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Progress reports on operations in E.L. 43/70,
Arthur River, Tasmania during 1970-1971

P.B. Nye and T.M. Porter
1971

Mineral Holdings Aust. Pty Ltd
CRA Exploration Pty Ltd

AMG REFERENCE POINTS ADDED

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PART 1

Report on operations on exploration licence
43/70 during November

P.B. Nye

December, 1970

Mineral Holdings Aust. Pty Ltd

REPORT ON OPERATIONS ON EXPLORATION LICENCE43/70 DURING NOVEMBERINTRODUCTION

This licence contains two mineral prospects, namely, the magnesite-dolomite outcrops near the old Victory mine and the coal seam in one of the branches of Relapse Creek.

The operations associated with each of these prospects will be described separately below

MAGNESITE-DOLOMITE OUTCROPS

These outcrops occur near, and to the north and north-east of the old Victory mine. As stated in the report for October, there are three separate outcrops. These outcrops are now called the Victory, Main and Eastern outcrops.

The Victory outcrop is situated on S.P.L. 56, the greater part of the Main outcrop is on E.L. 43/70, and the Eastern outcrop is probably wholly on E.L. 43/70.

The operations during November were on the Main outcrop and are included in this report on E.L. 43/70. They included

- 1) Visit by Directors, N.M. Thomas and P. Freeman, accompanied by prospector K. Pinner, examined the outcrops and collected specimens.
- 2) Receipt from the Mines Department Laboratory of the analyses of the 18 samples from the Main outcrop; the sampling was reported in October.
- 3) The analyses were carefully studied. The material had been referred to as magnesite-dolomite, to indicate that it was in general a mixture of those two minerals, with small portions consisting more or less entirely of magnesite or dolomite. The results of the sampling confirmed the above general conception. However, the analyses of the mixed magnesite-dolomite showed that this material contained much less dolomite than expected from visual examinations. On the other hand, the analyses showed that the insoluble matter was higher than expected. Some of the insoluble is due to the small crystals of quartz present, and the question arises as to whether the quartz could be removed by beneficiation.
- 4) Preparation by P.B. Nye of a Supplementary Report on the outcrops including descriptions of all factors associated with the magnesite-dolomite. A copy of the report is attached. One plat was not completed until December but is attached to the report.
- 5) Correspondence by Director N.M. Thomas with overseas companies with the object of getting them interested and associated with the testing and development of the deposit.

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COAL

A coal seam outcrops in a branch of Relapse Creek about 135 chains north-easterly from the Arthur River bridge. Access is gained from a point on Farquhar's road about 150 chains north-east from the Arthur River bridge. A track can be followed to the north for about 0.5 miles, and further access is by an old and overgrown bulldozed timber track trending north-east and east.

The coal seam occurs within an area occupied by Permian sedimentary rocks which are probably a southern extension from the Preolenna coal field. In addition to the undoubted Permian rocks there are outcrops of indurated sandstones. Some appear to have the same low dips as the Permian rocks and may be of that age. Where there are no outcrops, it is impossible to determine whether the rocks are of Permian or Pre-Cambrian age.

The operations to date include

- 1) Visit to the area by Directors N.M. Thomas and P. Freeman and prospector K. Pinner, who located the coal seam and obtained samples of the coal.
- 2) Visit of inspection by P.B. Nye, Consultant Geologist, and prospector K. Pinner to the area and the seam. Representative samples were taken from three places in a seam 12 to 14 inches thick. These samples were air-dried and then mixed and a representative sample sent to the Mines Department laboratory for analysis.

P.B. NYE.

Melbourne

18th December, 1970.

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PART 2

Preliminary report on coal in exploration
licence 43/70 Arthur River district,
north west Tasmania

P.B. Nye

February, 1971

PRELIMINARY REPORT ON COAL IN EXPLORATIONLICENCE 43/70, ARTHUR RIVER DISTRICT, NORTH WEST TASMANIAINTRODUCTION

Coal was found in 1901 in the adjacent district of Predlenna some three miles to the north-east of E.L. 43/70. Development work started about 1911 and continued on a small scale for at least 12 years, but production was small.

A State Coal Reserve was declared soon after the discovery of coal. It had an area of 975 acres, but was apparently terminated some time ago. This reserve occupied the north-eastern corner of what is now E.L. 43/70. It was stated in the Coal Resources of Tasmania (1922) that outcrops of coal and kerosene shale had been found in the eastern portion of the reserve. Plate XXXV of the Coal Resources of Tasmania shows the position of the reserve and the outcrops on it.

McNeil in 1960 reported that "several square miles of potential coal-bearing country exists to the north of the Victory Mine. It is traversed by Relapse Creek in which coal has been reported".

The residents of the Takone area apparently know of only one outcrop of coal. It is in one of the headquarter creeks of Relapse Creek, and situated in the north eastern portion of E.L. 43/70. The outcrop is in the bed and on the northern bank of the creek. This outcrop was visited by the writer late in 1970.

MINING TENEMENTS

Special Prospecting Licence 56 and Exploration Licence 43/70 are situated a few miles to the west of West Takone and are partly shown on the attached map.

S.P.L. 56 has its northern boundary on the Arthur River about 30 chains north of the bridge on Farquhar's Road and extends 5.5 miles to the south. It has an area of 25 square miles.

E.L. 43/70 includes a strip of country two miles wide around the northern and eastern boundaries of S.P.L. 56. It has an area of 23 square miles.

LOCATION AND ACCESS

As stated above the two licences are situated a few miles to the west of West Takone.

Access is gained by road from Burnie and Wynyard. A branch road leaves the Waratah Highway about 2-3 miles south-west from Yolla and runs in a general west-south-westerly direction through Takone and West Takone to a bridge over the Arthur River. It is a sealed road to Takone and a macadamised road from Takone to the Arthur River.

From a point about 4.3 miles westerly from West Takone, a bush track has a sinuous course for about 0.5 miles in a general northerly direction. It then breaks up into many bulldozed logging tracks trending in many directions. One old track extends in a general easterly direction for about 0.7 miles to the outcrop. The outcrop is situated about 36 chains from the nearest point of the road to the Arthur River.

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PREVIOUS LITERATURE.

The following reports and maps were consulted in connection with the preparation of this report.

Hills, Loftus, Assistant Government Geologist, The Preolenna Coalfield, Tas. Geol. Surv. Bull No. 13, 1913.

Geological Survey of Tasmania, The Coal Resources of Tasmania, Tas. Geol. Surv. Min. Resources No. 7, 1922.

McNeil, R.D., Geological Reconnaissance of Part of the Arthur River Area, Tas. Dept. Mines Technical Reports No. 5, 1960.

Banks, M.R., Permian, Chap V, The Geology of Tasmania, Geol. Soc. Aust. Vol. 9, part 2, 1962.

Gee, R.D., Gulline, A.B. and Bravo, A.P., Burnie Sheet Tasmanian 1 mile Series, 1967.

There are other official and private reports describing parts of the region.

GEOLOGICAL MAP

A geological map is attached. It has been prepared from all available published maps and reports.

The map includes all the Permian rocks on S.P.L. 56 and E.L. 43/70 and the Permian rocks to the east and north-east that contain the coal measures.

The mapping on S.P.L. 56 and E.L. 43/70 is based mainly on the map accompanying McNeil's 1960 report. The mapping to the east and north-east is based on Geological Survey of Tasmania 1 mile Sheet Burnie. A small amount has been added by the writer from knowledge gained by visits to the area.

There is a gap between the two sets of mapping and it should be geologically surveyed as soon as possible.

On the geological map, the different formations in the Permian sequence are not shown directly as such, but the Permian rocks are shown in three divisions, namely, the coal measures, the Permian rocks above them and the Permian rocks below them. This division was not possible in the region mapped by McNeil (1960) and the Permian rocks in that region are shown as undifferentiated, although mostly below the coal measures.

Narrow dykes have not been included on the map.

GEOLOGY

The oldest rocks are Precambrian schists of many types, quartzites, siltstones, etc. They outcrop over most of the southern part of S.P.L. 56 and E.L. 43/70, and overplaces in the northern parts of both licences, and to the north of the adjacent Preolenna area. They form the bedrock of the whole of the district.

Permian rocks overlie the Precambrian rocks with a marked unconformity. They outcrop extensively in the Preolenna area to the north-east of E.L. 43/70, and also in the northern parts of E.L. 43/70 and S.P.L. 56. To the south the Permian rocks are present only in downfaulted blocks.

Two small bodies of Jurassic dolerite are intrusive into the Permian rocks 0.5 to 1.5 miles north-east from the north-eastern corner of E.L. 43/70. In the north-eastern portion of E.L. 43/70 and in the country to the east and north-east, there are extensive flows of Tertiary Basalt.

Several faults traverse the Permian rocks and the underlying Precambrian rocks. The strikes are between north-north-east and east-north-east. The most prominent fault is in the north-western portion of S.P.L. 56 and it passes close to the Arthur Bridge. It strikes north-east and the Permian rocks on the western side are faulted down against the Precambrian on the east. Another prominent fault is that striking east-north-easterly from near the north-eastern corner of E.L. 43/70. It is in Permian rocks with downthrow to the north, bringing coal measures on the north against underlying rocks on the south.

This report is concerned mainly with coal, and as the coal seams are present in the Permian rocks, these rocks will be considered in detail. Divisions of the Permian rocks in the area under review and adjacent areas, have been made as follows:-

		TABLE 1			
	<u>Hille (1913)</u>	<u>McNeill (1960)</u>	<u>McNeill's Equivalents at Quamby Bluff</u>	<u>Burnie 1 Mile Sheet (1967)</u>	<u>Banks (1962)</u>
UNIT F					
UNIT E	Upper Marine Series			Flowerdale Sandstone	
UNIT D	Coal Measures	Relapse Sandstone	Liffey Sandstone	Preolenna Coal Measure	Mersey Group
UNIT C	Lower Marine Series	{ Campbell Formation { Siltstone, Mudstone { Member { Fenestella Shale { Takone Mudstone	{ Golden Valley Formation { Golden Valley Formation { Inglis Siltstone { Quamby Mudstone	{ Golden Valley Formation { Inglis Siltstone { Quamby Mudstone	
UNIT B					
UNIT A	Glacial Tillite, etc.	Victory Tillite	Stockers Tillite and Wynyard Tillite	Wynyard Tillite	Wynyard Tillite

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	<u>Area</u>	<u>Number of Divisions</u>
Hills (1913)	Preclenna	4
McNeil (1960)	Arthur River	4 (1 including 2 members)
Burnie Sheet (1967)	Preclenna	4

McNeil correlated his divisions with those of Hills, and also with the divisions at Quasby Bluff. On the Burnie Sheet, the formations were, with one exception, given local names. In the Geology of Tasmania, Banks gave a classification of the Permian formations for the north-western districts of Tasmania, and the correlation of the various formations named in different districts. All the divisions referred to above are included in Table 1.

The Victory Tillite is exposed mainly on the south-western side of the Arthur River. At the sharp bend in the Arthur River about 1.5 miles west from the bridge, the base of the tillite can be seen when the water-level in the river is low. The tillite overlies mica schists and the amphibolite dyke at that place with a marked unconformity. The slope of the surface of the schists and amphibolite and the dip of the basal beds of tillite are to the north or north-north-east at about 10 to 15 degrees. This exposure is to the west of the fault mapped at this place by McNeil. This fault was not seen or searched for, but its downthrow would be to the east.

Takone mudstones or the upper part of the Victory tillite crops out on the southern side of the Arthur River between the Keith River and the large fault to the east. Similar mudstones are present along the northern bank of the river between the sharp bend in the river referred to above, and the large fault near the old Victory mine. To the north of the old Victory mine, the Permian rocks against this fault are dipping vertically.

McNeil (1960) reports that the Relapse Sandstone is exposed to the north of the large fault and north of the old Victory mine.

To the east of the large fault, McNeil (1960) reports that the best section of the Permian rocks is exposed but that the base of the system appears to be faulted and the Relapse Sandstone does not appear. This section was not examined in detail by the writer during recent visits. In a report (Nye, April, 1925) the writer stated that in ascending the track from the Victory mine to the summit of the Campbell Range, the Permian rocks overlaid the Precambrian schists at an altitude of 600 feet above the river. McNeil states that the Takone Mudstone and Campbell Formation occur along the above road section.

On the track from Farquhar's road to the coal outcrop in a creek on E.L. 43/70, massive sandstones are present at a few places and at the coal outcrop. These sandstones apparently are part of the Relapse Sandstone. At the coal outcrop, they strike about east-north-east and dip to the north-north-west at 10 to 15 degrees.

The position of the coal outcrop was determined from aerial photographs, but it may not be correct, because on the aerial photographs it is difficult to determine the positions of small creeks.

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It will be seen from Table 1 that the coal measures under review are Unit D (Hills), Relapse Sandstone (McNeil) and Preclenna Coal Measures (Burnie Sheet) and that these are correlated with the Mersey Group.

It should be stated also that, according to the Burnie Sheet, Tasmanite oil shale occurs in the Inglis Sandstone at three places to the south of Takone.

POSSIBILITY OF COAL MEASURES AND SEAMS ON S.P.L. 56 AND E.L. 43/70

The country to the east and north-east of the north-eastern portion of E.L. 43/70 is occupied essentially by Permian rocks with Jurassic dolerite intrusions in places, and largely overlain by Tertiary basalt. At the surface, the coal measures are not present along the eastern and northern boundaries of E.L. 43/70 but the overlying Permian rocks are present at the north-eastern corner, and coal measures should occur at depth.

The mapping on the Burnie sheet shows that the coal measures and the overlying Permian rocks occur on the northern (downthrown) side of a strong fault striking west-south-westerly. This fault crosses the eastern boundary of E.L. 43/70 one mile from the north-eastern corner. Probably this fault continues some distance into E.L. 43/70 and the coal measures will occur on its northern side and at depth, but depending on the geological structure further to the west-south-west may crop out.

Actually the one outcrop of coal at present known on this area and referred to above, is slightly to the north of the assumed extension of the fault to the west-south-west.

As stated earlier in this report, Plate XXXV of the Coal Resources showed a State Coal Reserve with coal outcrops in two places. The northern place has one outcrop and the southern place has three outcrops. Fixing their positions from Plate XXXV presents difficulties, because their positions have to be fixed from stream intersections as some of the streams are probably not fixed accurately on any map. Some details suggest that the outcrops could be east of E.L. 43/70, but others suggest that they are in the north-eastern corner of E.L. 43/70. Further information will be sought about these outcrops, and a search made in the field to find them and fix their position.

The country to the west of the outcrop, but not including the outcrop, was mapped by McNeil (1960). McNeil stated that the Relapse Sandstone (the equivalent of the Preclenna Coal Measures) occurs north of the Arthur River and the large fault near the Victory Mine, so that it is probable that the Relapse Sandstone is present along at least part of the Relapse Creek, or adjacent areas.

The writer's short visit to the coal outcrop indicated that sandstones cropped out at a few places along the track to the coal outcrop. These sandstones especially as the coal seam overlies some sandstones, are probably part of the Relapse Sandstone.

The above information and the mapping on the attached plates suggest the north-eastern corner of E.L. 43/70 could contain the coal measures and the Permian rocks overlying them, that is, the coal measures could exist throughout that portion of E.L. 43/70. The portion occupied by the coal measures has an approximate length of two miles from east to west and a width of 1.2 miles from north to south. Detailed prospecting, some bull-dozing, geological mapping and drilling would be necessary to confirm the presence of the coal measures throughout that area.

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THE OUTCROP OF THE COAL SEAM

The outcrop is situated about 45 chains to the north-east of the north-eastern corner of S.P.L. 56. The seam is present in and on the northern side of a small creek flowing at 280 degrees, and which is one of the headwater streams of the Relapse Creek.

The southern side of the creek is occupied by massive micaceous sandstones striking at about 250 degrees and dipping to the north-north-west at 10 to 15 degrees.

The seam is exposed along a length of at least 100 feet. The sandstones referred to above appear to be the floor of the seam, but towards the western end of the exposure, there are a few inches of flagging shale between the sandstone and the coal. The roof is exposed only in a small cliff near the centre of the exposure, and is a grey mudstone.

The seam is partly covered by water, and appears to be 12 to 14 inches thick, and possibly slightly thicker near the centre of the exposure.

QUALITY OF THE COAL

Representative samples were taken across the seam from three places. The central sample was from the foot of the cliff. The western was 35 feet to the west, and the eastern about 50 feet to the east. The conditions for sampling were difficult and some of the coal in each case was taken from underwater.

The three samples were air-dried and then combined into one and forwarded to the Chief Chemist and Metallurgist of the Department of Mines Laboratory of Launceston for assay. The results of the assay of the sample (Reg. No. 703805) were:-

	%	
Ash	7.3	} 100.00
Internal Moisture	4.3	
Volatile Combustible Matter	35.8	
Fixed Carbon	52.6	
Sulphur	1.5	
Calorific Value 6,950 cal/gm (12,550 B.Th.U's)		

The general quality of "humic kerogenite" coal from the Preolenna field as shown in the Coal Resources of Tasmania (1922) is:-

	%	
Moisture at 105 degrees C.	1.52	} 100.00
Volatile Matter	32.46	
Fixed Carbon	52.30	
Ash	13.72	
Sulphur	5.87	
Calorific Value 6,780 cal. (12,204 B.Th.U's)		

In the above report, it was stated that the coal of the four Preolenna seams was high-grade and especially suitable for household purposes, gas-making and steam-raising, and also for destructive distillation at low temperatures to produce oils. It was stated also that the coal was the only coking coal in Tasmania. It was pointed out, however, that the sulphur content was high but that washing machines could reduce the sulphur content.

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QUALITY OF THE COAL

The analysis of the sample from the outcrop showed lower contents of ash and sulphur than the general quality of the Preolenna coals. However, it must be stressed that it is only one sample and is from outcrop or near-outcrop conditions, and that further samples from under cover would be necessary to determine the average quality of the coal in the seam represented by the outcrop.

CONCLUSIONS

The north-eastern part of E.L. 56 is about three miles to the south-west of the Preolenna coal-field.

In the Preolenna field, there were four seams and the possibility of a fifth. It is reported that the seams ranged in thickness from 9 to 24 inches, the majority of the outcrops ranging from 15 to 24 inches. The coal was of good quality, the one disadvantage being the high content of sulphur (5.87 per cent in coal of general quality).

The Preolenna Coal seams are in Permian rocks and the Permian rocks extend at least as far west as the eastern boundary of E.L. 43/70. Permian rocks occur also further west in E.L. 43/70, but there is an unmapped zone about two miles wide between the two mapped areas.

One coal outcrop is known in the unmapped area. It is in one of the headwater streams of Relapse Creek. The coal crops out over a length of at least 100 feet, and the seam is generally 12 to 14 inches thick and perhaps slightly thicker in the centre of the outcrop. Representative samples were taken from three places and combined into one sample. An analysis showed that the coal was generally similar to that at Preolenna, but the ash and sulphur contents were lower than those at Preolenna. The sample, however, was from one small length of the seam and was of coal under outcrop or near-outcrop conditions and many other samples would be needed to determine the average quality of the seam.

The outcrop was above massive sandstones, which are, therefore, part of the Relapse Sandstone, the equivalent to the Preolenna Coal Measures. In the Jessie River part of the Preolenna field, the coal measures are on the northern (upthrow) side of a strong fault. The outcrop described above on E.L. 43/70 is generally in line with any south-western extension of the fault in the Jessie River valley. It is possible the outcrop occurs under the same conditions as the seams in the Jessie River Valley and is on the northern side of the south-western continuation of the fault. In other words the coal measures come to the surface again on the northern side of the fault.

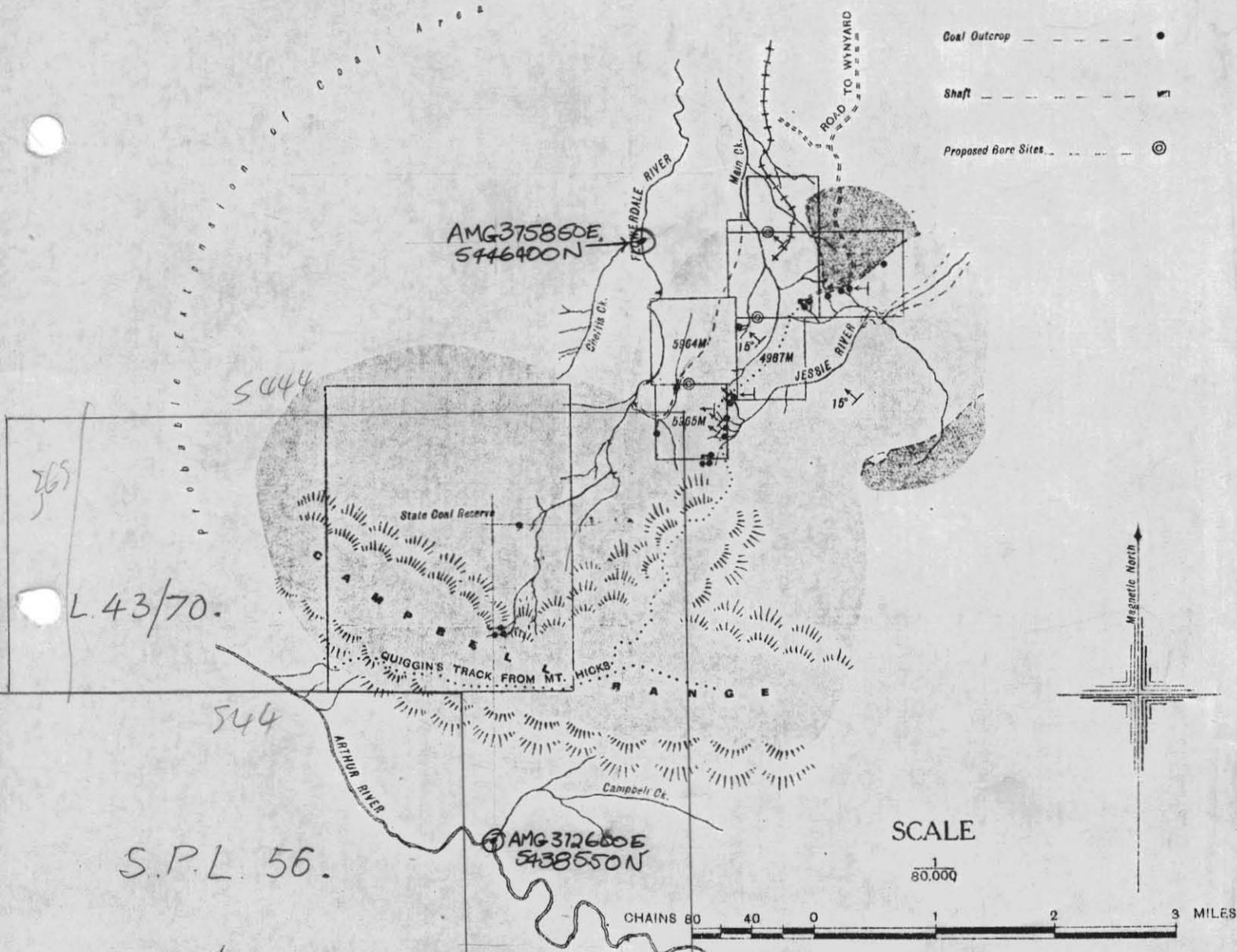
It is clear that there is insufficient knowledge of the rocks, coal measures and coal seams in the north-eastern part of E.L. 43/70. The procedures necessary to obtain further and detailed information include geological mapping, surface prospecting and, if warranted, bull-dozing. It is probable that the above would have to be followed by drilling to obtain complete information about the seams including their extent, thickness, number and quality.

P. B. Nye
P. B. Nye

Melbourne.
2nd February, 1971.

LEGEND

SEDIMENTARY		CHARACTERISTICS	
RECENT	Alluvium	Roads	
PERMO-CARBONIFEROUS	Sandstones and Mudstones	Tracks	
IGNEOUS		Railways	
TERTIARY	Basalt	Geological Boundaries	
UPPER MESOZOIC	Diabase	Strike & Dip of Strata	
		Coal Outcrop	
		Shaft	
		Proposed Bore Sites	



GEOLOGICAL SKETCH MAP

OF THE PREOLENNA COALFIELD

AMG REFERENCE POINTS ADDED

Based on Mines Chart, with additions by Loftus Hills. Geology by Loftus Hills.

Photo Aired by John Vail, Government Printer Hobart, Tasmania.

Positions of S.P.L. 56 and E.L. 43/70 have been marked using the Arthur River as the basis

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L.43/70.

S.P.L. 56.

372 E.L. 43/70 375

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GEOLOGICAL MAP
OF
PERMIAN ROCKS

ON S.P.L. 56, EL. 43/70

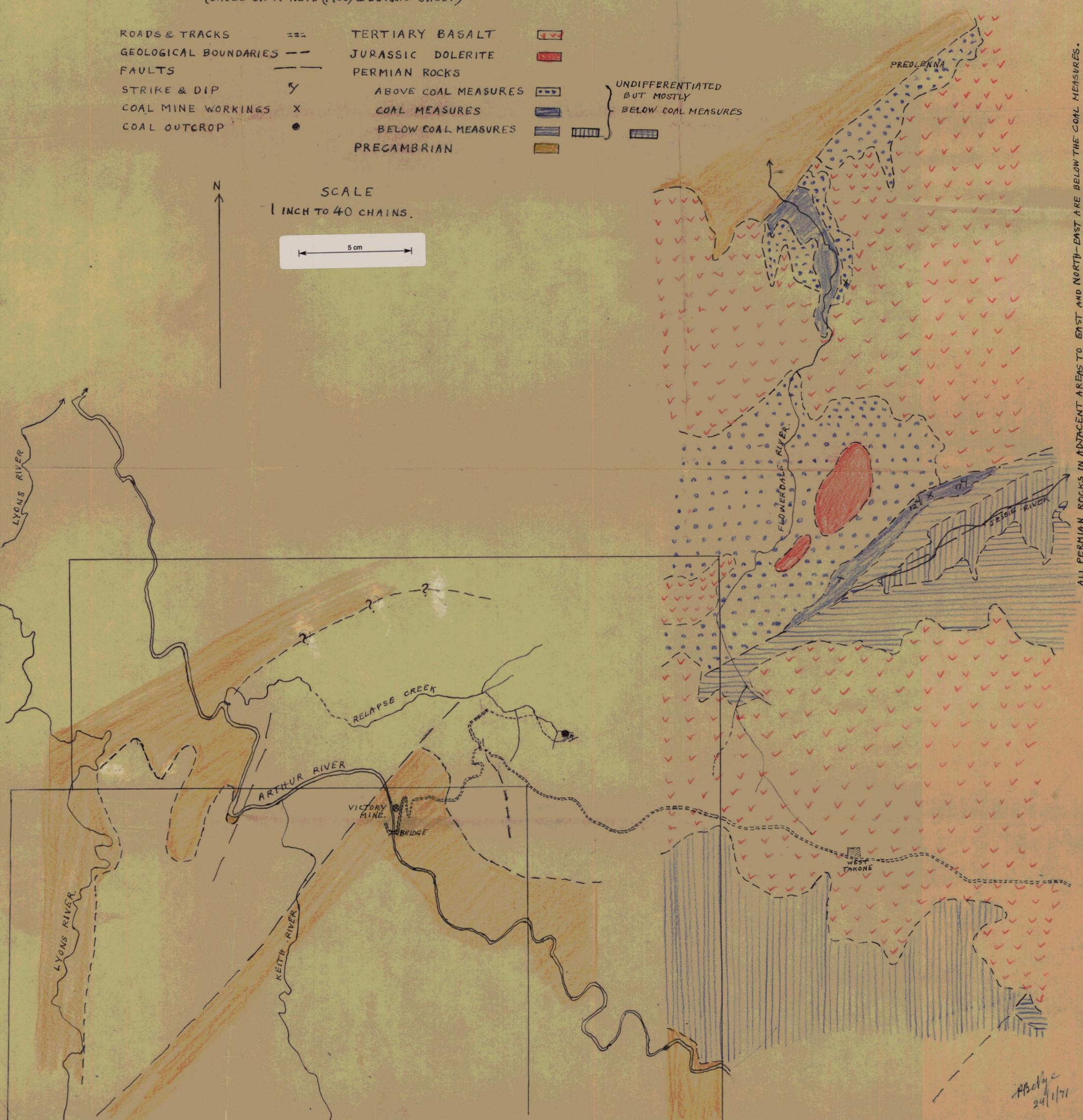
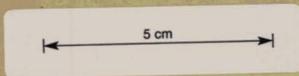
AND ADJACENT AREAS

(BASED ON McNEIL (1960) & BURNIE SHEET)

- | | | | |
|-----------------------|-------|---|--|
| ROADS & TRACKS | == | TERTIARY BASALT | |
| GEOLOGICAL BOUNDARIES | - - - | JURASSIC DOLERITE | |
| FAULTS | - - - | PERMIAN ROCKS | |
| STRIKE & DIP | Y | ABOVE COAL MEASURES | |
| COAL MINE WORKINGS | X | COAL MEASURES | |
| COAL OUTCROP | ● | BELOW COAL MEASURES | |
| | | UNDIFFERENTIATED BUT MOSTLY BELOW COAL MEASURES | |
| | | PRECAMBRIAN | |



SCALE
1 INCH TO 40 CHAINS.



ALL PERMIAN ROCKS IN ADJACENT AREAS TO EAST AND NORTH-EAST ARE BELOW THE COAL MEASURES.

AAc/yc
29/1/71

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PART 3

Progress report on anomaly No. 2

P.B. Nye

March, 1971

Mineral Holdings Aust. Pty Ltd

PROGRESS REPORT ON ANOMALY NO. 2.

This anomaly is situated in the south-western portion of E.L. 43/70. The western margin of the area covered by closed magnetic contours overlaps the eastern boundary of S.P.L.56 and extends a very short distance to the west into S.P.L.56.

The axis of the anomaly strikes north and south. The lowest closed contour is 4790 gammas and the highest contour 5000 gammas but the highest intensity was 5089 gammas, so the amplitude is about 300 gammas. The profile resembles that of Anomaly No.1, but the gradient of No.2 is not quite as steep as that of No.1. This similarity tends to suggest that Anomaly No.2 could arise from a magnetite formation as does Anomaly No.1, but this will have to be proved on the ground before it will be accepted.

The anomaly agreed fairly closely in plan position with the probable position of the Atlas group of leases (as thought during 1970), but was slightly to the north thereof. The problem of finding the Atlas leases and the source of the Anomaly No.2 was regarded more or less as one problem. Search was, however, devoted mainly to the finding of the Atlas leases and workings.

Part of the search was devoted to finding the source of the Anomaly No.2. It has been found that a flow of magnetic olivine basalt agrees closely in plan position with the Anomaly No.2 with a smaller area of the normal basalt of the district to the north of the olivine basalt.

Further field investigations will be made before it is accepted that the basalt flow is responsible for the anomaly. It may well be that there is a magnetic formation in the country rocks beneath this basalt. By analogy with Anomaly No.1, the formation would most likely contain magnetite. This possibility has been strengthened somewhat because it is believed that the position of the Atlas group of leases has been fixed and that the group is adjacent to, and to the south of, Anomaly No.2 and in line with the axis of the Anomaly. It is possible that any mineral formation on the Atlas leases could continue to the north through the area of the Anomaly and contain more magnetite or other magnetic mineral than it does on the Atlas leases.

This will be determined when the position of the Atlas leases is verified, and the mine workings and any formation in them found and examined.

Plate 1 is attached.

P.B. Nye
P.B. NYE.

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S.P.L. 56.

ARTHUR RIVER

AERO-MAGNETIC ANOMALY No.2.

MAGNETIC CONTOURS (IN GAMMAS)

LICENCE BOUNDARY

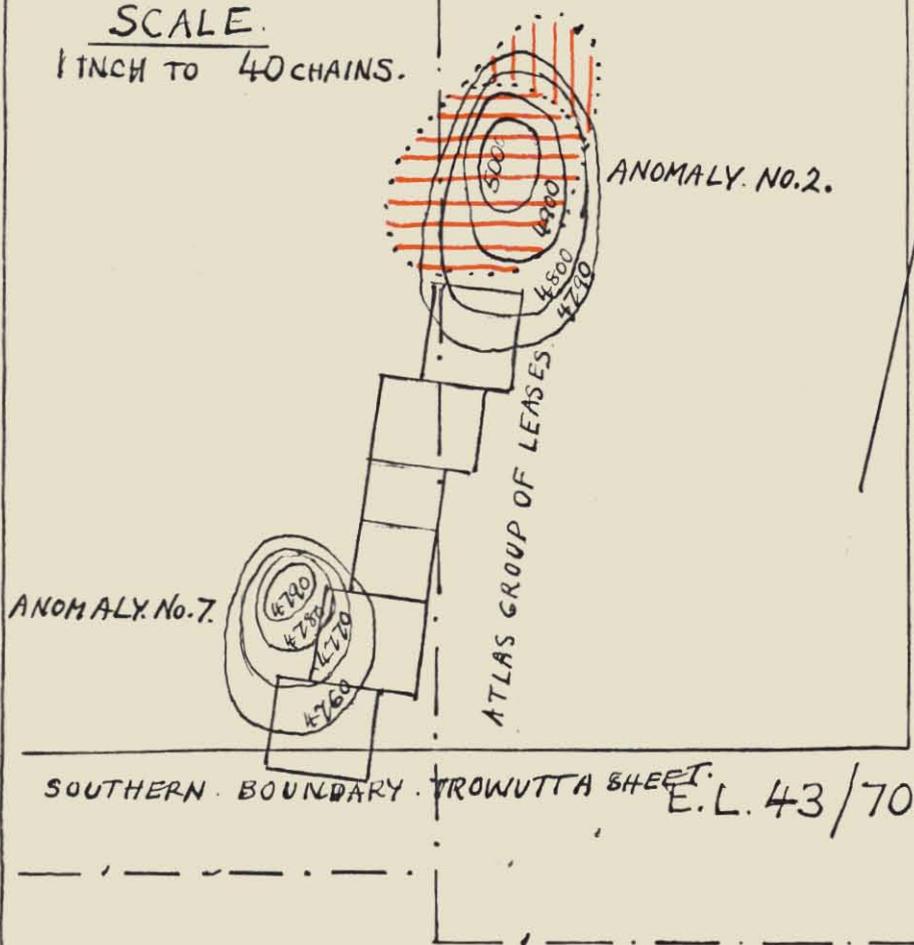
OLIVINE. BASALT

BASALT

SCALE.
1 INCH TO 40 CHAINS.

EASTERN BOUNDARY TROWUTTA FORESTRY SHEET.

MAGNETIC NORTH



SOUTHERN BOUNDARY TROWUTTA SHEET. E.L. 43/70.

AB 2/3/71

5 cm

Second report on coal in north-eastern corner
of E.L. 43/70 Arthur River district, north-west Tasmania

P.B. Nye

March, 1971

Mineral Holdings Aust. Pty Ltd

SECOND REPORT ON COAL IN NORTH-EASTERN CORNER OF E.L. 43/70ARTHUR RIVER DISTRICT, NORTH-WEST TASMANIAIntroduction

A preliminary report on coal in the above area was prepared on 3/2/71. It dealt with

Mining Tenements
Location and Access
Previous Literature
Geological Map
Geology
Possibility of Coal Measures and Seams
on S.P.L.56 and E.L.43/70
The Outcrop of the Coal Seam
Quality of the Coal
Conclusions

The present report deals with information gained since the above report was written.

"State Coal Reserve"

It was stated in the preliminary report that a State Coal Reserve had been proclaimed and that it covered much of the north-eastern part of E.L. 43/70.

The Director, Department of Mines, Tasmania stated in correspondence that the area is not a Coal Reserve, but is "exempt from the Operation of the Crown Lands Act, 1911". This exemption means that the sale of land under the Crown Lands Act would be restricted, but that the land would be subject to the Mining Act, 1929, and, therefore available for occupation as a mining tenement under that Act.

Further Outcrops

It was stated in the preliminary report that one coal outcrop was known on E.L. 43/70, but that Plate XXXV of the Coal Resources of Tasmania showed four outcrops. The Department of Mines was asked for any additional information about the outcrops and sent a portion of the Preolenna mineral chart that showed five outcrops, namely No.5 outcrop, No.6 outcrop, No.7 seam, No.9 seam and torbanite seam, all of which were in, or near, Lowrie Creek or its tributaries. These outcrops corresponded to the four on Plate XXXV, the additional one on the mineral chart being the No.5 outcrop.

Prospecting

Recent prospecting has found the above five outcrops, but as yet has not found any additional ones.

The outcrops show only the top parts of the seams and not the complete thickness. Shafts were sunk near some of the outcrops. Bull-dozing will be necessary to expose the whole of the seams.

Prospecting will be continued and consideration given to geological survey, exposure of complete sections of the seams by bull-dozing, etc., and sampling.

020

Quality of the Coal

The remainder of the sample (703805) described in the preliminary report was obtained and submitted to the Chemical Branch, Mines Department, Melbourne to determine its coking quality.

A copy of the report on it (as Sample No. 263/71) is attached.

The result was that "the coal would be considered to have no useful coking properties".

It has not been possible to obtain samples from the additional five outcrops located.

Access to the Coal-bearing Area

The question of access from the nearest part of the road from West Takone to the Arthur River is being considered.

The nearest outcrops are about 30 chains north from the road and the distant ones about 115 chains. A logging track could be used for most of the route to the southern outcrops, and about a mile of track would have to be bull-dozed to the No.5 and No.6 outcrops.

Conclusions

The known outcrops indicate that coal seams occur within a length of 90 chains along Lowrie Creek. The outcrop on Relapse Creek is about 32 chains from the southern group of outcrops in Lowrie Creek.

Outcrops 5, 6 and that in Relapse Creek occur along a line trending south-westerly, and are possibly extensions of the seam or seams from Jessie River valley, and would be on the north-western side of any south-western extension of the fault from that valley. Alternatively they could be extensions of the seams from Flowerdale River.

The No.7, No.9 and torbanite seam would probably be lower in the Permian sequence than the seam or seams at outcrops 5, 6 and in Relapse Creek. Support is given to this view, because one of the seams is a torbanite one, and some eight miles to the south-east, torbanite occurs at two places in the Inglis Silstone.

P.B. Nye
P.B. NYE.

To be returned to
me. P.B.H.

E.L. 43/70
MINERAL HOLDINGS

COAL 021

FROM OUTCROP NO. 6.

Reg. No.	Sample No.	Per Cent				Calorific Value	
		Ash	Moisture	V.C.M.	Fixed Carbon	(BTU/lb)	(cal./g.)
711542	Top 1. (12")	20.4	9.3	22.3	48.0	8,500	4,700
711543	Bottom 1. (12")	14.8	8.3	28.8	48.1	9,950	5,500
711544	No. 2	13.7	11.1	39.4	35.8	9,000	5,000

Analyses by... L. H. Gray...

A COMPARISON
703865

Release Ch.
(RELEASE CH.)

7.3

4.3

35.8

52.6

1.5

12,550

6,950

Fee: \$18.00

Chief Chemist & Metallurgist.

Rec'd
16/7/71
P.B.H.

725023

To be returned to
me - P.B.H.

E.L. 413/70
MINERAL HOLDINGS

COAL

FROM OUTCROP NO. 6.

Reg. No.	Sample No.	Per Cent					Calorific Value	
		Ash	Moisture	V.C.M.	Fixed Carbon	Sulphur	(BTU/lb)	(cal./g.)
711542	Top 1.	20.4	9.3	22.3	48.0	0.14	8,500	4,700
711543	Bottom 1.	14.8	8.3	28.8	48.1	0.43	9,950	5,500
711544	No. 2	13.7	11.1	39.4	35.8	0.40	9,000	5,000

Analyses by... L. Flay ...
 & COMPARISON
 703865. Relapse Ck.
 (Relapse Ck.)

7.3 4.3 35.8 52.6 1.5 12,550 6,950

Fee: \$18.00

A.K. Wainwright
 Chief Chemist & Metallurgist.

Rec'd
 16/7/71
 P.B.H.

725024

023

725025

PART 5

First report on silver-bearing iron oxide
slurry in the area between the Atlas leases
and the Keith River, E.L. 43/70, Tasmania

P.B. Nye

June, 1971

Mineral Holdings Aust. Pty Ltd

FIRST REPORT ON SILVER-BEARING IRON OXIDE SLURRY
IN THE AREA BETWEEN THE ATLAS LEASES AND THE KEITH RIVER,
E.L. 43/70, TASMANIA.

Introduction

Mr. B.A. Farquhar conducted exploration and prospecting as early as 1967 in the area that in 1969 was included in S.P.L.56 (now incorporated in E.L. 43/70. His parties discovered a few seepages of iron oxide slurry in the area traversed by eastern tributaries of the Keith River and situated between the Keith River and the old Atlas leases. One sample of the slurry was evaporated to dryness and the solids assayed 28.9oz. of silver per ton.

The 1967 Operations and Results

These operations were conducted by Messrs. I. Farquhar and A. Miller. They followed, or took the same route as, the old track (southern continuation of Sprent's track) from Kay's Crossing on the Arthur River to Waratah. At a point two miles from the Arthur River, they branched off to the west or south-west for a mile or a mile and a half respectively, and then turned south for 50 or 60 chains but made diversions into the creek to the east. It appears that two samples of rock or mineralised rock and one sample of iron oxide slurry were obtained, and sent to the Department of Mines Laboratory at Launceston for analysis. The results (26/6/67) were

Reg. No.	Sample No.	Gold oz/ton	Silver oz/ton	Remarks
671236	1	Nil	Trace	
671237	2	Trace	28.9	Slurry evaporated to dryness and solids assayed
671238	3	Nil	Trace	

The positions from where the samples were obtained are not known, but Mr. B.A. Farquhar states in letters, that Sample No.2 was considered to be about 1.5 miles south-west from a prospect (now called Goninon's Formation) situated about 15 to 20 chains west from the old Waratah track.

1968 Operations and Results

The same area was again visited by the two prospectors in February 1968. The only information available is that five samples were submitted to the Department of Mines Laboratory at Launceston. The results (22/2/68) were

Reg. No.	Sample No.	Silver dwt/ton	Remarks
680388	1	Trace	Rock
680389	2	Trace	Slurry
680390	3	Trace	Rock
680391	4	0.8	Slurry
680392	5	0.6	Slurry

Thus two samples of rock and three of slurry were submitted. The samples with more than a trace of silver are Nos. 4 & 5 and they contained less than 1 dwt. per ton.

The localities from which the samples came were not described.

The 1970 and 1971 Operations

Mineral Holdings Australia Pty. Ltd. purchased S.P.L.56 early in 1970. No specific attempts have been made to locate the places for the field from which the samples were taken and to investigate the slurry occurrences.

During 1971, however, the 1970 and 1971 correspondence, maps, etc., were investigated, and a direct approach made to Mr. B.A. Farquhar for additional information. In addition to other information given in reply, the information on the 1967 and 1968 operations enabled the preparation of the Sections on those operations. Another important piece of information was a map giving the approximate routes followed and samples taken in 1967 and 1968; this map will be discussed in the next section of this report.

Other information obtained in 1971 (and earlier) was that the slurry was coming out of cliffs along a tributary of the Keith River, and that the seepages were coming from the east.

During the search in 1971 for the old Atlas leases and workings, prospectors K. Pinner and C. Goninon traversed part of the area under review. Actually, they followed much of the track taken by the 1967 and 1968 parties after it branched from the old Waratah track. They did not see much "rusty water", but saw some.

Messrs. Pinner and Goninon had been in part of the same area early in 1970, and particularly near the prospect referred to earlier in this report as Goninon's Formation. At that place, there is a short drive or adit in the bank above the creek, and "rusty water" runs from the drive for 30 feet before joining the creek. Mr. Farquhar shows a shaft at that place, but Mr. Pinner states that in conversation with Mr. Farquhar, Mr. Miller's letter was read and it described a drive and not a shaft. Mr. Pinner considers that the rich slurry sample may have come from this prospect.

Map Showing Area, Route Traversed and Possible Sample Localities.

Mr. B.A. Farquhar submitted a map with his letter of 17/5/71. It was based on the Forestry Commission Sheet Trowutta and on memory of Mr. I. Farquhar (and possibly on 1967 and 1968 correspondence). As stated above, Messrs. Pinner and Goninon followed much of the route taken in 1967 and 1968 by the earlier prospectors and marked the route on the Trowutta Sheet. Mr. Pinner considers that the sketched route by Mr. B.A. Farquhar is shown to the south of where it should be.

A map has been prepared from the Trowutta Sheet, and both suggested routes for the track are shown on it, together with sample localities based on the track.

A copy of the map is attached.

Conclusions

The information available indicates that there is an area east of the Keith River in which there are seepages of iron oxide slurry. Samples of some of the seepages were assayed and gave the following results for silver.

671237	28.9 oz per ton
680391	0.8 dwt per ton
680392	0.6 dwt per ton

Other samples gave a trace of silver. In sample 671237, the slurry was evaporated to dryness and the solids assayed.

With one exception (Goninon's Formation), there is no indication as to the source from which the water and iron oxide is coming.

There are two possible localities from which the slurry sample that gave the high assay came. One position is about 1.5 miles south-west from Goninon's Formation. The other position is at Goninon's Formation where slurry issues from a short drive and flows into the nearby creek.

The area will be investigated when the conditions regarding weather and access become more favourable.

P.B. Nye

P.B. NYE.

Melbourne

1st June, 1971.

027

725029

MAP SHOWING

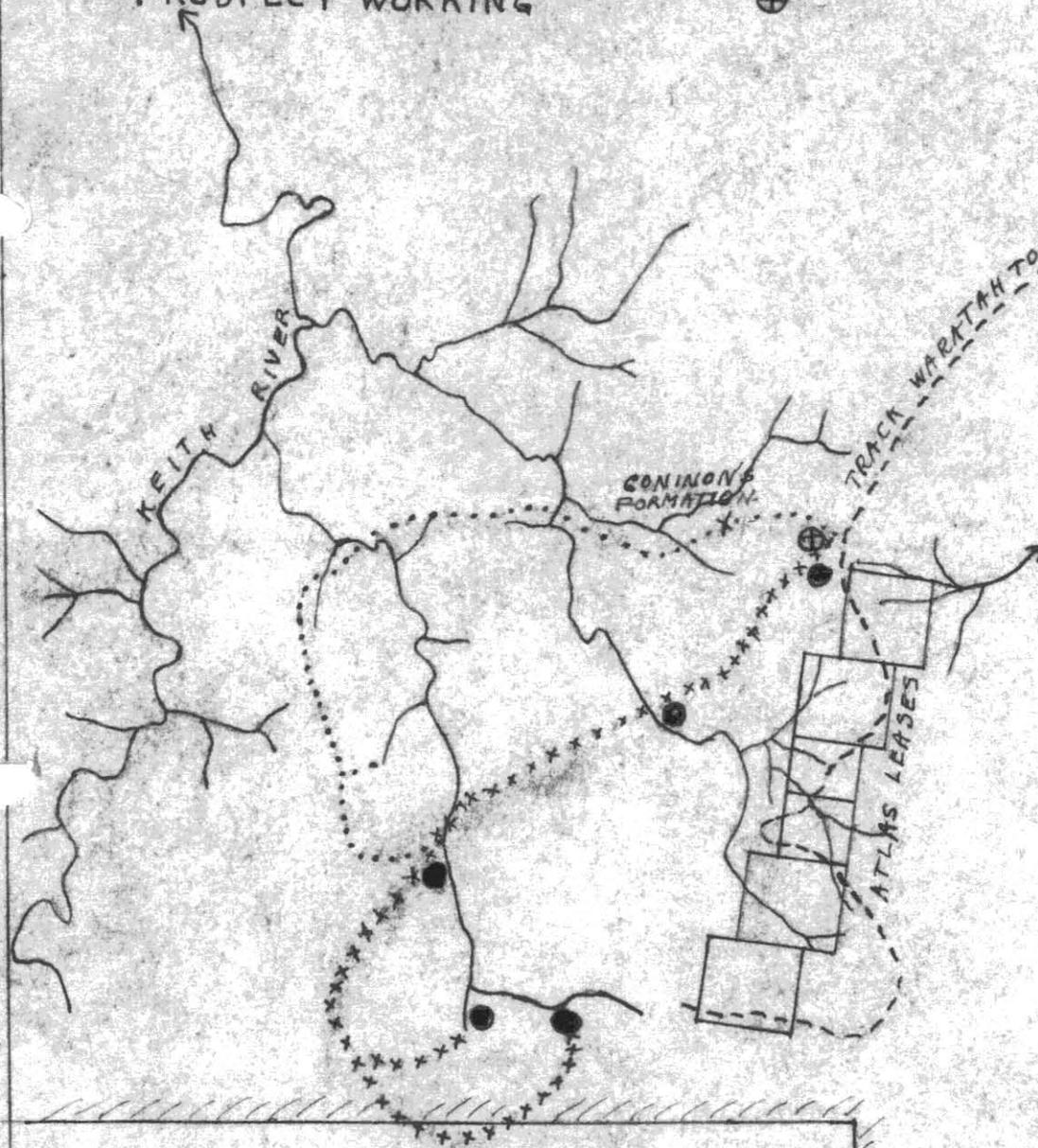
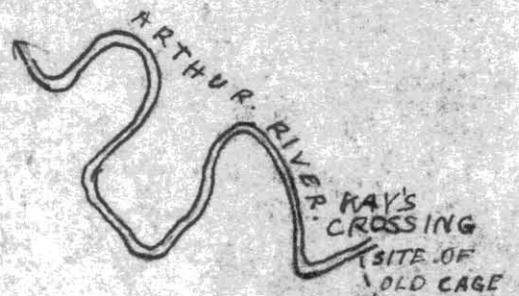
AREA OF SLURRY SEEPAGES.

TRACK OF [FARQUHAR
AND MILLER (1967-8)

AS MARKED BY B.A. FARQUHAR x x x x

AS " " " K. PINNER (1971)

SLURRY SEEPAGES
BY B.A. FARQUHAR
PROSPECT WORKING

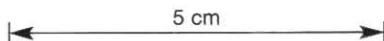


MAGNETIC NORTH

E.L. 43/70.

SCALE

1 INCH TO 40 CHAINS



APB/ye
2/6/71

042

KENIA RIVER DISTRICT DIAMOND DRILL CORE LOG

725030

D.D.H. KRI

CO-ORDINATES 10520N / 10630E AZIMUTH 143° DRILLERS A.D.S. COMMENCED 15/4/71 DEPTH 797' HOLE No. D.D.H. KRI 1
R.L. COLLAR 785.4 ANGLE FROM HORIZONTAL 60° DRILL TYPE MINDRILL FS2 COMPLETED 17/8/71 CASING LEFT SHEET No. 1

Table with columns: FOOTAGE (From, To), CORE REC (Ft.), CORE SIZE, Core Description, Mineralisation, SAMPLE NUMBERS, FOOTAGE SAMPLED (From, To). Contains detailed geological data for various depth intervals.

SUMMARY AND SPECIAL COMMENTS

Summary text: Fine quartz 13' - 13', Rotten amphibolite 134' - 135', Siliceous siltst. 146' - 155', Quartz 155' - 170', siliceous siltst. 170' - 181'. Amphibolite 181' - 299'. 'Iron formation' begins 299'. Traces of cp in amphibolite with core very broken - all footages to nearest one foot.

LOGGED BY: [Signature] DATE 20/11 - 20/6

043

725031

KEITH RIVER Tasmania DIAMOND DRILL CORE LOG

CO-ORDINATES 10520N/10630E AZIMUTH 143° DRILLERS P.B.J. COMMENCED 15/1/71 DEPTH 797' HOLE No. DD71 KR1
 R.L. COLLAR 985 ft ANGLE FROM HORIZONTAL 60° DRILL TYPE MINERAL 852 COMPLETED 17/2/71 CASING LEFT SHEET No. 2

FOOTAGE		CORE REC (Ft.)	CORE SIZE	Core Description	Mineralisation	SAMPLE NUMBERS	FOOTAGE SAMPLED	
From	To						From	To
302	316	3'6"	NQ	Laminated, fine, dark green siltstone with few pyritic bands. Core broken to sand size 314' - 316'	Occasional pyritic bands v. 1mm thick. Elsewhere very fine py throughout. Minor magnetite from 314' - 316'. Minor cp at 313', 314', in several fragments from 314' - 316'.	207502	309	318
316	360'6"	31'2"	NQ	Poorly laminated, fine, pale green siltstone. Bedding obvious from 319' - 320' but core too broken to measure. Bedding $\approx 70^\circ$ to h.c.a. at 356'.	No py bands. Very fine py throughout. Veinlets of spec. hm up to 1mm thick from 320' - 322'. Minor cp at 316', 317', 318', 319', 320', 337'.	207503 207504 207505 207506	318 328 338 349	328 338 347 358
360'6"	388'	14'7"	NQ	Soft, friable, slightly sandy, poorly laminated green siltstone with from 10 to 60% fine py. Has brown colouration in patches from 370' - 373' and 382' - 388' associated with higher py areas and is possibly due to limonite. Minor milky vein quartz at 372'6", 373', 377', 378'6" - 377'. Bedding $\approx 90^\circ$ to h.c.a. at 360'; $\approx 65^\circ$ to h.c.a. at 383. Appears brecciated at 384'6". No core recovered 385' - 388'.	From 10 to 60% py throughout. Minor spec. hm bands near 361'. Minor cp in laminations from 360'6" - 361', at 366'. Minor bn near 383.	207507 207508 207509	358 368 378	368 378 386
388'	391'	2'1"	NQ	Fine green siltstone with $\approx 10\%$ dolomitic bands up to 1/4" thick. Bedding \approx to L.C.A. variable, and drag folds evident.	Up to 30% py in siltstone bands.	207510	388	398
391'	393'2"	1'9"	NQ	Green to, brown (limonitic?), highly pyritic, slightly sandy siltstone.	Up to 75% py throughout.			
393'2"	396'6"	3'4"	NQ	Green siltstone with $\approx 10\%$ dolomite bands up to 1/4" thick. Strongly pyritic in parts. Bedding $\approx 65^\circ$ to L.C.A.	Pyrite in siltstone bands and directly related to bedding.			
396'6"	422'	18'8"	NQ	Grey dolomite with up to 30% bands from 1mm to 1cm thick of fine sulphide.	Sulphides predominantly py with lesser pyrrhotite and cp. In parts sulphides not as bands, but "patches" apparently unrelated to bedding.	207511 207512 207513	398 408 418	408 418 428
422'	428'	1'2"	NQ	Very broken low recovery core. White dolomite within grey amorphous dolomite with "patches" of sulphides.	Sulphides mainly py with lesser pyrrh. and traces of cp.			
428'	433'	nil	-	No core recovered.				
433'	435'	1'7"	NQ	White to grey dolomite with included angular blocks of a cream to yellow carbonate.	Traces of py.			
435'	439'	4"	NQ	White to pale grey dolomite, very soft, unlaminate siltstone.				
439'	444'	1'4"	NQ	Pale grey, weakly laminated, soft, slightly sandy siltstone. Smells a strong odour of sulphur. Bedding $\approx 90^\circ$ to L.C.A.	Minor fine py.	207514	433	444
444'	454'	nil	-	No core recovered.				
454'	455'	3"	NQ	Soft, grey unbedded siltstone.				
455'	460'	nil	-	No core recovered.				
460'	463'	3'	NQ	Medium grained grey to green sandstone. A 1" thick band of white dolomite at 461'.	Sparsely dispersed py throughout.	207515	460	470
463'	467'	3'9"	NQ	Laminated grey slightly sandy siltstone with py bands. At 465 a band of red unlaminate sandy silt with a higher py content. Bedding $\approx 50^\circ$ to h.c.a.	Bands of fine py parallel to bedding.			
467'	468'6"	1'6"	NQ	Grey siliceous and dolomitic silt with irregular bands up to 1/4" thick of sulphides.	Sulphides predominantly py with minor pyrrh. + traces of cp.			
468'6"	518'8"	36'3"	NQ	Pale grey laminated dolomitic silt grading to a massive pyritic dolomite at 486'. In parts from 486' the bands of massive py have been brecciated with subsequent dolomitic in filling. The massive sulphide bands are chloritic and contorted by microfolding. In places from 489' to 499' the dolomite with massive sulphides is brecciated and encased by a brownish massive quartz sandstone with sparsely dispersed py. Grades to a dolomitic sandstone 517' - 518'6".	Sulphides py + pyrrh with minor cp. Dark patches of spec. hm + py at 508'3", 508'6", 507'6".	207516 207517 207518 207519 207520	470 480 490 500 510	480 490 500 510 520
518'8"	533'2"	15'6"	NQ	Dark green fine grained amphibolite with randomly oriented calcite veins. From 530'10" has a conglomeratic appearance enclosing subrounded fragments of Phe.	Traces of py + cp in veins and dispersed through amphibolite.			

SUMMARY AND SPECIAL COMMENTS: Bedded siltstone, sandy siltstone, dolomite and dolomitic siltstone with banded sulphides related to bedding. to 518'6". Amphibolite probably representing a metamorphic extrusive from 518'6" to 533'2". Topazite reading at 40'.

LOGGED BY: G.W.P.
DATE 26/1/71 -> 31/1/71

04

KEITH RIVER Tasmania DIAMOND DRILL CORE LOG

725032

CO-ORDINATES 10520 N / 10630 E AZIMUTH 143° DRILLERS A.L. COMMENCED 15/4/71 DEPTH 797' HOLE No. D.D.71 KR1
 R.L. COLLAR 985 ft ANGLE FROM HORIZONTAL 60° DRILL TYPE M... COMPLETED 17/8/71 CASING LEFT SHEET No. 3

FOOTAGE		CORE REC (Ft)	CORE SIZE	Core Description	Mineralisation	SAMPLE NUMBERS	FOOTAGE SAMPLED	
From	To						From	To
552"	600'4"	72'7"	NA	Pale green bedded siltstone with calcite veins from 1m to 5m thick predominantly parallel to bedding. From 564'10" to 567'3" a scour and fill structure with infilling of a conglomeratic sandstone. Bedding \pm wrt h.c.a. variable eg. 5° at 539'; 25° at 543'; 15° at 550'; 20° at 551'; 2° at 563'. Overall averaging around 20°.	Traces of py, cp and pyrrh. both within veins and the siltstone.			
600'4"	650"	4'8"	NA	Dark grey bedded sandy siltstone grading in part to a sandstone. Has calcitic veins both parallel to and crosscutting bedding. Veins become quartzose below 635'. Bedding \pm to h.c.a. 10° at 602'; 15° at 609'; 55° at 617'; 65° at 627'; 20° at 644'.	Traces of spec. hm at 636'6"			
653'	690'	35'7"	NA. BARR from 673'	Fine grey quartzite with crosscutting randomly oriented white to pink quartz veins.				
690'	712'	14'4"		Grey slightly sandy siltstone. Brecciated from 691' to 695'. Bedding \pm 30° to h.c.a. at 691'.	Traces of py at 691'			
712'	795'9"	67'7"	NA from 716'	Grey fine grained quartzite. Bands of grey to green siltstone at 790' and 794' to 795'9". Bedding \pm 25° to h.c.a. at 790'.	Minor fine py on some joints. Rare pinkish quartz veins with traces of spec. hm.			
T.D.								

SUMMARY AND SPECIAL COMMENTS

Tropari readings at 600'-65", 790'-795". Pale green bedded silts with calcite veins to 600', then grey silts and quartzite. No base metal mineralisation.

LOGGED BY T.M.D.
DATE 18/8/71

045

725033

ATION PTY LIMITED

KEITH RIVER Tasmania

ASSAY LEDGER

HOLE NO D.D.71.KR1..

CO-ORDINATES. 10520N / 10630E...
R.L. COLLAR. 985

AZIMUTH. 173°
ANGLE FROM HORIZONTAL. 60°

ASSAYING BY ZIMM CORP. BROKEN HILL 207501 - 8.
D.P.O. Z.C. 13607 R.J. GLUYAS ADELAIDE. 207509 - 520.
GLUYAS 13611, 13612.

DEPTH . 797'
SHEET . 1

ASSAYING AND ANALYTICAL DETAILS

SAMPLE NUMBER	DEPTH		FOOTAGE DRILLED	CORE RECOVERED (ft)	TOTAL WEIGHT SAMPLE (lbs)	Fe %	S %	A.A.S. ppm.							Pb	Zn	Cu	Ni	Co	Mn	Ag	Au
	FROM (ft)	TO (ft)						Pb	Zn	Cu	Ni	Co	Mn	Ag								
207501	298	306	8'0"	4'		11.3	5.39	40	118	140	55	38										21
207502	309	318	9'0"	6'6"		20.5	14.47	48	131	180	45	35										1
207503	318	328	10'0"	7'9"		4.7	1.49	35	64	57	36	29										21
207504	328	338	10'0"	6'9"		5.5	1.12	35	72	110	34	24										21
207505	338	347	9'0"	6'0"		4.3	1.04	30	100	37	32	23										21
207506	349	358	9'0"	3'2"		4.9	1.66	35	103	82	43	24										21
207507	358	368	10'0"	7'2"		15.3	8.58	27	330	180	39	56										1
207508	368	378	10'0"	5'7"		21.2	22.06	32	730	480	34	56										1
207509	378	386	8'0"	3'10"	5.0	24.12	19.75	85	1400	815	125	140										2
207510	388	398	10'0"	9'4"	12.9	20.72	21.55	65	1560	192	75	75										2
207511	398	408	10'0"	9'6"	14.2	9.94	10.55	35	890	110	125	60										2 <0.01
207512	408	418	10'0"	7'2"	9.4	14.07	15.33	180	100	157	165	20										2.5
207513	418	428	10'0"	1'11"	2.7	9.94	9.31	65	130	140	125	40										0.5
207514	433	444	11'0"	3'8"	4.5	4.41	1.30	20	268	232	125	30										1
207515	460	470	10'0"	9'5"	10.6	9.71	8.19	95	200	145	65	50										2.5
207516	470	480	10'0"	6'2"	6.8	6.25	6.90	95	115	100	30	35										2
207517	480	490	10'0"	6'5"	8.6	12.01	11.05	110	250	167	30	55										1 0.01
207518	490	500	10'0"	9'4"	10.4	18.62	26.17	50	285	440	30	75										1
207519	500	510	10'0"	8'5"	10.0	15.20	11.44	63	273	227	30	55										1.5
207520	510	520	10'0"	4'7"	5.2	4.52	2.63	37	38	25	65	35										1.5

SUMMARY AND SPECIAL COMMENTS

DATE

CRAE PLAN No M.323

SIGNED

046

C.R.A. EXPLO.

D.D.H. KR2

KEITH RIVER Tasmania DIAMOND DRILL CORE LOG

725034

CO-ORDINATES 10270N 1010E
R.L. COLLAR 1055 ft.AZIMUTH 360°
ANGLE FROM HORIZONTAL 60°DRILLERS C.R.A.E.
DRILL TYPE MINDRILL FS.COMMENCED 4/9/71
COMPLETED 17/10/71DEPTH 545 ft.
CASING LEFT NIL.HOLE No. DD.71. KR2
SHEET No. 1.

FOOTAGE		CORE REC. (Ft.)	CORE SIZE	Core Description	Mineralisation	SAMPLE NUMBERS	FOOTAGE SAMPLED	
From	To						From	To
0	20	nil		Non-coring.				
20	75'6"	48'11"	HRT.	Poorly bedded grey quartzite with minor limonitic bands. Fine white quartz veins cutting the quartzite in random directions. Thin yellow "clayey" bands up to 2" thick from 64'6" to 66'0". Bedding \times 60° to L.C.A. @ 48'.	Spec. hm on fractures at 59'0" and 64'0" and in bedding planes from 42'6" to 61'0".			
75'6"	78'0"	11"	"	Rotten grey to yellow silt/s.				
78'0"	81'2"	1'11"	"	Grey quartzite.				
81'2"	100'0"	12'11"	"	Rotten grey, to beige limonitic, siltstone.	Minor thin magnetic bands between 84'9" and 86'3". Strongly cellular limonitic bands at 89' and from 93'9" to 94'6".			
100'0"	125'0"	11'11"	"	Very soft, laminated white silt/s grading to sandy silt/s @ 112'. Bedding \times 75° to L.C.A. @ 105'6"				
125'0"	172'9"	32'0"	"	Grey sandstone with minor soft silty sections. Grades to a white slightly silty s/s @ 131' and to a coarse grey s/s @ 146'. Band of pale grey to off-white rotten silt/s from 169'9" to 171'0". Bedding \times 37° to L.C.A. @ 127', 50° @ 135', 60° @ 148', 55° @ 165'.	Magnetite grains in bedding planes give a speckled appearance from 125' to 131'.			
172'9"	194'6"	20'11"	"	Poorly laminated pale grey to off-white rotten silt/s. Becomes harder and laminated from 181'. Bedding obviated by fine magnetite flecks in bedding planes. Bedding \times 37° to L.C.A. @ 181', \times 68° @ 183', \times 72° @ 190'.	Magnetite in bedding planes from 181'.			
194'6"	205'9"	5'11"	"	Pale green sandy silt/s with a coarse sandy band from 202'6" to 203'. Bedding \times 55° to L.C.A. @ 204'.	10% py in bedding planes from 204'0".			
205'9"	222'0"	14'5"	"	Dark green silt/s with magnetite and pyrite. Bedded in part. Bedding \times 63° to L.C.A. @ 207', \times 60° @ 211', \times 55° @ 219'.	Predominantly soft fine magnetite with lesser py 205'9" to 208', 209' to 210' 217' to 219'2".	207521	204'	214'
						207522	214'	224'
222'0"	262'3"	40'0"	"	Well bedded green silt/s with mag+py bands up to 1/2" thick comprising about 50% of the rock. Soft pale green silt/s with low mag+py 234'0" to 236'9". Bedding \times 58° to L.C.A. @ 226', \times 60° @ 229', \times 77° @ 259'.	213'6" to 217' no mag. but up to 20% py. Up to 50% mag+py in bands up to 1/2" thick. Mag./py about 60/40. Some massive py bands up to 3" thick. Traces of cp with py.	207523	224'	234'
						207524	234'	244'
						207525	244'	254'
						207526	254'	264'
262'3"	282'0"	12'11"	"	Dark green silt/s. Well bedded to 270'. Chloritic in part. Bedding \times 77° to L.C.A. @ 266'6".	Massive fine crystalline py with lesser coarse crystals. 261' to 262'3". Low py throughout occurring as coarse individual crystals.			
282'0"	330'0"	35'9"	"	Grey-green unbedded silty sandstone. Grades to a sandy silt/s in places and to a dark green silt/s from 320' to 324'9".	1" thick quartz vein @ 263' and 1/2" thick @ 262'6" with blebs of cp up to 1/8" in diameter.			
330'0"	421'0"	83'2"	HRT to 361' NR.	Grey-green to pink poorly bedded quartzite with minor thin silty bands to 340'. Bedding \times 10° to L.C.A. @ 332'.	Minor fine py+cp dispersed through rock 282' to 283' and 320' to 324'9". Minor fine sulphides mainly py with lesser cp dispersed through rock. Minor py+spec. hm on fractures. Minor cp in calcitic and quartz veins and dispersed through rock from 354' to 360'. Aggregates of cp up to 1/4" thick 367'6" and 371'0" to 372'. Bands of py+cp, up to 1/2" thick @ 367'6", 408'9", 412'9", 416'9". Very fine sulphides comprising cp+py up to 2% to 3% of rock 416'9" to 421'.	207527	351'	361'
						207528	365'	375'
421'0"	423'3"	1'0"	NR.	Dark grey to black laminated silt/s. Bedding \times 15° to L.C.A.				
						207529	411'	421'

SUMMARY AND SPECIAL COMMENTS

Tropari reading @ 100' \times 60°. Bedded silt/s, py and quartzite to 205'9".
Several thin gossanous bands between 85' and 95'. Bedded massive sulphides from 205'9" to 262'3".
With bands of magnetite. This is followed by silt/s, sandy silt/s and quartzites.

LOGGED BY *DMW*
DATE 30/9/71.

047

C.R.A

KEITH RIVER Tasmanian

DIAMOND DRILL CORE LOG

725035

CO-ORDINATES 10270 N 1010 E

AZIMUTH 300°

DRILLERS C.R.A.

COMMENCED 1/9/71

DEPTH 545 ft.

HOLE No. D.D.71.KR2

R.L. COLLAR 1055 ft.

ANGLE FROM HORIZONTAL 60°

DRILL TYPE

WINDMILL FS2

COMPLETED 17/10/71

CASING LEFT Nil.

SHEET No 2.

FOOTAGE		CORE REC (FT)	CORE SIZE	Core Description	Mineralisation	SAMPLE NUMBERS	FOOTAGE SAMPLED	
From	To						From	To
125'3"	167'6"	36'11"	NA	Soft dark green laminated siltstone with thin calcitic lenses at 125'3" thick parallel to bedding. Bedding $\times 25^\circ$ to L.C.A. @ 137', $\times 50^\circ$ @ 166'.				
167'6"	181'0"	12'6"	NA	Poorly bedded pale green dolomitic silt/s, comprising up to 5% dolomite. Bedding $\times 55^\circ$ to L.C.A. @ 177'.				
181'0"	545 T.O.	57'4"	NA	Dark grey poorly laminated siltstone. Develops into a massive hard grey-brown shale to slate from 194' to 195' and 195'6" to 198' and into a dark grey shale to slate from 510' to 534' and 541' to 545'. Blocks of quartz up to 1 1/2" occur within the silt/s. in part. Bedding $\times 50^\circ$ to L.C.A. @ 192 and 539.	Traces of cp occur as fine crystalline films up to 0.1" square on fracture surfaces intermittently throughout. These occurrences sparse. The largest example 1/2" in diameter by 0.1" thick @ 534'. Bleds of cp up to 1/2" in diameter @ 195', 198', 535'. Fine cp+py in small quartz block @ 197'4".			

SUMMARY AND SPECIAL COMMENTS

Tropite @ 540' - 57'. Laminated silt/s, dolomitic silt/s and poorly laminated dark silt/s to slate.

LOGGED BY W.P.

DATE 17/10/71

07-8

725036

PART 6

Report on operations on exploration licence 43/70
during May, 1971

P.B. Nye

June, 1971

REPORT ON OPERATIONS ON EXPLORATION LICENCE 43/70DURING MAY, 19711. Introduction

E.L. 43/70 and S.P.L. 56 were amalgamated as E.L. 43/70 during April, and this will be the first report on the amalgamated licence.

The prospects, anomalies, formations, etc., in the Licence area are generally as listed in previous monthly reports. A specific statement will be made when describing any additional prospect, etc.

The operations on the different prospects, etc., are described separately below:

2. Iron Formations

a) C.R.A. Exploration Pty. Ltd. continued its geological surveys and the drilling of the first diamond drill hole.

b) In the detailed geological mapping, the Keith Iron Formation was mapped. In this Formation, the out-cropping iron formations form a considerable part.

As stated in the April report, there is a plunging syncline at the northern end of the folded structure. The Keith body and its south-western extension occur in the eastern limb of the syncline, and the Track formation and its extensions in the western limb. At the south-western end of the Keith Iron Formation, an anticline is present, the limb with the Track Formation in it being the eastern leg, and the parallel zone to the west, with limonite and hematite outcrops being the western leg.

It has been stated that the mapping to the north-east of the Keith River has shown an extension of the Keith Iron Formation, but no details are available.

c) The drilling of the first drill hole is proceeding slowly. At 240 feet the diameter was reduced, and on 28th May, the length of the hole was 375 feet.

Near the surface, the hole passed through a completely weathered igneous rock which could not be otherwise identified except that it could be anywhere in the range from intermediate to basic or ultrabasic.

At greater depth, the rocks were less weathered and are probably ultrabasic.

It was stated that some pieces of core contained a few fine grains of pyrite and/or chalcopyrite.

d) A copy of the report of C.R.A. Exploration for April is attached.

e) Director, N.M. Thomas, visited the drill hole on 24th May.

030

3. Magnesite-dolomite Deposit

- a) On 23rd May, Director N.M. Thomas, visited the Victory magnesite outcrop to consider further the bull-dozing campaign to expose the body more fully and permit representative sampling. Arrangements have been made for the bull-dozing.
- b) If possible, the old Victory mine workings will be opened up and it is hoped that, crosscut across 50 feet of "dolomite" reported by Waller in 1902, will be open and permit examination and sampling of the body.
- c) Earlier in the year, the Forestry Commission bull-dozed three tracks in general area of the magnesite-dolomite deposits. Director, N.M. Thomas, collected a few specimens from these tracks, but they have not yet been examined. Arrangements have been made to have these tracks marked on our maps. An examination of the tracks will be made in the near future.

4. Coal

- a) Traverses were cut and surveys made to all the coal outcrops.
- b) Plotting of the surveys has been started.
- c) The samples obtained in April were forwarded to the Department of Mines, Laboratory at Launceston, but the results have not yet been received.

5. Atlas Leases and Workings

- a) A report completed early in May was attached to the April report on E.L.43/70.
- b) Two corrections have to be made to that report.
 - i) The gossan crust on the southern outcrop is 3 inches and not 3 feet, thick.
 - ii) The gossan at the northern outcrop does not extend southerly from the creek on the surface (as shown on the map) although it was cut in the No.3 adit.
- c) The assay results for gold on Samples 711041 to 47 were received and were "NIL".
- d) It was arranged that two composite samples be made, one of equal parts of samples 711041 and 42, and the other of samples 711046 and 47, and analysed by the Department of Mines Laboratory at Launceston.
- e) The results of the analyses were received and are given below.

		Sample 711193	Sample 711194
Acid Insol.	%	28.7	36.2
Fe(HCl Sol.)	%	1.4	23.8
Loss on ignition	%	32.5	22.4
CaO	%	21.0	0.34
MgO	%	13.8	4.3
Total		97.4	87.04

It was stated that the samples were impure dolomite and impure siderite respectively; this would be dependent on the "Loss on ignition" being mainly carbon dioxide.

- f) The above two composites together with a third composed of equal parts of Sampled 711043 and 44, were submitted for Scanning by Spectrometer Services, Melbourne. The results are attached.

The only significant amounts of metallic contents were 6000 p.p.m. of lead and 3500 p.p.m. of zinc. The lead content agrees generally with those in Samples 711043 and 44.

- g) Additional references in the Launceston "Examiner" to the Atlas S.M. Co, were received. Arrangements were made to have micro films made in Melbourne and they were received. Arrangements were made for enlargements but they have not yet been received.
- h) Possible routes were selected for a bull-dozer track into the Atlas leases from the track between the Arthur and Keith Rivers and reconnaissances were arranged. It was found that logging tracks were being bull-dozered along or near those routes, and the reconnaissances will include these recently bull-dozered tracks.

6. Iron Oxide Slurry and Water

This is the first time that reference has been made to this occurrence. In 1967 and 1968, the prospecting parties of Mr. B.A. Farquhar found iron oxide slurries and waters seeping from cliffs, etc., in the area east of the Keith River and between it and the old Atlas leases (as now positioned). Samples of the slurries and waters were assayed, and one of the slurries was evaporated to dryness and the solids were assayed and found to contain 28.9oz of silver per ton.

No specific search was made by Mineral Holdings in 1960 and 1971 to date to locate and sample the slurries and waters, but some of the area was covered in other searches and investigations.

All information submitted by Mr. Farquhar has been considered and further information about the 1967 and 1968 finds has been sought.

A report outlining the investigations and the current position is attached.

7. Goninon's Formation

This formation was not visited during May, but was examined earlier in the year and in 1970 during the search for the old Atlas leases. Some of the information obtained during those visits is contained in the report on the slurry and water referred to in the previous section of this report.

There is a short "drive" into this formation on the eastern side of a small creek. Slurry issues from this "drive" and flows 30 feet into the creek. The slurry has not been sampled by M.H.A.

It is considered that this drive is one of two possible places from which came the sample of slurry that yielded 28.9oz silver per ton when dried.

P.B. Nye
P.B. NYE

Melbourne
8th June, 1971.

Spectrometer Services Pty. Ltd.

29-3 Cobden Street, North Melbourne, 3051

Phones: 30 3910
30 3960

ANALYSIS DIVISION:
NEWLANDS ROAD, COBURG, 3058
Phones: 350 1766
350 1309

Reference No. M71/318MC.

032

SPECTROGRAPHIC AND CHEMICAL ANALYSTS

ANALYSIS REPORT FOR:

• Mineral Holdings Australia Pty. Ltd.,
5th Floor,
• Collins Street,
• MELBOURNE. VIC. 3000.

PURCHASE ORDER No.

DATE 21st May, 1971.

Samples.	Cu	Pb	Zn	Ni	Co	Sn	W	Mo	Bi	As	Sb	Be	Mn	Cr	V	Fe	Nb	Ag	Hg
711193. (1&2)	35	115	150	5	10	40	<15	10	20	<30	<30	1	2500	80	90	1%	<15	1	<.05
711194, 298 (3 & 4).	160	6000	3500	50	50	30	<15	2	10	<30	<30	3	1%	40	30	1%	<15	1	<.05
711298, 194 (6 & 7).	35	120	160	10	10	<5	<15	7	20	<30	<30	1	2000	80	100	1%	<15	5	<.05

NOTE: All results in PPM unless otherwise indicated.

SPECTROMETER SERVICES PTY. LTD.



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BY 1/6/71

"THE FOREGOING REPORT IS FURNISHED BY US PURSUANT TO CONTRACT AND IN STRICT CONFIDENCE. NO PART THEREOF MAY BE REPRODUCED FOR PUBLICATION WITHOUT OUR PRIOR WRITTEN APPROVAL."

725040

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725041

PART 7

E.L. 43/70 (Part) - Keith River, Tasmania
Report for the period ending 30th June, 1971

T.M. Porter

C.R.A. Exploration Pty Ltd

034

725042

C.R.A. EXPLORATION PTY. LIMITED

E.L. 43/70 (Part) - Keith River,
Tasmania
Report for the Period Ending 30th June,
1971

1. Work Undertaken

A geological map of the iron formation at Keith River was prepared (enclosed). Mapping on a scale of 1" = 200' was done by a plane table survey supplemented by tape and compass traverses. The area covered was slightly more than $\frac{1}{2}$ square mile, of dimensions 6,000 feet by 3,000 feet.

Using the preliminary mapping by P. B. Nye as a guide and plane table survey along the track as control, sufficient geological information was obtained from traverses to define the structure. Tight folding is indicated and the predominantly limonite outcrops known as the Keith Body appear to occur on a plunging syncline. A diamond drillhole was sited to intersect a limb of the syncline at the widest part of the formation about 300 feet vertical depth. The drilling contract was awarded to Associated Diamond Drillers on 22nd March, 1971.

Due to positioning delays drilling did not commence until mid-April. By the end of June, diamond drillhole DD71KR1 was advanced to 420 feet. To 300 feet, core recovery was poor.

The Keith River Iron formation was first intersected at 299 feet and comprised predominantly bedded pyrite in a soft green siltstone. The only notable magnetite encountered was three feet between 302 and 305 feet, and a further foot from 310-311 feet. Chalcopyrite is evident in uneconomic quantities, mainly in the section 312-320 feet.

Dolomitic bands, containing fine-bedded sulphides, occur from 388 feet to 420 feet.

To gain more information on what effect the iron formation might have on overall metal content of the streams, drainage samples were taken from the more accessible parts of the drainage systems of the Arthur and Keith Rivers within the E.L. areas. Final results of this

C.R.A. EXPLORATION PTY. LIMITED

E.L. 43/70 (Part) - Keith River, Tasmania
Report for the Period Ending 30th
June, 1971

2. Expenditure

Total expenditure for the period amounted to \$40,232.
comprising:-

Salaries	\$5025
Wages	371
General supplies	1198
Messing	19
Vehicles	743
Travel and accommodation	1837
Contracts and charters	7047
Option payments, etc.	20000
General overheads	<u>3992</u>
	<u>\$40232</u>

035

sampling are not yet to hand due to analytical difficulties.

During the mapping of the iron formation, some soil samples were taken along the traverses and submitted for base metal analysis.

This sampling revealed some low copper values, around which closely spaced weathered bedrock soil sampling has been commenced. It is envisaged that eventually this area will be outlined by 25 feet spaced samples along lines at 100 feet separation. The sampling to date has been plotted on the 100 foot scale plan and the samples have been despatched to The Zinc Corporation, Broken Hill, for analysis. No copper mineralisation has been observed at the surface.

Report on operations on exploration licence 43/70
during November, 1971

P.B. Nye
December, 1971

Mineral Holdings Aust. Pty Ltd
(CRA Exploration Pty Ltd)

REPORT ON OPERATIONS ON EXPLORATION LICENCE 43/70

DURING NOVEMBER, 1971.

1. INTRODUCTION

The weather improved considerably and most of the month was spent in marking and bull-dozing a track to the old Atlas leases and workings.

The operations in connection with each prospect, etc., are described separately below.

2. IRON FORMATIONS

a) C.R.A.E. discontinued operations after the completion of No.2 drill hole.

b) The company submitted its report for October together with

- Drill log of Keith River D.D.H.1
- " " " " " D.D.H.2
- Assay " " " " D.D.H.1

filed
[Signature]

c) A copy of the Company's October report and of each of the three logs are attached.

3. ATLAS PROSPECT

a) As stated in the Introduction, most of the month was spent in marking and bull-dozing the track to the Atlas leases.

b) By arrangement, C.R.A.E. then took over the bull-dozing and continued the track to the Atlas workings as they desired to examine and test the prospect.

c) C.R.A.E. carried out the following work

- i) Took soil samples through the northern leases to the workings
- ii) Sampled the three old adits
- iii) Bull-dozed near the workings and particularly the gossan outcrops.
An oral report stated that the gossan was not thick.

d) A written report on the surveys, sampling and bull-dozing has not yet been received.

e) A sample of the iron oxide slurry from No.2 adit was taken by M.H.A.

f) The sample was assayed and found to contain 28.0 ozs. per ton of silver (see attached Certificate of Spectrometer Services of 24th November.)

4. GONINON'S FORMATION

- a) The Atlas track gave easier access to this formation and it was sampled again.
- b) The formation was resampled at the place where it was previously sampled, namely, at a small and old excavation. The sample (No.1) was taken here.
- c) A sample was taken about 20 to 30 chains to the south-west on a similar formation that was considered to be the south-western extension of Goninon's formation. Two samples were taken at one place across the formation, No.2 being across 30 feet and No.3 across 25 feet, making the width 55 feet.
- d) It was reported that the formation could be traced for 40 chains to the south-west from Samples 2 and 3.
- e) The formation at No.1 Sample consisted of dark schists with quartz veinlets, but no visible pyrite. The formation where samples 2 and 3 were taken, consisted of black slates. Fine-grained pyrite was visible in No.2 sample but no pyrite could be seen in No.3 sample.
- f) The samples have been sent for assay.

5. SILVER-BEARING IRON OXIDE SLURRY

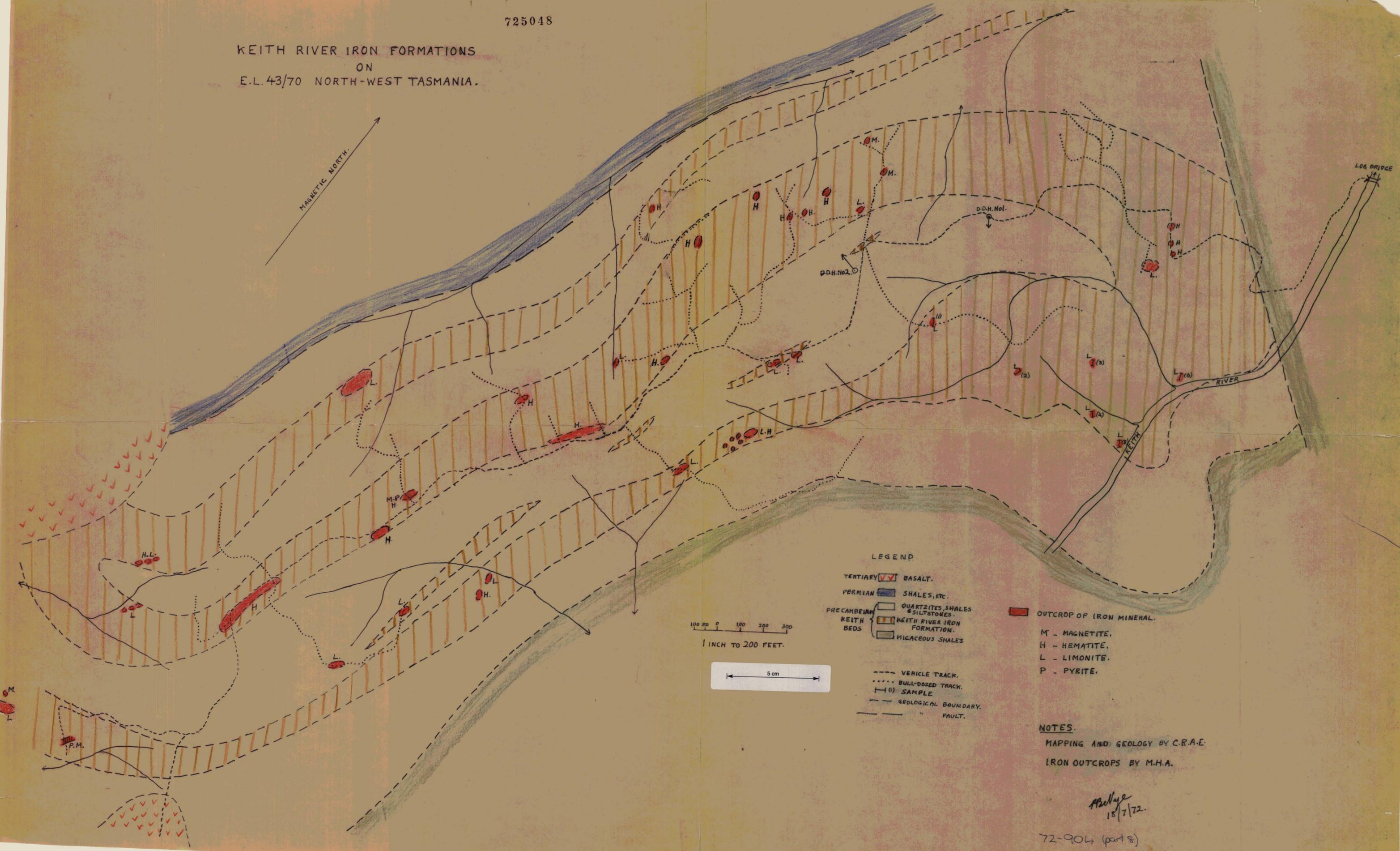
- a) The Atlas track permitted sampling of some of the iron slurries in that part of E.L. 43/70.
- b) Two samples were taken. Sample A was taken from the same place as Goninon's formation sample No.1 (see 4(b) above). Sample B was taken from the place where formation samples 2 and 3 were taken (see 4 (c) above).
- c) The two slurry samples were scanned and the silver content of B determined also by fire assay by Spectrometer Services. A copy of the certificate of 24th November is attached.
- d) Sample No.2 contained 24.0 ozs per ton of silver.
- e) It had previously been thought that the original silver-bearing slurry had come from the locality of Sample A (or formation Sample No.1).
- f) It will be noted that a slurry with a similar silver content (28.0 ozs per ton) has been described from the Atlas No.2 adit.

P.B. Nye

P.B. NYE.

KEITH RIVER IRON FORMATIONS
ON
E.L. 43/70 NORTH-WEST TASMANIA.

MAGNETIC NORTH.



LEGEND

- TERTIARY BASALT.
- PERMIAN SHALES, ETC.
- PRECAMBRIAN QUARTZITES, SHALES & SILTSTONES.
- KEITH RIVER IRON FORMATION
- BEDS MICACEOUS SHALES
- OUTCROP OF IRON MINERAL.
- M - MAGNETITE,
- H - HEMATITE,
- L - LIMONITE,
- P - PYRITE.
- VEHICLE TRACK.
- BULL-DOZED TRACK.
- SAMPLE
- GEOLOGICAL BOUNDARY.
- FAULT.

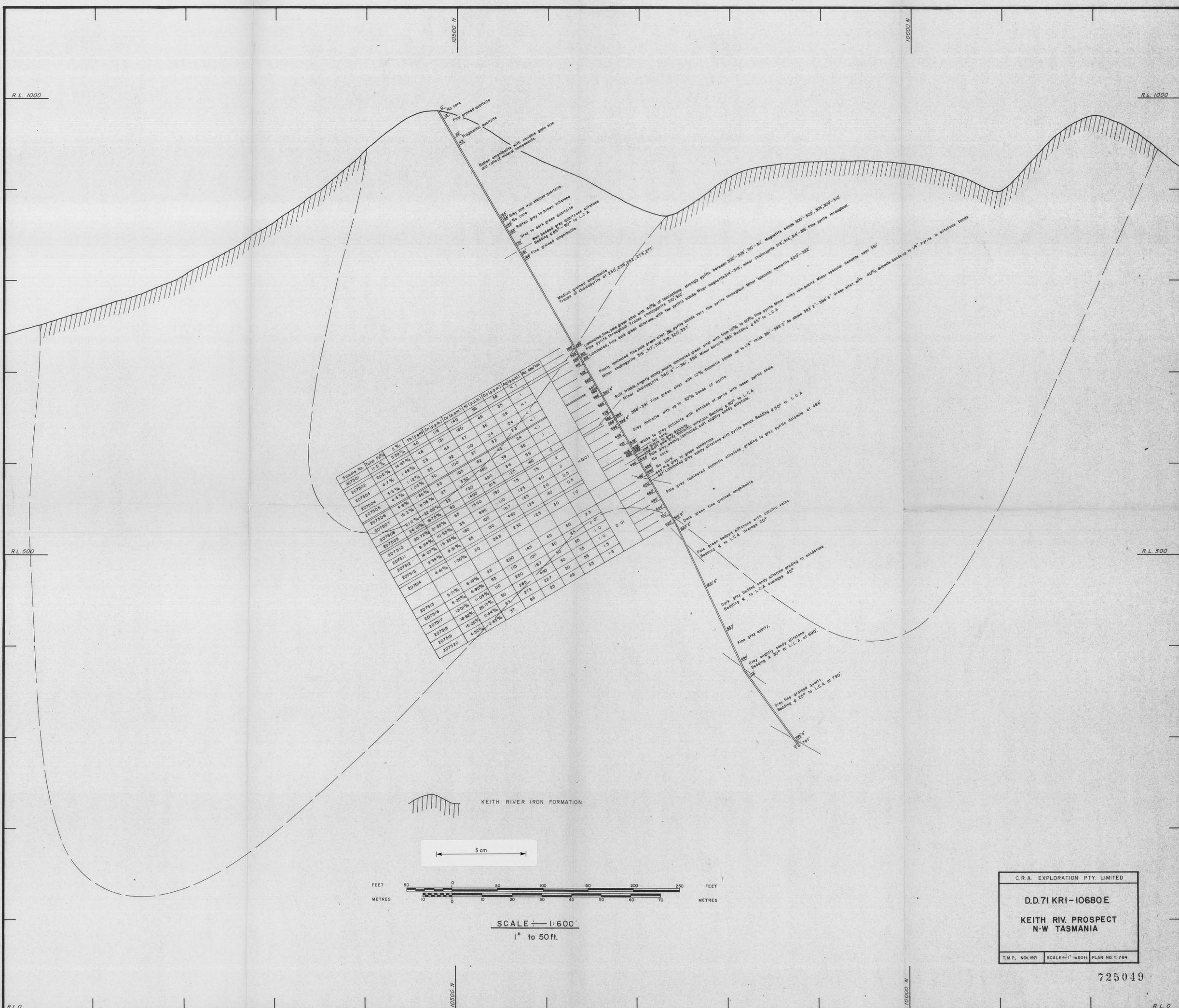
100 50 0 100 200 300
1 INCH TO 200 FEET.

5 cm

NOTES.
MAPPING AND GEOLOGY BY C.R.A.E.
IRON OUTCROPS BY M.H.A.

M.H.A.
18/7/72.

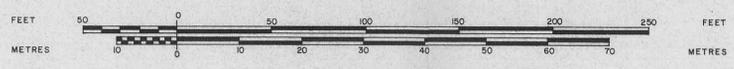
72-904 (part 5)



Sample No.	Total Fe%	Si	Al	Ti	Mn	Ni	Co	Cu	Zn	Pb	Cd	Ni	Mo	Ag	Au	As
207501	11.5%	4.0	131	64	57	140	45	35	<1							
207502	20.6%	14.47%	55	92	100	57	45	24	<1							
207503	4.7%	1.49%	30	103	480	34	24	2.5								
207504	5.5%	1.04%	55	730	480	34	24	2.5								
207505	4.3%	1.68%	27	1400	815	75	40	1.0								
207506	4.9%	0.58%	55	15.80	192	125	80	2								
207507	15.3%	22.06%	85	890	157	165	20	0.5								
207508	21.2%	22.06%	35	100	440	125	40	1.0								
207509	20.75%	10.55%	180	80	288	232	125	30								
207510	9.94%	15.35%	65	200	145	65	50	2.5								
207511	9.94%	15.35%	180	80	288	232	125	30								
207512	9.94%	15.35%	65	200	145	65	50	2.5								
207513	4.4%	1.30%	20	110	100	167	30	1.0								
207514	4.4%	1.30%	20	250	285	440	30	1.5								
207515	9.7%	8.09%	95	110	250	167	30	1.5								
207516	6.25%	6.90%	95	110	250	167	30	1.5								
207517	11.00%	11.00%	110	250	285	440	30	1.5								
207518	18.62%	26.17%	80	83	275	227	30	1.5								
207519	15.20%	11.44%	83	88	275	227	30	1.5								
207520	4.62%	2.63%	37	88	275	227	30	1.5								

KEITH RIVER IRON FORMATION

5 cm

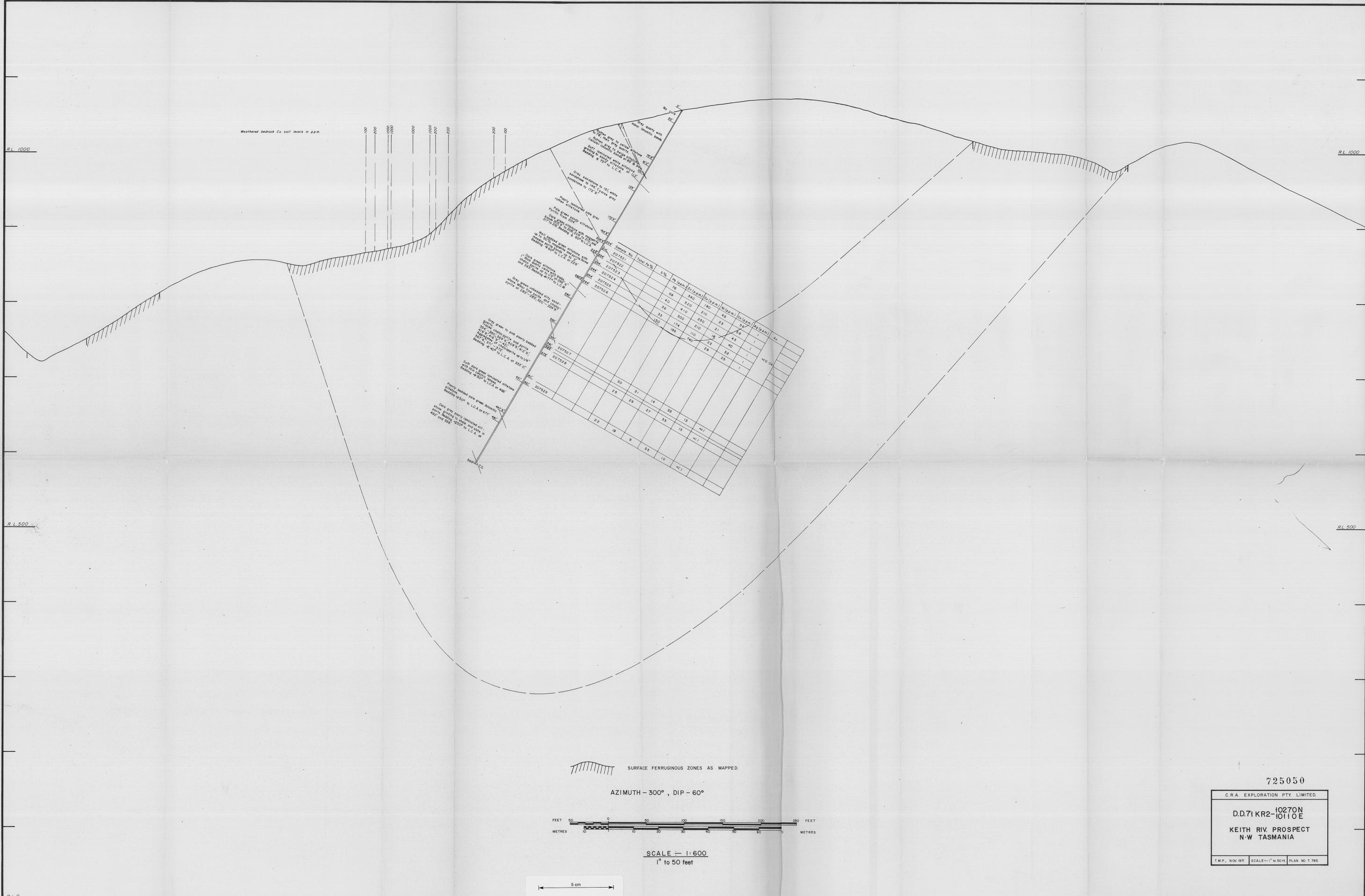


SCALE 1" = 50 ft. 1:600

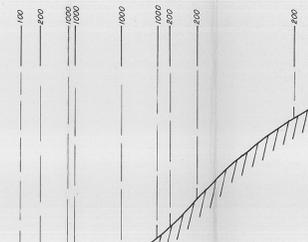
C.R.A. EXPLORATION PTY. LIMITED
 D.D.71 KRI-10680 E
 KEITH RIV. PROSPECT
 N-W TASMANIA
 T.M.R., NOV.1971 SCALE 1" to 50ft. PLAN NO. T. 784

725049

Size 27 1/4" x 22 1/2"
 72-904 (part 8)



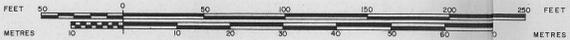
Weathered bedrock Cu soil levels in ppm



Sample No.	Top (ft)	Bottom (ft)	SS%	Fs (ppm)	Ca (ppm)	Mg (ppm)	Co (ppm)	Al (ppm)	As (ppm)
207521	76	40	76	520	190	48	58	1	1
207522	66	40	66	520	210	48	58	1	1
207523	36	40	36	410	250	23	58	1	1
207524	33	300	33	300	250	21	58	1	1
207525	150	174	150	190	210	18	40	1	1
207526	130	198	130	740	110	22	40	1	1
207527	30	31	30	31	14	33	19	<1	<1
207528	29	29	29	29	14	35	16	<1	<1
207529	28	18	28	18	9	33	10	<1	<1

SURFACE FERRUGINOUS ZONES AS MAPPED.

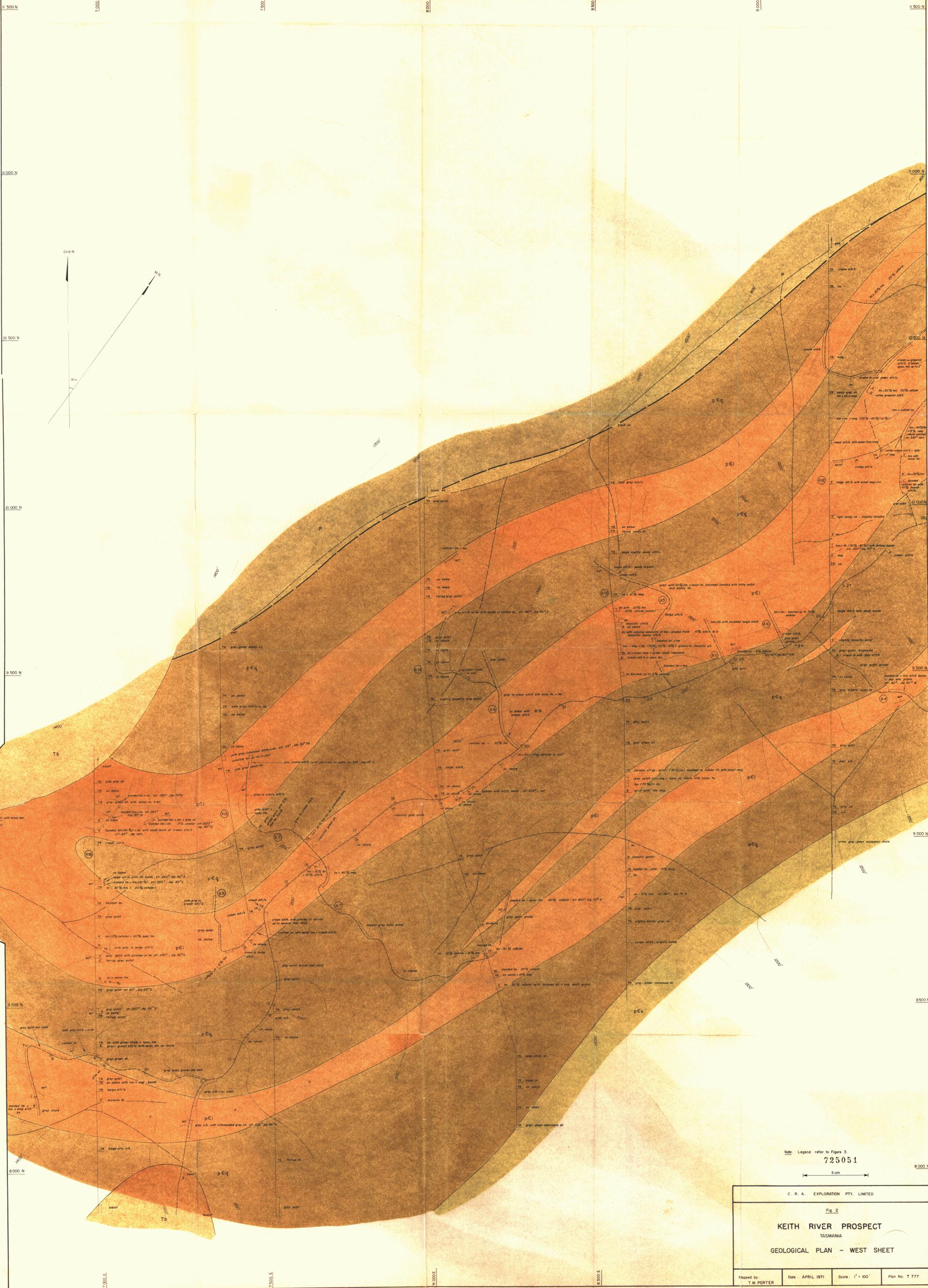
AZIMUTH - 300°, DIP - 60°



SCALE 1" = 600'
1" to 50 feet



725050
C.R.A. EXPLORATION PTY. LIMITED.
D.D.71 KR2-10270N
10110E
KEITH RIV. PROSPECT
N-W TASMANIA
T.M.P., NOV 87 SCALE 1" = 50 FT. PLAN NO. T 785



Note: Legend refer to Figure 3
725051

5 cm

C. R. A. EXPLORATION PTY. LIMITED

Fig. 2

KEITH RIVER PROSPECT
TASMANIA

GEOLOGICAL PLAN - WEST SHEET

Mapped by: T. M. PORTER Date: APRIL 1971 Scale: 1" = 100' Plan No. T 777



LEGEND

- | | | |
|-------------|------|---|
| TERTIARY | Tb | Basalt |
| PERMIAN | P | Black to grey shales and greywacke |
| | pCq | Interbedded quartzites, shales and siltstones |
| PRECAMBRIAN | pCi | Keith River Iron Formation |
| Keith Beds | pCs | Grey - green micaceous shale |
| | 3' | Point outcrop and width |
| | TR | Rock in roots of fallen tree |
| | B | Rock in bedrock soil sample |
| | --- | Extended outcrop |
| | --- | Scree |
| | --- | Extended area of scree |
| | --- | Line cut |
| | --- | Limonite, haematite, magnetite |
| | (K2) | Track number |
| | (A3) | Track number |
| | --- | Descriptive interval |
| | ○ 42 | Survey station and number |
| | --- | Geological boundary |
| | --- | Fault |
| | --- | Watercourse |
| | --- | Topographic contour - 50' interval |

725052

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Fig. 3

KEITH RIVER PROSPECT

TASMANIA

GEOLOGICAL PLAN - EAST SHEET

Mapped by: TM PORTER	Date: APRIL 1971	Scale: 1" = 100'	Plan No. T.778
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5 cm