ARNHEM LAND MINING LIMITED

OPEN FILE

ANNUAL REPORT

ON

EXPLORATION LICENCE 2564
AND
EXPLORATION LICENCE 2565

ON

EXPLORATION CARRIED OUT

DURING THE FIRST YEAR OF TENURE

OCTOBER, 1980 - OCTOBER, 1981

E.R. DAVIES

DECEMBER, 1981

CONTENTS

STATEMENT OF EXPENDITURE.

EXPLORATION LICENCES 2564 & 2565.

EL 2564 - 29/10/80 - 28/10/81
EL 2565 - 8/10/80 - 7/10/81

	EL 2564	EL 2565
Salaries	20848.46	14200.96
Wages	13524.10	8887.84
Fringe Costs	8717.95	5479.51
Office Rent	3568.69	2336.72
Electricity	306.53	162.64
Telephone	1495.57	931.77
Freight	334.02	691.04
Publications	295.00	384.06
Office Supplies	656.16	392.54
Maps & Reproductions	874.85	1035.58
Bank Charges	14.47	11.97
Medical	167.63	175.92
Equipment Maintenance	1050.37	859.15
Entertainment	226.71	255.76
Miscellaneous	79.49	79.49
Air Fares	2481.58	2155.03
Hotels & Food	1775.81	1566.45
Hire cars & Taxis	519.16	444.21
Consultant	52.50	52.50
Equipment-non capital	10607.54	8104.76
Charter Aircraft	7549.66	10343.31
Vehicle Expense	10745.53	8409.71
Prop. Payments	527.84	582.16
Photography-aerial	5860.00	1710.00
Gravity survey	5563.86	8223.65
Radiometrics/Magnetics-Air	25533.10	25533.09
Magnetics-Ground	1750.00	-
Camp Accommodation	5616.64	3330.50
Assays	424.13	102.92
Sydney Overheads	11704.80	7697.17
TOTAL	142872.15	131160.41

SUMMARY

Exploration Licences 2564 and 2565 were acquired to assess the potential of the area to host uranium and base metal deposits. The area was selected partly as a result of the recognition of a high gravity and magnetic response indicated on Bureau of Mineral Resources plans.

An airborne radiometric and magnetic survey was flown in late 1980, as a result of which a large number of uranium-dominant anomalies were identified. These uranium anomalies were mainly clustered in two areas - in the south and in the northwest of E.L. 2564.

The two areas were examined by systematic grid survey, geologic and radiometric mapping. Other airborne anomalies elsewhere were examined by reconnaissance visits.

The airborne anomalies in the principle areas are caused by flat-lying uraniferous phosphatic sandstone units, interbedded in conventional sandstone of the Masterton Formation of Mid-Proterozoic age.

A reconnaissance gravity survey was carried out to define the feature previously identified by the BMR.

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

LOCATION PLAN

PUNGALINA AREA N.T.

FIG. 1.

Prepared E.R.Dovies		Drawn A.L.L.
Scale 1:5 million	Date April 1, '80.	Proj.
	Report	Dwg. NT80-14

1. INTRODUCTION

Exploration Licences 2564 and 2565, covering 928 square kilometres and 505 square kilometres respectively, were granted to Arnhem Land Mining Limited on October 29 and October 8, 1980.

The Licences are contiguous and were explored as one exploration program. Accordingly, this report covers exploration over both tenements.

The program for the first year of tenure, covered in this report, was managed and supervised by Australia and New Zealand Exploration Company (ANZECO) in consultation with the joint venture partner Mines Administration Pty Ltd.

2. EXPLORATION CONCEPT

Research into mineralization in relation to regional tectonics led to an examination of the region known as the Wearyan Shelf, a Mid-Proterozoic cover sequence over presumed Lower Proterozoic metamorphics. More detailed investigation indicated two favoured situations for mineral potential.

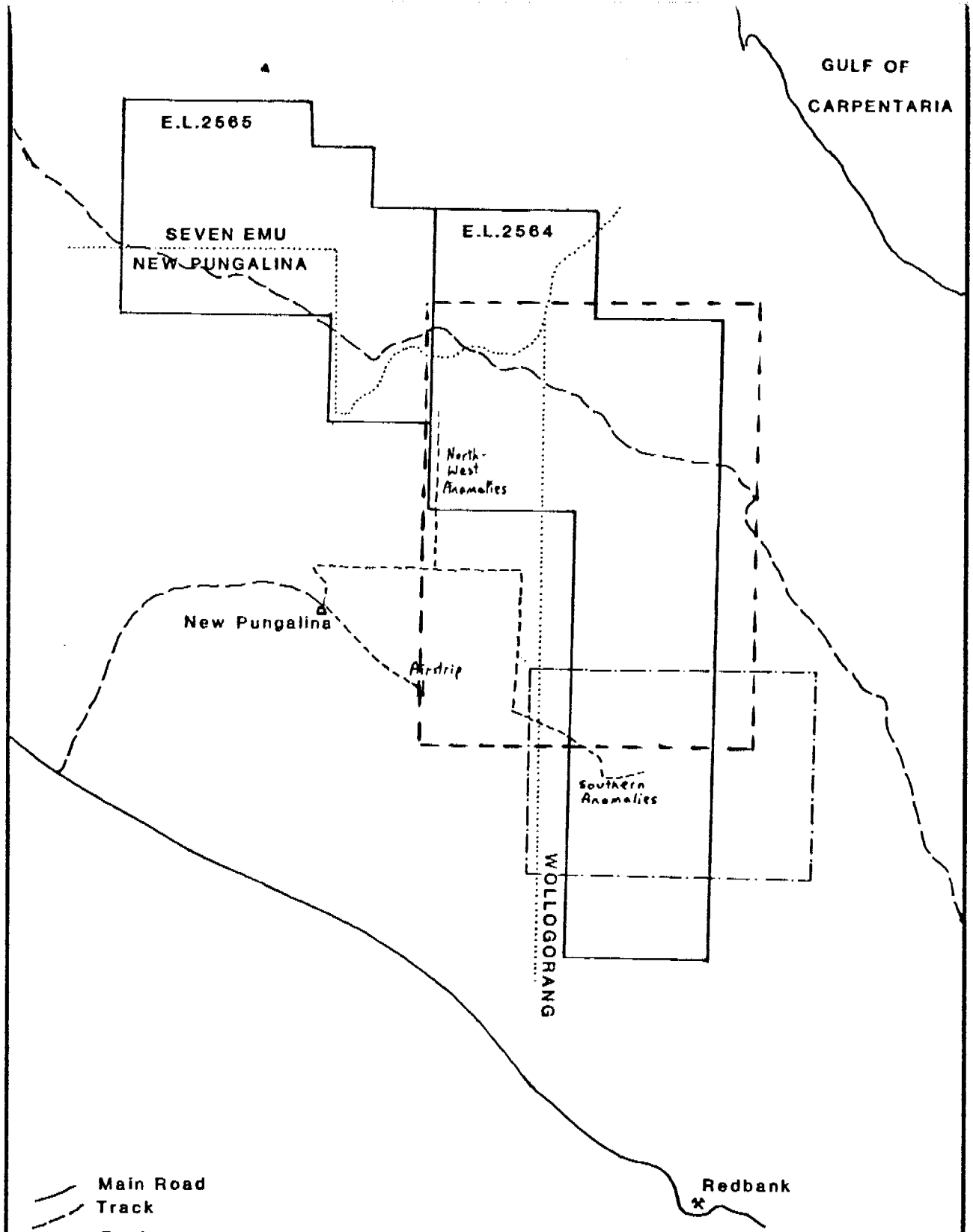
a) Government surveys had identified near co-incident gravity and magnetic "highs" in the vicinity of Sandy Creek. Geophysical modelling indicated they they could be caused by an elevated basement area. Further detailed survey was obviously required.

b) Previous exploration on adjacent ground by another company had revealed mineralized (Cu/U) minor felsitic dykes intruding the upper sequences of the Hobblechain Rhyolite and Gold Creek Volcanics. Although in themselves the reported dykes are too small to be considered as targets, it was thought possible that they could be part of a system that produced extensive deposits of potential economic interest.

3. LOCATION AND ACCESS

3.1 Exploration Licences 2564 and 2565 are located in the Carpentaria region of the Northern Territory, near the Queensland border. The area is some 1,000 km. from Darwin and 600 km. from Mount Isa (Figure 1).

3.2 The only substantial settlements in the region, other than a few cattle properties, are Borroloola (N.T.) and Doomadgee (Qld), both of which are some 150 km. from the tenements. The gravelled road from Borroloola to Doomadgee lies south of the Licences, which are reached by a poor station track to New Pungalina Homestead (GR 6364-571491), and thence by track



AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

E.L.s 2564 and 2565
ACCESS AND PROPERTIES

Fig 2

Prepared		Drawn E.R.D.
Scale 1:500000	Date	Proj.
	Report	Dwg.

to the east. An alternative access via Seven Emu Station traverses the north and east of the Licences (Figure 2). The Licence areas are isolated by road during the wet season.

3.3 Airstrips in the area include -

a) Borroloola	Government strip,	unsealed	1.4 km.	long
b) Calvert Hills	Private strip	unsealed	1.2 km.	"
c) McArthur River	Private strip	sealed	1.5 km.	"
d) New Pungalina	Private strip	unsealed	1.0 km.	" (constructed during 1981 GR6364-640430)
e) Redbank	Private strip	unsealed	0.7 km.	"
f) Robinson River	Private strip	unsealed	1.4 km.	"
g) Wollogorang	Government strip,	unsealed	0.9 km.	"

Scheduled air services are -

a) Borroloola — Tillair from Katherine every Thursday
b) McArthur River — Charter from Mount Isa, weekly
c) Calvert Hills & other properties — Tennant Air from Tennant Creek every Saturday.

A light helicopter (Hughes 300) based at Calvert Hills Station was contracted for reconnaissance work from Heli-Mustering Services.

3.4 Several haulage contractors operate from Darwin-Katherine to Borroloola, and Mount Isa to Borroloola on a more or less regular basis.

4. MAPS AND AIRPHOTOS

4.1 Topographic Maps -

Robinson River	1:250,000
Pungalina	1:100,000
Calvert River	1:100,000
Robinson River	1:100,000
Selby	1:100,000

4.2 Geologic Maps -

McArthur Basin	1:500,000
Robinson River	1:250,000

4.3 Air Photographs - RC 9 Approx. 1:84,000 1968-69 monochrome

Robinson River Sheet	Run No.	1	CAG 338	Photos	195-225
		2	337		72-111
		3	337		115-159
		4	339		25- 67
		5	349		77-126
		6	349		151-201
		7	373		28- 78
		8	379		17- 62

During 1981 a small area in the south of E.L. 2564 was photographed in colour at a scale of 1:20,000 by Geospectrum on behalf of ANZECO. The area covered in shown on Figure 2.

5. NATURAL FEATURES

5.1 Topography

The E.L.'s cover a dissected plateau of flat-lying sandstone. Plateau elevations average 100-150 m. in the north, with spot elevations to 179 m., and 150-157 m. in the south, with spot elevations to 250 m. The dissected and rugged country makes travel across the area extremely difficult. East of the hill range, the coastal plains are flat and sandy with some low lateritic ridges. West of the hills, a sandy plain with occasional rock outcrops extends over a wide area.

5.2 Vegetation

The rocky plateau supports a dry eucalypt forest with trees averaging 5 m., and of moderate density. The coastal and inland plains support a medium density tree growth with eucalypts to 10 m. There is little or no understorey. The permanent creeks and waterholes are lined with paperbark and denser scrub.

5.3 Watercourses

The perennial Calvert River traverses the northern part of the E.L. 2565. Sandy Creek, and in part Running Creek, are perennial. Other larger creeks may diminish to separate water holes towards the end of the dry season.

6. PASTORAL LEASES

The E.L.'s lie within three pastoral leases (Figure 2).

a) Seven Emu, lessee J. Shadforth
b) New Pungalina (El Dorado), lessee W. Bright
c) Wollogarang, lessee P. Zlotkowski

7. PREVIOUS EXPLORATION

7.1 Little serious company prospecting appears to have been carried out specifically on the E.L. areas in the past, although they had formed part of larger areas surveyed by other companies. Examination of records and reports indicates the following previous work pertaining to the E.L.'s and surrounding ground.

7.2 The Bureau of Mineral Resources mapped the Robinson River 1:250,000 Sheet area in 1961 as part of a regional survey. This work forms the basis of all subsequent work.

7.3 The Redbank copper deposits, located 20 km. south of E.L. 2564, were discovered in 1912 and were worked in a desultory fashion for some years. These deposits have been further investigated in recent years by several companies.

7.4 U.S. Steel This company held 4 Authorities to Prospect covering 19,295 square kilometres between Borroloola and Running Creek from 1968 to 1970. The primary mineral sought was manganese, but attention was also directed to base metals and uranium. Base metal geochemical surveys and ground radiometrics seem to have been limited to small areas of the tenements. The work is reported by Campe and Gausden.

7.5 Euralba Mining N.L. This company held A.P.2295 (subsequently converted to E.L.28) between 1969 and 1972. The area covered about 1,320 square kilometres in the Karns Creek - Running Creek area, partially overlapping the southern part of E.L. 2564. Euralba sought copper and manganese by helicopter, supported by ground traverses. A geiger counter seems to have been used on some of the work and an apparently radioactive (30mr/h) "dolomitic siltstone" was reported. The work was reported by Fisher (1970 and 1973) and Shannon (1971a).

7.6 CRAE Limited/Euralba Mining N.L. These companies jointly held A.P.'s 3230 and 3239 in 1971/72, covering an area of about 1,000 km^2 in the south-east section of the Robinson River Sheet area, and the northeast of the Calvert Hills Sheet area. They explored the area for copper-bearing breccia pipes of Redbank type. Reports were prepared by Shannon (1971b), Johnston (1972) and Field (1972).

7.7 Australian Geophysical This company held A.P. 1343, covering about 15,000 km^2, between 1965 and 1967. This large block covered the southern part of the Robinson River and the northern part of the Calvert Hills Sheet areas. Base metals were sought by an extensive geochemical program. Several prospects were examined in detail, and it was apparent that disseminated copper mineralization, restricted to certain units, may be widespread in the region. The work is reported by K. McMahon and Partners (1967 a & b). Observations of widespread mineralization are confirmed in the Foelshe River area by Australian Cities Services (Buchholtz & Taylor, 1975, and Buchholtz, 1974 & 1976).

7.8 AMAX Exploration Amax held E.L. 1146 covering 1,210 km^2 over the Redbank area and extending into the southeast part of the Robinson River Sheet area. They explored for copper-lead in the 1976-79 period, seeking sedimentary, and subsequently breccia pipe, mineralization by geochemical methods and by ground checking for air photo features (Steward, 1978).

7.9 CRAE Ltd. CRAE explored E.L.1875 from 1978 to 1980. The tenement covered 1,080 km^2 and was centred on the Gold Creek area. Exploration was directed to Cu/U bearing breccia pipes, and a detailed airborne radiometric/magnetic survey was flown. Several radiometric anomalies were confirmed by ground work, and two holes were drilled. It is apparent that anomalous uranium, copper and perhaps gold occur in some rocks. Thin acid dykes intrude the volcanics, and grab samples showed values up to 920 ppm Cu and 150 ppm U. One drill hole intersected 4 m. of quartzite/siltstone assaying 0.4% Cu with gold traces. The results are reported by Frazer (1980).

7.10 Mount Isa Mines Ltd MIM held A.P.444 (subsequently A.P.511) from 1956 to 1957. The area was 6,055 km^2 and covered the Calvert Hills Sheet extending into the south of the Robinson River Sheet area. MIM sought uranium and base metals by some geochemistry and by wide-spread airborne radiometric survey lines. The results are reported by Battey (1957), Manser (1957) and Battey (1958).

8. WORK CARRIED OUT DURING FIRST YEAR OF TENURE

8.1 General

Improvement of existing access tracks (~80 km.), construction of new access road (~45 km.), construction of airstrip.

8.2 Geophysical

Interpretation of Government data by Hunting Geology & Geophysics.

Airborne radiometric and magnetic survey by Geometrics International Inc. (4,100 line km.)

Preparation of plots and plans of airborne data.

Assessment of airborne data by Hunting Geology & Geophysics.

Completion of a reconnaissance ground gravity survey by Solo Geophysics.

8.3 Photography, etc.

Colour photography of 450 km^2 of part of E.L. 2564 by Geospectrum.

Acquisition of Landsat CCT's from Australian Landsat Station, and processing by Technical & Field Surveys Pty Ltd on interactive DIPIX system.

8.4 Geological Survey

Reconnaissance inspection of over 50 separate airborne anomalies by vehicle and helicopter, with inspections of adjacent areas.

Gridding (74 line km.) and radiometric survey over anomalous areas in the northwest part of E.L. 2564 (32 km^2).

Gridding, radiometric surveying and geological mapping over 7 km^2 of anomalous areas in the south of E.L. 2564.

Petrological and assay work on a variety of rock samples.

9. REGIONAL GEOLOGY (Figure 3)

The Licence area is situated on the Wearyan Shelf. This is a relatively undeformed block of volcanics and chemical and arenaceous sediments of Mid-Proterozoic age. Lower Proterozoic metamorphic rocks intruded by Early-Mid Proterozoic granites and with accompanying acid volcanics crop out along the "Murphy Tectonic Ridge", which marks the southern limit of the Wearyan Shelf. It is believed that Lower Proterozoic metasediments form a basement elsewhere throughout the Shelf area, although no direct evidence is available.

The Shelf is bounded on the east by the Gulf of Carpentaria, and there is geophysical evidence that a structural lineament may exist there, trending northwest-southeast parallel to the coastline.

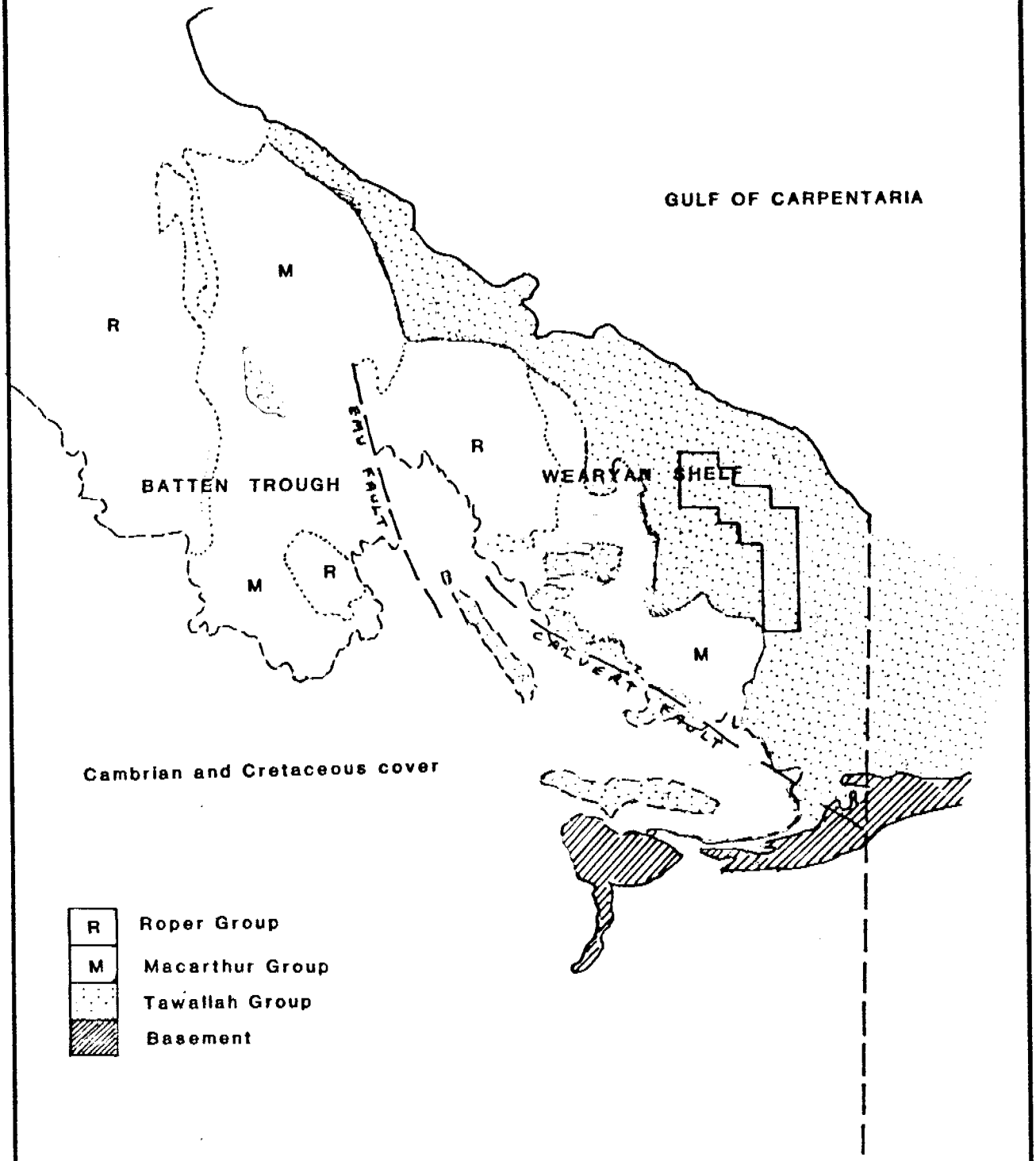
A series of sub-parallel northwest-southeast trending regional faults mark the western limit of the Shelf. West of these faults (the Calvert and Emu Faults) a basinal development has occurred with a series of troughs in which have accumulated large thicknesses of Middle to Late Proterozoic sediments (Tawallah, McArthur and Roper Groups) which have been subsequently deformed into open folds.

The Mid-Proterozoic platform cover rocks of the Wearyan Shelf itself crop out successively northwards from the Murphy Tectonic Ridge and comprise -

Masterton Formation	sandstones + some siltstone
Hobblechain Rhyolite	local and intruded by the Packsaddle Micro-granite
Gold Creek Volcanics	basaltic flows
Wollogorang Formation	dolomites
Settlement Creek Volcanics	basalts and tuffs
Aquarium Formation	sandstone
Sly Creek Sandstone	sandstone
McDermott Formation	dolomites
Peters Creek Volcanics	basaltic flows
Westmoreland Conglomerate	sandstone and conglomerate
Basement	(Lower Proterozoic Metasediments and) (Early-Mid Proterozoic igneous rocks)

The above conformable sequence comprises the "Tawallah Group".

This Group was elevated and subject to some erosion prior to the deposition of the succeeding McArthur Group sediments. These latter were predominantly deposited in the basinal areas west of the Wearyan Shelf, although at least one unit - the Karns Dolomite - overstepped onto the partly eroded Masterton



AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

E.L.S 2564 and 2565

REGIONAL GEOLOGY

Fig 3

Prepared		Drawn
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	Report	Dwg.

Formation and down to the Aquarium Formation in the Shelf. It seems that the Karns Dolomite in this area was deposited over a surface of some considerable local relief.

It is likely that the Karns Dolomite may have been laid down over a wider area of the Shelf than its present outcrop indicates, but it, and any later Proterozoic deposits, was subsequently partially stripped by erosion, being preserved only in the lower "hollows" of its depositional environment.

Small areas of Cambrian sandstone on the Shelf represent residual cover related to large areas of outcrop in the McArthur River area.

There is no evidence of subsequent deposition until the Cretaceous period. Cretaceous marine arenites and pelites occur extensively along the Gulf of Carpentaria coastal plains to the north and south of the Wearyan Shelf, and sizeable remnants of Cretaceous cover occur on the Shelf. It is likely that cover was originally more extensive than shown at present.

Tertiary and Cainozoic sandy cover, including some laterite development, is locally extensive.

10. MINERALIZATION

10.1 Major

10.1.1 No commercial mineral deposits have yet been identified in the Tawallah Group rocks. The most promising development to date is the discovery of the sandstone-hosted uranium deposits of the Westmoreland Conglomerate, the basal formation in the Group. These deposits have been continually under assessment since their discovery in the 1950's.

10.1.2 The Redbank copper deposits near Wollogorang were discovered in 1912, and minor production of high-grade secondary ore took place. The Redbank deposits occur in volcanic breccia pipes (diatremes) filled with a rubble of host sediments and the Gold Creek Volcanics. It seems likely that mineralization and brecciation occurred at the end of the volcanic episode. Some dozen mineralized breccia pipes have been discovered, but only a few are of such a grade and size to warrant commercial assessment. Reports on the Redbank deposits include those by Jensen (1940) and Orridge and Mason (1976).

10.2 Minor

10.2.1 Several small, but in some cases high-grade, uranium deposits have been found in the N.T. west of the Westmoreland deposits. These include the Pandanus Creek, Cobar 11 and El Hussen deposits. They occur in the Westmoreland Conglomerate and in the over-lying Peters Creek Volcanics, mostly being concentrations of mineralization in and adjacent to faults. Minor ore gouging of high-grade material has taken place in the 1950's.

10.2.2 Company exploration on the Wearyan Shelf in recent years has resulted in the recognition of widespread pervasive base metal mineralization in certain regional units. Generally copper is associated with volcanic formations, whereas lead and zinc seem to be commoner in certain chemical sediments. No potentially economic section has yet been intersected.

11. REGIONAL GEOPHYSICS

11.1 Magnetics

The regional geophysical characteristics of the Wearyan Shelf are indicated on the BMR gravity and aeromagnetic plans, produced at 1:500,000 and 1:250,000 scales respectively. The principal features of the magnetic maps are a series of strong high-frequency anomalies related to the outcrop and sub-crop of basic volcanic units of the Tawallah Group, being particularly prominent on the Calvert Hills Map Sheet area. Other magnetic features are broad, low amplitude variations probably related to variations in cover thickness over the basement. A fairly extensive area of moderate amplitude and higher frequency anomalism exists near Sandy Creek on the Robinson River Sheet. This feature is under investigation during the current program. High frequency magnetic anomalies occur near the contacts of the Packsaddle Microgranite. CRAE Ltd suggests that these anomalies could be caused by the development of magnetite-bearing skarns.

11.2 Gravity

The regional gravity features of the Wearyan Shelf appear to be related to cover thickness to a great degree. It has been suggested by Hunting Geophysics & Geology that the thickest section of Tawallah Group lies in the centre of the Calvert Hills Sheet area. A positive gravity anomaly of up to 12 m.gals, covering an area of some 25 km. in diameter, occurs near Sandy Creek in the Robinson River Sheet area. The centre is offset about 12 km. south from the area of magnetic anomalism mentioned above. This gravity feature was checked during the current program by line traverses.

An evaluation of the regional geophysical environment was carried out for ANZECO by Hunting Geology & Geophysics, with emphasis on the context and forms of the Sandy Creek magnetic and gravity anomalies, which lie to a large extent within E.L. 2564 and E.L. 2565.

12. LOCAL GEOLOGY

12.1 The geology of E.L.'s 2564 and 2565 is poorly reported. The geology is dominated by the flat-lying to shallow-dipping beds of the Masterton Formation, although a very small area of underlying Hobblechain Rhyolite crops out in the south of E.L. 2564. Small areas of subcropping Karns Dolomite occur in the western part of E.L. 2564 and in the south of E.L. 2565.

12.2 Structure

The Masterton Formation generally dips west and north at low angles, each exposed bed giving a wide outcrop. Detailed mapping in the south of E.L. 2564 has identified minor local folding on an east-west axis, with dips measured up to 35°. Several east-west crush zones have been located in the Formation, these being near-vertical and steep-dipping zones up to 2 m. wide where the host sandstone has been broken up to a rubble. No evidence of significant movement has been found on most of these zones, although one zone in the (western) mapped southern area of E.L. 2564 appears to show some slip features. A series of shear structures up to 3 m. wide occurs in the eastern mapped area in the south of E.L. 2564. The direction of movement on these shears has not been determined, but they cut off the target radioactive unit at that point.

12.3 Hobblechain Rhyolite

The Hobblechain Rhyolite crops out over a small area in the south of E.L. 2564. It has had only a cursory examination to date.

12.4 Masterton Formation

The Masterton Formation conformably overlies the Hobblechain Rhyolite, and generally consists of white, pink and pale buff quartz sandstones and local feldspathic sandstones. The sandstones are generally massive and thickly cross-bedded, but rather flaggy beds also occur through the succession. These flaggy units commonly show ripple marks and, in some cases, mud cracks. In one outcrop area in the east of the southern mapped area, sun cracks were seen superimposed on ripple marks. Flaggy siltstones are locally an important component of the succession. Near the base of the succession, along the eastern side of the tenements, these siltstones are noticeably radioactive in K, U and Th channels, and probably represent the named "Pungalina Member" of the Formation. Similar radioactive siltstones occur higher up the succession. In addition to the siltstones, recent exploration has revealed phosphatic sandy beds which in places are anomalously higher in uranium. These uraniferous phosphatic sands have been the subject of more detailed survey, as described later.

No true conglomerates have been found, although pebbles of sandstone, and also rhyolite, have been seen in some of the coarser sandstone beds.

12.5 Karns Dolomite

The outcrop areas of Karns Dolomite recorded by the BMR have not been examined. Nearby outcrops of rubbly cherty material represent silicified carbonate rocks.

13. AIRBORNE SURVEYS

An airborne survey of approximately 4,100 line km. was flown by Geometrics International Inc. for ANZECO in December, 1980. North-south flight lines

were 500 m. apart, with a terrain clearance of 80 m. The aircraft airspeed was approximately 50 m./sec. The aircraft carried a 30 litre spectrometric crystal system recording four channels of output (T.C., K, U and Th) and a Geometrics magnetometer sensitive down to 0.5 T.

The data was processed by Geometrics and presented in stacked profile (radiometrics) and profile and contour (magnetics) form on each of 12 plan sheets at 1:25,000 scale. Stacked radiometrics (T.C.) and contour magnetic plans are attached as Plates 1 to 24.

The radiometric data revealed clustering of uranium anomalies in the north-west corner and in the south of E.L. 2564. In the latter area an extremely large uranium anomaly was of immediate interest. Several other uranium anomalies occur elsewhere in the tenements. An interpretation of the anomalies in relation to types and location enabled a priority rating to be established, and indicated that several were probably hydromorphic anomalies in black soils and creeks.

The magnetic data confirmed the existence of the anomaly previously recorded and much more detail was obtained. A complete interpretation of this data and integration with gravity data was not completed at the end of the review period.

14. GRAVITY SURVEY

A ground reconnaissance gravity survey was carried out by Solo Geophysics & Co. of Adelaide. The survey was carried out by taking gravity measurements at intervals of 500 - 1000 m. along available tracks. A total of 325 gravity stations was occupied. The survey confirmed the BMR feature, and also revealed lesser variations within the main anomalous area. The results were being correlated with the magnetic data at the end of the tenure year. A plan of the gravity survey results is attached as Plate 25.

15. RADIOMETRIC FOLLOW-UP

The principal areas of airborne uranium anomalism were followed up by systematic grid survey. These surveys are described in detail below. A total of 29 other isolated airborne anomalies was visited by ground and helicopter. The results of these inspections are given in Appendix 2.

16. NORTHWEST ANOMALIES - E.L. 2564

The airborne anomalies in this area occur over some 15 km^2. Because of the number of anomalies, it was decided to survey the area systematically, and

a north-south baseline was established and east-west survey lines laid out at 500 m. intervals. The survey lines were traversed and radiometric spectral readings were taken at 100 m. intervals. A total of 74 line km. was surveyed by this method. It became apparent that the area was one of quite high background uranium values, caused by a flat-lying, rather uraniferous bed cropping out and subcropping over the whole area.

The uraniferous unit is a fine-grained somewhat phosphatic flaggy to massive sandstone, containing uranium values up to e30 ppm. Occasional ferruginous nodular grits occur which give elevated radiometric readings (rock sample 3165 assayed at 40 ppm U). Traces of copper may occur in flaggy, somewhat iron-rich, beds.

The airborne survey integration of the widespread low-order uranium anomaly gave rise to the marked airborne response in this area.

The results of the ground radiometric survey are shown as a series of stacked profiles on Plate 26.

17. SOUTHERN ANOMALIES - E.L. 2564

17.1 Much higher radiometric readings were recorded during reconnaissance in the south of E.L. 2564 than in the northern area. Highest readings were noted over a) ferruginous grit lenses, and b) white granular rock with a superficial "volcanic" appearance. The latter rock was subsequently determined to be a phosphatic sandstone with quartz overgrowth on sand grains forming euhedral crystals. Grab samples showed values up to 492 ppm U. Reconnaissance indicated three principal areas of phosphate outcrop and anomalism. The three areas lie on an east-west line, and were tied together with a 6 km. east-west baseline. Each was surveyed on an initial 100 m. grid, locally reduced to 50 m. and in some cases 10 m. The three areas are termed Western, Camp and Eastern areas. The country rocks comprise massive and flaggy pink and white sandstone. The true sandstones are barren, but the rather silty and flaggy units appear to be often slightly phosphatic and radioactive and may represent lateral facies variants from the main phosphatic units and in some cases appear to be re-worked phosphatic material.

17.2 Western Area

Anomalous radioactivity is associated with an identifiable phosphatic and flaggy unit, which is shown on Plate 27 as beds 1, 2 and 3. Mapping has shown that the rocks in the area have been folded on an open pattern into domal and synclinal features on an north-east axis. These folds occur superimposed on a shallow regional dip to the north, and the target unit dips under overlying rock in that direction. Within the uraniferous flaggy unit several outcrops of more massive white phosphatic rock occur. The major outcrop is centred at 343N, 840E and a thickness of at least 2 m. is indicated at surface. Surface spectrometer assaying indicates a uranium value averaging e250 ppm, with a peak of e500 ppm. These values are confirmed by assay, samples 3166 and 20594 having values of 390 ppm U and 532 ppm U respectively.

The white phosphatic unit crops out as a distinctive speckled, often pelletal, rather massive, bedded rock, which appears to exist as lenses within the much more extensive thinly bedded, flaggy units. These latter (labelled beds 1, 2 and 3 on Plate 27) are characterised by lower, but still anomalously high, radioactivity, and by a finer more silty texture with less apparent phosphate component. The flaggy unit is commonly red-stained by haematite and/or limonite, and evidence of minor copper mineralization is widespread in the form of disseminated and flakey turquoise development. The surface radioactive signature of these units is shown on Plates 28 and 29.

Samples of these rocks were sent for petrographic description to Central Mineralogical Services at Adelaide. The report is attached as Appendix 1. CMS report that in the massive white rock, e.g., sample 20592, the phosphate is clastic and syngenetic, with some evidence of re-working. Samples of more flaggy material, e.g. samples 20576, 20580 and 20596, indicate that the phosphate component is re-worked and clastic, but also probably contemporaneous. Phosphate also occurs as cement. In summary, CMS recognise three generations of phosphate -

1) essentially contemporaneous phosphate desposited and re-worked almost immediately,
2) pellets and ooliths deposited contemporaneously with sedimentation,
3) phosphatic cement.

The sediments were deposited under shallow water conditions, as shown by ripple marks and sun cracks in nearby units. A degree of re-sorting would therefore be expected to occur, with contemporaneous erosion of high phosphate beds and dilution of the phosphate in the flaggy units. Evidence for exceptionally turbulent water conditions was not seen at this area, but is described later from the "Camp" anomaly.

No uranium mineralization was visible in the rocks, and to ascertain the distribution of the element several samples were examined by autoradiographs. The CMS report is attached in Appendix 1. Radioactivity is characteristically related to the phosphatic component, and appears to be uniform and diffuse, not being related to discrete minerals.

Samples of various rocks were sent for assay to Australian Laboratory Services at Brisbane. The results are reported in Appendix 1.

Phosphate/Uranium The white phosphatic rocks indicated assay values up to 19.1% P_2O_5 and 285 ppm leachable U (sample 20579). The flaggy units as expected contain lower values. An interesting feature is the large percentage of acid soluble (2N HNO_3) uranium in the rock, indications from a few assays being over 50% leachable U.

Other Elements The only other element of potential economic interest in the rocks appears to be copper, which reports as elevated values even when no turquoise is visible. The highest value of 900 ppm Cu was obtained from a copper-stained ferruginous gritty bed in the flaggy unit (sample 10105).

17.3 Camp Area

The "Camp" area trends east-southeast from Camp Creek (ANZECO name), a tributary of Running Creek, along a level plain flanked to south and north by ridges of barren massive sandstone. The plain is about 700 m. long by 150 m. wide and is underlain by white phosphatic sandstone which crops out locally as massive and also as more flaggy beds. The unit appears to be lensoidal in form, possibly being synclinal. The geology is shown on Plate 27, and the radiometric pattern on Plate 28. Outcrop is best along the southern part of the unit, and a series of small outcrops over a few hundred metres reveals a bed of disordered clasts forming a phosphatic breccia bed. These clasts, formed of sandstone and phosphatic sandstone, are up to 20 cm. in size and demonstrate contemporaneous and near-contemporaneous violent turbulent local conditions.

The Camp anomaly, unlike the Western, does not show a wide development of flaggy re-worked sandstone at outcrop.

17.4 Eastern Area

This area encompasses the largest exposed area of white phosphatic sandstone, with virtually no soil or vegetation cover. This exposure of bare rock gave rise to by far the largest airborne radiometric anomaly. The outcropping unit covers an area of about 11 ha. The geology is shown on Plate 30, and the results of radiometric surveys in Plates 31 and 32. The unit appears to be lensoidal, with a length of some 800 m. and a width of 150 m. The bed outcrop is terminated in the east by a shear zone 3 m. wide.

The area shows little development of flaggy radioactive units, those located to date being north of the main outcrop and separated from it by barren sandstone. It is not yet clear whether they lie at an equivalent stratigraphic position.

17.5 In summary, the southern anomalies in E.L. 2564 are due to outcropping phosphate-rich sandstone, the best developed of which occur in the east. Further to the west a larger amount of re-working and dilution appears to have taken place, although remnants of the higher phosphate beds appear to remain. The phosphatic beds probably occur as lenses within normal quartzitic sandstone.

18. ORIGIN OF THE UNITS

18.1 The flaggy radiometric units in the northwest and south of E.L. 2564 appear to be re-worked and diluted material from the white, high-phosphate sandstone. This rock has not yet been identified in the northwest anomaly areas. Where seen in the south, it is characterised by a high radioactivity.

18.2 Insufficient work has been carried out to comment on the likely genesis of this rock, or on the associated uranium and copper mineralization. However, the association of phosphate in an essentially quartzose sandstone shallow-water environment is unusual, as virtually all reported phosphate occurrences have a closer association with argillic and chemical sediments than with sandstones.

18.3 The phosphatic unit has only been found in outcrop in a limited zone in the south of E.L. 2564. Whether this restriction is real has yet to be determined, but the outcrop is distinctive in radiometric signature and in appearance, and no other indications have been seen elsewhere. If the unit is a "normal" part of the Masterton Formation one may expect a widespread distribution even if only confined to a limited stratigraphic interval.

18.4 The association of uranium, and to a degree copper, with phosphatic sediments is not unusual, although the indicated uranium grades per unit of phosphate seem to be rather higher here than at other deposits elsewhere. The genetic relationship of metals to phosphate is very poorly documented, and there is the inference that they are syngenetic. It is generally thought that uranium is tightly bound within the phosphate lattice, with little uranium liberated by cold extraction techniques, but again documentation is generally lacking on this point. The assays from samples in E.L. 2564 indicate that 50% of the uranium may be easily leached.

19. CONCLUSIONS

19.1 Gravity and magnetic surveys have detailed anomalies in the Sandy Creek area, and await interpretation.

19.2 A radioactive phosphatic unit crops out in the south of E.L. 2564. The unit appears to consist of separate lenticular beds. Uranium is associated with the phosphate, while copper mineralization is commoner in adjacent flaggy units containing re-worked phosphatic material.

E.R. Davies
Regional Geologist

December, 1981

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- CR 77 by W. Manser
- CR 103 by G. Battey

APPENDIX I

PETROGRAPHIC AND ANALYTICAL REPORTS

ANALYSIS AND PETROLOGY

Assay Certificates and petrographic descriptions are attached. The following notes augment the consultant's reports.

1. SAMPLES 10101-10105 were collected during reconnaissance of the Western anomalous area in the south of E.L. 2564. Locations are approximate. Radiometric readings were taken with a Geometrics GR 110 scintillometer. The general background level is about 20 cps.

Sample No	Location		cps	Remarks
10101	3449N	8358E	800	Phosphatic sandstone
10102	3452N	8367E	800	" "
10103	3448N	8372E	1000	" "
10104	3447N	8377E	2200	" "
10105	3454N	8381E	800	Ferruginized sandstone + Cu

2. SAMPLES 3161-3165 and 20590 were collected from several different areas. Locations are approximate.

Sample No.	Location		cps	Remarks
3161	3460N	8413E		Coarse phosphatic sandstone, limonite stained, weathered.
3162	3454N	8412E		Highly limonite stained coarse phosphatic sandstone.e Assay 114 ppm U.
3163	3450N	8413E		Ferruginous grit. Granular, vughy specular haematite. e Assay 316 ppm U
3164	3449N	8400E		Fissile slightly phosphatic sandstone. Grey + limonite stained.
3165	6130N	6710E		Nodular ferruginous gritty laterite-like material.
20590	3452N	8419E		Ferruginous grit. Angular/sub-angular quartz. Limonite cement.

3. SAMPLES 3166-3171 were collected from higher counting outcrops in the southern areas, to ascertain the relationship between the uranium and the phosphate content.

4. SAMPLES IN THE 20500 SERIES were collected for petrographic study and assay.

Sample No.	Location		T.C./K/U/Th Radiometric cps (GR310)
20576	3428N	3820E	340/ 10/ 9/ 0
20579	3428N	3812E	760/ 22/ 20/ 1
20580	N	E	280/ 10/ 7/ 1
20592	3429N	8400E	810/ 36/ 29/ 1
20594	6450N	6700E	
20596	N3432	8401E	

APPENDIX II

AIRBORNE RADIOMETRIC ANOMALIES

- GROUND CHECKS

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

E.L. 2564 - SELBY, N.T.

GROUNDCHECKED RADIOMETRIC ANOMALIES

Grid Reference	Description
6400N - 6470N 6680E - 6750E	Broad radiometric highs extending over several hundred metres. GR110 ± 300 cps. Average, say, 250 cps. Sample no. 20594 picked for green copper mineral assayed 28 ppm U and .1% Cu. Rock described as fine-grained equigranular, well sorted arkose (30-35% felspar). A ferruginous clast breccia is also radiometrically anomalous here.
6110N, 6680E	GR 110 ± 350 cps. Broad radiometric high in fine-grained arkosic sandstone
Group around 6050N, 6800E	Broad high ± 300 cps (GR 110) in fine-grained sandstone.
Group along southern bank of stream 5780N, 6680E- 6800E	Black soil anomaly ± 100 cps (GR 110).
6580N, 7120E 6580N, 7270E 6420N, 7220E 6460N, 7220E	Anomalies not confirmed by helicopter reconnaissance
6120N, 9490E	GR 110 190 Highly ferruginous muddy siltstone window. ripple marked.
5200N, 8580E	GR 310 Total count - 45; K2, U2, Th1. Red ferruginous fine-grained sandstone adjacent to swamp. Surrounded by typical white, non-radiometric ripple marked sandstone.
4040N, 8520E 4030N, 8720E 4160N - 8840E - 4200N 8880E 4260N, 9060E	Obvious black soil anomaly.
6800N, 8320E 3910N, 8360E 3880N, 8420E Group centred around 3580N, 8220E	Obvious black soil anomaly.
3800N, 8520E	Up to 100 cps (GR 110) Total count 48; K2, U 0.7, Th 0.3 (GR 310). Black soil anomaly.

Grid Reference	Description
Group around 3430N, 8440E	Gridded and mapped - see geologic map and other reports. Western of southern anomalies and camp anomaly.
Group around 3430N, 8830N	Gridded and mapped - see geologic map and other reports. Eastern of southern anomalies.
3280N, 8160E 3330N, 8300E	Prominent outcrop of flaggy unit just southwest of gridded and mapped area. Some copper in ferruginous unit 2 m. x 0.25 m. GR 110 - 700 cps highs.
3230N, 8100E	GR310 - Total count - 193; K 10, U 5, Th 0.9. Flaggy unit with phosphate? (white) clasts. Becomes white speckled in places. Contains typical worm-like structures and tinderbox weathering. Occasional cross-bedding in less radiometrically high units. Occasional green (copper) staining. Actual anomaly highs only cover a few square metres, the most prominent of which occurs in the middle unit of 3 flaggy units.
3810N, 8980E	White siltstone surrounding prominent hill. GR 310 - Total count - 63.4; K 3.1, U 3, Th 1.2.
3800N, 8780E	Anomaly not confirmed by helicopter reconnaissance.
3590N, 9060E	Low order anomaly confirmed by helicopter. Probable siltstone origin.

The following airborne anomalies with E.L.'s 2564 and 2565 have yet to be checked. In many cases, black soil sources are suspected.

NORTH	EAST
231	874
315	839
379	875
380	886
424	819
467	797
475	822
544	799
558	812
605	829
614	692
613	699
615	712
625	694
625	699
632	708
639	711
638	717
642	722
646	721
658	712
658	728
679	689
693	701
700	751

AUSTRALIAN LABORATORY SERVIC

CONSULTING CHEMISTS & ANALYSTS

LABORATORY REPORT

Batch No.: G105 | Client: A.N.Z. EXPLORATION COMPANY,
Address: G.P.O. BOX 3972, SYDNEY. N.S.W.

Date Received 14/07/81

Date Completed 03/08/81

Order No.: SDO 00118 | Sample Type: ROCK

SAMPLE NO.	U m XRF 1A
3161	48
3162	140
3163	492
3164	68
3165	40
20590	244

UNITS LEGEND ----- m - Parts per million   b - Parts per billion   % - p
g - Grams   a - Absorbance

CONSULTING CHEMISTS & ANALYSTS

LABORATORY REPORT

OFFICE & LABORATORY
P.O. BOX 66
EVERTON PARK QLD 4053
Ph 07 3525577
TELEX ALSEV 42344

Batch No.: F101

Client: A.N.Z. EXPLORATION COMPANY,
Address: G.P.O. BOX 3972,
SYDNEY.
N.S.W.

Area Contact: MR. H.F. GIRSCHIK
Address: P.O. BOX 41619
CASUARINA N.T. 5792

Date Received 10/06/81
Date Completed 16/07/81

Order No.: 00308 3/6/81

Sample Type: ROCK

No. of Samples: 6

SAMPLE NO.	Cu	Co	Ag	Mo	Se	Au	U	Th	ELEMENTS
	m	m	m	m	m	m	m	m	UNITS
	1-A	1-A	1-A	2	XRF 1B	120	XRF 1A	XRF 1A	METHODS
10101	15	5	1	5	<2	<0.1	108	4	
10102	110	45	2	5	<2	<0.1	108	12	
10103	160	50	2	10	<2	<0.1	128	8	
10104	160	10	2	5	<2	<0.1	172	12	
10105	900	10	1	10	4	<0.1	148	12	
10106	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	

P.O. BOX 66
EVERTON PARK QLD 4053

Ph 07 3526577
TELEX AUSEV 42344

LABORATORY REPORT

atch No.: H203

ate Received 25/08/81
ate Completed 13/10/81

der No.: VERBAL

Client: A.N.Z. EXPLORATION COMPANY,
Address: G.P.O. BOX 3972,
SYDNEY.
N.S.W. 2001

Area Contact: MR. TED DAVIES
Address:

Sample Type: PULPS EX G105

No. of Samples: 8

MPLE NO.	P205 % 157	U (Leachable) m 118-D
EX G105) 3161	0.39	4.0
EX G105) 3162	2.13	28.0
EX G105) 3163	1.76	60.0
EX G105) 3164	9.16	11.0
EX G105) 3165	0.66	5.8
EX G105) 20590	1.58	24.0
EX H057) 20579	19.1	285
EX H057) 20592	14.6	280

ELEMENTS
UNITS
METHODS

AUSTRALIAN LABORATORY SERVICES PTY. LTD.

CONSULTING CHEMISTS & ANALYSTS

OFFICE & LABORATORY
P.O. BOX 66
EVERTON PARK QLD 4053

Ph 07 3525577
TELEX ALSEV 42344

LABORATORY REPORT

Batch No.: H057
Client: A.N.Z. EXPLORATION COMPANY,
Address: G.P.O. BOX 3972,
SYDNEY,
N.S.W. 2001

Area Contact: MR. H.F. GIRSCHIK
Address: P.O. BOX 41619
CASUARINA N.T. 5792

Date Received 07/08/81
Date Completed 26/11/81

Order No.: SDO 00456
Sample Type: ROCK
No. of Samples: 6

SAMPLE NO.	U	Sn	W	Rb	F	Li	Cs	Be	Cu	Au	ELEMENTS
	m	m	m	m	%	m	m	m	m	m	UNITS
	XRF 1A	XRF 1A	XRF 1A	XRF 1A	17	144	149	150	101	120	METHODS
20579	580	<5	<10	30	1.92	<5	<100	<20	130	<0.1	
20592	532	<5	<10	30	1.52	<5	<100	<20	330	<0.1	
20594	28	<5	<10	55	0.04	<5	<100	<20	0.10 %	<0.1	
20595	68	<5	<10	15	1.36	<5	<100	<20	620	<0.1	

REPORT CMS 81/8/12

Eight rock samples were received for thin-section preparation and petrological examination; all the offcuts were subjected to potash stain tests, regarded as essential following the discussion with E. Davies in Adelaide, in which there was some suggestion of a possible sandstone U situation with volcanic source material. The samples are individually described in the accompanying table and were also verbally reported to E. Davies on 21.8.1981.

Summary

The rocks are all sediments, and comprise a series of phosphatic sandstones grading through phosphatic arkose to fine arkose, and ?tuffaceous siltstones with trachyte lapilli and smaller fragments of primary pyroclastic origin.

The phosphatic material (which was checked and confirmed as apatite by XRD), occurs in three distinct phases or generations; the earliest was material deposited and re-worked, then incorporated in the present sediments; this is believed to have formed essentially contemporaneously, being eroded and re-deposited almost immediately, whilst still fairly soft and poorly crystallized, i.e. intraformational - some grains are quite well stratified (showing fine bedding). The second phase was formation of phosphate pellets and complete ooliths contemporaneously with sedimentation, and incorporated with the clastic grains. The third, or youngest phase was phosphatic cement, which seems to postdate the quartz cement occurring as overgrowths on quartz grains; this phase may be a late-diagenetic distribution of earlier phosphate.

There is a clear correlation between phosphate occurrence and radioactivity; since no obvious U mineral was detected, it seems logical to assume that the phosphate itself contains the U/Th; in view of this consideration, further, more detailed investigations may not be warranted at this stage.

H.W. Fander, M. Sc.

REPORT CMS 81/9/23

Six rock samples were received for mineralogical examination, including autoradiography, and for assay.

In view of the anticipated low uranium values, autoradiography required a long exposure time; one month's exposure was given. The results, interpreted together with assay results and stereobinocular examinations, indicated that more detailed petrographic studies were not justified at this stage, particularly as similar rocks had already been described.

Results - Samples 3166 - 3171

The autoradiographs show a very clear correlation between phosphatic material and distribution of radioactivity. This is especially well demonstrated in 3169, which is a phosphatic sandstone with pebbles of layered non-phosphatic sandstone; in this sample, the autoradiograph shows radioactivity only in the phosphatic portions and not in the pebbles.

Sample 3166 shows a regular distribution of low-level radioactivity, as small patches corresponding to the phosphate particles, and radioactivity within each particle is uniform and diffuse; it does not occur as discrete concentrates which would characterise a uranium mineral as such.

The same features occur in the other rocks except in 3167, where radioactivity is related to the limonitic bands and interconnecting veinlets.

The assays show a general association between P_2O_5 and uranium, but not a constant ratio (e.g. compare 3166 and 3170).

H.W. Fander, M. Sc.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
20576 (T.S. 38156)	Phosphatic Sandstone. Framework of rounded grains of quartz, metaquartzite, impure phosphate rock and nodules, quartz cement in optical continuity; passes into ?phosphatic ~~siltstone~~.	Grains up to grit size; moderately-sized/sorted bedded.	Fine clastic micas in phosphate. Detrital tourmaline. Minor phosphate cement.	Phosphate particles believed to be reworked, essentially contemporaneous material; it is quite soft; some particles show bedding.
20580	Phosphatic Sandstone. Framework of small sub-angular/subrounded quartz and phosphate (collophane) grains; quartz overgrowths; phosphate cement.	Closely-packed, very well-sorted, closely-sized grains (0.15 mm); faintly bedded.	Detrital tourmaline. Phosphate grains contain clays, fine mica flakes.	Finer-grained equivalent of 20576, with both clastic phosphate grains and cement (i.e. two generations).
20592	Phosphatic Sandstone. Grains, pellets, ooliths of colloform phosphate (clastic and syngenetic), rounded quartz grains, quartz cement as over-growths.	Moderately to poorly-sized and -sorted, but definitely bedded. Coarse-grained.	A few metaquartzite grains. Phosphate contains clays, micas. Fe-stained.	Closely resembles 20576; phosphate is clastic (primary and reworked) and syngenetic. Quartz overgrowths are euhedral.
20594	Arkose. 30-35 % feldspars, as small fresh cleavage-fragments of microcline, orthoclase, plagioclase; subangular quartz grains, quartz cement as overgrowths.	Fine-grained, verging on silt; very evenly sized, well-sorted, unbedded.	Liesegang-ring structures of limonite impart pseudo-bedding. Clastic micas.	Featureless, uniform rock with fresh feldspars; no evidence of pyroclastic materials.
20596	Phosphatic ARkose. Small round/ovoid phosphate grains, cleavage-fragments of K-feldspar and plagioclase, subrounded quartz grains, quartz cement.	Uniform and fine-grained, except for scattered coarser grains. Bedded.	Finer layers with mica flakes. Rounded, detrital tourmaline.	Lithologically a hybrid between 20580 and 20594. Phosphate grains are mostly clastic, probably reworked.

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
21 Gore St UNLEY, S.A. 5061
P.O. BOX 3
UNLEY, S.A. 5061
PHONE: 272 5733

2979644

ANALYTICAL RESULTS

Samples from: C.M.S.

Area:

Samples of: Rocks .

Preparation: Crushed, quartered and pulverised

Batch No.: A 4191

Sheet No.: 1

Date: 25.9.81

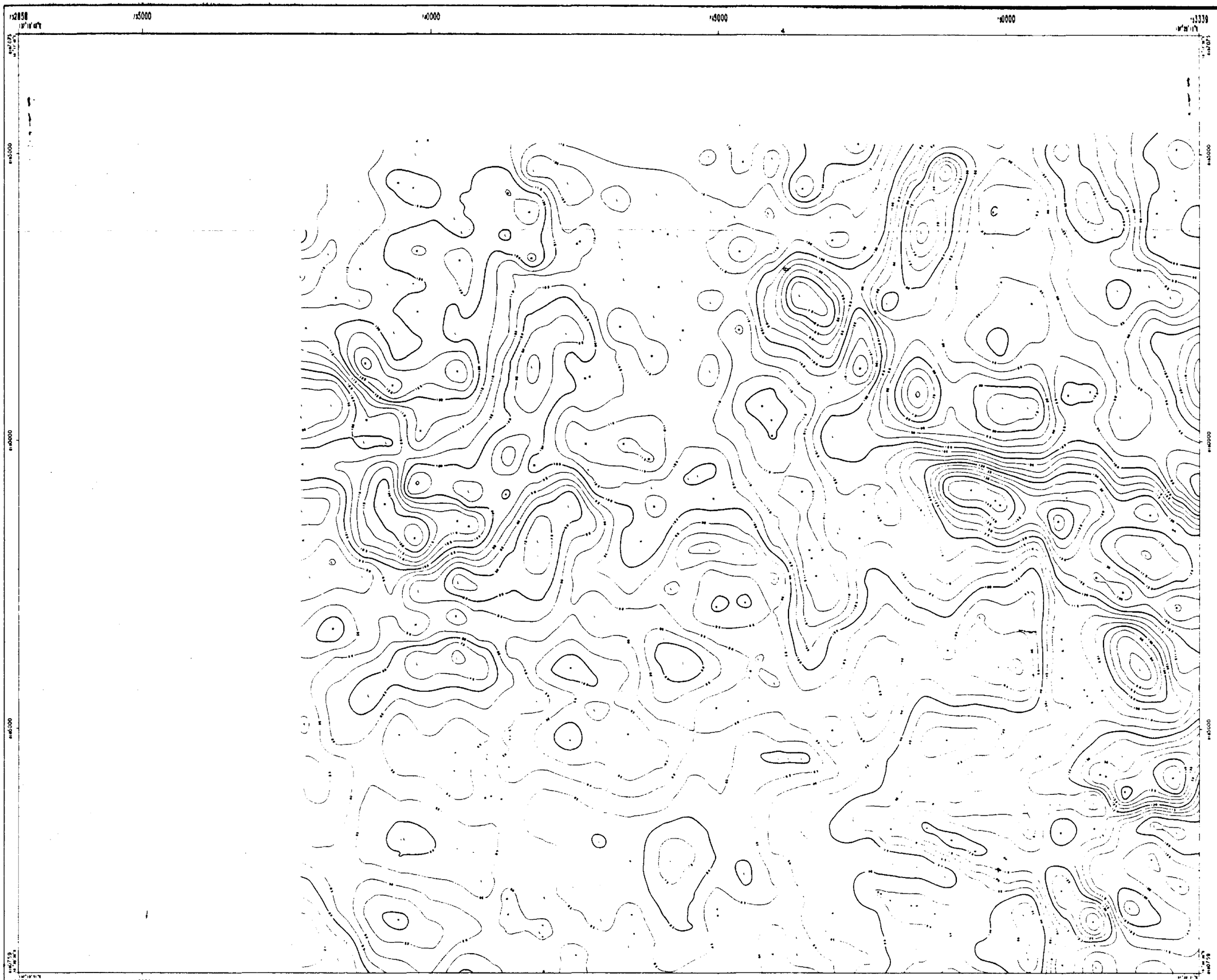
SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

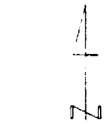
Sample Description		U ppm	Acid Soluble U ppm	P_2O_5 %
38554	3166	390	350	5.68
5	3167	135	48	1.26
6	3168	30	8.6	1030 ppm
7	3169	115	83	4.12
8	3170	165	88	8.08
38559	3171.	125	82	6.85

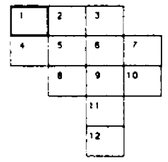
ANALYTICAL METHODS: Acid Soluble U by Fluorimetry following 2N HNO_3 leach. Total U by XRF.
P_2O_5 by Spectrophotometry.

Signed .....

DISTRIBUTION: C.M.S.







FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1258 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

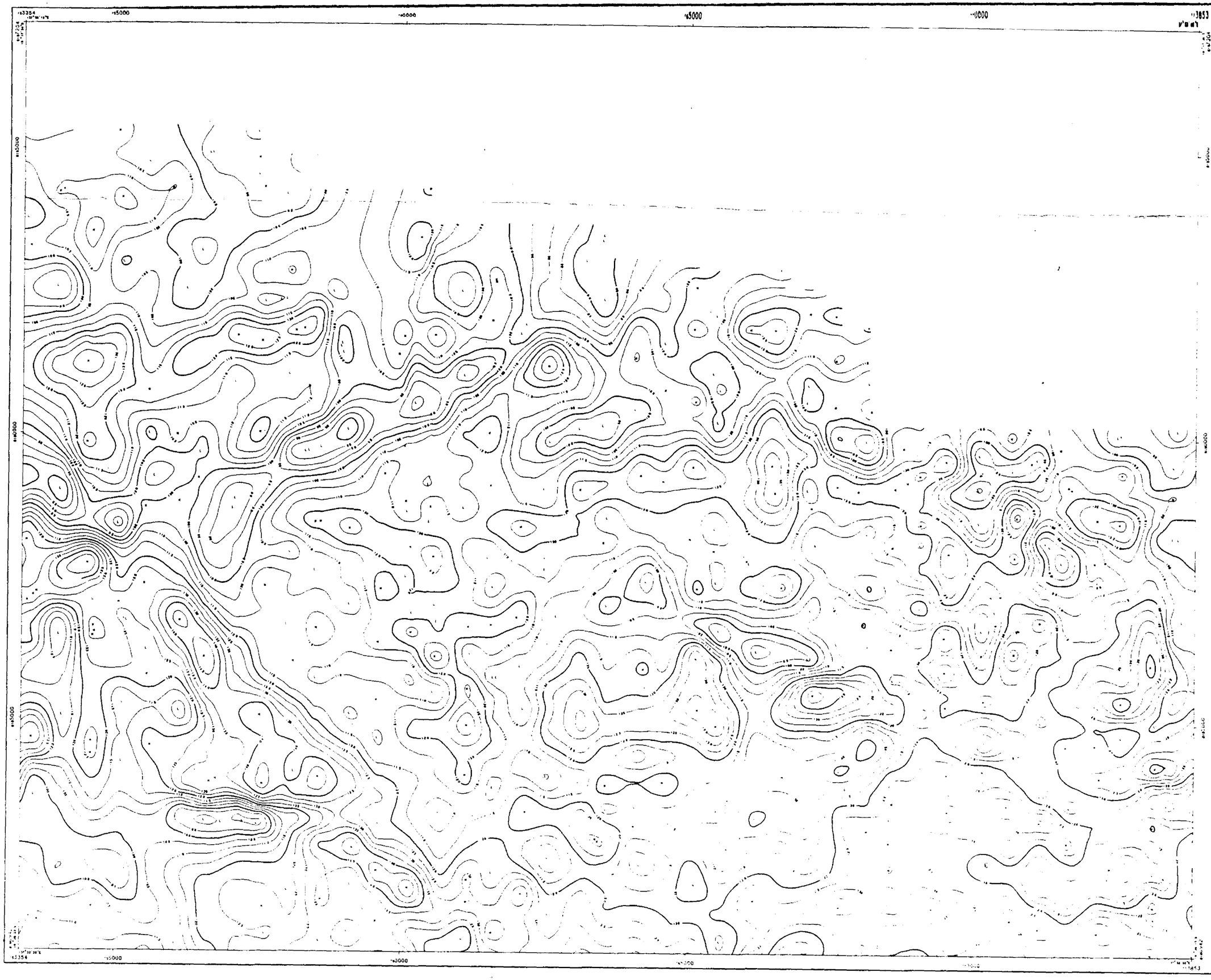
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		1
APPROVED:		

PLOTTED BY GEOSOFT COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/041

PI 1



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

102 251 0 251 502 754 1005 1256 1507 1758 2008 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

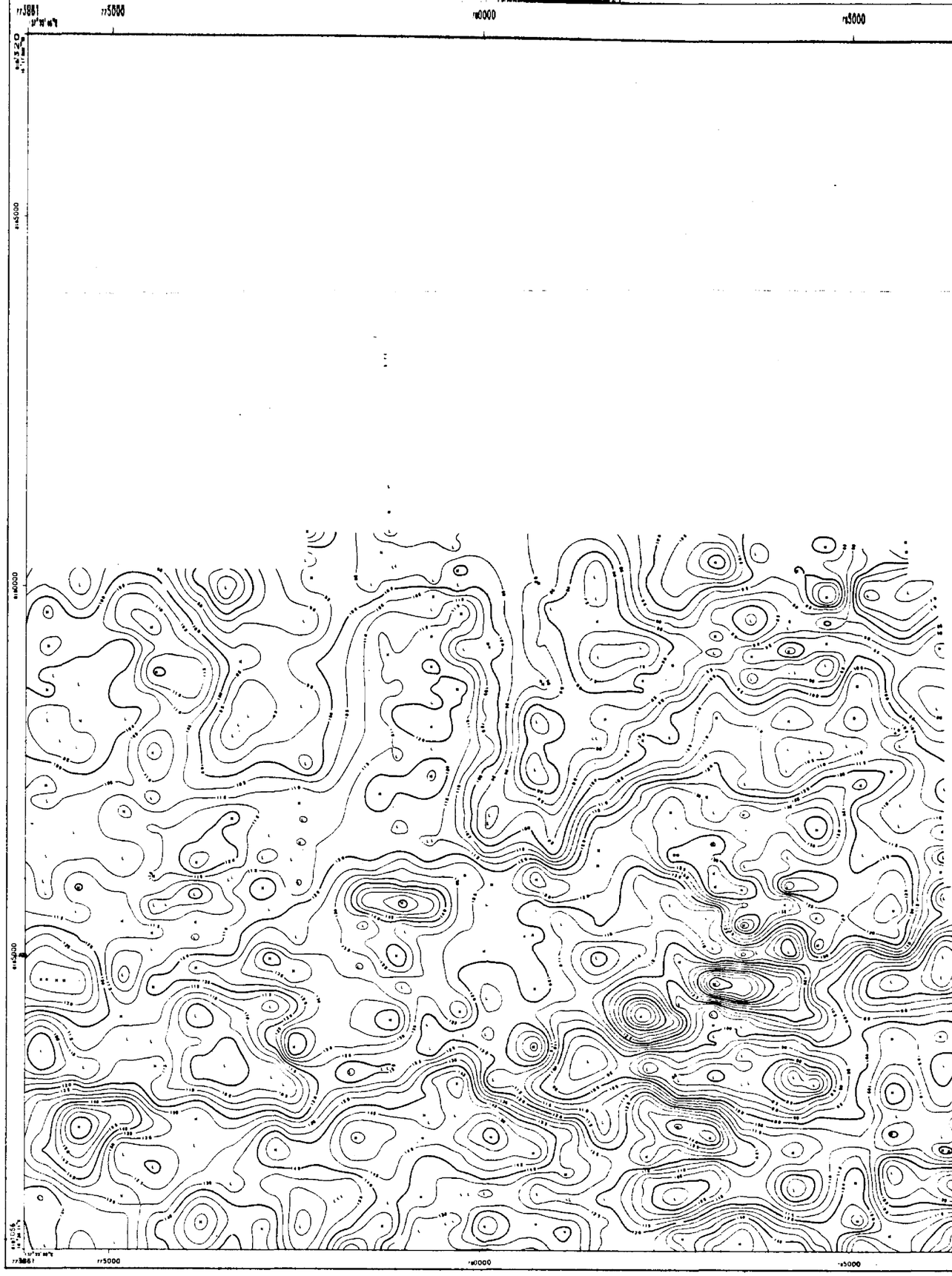
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

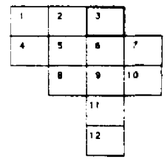
SCALE: 1:25,117	DATE:	FEB 81
DRAWN:	REVN	PLAN NO
CHECKED:		2
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY. LTD. SYDNEY, AUSTRALIA

CR 82/041

PL 2





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

102 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

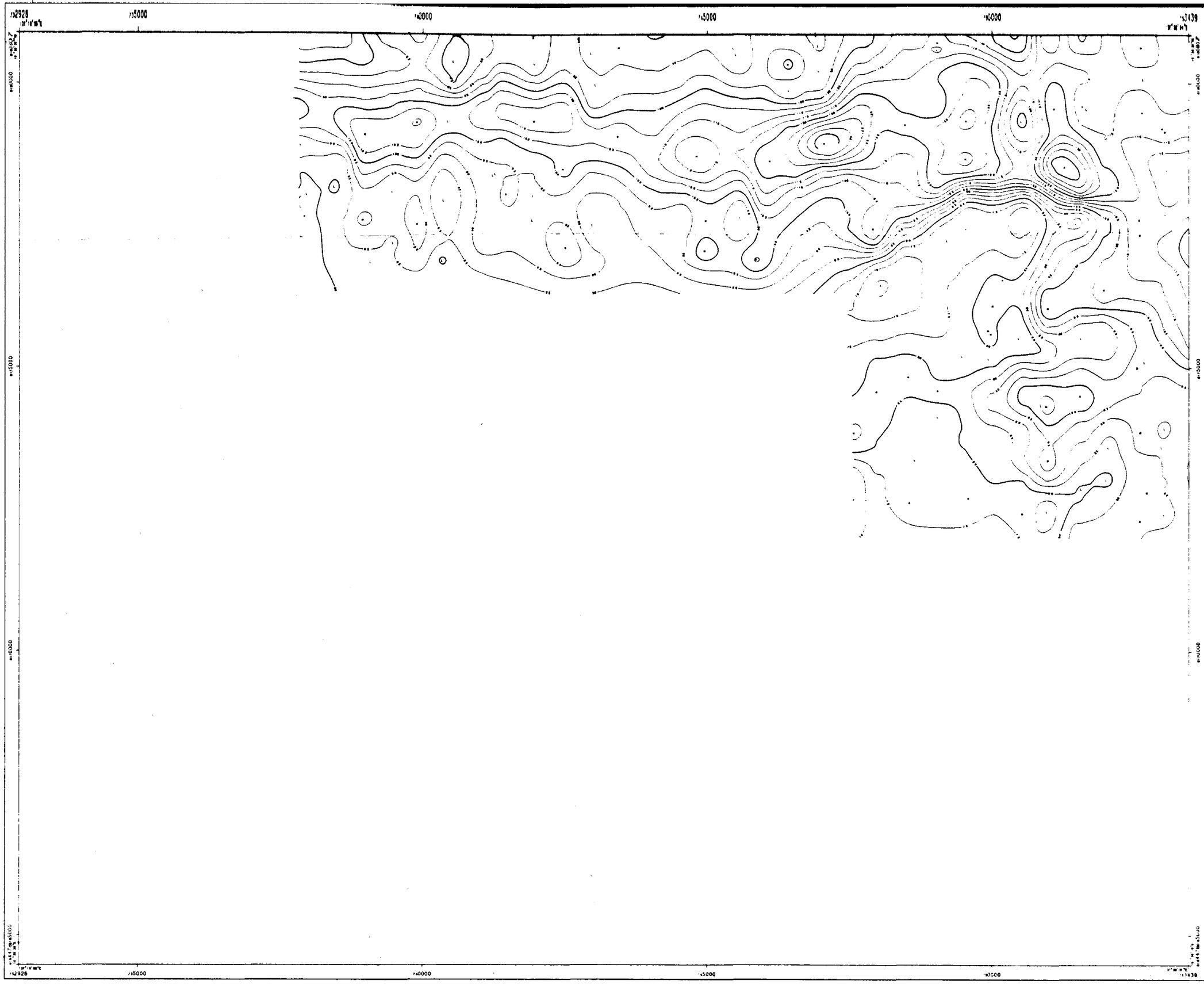
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

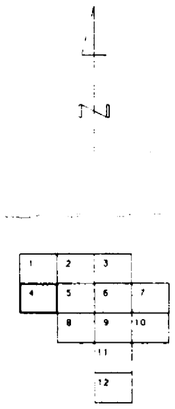
SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		3
APPROVED:		

SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR/82/041

PL 3





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

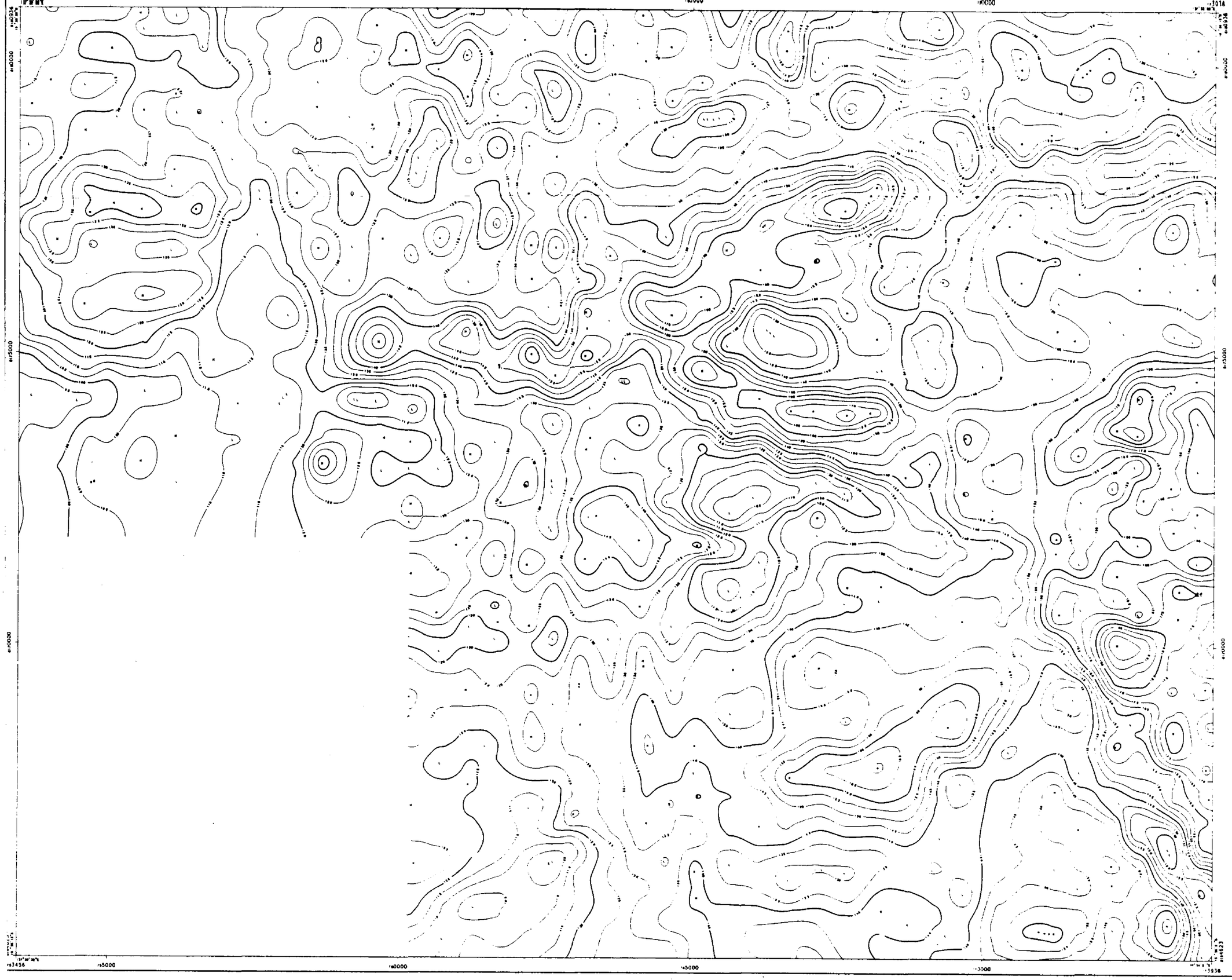
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

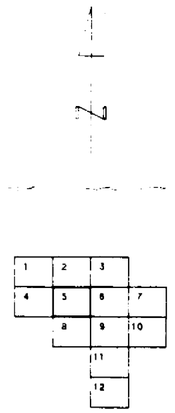
SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		4
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/041

PI 4





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

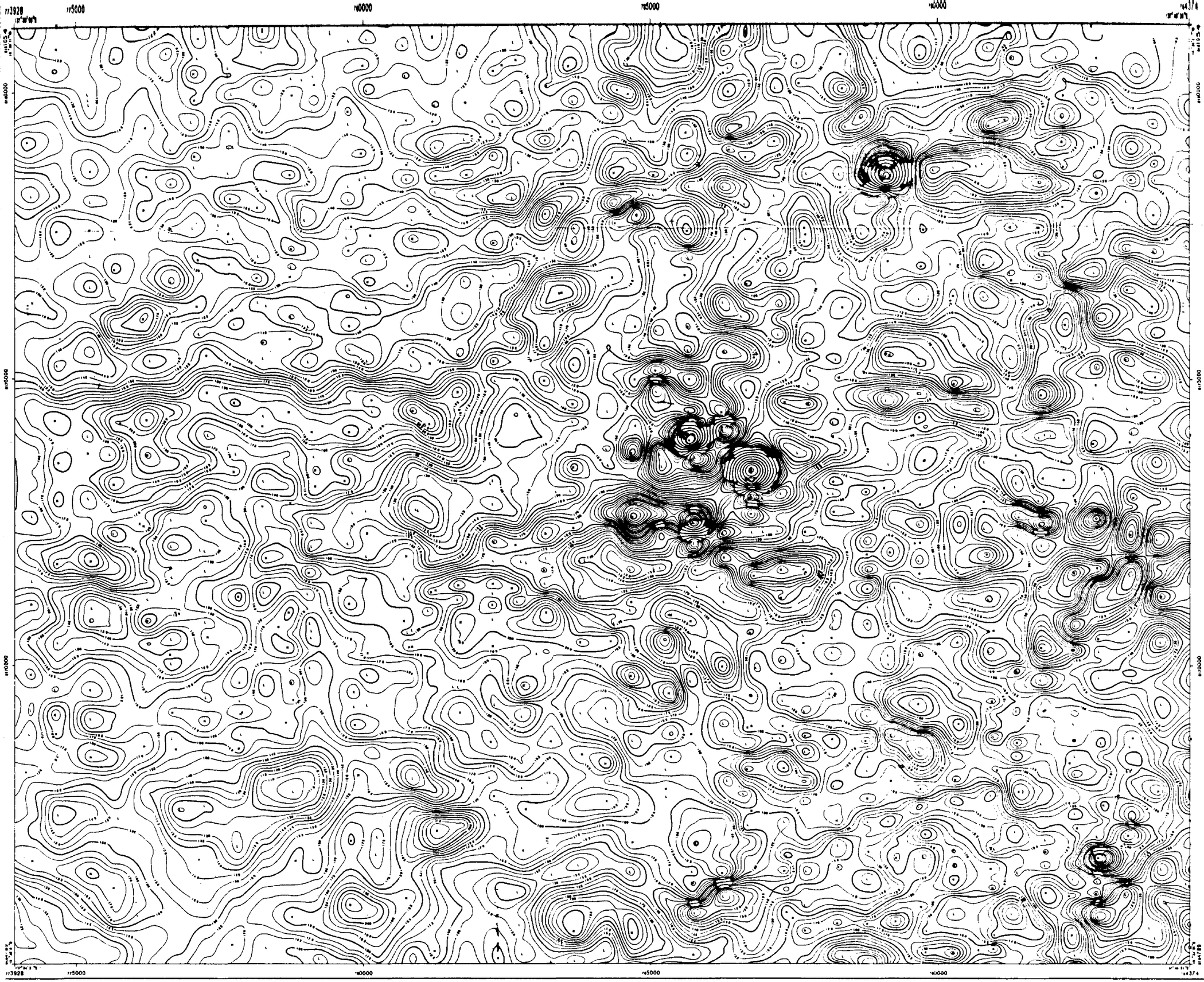
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		5.
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/041

PI 5



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

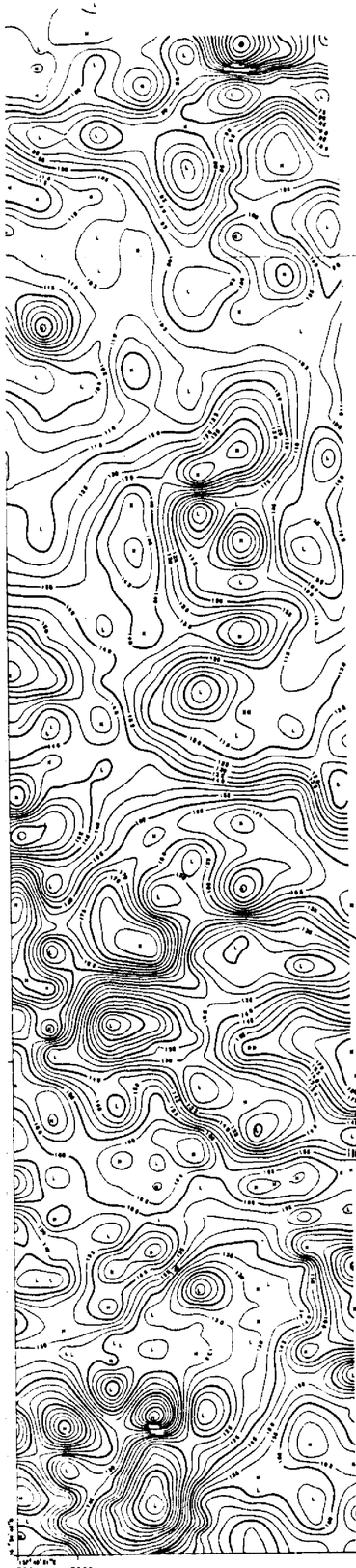
MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

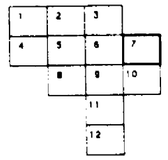
METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY		
CALVERT RIVER AREA RESIDUAL MAGNETIC INTENSITY		
SCALE: 1:25,117	DATE:	FEB 81
DRAWN:	REVN	PLAN NO
CHECKED:		6
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

-502 -251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

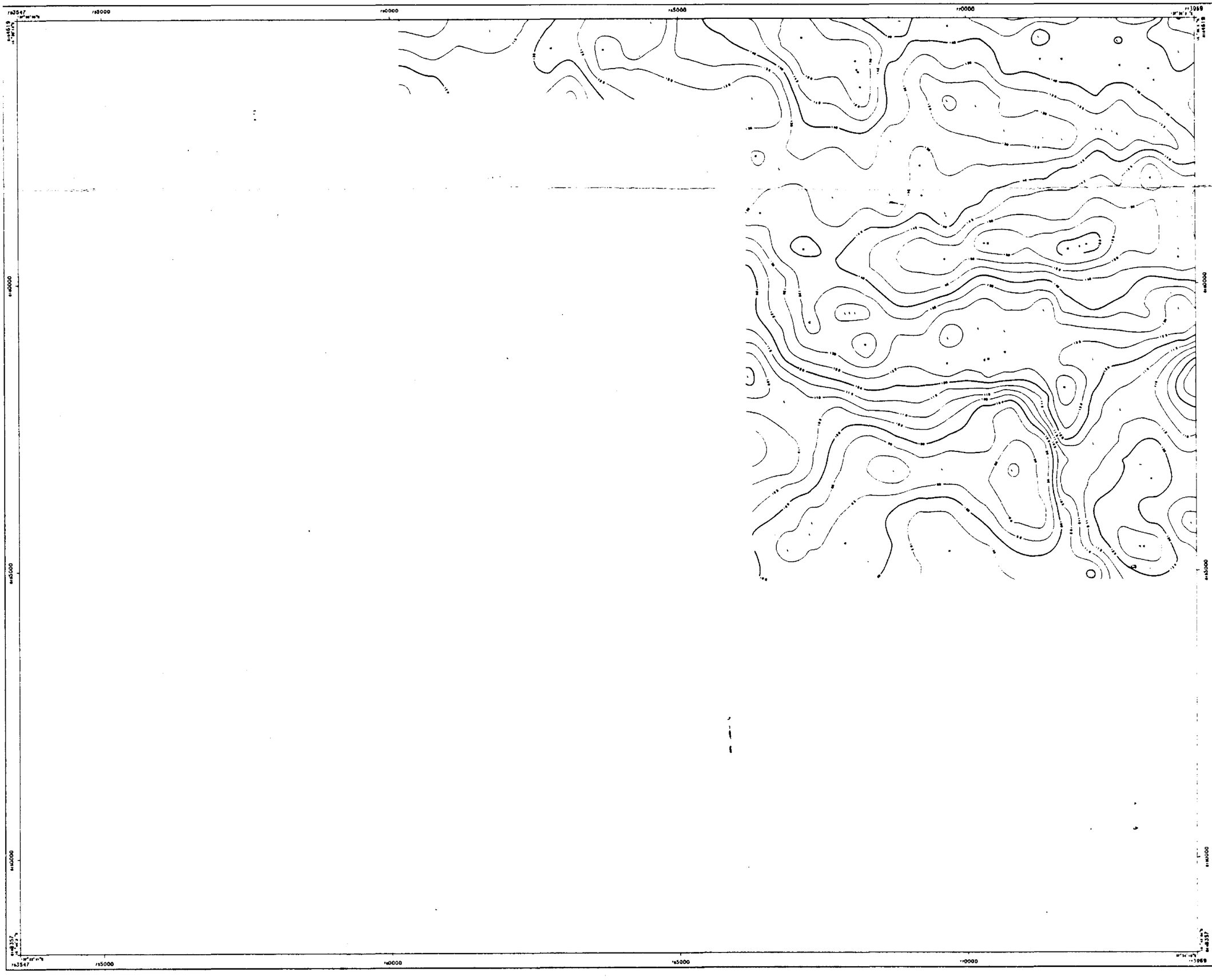
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			7
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD. SYDNEY, AUSTRALIA

CR 82/041

PL 7



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

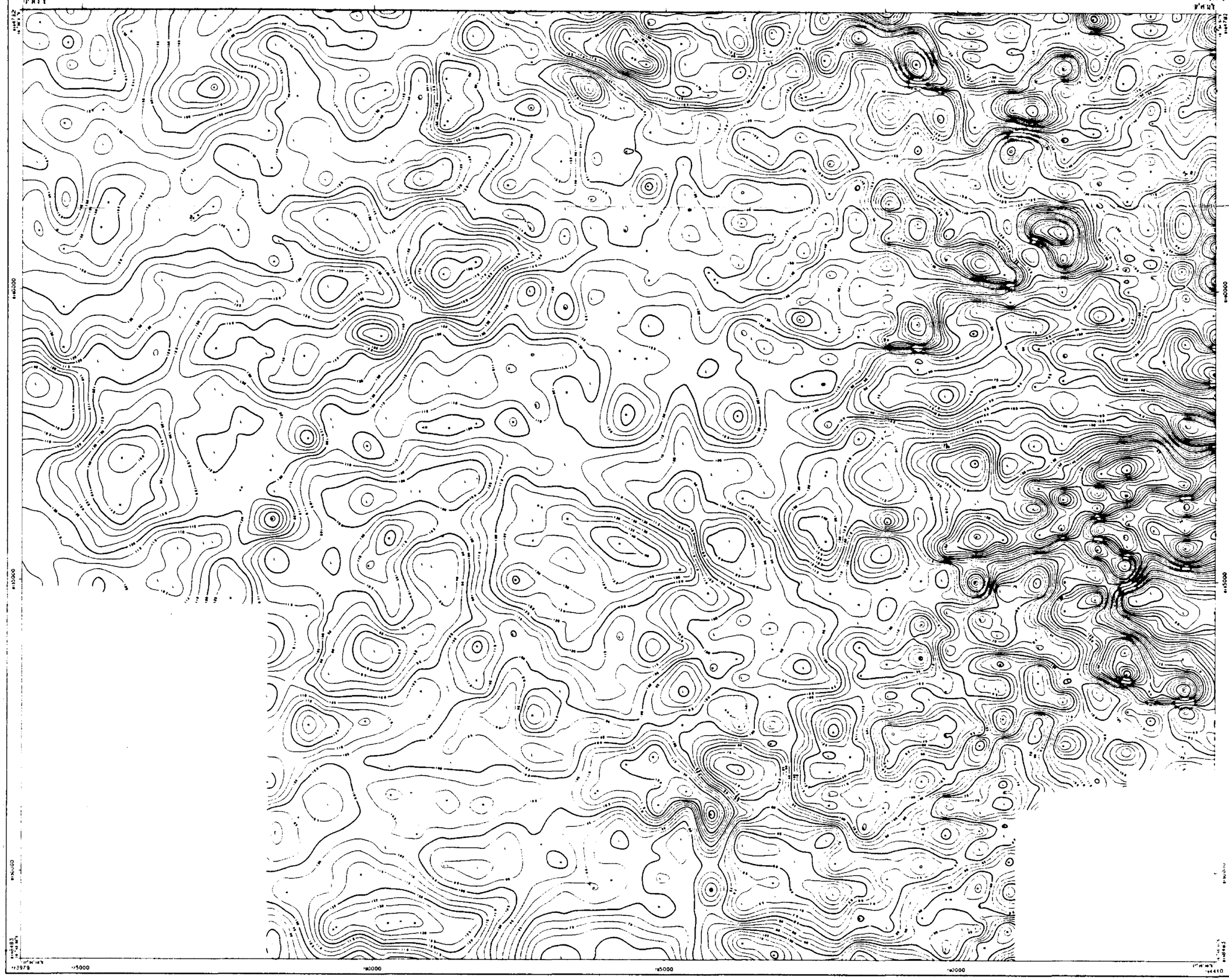
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		8
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/41 P1 8



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

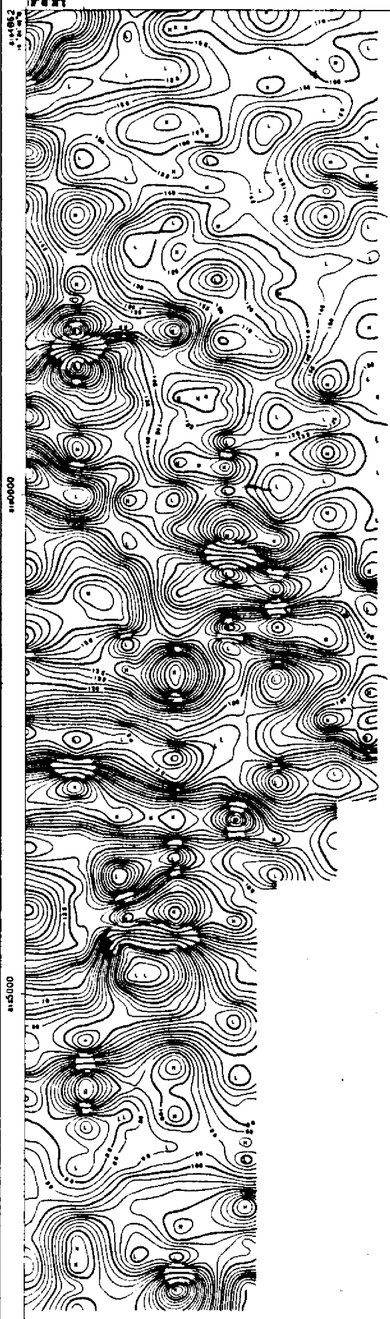
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

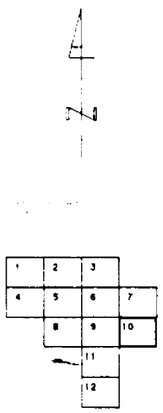
SCALE: 1:25,117	DATE:	FEB 81
DRAWN:	REVN	PLAN NO
CHECKED:		9
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/041

PI 9





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

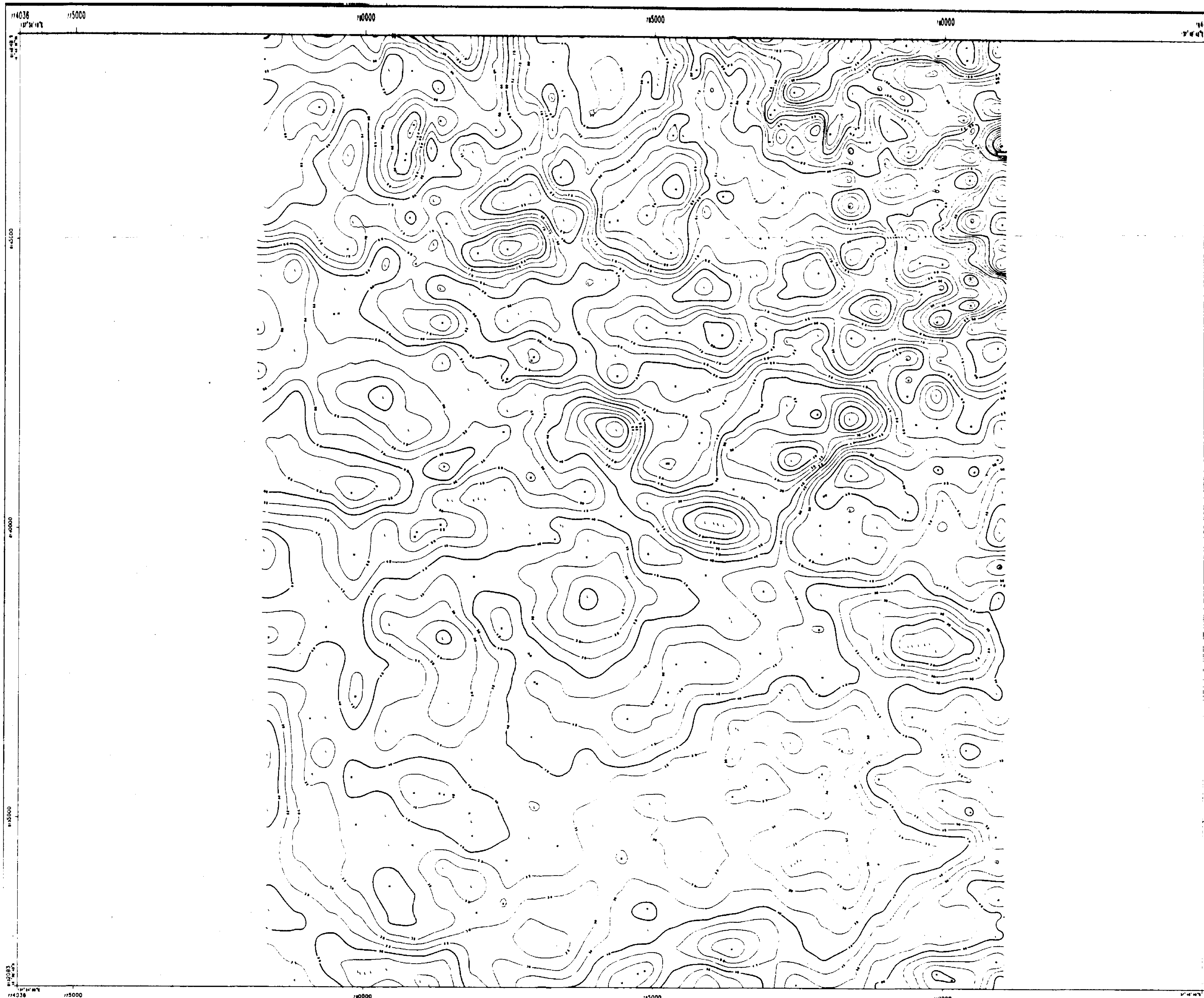
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

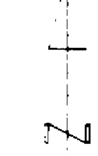
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

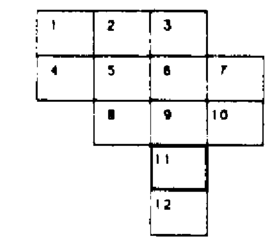
SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			10
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/41 PI 10







FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 6252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	ESAT TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

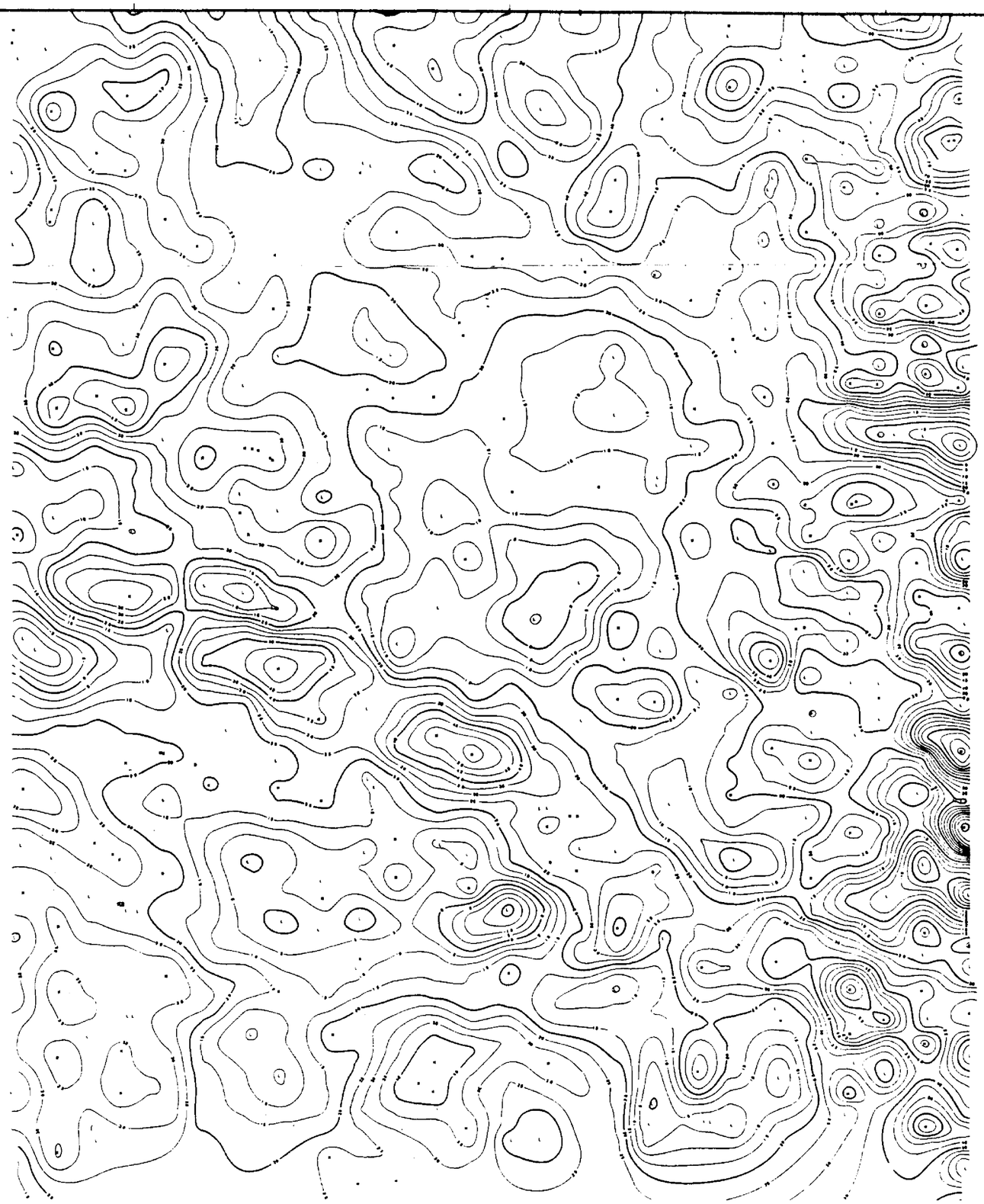
AUSTRALIA & NEW ZEALAND
EXPLORATION COMPANY

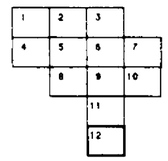
CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			11
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR 82/41 Pl 11





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	3000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

METRES

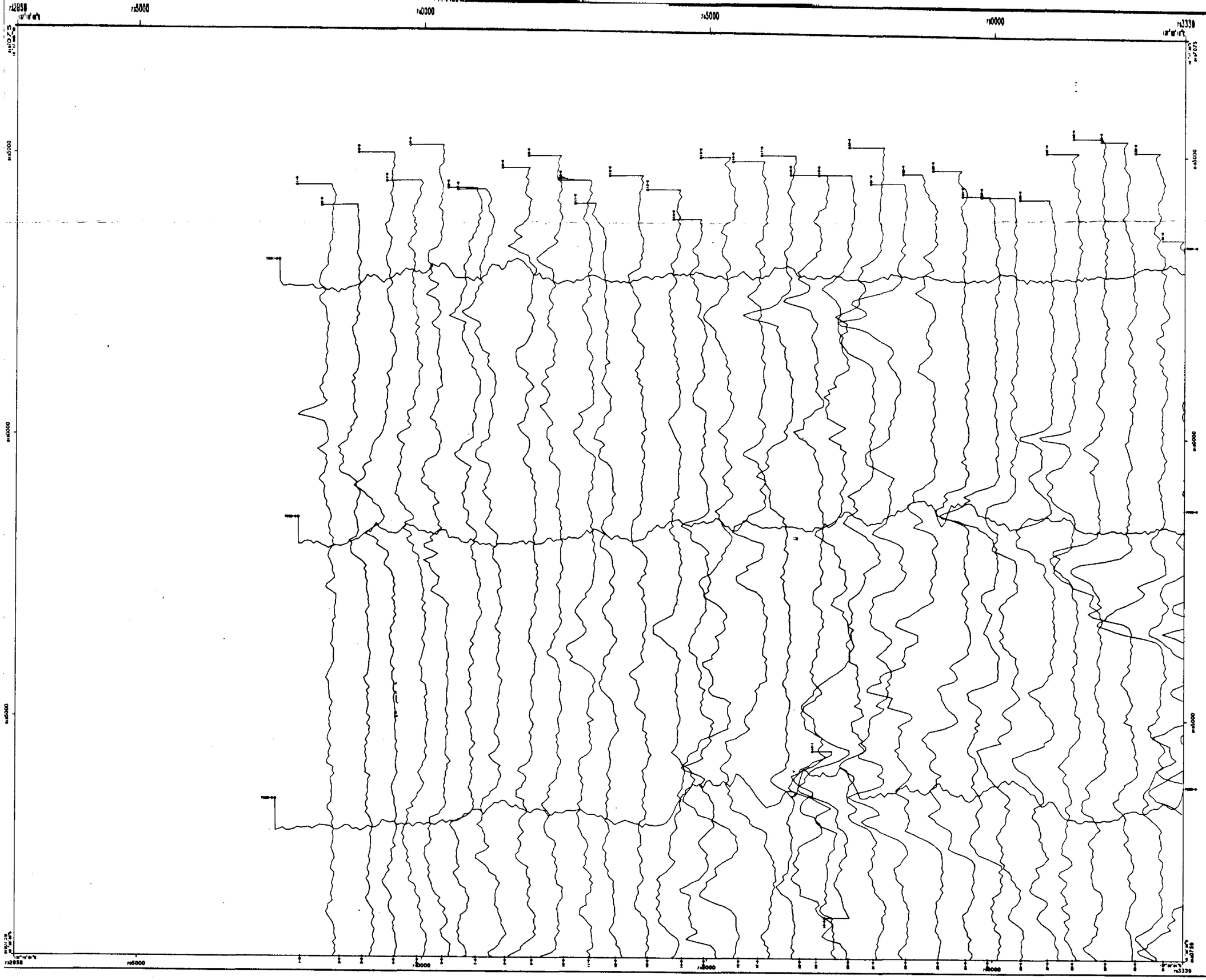
-502 -251 0 251 502 753 1005 1256 1507 1758 2009 2260 2512

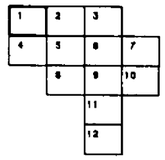
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

CALVERT RIVER AREA
RESIDUAL MAGNETIC INTENSITY

SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			12
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9253
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. 16.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	400 METRES
TIE LINE SEPARATION:	2000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

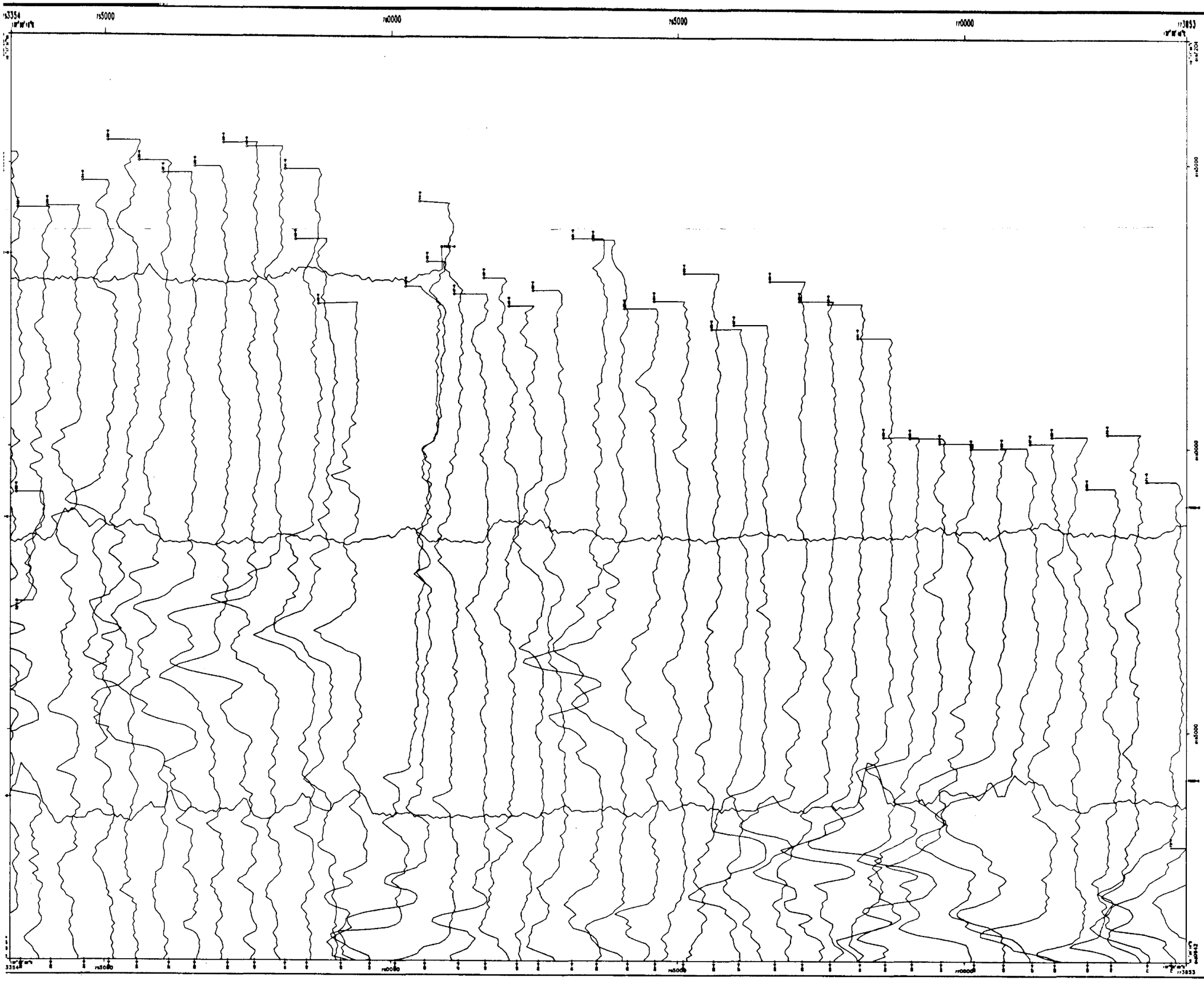
BASE LEVEL 1000.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

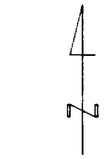
METRES

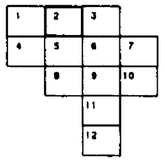
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY		
CALVERT RIVER AREA TOTAL COUNTS		
SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		1
APPROVED:		

CR82-41

PI 13







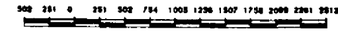
FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 0253
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 GAMMA/LAG
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. 12.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	800 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1300.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES



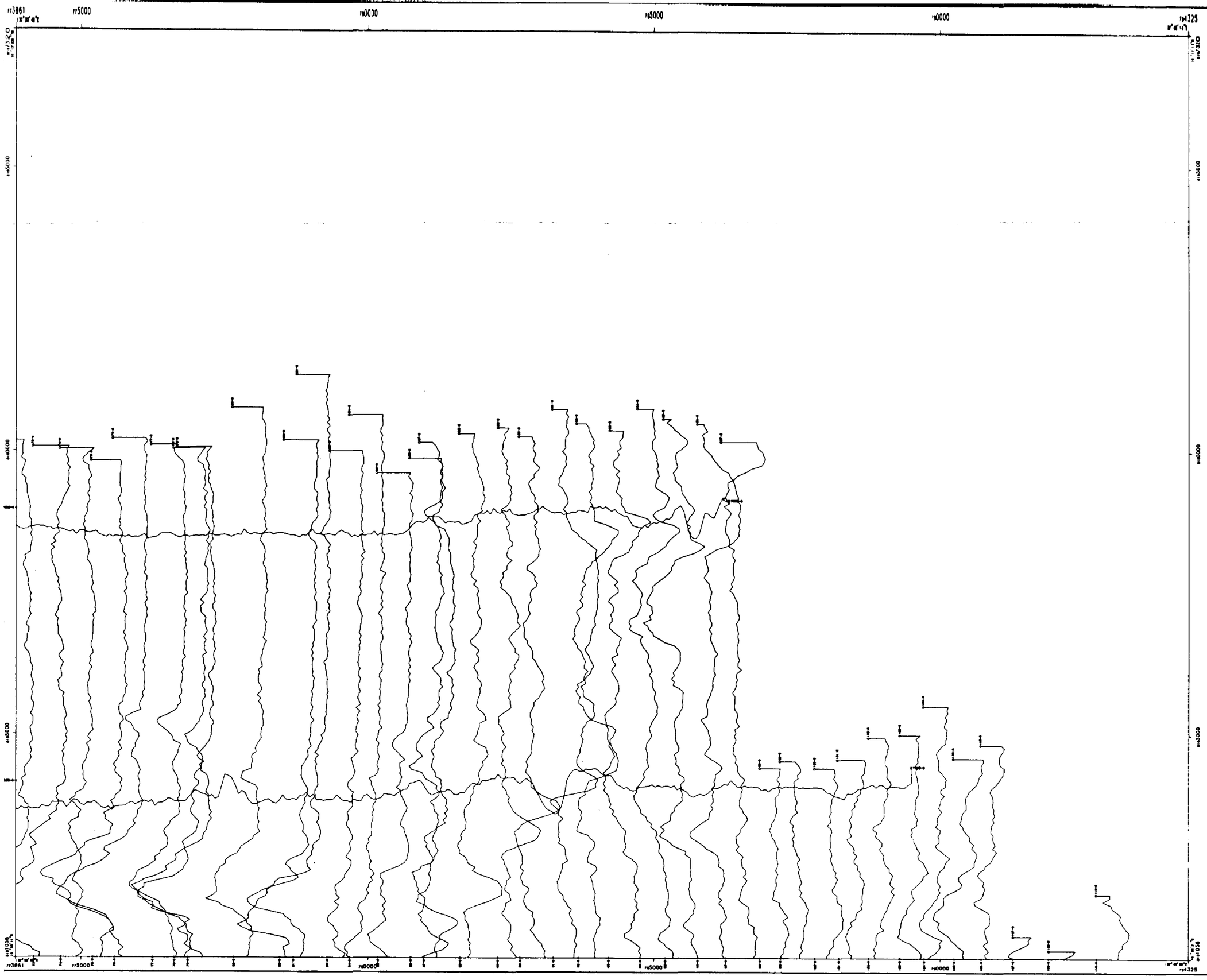
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

CALVERT RIVER AREA
TOTAL COUNTS

SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		2
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41 PI 14



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1500.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

500 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

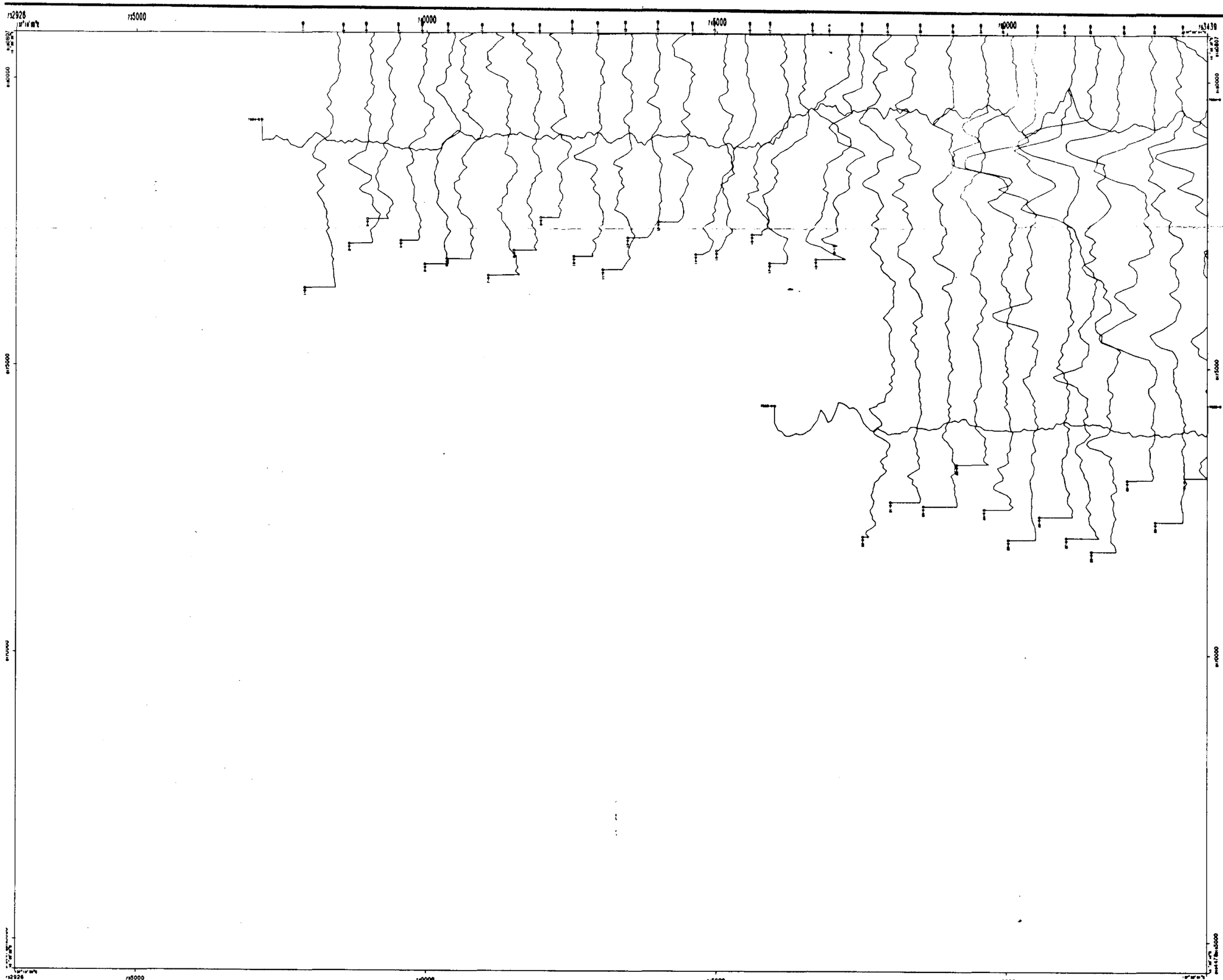
CALVERT RIVER AREA
TOTAL COUNTS

SCALE: 1:25,117	DATE:	FEB 81
DRAWN:	REVN	PLAN NO
CHECKED:		3
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41

PI 15



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 5252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
1080	REMOVED

BASE LEVEL 1900.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

502 251 0 251 502 754 1006 1256 1507 1758 2009 2261 2512

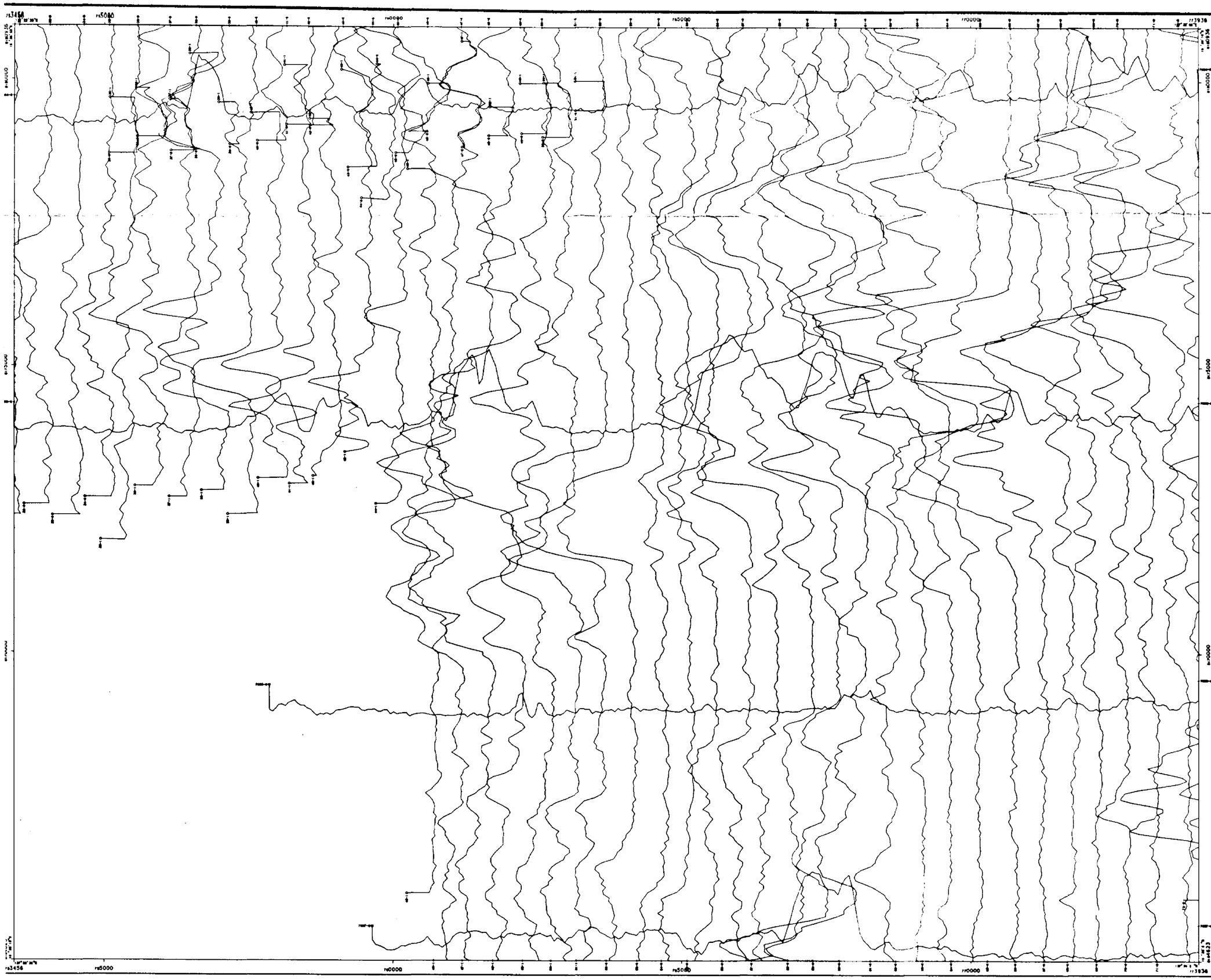
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

CALVERT RIVER AREA
TOTAL COUNTS

SCALE: 1:25,117	DATE:	FEB 81
DRAWN:	REVN	PLAN NO
CHECKED:		4
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9232
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
100F	REMOVED

BASE LEVEL 1900.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

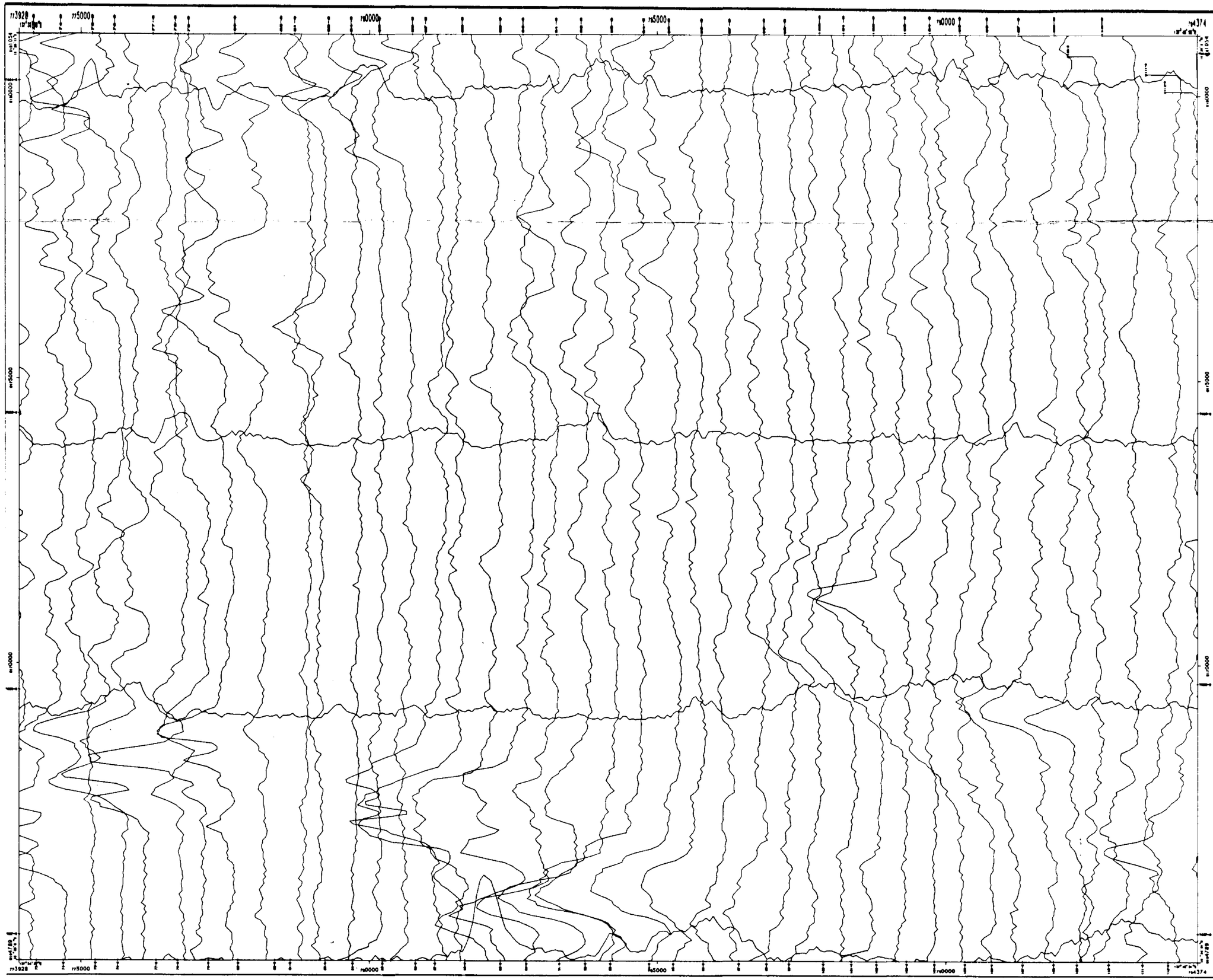
CALVERT RIVER AREA
TOTAL COUNTS

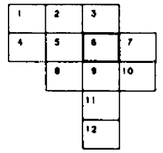
SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		5
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41

PI 17





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	3000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1800.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

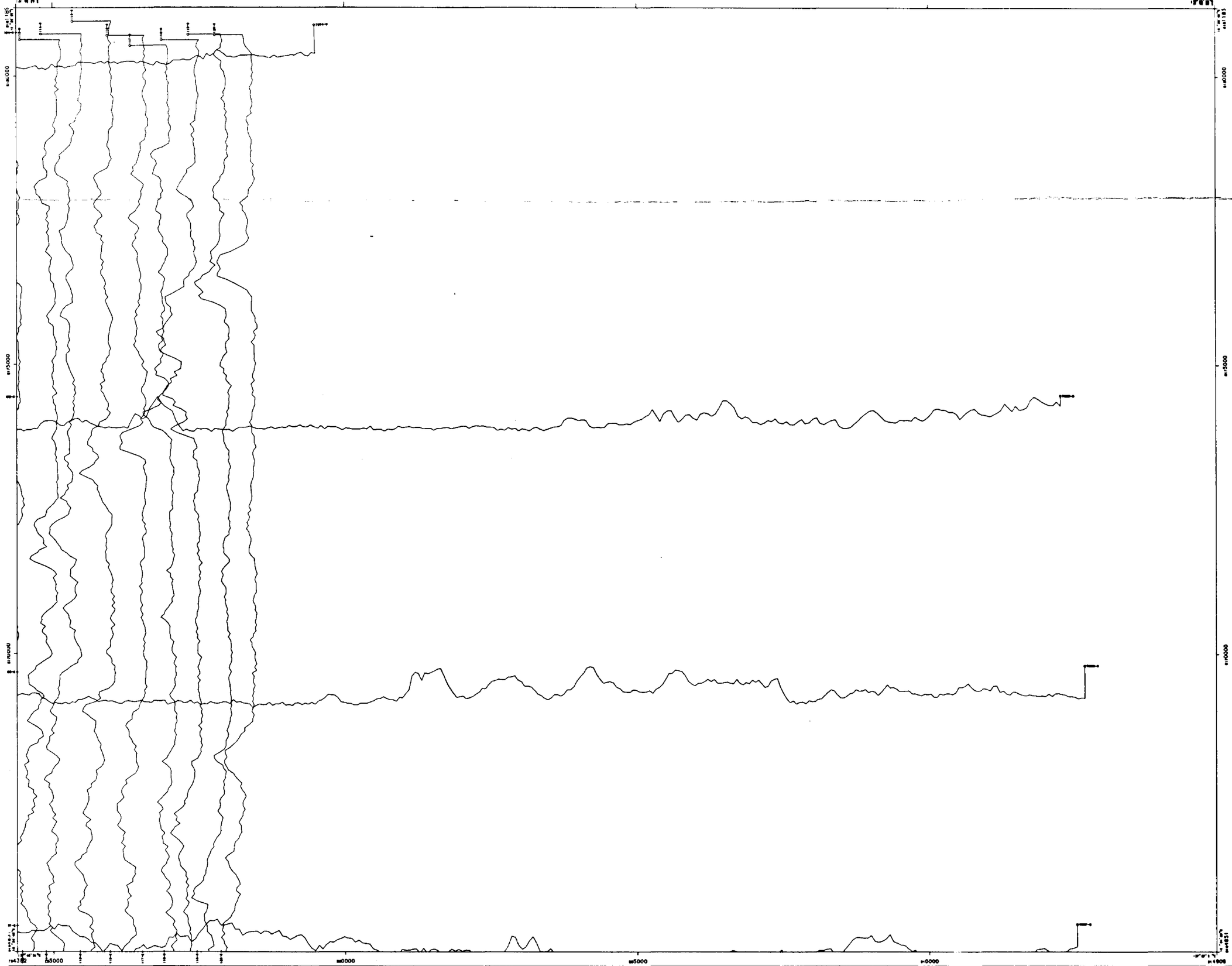
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

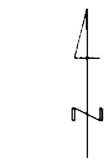
CALVERT RIVER AREA
TOTAL COUNTS

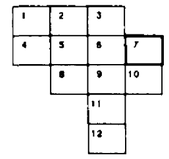
SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			6
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41







FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. 16.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	60 METRES
IGRF	REMOVED

BASE LEVEL 1900.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

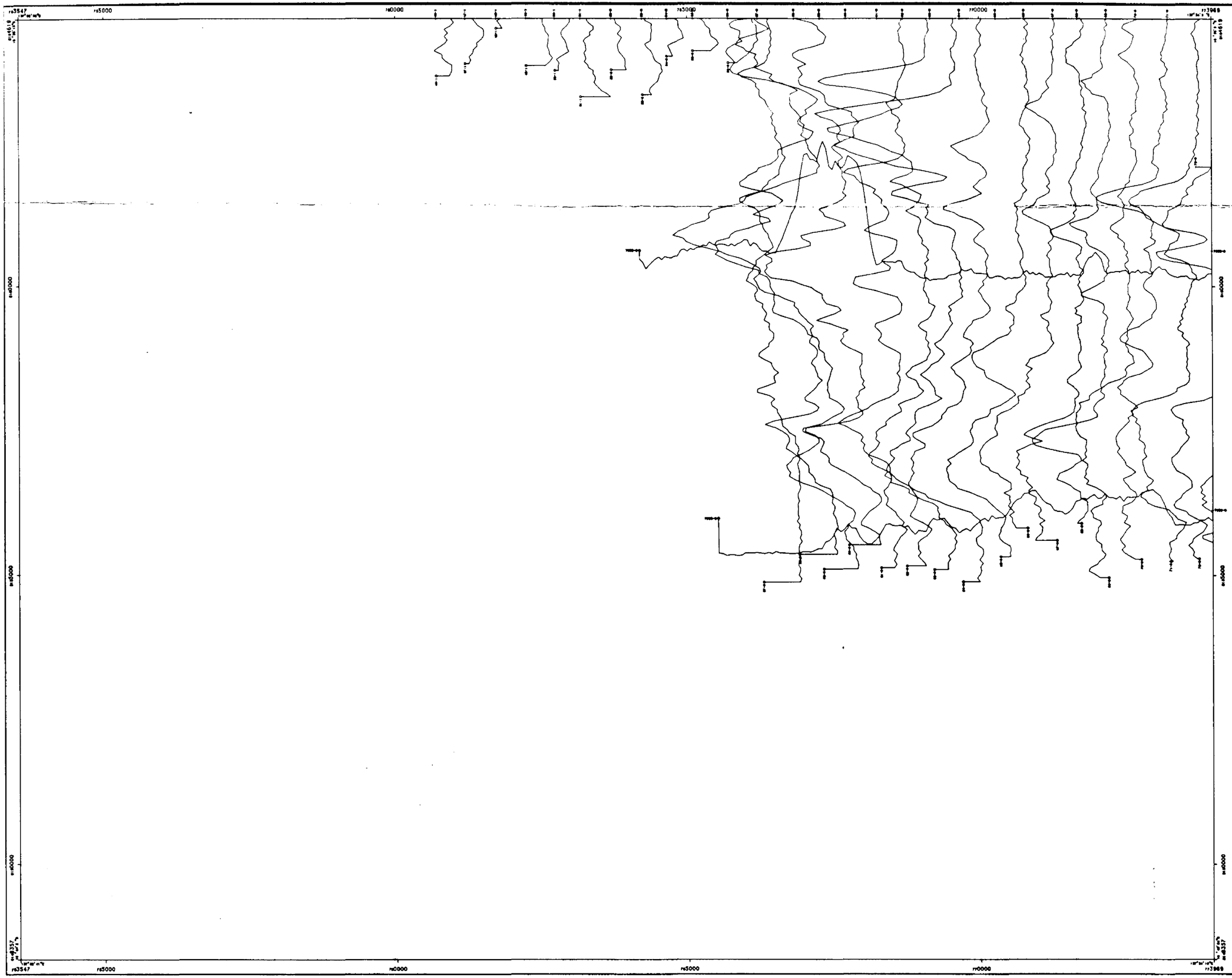
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

CALVERT RIVER AREA
TOTAL COUNTS

SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		7
APPROVED:		

EARTH RESOURCE COMPUTER SERVICES PTY LTD STONEY, AUSTRALIA

CR82-41



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 0252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.8 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1900.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES
502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

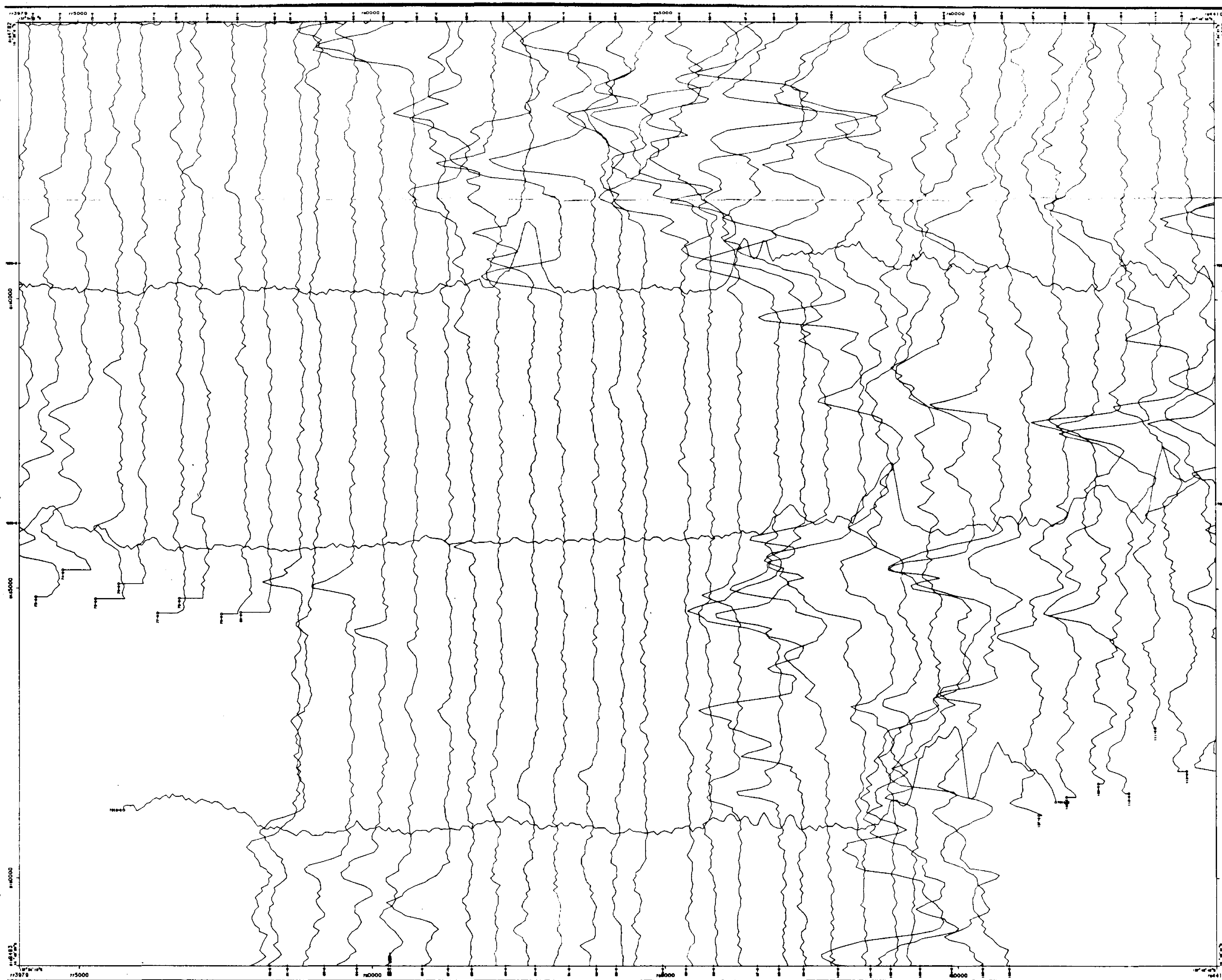
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

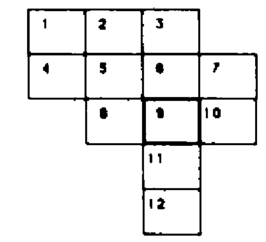
CALVERT RIVER AREA
TOTAL COUNTS

SCALE:	1:25,117	DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			8
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

PI 20





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1500.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES
502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

AUSTRALIA & NEW ZEALAND
EXPLORATION COMPANY

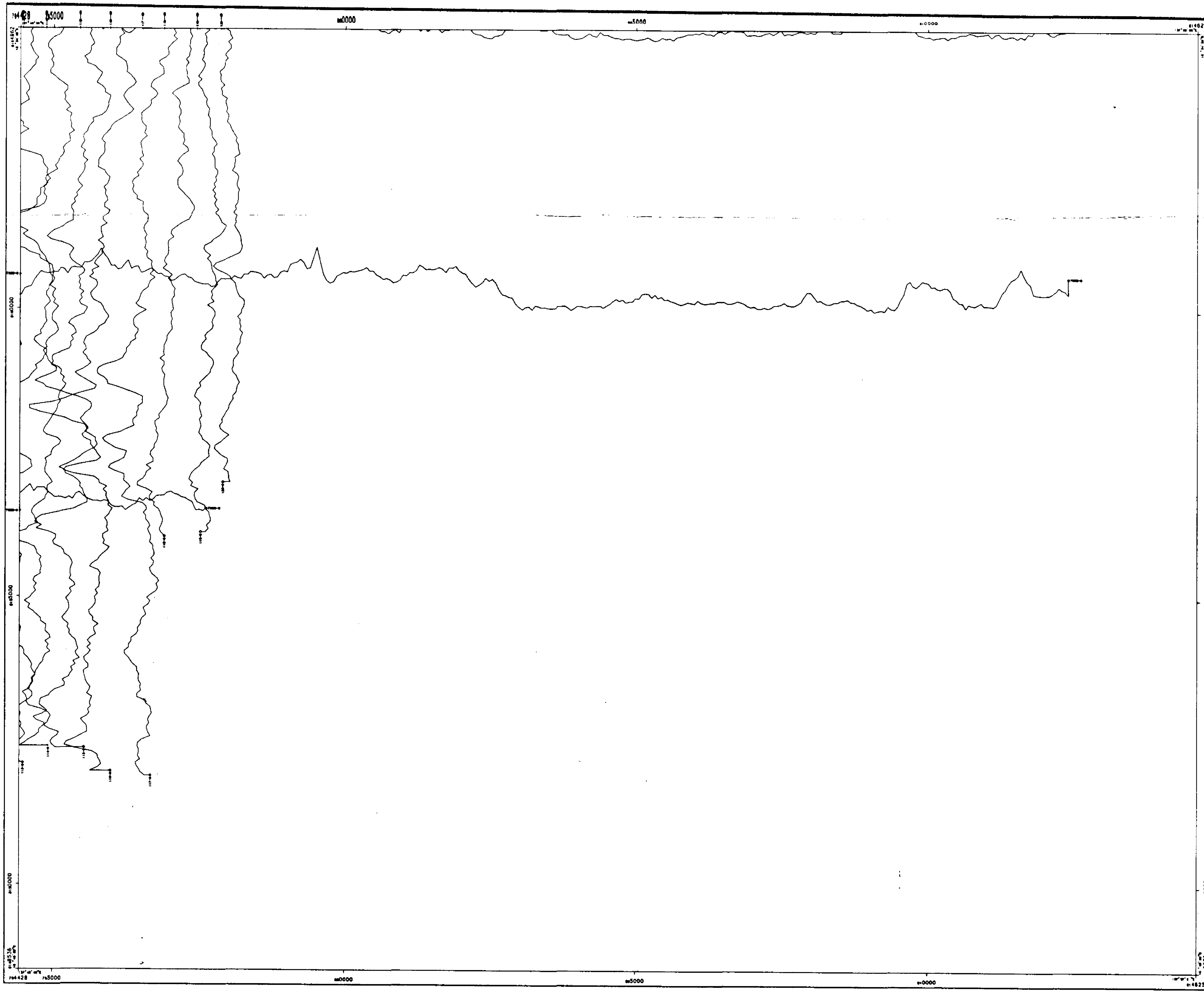
CALVERT RIVER AREA
TOTAL COUNTS

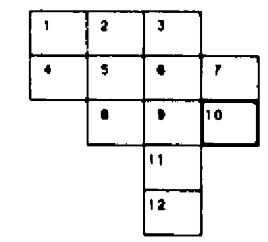
SCALE: 1:25,117	DATE: FEB 81	
DRAWN:	REVN	PLAN NO
CHECKED:		9
APPROVED:		

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41

PI 21





FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.5 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CU. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	ESAT TO WEST
FLIGHT LINE SEPARATION:	300 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

BASE LEVEL 1500.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES
502 251 0 251 502 754 1005 1256 1507 1758 2009 2261 2512

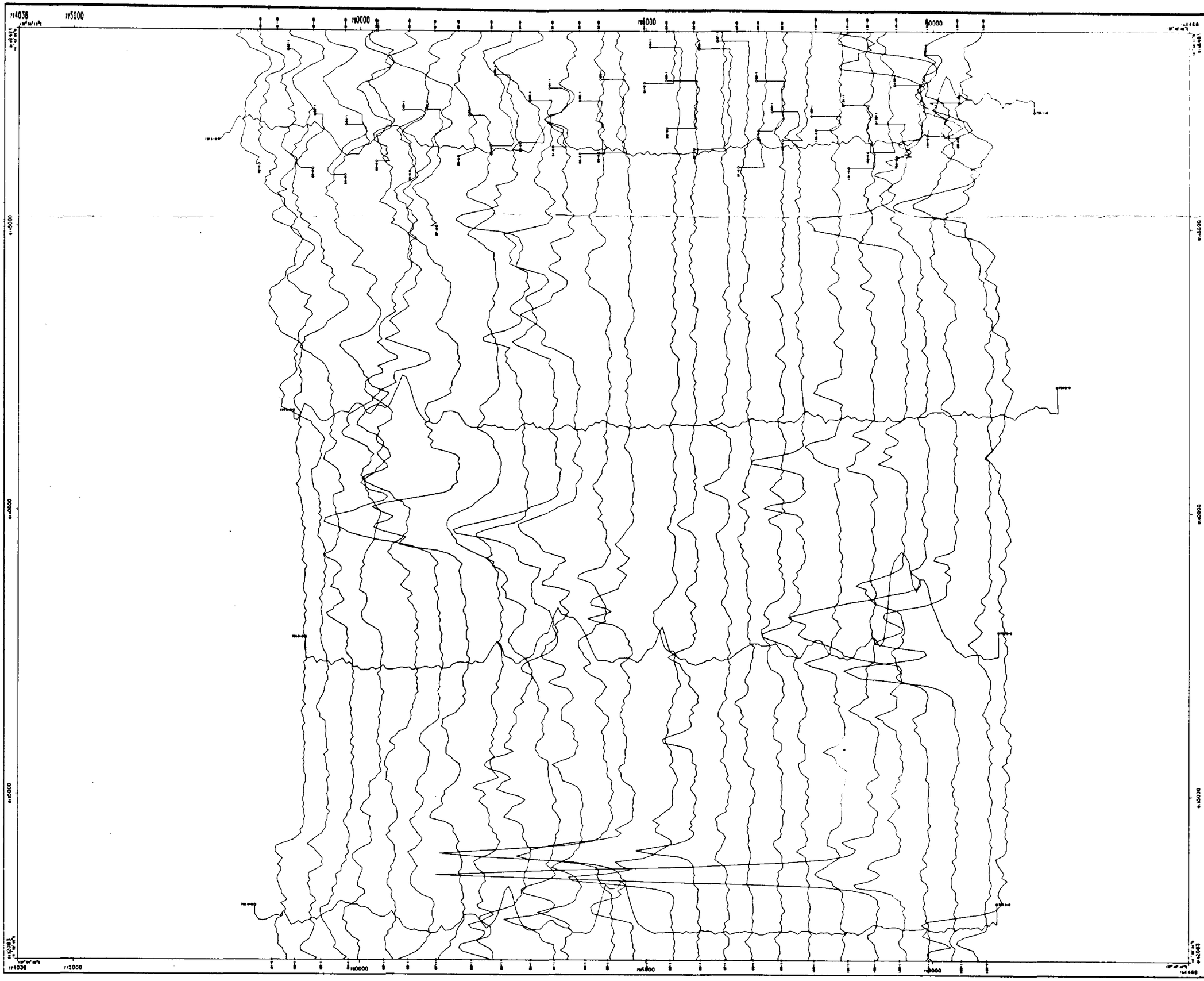
AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

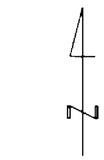
CALVERT RIVER AREA
TOTAL COUNTS

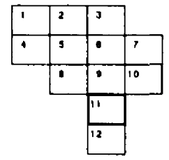
SCALE: 1:25.117		DATE: FEB 81	
DRAWN:		REVN	PLAN NO
CHECKED:			10
APPROVED:			

EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA

CR82-41 PL 22







FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 8252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.8 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. IN.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	500 METRES
TIE LINE SEPARATION:	5000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
IGRF	REMOVED

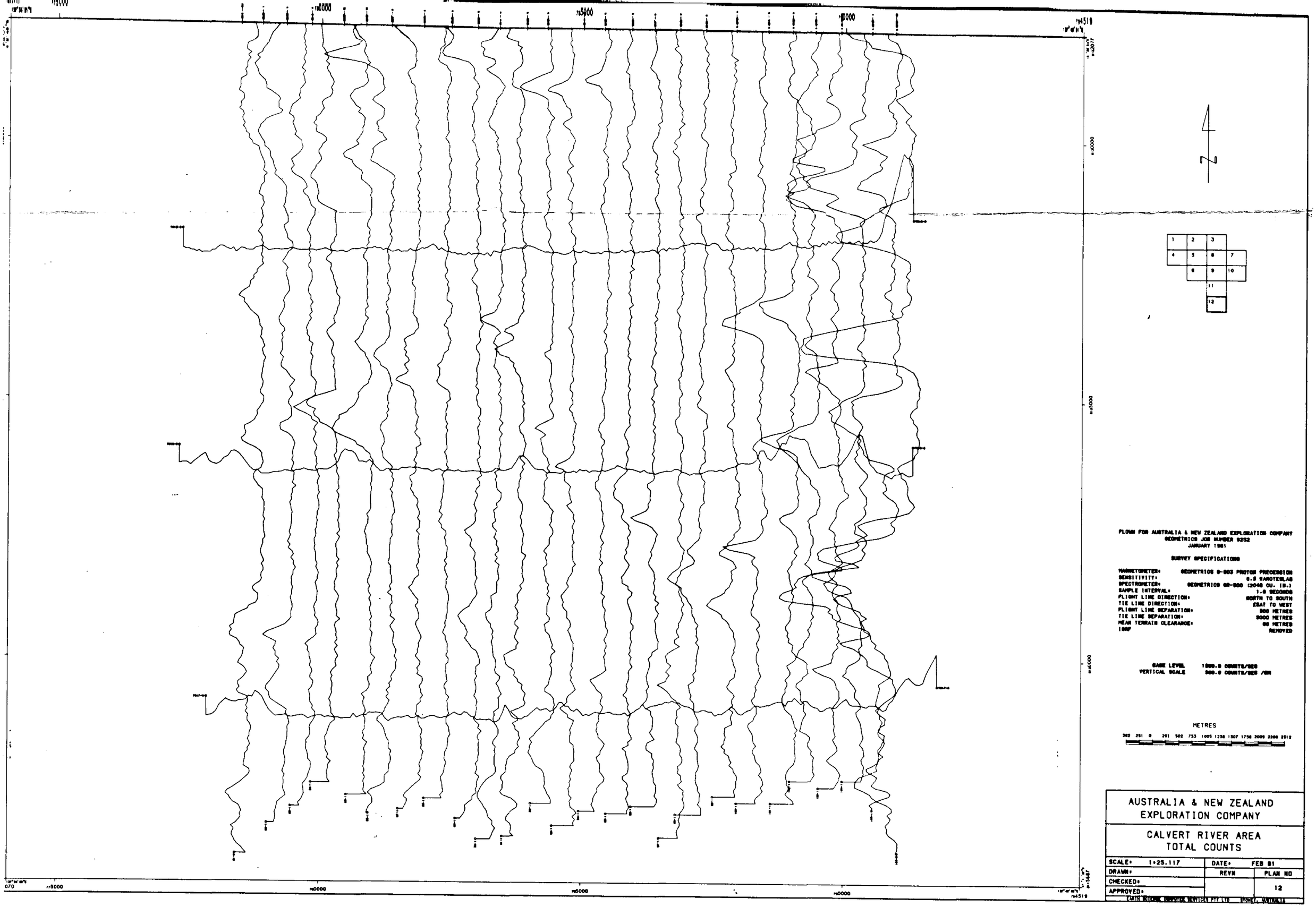
BASE LEVEL 1900.0 COUNTS/SEC
VERTICAL SCALE 500.0 COUNTS/SEC /CM

METRES

502 251 0 251 502 754 1005 1256 1507 1758 2008 2261 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY			
CALVERT RIVER AREA TOTAL COUNTS			
SCALE: 1:25,117		DATE:	FEB 81
DRAWN:		REVN	PLAN NO
CHECKED:			11
APPROVED:			
EARTH SCIENCE COMPUTER SERVICES PTY LTD SYDNEY, AUSTRALIA			

CR82-41 PI 23



FLOWN FOR AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
GEOMETRICS JOB NUMBER 9252
JANUARY 1981

SURVEY SPECIFICATIONS

MAGNETOMETER:	GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY:	0.6 NANOTESLAS
SPECTROMETER:	GEOMETRICS GR-800 (2048 CH. 12L.)
SAMPLE INTERVAL:	1.0 SECONDS
FLIGHT LINE DIRECTION:	NORTH TO SOUTH
TIE LINE DIRECTION:	EAST TO WEST
FLIGHT LINE SEPARATION:	800 METRES
TIE LINE SEPARATION:	8000 METRES
MEAN TERRAIN CLEARANCE:	80 METRES
180P	REMOVED

BASE LEVEL 1800.0 COUNTS/SEC
VERTICAL SCALE 900.0 COUNTS/SEC /CM

METRES

302 251 0 251 502 753 1005 1256 1507 1758 2009 2260 2512

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY

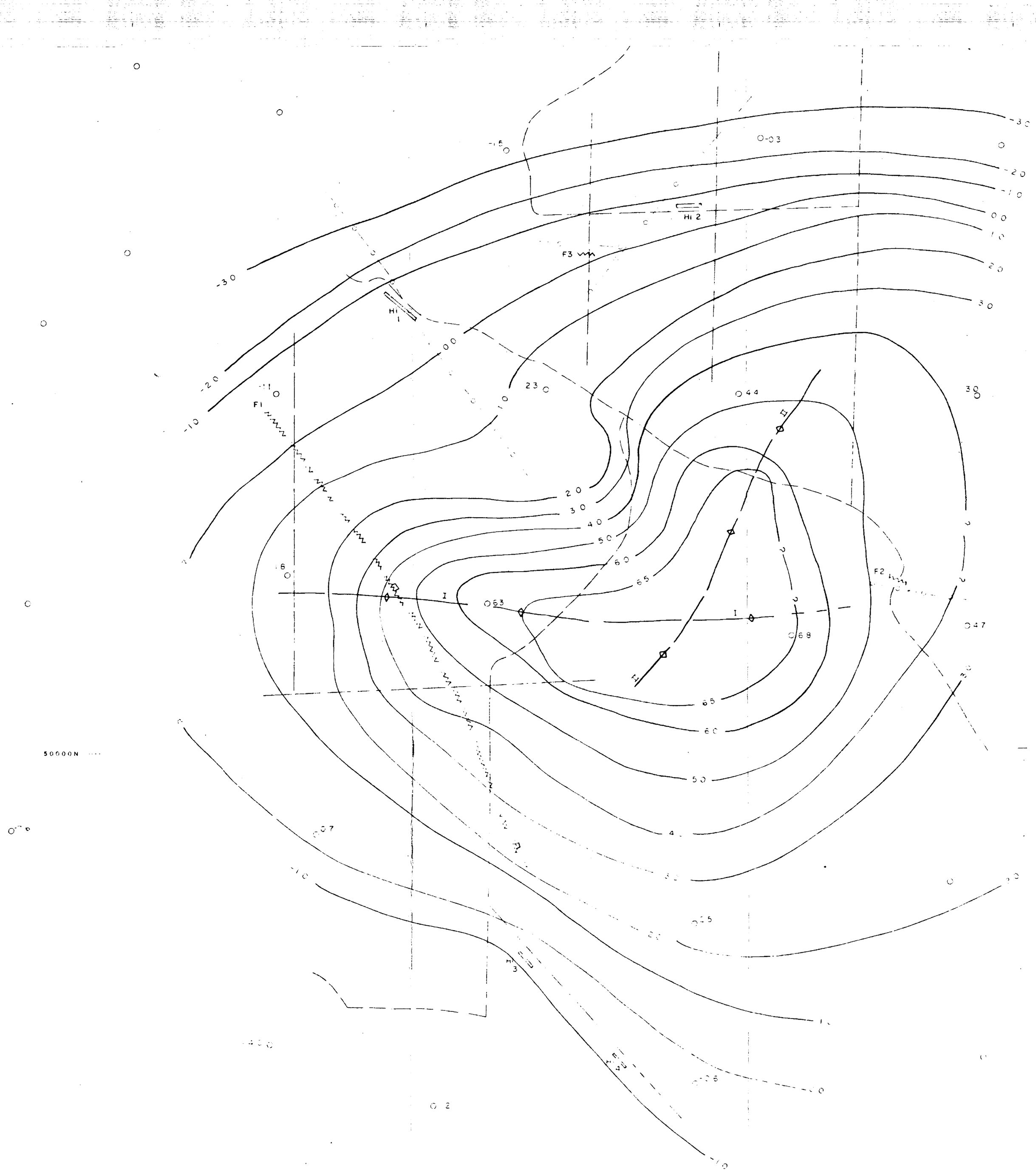
CALVERT RIVER AREA
TOTAL COUNTS

SCALE: 1:25,117		DATE: FEB 81	
DRAWN:		REVN	PLAN NO
CHECKED:			12
APPROVED:			

GEOMETRICS GEOPHYSICAL SURVEYS PTY. LTD. SYDNEY, AUSTRALIA

PI 24

CR82-41



Fault inferred from gravity

Bouguer gravity high

BMR gravity station

Linear inferred from magnetics

Contour interval in milligals

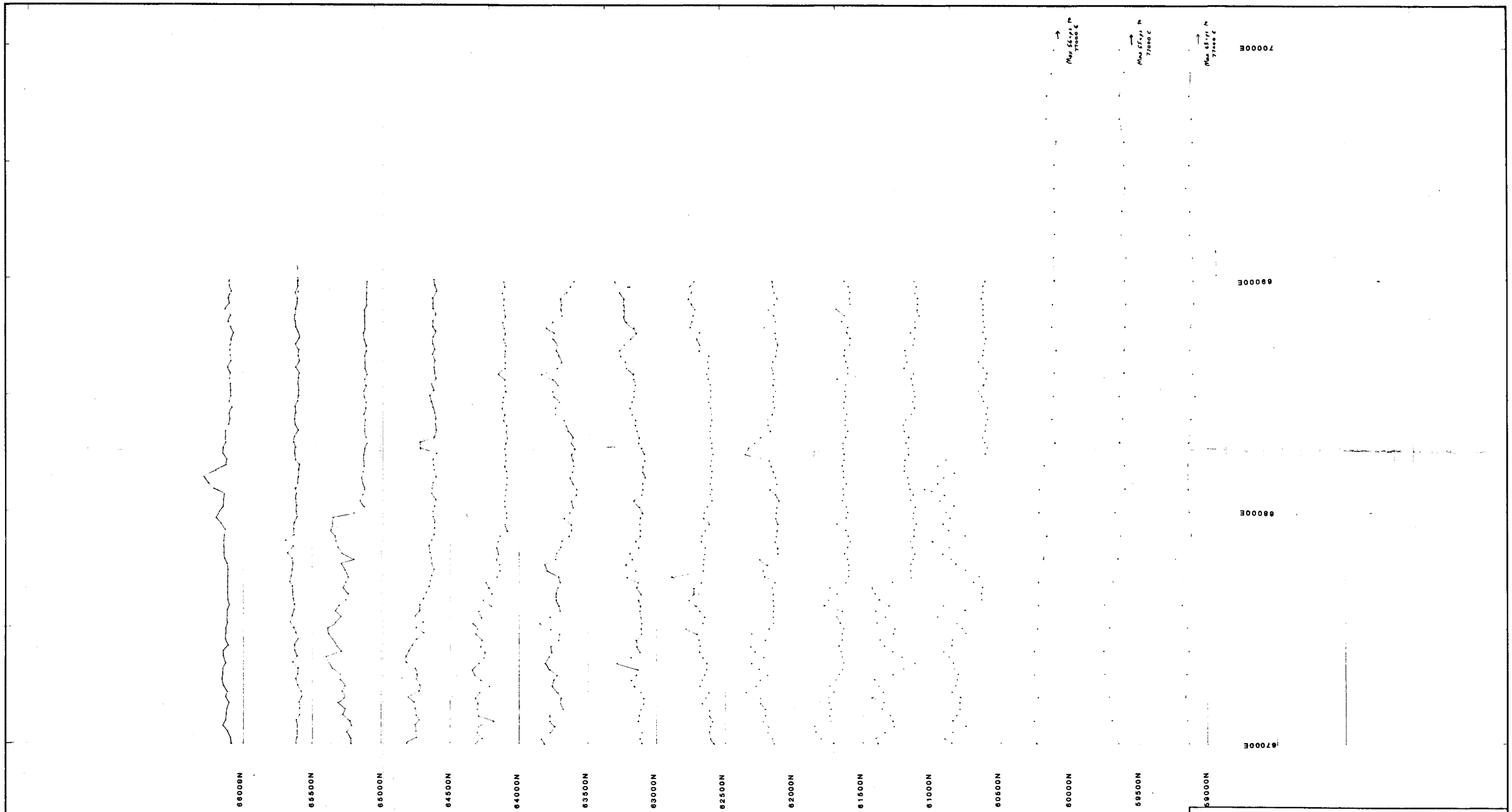
ROBINSON RIVER N.T.

BOUGUER GRAVITY CONTOUR MAP

SHOWING INTERPRETED FEATURES

& BMR GRAVITY STATIONS

SCALE - 1:100,000 APPROX.



AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564		
RADIOMETRIC SURVEY-TOTAL COUNT		
North-Western Anomalies		
Vert.Scale 1cm-50cps		Instrument GR 410
Prepared by,		Drawn by, ERD
Scale,	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

PI 26

CR82-41

35000N

34500N

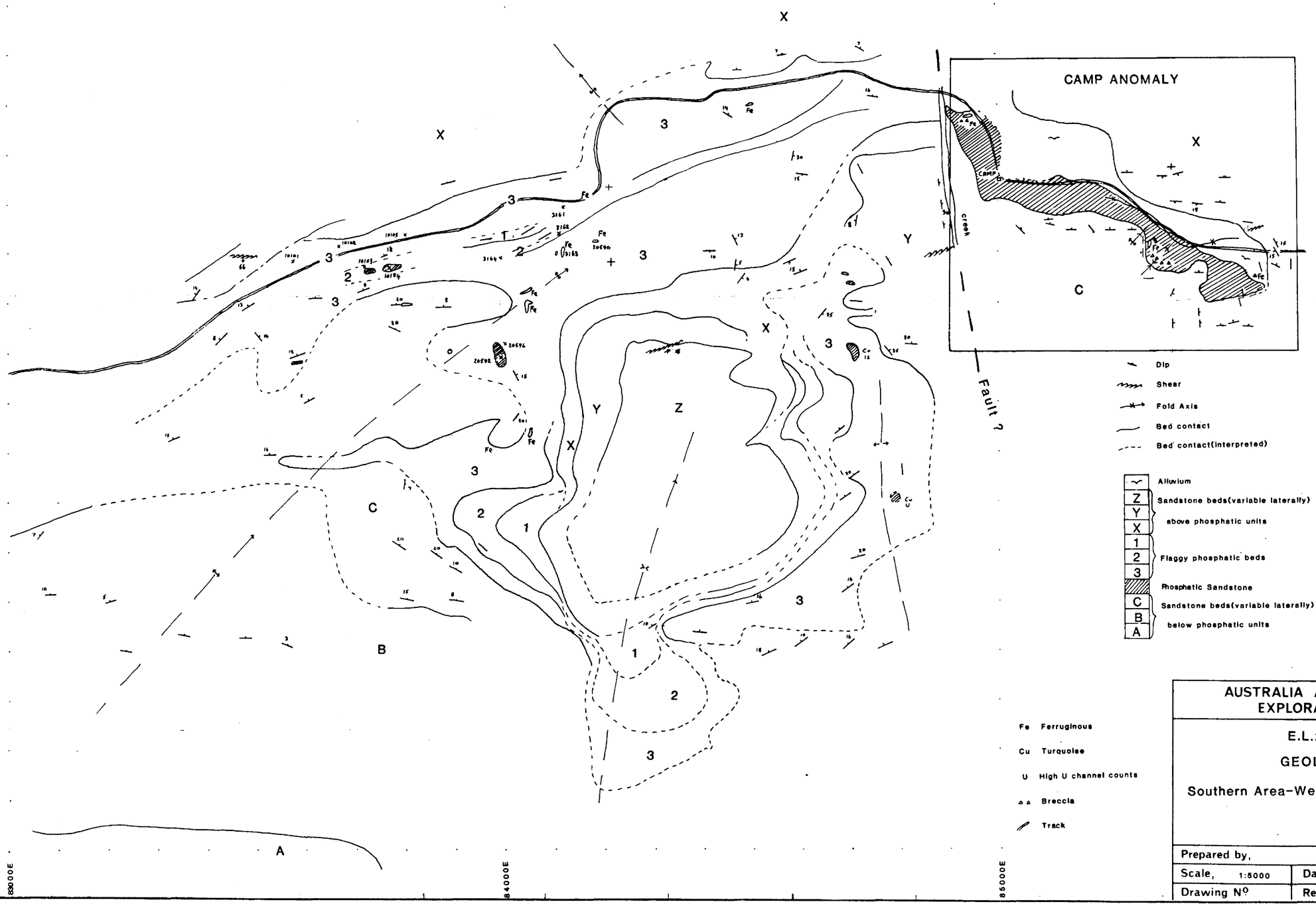
34000N

33500N

83000E

84000E

85000E



Dip
Shear
Fold Axis
Bed contact
Bed contact(interpreted)

Alluvium
Z
Y
X
1
2
3
Sandstone beds(variable laterally)
above phosphatic units
Flaggy phosphatic beds
Phosphatic Sandstone
C
B
A
Sandstone beds(variable laterally)
below phosphatic units

Fe Ferruginous
Cu Turquoise
U High U channel counts
Breccia
Track

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564		
GEOLOGY		
Southern Area-Western & Camp Anomalies		
Prepared by,	Drawn by, ERD	
Scale, 1:5000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

PI 27

CR82-41

35000N

34500N

34000N

33400N

83000E

84000E

85000E

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

E.L.2564

RADIOMETRIC SURVEY - TOTAL COUNT

Southern Area-Western & Camp Anomalies

Instrument GR 410 Readings 50 m grid

Prepared by,	Drawn by, ERD	
Scale, 1:5000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

PI 28

CR82-41

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564		
RADIOMETRIC SURVEY TOTAL COUNT		
Southern Area-Western Anomaly		
Instrument GR.310 Readings 10 m grid		
Prepared by,	Drawn by, ERD	
Scale, 1:1000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

PI 29

CR82-41

35000N

34000N

87100E

88000E

89100E

Flaggy Bed(some phosphate)

Phosphatic Bed

Scarp slope

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564		
GEOLOGY		
Southern Area-Eastern Anomaly		
Prepared by, DJ		Drawn by, ERD
Scale, 1:5000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

CR82-41

35100N

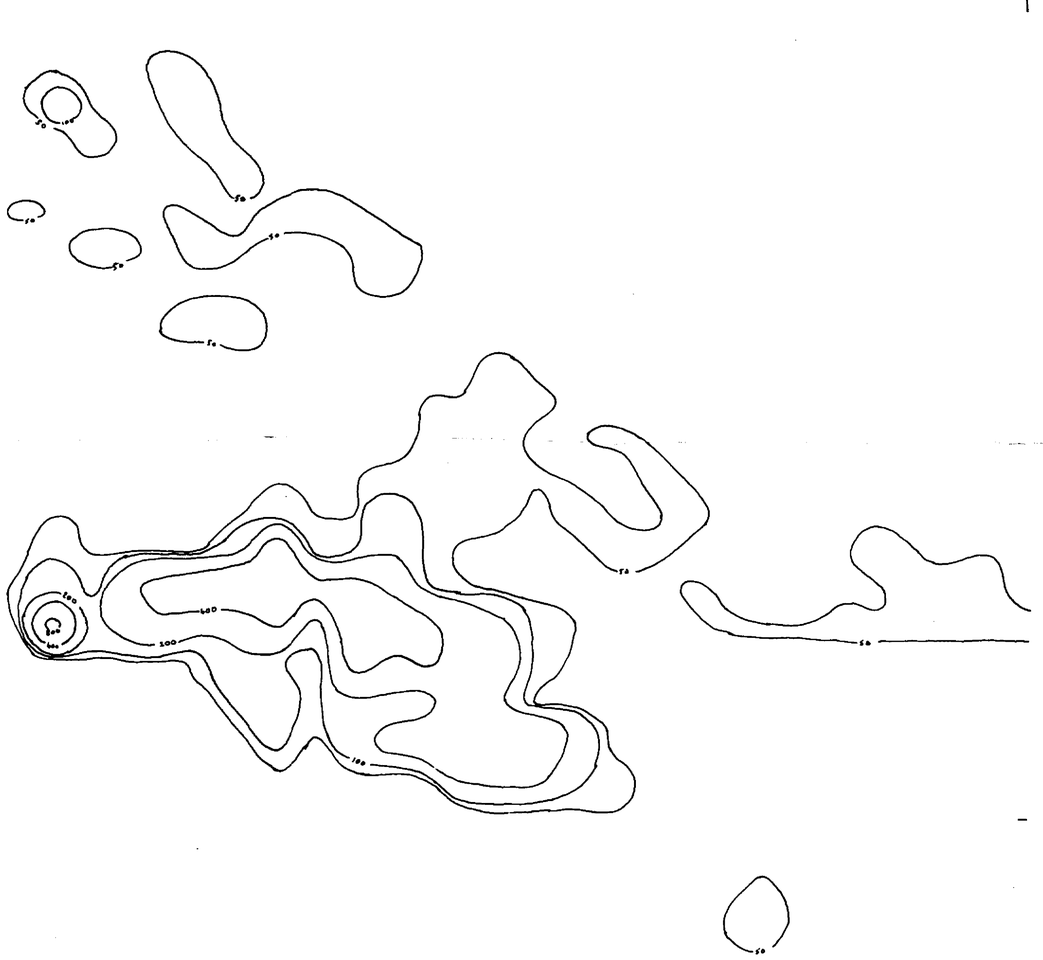
34000N

33700N

87100E

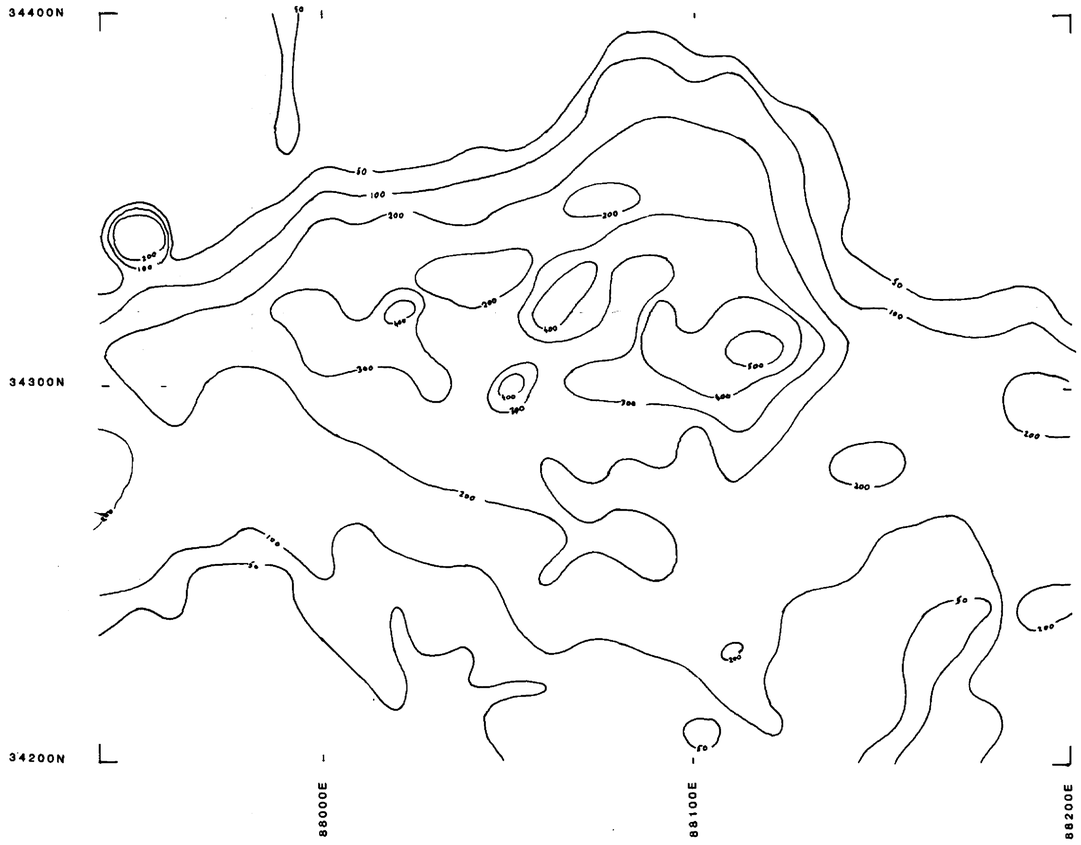
88000E

89100E



AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564		
RADIOMETRIC SURVEY-TOTAL COUNT		
Southern Area-Eastern Anomaly		
Instrument GR 410 Readings 50 m grid		
Prepared by,		Drawn by, ERD
Scale, 1:5000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

CR82-41



AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L.2564 RADIOMETRIC SURVEV - TOTAL COUNT Southern Area - Eastern Anomaly Instrument GR 310 Readings - 10 m grid		
Prepared by,	Drawn by, ERD	
Scale, 1:1000	Date,	Proj. Nº
Drawing Nº	Report Nº	Lib. Nº

CR82-41