REPORT OF PROSPECTING ON HOLSTEIN'S AUTHORITY TO
PROSPECT NO. 2042
AUGUST – SEPTEMBER 1968

INTRODUCTION

Capricornia Mineral Development Co Pty Limited was invited by Mr Holstein to inspect his Prospect Area in August 1968. The Prospect, known as the Mt Mary Prospect was visited in the company of W Holstein by geologist M E Morrison and the writer.

Rare earths were discovered by the owner who submitted a sample of barite for assay for these elements after his attention was called to the pegmatite dykes by the unusual weight of specimens collected.

A two year option over the area was negotiated with Holstein.

GEOLOGY

The region is one of granite gneisses enclosing a vast network of dykes. Their abundance and interweaving character are particularly impressive from the air, stretching from Mt Eaglebeak in the north for eight miles to the south. Strikes of the dykes vary widely. Seven distinct lodes or dykes were examined. Some of these split into additional en echelon lodes.
In as much as little is known about the area and there was no way in which to determine where significant values might be encountered the visit was restricted to a brief examination and the taking of preliminary samples for assay. The samples were submitted to London as the most rapid means of receiving results. These results have been received and will be matched in the field with their respective rock types, when, it is hoped, a logical pattern of association will be perceived.

It is possible that the rare earth minerals may be more widely distributed than so far determined.

CONCLUSION

Assay results on 13 samples taken from various lodes averaged as follows:

<table>
<thead>
<tr>
<th>Minerals</th>
<th>Average</th>
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<tbody>
<tr>
<td>Cerium</td>
<td>0.560%</td>
</tr>
<tr>
<td>Lanthanum</td>
<td>0.270%</td>
</tr>
<tr>
<td>Praseodmium</td>
<td>0.024%</td>
</tr>
<tr>
<td>Yttrium</td>
<td>0.233%</td>
</tr>
<tr>
<td>Neodymium</td>
<td>0.358%</td>
</tr>
</tbody>
</table>

an average of 1.338% REO or 30 lbs per ton.

Holsteins Prospect area is relatively small whilst a much more extensive A to P covering the same pegmatitic environment is held by Kaiser-Placer to the south.

In view of the uncertainty of economics of the above values and the factors involved in the milling, treating and marketing of rare earths it was decided to approach Kaiser-Placer with a view to joint venture exploration of the areas. This negotiation is continuing whilst technical data is awaited from Kaiser's Special Projects Division in the U.S.

A Kaiser-Placer prospecting team is expected to arrive in Alice Springs in early November and a base camp will be set up in the Harts Range area.

CAPRICORNIA MINERAL DEVELOPMENT COMPANY PTY LIMITED

(signed) D J Matheson
INTRODUCTION

The Mt Mary prospect was visited in the company of the owner, W Holstein and Mr D J Matheson on 29 July 1968. The area is held under A to P No 2042 by Mr Holstein and comprises three square miles. The A to P was granted on 5 July 1968 for one year for copper. Immediately to the south Kaiser-Placer have been granted a much more extensive A to P covering the same pegmatitic environment.

Rare earths were discovered by the owner who submitted a sample of barite for assay for these elements after his attention was called to the dykes by the unusual weight of the specimens. He reports that Geopeko examined the deposit recently and took 20 samples from various lodes. Cerium was proved to occur in amounts of 0.5% to 3%, and lanthanum up to 5%. It was stated that other valuable elements were also found, but their exact nature and assay were not revealed to him. A brief description of the geologic setting is given in this preliminary report.

LOCATION, ACCESS

The prospect is located at the extreme northeastern end of the Harts Range. The direct-line distance from Alice Springs is approximately 105 miles to the east-northeast. The mineralisation discovered to date is situated just at the base and on the lower slope of Harts Range and Mt Mary.

It is on a bearing of S43°W from Huckitta Outstation, located 13 miles N E across the flat plains.

Access from Alice Springs is via the Stuart Highway to the north for 42 miles, thence eastward on the Harts Range road for 117 miles. At this point, immediately before the main road crosses a cattle grid, the road running south to 'Quartz Hill' and Indiana Station is taken. The road junction is well marked by signposts. The Indiana road is followed southerly for approximately 7 miles, passing a bore on the left after 5 miles, through a gate, then across a creek at 6 miles and a second smaller creek at 7 miles. Here one must turn westerly across open country on the Huckitta Topographic and Geologic Sheets and is the highest peak on the skyline.
The prospect lies at a distance of 2 miles from the Indiana road, being situated at the quite low, rocky foot-hills immediately at the base of the main range. Some lodes occur on the lower slopes of the higher eastern end of the range, as well. See Fig. 1.

The co-ordinates of the A to P are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Lat.</th>
<th>Long.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23° 00' 00&quot;</td>
<td>135° 19' 40&quot;</td>
</tr>
<tr>
<td>2</td>
<td>23° 01' 00&quot;</td>
<td>135° 20' 40&quot;</td>
</tr>
<tr>
<td>3</td>
<td>23° 02' 00&quot;</td>
<td>135° 19' 20&quot;</td>
</tr>
<tr>
<td>4</td>
<td>23° 01' 00&quot;</td>
<td>135° 18' 20&quot;</td>
</tr>
</tbody>
</table>

GEOLOGY

The region is one of granite gneisses enclosing a vast network of dykes. Their abundance and interweaving character are particularly impressive from the air, stretching from Mt Eaglebeak on the north for 8 to 10 miles to the south. (The Connellan Mt Isa - Alice Springs flight passes almost exactly over the Mt Mary prospect.) Strikes of the dykes vary widely.

Seven distinct lodes or dykes were examined. See Fig. 2. Some of these also split into additional en echelon lodes. The two lodes situated furthest east on two small hills consist predominantly of barite, accompanied by a black, unidentified mineral (allanite?). Overburden obscures the first lode, except for minor outcrops, over a possible width of 20 feet, depending on which way the lode strikes. The second appears to be in the order of 1 to 3 feet wide, 100 feet long, striking north-south. The third lode strikes N33°W, outcrops over 100 feet of length, and has a width of from 2 to 12 feet. (Reported to carry 3% cerium by Peko.) This lode is brownish, chalcedonic, vuggy material with little or no barite.

Next west on the rocky hill to the south side of the area examined, a 12-foot chip sample was taken across the fourth lode, also chalcedonic in character, but including a 1-foot pegmatite in the centre. The lode runs NW-SE and was again sampled 250 feet along strike. There it is very vuggy over a width of 4 feet, with empty molds showing that large, radiating crystals have been leached out of the ground mass. The lode continues southeasterly to the crest of the hill where it was again sampled across 3½ feet of vuggy,
chalcedonic rock. (Peko's assay is reported to have been ¼% cerium at this locality.) The total length is not less than 400 feet and the lode may continue down the far side of the hill.

Lode 5 occurs NW of No 4, across a small creek and strikes N45°E, or about 90 degrees to the previous one. A chip sample was taken over a 300-foot length which pinches and swells from 5 to 8 feet wide but may have values across as much as 15 feet of width. It is baritic in some places and exhibits considerable leaching. See Fig. 1.

Fig. 1 View looking southwest at rare earth lodes Nos. 4 and 5, taken from near lode No. 7. Mt Mary, located at the eastern end of Harts Range, is seen in the centre background.

Lode 6 is located on the hill slope next NW from lode 5. It is a similar situation with red-brown chalcedonic material. Lode 7 outcrops in the flats about 1,000 feet SW from lode 1. The owner feels these are the same occurrence, which is doubtful. The only exposure in this area of overburden is an outcrop measuring 1½ feet by 6 feet, and consists of red,
chalcedonic material rather than the strongly baritic rock of lode 1.

Inasmuch as little is known about the area and there was no way in which to determine where significant values might be encountered, the visit was restricted to a brief examination and the taking of preliminary samples for assay. The samples were submitted to London as the most rapid means of receiving results. Once sample results are received and matched in the field with their respective rock types, it is hoped that a logical pattern of association will be perceived. It is possible that the rare earth minerals may be more widely distributed than so far determined. Again, a detailed programme of sampling can be intelligently laid out only after having received the preliminary assays.

Cadmium and indium are reported to occur in appreciable amounts in the samples taken by Peko, as well as other elements of value. In any event, samples taken by ourselves have been submitted for detailed assaying, and the occurrence of all the more exotic and rarely encountered minerals should thus be determined.

CONCLUSIONS

The potential of the region could be considerably greater than indicated by the brief visit in which only 7 lodes were examined. It is thought likely that because of the great network of dykes seen to occur in the region from the air, rare earth minerals may be fairly widespread throughout them.

RECOMMENDATIONS

It is recommended that sample results be awaited before making further decisions on the prospect. If results are encouragingly high, then a detailed and extensive sample programme is indicated, once a market survey shows this is justified. In the meantime, it is recommended that considerable investigation be made into the milling and marketing factors in that treatment and consumption of rare earths are far from straightforward.

Should a prospecting program be commenced, it is suggested that close security be maintained, if possible, in the hope that additional ground held by others to the south will be released for pegging after a period of a few months.

Respectfully submitted

(signed) M E Morrison
Consulting Geologist
Fig. 2 Generalised sketch showing relative location of rare earth lodes and samples taken.