The Director,
Mines & Water Resources Branch,
Northern Territory Administration,
Darwin NT 5790

Dear Sir,

A.P.'s 1721-1725 and 1891
Progress Report for March, 1969

In A.P. 1721 a completely new plot of all geochemical data available was completed by Curt Wheat. Results were analysed by the method proposed by Tennant and White and approximately 5 per cent of the 274 samples are considered to be anomalous. Anomalous results have been displayed in colour on result sheets.

As there is no readily evident reason for the anomalous results further work is planned to elucidate this problem.

A geological map of the northern \( \frac{2}{3} \) of A.P. 1721 was compiled during the month.

In A.P. 1724 a geological map of the Ruby Gap Gorge area in the south-east corner of the Authority has been completed and exploration of the heavy mineral content of the Hale River is planned. The Bitter Springs Formation in this area will be prospected by chip sampling and soil sampling. Quartz veined brecciated limestone from this locality have given anomalous lead values.

In A.P. 1891 further geochemical sampling of 56 square miles of the Authority was completed. Bases map showing sample localities and types have been forwarded to Sydney for drafting. A total of 592 samples were collected during the month. Analytical results are not yet available.

cc / Inspector of Mines
Magellan, Brisbane

Yours faithfully,

John Ivanac,
General Manager.
5th March, 1969

The Director,
Mines & Water Resources Branch,
Northern Territory Administration,
Darwin NT 5790

Dear Sir,

A.P.'s 1721-1725 & 1891
Progress Report for February, 1969

Under separate cover we are forwarding a copy of
the results of our prospecting activities in A.P. 1891. The
report brings available information on the area up to date and
outlines a preliminary programme of work to continue the
exploration of the Authority.

Statistical analysis of geochemical results has
not been completed but should be available during the coming
month.

Draft reports on other areas are in progress and
it is hoped they will be completed during the coming month.
As you know, field work in these areas is extremely difficult
and unrewarding during the summer season and although attempts
have been made to continue to work, we have found that the
efficiency of our operations has decreased substantially.
Nevertheless, efforts by our staff in Alice Springs are being
made to continue our exploration programme.

Yours faithfully,

John Ivanac,
General Manager.

cc Inspector of Mines,
Alice Springs.

Mr. R. Hopkins,
Brisbane.
The Director,  
Mines & Water Resources Branch,  
Northern Territory Administration,  
Darwin NT 5790

Dear Sir,

A.P.'s 1721-1726 & 1891  
Progress Report for January, 1969

Compilation of a report detailing the results of our prospecting activities within A.P. 1891 has been completed and the report will be forwarded to you shortly. A new programme of exploration has been planned in detail.

Statistical analysis of geochemical results from A.P. 1721 is progressing and a report presenting results and interpretations is being compiled.

All available literature relating to A.P. 1722 has been examined and a report on the area will be compiled during February.

The results of a geochemical survey in A.P. 1723 are being examined before deciding the course of future action in this area.

Geochemical results for samples collected from A.P. 1724 became available during the month. Heavy mineral concentrates from the Hale River were found to consist of magnetite (40%), other iron oxides (10-20%), ilmenite (30%), Amphibole (15%), and minor tourmaline, zircon and garnet. Several chip samples of brecciated limestone contained anomalous lead and zinc - 340 ppm and 389 ppm respectively.
Mines & Water Resources Branch,
Darwin  NT

Reassessment of all available information on A.P. 1725 was commenced and a preliminary report will be compiled during February.

A geological report on A.P. 1726 has been completed and will be forwarded shortly. Results of our exploration have not been encouraging.

Yours faithfully,

[Signature]
John Ivanac,
General Manager

cc: Inspector of Mines,
Alice Springs.

Mr. R. Hopkins,
Magellan.
17th January, 1969

The Director,
Mines Branch,
Northern Territory Administration,
Darwin NT 5790

Dear Sir,

A.P.'s 1721-1726 and 1891
Progress Report for December, 1968

A report on prospecting activities within A.P. 1891 has been compiled and will be forwarded as soon as drafting of maps and figures is completed. Approximately sixty square miles of the Authority have been selected for more intensive prospecting during 1969.

Thirty geochemical samples were collected from A.P. 1721. Results have been plotted on a photo scale base map. No anomalous results have been recorded. A progress report and evaluation of results to date is being compiled.

Geological reconnaissance and geochemical sampling have been carried out in the Tommy's Gap-Atnarpa Homestead-Ruby Gap area of A.P. 1724. Sands in the Hale River were sampled; they consist of hornblende, garnet, ilmenite and magnetite. Geochemical results are not yet available. Further work is planned for 1969 in the south-east of the Authority.

Geochemical anomalies near Mt. Peake in Authority 1723 were further investigated by sampling on a grid pattern. Above average copper values were confirmed but no large concentration has been located. High geochemical copper values (more than 1,000 ppm) were obtained from two fresh samples of basic rocks and further work is being considered. A progress report on exploration to date is being completed.

Yours faithfully,

John Ivanac,
General Manager.
31st December 1968

The Director.,
Mines Branch.,
Northern Territory Administration.,
Darwin N.T.  5790.

Dear Sir,

A.P.'s 1721 - 1726 & 1891
Progress Report for November, 1968

Results of a test geochemical survey in the Pinnacles Area show that
- 80 mesh fraction stream sediments are satisfactory for prospecting
in this area. It is proposed to re-apply for a prospecting lease of
reduced area (A.P. 1890) in the Pinnacles locality.

In A.P. 1721 Sampling of active stream sediments in the Winnecke Area
was continued as part of a systematic sampling programme of the area.

In A.P. 1725 Gold-bearing quartz veins occurring in dense, hard, and
virtually unaltered quartzite at White Range were investigated. The
gold is erratically distributed in the veins, to which it is confined
by the light non-reactive nature of the country rock. Some geophysical
work is planned for 1969 to examine the possibility of an increase of the
lodes with depth.

A re-examination of anomalous copper values near Mr. Peake and North of
Anningie Station in A.P. 1723 indicated the probability that the
anomalies delineate outcrops of weathered basic rocks.

Extensive quartz veins and greisenization were reported in the north
east corner of A.P. 1723, but investigation showed that this was not the
case.

Two unusual photo-patterns observed in the Arunta Complex near the
south western corner of A.P. 1721 were investigated. They proved to be
caused by several masses of fine medium-grained hornblende gabbro; white
areas on the photos were found to be irregular pegmatite and leucogranite masses intruded into the gabbro. The country rocks are gneiss and migmatite of the Arunta Complex. A sketch map of the area is attached.

Yours faithfully,

John Ivanac.
General Manager.

cc Inspector of Mines
Alice Springs.

cc R. Hopkins,
Magellan.
11th November, 1968

The Director,
Mines Branch,
Northern Territory Administration,
Darwin    NT    5790

Dear Sir,

P.A.'s 1721-1726 & 1891
Progress Report for October, 1968

Results of geochemical samples collected on A.P. 1721 during September have not been received from Australian Mineral Development Laboratories.

Further geological mapping and geochemical sampling continued in P.A. 1721 largely from the Sliding Rock area where copper mineralization occurs in a sequence of quartzites, phyllite and rare amphibolite in the Arunta Complex. Minor amounts of malachite and chalcocite occur in the quartzites but mapping shows that these minerals occur only adjacent to cupiferous quartz veins. Geochemical work is continuing and coverage of the area is expected to be completed by the end of November.

In P.A. 1723 a reconnaissance investigation showed that ferruginous bodies, some similar to those in which anomalous copper was found, occur in the area. However the inspection suggests that most of these are laterites.

Further reconnaissance surveys on A.P. 1726 were made and significant geochemical samples were submitted for analysis. The results show that - in the light of information collected to date - most of this authority
The Director,
Northern Territory Administration

does not appear to be prospective. A small area of interest on the southern flank of the Mt. Swan Granite is being examined. On completion of this examination a report will be prepared and a submission made to surrender most of this authority.

Yours faithfully,

John Ivanac,
General Manager.

cc /Inspector of Mines,
Alice Springs
The locations of samples collected during a two-day traverse of the Winnecke area are shown on the small sketch map of the area.

The Winnecke gold mines, in P.A. 1721, and Ciccone's Workings were inspected. The gold bearing reefs are small and very lightly mineralized. No base metal sulphides other than pyrite were observed. The mines offer no economic prospects. Alluvial ground associated with quartz reefs in Ciccone's workings are small and have been well worked over.

A small copper prospect south of Bald Hill warrants further investigation. Secondary copper mineralization can be observed in a sequence of micaceous quartzites of the Arunta Complex. The copper appears to be associated with a few siliceous "beds", and with fractured quartz veins. One or two days detailed work should be sufficient to determine the nature and extent of the mineralization.

A 200 foot wide breccia zone separates the Arunta Complex and the Bitter Springs Formation near Ciccone's workings. The breccia contains abundant limonite and three chip samples were collected to test the breccia.

In P.A. 1723 analytical results on samples collected during the visit have been received from Geomin. A number of interesting conclusions can be drawn from the results. First it appears that in this particular region stream sediment geochemical methods will be most effective if the -20 ± 80 mesh fraction is analysed. It is possible that wind-blown dust associated with the stream sediments has a considerable diluting effect on the concentration of the metallic ions adsorbed onto the ferruginous clays.

Both absolute anomalies and anomaly contrast may be subdued in this environment. This is illustrated in the weak copper, lead and arsenic concentrations associated with the stream sediments down-stream from the Home of Bullion Mine.

Results from samples taken from stream channels adjacent to the Anningie Tin-field suggest that complex tin-sulphides are absent and that cassiterite mineralization is present as coarse concentration and that fine grained disseminations into the surrounding country rock are also absent. Dispersion within the adjacent stream channels also suggest that the tin-lodes extend for a few hundred feet north and south of the exposed workings.

The primary tin-mineralization appears to be concentrated as an irregular two inch wide vein on the eastern side of a four foot wide pegmatite, and as such, will be uneconomic.

Fifty miles west of Barrow Creek and twelve miles
north of the Anningie tin-field, a number of massive limonite bodies are exposed, trending easterly for 5,000 feet. They rise approximately twenty feet above a peneplain and are some two hundred to three hundred feet wide. Random chip sampling has indicated anomalous copper (70 to 360 ppm) and gold (0.2 ppm) values.

A petrological report has indicated the limonite is an iron-stained breccia and clay cemented by limonite. Aggregates within the clay are suggestive of volcanic fragments and this could be a significant fact.

The country rock is granite but the thin section description has indicated that the limonite may be lying above a fracture containing shattered volcanics - a potential locus for metallic concentration.

A reconnaissance of the eastern part of P.A. 1726 shows that it is likely to be non-prospective for base metals except for the extreme north-eastern corner.

Mr. Clarke is to make a reconnaissance of the western part of the A to P during October.

In P.A. 1891 twenty-one samples of active stream sediment (-80 mesh) were collected from around the Johnnies Reward prospect. It is hoped that this will give further information about the effectiveness of stream sediment sampling in a terrain consisting of metamorphosed calcareous strata.

A further twenty-six stream sediment samples were collected from the major fault zone in the north eastern part of the Authority. Further samples are being collected in the week beginning September 23rd. When the results of the twenty-one test samples from the known mineralized area become available it will be possible to meaningfully analyse the results of samples collected in the fault zone.
Residual and geochemical samples were collected across and along the flanks of a major north-west trending fault system in P.A.'s 1721 and 1891. Results of samples collected in July were low. Zinc showed a higher than normal average of 450 ppm (emission spectrography result) but is not regarded as significant.

Reconnaissance investigation of P.A. 1723 suggests that lodes in the Arunta Complex appear to be too small or too low grade to interest the Company and this includes the Anningie Tin Lodes and the Home of Bullion Copper Mine.

Transported material from the Neutral Junction Tin-Tantalite Field, the Ivy Tin Mine workings, Mt. Nelson quartz-cassiterite deposits may provide areas of eluvial and alluvial concentrations. Some shallow pitting is planned.

Reconnaissance examination of the Central Mount Stuart Beds is proposed to check for radioactive deposits in conglomerates and zinc mineralization in dolomite.
Mapping and sampling Authority 1721 showed that a hill, three miles N.N.W. of Garden Homestead was found to consist of silicified and brecciated gneiss. The brecciated zone is about 100 feet wide and a chip sample of the pyritic quartz veins within the breccia gave the following results:

(in P.P.M.) 100 Cu; 40 Pb; 400 Zn; 50 Co; 80 Ni; 1 Sn; 0.2 Ag; 3 Au; 1,500 Cr; 100 W; 3 Mo; 50 As; 1 Bi.

This breccia may be part of a large north west trending fault or fault system extending through the Pinnacles and Wimmera areas for about 35 miles. Fifteen samples have now been collected from the central part of this fault. Analytical results are not yet available. The fault, which separates a sequence of banded calc-silicate rocks from amphibolite and granitic gneiss, is marked by breccias, quartz reefs, and zones of silicification.

A detailed reappraisal of information collected by previous investigators on P.A. 1723 and a study of previous reports is in progress.

Preliminary mapping and sampling was carried out within Authority 1724.

The area mapped is part of the Arltunga Mappe Complex. The gold mines at White Range were briefly inspected. These mines were inspected, mapped and sampled by A.G.G.S.N.A. in 1937, and Australian Development in 1962 carried out extensive drilling of the deposits. The deposits are highly irregular quartz segregations in fractured quartzite. Any decision on further investigation of the deposits must be based on an analysis of the results of previous investigations.

Several small mines and prospects were located in the Arunta Complex. At the Jenkins mine (sample 05-1) thin auriferous veins flank pegmatites in amphibolite.

Samples 05-2, 05-3 were collected to test faulted, sheared and quartz veined areas within a sequence of calcareous metasediments within the Arunta Complex. Sample 05-4 is a chip sample of greisenized granitic gneiss surrounding a small gold prospect at Arltunga.

A detailed study of available information on P.A.'s 1722 and 1725 is in progress.

* Semi-quantitative emission spectrography
W.R.1724. White Range, Claraville (C.R.M., W.A.)