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EXPLORATION LICENCE 3316

ANNUAL REPORT

FOR PERIOD

18TH JUNE 1983 TO 17TH JUNE 1984

DISTRIBUTION

GEOPEKO - DARWIN
GORDON

PETROCARB
DEPT MINES AND ENERGY

1 of 2 REPORTS

NORTHERN TERRITORY
GEOLOGICAL SURVEY

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JUNE 1984
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1. INTRODUCTION

Exploration Licence 3316 was granted to Peko-Wallsend Operations Ltd on 18th June 1982. Exploration has been carried out on the tenement by Geopeko on behalf of a joint venture between Peko Wallsend Operations Ltd and Petrocarb Exploration N.I. called the Molyhil Joint Venture. This report describes the activities carried out during the second year of tenure.

2. SUMMARY

Exploration has concentrated on definition of a silver-lead prospect known as Blueys Silver Show which occurs in sulphide bearing veins within carbonate units of the Bitter Springs Formation. Soil sampling had previously defined the extent of the mineralization and further detailed inspection was carried out to define what drilling would be needed to assess the prospect.

This work indicated that the veins, although of high silver grade, were very thin and of limited real extent and that they were unlikely to extend to any considerable depth. Drilling was not recommended.

3. PHILOSOPHY

The approach taken to exploration in this area has not altered since the last Annual Exploration Report. The area was taken up initially for its tungsten prospectivity but has within the area, significant base metal appeal. This is confirmed by the presence of a number of copper and silver-lead prospect.
4. **GEOLOGY**

The regional geological situation described in the previous annual report for the area has not been altered. Further inspection of Blueys silver-lead prospect has indicated that the area was structurally complex and underlain by granite of a fairly shallow depth. The bulk grade of the mineralized copper-lead-silver veins appeared low and of limited area extent.

The CSIRO Division of Mineralogy carried out an assessment of galena from five outcrop samples in the area. The procedure measures the lead isotope ratios in the sample with the aim of determining which class (model) of genetic process may have formed the lead mineral based on a base of data from other known deposits. Dr. Brian Gulson concluded that the mineralization had an isotopic signature different from any other known mineralization. Refer Appendix A.

5. **EXPLORATION COMPLETED**

The geological inspection and review was the major significant work conducted during the year.

6. **CONCLUSION**

Drilling of the copper rich gossan last year proved disappointing and requires no further definition. Regional assessment for the presence of Proterozoic strata bound copper mineralization in this area of the basin has indicated that the quality of any deposits likely to be present does not justify further exploration at this stage.

The review of Blueys Silver Prospect concluded that any deposit that may occur would not be of sufficient grade or size to warrant further testing.
7. EXPENDITURE

E.L. 3316 formed part of the Molyhil Exploration Joint Venture and as such has been included in the expenditure averaging process whereby total expenditure for the 12 months preceding the report date is allocated to the tenements on a proportional area basis.

Using this procedure the expenditure on EL 3316 for the current period amounts to $12,937.
APPENDIX A

Evaluation of Lead Isotopes in samples from Blues Silver Prospect.
Five outcrop samples containing galena were analysed from the Bitter Springs Formation, SE of Alice Springs. The host is a mixed sequence of marine overlap sandstones and carbonates and samples were from the basal section of the Formation.

Galena was handpicked from each sample and analysed using our conventional methods; the standard error limits apply for the isotopic ratios.

RESULTS

The data for the five samples have the following characteristics:

1. They are fairly uniform with a standard deviation of about ± 0.1% in the 207/206 although the 206/204 ratios deviate by about ± 0.3%.

2. They plot in the area of the growth curves in which the deposits of Broken Hill and Mt Isa also lie and this may indicate they have a Proterozoic age.

3. However, on the 208-related plots, the data exhibit an excess of 208-derived Pb whereas on the uranium plots, the data lie below the curve. This would suggest that the source of the Pb has an unusually high Th/U ratio.

INTERPRETATION

The mineralization may be Proterozoic but the long extrapolations of the cluster of data to the growth curves preclude a more precise estimate of the age, even if we were strong advocates of galena model ages.

There would appear to be no evidence of a 400 Ma event and this may be interpreted to mean that the mineralization was derived from a significant Proterozoic Pb accumulation or the Pb associated with the 400 Ma event is minor.

This mineralization has an isotopic signature which differs from any other known mineralization for which Pb isotopic data are available. (Unfortunately, there are no isotopic data available for deposits in the Tennant Creek area, although these are somewhat distant).

Because of the unusual isotopic signature, interpretations of size, etc. are invalid. On the other hand, the unusual signature may have some potential use in future exploration.

Figures: Conventional isotopic ratio plots for galenas from the Bitter Springs Formation. The dashed lines are the growth curves for massive sulfides and error bars in upper left hand corner, 2 sigma limits. Reference point is for Broken Hill.
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BITTER_SPRINGS_GALENAS
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BITTER SPRINGS GALENAS

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15.5
15.4
15.3
15.2

15.9 16.0 16.1 16.2 16.3

206/204