

## 2013 Winter Uranium Survey: Subdued Market Awaits Japan

As discussed last week, we have completed the UxC Winter Market Survey, and in today's cover we review the results from our uranium and reactor-related questions. In terms of the major themes, we can conclude that the current market is in a wait-and-see mode as important developments in Japan this year could determine near-term demand and price movements. Further out, Japan, China, and a few other key countries along with secondary supply are critical in shaping future price levels as well as uranium production.

### Spot Price Expectations for 2013 –

As the bottom left graph indicates, there is a relatively tight range regarding where the spot uranium price will be at the end of this year. While the majority response falls in the \$40-\$45 band, there are also quite a few who see the price rising up to the \$45-\$50 level by year-end. Those who see a spot price below \$40 outnumber those who are much more bullish about a \$50+ price level by year-end.

From the comments to this question,

we can conclude that the variation of opinion about near-term spot price movement comes from different views over the same set of factors. The more pessimistic viewpoint suggests a very slow return of Japanese reactors, low spot demand overall, as well as large inventories and secondary supplies overhanging the market (including the possibility of additional U.S. DOE material). The flip side sees these factors in a more positive light, especially in terms of Japanese reactors returning more rapidly, which should create a strong psychological impact on future demand expectations. Ultimately, it appears that nearly all can agree that as one commenter put it, "spot price will be range-bound through 2013."

### Long-Term Price for Year-End 2013

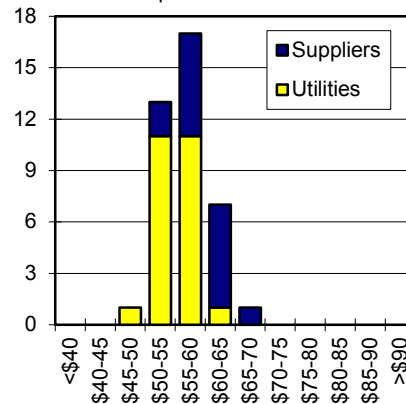
– Turning to the long-term (LT) uranium price by year-end, we can see from the graph on the top right that there is a similarly tight opinion range. Although most believe the LT price will remain very close to where it is today, the broader consensus is somewhere in the

**Ux U<sub>3</sub>O<sub>8</sub> Price: (4/8/13)**  
**\$42.25 (Unch.)**

**Ux LT U<sub>3</sub>O<sub>8</sub> Price: (3/25/13)**  
**\$56.00**

### Where will the Long-Term U<sub>3</sub>O<sub>8</sub> price be at year-end?

Number of Responses © UxC

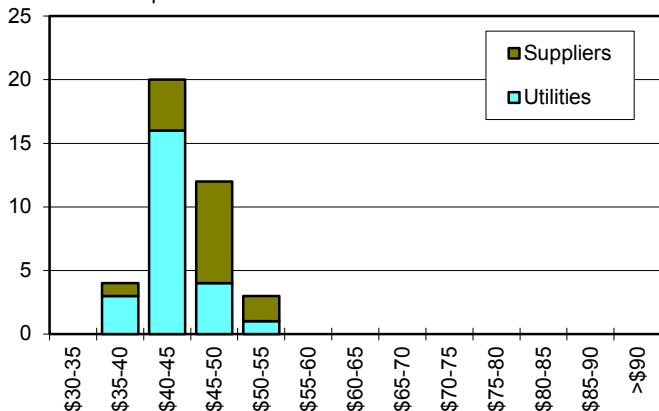


\$50-\$65 range, with suppliers clearly more optimistic about higher prices than utilities.

In the commentary to this question, the differences between utilities and suppliers were quite obvious. Several utilities noted that the LT premium of around 30% above spot is too high, which allows for ample arbitrage opportunities between spot, mid-term, and LT contracts. The more bearish sentiments also point to depressing market factors, such as Japan, as exerting influence on

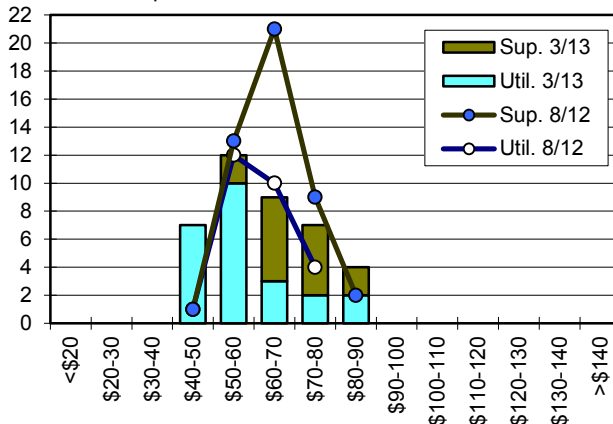
### Where will the spot U<sub>3</sub>O<sub>8</sub> price be at year-end?

Number of Responses © UxC



### Where will the spot price be in 5 years (2018\$)?

Number of Responses © UxC



the LT price throughout this year. Suppliers argue that production costs and higher future demand will lead to LT prices stabilizing and ultimately rebounding upwards later this year. Another key point made by the bullish side is that once spot price recovers, LT price will naturally follow.

**Spot Price in 2018** – Looking out five years from now, we see from the bottom right graph on page 1 that there is a wide range of opinions with no clear majority view. Utilities are focused in the \$40-\$60 range, whereas suppliers are mostly in the \$60-\$80 range. It is evident, however, that all future spot price expectations are lower today than they were just half a year ago.

While most see spot price higher in 2018 compared with current levels, the question is the degree to which prices will rise. In this regard, the commentary suggests that there are varying opinions regarding both future demand and supply developments. As for demand, some see low levels of uncovered utility requirements for the next five years, which will drive slower price increases. The opposing view is that Japan will recover and new reactors in China and elsewhere will drive strong demand growth in the coming five years. On the supply side, the role of inventories and secondary sources is a key factor, as this also drives the level of future new production. If more new mines are required, as some argue, then future prices must reflect the incentives needed to initiate these investments. On the other hand, if secondary supplies and existing lower cost production remains plentiful, then

future price rises will be muted.

**Future Uranium Supply Adequacy** –

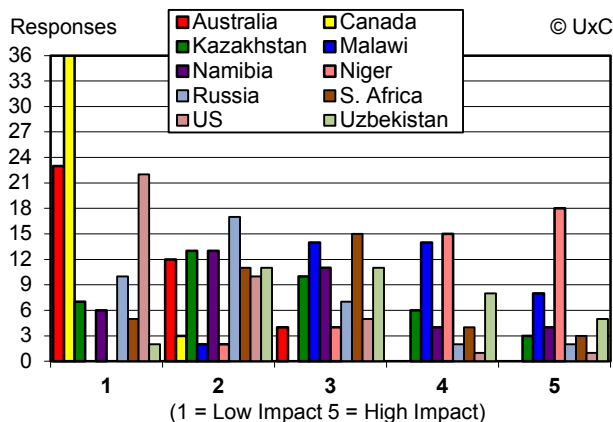
Turning to the question of future uranium supply adequacy (i.e., uranium production, not uranium reserves), we can see from the bottom left graph that the further you look out in time, the greater the concerns are about uranium supplies. Depending on whom you ask, some believe a shortfall could occur as soon as 2015, but many more see this happening in the post-2020 period.

Comments to this question again highlighted the big divide between utilities and suppliers. Sixty-four percent of utilities indicated adequate or plentiful supplies for 2026-2030, whereas 87% of suppliers suggested a shortfall in the same period. Most utilities also failed to mention the question of future production costs and instead focused more on the fact that there is lots of uranium in the ground, so lower demand growth should be relatively easily matched by future production. Suppliers naturally focused heavily on future prices as determining the level of future production. Meanwhile, producers also believe that demand growth will be much stronger after 2020, and thus proper and timely market signals are imperative to ensure that enough uranium is mined when it is needed in the next decade.

**Uranium Mining Geopolitical Risks**

– Given developments around the world, we wanted to gauge market sentiment about which uranium producing countries have the highest geopolitical risk. As the graph on the top right indicates, countries perceived to have the lowest risk are Australia, Canada, and the U.S. The highest risks are seen in Niger and

**Please rate the following countries with operating uranium projects based on geopolitical risk.**



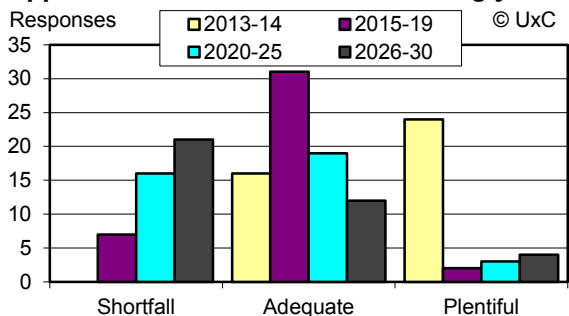
Malawi, while the rest are in between.

In general, the reasons for higher risks in Niger are well known given the recent Tuareg rebel activities and fighting in nearby Mali. Malawi was mentioned as having risks due to it being a land-locked country in Africa. Some suggested that regulatory risks in other countries may be more critical than geopolitical risks.

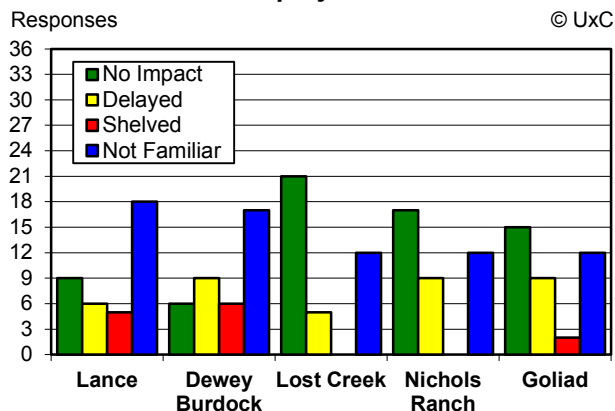
**U.S. ISR Projects** – Turning to the various smaller in-situ recovery (ISR) uranium projects in the U.S., we can see that there are varying opinions about the current spot price impacting start-ups (see graph on top left of page 3). While many respondents said they were not familiar with these projects, it appears that Lost Creek, Nichols Ranch, and Goliad are viewed as most likely to proceed no matter the current spot price. Lance and Dewey Burdock are perhaps more uncertain. Despite these responses, the commentary suggested that market participants view these types of projects as much more susceptible to price impacts given the fact that they rely on investors who can be quite jittery when spot price is below production costs. In addition, we also received comments about the potential for regulatory delays holding some of the U.S. ISR projects back.

**Japanese Reactors Restarts** – Considering the broad consensus that the situation in Japan is critical to determining the future (especially the near-term future) of the nuclear fuel markets, we wanted to assess market sentiment

**How would you assess the adequacy of future supplies of Uranium over the following years?**



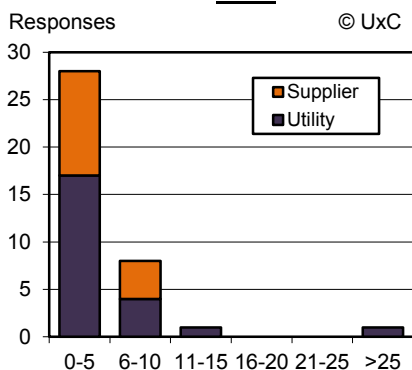
**Do you think the current spot U<sub>3</sub>O<sub>8</sub> price will impact the start-up of the following planned U.S. ISR projects?**



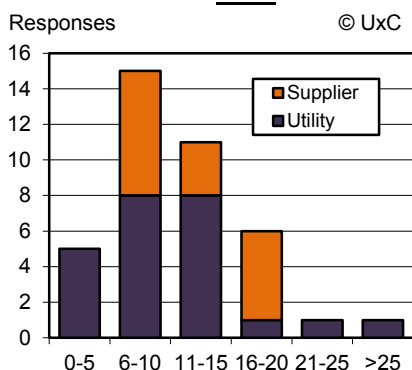
regarding reactor restarts in Japan over the next two years. As the two graphs on the bottom left of this page show, there is relatively strong agreement that no more than five reactors will be back in service in Japan by the end of this year. However, when we look to the end of 2014, we see that there is a much wider range of opinion.

Looking at 2013, we heard from several respondents that they believe restarts this year are likely, although the

**How many reactors do you think will be operating in Japan by the end of 2013?**



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process will take time and will not start until the second half of the year once the Nuclear Regulation Authority (NRA) issues its new regulations in July. Some noted that given the likely need for capital intensive, highly engineered retrofits, the restart process will not be quick. Moreover, restarts will take place “one by one,” which takes time.

As for 2014, market participants seem to agree that once the NRA restart process is in place, there should be a gradual ramp-up in restart approvals. PWR utilities are destined to go first, as there are fewer retrofit requirements. Ultimately, however, a complete return to “normalcy” in Japanese reactor operations is still not expected until after 2014.

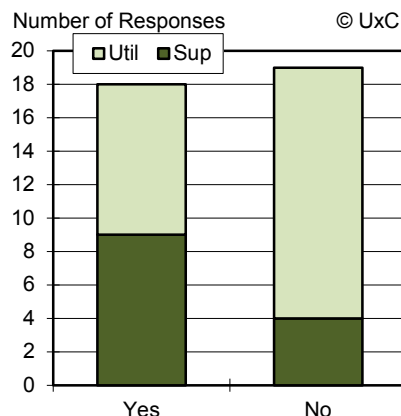
**Small Modular Reactors** – Our last survey question asked market participants to speculate on the potential impact of small modular reactors (SMRs) on the broader nuclear power industry in the long-term. As the graph on the bottom right indicates, there is a near 50/50 split with suppliers slightly more optimistic than utilities about the potential for SMRs to have a big impact by 2040.

When it comes to SMRs, there are varied views as to whether they will actually be built, and, if so, to what degree. Some respondents are less convinced about SMRs in the first place and see nearly none except for a few prototypes being built in the next 25 years. Meanwhile, others see quite a few SMRs coming online but conclude that these will only have a marginal impact on the total installed nuclear capacity level around the world. For those that do see a much greater role for SMRs, the commentary suggests that there is a view that new energy models need to be found while replacements for the current reactor fleet will also become more criti-

cal in the longer term. For those that responded “yes” to this question, there appears to be agreement that the key point is “by 2040” as the ramp-up in SMRs is unlikely to occur until after 2030. Interestingly, this conclusion aligns quite well with UxC’s own SMR deployment forecast, which is presented in detail in our new *SMR Market Outlook* report, which was published last month.

**Summary** – As we noted at the outset, this year’s Winter Market Survey can be seen as heavily influenced by the current uncertain situation in Japan. Spot and LT uranium price expectations this year are seen as most directly affected by the outlook for Japanese reactor restarts. Of course, further out into the future, the question of demand is again paramount in determining both how much prices will rise and whether adequate production will be available in the post-2020 period. This future demand is again heavily influenced by the state of nuclear power in Japan, as well as China and a few other key countries. Future uranium prices are also critical in determining the nature of future production, especially as projects that may be in geopolitically risky countries or are marginally economic will likely be more heavily impacted by future lower prices. Ultimately, what can be most readily concluded from our latest survey is that the market has yet to recover fully from Fukushima, which means uncertainty will continue to reign.

**Do you believe small modular reactors (SMRs) will have a big impact on nuclear power by 2040?**



# News Briefs

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## **Fennovoima considers Russian reactor for plant in Finland**

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In an April 5 press release, Fennovoima stated that it has asked Rosatom to participate in direct negotiations to potentially supply its 1,200 megawatt VVER reactor for the Pyhajoki site in Finland. Fennovoima is already in direct negotiations with Toshiba for the Advanced Boiling Water Reactor. The company previously considered AREVA's EPR and AREVA and Mitsubishi's ATMEA1 reactor. Fennovoima plans to choose a reactor design sometime later this year.

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## **Russia and India nearing agreement on new reactors**

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Russia and India are reportedly coming close to finalizing an agreement on two additional reactors at the Kudankulam nuclear power plant. Negotiations for the reactors previously stalled because India had insisted that the reactors come under its 2010 liability law, which includes provisions for vendor liability. Russia had previously refused to accept this liability provision, but now it is expected to agree to India's liability policy in exchange for a higher price for the reactors. Units 1 and 2 at Kudankulam are now nearing completion with initial criticality of Unit 1 expected to occur this month. Russia has offered India a \$3.4 billion loan for the construction of Units 3 and 4 at Kudankulam, and Russian President Vladimir Putin and Indian Prime Minister Manmohan Singh have recently agreed to work to resolve the remaining issues needed for the two new units. In addition, India's Cabinet Committee on Security has granted its approval for Kudankulam 3 and 4.

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## **ETC accident at Almelo Site**

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Enrichment Technology Company Ltd. (ETC) reported on March 29 that a tragic accident occurred at its Almelo facility in the Netherlands during plant operations,

in which two employees perished. Dutch sources reported that the two employees became unconscious from a lack of oxygen while working in a furnace at the Almelo site. ETC emphasizes that it is a non-nuclear facility and there was never any danger for the surrounding area or the environment.

ETC is working closely with local authorities to investigate the details of the accident. ETC reports that the accident site itself has been released back to the company and it has launched its own internal investigation of the accident. In the interest of safety, ETC decided to temporarily halt production and related activities at all of its five facilities located in the Netherlands, France, Germany, UK, and the U.S. that, together, employ approximately 2,000 people. An ETC spokesperson said the company does not know when machine production will restart.

ETC is a 50/50 joint venture between URENCO and AREVA and develops and manufactures centrifuge machines for the enrichment of natural uranium. URENCO and AREVA's existing uranium enrichment operations in Europe and the U.S. (URENCO) are operating normally.

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## **USEC completes construction of ACP demonstration cascade**

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USEC Inc. announced on April 3 it completed construction of the American Centrifuge Plant (ACP) commercial demonstration cascade. The 120-machine cascade is the centerpiece of a \$350 million cost-shared USEC/DOE research, development, and demonstration program (RD&D) whose purpose is to confirm the technical readiness of the ACP. "Completing construction of the demonstration cascade is a major step toward achieving the objectives of the RD&D program," said Glenn Strausser, director of engineering, procurement, and construction for the ACP project.

Construction activities included preparing the cascade for machine installation, making physical improvements to

the facilities, removing existing cascade support equipment and installing infrastructure systems. Cascade construction involved more than 300 workers. Electricians installed 4,000 feet of cable tray, more than five miles of conduit, and more than 60 miles of cables. The plant operations group has also populated the cascade with its full complement of 120 centrifuge machines. The ACP project team will continue system testing in preparation for formal integrated systems testing required before the cascade becomes operational later this year.

USEC and DOE entered into a cooperative agreement in June 2012 to accomplish an 18-month research, development, and demonstration program for the American Centrifuge Project. The DOE is contributing \$280 million and USEC is contributing \$70 million to the project, which is currently on schedule and on budget and is expected to be completed by December 2013. DOE's provision of its share of the program cost to date will fund the program through September 30, 2013 with additional DOE funds (approximately \$50 million) still to be identified for the remainder of the program.

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## **Westinghouse seeking funding from DOE for its small modular reactor**

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On April 8, Westinghouse announced that it submitted a letter of intent to compete for a second round of funding for development of small modular reactor technology being offered by the U.S. Department of Energy (DOE). The company is seeking funds for the Westinghouse SMR, a 225 megawatt integral pressurized water reactor. Westinghouse is working with Missouri utility Ameren to seek design certification for the Westinghouse SMR and a combined construction and operating license at Ameren's Callaway nuclear power plant site. Westinghouse and Ameren sought funding from the DOE last year, but the DOE instead chose to fund Babcock & Wilcox's mPower reactor.

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## **Alstom to refurbish Darlington steam generators**

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On April 4, French engineering giant Alstom announced that it has won a contract from Ontario Power Generation (OPG) to refurbish four steam generators at the Darlington nuclear power plant in Canada. The contract is valued at €265 million. The refurbishment of Darlington is expected to start in 2016, and refurbishment for all four units at the plant is scheduled for completion in 2024. "We have been supporting OPG at Darlington since it was built and know the equipment and project requirements very well," said Alstom Thermal Service senior vice president Hans-Peter Meer.

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## **New rotors to boost Perry nuclear plant's capacity**

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On April 3, installation began for three new rotors at FirstEnergy's Perry nuclear power plant's main steam turbine. The installation marks the first time since 1987 that rotors at the plant have been replaced. The new rotors will increase the plant's existing generating capacity of 1,260 megawatts by about 30 megawatts. The cost of the project is \$109 million. The new rotors were first ordered in 2008 and are expected to remain functional for the remainder of Perry's operating life. The plant is currently licensed to operate until 2026 but is likely to obtain a 20-year license extension.

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## **TEPCO says radioactive water has leaked from Fukushima**

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Last week, Tokyo Electric Power Co. (TEPCO) stated that about 120 tons of radioactive water has leaked from an underground pool at the Fukushima nuclear power plant. The utility is unsure how much of the radioactive water may have contaminated the soil.

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## **Metropolis plant remains on schedule for June restart**

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Honeywell spokesman Peter Dalpe recently stated that the Metropolis conversion plant remains on schedule to

resume operation in June. The plant has been offline for upgrades since May of last year. Dalpe believes that the U.S. Nuclear Regulatory Commission (NRC) will grant approval for Metropolis to restart after a final inspection is held.

In related news, on April 5, ConverDyn announced that Ganpat Mani will retire from his position as President and CEO effective May 1. Malcolm Critchley, who currently serves as the company's Vice President for Asia Marketing & Sales, will take over as President and CEO. ConverDyn is jointly owned by Honeywell and General Atomics and is responsible for marketing of conversion services from the Metropolis plant.

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## **Federal government approves Toro's Wiluna mine**

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On April 2, Toro Energy Ltd. announced that the Australian federal government granted the company environmental approval for its wholly-owned Wiluna uranium project located in Western Australia. The approval decision was announced by Australia's Federal Minister for Sustainability, Environment, Water, Population, and Communities Tony Burke and represents the last approval required to clear the way for the proposed A\$269 million Wiluna uranium mine to become Australia's sixth uranium producer and the first uranium producer in Western Australia. The approval follows a similar Western Australian government environmental approval for Wiluna, awarded in October 2012.

The Wiluna uranium project now moves into the final project investment determination phase. The Centipede and Lake Way deposits form the basis of the Wiluna resource, which will be mined in a shallow surface strip mining operation and processed through a conventional alkaline tank leach process. Toro's economic modeling for the Wiluna mine based on process engineering from the project's Definitive Feasibility Study (DFS) indicates a reduced capital cost estimate of A\$207 million in direct costs, A\$31 million in EPCM, and a further

## **Industry Calendar**

- April 16-17, 2013  
**Small Modular Reactor Conf.**  
Nuclear Energy Insider  
<http://www.nuclearenergyinsider.com/>  
Marriott Downtown Hotel  
Columbia, South Carolina, USA
- May 15-17, 2013  
**China Nuclear Energy Congress**  
China Decision Makers  
<http://www.cdmc.org.cn/2013/cnec/>  
Marriott Beijing Northeast  
Beijing, China
- May 23-24, 2013  
**4th Annual Supply Chain Conf.**  
Nuclear Energy Insider  
<http://www.nuclearenergyinsider.com/>  
Hilton City Centre Hotel  
Charlotte, North Carolina, USA

Details are available at:  
[http://www.uxc.com/c/data-industry/uxc\\_calendar.aspx](http://www.uxc.com/c/data-industry/uxc_calendar.aspx)

A\$31 million in contingency for a total of A\$269 million. C1 cash operating costs for the project are currently estimated at US\$37 per pound U<sub>3</sub>O<sub>8</sub>. Production is expected to commence in 2015.

Following Toro's announcement, *Bloomberg* reported that the company is now in talks with seven potential partners in Japan, China, and South Korea to advance Wiluna's development. Toro Managing Director Vanessa Guthrie said, "We're seeing a supply shortfall from 2016 onwards starting to drive potential partners and customers to look to secure supply." However, *Bloomberg* reported that Ms. Guthrie declined to identify any potential partners by name.

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## **Tanzania grants ARMZ Mkuju River mining license**

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Today (April 8), Russian firm Atomred-metzoloto's (ARMZ) Tanzanian subsidiary, Mantra Tanzania, was granted a mining license for the Mkuju River uranium project by the Ministry of Energy and Mineral Resources. Chairman of Uranium Holding ARMZ and Uranium One Inc. President Vadim Zhivov stated, "Getting a special mining license – the first license to mine uranium in the United Republic of Tanzania – (is) a real

breakthrough and a direct result of two years of work coordinated at all levels.”

ARMZ acquired exploration company Mantra Energy Ltd. in December 2010 in order to gain access to the Mkuju River project in Tanzania’s Selous Game Reserve. The Mkuju River project hosts total resources of over 93.3 million pounds U<sub>3</sub>O<sub>8</sub>.

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### ***Khan issued “unfavorable” decision in ARMZ litigation***

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Khan Resources Inc. announced on April 2 that it received the decision of the Court of Appeal for Ontario in respect of Khan’s attempts to effect service of its lawsuit against Atomredmetzoloto JSC (ARMZ) in which Khan was seeking damages of C\$300 million. The Court of Appeal has dismissed Khan’s appeal and its attempts to validate, substitute, or dispense with service of the Statement of Claim.

Khan has been attempting to effect service of a lawsuit on ARMZ since late 2010. The company’s attempts at service were stymied when the Russian Ministry of Justice refused to effect service, citing Article 13 of the Hague Convention, which provides that the state addressed may refuse to effect service “only if it deems that compliance would infringe its sovereignty or security.” The Ministry of Justice provided no reason or explanation for why service of Khan’s lawsuit would infringe on Russian sovereignty or security.

Khan President and CEO Grant Edey stated, “We are disappointed by the outcome of the decision. We find it highly regrettable that ARMZ, a business with substantial interests in Canada, can engage in business with a Canadian company and then be sheltered by its shareholder, the Government of Russia, from being held accountable in a Canadian court for the wrongdoing and damages inflicted on Khan and its shareholders.” The company is reviewing the decision and is considering the options available to it.

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### ***Cameco officials present Cigar Lake license proposal to CNSC***

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Multiple news sources reported on April 4 that Cameco Corp. is currently awaiting a ruling from the Canadian Nuclear Safety Commission (CNSC) for a license to commence mining at the Cigar Lake uranium mine in Saskatchewan. Company officials on April 3 presented a 10-year operations license proposal to the CNSC. Cameco’s COO, Bob Steane told *The Canadian Press* that the proposal to the CNSC occurs as Cameco is working to transition from the final commission stages to the start of production by the end of this year. The CNSC is scheduled to return a report outlining its Cigar Lake decision in about two months.

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### ***Paladin enters US\$10 million environmental bond for Kayelekera***

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The *Nyasa Times* reported on April 3 that Paladin Energy Ltd., operator of the Kayelekera uranium mine in Malawi, has entered into a US\$10 million Environmental Performance Bond with two commercial banks in Malawi. Paladin General Manager for International Affairs Greg Walker said of the Bond, “Paladin has a MWK 3.9 billion (US\$10 million) Performance Bond in place to satisfy the environmental obligations of Clause 18.14(a). This comprises a US\$5 million Performance Bond with Nedbank Malawi Limited.” The bond will deal with issues like water and environmental contamination and clean up.

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### ***DYL testwork demonstrates Omahola heap leach potential***

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Deep Yellow Ltd. (DYL) announced on April 4 the completion of initial metallurgical testwork, which has demonstrated the potential for a heap leach operation at the company’s flagship Omahola uranium project in Namibia. The column leach testwork, conducted at Gecko Labs in Swakopmund, used a composite of samples collected from seven diamond drill holes from Omahola’s Ongolo

and MS7 deposits. The leach trials were compared against conventional laboratory bottle roll and beaker agitation leach tests, which are used to determine a theoretical maximum uranium extraction. Following the column testwork, DYL has determined that heap leach extraction has the potential to reduce cutoff grade, with a corresponding increase in overall uranium extraction while also reducing project capital and accelerating the likely development schedule at the Omahola project.

DYL Managing Director Greg Cochran stated, “We are pleased with this initial result which has demonstrated that heap leach is a realistic option for Omahola. We acknowledge that there is still much work to do, however this gives us confidence to plan a trade-off study to compare the options to see which process route delivers the best economic outcome.”

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### ***Energy Metals receives uranium export permit***

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Energy Metals Ltd. announced on April 8 it had received an extension to its permit from the Australian Safeguards and Non-Proliferation Office to possess nuclear material. The company’s permit, originally granted in April 2011, has now been extended until March 31, 2018 for the export of uranium oxide concentrates to overseas customers. Receipt of the permit makes Energy Metals one of five companies that currently hold all the required permits to export uranium from Australia. Furthermore, the company recently completed its first uranium shipment to China, which was sold to China Guangdong Nuclear Power Holding Company (CGNPC).

CGNPC’s wholly-owned subsidiary, China Uranium Development Co., is Energy Metals’ largest shareholder with a 60.6% stake. Energy Metals stated it has recently been negotiating purchase agreements with Australian uranium producers to enable further shipments from Australia for resale, primarily to CGNPC.

# The Market

## Uranium Spot Market

Many market participants make their way to Singapore this week for the World Nuclear Fuel Cycle conference, which provides an excellent chance for face-to-face meetings between buyers and sellers. In a market that has been relatively stable and quiet over the past five weeks, participants are looking to the next movement in the market that will entice either buyers or sellers. In the meantime, based on recent activity and available bids and offers that have been relatively stable, the spot Ux U<sub>3</sub>O<sub>8</sub> Price remains unchanged for the week at \$42.25 per pound.

The weekly spot price has now been at \$42.25 for six weeks in a row, and as noted last week, this is the longest the price has remained unchanged since late 2008. As the price has stabilized at these levels, neither buyers nor sellers seem to be highly motivated to complete transactions. As such, activity has been light over the past couple of weeks with only three spot transactions reported over the past week, bringing annual volume to 12.5 million pounds U<sub>3</sub>O<sub>8</sub> equivalent under 85 transactions.

Discretionary interest is low, but remains present in the market for spot and near-term delivery. Utility activity has been present in the spot market over the past month but has been limited. A non-U.S. utility is evaluating spot offers based on its request for 130,000 pounds U<sub>3</sub>O<sub>8</sub> equivalent contained in UF<sub>6</sub> with delivery later this year. As discussed below, there is some increased interest in term delivery with some focus on the mid-term. Several new requests are expected to emerge over the next month or so. Depending on what actually transpires with respect to new term requests, there could be some related impact on spot interest either in direct conjunction with these requests or as a result of activity following potential awards to fill these requests.

## UxC Broker Average Price

The UxC Broker Average Price (BAP) began Tuesday in familiar territory, up \$0.06 to \$42.31. The midpoint held until Friday where it fell \$0.06 to \$42.25. Over the past few weeks, the midpoint has stayed bounded in this \$0.06-range. Today's UxC BAP breaks out of its bounded range at \$42.13 per pound, down \$0.12 on both the day and last Monday. The BA Bid is \$41.75, un-

Ux Price Indicators (€ Equiv**)			
<b>Weekly (4/8/13)</b>		1 US\$ = .76860€	
<b>Ux U<sub>3</sub>O<sub>8</sub> Price</b>	<b>\$42.25</b>	<b>€32.47</b>	
<b>Mth-end (3/25/13)</b>		1 US\$ = .77686€	
<b>U<sub>3</sub>O<sub>8</sub></b>	Spot	<b>\$42.25</b>	€32.82
	Long-Term	<b>\$56.00</b>	€43.50
<b>Conversion</b>	NA Spot	<b>\$10.50</b>	€8.16
	NA Term	<b>\$16.75</b>	€13.01
	EU Spot	<b>\$11.00</b>	€8.55
	EU Term	<b>\$17.25</b>	€13.40
<b>UF<sub>6</sub> Spot</b>	NA Price	<b>\$120.25</b>	€93.42
	NA Value*	<b>\$120.89</b>	€93.91
	EU Value*	<b>\$121.39</b>	€94.30
<b>SWU</b>	Spot	<b>\$115.00</b>	€89.34
	Long-Term	<b>\$129.00</b>	€100.21
<b>EUP</b>	NA Spot**	<b>\$1,952</b>	€1,516
	NA Term**	<b>\$2,470</b>	€1,919

changed from last Monday's \$41.75 and the BA Offer is \$42.50, down \$0.25 from last Monday's \$42.75.

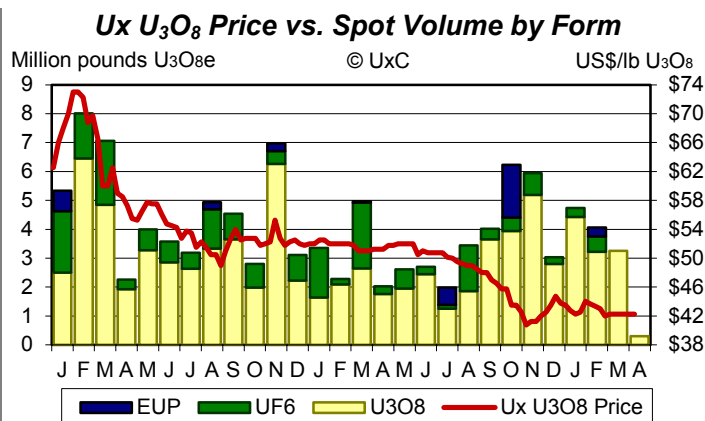
## Fund Implied Price (FIP)

The Fund Implied Price (FIP) began the week on Tuesday up \$0.49 to \$41.04 per pound. However, the FIP's upward momentum was short lived as it declined throughout the week to ultimately finish Friday at \$40.39. Today's FIP continues the trend at \$40.02, down \$0.37 on the day and down \$0.53 from last Monday's \$40.55.

UxC Market Statistics				
Monthly (Apr)	Spot		Term	
	Volume	# Deals	Volume	# Deals
U <sub>3</sub> O <sub>8</sub> e (million lbs)	W	3	0	0
Conv. (thousand kgU)	0	0	0	0
SWU (thousand SWU)	0	0	0	0
2013 Y-T-D				
	Spot		Term	
	Volume	# Deals	Volume	# Deals
U <sub>3</sub> O <sub>8</sub> e (million lbs)	12.5	85	W	7
Conv. (thousand kgU)	W	7	W	1
SWU (thousand SWU)	W	2	W	2

Key: N/A – Not available. W – Withheld due to client confidentiality.

UxC Leading Price Indicators	
Three-month forward looking price indicators, with publication delayed one month. Readings as of Mar 2013.	
<b>Uranium</b> (Range: -17 to +17)	<b>-7</b> [unchanged]
<b>Conversion</b> (Range: -16 to +16)	<b>+2</b> [unchanged]
<b>Enrichment</b> (Range: -18 to +18)	<b>-9</b> [down 1 point]
<b>Platts Forward Uranium Indicator</b>	<b>\$41.75-42.75</b>
A forward one-week outlook.	As of 4/5/13 (US\$/lb)



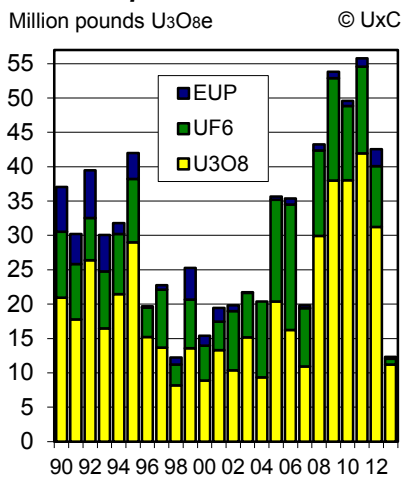
## Tickets

A police officer friend of ours had stopped at the local cafe for coffee and was getting ready to leave when I spotted him. "Go out and get'em!" I said. "I suppose everyone gets a ticket today?" "I don't really give out many tickets," he said seriously. "Oh come on," I teased, "you'd give your own mother a ticket." "No, my mother never drove a car," he said, still serious. Then a grin spread over his face. "I did catch her jaywalking once." he said, "and I issued her a warning. But that's all."

## Ux U<sub>3</sub>O<sub>8</sub> Prices



## Annual Spot Uranium Volumes



## U<sub>3</sub>O<sub>8</sub> Futures Market

The CME Group futures market for uranium remained quiet over the last week as no new contracts were booked. Pricing declines on the strip accounted for the week's only notable activity. For the latest futures market prices, please refer to the table on the next page. As no

## Ux Price Indicator Definitions

The Ux Spot Prices indicate, subject to the terms listed, the most competitive offers available for the respective product or service of which The Ux Consulting Company, LLC (UxC) is aware, taking into consideration information on bid prices for these products and services and the timing of bids and offers as well. The Ux U<sub>3</sub>O<sub>8</sub> Price (Spot) includes conditions for delivery timeframe ( $\leq 3$  months), quantity ( $\geq 100,000$  pounds), and origin considerations, and is published weekly. The Ux LT U<sub>3</sub>O<sub>8</sub> Price (Long-Term) includes conditions for escalation (from current quarter), delivery timeframe ( $\geq 24$  months), and quantity flexibility (up to  $\pm 10\%$ ) considerations. The Ux Conversion Prices consider offers for delivery up to twelve months forward (Spot) and base-escalated long-term offers (LT) for multi-annual deliveries with delivery in North America (NA) or Europe (EU). The Ux NA UF<sub>6</sub> Price includes conditions for delivery timeframe (6 months), quantity (50-150,000 kgU), and delivery considerations. \*The Ux NA and EU UF<sub>6</sub> Values represent the sum of the component conversion and U<sub>3</sub>O<sub>8</sub> (multiplied by 2.61285) spot prices as discussed above and, therefore, do not necessarily represent the most competitive UF<sub>6</sub> spot offers available. The Ux SWU Price (Spot) considers spot offers for deliveries up to twelve months forward for other than Russian-origin SWU. The Ux LT SWU Price (Long-Term) reflects base-escalated long-term offers for multi-annual deliveries. \*\*The Ux Spot and Term EUP Values represent calculated prices per kgU of enriched uranium product based on a product assay of 4.50% and a tails assay of 0.30%, using spot and term Ux NA and appropriate spot and term price indicators and are provided for comparison purposes only. All prices, except for the weekly Ux U<sub>3</sub>O<sub>8</sub> Price, are published the last Monday of each month. (Units: U<sub>3</sub>O<sub>8</sub> = US\$ per pound, Conversion/UF<sub>6</sub>: US\$ per kgU, SWU: US\$ per SWU, EUP: US\$ per kgU) The Ux Prices represent neither an offer to sell nor a bid to buy the products or services listed. \*\*The Euro price equivalents are based on exchange rate estimates at the time of publication and are for comparison purposes only.

new contracts were booked during the week, the 2013 annum total remains unchanged at 1,559 contracts (389,750 pounds U<sub>3</sub>O<sub>8</sub>). Open interest also remains unchanged at 5,897 contracts (1,474,250 pounds U<sub>3</sub>O<sub>8</sub>).

## Uranium Term Market

As with the spot market, the term uranium market has been relatively quiet over the past month. Spring sometimes brings with it a new round of term requests. There remains some mid-term interest in the market, and a couple of utilities are considering entering with requests during this quarter. The WNFC conference this week will also give the opportunity for utilities to meet with suppliers and potentially craft additional details to terms and conditions they may put into new requests. However, no new demand or awards have been reported over the past week. Several utilities remain active in the market evaluating offers including a non-U.S. utility that is out for about 2.6 million pounds U<sub>3</sub>O<sub>8e</sub> contained in either UF<sub>6</sub> or EUP with delivery starting in 2014. Another utility is evaluating offers with delivery starting in 2017. A couple of other utilities are in more quiet discussions.

## Conversion & UF<sub>6</sub>

Outside one non-U.S. utility evaluating offers for 50,000 kgU as UF<sub>6</sub> for delivery later this year, there has been little spot activity to report for either conversion or

UF<sub>6</sub>. In the term market, a non-U.S. utility is evaluating offers for about one million kgU of conversion contained in either UF<sub>6</sub> or EUP with delivery starting in 2014. Another utility is also evaluating offers for about one million kgU of conversion services with delivery also starting in 2014. A third utility is seeking offers for several million kgU as conversion services with delivery starting in 2016.

## Enrichment & EUP

As noted in last week's news briefs, there has been some additional attention paid to the enrichment market as a result of the DOE's latest Secretarial Determination. These discussions fall on a backdrop of limited activity with no new demand or transactions reported over the past week. Questions include how additional material that would likely be sold in the spot market would impact price, as this market segment has reflected downward pressure. In the term market, a U.S. utility has a request for offers that contain anywhere between 100,000 and one million SWU per year with a three-year minimum delivery starting in 2018. Offers are due in May. A non-U.S. utility is evaluating offers based on its request for five reloads (about 750,000 SWU) as either enrichment services or EUP with deliveries starting in 2014 through 2020. Another utility is looking for about one million SWU with delivery starting in 2017.

The Platts Forward Uranium Indicator price range belongs to Platts, a McGraw Hill Company, and is published with permission. Definitions of these prices are available from their original source.

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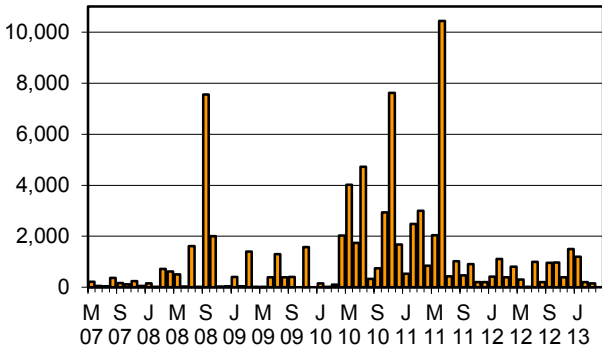
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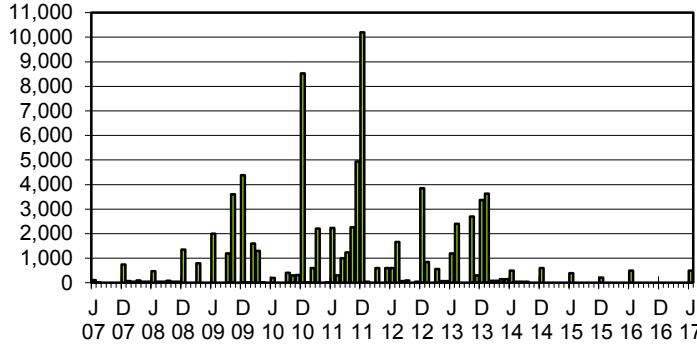
### CME/NYMEX UX Futures Activity Total Contracts by Transaction Month, by Transaction Year

Contracts per Month © CME, UxC



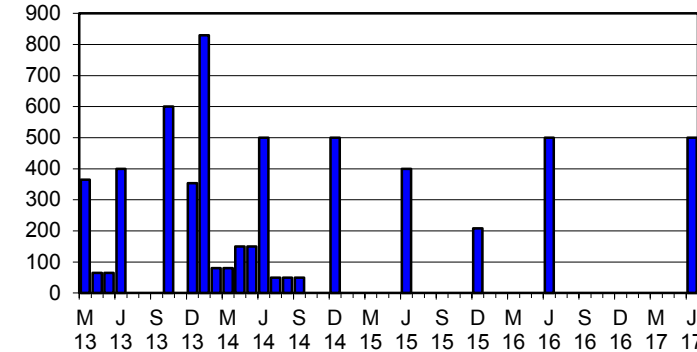
Total Contracts by Settlement Month

Contracts per Month © CME, UxC

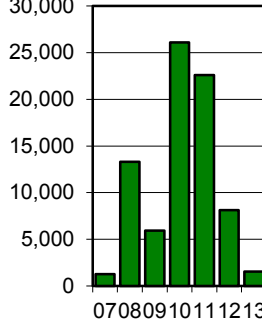


Open Interest by Settlement Month

Contracts per Month © CME, UxC



Contracts per Year



### CME UxC Uranium U<sub>3</sub>O<sub>8</sub> (UX) Futures

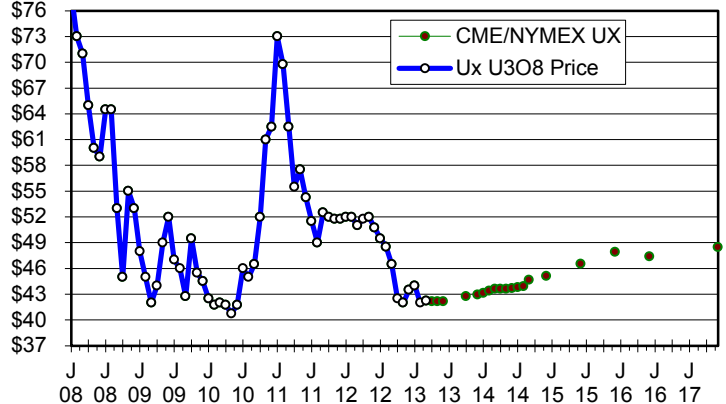
Activity as of April 5, 2013

Settlement	Price	Volume	Open
Sep 2012	\$46.50	101	N/A
Nov 2012	\$42.00	50	N/A
Dec 2012	\$43.50	3,851	N/A
Jan 2013	\$44.00	850	N/A
Mar 2013	\$42.25	567	365
Apr 2013	\$42.15	65	65
May 2013	\$42.15	65	65
Jun 2013	\$42.15	1,200	400
Jul 2013	N/A	2,400	0
Oct 2013	\$42.75	2,700	600
Nov 2013	N/A	300	0
Dec 2013	\$42.95	3,372	354
Jan 2014	\$43.15	3,630	830
Feb 2014	\$43.40	80	80
Mar 2014	\$43.60	80	80
Apr 2014	\$43.60	150	150
May 2014	\$43.60	150	150
Jun 2014	\$43.70	500	500
Jul 2014	\$43.80	50	50
Aug 2014	\$43.90	50	50
Sep 2014	\$44.65	50	50
Dec 2014	\$45.10	603	500
Jun 2015	\$46.55	400	400
Dec 2015	\$47.90	210	208
Jun 2016	\$47.40	500	500
Jun 2017	\$48.48	500	500
*From May 2007		<b>Totals:</b>	<b>78,899*</b>
			<b>5,897</b>

### Ux U<sub>3</sub>O<sub>8</sub> Price vs. CME/NYMEX Forward UX Price Curve

US\$/lb U<sub>3</sub>O<sub>8</sub>

© UxC, CME



### UxC Broker Average Price (BAP) Definition

The UxC BAP (Broker Average Price), subject to the terms listed, is a calculated average mid-point of bid and offer prices as supplied to UxC by participating brokers. The participating brokers are Evolution Markets and Armajaro Securities (the "Brokers"). Data posted by the Brokers are kept confidential and will not be published or made available independently. The Broker data are subject to verification by The Ux Consulting Company, LLC (UxC), which compiles and reports the UxC BAP. In order to have a sufficient number of data points and to represent submissions by all of the Brokers, the UxC BAP includes the best bids and offers reported over a three-month forward period. This period is consistent with the three-month delivery period for offers considered in the determination of the Ux U<sub>3</sub>O<sub>8</sub> Price. On a daily basis, the Brokers submit their best bids and offers over a forward three-month period through a secure system. From these postings, UxC separately calculates the UxC Broker Average (BA) Bid and the UxC Broker Average (BA) Offer prices. The UxC BAP is a simple mid-point average of the UxC BA Bid and UxC BA Offer prices. Other Broker data collected include lot volume on a per offer basis. The UxC BAP is published on a daily basis and is made available to subscribers through email updates and UxC's Subscriber Services website.

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US\$/lb U<sub>3</sub>O<sub>8</sub>

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