GEOLOGY AND MINERALISATION

REGIONAL GEOLOGY

The Exploration Licence is located near the centre of the Pine Creek Geosyncline with Early Proterozoic metasediments of the Mt Partridge, South Alligator and Finnis River Groups exposed in the area.

Within the southern portion of the licence, the Cullen Batholith outcrops and is comprised of the McCarthy’s Granite, which is a coarse grained porphyritic hornblende biotite rock. The granite is generally well exposed in the area and forms low undulating hills, well incised by numerous perennial streams. The intrusive contact with the sedimentary rocks to the north is often marked by a zone of quartz, pegmatite and aplite veining, rafts of sedimentary rocks within the granite and slivers of granite within the sedimentary rock pile.

Directly north of the granite contact, the Early Proterozoic sedimentary sequences of the Mt Partridge, South Alligator and Finnis River Groups have been folded into an asymmetrical sequence along a north-westerly trending axis. Two anticlines, called the McCarthy’s and Spider Anticline, after Goldfield’s work in 1988, form the prominent features within this folded sequence. These anticlines expose Mundogie Sandstone in the core and Wildman Siltstone and Koolpin Formation along the limbs of the structure. Further to the north, the folding exposes stratigraphically higher units of the South Alligator and Finnis River Groups.

GEOLOGY OF THE TENEMENTS

Mundogie Sandstone
The Mundogie Sandstone consists of coarse grained felspathic quartz sandstones and pebble conglomerate. It forms a prominent topographic high feature with rugged and deeply incised streams draining from it. On the contact with the Wildman Siltstone a strongly ferruginous, brecciated, gossanous and quartz veined horizon is occasionally developed. Secondary ferruginisation is ubiquitous in these instances, often forming the framework within the sandstones and breccias. This horizon is conformable and can be mapped over a considerable strike length. It is interpreted to be a décollement structure. A relic boxwork texture is observed at times and contributes to the strong ferruginous alteration. Quartz veining in this horizon is multiphased and stockworked in appearance and also often affected by later tectonic brecciation.
Wildman Siltstone
This unit predominantly comprises siltstones and carbonaceous phyllite, and forms areas of relatively gentle undulating relief. A strong cleavage is developed in these rocks and exposed bedrock is typically stained by iron oxide. The McCarthy's deposit is hosted by the Wildman Siltstone. A distinctive haematite rich horizon can be traced within the unit over most of the licence area. It is interpreted to be a lateral equivalent of the iron ore deposits at Frances Creek and is locally termed, 'Frances Creek beds'.

Koolpin Formation
The Koolpin Formation forms the topographic high ridge lines. On the limbs of the Spider Anticline, these ridges are flat topped and have cliff like drop offs along the edges. Silicification as a result of weathering phenomena has strongly altered these rocks, although the original texture and nature can still be discerned. The Koolpin predominantly comprise carbonaceous mudstone but has chert, ironstone and phyllite interbeds. A commonly exposed ironstone interbed is characterised by the presence of sugary and nodular cherty bands which resemble the IS ironstone horizon as known within the Middle Koolpin Formation in the Mt Bonnie and Burrundie Dome regions. The nodular chert ironstone horizon often forms the steep drops along the edges of the ridge. Strong secondary silicification in conjunction with ferruginisation within this bed make it particularly resistant to erosion. Ferruginisation within the Koolpin Formation is a common feature. Boxwork textures as disseminations and within fractures are often observed throughout, but are particularly concentrated along cherty and ironstone horizons.

Gerowie Tuff
The Gerowie Tuff comprises light brown siliceous siltstones, argillites and albatic cherts. These rocks, along with the Mt Bonnie Formation, form a series of relatively low undulating hills that are well incised by a perennial drainage system. Very thin skeletal soils develop over the Gerowie Tuff and rock types are difficult to discern through the effects of weathering on similarly textured and colourised lithologies.

Mt Bonnie Formation
The Mt Bonnie Formation superficially, at least, resembles the Gerowie Tuff in its occurrence and nature. Siliceous siltstones, slates, argillites, cherts, and greywackes are observed. Areas of well incised but low relief are formed and thin skeletal soils are commonly developed.

Burrell Creek Formation
The Burrell Creek Formation is typified by felspathic greywacke, slates and siltstones.

Zamu Dolerite
The dolerite occurs as a medium to coarse grained sill intruding the Koolpin Formation. It can occur as a distinctive series of resistant outcrop and rubble or become preferentially weathered and be obscured under soil and regolith cover. Distinctive dark red clay-rich soils are developed over the dolerites in these instances.
MINERALISATION

McCarthys silver-lead mine is the only documented economic mineral occurrence near the licence area. The lode is 0.3m to 1.0m wide and was worked between 1912 and 1927 from several shafts. The mineralisation occupies a shear zone dipping between 70° and 80° west and transgresses carbonaceous siltstone of the Wildman Siltstone. The ore comprises an oxidised zone with pyromorphite, cerussite, anglesite and galena. It is postulated that the mineralisation formed due to metal precipitation by reduction during contact metamorphism within the hornblende-hornfels zone around the McCarthys Granite. Total recorded production is estimated at 580t concentrate of silver and lead (Stuart-Smith et al, 1988).

Detailed exploration conducted by Aztec Mining Pty Ltd has located discordant lead and zinc mineralisation in northerly and west north west trending structures. The mineralisation commonly occurs as linear gossanous limonitic outcrops variably silicified with a trace of galena and pyrite. Within Zamu Dolerite the mineralisation occurs more as a stockwork of gossanous veinlets. The widest development occurs where two structures intersect. The northerly structures are more siliceous and lead rich, whereas the west north west structures are more ferruginous and limonitic and zinc rich.
Exploration license 22440 was granted to the author of this report (Jim Kastrissios) and his partner David Langley and partner in EL(A)24539 Grant Archer, on the 17th of March 2004. The tenement was primarily acquired to search for gold and base metals lead, zinc and silver, to which has been included iron ore due to the successful entry in the Australian Stock exchange by "Territory Iron" that currently has the Iron ore tenements at Frances Creek, and also the recent commencement in the building of the $11 million dollars "bulk ore loading facility" in middle arm port, specifically designed for manganese and iron ore loading into the ships.

No field work was done during the first year of EL22440 because the author had two operations, one of which was congenital hernia. Instead, the work done for the first year report of EL22440 was the following:

1. Assimilation of all rockchip, stream sediment and soil sampling results of all previous EL’s and CR’s covering specifically the ground within EL22440 from the period of 1966 up until 1995 inclusive which was the year the last samples were taken, a total of approximately 2,100 soil samples, 830 stream sediment and 1,340 rockchip/ironstone samples have been taken from within the boundaries of EL22440 by 8 different mineral exploration companies. This amounts to a grand total of 4,270 mixed sample results.

2. Plotting on two separate maps, one for
Zinc and another for lead, all stream sediment and soil sampling values from 200 ppm and upwards and for rockchip all values from 360 ppm and upwards. All these values in turn for purposes of optimum illustration in the simplest of manner, were graded at the authors' (subjective evaluation) based wholly on observation of the range of values in the total of 4,270 mixed sample results into the three following "equivalent value ranges" of significance:

- Soil sample: Stream sediment sample
- \(200 \text{ ppm} - 499\) ppm
- \(500 - 999\) ppm
- \(1,000 \text{ ppm} - \) or more.

where each of the symbols \(\bullet\), \(\times\), \(\otimes\) separately, represent the same level of significance for all soil, stream and rockchip samples with that particular symbol plotted on the map.

Map A represents all sample values for Zinc and Map B for lead, 200 ppm or more. As a result of this work when one combines the data from map A and map B, one can clearly see the anomalies 1, 2, 3, 4 and 5 from the anomaly location plan for (Aztec Mining Company Ltd.) CR92/168, and in addition to these anomalies one can also see anomalies 6, 7, 8, 9, 10 and 11.

Anomaly 10 is very elusive, I had to get it from bits and pieces from several company reports, it is right next to graphitic shale and there is a magnetic high partly overlapping it.
Anomaly 5 is mainly to the north and south McCarthy's lodes, but added to that are strong stream sediment and soil sample results 200 to 300m south from the southern lode and also the creek drainage over the next ridge from McCarthy's to the east. Furthermore in the Mary River aeromagnetics and radiometrics survey a moderate to low but distinct magnetic anomaly of dimensions 400 metres E-W and 500 metres N-S overlies the McCarthy's Pb-Ag prospect. Finally from CR66/38 a Limestone outcrop 100 metres away from McCarthy's South in a direction bearing 040° North East of dimensions 75 metres long and 17 metres wide exists followed by a smaller limestone outcrop some 45 metres away from the first limestone 30 metres long and 7 metres wide. The limestone outcrops even though they are small, their proximity to McCarthy's South, added to the overlapping magnetic anomaly brings up the prospect that there could be a small economic Pb-Zn-Ag deposit in depth. Furthermore this possibility is given support by the fact that United Uranium in 1966 in CR66/38 did shallow wagon drilling up to 30 metres depth which drilling is the equivalent of today's percussion drilling and they mention loss of the drilled powder due to ground water problems. No diamond drilling was done and no detailed ground magnetics which is warranted due to the high level of trace elements throughout their sampling grid.
It is quite evident from maps A and B, that zinc anomalies are not as strong as lead anomalies and that is because zinc like silver leaches out easily with water and secondly, if you compare maps A and B, most of the areas anomalous for zinc are also anomalous for lead and vice versa.

Anomaly 4 contains 1.2% Zn from carbonaceous rock, it also has a small shaft near by, it is close to the major north-east trending fault line within EL 22440 and very close to the Zamu dolerite on its northern boundary. Furthermore it has a very steep magnetic gradient of 1,000 nano Tesla going through it in a SSW direction with starting point its northern boundary with the dolerite contact, and traversing in a perpendicular direction to the strike direction of the wildman siltstones. The 1,000 nano Tesla change is within a 400 metre traverse.

Anomaly 6 is in ironstone within the Koolpin formation once again close to the dolerite contact. The orientation of the ironstone is 350°. Several % type lead assays were collected from the ironstone with the best being 15% Pb. Furthermore a 1,500 nano Tesla magnetic gradient is in the immediate vicinity of the ironstone, most of it is in an easterly direction from the ironstone within a 500 metre west to east ground traverse. Finally only 400 metres north east from the ironstone the best gold assay to date within the ground covering EL 22440 was collected grading 4.9 Au/g.

The aeromagnetic flight path was E-W which makes it highly probable the ironstone causes the steep magnetic gradient.
Location 2 is a discontinues 102 km outcropping moderate mineralisation gossan and anomaly 3 a 300 to 400 m good gossan. Location 2 and anomaly 3 combined, form the SW and NE flanks of the golden spider anticline as it passes through the wildman siltstone and mundogie sandstone contact in a NW direction.

Also along the golden spider anticline in a NW direction starting from the wildman siltstone mundogie sandstone contact, there are 2 partly fused magnetic anomalies one of which covers location 2 and anomaly 3 and further north the other magnetic anomaly covers the argillaceous sediments with mundogie sandstone contact.

Anomaly 1, has steep magnetic lines passing through it, but the description of the gossan warrants more work on it.

Anomaly 2 which has diamond drill hole 2 on it, has a subdued magnetic high over the northerly discordant siliceous gossan on which DDH 2 is located. The siliceous structure is 600 metres long averaging 20 metres thickness and has average of 0.5% Zn and 0.5% Pb through it. It also had 10 metres chip of 2g Au/tonne on one channel sample on the surface. And the diamond drill hole 15 metres away from the gossan from 55 to 57 metres depth averaged 1.3g Au/tonne and 55 to 59 metres averaged 0.7g Au/t.

and at 74 metres when it actually pierced the skin of the gossan (siliceous) from 74 to 77m averaged 1.75% Pb and at 92-93.5 m 1% Zn and at 99.5 to 100.4 m 6.7% Zn. The subdued magnetic high is 400m E-W by 400 m N-S.
The author gave the geophysicist Angus McKoy a map with five areas drawn which Angus reproduced with dotted yellow outline on the geophysics contour maps and designated them as areas 1, 2, 3, 4 and 5. The purpose was to check how magnetic they are.

Area 4 contained part of a siliceous northerly trending gossan about 500 metres west from (DDH1 in CR93/216) which was mineralized and not fully tested and appeared to me to probably resemble the 600m northerly trending siliceous gossan drilled in DDH2 that contained a 10m surface rock chip assaying 2g Au/t. The purpose was to see if it was extensive and magnetic due to pyrrhotite in depth. That is not the case (at least not at 400m magnetic line spacing), but we will visit the site to locate the full outcrop of the siliceous gossan.

Area 5 was bordering a graphitic shale outcrop and it is also anomalous for lead, so my suspicion was sulphides in depth. The area is highly magnetic and whether it is a pyrrhotitic sulphide deposit in contact with the graphitic shale or it is alteration of the two nearby ironstone outcrops to a sulphide phase at depth (pyrrhotite containing, such as Iron Blow and Mount Bonnie) or something else, time will tell, we will endeavour to find the truth.

Area 3, not only contains the 600m discordant northerly trending siliceous gossan with one 10m channel rockchip sample assaying 2g Au/tonne, but there are also at least 3 other samples
at distances 400 metres, 600m, and 700 m all south east from the discordant northerly trending gossan, two of which the assay values were 0.33g Au/t and 1.03g Au/t. Most interestingly these two samples with 0.33g Au/t and 1.03g Au/t overlap into the eastern end of anomaly 1. Furthermore anomaly 1 is very spongy and I believe careful selection of samples to be tested by fire assay might produce some gold. Also a 50 metres northerly trending discordant quartz blow is in the vicinity of anomaly 1 and this has not been tested for gold at all, and it should be, because the nearby anomaly 1 is high in lead and zinc as with a lot of the gold in Northern Hercules and Moline, about ppm. Area 2 is on the north west side of the golden Spider anticline, where two ferruginous quartz samples assayed 0.42g Au/t and 1.03g Au/t and these samples are about 120 to 150 metres south from the anticline hinge line and 500 to 700 metres away from the Cullen batholith. What the author likes about the area is that the quartz ferruginisation is extensive but unfortunately (at 400m spacing of magnetic flight lines) it appears to be non-pyrrhotitic. In the course of time the area will be visited at least briefly. Area 1 speaks for itself in the magnetics, it is the south east end of the golden spider anticline. Several samples more than 1g Au/ton
have been collected with the best being 4 g Au/tonne.
There are parasitic overturned anticlinal folds closely and adjacent to the nose of the golden spider anticline. Also within the dolerite nose forming near the end of the anticline, inside of that nose in the wildman siltstone there exist a quartz saddle reef which has graded up to 1.5 g Au/t. Outside of the dolerite nose exists the Koolpin formation with at least four ironstone units close to the hinge zone of the anticline, also a sample 4 g Au/t was picked close to the hinge of the anticline a couple of hundred metres outside the dolerite in the Koolpin.

One of the ironstones furthest out from the dolerite nose and close to the hinge assayed one sample at 0.5 g Au/t.

Three of the five major magnetic anomalies in the exploration license 22440 had two or more ironstone bodies within close proximity to the anomalies, so it is reasonable to suspect the ironstones becoming sulphidic and pyrrhotitic in depth, especially since some of them have grades of lead up to 2% and zinc 1% and arsenic 0.5% on the surface. One more thing is that the nose of the golden spider anticline which composes the inner dolerite nose with wildman siltstone within it and the outer shell of the nose which composes of carbonaceous
Koolpin sediments and has several subparallel parasitic folds some of them overturned and several ironstone bodies all around the outside shell of the inner dolerite nose, reminds the author of the similarity with the plan view of the Cosmo Howley gold mine (as it is in colour print on page 39 of NTGS, Gold deposits of the N.T., Report 11 by M. Ahmad, A.S. Wygralak and P.A. Ferenczi).

Finally the geophysicist in his part of the report in mentioning that ground magnetic surveys have been conducted by exploration licenses that held the ground in the past is only partly true. Previous exploration license EL3008 that held the ground covering EL22440 at the same time held the ground covering Moline, Northern Hercules and all the ground between EL22440 and Northern Hercules etc. In company report CR86/119 by Cyprus minerals Australia, ground magnetic traverses were conducted over the gold prospects Dingo, Mango, Cowbell etc... all of which were within the boundaries of EL3008 as was the ground covering EL22440, but to my knowledge and I read the report carefully, no ground magnetic survey has yet been conducted over any of the ground inside EL22440. Well that’s about to change as this year 2005 and 2006 inclusive, detailed ground magnetic is going to be on the menu for several of the gossanous and/or magnetic anomalies.
(3) Took note within all historical EL's and CR's covering EL 22440 of all implied and direct written evidence as to the existence of Frances Creek type of crystalline hematite grading 62% Iron and the following is what was found.

In EL 2029 ironstone outcroppings both at Frances Creek and at McCarthy's (EL 22440) were sampled on a few dozen locations in each area and the similarities in the values for lead, zinc and arsenic in about half of the samples, implies the existence of some crystalline hematite at McCarthy's.

Furthermore in company report CR 88/272 by John Vann, two of the ironstone samples graded 62% iron and also described to be as crystalline hematite, and one graded 54% iron.

Also in EL 5195 it is explicitly written that in the north west corner of the EL "a ridge of crystalline hematite of the Frances Creek type" exists, and this ridge incidentally happens to be capped by Wildman siltstone as in Frances Creek.

Finally in "N.T Geological Survey, report 13 by Phillip A. Ferenczi", the Helen 6/7 deposit from which 6.0 million tonnes of Iron Ore was produced, is right alongside a syncline in the wildman siltstone and, its "plan view" surface expression is only 300m x 250m at the most. There is about 5 square kilometres of wildman siltstone in EL 22440 and about 1.5 square kilometres of that ground on the flanks of an anticline and furthermore, banded hematitic shale which is present in and below the main ore horizon of the Helene 6/7 deposit.
was reported in about 10 different rockchip samples in CR68/64 by C.R. Weber, and likewise in CR88/227.

Putting all the above written evidence in perspective, the possibility of a small economic deposit of crystalline hematite within the boundaries of EL22440 cannot be ruled out.

To conduct detail ground magnetics over all gossanous and/or magnetic anomalies, and to take detail and carefully selected assay samples over this. The emphasis is to spend several days on each of these anomalies over the next two years. Walk over the anomalies ground carefully, pick up rock samples and break them open and examine the nature of the cavities in the freshly broken rocks under a 1x50 magnification hand held lens to observe the relative spongiousness of the rock also whether the cavitation is caused by pyritic or arsenopyritic decomposed crystals, or some other form of crystalline sulphide that has decomposed for example marcasite. To do the same procedure with the shales, mudstones, slates and ironstones and document with GPS coordinates their position.

To do detail ground geology in the vicinity of sufficient encouraging assay samples, and/or in the vicinity of encouraging ground magnetics. To photograph with a digital camera all interesting gossans with some close up views.

And last but not least to ascertain the extent of economic hematite, should economic deposit of hematite exist. This will be a thorough two year preparation prior to costeaming, EM and drilling. Remote sensing is also on the agenda targeting sulphidic iron ore.
Putting it all in perspective, for the last 40 years, 8 exploration companies have covered this ground, each going through it in a rush and finding nothing. The reason for finding nothing in the authors opinion is because they had no faith that the ground was valuable and they rushed through it. However each time a company rushed this ground they gathered some information and to add to this information the dedicated, concise documentation of all surrounding geology by the professional team of NIGS geologists has helped me to see the picture clearer and the true potential of the ground.

We will spend considerable time and effort to see if there is something of value near the surface or at depth. If need be at the appropriate time we will bring in a bigger player to do targeted and/or extensive drilling.

The author realises this report took longer to produce than it should. Please forgive, for that it is his second report, the first done mainly by his reliable partner David Langley. This report the author did entirely on his own, has spent the last 3½ months reading on it and planning it. Each previous mineral explorer drew the streams slightly different, and the fact that I didn't have a computer didn't make things any easier. A computer and computer course is on the menu. The next report will be easier and more organised.
OPTIMAL AEROMAGNETIC FLIGHT LINES DIRECTIONS FOR EL22440.

From the collective knowledge of all previous mineral explorers, it has been ascertained that mineralization as it has been observed up to now in EL22440 occurs in two principal directions.

1. Discordant to bedding siliceous gossanous boxwork veins striking in a northerly direction, enriched in lead and gold.

2. West-north westerly concordant to bedding limonitic and ferruginous outcrops rich in zinc.

Optimum resolution of the magnetic image of the northerly trending lead and gold rich structures can be achieved if the aeromagnetic flight lines are flown in an East-west direction effectively perpendicular (at 90° angle) to the strike direction of the siliceous gossanous outcrops.

Likewise if the flight lines are flown in a North North East direction which is perpendicular to the west north west strike of the zinc rich limonitic ferruginous structures you would get optimum resolution of the magnetic image of these structures.

So to effectively show both types of mineralized structures, the entire ground has to be aeromagnetically flown twice, once in E-W flight lines and another in NNE flight lines.

To illustrate the point, the two magnetic images covering the same ground would be like the two separate images viewed in a hologram by tilting the hologram at a different angle, only here the angle that is tilted is that of the aeromagnetic flight lines themselves, and the image changes as the angle changes, and all in-between images represent a cross between the two mineralised structures.
The references are divided into two sections, A and B.

Section A is the sum total of exploration licenses and the company reports attached to these licenses that covered a portion or the total of the ground within EL22440 historically.

Of these EL's and CR's the author extracted information starting from BMR bulletin 82 (1919) travelling through time up until company report CR95/381 which covers EL's 7614, 7615 and 7979 collectively in the year 1995.

The author read information relating to EL's 9053, 9083 and 9597 which cover sections of EL22440, but all work done on these three EL's covers satellite imaging and ground slope vectors, which for the present time has not been used, and this brings the history of the ground to the year 1997.

A couple of years latter the author and his partners applied for EL22440.

Section B covers most of the other material that the author can remember reading in the last 3½ months to broaden his knowledge of the surrounding geology around the Cullen Batholith and surrounding mines such as Moline, Northern Hercules, Mount Bonnie, Iron Blow and to a lesser extent some of the other mines.

The "Northern Territory Geological Survey, Gold deposits, report 11, by M. Ahmad, A.S Wygralak and P.A. Ferenczi" pages 25 to 46 inclusive, covering gold deposits in the Pine Creek Orogen. I spent 6 days reading it over and over again 4 times believe it or not.
It is the most informative literature in condensed form on economic geology on gold deposits of the Northern Territory I have read. It is work like this that enlightens the mineral explorer and helps him/her find the minerals he/she is looking for, on a broad regional scale.

REFERENCES
Section A.
BMR bulletin 82 (1919)

CR66/38 A.G. Sturm United Uranium N.T.
CR68/64 C.R. Weber United Uranium N.T.

EL 1091 C.R.A Exploration Pty Ltd
CR78/062, CR79/061

EL 2029 Australian and New Zealand Exploration Company CR81/44.

EL 3008 Amoco Minerals Australia Company,
Cyprus Minerals Australia Company,
Greenbushes Tin Ltd, Greenex,
CR86/119, CR86/263.

EL 4508 CR90/586 Cyprus Minerals Australia Company.

EL 4933 Driffield Mining Pty Ltd
CR88/330, CR89/364

EL's 5194, 5195, 5196 collectively operated by Goldfields Exploration Pty Ltd
CR88/227, CR89/364

EL5847 Driffield Mining Pty Ltd
CR89/222
References section A (continued)


EL 7054 Aztec Mining Company CR92/168, CR93/76 and CR95/197.

EL's 7614, 7615 and 7979 collectively operated by Nicron Resources Limited CR95/381 (final report).

EL's 9053, 9083 and 9597 all work done on these three EL's covers satellite imaging and ground slope vectors, the information has been acquired but not used in this report.

Aztec Mining and Nicron Resources were both owned by Woodcutters, which was taken over by Normandy Metals, a subsidiary of Normandy Poseidon in 1993 and the ground currently covering EL 22440 was dropped in 1995.

Section B references.

HYC Silver-Lead-Zinc Deposit, McArthur River.

Lady Loretta Silver-Lead-Zinc deposit
M.C Hancock and A.H. Purvis

Century Zinc - Zinifex Mining.

Note "Amoco Minerals Australia Company" changed its name to "Cyprus Minerals Australia Company".
FIRST YEAR EXPLORATION EXPENDITURE ON EL 22440

Labour to research all previous EL’s over the same ground, and to compose several related material, and to compose several computer CD of the first preliminary year report, 54 days x $250 = $13,500

Geophysical interpretation of Mary River aeromagnetics & radiometrics survey. = $2,200

Travelling fuel

EL 7054, Aztec Mining Company CR93/76, CR92/168, CR93/76 and CR95/197 EL’s 7614, 7615 and 7979 collectively operated by Nicron Resources Limited CR95/381 (final report)

EL 7615 CR93/216A

Aztec mining and Nicron resources were both owned by Woodcutters which was taken over by Normandy Metals, a subsidiary of Normandy Poseidon in 1993 and dropped this ground that year in 1994.

EL/1091, C.R.A Exploration Pty Ltd., CR78/062, CR79/061

EL 2029 Australian and New Zealand Exploration company CR81/44. EL 6556 Nicron Resources, Lachlan Zinc and Petrocarb NL CR91/526, CR92/168, CR92/587
FIRST YEAR EXPLORATION EXPENDITURE
ON EL22440.

Labour, to research all previous EL's
over the same ground, and various related
material, and to compose after several
preliminary mapping drafts, a computer
CD of the final product of maps and
written text, which is the first year
report on EL22440. 54 days x $250 = $13,500

Geophysical interpretation of Mary
River aeromagnetics & radiometrics survey.

= $2,200

Travelling fuel, vehicle maintenance
and parking tickets for the duration
of making this report.  = $400

Multiple photocopies of existing maps,
drafted maps & written text.  = $500

Multiple computer discs scanned copies
of first year EL22440 report.  = $350

First year rental and application
fee for EL22440.  = $600

EXPENDITURE TOTAL  = $17,550-
6. DISCUSSION OF RESULTS AND PROPOSED FOLLOW UP INVESTIGATION

The exploration work undertaken this year principally involved investigation of geochemical anomalies generated by earlier workers. In the course of this work, and as a result of additional sampling, five significant anomalies (Anomaly 1 to 5) have been highlighted. These anomalies and the follow up investigations recommended, are discussed below. Five other locations (location 1 to 5) of lower priority were also investigated and sampled. These are also discussed below.

All geochemical sample data can be reviewed by reference to Diagrams 2 to 7 (in enclosures) and Appendix 1. A diagramatic presentation of the significant anomalies and locations is also presented in Diagram 7.

Anomaly 1.

Description: This anomaly was initially detected by anomalous Cu (360ppm) and Pb (up to 192ppm) stream sediment samples passing through the Koolpin Formation and Zamu Dolerites immediately north of the granite contact. Anomalous Cu, Pb and Zn rock chip samples were obtained from a gossanous horizon near the Koolpin and Zamu Dolerite contact and from a quartz blow which could account for the stream sediment anomalism. The gossan horizon outcrops on the back of a distinct ridge and has developed along or next to a nodular chert horizon within carbonaceous mudstones, similar in appearance to the 15 Unit as known within the Koolpin Formation at Burrundie Dome. Values for Cu up to 340ppm, Pb up to 1970ppm and Zn up to 460ppm where achieved from rock chip samples from the gossan and "15" horizon. The gossan where best developed is an intensely boxworked limonite, haematite, goethite sponge showing no trace of the host rock texture or composition. The appearance grades from this, over several hundred metres, to a strongly ferruginous carbonaceous mudstones with minor boxwork texture in association with nodular chert fragments. The true thickness or strike of the gossan is not accurately ascertained because of dispersion down slope and regolith cover but a width up to 10m and strike of 300 to 400m is indicated for the highly gossanous zone. The quartz blow south of the gossan occurs as a prominent outcrop (15 x 50m approximately), also within the Koolpin Formation, although this area is blanketed by regolith cover. Values of 210ppm Cu, 3520 Pb and 1120 Zn were obtained from a rock chip sample of the quartz. The quartz blow appears to strike discordantly with the
stratigraphy.

Four wide spaced soil sample traverses tested the zone of regolith over the Koolpin Formation and granite contact zone. Several Pb and Zn soil anomalies were highlighted by this work. One soil anomaly coincided with the gossan zone and the dolerite contact, and is therefore accounted for, whereas the other two west of the quartz blow remain to be accounted for. Soil samples over the gossan and dolerite ranged up to 1010ppm (Pb) and 660ppm Zn. In the areas of regolith cover the other two soil anomalies have values of Pb up to 390ppm and Zn 210ppm. The presence of more anomalous quartz reefs, albeit under cover, near the granite contact is a likely explanation for these soil anomalies but this need to be investigated.

Proposed follow up work:-

A. Investigate areas of soil anomality and undertake additional geochemical sampling if anomalous features of economic potential are indicated.
B. Excavate coteans in areas of the best soil anomality to expose the source and likely dimensions of mineralisation.
C. Excavate coteans through the best portion of the gossan horizon to test for widths and grade.
D. Undertake a staged drilling programme if results remain positive.

Anomaly No.2
Description:- Anomaly No.2 is highlighted by anomalous Pb and Zn stream sediment samples. These streams essentially drain from a regionally prominent ridge line formed by the Koolpin Formation. Anomalous Pb values between 216ppm and 520ppm and Zn values between 182ppm and 236ppm are present in these streams. Outcrops of quartz with highly elevated Cu (≤720ppm), Pb (≤1.28%), Zn (≤8660ppm) and Au (≤0.28ppm) were located on the slopes of the prominent ridge and clearly could account for the stream sediment anomaly. Scree from the ridge effectively blankets all outcrop with the exception of the few quartz reefs and consequently other bedrock sources cannot be discounted. The quartz has a steely grey appearance and abundant disseminated boxwork texture.
Anomaly 3.

Description: The anomalous Pb and Zn stream sediment anomalies located here are sourced from a silicous, quartz veined, brecciated and strongly gossanous cherty sedimentary rocks. They occur as prominent outcrops on the contact of the Mundogie Sandstone with the Wildman siltstone. The stream sediment samples returned a maximum of 420 ppm Pb and 342 ppm Zn from immediately down stream of the outcrops. Twenty rock chips of the gossanous outcrops were taken and consistently anomalous Pb and Zn values were returned. The best Pb values was 8660 ppm and the best Zn was 1810 ppm.

The geological setting and economic potential of this area is not readily determined despite the prominent outcrops. Bedding dips and strike vary considerably in the immediate area indicating a complexly folded sequence. This is not shown on the geological map however an anticlinal axis, running parallel to the Spider Anticline, may account for the complexity observed. In this event the brecciated, quartz veined rocks may lie within a disrupted fold nose zone.

Proposed follow up work:

A. Geological mapping is required initially to establish the possible extensions and control of the gossanous brecciated rock. If any potential for economic structures or mineralised horizons are recognised from this work those additional geochemical sampling should be initiated.

B. The mineralised rock is extremely hard and not readily amenable to near surface evaluation by costeans. It may be necessary to select drill targets to carry out the next phase of exploration.

Anomaly 4.

Description: This soil and rock chip Pb and Zn anomaly is hosted in well exposed carbonaceous sedimentary rocks along the back of a prominent ridge. Soil values up to 314 ppm Zn and 150 ppm Pb are recorded and rock chip of 1.21% Zn and 2615 ppm Pb are collected from the immediate vicinity.

No obvious signs of significant mineralisation were observed despite these anomalous
geochemical values. Two additional soil sample traverses were completed approximately 100m either side of the original anomaly but failed to detect extensions of the original anomaly. A shallow prospecting shaft was also located on the eastern end of the anomaly but no clues as to its target were ascertained.

**Proposed follow up work:-**

A. The bedrock exposure over this anomaly is quite good and consequently it is unlikely that any significant potential exists. However the geochemical anomalies achieved are not accounted for and remain a mystery. No further work is recommended in the short term but this anomaly may perhaps be explained later once more work is done on the other surrounding anomalies.

**Anomaly 5.**

**Description:-** Two streams with anomalous Pb and Zn stream sediment sample values define this anomaly. The eastern most stream has the abandoned McCarthy's Pb Ag mine within it's catchment and as a consequence Pb (264 ppm) and Zn (248 ppm) stream sediment values obtained 500 m downstream are expected. The western most stream, however, occurs in the adjoining catchment area and an explanation is yet to be determined for the anomalous Zn (222 ppm) and Pb (2160 ppm) obtained. The McCarthy's Mine workings do not appear to extend into this catchment area, despite it's proximity, and the anomalous stream sediment samples have been collected well within the granite. Gossaneous quartz veins associated with granite and dolerite dykes were sampled in the headwaters of this stream directly west of McCarthy's Mine but no significantly anomalous base metal values were obtained that could account for the stream sediment anomism.

**Proposed follow up work:-**

A. Resample the anomalous streams to check the accuracy of the original sample
B. Soil sample across the projected southern strike of the McCarthy's Mine structure to test for hidden sources of mineralisation which could account for the stream sediment anomaly.
Location 1.

Description. This anomaly is highlighted by two small easterly flowing streams with anomalous Zn (234 ppm and 260 ppm) and one anomalous Pb (162 ppm) stream sediment samples. Rock chip samples of isolated gossanous quartz blows returned anomalous Pb (1230 and 960 ppm) and Zn (440 ppm) values which could account for the stream sediment anomaly on the northern most of the two streams. Rock chip samples of ferruginous and weakly gossanous dolerite and sedimentary rocks around the southern most stream, however, did not reflect any anomalism which would account for this stream sediment sample result. Rock exposure is reasonably good in this area and as a consequence a geological explanation is yet to be determined.

Proposed follow up work:

A. No additional work is recommended in the short term; the streams cross out of the EL boundary and the geochemical values and geological observations do not indicate prospectivity.

B. Review the results for this anomaly once additional work on the other anomalies has been completed.

Location 2.

Description:- A line of gossanous, quartz veined, ferruginous and brecciated rock up to 15 m wide is the dominant feature of this anomaly. The gossan is best developed where it lies on the Mundogie Siltstone contact but then trends to the east as a discontinuous series of isolated outcrops in flat lying areas of regolith cover. The assumption is made that the gossan zone is continuous because the outcrops line up but this actually is not proved. Rock chips from along this gossan returned a maximum of 3260 ppm Zn, 3700 ppm Pb and 710 ppm Cu but most of the Cu, Pb, Zn assays had values in the low hundreds.

A number of southerly flowing streams pass through the gossan horizon and are moderately anomalous in lead and zinc.
Proposed follow up work:

A. The geochemical assay results do not indicate a high priority target despite the interpreted strike extent and width of the gossan. No work is recommended in the short term but this anomaly should be reassessed upon completion of follow up work on the other nearby anomalies. Geological information obtained from that work may assist in resolving the geological setting and potential of this target.

Location 3, 4 and 5

Description: Each of these location mark areas of weakly anomalous Pb and Zn stream sediment sampling. Values range between 90 and 220 ppm Zn and 70 to 170 ppm Pb from within these areas. In each case the streams drain from a very steep scree covered ridge formed on the Koolpin Formation. Soil sample traverses were run down the scree slopes on Locations 3 and 5 and rock chips were collected along the ridge of any likely mineralised rock sources. Several soil samples were weakly anomalous at Location 5 (105 and 110 ppm Pb) and one rock chip above Location 4 was anomalous in Zn (1864 ppm Zn). No significant sources of mineralisation appear to be present. The Koolpin Formation is characterised by the presence of a weak boxwork texture throughout, clearly indicating primary sulphide mineralisation, and this could account for the elevated and weakly anomalous geochemical anomalies without actually indicating economic targets.

Proposed follow up work:

A. No follow up work is recommended. Significantly new geological insight or data would need to be available which would justify additional work. Although scree cover prevents any significant geological outcrop from being sampled or observed the geochemical samples would effectively highlight any significant targets if present.