

MINERAL HOLDINGS AUSTRALIA PTY LTD

**SPECIAL EXPLORATION LICENCE
40/2006, NW TASMANIA**

**FIRST AND FINAL
REPORT ON EXPLORATION
TO JUNE 2007**

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ABSTRACT

This report gives a review of a scout exploration and evaluation program for phosphate mineralization carried out by Mineral Holdings Australia Pty. Ltd. after the grant of SEL 40/2006. The licence covers 1189 sq km in the Christmas Hills area and covers a large part of the northern section of the Smithton Basin.

The Smithton Basin is of similar age and geological setting to the Georgina Basin of north Queensland. Trace amounts of apatite (0.05 to 0.30% P₂O₅) have been recorded from many of the Smithton Basin carbonates and it was believed there was potential economic phosphate mineralization within the Smithton Basin.

Several target areas were selected and rocks along road traverses in the target areas were tested with ammonium molybdate solution. No reaction was observed and assay of a number of selected drill core samples from Forrest DDH No 1 Drilled by MRT near Stanley at AMG (AGD66) 352,738E and 5,480,111 N also proved negative and the Licence was consequently relinquished on its first anniversary.

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1.0 INTRODUCTION

RL 1/2005 was applied for by Mineral Holdings Australia Pty Ltd in late 2005 and was granted on 14th June 2006. This is the first and final Report for year one of the licence. The Licence was relinquished as of the 14th June 2007.

SEL 40/2006 covers an area of 1189 Km² covering most of the northern section of the Smithton Basin in North West Tasmania. Clive Calver of Mineral Resources Tasmania drew attention to the similarities between the Smithton Basin and the phosphate bearing Georgina Basin of north Queensland. A number of potential targets were selected on this basis and road traverses and outcrops in these areas were tested with ammonium molybdate solution with no success.

Nine drill core samples from the prospective Black River Dolomite in Forest DDH No 1 Drilled by MRT Just south of Stanley at AMG (AGD66) 352,738E and 5,480,111 N and assayed for P₂O₅ by AMDEL. Results ranged from 0.09 to 0.38% P₂O₅.

The results were disappointing and the Licence was relinquished as of 14th June 2007.



Figure 1 SEL 40/2007 Location Diagram

2.0 GEOLOGY

The geological succession in the Smithton Basin consists of,

CAMBRIAN	- Dundas Group equivalents	Turbidites in Christmas Hills area
EO-CAMBRIAN	-Smithton Dolomite	Extensive banded to massive dolomite with minor dolomitic limestone and limestone at Montague.
	-Crimson Ck. Correlates	Turbidites and Basaltic lavas
	- Black River Dolomite	Dolomite with minor mudstone and chert
	- Forest Conglomerate	Orthoquartzite and conglomerate

The Forest Conglomerate and in places the Black River Dolomite rest unconformably on Rocky Group quartzites and shales which apparently formed a series of islands in the old Eo-Cambrian sea.

Structure of the Smithton Basin is relatively simple with a broad series of open folds extending across the basin.

3.0 THE SMITHTON BASIN POTENTIAL FOR PHOSPHATE

Clive Calver from MRT initially drew attention to the Smithton Basin as a potential target for phosphate. He suggested-

“ The Smithton Dolomite is a shallow water carbonate unit about 1500 m thick, of latest Precambrian (Ediacaran) to possibly early Cambrian age (about 570-530 Ma: the base of the Cambrian is at 543 Ma) The Ediacaran to middle Cambrian was a time of generation of large phosphorite deposits in many parts of the world (Australia, India, China etc.) This seems to have been caused by several “oceanic anoxic events” which were followed by overturn and upwelling with deposition of phosphorite in shallow – marine environments at widespread localities. This interval is recognized as one of the major phosphorite generating episodes in Earth’s history.

The Smithton Dolomite is the right age to be prospective for phosphorite, Also, it is a shallow marine carbonate which means that marine precipitates would have been undiluted by clastic input.”

Clive suggested that as the Smithton Dolomite was so poorly exposed the best way to prospect the sequence was to drill a series of stratigraphic holes. Mineral holdings however decided it needed some encouragement before going to the expense of drilling

and opted to sample all known quarries in the Smithton Dolomite for phosphate horizons with ammonium molybdate solution. No trace of phosphate mineralization was found.

Taking a closer look at the occurrence of phosphate rock in the Georgina Basin in Western Queensland the phosphorite is contained within bedded cherts, black mudstones and limestones near the base of the Upper Cambrian sequence. These rocks are the near shore equivalents of major dolomite beds and occur immediately above the unconformity with underlying Precambrian rocks and usually lie close to prominent basement highs which were originally islands in the shallow Cambrian sea.

The setting, sequence and rock types are almost identical to the basal section of the Smithton Trough. There are a series of basement highs where the basal near – shore sequences of the Smithton Trough onlap, and the basal sequence (certainly in the western part of the Basin at least) consists of shallow marine thin bedded chert and laminated black mudstones which are equivalent to the Black River Dolomite.

The Black River dolomites are older, Uppermost Precambrian to Lower Cambrian in age vs Middle to Upper Cambrian for the Georgina Basin, But they still lie within or very close to the magic Ediacaran age. and this is why Clive wants to explore the higher Middle to Upper Cambrian sequences overlying the Smithton Dolomite. However In many cases the setting is more important and the fact that traces of phosphate rock occur in the Upper Precambrian (Adeladian) age rocks in South Australia (which was directly linked to Tasmania even in those long ago times) gives added weight to an identical setting rather a time equivalent.

With this in mind new targets were suggested for initial molly solution testing. In order of priority the targets were;

TARGET 1. Jim's Plain on Woolnorth 1:50,000 Geological Map

The outcrops of Ecb surrounding the Precambrian inlier at Jim's Plains 10Km south west of Montague are the target in this area. The 13 outcrop areas occur on the Geological map. They consist of black mudstone and chert with some dolomite. All rock types were to be tested especially any nodules or pebbled rocks. The two outcrops with gravel pits, were to be carefully examined.

TARGET 2 Seymour Hill - Duffs Flats Area on Woolnorth 1:50,000 Geological Map

A strip of Ecb adjacent to the Precambrian basement located about 4Km south of the Carbonate Hills limestone deposit is the target in this area. Togari is on the upper right margin. Fairview Road crosses the target outcrop area twice.

TARGETS 3, 4 and 5 on Smithton 1:50,000 Geological Map.

These areas are all close together. Target Area 3 consists of outcrops of Plf (Forest Conglomerate) and the lower part of Pld (Smithton Dolomite) surrounding a Precambrian inlier at Lake Mikiny. The Forest Conglomerate is a high energy unit but it was thought it might contain some chert and mudstone bands and perhaps some of the pebbles could be phosphatic. The area is large and it was considered best to confine the search to road

cuttings and perhaps a few creek traverses where they cross the units. Any gravel pits would also be searched.

Target area 4 is the outcrop of Plf (Forest Conglomerate) and Pls (Smithton Dolomite) along the Precambrian contact at South Forest.

Target area 5 is less well exposed and consists of the scattered Pls Smithton Dolomite outcrops adjacent to the Precambrian outcrops south of Irishtown

. As a first pass it was suggested that prospecting with molybdate solution should be along road cuttings, gravel pits and some creek traverses rather than trying to visit every outcrop. If there was any phosphate there it would have to be very extensive to be worthwhile. Again no trace of any phosphate mineralization was detected.

4.0 TESTING OF DRILL CORE

A section of the Black River Dolomite was intersected in Forest DDH No1 drilled by MRT just to the south of Stanley (AMG (AGD66) 352,738E and 5,480,111 N). Clive Calver selected nine samples described by him as most likely to contain phosphate. Mineral Holdings collected the half core and arranged for assay by AMDEL.

The intervals are as follows –

BH 1-01	835.0 – 837.17m	massive calcareous mudstone
BH 1 – 02	832.22 – 832.37m	massive calcareous mudstone
BH 1 – 03	821.14 – 821.33m	pale grey, uniform massive mudstone
BH 1- 04	813.6 – 816.76 m	dark grey, uniform massive mudstone
BH 1- 05	802.55 – 802.70m	Khaki grey, laminated mudstone
BH 1 – 06	800.84 – 801.00m	dark grey, medium bedded limestone
BH 1 – 07	788.00 – 788.20m	black mudstone, green brown layers
BH 1 – 08	777.40 – 777.45m	green mudstone band
BH 1 – 09	777.45 – 777.45m	grey mudstone band

Assay results are supplied in Table 1 below but P₂O₅ levels only ranged between 0.09 and 0.38% again indicating little prospect for a substantial phosphorite deposit within the Smithton Basin

5.0 CONCLUSIONS

The results indicate little potential for phosphate mineralization within the Smithton Basin. The Special Exploration Licence has therefore been relinquished.

6.0 KEY WORDS

Phosphate, Smithton Basin, Smithton Dolomite, Black River Dolomite, Forest Conglomerate, Forest DDH1, Woolnorth 1:50,000 Map sheet, Smithton 1:50,000 Map Sheet.