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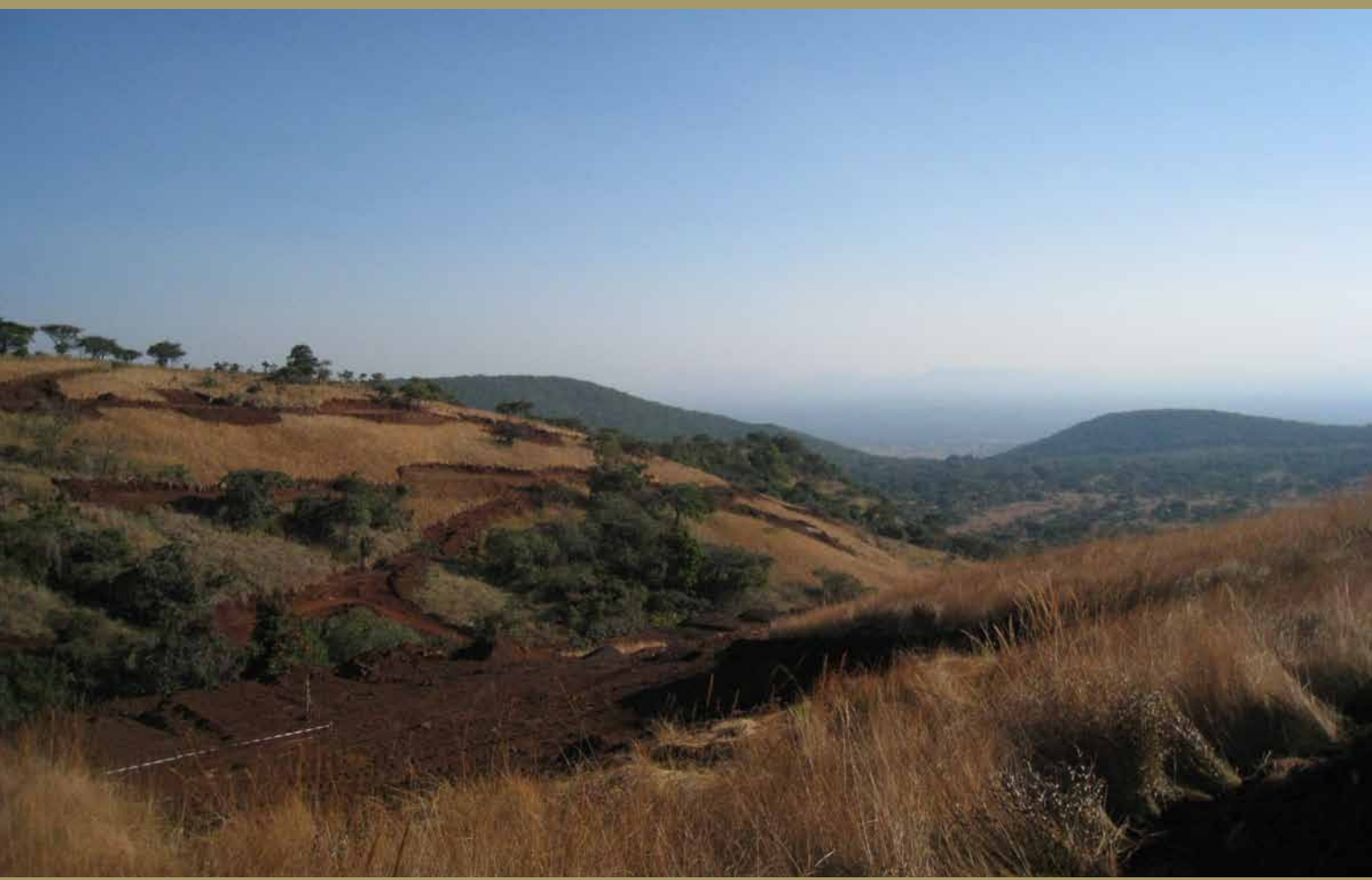
RARE FIND



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RARE FIND

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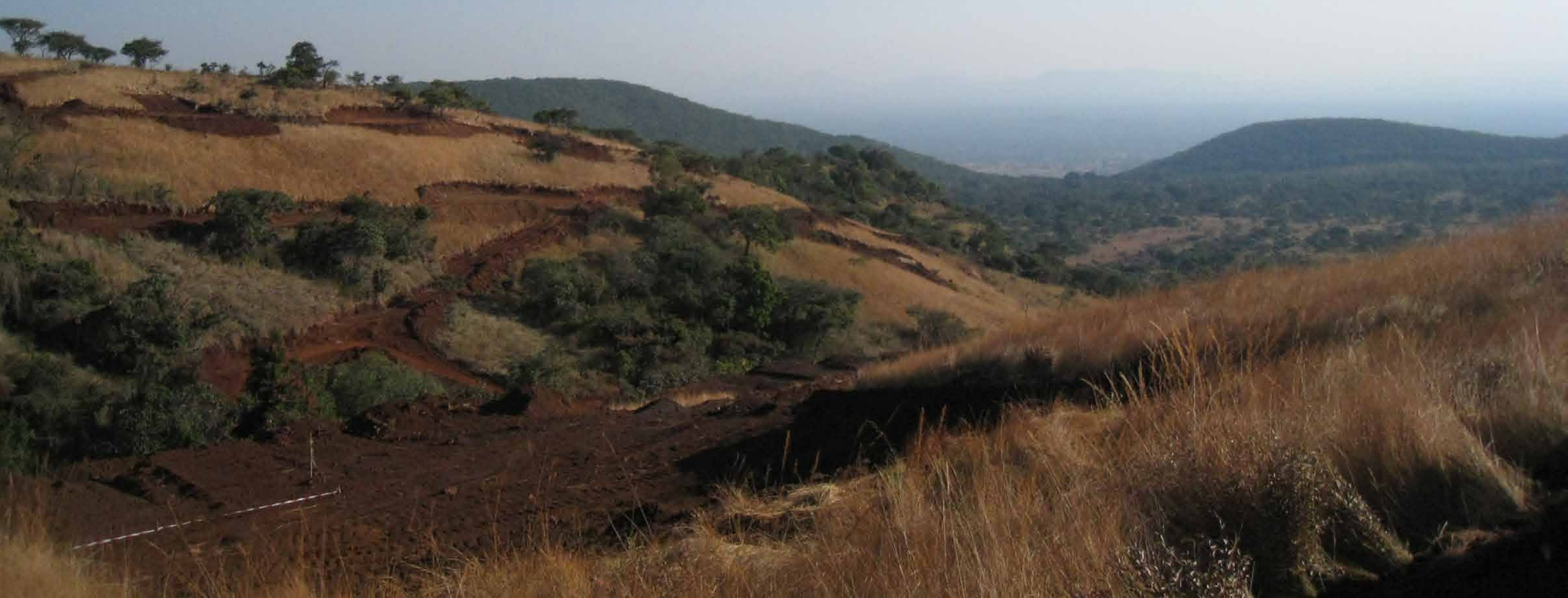
The role of junior exploration companies is to find something to mine; but there is one such company planning to use the finds it has made to transform into a major mining operation



Drilling on the south east side of Ngualla Hill

While rare earths are nowhere near as rare as their name implies—cerium, for example, is present in similar quantities to copper—they don't make commercial extraction easy. They are often widely dispersed and lack the concentration needed for economical exploitation. And even where minable deposits are found, the metallurgy involved in claiming the minerals is often highly complex.

Of all the world's sources of rare earths, by far the most plentiful is found in China but for the past few years, the Chinese have been restricting exports. Not surprisingly, then, in rare earth circles, a new and plentiful source is bound to create interest.

Such is the case in Tanzania, where Australian junior exploration company Peak Resources, after a long and winding road, has stumbled across what is shaping up to be the fifth largest rare earth find in the world outside of China.

"Peak Resources," explains managing director Richard Beazley, "was launched on the Perth stock exchange in 2006 as an exploration company, looking for gold. When Alistair Hunter joined Peak [Hunter is now company chairman] he brought with him gold leases from Tanzania. Once we landed in Africa, the search soon widened to phosphates, which the Canadians had earlier identified. But after two exploratory drill holes at Ngualla, we found indications of rare earths

The team on Ngualla Hill - left to right - Patrick Ochieng, Sam Boucaut, Erasto Kafyulilo, George Mwarabu and Emmanuel Kisendi

and with that, adopted a complete shift in approach."

Rare earths are collectively a group of elements that essentially make up the second bottom row of the periodic table. There are 15 such elements, ranging from light to heavy atomic weights with the heaviest the most difficult to separate and the most costly to buy. They tend to group themselves together and offer numerous properties for use in today's technologies. Rare earth magnets, for example, are nine times more powerful than ferrite magnets and are finding applications as tiny magnetic medical tools for use inside the body or in hybrid vehicles or wind turbines. Other rare earths are particularly useful in polishing the finest optical surfaces; while others have fluorescent properties ideal for communication equipment such as TVs and mobile phones.

The site at Ngualla is still virgin bush. In late February, after just 18 months of drilling, the company issued a maiden resource statement defining a resource of 170 million tonnes of rare earth oxides at 2.4 per cent; and within that body a high grade part of 40 million tonnes at 4.07 per cent. Since then, more infill drilling has been conducted, with the ongoing data indicating continuing positive high grades.

So much so that Peak Resources is now morphing from a junior exploration company into a mining operation. The first step in this process, just seven months ago, was the appointment of Beazley as managing director who brought with him considerable mining experience, particularly in the development of new green field sites. In turn, Beazley has made his first major recruitment decisions, bringing on board an experienced rare earth metallurgist who will be instrumental in defining the flow of material through the plant and a chief development officer who will manage the balance of the studies that are needed and begin commercial development.

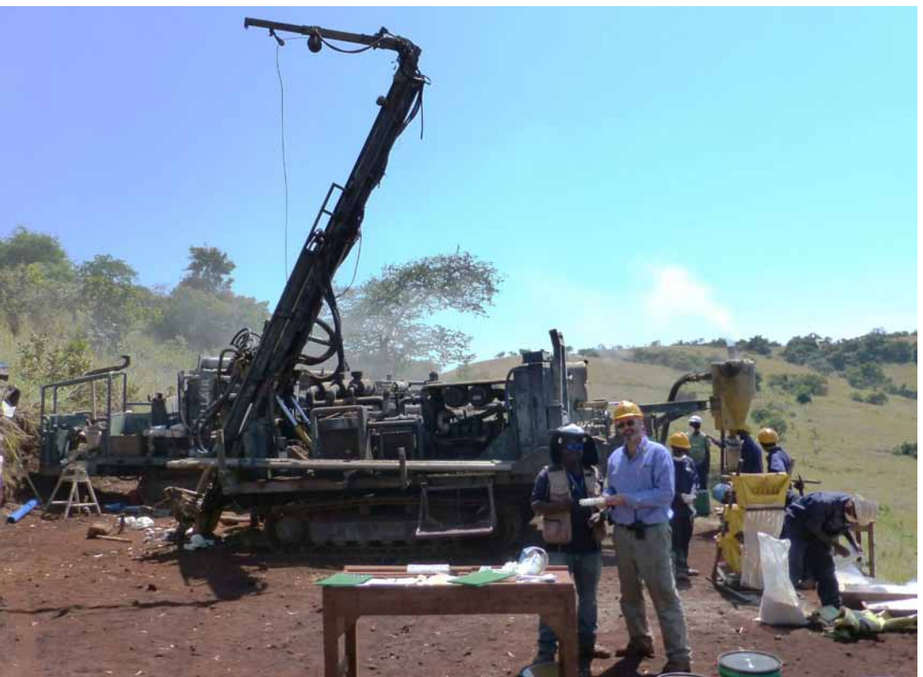
> "RARE EARTHS HAVE ALWAYS INVOLVED COMPLEX METALLURGY BUT WE ARE CONFIDENT THAT OURS WILL BE AS SIMPLE AS IT'S POSSIBLE TO BE"

2006

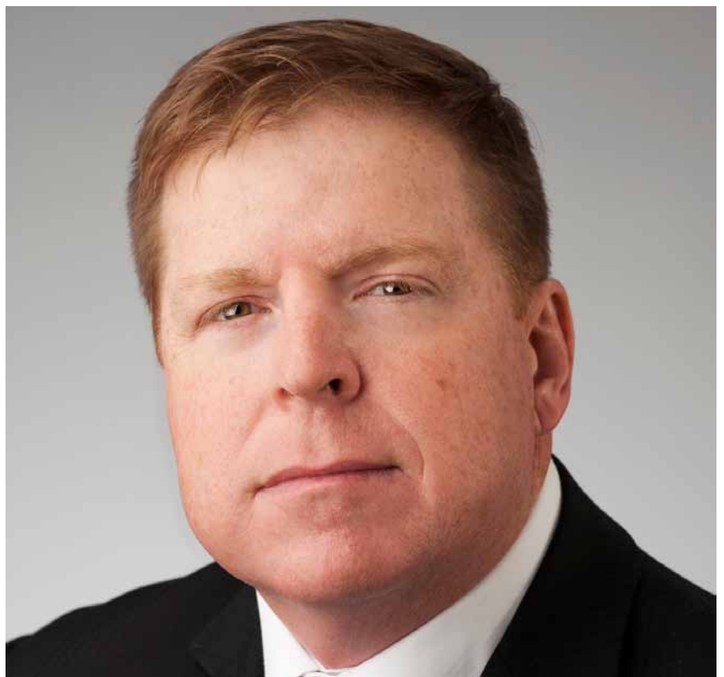
Year Peak Resources launched on Perth Stock Exchange

"We are just a few weeks away," says Beazley, "to being able to release a detailed process flow sheet or diagram on how we will process the mined ore through to finished product. Rare earths have always involved complex metallurgy but we are confident that ours will be as simple as it's possible to be. The ore body is relatively clean and we are confident of being able to avoid the need for an expensive flotation plant or other processes to clean up the ore before processing."

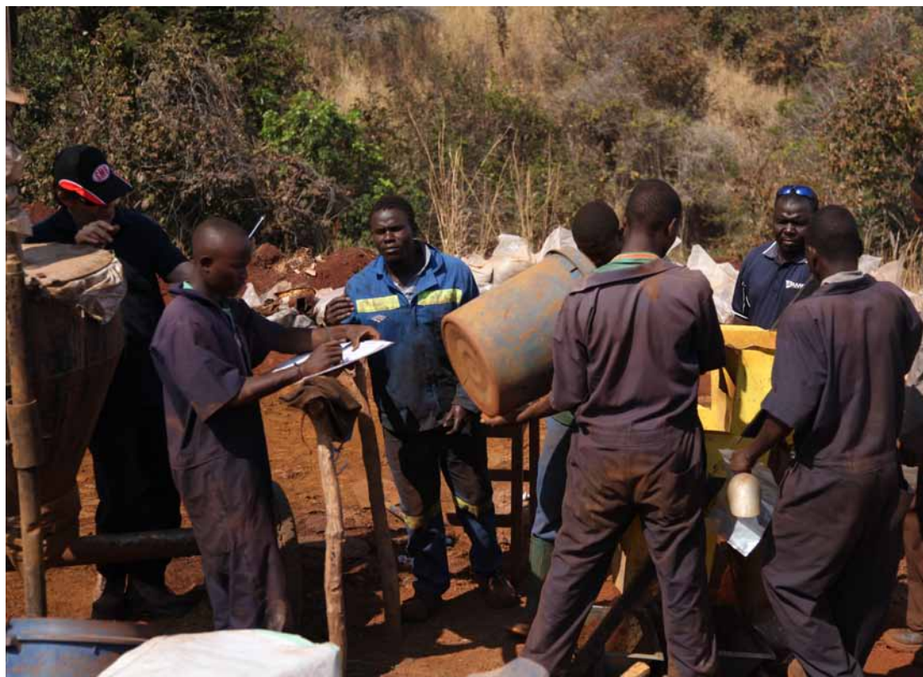
Instead, after mining and blending on a ROM pad, the outline plan will involve grinding the ore down to 100 microns, mixing it into a slurry and then stripping out the rare earths through a low concentration, low temperature sulphuric acid leaching cycle. Even then, the investment needed to bring the plant on stream will be well in excess of half a



Erasto Kafyulilo (geologist) and Dave Hammond (technical director) on Ngualla Hill



Richard Beazley



Onsite sampling at Ngualla

> "THE MOST IMPORTANT FACTOR BY FAR IS THE NATURE OF THE ORE BODY WE ARE WORKING WITH AND ITS LOW LEVELS OF IMPURITIES"

billion dollars and Beazley is currently in exploratory talks with potential offtake partners who could be instrumental in raising the funds. As a junior mining company, the ability to raise the money to go it alone is simply out of the question and it will need some of the world's biggest organisations—and users of rare earths—to underwrite construction.

Apart from the underlying excitement of having such a potentially rich source of rare earth minerals, the industry is shaking its collective head at the audacious timescale that Peak Resources is publically claiming is achievable. "All the other rare earth mining projects have taken years, if not decades," says Beazley, "and we are telling the industry that product will come on stream by 2015 or 2016 at the latest. Insiders are saying that this is impossible."

Nevertheless, Peak could well show all its detractors that they are wrong. For example, the lab work necessary to prove the complex chemical extraction process often takes years to finalise and yet Peak has accomplished this in just eight months. "There is still some R&D work to do," says Beazley, "because no rare earth body is ever the same. But our timescale is realistic. We aren't breaking new ground but building on what is already known. But the most important factor by far is the nature of the ore body we are working with and its low levels of impurities. Immediately, this cuts out half the time and half the capex."

15

Number of elements classified as rare earths

The next stage of the process, as well as a complete understanding of the variability of the ore body, will be further proof that the metallurgy is understood. This will involve a pilot plant which can demonstrate that the five product groups of rare earths that Peak Resources is initially targeting can actually be extracted in the way that it believes. BE

For more information about Peak Resources visit: **www.peakresources.com.au**

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