorite, epidote. Abundant carbonate in upper part of zone as nodules & coating on gneiss		58	10	5	<3		
10 – 20	Acid Gneiss - with hornblende, magnetite. Light grey, becoming hard, less weathered, still with some carbonate & occasional softer zones up to 6" containing chlorite, epidote, yellow brown quartz feldspar - possibly joints.		59	10	5	<3		
			60	25	15	<3		
			61	25	15	<3		
			62	25	15	<3		
			63	15	10	<3		
20 – 30	Altered zone - Softer with chlorite, epidote. Some parts completely decomposed to clay. Light yellow-grey		64	10	20	<3		
30 – 40	Acid Gneiss - Light grey. Hard, unaltered. Occassional coarse feldspar crystals. Some magnetite.		65	15	20	<3		
	Altered zone - as before							
	Acid gneiss - as above							

WATER CUT : .75!....

STATIC LEVEL : .66!....

PLAN REF : 72-944.....

SAMPLE SHEET REF. : 2374/72..

SAMPLE Nos. : 3557/71 TO ...3565/71

DRILL NO. : ...63.....

TYPE : ...Gayhew.....

DRILLER : ...Lignitter

START : 25.10.71..

FINISH : 25.10.71..

LOGGED BY : D.O. Scott

DATE : 14.12.71

DRG NO.

SHEET ....1 OF ....2...

R.F. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : MM Survey

FEATURE : Kenmore-II

LOCATION Kenmore Pk

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90°

AZIMUTH :

HOLE NO. : KM11

COORDINATES : 8806N, 7003

DEPTH : 90'

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	(cont.) Acid Gneiss – as before		93566/71	15	10	<3		
90	90' Foot of Hole Note: Abundant water in this hole. 180 gallons/hr. This could be increased by deepening & reaming out of hole. Only likely hole for water in this area to date (up to Hole KM36)							

WATER CUT : 75'

STATIC LEVEL : 68'

PLAN REF : 72-944

SAMPLE SHEET REF. 93574/72

SAMPLE Nos. 93566/71 TO 93574/71

DRILL NO. : 63

TYPE : Wilson

DRILLER : P. Ligatter

START : 25.10.71

FINISH : 25.10.71

LOGGED BY : D.A. Scott

DATE : 14.12.71

DRS NO.

SHEET 2 OF 2

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : N/..Survey...
FEATURE : Kenmore II...
LOCATION : Kenmore Pk...
INCLINATION : 90°..... AZIMUTH : .....
HOLE NO. : ... K12 .....
COORDINATES : 36008, 7004
DEPTH : ...38' .....

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 / 0	Topsoil – red brown, sandy		3567/71	25	20	3		
	Weathered zone & calcrete – mainly weathered gneiss – completely decomposed in upper part to quartz, feldspar grains & clayey fragments. Abundant white carbonate – nodular & coating on gneiss.		68	25	20	<3		
10			69	25	20	<3		
5 / 15 / 20	Acid Gneiss & minor hornblende, magnetite. Medium grained, light blue grey. Some biotite rich bands. Becoming very hard, fresh past 25' with occasional thin , up to 6" altered band.		70	55	15	<3		
			71	160	20	<3		
10	Banded Gneiss & hornblende & magnetite; biotite rich in parts. Softer with few inclusions of dark, fine grained dolerite.							
	Acid Gneiss – as before. Biotite slightly more abundant. Hard.		72	100	15	<3		
			73	95	20	<3		
25 / 30	Slightly altered zone. Banded Gneiss softer with yellow brown feldspar, quartz, some epidote. Inclusions of Dolerite.		74	200	20	<3		
35 / 40	Altered, weathered zone – Banded Gneiss completely decomposed in parts, clay & chlorite, flakes of biotite common. Coarse grained feldspar, quartz also abundant. Dolerite common in parts. Becoming damp, soft.	"	3575/71	260	25	<3		

WATER CUT : Not Obs.
STATIC LEVEL : 68'....

PLAN REF : 72-944...
SAMPLE SHEET REF : 2574/72 ...
SAMPLE Nos. ...3567/71 TO 3576-7

DRILL NO. : 63.....
TYPE : Weather.....
DRILLER : ...Ignitter
START : 29.10.71...
FINISH : 29.10.71...

LOGGED BY : D.C. Scott
DATE : 14.12.71.
DRG NO.
SHEET 1 OF 2

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : NW. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park
INCLINATION : 90°
AZIMUTH :
HOLE NO. : KH12
COORDINATES : 3600E, 700N
DEPTH : 88'

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 / 30	Banded Gneiss - Medium grained, light grey with magnetite. Very hard with a few narrow softer, slightly altered bands.		G3576/71	25	30	<3		
90	88' Foot of Hole							
5 / 100								

WATER CUT : Not Obs.
STATIC LEVEL : 68'

PLAN REF : 72-944
SAMPLE SHEET REF. No. 2374/72
SAMPLE Nos. G.3567/71 TO G.3576/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : P. Limitter
START : 29.10.71
FINISH : 29.10.71

LOGGED BY D.C. Scott
DATE : 14.12.71
DRG NO.

SHEET 2 OF 2

P.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT :..NW.Survey.... LOG OF ROTARY – AIR DRILL HOLE HOLE NO. :KM13.....

FEATURE :..Kenmore.II.. COORDINATES :9600E, 600N

LOCATION :..Kenmore Pk.. INCLINATION :....90°..... AZIMUTH :..... DEPTH :....85'.....

METRES / SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil - red brown sandy & some gravel.		G3577/71	75	25	<3		
	Weathered zone & calcrete - white nodular & reddish, iron stained gneiss completely weathered - quartz, feldspar grains & chlorite & clay. Yellow green.		78	130	30	<3		
10			79	1800	50	<3		
15	Weathered, altered zone - gneiss altered as above & chips of dark brown dolerite. Biotite flakes abundant & chlorite. Rock still highly altered, soft.	Traces of copper staining, mainly chrysocolla & malachite	80	2300	25	<3		
20	Altered zone - as above, abundant flakes of biotite, chlorite, epidote. Dolerite more common. Very soft, powdery in some parts. Yellow-green to light brown.	Traces of copper fairly common in parts of this section.	81	2700	20	<3		
	Contact zone - abundant biotite & red ochre.		82	630	60	<3		
	Banded gneiss - with magnetite. Medium grained, grey & numerous thin biotite rich bands, inclusions of course grained feldspar, quartz. Altered in upper part, becoming hard, fresh past 70'.		83	360	60	<3		
25			84	1600	50	3		
	Biotite Gneiss & hornblende. Dark fine grained. Moderately hard, little altered with coarse grained feldspar, quartz inclusions	Up to 10% sulphide; pyrite & chalcopyrite. Disseminated & large blebs.						
	Banded Gneiss - medium grained. Somewhat altered & inclusions of dolerite	Specks & blebs of sulphide as at 66.5'-73'	G3585/71	3800	20	<3		
30	Biotite Gneiss - as before							

WATER CUT :....76'...

STATIC LEVEL:.... 64'..

PLAN REF: 72-944.....

SAMPLE SHEET REF. AM.2374/72..

SAMPLE Nos G3577/71 TO G3586/71.

DRILL NO. :..63.....

TYPE :..Haybow.....

DRILLER :.E.Pigmitter

START :30.10.71..

FINISH :30.10.71..

LOGGED BY :..D.C.Scott

DATE :16.12.71..

DRG NO.

SHEET 1 OF 2

RF. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : ..NM Survey...
FEATURE : Kenmore II ...
LOCATION : Kenmore ..... INCLINATION : ...90°..... AZIMUTH : .....

HOLE NO. : ... KH13 .....
COORDINATES : 4,000N, 4,000...
DEPTH : ...85'.....

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
80	(cont.) Banded Gneiss - [illegible] lende, magnetite - [illegible], slightly altered & minor inclusions of dolerite	specks of pyrite [illegible]rite	3586/71	1500	20	<5		
	85' Foot of Hole							
90	Note: Hole stopped at 85' due to water - poor return of cuttings.							
100								

WATER CUT : 76'....
STATIC LEVEL : 64'....

PLAN REF : 72-944.....
SAMPLE SHEET REF. 71.2574/72..
SAMPLE Nos. 3577/71 TO 3586/71

DRILL NO. : 63.....
TYPE : Mayhew....
DRILLER : F. Lignitter
START : 30.10.71..
FINISH : 30.10.71..

LOGGED BY : D.J. Scott
DATE : 16.12.71
ORG NO.

SHEET ...2... OF ....2.

RF No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : [illegible] Survey
FEATURE : Kenmore 11
LOCATION : Kenmore Park
INCLINATION : 90°
AZIMUTH :
HOLE NO. : [illegible]
COORDINATES : [illegible]
DEPTH : 90'

LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
Topsoil & some grit & gravel							
Weathered zone & calcrete – banded gneiss completely weathered in upper part to clay, chlorite, grains of quartz feldspar. Yellow brown & white & reddish to stained calcrete, less common past 15'.		[illegible]/71	100	25	<3		
		88	55	60	<3		
		89	340	60	<3		
Acid Gneiss – with hornblende. Medium grained, yellow brown to light grey. Still moderately weathered, becoming hard fresh past 27'.		90	350	40	<3		
Altered zone – softer with abundant dolerite, partly altered with veins of quartz, iron stained		91	410	75	<3		
Altered weathered zone – mainly dolerite & inclusions of highly weathered gneiss.							
Banded Gneiss – with hornblende. Medium grained, grey. Slightly altered near contact with above zone, becoming very hard past 43', some thin softer bands.	[illegible] specks of [illegible]-ite.	92	190	60	<3		
		93	225	20	<3		
Banded Gneiss – as above. Softer, partly altered. Minor inclusions of dolerite.		94	50	25	<3		
Banded Gneiss – minor hornblende, magnetite, biotite rich bands & some coarse grained feldspar, quartz. Dampness encountered in this zone.		95	25	15	<3		

WATER CUT : Not Obs.
STATIC LEVEL : 65'

PLAN REF : 72-944
SAMPLE SHEET REF. AN 2374/72
SAMPLE Nos. S.3587/71 TO S.3596/71

DRILL NO : 63
TYPE : Mayhew
DRILLER : [illegible]
START : 30.10.71
FINISH : 1.11.71

LOGGED BY : D.J. Scott
DATE : 13.12.71
DRG NO.
SHEET 1 OF 2

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey

FEATURE : Kenmore II

LOCATION Kenmore Park. INCLINATION : -60° AZIMUTH : ..... DEPTH : 54'

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO : [illegible]

COORDINATES : [illegible]

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil		93597/71	55	20	<3		
10	Weathered zone & calcrete - highly weathered Banded Gneiss & abundant nodular calcrete in upper part of zone.		98	25	25	3		
			99	45	25	<3		
5 20	Banded Gneiss - Yellow brown to light grey & few narrow hornblende rich bands. Still moderately weathered fairly soft.		600	160	35	<3		
			01	120	35	<3		
	Hornblende Gneiss - medium grained, dark grey-black. Moderately hard, somewhat altered, with abundant chlorite		02	930	30	3		
	Altered zone - highly decomposed Banded Gneiss inclusions, weathered to clay, carbonate, chlorite. Soft.		03	950	5	<3		
	Acid Gneiss - partly altered like above-zone. Becoming hard, less altered past 54'. Occasional thin <6" softer band & some thin hornblende rich zones up to 1'.		04	810	10	<3		
20	Banded Gneiss softer, slightly altered.	Few specks & small blebs of sulphide through out this zone.						
30	Banded Gneiss - Light grey-blue. Becoming very hard, fresh. Narrow hornblende rich bands.		05	360	25	<3		

WATER CUT : .....

STATIC LEVEL : .....

PLAN REF : 74-44

SAMPLE SHEET REF. 2324/72

SAMPLE Nos. 93597/71 TO 93605/71

DRILL NO. 03

TYPE [illegible]

DRILLER [illegible]

START 31.1.71

FINISH 2.2.71

LOGGED BY : [illegible]

DATE 17.12.71

DRG. NO

SHEET 1 OF 2

REF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : NW Survey
FEATURE : Kenmore Hill
LOCATION : Kenmore Hill
INCLINATION : 90°
AZIMUTH :
HOLE NO. : [illegible]15
COORDINATES : [illegible],200[illegible],50[illegible]
DEPTH : 100'

SCALE (FEET)	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
80	(Cont.) Banded Gneiss – as before		33606/71	150	50	<3		
	Biotite Gneiss. Dark grey-black. Abundant biotite, large flakes. Softer	Specks of pyrite, chalcopyrite						
90	Acid Gneiss – very hard & few narrow hornblende rich bands. Pegmatite.		07	25	50	<3		
100	100' Foot of hole Note: Dry hole – only slight dampness near 85'.							

WATER CUT :
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF. [illegible].2574/72
SAMPLE Nos. 33597/71 TO 33607/71

DRILL NO. 63
TYPE : Mayhew
DRILLER : [illegible] Ignitter
START : 1.11.71
FINISH : 2.11.71

LOGGED BY : [illegible]
DATE : 17.12.71
DRG NO.
SHEET 2 OF [illegible]

R.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : [illegible] Survey

FEATURE : Kenmore II

LOCATION : Kenmore Pk. INCLINATION : -60° AZIMUTH : .....

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : [illegible]16

COORDINATES : [illegible]

DEPTH : [illegible]

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil & some gravel		[illegible]/71	110	15	<3		
10	Weathered zone – calcrete. Very weathered. Acid Gneiss & some biotite rich gneiss. Abundant calcrete – iron stained in part.		09	170	25	3		
5 20	Weathered zone – as before. Biotite more common & chlorite epidote. Carbonate less abundant.	Some very faint copper staining in parts.	10	330	25	3		
	Acid Gneiss – still moderately weathered. Clay in part. Biotite rich bands common.		11	170	25	<3		
	Quartz – clear white minor felspar. Biotite. Large grains.							
15 10	Acid Gneiss – minor pegmatite. Moderately soft, powdery in parts with occasional harder bands. Four narrow biotite rich bands up to 6". Red ocherous haematite occurs in places.		12	420	25	<3		
			13	590	25	<3		
			14	1000	60	<3		
25	Altered zone – Hornblende Gneiss & Dolerite – much altered, soft – abundant chlorite, epidote, clayey becoming damp.							
20	Banded gneiss – still partly altered softer with numerous short biotite rich bands with occasional large flakes. Becoming harder, fresh past 77'.	Specks of sulphide in biotite rich bands.	15	390	25	<3		
			16	390	25	3		

WATER CUT : Not Obs.

STATIC LEVEL : 72' ....

PLAN REF : 72-944 ....

SAMPLE SHEET REF. ... 374/72.

SAMPLE Nos. [illegible]/71 TO [illegible]/71

DRILL NO : 63 .....

TYPE : Mayhew ...

DRILLER : [illegible] Hamilton

START : 2.11.71 ...

FINISH : 2.11.71 ...

LOGGED BY : D. J. [illegible]

DATE : 17/12/71.

DRG NO.

SHEET 1 OF 2

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : [illegible] Survey

FEATURE : Lenmore II

LOCATION : Lenmore [illegible]

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : [illegible] 16

COORDINATES : 6608[illegible], 4[illegible]

INCLINATION : 60°

AZIMUTH : [illegible]

DEPTH : 92'

METRES / SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
30 / 90	(cont.) Banded Tactite as before	Specks of sulphide (as before)	93617/71	310	40	<3		
	92' Foot of Hole							

WATER CUT : Not Obs.

STATIC LEVEL : 72'

PLAN REF : 72-948

SAMPLE SHEET REF. : 2374/72

SAMPLE Nos : 93605/71 TO 93617/71

DRILL NO. : 60

TYPE : Airthew

DRILLER : [illegible] Armitter

START : 2.11.71

FINISH : 2.11.71

LOGGED BY : J.B. Jastr

DATE : 17.12.71

DRG. NO.

SHEET 2 OF 2

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : ...W. SURVEY... LOG OF ROTARY – AIR DRILL HOLE HOLE NO. : ...[illegible]...

FEATURE : ...[illegible]... COORDINATES : ...[illegible]...

LOCATION : ...[illegible]... INCLINATION : ...90°... AZIMUTH : ..... DEPTH : ...[illegible]...

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil		3627 71	200	15	<3		
10	Weathered zone – calcrete – abundant white nodular calcrete in upper part & highly weathered gneiss to clay, chlorite, fledspar, quartz grains with abundant small flakes of biotite.		28	1200	60	3		
20			29	1200	35	<3		
5	Biotite Gneiss – medium grained grey green. Still much weathered, soft & minor carbonate							
	Acid gneiss – coarse grained. Yellow-brown moderately weathered, becoming hard, fresh past 21'. Few thin biotite rich bands.		30	830	30	<3		
15			31	980	15	<3		
10	Banded Gneiss – with minor hornblende, magnetite. Medium grained, grey. Hard, fresh.	Occasional small specks of sulphide	32	710	10	<3		
	Acid Gneiss – light grey. Very [illegible]							
	Altered zone – softer, weathered gneiss with abundant biotite flakes & inclusions of dolerite. Clayey in part, slightly moist.	Trace of chrysocolla & some chrysocolla & some malachite. Few specks of sulphide in less altered rock.	33	1000	20	<3		
30	Banded Gneiss – somewhat altered but harder than above zone.	Occasional specks of sulphide.	34	310	35	5		
70	Altered zone-grey-olive-abundant biotite & clay. Very soft, damp.	Specks of disseminated sulphide in harder rock						
	Banded Gneiss – light grey, hard fresh. Note: cuttings here much contaminated with softer rock from above zones.	Occasional specks of sulphide.	35	1200	40	<3		
100								

WATER CUT : .....
STATIC LEVEL : .....

PLAN REF : 72-844...
SAMPLE SHEET REF. ...2374/72...
SAMPLE Nos. 3627, 71... TO. 3657, 71...

DRILL NO. : 63.....
TYPE : ...Rotary...
DRILLER : W. Ligmitter
START : 3.11.71...
FINISH : 12.11.71...

LOGGED BY : D.J. Scott
DATE : 15.11.71
DRG NO.
SHEET ...1... OF 2...

P.F. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : [illegible] Survey

FEATURE : [illegible]

LOCATION : [illegible] INCLINATION : 90° AZIMUTH : .....

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : [illegible]

COORDINATES : [illegible]

DEPTH : [illegible]

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 / 0	Topsoil-red brown, sand[illegible] grit.		[illegible] 71	[illegible]	40	<		
10	Weathered zone [illegible] calcrete - mainly acid Gneiss & some hornblende gneiss completely decomposed in upper part	[illegible] traces of copper staining [illegible] pyrite [illegible] magnetite.	[illegible]	[illegible]	90	<3		
5 / 20	Banded Gneiss - with numerous hornblende rich bands, inclusions of coarse grained feldspar, quartz. Moderately weathered, becoming harder, fresh past 25'.		40	810	55	<3		
	Acid Gneiss - [illegible] Fe. small garnets. Hard.		41	160	90	<3		
	Banded Gneiss - with hornblende, magnetite. Numerous thin pyroxene rich bands. Becoming very hard, unaltered.		42	[illegible]	13	<3		
10			43	530	80	<3		
			44	380	80	<3		
	Banded Gneiss - as above, partly altered.							
	Biotite gneiss - dark grey to black. Softer with abundant biotite		45	310	100	3		
15	Banded Gneiss - as before							
20	Biotite Gneiss - softer altered		46	1000	65	3		
	Altered zone - banded gneiss with abundant biotite in part. rich altered, clayey, damp. Dark yellow brown.	[illegible] disseminated sulphide in less altered rock.						

WATER CUT : .....

STATIC LEVEL : .....

PLAN REF : 72-9-4

SAMPLE SHEET REF. : [illegible]/72.

SAMPLE Nos. [illegible]/71 TO [illegible]/71.

DRILL NO. : 53

TYPE : Rayco

DRILLER : [illegible]

START : [illegible].11.71

FINISH : [illegible].11.71

LOGGED BY : [illegible]

DATE : 20.12.71

ORGT. :

SHEET 1 OF [illegible]

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : M.T. SURVEY
FEATURE : [illegible]
LOCATION : [illegible] INCLINATION : [illegible]° AZIMUTH : [illegible]

HOLE NO. : [illegible]18
COORDINATES : [illegible]
DEPTH : [illegible]'

METRES / SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	(cont.) Banded [illegible] – [illegible] altered–as before. Biotite, [illegible] more abundant in this zone. Becoming damper.		[illegible] 71	[illegible]	[illegible]	47		
90	85' Foot of Hole Note: Hole stopped due to compress – rods binding in hole.							
280								

WATER CUT : [illegible]
STATIC LEVEL : [illegible]

PLAN REF : [illegible]
SAMPLE SHEET REF. [illegible]
SAMPLE Nos. [illegible] TO [illegible] 71.

DRILL NO. : [illegible]
TYPE : [illegible]
DRILLER : [illegible]
START : [illegible]
FINISH : [illegible]

LOGGED BY : [illegible]
DATE : [illegible]
DRG. No.
SHEET [illegible] OF [illegible]

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : W. SURVEY
FEATURE : KENMORE II
LOCATION : KENMORE PK
INCLINATION : 90°
AZIMUTH :
HOLE NO. : 10
COORDINATES : 9000N, 900E
DEPTH : 60'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil & some grit & gravel near surface. 3'		3648/71	25	25	3		
10	Weathered zone & calcrete. Highly weathered gneiss-soft, friable clay-in part & chlorite. Nodular calcrete white & some chert with Mn. staining.		49	25	30	<3		
5 20	Banded Gneiss - minor hornblende still much weathered in upper part, becoming harder.		50	45	45	3		
			51	50	40	3		
15	Banded Gneiss - with [illegible]. Medium grained. Light grey with numerous thin, up to 6", biotite, hornblende rich bands. Very hard, fresh past 35'.		52	90	35	3		
10			53	45	50	3		
			54	25	40	<3		
20	60' Foot of Hole Note: No water encountered in this hole							
30								

WATER CUT :
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF. : 2308/72
SAMPLE Nos. 3648/71 TO 3654/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : P. Lightter
START : 4.11.71
FINISH : 4.11.71

LOGGED BY : D.C. Scott
DATE : 20.12.71
DRG. NO.

SHEET 1 OF 1

REF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

LOG OF ROTARY – AIR DRILL HOLE

PROJECT : ...EL SURVEY...
FEATURE : KENMORE II...
LOCATION : KENMORE PK ... INCLINATION : ...90°..... AZIMUTH : .....

HOLE NO : ... 20 .....
COORDINATES : 20[illegible] N, 1990 E
DEPTH : ... 100' .....

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil – red brown & grit & gravel.		73655/71	120	15	<3		
		Weathered zone & minor calcrete. Mainly very weathered acid gneiss to quartz-feldspar grains & clay.		56	460	10	<3		
	10	Abundant haematite. Narrow band of calcrete & nodules in upper part.		57	850	40	<3		
5		Acid Gneiss – very coarse grained. Light yellow brown. Still much weathered, moderately hard.							
	20			58	1500	25	<3		
		Micaceous zone – very [illegible] flakes up to ½" in diameter, much altered with clayey material, quartz, feldspar grains. Dark yellow-green. Very soft.		59	1300	5	3		
10		Altered zone – mainly banded gneiss with bands of hornblende rich gneiss & tachylite. Soft & coarse harder near 46', with clay, epidote, chlorite. Yellow-brown with some iron staining.		60	540	55	3		
		Banded Gneiss – hornblende rich. Grey-green, still moderately altered with softer bands.	Specks of sulphide	61	3800	20	45		
15		Biotite Gneiss – altered, fine-mined dark grey to yellow-brown. Moderately hard to soft clayey in parts, iron stained grains of blue-green quartz observed. Slightly moist in bottom part.	Up to 5% pyrite chalcopyrite disseminated & small blebs. Suspect streaks & small flakes molybdenite	62	2600	15	45		
		Altered zone – gneiss as above. Softer Light brown, clayey, damp in part with harder bands.	Abundant sulphide stringers malachite in altered rock	63	3200	15	35		
20		Quartzite minor feldspar, biotite, magnetite few small garnets. Fine grained, light grey. Hard to very hard with few thin altered soft bands. Some blue green quartz.	Specks & blebs of sulphide	64	1800	5	6		

WATER CUT : Not Obs.
STATIC LEVEL : 58'

PLAN REF : 72-944
SAMPLE SHEET REF : 2593/72
SAMPLE Nos : 73655/71 TO 73666/71

DRILL NO : .....63.....
TYPE : Mayhew
DRILLER : J. Lightfoot
START : 5.11.71
FINISH : 5.11.71

LOGGED BY : D.C. Teots
DATE : 22.11.71
DRG NO :
SHEET ... 1 ... OF ... 2 ...

RF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : MV. Survey.... FEATURE : [illegible] II.... LOCATION : [illegible] INCLINATION : ..... 90..... AZIMUTH : ..... DEPTH : ..100'.....

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO : ...12/20..... COORDINATES : 3000 ,4000

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 80	Quartzite – as before. Few narrow bands of Gneiss	As before	23665/71	1000	5	3		
	Dolerite-fine grained, dark grey-blue	Specks of disseminated sulphide						
90	Quartzite – as before							
	Banded Gneiss – with hornblende & abundant magnetite. Hard, fresh. Blue grey. Blue-green quartz.	Specks of sulphide Occasional small specks of pyrite	66	240	25	3		
5 100	100' Foot of Hole							

WATER CUT : Nat. obs.
STATIC LEVEL : 58'.....

PLAN REF : 72-944.....
SAMPLE SHEET REF. No. : 293/72.....
SAMPLE Nos. : 23655/71 TO 23666/71

DRILL NO. : 63.....
TYPE : Mayhew.....
DRILLER : J. Pignitter
START : 5.11.71...
FINISH : 5.11.71...

LOGGED BY : D.C. [illegible]
DATE : 22.12.71.
DRG. NO.

SHEET 2 OF 2

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : ...SURVEY...
FEATURE : ...
LOCATION : ...

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : ...

HOLE NO. : ...
COORDINATES : ...
DEPTH : ...

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	**Topsoil**		G3675/71	180	15	<3		
	Weathered zone of calcrete. Highly weathered acid gneiss & biotite gneiss becoming more common near 14' Iron staining common throughout + some purple manganese stains	Faint copper staining near 14'	76	720	5	3		
10			77	2500	5	3		
5	**Micaceous zone – biotite very abundant, flakes up to ½" soft, altered dark yellow green. Inclusions of altered gneiss, iron stained + chlorite and clay.**	Traces of copper staining through out this zone – mainly malachite and some chrysocolla						
20	**Altered zone – less biotite than above mainly biotite gneiss + harder quartz rich bands. Much altered, soft.**		78	5100	15	15		
	Micaceous zone – as before. Biotite flakes smaller, less abundant more highly altered. Red brown, iron staining common + inclusions of banded gneiss – highly altered to clay, chlorite – very soft powdery in part.		79	3300	5	25		
10	**Altered zone – as before. Still much altered, moderately soft with inclusions of dark, fine grained dolerite.**	Faint traces of copper staining	80	1700	15	5		
	Banded gneiss + occasional garnets and horndblende. Grey, moderately altered, becoming harder past 50'		81	750	60	<3		
20	**Altered zone – very soft, powdery. Biotite rich in part**		G3682/71	720	35	<3		
30	**62' Foot of Hole** **Note:(1) Hole stopped due to cave in at approx. 35' – rods badly stuck in soft zone here.** **(2) Hole KM22 at 840CN, 910W abandoned at 5' due to boulder at side of hole at 2.5' deflecting bits – impossible to drill past 5'**							

WATER CUT : ...
STATIC LEVEL : ...

PLAN REF : 72-944
SAMPLE SHEET REF. AN2546/72
SAMPLE Nos. G3675/71 TO G3682/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F.Pignitter
START : 8/11/71
FINISH : 8/11/71

LOGGED BY D.C. Scott
DATE 23/12/71
ORG NO.
SHEET 1 OF 1

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT N.W. Survey
FEATURE Kenmore II
LOCATION KENMORE PARK

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : ..... DEPTH : 73'

HOLE NO. : KM24
COORDINATES 1085ON 100W

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil – red brown, sandy and some grit and gravel							
	Weathered zone+calcrete – mainly very weathered banded gneiss with abundant flakes of biotite, rock much altered with chlorite, epidote, quartz and feldspar grains + some very coarse grained feldspar crystals. Calcrete nodules, buff to light brown abundant in upper part of zone.		G7001/02	30	50	<3	3	75
			02	45	65	<3	5	70
10			03	45	50	<3	5	55
15	Banded gneiss – quartz rich in part Light grey green. Fine-medium grained Abundant thin biotite, hornblende rich bands, partly altered, moderately weathered.		04	410	25	<3	5	150
20								
30			05	620	35	3	5	180
40	Banded gneiss with hornblende and occasional small garnets. Medium grained, grey. Partly altered with chlorite, epidote, becoming hard, less altered past 40'. Few narrow 3" altered bands with yellow brown quartz feldspar.		06	35	25	<3	5	150
50	Altered zone – softer + chlorite, carbonate							
	Banded gneiss – as above – fine grained		07	25	30	<3	5	130
60	Banded gneiss – quartz rich, medium grained, light grey. Magnetite abundant in part. Becoming very hard		08	25	25	3	5	220
70	Banded gneiss – as at 52'60'		G7009/71	120	10	<3	5	210
	73' Foot of Hole							

WATER CUT : l
STATIC LEVEL : .....

PLAN REF : 72-944
SAMPLE SHEET REF. AN2773/72
SAMPLE Nos. G7001/72 TO G7009/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F.Pignitter
START : 13/11/71
FINISH : 15/11/71

LOGGED BY : D.C. Scott
DATE : 6/1/72
DRG I.D.
SHEET 1 OF 1

RF. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N. W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : KM25
COORDINATES : 10800N 100W
INCLINATION : 90° AZIMUTH : DEPTH : 70'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil		G7010/71	310	15	<3	5	85
10	~~Weathered zone + calcrete – very~~ weathered. Banded gneiss + coarse grained feldspar inclusions. Upper part completely decomposed. Calcrete nodules and coating in this zone. Biotite rich near 10'.		11	1100	15	<3	5	220
5 20			12	190	35	<3	<5	200
	Banded gneiss – medium grained. Grey to black with narrow hornblende and possibly pyroxene rich bands. Minor magnetite. Rock hard, fresh from 22'.		13	100	35	<3	<5	150
30	Acid gneiss – with minor hornblende, magnetite medium-coarse grained, light grey, hard. Few thin biotite rich bands.		14	60	10	<3	5	150
40			15	35	15	<3	<5	230
15 50	~~Softer zone with chlorite, carbonate~~ Acid gneiss as above. Quartz rich in part. Fine grained magnetite fairly common. Very hard past 56'.		16	45	20	<3	5	130
60 20 70			G7017/71	30	20	<3	5	150
	70' Foot of Hole.							
80								

WATER CUT : Dry
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF AN2773/72
SAMPLE Nos G7010/71 TO G7017/71

DRILL NO. : 63'
TYPE : Mayhew
DRILLER : F. Pignitter
START : 15/11/71
FINISH : 15/11/71

LOGGED BY : D.C. Scott
DATE : 6/1/72
DRG NO.
SHEET 1 OF 1

P.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N S.W. Survey

FEATURE : Kenmore II

LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : KM28

COORDINATES : 10400N 400W

INCLINATION : 90° AZIMUTH : DEPTH : 70'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil – sandy + grit and gravel		G7033/71	640	10	3	15	75
	10	Weathered zone + calcrete. Highly weathered acid + banded gneiss fragments to clay + chlorite and quartz, feldspar grains. Biotite flakes up to ⅛" abundant in part. Nodular buff to brown calcrete + light red chert iron stained also some manganese staining.		34	700	10	<3	5	180
5				35	630	35	<3	5	310
	20	Banded gneiss – Medium grained, light grey to yellow brown. Numerous short biotite and hornblende rich bands 3" – 9". Becoming hard, fresh past 25' with few thin slightly altered bands with epidote and red chert.	Occasional small specks of sulphide in biotite rich bands in this zone.	36	220	25	<3	5	150
	30			37	180	15	<3	<5	160
10	40	Biotite gneiss – medium grained dark grey with few small garnets, magnetite							
		Acid gneiss – quartz rich, minor biotite and magnetite. Buff to light grey. Very hard.		38	45	10	<3	5	95
15	50			39	85	10	<3	<5	95
	60								
20	70	Banded gneiss – with hornblende, magnetite – Medium grained, grey, Hard with few short softer biotite rich bands		G7049/	45	20	<3	<5	85
		70' Foot of Hole							
	80								

WATER CUT : Dry

STATIC LEVEL :

PLAN REF : 72-944

SAMPLE SHEET REF : AN2773/72

SAMPLE Nos : G7033/71 TO G7040/71

DRILL NO. : 63

TYPE : Mayhew

DRILLER : F.Pignitter

START : 16/11/71

FINISH : 17/11/71

LOGGED BY : D.C.Scott

DATE : 7/1/72

DRS NO :

SHEET 1 OF 1

P.F. No. 510216 MB

DEPARTMENT OF MINES -- SOUTH AUSTRALIA

PROJECT : N.W. SURVEY
FEATURE : KENMORE II
LOCATION : KENMORE PARK

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : KM 29
COORDINATES : 10,400N 500W
INCLINATION : -90° AZIMUTH : - DEPTH : 70'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil - red-brown, sandy							
		Weathered zone + Calcrete. Mainly large feldspar, quartz grains from highly weathered acid gneiss & clay & chlorite. Minor Calcrete buff to brown iron stained, mostly in upper 10'. Becoming harder less weathered past 15'.		G7041/71	210	20	<3	5	45
	10			42	390	20	<3	5	75
3				43	350	15	<3	<5	75
	20	Acid Gneiss - Coarse grained, light grey to yellow brown. Fairly hard with softer, slightly altered bands, with yellow feldspar, chlorite & dark green epidote. Few narrow biotite, hornblende rich bands.		44	460	25	<3	<5	90
10	30			45	3900	25	<3	<5	200
		Altered Zone - softer with abundant fine grained dolerite. Biotite flakes abundant in parts + highly altered gneiss to clay chlorite.	Traces of Copper staining chrysocolla & malachite mainly on dolerite.	46	1500	20	<3	<5	140
	40			47	390	80	<3	<5	160
15	50	Acid Gneiss - quartz rich + hornblende. Medium grained, light grey magnetite common. Moderately hard, with few softer, narrow hornblende rich bands.		48	145	30	<3	5	95
	60								
		Altered Zone-as before, slightly damp.							
20		Banded Gneiss - medium grained, light grey-green with magnetite & hornblende rich bands.		G7049/71	980	30	<3	5	800
	70								
		70' Foot of hole							
	80								

WATER CUT : DRY
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF. : AN2773/72
SAMPLE Nos. G7041/71 TO G7049/71

DRILL NO. : 63
TYPE : MAYHEW
DRILLER : F. PIGNITTER
START : 17.11.71
FINISH : 18.11.71

LOGGED BY : D.C. SCOTT
DATE : 7.1.72
CHECKED :
SHEET 1 OF 1

REF. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : KM30
COORDINATES : 10400N 800W
INCLINATION : 90° AZIMUTH : DEPTH : 100'

METRES SCALE 1 INCH = 10 FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Topsoil – red brown, sandy							
	Weathered zone – calcrete – Mainly highly weathered acid gneiss to feldspar, quartz grains, chlorite biotite and clay. Light grey green. Minor calcrete coating in upper part of zone. Harder, less weathered past 20'.		G7050/71	25	20	<3	<5	25
			51	15	50	<3	<5	55
			52	15	25	<3	<5	45
	Banded gneiss – Medium grained light grey green to grey. Still partly weathered with chlorite yellow-brown feldspar, quartz. Numerous short up to 9" coarse grained feldspar rich bands.		53	15	70	<3	<5	55
	Acid gneiss – Medium to coarse grained Buff to light grey. Hard, fresh							
	Banded gneiss – as before. Harder		54	50	30	<3	<5	55
	Dolerite. Fine grained, dark grey brown with small red brown weathered olivine? crystals. Partly altered, iron stained + carbonate. Few inclusions of gneiss and white quartz.		55	85	55	<3	<5	50
	Acid Gneiss as before with some magnetite.		56	60	50	<3	<5	55
	Dolerite – as before							
	Acid gneiss – medium grained. Light grey to buff. Magnetite relatively abundant. Slightly altered near contact with dolerite, with epidote chlorite. Becoming very hard, light grey unaltered past 70'. Very occasional thin – up to 6" biotite rich bands.		57	30	35	<3	<5	45
			G7058/71	15	25	<3	<5	25

WATER CUT Not obs.
STATIC LEVEL 75'

PLAN REF 72-944
SAMPLE SHEET REF KM2773/72
SAMPLE Nos G7050/71 TO G7060/71

DRILL NO 63
TYPE Mayhew
DRILLER S. Pignitter
START 18/11/71
FINISH 18/11/71

LOGGED D.C. Scott
DATE 10/1/72
CHECKED
SHEET 1 OF 2

RE. No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N. W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : .....

HOLE NO. : KM.30
COORDINATES : 10400N 600W
DEPTH : 100'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
30	Acid gneiss – as before		G7059/71	15	25	<3	<5	30
90			G7060/71	5	30	<3	<5	55
100	100' Foot of Hole							

WATER CUT Not obs.
STATIC LEVEL : 75'

PLAN REF : 72-944
SAMPLE SHEET REF : AN2773/72
SAMPLE Nos : G7059/71 TO G7060/71

DRILL NO. 63
TYPE Mayhew
DRILLER F. Pignitter
START 18/11/71
FINISH 18/11/71

LOGGED BY D.C. Scott
DATE 10/1/72
ORG. I.C.

SHEET 2 OF 2

REF. No. 510216 MB

PROJECT : N-W SURVEY
FEATURE : Kenmore II
LOCATION : Kenmore Park

DEPARTMENT OF MINES – SOUTH AUSTRALIA
LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : K M 31
COORDINATES : 10,400N550W
INCLINATION : 90° AZIMUTH : - DEPTH : 100'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil + grit & some gravel.		G7061/71	50	10	<3	5	25
10	Weathered zone + calcrete - Highly weathered. Acid Gneiss to feldspar, quartz grains, chlorite, biotite & clay. Some very coarse grained crystals of feldspar. Only minor calcrete in upper 5' of zone - coating on Gneiss fragments.		62	50	15	<3	<5	50
15			63	85	30	<3	<5	65
20	Acid Gneiss - Medium grained. Light grey - yellow brown. Still partly weathered, becoming harder, fresh past 23'. Few narrow - up to 6" - biotite, hornblende rich bands. Magnetite abundant in parts. Very hard past 65'. Only minor variations throughout.		64	65	35	<3	<5	75
30 10			65	25	25	<3	<5	55
40			66	10	25	<3	<5	35
15 50			67	15	25	<3	<5	50
60			68	25	25	<3	<5	35
20 70			G7069/71	25	30	<3	<5	45
80								

WATER CUT : Dry
STATIC LEVEL :

PLAN REF : 72-944
SAMPLE SHEET REF. AN2773/72
SAMPLE Nos. G7061/71 TO G7071/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F. Pignitter
START : 18/11/71
FINISH : 19/11/71

LOGGED BY : D.C.Scott
DATE : 10/1/72
DRG NO.
SHEET 1 OF 2

P.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : .....

HOLE NO. : KM31
COORDINATES : 10 400N 550W
DEPTH : 100'

METRES / SCALE / FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Acid Gneiss as before		G7070/71	5	25	<3	<5	35
90			G7071/71	25	25	<3	<5	45
100	100' of Hole							

WATER CUT Dry
STATIC LEVEL : .....

PLAN REF : 72-944
SAMPLE SHEET REF. AN2773/72
SAMPLE Nos. G7061/71 TO G7071/71

DRILL NO. : 63
TYPE Mayhew
DRILLER F. Pignitter
START 18/11/71
FINISH 19/11/71

LOGGED BY : D.S. Scott
DATE : 10/1/71
DRG. NO.

SHEET 2 OF 2

P.F. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : .....

HOLE NO. : KM32
COORDINATES : 1090W 8000N
DEPTH : 66'

METRES	SCALE	FEET	LITHOLOGY	MINERALIZATION
0		0	Topsoil redbrown sandy + grit and some gravel near 4'	
		10	Weathered zone. Highly weathered Acid gneiss – coarse grained + some Biotite gneiss to chlorite and clay. Only very minor calcrete in upper 5'. Coating on gneiss fragments. Few fragments of chert, iron and manganese stained.	
5		20	Banded gneiss, medium grained, grey still fairly soft in upper part, somewhat altered with biotite rich bands. Harder, fresher past 25'	
		30		
10			Altered zone – very soft with chlorite carbonate.	
		40	Acid gneiss, medium grained, light grey, to buff with magnetic and occasional biotite, hornblende rich bands. Becoming very hard past 35'	
			Altered zone – as before	
20		50	Acid Gneiss – as before. Slightly softer light yellow brown near altered zone. Very hard past 50'	
		60		
		70	Altered zone as before. Water encountered.	
			66' Foot of Hole Note: Hole stopped due to water cut at 64'. Large amount possibly from diamond drill working in area adjacent to this hole.	

SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
G7072/71	35	20	<3	10	35
73	50	25	<3	<5	50
74	60	25	<3	<5	85
75	15	25	<3	<5	55
76	15	20	<3	<5	35
77	15	20	<3	<5	40
78	10	25	<3	<5	45
G7079/71	20	20	<3		

WATER CUT 64'
STATIC LEVEL not obs.

PLAN REF : 72-944
SAMPLE SHEET REF. AN2723/72 & AN2965/72
SAMPLE Nos. G7072/71 TO G7079/72

DRILL NO. 63
TYPE Mayhew
DRILLER F. Pignitter
START 19/11/71
FINISH 20/11/71

LOGGED BY : D.C. Scott
DATE : 10/1/72
DRG. NO.
SHEET 1 OF 1

F.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey — LOG OF ROTARY – AIR DRILL HOLE — HOLE NO. : KM33

FEATURE : Kenmore II — COORDINATES : 8000N 1015W

LOCATION : Kenmore Park — INCLINATION : 90° — AZIMUTH : ..... — DEPTH : 87'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
	0	Topsoil – red brown sandy + grit and some gravel.		G7080/71	75	20	4		
	10	Weathered zone – Calcrete – Highly weathered acid gneiss with some biotite rich bands with chlorite, epidote and clay. Minor calcrete coating on gneiss in upper few feet of zone. Iron staining common throughout – light brown.		81	130	25	3		
5	20	Acid gneiss – medium to coarse grained. Light grey brown. Fairly soft, weathered, becoming harder, less weathered past 20' with some biotite hornblende rich bands. Somewhat altered, softer past 26' with few inclusions of dolerite or tachylitec veins.		82	130	25	3		
	30	Altered zone – much altered with chlorite, epidote, coarse grained yellow brown feldspar quartz, biotite flakes. Grey, softmainly banded gneiss + few inclusions of dolerite		83	75	35	3		
10	40	Banded gneiss – with horblende, medium grained grey. Hard, little altered.		84	200	20	3		
		Dolerite, fine grained, dark grey with weathrered olivine crystals							
		Acid gneiss – Coarse grained, light grey with few biotite, hornblende rich bands. Hard, fresh.		85	720	10	3		
15	50	Banded Gneiss with hornblende, pyroxene and magnetite. Partly altered with occasional inclusion of tachylite, moderately hard with softer bands. Damp zone encountered at 66'	small specks of sulphide	86	1150	25	4		
	60			87	1400	20	3		
20	70	Biotite Gneiss, fine to medium grained, grey soft, partly altered Some blue green quartz and chlorite also coarse feldspar.	Fairly abundant disseminated & specks of pyrite, chalcopyrite						
		Banded Gneiss – occasional small garnets. Fine to medium grained, light grey. Very hard, fresh with few short softer zones.	Occasional specks of pyrite	G7088/71	840	10	4		
	80								

WATER CUT 66'

STATIC LEVEL : Not obs.

PLAN REF : 72-944

SAMPLE SHEET REF. AN2965/72

SAMPLE Nos G7080/71 TO G7088/71

DRILL NO. 63

TYPE Mayhew

DRILLER E.Pigmitter

START 20/11/71

FINISH 20/11/71

LOGGED BY : D.C.Scott

DATE : 11/1/72

DRG. NO.

SHEET 1 OF 2

RF No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT: N.W. Survey
FEATURE: Kenmore II
LOCATION: Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION: 90° AZIMUTH: .....

HOLE NO.: KM33
COORDINATES: 8000N 1015W
DEPTH: 87'

METRES / SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	Banded gneiss asbefore	As before						
30	Biotite gneiss - dark grey, altered in part to chlorite, clayey and some coarse grained quartz, feldspar. Numerous large flakes of biotite.	Abundant blebs & disseminated pyrite, and chalcopyrite.	G7089/71	4100	10	40		
90	87' Foot of Hole Note: Hole stopped due to water very abundant past 75' - samples somewhat contaminated past this point.							
100								

WATER CUT: 66'
STATIC LEVEL: .....

PLAN REF: 72-944
SAMPLE SHEET REF: AN2965/72
SAMPLE Nos.: G7080/71 TO G7089/71

DRILL NO: 63
TYPE: Mayhew
DRILLER: F.Pignitter
START: 20/11/71
FINISH: 20/11/71

LOGGED BY: D.C. Scott
DATE: 11/1/72
DRG NO.:

SHEET 2 OF 2

R.F. No. 510216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT : N.W. Survey
FEATURE : Kenmore II
LOCATION : Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

HOLE NO. : KM34
COORDINATES : 7200N 1100W
INCLINATION : 90°
AZIMUTH : .....
DEPTH : 85'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
	0	Topsoil, red, brown, sandy							
		Weathered zone and calcrete. Mainly weathered banded gneiss and coarse grains of feldspar, quartz. Fairly abundant flakes of biotite in parts. Nodular buff to red brown calcrete common in upper 5' of zone + some iron stained chert. Traces of manganese		G7090/71	190	10	4		
				91	1300	10	3		
	10								
		Banded gneiss – medium grained, grey mostly hard with softer biotite, hornblende rich bands. Still altered in part with chlorite, some clayey material. Fragments of chert down to 20'. Some iron staining.		92	720	15	3		
5	20								
				93	1100	5	3		
		Acid gneiss – medium to coarse grained, light grey. Occasional small garnets. Fairly numerous thin biotite rich bands, very hard past 35'							
	30								
10				94	370	5	<3		
	40								
				95	1450	25	3		
		Altered zone – softer altered banded gneiss with hornblende, pyroxene and inclusions of fine grained dolerite iron stained.							
15	50								
		Acid gneiss – as before. Quartz rich, very hard.							
		Biotite gneiss – black with large flakes/specks of sulphide		96	240	45	3		
		Acid gneiss with minor hornblende							
	60	Banded gneiss – with minor hornblende Medium grained, grey. Softer, partly altered. Some coarse grained feldspar, quartz, also large grains of blue green quartz. Becoming damp past 70'	Occasional specks of pyrite	97	100	75	<3		
20									
	70								
				G7098/71	790	20	3		
	80								

WATER CUT : 70'
STATIC LEVEL : Not obs.

PLAN REF : 72-944
SAMPLE SHEET REF : AN2965/72
SAMPLE Nos : G7090/71 TO G7099/71

DRILL NO : 63
TYPE : Mayhew
DRILLER : F.Pigmitter
START : 22/11/71
FINISH : 22/11/71

LOGGED BY : D.C.Scott
DATE : 11/1/72
DRG NO.

SHEET 1 OF 2

RF No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT N.W. Survey
FEATURE Kenmore II
LOCATION Kenmore Park

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : .....

HOLE NO. : KM35
COORDINATES 10400N 450W
DEPTH : 90'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0 0	Topsoil-red brown, sandy and grit and gravel.							
	Weathered zone + calcrete. Highly weathered banded gneiss to feldspar, quartz grains + clay, chlorite and biotite flakes, fairly abundant. Nodular calcrete in upper 5' red brown iron stained + some chert.		G7100/71	270	15	<3		
10			01	290	15	3		
	Banded gneiss, medium grained, grey with hornblende rich bands, magnetite. Still partly weathered, becoming harder.		02	1150	25	3		
20	Altered zone – soft, banded gneiss completely decomposed in part to clay chlorite, epidote, large biotite flakes. Yellow.	Traces of copper chrysocolla, malachite	03	1150	35	3		
	Banded gneiss – as before. Partly altered. Yellow grey with chlorite + thin carbonate veins. Moderately hard							
30	Dolerite- fine grained, partly altered							
	Banded gneiss – as before, still partly altered, becoming harder with softer biotite rich bands. Hornblende more common.		04	190	60	3		
40								
	Acid gneiss – coarse grained, light yellow brown. Softer, partly altered Numerous, short up to 6" hornblende rich bands.		05	170	30	3		
50								
	Altered zone – as before, slightly damp.	Traces of chrysocolla						
	Banded gneiss – as before. Moderately hard with short softer bands. Numerous short hornblende rich bands, and some yellow brown feldspar, quartz bands.		06	1450	30	3		
60								
			07	130	45	3		
70								
			G7108/71	460	35	4		
80								

WATER CUT Not obs.
STATIC LEVEL: .....

PLAN REF 72-944
SAMPLE SHEET REF AN2965/72
SAMPLE Nos G7100/71 TO G7109/71

DRILL NO. 63
TYPE Mayhew
DRILLER F. Pignitter
START 22/11/71
FINISH 23/11/71

LOGGED BY : D.C. Scott
DATE : 12/1/72
DRG NO.

SHEET 1 OF 2

P.F. No. S10216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT :N.W. Survey — LOG OF ROTARY – AIR DRILL HOLE — HOLE NO :KM35

FEATURE :Kenmore II — COORDINATES :10400N 450W

LOCATION :Kenmore Park. INCLINATION :90° AZIMUTH : DEPTH :90'

METRES SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
90	continued) Banded Gneiss as before		G7109/71	100	20	3		
90	90' Foot of Hole							
100								

WATER CUT Not obs.
STATIC LEVEL:

PLAN REF 72-944
SAMPLE SHEET REF. AN2965/71
SAMPLE Nos. G7100/71 TO G7109/71

DRILL NO 63
TYPE Mayhew
DRILLER F.Pignitter
START 22/11/71
FINISH 23/11/71

LOGGED BY D.C. Scott
DATE 12/1/72
DRGT.O
SHEET 2 OF 2

RF No. SIO216 MB

DEPARTMENT OF MINES – SOUTH AUSTRALIA

PROJECT N.W. SURVEY
FEATURE KENMORE II
LOCATION KENMORE PARK

LOG OF ROTARY – AIR DRILL HOLE

INCLINATION : 90° AZIMUTH : .....

HOLE NO. : KM36
COORDINATES : 10 400N 150E
DEPTH : 64'

METRES	SCALE FEET	LITHOLOGY	MINERALIZATION	SAMPLE NUMBER	Cu ppm	Ni ppm	Mo ppm	Pb ppm	Zn ppm
0	0	Topsoil							
		Weathered zone - calcrete - highly weathered banded gneiss. Fairly abundant nodular calcrete + chert.		G7110/71	80	30	3		
	10			11	45	95	<3		
		Banded gneiss with hornblende medium grained, grey green with abundant chlorite - epidote. Some coarse grained feldspar. Rock still moderately weathered, fairly hard.		12	290	70	<3		
5	20	Altered zone - gneiss highly altered clay, chlorite, carbonate flakes of biotite, large feldspar, quartz grains, yellow brown. Very soft, slightly moist.	copper staining mainly chrysocola and some malachite	13	3200	40	<3		
	30	Banded gneiss with magnetite. Medium grained, light grey to grey. Biotite rich in parts. Somewhat altered in upper part, becoming hard, less altered past 30'		14	140	25	<3		
10	40								
		Acid gneiss - minor biotite, magnetite. Fine to medium grained very light grey to buff. Very hard past 45' ($1\frac{1}{2}$ hours to drill 6')		15	150	10	<3		
15	50								
				16	120	5	5		
	60			G7117/71	110	5	3		
20		Foot 64' of Hole							
	70								
	80								

WATER CUT : Dry
STATIC LEVEL : .....

PLAN REF : 72-944
SAMPLE SHEET REF : AN2965/72
SAMPLE Nos G7110/71 TO G7117/71

DRILL NO. : 63
TYPE : Mayhew
DRILLER : F.Pignitter
START : 23/11/71
FINISH : 24/11/71

LOGGED BY D.C.Scott
DATE 12/1/72
DRG NO.
SHEET 1 OF 1

P.F. No. SIO216 MB

APPENDIX II

Logs of Diamond Drill Holes
Kenmore II Prospect

...LL DIAMOND DRILL — ASSAY REFERENCE — DATE COMPLETED 16.11.71

NO. 9 — INCLINATION VERTICAL — DRILLER D. WHITE

AL NO. 621/72 — AZIMUTH - — COORDINATES 8400N 925W — LOGGED BY M.N. HIERN (and A.M. PAIN)

DEPTH 180'1" — ELEVATION

ECOVERY LOG		LOG OF DRILL HOLE			ASSAYS						
INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO					
12'2"	0'9"	0	12'12"	Acid Gneiss. Coarse grained, slightly weathered, Some epidote.							
3'10"	0'7"	12'2"	16'0"	Acid Gneiss. As above but with more biotite							
4'0"	1'6"	16'0"	20'0"	Acid Gneiss. Coarse grained as above with some biotite. Garnet at 20'0". Minor epidote. Minor copper staining near top of interval. Banding @ 10° to core axis.							
5'4"	4'8"	20'0"	25'0"	Acid Gneiss. Coarse grained with thin biotite rich bands. Core pitted @ 20'-21' with white chalcedonic silica in fine horizontal veins. Banding @ 20°-30° to core axis.							
6'2"	5'10"	25'0"	31'6"	Acid Gneiss. Coarse grained rock with biotite rich bands becoming slightly finer grained with depth. Blue copper staining at 31'5".							
2'1"	1'3"	31'6"	33'7"	Acid Gneiss. Coarse grained with thin biotite bands and minor garnet. Blue copper staining @ 31'6". Black (manganese?) staining at 32'0".							
4'3"	3'3"	33'7"	37'6"	Acid Gneiss. Coarse grained with some biotite in thin bands. Banding at 30° to core axis.							
2'2"	1'10"	37'6"	37'10"	Biotitic Gneiss. Weathered and decomposed.							
6'0"	4'7"	37'10"	46'0"	Banded Gneiss. A medium grained gneiss with some coarser feldspar-rich zones. Thin biotite rich zones @ 37'10", 39'6", 43'0", 44'6". Banding irregularly developed at 30-35° to core axis. Decomposed epidote zone at 39'6".							
		46'0"	47'0"	Banded Gneiss with large hypersthene clots.							
4'9"	3'5"	47'0"	47'6"	Quartz-feldspar Rock. A coarse grained white rock with one garnet grain.							

RVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO					
11"	7'9"	47'6"	66'0"	Banded Gneiss. A medium grained feldspar-quartz-biotite rock with large hypersthene grains.							
4"	4'4"			Coarse garnet @ 58'8". Mainly fresh except for weathered coarse biotite zones from 49'8"-49'10", 53'6", 61'8", 62'8".							
0"	7'3"	66'0"	67'0"	Acid Gneiss. A coarse-grained rock. Broken and weathered. Some malachite staining on a broken face at 66'0". Some red iron staining.							
		67'0"	69'6"	Banded Gneiss. A medium grained rock with some finer biotite-rich bands. Banding at 35°-40° to core axis. Rock is fairly fresh; less weathered than above. Note: at 69'6" fine sulphide in a biotite-rich zone.							
		69'6"	70'0"	Banded Gneiss. As above. At 70'0" fine sulphide occurs in a biotite-rich zone at 30° to core axis.							
0"	5'7"	70'0"	82'0"	Banded Gneiss. As for interval 67'0"-69'6". Biotite-rich zone at 75'8" @ 40° to core axis. Banding 35°-40° to core axis.							
3"	10'2"	82'0"	92'0"	Biotitic Gneiss, with occasional quartzo-feldspathic bands. Faintly banded. Soft carbonate-chlorite alteration.							
3" 3" 10" 3" 0"	10'2" 10'2" 9'6" 9'10" 4'10"	92'0"	136'10"	Banded Gneiss. Gradational contact with the above rock type. A medium grained rock with a coarser grained band from 92'0"-95'0". Biotite rich zones from 99'8"-101'0" & 120'10"-121'0". Coarse quartzo-feldspathic zone 121'0"-122'0". Soft weathered zone at 133'6". Banding 30° to core axis @ 98'. Banding 60° to core axis @ 106'. Banding at 40° to core axis @ 115'. Banding variable to core axis @ 130'.							
'0" '3"	2'9" 9'10"	136'10"	141'1"	Dolerite Dyke. A dark grey fine grained rock with contacts at 70° to core axis and some pseudotachylite near lower contact. Deeply weathered @ 139'9".							
'6"	9'2"	141'1"	156'11"	Banded Gneiss. A medium grained feldspar-biotite gneiss. Thin pseudotachylite vein (½") at 152'2".							

ERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO
				Banding 40° to core axis @ 146'. " 45° " " " " 149'. " 20° " " " " 155'.		
		156'11"	157'6"	Breccia Zone with pseudotachylite at 60° to core axis.		
0'3"	9'9"	157'6"	163'0"	Acid Gneiss. A coarse-grained rock with some coarse pink feldspar grains. Some biotite rich bands. Minor garnet from 160'0". Banding 50° to core axis at 158'.		
0'3"	10'1"	163'0"	172'10"	Garnetiferous Banded Gneiss. A medium grained faintly banded feldspar-biotite-quartz-garnet gneiss with 3% garnet (up to 10% in places) as medium to coarse subhedral red grains.		
		172'10"	180'1"	Garnetiferous Acid Gneiss. A coarse grained feldspar-biotite-garnet rock with 4% garnet as coarse subhedral red grains.		
				180'1" END OF HOLE.		

LE Diamond Drill Hole

D. 9 — INCLINATION Vertical — ASSAY REFERENCE A1211/71 & A4/73 — DATE COMPLETED 20/11/72

NO. 624/72 — AZIMUTH - — COORDINATES 8600N-895W — DRILLER D. WHITE

DEPTH 125'3" — ELEVATION — LOGGED BY M.N. Hiern & A.M. Pain

COVERY LOG		LOG OF DRILL HOLE			ASSAYS						
INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S%
		0'0"	65'0"	Mayhew Rotary Hole KM 27							
0'0"	10'0"	65'0"	65'3"	Acid Gneiss A coarse-grained quartz-feldspar-biotite greiss							
		65'3"	74'6"	Banded Gneiss A medium-grained quartz-feldspar-biotite gneiss with banding at 40° to core axis. Iron staining on some joint faces. Minor sulphide grains near 74'6".							
)'4"	9'4"	74'6"	74'9"	Acid Gneiss A coarse-grained quartz-feldspar rock with biotite clots containing some fine sulphide.							
		74'9"	74'10"	Biotite-feldspar Rock A medium grained biotite-feldspar rock with some sulphide associated with biotite. Contact is at 35° to core axis, and shows sulphide parallel to banded contact.	74'9"	76'0"	0.12	25	<5		0.65
		74'10"	76'0"	Acid Gneiss - Mineralized A coarse-grained feldspar-quartz rock with biotite as fine disseminated grains and a coarse band. Some coarse cloudy white feldspar grains. Fine disseminated sulphide associated with biotite which has altered to chlorite.							
		76'0"	79'4"	Banded Gneiss-Sulphide Zone Contact at 50° to core axis. Mainly medium grained rock with some coarser grained bands. Sulphide is mainly pyrite with some chalcopyrite. Some thin sulphide veinlets (eg. 77'6")	76'0"	79'4"	0.82	15	<5		1.7
		79'4"	81'7"	Acid Gneiss A coarse-grained feldspar-quartz rock with some thin biotite-rich bands. Minor fine disseminated sulphide.	79'4"	81'7"	0.02	<5	<3	200	0.26

RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S%
	81'7"	85'1"	Biotitic Gneiss - Sulphide Zone A biotite-chlorite rock with pyrite and some cholcopyrite.	81'7"	85'1"	1.05	25	15		6.0
10'3"	85'1"	86'4"	Banded Gneiss A medium to coarse-grained quartz-feldspar biotite rock with some biotite-rich bands with fine sulphide and one grain of bornite	85'1"	86'4"	0.05	40	<5		0.5
	86'4"	95'0"	Banded Gneiss with some bands of coarse-grained quartz-feldspar rock. Sulphide from 88'2"-89'0" and 92'2"-92'6" with a few grains elsewhere.	86'4"	88'2"	0.03	90	<5		0.3
				88'2"	89'0"	0.58	10	<5		0.85
				89'0"	95'0"	0.14	20	<5		0.6
	95'0"	103'6"	Banded Gneiss - Sulphide Zone Rock type is predominantly banded gneiss, but lithology is variable and grades to coarse-grained feldspar-quartz rock with biotite bands, and large biotite clots (after pyroxene?) Sulphide abundant 95'-96'5", 98'9"-103'6" (mainly pyrite with some cholcopyrite. Abundant biotite from 98'9"-103'6".	95'0"	96'5"	0.53	30	15		6.1
				96'5"	98'9"	0.33	10	<5		1.9
				98'9"	103'6"	0.48	20	65		3.7
3" 10'3" 3" 10'3"	103'6"	107'0"	Banded Gneiss with Sulphide in biotite-chlorite zones. Minor thin mylonite bands to 2mm wide. Traces of pale pink garnet at 105 feet.	103'6"	107'0"	0.40	30	15		1.05
10'2"	107'0"	117'1"	Banded Gneiss with coarse grained zones and minor disseminated sulphide. Banding at 30° to core axis. Pink feldspar grains at 112'0".							
	117'1"	121'9"	Acid Gneiss A coarse grained rock with some coarse biotite clots and minor disseminated sulphide.							
	121'9"	121'11"	Acid Gneiss Contact at 40° to core axis. Minor Chalcopyrite and pyrite grains are associated with coarse biotite clots.							
	121'11"	125'3"	Banded Gneiss medium grained rock with rare sulphide grains. Banding at 20° to core axis.							
			125'3" END OF HOLE							
			SULPHIDE INTERSECTION							
			FROM 74'9" to 107'0" 32'3" of 0.41% Cu.							

9

NO. 627/72

INCLINATION 60°

AZIMUTH 090° from grid north

DEPTH 285'6"

A1219/72and A5/73 to A7/73

COORDINATES 8600N 1000W

ELEVATION

DRILLER D.E. WHITE

LOGGED BY M.N. HIERN AND A.M. PAIN

OVERY LOG		LOG OF DRILL HOLE			ASSAYS						
INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S%
13'0"	0'4"	0'0"	13'0"	Acid Gneiss. A coarse grained rock, calcreted at 13'0". (only 4" of core at end of run).							
4'0"	0'2"	13'0"	17'2"	Acid Gneiss. Calcreted. (only 2" of core-end of run).							
5'7" 10'3"	5'0" 9'0"	17'2"	30'5"	Acid Gneiss. A coarse grained quartz-feldspar biotite rock with banding. Some pseudotachylite veins. Banding at 45° to core axis at 26'. " parallel " " " " 27'-30'. Core is slightly weathered.							
		30'5"	31'0"	Kaolin Zone. Minor coarse quartz.							
		31'0"	31'6"	Biotitic Gneiss. Broken, weathered biotite-rich rock, with banding at 50° to core axis.							
4'4"	3'3"	31'6"	35'10"	Acid Gneiss. Coarse grained. Core lost, from 32'2" - 37'10", probably in acid gneiss.							
8'8"	8'5"	35'10"	39'6"	Banded Gneiss. A medium grained banded rock with more biotite than above. Banding at 50°, to core axis.							
		39'6"	40'6"	Acid Gneiss. A coarse grained feldspar-quartz rock with minor biotite. Coarse pink K-feldspars and cloudy white plagioclase feldspars define banding. Acid gneiss grades locally to banded gneiss with increase in biotite content.							
5'6" 3'6" 7'1" 5'11"	5'6" 3'6" 7'1" 5'3"	40'6"	66'9"	Acid Gneiss. A coarse grained quartz-feldspar-biotite rock with a few medium grained 3"-6" wide biotite-rich bands. Banding mainly 50° to core axis. Jointing parallel to core axis at 51'-56'. Core is slightly to moderately weathered and broken with some greenish clay filling fractures.							
5'11"	5'10"	66'9"	70'7"	Dolerite Dyke. A dark grey fine to medium grained rock, broken by joints parallel to core axis. Some core lost. Contacts are broken but appear							

ERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Co ppm	Zn ppm	S%
				to be at 70° core axis. Weathered. Country rock at contacts completely weathered.							
'3" '2" '2" '2" '0"	8'0" 10'2" 9'2" 10'2" 10'0"	70'7"	122'0"	Acid Gneiss. Predominantly a coarse grained (pink) feldspar-quartz-biotite gneiss, but grades locally to banded gneiss with increase in biotite content. Abundant coarse leucocratic bands. Banding mainly 40°-50° but crenulated at 90'. Finer grained mafic zone at 106-108 feet.							
'0" '0"	10'0" 10'0"	122'0"	142'0"	Banded Gneiss. A medium grained rock with some coarser grained leucocratic bands. Minor pink garnet at 130'. Banding 50° to core axis at 136'. " 55° " " " " 139'. " variable, 30-55° to core axis between 136' and 139'.							
'9"	6'9"	142'0"	148'10"	Garnetiferous Banded Gneiss. Similar to above rock type but with subhedral pink garnet grains. Biotite-chlorite zone at 148'. Minor sulphide near 148'10". Thin (to 1/8") mylonite zones near base of interval. Banding 55°-60° to core axis at 148'.	148'0"	148'10"	0.14	<5	<3	110	0.54
0'5"	10'3"	148'10"	149'10"	Banded Gneiss with minor sulphide. Banding 55° to core axis.	148'10"	149'10"	0.25	25	<5		1.1
		149'10"	154'4"	Banded Gneiss. Mineralized. A medium grained quartz-feldspar-biotite gneiss with fairly abundant biotite in bands and in coarse clots associated with relict coarse pyroxene grains. Abundant sulphide (pyrite & chalcopyrite) particularly from 153'0"-154'4". Sulphide as interstitial grains and irregular blebs roughly conformable to banding.	149'10" 153'3"	153'3" 154'4"	0.33 2.0	15 25	<5 110		1.65 7.6
		154'4"	154'10"	Feldspathic Zone. A coarse feldspar-quartz rock with minor biotite and disseminated sulphide.	154'4"	156'4"	0.15	15	20		1.25
		154'10"	156'4"	Banded Gneiss. Mineralized. Similar to interval from 149'10"-154'4" but with less sulphide.							
		156'4"	157'1"	Garnetiferous Banded Gneiss. A medium grained feldspar quartz biotite garnet gneiss	156'4"	157'1"	<0.01	<5	8	40	0.11
		157'1"	157'4"	Banded Gneiss - Sulphide Zone with pyrite, chalcopyrite and molybdenite.	157'1"	157'4"	0.14	10	85		2.25

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S %
		157'4"	159'0"	Garnetiferous Banded Gneiss. Some coarse biotite clots. Minor disseminated sulphide.	157'4"	159'0"	0.03	9	5		0.25
6'4"	6'2"	159'0"	166'8"	Garnetiferous Banded Gneiss - Mineralized Zone. A feldspar-biotite rock with minor garnets. Some coarse subhedral pyroxene grains to 1 cm. diameter partly replaced by chlorite and biotite. Minor sulphide; mainly pyrite.	159'0"	166'8"	0.07	15	<5		0.55
0'3"	10'3"	166'8"	167'8"	Garnetiferous Banded Gneiss. A banded, medium grained feldspar biotite garnet rock with minor disseminated sulphide.	166'8"	167'8"	0.02	<5	25	130	0.16
		167'8"	168'0"	Garnetiferous Banded Gneiss - Mineralized. As for 159'0" - 166'8" but with more sulphide.	167'8"	168'0"	0.22	20	40		3.5
		168'0"	174'6"	Banded Gneiss. Medium to coarse-grained banded gneiss with some pink feldspar. Sulphide at 170'-171' and 173'9"-174'6".							
7'3"	7'3"	174'6"	197'0"	Banded Gneiss. A medium grained feldspar-quartz biotite gneiss with some coarser grained leucogranitic bands. Banding 40°-50° to core axis (up to 80° @ 196'). Minor sulphide @ 177'5".							
0'0" 8'6" 5'9" 0'11"	10'0" 8'6" 5'9" 0'11"	197'0"	209'0"	Acid Gneiss. A coarse-grained faintly banded feldspar-quartz-biotite gneiss with abundant coarse pink feldspar grains. Banding 40°-25°. Banded gneiss zone from 200'9"-202'0".							
0'3" 0'3" 0'0"	10'2" 10'3" 10' 0"	209'0"	232'0"	Banded Gneiss. A medium grained feldspar-quartz-biotite gneiss with a coarse leucocratic band from 226'0"-228'0".							
6'5" 0'0" 9'6"	6'0" 10'0" 9'6"	232'0"	260'0"	Garnetiferous Banded Gneiss. A feldspar-biotite rock with some garnet. Faintly banded near top of interval, but becomes more banded with depth. Banding contorted from 254'8" - 260'. Banding at 50°-55° to core axis at 240'. " " 30°-35° " " " " 248'. " " 20° " " " " 251'.							
)'10" '4" '1"	9'10" 4'3" 6'0"	260'0"	285'6"	Banded Gneiss. Feldspar-quartz-biotite banded gneiss with a thin clay-filled shear at 279'5" dipping normal to banding. Minor sulphide in a coarse leucocratic band at 270'0" and on a chlorite-faced joint at 277'0". Banding at 45°-50° to core axis steepens to 50-60° below 275'. 285'6" END OF HOLE							

SULPHIDE INTERSECTION FROM 148'0"-168'0" 20'0" of 0.23%Cu.

INCLINATION 60° to A1235/71 DRILLER D.B. White

D.630/72 AZIMUTH 090° from Grid North. COORDINATES 8000N 1150W LOGGED BY P.N. Hiern & A.M. Pain

DEPTH 252'0" ELEVATION -

RY LOG		LOG OF DRILL HOLE			ASSAYS						
ERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S %
6"	0'0"	0'0"	21'6"	No Core Recovery							
6" 2" 6" 4"	0'3" 9'0" 2'5" 6'3"	21'6"	43'11"	Banded Gneiss - A medium to coarse-grained feldspar-quartz-biotite gneiss, with frequent thin calcite veins, some normal to core axis and some at other angles. 37'7"-38'3". Finer grained with more biotite Banding at 60° to core axis at 33' " parallel " " " " 33'-34' " variable " " " " below 34' " at 80° " " " " at 43'							
'10"	5'10"	43'11"	44'6"	Alteration Zone - A pale green epidotized rock with a quartz band and thin calcite veining.							
'6"	4'5"	44'6"	54'3"	Banded Gneiss, grading to acid gneiss in places. Some calcite veining. Banding mainly at 40°-45° to core axis.							
'5"	9'5"	54'3"	58'4"	Banded Gneiss A medium grained rock grading to acid gneiss in places. Some fine to medium hypersthene grains. Grades to biotitic gneiss in parts. Some calcite veining.							
'6" '4" '3"	8'6" 8'3" 10'3"	58'4"	90'0"	Acid Gneiss grading in parts to banded gneiss. Generally coarser grained than above with some coarse pink feldspar. Banding mainly at 55° to core axis. Slightly weathered, with calcite veining down to about 70ft.							
'3" '3"	10'3" 10'3"	90'0"	116'6"	Banded Gneiss, with occasional coarse pink feldspar grains in bands up to 4" wide. Banding regular at 60° to core axis.							
'3" '3"	10'3" 10'3"	116'6"	128'8"	Garnetiferous Banded Gneiss Similar to above rock type but with up to 5% subhedral, pink garnet grains to 3mm. diameter.							

NTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S%
6'6"	6'6"	128'8"	134'0"	Garnetiferous Acid Gneiss A medium to coarse-grained feldspar-quartz gneiss with minor disseminated biotite flakes and occasional fine garnet grains up to 1mm diameter. Faintly banded. Some pink feldspar grains.							
		134'0"	138'3"	Banded Gneiss A faintly banded medium-grained quartz-feldspar-biotite gneiss.							
9'6"	8'9"	138'3"	139'0"	Banded Gneiss- Weathered zone with feldspar deeply weathered to white kaolin. Some core probably lost.							
10'0"	10'0"	139'0"	155'0"	Banded Gneiss A faintly banded rock with rare garnet grains. Banding 50°-55° to core axis. Thin smears of bronze biotite on some partings in banding (possibly sulphide smears). Fine disseminated sulphide in coarser band at 141'0". Minor fine calcite veining.							
		155'0"	160'9"	Garnetiferous Banded Gneiss Similar to the above rock type but with up to 4% subhedral garnet grains to 3mm diameter.							
4'3"	4'3"	160'9"	161'2"	Breccia Zone in coarse pink feldspar with some fine pseudo tachylite veining. Contact parallel to banding at 55°.							
10'3"	10'3"	161'2"	175'2"	Banded Gneiss with some coarse-grained pink and white feldspar. Banding at 55° to core axis, flattening to 35° at 175 feet. Some brecciation of coarse pink feldspar and thin tachylite veining from 167'-168' and 172'-173'.							
		175'2"	175'6"	Banded Gneiss, with irregular banding at about 15° to core axis. Minor disseminated sulphide and a thin vein of sulphide.	175'2"	176'6"	0.23	25	20		7.25
		175'6"	175'7"	Calcite Vein Contact sharp and at 50° to core axis, probably cross-cutting banding. Fine needle-like crystals normal to walls.							
		175'7"	176'6"	Banded Gneiss - Sulphide Zone Up to about 10% sulphide; - mainly pyrite but with chalcopyrite predominant from 176'4"-176'6". Sulphide has crude alignment with banding. Contact at 176'6" has some clay and appears to be 60° to core axis.							

		176'6"	177'5"	Banded Gneiss Some large biotite clots and minor garnet. A little fine disseminated sulphide and one very fine sulphide-filled minor fracture at about 10° to core axis and cutting across banding. Banding at 45° to core axis.	176'6"	177'5"	0.11	10	5		0.2
		177'5"	179'0"	Banded Gneiss - Mineralized Thinly banded with some sulphide-bearing biotite-rich bands containing mainly pyrite and some chalcopyrite. Less than 1% total sulphide over interval. Broken biotite-rich zone at 178'8". Banding at 50°-55° to core axis.	177'5"	179'0"	0.13	20	10		1.75
		179'0"	179'8"	Banded Gneiss Minor flecks of sulphide. Banding at 50° to core axis.	179'0"	179'8"	0.02	35	<5		0.29
		179'8"	180'1"	Biotitic Gneiss A banded rock with some sulphide mainly pyrite.	179'8"	180'1"	0.10	35	<5		1.95
1"10'3"	10'3"	180'1"	181'3"	Acid Gneiss A coarse-grained feldspar-quartz-biotite rock with some chlorite. Some fairly coarse disseminated sulphide including chalcopyrite. Pseudotachylite band ¼" wide at 75° to th e axis at base of interval has abundant associated sulphide.	180'1"	181'3"	0.12	10	<5		1.0
		181'3"	183'0"	Feldspathic Rock A coarse-grained white feldspathic rock with some apple-green intersitial chlorite.	181'3"	183'0"	0.12	10	<5		0.40
		183'0"	183'6"	Biotitic Zone Zone of coarse biotite-chlorite clots after pyroxene, with some associated pyrite and chalcopyrite.	183'0"	183'6"	0.83	15	10		2.70
		183'6"	187'3"	Acid Gneiss A feldspar-quartz-biotite coarse-grained rock with interstitial biotite. Minor sulphide only except at 184'3" where a biotite-rich zone contains pyrite.	183'6"	187'3"	0.09	10	5		0.60
		187'3"	189'0"	Banded Gneiss A medium grained gneiss with faint banding. Biotite and chlorite occur as interstitial grains and small clots after pyroxene. Some hypersthene grains up to 3mm diameter. Some pseudotachylite veinlets at about 20° to core axis some with sulphide. Also disseminated sulphide (chalcopyrite) occurs as irregular interstitial grains.	187'3"	189'0"	1.09	15	10		2.25

		189'0"	190'3"	Banded Gneiss As above but with slightly more prominent banding. Sulphide as irregular interstitial grains concentrated into bands.	189'0"	190'3"	0.33	10	5	0.9
'11"	3'0" 3:0"	190'3"	191'0"	Banded Gneiss As above with approx 10% pyrite in a biotitic band from 190'3"-190'4" and some chalcopyrite from 190'4"-191'0".	190'3"	191'0"	0.28	65	10	4.3
'3"	3'4" 3'4"	191'0"	191'11"	Feldspar-Pyroxene Rock A fine-grained equigranular rock with a clear contact at 191'0" parallel to banding at 55° to core axis.	191'0"	191'11"	<0.01	55	10	0.
		191'11"	196'1"	Acid Gneiss Mainly a medium to coarse-grained quartz-feldspar-biotite rock with some coarse biotitic patches. Almost no sulphide except for some chalcopyrite at 192'6".	191'11"	196'1"	0.13	25	<5	0.2
		196'1"	197'0"	Banded Gneiss - Sulphide Zone Some faint banding in parts. Up to 5% pyrite with light brown clay. Carbonate seam ¼"wide dipping at 50° to core axis. Core is broken at 197'0".	196'1"	197'0"	0.62	15	10	4.4
		197'0"	197'5"	Biotite Zone Completely decomposed with flecks of native copper.	197'0"	197'5"	0.33	25	<5	0.1
0"	0'9" 0'9"	197'5"	199'0"	Alteration Zone A feldspar-quartz rock with minor biotite in patches, partly altered to chlorite Coarse white cloudy feldspar grains.						
1"	5'1" 5'1"									
5"	9'4" 9'4"									
5"	10'0" 10'0"	199'0"	222'5"	Banded Gneiss A medium-grained fledspar-biotite-quartz rock with thin coarser-grained leucocratic bands at intervals. Banding regular at about 50° to core axis.						
0"	9'7" 9'6"	222'5"	239'0"	Garnetiferous Banded Gneiss Coarser grained than above with some pink garnet. Grades locally to garnetiferous acid gneiss with increase in cloudy white and pink feldspar. Banding at 50°, locally 30°-35° at 234'.						
0"	10'0" 10'0"									

NTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO					
10'0"	10'0"	239'0"	252'0"	Banded Gneiss. Banding at 50° to core axis steepening to 60°-70° towards base of interval. Minor garnet at 240'. Fine sulphide in biotite at 247 feet. 252'0" END OF HOLE SULPHIDE INTERSECTION From 175'2" to 197'5" 22'3" of 0.25% Cu							

E Diamond Drill [illegible] Azimuth 076° (Grid North) ASSAY REFERENCE A1236/71 to A1247/71 DATE COMPLETED 9.2.72

9 INCLINATION 50° DRILLER D.E. White

NO. 63/72 AZIMUTH 090° from grid north COORDINATES 7200N-1215W LOGGED BY M.N. Hiern and A.M. Pain

DEPTH 395'4" ELEVATION -

VERY LOG		LOG OF DRILL HOLE			ASSAYS						
NTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu%	Ni ppm	Mo ppm	Zn ppm	S%
13'0"	1'6"	0'0"	13'0"	Acid Gneiss Only 1'6" of core at end of run. Coarse to medium-grained quartz-feldspar-biotite gneiss. Calcreted.							
6'6" 3'8" 6'9" 6'7" 4'0" 3'7"	6'6" 3'8" 6'9" 6'7" 4'0" 3'7"	13'0"	40'4"	Banded Gneiss Medium to coarse-grained rock with thin biotite-rich bands. Banding variable, but mainly at 50°-60° to core axis. Calcite veining at 20° to core at 20'0" and 31'4", and fine calcite veining throughout, particularly 25'-31'. Core is moderately weathered.							
9'5"	9'5"	40'4"	44'3"	Biotitic Gneiss A dark, fine to medium grained biotite-hornblende-feldspar rock, faintly banded with broken coarse-grained quartz. Minor biotitic zone with calcrete veining 42'0"-43'6".							
5'0" 1'7" 2'5" 6'6"	5'0" 1'6" 2'5" 6'6"	44'3"	71'6"	Banded Gneiss Medium to coarse-grained feldspar-biotite gneiss with minor epidote. Banding mainly 60°-70° to core axis. Thin calcite veins approximately normal to banding.							
10'3"	10'2"	71'6"	72'2"	Banded Gneiss A medium grained biotitic rock with rare fine sulphide specks becoming more abundant towards 72'2". (chalcopyrite and pyrite). Banding at 55°-60° to core axis.							
		72'2"	72'4"	Breccia Zone Coarse quartz fragments in biotite-chlorite network with thin mylonite veins up to 3 mm wide.							
		72'4"	72'8"	Feldspathic Band A coarse-grained feldspathic band with some biotite and chlorite.							

NTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Moppm	Znppm	S %
2'1" 9'10" 4'7" 0'1"	2'1" 9'10" 4'7" 10'1"	72'8"	104'0"	Banded Gneiss is predominant rock type. A medium grained biotite-feldspar-quartz rock with frequent 1" to 3" wide coarse leucocratic bands, and a few coarse-grained hornblende aggregates. Banding fairly constant at 60°-65° to core axis with minor crenulations at 92'6". Minor fine disseminated sulphide grains 87'4"-89'3" in chlorite-rich zone. Coarser-grained sulphide 93'5"-93'10" in coarser-grained feldspar chlorite zone. Minor sulphide, fairly disseminated 99'0"-99'4". Some jointing parallel to core axis from 99'0"-100'0".							
4'10" 10'3"	4'10" 10'2"	104'0"	109'0"	Banded Gneiss Coarser grained than above with coarse pink feldspar. Fine chlorite veinlets indicate some mild brecciation.							
5'8"	5'8"	109'0"	125'0"	Banded Gneiss with a few coarser leucocratic bands. Banding mainly 50°-60° to core axis, but 45° at 119'. Broken, bleached, altered zone 110'6"-111'4". Thin biotite-tachylite band sub-parallel to but cutting across banding. Thin biotite shear dipping 75° cross-cutting and displacing banding at 125'0". Some brecciation in sulphide zone at 119'-120'. Minor sulphide, mainly finely disseminated pyrite occurs throughout this zone but is not continuous. Mainly 109'4"-109'6", 112'9"-113'4", 115'0"-120'6" and 122'0"-122'1".							
4'10"	4'9"	125'0"	133'0"	Banded Gneiss Similar to above interval but with only a few specks of sulphide.							
7'0"	7'0"	133'0"	138'2"	Banded Gneiss As above but with some biotitic gneiss bands up to 3" wide. Minor disseminated sulphide. Possibly some brecciation at 135' with coarser pyrite. Iron-stained joint sub-parallel to core axis 135'0"-136'6".							
'10'3"	10'3"	138'2"	144'4"	Banded Gneiss A medium-grained rock with finer grain size than above. Rock has less biotite than above so banding is fainter. Banding is a little variable, but approx. 60°-65° to core axis. Minor crenulation 139'7". Sulphide facing on biotite seam @ 139'9". Minor disseminated sulphide 144'0"-144'4" Garnet 142'0"-144'4".							

		144'4"	148'6"	Banded Gneiss-Sulphide Zone A feldspar-quartz-biotite-chlorite rock, becoming more biotitic in parts. Sulphide (mainly pyrite) is aligned to give banding parallel to gneissic banding at 60°-65° to core axis. (down to 55° in parts) Sulphide most abundant from 145'11"-148'0". Biotitic zone with pyrite and minor chalcopyrite @ 148'0". Chalcopyrite predominant from 148'0"-148'1".	144'4"	145'11"	0.22	15	15		3.55
					145'11"	148'0"	0.49	30	40		9.70
					148'0"	148'6"	0.59	25	85		7.35
1"	10'3"	10'3"	148'6"	150'2"	Biotitic Gneiss A medium-grained dark grey to black quartz-feldspar-biotite gneiss with a few specks of sulphide-minor chalcopyrite.	148'6"	150'2"	0.07	40	5		0.75
			150'2"	152'5"	Feldspar-Quartz-Biotite hypersthene rock-Sulphide Zone A coarse-grained rock with coarse (to 1") hypersthene grains partly replaced by biotite and chlorite. Coarse red garnet grain (1" diam) at 150'6". No banding. 2-3% sulphide including some chalcopyrite, particularly at 151'0" and 152'5".	150'2"	152'5"	0.26	20	15		1.50
			152'5"	157'2"	Biotitic Gneiss A fine to medium-grained rock as for 148'7"-150'0". No banding. A few sulphide specks near 157'0".	152'5"	157'2"	0.01	40	25		0.24
			157'2"	158'4"	Biotitic Gneiss-Sulphide Zone Total sulphide 1-2%. Chalcopyrite is predominant sulphide, particularly at 158'2" where it is coarse grained. Faint banding at 60° to core axis @ 158'4".	157'2"	158'4"	0.45	35	10		2.65
			158'4"	159'6"	Biotitic Gneiss with only a few sulphide specks.	158'4"	159'6"	0.05	45	<5		0.47
11"	7'10"	7'9"	159'6"	160'7"	Biotitic Gneiss-Sulphide Zone with 1-2% pyrite.	159'6"	160'7"	0.53	15	20		3.25
			160'7"	161'0"	Banded Gneiss A quartz-feldspar-biotite gneiss with faint banding at 60° to core axis. Fine sulphide specks, particularly near 161'0".	160'7"	162'0"	0.11	5	10		0.60
			161'0"	162'0"	Breccia Zone Sharp contact at 161'0" dipping at about 50° sub-parallel to banding. Gradational contact at 162'0". A coarse grained rock with quartz and chlorite. Some coarse biotite. Minor sulphide.							

INTERVAL	RECOVERY	FROM	TO							
		162'0"	163'6"	Banded Gneiss A feldspar-quartz-biotite gneiss with distinctive "spotted" texture. Faint banding caused by alignment of "spotted" texture. Minor disseminated pyrite.	162'0"	163'6"	0.11	5	15	0.7
		163'6"	163'10"	Banded Gneiss with some biotitic gneiss bands. Banding at 50° to core axis. Some pyrite.	163'6"	163'10"	0.40	20	85	3.5
		163'10"	166'11"	Banded Gneiss Banding flattens off to 40° near 166'11". Biotite-rich band at 166'10".						
'1" 10'2" '2" 10'1"	9'11" 9'11"	166'11"	188'0"	Banded Gneiss A medium-grained feldspar- quartz-biotite gneiss with prominent banding. Occasional pale grey feldspathic bands up to 2" wide, and occasional coarse-grained biotite-feldspar bands or patches up to 3" wide. Some red garnet grains up to 1/8" diam. near base of interval. Banding 40° to core axis steepens to 70°-75° near base of interval.						
'2" 10'0"	9'10"	188'0"	197'1"	Garnetiferous Banded Gneiss Banding is fainter than in above interval since rock is less biotitic. Banding at 65° to core axis. Minor pyrite specks at 192'0" and 194'6".						
'2" 10'0"	9'11"	197'1"	202'8"	Garnetiferous Acid Gneiss A coarse-grained feldspar-quartz-biotite-garnet rock with banding at 60°. Abundant patches with coarse white and pink feldspar grains to ¼" diameter.						
		202'8"	207'1"	Banded Gneiss Fine to medium grained felspar-quartz-biotite gneiss.						
"2" 10'0"	10'0"	207'1"	208'7"	Banded Gneiss Medium to coarse-grained feldspar-quartz-biotite gneiss with some garnet. Abundant bands and patches of coarse grained quartz and feldspar with white and pale pink feldspar grains up to ¼" diam. Banding at 60° to core axis.						
'2" 10'0" '1" 9'11" '1" 10'0"	9'10" 9'10" 10'0"	208'7"	245'4"	Banded Gneiss Medium-grained quartz-feldspar biotite rock with prominent banding at 60° to core axis. Occasional leucaratic feldspar-rich bands and patches to 3" wide. Minor pyrite specks and small blebs occur in some coarse-grained feldspathic bands (e.g. at 220'4").						

INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S%
		245'4"	247'3"	Biotitic Gneiss A coarse-grained feldspar-quartz-biotite rock with a distinctive "mottled" texture. Banding is very poorly defined. Rock has anhedral feldspar grains up to ½" diameter, and ½" diameter aggregates of biotite flakes.							
10'0"	9'11"	247'3"	257'1"	Banded Gneiss A banded medium-grained feldspar quartz-biotite gneiss with fairly abundant patches or bands up to 3" wide consisting of coarse feldspar grains to ½" and biotite aggregates to ¼".							
10'0"	9'11"	257'1"	265'5"	Banded Gneiss A feldspar-quartz-biotite gneiss with banding at 55° to core axis.							
		265'5"	266'3"	Feldspathic Zone A coarse-grained pale grey and white feldspathic rock with 5-7% biotite as flakes parallel to foliation, and in patches. Some patches are altered to green chlorite. Minor sulphide specks.							
		266'3"	266'9"	Banded Gneiss . A medium-grained feldspar-quartz-biotite gneiss with banding.							
10'0"	10'0"	266'9"	268'2"	Banded Gneiss. A medium to coarse-grained quartz-feldspathic gneiss with thin biotite bands defining the foliation.							
10'0"	9'10"	268'2"	287'10"	Banded Gneiss Medium to coarse-grained feldspar-quartz-biotite gneiss with occasional pale grey feldspathic segregations. Banding at 60° to core axis. Pyrite occurs as small blebs and specks (½-1%) from 280'1"-280'4".							
10'0"	10'0"	287'10"	288'8"	Feldspathic Zone A pale grey to white coarse-grained feldspathic rock with coarse biotite grains. Disseminated pyrite and chalcopyrite specks and small blebs reach ½% between 287'10" and 287'11".							
		288'8"	293'4"	Biotitic Gneiss Medium-grained feldspar-quartz-biotite gneiss with homogeneous texture and only faint banding.							

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
10'0"	9'11"	293'4"	307'0"	Banded Gneiss A banded medium grained feldspar-quartz-biotite gneiss with some leucocratic bands and patches up to 3" wide. Banding at 60° to core axis.							
10'0" 10'0"	9'11" 9'10"	307'0"	326'6"	Garnetiferous Banded Gneiss Feldspar-quartz-biotite-garnet gneiss with occasional patchy coarse-grained leucocratic zones. Banding 60° to core axis. Pyrite minor specks and small blebs @ 318'4" and 325'4". ½-1% pyrite and chalcopyrite as small blebs and specks associated with leucocratic segregation from 323'3"-323'8".							
		326'6"	327'1"	Quartz-Feldspar Vein Coarse-grained pale grey, off-white and pale pink rock.							
10'0" 6'0"	9'11" 5'11"	327'1"	341'0"	Garnetiferous Banded Gneiss Feldspar-quartz-biotite-garnet gneiss with occasional coarse-grained off white and pale pink feldspathic zones up to 3" wide. (Note blue colouration in quartz). Pyrite occurs as small specks and blebs from 328'7" to 328'9".							
		341'10"	343'0"	Brecciated Zone Acid gneiss containing coarse white and pink feldspar and medium-grained biotite. Dark mylorite (pseudotachylite?) material.							
2'11"	2'7"	343'0"	346'6"	Brecciated Zone As above but more intensely sheared. Feldspar is kaolinized and core is rubbly and broken.							
1'9"	1'7"	346'6"	349'9"	Acid Gneiss Weathered, soft and kaolinized.							
8'0" 1'3"	5'10" 1'3"	349'9"	357'4"	Acid Gneiss Coarse-grained feldspar-quartz gneiss with occasional thin biotitic bands defining foliation at 60° to core axis. Abundant coarse subhedral to anhedral pale pink and white feldspar grains.							
8'0"	7'9"	357'4"	365'6"	Garnetiferous Banded Gneiss Medium to coarse grained feldspar-quartz-biotite-garnet gneiss with coarse-grained patches of white and pale pink feldspar grains. Pale pink euhedral garnet grains up to 1/8" diameter. Thin biotite bands define foliation.							

_RVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S%
0'0" 0'2"	10'0" 9'11"	365'6"	385'7"	Banded Gneiss Medium-grained quartz-feldspar-biotite gneiss with occasional coarse feldspathic segregations with white grains up to ½" diam. Banding at 65-70° to core axis. Pyrite as rare specks.							
0'2"	10'1"	385'7"	386'7"	Feldspathic Zone Coarse-grained leucocratic segregation with feldspar grains to ½" diameter and coarse biotitic clots up to ¼" diameter.							
		386'7"	395'4"	Banded Gneiss Medium grained rock as for interval 364'6" to 385'7".							
				395'4" END OF HOLE							
				SULPHIDE INTERSECTION							
				FROM 144'4" TO 163'10" 19'6" OF 0.21% Cu							

: Diamond Drill Azimuth 074°
9 INCLINATION 60°
NO. 633/72 AZIMUTH 0.90° from grid north COORDINATES
DEPTH 542'11" ELEVATION

ASSAY REFERENCE A598/72 to A613/72 & A8 to A12/73

DATE COMPLETED 1/3/72
DRILLER D.E. WHITE
LOGGED BY A.M. PAIN

VERY LOG		LOG OF DRILL HOLE			ASSAYS						
ITERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
		0'00"	3'3"	Core Lost							
'1"	0'9"	3'3"	4'1"	Acid Gneiss Rubbly weathered rock with some carbonate veining.							
3'0"	0'0"	4'1"	27'1"	Core Lost							
5'9"	4'6"	27'1"	31'6"	Banded Gneiss Weathered medium to coarse-grained rock with some carbonate on cleavage surfaces. Prominent foliation at 45° to core axis.							
		31'6"	32'10"	Core Lost							
5'0"	4'7"	32'10"	37'5"	Banded Gneiss As for previous description.							
		37'5"	37'10"	Core Lost							
5'0"	4'4"	37'10"	41'9"	Banded Gneiss As for previous description.							
		41'9"	42'9"	Banded Gneiss Manganese stains on cleavage surfaces. Minor folding visible.							
5'8"	1'11"	42'9"	48'11"	Core Lost							
		48'11"	51'9"	Banded Gneiss Med. to coarse grained. Weathered.							
9'10"	8'8"	51'9"	52'3"	Feldspathic Band A coarse grained feldspathic rock with small biotite flakes. Fractured and weathered.							
		52'3"	56'8"	Banded Gneiss, with white felsic bands up to 1" wide parallel to foliation. Weathered. Foliation prominent at 45° to core axis.							
		56'8"	58'5"	Acid Gneiss A medium to coarse-grained rock with indistinct foliation - Core fractured and weathered.							
7'0"	5'5"	58'5"	67'4"	Banded Gneiss A medium grained feldspar-quartz-biotite gneiss with banding at 45° to core axis.							

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
		67'4"	68'3"	Core Lost							
'3"	1'7"	68'3"	69'11"	Banded Gneiss As above. Foliation 40-45°							
		69'11"	70'5"	Core Lost							
'1"	6'7"	70'5"	91'1"	Banded Gneiss As above. Weathered.							
'5"	4'8"			Fracture zone from 84'0" - 84'6"							
'5"	7'7"	91'1"	92'9"	Acid Gneiss A coarse grained rock with some coarse pinkish-brown feldspar. Some thin cross-cutting feldspathic veins. Foliation indistinct. Core is less weathered than above.							
'0"	1'5"	92'9"	94'5"	Banded Gneiss Medium to coarse grained. Weathered.							
'0"	1'5"	94'5"	100'9"	Core Lost							
		100'9"	101'1"	Acid Gneiss Coarse-grained. Soft, Weathered Kaolinitic core is rubbly and broken.							
		101'1"	103'7"	Acid Gneiss A Medium to coarse-grained rock with abundant coarse subhedral pinkish feldspar grains up to ½" diameter. Foliation faint at 45° to core axis. Weathered.							
'0"	1'9"	103'7"	104'5"	Banded Gneiss A Medium-grained rock with feldspar bands up to ½" wide parallel to foliation. Foliation at 60° to core axis. Slightly weathered.							
'10"	1'10	104'5"	105'00"	Core Lost							
		105'00"	105'3"	Leucocratic Band Coarse white quartzofeldspathic zone.							
		105'3"	106'3"	Biotitic Gneiss A soft, weathered slightly biotitic rock with some chloritic alteration. Minor shearing at base of interval.							
'3"	8'00"	106'3"	107'3"	Acid Gneiss A coarse-grained quartzofeldspathic rock with minor biotite. slightly weathered. Thin irregular fractures cross-cut core at slight angle to foliation.							
		107'3"	116'00"	Banded Gneiss Core fresh & unweathered. Bands of quartz, pale pink and white feldspar up to 2" wide parallel to foliation. Rapakivi feldspars to 1" diam. Banding 50° to core axis. Minor contortions in foliation.							

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
7'4"	6'10"	116'00"	119'8"	Biotitic Gneiss A medium-grained grey-green biotitic rock with fairly prominent foliation. Banding absent due to low content of felsic minerals.							
		119'8"	120'8"	Epidotized Zone Feldspar-biotitic - quartz - epidote rock with minor chlorite specks. Small cross-cutting fractures at slightly steeper angle than foliation. Foliation @ 45° to core axis.							
		120'8"	130'1"	Biotitic Gneiss Some felsic bands up to ½" wide. Rare coarse biotite clots.							
		130'1"	131'0"	Banded Gneiss A white feldspathic zone with white plagioclase grains up to ¾" diameter and coarse biotite clots. Minor Epidote. Rare pyrite specks.							
'11" '0" '00"	9'7" 10'0" 10'0"	131'0"	152'8"	Banded Gneiss A medium-grained banded rock with coarse white feldspathic bands up to 1" wide parallel to foliation, often with associated biotite clots and minor pyrite specks. Minor Epidote. From 139'4"-139'6" is a weathered, iron stained cross-cutting fracture zone at 65° to core axis (almost at right angles to foliation). Foliation prominent-variable. 35°-50° to core axis. Minor contortions visible.							
0'0"	9'10"	152'8"	153'10"	Banded Gneiss - Mineralized. Rock has some coarse grained feldspathic zones with some coarse biotite clots (after pyroxene?) Some green chloritic alteration. Minor epidote. 1% pyrite.	152'8"	153'10"	0.04	100	< 3	95	0.48
		153'10"	154'4"	Feldspathic Vein - Mineralized Zone consists mainly of coarse plagioclase (½") with some coarse pink feldspars. ½-1% pyrite disseminated specks.	153'10"	154'4"	0.02	22	< 3	48	0.12
		154'4"	155'6"	Banded Gneiss Rock has a "mottled" texture due to biotite clots and spots. Pyrite as rare specks.							
		155'6"	165'10"	Banded Gneiss A medium-grained rock. Banding faint, with some coarse white feldspathic bands up to 1½" wide parallel to foliation, often associated with biotite clots and minor pyrite specks. Minor epidote grains.							

	INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
3"	9'11"	9'10"	165'10"	167'2"	Banded Gneiss Some coarse plagioclase with grain size up to ¾". Biotite as dark clots (after relict pyroxene?) Biotite clots give rock a "mottled" texture with coarse mottles defining indistinct banding. Pyrite ½-1% as small interstitial grains and fracture fillings.							
			167'2"	173'0"	Banded Gneiss As for interval 155'6" - 165'10" Epidote band ½" wide at 171'7"							
4"	4'8"	4'7"	173'0"	176'6"	Banded Gneiss A coarse-grained feldspar-quartz-biotite rock with plagioclase grains up to ¾" diameter and biotite clots (after pyroxene) up to 1" diam. Coarse feldspathic band 173'0" - 174'4" Epidote alteration 173'0" - 173'5" Pyrite ½% interstitial grains.							
10"	0'6"	0'6"	176'6"	177'10"	Epidotized Zone An altered m.g. feldspar-quartz-biotite rock with epidote as interstial grains and in epidote-quartz veins. Foliation at 50° to core axis.							
'10"	10'0"	9'11"	177'10"	179'5"	Banded Gneiss-Altered A coarse-grained-feldspar-quartz-biotite rock with abundant coarse feldspar grains up to 1" diameter. Dark biotite-chlorite clots (after pyroxene) up to 1" diameter. Epidote in irregular fractures, generally at about 10° to core axis. ¼-½ % disemminated pyrite.							
			177'5"	184'1"	Banded Gneiss A med.-grained rock with some patches of coarse pink and white feldspar grains up to ½" diam. Generally pink feldspar is concentrated about irregular fractures at shallow angles to core axis. Epidote is associated with small irregular fractures. Foliation at 50° to core axis.							
			184'1"	188'3"	Epidotized Zone A medium-grained rock with abundant patches of coarse pink feldspar grains to ½" diameter. Some chlorite. Epidote as interstitial grains, thin irregular veins, and pale green epidote-rich bands. Pyrite (¼%) commonly associated with green chlorite clots.							

ERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
10'0" 2'4" 7'7"	9'10" 2'3" 7'7"	188'3"	203'0"	Banded Gneiss A medium-grained rock with patches of coarse-grained white and pink feldspar. Epidote as irregular veins and interstitial grains occurs throughout most of the interval. Foliation at 55° to core axis.							
		203'0"	203'5"	Feldspathic Vein Coarse-grained white and pale pink vein with some chlorite and interstitial epidote.							
		203'5"	204'4"	Epidotized Zone Medium-grained gneiss with abundant epidote alteration. A coarse-grained feldspar vein 2½" wide with associated chlorite clots and epidote occurs near base of interval.							
		204'4"	206'1"	Biotitic Gneiss A fine to medium grained dark rock with abundant biotite. Foliated but gneissic banding not prominent due to absence of feldspar veining.							
0'0" 0'0" 0'0"	10'0" 9'10" 9'11"	206'1"	238'3"	Banded Gneiss Banding at 45° to core axis. 207'9"-207'10" Alt'n zone with coarse pink felds. & minor epidote. 211'1"-211'10" " " " " " " " " 229'5"-230'1" " " " " " " " " 238'0"-238'3" " " " " " " " " 217'1"-218'4" Altered zone with coarse pink feldspar and thin cross-cutting mylonite veins.							
0'0" 0'0" 9'10" 10'2" 10'0"	10'0" 10'0" 9'10" 9'9" 9'9"	238'3"	266'7"	Banded Gneiss Banding at 40-45° to core axis. Patches of coarse plagioclase with biotite clots after pyroxene from 253'9"-254'9", 256'8"-258'1",260'5"-261'1". Banded Gneiss A medium-grained rock with coarse white feldspathic bands up to 1" wide parallel to foliation, often associated with biotite clots. Foliation prominent, but contortions and folding become visible through bottom 3ft. of interval.							
9'11"	9'10"	287'10"	289'8"	Alteration Zone in Banded Gneiss with some coarse pink feldspar and irregular zones ½" wide containing mylonite.							
10'0" 9'0" 0'0" 0'11" 0'3" 9'10"	9'11" 9'11" 9'11" 9'10" 10'0" 9'10"	289'8"	397'0"	Banded Gneiss A pale grey rock with minor irregular contortions, but overall foliation is at 45°-60° to core axis. Biotite content decreases and contortions became slightly more irregular with depth. Coarse white and pale pink feldspar bands from 310'4"-310'10",321'6"-322'2",329'9"-329'10".							

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Mo ppm	Znppm	S %
'10"	9'8"			Biotite clots to ¼"diameter (after pyroxene) from 344'11"-345'1",345'6"-345'7",383'10"-384'7". Coarse pink feldspar grains with thin mylonite veins and some irregular fractures from 380'9"-381'4".							
'5"	7'5"										
9'0"	9'11"										
9'0"	9'10"										
9'0"	9'11"										
9'11"	9'11"										
		397'0"	402'8"	Banded Gneiss Gradational contact with the above interval. Coarse pink feldspar grains to ½" diameter. Rare clots of biotite (after pyroxene?) Rare epidote veins. Mylonite in thin veins and as irregular patches to ½" wide. Rock is gradational to acid gneiss in parts.							
9'9"	9'9"	402'8"	461'0"	Banded gneiss Some pink feldspar as above. Grades locally to acid gneiss. Zones with coarse pink feldspar to 1" diam, rare biotite clots, thin mylonite veins, epidote, rare pyrite specks 413'9"-414'4", 444'7"-445'9",455'3"-459'1".							
10'3"	10'2"										
10'0"	9'10"										
5'1"	5'0"										
10'0"	9'8"										
10'0"	9'9"										
		461'0"	461'5"	Feldspathic Zone A coarse-grained rock consisting of white & pink feldspar with biotite clots after pyroxene. Thin fracture zone ¼" wide with weathered brown clayey material at 461'3"							
9'10"	9'10"	461'5"	473'8"	Banded Gneiss Grades locally to acid gneiss. In some places rock is coarse-grained with pale brown and pink feldspar grains and minor interstitial biotite clots.							
10'1"	10'1"			467'1"-473'5" Mineralized Zone Py, Pyrrh , Cpy rare specks.							
				470'2"-471'7" Mineralized Zone Py, Pyrrh Cpy 3%.	470'2"	471'7"	0.08	35	<3	75	0.43
				471'7"-473'3" Mineralized Zone by Pyrrh, Cpy 3%.	471'7"	473'3"	0.25	80	<3	150	0.77
				473'3"-473'8" No perceptible sulphides.	473'3"	473'8"	0.01	15	<3	55	0.10
		473'8"	480'5"	Banded Gneiss A medium-grained dark grey rock with more biotite than above. Prominent banding at 40°-50° to core axis.	473'8"	475'8"	0.01	30	<3	25	0.03
					475'8"	476'3"	0.11	95	<3	80	1.20
				473'8"-475'8" Mineralized Zone Rare Pyrite specks.							
				475'8"-476'3" Mineralized Zone Cpy, Pyrrh, Py 2% as irregular interstitial grains.							
				476'3"-477'9" No perceptible sulphides.	476'3"	477'9"	0.01	38	<3	38	0.10
				477'9"-478'11" Mineralized Zone Cpy, Pyrrh, Py.2-3% irregular interstitial grains.	477'9"	478'11"	0.22	30	<3	170	1.35
				478'11-479'5" Mineralized Zone Cpy, Pyrrh, Py3-4% irregular interstitial grains.	478'11"	479'5"	1.00	30	<3	210	2.40
				479'5"-479'9" Mineralized Zone Cpy, Pyrrh, Py 1% irregular interstitial grains.	479'5"	479'9"	0.17	30	<3	200	1.15
				479'9"-480'5" Mineralized Zone Pyrrh Cpy Py 8% irregular interstitial grains.	479'9"	480'5"	0.55	70	<3	140	4.10

TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION
		480'5"	481'7"	Biotitic Gneiss Mineralised Zone medium grained biotitic rock with some course irregular feldspar grains. Banding moderately prominent. 3% Pyrrh, Cpy, Py, as irregular interstitial grains.
		481'7"	536'2"	Banded Gneiss Biotite content decreases with depth.
				481'7"-482'7" Mineralised Zone Pyrrh Cpy Py as irregular interstitial grains and some small fracture fillings Cpy. and Pyrrh. appear to surround Py & Biotite
0'3"	10'3"			482'7"-485'8" Trace Sulphs Only.
				485'8"-486'7" Mineralised Zone Cpy (Py Pyrrh)3% irregular angular interstitial grains.
				486'7"-487'3" Trace Sulphs Only
				487'3-488'4" Mineralised Zone Cpy Pyrrh Py?-4% as irregular interstitial grains with chalcopyrite surrounding pyrhotite.
				488'4"-492'5" Trace Sulphs Only
				492'5"-492'8" Mineralised Zone Pyrrh ,Cpy 1-2% associated with the hotter margin of a zone rich in biotite clots from 492'1"-492'5".
9'11"	9'9"			492'8"-502'6" No discernible sulphides
				502'6"-502'11" Mineralised Zone Pyrrh Cpy 2% irregular interstitial grains.
1'11"	9'6"			502'11"-504'10" Sulphides trace only.
				504'10"-505'3" Mineralised Zone Pyrrh Cpy 1-2%
				505'3" - 506'2" No discernible sulphs.
				506'2" - 506'11" Feldspar-rich zone with 1% Cpy.
				506'11"-507'2" No discernible sulphs.
				507'2" -507'5" Mineralised Zone Cpy Pyrrh Trace
2'10"	2'10"			507'5"-516'7" No discernible sulphs
10'0"	9'11"			516'7"-516'9" Mineralised Zone Py Pyrrh Cpy trace
40'2"	10'0"	536'2"	542'11"	Garnetiferous Banded Gneiss .. foliated rock with 2-4% reddish garnets up to 1/8" diameter

542'11" END OF HOLE

SULPHIDE INTERSECTIONS

FROM	152'8"	TO 154'4"	1'9"	of 0.03% Cu
"	470'2"	" 488'4"	18'2"	of 0.24% "
"	492'5"	" 492'8"	0'3"	of 0.05% "
"	502'6"	" 502'11"	0'5"	of 0.29% "
"	504'10""	505'3"	0'5"	of 0.14% "
"	506'2"	506'11"	0'9"	of 0.18% "

FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
480'5"	481'7"	0.27	50	<3	120	3.10
481'7"	482'7"	1.20	60	<3	220	4.45
482'7"	485'8"	0.02	30	<3	100	0.14
485'8"	486'7"	0.34	30	<3	240	1.20
486'7"	487'3"	0.02	25	<3	120	0.22
487'3"	488'4"	0.60	70	<3	190	2.15
492'5"	492'8"	0.95	70	<3	140	0.33
502'6"	502'11"	0.29	50	<3	220	1.15
504'10"	505'3"	0.14	25	<3	120	0.97
506'2"	506'11"	0.18	5	<3	60	0.37

E Diamond Drill

9

NO. 641/72

INCLINATION 50°

AZIMUTH 240° from Magnetic North

DEPTH 414ft. 5 inches

ASSAY REFERENCE A614/72 to A623/72 and A14/73 to A16/73

COORDINATES 10500N 330E

ELEVATION

DATE COMPLETED 15.3.72

DRILLER D.E. WHITE

LOGGED BY A.M. PAIN

VERY LOG		LOG OF DRILL HOLE			ASSAYS						
TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
		0'0"	39'4"	No Core Recovery.							
		39'4"	44'5"	Acid Gneiss. A coarse grained very weathered white rock. Core rubbly and broken.							
		44'5"	46'11"	Banded Gneiss. A brown, weathered foliated rock.							
		46'11"	50'10"	Garnetiferous Banded Gneiss. A pale grey coarse-grained quartz-feldspar rock with faint banding. Disseminated subhedral red garnet grains.							
0'10"	9'1"	50'10"	63'6"	Garnetiferous Banded Gneiss. Similar to above but with more biotite (up to 6-8%). Foliation at 45° to core axis. Less weathered with depth.							
7'7"	6'11"										
3'7"	6'5"	63'6"	99'3"	Banded Gneiss. A medium-grained feldspar-quartz-biotite gneiss with biotite in thin bands parallel to prominent foliation. Occasional coarse leuco-cratic patches up to 8" wide. Core is slightly weathered with brown iron staining in parts and some bright red iron staining in top 5ft. of interval. Foliation at 43° to core axis, with some contorted folding between 95'2" and 96'5".							
0'3"	10'0"										
6'7"	6'4"										
0'3"	9'11"										
10'2"	10'1"	99'3"	126'3"	Banded Gneiss. As above. Foliation at 47° to core axis.							
7'4"	7'2"										
3'0"	2'5"	126'3"	127'4"	Banded Gneiss - Sulphide Zone. Rock type similar to above but with coarse biotite clots to ½"diam. after pyroxene. Chalcopyrite, Bornite (molybdenite?) as small interstitial grains and stringers.	126'3"	127'4"	0.57	5	4	370	3.35
9'5"	8'8"										
10'3"	10'2"	127'4"	130'9"	Banded Gneiss. Foliation at 55° to core axis.							
0'3"	10'2"	130'9"	164'2"	Quartz-Feldspar Rock. A hard, white, medium to coarse grained rock with less than 2% biotite flakes orientated parallel to a very faint foliation.							
0'2"	9'2"										
0'3"	10'3"										

INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Nippm	Moppm	Znppm	S %
0" 10'3"	10'3"	164'2"	192'11"	Banded Gneiss. A medium-grained fairly biotitic rock with some irregular folding, particularly between 190'3" and 191'5". Occasional medium to coarse leucocratic patches with coarse biotite clots. Minor epidote patches between 187'4" and 188'1". Banding variable from 45° at 183'9" to 54° at 183'9".							
" 7'5"	7'5"										
)" 6'9"	6'8"	192'11"	194'6"	Banded Gneiss. Coarse plagioclase grains up to ½" diameter with coarse biotite clots (after pyroxene). ½-1% pyrite associated with the coarse biotite clots.							
		194'6"	198'3"	Banded Gneiss. As for interval from 164'2"-192'11".							
1" 9'11"	9'11"	198'3"	204'7"	Acid Gneiss. A coarse-grained white to pale grey rock with disseminated flakes of biotite and coarse clots (after pyroxene?). Pyrite as minor disseminated specks from 201'3"-204'7".							
		204'7"	207'3"	Banded Gneiss. A medium-grained biotitic rock with occasional coarse-grained leucocratic patches with biotite clots. Some folding.							
0" 7'11"	7'7"	207'3"	213'7"	Acid Gneiss. A coarse-grained, off-white dominantly leucocratic rock with occasional thin biotite bands and contorted patches.							
)" 10'2"	10'2"	213'7"	237'10"	Banded Gneiss. A medium-grained biotitic rock with occasional coarse leucocratic patches with biotite clots. Foliation 55° to core axis..							
" 8'1"	7'10"										
4" 10'3"	10'1"			225'11"-226'10" Sulphide Zone. A coarse grained feldspathic zone with coarse biotite clots and associated 5-6% pyrrh, py, cpy interstitial grains. 226'10"-227'4". Coarse grained white quartz-feldspar zone.	225'11"	226'10"	0.15	150	<3	190	1.4
				235'10"-236'1" Sulphide Zone. 2% pyrite as irregular angular grains associated with biotitic zone in gneiss.	235'10"	236'1"	0.09	30	<3	280	1.3
		237'10"	240'0"	Acid Gneiss. Coarse grained off white rock with some interstitial biotite and coarse biotite clots up to ½" diameter.							
		240'0"	240'10"	Acid Gneiss. Sulphide Zone. Coarse feldspathic zone with some interstitial biotite grains and minor pyroxene grains. 3% pyrrh, py, cpy, as medium to coarse angular grains. Cpy. grains up to ⅜" diameter.	240'0"	240'10"	0.24	50	<3	160	0.1

INTERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S %
		240'10"	241'6"	Biotitic Gneiss. Sulphide Zone with ½% py, cpy as fine interstitial grains.	240'10"	241'6"	0.02	30	< 3	190	0.37
		241'6"	242'10"	Acid Gneiss. As for interval 237'10"-240'0".							
		242'10"	243'4"	Brecciated Zone. Coarse, cloudy brecciated feldspar grains with biotite and chlorite filling fractures. Minor epidote.							
0'3" 9'1"	10'3" 8'10"	243'4"	259'11"	Banded Gneiss. Medium-grained banded gneiss with occasional coarse leucocratic patches and coarse biotite clots. An epidote rich zone occurs between 257'5" and 257'7".							
		259'11"	261'10"	Banded Gneiss. As above but core is rubbly, broken and slightly weathered, with some iron staining on joints - Fracture Zone.							
10'2" 4'10" 10'2" 10'3"	10'2" 4'9" 10'2" 10'3"	261'10"	295'5"	Banded Gneiss. A medium-grained rock with occasional coarse-grained leucocratic patches with coarse biotite clots. Occasional thin biotite bands up to 1" wide.							
				286'11"-287'8" Sulphide zone. A medium-grained leucocratic patch with biotite as disseminated flakes and coarse clots. Py Cpy 1-2% interstitial grains.	286'11"	287'8"	0.09	20	<3	120	0.70
				287'8"-293'4" Py ½% disseminated grains.							
				293'4"-293'8" Sulphide Zone. Py Cpy 3% disseminated interstitial grains.	293'4"	293'8"	0.53	70	<3	240	2.80
				293'8"-294'6" Barren.	293'8"	294'6"	0.03	35	<3	80	0.39
				294'6"-294'11" Sulphides Py Cpy 3%.	294'6"	294'11"	0.17	5	6	220	1.50
				294'11"-295'5" Sulphides minor specks only.	294'11"	295'5"	0.04	12	3	160	0.30
		295'5"	297'0"	Banded Gneiss - Mineralized. Coarse feldspar grains and irregular coarse biotitic clots with associated chalcopyrite and pyrite 1% irregular specks and fine fracture fillings.	295'5"	297'0"	0.11	35	3	95	0.56
0'3"	10'2"	297'0"	316'8"	Banded Gneiss. No visible sulphides.							
0'3"	10'2"	316'8"	317'10"	Banded Gneiss - Mineralized. Py, Cpy irregular	316'8"	317'10"	0.09	5	<3	100	0.74
		317'10"	318'8"	Biotitic Gneiss - Sulphide Zone. A coarse-grained dark grey rock with abundant biotite as irregular clots, and coarse grains, some concentrated into bands. Py Cpy 5% irregular interstitial grains.	317'10"	318'8"	0.17	130	<3	140	1.40

ERVAL	RECOVERY	FROM	TO	DESCRIPTION	FROM	TO	Cu %	Ni ppm	Mo ppm	Zn ppm	S %
'6"	9'5"	318'8"	326'1"	Banded Gneiss. Feldspar-quartz-biotite gneiss with some coarse-grained segregations of white and pale pink feldspar with coarse biotite clots. Some biotite as coarse clots to ½" diameter (after pyroxene). Minor pseudotachylite veins to 1/8" wide from 318'8"-318'9".							
		326'1"	329'2"	Acid Gneiss. A hard white coarse-grained rock with 4-5% biotite as small flakes and coarse clots to ¼" diameter. 326'1"-326'7" ½% pyrite specks assoc. with biotite. 328'10"-329'2" Irregular pseudotachylite veins up to ½" thick.							
'3"	10'1"	329'2"	346'7"	Banded Gneiss. A medium-grained feldspar-quartz-biotite gneiss with coarse leucocratic segregations having coarse biotite clots up to ¼" diam. Foliation prominant at 65°-70° to core axis. 329'2"-329'9" Pyrite ½% disseminated specks. 342'2"-342'10" Pyrite ½% disseminated specks. Thin pseudotachylite veins of 332'4",334'0",336'11".							
'3"	10'3"										
		346'7"	347'7"	Biotitic Gneiss - Mineralized. 2% Chalcopyrite, pyrite (& molybdenite?) associated with contorted biotitic gneiss band.	346'7"	347'7"	0.16	25	3	75	1.45
0'3"	10'1"	347'7"	363'6"	Banded Gneiss. As for interval 329'2"-346'7".							
'2"	4'4"	363'6"	365'11"	Fracture Zone. Rock is biotitic and weathered to brown clayey rock.							
'3"	8'10"										
'2"	10'2"	365'11"	407'10"	Banded-Gneiss. Feldspar-quartz-biotite gneiss as for interval 329'2"-346'7" Foliation at 65° to core axis.							
'0"	10'0"										
'0"	10'0"										
'0"	9'9"	407'10"	414'5"	Garnetiferous Banded Gneiss. Similar to the above rock type but with 4% subhedral to euhedral pink garnet grains.							

414'5" END OF HOLE

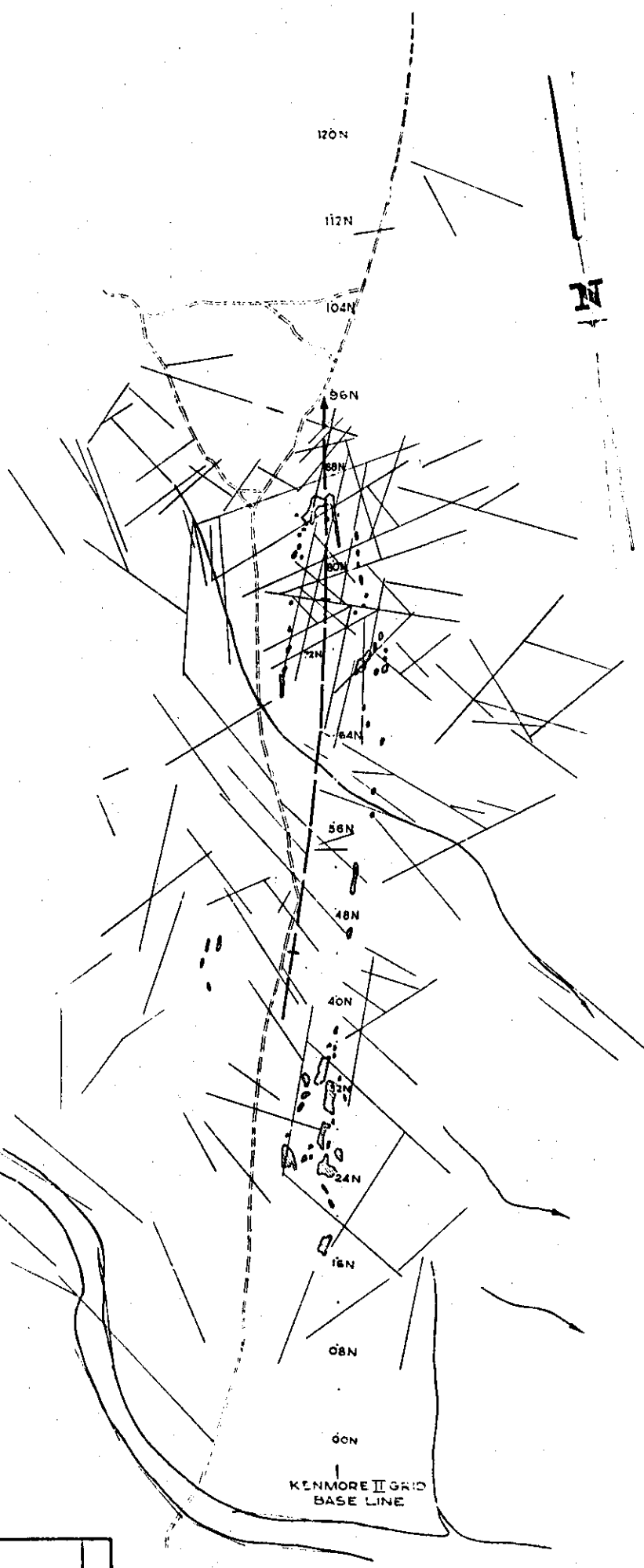
SULPHIDE INTERSECTIONS

From	225'11"	to	226'10"	0'11"	of 0.15% Cu
"	235'10"	"	236'1"	0'3"	" 0.09% "
"	240'0"	"	241'6"	1'6"	" 0.14% "
"	286'11"	"	287'8"	0'9"	" 0.09% "
"	293'4"	"	297'0"	3'8"	" 0.13% "
"	316'8"	"	318'8"	2'0"	" 0.12% "
"	346'7"	"	347'7"	1'0"	" 0.16% "

=		ASSAY REFERENCE		DATE COMPLETED
9	INCLINATION	50°		DRILLER D.E. WHITE
NO. 646/72	AZIMUTH	090° from Magnetic North	COORDINATES 10400N; 680W	LOGGED BY A.M. PAIN
	DEPTH	301 ft 5 inches	ELEVATION	

/ERY LOG		LOG OF DRILL HOLE			ASSAYS						
TERVAL	RECOVERY	FROM	TO	LITHOLOGICAL DESCRIPTION	FROM	TO					
'0"	0'0"	0'0"	20'0"	Core Lost							
'0"	8'8"	20'0"	41'4"	Banded Gneiss. Grading locally to acid gneiss in upper 13 ft of interval. A medium to coarse-grained rock with prominent foliation at 50° to core axis; defined by thin biotite-rich bands 1/8" wide. Occasional pale grey to white coarse-grained feldspar-quartz bands up to 10" wide with only minor biotite. Core is weathered and broken, with pale brown iron staining. Much of the biotite is weathered to pale brown orange clay.							
'0"	8'6"										
'3"	10'0"										
		41'4"	42'1"	Banded Gneiss. Similar to above but slightly darker due to increased biotite content. Grades locally towards biotitic gneiss.							
)'2"	9'6"	42'1"	100'4"	Banded Gneiss. As for interval 20'0" - 41'4" weathered. Core rubbly and broken with brown iron staining. 86'7" - 87'10" Minor irregular pseudotachylyte veins up to 1/4" wide. 96'7" - 100'0" Some thin veins to 1/16" wide, filled by weathered feldspar and pale brown clay material.							
)'0"	9'10"										
)'3"	8'8"										
5'4"	4'0"										
2'0"	1'0"										
3'3"	2'11"										
8'6"	8'2"										
5'3"	4'11"	100'4"	101'5"	Dolerite Dyke. Dark grey, very fine grained rock with sharp contacts. Slightly weathered. Core fractured and broken with some brown iron staining on joints.							
)'3"	9'7"										
4'7"	4'4"										
)'3"	10'1"										
)'0"	8'10"	101'5"	172'0"	Banded Gneiss. As for interval 20'0" - 41'4" Banding at 60° to core axis. (Core lost from 142'6" - 145'0").							
1'5"	3'10"										
2'6"	0'0"										
3'5"	6'2"	172'0"	175'6"	Banded Gneiss. Very weathered, friable zone. Core is patchily weathered to soft, pale green and pale brown clay.							
7'8"	7'1"										
5'11"	6'8"										
4'0"	3'7"	175'6"	180'5"	Acid Gneiss. A weathered, coarse-grained quartz-feldspar-biotite rock. Coarse, pink and cloudy white feldspar in patches. Biotite as disseminated grains, irregular clots and in thin banding which defines foliation. Core is weathered to pale green colour in places.							
3'0"	2'8"										
1'4"	3'8"										

10'2"	9'9"	180'5"	184'1"	Biotite Gneiss. A medium-grained, hard, (only slightly weathered) rock with fairly homogeneous texture. Foliation indistinct due to lack of feldspathic bands, but faint lamination at 62° to core axis. 182'5" - 183'5" Zone with weathered soft brown and green clay in fractures. One fracture at 5° and others at 60° to core axis.							
		184'1"	185'4"	Acid Gneiss. A hard, white coarse-grained rock with <5% biotite occurring mainly as disseminated flakes parallel to faint foliation.							
		185'4"	186'7"	Banded Gneiss. A hard, white, coarse-grained rock with approx. 7% biotite as fine flakes and coarse clots. Coarse biotite clots (after pyroxene?) roughly define the banding. Minor pyrite specks associated with biotite.							
		186'7"	189'2"	Banded Gneiss. A medium-grained hard rock with faint banding.							
10'2" 7'7"	10'0" 7'2"	189'2"	203'0"	Banded Gneiss. A medium-grained rock with faint lamination and moderately prominent foliation. Abundant coarse biotite clots (after pyroxene?) to 1/2" diameter.							
10'0" 6'4" 6'4" 10'3" 10'3" 10'3" 10'3" 10'3" 10'2" 10'1"	9'8" 5'9" 6'1" 9'11" 9'10" 9'9" 10'1" 10'3" 10'2" 9'9"	203'0"	301'5"	Banded Gneiss. A medium-grained hard grey rock with biotite-rich laminations up to 1/4" wide. Occasional coarse-grained leucocratic patches with associated biotite clots up to 1/2" diameter. Leucocratic patches are up to 10" wide and become more common with depth. Grades locally to acid gneiss in bottom 12 ft of interval. Foliation changes from 70° at top to 52° at bottom. 205'8" - 226'3" Fractured, weathered zone of banded gneiss with broken core. 246'7" - 260'6" Slightly weathered zone with fractured core. Clay-filled fracture at 35° to core axis from 251'4" - 251'6" Minor cpy. specks from 270'8" - 270'9". Weathered fracture zones at 35° to core axis at 276'11" and 296'7".							
				301'5" END OF HOLE							



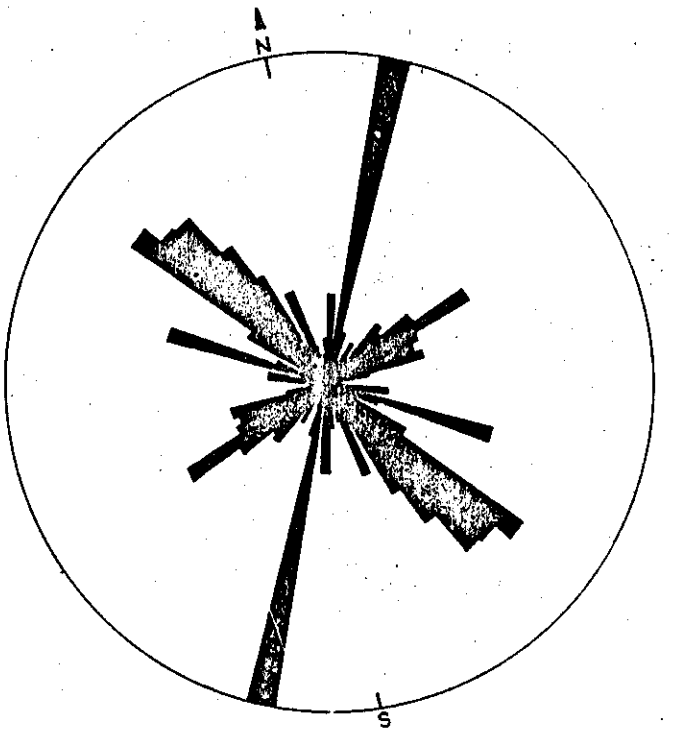


DIAGRAM SHOWING LINEAMENT CONCENTRATION AND DIRECTION

LEGEND

Outcrop of altered basic (ultra basic ?) rock. Brown calcreted carbonate. Silicified in places to hard brown jasper capping

Tracks

Creeks

Photo-interpreted lineaments representing joints or small faults in the folded Proterozoic metasediments.

Anticlinal fold axis

SCALE IN FEET

SCALE IN METRES

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT

KENMORE 1:63,360 SHEET

PHOTO INTERPRETED LINEAMENTS

METALLIC MINERALS SECTION		
	A M Pain GEOLOGIST	Drn. AMP
		Trd. C.V.
		Chd. A.F.
Director of Mines		Scale: As shown
		73-101
Ed.		Ag
		DATE 31 JAN '73

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT

KENMORE 1:63,360 SHEET AREA

GEOCHEMICAL SAMPLES—COPPER ASSAYS—MINUS 80 MESH

FOR DEPARTMENT OF MINES AND ENERGY	GEOLOGIST	Drawn	SCALE: 1 inch = 400ft (1:4800)
		Trd G.M.	73-245
		Ckd.	A5
Director of Mines		Trd.	DATE: [illegible] 1973

LEGEND

- Geochemical soil sample location with copper assay (p.p.m) Minus 80 mesh sample taken from 9 inches depth (in 1971)
- Geochemical soil sample location with copper assay (p.p.m) Minus 80 mesh sample taken from 12 inches depth (in 1972)

CONTOUR INTERVAL

- 500 p.p.m +
- 400–499 p.p.m.
- 300–399 ppm.
- 200–299 p.p.m
- 100–199 p.p.m.
- 50–99 p.p.m.

SCALE IN FEET: 400 0 400 800 1200 1600 2000

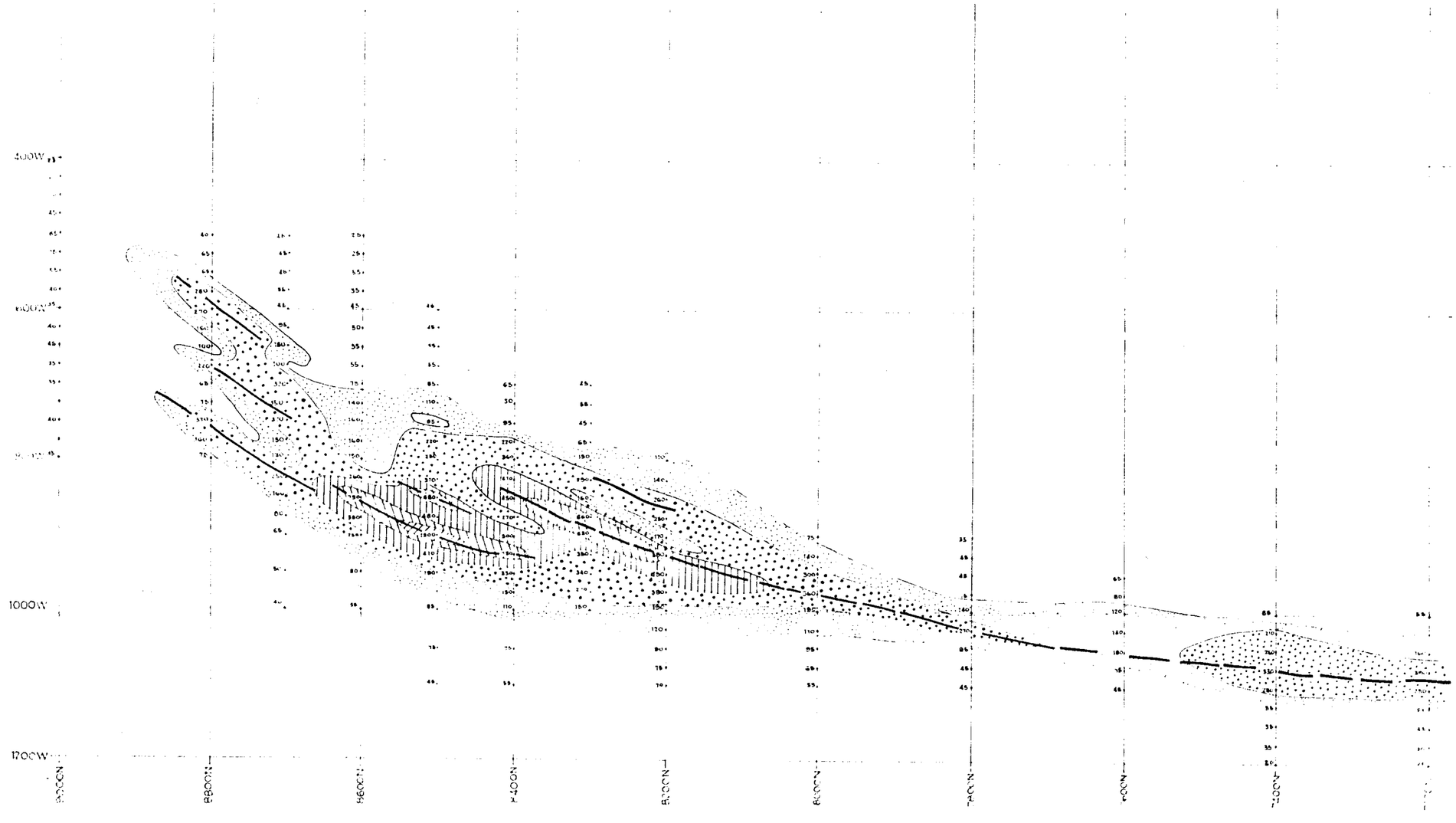
SCALE IN METRES: 100 0 100 200 300 400 500 600

00N 400N 800N 1200N 1600N 2000N 2400N 2800N 3200N 3600N 4000N 4400N 4800N 5200N 5600N 6000N 6400N 6800N 7200N 7600N 8000N 8400N 8800N 9200N 9600N 10000N 10400N 10600N 10800N 11200N 11600N 12000N 12400N

Victory Downs 27.4 km

Chrysoprase Bore 3.2 km

N



DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT

KENMORE 1:63360 SHEET AREA

GEOCHEMICAL SOIL SAMPLES COPPER ASSAYS
MINUS 80 MESH — 18 INCHES DEEP

NON-METALLIC MINERALS SECTION	GEOLOGIST	Drn. A.H.P.	SCALE: 1:5000
		Trd. G.M.	73-271
Director of Mines		Ckd. A.H.	
		Encl.	DATE:

1600W 1500W 1400W 1300W 1200W 1100W 1000W 900W 800W 700W 600W

Copper p.p.m
400
200

Copper analyses from 18" deep (Minus 80 mesh) soil samples

K2D5

KM34

190
1300
720
1100
370
1450
240
100
190
1600
85

Sulphides in drill cut

KM21

35
25
25
35
70
55
100
75
70'

Approximate depth of weathering

Static Water level

Sulphide zone
15'6" of 0·21% copper

Sulphide Zone

395'4"

Scale in feet
40 0 10 20 30 40

Scale in metres

LEGEND

DIAMOND DRILLHOLE WITH LITHOLOGY SHOWN
- Acid gneiss
- Garnetiferous acid gneiss
- Banded quartz
- Garnetiferous banded gneiss
- Biotite gneiss
- Pyritic quartz biotite hornfelsic rock
- Dolerite dyke rock
- Breccia zone

ROTARY-PERCUSSION DRILLHOLE WITH COPPER ASSAYS IN PPM
15
65
125
1320
910
75
60 DEPTH OF HOLE

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT
CROSS SECTION 7200 NORTH

NON-METALLIC MINERALS BRANCH	A.M.Dunn CHIEF GEOLOGIST	Drn. A.M.D	SCALE: 40 feet to 1 inch
		Trd. G.M.	73-304
Director of Mines		Chkd.	Aa
		Exd.	DATE 15th August 1973

1500W 1400W 1300W 1200W 1100W 1000W 900W 800W 700W

KZD6

Sulphide zone
1·6' of 0·03%
copper

Sulphide Zone

Sulphide zone
18·2' of 0·24% copper
0·3' of 0·05% Cu
0·3' of 0·28% Cu
0·5' of 0·14% Cu
0·3' of 0·18% Cu

542'11"

Copper p.p.m
400
200

Copper analyses from 18" deep (Minus 80 mesh) soil samples

Approximate depth of weathering

LEGEND

DIAMOND DRILLHOLE WITH LITHOLOGY SHOWN
- Acid gneiss
- Garnet-feldspar-mica gneiss
- Banded gneiss
- Garnet-rich rock in banded gneiss
- Biotite gneiss
- Foliated quartz-mica-hypersthene rock
- Dolerite dyke rock
- Breccia zone

ROTARY-PERCUSSION DRILLHOLE WITH COPPER ASSAYS IN PPM
15 65 125 1320 930 75
60 DEPTH OF HOLE

Scale in feet
0 10 0 10 20 30 40 50 60

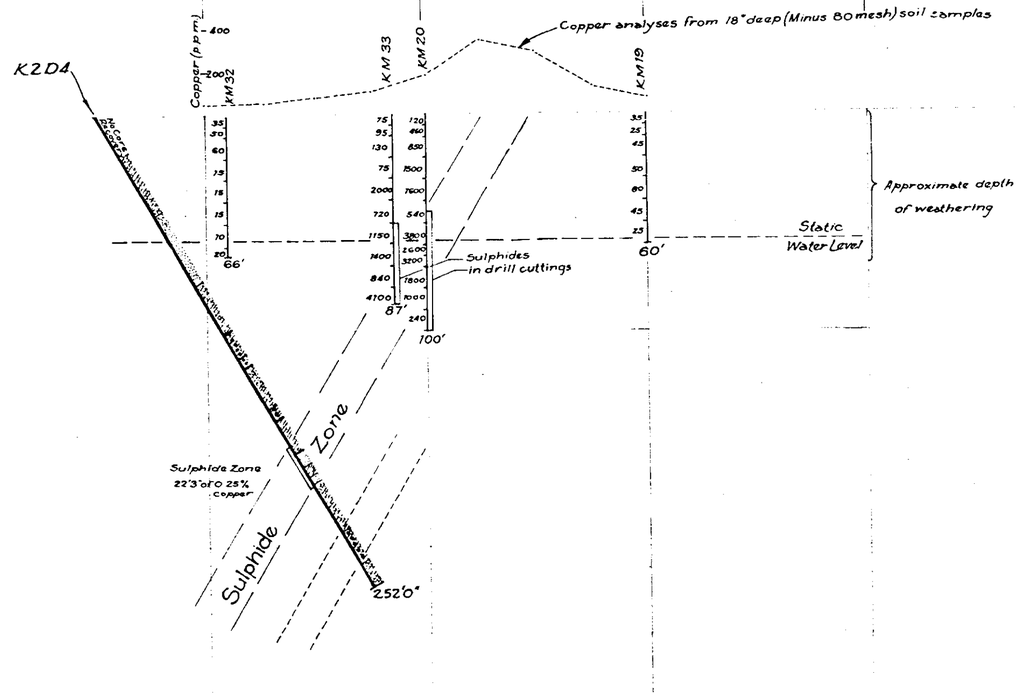
Scale in metres

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT
CROSS SECTION 7600 NORTH

NON-METALLIC MINERALS SECTION	GEOLOGIST	Drn. J.M.D.	SCALE: 40 feet to 1 inch
		Trd. G.M.	73-305
Director of Mines		Chd. A.F.	Aa
		Ead.	DATE: 16th September 1974

1600W 1500W 1400W 1300W 1200W 1100W 1000W 900W 800W 700W 600W



LEGEND

DIAMOND DRILLHOLE WITH LITHOLOGY SHOWN

- Acid gneiss
- Garnetiferous acid gneiss
- Banded gneiss
- Garnetiferous banded gneiss
- Biotite gneiss
- Feldspar quartz basalt to hypersthene rock
- Dolerite dyke
- Breccia zone

ROTARY-PERCUSSION DRILLHOLE WITH COPPER ASSAYS IN PPM

15 65 125 1320 930 75

60 DEPTH OF HOLE

Scale in feet

40 0 40 80 120 160 200

10 0 10 20 30 40 50 60

Scale in metres

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT

CROSS SECTION 8000 NORTH

NON-METALLIC MINERALS SECTION	A Williams CHIEF GEOLOGIST	Drn. A M D	SCALE: 40 feet to 1 in
		Trd G M.	73-306
Director of Mines		Chd. A I	Aa
		Lod	DATE 11th April 1973

800N 700N 600N 500N 400W 300W 200W 100W 00 100E 200E

Copper (ppm)
-400
-200
0

KDB

KM30 KM31 KM29 KM35 KM28 KM36

Copper analyses from 9" deep (Minus 80 mesh) soil samples

Secondary copper staining

Copper staining

Secondary Copper Staining

Static Water Level

70' 70' 90' 100' 64'

Approximate depth of weathering

Dolerite dyke

301'5"

LEGEND

DIAMOND DRILLHOLE WITH LITHOLOGY SHOWN
- Acid gneiss
- Garnetiferous acid gneiss
- Banded gneiss
- Garnetiferous banded gneiss
- Biotite gneiss
- Felsic quartz biotite hypersthene rock
- Dolerite dyke rock
- Breccia zone

ROTARY-PERCUSSION DRILLHOLE WITH COPPER ASSAYS IN PPM
15 65 125 1320 910 75
60 DEPTH OF HOLE

Scale in feet
40 0 40 80 120 160 200
10 0 10 20 30 40 50 60
Scale in metres

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT
CROSS SECTION 10400N

NON-METALLIC MINERALS SECTION	A M Pain GEOLOGIST	Drn. A·M·P	SCALE: 40ft to 1inch
		Tcd. G.M	73-307
Director of Mines		Ckd. A F	Aa
		Exd.	DATE: 18th April 1973

1500W 1400W 1300W 1200W 1100W 1000W 900W 800W 700W 600W

-800
-600
-400
-200
P.P.M. Copper

Copper Analyses from 18" deep (Minus 80 mesh) soil samples

K2D3

KM14 KM27 K2D2

KM13

KM12

Secondary copper staining

Approximate depth of weathering

Dyke

Dolarite

Sulphide zone 323'@1.04%Cu

Sulphides in drill cuttings

125'3"

Sulphide Zone 20'0" of 0.23%Cu

Sulphide Zone

285'6"

LEGEND

DIAMOND DRILLHOLE WITH LITHOLOGY SHOWN

- Acid gneiss
- Garnetiferous acid gneiss
- Banded gneiss
- Garnetiferous banded gneiss
- Biotite gneiss
- Felsitic quartz feldspar layered siliceous rock
- Dolarite dyke rock
- Breccia zone

ROTARY-PERCUSSION DRILLHOLE WITH COPPER ASSAYS IN PPM

15 65 125 1320 810 75

60 DEPTH OF HOLE

Scale in feet

40 0 40 80 120 160 200

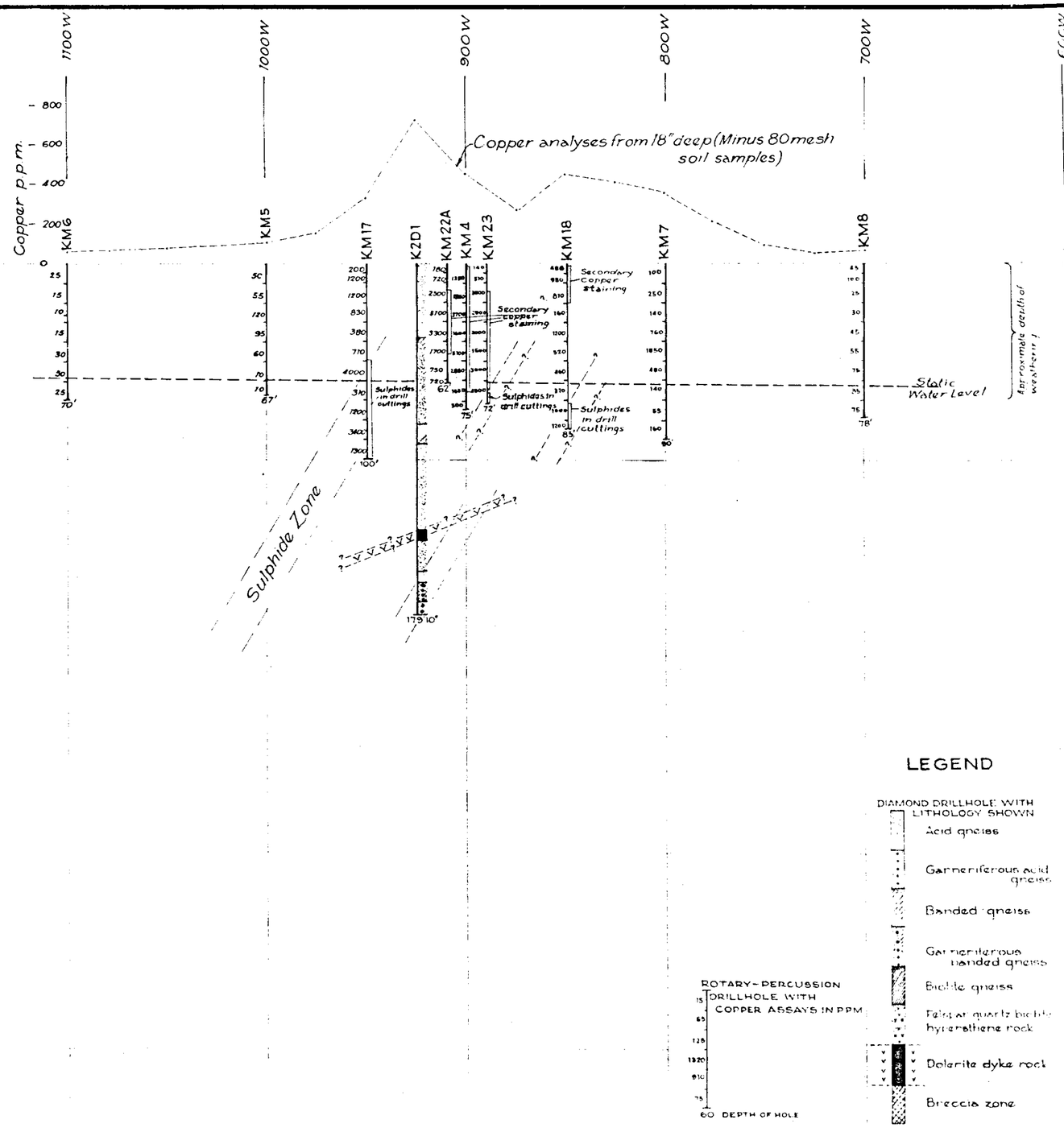
10 0 10 20 30 40 50 60

Scale in metres

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT
CROSS SECTION 8600 NORTH

NON-METALLIC MINERALS	A.M.Rowe CHIEF GEOLOGIST	Drn. A.M.D.	SCALE: 40 feet to 1 inch
		Trd. G.M.	73-308
Director of Mines		Chd.	Aa
		Lzd.	DATE: 27th August 1973



Scale in feet

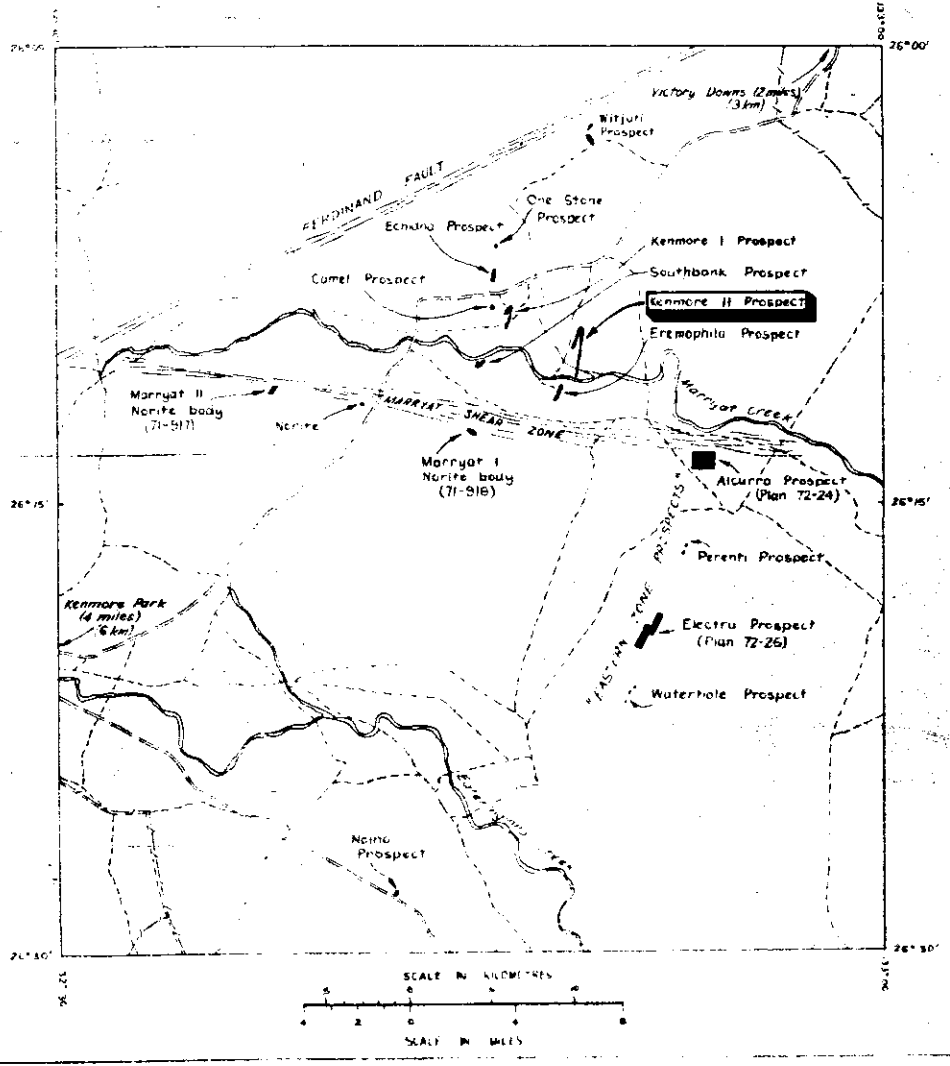
Scale in metres

DEPARTMENT OF MINES — SOUTH AUSTRALIA

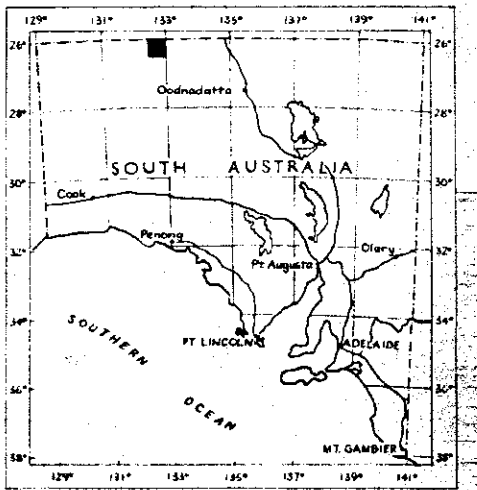
KENMORE II COPPER PROSPECT
CROSS SECTION 8400 NORTH

NON-METALLIC MINERALS SECTION	GEOLOGIST	Drn. J.M.D	SCALE: 40 feet to 1 inch
		Tr'd G.M	73-309
Director of Mines		Chd. A.T	Aa
		Exd.	DATE: 16 APRIL 1973

SCALE IN FEET



LOCALITY



MINERAL RESOURCES DIVISION

Drawn: A.M.Pam

Checked: D.J.M. A.F.

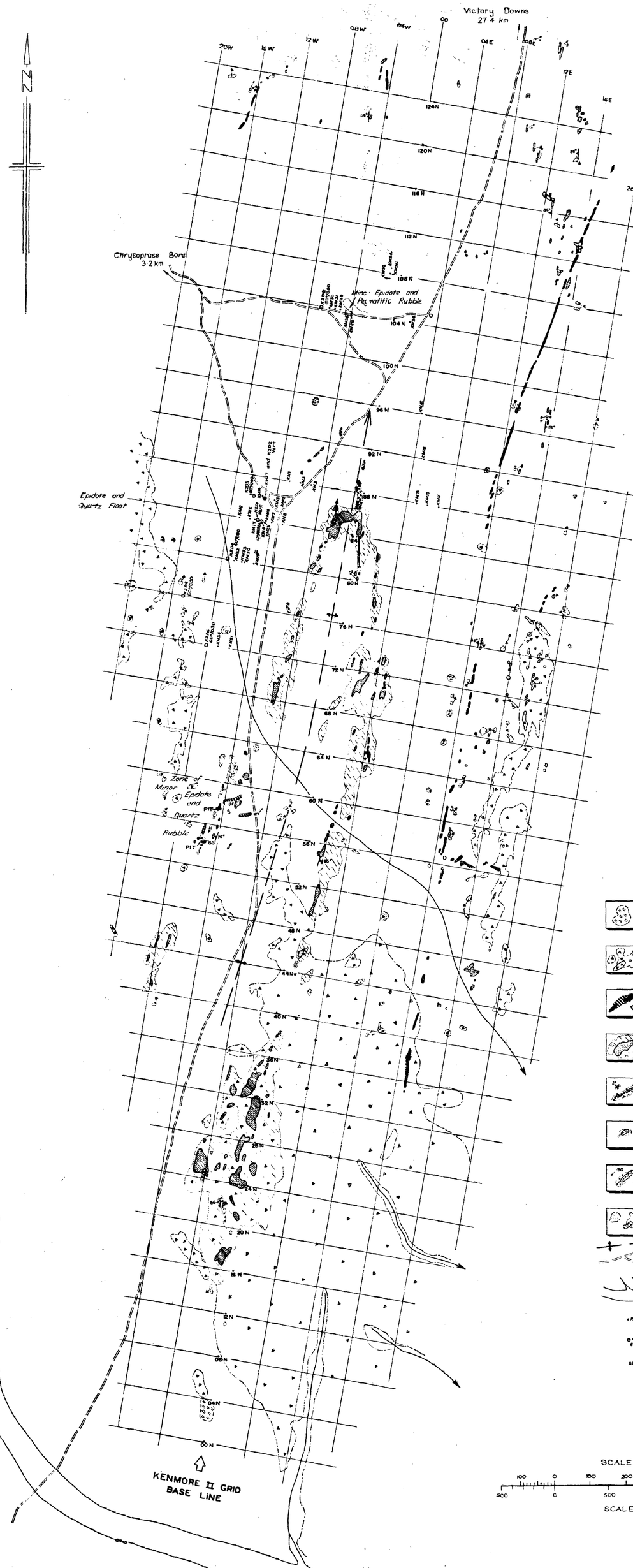
DEPARTMENT OF MINES – SOUTH AUSTRALIA

KENMORE II PROSPECT
LOCALITY PLAN

Scale: 1:250,000

Date: 12th Mar 1973

Dwg. No. 73-441 Ag



GEOLOGICAL SUMMARY

At the Kenmore II Prospect, an apparently strata-bound occurrence of chalcopyrite and pyrite has been found in acid gneiss near the nose of a right northerly plunging anticline.

The rock sequence consists predominantly of quartz-feldspar-biotite-(hypersthene) gneiss with some garnet-bearing and sillimanite-bearing bands, and some bands of basic granulite.

The core of the anticline underlies a low ridge which rises 10-15 feet above the surrounding plain and is capped by hard, brittle siliceous jasper. No drilling has been done in the core of the structure, so the nature of the rock which gave rise to the jasper after weathering and silicification is not known. Inconclusive results of pitting suggest that it could be a basic granulite or a biotite-rich zone within the gneiss sequence. However, samples taken from drill-holes undercutting a similar jasper-capped rise at Kenmore I Prospect three miles west were examined petrographically and identified as peridotites.

Intense brittle fracturing or jointing has taken place since folding and metamorphism. On aerial photographs a pattern of closely spaced lineaments is clearly visible; the main trend directions being approximately 015°, 060°, 110°, and 130° from grid north. It is possible that some minor displacements have taken place along these. (Thin bands of mylonite and pseudotachylite were found in outcrop and diamond drill cores.)

Dolerite dykes up to ten feet wide have been intruded into some fractures. Late stage epidote alteration of the gneisses is a widespread feature and is associated with the fracturing.

LEGEND

- Calcreted brown surficial dolomitic limestone outcrop
- Epidote - Quartz Rock (Epidotized Gneiss) Outcrop and Float
- Dolerite Dyke Outcrop and rubbly Float. A hard, dense dark grey to black rock
- Altered Basic (Ultrabasic?) Rock. Brown calcreted carbonate with some limonite ochre. Minor hematite. In places silicified to hard brown jasper capping.
- Quartzite (Outcrop and rubbly Float) A glassy, banded, bluish quartzite with minor pyroxene
- Sillimanite Gneiss (Outcrop and Float)
- Basic Granulite (Outcrop and Float) Coarse-grained pyroxene-amphibole-feldspar rock
- Quartzo-Feldspathic gneiss (Outcrop and rubbly Float)
- Anticlinal Fold Axis
- Tracks
- Creeks
- Rotary - Percussion (Mayhew) Drill Hole — Vertical
- Diamond Drill Hole Location with dip (from horizontal) and azimuth (from grid north)
- Strike and dip of foliation in gneiss

SCALE IN METRES
100 0 100 200 300 400 500 600
SCALE IN FEET
500 0 500 1000 1500 2000

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KENMORE II COPPER PROSPECT
KENMORE i 63 360 SHEET AREA
GEOLOGICAL PLAN

GEOLOGIST	A.W. Pain
Dm.	J.M.P.
Trd.	D.J.M.
Chk.	A.F.
Enq.	
DATE	6 NOV. 1972
SCALE	1 INCH = 400 FEET (1:4800)
PLAN No.	72-944

Director of Mines | SUP. GEOLOGIST | MINERAL ATLAS SECTION