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Partial Relinquishment Report
EL 22168 Wonarah
For the Period ending 3rd August 2004
Frew River SF53-03, Avon Downs SE53-04,
Alroy SE53-15, Ranken SE53-16
Northern Territory

Tenement Holder: AKD Limited

Date: November 2004

Author: Z A Sas

Distribution:	Dept of Business, Industry and Resource Development – Northern Territory AKD Limited, Perth

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1 SUMMARY

This final report summarises exploration activities completed on relinquished portions of EL 22168 during the period 4th August 2000 to 3rd August 2004. The tenement forms part of a project area held by AKD Limited being explored for large tonnage phosphate deposits. Since March 1999, Rio Tinto was AKD's joint venture partner and spent AUD$2.4 million in exploration over the project tenements. Rio Tinto withdrew from the JV in December 2002.

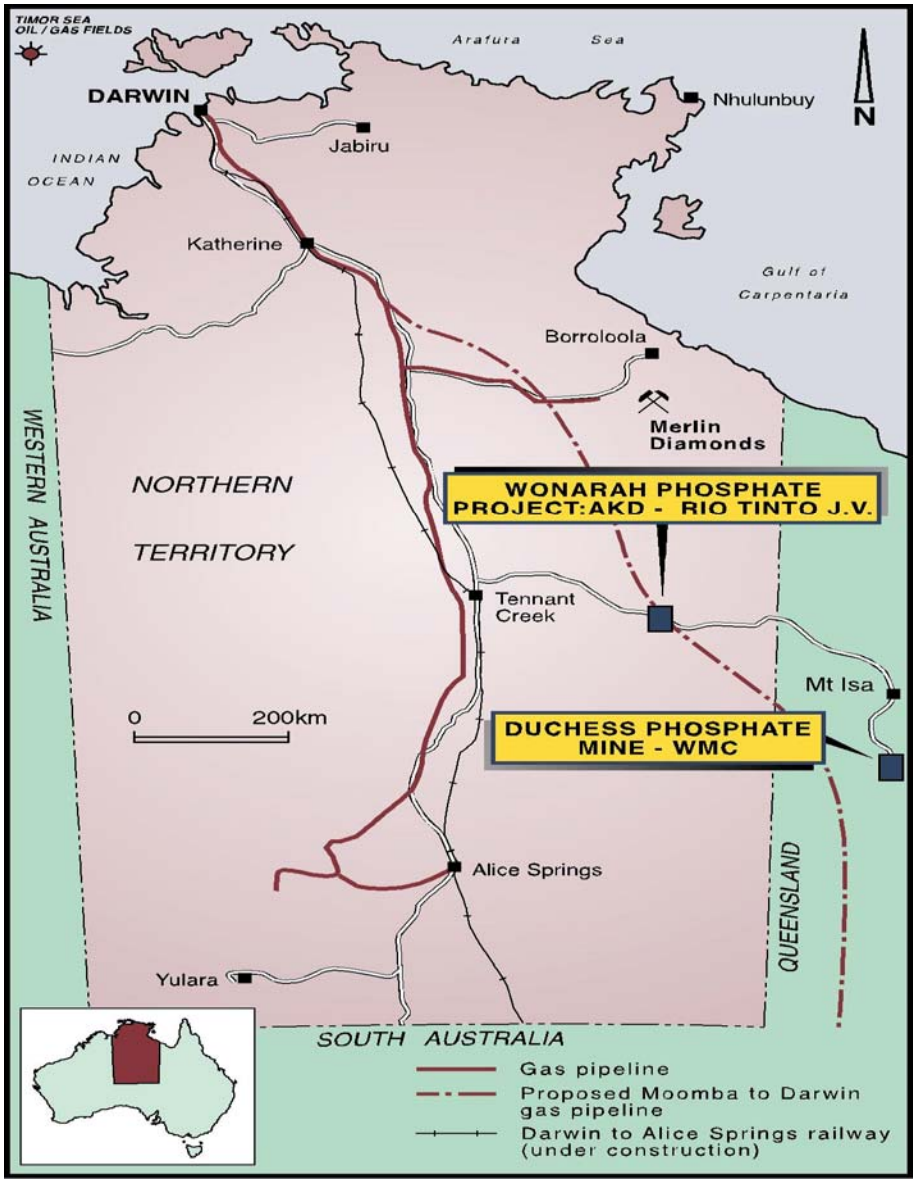
Drilling on the relinquished portions of EL 22168 either intersected deep phosphorite or failed to intersect phosphorite mineralisation of any significance. The excessive overburden and poor grade rules out any potential for economic phosphate resources in these areas.

2 INTRODUCTION

EL 22168 Wonarah is located ~250 km east southeast of Tennant Creek in Northern Territory, Australia (see Location Plan). This tenement (and EL's 9976, 9977, 9978 and 9979) is the subject of an exploration effort for large tonnage phosphorite deposits suitable for production of DAP fertiliser.

EL 22168 was granted to Rio Tinto on 4 August 2000 for a period of 6 years. The tenement was incorporated into the Rio Tinto – AKD Wonarah phosphate JV which commenced on the 4th March 1999 and terminated on the 3rd December 2002. Rio Tinto held the tenement beneficially on behalf of AKD Limited, now the manager of the project, until recently when the tenement was transferred and registered into AKD's name. During June this year, 17 sub-blocks within EL 22168 were submitted for relinquishment. The underlying land tenure is Arruwurra Aboriginal Corporation NT freehold for which an exploration agreement was negotiated in August 2000.

This report summarises exploration activities completed on relinquished portions of EL 22168 during the period 4th August 2000 to 3rd August 2004.


TIMOR SEA
OIL / GAS FIELDS
Arafura Sea
DARWIN
Nhulunbuy
N
Jabiru
INDIAN
OCEAN
Katherine
Gulf of
Carpentaria
Borroloola
Merlin
Diamonds
WESTERN AUSTRALIA
NORTHERN
TERRITORY
WONARAH PHOSPHATE
PROJECT: AKD - RIO TINTO J.V.
Tennant
Creek
Mt Isa
0
200km
DUCHESS PHOSPHATE
MINE - WMC
Alice Springs
QUEENSLAND
Yulara
SOUTH AUSTRALIA
Gas pipeline
Proposed Moomba to Darwin
gas pipeline
Darwin to Alice Springs railway
(under construction)

3 GEOLOGY

The tenements cover Middle Cambrian sediments of the Georgina Basin, a large late Proterozoic to early Palaeozoic basin extending across the eastern Northern Territory and northwestern Queensland.

Basement in this part of the Georgina Basin are Mesoproterozoic sediments and volcanics overlain by the Early Cambrian Peaker Piker Volcanics. The volcanics are tholeiitic and comprise amygdaloidal and porphyritic basalts, and dolerite. The volcanics form an east-northeast trending basement high, part of the northeast-southwest trending Alexandria-Wonarah Basement High. Lower Middle Cambrian (late Templetonian) phosphorite deposits occur along the basement high. These are hosted by marginal transgressive sediments of the Burton Beds (Alroy, Alexandria) and the Upper Gum Ridge Formation (Wonarah), which are equivalent to the Beetle Creek Formation (Phosphate Hill, Ardmore, and Lady Annie–D-Tree) on the eastern margin of the basin (Southgate & Shergold, 1991; Gravestock & Shergold, 2001).

The lower Middle Cambrian sequence at Wonarah has been divided into distinct units based on logged geology, geochemistry, and stratigraphic relationships (Figure 1; Lilley & Andrews, 2001). The basement high is flanked by onlapping dolomitic rocks equivalent to the lower Middle Cambrian Thorntonia Limestone (Figure 2). Overlying basement is dolostone, mudstone, and phosphorite of the lower Middle Cambrian Upper Gum Ridge Formation, and mudstone, siltstone, and dolostone of the Middle Cambrian Wonarah Beds.

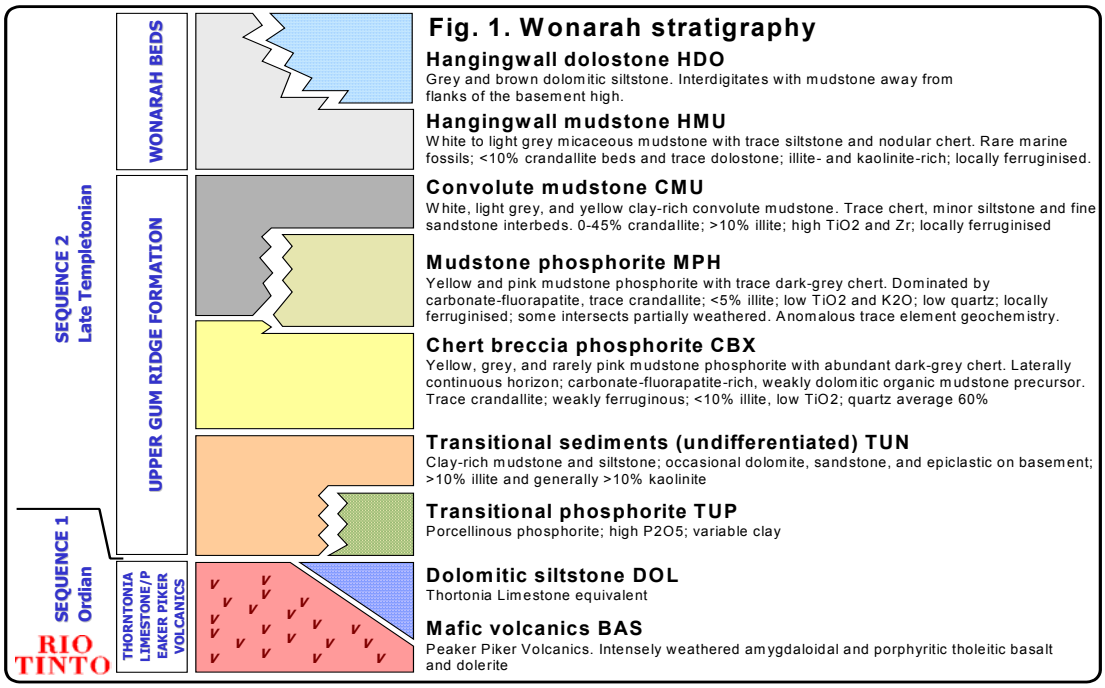


Figure 1: Wonarah Stratigraphy

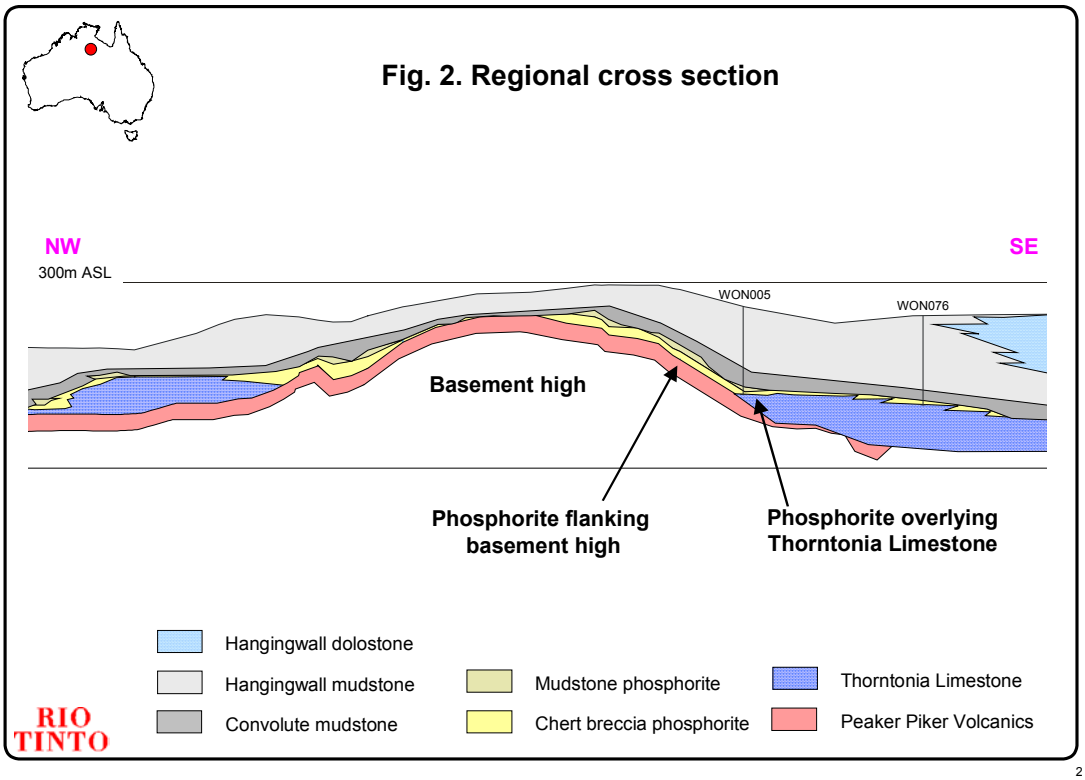


Figure 2: Diagrammatic Regional Cross Section

The Upper Gum Ridge Formation is divided into four main units (from the base; Figure 1): undifferentiated transitional sediments (**TUN**), chert breccia phosphorite (**CBX**), mudstone phosphorite (**MPH**), and convolute mudstone (**CMU**). Where the stratigraphic relationships are poorly understood, the phosphorite horizon has been modelled as undifferentiated phosphorite (**PUN**). The chert breccia phosphorite and mudstone phosphorite are collectively termed the phosphorite horizon, and locally contain ore-grade (>15% P_2O_5) intervals. The phosphorite horizon is overlain by clay-rich light grey and yellow convolute mudstone, with minor interbeds of siltstone and fine sandstone (**CMU**). The convolute mudstone typically contains an average 2% P_2O_5 as crandallite.

The Wonarah Beds, comprising mudstone and siltstone with minor nodular chert overlie the convolute mudstone. In the tenement area these rocks are grouped as hangingwall mudstone (**HMU**). Laterally equivalent dolomitic mudstone facies are assigned to hangingwall dolostone (**HDO**).

Intensely weathered Peaker Piker Volcanics subcrop and occur beneath thin transported cover in the relinquished portions of EL 22168. In this area the phosphorite horizon is interpreted not to be present, due either to erosional stripping, or because it was stratigraphically above the limit of phosphorite deposition.

In of EL 22168, the Upper Gum Ridge Formation and Wonarah Beds overlie the Thorntonia Limestone (**DOL**), which is capped by a karst weathering surface. Dolomitic rocks outcrop in the relinquished portions of EL 22168 and may represent an up-faulted block of Thorntonia Limestone or a carbonate facies that laterally interdigitates with the Wonarah Beds.

3.1 Regolith

An interpretation of Landsat 5 Thematic Mapper (TM) multispectral data mapped the distribution of regolith types including silcrete, ferricrete, calcrete, and a range of colluvial, alluvial, and aeolian deposits.

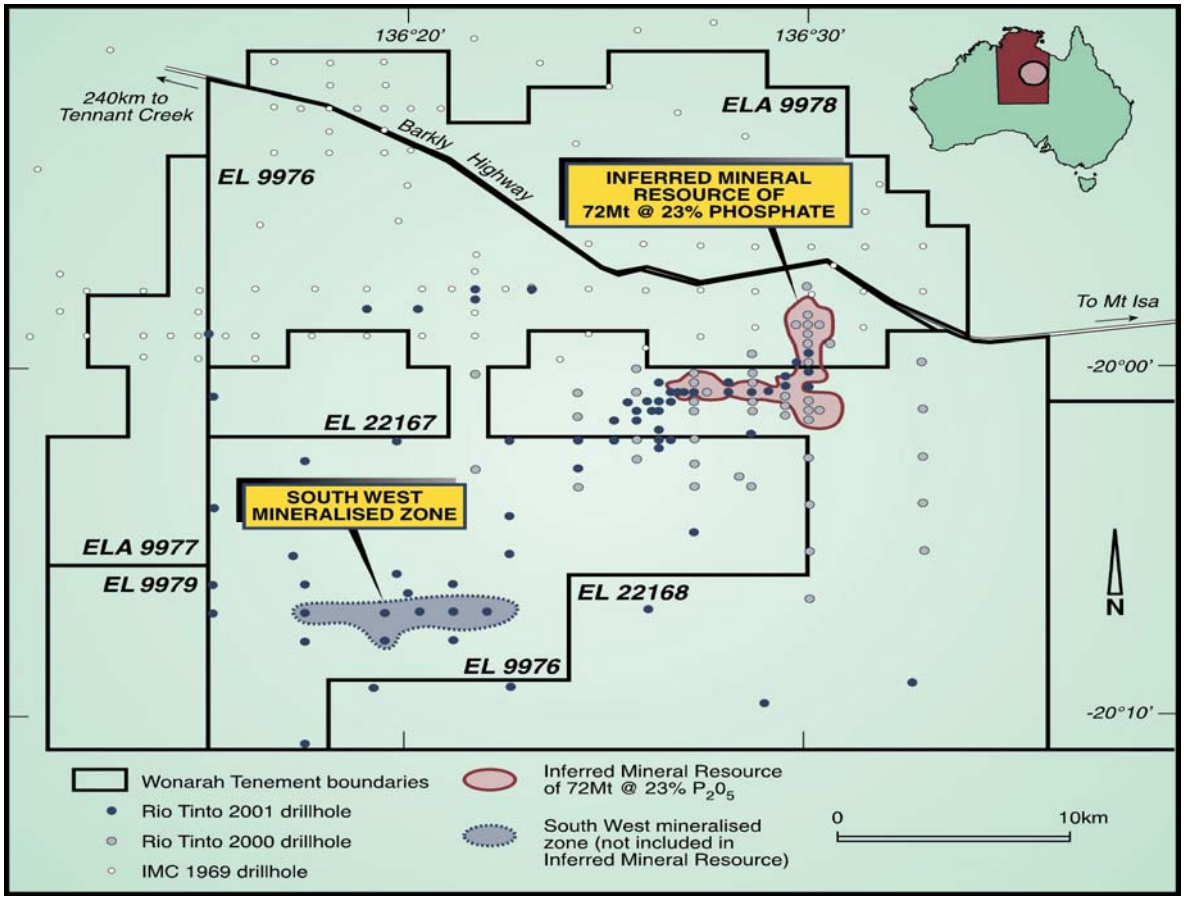
The lower Middle Cambrian rocks are intensely weathered and covered by stabilised Cenozoic aeolian sand sheets and longitudinal dunes trending 310º - 320º across the region. Silcrete and ferricrete duricrust underlies much of the sand cover and outcrops sporadically as low rises. Calcrete and black soil overlie dolomitic rocks. The distribution of duricrust outcrops is

structurally controlled along linear trends, possibly implying minor Cenozoic reactivation of basement fault structures.

4 DRILLING

Three separate drilling programs were undertaken on the Wonarah tenements by former JV partner, Rio Tinto. Seven RC holes, WON 3, 4, 5, 6, 7, 15 and 55, totalling 230m, were drilled on the relinquished portions of EL 22168 during the period of exploration. Each hole was geologically logged on site for geologic description, including estimates of chert, clay, iron oxide, and phosphate (strength of ammonium molybdate response). A riffle splitter was used to split samples to obtain ~ 1.5 kg sample. Samples were submitted to Amdel Laboratories in Mount Isa. On receipt of assays, interpretation using geochemistry and geologic logs assigned each sample to a lithologic unit. All RC samples were weighed on site. Estimated recoveries for each meter have been calculated from sample bag weights using a density of 2.0 g cm^{-3}.

Phosphorite was intersected in the relinquished portions of EL 22168 but was either too deep or low-grade(Appendix 1). The best results for each drill hole were: **WON 3:** 2m @ 5.96% P_2O_5 from 70m ; **WON 4:** 1m @ 6.24% P_2O_5 from 72m; **WON 5:** 3m @ 23% P_2O_5 from 78m; **WON 6:** 2m @ 17.4% P_2O_5 from 60m; **WON 7:** 2m @ 25.3% from 63m, **WON 15:** 1m @ 6.11% P_2O_5 from 13m; (Drill hole **WON 55** did not intersect any phosphorite of interest).



Drill hole collars were surveyed in July 2001 using Trimble 4000 SSI differential GPS equipment. Survey data and comments are tabulated in Appendix 2.

4.2 Geochemical Analysis

Results for the drill hole RC percussion chip samples are provided in Appendix 1.

Samples were submitted to Amdel Laboratories preparation facility in Mount Isa where they were dried at 110°C, crushed to -2 mm, and a 100 g split pulverized to -106 µm. A 20 g split of the pulverized sample was then sent to Amdel Laboratories in Adelaide for analysis. All samples have been assayed by inductively coupled plasma optical emission mass spectroscopy (ICP-OES; method IC4 (4.2.1)).

4.2.1 Method IC4

A 0.1 g subsample is fused with a mixture of lithium meta and tetra borates. The resultant glass is dissolved in a 5% HNO_3 solution and assayed for major element oxides (P_2O_5, Al_2O_3, Fe_2O_3 (total Fe), CaO, K_2O, MgO, MnO, Na_2O, SiO_2, and TiO_2) by inductively coupled plasma optical emission spectroscopy (ICP-OES).

5 ENVIRONMENT

All drill holes from the relinquished portions of EL 22168, have been rehabilitated. All access tracks within EL 22168 have been rehabilitated.

A Rehabilitation Report for the Wonarah project, including the holes drilled, has been separately submitted to the DBIRD by former JV partner Rio Tinto and is not reproduced here.

6 CONCLUSIONS AND RECOMMENDATIONS

Drill holes located in the relinquished portions of EL 22168 intersected phosphorite horizons which were either too deep and/or low-grade, and therefore these areas were recommended for surrender.

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LOCALITY

Frew River	SF53-03	1:250 000
Avon Downs	SE53-04	1:250 000
Alroy	SE53-15	1:250 000
Ranken	SE53-16	1:250 000

DESCRIPTOR

Seven RC holes were drilled by Rio Tinto within the relinquished portions of EL 22168 in 2000/2001 but intersected phosphorite mineralisation which was either too deep and/or low-grade.

KEYWORDS

Wonarah, phosphate, phosphorite, Cambrian, Frew River, Avon Downs, Barkly Tableland, Gum Ridge Formation, Wonarah Beds, RC drilling.

APPENDIX 1

Downhole Geochemistry

APPENDIX 2

Drill Collar Survey Data

APPENDIX 3

Normative Mineralogy