



THE MISSING ELEMENT

AVALON RARE METALS' ADVANCED-STAGE RARE EARTHS PROJECT near Yellowknife has it all: a well-stocked treasury, a pending feasibility study, a well-maintained relationship with affected First Nations groups and a favourable demand outlook thanks to China's mighty-tight grip on rare earths. But if you ask Avalon, there's still one thing that, increasingly, has the potential to curb the company's progress: the crucial-but-slower-than-ideal Northern regulatory system. **GUY QUENNEVILLE** reports.

Don Bubar, president of Avalon Rare Metals

Attention spans are short these days, so an industrial development vying for attention needs an attractive narrative – a punchy one-liner succinctly driving home the project's main selling point. Since it began aggressively developing its Thor Lake rare earths project in 2007, Toronto-based Avalon Rare Metals has had a doozy of a pitch. Basically, it goes like this: China retains a virtual monopoly on the supply of rare earths. The result? These obscure, hard-to-pronounce elements of the periodic table are in high demand right now – crucial ingredients in a dizzying array of ubiquitous products (cell phones, iPads) as well as green technologies poised to become mainstream. The latest, headline-grabbing example? Energy-efficient fluorescent light bulbs, which are quickly replacing their incandescent predecessors in the United States due to newly-enacted legislation.

With demand spiking, the “China factor,” as Avalon's corporate presentations term it, is still very much in play. “It continues to be the main reason why there is the business opportunity to bring new rare earths production to market from outside China,” says Don Bubar, founder and president of Avalon. But here's the thing, the factor that underlies the urgency with which Avalon is pursuing the project: It's a short-term opportunity.

Though the various industries relying on rare earths are worth an estimated \$4.8 trillion, the global rare earths industry itself is only worth \$1.5 billion. That creates a very narrow window of opportunity for Avalon to bring Thor Lake into production and profit from built-up demand. “Once that market is basically taken care of, then the new [read: late-to-the-game] producer just doesn't have anyone to sell their production to,” says Bubar.

The challenge going forward, then, is making sure Avalon maintains its lead over other companies. It's a race, essentially, and Avalon is operating with an admitted handicap: it's undergoing an environmental assessment (EA) in a region not known for its timely regulatory process. In fact, the environmental assessment process – conducted by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) – is frequently cited as a major barrier to investment in the NWT. And based on some legs of the Thor Lake assessment so far, Avalon is starting to get worried, says Bubar. “The main thing that concerns us right now is

the regulatory process of the North not being able to move along quickly enough to allow us to stick to our timelines.”

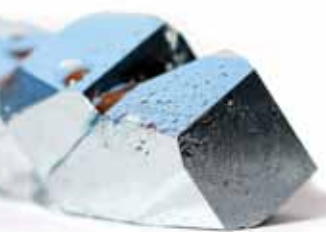
THE SENSE OF URGENCY that surrounds Thor Lake stands in marked contrast to the project's humble origins as the ugly duckling to other, more attractive prospects in the mid-1990s resource sector. The Cinderella story starts with Bubar. A geologist and former exploration manager with Aur Resources, Bubar helped discover the Louvicourt copper-zinc deposit in Val d'Or, Quebec in 1989. He left Aur in 1994 to form his own junior exploration company, Avalon, a year later. The upstart, like most other companies at the time, was primarily interested in gold and base metals projects.

But then Bre-X happened, taking the shine off gold companies. Suddenly, what was once Avalon's least marketable holding, a lithium and tantalum rare earths deposit in Northern Ontario, emerged as the better bet. “It was an asset that we could actually raise some money on by making a link at that time between growing the use of rare metals and new technology, tantalum capacitors, lithium batteries, cell phones,” says Bubar. When Avalon later picked up Thor Lake in 2005, “it was basically an unwanted orphan.”

It took a few more years for iPods and wind turbines to become household names, spurring demand for rare earths. During those initial, lean years, Bubar worked overtime educating people on what rare metals are. “We stuck with it while no one really cared about it,” he says. What's radically changed things is China's growing reliance on and production of rare earths. In 1990, the country produced only 27 per cent of the world's rare earth output, according to a recent report from the U.S. Geological Survey. That percentage climbed to 90 per cent three years ago. Today, most estimates put it at around 95 per cent. While Chinese production soared during the 1990s, it wasn't until after the new millennium that Chinese consumption of rare earths also climbed precipitously. Now that the wider world is hungry for rare earths, too, China is strategically controlling its supply, to the frustration of the United States and the European Union.

Enter Thor Lake. >

● RIGHT: Avalon's camp is located 100 kilometres southeast of Yellowknife. It spares nothing: satellite TV, an Internet connection allowing workers to Skype with girlfriends back home and a constant supply of freshly baked goods.



GALLIUM: One of more than a dozen rare earth elements found at the Avalon's Nechalacho project, used in light-emitting diodes (LEDs)

NECHALACHO BY THE NUMBERS

PROJECT: Nechalacho rare earths deposit

COMPANY: Avalon Rare Metals Inc.

LOCATION: 100 km southeast of Yellowknife

PRICE TAG: \$902 million

CONSTRUCTION PERIOD: 16 to 18 months

PRODUCTION LIFE: 20 years, minimum

OPERATIONS WORKFORCE: 303 people

REVENUES TO THE GNWT: \$774 million

NWT SUPPLY PURCHASES: \$1.2 billion

THE SITUATION NOW: Nechalacho is currently under environmental assessment. Avalon hopes the process is over by the end of next year, allowing the company to start full production at Nechalacho in 2015.



PHOTOS (RIGHT) Michael Ericsson PREVIOUS PAGE John Burridge

In 2007, Avalon began drilling at the site, located 100 kilometres southeast of Yellowknife, north of the Hearne Channel of Great Slave Lake. The company suspected it was sitting on a motherlode of “heavy” rare earths – even-more-hard-to-find variants of rare earths. The drilling confirmed it. An updated pre-feasibility study, released at the start of this year, outlined the proposed \$902-million project. Thor Lake, renamed Nechalacho by one of the affected First Nations groups, will initially operate for 20 years (though it could run as long as 100 years, if demand is there, says Bubar.) Some 216 people will extract and process ore at the mine site. An additional 87 people will convert the raw ore into the rare earth oxides at the project’s hydrometallurgical plant, slated to be built near the site of Pine Point, a former lead-zinc mine located 85 kilometres east of Hay River. Overall, the project, including its 16-to-18-month construction phase, will generate \$382 million in NWT wages and benefits, help expand the territory’s mining

sector beyond diamonds and, with the hydromet facility, give struggling Hay River a much-needed economic shot in the arm.

As Avalon works to produce a bankable Nechalacho feasibility study for the end of next year, the most pressing issue at the moment is the project’s environmental assessment under MVEIRB. The assessment, which began last year and which Avalon is hopeful will conclude by the end of 2012, must be in favor of Avalon’s plan before MVEIRB’s sister board, the Mackenzie Valley Land and Water Board, can grant Avalon the permits it needs to build and operate Nechalacho.

The assessment comes at a propitious moment for the project. The effects of China’s ever-tightening grip on rare earths are starting to extend to the average Wal-Mart shopper. Last month, no less than General Electric released a statement to its customers about the general glut of rare earths. The reason? China’s closing and nationalizing of dozens

of producers of rare earths (key ingredients of GE’s new spiral-shaped bulbs) sent prices for certain elements – and the price of GE’s compact bulbs – soaring. As GE noted, if the rate of inflation over the previous 12 months on the rare earth europium oxide had been applied to a \$2 cup of coffee, that coffee would now cost \$24.55. “It’s increasing demand for some of the heavy rare earths key to our project,” says Bubar of this latest development, and China’s consolidation of the industry. “China is sort of leveraging its control over the supply side to try to attract more manufacturing investment in China to take advantage of its proximity to supply of raw materials.” Meanwhile, steep export quotas continue to constrain the supply of rare earth oxides outside of China. Earlier this fall, for example, it was announced that this year’s quota for one of the heavy rare earths present at Nechalacho, an element that is a key ingredient in high-strength magnets used in hybrid cars, had already been reached.

All of this only strengthens the economic case for Nechalacho, but it also creates further pressure for Avalon to advance its project as quickly as it can – all while being subject to the often-unpredictable schedule of the environmental assessment. “We think we’re number three or four in the race to bring new supply into the market from outside China – for rare earths generally, that is,” says Bubar. “And we think we’re number one in the race, from outside China, to bring a significant new supply of the heavy rare earths to the market place.” Not that other companies aren’t trying to outpace Avalon. “There are lots of other projects out there right now that are at the exploration stage that are trying hard to catch up.” As long as the environmental assessment process proceeds smoothly, though, Avalon should be able to maintain that lead.

But as Bubar and his vice president of operations, David Swisher, admit, there is reason to fear the EA process could impact Avalon’s important timelines. This past May, within nine days, MVEIRB received the developers assessment reports (DARs) for three projects: Fortune Minerals’ NICO project, Tyhee Gold Corp.’s Yellowknife gold project, and Nechalacho. A DAR, running thousands of pages, is a detailed description of a project and its potential impacts on the environment, serving as the basis for the ensuing environmental assessment. It is the product of much back-and-forth between a company, the board and the parties to the assessment, such as affected First Nations groups. Once a DAR is submitted, the review board must determine if it provides answers to all the questions that it was decided the DAR should address. Not detailed answers, just answers.

Of the three DARs, only Avalon’s was found lacking. Swisher admits to some annoyance at both the amount of time it took for the board to complete its review of Avalon’s DAR (96 days, compared to the 55 days it took to review the Fortune DAR that arrived the same day) and



the fact that Avalon was the odd man out. Missing from Avalon’s DAR, the board said, was information about the thorium content of ore at Nechalacho. Thorium is a radioactive element sometimes associated with rare earths projects and can be harmful to the environment if not handled and disposed of safely, as in parts of China where factories were recently closed. But Avalon is disputing that that information was missing. “There were no deficiencies,”

says Swisher. “We had the information in there,” echoes Bubar, “We were pretty puzzled by it because basically we thought there was more than adequate data on that in there. We’ve got a pretty good handle on what the thorium content is in the ore. It can be monitored thoroughly and tracked through the recovery process.” >

● ABOVE: Drillers at Nechalacho have so far unearthed 227 million tonnes of rare earths, according to Avalon’s latest resource estimate.

RARE EARTHS – WHAT ARE THEY IN?

A bewildering amount of stuff, actually. The various industries relying on rare earths – from Apple to Ski-Doo – are worth \$4.8 trillion. Here’s a handy guide to which elements of the periodic table (highlighted below) are found at Avalon’s remote Nechalacho site – and what products wouldn’t be possible without them.

Lithium (Li)
LONG-LIFE BATTERIES

Beryllium (Be)
FLEXIBLE, LIGHTWEIGHT ALLOY WITH COPPER AND ALUMINUM

Hafnium (Hf)
USED AS THE ELECTRODE IN PLASMA CUTTING

Gallium (Ga) & Indium (In)
ULTRA LIGHT-WEIGHT SOLAR PANELS

Gallium (Ga)
EMITS BLUE LIGHT IN LEDs

Yttrium (Y)
ELECTRODES IN HIGH-PERFORMANCE SPARK PLUGS, AND WHITE PHOSPHORS AND LEDs

Lutetium (Lu)
X-RAY PHOSPHORS FOR MEDICAL AND OTHER APPLICATIONS

Lanthanum (La)
INCREASED REFRACTIVE INDEX IN CAMERA LENSES

Tantalum (Ta)
MINIATURIZATION OF CAPACITORS FOR LAPTOPS AND CELL PHONES, CARBIDE BLADES AND MACHINE TOOL BITS

Erbium (Er)
A DOPING AGENT IN OPTICAL FIBRES

Zirconium (Zr)
COMMONLY USED IN JEWELRY AND STABILIZED WITH YTTRIUM TO MAKE SHARPER SCALPELS

Dysprosium (Dy)
IN COMPACT DISCS AND DRIVE MOTORS FOR HYBRID ELECTRIC VEHICLES

Terbium (Tb)
COLOUR TVs, LASERS AND FLUORESCENT LIGHTING

Cerium (Ce)
CERAMICS IN CATALYTIC CONVERTERS AND DENTAL CERAMICS

Praseodymium (Pr)
WELDER GOGGLES AND UV PROTECTIVE GLASS

Neodymium (Nd)
STRONG PERMANENT MAGNETS AND GLASS IN INCANDESCENT BULBS

Samarium (Sm)
LONG-LASTING LIGHT WEIGHT MAGNETS USED IN EARPHONES, AUTOMOTIVE ACCESSORIES

Europium (Eu)
RED PHOSPHORS IN TVs AND FLUORESCENT LAMPS

Gadolinium (Gd)
USED IN COMPACT DISCS AND WITH YTTRIUM IN MICROWAVES

Thulium (Tm)
ELECTRONICS AND HIGH TEMPERATURE SUPERCONDUCTORS

■ OTHER RARE METALS
■ LIGHT RARE METALS
■ HEAVY RARE METALS

We're at work on top of your world

exploration

Nuna Group of Companies...
is committed to Northern Development

- Crushing
- Open Pit Mining
- Training Simulator
- Heavy Civil Earthworks
- Large Diameter Drilling
- Winter Road Construction
- Dam and Dike Construction
- Site and Exploration Services
- All Weather Road Construction



nunalogistics.com

Operations & Human Resources Office
1-877-499-9114

Executive Office Vancouver
1-888-734-5773

Regional Offices
Yellowknife NT,
Rankin Inlet NU,
Prince Albert SK,
Thunder Bay ON

MISSING ELEMENT

But Avalon's concern extends beyond a disagreement over whether the company fulfilled its obligation when submitting the DAR. Bubar and Swisher also express doubts as to whether the review board, which had five environmental assessment officers on staff as of last month, is properly staffed. "The decision components seem to be taking a bit longer than what I'm used to, having gone through the process before," says Swisher. Before joining Avalon, Swisher helped usher Tamerlane Ventures' redevelopment of the Pine Point lead-zinc mine through its own environmental assessment, just as he is now with the Nechalacho project.

This isn't the first time the review board has come under the scrutiny of Avalon and Swisher. In August 2010, the board held a scoping session regarding Nechalacho in

"It takes its toll, I suppose," says Vern Christensen, executive director of MVEIRB, "if people don't understand that there are more parties involved than just the review board."

local newspaper at the time. "It's an expense to everybody, not just the company. It's an expense to the taxpayers and it's not a good use of everybody's time."

VERN CHRISTENSEN is all-too-aware of the backlash against MVEIRB. As the board's executive director, he's in the thick of it. But the board is hardly wallowing in self-pity, he says. "It takes its toll, I suppose - if people don't understand that there are more parties involved than just the review board," he says, pointedly.

Indeed, many parts of the EA process are beyond the board's control. Case in point: After the board conducts its environmental assessment, the review board then recommends to the federal minister of Aboriginal Affairs and Northern Development Canada (AAND) whether a project should proceed to permitting (with or without amendments to a company's plan) or whether it should be rejected. Ultimately, the final call is made by the minister. Sometimes, that decision can take time.

Just how much time? Well, that depends on the project. But in some cases, it's been known to take a while - three years and counting, in the case of Sidon International Resources. In 2004, Sidon applied to the Mackenzie Valley Land and Water Board for a land use permit to conduct exploratory drilling for diamonds near Drybones Bay, a sensitive area identified by the Yellowknives Dene First Nation as the site of ancient Dene burial grounds. Sidon's application was referred to the review board,

\$10
SHIPPING ON ORDERS TO
NWT & NUNAVUT*
CALL TOLL FREE TO SET UP YOUR ACCOUNT:
1.866.523.5437

WE SELL BRIGHT FUTURES



POWER SURGE
TECHNOLOGIES LTD.
OFFICE SUPPLY PROFESSIONALS

WWW.POWER123.COM
4 LEPINE STREET, HAY RIVER, NWT X0E 1G1 T: 867.874.4385 F: 867.874.4383
CALL FOR A FREE CATALOGUE WITH OVER 15,000 OFFICE PRODUCTS

*CALL FOR DETAILS

Is this a problem for you?

QIKIQTAALUK ENVIRONMENTAL

Over 10,000 metric tons of Hazardous Waste and Contaminated Soil safely transported and disposed from the North since 2003

- Mining Industries
- Federal and Territorial Agencies
- Abandoned Site Decommissioning

Let us manage your environmental liability

Qikiqtaaluk Environmental is a joint venture between

Iqaluit, Nunavut • (867) 979-8400 • info@qenv.ca • www.qenv.ca

which completed its environmental assessment in 2008. The board recommended to then-AAND minister Chuck Strahl that exploration proceed, provided certain mitigating measure be put in place. The board is still waiting for a decision from Strahl's replacement, John Duncan.

In correspondence with the federal government last March, Laurence Stephenson, a consultant to Sidon, could hardly betray his incredulity at the lengthiness of the process. "What

are you smoking down there in Ottawa?" he fumed. "This is ludicrous. The state of mineral exploration in the NWT is non-existent! I don't even know if the (land use permit) was granted tomorrow that we could interest enough people to put together the financing to proceed with the exploration program we proposed so long ago!

"I can't even remember if it was three sites, five sites or 10 drill sites (that we had proposed)," continued Stephenson. "Permitting

like that takes 30 days in BC, a day or two in Quebec, two to three weeks in Ontario and rarely more than six weeks anywhere in Canada for the scale of proposed exploration."

Admittedly, the Sidon case is the worst case scenario, says Christensen. Still, the review board is too often blamed for parts of the process taken up by lengthy ministerial decisions, he added. "I think there's a perception that the board has control over the whole process when really the review board manages the environmental impact assessment process. There are pieces within that process that are really outside of the board," he says.

When it comes to the MVEIRB's own backyard, and in light of the concerns raised by Avalon and other companies about its capacity, the question still remains: does the review board have the resources it needs to conduct timely EAs?

"Well, the board is busy," offers Christensen. "It's fair to say we are working to capacity." So busy, in fact, that, for work on the Avalon's file, the board contracted some outside help to shoulder the load. Bubar, for his part, wonders what would happen if the board was flooded with more environmental assessments than it currently has on the books (six, not including the environmental impact review

– thorougher than an EA – for De Beers Canada's Gahcho Kue diamond project.) "If there really was a mineral exploration boom happening in the NWT like there should be, as we're seeing in other jurisdictions, they should be seeing 50 of them," says Bubar. "So what are they going to do if there is a real boom and you've got a 100 of those projects under review?"

In terms of its budget, if you take into account only its starting budget every year, the board is underfunded. But there are contingencies in place that make up for it, says Christensen. The board receives an annual budget of \$2.5 million from the federal government,

but it routinely asks for supplementary money each year, so that the actual annual budget of the board averages \$3.3 million, according to Christensen. (That doesn't include the cost of environmental impact reviews, which are rare.) The board's funding is the direct result of a land claim agreement signed in 1992 between the feds and the Gwich'in people of the Northern NWT. "Unfortunately, as each new land claim was settled, we haven't gotten additional funds from those land claims. Our funding is solely from the Gwich'in implementation plan." Asked why that's the case, Christensen responded, "That's a good question."

As for why Avalon's developers assessment report didn't measure up: Well, it just didn't measure up, according to Christensen. When it comes to the DAR, he says, "the quality of the answer isn't the question. It's, 'Was there an answer or not?' I don't want to be critical of the company, but it's a low test."

It should also be pointed out that not every mining project is the same; therefore, not every environmental assessment can be measured the same way, says Renita Jenkins, the board's head of communications. "Tyhee is a gold mine. Fortune is a cobalt-gold-bismuth mining and milling project and Avalon is a rare earth elements project dealing with radioactive materials. The process the review board takes with each project is designed and run with the circumstances of the development and environment in mind to make sure a quality environmental assessment of impacts is done."

Swisher thinks the review board should consider prioritizing projects. "There needs to be some consideration for those developers who are serious about putting things into construction and operation versus maybe those that are less certain," he says. Asked how the board would go about determining that, Swisher replied, "Maybe track record, past history, performance, company funding. There are different measures that could be used. But that would be at the discretion of the board." Christensen is, not surprisingly, doubtful of such a scheme, saying, "I think what's important is that the board creates a work plan that allows people to participate." A revised work plan for the Nechalacho environmental assessment – to which Avalon and other parties were free to submit comments – was expected for release by now.

IN ITS BULLETIN to consumers fuming over the high cost of energy-efficient bulbs, General Electric tackled the question of what new mines were being undertaken to keep up with rare earth

demand – specifically, the heavy rare earths needed in fluorescent bulbs. "(They) will not be produced in viable quantities outside of China for many years," the company wrote.

If Avalon gets its way and wins the race to mine heavy rare earths, the wait could be four years, says Don Bubar. "We want to get the hydromet plant started up in 2015, so to do that means we need to initiate construction in 2013. To meet that target, we need to get our bankable feasibility study done at the end of

next year and certainly have that environmental assessment process done by that time, too."

But the truth is, until the environmental assessment runs its course and Minister Duncan signs off on the project – and provided those milestones are reached in a timely manner – all bets are off. "The opportunity is still there..." says Bubar. "But because it's a race to production, if we had a significant delay in receiving our operating permits, then that could frustrate the opportunity." **UHB**



**Congratulations
Greg Harding, Q.C.**
on admittance to
the NT bar

The Best in His Field

Greg Harding, Q.C. was admitted to the law society of the Northwest Territories. He joins our 14 other lawyers licensed to practice in the North, offering support to Jack Williams, Gerald Stang, and Dale Cunningham in our Yellowknife office.

F I E L D L A W

suite 201 5120 - 49th street
yellowknife NT X1A 1P8
PH 867 920 4542
FAX 867 873 4790

YELLOWKNIFE • EDMONTON • CALGARY
www.fieldlaw.com

OUR AREAS OF LAW

business
general litigation
taxation
metis and first nations
health
labour & employment
personal services
dispute resolution/mediation
commercial real estate
natural resources
residential schools claims

"The opportunity is still there...But because it's a race to production, if we had a significant delay in receiving our operating permits, then that could frustrate the opportunity," says Bubar.

Diavik... proud of our legacy to the North



Our community projects

At Diavik, we are committed to the North, and part of our legacy is our community projects. Working with many partners, we've contributed our expertise to help build the Shorty Brown Arena, the Bailey House men's transition centre, and the Aven cottages territorial dementia facility.

These build upon our early trades training programs, which resulted in new and improved community infrastructure. The Lutsel K'e road construction course is one of many examples of our work with local communities.

Our most recent legacy initiatives include our donation to the Stanton Territorial Hospital digital mammography machine fundraising campaign and the new security system for the Alison McAteer House.

The results... a legacy of new services and better infrastructure for all northerners.

Diavik Diamond Mines Inc.

5007-50th Avenue
Yellowknife, NT
Canada X1A 2P8

diavik.ca



HARRY WINSTON

RioTinto

Diavik Diamond Mine
Five-time John T. Ryan Safety Award Winner