

# Quest to crack metallurgy

EMERGING RARE EARTHS producer Arafura Resources NL has identified clear objectives for 2007, including pilot plant testing its Nolans Bore rare earth oxides and fine tuning the pre-leach processing route.

The company's focus this year will centre on its Nolans project, located in the Northern Territory, following the completion of the proposed demerger of its uranium assets to NuPower Resources in mid-February.

It is also relatively cashed up. A rights issue last year raised \$12.3 million and of this, \$8.8 million will be used as working capital for NuPower, with the balance going to Arafura.

Arafura managing director Alistair Stephens said the company needed to prove to the market that it could crack the metallurgy at Nolans and produce materials. He said this was behind Arafura's testwork objectives.

The company is using the Australian Nuclear Science and Technology Organisation's Lucas Heights facility for its pilot plant testwork activities, treating rare earth oxides from Nolans and fine tuning the pre-leach processing route.

The company's objective is to take the material to a 95% to 99% grade concentrate before establishing a joint venture in Asia, Europe or potentially China with a company in possession of the technology and expertise to further refine the product to a high-purity grading of 99.9999%.

"We have had interest in the Nolans material, but I can't say more than that," Stephens said. "We are hoping to get a deal stitched up this year."

"We would look to work in collaboration initially, during the pilot plant phase, and then form a JV to take it through the further stages."

The timeline, if all goes according to Arafura's plans, is for the company to undertake design work in 2008, construction in 2009 and first production by 2010.

## Active phase

Arafura is looking to produce around 10,000 tonnes of rare earths over a 20-year mine life, with RC drilling having outlined potential extensions to the Nolans Bore deposit.

"The reason we did that drilling was to prove to the market that we had a large resource and would not be a short term player," Stephens said.



▲ Alistair Stephens

"There is no use trying to attract a customer away from the Chinese with only a five year mine life.

"We also wanted to show that we could potentially upscale the project, if we need to, in various stages to meet the needs of the market."

According to Stephens, another advantage of the Nolans deposit was its mix of rare earths, with about 21% of the material being neodymium – a high-value product that cannot be substituted.

Rare earths are essential components in rechargeable batteries, magnets in electric motors, mobile telephones, laptop computers and plasma screen televisions.

The biggest growth market for rare earths is the hybrid car market, a major user of rechargeable batteries (lanthanum) and high-strength magnets (neodymium).

"China only has 15-years supply of rare earths left, based on their consumption rates and growth rates," Stephens said.

"I think we will see a substantial change in the industry and more raw material being supplied outside of China.

"There is a genuine demand from those countries that are heavily reliant on electronics, like Korea, Taiwan and Japan, for an alternate supply."

## East mining

The Nolans deposit is exposed at surface and consists of a series of en echelon lenses up to 900m in width. Mineralisation extends over 1,500m, with only half of the ore body drilled to 100m depth. Because of this, the first 10

years of production has a very healthy stripping ratio of 1:1.

"Because it will be a chemical digestion type process, there probably will be grinding and upgrading of the material on site before it is transported to a processing facility at Darwin," Stephens said.

"At the rate of 500,000 tpa, road transport would probably be more favoured over rail."

The Nolans project is located 135 km north west of Alice Springs, 5 km from a gas pipeline, 10 km from the Stuart Highway and 50 km from the Darwin to Alice Springs railway line.

Outside of Nolans, Arafura also has the Jervois project, where magnetite has been identified grading between 1%-1.5% vanadium.

"We did some drilling and the most significant results were 40m to 48m in thickness of either massive or layered magnetite, but we don't have the assay results back from that yet," Stephens said.

The Jervois project is located 290 km north east of Alice Springs and 20 km east of the Lucy Creek uranium prospect.

Territory Iron Ltd will begin production at Arafura's Frances Creek iron ore project, also located in the NT, this year. Arafura will receive additional cashflow in the form of royalties from Territory Iron, beginning in 2008, expected to be between \$1 million and \$1.5 million each year.

Also thrown into the mix is a small gold resource the company has at Mt Porter, near GBS Gold International's recently commissioned Union Reefs mill. The obvious rationale would be to form a toll milling arrangement or some other deal with GBS to treat that ore.