

Nuclear Buzz

Those Pesky RCPs

By Rod Adams, Columnist

This is a story that I really don't want to tell, but bad news is like old fish. It doesn't smell any better as it ages.

All eight AP1000 construction projects are at risk "for want of a nail."

In this case the nail is a reactor coolant pump, **the largest one in the world**, equipment that evidently doesn't exist and for which there is only one supplier.

In May 2010, Nuclear Engineering International published an article that announced that the coolant pumps for the first AP1000 reactors had been successfully tested at normal operating temperatures and pressures. Those tests were witnessed by the customer.

But RCPs were a significant topic during **the July 30 investor call** held by Curtiss-Wright (NYSE:CW) on its second quarter earnings, five years after the triumphant announcement that testing had been completed.

The company's presentation during the call included the following statement from chairman, president and CEO David Adams:

Regarding an update to our long-term operating margin guidance, we are not prepared to provide any target at this time. As the AP1000 program is quite significant to our future growth rates, we need to finalize the pending China order before

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Sprott: Japan Is Setting Stage For Uranium Market Rally

By Roger Murray, Global Correspondent

Last week's restart of Sendai 1 by Kyushu Electric Power Co. had little immediate impact on uranium spot prices.

The restart had been largely priced in to the current market and the UxC Weekly price ticked up 25 cents to \$36.25 per pound U3O8 on Aug. 17. Sendai 2 is currently scheduled for switch on in mid-October.

While there will be little near-term impact on physical trading, given that Sendai and the 25 other Japanese plants currently moving through the restart process have more than sufficient uranium inventory for initial reloadings, the development is still viewed as broadly positive for the nuclear industry.

"While a single reactor will not move the needle in terms of overall uranium demand, we view this event as the type of front page news event that will return interest into the nuclear and uranium space," said Cantor Fitzgerald's Rob Chang.

"We expect across the board strength in the uranium universe, with particular interest being paid to companies with higher liquidity," he added.

Five of the 25, including the two Sendai units, have so far received approval to come back on line from Japan's Nuclear Regulatory Authority.

Return to Favor?

Many industry analysts believe that an acceleration in the pace of restarts is likely to lead to more utilities re-entering the term market.

From outside the uranium space, the latest Sprott's Thoughts (Aug. 13) from Sprott Global Resource Investments (SGRI) opined that Japan "is setting the stage for a uranium market rally."

SGRI analyst Steve Todoruk commented that this first reactor restart does not increase uranium demand on its own. "But it does suggest that uranium could return to favor."

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New Saudi Arabia NPP Activities Possible by Yearend

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fully resetting long-term expectations for margin growth....

Next I would like to provide an update on the AP1000 program. Overall **we continue to make progress** in the production of our first of a kind reactor coolant pump or RCP, supporting the AP1000 nuclear program. We have successfully completed the engineering and endurance testing phase and are **now working with our customer and the Chinese** as we evaluate the results of those tests. We **expect to begin deliveries** of our RCPs to China in the latter half of the third quarter. Regarding our next AP1000 order, we anticipate contract negotiations to resume once we begin shipping pumps and remain hopeful for the order by the end of the third quarter. (*emphasis added*)

CEOs of public companies are required to inform investors about issues that can materially affect their finances. That task is not always easy or welcome.

Preparing the exact wording can require an almost unbelievable amount of effort and is often a painful process for several players who must contribute. It takes experience and discernment to unravel the words.


Adams was providing forward-looking statements using words that clearly indicated he was making predictions based on currently available information. As earnings statement disclosures warn, predictive statements might not be correct.

“Working with our customer” and “expect to begin deliveries” are statements indicating that work is not only incomplete, but still somewhat undefined.

Uncertainty about completion became even more apparent during the Q&A period, as Adams answered related questions:

I said on the last call as well that we had anticipated that we would get through the E and E testing and we did over the end of last quarter and that was excellent. We were very happy. We proved out the design modifications that we had made at that point. The thrust runner, bearing and so forth. The whole purpose was to go through and to really prove that we got a 60-year-life pump.

*And so everybody's happy that we did accomplish that. And now as a result **we are doing some tweaks** and we anticipate that we are going to be shipping hardware in the very near term to China. And that was always the premise with our customer both domestic and China that once we started shipping product that met the requirement (of efficiently passing the E and E testing) then we would be starting resuming negotiations. So you've heard me say before I've*

		Uranium Prices Term: September 2015 cob August 20, 2015	
		BID	OFFER
U3O8 (physical)		\$36.00	\$36.75
U3O8 (financial)		\$36.00	\$36.75
UF6 (physical)		\$101.50	\$103.50

Source: Evolution Markets Inc. +1 914.323.0252
www.evomarkets.com [Disclaimer](#)

*been cautiously optimistic; I remain so. And third quarter is still what we are looking at to pick up an order as I indicated. We're going to be shipping hardware pretty soon. (*emphasis added*)*

For anyone who is experienced in nuclear energy-related engineering and quality assurance programs, “doing some tweaks” is a red-flag statement.

It means that changes may still be necessary. There are few changes that can be made to critical equipment without going back into the testing and evaluation phase.

Because of the critical nature of these pumps and the harsh working environment that they must endure during their 60-year design life, testing and evaluation are time-consuming endeavors.

The current redesign and retesting effort began sometime before April 2014 when statements issued by the responsible companies indicated that some pumps that had already been delivered to China passed post installation testing and others did not. That was almost 18 months ago.

As Curtiss-Wright statements indicate, there will not be any new AP1000 commitments until after the coolant pumps have been proven. Customers have growing reasons to wonder if that finish line will be reached before they run out of patience or money.

When contacted via email about the reactor coolant pump situation described above, a Westinghouse spokesperson offered the following:

Construction of four AP1000 units in China continues to move forward at an impressive pace, with milestones being achieved on a regular basis. The related RCP issue is being resolved by all parties working together in the safest and most timely manner

possible. Westinghouse does not comment on confidential project or commercial matters. Westinghouse remains focused on, and committed to, the safe and successful delivery of AP1000 units in China and around the world.

Let's hope that the parties are working together to complete their work safely and effectively in the very near future. ●

Saudi Arabia's Nuclear Plans May Be Hobbled by U.S. Law

By Paul Cochrane, Special to FCW

BEIRUT—As Iran takes tentative steps towards being welcomed back into the international nuclear community, its neighbor and rival Saudi Arabia has been ramping up efforts to create nuclear power generating capacity of its own.

In June, the kingdom's nuclear energy body, the King Abdullah City for Atomic and Renewable Energy or K.A.CARE, signed a nuclear energy cooperation deal with Rosatom director general Sergey Kirienko, in which the Russian state-owned firm could play a role in building 16 reactors.

The agreement focuses on Saudi access to Russian nuclear energy facilities, the development of research reactors, used fuel and radioactive waste management, radioisotope production and training and education.

Also, this March, K.A.CARE and South Korea's ministry of science, ICT and future planning signed a \$2 billion deal to develop the construction of two small-to-medium sized nuclear reactors.

The agreement includes joint work on developing a 330 MW PWR with steam generators and advanced safety features.

Two months ago, Saudi Arabia and France signed three nuclear cooperation agreements, while in July a memorandum of cooperation was signed between K.A.CARE and ANDRA, France's national radioactive waste disposal organization.

These moves follow the 2012 announcement by the K.A.CARE that it aims to have 17 GW of nuclear power installed by 2032. K.A.CARE has also signed nuclear cooperation deals with China and Argentina.



Saudi Arabia, France sign cooperation agreement in Paris

Of course, deals are one thing, and reactors in place quite another. Indeed, Hashim Abdullah Yamani, the president of K.A.CARE, has said plans are likely to take longer than already expected, until 2040.

Monkey Wrench: Recent Iran Deal

And the Iran deal, while perhaps encouraging Riyadh politically to consider its nuclear options, may, however, also slow detailed supply agreements.

Saudi Arabia has reluctantly approved of the Iran nuclear deal, but its lack of a "123 agreement" with the United States could cause problems.

Section 123 of the U.S. Atomic Energy Act mandates a specific agreement for significant transfers of nuclear material, equipment, or components from the U.S. to another nation, and to allow for cooperation in other areas, such as technical exchanges, scientific research, and safeguards discussions.

The law also requires nations that sign cooperation agreements with the U.S. to formally commit to forgo enrichment and reprocessing.

Faced with an Iranian neighbor whose sanctions are being lifted without making such a 123 declaration, the Saudis might not actually use the U.S. cooperation deal, to keep its own options open.

"My view is that one of the key issues for Saudi's nuclear program is a bilateral agreement with the U.S., the 123 Agreement, as it

has been fairly slow going with some difficulties,” said Edward Kee, founder of the Nuclear Economics Consulting Group in Washington, D.C.

“The deal with Iran, if approved, could be seen as allowing the Iranians to do enrichment, which would not be helpful when the U.S. is asking the Saudis to forego enrichment and reprocessing,” he explained.

Game Changers: Akkuyu, Barakah Deals

Without a U.S.-Iran agreement, vendors that have systems with U.S. patents and technology, such as Japanese firms and of course American firms, would not be able to compete for Saudi nuclear power contracts.

“The Toshiba and Hitachi APR1000 reactors would not be available without an agreement,” said Kee. But South Korea could offer a way out.

“The South Koreans told the Saudis a few years ago they would be developing an APR plus reactor design, a similar one to the APR 1400 reactor (to be used in the United Arab Emirates) that might make it possible without the 123 agreement,” he added.

Also, the start of construction in April of the Akkuyu plant in Turkey, and ongoing construction of Barakah in the UAE by the South Korean consortium KEPCO, could encourage the Saudis.

“If you look at the international scene, the game changers in many ways are the Akkuyu and Barakah projects,” said Shah-Nawaz Ahmad, senior advisor for India, Middle East and south-east Asia at the World Nuclear Association.

“They have permitted, in a sense, a universalization of the nuclear power business because it allows projects to be built in parallel with the hosting nation, to acquire infrastructure and training to manage those projects over their lifetimes.”

Despite the potential U.S. regulatory obstacles, if Riyadh avoids country-to-country agreements for delivering new reactors, there is the expectation of a fairly transparent bidding process.

“I think it will be close to a public tender as that has become the norm, you get better bids, and also the vendors are now more comfortable with this. I don’t think there will be a specific

technology tie-up with one vendor, but with more than one provider,” said Ahmad.

With small-to-medium reactors also to be built, “there may be even more variety,” he added.

Riyadh’s Drive to Diversify Electricity

Riyadh’s drive to build a nuclear power program is to reduce dependency on hydrocarbons for power production to bolster export revenues. This will require diversifying power generation to meet an estimated 107% increase in electricity output by 2032, according to the U.S. Energy Information Administration.

Under current plans, out of 123 GW required, 17 GW will come from nuclear while 40 GW will come from renewable sources.

“Saudi Arabia is still very conservative in its (nuclear power) ambitions. Even if 17 GW is produced by 2032, at the best this would only be contributing 15% of total electricity requirements,” said Ahmad.

Low oil prices, however, could pose funding issues for the 16 nuclear power plants that Saudi Arabia wants built, slated to cost more than \$80 billion.

Riyadh is struggling to balance its budget, which is 90% reliant on oil sales, while the fiscal break-even price is \$106-a-barrel-of-oil, according to International Monetary Fund figures.

“I haven’t heard of a change in overall plans except delays, and not sure how oil prices affect decisions at the policy level. But if we believe today’s prices signal something about the price in the future, this could have an impact. It may make it harder for capital investment [in NPPs] even if makes sense to do so,” said Kee.

Ahmad believes the NPP projects will move ahead. “From an economic point of view, the return on investment of an NPP is very attractive right now. If oil prices go even higher, it will be more attractive,” he said.

In the near term, Kee thinks “there may be significant activity before the end of the calendar year” regarding the kingdom’s nuclear power aspirations. ●

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Todoruk added that “it will likely take several years for Japan to re-start all of its idle nuclear plants...If the rest of the world sees Japan go back to nuclear energy without incident, I believe that nuclear power will gradually stop being so ‘hated.’”

He noted that most reactors around the world “do not bear the same risks as the plant (Fukushima) that was affected by the (2011) quake. For one, they are not built on major fault lines with active volcanism, as in Japan.”

Existing reactors “will likely be re-enforced to avoid similar accidents in the future,” he continued. “And new plants can be built to avoid these risks.”

The continuing volcanic risk in Japan was highlighted by renewed activity last weekend at Mount Sakurajima, which is near the Sendai plant. The country’s meteorological agency responded by raising its warning level from 3 to an unprecedented 4, citing the prospect of an imminent large eruption and advising nearby residents to evacuate.

Expected Boost to Equities

Todoruk expects Japan’s restart process to bolster uranium equities and place them on “a more durable trend higher.”

He added that “each successful re-start could serve as an additional boost to uranium stocks,” noting that the Sendai restart news “caused a slight bump in uranium mining stocks.”

Todoruk said that as of Aug. 12, Cameco (TSX:CCO, NYSE:CCJ) was up 4% compared to the previous week, with explorer NexGen Energy (TSX-V:NXE) and Uranium Participation (U) up 8% and 3%, respectively, over that timeframe.

Denison Mines (TSX:DML, NYSE:DNN) rose 10% the day of the news, but then fell back. Fission Uranium (TSX:FCU) also “popped” 7.5% higher before also retreating.

Uranium miners Paladin (TSX:PDN), Energy Fuels (TSX:EFR, NYSE:UUUU), and Uranium Energy Corp. (NYSE: UEC) have also seen their shares generally rise this month.

By Tuesday most stocks subsequently retreated, with only



The two-unit Sendai plant

Source: World Nuclear News

NexGen remaining unchanged since Aug. 12.

Ur-Energy Inc. (TSX:URE) was hit hard over the five-day period, opening at C\$0.94 on Aug. 12 but falling to C\$0.79 this week.

‘Go-To’ Stocks

So which stocks should benefit most and where is Sprott advising its clients to invest?

Cameco was “a very well-performing stock during the last bull market in uranium.” As a big producer, it was a “go-to” for funds and regular investors. It rose from around \$4 in early 2003 to a high of over \$56 in mid-2007.

Today, Cameco would likely still be a “go-to” stock for large funds seeking uranium exposure, said SGRI. It is the only large miner today to produce only uranium.

By comparison, Todoruk noted there are around 10 to 15 big gold producers to choose from.

In exploration, the most well-followed story is Fission Uranium Corp., which recently announced a merger with Denison Mines.

NexGen Energy has also received attention from investors with a new discovery near Fission’s Triple R project.

In Todoruk’s view, “discovery plays” often make the biggest moves, thanks to the heightened takeover potential.

He concluded that so long as more Japanese reactors “come back on line without incident, I expect uranium to get a lift.” ●

Western Australia uranium developer **Toro Energy** (ASX:TOE) announced Aug. 18 encouraging results from technical R&D studies for its 100%-owned, government-approved **Wiluna** project.

The studies were undertaken during the first half of 2015 to explore opportunities to enhance and optimize Wiluna's process design, project configuration, operating and capital cost structure.

A 130 sonic drill hole campaign was completed at the Centipede, Millipede, Lake Maitland and Nowthanna deposits, to help determine why down hole gamma probe measurements appear to underestimate the uranium content compared to uranium values from geochemical analysis, particularly at high grades.

Early results have "significantly improved" understanding of the relationship of uranium grade to mineralogy and the impact this may have on the application of gamma measurement to determining the Wiluna resource. Based on these results, Toro anticipates completing a new mineral resource estimate in Q4.

Initial components of a multi-staged metallurgical program to assess the applicability of the U-pgrade proprietary process of **Marenica Energy** (ASX:MEY) to ore samples collected from Wiluna have achieved "promising results," including the removal of fine particles from the feed samples.

This demonstrated that de-sliming results in the rejection of approximately 15% of ore mass with a very low uranium loss to a slime product.

Development of the **Mkuju River** ISR project in southern Tanzania is underway with a production start scheduled for next April, according to the deputy minister of energy and mining Charles Kitwanga.

East African Business Week reported on Aug. 16 that Kitwanga had said heavy machinery for construction of a mine had arrived on site. Mkuju River is located 470 kilometers southwest of Dar es Salaam and is owned by **Mantra Tanzania Ltd.**

In 2011 its Australian parent company Mantra Resources was acquired by Canada's Uranium One, now a unit of Russia's state-owned ARMZ.

Measured and indicated resources total 125 million pounds (56,999 tonnes) U3O8 grading an average 0.030% yellowcake at

a 100 ppm cut-off grade. Some 87% of this resource is within 60 meters of surface.

Production is planned to be around 4 million pounds (1,800 tonnes) U3O8 per year over an initial ten-year lifespan.

Global Briefs

Hot commissioning of a new \$200,000 acid plant at the Tsumeb copper smelter in northeast Namibia, is currently underway, with the official opening due to take place early in 2016 according to project developer, Canada's Dundee Precious Metals.

Once in full operation the high-tech plant will significantly reduce toxic emissions from smelting and most of the acid will be sold to the **Rössing** uranium mine under a sales contract signed two years ago.

Based on a projected smelter throughput of 240,000-310,000 tonnes per year of copper concentrates, the acid plant is expected to produce approximately 270,000-340,000 tons of sulfuric acid per annum.

This will largely eliminate Rössing's current dependence on imported acid product

Forte Energy (AIM:FTE) and its 50/50 joint venture partner **European Uranium Resources** (TSX-V:EUU) are continuing legal proceedings against Slovakia's Ministry of Energy over the latter's refusal to grant an extension of the **Kuriskova and Noveska Huta** uranium exploration permits that expired in April.

Legal proceedings were filed at the Slovakian higher court in mid-June, requesting it to review the Ministry's decision and determine whether this was in accordance with the country's geological law.

The €25 million (\$27.5 million) invested by EUU in exploration at Kuriskova would be the starting point for any compensation claim. Forte, which also has uranium exploration projects in West Africa, has met its joint venture obligation to fund the first year's expenditure of C\$350,000 (\$270,000) at Kuriskova.

The partners have also applied for a new exploration license covering 15 square kilometers, including the area of the currently defined resource, for an initial four years to enable work at Kuriskova to continue. ●



OPEN URANIUM DEALS (8/13/2015 – 8/19/2015)

Company Name	Offer Size	Price Per Share	Discount Premium	Security Type	Warrant @ Share	Market Cap	Underwriters	Financing Basis	Open Date, Updated
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NO DEALS OPENED THIS WEEK

RECENTLY CLOSED URANIUM DEALS (8/13/2015 – 8/19/2015)

Company Name	Offer Size	Price Per Share	Discount Premium	Security Type	Warrant @ Share	Market Cap	Underwriters	Financing Basis	Open Date, Close Date
Monster Uranium Corp. (TSX-V:MU)	\$0.22m	\$0.05	66.67%	Common	1 @ \$0.10	\$0.36m	–	Best Efforts	7/02/15, 8/13/15

Source: Oreninc.com

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Providing weekly data on CNSX, TSX & TSX-V uranium financing activity. All figures in \$CAD.

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