Niger – Africa's Rising Uranium Hotspot

No one much in the West paid much attention to Niger's mining activities before 2003 and hardly anyone knew that Niger was an important uranium producer. All that changed in the run-up to the Iraq War where the "smoking gun" for the invasion of Iraq was the supposed attempts by Saddam Hussein of Iraq to obtain yellowcake from Niger to feed some sort of nuclear program. Subsequently the whole affair proved to be a bogus false-flag operation and the matter degenerated into a morass of lawsuits known as the Plame Affair. It turned out that a former US ambassador had been sent to Niger to investigate the matter but his finding, that it was highly unlikely that Niger had exported any uranium to rogue states, was suppressed. This was too late though for Iraq as the allegations were used as the trigger for the invasion. The Coalition of the Willing turned out to be the Coalition of the Misinformed.

Leading (Sometimes) the Pack

The one thing that was true was that Niger was one of Africa's leading uranium producers, swapping first place over time with Namibia depending on which country was ahead on sales at any time. In 2011, the country ranked fourth (globally) in terms of uranium production by volume, accounting for about 8% of world production.

Niger has been mining uranium since 1971. It is currently the world's fifth largest uranium producer, producing approximately eight million pounds of uranium per year, and its global market share has fluctuated between 5-9% over the last decade. It has accounted for as much as 72% of the country's export revenues. Foreign direct investment in the sector from 2008 to 2012 (the most active period) was estimated to have been US$1.4 billion.

The Geology

All uranium production in the country comes from sandstone-hosted deposits within sediments of the Tim Mersoi Basin, which are adjacent to and overlie rocks of the Air Massif. At least 13 individual uranium deposits are known in the area. The Tim Mersoi deposits have attractive uranium grades, typically of 0.3% to 0.6%. The abundance of uranium in the district, the attractive grades, and the relative lack of exploration clearly make this area an attractive exploration target.

The uranium deposits in the country are the orange circles in the mid-north of the country.

The rocks hosting the uranium mineralization are commonly arenites of the Carboniferous Guezouman and Tarat Formations. Some beds within the Tchirozerine Formation of Jurassic age and the Irhazer Formation of Cretaceous age also contain uranium. The depositional environment of these formations was fluvial to deltaic, and apparently the uranium was leached from the basement units. Tectonic, lithological and geochemical features are important in trapping the mineralization, which is often of roll-front type, either reduced consisting of pitchblende and coffinite (Akouta, Arlit, Afasto, Madaouela) or oxidized minerals (Imouraren).

The Players

The 800-lb gorilla in the Niger uranium picture is Areva (formerly known as COGEMA). Its properties are:

Compagnie Minière d’Akouta (COMINAK), owned by Areva Group (34%), the Government of Niger (31%), Overseas Uranium Resources Development Co. of Japan (25%), and ENUSA Industrias Avanzadas, S.A. of Spain (10%). This mine produces around 2,000 tonnes of U3O8 per annum.

Societe des Mines et de l'Air (SOMAIR) owns the Arlit open-pit mine which is operated by Areva. It mines approximately 1,000 t U3O8 per annum. SOMAIR was owned by Areva Group (63.4%) and the Government of Niger (36.6%).

Areva also has four uranium projects (Imouraren, Afasto W, Techili and Abkorum), which are in the same area as the two operating mines, are in an advanced stage of evaluation.

Areva's open pit SOMAIR mine, together with its COMINAK underground mine, have produced approximately 240 million pounds of uranium oxide (U3O8) since 1971 and are the highest grade uranium mines in Africa.

Work began back in 2010 on the Imouraren deposit. The IMOURAREN Inc. exploitation company was established, held 66.65% by a JV of Areva and Korean groups (Areva 86.5% & KEPCO/KHNP -13.5%) and 33.35% by the State of Niger. This project has stalled in the wake of Fukushima but is envisaged as a 36 year mine life with production of 5,000 tpa of U3O8.

SinoU – a Chinese SOE

In a July 2006 joint-venture, the Nigerien government granted SinoU (China National Nuclear) the rights to develop a uranium mine complex in Azelik in the Agadez region of Niger. The joint-venture, known as Niger Azelik Mining Industry, is co-owned by SinoU (37.2%), the Nigerien Government (33%), ZXJOY Invest (24.8%), Korea Resources – Kores (4%), and Trendfield Energy & Resources (1%). In addition to the uranium mine, the complex will include two coal-fired power plants and a hydrometallurgy plant. On April 24, 2009, the Nigerien government announced that the Exim Bank of China had granted them a preferential loan of Yuan 650 million for the development of the mine. The loan is repayable in 15 years with a 5 year grace period and an interest rate of 2%. The first drum of yellowcake uranium rolled off the production

line in late 2010. Under the original plan the mine was expected to produce 700 tpa of uranium and to increase production to 2,500 tpa by 2015.

Pan African Uranium

Originally the bunch of assets held by this company was ensconced in Homeland Energy Corporation through its subsidiary, Uranium International. When Homeland was backdoored into Western Uranium the African assets were announced to be a spinco in late 2014. However, the website for Pan-African shows it as still unlisted. Originally Homeland's subsidiary had acquired a 100% interest in two exploration licenses in the Republic of Niger. The Agelal license is adjacent to that which hosts the Arlit and Akouta deposits, and represents an area formerly held by Cogema (nw AREVA). Over 36 holes were drilled by Cogema within the boundaries of the current Agelal license, several of which intersected uranium mineralization at depths of between 600-1,000 metres below surface. The Aserka license is located to the immediate southwest, somewhat deeper in the basin, due north of the Teguida uranium deposit and roughly 35 km west of the Imouraren deposit. Niger has also granted eight uranium prospecting concessions to Uranium International Ltd in the northeastern area around Agadez.

Pan African seems to be in somewhat of a listing limbo currently, but when finally set free should be an interesting pure play in uranium in Niger.

Aura Energy (ASX: AEE)

Aura's wholly owned Tim Mersoi Basin applications are located in Northwest Niger and cover 1,500 square kilometres.

The Aura application areas (known as Ebadargene 1, 2 and 3) lie close to and south of the Air Massif and contain a swarm of east-northeast fault structures that, further to the west, contain uranium and associated copper. In the company's view

the application areas appear to contain extensions to known mineralised structures. Fault structures, particularly east-northeast and north-south trending faults, have been influential in transmitting the mineralising ground waters within the Tim Mersoi Basin. An airborne radiometric and magnetic survey has been flown over the Air Massif under European Aid funding and covers much of Aura's northern application area. Seems like not much is happening here for the moment.

Paladin Energy (ASX: PDN, TSX: PDN)

With its main focus on Namibia, Niger clearly takes a back seat. This company's Niger interest is the Agadez project which is located 30km west and north-west of the township of Agadez. It includes three exploration concessions: Tagait 4 (TAG4); Toulouk 1 (TOU1); Terzemazour 1 (TER1); and, one application Ekazan 1 (EKA1), covering in total an area of 990km^2. The concessions cover sandstone type uranium mineralisation in the Tim Mersoï Basin. At this stage Paladin has suspended all field activities in the Arlit and Agadez areas and a *force majeure* has been requested from the government authorities for indefinite suspension of expenditure requirements.

GoviEx Uranium (CSE: GVX) – Friedland Junior (literally)

It was a meeting with this company a couple of weeks back that perked up our interest in Niger and its potential on the uranium front. Its existing role in the industry was known to me but the extent to which juniors were playing here was not.

It was particularly intriguing that GoviEx was the vehicle of Govind Friedland, the son of Robert Freidland. Much to our surprise the strange name of the company is merely a coincidence. The company is a relatively recent listing dating only from June 2014. Interestingly it chose the CSE over the TSX-V. This is no small project with over $100mn having been

spent on it so far between $30mn in acquisition costs and $70mn in exploration work. Neither is the project fledgling as GoviEx in its private manifestation has been working on the project since 2007. The company has undertaken a rather stunning 581,000 metres of drilling so far, so like every Friedland family project, nothing is being skimped.

The main prospect is Madaouela, which is in the main prospectivity zone for uranium in Niger and in close proximity to the aforementioned Arlit mine of Areva. The Probable Mineral Reserve is 54.88mn lbs at 0.098% U3O8.

The proposed base case envisions an average 2.53mn lb per year U3O8 yellowcake production rate over an eighteen year mine life, with an 83% ultimate recovery of uranium. The base case project economics for this project at a long-term uranium price of USD 70 /lb U3O8 are positive, and indicate an after-tax NPV of US$251mn (at an 8% discount rate) with an IRR of 21.9%. Initial capital costs are estimated at US$339mn, total life of mine capital costs at US$646mn, and cash operating costs of US$33.10 per lb U3O8 including royalties.

The shareholder list is A-grade with Govind Freidland holding 21.36%, Toshiba with 19.42% and Cameco with 8.55% (even Semafo is in the mix with 6.7%).

So capex here is chunky and opex is flirting with the levels at which uranium is currently trading in the spot markets. This implies that nothing much is likely to happen in the short term as far as production decision is concerned. The company is not fazed though as it has a tie-up with Toshiba and is clearly focusing on proving up the deposit and plans for its development and “awaiting the turn” in the uranium price like so many others. As “failure” is not in the Friedland family phrase book and “too big” is not employed either, GoviEx remains something to watch for eventually becoming a reality.

Orezone (TSX: OZN) – Bulking Up

Orezone Resources owes its position in uranium in Niger to a merger of its uranium interests in Niger withthose of North Atlantic Resources Ltd (TSX: NAC). In late 2009 the two groups signed a definitive agreement whereby Orezone acquired three uranium exploration licenses in the Republic of Niger, West Africa, from North Atlantic to create Brighton Energy Ltd. Prior to this Oroezone's wholly-owned subsidiary, Niger Resources, had been granted two uranium exploration permits in Niger. The two permits totaling 980km² were located adjacent to Areva's exploration permits and within 40km of Areva's SOMAÏR and COMINAK uranium. The permits, named ZELINE 1 and ZELINE 4 are within the Tim Mersoï sedimentary basin. In late 2010 and early 2011 drilling (twelve holes in 2011) intercepted uranium mineralization above a lower cut-off 100ppm of U3O8, with eight of the holes intersecting more than 200 ppm of U3O8. Drilling (in 2010) of the Guezouman-Talak Formation, which is the host rock of the neighboring Cominak mine and Madaouela deposits, was consistently mineralized within a 6 km² zone at depths from 112 to 182 m.

The new discovery was considered to be shallow and amenable to open pit mining, and is also largely associated with reduced rocks that are typically amenable to standard extractive processes.

In 2012, Orezone consolidated all of Brighton Energy into its main structure by offering Orezone stock to the minority holders. As uranium was out of favour, one scarcely sees mention any more of the Niger properties in the Orezone promotional material.

Conclusion

To most distant watchers of Uranium, the name Namibia rings a bell but Niger scarcely raises an eyebrow. Besides its more controversial (and involuntary) bit-part role in one of the

most sleazy false flag operations ever, it frequently has out produced Namibia and may yet do so again in terms of uranium output. Thus far production has been centred on deposits owned by the French giant Areva and JVs with a heavy Chinese SOE component, however rising companies like GoviEx and temporarily sidetracked ones like Aura Energy and Homeland/Pan African give Niger the potential to return to number one ranking in Africa and a shot at being in the world's top five producers within the next ten years.

The existing production of Areva and China National Nuclear mines combined with Areva's and GoviEx's projects could boost uranium production capacity to over 10,000 tpa within five years from the present 4,500 tonnes. This would put Niger definitively ahead of Namibia in the African U3O8 stakes.

Now all we need is for uranium prices to come to the party.

Lifton on why this is 'the very best time ever' to invest in rare earths

April 11, 2015 – In a special **InvestorIntel** interview, Publisher Tracy Weslosky speaks with Jack Lifton, Founding Principal of Technology Metals Research, LLC and Sr. Editor for **InvestorIntel** on his short term forecast on the rare earth sector. In this interview he discusses China, their impact on demand and prices and the recent 'game changer' deal that Texas Rare Earth Resources Corp. just announced with Areva.

Tracy Weslosky: So, Jack for everyone in InvestorIntel audience, would you mind telling us what you perceive to be

happening in the short-term markets for rare earths or should I say technology metals?

Jack Lifton: I think in fact, for rare earths and technology metals, the Chinese restructuring is artificially causing price fluctuations. We are going to see a steady rise in rare earth prices. Demand is increasing, Chinese production is decreasing at the moment and Chinese production at the moment is all there is. This is in fact the very best time ever to invest in the development of junior rare earth companies and junior technology metal companies in general. The Chinese have stumbled and they're reorganizing. If you think it would be easy to reorganize, let's say, General Motors, imagine reorganizing the Chinese industrial, which is what they're doing. It's going to take a while and this is a great opportunity. When they come back they're going to need every bit of their internal production for their domestic use. Watch out because if you think there was a rare earth crisis before, you ain't seen nothing yet.

Tracy Weslosky: Of course we've had a lot of debate on our site recently over the Sunset Boulevard and Molycorp story. Would you like to address our audience once and for all: and set the record straight?

Jack Lifton: Yes. I have absolutely no axe to grind with any company, much less Molycorp or Lynas. These were very challenging ventures. I personally believe in my opinion both of those companies seem to have bitten off more than they can chew. The issue was never the deposit. This is the old way of thinking Tracy. The old way of thinking is, the bigger the deposit and the higher the grade the better off you are. That translated itself for both of those companies into attempting to build each of them the world's largest processing plant for light rare earths. Both of them have stumbled in this and it's not really surprising. These things were touted as the answer to all the questions. In fact they have managed to emphasize

the question of, when is there too much of a good thing? I think that I've been saying for a number of years, projects have to be the right size. I think both of them are the wrong size. It's as simple as that. I hope that they stay in production, but it doesn't look promising. We may be right back to where we were five years ago where the Chinese produce, not only all the heavy rare earths, but almost all of the light rare earths. What has happened to these maybe $10 billion dollars that have been spent since then? This is a question that should be addressed.

Tracy Weslosky: Okay. Well, let's talk about then the big deal with AREVA and Texas Rare Earth Resources since you're on the board of directors. What do you really think Jack?

Jack Lifton: I was very impressed by the speed at which this deal was put together. It only took a few months…click here to hear the rest of the video

Disclaimer: Please read Jack Lifton's bio (click here) as it explains how he is on the Board for Texas Rare Earth Resources Corp. and includes all of his existing contractual work with publicly listed companies on InvestorIntel. Please email info@InvestorIntel.com with any additional questions.

TRER's Round Top – where uranium glows….

Back in the first flush of Rare Earths a flock of uranium companies scrabbled through their old NI 43-101s to see if there were any REEs worth mentioning in their mix and, even if the showing was slight, such was their desperation at the woes of the Uranium space they nevertheless restyled themselves as

Rare Earth players and were off the races.. literally.

It is somewhat ironic then, in light of this week's announcement, that Texas Rare Earth Resources (OTCQX:TRER) did not start out as, or ever claim to be, a uranium company, in fact it came to the REE space from the more rarefied zone of Beryllium hunters (we use the plural advisedly because they were almost alone). It was briefly explored many decades ago by some uranium juniors but they were pushed aside by the heavyweights pursuing Beryllium. Now we find that TRER's uranium is coming to the fore as a key part of the economics. This surprises us not the least as we have long trumpeted the multi-faceted multi-metal nature of the Round Top deposit and now this is being born out.

The Latest Transaction

Earlier this week TRER announced that it had entered into a uranium offtake agreement with a subsidiary of AREVA (OTC: ARVCY), the French giant, to supply up to 300,000 pounds of uranium concentrates (U_3O_8) per year based upon a pricing formula indexed to U_3O_8 spot prices at the times of delivery over a five-year period commencing in 2018 or as soon thereafter. This agreement is contingent upon development and production at TRER's Round Top project.

The company's most recent Preliminary Economic Assessment (dated December 20, 2013) estimates that Round Top has approximately 96.4 million pounds in total of measured, indicated and inferred U_3O_8 oxide resources, out of which 56.3 million pounds are measured and indicated resources. We might also note that the company's CEO, Dan Gorski, is a uranium veteran.

Investorintel's very own Jack Lifton (who also is a TRER board member) was understandably a happy camper and commented "This is, to the best of my knowledge, the first binding offtake contract for a valuable byproduct of a heavy rare earth

project. We were able to attract a uranium industry market leader like AREVA because of the progress on our Round Top project metallurgy due to our application of the K-Tech continuous ion exchange/continuous ion chromatography (CIX/CIC) technology. This separation technology has been applied to the recovery of uranium from similar process leach solutions and is commonly used in the uranium extraction industry".

Areva is the closest thing the uranium space has to a fairy godmother. One cannot underestimate the importance of the French company waving its magic wand over Round Top as it gives the stamp of approval of a group that is savvy and serious to a project that many in the REE space had sidelined with their backbiting and technology one-upmanship. While this agreement is not the same as money in the bank it certainly gives the company an offtaker which is not shy to step forward and take supply from wherever it can get it. And the US is a better source than many for a product where majors are in a close hand-to-hand tussle with the Chinese to secure future supplies.

We should also note that Uranium (or Thorium) in a REE deposit has hitherto been seen as a deleterious element and TRER shows that it can actually be monetized and act as a project driver rather than as an anchor. But moreover the Holy Grail of REE wannabes is a real live REE offtaker and these have proven to be rarer than a unicorn. I have long sustained that TRER's advantage was in its other metals/minerals as enablers for the REE component of the project.

The Texas Angle

It should also be recalled that Texas has been one of the most trouble-free areas of the US for permitting, including for uranium-mining permitting. The state is the second largest producer of uranium in the United States. The Texas Railroad Commission reports ten uranium exploration permits issued in

the state as of January 2015. According to the U.S. Energy Information Administration, as of the 4th quarter of 2014, Texas has an annual production capacity of 7.3 million pounds of uranium as represented by seven existing projects.

This receptive jurisdiction is certainly a change from the various hostile ones where uranium producers must live in hope like New Mexico in the US and Queensland in Australia.

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Fission Uranium the catalyst of the Athabasca uranium exploration 'boom'

Fission Uranium Corp ('Fission', TSXV: FCU | OTCQX: FCUUF) is a mineral exploration company focused on developing its Patterson Lake South (PLS) uranium property, located in Saskatchewan's uranium rich Athabasca Basin. At the end of May, Fission announced the assay results from 10 holes (nine in zone R780 and one in zone R00E) at PLS. One of the holes was especially promising as it yielded high-grade intercepts as high as 14.74% U3O8 over 10 meters at 4.44% U3O8. Meanwhile, all ten holes showed uranium mineralization while six of these presented significant high grade assay results at shallow depth (50 meters), following other promising results from the winter drilling programs as outlined in press

releases on February 19, 2014 and April 22, 2014. The mineralization uncovered so far at PLS remains stretches along a strike from west to east. The Athabasca Valley may well be the world's richest source of high quality uranium and a number of uranium majors, and minors, are working in the area.

PLS is accessible by road and enjoys a year-round highway access from Highway 955, which runs north of the former Cluff Lake mine and discovery runs about 50 miles north through the nearby UEX-Areva Shea Creek, which is currently being actively explored and developed. Fission's management team under CEO and Chairman Dev Randhawa and COO Ross McElroy, President and Chief Geologist, is the same group that made "Fission Energy" into one of the leading uranium exploration companies in Canada. Fission Energy was sold in April 2013 the majority of their assets, including the discovery at Waterbury Lake, as well as interests in all other properties in the eastern part of the Athabasca Basin, Quebec and Nunavut and two joint ventures in Namibia to Denison Mines (TSX: DML | NYSE MKT: DNN).

Fission Uranium was spun out from the 2013 merger of 'Fission Energy' and Denison Mines and the PLS property is one of the Company's main assets. Fission acquired PLS when it merged with Alpha Minerals last November. This is the sort of experience that suggests Fission's management understands the concept of 'closeology' very well. And the fact that Fission's PLS is in the Athabasca basin is its main strength and strategy to hedge against the low uranium prices. Athabasca has seen the start of an actual uranium exploration 'boom' (no pun intended), because its deposits are among the most desirable in the world. Some analysts suggest that when uranium demand gets under way – and it will, given the number of uranium reactors that are being planned for construction until 2020 – the Athabasca properties will be among the ones to benefit first and most. Athabasca is home to such large and uranium rich properties as McArthur River and Cigar Lake.

While most uranium mines produce at grades of 0.15% or less, Athabasca (and see above the PLS has already shown grades of about 15%). This means Athabasca produces grades that are better than the average by a factor of 100 or above. In addition, many uranium plays are in less politically or regulatory stable jurisdictions, while Athabasca uranium is in Saskatchewan one of the most mining friendly provinces of one of the most mining friendly countries in the world and one with ready and efficient infrastructure. Finally there is a purely geological reason.

Uranium has been mined in the Athabasca Basin for more than 60 years, which has allowed geologists and engineers to gather plenty of data about the geological formation of uranium enrichment and the area’s unique formations, allowing for the use of much more sophisticated exploration methods than in lesser known areas. Fission Uranium Corp. has already used this technology to its advantage and the results of its winter exploration program and related updates have proven their effectiveness.