The Director  
Mines & Water Resources Branch  
Northern Territory Administration  
DARWIN N.T. 5790

Dear Sir,

A.P. 2037 - Rankin's Prospect  
Report for March, 1971

Three percussion holes aggregating 670 feet were drilled to intersect outcropping ironstone lenses containing up to 1% copper and lead. Although sulphide mineralisation was intersected in these holes the base metal content and width were such as to down grade the prospect.

Drilling commenced on the 18th February and was completed on the 24th February. Abbreviated geological logs of the holes are as follows:--

**PH NT 17-2**  
**Bearing 68°, Angle 70°**  
0 - 160 Hornblende schist containing disseminated (< 5%) magnetite.  
Cu 52 - 80 ppm  
Pb 150 - 300 ppm  
Zn 220 - 660 ppm  
175 - 195 Hornblende schist containing disseminated magnetite (<1%)  
195 - 285 Quartz felspar gneiss containing lenses of hornblende schist

**PH NT 17-4**  
**Bearing 131°, Angle 58°**  
0 - 90 Hornblende schist  
90 - 105 Hornblende schist  
Cu 30 - 72 ppm  
Pb 28 - 40 ppm  
Zn 110-160 ppm  
105 - 145 Hornblende schist  
145 - 160 Quartz-felspar gneiss  
Cu 56 - 110 ppm  
Pb 110 - 720 ppm  
Zn 140 - 360 ppm  
160 - 195 Quartz-felspar gneiss containing lenses of hornblende schist. Disseminated magnetite and pyrite (< 5% oxide and sulphide)  
195 - 205 Quartz-felspar gneiss
PH NT 17-5  Bearing 159°, Angle 60°

0 - 50  Hornblende schist
50 - 105  Hornblende-biotite schist
105 - 110  Hornblende-biotite schist containing limonite and up to 20% combined magnetite and pyrite
110 - 130  Ironstained hornblende schist containing up to 20% combined magnetite-pyrite-galena-sphalerite

   Cu  270 - 700 ppm
   Pb  1500 -> 1%
   Zn  270 -> 1%

130 - 135  Ironstained hornblende schist containing up to 30% combined pyrite and magnetite.
135 - 190  Hornblende schist exhibiting decreasing sulphide content with depth. Combined pyrite magnetite content < 5%

Check assays on the zone 120 - 130 feet containing greater than 1% base metal yield the following results:

<table>
<thead>
<tr>
<th>Pb%</th>
<th>Zn%</th>
<th>Slope Width</th>
<th>True Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 - 125</td>
<td>3.8</td>
<td>1.6</td>
<td>5 ft.</td>
</tr>
<tr>
<td>125 - 130</td>
<td>1.2</td>
<td>0.8</td>
<td>5 ft.</td>
</tr>
</tbody>
</table>

Average grade is 2.5% Pb and 1.2% Zn over 6.4 ft. true width. These grades are not economic and not encouraging when considered in relation to the other drilling results and local geology.

Analytical results for silver, bismuth and antimony were all low i.e.

   silver < 15 ppm
   bismuth < 75 ppm
   antimony < 25 ppm

Expenditure to the end of February 1971 is $379.00 out of a total of $28,464.00 spent on exploration in the Northern Territory for 1971. This does not include capital equipment and plant needed to service the various projects.

Yours faithfully,

J.F. Ivanac
General Manager

C.C. Inspector of Mines
Mines Department
ALICE SPRINGS  N.T.
10 March 1971

The Director
Mines & Water Resources Branch
Northern Territory Administration
DARWIN N.T. 5790

Dear Sir,

AP 2037 - Rankins Prospect (NT 17)
Report for February 1971

The four drill sites were remade to accommodate the 27 ton drilling rig. The drilling commenced on the 18th and was completed on the 25th of the month.

The drillers were efficient and produced a daily footage of about 170 feet barring breakdowns.

The first hole to be drilled was P.H. No. 2 (415N 010E) which was stopped at 285 feet in water. A small amount of pyrite was observed near the bottom of the hole. It was found after the hole had been drilled that the angle of depression was 70° instead of 60°.

P.H. No. 4 (090N 090E) was stopped at 205 feet, with a small amount of pyrite near the bottom of the hole.

P.H. No. 5 (1390N 085E) was drilled to 190 feet after passing 25 feet into the footwall gneiss. Traces of sulphide probably pyrite were found from 90 feet to 110 feet. Galena and magnetite were found from 120 feet and 130 feet. Small amounts of pyrite were found down to 155 feet. This hole was drilled into a strong magnetic anomaly with galena outcropping on the surface. The magnetic anomaly is obviously due to the 10 foot intersection of magnetite.

The drilling of these three holes did not prove any of the massive sulphides which were expected to be found.

Expenditure for the month of January was $89.00; February not compiled.

Yours faithfully,

J. F. Ivanac
General Manager

c.c. Inspector of Mines
Alice Springs.
15th February 1971

The Director
Mines & Water Resources Branch
Northern Territory Administration
DARWIN N.T. 5790

Dear Sir,

AP 2037 – Rankins Prospect (NT 17)
Report for January, 1971

Gorey and Cole of Alice Springs may commence a percussion drilling programme in mid-February. The drilling (1000 feet at $4.20 per foot for 60° holes) will be carried out in conjunction with a similar amount of drilling at the Gheko Prospect a few miles to the east.

Prospecting by K. Rankin has continued using an ultra-violet light.

Prospecting has continued around the "Rankin's Copper Prospect" and around the Phlogopite Mine. No scheelite was found but specks of willemite were found at the copper prospect and a green fluorescent powder coating magnetite was found at the Phlogopite Mine.

Expenditure for 1970 is approximately $2,261.

Yours faithfully,

[Signature]

J.F. Ivanac
General Manager

C.C. Mr. K. Rankin, A. Springs
Inspector of Mines, Alice Springs
11th November, 1970

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

Dear Sir,

AP 2037 - Rankins Prospect
Progress Report for October, 1970

An application for renewal of Authority to Prospect 2037 was lodged on behalf of Mr. K. Rankin on 5th August, 1970. On 10th August we received advice that our application is under consideration.

It is advised that tracks and two drill sites have been bulldozed to Rankins Copper Prospect and the Phlogopite Mine, to enable a drilling programme to be carried out during November. Arrangements are also being made with the Mines Branch to diamond drill the Phlogopite Mine in depth later on this year. 2,250 feet of down hole hammer drilling is planned to test the prospects.

Yours faithfully,

J. F. Ivanac,
General Manager

cc Mr. K. M. Rankin, Alice Springs
    (Inspector of Mines, Alice Springs.)
14th October, 1970

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

Dear Sir,

AP 2037 - Rankins Prospect
Progress Report for September, 1970

Discussions have commenced with contractors to carry out a drilling programme to test prospects at AP 2037 and some detailed literature investigations have been made to study possible mineral associations in this particular Authority to Prospect.

A recent paper "The Mode of Occurrence & Petrogenesis of the Sapphirine-bearing and Associated Rocks of West Greenland" by Herd et al. (Geol. Surv. Greenland, Rpt. 24, 1969) describes an occurrence of magnesian metamorphics which exhibit very similar mineral assemblages to those of the phlogopite mine in Authority to Prospect 2037. Assemblages including sapphirine, olivine, enstatite, phlogopite, cordierite, spinel, corundum and pargasite are described as the high grade metamorphic equivalent of a layered ultrabasic/basic complex. Associated with these rocks are extensive chromite-bearing rocks of similar composition and setting to those of the Bushveld Complex. The geology of the area of the phlogopite mine is similar to that described in West Greenland and it is suggested that some of the heavy minerals which occur very commonly in the creeks of the area may be chromite. A geochemical programme will be carried out to test this possibility.
An application for renewal of AP 2037, on behalf of Mr. K. Rankin, the current holder of the authority, was made on 5th August, 1970.

Yours faithfully,

J. F. Ivanac,
General Manager

cc Mr. K. M. Rankin, Alice Springs
  Inspector of Mines, Alice Springs.
14th September, 1970.

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

Dear Sir,

AP 2037 – Rankin's Prospect
Progress Report for August, 1970

An application for renewal on behalf of
Mr. Rankin, prospector of Alice Springs, was made on
5th August, 1970.

A subsidised N.T. Mines Department drilling
programme has been agreed to, but the drill is
currently in the Yuendemu area. The date on which the
drill will be available is not known.

Yours faithfully,

J. F. Ivanac,
General Manager.

cc: Mr. K.M. Rankin, Alice Springs.
Inspector of Mines, Alice Springs.
16th December, 1969

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

Dear Sir,

AP 2037 - Rankins Prospect
Progress Report for November, 1969

Petrographic descriptions of six specimens from the area of the phlogopite mine were received during the month. Dr. Ron Vernon of Macquarie University who described the specimens, identified the rare mineral clinohumite, Mg(OH,F)₂4MgS₁₁₄, in the assemblage of three of the specimens. The mineral assemblages suggest an ultrabasic/high grade metamorphic origin for the rocks of the area. Conversation with Peter Crohn who described the Mud Tank "carbonatite" suggested this mineral was previously unidentified. Of further interest was Vernon's identification of accessory xenotime (YPO₄), which contains 54% to 64% Y₂O₃. Yttrium has been described from the locality previously, according to Keith Rankin. Most of the world's Yttrium production comes from alluvial deposits in association with monazite, hence it may be worthwhile examining stream sediments in the vicinity of the phlogopite mine.

Ron Vernon has asked if he might carry out a small research project on the rocks of the phlogopite mine area. He has been advised that we would welcome any such activity and that we will assist him in any way possible.

Rankin's copper-lead-zinc show was remapped
The Director,  
Mines & Water Resources Branch

from 18th to 20th November in order to obtain further structural data for the proposed Government drilling application. In addition, six cobra holes were drilled into the surface area of Zone B of the recent I.P. survey. Fourteen samples were collected and despatched to Geomin on 19th for analysis for Cu, Pb and Zn.

Yours faithfully,

[Signature]

per J. F. Ivanac,
General Manager

15 July 1969

The Director,
Mines & Water Resources Branch,
Northern Territory Administration,
DARWIN N.T. 5790.

Dear Sir,

AP 2037 - Rankin's Prospect

Seventy-five samples from area N.T.17 were
submitted for analysis during the month.

Mapping at Rankin's Prospect was completed
in early June and a 100 foot to an inch map compiled
incorporating all geological and analytical data available.
The results confirm the impression that the mineralization
is basically lead-zinc with some subordinate copper. Gold
values are uniformly low. An Induced Polarization and
Magnetometer survey of the Prospect by Seigel Associates
commenced on 30th. June.

Yours faithfully,

[Signature]
JOHN IVANAC
General Manager

cc Inspector of Mines, Alice Springs
Magellan Petroleum (NT) Pty.Ltd., Brisbane
17th June, 1969

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

Dear Sir,

AP 2037 - Rankin's Prospect
Progress Report for May, 1969

A 2,000 foot square grid was laid out over Rankin's Prospect to form a base for detailed mapping. It is hoped that mapping will be completed by May 30th.

Twenty 3-foot cobra drill samples were collected from mineralized areas and despatched to Geomin on 12th May.

It is apparent that drilling will be necessary to fully evaluate this prospect. As soon as the map is compiled a summary report will be sent to Head Office setting out proposed drill sites.

Eight samples (NT 17-161 to 168) were also collected from the phlogophite mine in the northern part of AP 2037 and despatched to Geomin on 9th May. Phlogophite mica occurs in the margins of a dunite/pyroxenite sill in vertical dipping calcareous metasediments. The sill is 2,500 feet long by 50 to 100 feet wide. The dunite contains small lenses and stringers of pyrrhotite, galena and chalcopyrite.

cc Inspector of Mines, Alice Springs.
Magellan, Brisbane
Mr. K. M. Rankin

Yours faithfully,

John Ivanac,
General Manager.
Applicant: Keith Ronald RANKIN
Area: 6 Square Miles

Approved Period: 27-8-68
Location: Bald Hill
Goldfield: Arraught
Minerals: Copper + Others

ALL THAT piece or parcel of land in the Northern Territory of Australia containing an area of 6 square miles more or less, the boundaries of which are described as follows:

Commencing at the intersection of latitude 23 degrees 13 minutes 00 seconds with longitude 134 degrees 05 minutes 20 seconds thence proceeding to the intersection of latitude 23 degrees 16 minutes 10 seconds with longitude 134 degrees 07 minutes 00 seconds thence proceeding to the intersection of latitude 23 degrees 16 minutes 00 seconds with longitude 134 degrees 07 minutes 00 seconds thence proceeding to the intersection of latitude 23 degrees 15 minutes 00 seconds with longitude 134 degrees 06 minutes 00 seconds thence proceeding to the intersection of latitude 23 degrees 16 minutes 10 seconds with longitude 134 degrees 06 minutes 00 seconds thence proceeding to the intersection of latitude 23 degrees 16 minutes 00 seconds with longitude 134 degrees 04 minutes 20 seconds thence to the point of commencement excluding therefore all reserves, all mining tenements held or applied for and all mill and mill reserves.

Gazetted (No 39) 24-9-69

APPLICATION FOR RENEWAL REG. 5-8-69 $6.00

PERIOD: TWELVE MONTHS (12) TO 26-8-1970

APPROVED: 10th DAY OF SEPTEMBER 1969.

App. for Renewal reg'd 16/9/70

Period: Twelve (12) Months To 26/8/71

Approved: 26/1/71.

Application for Renewal reg'd 30/10/70 $6.00

Period: Twelve (12) Months To 26/8/72