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FINAL REPORT
GROUND RECONNAISSANCE PROGRAMME
E.L. 552 SLEISBECK
E.L. 672 MIRIAM SPRINGS
E.L. 145 DENVER CARPENTARIA
NORTHERN TERRITORY
SEPTEMBER 5 - DECEMBER 1, 1974 -

OPEN FILE

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PANCONTINENTAL MINING LIMITED
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Enclosures

- ✓ 1:25,000 Sleisbeck N.T.
Surface Geology and Airborne Anomalies
- ✓ 1:10,000 Sleisbeck N.T.
Sheet D, Surface Geology
- 1:50,000 Denver Carpentaria/Miriam Springs N.T.
Surface Geology and Airborne Anomalies
- ✓ 1:10,000 Sleisbeck N.T.
Sheet C, Subsurface Radiometrics and
Subsurface Geology
- ✓ 1:10,000 Sleisbeck N.T.
Sheet D, Subsurface Radiometrics and
Subsurface Geology

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1.0.0

SUMMARY

This report describes exploration activities carried out over E.L.s 552 Sleisbeck, 672 Miriam Springs, 145 Denver Carpentaria, Northern Territory, during the period September to December, 1974.

Some 740 metres of shallow open hole reconnaissance drilling at U4 and UM14 anomalies failed to reveal subsurface anomalism.

Deep drilling at the North Fault - U3 anomaly, Sleisbeck was unsuccessful in that it failed to penetrate the Upper Proterozoic cover, overlying the Koolpin Formation target. One hole - DDH 2, bottomed in Birdie Creek Volcanics.

Ground follow-up prospecting of 21 airborne radiometric anomalies was carried out on the Denver Carpentaria/Miriam Springs properties. One anomaly, DC 10, which occurs in McAdden Creek Volcanics, requires further investigation.

2.0.0

SLEISBECK PROGRAMME

2.1.0

INTRODUCTION

Radiometric prospecting was carried out on anomalies UM14, UM15, TM8, TM9.

Anomalies UM4, UM14, and UM15 were gridded and radiometrically surveyed.

Shallow reconnaissance drilling was carried out on anomalies U4 and UM14. A series of shallow holes was drilled on a line extending north-eastwards from the U4 grid towards the UM14 grid, here referred to as the North East Line.

At the North Fault, an attempt was made to penetrate the Kombolgie by diamond drilling.

Where possible anomalies are dealt with individually.

2.2.0 U4 ANOMALY

2.2.1 SURFACE GEOLOGY

The U4 grid area was geologically mapped concurrent with the radiometric survey. Traverses were made along the north and south banks of the Katherine River from the U4 grid to UM15 to the north-east. Several further small outcrops of Koolpin Formation were located.

2.2.2 SURFACE RADIOMETRICS

Some 43,300 line metres were radiometrically surveyed, readings being taken at 50 metre intervals on lines spaced 150 metres apart. Readings taken at waist level with a GIS-3 spectrometer ranged between 3 - 60 cps. Maximum readings were obtained on outcrops of Koolpin phyllite.

2.2.3 SUBSURFACE GEOLOGY

Twenty-six holes were drilled for a total of 311 metres. Samples were collected at one metre intervals. All holes bottomed in Koolpin Formation with the exception of three in Birdie Creek volcanics. Average depth of hole was 8.5 metres. Maximum 48 metres.

2.2.4

SUBSURFACE RADIOMETRICS

Holes were logged at metre intervals with a Scintrex - BHP - 1 probe connected to a Scintrex GIS-2 spectrometer. Equipment failure resulted in many of the holes not being logged. Radiometric readings were taken over cuttings with a GIS-2/GIS-3 spectrometer.

A maximum down hole reading of 30 cps was obtained at 200E, 150W in schist. Readings taken over cuttings gave a maximum of 34 cps over Koolpin schist and 38 cps over Birdie Creek volcanics.

2.3.0

UM14 ANOMALY

2.3.1

SURFACE GEOLOGY AND RADIOMETRICS

Anomaly UM14 is located on a low ridge. There is no exposure, the area being covered by a lateritic soil and the remnant of a laterite cover. A grid was established for a total of 4350 metres, readings being taken at 50 metre intervals on lines spaced 200 metres apart. Readings ranged between 10 - 32 cps, using a GIS-3 spectrometer.

2.3.2

SUBSURFACE GEOLOGY

Six holes were drilled for a total of 50 metres. All holes were drilled in Koolpin phyllite, samples being taken at one metre intervals. Maximum reading over cuttings was 32 cps. Background 28 cps. None of these holes were radiometrically probed.

2.4.0

UM15, TM8, TM9

2.4.1

SURFACE RADIOMETRICS

Radiometric prospecting failed to locate thorium anomalies TM8 and TM9.

A base line was established over UM15 and readings were taken over 3150 metres of line, using a Geometrics 300 spectrometer. Readings ranged between 8 - 398, equivalent to 1 - 40 cps on the GIS-3 instrument.

2.4.2 SURFACE GEOLOGY

The anomaly was found to coincide with a shallow clay covered flood channel. The area lies between the Katherine River and Gimbat Creek.

2.5.0 NORTH EAST LINE

2.5.1 INTRODUCTION

Geological mapping along the Katherine River revealed that the Koolpin Formation was more extensive than previously thought. A series of holes was drilled on a line extending north-eastwards from the U4 grid towards UM14.

The object was to test the Koolpin across strike to determine possible changes in lithology and degree of metamorphism.

Some 44 holes were drilled for a total of 379 metres.

2.5.2 SUBSURFACE GEOLOGY

The majority of the holes were in Koolpin Formation. Some predictably intersected Edith River volcanics, Birdie Creek volcanics and Kombolgie.

2.5.3 SUBSURFACE RADIOMETRICS

Only the first 19 of these holes were radiometrically probed. Highest borehole reading was 17 cps. Highest reading taken over cuttings was 30 cps on Koolpin schist (GIS-2).

2.6.0 NORTH FAULT ANOMALY

2.6.1 INTRODUCTION

The black soil anomalies discovered during the 1973 programme were relocated. Similar anomalies were found to exist to the south of the North Fault - U3 - South Fault area, outside the licence area. However, these were less extensive in area than the North Fault anomaly.

2.6.2 SOIL SAMPLING

Three soil samples were taken at points of maximum radiometric readings; 750N 2600E, 450W 1650E, and 0/0 on the 1973 percussion grid. The samples contained a high percentage of organic matter.

2.6.3 WATER SAMPLING

Ten water samples were collected at seepage points along the southern side of the North Fault valley. Natural gamma spectrograms were run on these samples by Geopeko, Darwin. Samples were acidified in the field and processed within 24 hours of collection.

2.6.4 DEEP DRILLING, NORTH FAULT AREA

It was intended to penetrate the Upper Proterozoic at the North Fault, with two diamond drill holes, the purpose being:-

- 1) to determine the thickness of the Upper Proterozoic cover
- 2) to obtain samples of the underlying Koolpin Formation to determine its lithology, degree of metamorphism and uranium content.

An unsuccessful attempt was made to deepen PDH1 (1973), which reached a depth of 80 metres.

Two attempts were made to put down a hole at the side of PDH1. Both holes failed to penetrate a fracture zone at a depth of approximately 27 - 30 metres.

A third unsuccessful hole (DDH 2), approximately 100 metres west of U3 anomaly, reached a depth of 129 metres, before the rods jammed in the hole. Core was obtained from 36.6 metres to 114 metres in Kombolgie sandstone and quartzite. No recovery was obtained between 114 and 126 metres in what was a leached sandstone, possibly a fault zone overlying the Birdie Creek volcanics. The last two metres were cored in Birdie Creek tuff, a sample of which has been submitted for uranium analysis.

An attempt was made to ream out this hole to take NQ rods, but the quartzite proved to be too resistant for this to proceed economically.

2.7.0

CONCLUSIONS, SLEISBECK PROPERTY

Deep drilling at the North Fault anomaly encountered difficulties in the form of fault zones and solution cavities. The programme was concluded when it became evident that penetration of the Upper Proterozoic was not possible with the drilling equipment available on site. Continuation was also precluded by the onset of adverse weather conditions.

To date, little additional knowledge has been gained as to the origin of the North Fault anomaly. It is hoped that results of water and soil analyses will throw some light on the problem.

The U4 airborne anomaly is caused by higher background Koolpin Formation outcropping in lower background sands and silts. Shallow reconnaissance drilling has not revealed subsurface anomalism.

Laterite and lateritic soil occurring on a low ridge gives rise to UM14 airborne anomaly. Again subsurface anomalism was not revealed in shallow reconnaissance drilling.

Radiometric prospecting of UM15 anomaly revealed higher background values associated with a clay bottomed flood channel.

3.0.0 DENVER CARPENTARIA/MIRIAM SPRINGS PROGRAMME

3.1.0 INTRODUCTION

Some 21 anomalies located during the 1972 airborne radiometric survey were radiometrically prospected on the ground. Location was by means of photo mozaics.

Anomalies located included DC1, DC6, DC7, DC10, DC11, DC13, DC17, DC19, MS6, MS7, MS8, MS13 and MS22.

The following anomalies were prospected but not located: DC16, MS5, MS15, MS20, MS21, MS23 and MS24.

In this report the anomalies are dealt with under two headings, those located on Kombolgie and those located on volcanics. A brief description of each anomaly follows.

3.1.1 KOMBOLGIE ANOMALIES

Seven of the located anomalies occur on Kombolgie sandstone. They include DC7, DC11, DC17, DC19, MS6, MS13 and MS22.

DC7

The source of the anomaly was not found in situ. Boulders of Banded sandstone in a creek bed gave readings of 400-500 (Geometrics 300), equivalent to 40 - 50 cps on a GIS-3. The highest readings were obtained on bands of heavy mineral sands (2cm wide). The boulders occur at the base of an almost vertical, 25 metres high cliff.

DC11

A small area of Kombolgie gave readings between 25 - 30 cps (GIS-3). Average reading on the surrounding Kombolgie was 10 - 15 cps. Quartz veining and hematitic mineralisation occur along joint planes and fracture surfaces.

DC17

Average reading over Kombolgie sandstone is 10 - 15 cps (GIS-3). A small area of sandstone gave readings between 25 - 33 cps. The sandstone is coarse grained, porous and darker in colour than the surrounding sandstone.

DC19

Anomalous readings occur over a zone of banded sandstone 0.5 metres wide, 30 metres long, and range between 100 - 200 cps (GIS-3). Normal readings over Kombolgie sandstone are 10 - 15 cps. The darker bands are formed of heavy mineral sands. Readings of up to 320 cps were obtained in contact with the darker bands. A sample of banded sandstone has been submitted for analysis and thin section description.

MS6

This is a spring fed black soil anomaly situated at the base of a Kombolgie escarpment. The anomaly covers an area of 20 metres by 40 metres and gives readings up to 225 cps (GIS-3). Water issues from a crevice in the quartzite escarpment.

MS13

This anomaly is caused by a band of hematitic, micaceous siltstone within the Kombolgie sandstone, width 5 metres, length 30 metres. Readings range up to 45 cps (GIS-3). Background over sandstone is 15 cps. The anomaly occurs just below the McAdden Creek volcanics horizon.

MS22

This is caused by a laterite on a low ridge of Mullaman beds, overlying Kombolgie. Readings range up to 48 cps (Geometrics 100).

3.1.2

VOLCANICS ANOMALIES

All the airborne anomalies occurring over volcanics and defined as definite anomalies were investigated. They included: DC1, DC5, DC6, DC10, DC13, DC16, MS5, MS7, MS8, and MS15. Anomalies DC16, MS5 and MS15 were not located by ground prospecting.

DC1

This anomaly occurs on Mullaman beds, overlying Antrim Plateau volcanics. Sandy soil in this area gives readings of 70 - 100 (Geometrics 300), equivalent to 7 - 10 cps on GIS-3. Slightly darker sandy soil lying in a depression gives readings up to 22 cps.

DC5

This anomaly occurs in a valley over McAdden Creek volcanics. Background readings over alluvium in the valley range between 10 - 15 cps (GIS-3). Swampy black soil areas give readings averaging 45 cps and ranging up to 100 cps. Small outcrops of volcanics give readings up to 35 cps.

DC6

A weak, spring fed black soil anomaly approximately 50 metres west of the sandstone/volcanics boundary gives readings up to 45 cps (GIS-3).

DC10

This anomaly occurs in McAdden Creek Volcanics which have been subjected to silicification and hematitic mineralisation. Readings of up to 170 cps were obtained at waist level using a GIS-3 instrument. The average reading obtained on surrounding volcanics was 30 cps. A sample of silicified volcanics has been submitted for analysis and thin section description. The anomaly was gridded. Anomalous readings occur over an area 50 metres by 50 metres.

DC13

The anomaly occurs in amygdaloidal basalt of the Dorothy volcanics. Readings range between 14 - 82 cps (GIS-3), the average reading being 50 cps. Higher readings occur erratically as spot highs. The anomaly was gridded.

MS7

This is a swamp anomaly giving readings up to 88 cps (Geometrics 100). It occurs in a valley bottom underlain by Henwood volcanics.

MS8

This anomaly is similar to MS7 with readings ranging to 75 cps.

3.2.0

CONCLUSIONS, DENVER CARPENTARIA/MIRIAM SPRINGS PROPERTY

Of the 21 anomalies prospected DC10, occurring on McAdden Creek volcanics, warrants further investigation. The anomaly occurs some 4.0 kilometres north-west of the ABC prospect in the same volcanic member.

MS13 could also warrant further investigation.

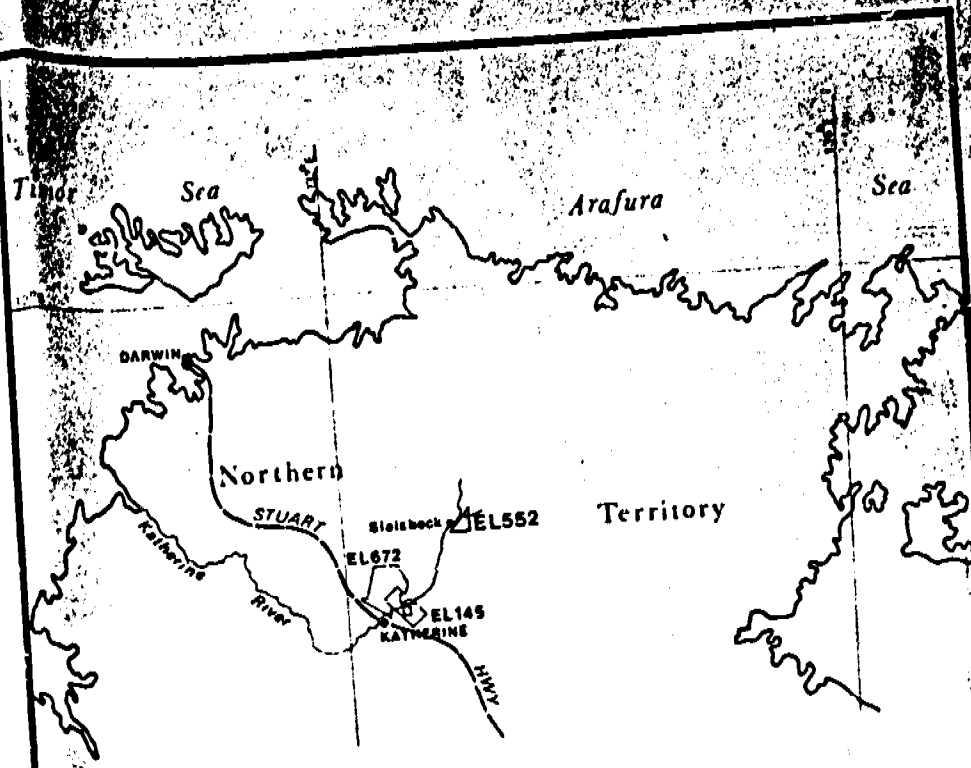
Respectfully submitted
Pancontinental Mining Limited

A handwritten signature in dark ink, appearing to read 'A.O.J. Cox', written in a cursive style.

A.O.J. Cox
Project Geologist

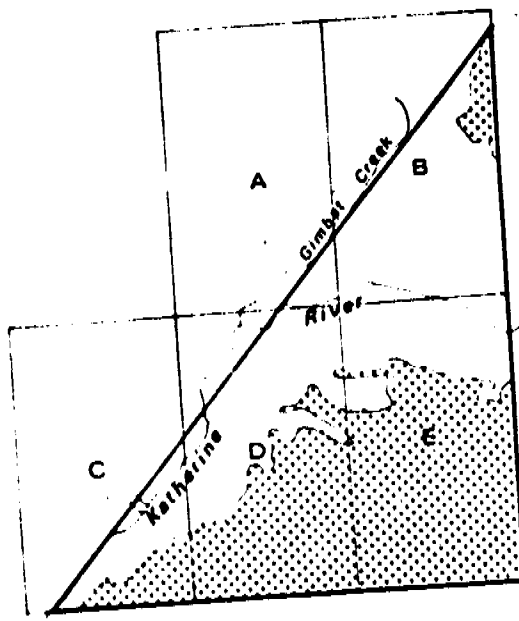
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			Cx2	Superficial Deposits - Sand
MESOZOIC	LOWER CRETACEOUS	Mullaman Basin	Kim	Sandstone and Cherty Shale
		Kombolgie Formation	PhA/A	Sandstone medium to coarse grained / brecciated
	UPPER PROTEROZOIC	Edith River Volcanics	PhB	Mainly Andesite with minor amygdaloidal lavas
PRECAMBRIAN		Grace Creek Granite	PhC	Mainly Rhyolite with dacite, sedimentary breccia, agglomerate and lenses of sandstone
		Zamu Complex	PhD	Granite, Granite Porphyry
		Fisher Creek Silstone	PhE	Silt and dykes of dolerite and gabbro intrusions within the Fisher Creek Silstone north of the Katherine River
LOWER PROTEROZOIC		Koolpin Formation	PhF	Siltstones and schist locally intruded by dyke and silt of the Zamu Complex
			PhG	Muscovite schist, phyllite
			PhH	Muscovite chlorite schist
			PhI	Chlorite schist
			PhJ	Chlorite muscovite schist

SYMBOLS

Geological contact proved

Surface geological contact inferred

Subsurface geological contact inferred

Float

Limit of geological mapping

Strike and dip of bedding, Horizontal bedding

Strike and dip of schistosity

Strike and dip of joint

Probable fault

Established joint/fault concealed

Inferred joint/fault

Slope of ground

Flat lying ground

Swamp

Direction of flow of running water

Direction of flow of intermittent stream

Billabong

River

Depression

Baseline

Total count gamma ray contours

Radiometric form line for surface readings

Overburden Max. cps

Bedrock Max. cps

Percussion Hole 1

Track

Bulldozed road

S 10205 Sample sent for petrographic description

AIRBORNE GAMMARAY SPECTROMETRY RESULTS

Altitude: 400ft MTC

Airspeed: 80 knots ±

Line Spacing: 1/2 mile

Direction: N-S

Instrument: Nuclear Enterprise Model 842

Crystals: 8x4 NaI

Crystal Volume: 804 cu in

Calibration: Caesium 137

Uranium (U²³⁸) 1.66-1.86 MeV 2.5 sec T.C.

Background: 12 cps

Anomalism: []

Thorium (Th²³²) 2.42-2.82 MeV 2.5 sec T.C.

Background: 20 cps

Anomalism: []

Potassium (K⁴⁰) 1.36-1.56 MeV 2.5 sec T.C.

Background: 12 cps

Anomalism: []

PANCONTINENTAL MINING LTD - BUKA MINERALS NL - WESTERN NUCLEAR AUSTRALIA LTD. JOINT VENTURE

E.L. 552 SLEISBECK N.T.

SURFACE GEOLOGY AND AIRBORNE ANOMALIES

Prepared by PANCONTINENTAL MINING LTD

Geology: G. Coburn, C. Kojan

Compiled: G. Coburn

Drawn: K. Bess

Scale: 1:25,000

100m 50m 0 0.5Km 1Km 2Km

265 000 E 270 000 E 275 000 E 280 000 E

8470 000 N 8475 000 N 8480 000 N 8485 000 N 8490 000 N

CK 75/3

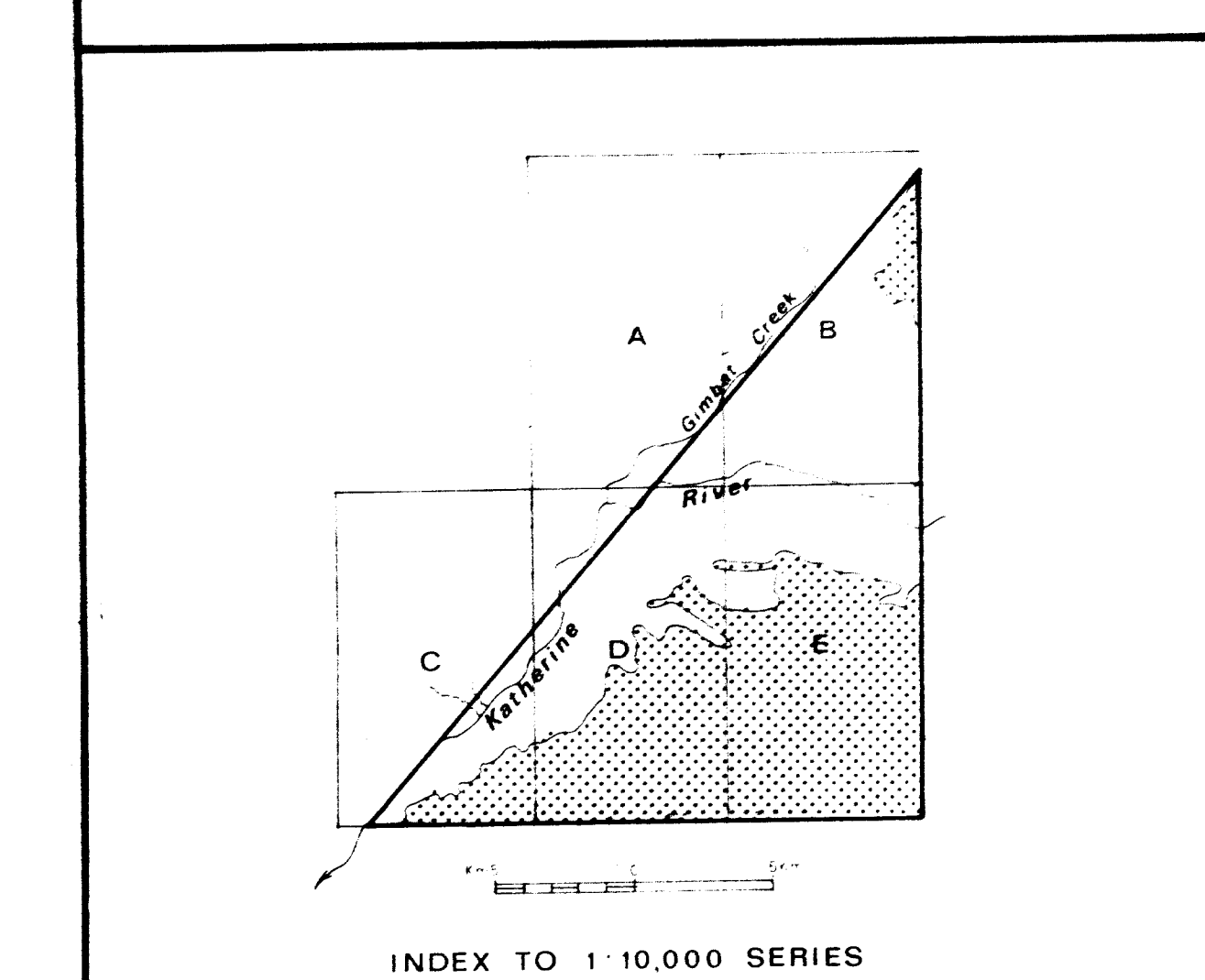
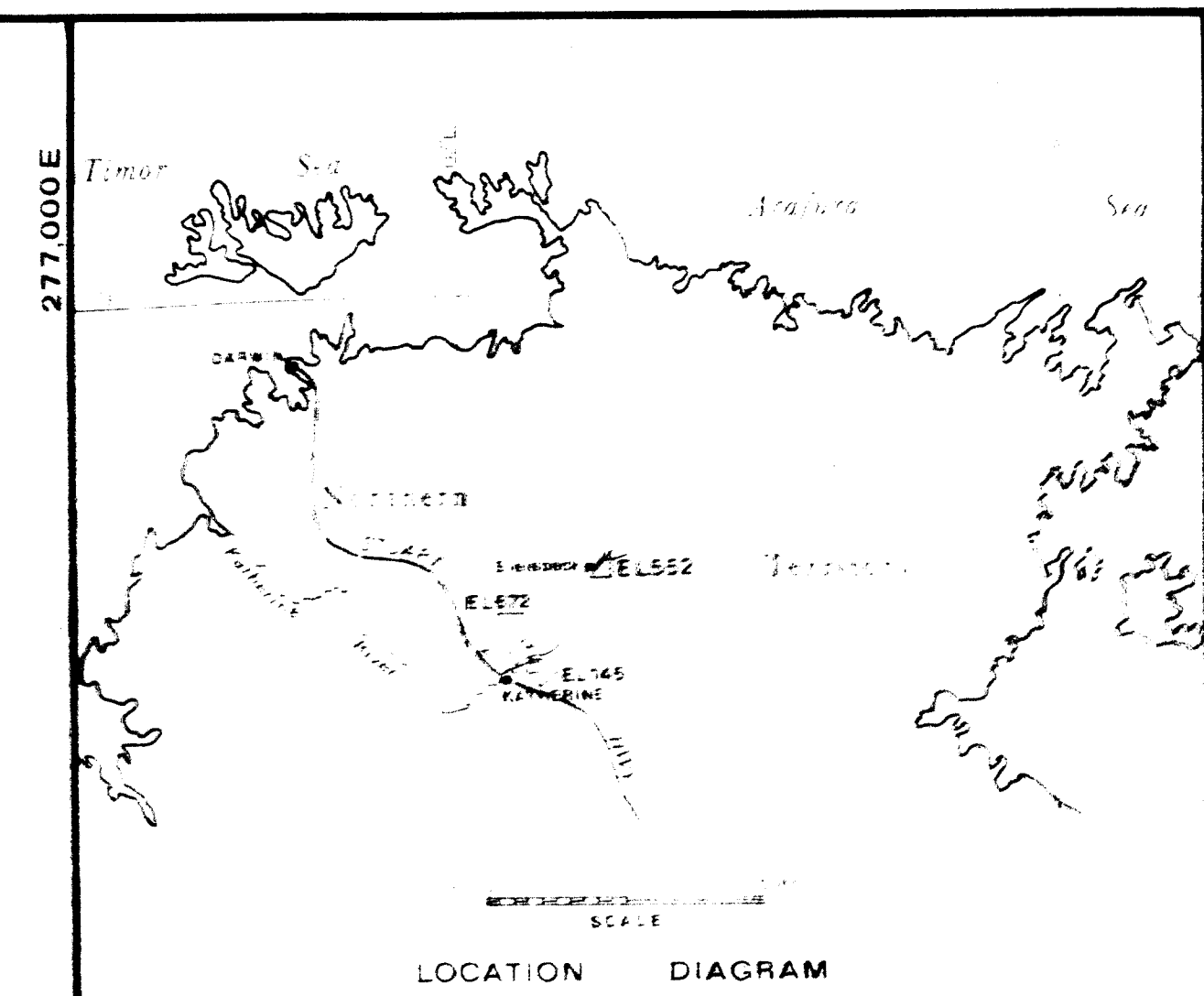
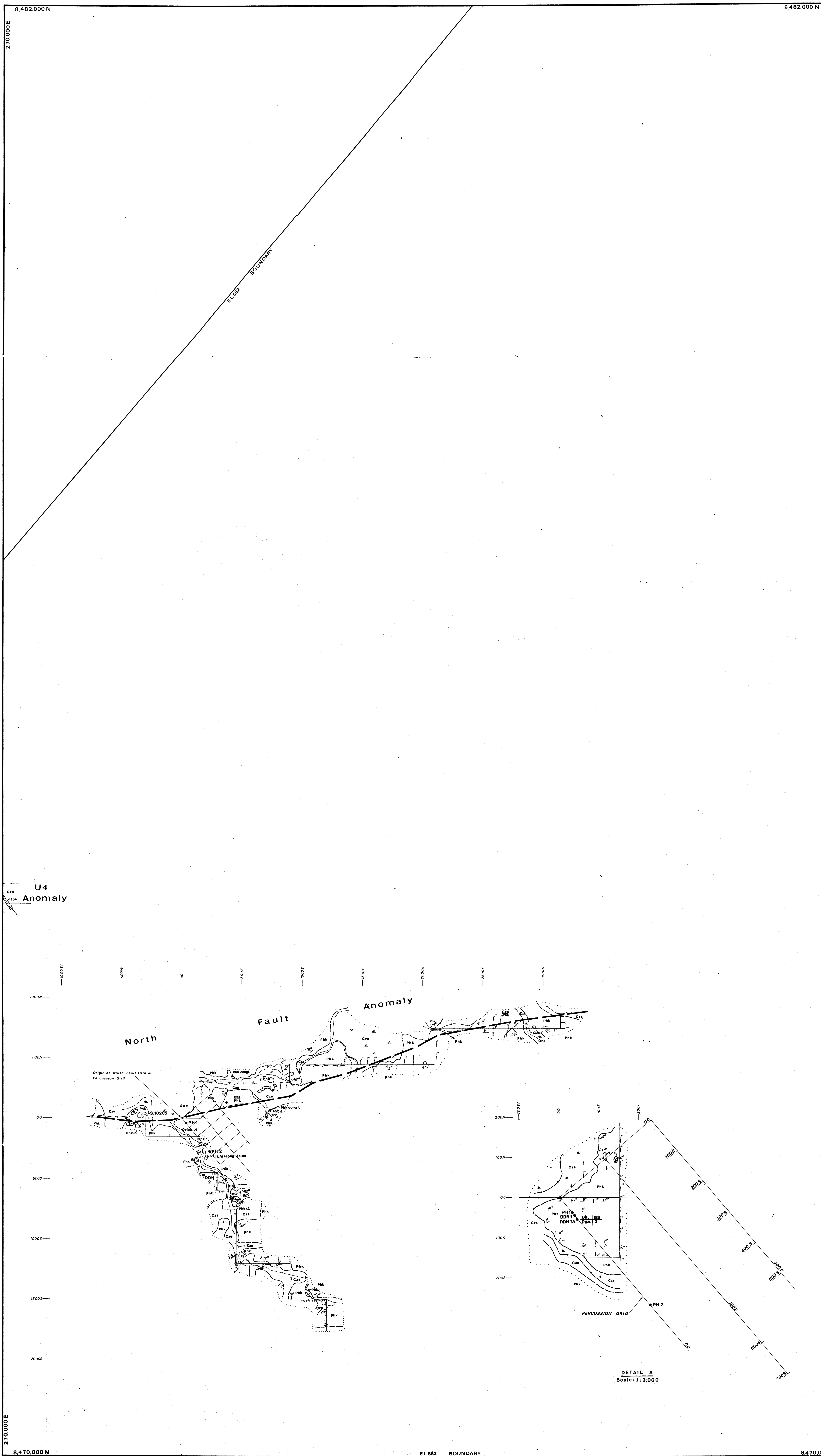
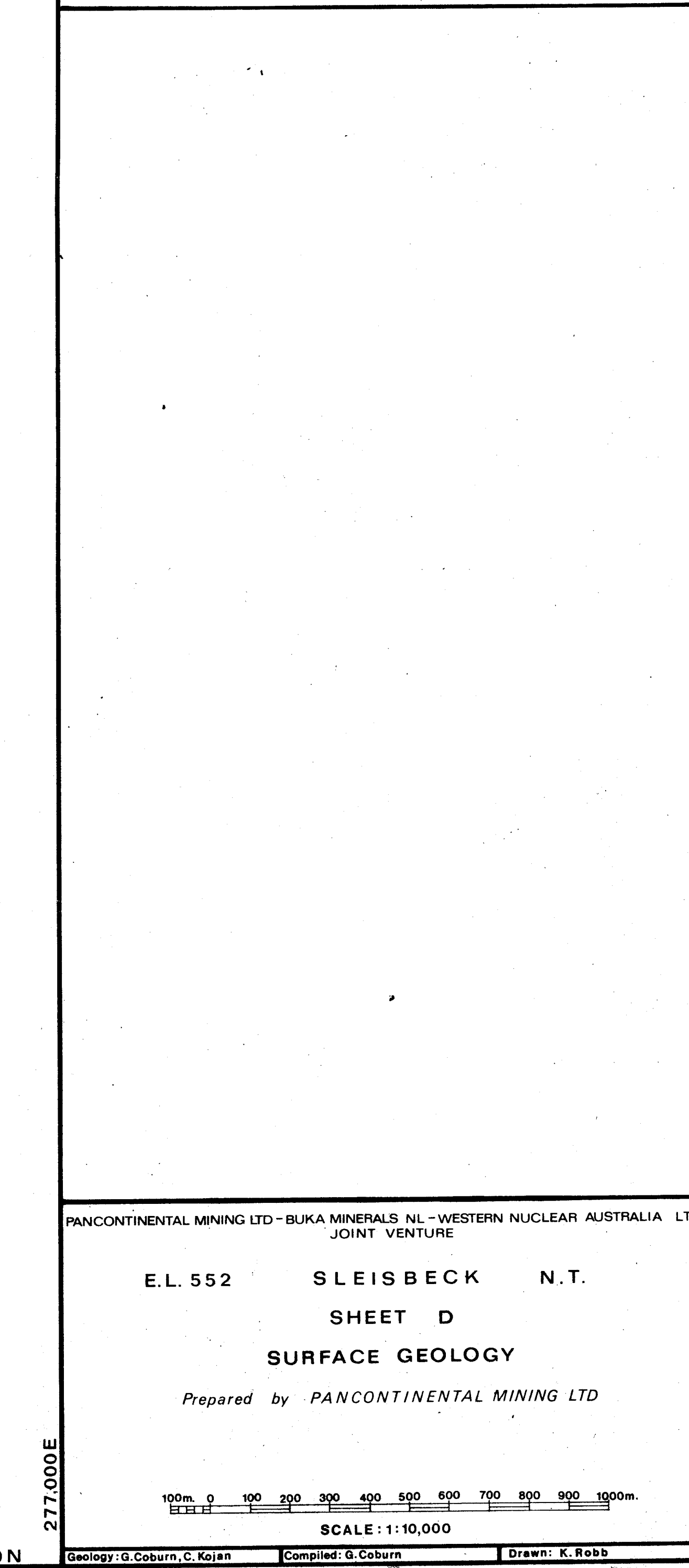
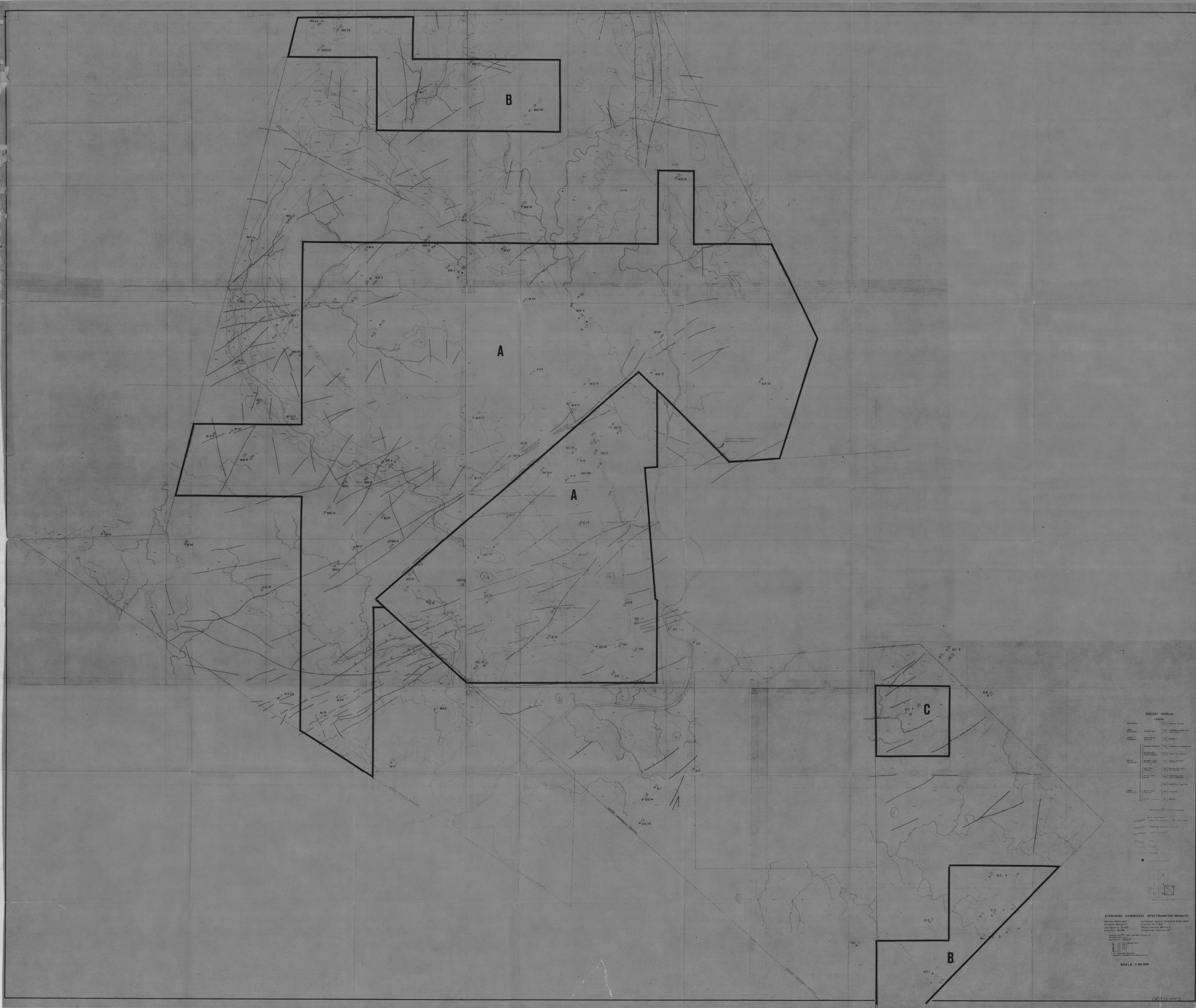


TABLE OF FORMATIONS			
CAINOZOIC	RECENT	Superficial Deposits	Cx1 Superficial Deposits—Laterite
			Cxa Superficial Deposits—Sand
MESOZOIC	LOWER CRETACEOUS	Mullman Beds	Kim Sandstone and Cherty Shale
	UPPER PROTEROZOIC		Kombolgie Formation
Birdie Creek Volcanic Member			Phu6 Matrix andesite with minor amygdaloidal lavas
Edin River Volcanics			Phu Mainly Pyroxite with decalc, sedimentary breccia agglomerate and lenses of andesite
PRECAMBRIAN	LOWER PROTEROZOIC	Grace Creek Granite	Pgx Granite, Granite Porphyry
		Zamu Complex	Pd1 Sills and dykes of dolerite and gabbro within the Fisher Creek Siltstone north of the Katherine River
		Fisher Creek Siltstone	Pt Siltstones and schist locally intruded by dykes and sills of the Zamu Complex
			1a Muscovite schist, phyllite
			1ab Muscovite chlorite schist
		1b Chlorite schist	
		1ba Chlorite muscovite schist	
		Koolpin Formation	

	Geological contact proved
	Surface geological contact inferred
	Subsurface geological contact inferred
	Fault
	Limit of geological mapping
	Strike and dip of bedding, Horizontal bedding
	Strike and dip of schistosity
	Strike and dip of joint
	Probable fault
	Established joint/fault concealed
	Inferred joint/fault
	Slope of ground
	Flat lying ground
	Swamp
	Direction of flow of running water
	Direction of flow of intermittent stream
	Billabong
	River
	Depression
	Baseline
	Total count gamma ray contours
	Radiometric form line for surface readings
	Overburden Max. cps.
	Bedrock Max. cps.
	Percussion Hole 1
	Track
	Bulldozed road
	Sample sent for petrographic description





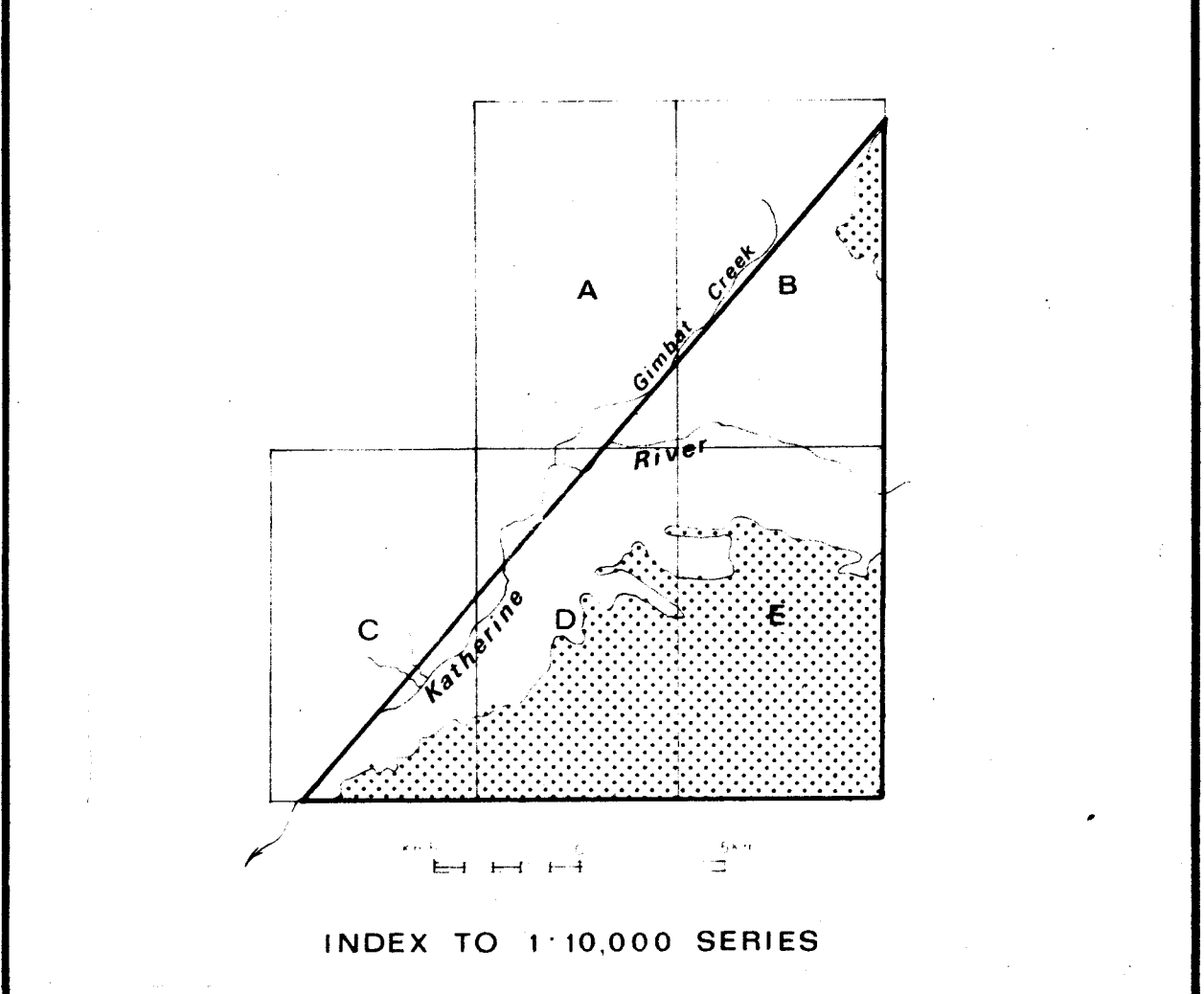
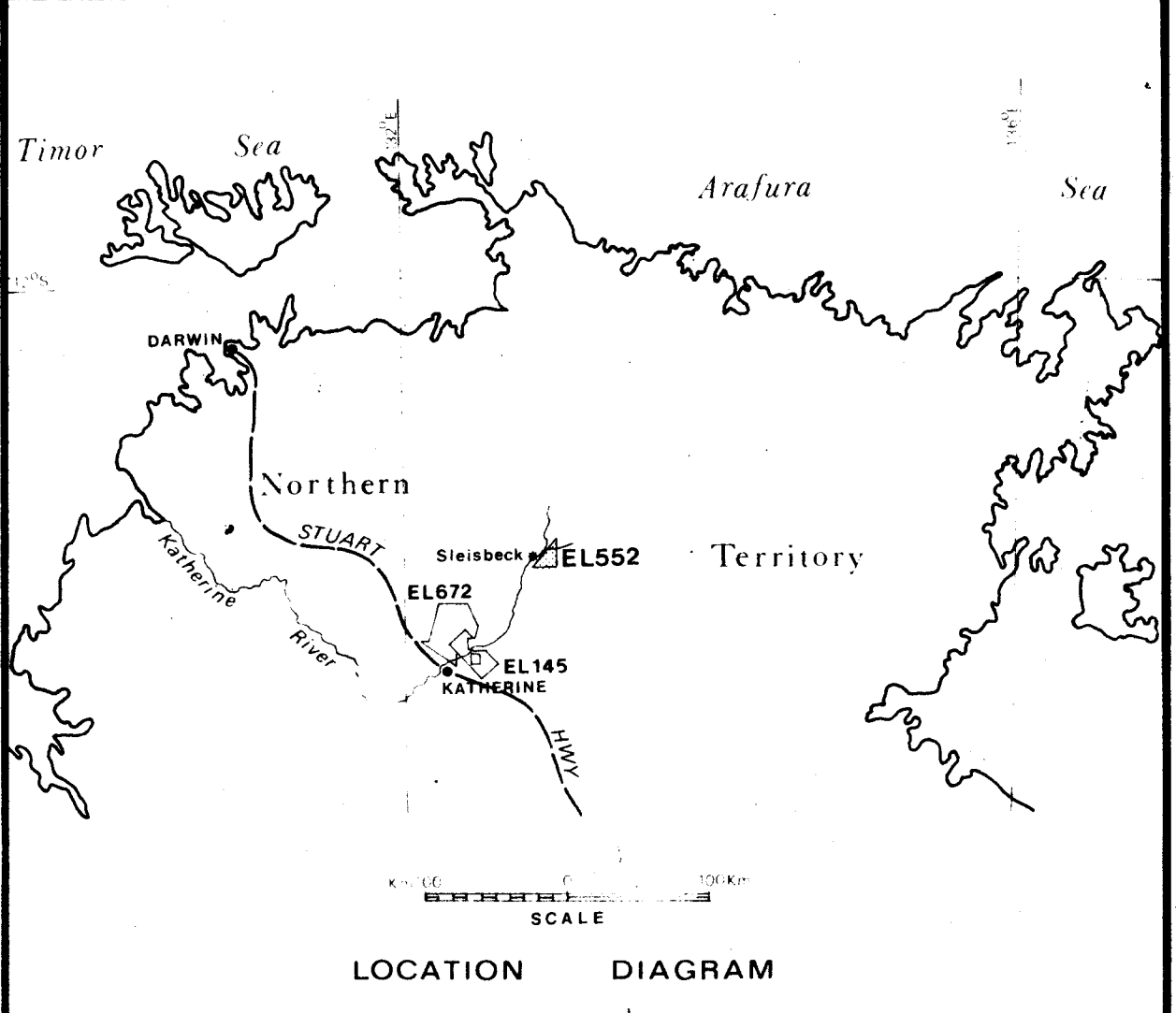
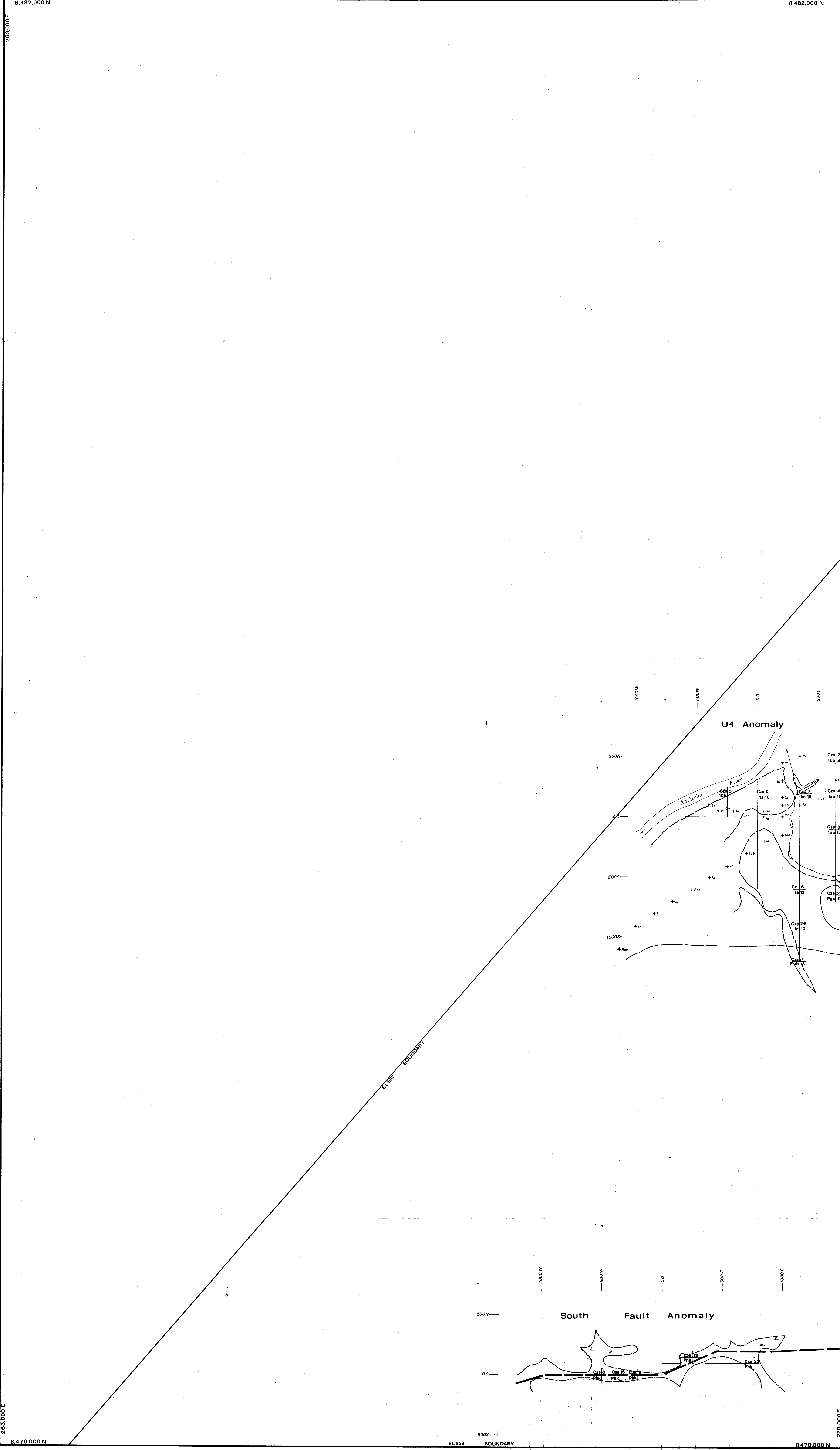


TABLE OF FORMATIONS			
CAINOZOIC	RECENT	Superficial Deposits	Cz1 Superficial Deposits - Laterite
		Superficial Deposits - Sand	Cz2 Superficial Deposits - Sand
	LOWER CRETACEOUS	Mullaman Beds	Klm Sandstone and Cherty Shale
		Kombolgie Formation	Pkh Sandstone, medium to coarse grained / brecciated
MESOZOIC	UPPER PROTEROZOIC	Birdie Creek Volcanic Member	Pkb Mainly Andesite with minor argillaceous tuffs
		Edith River Volcanics	Phe Mainly Rhyolite with dykes, volcanic breccia agglomerate and lenses of sandstone
	PRECAMBRIAN	Grace Creek Granite	Pgx Granite, Granite Porphyry
		Zamu Complex	Pdz Sills and dykes of dolerite and gabbro intrusives within the Zamu Creek-Silstone north of the Katherine River
LOWER PROTEROZOIC	Fisher Creek Silstone	FI	Siltstones and schists locally intruded by dykes and sills of the Zamu Complex
		1a	Muscovite schist, phyllite
	Koolpin Formation	1ab	Muscovite chlorite schist
		1b	Chlorite schist
		1ba	Chlorite muscovite schist

- SYMBOLS**
- Geological contact proved
 - Surface geological contact inferred
 - Subsurface geological contact inferred
 - Float
 - Limit of geological mapping
 - Strike and dip of bedding, Horizontal bedding
 - Strike and dip of schistosity
 - Strike and dip of joint
 - Probable fault
 - Established joint / fault concealed
 - Inferred joint / fault
 - Slope of ground
 - Flat lying ground
 - Swamp
 - Direction of flow of running water
 - Direction of flow of intermittent stream
 - Billabong
 - River
 - Depression
 - Baseline
 - Total count gamma ray contours
 - Radiometric form line for surface readings
 - Overburden, Max. cps.
 - Bedrock, Max. cps.
 - PHI+
 - Track
 - Bulldozed road
 - S. 10205 Sample sent for petrographic description
 - + 1ab Subsurface geology, 1974 drilling.

LEGEND

Instrument: G15-2 ratemeter with Bhp-1 probe
Subsurface radiometric survey by G. Coburn, September 1973

PANCONTINENTAL MINING LTD - BUKA MINERALS NL - WESTERN NUCLEAR AUSTRALIA LTD
JOINT VENTURE

E.L. 552 SLEISBECK N.T.
SHEET C

SUBSURFACE RADIOMETRICS AND SUBSURFACE GEOLOGY
Prepared by PANCONTINENTAL MINING LTD

100m 0 100 200 300 400 500 600 700 800 900 1000m
SCALE 1:10,000

Geology: G. Coburn, C. Kojan
Compiled: G. Coburn
Drawn: K. Webb

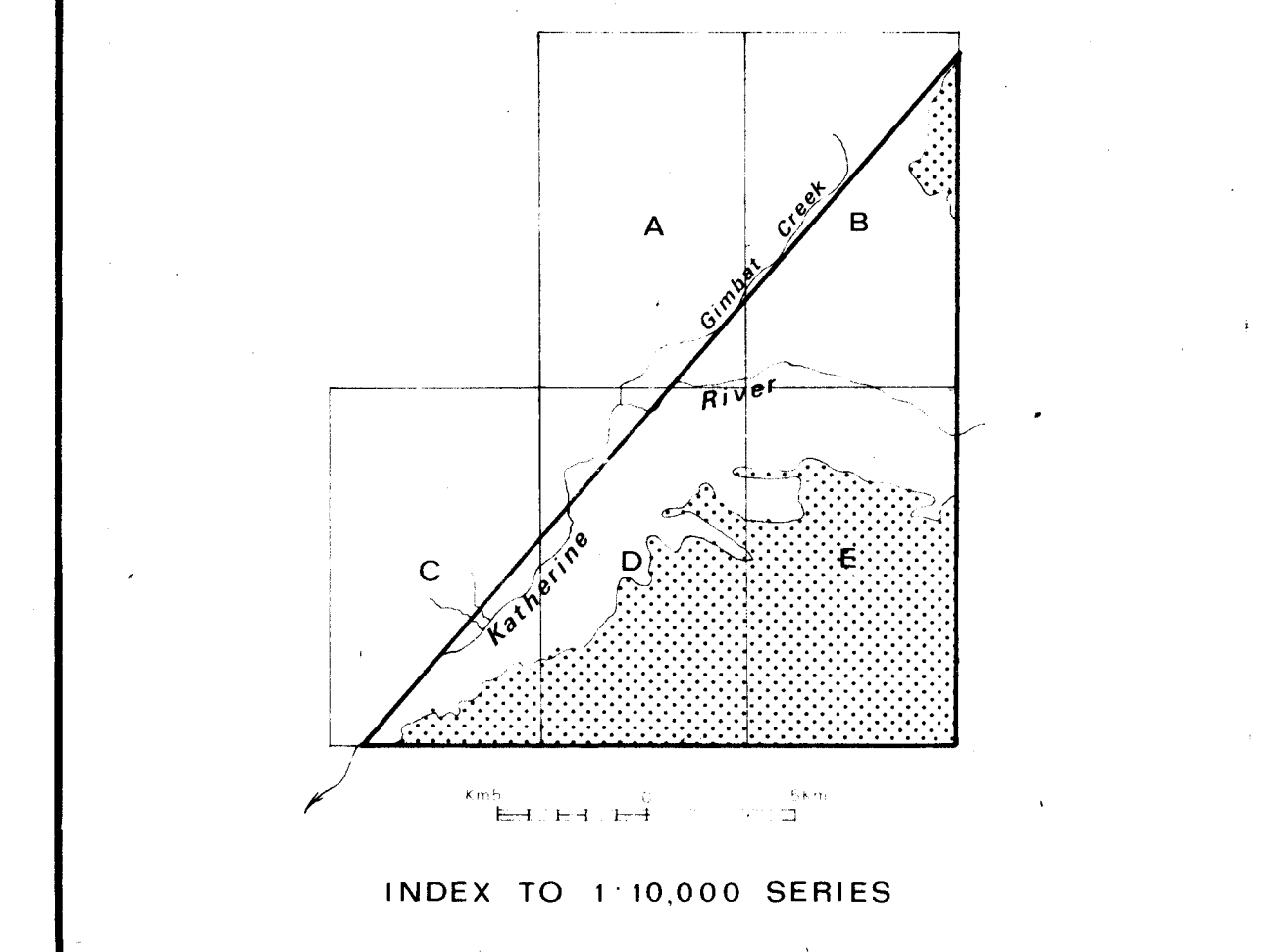
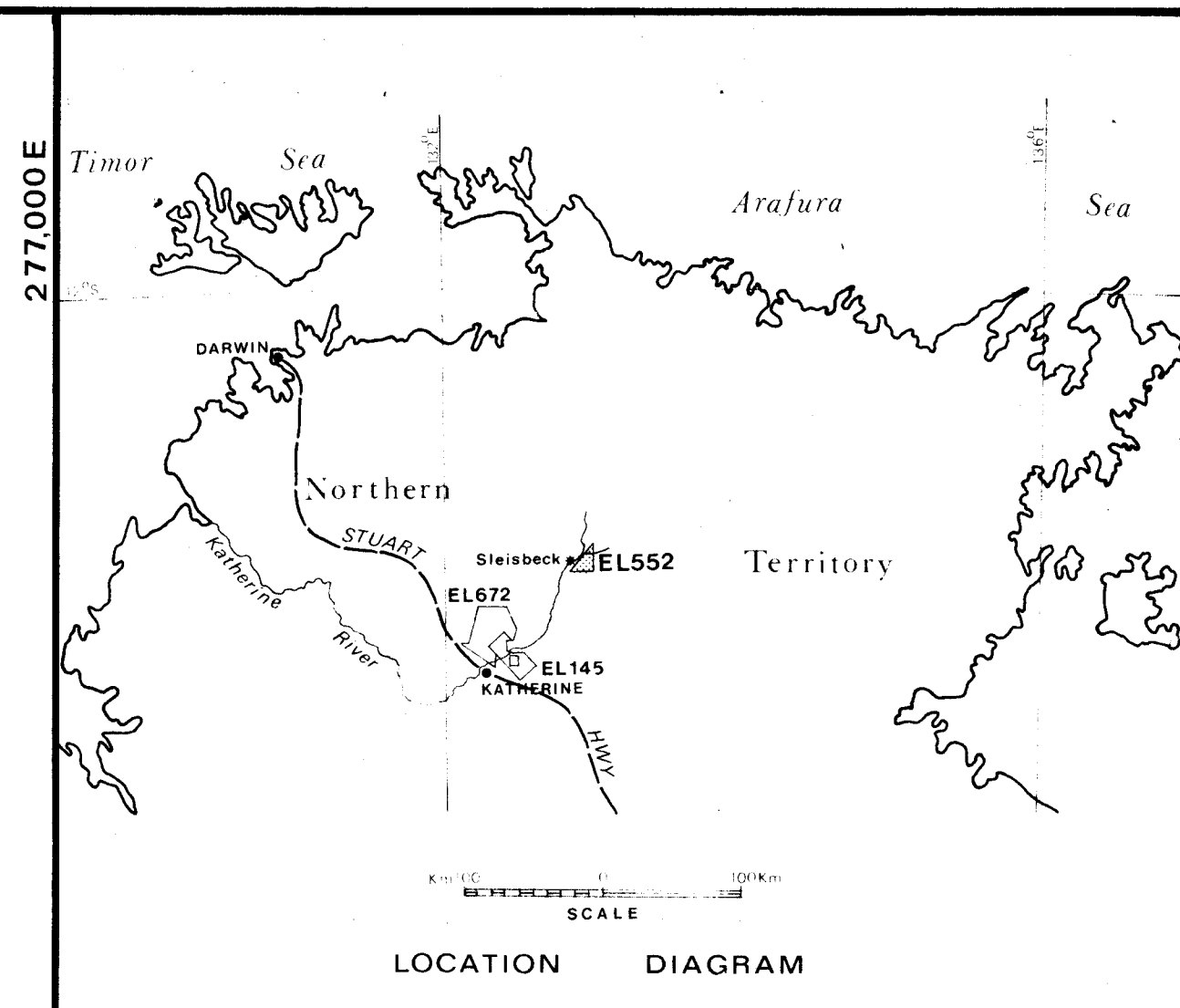
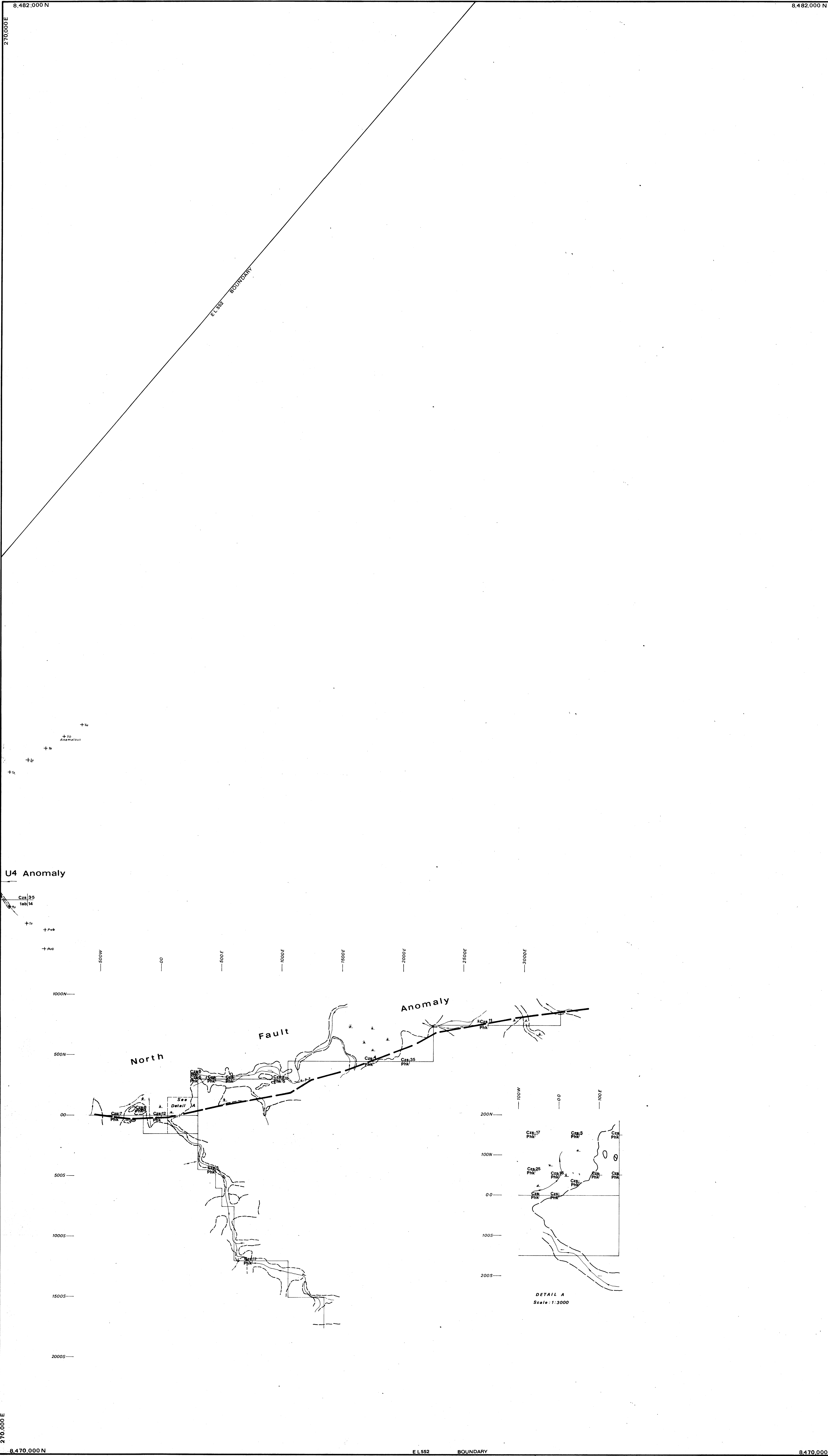


TABLE OF FORMATIONS			
CAINOZOIC	RECENT	Superficial Deposits	[Csl] Superficial Deposits - Laterite [Csa] Superficial Deposits - Sand
	LOWER CRETACEOUS	Mullaman Basin	[Klm] Sandstone and Cherty Shale
MESOZOIC	UPPER PROTEROZOIC	Kombitje Formation	[Phu/A] Sandstone medium to coarse grained / brecciated
		Birdie Creek Volcanic-Metamorphic	[Pub] Mainly Andesite with minor amygdaloidal dykes
		Edith River Volcanics	[Phe] Mainly Rhyolite with dacite, sedimentary breccia agglomerate and lenses of sandstone
PRECAMBRIAN		Grace Creek Granite	[Pga] Granite, Granite Porphyry
		Zamu Complex	[Pgi] Sills and dykes of dolerite and gabbro intrusive within the Fisher Creek Siltstone north of the Katherine river
		Fisher Creek Siltstone	[Pfi] Siltstones and schist locally intruded by dykes and sills of the Zamu Complex
	LOWER PROTEROZOIC		[1a] Muscovite schist, phyllite
			[1ab] Muscovite chlorite schist
			[1ba] Chlorite schist

SYMBOLS	
	Geological contact proved
	Surface geological contact inferred
	Subsurface geological contact inferred
	Float
	Limit of geological mapping
	Strike and dip of bedding, Horizontal bedding
	Strike and dip of schistosity
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	Flat lying ground
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	Direction of flow of running water
	Direction of flow of intermittent stream
	Billabong
	River
	Depression
	Baseline
	Total count gamma ray contours
	Radiometric form line for surface readings
	Overburden Max. cps.
	Bedrock Max. cps.
	Percussion Hole 1
	Track
	Bulldozed road
	Sample sent for petrographic description
	Subsurface geology, 1974 drilling

LEGEND

Instrument GIS-2 ratemeter with Bhp-1 probe

Subsurface radiometric survey by G.Coburn September 1973

E.L. 552

SLEISBECK

N.T.

SHEET D

SUBSURFACE RADIOMETRICS AND SUBSURFACE GEOLOGY

Prepared by PANCONTINENTAL MINING LTD

100m 0 100 200 300 400 500 600 700 800 900 1000m

SCALE: 1:10,000

CR 1725 2263

Geology: G.Coburn, C. Kaye

Compiled: G.Coburn

Drawn: A. Koss