MOBIL ENERGY MINERALS AUSTRALIA INC.

LICENCE 1597 - CHILLING CREEK

ANNUAL REPORT TO THE NORTHERN TERRITORY
DEPARTMENT OF MINES AND ENERGY

TWELVE MONTHS ENDING AUGUST 7, 1981

Mobil Energy Minerals Aust. Inc.
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SUMMARY

This report details work performed during the year ending August 7, 1980. Prior work by Mobil Energy Minerals Australia has included regional geological mapping and photo interpretation, regional airborne geophysics, and a regional stream sediment survey; all directed towards defining economic uranium deposits and any associated metals.

The regional geology is dominated by the Giants Reef Fault which locally breaks up into a series of splayed faults causing juxtaposition of the Lower Proterozoic Litchfield Complex and the relatively undeformed and flat lying Carpentarian sequence.

Detailed follow-up of regional stream sediment anomalies during the year showed most anomalies to have limited prospectivity for uranium but defined a significant base metal anomaly, the Buffalo Fly Prospect, over a fault bound wedge of Hermit Creek metasediments and metabasalt. Combined geochemistry, magnetics and ground EM defined drill targets within the Hermit Creek Metamorphics prospective for syngenetic volcanogenic sulphide deposits.

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1. INTRODUCTION

The Chilling Creek Exploration Licence (E.L. 1597) was granted on August 8, 1977 to Autopool Pty. Ltd., a member of the Suttons Group of Companies. Suttons subsequently entered into a joint venture agreement with MEMA on August 25, 1978.

For the first two years of tenure the E.L. was subject to successive 50% reductions and for the year ending August 7, 1981 encompassed 24.01 square miles. See Plate 1.

MEMA has been operator since April, 1977. During that period exploration has consisted of:

- geologic mapping and photogeologic interpretation;
- a detailed airborne radiometric and magnetic survey by Scintrex;
- a regional stream sediment geochemical survey;
- detailed follow-up of geophysical and geochemical anomalies.

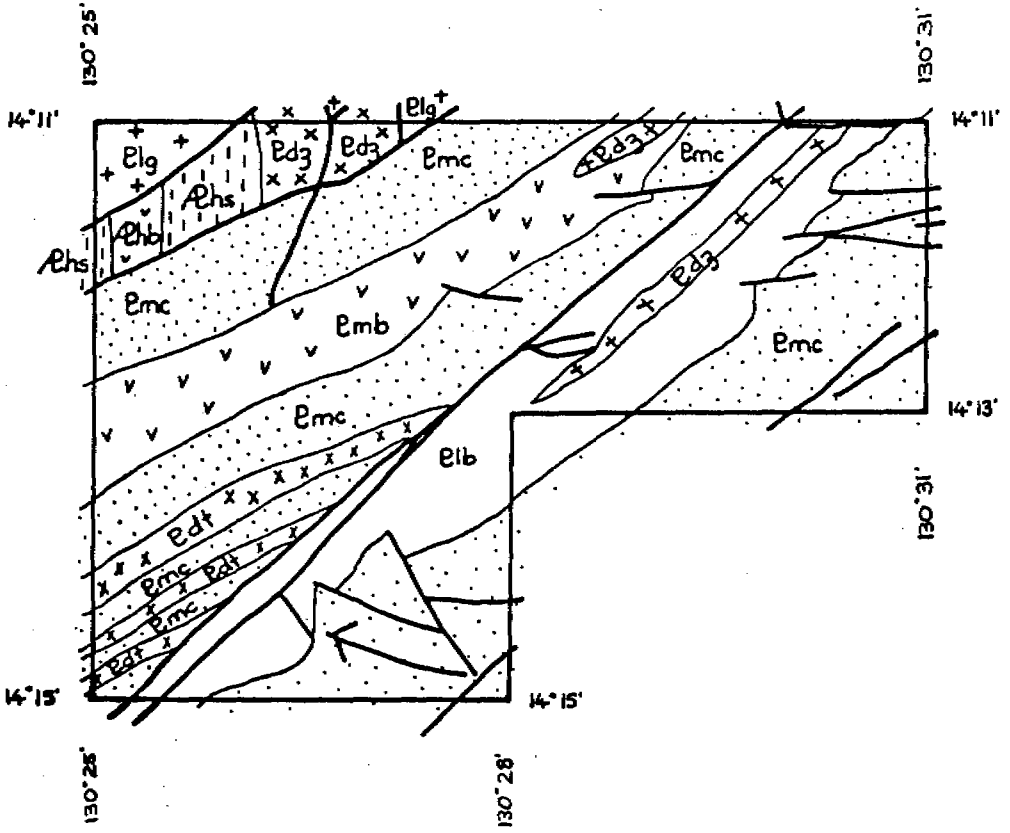
Exploration has been aimed at defining economic uranium deposits and any associated metals.

2. GEOLOGY

2.1 INTRODUCTION

The geology of the licence area, as summarised in Figure 1, has been derived from:

- a regional photogeological map which was compiled in 1978 using 1:88,000 black and white RC9 airphotographs in conjunction with 1:250,000 BMR regional geologic maps;
- a preliminary regional geologic map compiled in 1979 following ground traversing associated with airborne geophysical anomaly follow-up;
- a consultant structural geologist employed in 1980 to give a structural and metamorphic overview of the licences held by Suttons;
- detailed geological maps compiled during 1980/81 as part of an anomaly follow-up programme.



LEGEND

PROTEROZOIC MIDDLE	Pdt	Ti Tree Granophyre
	Pd3	Zamu Dolerite
	Pmc	Chilling Sandstone
	Pmb	Berinka Volcanics
LOWER	Plg	Litchfield Granite
	Plb	Burrell Ck Formation
L.PROT./ARCHEAN	Phb	Hermit Ck Metabasalt
	Phs	Hermit Ck Metasediments

N

0 1 2 3 4 Km

SCALE 1:100,000

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

Fig.1 CHILLING CREEK EL 1597 GEOLOGY

	DATE	BY		DATE	BY
COMPILED	3 Nov 81	DP	ADDNS		
DRAWN	3 Nov 81	LG			
SCALE	1:100,000		DWG No	4162	

2.2 LOWER PROTEROZOIC LITHOLOGIES

2.2.1 Hermit Creek Metamorphics

A narrow wedge of metasedimentary schists and metabasalts that outcrop in the Buffalo Fly Hill area have been correlated with the Hermit Creek Metamorphics which are extensively exposed in the Twin Peaks area.

Pelitic schists/gneisses and quartzites of the Hermit Creek Metamorphics, which have a complex structural and metamorphic history with respect to other Lower Proterozoic rocks of the Pine Creek Geosyncline, were initially regarded as Archaean by BMR geologists in the 1950's. However, recent BMR age dating (unpublished) sets a time of emplacement on the Litchfield granite of 1840m.y. suggesting the Hermit Creek Metamorphics, from which the granite was presumably derived, to be at the base of the Lower Proterozoic in the West Pine Creek.

At Buffalo Fly Hill, the Hermit Creek Metamorphics consist of a 2.5km sequence of steeply dipping turbidites (greywackes, silts and shales) and interbedded non-vesicular pillow basalts overturned and younging to the north east. The metasediments are locally ferruginous, graphitic and anomalous in lead at those horizons stratigraphically overlying successive basalt flows.

2.2.2 Litchfield Granite

The Litchfield Granite is a collective term for a number of syntectonic granitoid intrusions produced by anatexis of the Hermit Creek Metamorphics.

The granitoid in the Buffalo Fly Hill area is a quartz poyphyritic biotite granodiorite with minor garnet and abundant metasedimentary xenoliths.

2.2.3 Zamu Dolerite

The Zamu Dolerite series is represented by a small intrusive

body of tholeiitic quartz dolerite in the north of the E.L., (bound by late faults which also cut the Chilling Sandstone), and by sills injected into the Burrell Creek Formation and the Berinka Volcanics.

In a regional sense the Zamu igneous episode is correlated with the concluding stages of the Lower Proterozoic sedimentation (pre 1800m.y.). This is supported by the intrusive and relatively undeformed nature of the doleritic body with respect to the Hermit Creek Metamorphics in the Buffalo Fly Hill area.

In general, the Zamu series has been metamorphosed by the regional prograde event of 1840m.y.

2.2.4 Burrell Creek Formation

The Burrell Creek Formation is a thick sequence of quartz sandstones, silts, shales and minor conglomerates representing the final stages of Lower Proterozoic geosynclinal sedimentation. It is characterised by a complex interbedding of dominantly coarse grained proximal facies turbidites and finer grained distal facies turbidites. The Burrell Creek Formation in the Chilling Creek area consists dominantly of quartz sandstones.

The Burrell Creek Formation has been subjected to a regional prograde metamorphism to middle greenschist facies, commonly yielding quartz-chlorite-sericite phyllites and quartz-mica metasandstones. Metamorphism in the Chilling Creek E.L. was less extensive, commonly producing lower greenschist facies quartz-mica sandstones.

2.3 CARPENTARIAN LITHOLOGIES

2.3.1 Chilling Sandstone

The Chilling Sandstone outcrops extensively in the Chilling Creek E.L. It is a clean quartz sandstone of fluviatile origin, commonly ripple marked and cross-bedded. Rare quartz-pebble

conglomerates and tuffaceous sandstones occur.

2.3.2 Berinka Volcanics

The Berinka Volcanics comprise a series of flows, ignimbrites and high level sills interbedded with and intruding the Chilling Sandstone. They are predominantly red-brown and green porphyritic rhyolites with minor intermediate units.

2.3.3 Ti-Tree Granophyre

Transgressive dilational sills of fine-medium grained intermediate to acid granophyre outcrop in the south west of the E.L. They may represent intrusive equivalents of the Berinka Volcanics.

2.4 STRUCTURE

2.4.1 Faulting

In the south of the Twin Peaks E.L. the trend of the Giants Reef Fault swings from south to south west and the fault then becomes a series of splays which give rise to a major zone of deformation extending into the Chilling Creek E.L. This structural feature has caused repetition of the Carpentarian sequence and limits the wedge of Hermit Creek Metamorphics. However, the northern boundary of the Hermit Creek Metamorphics may be partially intrusive and the southern boundary an unconformity.

2.4.2 Folding

The metasedimentary units of the Hermit Creek Metamorphics at Buffalo Fly Hill have a steeply dipping layer parallel schistosity indicative of an upright isoclinal style of folding. The stratigraphy is demonstrably overturned inferring downward facing folds.

Folding in the Burrell Creek Formation is characterised by two

generations of isoclinal folding and a layer parallel cleavage.

The Carpentarian sequence displays limited large scale warping, possibly related to faulting.

3. EXPLORATION AND RESULTS

3.1 INTRODUCTION

A regional stream sediment survey was conducted over the Twin Peaks and Chilling Creek exploration licences in May-June 1980.

Detailed geological mapping and geochemistry was carried out concurrently over a number of anomalies generated in the Chilling Creek E.L. by the 1979 airborne geophysical survey - M2 and computer enhanced U Source No 3.

A plan showing the distribution of regional stream sediment sample sites and location of derived anomalies is included as Plate 9. Anomalies U1A, U1B, U1C, U1D, BM1, BM2 and BM3 were defined in the Chilling Creek E.L. - U1A being coincident with U Source No 3 and BM1 being coincident with M2.

Work during the time span of this report was directed toward testing these anomalies, particularly the base metal/magnetic BM1/M2 anomaly, subsequently known as the Buffalo Fly Prospect.

3.2 BUFFALO FLY PROSPECT (BM1/BM2)

3.2.1 Introduction

Preliminary geologic reconnaissance and semi detailed stream sediment and rock chip sampling were carried out over the M2 magnetic feature in June 1980, during the course of the regional stream sediment survey. Results of this work encouraged further detailed stream sediment, base of slope and rock chip sampling to be undertaken in September-October 1980. A preliminary grid was established to facilitate detailed mapping and ground magnetics. A single ground E.M. traverse was undertaken in July 1981 to define conductive horizons and possible drill hole

locations for the 1981 field season.

3.2.2 Detailed Geology

The outcropping Hermit Creek Metamorphics consist of a narrow wedge of interbedded pillow basalts and pelitic/graphitic schists intruded by and faulted against granite of the Litchfield Complex to the north, and in contact with a sequence of Chilling Sandstone and Berinka Volcanics to the south. This contact dips south east at 45° and can be interpreted as either an unconformity or a normal fault with north west block up-thrown. The outcrop geology of the area is shown in Plate 2.

The metamorphic sequence appears to have undergone two phases of regional metamorphism and there appears to be a degree of thermal overprinting to the west of line 200E, with hornfelsic textures and cordierite prophyroblasts being developed in the metasediments. The metasediments have a steeply dipping layer-parallel schistosity which strikes between 330° and 360°. Folding is inferred to be isoclinal and downward facing.

Base metal anomalies appear to be related to a sequence of ferruginous and graphitic fine grained quartz-muscovite schists, some with andalusite. The graphitic schists are restricted to a metabasalt horizon approximately one (1) kilometre wide across strike. The remainder of the sequence is interbedded quartz-muscovite schists, muscovite-quartz schists and related hornfelses (quartz-muscovite, some with biotite and cordierite).

3.2.3 Geochemistry

Detailed resampling of the anomalous area consisted of soil, rock and stream sediment geochemistry.

As most anomalies were in areas of some relief with extensive scree slope debris, base of slope and transported soil samples were collected.

Samples were screened to -20 mesh in the field, collected in paper envelopes and submitted to Pilbara Laboratories for

analysis. Analysis was by fluorimetry for uranium, AAS for lead and ICP for other elements (Appendix 3).

A number of rock chip samples were collected from areas of interest usually taking 5 - 10 chips in a random pattern over about two metres at any one site. Rocks were submitted to Amdel for assay.

Sample location sites and analytical results have been plotted on Plate 3.

Results of the soil sampling indicate a broad area of anomalous zinc values over the known Hermit Creek Metamorphics. The zinc anomaly encloses coincident, more reduced areas of copper and lead anomalism which appear to be specifically related to the muscovite-quartz schist and graphitic horizons within the Hermit Creek Metamorphics.

The enhanced soil metal values are supported by the results from the rock chip sampling which indicated that iron-rich schists were particularly anomalous for copper and lead.

A number of rock specimens from the Buffalo Fly area were also submitted for whole rock geochemical analysis, including six (6) metasedimentary schists and three (3) pillow basalt samples (Appendix 4).

The pillow basalts have a typical low-Al tholeiitic composition with the mean MgO level relatively high suggesting that the basalts were probably olivine bearing. The BM2 gabbro from the north central area of Chilling Creek has a more alkaline composition than the pillow basalts and is probably unrelated.

The metasediments have a geochemistry which suggests that the bulk of the Fe-rich samples consisted of quartz, illitic clays, and iron oxides or sulphides, with little or no feldspars. The elevated base metal values, the sympathetic variation of P_2O_5 with Fe_2O_3, and the anomalously low Th/U ratios, are all features indicative of a substantial component of chemical sedimentation.

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3.2.4 Geophysics

The prospect was initially identified as a sharp, circular airborne magnetic anomaly. Follow-up detailed ground magnetic traversing located the anomaly and defined an area to be gridded. The resultant magnetometer survey of the grid revealed a strongly anomalous horizon within the Hermit Creek Metamorphics.

Plate 4 shows a plot of the grid line profiles and a contoured plan of the results is included as Plate 5.

The anomalous horizon is decidedly linear, with near vertical dips and appears to be conformable with the overall geological strike of 340°.

The magnetic body does not outcrop but the anomaly appears to be coincident with a number of graphitic, ferruginous schist horizons that are interbedded with the pillow basalts.

The magnetic anomaly is coincident with the anomalous soil geochemistry as shown on Plate 6.

A ground electromagnetic (E.M.) survey using the Sirotem technique was conducted by Geoex Pty. Ltd., of Adelaide in July 1981 over a surveyed line three (3) kilometres in length. The location of the survey is plotted on Plate 3.

The purpose of the survey was to further define the graphitic units and any other conductors within the Hermit Creek Metamorphics.

The line was surveyed using the standard transmitter-receiver coincident loop configuration based on a 100 metre square with a station spacing of 50 metres. The results are plotted as a line profile and are included as Plate 7.

A particularly conductive zone coincident with an area of metabasalts was resurveyed over 750 metres using a separated loop configuration. This has the advantage of reducing coupling and produces an anomaly directly over the conductor.

It should be pointed out for the purposes of interpretation that this configuration produces anomalies which have negative polarity (See Plate 8).

The latter survey delineated two significant conductors at 1100m and 1400m and a minor conductor at 850m which is coincident with the magnetic anomaly.

The significance of these conductors has yet to be ascertained.

3.3 REGIONAL STREAM SEDIMENT ANOMALY FOLLOW-UP

3.3.1 Introduction

A follow-up programme combining detailed stream sediment, soil, and rock chip sampling was conducted in September - October 1980. Streams were sampled at intervals from 50 to 200m and as most of the anomalies were in areas of contrasted relief, base of slope and stream-bank transported soil samples were taken.

Samples were seived in the field to -20 mesh and further reduced to -200 mesh by the laboratory prior to assay, U by fluorimetry, Pb by AAS and all other elements by ICP.

The survey parameters outlined in Appendix 1 were similar to those developed for the 1980 regional stream sediment survey. Regional assay values for the anomaly areas are presented in Appendix 2 those for the anomaly follow-up are detailed in Appendix 3.

3.3.2 Results

Results of the anomaly follow-up programme have been summarised according to individually identified anomalies. The location and brief geological description of each anomaly together with results is set out below.

(a) Anomaly U1A

Location: E.L. 1597, Wingate Mountains, 1:100,000 Sheet, Ref 630303.

Geological Description: Elevated uranium soil assays and a total count high occur over a strike length of more than 50m, and appear to be associated with fine-grained ferruginous outcrop of laminated sandstones, probably part of the Chilling Sandstone which has been faulted against Burrell Creek Formation. If this is the case the high uranium assays are also proximal to the fault zone and mineralisation may be fault controlled.

Results: Anomalous uranium values were located but their source has not yet been defined.

(b) Anomaly U1B

Location: E.L. 1597, Moyle 1:100,000 Sheet, Ref 565250.

Geological Description: Anomalous uranium stream sediment assays and a high total count zone, were associated with humic soil and sediments close to a semi-permanent spring in Chilling Sandstone terrain. The spring is possibly structurally controlled, but there is little evidence for major faulting.

Results: A uranium anomaly has been identified which is analogous to, but much smaller than, that at the Hayward Creek Prospect. Because of its small size and extreme inaccessability, very favourable results at Hayward Creek would be required before proceeding with further exploration.

(c) Anomaly U1C

Location: E.L. 1597, Moyle 1:100,000 Sheet, Ref 525248.

Geological Description: Anomalous U and separate Cu/Zn, values in stream sediments were located in an area of laminated sandstones interbedded with Berinka acid-intermediate volcanics and tuffs.

Results: Follow-up sampling failed to support the small single point anomalies. The anomaly was largely spurious and attributable to elevated backgrounds over the Ti Tree Granophyre.

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(d) Anomaly U1D

Location: E.L. 1597, Moyle 1:100,000 Sheet, Ref 615290.

Geological Description: A high total-count radiometric response and rock-chip uranium assays, were associated with ferruginous fracture infill in Chilling Sandstone outcrop. The occurrence is very small.

Results: The anomaly is situated adjacent to a major water-course, so direct drainage sampling was impracticable. Adjacent sampled drainages were not anomalous. Thus the regional stream sediment survey alone would have failed to identify this area, which geological traversing in its vicinity showed to be very small.

(e) Anomaly BM2

Location: E.L. 1597, Wingate Mountains 1:100,000 Sheet, Ref 640325.

Geological Description: A Cu-Mo anomaly is situated in a broad flat valley containing probable Burrell Creek Formation metasiltstones and metasandstones, intruded by gabbroic rocks and fault bounded in the north and south against Chilling Sandstone.

Results: Detailed stream sediment and soil sampling follow-up did not substantiate the initial anomaly.

(f) Anomaly BM3

Location: E.L. 1597, Moyle 1:100,000 Sheet, Ref 570235.

Geological Description: A minor base metal anomaly occurs in an area of Burrell Creek Formation and Berinka Volcanics, intruded by Ti Tree Granophyre and faulted against Chilling Sandstone.

Results: The low values encountered in this anomaly and the geology, suggest a background lithological source.

APPENDIX 1

SURVEY PARAMETERS AND LABORATORY PROCEDURES

- 1980 REGIONAL STREAM SEDIMENT SURVEY

1. SELECTION OF SAMPLE SITES

Two major topographical divisions occur in the area of survey, broadly corresponding to the Litchfield Complex in the west and north, and the Proterozoic sediments. The latter forms the mountainous terrain of the southern part of the Chilling Creek Exploration Licence, and extends northwards as ridges to the Daly River. Drainage patterns are well developed, and the density of stream courses is high. The Litchfield Complex has low relief in the area of sampling, and the drainage density is significantly less than that of the adjacent Proterozoic terrain.

Uranium dispersion trains generally have a restricted length in the heavy rainfall areas of northern Australia. Consequently, a high sample density, with sites in drainages of less than 0.6 km is required to identify uranium sources of stream sediment anomalies. Thus a sample density of 3-5 per km^2 was selected for the areas of well-developed drainage. This density could not be maintained over the Litchfield Complex owing to the fewer number of streams, and longer stream courses were sampled in this area.

Active drainage sediments were sampled when these were available. The nature of the sample was noted in the field sample sheets.

2. SAMPLE PREPARATION

All stream sediment samples were sieved to obtain a minus 200-mesh fraction for analysis. This fraction was selected because:-

a) it gives higher absolute values in most environments
b) an orientation survey at a prospect in the Noltenius EL gave a higher peak/background ratio for U, As and Nb.
c) it is recommended by Foy and Gingrich from the result of orientation surveys in the East Pine Creek Geosyncline.

TECHNICAL SPECIFICATIONS

1. Sample Density

Previous geochemical orientation surveys in the Pine Creek Geosyncline and elsewhere have shown that the dispersion of uranium in stream sediments rapidly falls to background levels down-gradient of known uranium occurrences. Few uranium anomalies persist for more than 500 m downstream, and the sampling of relatively short drainages is required to define anomalies catchments. Drainage overlays to the 1:29,000 scale air photographs were compiled to determine the density of sampling required to provide a reasonable aerial coverage using drainages of this length, and percentages of the non-sampled catchments calculated. The resultant sample density for this project was approximately 4 per km^2.

A trial sampling programme was carried out prior to the regional survey to determine the practicalities of sampling on this basis.

2. Sieve Mesh Fraction:

The fine, minus 200-mesh fraction of the stream sediment has been used in the project as this generally provides the optimium peak/background ratios and larger anomalous dispersions for uranium. Orientation studies in the local area have indicated that an approximately equal number of the elements determined in the project give better resolution in the minus 200-mesh as they do in the minus 80-mesh fractions.

The trial programme completed in early May revealed that many sediment samples are depleted in fine material, but 1g of material was obtained in most instances. This is sufficient for the ICP method of analysis used.

3. Element Determined:

The documentation of elements associated with uranium in the ore deposits of the Pine Creek Geosyncline and orientation surveys carried out in adjacent areas have shown that the following have potential as indicator elements for mineralisation in the region: Cu, Pb, Zn, Co, Ni, As, Mo. Co, Nb, Fe. These elements have been determined on all stream sediments in this project.

APPENDIX 2

ASSAY RESULTS FOR ANOMALOUS AREAS

- REGIONAL SURVEY

ASSAY RESULTS FOR ANOMALOUS AREAS

(REGIONAL SURVEY)

SAMPLE	Fe	Co	Ni	Cu	Zn	As	Nb	Mo	Ce	Pb	U
U1A											
0524	1.27	10	13	12	22	<1	23	15	<2	24	2
0525	1.23	4	9	16	20	4	7	6	3	16	1
0526	1.76	9	12	11	26	<1	12	11	35	23	1
0527	4.54	15	13	5	29	3	16	28	35	18	2
0528	2.41	11	13	6	25	2	24	27	46	14	2
0529	4.32	19	14	10	28	<1	7	18	24	10	3
0530	1.91	5	9	3	11	4	12	12	84	10	.5
0531	5.48	18	21	19	39	12	10	35	8	20	17
0532	3.19	9	15	8	22	5	11	21	39	18	3
0533	1.19	5	16	7	14	4	15	15	27	9	1
1040	1.34	<5	<5	28	25	11	<5	<2	32	17	1
1041	3.61	22	7	26	41	11	14	29	30	21	3
1042	4.34	14	<5	30	52	6	10	34	38	26	1
1043	3.48	8	5	12	23	12	7	25	42	18	1
1044	3.17	17	3	16	28	11	7	21	22	15	<1
1045	10.00	20	<5	52	196	17	<5	13	32	38	1
U1B											
2012	2.28	<5	10	15	13	<2	<5	6	50	20	4
2013	1.69	<5	10	20	15	<2	6	14	58	20	7
2014	3.02	<5	10	16	16	8	6	15	85	24	9
2013R	1.36	<2	<2	25	18	2	<5	<2	26	21	14
/2013	1.34	3	<2	47	20	<1	<5	9	12	10	2
/2013 2	2.23	<2	5	52	26	<1	<5	7	17	18	4
/2013 3	2.03	4	6	37	16	<1	<5	3	18	30	5
/2013 4	1.73	<2	<2	28	11	<1	<5	<2	22	32	5
/2013 5	2.22	<2	<2	39	18	<1	<5	8	16	27	3
/2013 6	2.47	<2	<2	60	32	<1	<5	9	12	20	2
/2013 7	2.40	<2	<2	12	26	<1	<5	11	15	22	1
/2013 8	3.28	<2	<2	12	11	<1	<5	6	19	21	2
/2013 9	2.14	<2	<2	9	9	5	<5	8	10	31	2
/2014 0	1.13	<2	<2	23	10	<1	<5	<2	10	10	2
/2014 1	0.75	<2	<2	351	167	<1	<5	5	10	61	7
/2014 3	1.47	<2	<2	33	9	<1	<5	4	8	20	7
/2014 4	1.52	<2	<2	33	10	<1	<5	2	8	9	2
/2014 5	2.27	<2	<2	17	10	<1	<5	10	6	<5	2

SAMPLE	Fe	Co	Ni	Cu	Zn	As	Nb	Mo	Ce	Pb	U
U1C											
163	1.40	<5	7	12	22	3	12	16	84	21	2
164	1.92	7	9	28	25	2	13	18	75	22	3
165	2.98	5	9	36	49	6	45	13	62	23	3
1005	2.10	8	15	24	17	2	<5	18	59	22	<1
1006	2.09	7	<5	42	21	5	<5	21	72	12	<1
1007	1.23	<5	<5	18	13	8	<5	11	68	12	<1
1008	4.02	14	<5	20	34	6	<5	25	73	26	1

SAMPLE	Fe%	Co	Ni	Cu	Zn	As	Nb	Mo	Ce	Pb	U
BM 1											
121	2.14	<5	10	715	75	22	<5	13	17	40	1
122	3.02	<5	<5	95	19	45	10	18	37	19	1
123	2.32	<5	6	128	33	16	<5	11	23	23	1
124	2.01	<5	7	175	49	6	6	12	29	18	1
125	2.44	<5	10	268	52.	7	6	16	29	22	1
126	I.S.	<5	12	950	287	13	I.S.	I.S.	I.S.	64	3
127	2.64	<5	8	202	74	13	18	21	29	21	1
128	1.66	5	13	40	15	22	7	9	25	18	1
129	1.93	<5	<5	12	5	53	15	18	23	17	<1
130	2.91	<5	9	35	12	12	8	8	22	19	1
131	1.87	7	15	26	12	38	6	2	28	18	1
132	4.37	<5	<5	27	26	33	10	12	30	16	3
133	I.S.	<5	5	225	120	97	I.S.	I.S.	I.S.	38	1
1570	8.06	60	46	59	202	4	23	76	30	120	2
1571	2.08	2	<2	11	16	5	<5	12	36	21	1
1572	9.50	41	51	88	100	4	<5	27	42	42	1
1573	9.28	69	51	84	103	3	7	45	52	27	1
1574	9.20	62	73	90	209	5	42	48	37	78	<1
1575	5.50	34	21	448	39	11	<5	17	32	32	3
3119	2.50	13	14	10	18	2	<5	6	51	15	3
3120	5.83	35	50	59	108	10	<5	19	28	87	4
BM 2											
1077	2.24	17	8	26	32	2	11	16	38	24	.3
1078	5.54	7	10	49	78	6	<5	24	27	36	3
1079	6.02	6	10	40	98	10	<5	19	18	34	1
1080	3.49	27	8	75	43	2	9	21	22	22	2
1081	7.12	12	10	173	56	10	12	54	10	32	1
1082	4.59	47	15	39	46	4	23	47	53	22	<1
1119	6.33	12	<5	15	29	<2	<5	67	16	16	<1
1120	2.12	<5	<5	11	17	<2	19	41	17	16	2
1121	5.59	12	7	32	25	3	8	33	13	20	2
1122	3.30	7	<5	12	22	<2	32	76	11	18	1
1123	8.28	33	12	32	50	<2	11	69	4	23	3
1124	6.73	22	10	150	56	<2	6	37	12	23	1
1125	3.38	20	17	40	23	<2	6	17	25	17	1
1126	2.22	8	11	18	13	<2	8	20	15	11	1
1127	7.06	35	16	500	75	8	<5	24	8	26	1

SAMPLE	Fe	Co	Ni	Cu	Zn	As	Nb	Mo	Ce	Pb	U
BM3											
3003	6.59	21	8	23	132	2	<5	36	36	74	2
3004	4.95	15	<5	22	51	5	<5	30	21	103	3
3005	4.31	20	6	36	60	4	<5	34	28	71	3
3006	3.85	12	<5	53	51	4	<5	24	25	102	3
3007	4.41	16	6	14	63	7	<5	27	21	96	3
3008	6.61	16	11	34	114	8	<5	41	61	129	5
3009	4.55	11	<5	96	64	5	<5	24	20	117	6
3010	3.81	13	5	53	46	2	<5	24	28	116	3
3011	7.10	16	<5	38	92	4	<5	48	38	114	4
3012	3.92	15	<5	18	41	4	13	39	40	83	3
*	8.00	45	100	140	110	16	23	60	130	45	4.5

* Threshold value, background : anomaly.

APPENDIX 3

ASSAY RESULTS FOR ANOMALOUS AREAS

- DETAILED SURVEY

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

4036

FIELD COPY

SAMPLES TO: PILBARA LABORATORIES
6 MACQUARIE PLACE PERTH, WA

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC.
P.O. BOX 4507
MELBOURNE 3001
AND M BINNS, ROBERTSON RESEARCH
POST OFFICE
ADELAIDE RIVER NT 5793

PROJECT: SUTTONS
TENEMENT: YARLLING CREEK
PROSPECT:
SAMPLE SITE:
LINE GRID CO-ORDINATES:
DRILL HOLE NUMBER:
MAP SHEET:
CO-ORDINATES

SAMPLE TYPE (CHECK):
- STREAM SEDIMENT [✓]
- SOIL PROFILE [✓]
- ROCK [ ]
- DRILL DUST [ ]
- DDH CORE [ ]
- OTHER [ ]

FRACTION: -20 MESH (ground round)

SAMPLED BY: V.H. ANE
DATE: 4.10.90

SAMPLES DISPATCHED: DATE:
BY:
FROM:
VIA:

INSTRUCTIONS TO LABORATORY:
SCREEN TO -240 MESH (ALL SAMPLES).

AC SAN BM1 & BM2 SAMPLES (TOTAL 108)
FOR: Cu, Pb, Zn, Fe, Co, Ni

ASSAY WA SAMPLES (TOTAL 27)
FOR: Au ONLY

REMARKS AND FOLLOW UP:

Retain coarse (all fractions) with further notice

	SAMPLE No.	DEPTH FROM	DEPTH TO	LAB USE ONLY	
1	6408-6414	(7)			
2	1609-1612	(4)			
3	6762-6782	(21)			
4	0887-0892	(6)			
5	6415-6437	(23)			
6	1613-1625	(13)			
7	0865-0871	(7)			
8	6750-6752	(3)			
9	6401-6403	(3)			
10	6405-6407	(3)			
11	6757-6761	(5)			
12	0877-0883	(7)			
13	1601-1608	(8)			
14	TOTAL	108			
15	(BM1+BM2)				
16					
17					
18					
19	6753-6756	(4)			
20	0872-0876	(5)			
21	6783-6797	(15)			
22	0884-0886	(3)			
23	TOTAL	27			
24	(WA)				
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					

Pilbara Laboratories Pty Ltd

4 MacAdam Place,
Balcatta,
Western Australia, 6021

Telephone: (09) 344 2411
Telex: AA 93837
Cables: Pilbaralab — Perth

Analytical Report

Cover Sheet

MOBIL ENERGY MINERALS AUSTRALIA

Submission Date: October 14, 1980
Clients Order: Submission 4036
Project: SUTTONS
Locality: CHILLING CREEK
Sample Type: Sediment & Soil

Report Code: P 2880
Report Date: October 24, 1980
Report Comprises: 3 data sheets

Distribution:
Melbourne Office, Vic.
M. Binns, Adelaide River
BM1
BM2
U1A

DETERMINATION	ANALYTICAL TECHNIQUE	PRECISION — ACCURACY	DETECTION LIMIT
Cu Pb Zn Co Ni	ICP	prec. ± 10%	2,5,2,5,5
* Fe	ICP	prec. ± 10%	0.01
U	F	prec. ± 10%	1

KEY	
ICP:	INDUCTIVELY COUPLED PLASMA EMISSION SPECTROSCOPY
AAS:	ATOMIC ABSORBTION SPECTROPHOTOMETRY
UV-VIS:	UV-VISIBLE SPECTROPHOTOMETR
COL:	COLORIMETRY
F:	FLUORIMETRY
L:	LECO FURNACE ANALYSIS
SIE:	SPECIFIC ION ELECTRODE ANALY.
PT:	PRECISE TITRATION INSTRUMENTATION
CCA:	CLASSICAL CHEMICAL ANALYSIS
FA:	FIRE ASSAY
SNR:	SAMPLE NOT RECEIVED
—:	ANALYSIS NOT REQUESTED
IS:	INSUFFICIENT SAMPLE
DTF:	DATA TO FOLLOW
DSP:	DATA SENT PREVIOUS

COMMENT: Data in ppm unless otherwise stated.
* Data in percentages.

NATA SIGNATORY

Ray Waddington

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: L 2880 Page: 1 of 6

Report Date: October 24, 1980 Sample Prefix:

REGISTERED LABORATO
NUMBER 1076
4 MacAdam Place, Balcat
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb
1601		1.87	<5	6	16	10	14
1602	BM1	1.43	<5	6	7	8	10
1603	Stream	1.45	<5	<5	8	9	11
1604	Sed	1.40	<5	<5	4	7	9
1605		1.26	<5	6	5	8	6
1606		1.34	<5	5	4	8	8
1607		2.31	5	5	4	15	6
1608		1.47	<5	<5	3	10	5
1609		2.03	<5	5	4	9	<5
1610		3.91	<5	<5	3	14	5
1611		2.57	<5	<5	3	7	8
1612		2.93	<5	<5	5	10	12
1613		2.16	<5	<5	3	9	<5
1614		2.56	<5	<5	2	7	5
1615		1.59	<5	<5	3	7	7
1616		1.79	<5	<5	3	5	8
1617		2.31	<5	<5	4	11	9
1618		2.27	<5	<5	5	11	6
1619		2.09	<5	31	6	10	10
1620		4.29	11	13	39	19	8
1621		3.54	24	18	41	23	12
1622		3.15	21	18	40	20	30
1623		7.47	45	44	49	63	28
1624		7.60	42	61	68	125	52

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: P 2680 Page: 2 of 8

Report Date: October 24, 1980 Sample Prefix:.....

REGISTERED LABORAT
NUMBER 1076
4 MacAdam Place, Balc
Western Australia,

BMI Soil Sample

SAMPLE	Fe%	Co	Ni	Cu	Zn	Pb
6401	5.49	55	56	69	123	34
6402	7.90	65	70	75	210	44
6403	7.72	54	52	76	121	20
6405	7.84	63	40	107	119	112
6406	1.78	21	16	31	7	156
6407	2.43	12	19	23	31	8
6408	1.81	<5	16	6	9	10
6409	3.04	<5	10	5	23	16
6410	1.29	<5	22	4	5	27
6411	1.40	<5	5	3	5	29
6412	2.74	<5	<5	2	12	<5
6413	1.62	<5	15	4	9	<5
6414	3.21	<5	<5	3	10	<5
6415	1.88	<5	7	4	10	8
6416	2.86	<5	9	3	8	<5
6417	1.24	5	58	4	10	10
6418	1.24	<5	6	3	4	<5
6419	1.05	<5	9	2	6	<5
6420	0.72	6	9	5	10	<5
6421	1.52	<5	8	3	7	<5
6422	3.15	5	11	5	14	<5
6423	1.80	<5	6	3	7	14
6424	3.29	5	11	4	12	10
6425	1.65	<5	9	4	9	15
6426	2.64	<5	8	2	10	13

Analytical Report

Data Sheet

Report Code: S 2810

Report Date: October 24, 1980

Sample Prefix:

REGISTERED LABORATI
NUMBER 1076
4 MacAdam Place, Balc
Western Australia, 602

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb
6427	BMI Soil Sample	1.80	<5	11	4	10	6
6428		2.29	5	9	2	10	<5
6429		2.07	5	12	5	10	<5
6430		2.08	<5	6	7	7	<5
6431		1.63	<5	34	4	4	7
6432		1.40	<5	<5	4	5	<5
6433		3.52	14	14	60	19	34
6434		2.37	10	9	35	11	25
6435		2.76	9	9	41	17	45
6436		3.27	35	115	57	72	28
6437		12.60	43	45	113	140	79

Analytical Report

Data Sheet

Report Code: L 2010 Page: 4 of 8

Report Date: October 24, 1980 Sample Prefix: SS

REGISTERED LABORATOR
NUMBER 1076
4 MacAdam Place, Balcatt
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb
0865		2.29	7	7	3	10	19
0866	BM2	5.03	19	<5	10	25	28
0867		7.75	31	10	15	38	21
0868	Stream	4.97	11	7	8	47	25
0869	Sed	5.69	17	<5	7	61	20
0870		6.73	34	22	11	23	12
0871		2.53	10	12	9	13	<5
0877		1.16	7	13	12	18	42
0878		1.21	<5	7	10	15	24
0879	BM1	1.47	8	11	9	15	14
0880	Stream	1.92	7	15	15	22	12
0881		1.79	7	11	10	15	7
0882	Sed	1.34	6	12	8	8	6
0883		2.00	11	19	24	22	18
0887		6.38	32	50	65	117	82
0888		7.68	31	48	44	73	28
0889		4.64	31	44	76	141	112
0890		2.03	12	16	14	17	7
0891		2.27	16	20	16	17	6
0892		2.07	12	22	18	17	10

Analytical Report

Data Sheet

Report Code: L 2110

Report Date: October 24, 1990

Sample Prefix:.....

REGISTERED LABORATO
NUMBER 1076
4 MacAdam Place, Balcatt
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb
6750	BM2 Soil Sample.	2.02	10	9	5	9	8
6751		2.05	9	11	4	8	9
6752		3.32	10	9	7	19	5
6757	BM1 Soil Sample	4.61	26	27	39	97	43
6758		5.89	40	33	33	72	37
6759		4.99	56	58	68	118	34
6760		5.16	18	27	24	41	22
6761		2.63	10	25	33	28	17
6762		6.78	25	36	27	84	14
6763		8.15	39	46	36	112	17
6764		7.37	39	52	44	80	16
6765		6.56	35	43	43	62	12
6766		3.03	16	27	14	14	8
6767		1.98	11	17	8	10	7
6768		1.45	5	15	5	7	9
6769		6.75	44	41	58	82	75
6770		8.07	10	26	30	38	14
6771		8.52	64	41	47	76	10
6772		10.40	59	47	40	33	12
6773		5.16	39	34	36	29	12
6774		5.63	40	44	45	41	10
6775		8.04	71	72	47	111	16
6776		6.62	68	54	69	105	15
6777		6.58	61	60	60	85	13
6778		4.46	46	48	55	43	11

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: B 2080

Report Date: October 24, 1980

Sample Prefix:.....

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb
6779	BMI Soil Sample	2.16	8	16	11	11	14
6780		1.52	7	11	10	8	5
6781		1.57	6	14	9	8	8
6782		1.30	9	13	9	10	6

Analytical Report

Data Sheet

Report Code: I 2560

Report Date: October 24, 1980

Sample Prefix: SS

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta
Western Australia, 6021

SAMPLE		U
0872	UIA Stream Sed	5
0873		3
0874		3
0875		4
0876		3
0884		5
0885		3
0886		4

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: P 2650

Page: 6 of 6

Report Date: October 24, 1980

Sample Prefix:

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta, Western Australia, 6021

SAMPLE		U
6753	UIA Soil Sample	4
6754		4
6755		4
6756		2
6783		17
6784		7
6785		3
6786		1
6787		1
6788		2
6789		1
6790		3
6791		2
6792		4
6793		1
6794		4
6795		3
6796		3
6797		2

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

4035

FIELD COPY

SAMPLES TO: PILBARA LABORATORIES
4 MACADAM PLACE
BALCATTA, WA 6021

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC.
P.O. BOX 4507
MELBOURNE 3001
And: M. Binns, c/o Adelaide River PO
Adelaide River, NT 0883

PROJECT: SUTTONS
TENEMENT: CHILLING CREEK
PROSPECT: Anomaly BM 2

SAMPLE SITE: —
LINE GRID CO-ORDINATES: —

DRILL HOLE NUMBER: —

MAP SHEET CO-ORDINATES

SAMPLE TYPE (CHECK):

STREAM SEDIMENT	✓	DRILL DUST	
SOIL PROFILE	✓	DDH CORE	
ROCK		OTHER	

FRACTION: -20# (screened to remove gravel only)

SAMPLED BY: KH AWR
DATE: 28-29 Sept

SAMPLES DISPATCHED: DATE: 30 Sept
BY: MEMA
FROM: DARWIN
VIA:

INSTRUCTIONS TO LABORATORY:
Assay -200 # fraction for:
Cu, Pb, Zn, Ni, Co, Mo, Fe, by
same methods as previous 1980 assays

REMARKS AND FOLLOW UP:
Total 30 stream sediment, 26 soils
all fractions of
fabrics / samples for further assays, to be
specified later

SAMPLE No.	DEPTH FROM	DEPTH TO	LAB. USE ONLY
STREAM SEDIMENTS			
0825 → 0864			
SOILS			
6876 → 6900			
6749.			

Pilbara Laboratories Pty Ltd

4 MacAdam Place,
Balcatta,
Western Australia, 6021

Telephone: (09) 344 2411
Telex: AA 93837
Cables: Pilbaralab — Perth

Analytical Report

Cover Sheet

MOBIL ENERGY MINERALS AUSTRALIA

Submission Date: October 1, 1980
Clients Order: ; Submission 4035
Project: SUTTONS
Locality: CHILLING CREEK
Sample Type: Sediments & Soil

Report Code: B 2790
Report Date: October 17, 1980
Report Comprises: 3 data sheets

BMZ

Distribution:
Melbourne Office
M. Binns, Adelaide River

DETERMINATION	ANALYTICAL TECHNIQUE	PRECISION — ACCURACY	DETECTION LIMIT
Pb	AAS	prec. ± 10%	5
Cu Zn Ni	ICP	prec. ± 10%	2,2,5
Co Mn	ICP	prec. ± 10%	5,5
Fe	ICP	prec. ± 10%	0.01

KEY	
ICP:	INDUCTIVELY COUPLED PLASMA EMISSION SPECTROSCOPY
AAS:	ATOMIC ABSORBTION SPECTROPHOTOMETRY
UV-VIS:	UV-VISIBLE SPECTROPHOTOMETRY
COL:	COLORIMETRY
F:	FLUORIMETRY
L:	LECO FURNACE ANALYSIS
SIE:	SPECIFIC ION ELECTRODE ANALYS
PT:	PRECISE TITRATION INSTRUMENTATION
CCA:	CLASSICAL CHEMICAL ANALYSIS
FA:	FIRE ASSAY
SNR:	SAMPLE NOT RECEIVED
—:	ANALYSIS NOT REQUESTED
IS:	INSUFFICIENT SAMPLE
DTF:	DATA TO FOLLOW
DSP:	DATA SENT PREVIOUS

COMMENT: Data in ppm unless otherwise stated.

NATA SIGNATORY

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: L 2790 Page: 1 of 3

Report Date: October 17, 1980 Sample Prefix:.....

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Mo	Pb
835		1.95	6	16	7	26	18	19
836	BM2	5.48	26	20	15	75	33	11
837	Stream	4.91	14	13	13	47	24	11
838	Sed	1.99	7	16	5	17	24	15
839		10.10	39	19	40	74	63	9
840		5.83	31	14	33	36	78	11
841		2.68	9	12	9	20	13	6
842		2.93	18	15	15	35	14	<5
843		9.35	61	22	35	38	155	<5
844		2.44	7	15	7	18	29	19
845		5.30	45	22	39	49	95	25
846		1.63	8	17	5	16	10	24
847		10.60	60	20	35	41	131	26
848		2.43	5	7	9	18	5	15
849		8.95	36	29	15	71	21	31
850		5.89	28	12	18	62	25	15
851		1.70	7	12	4	9	15	18
852		2.52	6	9	17	12	46	23
853		6.87	45	17	34	38	84	25
854		4.43	19	23	18	69	17	23
855		11.20	98	22	42	100	88	17
856		15.30	90	16	15	500	11	20
857		1.73	5	<5	15	9	3	22
858		2.61	7	10	10	11	35	19
859		2.75	8	13	13	7	33	21

BM2

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: B 2790 Page: 2 of 3

Report Date: October 17, 1980 Sample Prefix:.....

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Mo	Pb
860	BM2 Stream Sed	5.91	8	15	24	21	63	13
861		6.61	34	16	33	34	97	16
862		3.28	<5	9	12	10	35	25
863		3.36	5	9	15	12	52	17
864		1.57	7	13	6	10	6	14
6749	BM2 Soil Sample	2.25	7	14	6	18	21	10
6876		9.20	53	26	43	46	76	12
6877		9.63	86	13	46	52	140	14
6878		4.16	9	<5	32	19	56	20
6879		6.13	20	13	37	28	79	380
6880		8.54	73	14	42	63	140	15
6881		13.20	92	9	46	54	232	9
6882		8.55	75	28	39	65	118	12
6883		12.00	103	21	52	92	154	10
6884		9.76	83	<5	45	51	151	11
6885		13.30	96	11	50	98	156	18
6886		8.58	60	13	40	83	98	9
6887		4.96	7	<5	29	19	74	15
6888		4.81	24	13	28	30	69	13
6889		2.37	<5	<5	8	7	32	11
6890		2.63	<5	<5	20	9	70	9
6891		3.40	13	<5	20	7	56	8
6892		6.16	37	<5	27	38	56	14
6893		6.42	39	<5	33	24	121	8
6894		2.98	18	12	39	10	81	10

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: B 2790 Page: 3 of 3

Report Date: October 17, 1980 Sample Prefix:

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Mo	Pb
6895		3.78	16	7	31	15	101	11
6896	BM2	2.43	<5	<5	14	5	53	9
6897	Soil	3.14	<5	9	10	14	46	15
6898	Sample	1.88	5	7	12	10	43	16
6899		2.50	6	9	7	13	26	12
6900		2.17	<5	<5	7	11	29	<5

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

4037

FIELD COPY

SAMPLES TO: PILLSBURY LABORATORIES
4 MACADAM PLACE
BALCATTA, PERTH. WA 6021

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC.
P.O. BOX 4507
MELBOURNE 3001
And M. BINNS, Adelaide River P.O.
Adelaide River, NT. 5783

PROJECT: SUTTONS
TENEMENT: CHILLING CREEK
PROSPECT: —
SAMPLE SITE: —
LINE GRID CO-ORDINATES: —
DRILL HOLE NUMBER: —
MAP SHEET CO-ORDINATES —

SAMPLE TYPE (CHECK):

STREAM SEDIMENT	✓	DRILL DUST	
SOIL PROFILE	✓	DDH CORE	
ROCK		OTHER	

FRACTION: -20# (coarse material removed)

SAMPLED BY: KHill
DATE: 8 October 1990

SAMPLES DISPATCHED: DATE: ~12 Oct
BY: MOMA
FROM: DARWIN
VIA:

INSTRUCTIONS TO LABORATORY:

Screen at 200#, and analyse -200# material for:

U, Cu, Pb, Zn, Fe, Co, Ni

REMARKS AND FOLLOW UP:

SAMPLE No.	DEPTH FROM	DEPTH TO	LAB. USE ONLY
3801 → 3814			
6438 → 6443			
6446 → 6454			

Pilbara Laboratories Pty Ltd

4 MacAdam Place,
Balcatta,
Western Australia, 6021

Telephone: (09) 344 2411
Telex: AA 93837
Cables: Pilbaralab — Perth

Analytical Report

Cover Sheet

MOBIL ENERGY MINERALS AUSTRALIA

Submission Date: October 15, 1980
Clients Order: Submission 4037
Project: SUTTONS
Locality: CHILLING CREEK
Sample Type: Sediments & Soil

Report Code: B 2897
Report Date: October 30, 1980
Report Comprises: 2 data sheets

Distribution: MIC, BM3
Melbourne Office, Vic
M. Binns, Adelaide River

DETERMINATION	ANALYTICAL TECHNIQUE	PRECISION — ACCURACY	DETECTION LIMIT
* Fe	AAS	prec. ± 10%	0.01
Cu Pb Zn Co Ni	AAS	prec. ± 10%	2,5,2,5,5
U	F	prec. ± 10%	1

KEY	
ICP:	INDUCTIVELY COUPLED PLASMA EMISSION SPECTROSCOPY
AAS:	ATOMIC ABSORBTION SPECTROPHOTOMETRY
UV-VIS:	UV-VISIBLE SPECTROPHOTOMETRY
COL:	COLORIMETRY
F:	FLUORIMETRY
L:	LECO FURNACE ANALYSIS
SIE:	SPECIFIC ION ELECTRODE ANALYSIS
PT:	PRECISE TITRATION INSTRUMENTATION
CCA:	CLASSICAL CHEMICAL ANALYSIS
FA:	FIRE ASSAY
SNR:	SAMPLE NOT RECEIVED
—:	ANALYSIS NOT REQUESTED
IS:	INSUFFICIENT SAMPLE
DTF:	DATA TO FOLLOW
DSP:	DATA SENT PREVIOUS

COMMENT: Data in ppm unless otherwise stated.
* Data in percentages.

NATA SIGNATORY

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: E 2897 Page: 1 of 2

Report Date: October 30, 1980 Sample Prefix:.....

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb	U
3801	U1c Stream Sed	1.16	<5	<5	2	13	13	1
3802		1.43	<5	14	2	12	12	2
3803		1.35	<5	8	4	14	14	2
3804		1.14	<5	14	6	15	16	2
3805		0.99	<5	10	4	10	11	2
3806		1.16	7	9	5	15	94	2
3807		1.08	<5	11	2	14	14	2
3808		1.03	7	5	6	10	14	2
3809		1.14	5	13	6	10	15	2
3810		1.04	10	15	4	10	19	2
3811	BM3 Stream Sed	4.49	13	9	19	66	32	2
3812		4.81	9	7	15	65	16	2
3813		5.38	10	8	15	54	11	2
3814		1.74	<5	9	8	14	15	1
6438	U1c Soil Sample	1.32	5	11	12	17	19	2
6439		1.40	<5	7	5	21	18	2
6440		1.40	<5	16	7	13	12	2
6441		1.33	5	7	2	16	13	2
6442		1.52	6	12	10	17	11	1
6443		1.43	<5	15	6	18	19	2
6446		1.09	<5	10	6	18	13	2
6447		1.18	<5	7	4	15	18	2
6448		1.25	5	13	7	14	21	2
6449		1.30	<5	12	9	14	14	2
6450		1.22	<5	10	6	18	20	2

THE DATA REPORTED HERE COMPRISE AN AUTHENTIC DATA

Pilbara Laboratories Pty Ltd

Analytical Report

Data Sheet

Report Code: B 2897 *Page:* 2 *of* 2

Report Date: October 30, 1980 *Sample Prefix:*

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE		Fe%	Co	Ni	Cu	Zn	Pb	U
6451	UIC Soil Sample	1.12	5	16	3	14	12	1
6452		0.96	<5	11	4	10	8	1
6453		1.30	7	14	10	15	13	2
6454		1.89	7	15	7	19	9	3

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

4045

FIELD COPY

SAMPLES TO: 188 AMDEL FLEMINGTON ST
WESTERNDOM-ST FRENVILLE SA
PERTH WA 6000

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC.
P.O. BOX 4507
MELBOURNE 3001
AND: K HILL, MOBIL ENERGY MINERALS AUST INC
~~Secret~~ Incinerator BOX 1510
DARWIN NT 5794

PROJECT: SUTTONS
TENEMENT: TWIN PEAKS/CHILLING CAL
PROSPECT: —

SAMPLE SITE: —

LINE GRID CO-ORDINATES: —

DRILL HOLE NUMBER: —

MAP SHEET CO-ORDINATES

SAMPLE TYPE (CHECK):
STREAM SEDIMENT ✓ DRILL DUST
SOIL PROFILE ✓ DDH CORE
ROCK OTHER

FRACTION: UNSCREENED OR -20#

SAMPLED BY: K HILL
DATE: OCT. 90

SAMPLES DISPATCHED: DATE: 1-12-90
BY: K HILL
FROM: DARWIN
VIA:

INSTRUCTIONS TO LABORATORY: SEIVE TO -200 #;
ASSAY -200# FRACTION; AAS CODE C1

FOR: Co, Cr, Cu, Fe, Ni, Pb, Zn

CODE C2: Mo, As

CODE J3/2: U

Fe May exceed 1% — to be assayed as appropriate

REMARKS AND FOLLOW UP: —

SAMPLE No.	DEPTH FROM	DEPTH TO	LAB USE ONLY	
925				1
- 6				2
- 7				3
- 8				4
- 9				5
930				6
- 1				7
- 2				8
- 3				9
- 4				10
- 5				11
- 6				12
- 7				13
- 8				14
- 9				15
940				16
- 41				17
(1)				18
2				19
A				20
				21
				22
				23
				24
				25
				26
				27
				28
				29
				30
				31
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				46
				47
				48
				49
				50

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

SAMPLES TO: AMDEL FLEMINGTON ST FREW VILLE S.A.

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC.
P.O. BOX 4507
MELBOURNE 3001

AND: K. HILL
BOX 1510 MOBIL ENERGY MINERALS AUST INC
STUART HWY, DARWIN, NT 5794

4046

FIELD COPY

PROJECT: SUTTONS
TENEMENT: TWIN PEAKS/CHILLING GL
PROSPECT: —

SAMPLE SITE: —
LINE GRID CO-ORDINATES: —

DRILL HOLE NUMBER:

MAP SHEET CO-ORDINATES

SAMPLE TYPE (CHECK):
- STREAM SEDIMENT [ ]
- SOIL PROFILE [ ]
- ROCK [✓]
- DRILL DUST [ ]
- DDH CORE [ ]
- OTHER [ ]

FRACTION:

SAMPLED BY: K HILL
DATE: OCT 90

SAMPLES DISPATCHED: DATE: 1-12-90 BY: K. HILL FROM: DARWIN VIA:

INSTRUCTIONS TO LABORATORY: CRUSH - PULVERIZE (codes P3/1, P2), ASSAY AS FOLLOWS

CODE C1: Co, Ce, Cu, Fe, Ni, Pb, Zn
CODE C7: Mo, As
CODE F3/2: U

Fe may exceed 1% - Tu be assayed as appropriate

REMARKS AND FOLLOW UP:

	SAMPLE No.	DEPTH FROM	DEPTH TO	LAB USE ONLY	
1	6466				
2	6471				
3	6472				
4	6474				
5	6475				
6	6476				
7	6477				
8	6481				
9	6483B				
10	6484				
11	6485				
12	6486				
13	6487B				
14	6488				
15	6489				
16	6490				
17	6491				
18	6492				
19	6493				
20	RM2/1				
21	N1				
22	N2				
23	N3				
24	N4				
25	N5				
26	6463				
27	25-11-1				
28	0S10E				
29	100S 50W				
30	200S 100W				
31	300S 150W				
32	400S 200W				
33	500S 225W				
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49					
50					

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

amdel

NATA CERTIFICATE

3/891/0 - AC 3014/81
P490/81
30 January 1981

REPORT COMPLETE

The Manager
Mobil Energy Minerals Aust Inc.
PO Box 4507
MELBOURNE VIC 3001

REPORT AC 3014/81

YOUR REFERENCE:	Sample submission sheets, 4045, 4046
IDENTIFICATION:	As listed
DATE RECEIVED:	3 December 1980

D.K. Rowley
Manager
Analytical Chemistry Division

L.L. Bowditch
for Norton Jackson
Managing Director

cc Mr K Hill
PO Box 1510
DARWIN NT 5794

dam

amdel

Analysis code C1 Report AC 3014/81 Page 1

NATA Certificate Order 4045,4046 Results in ppm

Sample	Cu	Pb	Zn	Co	Ni	Cr	Fe
925	65	10	10	25	50	40	1.50%
926	75	5	36	35	70	150	2.40%
927	110	10	34	30	80	170	2.10%
928	75	10	14	15	50	80	1.60%
929	90	5	30	25	80	190	1.90%
930	120	5	40	35	95	120	2.50%
931	100	5	34	35	110	280	2.90%
932	90	10	30	30	95	140	2.20%
933	85	15	34	30	80	160	2.50%
934	120	15	34	35	95	170	2.50%
935	110	5	26	40	90	170	2.60%
936	100	15	34	25	85	80	2.40%
937	90	5	26	35	95	150	2.30%
938	100	<5	50	40	90	250	2.50%
939	90	<5	16	40	95	230	2.80%
940	110	5	28	30	100	180	2.60%
941	110	5	26	30	85	140	2.30%
1	46	10	48	35	15	10	5.90%
2	14	10	20	10	10	<10	3.70%
A	85	5	20	25	60	30	2.70%
6466	24	5	10	10	100	40	1.20%
6471	85	45	75	10	10	40	8.50%
6472	230	45	75	10	15	30	11.3%
6474	140	75	36	5	5	40	6.80%
6475	130	65	4	<5	<5	40	10.3%
6476	100	130	80	10	20	70	19.8%
6477	70	40	12	5	5	20	11.0%
6481	180	45	360	15	40	50	22.9%
6483B	110	35	180	<5	10	40	25.3%
6484	250	90	28	5	10	40	18.4%
6485	250	55	16	5	10	10	8.50%
6486	430	150	200	20	15	50	25.6%
6487B	240	4800	30	5	<5	30	22.5%
6488	160	290	95	15	5	20	13.7%
6489	150	810	120	5	5	30	18.1%
6490	170	570	110	5	20	50	15.9%
6491	95	55	16	10	20	30	6.70%
6492	70	990	10	<5	<5	20	6.30%
6493	70	120	2	<5	<5	30	7.70%
BM2/1	44	10	50	30	10	10	4.90%
Detn limit	(2)	(5)	(2)	(5)	(5)	(10)	(5)

amdel

Analysis code C1 | Report AC 3014/81 | Page 2

NATA Certificate | Order 4045,4046 | Results in ppm

Sample	Cu	Pb	Zn	Co	Ni	Cr	Fe
N1	9	10	4	10	20	<10	6700
N2	60	5	22	20	60	50	2.20%
N3	100	5	10	5	35	10	8700
N4	80	5	4	5	40	10	4000
N5	100	10	8	10	35	10	5900
6463	30	5	46	10	30	10	2.80%
25.11.1	10	<5	48	35	520	980	3.20%
0S 10E	65	35	16	5	15	60	13.9%
100S 50W	75	20	18	5	15	50	16.7%
200S 100W	150	25	24	5	15	100	20.3%
300S 150W	160	25	34	5	25	90	21.0%
400S 200W	190	50	120	10	25	390	18.9%
500S 225W	110	50	46	5	5	30	7.50%
Detn limit	(2)	(5)	(2)	(5)	(5)	(10)	(5)

219 60 70

amdel

Analysis code C2 Report AC 3014/81 Page 3

NATA Certificate Order 4045,4046 Results in ppm

Sample	Mo
925	<1 .5
926	2
927	3
928	3
929	2
930	3
931	3
932	2
933	<1 .5
934	4
935	<1 .5
936	2
937	2
938	3
939	2
940	3
941	3
1	2
2	1
A	2
6466	1
6471	9
6472	11
6474	8
6475	9
6476	5
6477	5
6481	9
6483B	14
6484	30
6485	6
6486	11
6487B	10
6488	10
6489	7
6490	9
6491	4
6492	3
6493	5
BM2/1	1
Detn limit	(1)

amdel

Analysis code C2 | Report AC 3014/81 | Page 1

NATA Certificate | Order 4045,4046 | Results in ppm

Sample	Mo
N1	3
N2	2
N3	3
N4	3
N5	1
6463	<1·5
25.11.1	<1·5
0S 10E	18
100S 50W	11
200S 100W	17
300S 150W	20
400S 200W	8
500S 225W	2
Detn limit	(1)

amdel

Analysis code J3/2 Report AC 3014/81 Page 5

NATA Certificate Order 4045,4046 Results in ppm

Sample	U
925	0.5
926	0.3
927	0.3
928	0.5
929	0.2
930	0.3
931	0.5
932	0.4
933	0.4
934	0.3
935	0.4
936	0.5
937	0.3
938	0.4
939	0.4
940	0.3
941	0.5
1	2.3
2	2.2
A	0.7
6466	0.3
6471	2.9
6472	1.9
6474	3.8
6475	1.8
6476	2.3
6477	2.3
6481	5.2
6483B	2.8
6484	2.4
6485	4.6
6486	4.4
6487B	5.7
6488	2.0
6489	1.6
6490	7.1
6491	2.3
6492	2.8
6493	1.5
BM2/1	1.2
Detn limit	(0.1)

amdel

Analysis code J3/2 Report AC 3014/81 Page 6

NATA Certificate Order 4045,4046 Results in ppm

Sample	U
N1	0.2
N2	0.1
N3	0.2
N4	0.2
N5	0.2
6463	2.9
25.11.1	1.2
0S 10E	1.3
100S 50W	0.9
200S 100W	1.5
300S 150W	2.8
400S 200W	1.0
500S 225W	1.1
Detn limit	(0.1)

amdel

Analysis code C2 | Report AC 3014/81 | Page 7

NATA Certificate | Order 4045,4046 | Results in ppm

Sample	As
925	100
926	120
927	120
928	100
929	130
930	150
931	110
932	100
933	130
934	110
935	110
936	110
937	110
938	110
939	110
940	110
941	110
1	80
2	60
A	110
6466	170
6471	110
6472	110
6474	150
6475	140
6476	200
6477	50
6481	250
6483B	130
6484	260
6485	270
6486	100
6487B	350
6488	80
6489	60
6490	4500
6491	240
6492	210
6493	150
BM2/1	80
Detn limit	(20)

amdel

Analysis code C2 | Report AC 3014/81 | Page 8

NATA Certificate | Order 4045,4046 | Results in ppm

Sample	As
N1	150
N2	100
N3	140
N4	120
N5	130
6463	70
25.11.1	70
0S 10E	90
100S 50W	80
200S 100W	90
300S 150W	70
400S 200W	70
500S 225W	90
Detn limit	(20)

APPENDIX 4

WHOLE ROCK ANALYSES FOR HERMIT CREEK METAMORPHICS

BUFFALO FLY PROSPECT

(AMDEL LABORATORIES)

Whole Rock Analyses for Hermit Creek Metamorphics - Buffalo Fly Prospect - AMDEL laboratories

	6467	6475	6487B	6489	6490	6491	6466	6478	6482	BM2/1
SiO_2	64.30	56.20	39.60	67.00	51.20	64.70	49.90	48.70	47.70	47.60
TiO_2	0.57	1.93	0.41	0.42	0.43	0.63	0.63	2.31	2.28	2.30
Al_2O_3	18.10	15.00	8.70	2.61	11.10	14.30	12.70	14.00	14.40	14.30
Total Fe_2O_3	6.38	15.50	39.20	26.00	25.50	11.00	11.10	13.30	13.10	15.60
MnO	0.06	0.01	0.02	0.05	0.03	0.04	0.17	0.19	0.17	0.20
MgO	1.88	0.57	0.38	0.10	0.48	0.76	11.80	6.72	6.50	5.45
CaO	0.60	0.16	0.18	0.23	0.18	0.15	10.30	10.60	11.70	9.20
Na_2O	0.93	0.21	<0.06	<0.06	<0.06	0.08	0.87	1.98	2.20	2.40
K_2O	4.80	3.85	1.95	0.26	2.22	3.89	0.95	0.84	0.62	1.00
P_2O	0.10	0.11	1.02	0.07	0.71	0.07	0.07	0.25	0.26	0.11
L.O.I.	2.80	6.73	8.22	3.64	7.56	4.95	1.56	1.10	1.08	2.00
	100.52	100.30	99.70	100.40	99.40	100.60	99.30	99.60	99.80	100.10
U	4	12	12	4	10	8	-	<4	-	-
Th	16	10	<4	<4	30	8	-	<4	-	-
Y	22	8	<4	<4	6	16	12	30	30	18
Rb	240	490	85	19	130	140	38	20	26	40
Zn	150	22	110	70	110	170	34	160	170	80
Sr	50	15	46	10	60	13	110	180	210	160
Nb	20	30	24	14	20	24	12	26	28	14
Cu	20	140	240	190	190	95	10	120	140	36
Pb	10	55	6000	880	600	200	10	10	10	15
Zn	70	6	14	120	90	60	44	32	26	36
Co	15	<5	10	15	5	15	15	15	10	30
Ni	25	15	5	<5	10	15	400	20	10	15
Cr	10	40	30	30	50	40	800	<100	200	<100
Sn	12	6	6	6	8	8	-	-	-	-

Field Description

6467	Low grade quartz-muscovite (graphite) schist
6475	" " " " " "
6487B	" " " " " "
6489	" " " " " "
6490	" " " " " "
6491	" " " " " "
6466	Pillow basalt
6478	" "
6482	" "
BM2/1	Gabbro

APPENDIX 5

PETROGRAPHIC DESCRIPTIONS OF CHILLING CREEK PROSPECT SAMPLES

MOBIL ENERGY MINERALS AUSTRALIA

SAMPLE SUBMISSION SHEET

4006

FIELD COPY

SAMPLES TO:

RESULTS TO: MOBIL ENERGY MINERALS AUSTRALIA INC,
P.O. BOX 4507
MELBOURNE 3001

AND: M. BINNS, C/- ADELAIDE RIVER POST OFFICE, N.T. 5783

PROJECT: SUTTONS

TENEMENT: EL 1765 and 1597

PROSPECT: —

SAMPLE SITE: —

LINE GRID CO-ORDINATES: —

DRILL HOLE NUMBER: —

MAP SHEET CO-ORDINATES

SAMPLE TYPE (CHECK):

STREAM SEDIMENT		DRILL DUST	
SOIL PROFILE		DDH CORE	
ROCK	✓	OTHER	

FRACTION:

SAMPLED BY: WH

DATE: 26/5 - 13/6

SAMPLES DISPATCHED: DATE:
BY:
FROM:
VIA:

INSTRUCTIONS TO LABORATORY: Brief petrographic description

TOTAL: 11 SAMPLES

REMARKS AND FOLLOW UP: Return thin sections and off-cuts to:
Mobil Energy Minerals Australia
PO Box 4507
Melbourne 3001,
Attention P.W Pritchard

SAMPLE No.	DEPTH FROM	DEPTH TO	LAB USE ONLY	
6018				1
6022				2
6024				3
6026 A				4
6026 B				5
6028				6
6032				7
6033				8
6034				9
6035				10
6038				11
6041				12
6042				13
6043				14
				15
				16
				17
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Central Mineralogical Services

39 Beulah Road
Norwood, S.A. 5067
Telephone 42 5659

Mr. M.J. Binns
Geologist
Mobil Energy Minerals Aust. Inc.
c/o Post Office
ADELAIDE RIVER / N.T. 5783

10th July, 1980

REPORT CMS 80/6/34

YOUR REFERENCE:	Sample Submission Sheet No. 4006
DATE RECEIVED:	24th June, 1980
SAMPLE NOS.:	6018, 6022, 6024, 6026A & B, 6028, 6032, 6033, 6034, 6035, 6038, 6041, 6042, 6043
SUBMITTED BY:	M.J. Binns
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

Copy & Invoice to:
Mr. P.W. Pritchard
Manager Exploration Operations
Mobil Energy Minerals Aust. Inc.
P.O. Box 4507
MELBOURNE / VIC. 3001

REPORT CMS 80/6/34

Suttons Project Rock Samples

Fourteen rock samples were received for thin-section preparation and petrological description; offcuts were examined as well as thin-sections, and were K-stained where necessary. The descriptions are presented in the accompanying tables.

Summary

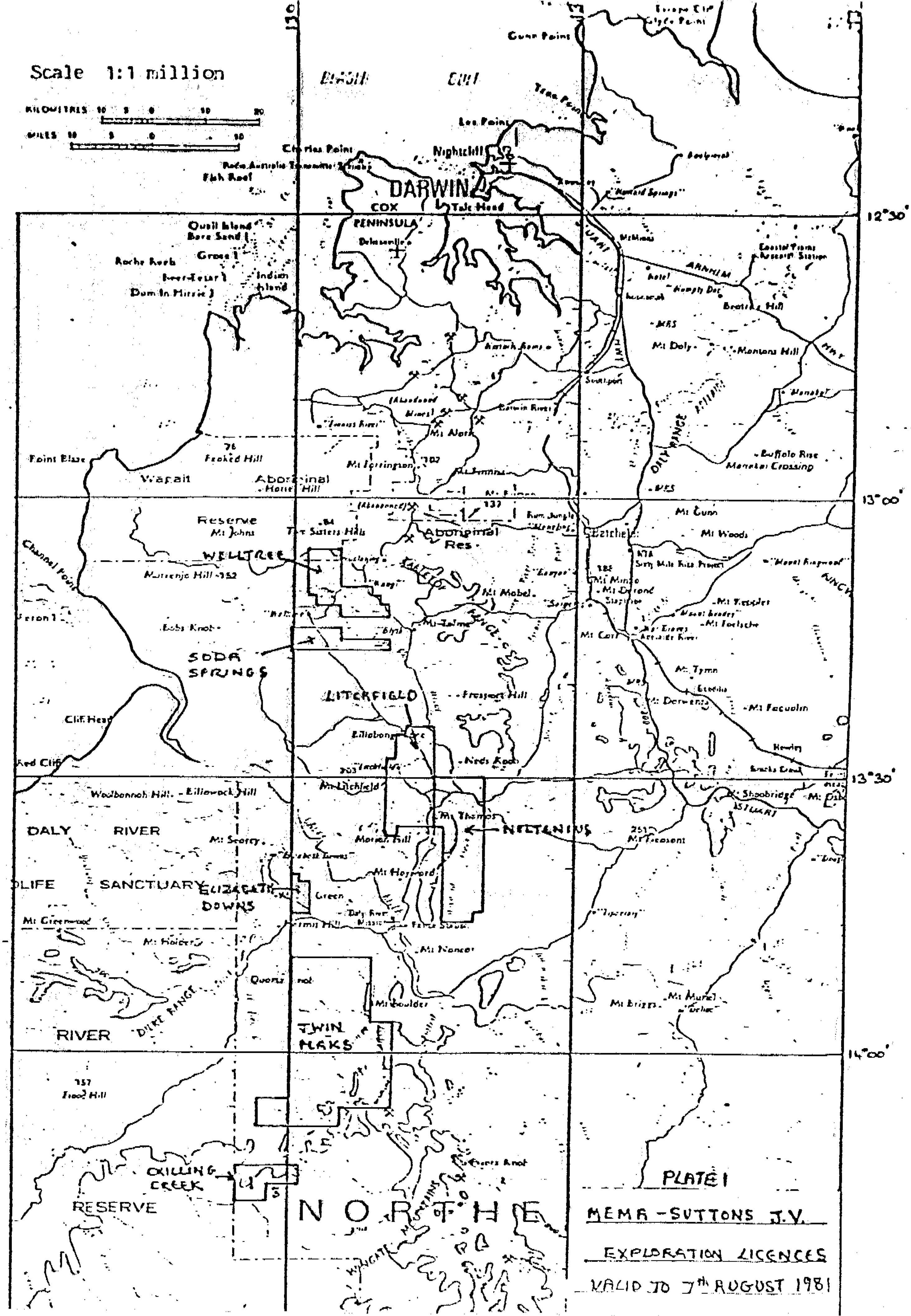
This suite comprises mainly igneous rocks, with four metamorphics and no sediments; two rocks are very probably of metasomatic or related formation.

The igneous rocks are mostly basalts and gabbros, possibly all genetically related, but relationships are partly obscured by patchy metasomatism (amphibolisation); a distinction is made between uralitisation (a deuteric process) and amphibolisation (metasomatic), but this may be difficult to justify under some circumstances. Two of the igneous rocks are of "acid" derivation, but are both altered; the greisen may be worth assaying for the usual W-Sn-Bi-Mo association.

The metamorphic rocks range from quartz-mica schists to a hornblende-pyroxene granulite (?igneous origin) and an altered quartz-feldspar-sillimanite-biotite gneiss.

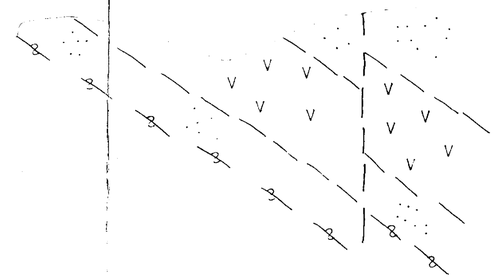
H.W. Fander, M. Sc.

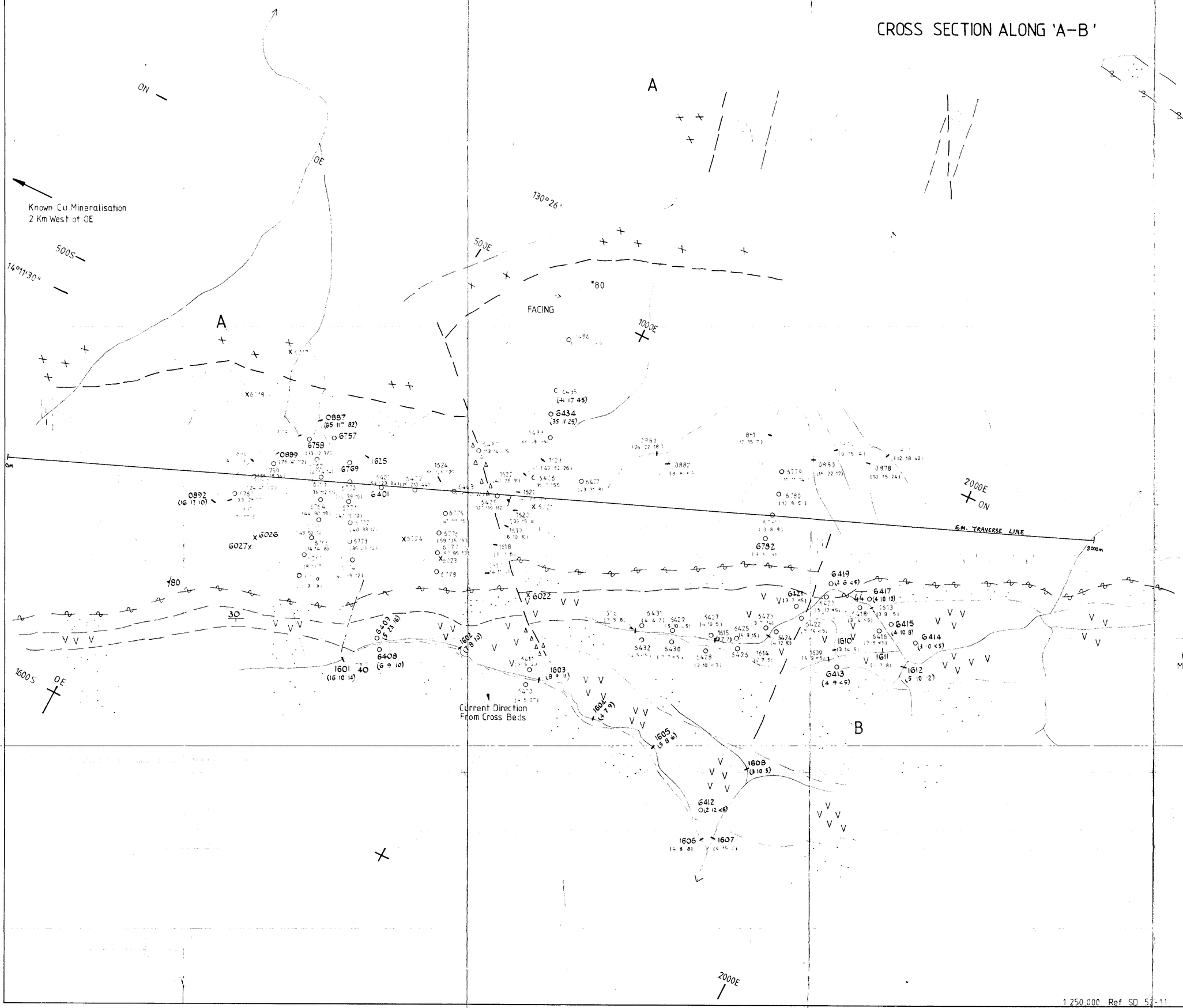
Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
6018 (T.S. 32407)	Actinolite Rock. Virtually monomineralic; coarse random actinolite crystals with fibrous textures, finer aggregates with intergrown epidote.	No relict features or preferred orientation; skarn-type fabric.	Small, dispersed patches of magnetite.	Believed to be a metasomatic, skarn-type rock; original nature not known.
6022	Altered "Quartz Porphyry". Scattered quartz phenocrysts, sericitised feldspars, in a mass of interlocking quartz patches; zones of fine hematite.	Igneous, medium-grained fabric; relict phenocrysts.	Occasional sericitised primary mica (?biotite) flakes.	Probably a felsite, porphyritic intrusive rhyolite or related rock, thoroughly sericitised, silicified, hematitised.
6024	Metasomatised ?Basalt. Occasional altered plagioclase phenocrysts in a fine-grained mass of andesine-labradorite, fine hornblende and microgranular epidote.	Fine, random fabric; no preferred orientation, flow-structures or vesicles.	Veins of quartz-plagioclase-hornblende-sphene. Prehnite veinlets.	Fabric suggests original andesite or basalt, but thoroughly amphibolised, not simply uralitised.
6026A	Greisen. Mainly interlocking quartz, random bunches of muscovite flakes, patches of sericitised feldspar, prismatic tourmaline crystals.	Medium- to coarse-grained, igneous fabric muscovite is replacive.	Hematite-goethite pseudomorphs after pyrite cubes.	Typical greisen, representing pneumatolysed granite or microgranite. Assays for Sn, W, recommended.
6026B	Quartz-Muscovite Schist. Mostly muscovite, as masses of small flakes with simultaneous extinction, with embedded fine quartz.	Homogeneous, fine-grained, with small crenulations, fractures.	Small prismatic crystals of blue-green tourmaline throughout. Fe-staining.	Minor fine pyrite may have been present. Greenschist-facies metamorphism of semi-pelitic rock.
6028	Gabbro. Approximately 50 % euhedral, prismatic, fairly fresh labradorite, 50 % subophitic, pale Ti-augite, partly uralitised in places.	Typical gabbroic fabric, classical subophitic textures.	Isolated hypersthene, Ti-biotite, scattered oxide opaques. Trace quartz.	Straightforward, orthodox basic intrusive with accessory primary quartz.
6032	Gabbro. About 60-65 % labradorite as fresh, complexly-twinned, prismatic crystals, 35-40 % pyroxene, mainly augite, and minor hypersthene.	Moderately coarse gabbroic fabric, intersertal to subophitic textures.	A few flakes of Ti-biotite, oxide opaque grains.	Very similar to 6028, but more feldspathic (i.e. leucocratic); incipient uralitisation of some pyroxene.
6033	Uralitised Gabbro. About 50 % fresh, coarse euhedral labradorite, and 50 % completely uralitised pyroxene - pseudomorphs of pale fibrous hornblende.	Coarse gabbroic fabric, 1.5 - 2 mm grainsizes; subophitic textures.	Occasional coarse epidote; leucoxenised oxide opaques.	Uralitised equivalent of 6028, 6032; all three rocks petrogenetically related, not metamorphosed.
6034	Basalt. Small labradorite laths, abundant interstitial microgranular clinopyroxene and ?orthopyroxene, uralitised in places.	Coarser random fabric grading to finer fabric with parallel alignment.	Ultrafine oxide opaques throughout. Hornblende veinlets.	Could be fresher equivalent of 6024; probably close to a contact; flow-alignment of finer portions.
6035	Albite Rock. Dominantly stressed, shapeless, small and large, interlocking albite patches, very poorly twinned; minor interstitial quartz.	Featureless fabric, variable grainsizes; no igneous characteristics.	Minor traces of biotite shreds, leucoxene, ?apatite.	Not interpreted as igneous, but believed to be metasomatic or metamorphic, depending on field data.
6038	Muscovite-Graphite Schist. Coarse, subparallel muscovite flakes, lenses and streaks of granular quartz; small graphite flakes; Fe-stained.	Schistosity not well-developed, because mica flakes not well-aligned.	Rutile crystals up to 0.5 mm throughout. Goethite films.	Unusually coarse mica flakes, some with random orientation, causing indifferent schistosity. Low-grade metasediment.
6041	Altered Sillimanite Gneiss. Sericitised lenses of fibrous sillimanite; sericitised feldspars; chloritised biotite masses; lenses of mosaic quartz.	Coarse, gneissic fabric but alteration minerals are fine-grained.	Fine secondary rutile in chloritised biotite. Silica films, Fe-staining.	Relict textures are diagnostic for sillimanite. Amphibolite-facies aluminous metasediment.
6042	Biotite Microgranite. Small, stubby, prismatic crystals, occasional poikilitic phenocrysts of albite; random brown biotite, shapeless quartz patches; very minor K-feldspar.	Medium-grained, igneous fabric, random orientation; well-crystallized.	Accessory euhedral apatite; minute radioactive inclusions in biotite.	Very fresh rock, strongly sodic; probably a minor intrusive. Not metamorphosed.
6043 (T.S. 32420)	Pyroxene Granulite. Very abundant granular, poikiloblastic diopside and hypersthene, minor hornblende, interstitial labradorite (also coarser patches).	Vague preferred orientation, typical granulitic fabric, medium to coarse.	Oxide opaques, scattered sphene patches.	Hornblende often as orientated intergrowths with pyroxene, thus "primary", and rock is transitional between amphibolite/granulite facies; ?meta-igneous.

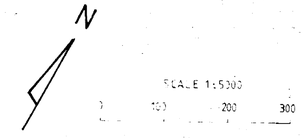


Scale 1:1 million
KILOMETRES
MILES
DARWIN
COX PENINSULA
Gunn Point
Lee Point
Charles Point
Nightcliff
Fish Reef
Point Blaze
Wagait Aboriginal Reserve
Channel Point
Clift Head
Red Cliff
Aboriginal Res.
WELLTREE
SODA SPRINGS
LITCHFIELD
NEPTUNUS
ELIZABETH DOWNS
TWIN PEAKS
CHILLING CREEK
DALY RIVER
SANCTUARY
LIFE
RIVER
DUKE RANGE
RESERVE
NORTHE
Batchelor
Mt Litchfield
Mt Thomas
Mt Hayward
Mt Nancar
Mt Boulder
Mt Gunn
Mt Woods
Mt Tymn
12°30'
13°00'
13°30'
14°00'
PLATE I
MEMR - SUTTONS J.V.
EXPLORATION LICENCES
VALID TO 7th AUGUST 1981

CROSS SECTION ALONG 'A–B'







REFERENCE

Middle Proterozoic

- Berinka Volcanics Acid to Intermediate Flows & Sills
- Chilling Sandstone Cross Bedded Fluviatile Quartz Sandstone

Lower Proterozoic -? Archaean
Litchfield Complex

- Granite (Unnamed ~1840 m.y.)

Hermit Creek Metamorphics

- Metabasalt Lower Greenschist Facies, Massive, Some Preserved Pillow Structures
- Muscovite-Quartz Schist in Part Graphitic, Hematitic,? Sulphides

- Fault
- Stratigraphic Boundary
- Unconformity
- Quartz-Hematite Fault Breccia
- Stream Sediment Sample
- Soil Sample
- Rock Sample
- Sample Numbers
- Assay Values (Cu Zn Pb)

1 250,000 Ref SD 53-11

Plate 3

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L.1597)

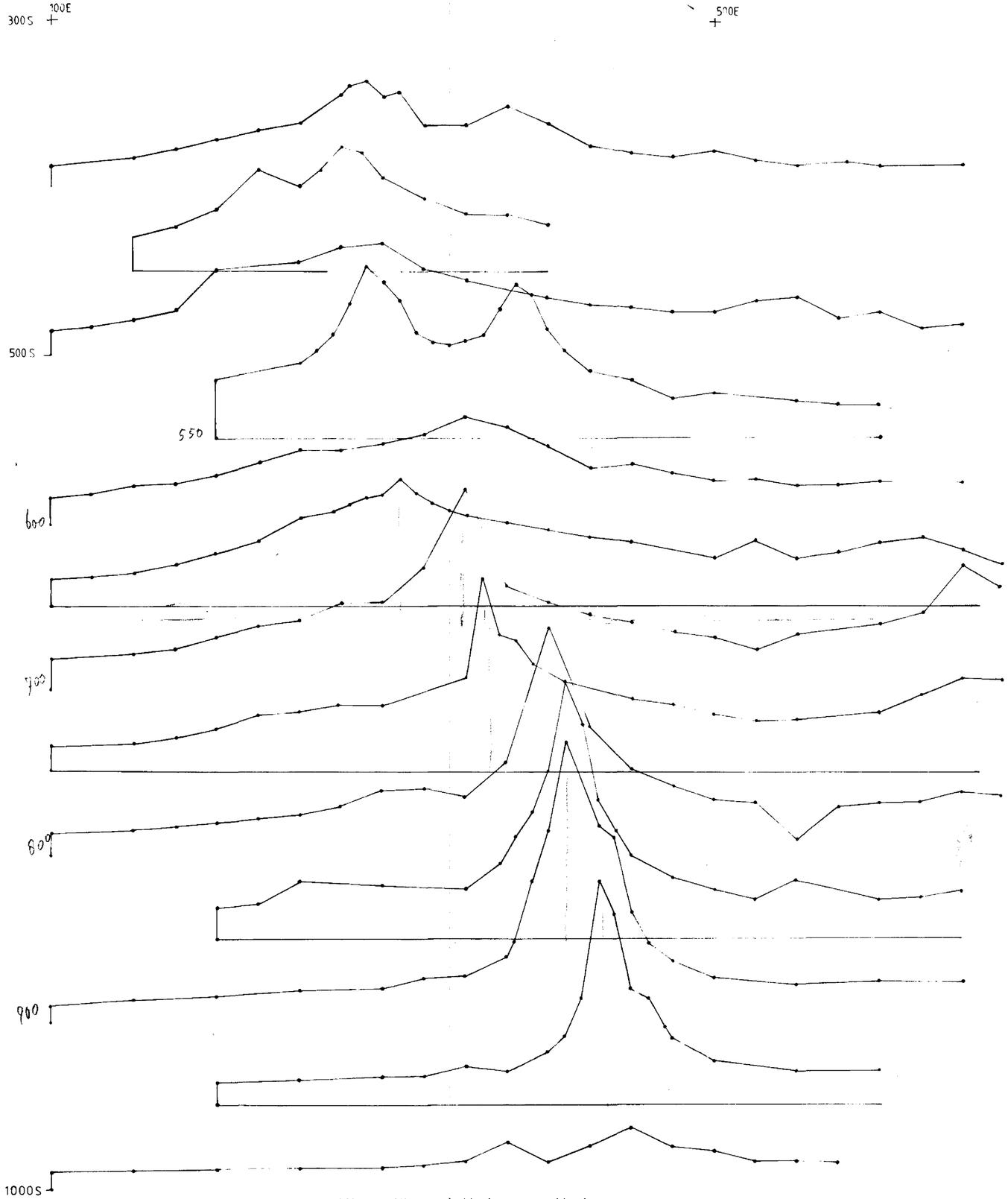
ANOMALY AREA BM1

DETAILED GEOCHEMICAL SURVEY

SAMPLE LOCATIONS & INTERPRETED GEOLOGY

	DATE	BY		DATE	BY
COMPILED	NOV.'80	K.H	ADDNS		
DRAWN	12 DEC '80	R.H			
SCALE	1 : 5000		DWG No	3246/A	

CR81/280



All profiles plotted on vertical scale: 1cm = 200$_\gamma$
Actual grid lines represent 47,700$_\gamma$ line for each plot.

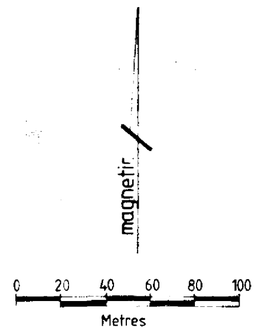


Plate 4

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L.1597)
BUFFALO FLY PROSPECT
TOTAL MAGNETIC INTENSITY
STACKED PROFILES
1:250,000 Ref. SD 52-8

	DATE	BY		DATE	BY
COMPILED	Dec. 80	K.H.	ADDNS		
DRAWN	Dec 80	E.M.G.			
SCALE	1 : 2000		DWG No	3721	

0 200 E 400 E 600 E 800 E 1000 E

200 S

400 S

600 S

800 S

1000 S

N

SCALE 1 : 2000

Unbroken Contours At 200 γ Intervals
Broken Contours At 100 γ Intervals
Data Corrected For Diurnal Drift
Instrument : Scintrex MP2 Proton Precession Magnetometer

1:250,000 REF SD 52-11

Plate 5

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L.1597)

BUFFALO FLY PROSPECT

GROUND MAGNETIC SURVEY
CONTOURED MAGNETIC INTENSITY

	DATE	BY		DATE	BY
COMPILED	NOV. 1980	Ken Hill	ADDNS		
DRAWN	9-12-80	R. Hutton			
SCALE	1 : 2000		DWG No	3723	

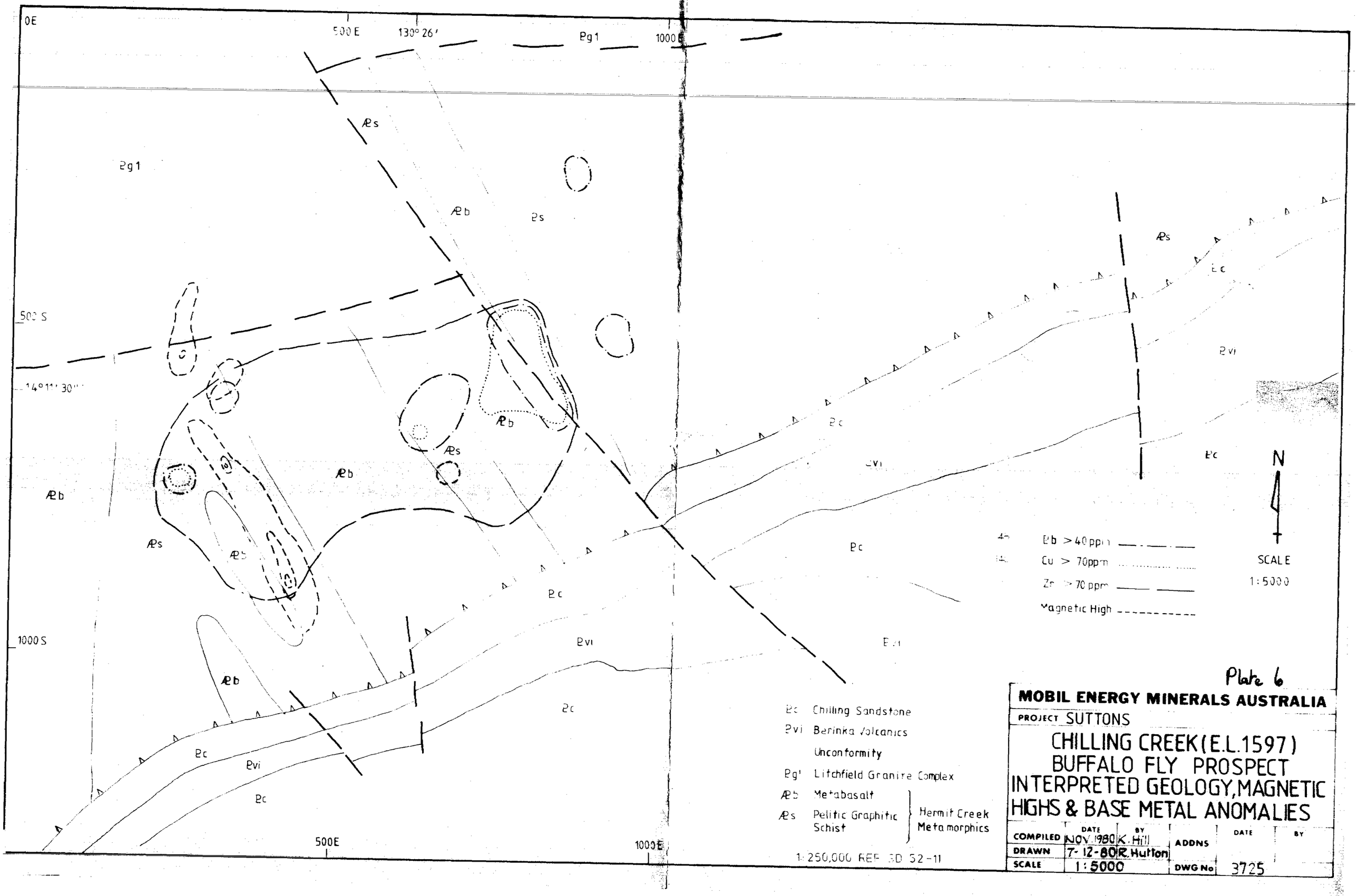


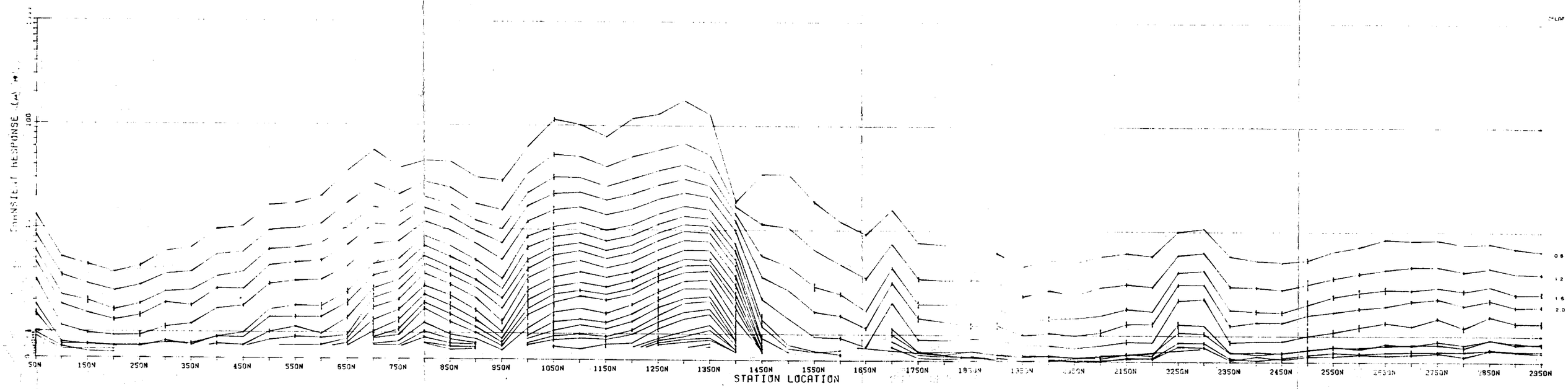
Plate 6

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L.1597) BUFFALO FLY PROSPECT INTERPRETED GEOLOGY, MAGNETIC HIGHS & BASE METAL ANOMALIES

	DATE	BY		DATE	BY
COMPILED	NOV. 1980	K. Hill	ADDNS		
DRAWN	7-12-80	R. Hutton			
SCALE	1:5000		DWG No	3725	



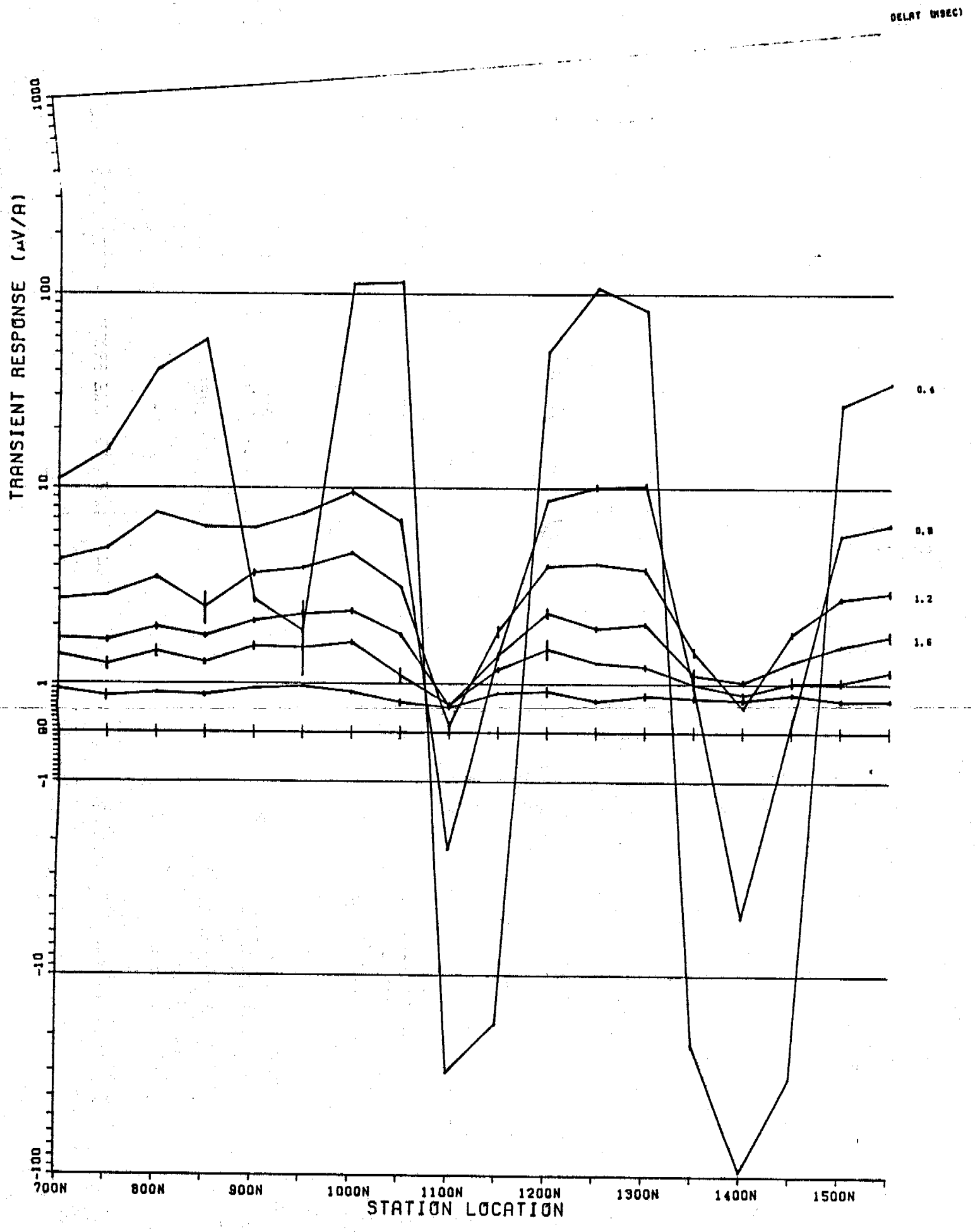
INSTRUMENT :SIROTEM
CONFIGURATION:100M SQUARE COINCIDENT LOOPS
READING INTERAVAL 50M

SCALE: 1:5000
DATE : JULY, 1981.
MAP : DALY RIVER, N.T.

MOBIL ENERGY MINERALS INC.
TRANSIENT E.M. PROFILE
LINE A . PROSPECT BUFFALO FLY

AGENEX PTY LTD

PLATE 7: SIROTEM LINE PROFILE - COINCIDENT LOOPS Dwg. No.



INSTRUMENT :SIROTEM
CONFIGURATION:50M SQUARE TWIN LOOPS,
100M BETWEEN LOOP CENTRES
READING INTERVAL 50M

SCALE: 1:5000
DATE : JULY, 1981.
MAP : DALY RIVER, N.T.

MOBIL ENERGY MINERALS INC.
TRANSIENT E.M. PROFILE
LINE A , PROSPECT BUFFALO FLY.

GEOEX PTY LTD

PLATE 8: SIROTEM LINE PROFILE - SEPARATED LOOPS

Dwg. No.

130°31'

14°11'30"

Pu

Pc

Pdz

60

6797(2) 6796(3) 6795(3) [0524(2)] 6793(1) 6792(4) [0530(5)] [0531(m)] [0532(3)] 6785(3) 6786(1) 6787(1) 6788(2) 6789(1) 6790(3)

6794(3) 0886(4) 6791(2) 0885(3) 6783(7) 6784(7) 0872(5)

0876(3) 6756(2) 0875 6755(4) 0874(4) 6754(4) 0873(3) 6753(4)

0 100 200 300
Metres

o 6756(2) Base of slope soil sample point number and U assay value

× 0876(3) Stream sediment sample point number and U assay value

[0524(2)] Original survey sample point number and U assay value

1:250,000 REF SD 52-12

LEGEND

Pc Chilling Sandstone cross-bedded fluviatile sandstone

Pdz Zamu Dolerite: basic sills.

Pu Burrell Creek Formation sandstone and siltstones turbidite facies.

Inferred Contact

Unconformity

Fault

60 Dip and strike of bedding

Plate 10

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (EL. 1597)
AREA U1A
GEOLOGY AND ASSAY RESULTS

	DATE	BY		DATE	BY
COMPILED	Dec '80	K.H.	ADDNS		
DRAWN	Dec '80	E.M.G.			
SCALE	1:5000		DWG No	3277	

CR81|280

N

0 200 400 metres

SCALE 1 10,000

LEGEND

Z ZAMM DOLERITE - DIFFERENTIATED BASIC INTRUSIVE BODY

+ UNNAMED BIOTITE GRANODIORITE OF LITCHFIELD COMPLEX

STREAM SEDIMENT SAMPLE SITE

3277 ORIGINAL SURVEY

925 DETAILED SURVEY

O SOIL SAMPLE SITE

X ROCK SAMPLE SITE

ASSAY VALUES

1 250,000 REF SD 52-11

Plate 11

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS PROJECT

TWIN PEAKS (EL 1965)

GEOCHEMICAL SURVEY OF ANOMALOUS NICKEL AREA

SAMPLE SITES

	DATE	BY	ADDNS
COMPILED			
DRAWN	DEC '80	L.U.	
SCALE	1:10,000	DWG No	3716

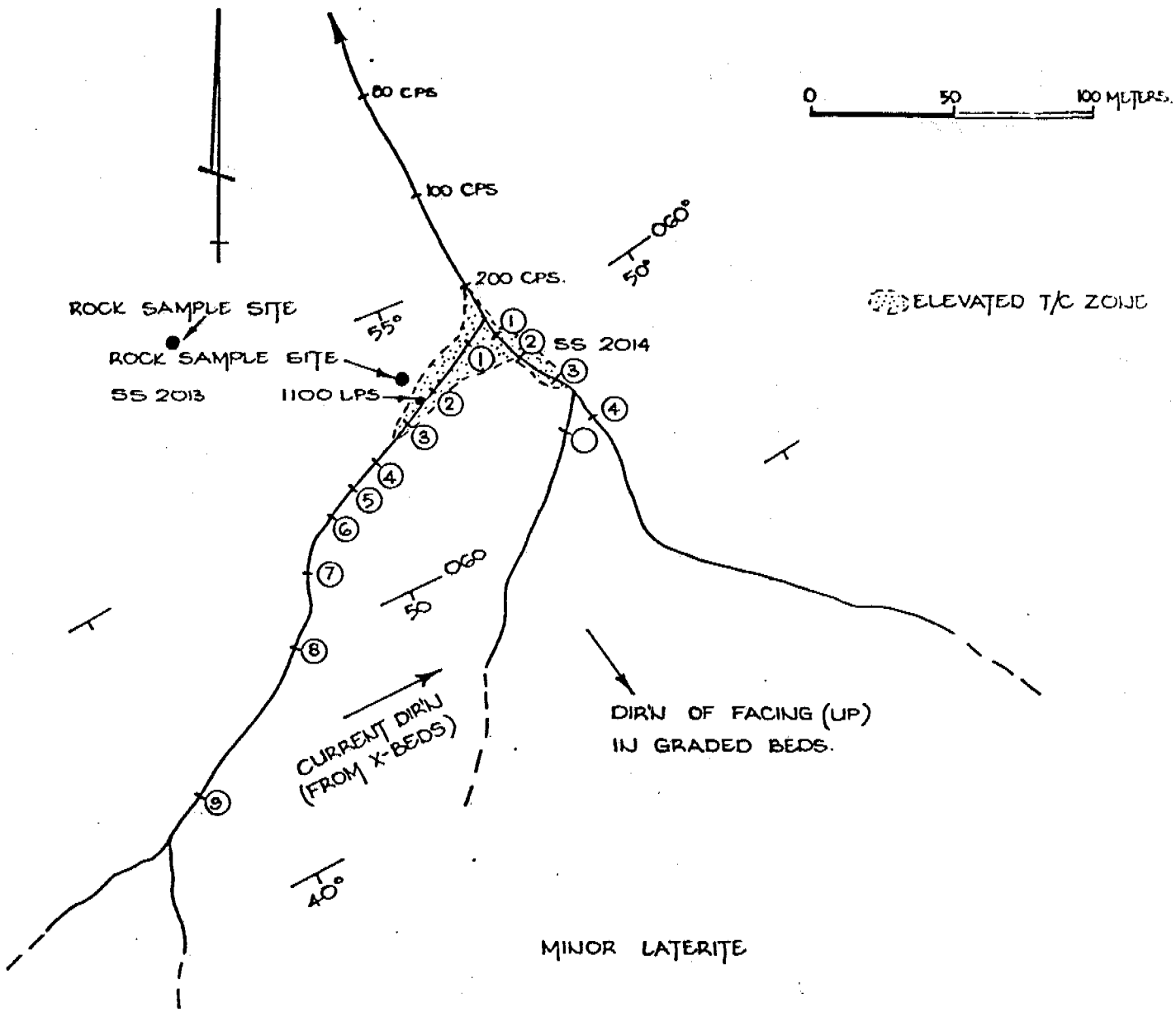


PLATE 12.

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT	SUTTONS				
Anomaly U1B Detailed Geology and Sample Locations (Chilling Creek E.L. 1597)					
COMPILED	DATE Jun 80	BY K.H.	ADDNS	DATE	BY
DRAWN	Aug 80	L. DeL.			
SCALE	1:2,300 app.		DWG No		

130°25'

14°14'

(0009) 45 34 62 1

21 (0008) 20 34 1

(0007) 80 37 70 3

(0165) 3 2 4 3

(0164) 28 22 25 3

(0166) 22 28 45 1

3804 6 16 15 2

3807 2 1 14 2

6446 6 13 18 2

3805 4 10 2

3806 5 94 15 2

6447 4 18 15 2

3808 6 14 10 2

6449 9 14 14 2

6448 7 21 14 2

3809 6 15 10 2

6450 6 20 18 2

6452 4 8 10 1

6454 7 9 19 3

(0006) 219 42 104 1

3810 4 19 10 2

6451 3 14 1

6453 10 13 15 2

3801 (0163) 12 2 22 12

6438 12 19 17 2

6439 5 18 21 2

6440 7 12 13 2

6441 2 13 16 2

6442 10 11 17 1

3802

6443 6 19 8 2

6444 4 14 14 2

3803

6445

0 100 200 300

Metres

Plate 13

LEGEND

(0163) Regional Stream Sediment Sample

3801 Detailed Stream Sediment Sample

x 6438 Soil Sample

Assay data listed in following order

Cu
Pb
Zn
U

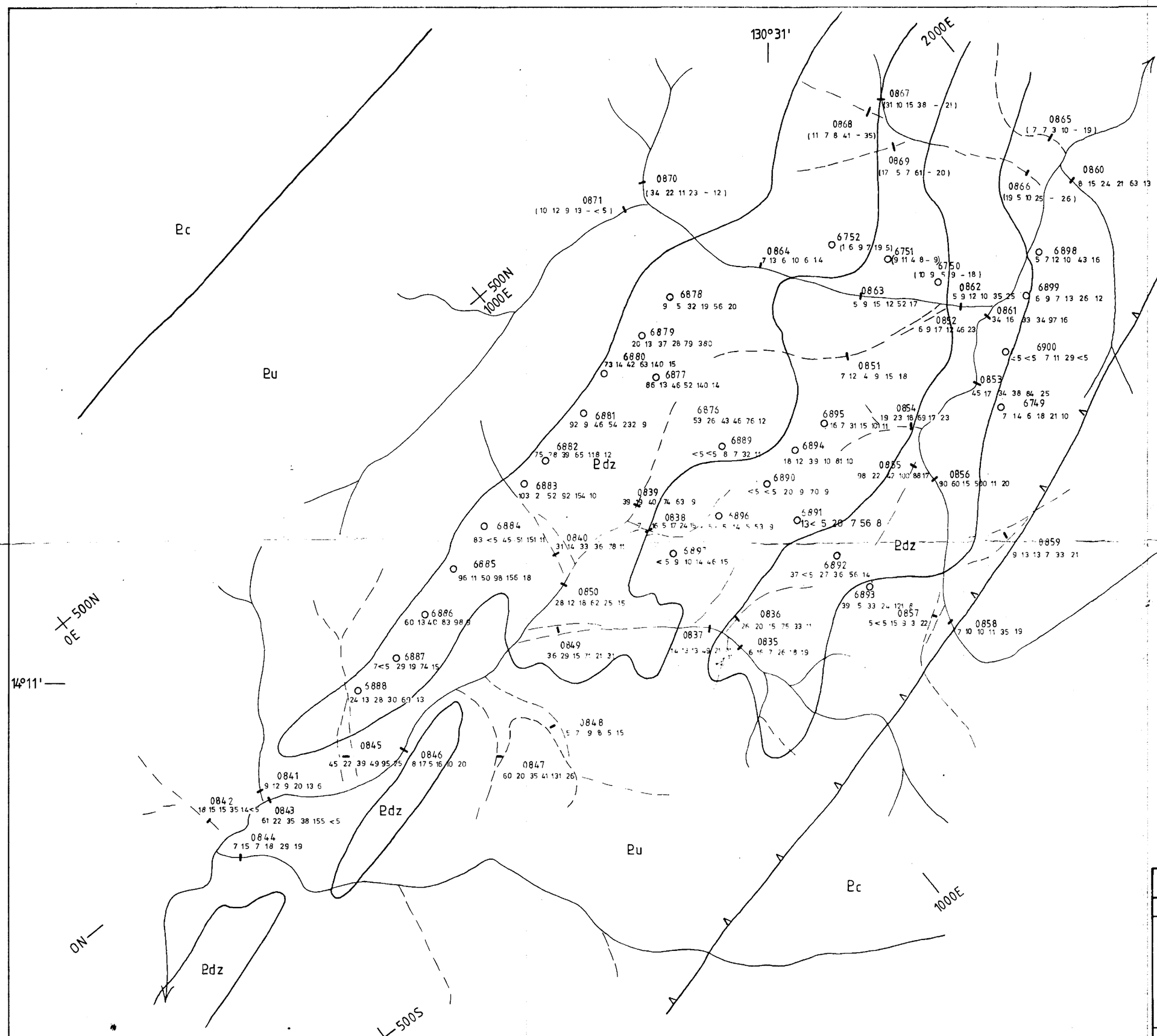
1:250,000 REF SD 52-11

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L.1597) ANOMALY AREA UIC GEOCHEMICAL SURVEY SAMPLE LOCATIONS

	DATE	BY		DATE	BY
COMPILED	Dec 1980	K.H.	ADDNS		
DRAWN	Dec. 1980	E.M.G.			
SCALE	1:5000		DWG No	3237	



KEY

Pc- Chilling Sandstone - Cross Bedded Fluviatile Sandstones

Pu- Burrell Creek Formation Siltstones & Sandstones Turbidite Facies

Pdz Zamu Dolerite - Basic Sills

6900 SAMPLE NUMBER

<5 <5 7 11 29 <5 } ASSAY VALUES

Co Ni Cu Zn Mo Pb

o Soil Sample

+ Stream Sediment Sample

—Δ— Unconformity

—— Fault

—— Geological Boundary

← Stream

Plate 14

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (EL 1597)
ANOMALY BM 2
GEOLOGY AND GEOCHEMICAL SURVEY RESULTS

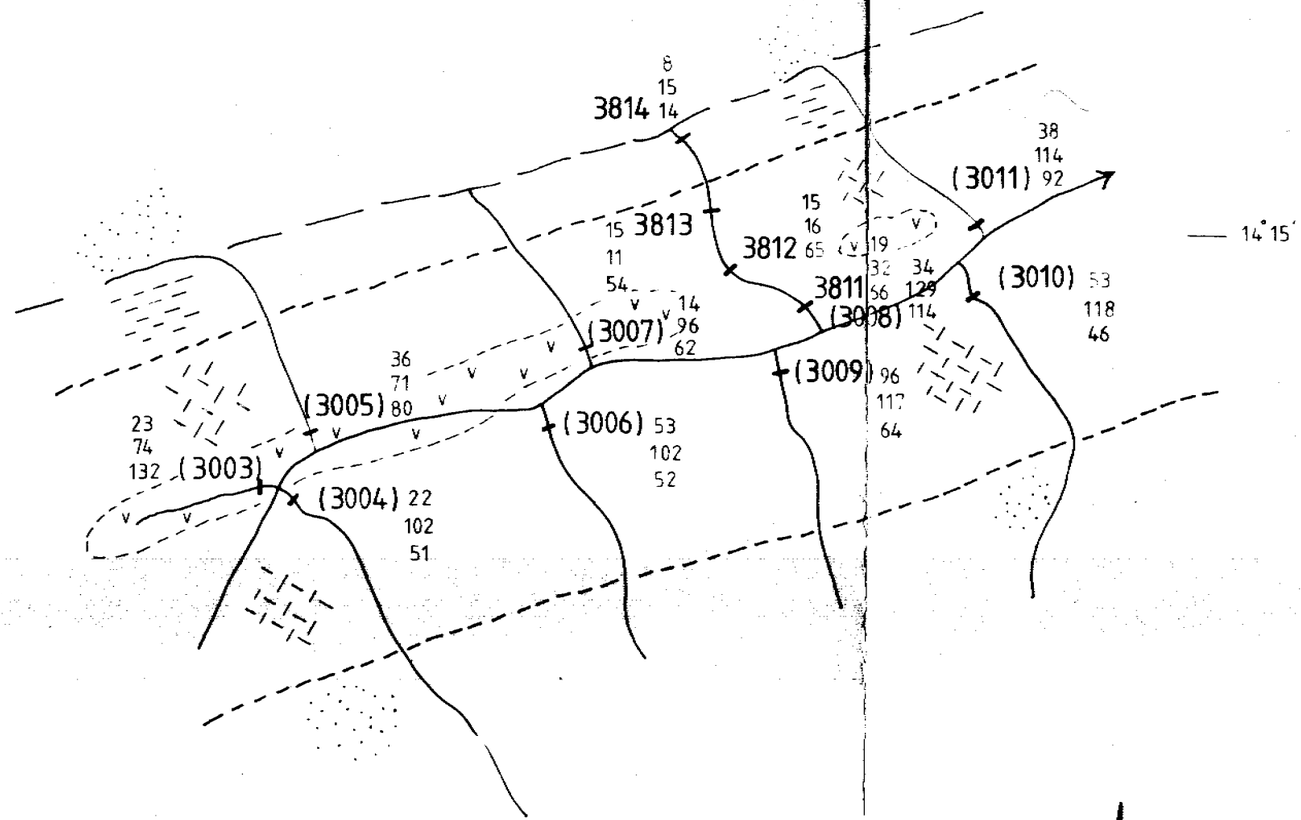
1:250,000 REF SD 52-12

	DATE	BY	ADDNS	DATE	BY
COMPILED	NOV '80	K.H.			
DRAWN	11 DEC '80	R.H.			
SCALE	1:5000 APPROX.		DWG No	3726	

CR81/280

130° 27′ 30″

14° 15′



LEGEND

- Chilling Sandstone
- Burrell Creek Formation
- Berinka Volcanics
- v v v Ti-Tree Granophyre
- (3003) Regional Stream Sediment Sample
- 3811 Detailed Stream Sediment Sample
- Fault (Inferred)
- Geological Boundary (Inferred)

Assay data listed in following order : Cu
Pb
Zn.

0 500
Metres

1 : 250,000 REF. SD 52-11

Plate 15

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT SUTTONS

CHILLING CREEK (E.L. 1597) ANOMALY AREA BM 3 GEOLOGY AND GEOCHEMICAL SAMPLE LOCATIONS

	DATE	BY		DATE	BY
COMPILED	Dec 80	K.H.	ADDNS		
DRAWN	Dec 80	EMG.			
SCALE	1 : 100,000		DWG No	3234/A	

CR81/280