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Highlights of Section 232 Public Comments

The U.S. Bureau of Industry and Security (BIS) within the U.S. Department of Commerce (DOC), which has the responsibility for carrying out the ongoing Section 232 investigation, has received an impressive number of public comments to consider in deciding whether U.S. uranium producers should receive trade protection on national security grounds. A total of 834 comments were received. A month since the comment period closed, all submittals have been made public. Even weeding out the multitude of comments from concerned individuals, this still leaves a significant number of comments to review. For those unable to dedicate time to scrutinize the hundreds of pages of carefully crafted arguments, we provide the highlights of some of the key comments submitted.

The comments provide interesting insights into the public positions of various concerned parties. The **Ad Hoc Utilities Group (AHUG)**, which represents many of the nuclear generators in the U.S., provided very comprehensive comments, addressing and countering various assertions made by the petitioners. AHUG's response focuses specifically on the importance of nuclear generation to U.S. national security and stresses that imposing import restrictions would ultimately be harmful to national security. Several utilities also filed separate comments.

Of note is the fact that on October 9, AHUG submitted a request to DOC to place its 232 comments on record of the ongoing administrative review of the Russian Suspension Agreement (RSA). This link between the 232 investigation and the RSA can be observed in several other comments as well. The administrative review of the RSA is another ongoing trade issue at this time.

The heart of **Kazatomprom's** (KAP) comments is an explanation of its operations and role in the U.S. market, whereby it refutes and corrects a number of points that it says the petitioners misrepresented. KAP points to the fact that the vast majority of uranium produced in Kazakhstan stems from joint ventures. Partners in these JVs include Canada's Cameco, France's Orano, and Russia's Uranium One, among others. KAP also notes the limited role of Kazakh uranium in the U.S. (~10%) compared to the country's share of global uranium production. The company corrects a common popular misconception about its pricing methodology by providing the methodology legislation and explaining that this legislation has actually prevented it from being price competitive.

Ux Price Indicators

Weekly* Ux U_3O_8 Price® *(10/29/18) **$27.90** (+$0.30)

Ux 3-Yr U_3O_8 Price $31.75 — Ux 5-Yr U_3O_8 Price $35.00

Month-end (10/29/18) **Calculated values*

U_3O_8	Spot	**$27.90**	Conversion	NA Spot	**$13.25**
U_3O_8	Spot MAP*	*$27.54*	Conversion	NA Term	**$15.50**
U_3O_8	3-Yr Forward	$31.75	Conversion	EU Spot	**$13.50**
U_3O_8	5-Yr Forward	$35.00	Conversion	EU Term	**$15.50**
U_3O_8	Long-Term	**$31.50**	SWU	Spot	**$36.50**
UF_6 Spot	NA Price	**$86.15**	SWU	Long-Term	**$40.00**
UF_6 Spot	NA Value*	*$86.15*	EUP	NA Spot*	*$1,109*
UF_6 Spot	EU Value*	*$86.40*	EUP	NA Term*	*$1,249*

Pointing to its several years of profitability, Kazatomprom argues that its uranium exports are not government sponsored, but instead its production expansion is explained by the profitability of operations and sound business. The simple business reality of the situation, concludes Kazatomprom, is the fact that it can make a profit at world market prices, but the two U.S. producers cannot, "such fact has nothing to do with unfair trade; rather such fact results from differences in location of uranium ore and extractions production technologies."

TENEX's primary argument is the fact that all its imports are already restricted and tightly regulated. As such, the company argues that current U.S. law and bilateral intergovernmental agreements actually mandate the DOC to exclude Russia's uranium products from any Section 232 action.

TENEX's U.S. subsidiary, **TENAM**, argued in its comments that the proposed import measures would "lead to economic chaos for the U.S. nuclear power industry." TENAM states that uranium imports are not responsible for the economic hardships facing the U.S. uranium industries, but rather market fundamentals. Additionally, the company points to the new studies that conclude domestic uranium production is unable to meet the levels suggested by the petitioners and the forced transition, which would take years, "would cripple the U.S. nuclear generation industry."

Centrus highlights its role as a developer of domestic enrichment technology. The company, which heavily relies on Russian SWU, opposes trade restrictions as it says this would take away its ability to finance its R&D efforts. Instead, Centrus believes the U.S. government should increase its support for development of domestic nuclear fuel cycle technologies.

URENCO submitted two comments representing its European and U.S. operations. Several of the key points for both comments overlapped, although the emphasis differed. As can be expected, URENCO USA (UUSA) highlighted its role as the sole enrichment plant in the U.S. UUSA's primary message is that although it shares some of the miners' concerns, it has chosen a different pathway to address its issues – via the RSA. URENCO Europe is more concerned with emphasizing the importance of enrichment supply from its European plants to the U.S., since UUSA is not capable of fully meeting U.S. requirements. Both comments stress that any remedies should be narrowly targeted at the uranium ore component.

Orano's comments focus on correcting the misconception about what factors have had a detrimental impact on the nuclear fuel markets. These macroeconomic issues, argues Orano, are not redressable by trade remedies. In this vein, Orano emphasizes that if the U.S. government has nuclear-related defense needs, it should address these separately from the commercial market.

Some wondered about the position that would be taken by **ConverDyn**, the sole domestic converter. The company's comments notably focus on tariffs as a potential remedy and make no mention of a quota. The company outlined how a tariff could have a significant adverse impact on its business, unless it is tailored to mitigate the potential harm on domestic fuel cycle companies.

Predictably, the **Uranium Producers of America (UPA)** make a case for import restrictions under Section 232. The trade association focuses on the topic of behavior and unfair advantages of state-controlled enterprises (SOEs). The UPA also emphasizes national security and alleges that the utilities' views are shortsighted and endangering U.S. national security.

Views expressed by the **Government of Canada** (GC) were dominated by two separate threads. First, the GC emphasizes the close strategic relationship between the U.S. and Canada, arguing that the concern about the state of the uranium industry is shared. Second, the GC positioned producers from the U.S. and Canada in a different category than SOEs, whose behavior it strongly condemns as damaging.

Cameco voiced its opposition to tariffs as a potential solution, but the Canadian company is more nuanced about any potential quota. Although a quota in its currently proposed form is not acceptable to Cameco, it does suggest that a quota could be tweaked to be more palatable. Cameco is also supporting further extension to the RSA. Ultimately, the company argues that no measure should include any restrictions on uranium imports from Canada as it feels it should not be equated to state-owned producers.

The petitioners (**Energy Fuels and Ur-Energy**) laid out their arguments in the original petition, but they also submitted additional comments to the DOC. The U.S. producers' comments predictably are in support of the arguments offered in the original petition as the companies emphasize the dangers to national security, outline their plans and ability to produce the necessary volumes, and dismiss the U.S. import data for 2017 as a fluke. Most importantly, the producers outline their desire to see the creation of a U.S.-centric market as a result of the quota system that would shield and support U.S. producers. Any other remedy, they argue, will be insufficient to support the industry.

Where Do We Go from Here?

With the comment period closed and all comments published, the BIS team has been processing them and touring a number of nuclear sites in its effort to better understand the nuclear industry.

In terms of timing, the investigation process has a clearly outlined timeline. Given the start of the process on July 18, this puts the likely date for the DOC report issuance sometime in mid-April 2019. And, should the President take the full 90 days to decide a course of action, this would put the final decision announcement sometime in mid-July next year.

In terms of a potential final resolution to this trade case, it is interesting to observe that despite the common recognition that the outcome of either the investigation or the President's imposed remedy is completely unpredictable, there appears to be an increasingly held belief among several U.S. industry participants that (1) there will be some remedial action taken, and (2) tariffs are a more likely outcome than the quota requested by the petitioners. Results from our recently-completed summer survey provide further signals that lead us to this conclusion (see *UxW32-41*). However, it is notable that the petitioners strongly object to the tariff solution, deeming anything but a fixed quota as insufficient. Meanwhile, it is not surprising that the U.S. utility industry is taking a very strong position in opposition and has highlighted the potential severe harm that would befall the nuclear power operators if a large increase in uranium costs is incurred due to trade actions.

Finally, the link between the Section 232 investigation and the ongoing review of the RSA is undeniable, and therefore any RSA developments must be closely monitored as well. In this regard, it should be noted that DOC is believed to have received its final set of comments from stakeholders under the ongoing administrative review today (October 29).

While this cover story has merely provided highlights of some of the Section 232 public comments, UxC's in-depth *Policy Watch* service offers much more detailed coverage of all policy-related developments, including these latest U.S. trade issues.

News Briefs

Second AP1000 reactor attains commercial operation in China

With the successful completion of a required testing period of 168 hours of full capacity operation as of October 22, Unit 1 at the Haiyang nuclear power plant in Shandong Province, China is now operating on a commercial basis. Construction on Haiyang 1 first began in 2009, and the reactor was connected to the grid this August. Haiyang 1 becomes the second Westinghouse AP1000 reactor in China and in the world to attain commercial operation. In September, another Chinese unit, Sanmen 1, became the first AP1000 reactor to operate on a commercial basis.

Tianwan 4 connected to the grid

Rosatom reported October 27 that Unit 4 of the Tianwan nuclear power plant in Jiangsu province, China achieved energy startup and grid connection. In accordance with directives issued by China's nuclear regulator, Tianwan 4 was brought to 25% power to turn the turbine and commence electrical and power output tests. Rosatom said that all systems of the power unit worked in the normal project mode, and thus the reactor was connected to the electrical grid. Tianwan 4 is a Russian designed VVER-1000 reactor that is slated to enter commercial operation in March 2019.

"The energy start of the fourth unit of the Tianwan NPP is another victory of the team of Russian and Chinese specialists. Our partnership, which has lasted for decades, allows us to speak with confidence about the further successful continuation of our work - the implementation of equally ambitious plans for the construction of four blocks of the VVER-1200 project, the evolutionary development of the VVER-1000 project is ahead," said Rosatom Engineering Division head Valery Limarenko.

EDF submits plan for closure of Fessenheim by 2022

According to two recent news articles from *Montel*, EDF has informed the French Nuclear Safety Authority (ASN) that it intends to close Unit 1 at the Fessenheim nuclear power plant by 2020 and Unit 2 by 2022. The utility has requested that ASN modify certain safety demands given its now definitive plans to close the two 900 MWe pressurized water reactors. ASN is still awaiting a final statement from EDF on the shutdown of Fessenheim 1 and 2.

France's highest court, the state council, has ruled against a decree issued by France's previous Socialist government to close Fessenheim by 2020. Despite this ruling, the government's new energy minister, Francois de Rugy, has stated the closure of Fessenheim will proceed and a new decree will be issued. The closure of Fessenheim previously was to be carried out in conjunction with commissioning of the European Pressurized Reactor (EPR) now under construction at the Flamanville nuclear power plant. However, de Rugy has stated Fessenheim's closure is no longer linked to the startup of Flamanville 3, given the current uncertainty of the latter's schedule for commissioning.

Industry Calendar

- October 28-31, 2018
  NEI Uranium Fuel Seminar
  Nuclear Energy Institute
  https://www.nei.org/Conferences/
  Omni Parker House, Boston, MA, USA
- October 31, 2018
  9th Annual Nuclear Power Asia Conference
  Clarion Events
  http://www.nuclearpowerasia.com/
  Sands Expo & Convention Centre, Singapore
- November 13-14, 2018
  ATOMEX 2018
  http://www.atomeks.ru/en
  Gostiny Dvor, Moscow, Russia
- January 15, 2019
  NEI Fuel Supply Forum
  Nuclear Energy Institute
  http://www.nei.org/Conferences
  The Mayflower Hotel, Washington, D.C., USA
- March 5-6, 2019
  VI. International Power Plants Summit
  INPPS Association Management
  https://www.nuclearpowerplantssummit.com/
  Pullman Istanbul Airport Hotel, Istanbul, Turkey
- April 9-11, 2019
  World Nuclear Fuel Cycle 2019
  NEI/WNA
  http://www.wnfc.info/
- June 3-5, 2019
  Nuclear Energy Assembly
  NEI
  https://www.nei.org/Conferences/
  Omni Shoreham Hotel, Washington, DC, USA
- June 25-27, 2019
  UxC Nuclear Fuel Training Seminar
  UxC
  http://www.uxc.com/products/uxc_seminar.aspx
  InterContinental Buckhead, Atlanta, GA, USA

Details are available at:
https://www.uxc.com/c/data-industry/Calendar.aspx

Taiwan to hold public referendum on government's nuclear phase-out in November

Taiwan's Central Election Commission (CEC) has approved a petition to hold a public referendum to determine whether to continue with the government policy put in place in 2016 to phase out the use of nuclear power. On November 24 in conjunction with local elections, voters will have their say on whether to proceed with or cancel the policy enacted by Taiwan's Democratic Progressive Policy to close all six of the nation's operable commercial reactors by 2025. A pro-nuclear activist, Shihi-Hsui Huang, collected well over 300,000 signatures in September, significantly higher than the required

282,000 signatures needed for a referendum. However, the Central Election Commission had previously rejected the petition for noncompliance with a policy that requires petitions for referendums to first gather 2,000 signatures and then obtain approval before spending another six months collecting the bulk of the signatures. In response to protests and a hunger strike by Huang, the CEC has reversed its prior refusal and will now allow the referendum to move forward. Huang has also mentioned the possibility for an additional referendum to allow the work on the canceled two-unit Lungmen nuclear power plant to proceed.

Japan court paves way for Ikata 3 restart

Reuters reported October 25 that the Hiroshima District court in western Japan rejected a lawsuit by Hiroshima Prefecture residents that sought to prevent Shikoku Electric Power Co.'s (EPC) Ikata 3 reactor from restarting. The verdict allows Shikoku EPC to restart its reactor and followed the Hiroshima High Court's late-September move to lift an injunction that had kept the plant offline since December 2017.

Shikoku EPC said the reactor has subsequently commenced restart operations and is expected to begin producing and transmitting electricity on October 30. The reactor is slated to enter commercial operation on November 28.

Japanese utility Tohoku to scrap Onagawa 1

In its financial results for the second quarter of the 2018 fiscal year published on October 25, Japanese utility Tohoku Electric Power Co. (EPC) stated that it intends to decommission Unit 1 at the Onagawa nuclear power plant. The company determined that the technical difficulty and expense of the safety upgrades that would be needed to bring the reactor back into service were not justified. It will now seek consent from Japan's Ministry of Economy, Trade and Industry (METI) to scrap Onagawa 1, a 524 MWe BWR that first started operation in 1984. "We decided to decommission (the reactor) at a board meeting today," said Tohoku EPC President Hiroya Harada as quoted by *Kyodo*. "We took into consideration technical restrictions associated with additional safety measures, output and the years in use."

At the end of 2013, Tohoku filed an application with Japan's Nuclear Regulation Authority (NRA) seeking approval for the restart of Unit 2 at Onagawa, a larger capacity 825 MWe reactor. The company hopes to bring Onagawa 2 back online as soon as 2020. Tohoku is also reportedly making preparations to file paperwork with the NRA, seeking the restart of Onagawa 3, which like Unit 2 is an 825 MWe BWR.

News reports claim Toshiba is considering liquidation of NuGen venture for UK reactors

According to recent articles from *Reuters* and *Jiji Press*, Toshiba is looking at the prospect of dissolving its 100% owned NuGen venture for the construction of new reactors at the Moorside site in the UK if negotiations to secure a buyer are unsuccessful. Both articles cited anonymous sources that claimed NuGen would most likely be liquidated if sales talks are unsuccessful. "Toshiba is eager to shut off potential risks associated with NuGen soon," said one anonymous source as quoted by *Reuters*.

Previously, Toshiba named Korea Electric Power Corp. (KEPCO) as the preferred bidder for NuGen. Although the sale of NuGen to KEPCO is still under consideration, Toshiba revoked the South Korean firm's preferred status in July after talks continued to drag on. *Reuters* also reported that one anonymous source claimed negotiations held with Brookfield Asset Management were also unsuccessful. In a statement, Toshiba told *Reuters* that it "continues to consider additional options including the sale of its share in NuGen to KEPCO," and additionally, "We are carefully monitoring the situation, in consultation with stakeholders including the UK government."

U.S. Department of Energy awards funding to GE for fuel rod technology development

On October 25, the U.S. Department of Energy (DOE) awarded General Electric (GE) $33.7 million in funding to support the development of advanced fuel rod technologies. The development effort, which is to take place over two-and-a-half years, includes GE and Hitachi joint venture Global Nuclear Fuel, and is being led by scientists and engineers from GE's Global Research Center. A key objective of the project is to develop fuel rods that are able to perform better under normal conditions and with greater resilience in the event of an accident. "With the DOE's support and in partnership with our National Lab and utility partners, we have an extraordinary opportunity to accelerate our ongoing fuel rod work and ultimately deliver new technologies to market that benefit our US nuclear facilities and those globally," said GE Global Research technical operations leader in metals Evan Dolley.

Project work will occur at the GE Global Research Center location in Niskayuna, New York as well as in Wilmington, North Carolina where Global Nuclear Fuel-Americas is located. "Research and development of materials, inspection techniques and testing, as well as corresponding analysis and software methods development, will be conducted in Wilmington," said GE Hitachi Nuclear Energy spokesman Jon Allen as quoted by *WilmingtonBiz*.

Chatterjee appointed as FERC Chairman

Reuters reported October 24 that President Donald Trump appointed Neil Chatterjee as Chairman of the Federal Energy Regulatory Commission (FERC). Chatterjee, a Republican who has backed plans to subsidize aging coal and nuclear power plants, previously served as FERC's acting Chairman in 2017 until Kevin McIntyre was sworn in late last year. However, McIntyre will step down from his post to become a Commissioner due to health issues. "I very recently experienced a more serious health setback, leaving me currently unable to perform the duties of Chairman with the level of focus that the position demands," McIntyre said in a letter on FERC's website.

In 2017, Department of Energy (DOE) Secretary Rick Perry issued FERC a directive to bail out aging marginal coal and nuclear plants; however, FERC rejected that plan in January 2018. In the coming months, the Commission will likely weigh similar plans to save aging baseload generators brought forth by the Trump Administration. Earlier this month, President Donald Trump nominated Republican Bernard McNamee, another prominent supporter of subsidizing aging coal and nuclear plants, to a vacant seat on the FERC Commission.

Russia ships steam generators for India's Kudankulam 3

In an October 19 press release, AEM Technologies announced that it shipped four steam generators that are bound for Kudankulam 3, a VVER-1000 reactor now under construction in India. AEM Technologies is a subsidiary of Russian firm Rosatom's engineering division, Atomenergomash (Atommash). "This is the first shipment to a non-CIS country in the new history of Atommash," said Branch Director Rovshan Abbasov. "It can be said that a large series of shipments of our equipment outside the post-Soviet space begins with India. Today reactors and steam generators for Turkey and Bangladesh are located at various stages of production in the plant workshops. Contracts for equipment production for nuclear power plants in Egypt, Finland, and Hungary have been signed. By 2021, we should significantly increase the production of equipment." The press release also added that manufacturing is now underway for Kudankulam Unit 4's steam generators.

Bulgaria to launch Belene tender by yearend

Reuters reported October 26 that Bulgaria's government may choose to launch a tender for a strategic investor to help construct the Belene nuclear power plant project before yearend 2018, according to Energy Minister Temenuzhka Petkova. The country lifted a six-year ban on a planned 2.0 GWe nuclear plant at Belene in June and asked Minister Petkova to establish the necessary procedures to select a strategic investor for the project by the end of this month. Bulgaria has already paid over €620 million to Russia's Rosatom for scrapping the Belene project, but also received nuclear equipment for two 1.0 GWe reactors that it intends to use.

The project to complete the Belene nuclear plant is estimated to cost at least €10 billion ($11.3 billion), and the government has said it does not want to commit more public funds, extend state or corporate guarantees for any loan, or offer preferential power purchase prices for the plant. Yet, Bulgaria appears serious about finishing the plant as Petkova told Rosatom CEO Alexey Likhachev, "The procedure is in its final stages. If the parliament approves it, the choice of a strategic investor can start by the end of the year." Parties named as expressing interest in constructing the Belene nuclear plant project include China's CNNC, France's Framatome, and Russia's Rosatom.

Czech Republic may delay nuclear power growth plans

On October 29, *Reuters* reported that Czech Republic Industry Minister Marta Novakova said the government may delay its awaited decision on building new reactors at state-controlled utility CEZ's Dukovany nuclear power plant site. "The decision about building nuclear units can't be done under pressure and we don't want to be put under pressure from suppliers or other entities," Novakova said. "The finance ministry is also analyzing the risk of potential court disputes," she added.

Earlier this month, Novakova told the press that the Czech government expected to select the best financing model for the construction of new reactors by the end of 2018. Yet, some minority shareholders fear that the multi-billion projects might hinder dividend payouts if CEZ were on the hook to finance the reactor construction on its own. A CEZ shareholder group recently called for a general meeting to demand more minority shareholder representation on the company's supervisory board. "Buying out minority shareholders in CEZ is the most expensive option, and, based on the debates we're having, I would say the least preferred," said Novakova. She added that the state prefers to provide as few guarantees as possible for the project. "It's obvious that the government wants to minimize the guarantees it will provide, and would rather push CEZ to at least participate in the financing of the project," she said.

In August 2018, Czech Republic Prime Minister Andrej Babis said he wanted the government to deliver a financial decision on Dukovany by the end of 2018. "We have to start moving fast as of September. Let's hope a decision will be made by Christmas," said Babis. At that time, CEZ CEO Daniel Benes said that a state-owned subsidiary of the utility would be the best way to ensure that new units get built. However, Prime Minister Babis says that CEZ can build the new units without being split up, iterating that a CEZ subsidiary should be the main vehicle to build the new reactors at Dukovany.

CRA appeals Tax Court ruling on Cameco

Cameco Corp. announced October 26 the receipt of notification that the Canada Revenue Agency (CRA) has filed an appeal with the Federal Court of Appeal regarding the Tax Court of Canada (Tax Court) decision of September 26, 2018, which found in favor of Cameco for tax years 2003, 2005, and 2006. Cameco's President and CEO Tim Gitzel said, "We are disappointed that the CRA has taken this action after such a clear and decisive ruling from the Tax Court." Gitzel added, "We are pleased that the CRA did not appeal Justice Owen's decision that sham does not apply." Gitzel said Cameco does not agree with the remaining grounds for appeal and estimates that it would take about two years for the Federal Court of

Appeal to hear and decide the matter.

Decisions of the Federal Court of Appeal may be appealed to the Supreme Court of Canada, but only if the Supreme Court agrees to hear the appeal. If an appeal to the Supreme Court is pursued, Cameco estimates that a further two years would be required to receive a decision.

The Tax Court decision and CRA appeal apply only to the 2003, 2005, and 2006 tax years, which were subject of the original court date. Cameco expects any further actions regarding subsequent tax years that have been reassessed (2007 through 2012) will be suspended until the first three tax years are resolved. Tax years 2013 and beyond have not been reassessed, and it is uncertain what audit approach CRA will take.

Cameco stated that despite the CRA's appeal, it will make an application to the court to recover substantial costs incurred over the course of the case. The actual cost award will be at the discretion of the Tax Court.

Kazakhstan to produce 21,600 tU in 2018

In an interview with *S&P Global*, Kazatomprom Chief Commercial Officer Riaz Rizvi stated that Kazakhstan plans to produce a total of 21,600 tU (~56.2 million pounds U_3O_8) in 2018, which would be nearly 8% lower than the 23,391 tU (60.8 million pounds U_3O_8) produced in 2017. Rizvi noted that Kazatomprom plans to implement similar cuts of around 20% to earlier Kazakh production targets for 2019 and 2020.

Paladin reports Q3 2018 quarterly activities

Paladin Energy Ltd. announced October 19 its activities report for the third quarter (Q3) ending September 30, 2018. At the company's suspended Langer Heinrich uranium mine in Namibia, Paladin said it completed plant systems cleanout in early August and the operation is now officially in care and maintenance. Paladin said its primary focus at the project is to maintain plant infrastructure and complete operational reviews to assess process optimization, cost reduction, production capacity, and life-of-mine alternatives to allow for a restart of operations when feasible.

Paladin reported that it sold 267,423 pounds U_3O_8 at an average price of $24.60 per pound during Q3 2018, which generated gross revenue of $6.6 million. Furthermore, the company has a delivery commitment of 475,000 pounds U_3O_8 due in December 2018, which should return gross revenue of between $14 million and $15 million. Paladin said that the December delivery will be met from existing uranium inventory and inventories that were already purchased.

Global Atomic reports positive PEA results for DASA project

On October 23, Global Atomic Corporation announced the results of the Preliminary Economic Assessment (PEA) on its DASA uranium project in the Republic of Niger. A uranium price of US$50 per pound U_3O_8 was chosen for the PEA. The objective of the PEA was to study the DASA project as in integrated underground mining operation, processing mineralized material through an on-site mill initially operating at 2,500 tpd (tonnes per day) and ramping up to 3,000 tpd. Under the DASA standalone scenario, 69 million pounds U_3O_8 would be recovered at an average grade of 2,380 ppm U_3O_8 over a 15-year mine life. Annual production would be sustained from 4 million pounds U_3O_8 to 7 million pounds U_3O_8 over the mine life. This scenario projects an all-in sustaining cost of US$28.51 per pound U_3O_8, with an initial CAPEX of US$320 million, including US$141 million for an on-site mill; US$467 million with sustaining capital and reclamation.

Meanwhile, an alternate mine plan scenario based on the July 2017 MOU signed with Orano Mining, in which high grade mineralized material is sold to Orano targeting early cash flow, identified a significant value opportunity. In this alternate mining scenario, initial capital is reduced with only U$35 million to start mining and no milling required. There is the potential to ship 360,000 tonnes are annually for the 5-year contract containing on average 2.8 million pounds U_3O_8 grading 3,698 ppm. Total costs including mining, G&A and sustaining capital are US$10.94 per pound U_3O_8 before transport and processing. The company expects it could permit the Alternate Mining Strategy by Q4 2019, with ramp development beginning as early as 2020.

Stephen G. Roman, President and CEO of Global Atomic, stated, "The DASA uranium project is a Tier 1 project in a proven uranium mining jurisdiction where accelerated permitting is possible. The PEA demonstrates the economic potential of the project and our agreement with Orano allows us to pursue ways to fast track the project to early mining at current commodity prices."

Namibia abandons rules for black ownership of mineral exploration companies

Namibia has ended a requirement for companies seeking mining exploration licenses to be partly owned and managed by black Namibians, said the nation's Chamber of Mines on October 26. The policy was introduced in 2015 to increase participation of historically disadvantaged black Namibians in some of the country's most lucrative business projects, but critics said it threatened the diamond and uranium producer's ability to attract investment.

The Chamber of Mines stated the requirements had been set aside by Namibia's Minister of Mines and Energy, Tom Alweendo, in a letter to the group. Hilifa Mbako, Chamber of Mines 1st Vice President, said the decision "was the most important fundamental decision for future investment into Namibia."

Mining contributed to 12.2% of Namibia's GDP in 2017. Under the scrapped policy, the management structure of a company applying for an exploration license was required to have a minimum 20% representation of black Namibians. At least 5% of the company also had to be owned by Namibians or by a company wholly owned by Namibians. Mbako said the requirements and uncertainties created by the planned New Equitable Economic Empowerment Framework, a regulation intended to force white-owned businesses to sell a 25% stake to blacks, had hit investor confidence in Namibia.

U.S. appeals court allows challenge to uranium mining at Energy Fuels' Canyon mine

On October 25, a three-judge panel of the 9th U.S. Circuit Court of Appeals said the Havasupai tribe and environmental advocate can challenge Energy Fuels' Canyon mine on land near the Grand Canyon where mining was recently banned. The decision is a partial reversal of its own December decision that said the Canyon mine, approved in 1988, was grandfathered in and could not now be challenged.

However, Energy Fuels Resources spokesman Curtis Moore told *Cronkite News*, "It's a minor setback, but I don't think it's going to impact anything we're doing up there. So we'll see what happens."

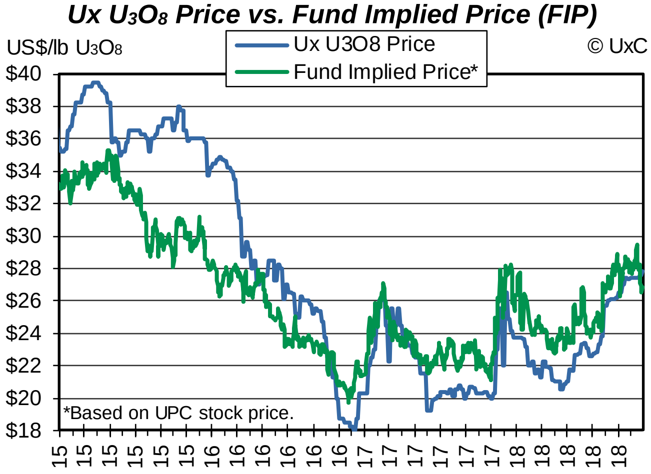
While the Canyon mine approval cannot be challenged under the environmental or historical laws, the 9th U.S. Circuit Court of Appeals said there could be a challenge under the Federal Land Policy Management Act (FLPMA). It said that act gives the Interior Secretary the authority to order mineral withdrawals, but that these withdrawals are "subject to valid existing rights" and the district court needs to determine if there was a valid existing right under the FLPMA. The court ordered the case back to district court to reconsider the challenge on those grounds.

Both sides agree that there is still a long legal battle ahead, but Moore said that Energy Fuels is confident that it will be successful. "We're unsure what exactly our next steps will be, but presuming that we do have to go back to the district court and argue that issue, we're pretty confident that we'll prevail on that issue," Moore said.

Western Uranium & Vanadium plans to re-open Sunday Mine Complex to produce vanadium

On October 25, Western Uranium & Vanadium Corp. announced its intention to re-open the Sunday Mine Complex

Ux U_3O_8 Price vs. Fund Implied Price (FIP)



(SMC) in Colorado. The company plans to upgrade the vanadium resource and monetize the significant vanadium resource holdings. Increased demand for vanadium in high-strength steel and accelerating battery metal demand for vanadium flow battery applications has driven vanadium prices from US$10 to US$30 during 2018. The large price increase is driven by a global supply deficit, and most notably new Chinese building code standards requiring vanadium rebar strengthening effective next month (November 2018).

There was no mention in the company press release to produce uranium as a by-product of vanadium. The Sunday Mine Complex is an advanced stage mine property consisting of five individual mines (Sunday, St. Jude, West Sunday, Carnation, and Topaz) and comprised of mining claims totaling about 3,748 acres. The last mining interval occurred from 2006-2009 by previous owner Denison Mines. UxC estimates the Sunday Mine Complex contains ~1.0 million pounds U_3O_8 at 0.25% U_3O_8.

Berkeley responds to recent media reports

On October 29, Berkeley Energia Ltd. announced that it was informed by Spain's Nuclear Safety Council (NSC) that the Council was not the source of widely circulated media reports that the government intends to deny the final permits for the Salamanca uranium mine in western Spain. Berkeley added that it is continuing to work with the NSC in advancing the necessary approvals for Salamanca.

Several media outlets reported October 16 that an anonymous source inside Spain's government leaked that the government would deny Berkeley its final permits to start production at the Salamanca project. The Salamanca uranium project is an advanced stage, open pit uranium project with total combined resources of 89.3 million pounds U_3O_8 grading 0.0514% U_3O_8. The Definitive Feasibility Study for Salamanca, however, was solely based on measured and indicated resources of 59.8 million pounds U_3O_8.

UEX reports Christie Lake drill results

UEX Corp. announced October 29 results of the summer drilling program at the Shoreline area of the Christie Lake uranium project in the Athabasca Basin. The summer program was designed to test the unconformity intersection of the Yalowega Trend in the 350-meter-wide gap in drilling between the Ken Pen deposit and the Orora deposit. UEX completed five holes during the summer program totaling 2,637 meters. Highlights from the summer drill program include: 11.2 meters grading 0.37% U_3O_8, 2.7 meters grading 1.21% U_3O_8, 1.0-meter grading 0.33% U_3O_8, and 0.5 meters grading 5.67% U_3O_8. UEX said that following completion of the summer drill program, the company will now focus its efforts at Christie Lake on completing three-dimensional models of the Paul Bay, Ken Pen, and Orora deposits in preparation for a maiden NI 43-101 resource estimate.

The Market

Uranium Spot & Forward Market

While spot activity has fallen each month since the record volume peak in July, the spot market remained moderately active during October but slowed somewhat more recently as many traveled to Boston for this week's NEI IUFS meetings. Over the past week, a non-U.S. producer entered the spot market seeking up to 500,000 pounds U_3O_8 equivalent for delivery prior to yearend and offers due this past Friday (Oct 26).

A total of six transactions involving 600,000 pounds were reported over the past week, bringing the monthly total to about 5.4 million pounds U_3O_8 under 39 transactions. Prices under these transactions reflected a further strengthening of the spot price during the week with the Cameco delivery premium remaining in the lower $0.10 to $0.15 range in accepted deals. In addition, the range in overall offer levels have widened including that for Cameco delivery. Based on recently completed transactions as well as currently available bids and offers, the Ux U_3O_8 Price increases to $27.90 per pound, up $0.30 for the week and up $0.55 for the month. With the price increases over the previous three weeks, the Ux U_3O_8 Monthly Average Price (MAP) for October rises to $27.54 per pound, up $0.48 for the month. However, the Ux 3-Year and 5-Year U_3O_8 Forward Prices decrease this week to $31.75 and $35.00 per pound, respectively.

UxC Broker Average Price

The UxC Broker Average Price (BAP) started Tuesday unchanged at $27.75. By Friday, the indicator had inched up to $27.89, up $0.11 on the day. Today's UxC BAP is $27.96 per pound, up $0.07 from Friday and up $0.21 from last Monday's $27.75. The BA Bid is $27.88, up $0.33 from last Monday's $27.55 and the BA Offer is $28.05, up $0.10 from last week's $27.95.

Fund Implied Price (FIP)

Fund Implied Prices (FIP) began the week on Tuesday down sharply by $1.14 to $27.10. The Price remained relatively flat through the midweek before dipping further on Friday to $26.53, down $0.42 on the day. Today's FIP is $26.88, up $0.35 on the day but down $1.36 or about 5% from last Monday's $28.24 (see page 7).

U_3O_8 Futures Market

The CME Group futures market for uranium booked 11 contracts (2,750 pounds U_3O_8) during the week in a few on-market deals. On Tuesday, October 23, five contracts were rolled forward from the December 2018 contract month to December 2019 at $28.30 and $29.55, respectively. Throughout the middle of the week, several bids and offers for December 2018 went unmatched. However, a single contract was added for December 2018 on Friday at $27.45. Prices trended upward as the strip increased an average of $0.27 by week's end on Friday. With the week's increase of 11 contracts (2,750 pounds U_3O_8), the October monthly grows to 794 contracts (198,500 pounds U_3O_8) and the 2018 annum total reaches 4,246 contracts (1,061,500 pounds U_3O_8). Open interest increased by five contracts during the week and currently stands at 4,693 contracts (1,173,250 pounds U_3O_8).

Uranium Term Market

The term market was relatively quiet as no new demand or contract awards were reported over the past week, however, several utilities remain active evaluating offers and a non-U.S. utility is expected to enter the term market shortly. Other utilities are also evaluating when to enter the market and look to

UxC Market Statistics

Monthly (Oct)	Spot Volume	Spot # Deals	Term Volume	Term # Deals
U_3O_8e (million lbs)	5.4	39	W	1
Conv. (thousand kgU)	0	0	0	0
SWU (thousand SWU)	0	0	0	0
2018 Y-T-D	**Spot Volume**	**Spot # Deals**	**Term Volume**	**Term # Deals**
U_3O_8e (million lbs)	75.2	369	>58.0	21
Conv. (thousand kgU)	5,362	41	>19,000	14
SWU (thousand SWU)	1,095	7	>12,000	8

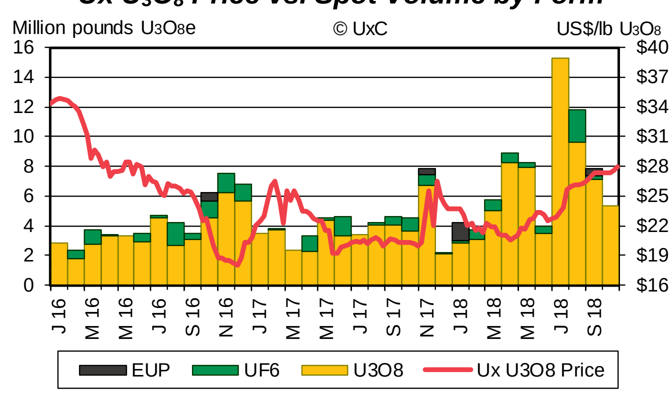
Key: N/A – Not available. W – Withheld due to client confidentiality.

UxC Leading Price Indicators

Three-month forward looking price indicators, with publication delayed one month. Readings as of Sept. 2018.

Uranium (Range: -17 to +17)	**+2** [up 3 points]
Conversion (Range: -16 to +16)	**+4** [unchanged]
Enrichment (Range: -18 to +18)	**-9** [unchanged]

Ux U_3O_8 Price vs. Spot Volume by Form



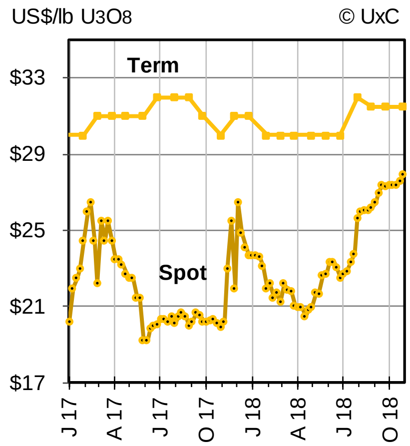
Surgeon and Architect

An architect watched a mechanic remove engine parts from his car to get to the valves. A surgeon, waiting for his car to be repaired, walked over to observe the process. After they introduced themselves, they began talking, and the talk turned to their lines of work.

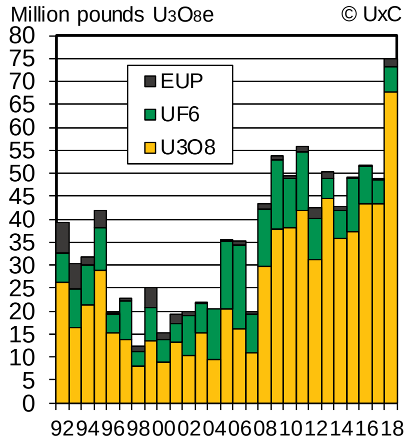
"You know, doctor," said the architect, "I sometimes believe this type of work is as complicated as the work we do."

"Perhaps," the surgeon replied. "But let's see him do it while the engine is running."

Ux U_3O_8 Prices



Annual Spot Uranium Volumes



Ux Price Indicators (€ Equiv‡)			
Weekly (10/29/18)	1 US$ =	**.87768€**	
Ux U_3O_8 Price		**$27.90**	**€24.49**
Ux 3-Yr Forward		$31.75	€27.87
Ux 5-Yr Forward		$35.00	€30.72
Mth-end (10/29/18)	1 US$ =	**.87768€**	
U_3O_8	Spot	**$27.90**	€24.49
	Spot MAP†	*$27.54*	€24.17
	3-Yr Forward	$31.75	€27.87
	5-Yr Forward	$35.00	€30.72
	Long-Term	**$31.50**	€27.65
Conversion	NA Spot	**$13.25**	€11.63
	NA Term	**$15.50**	€13.60
	EU Spot	**$13.50**	€11.85
	EU Term	**$15.50**	€13.60
UF_6 Spot	NA Price	**$86.15**	€75.61
	NA Value*	*$86.15*	€75.61
	EU Value*	*$86.40*	€75.83
SWU	Spot	**$36.50**	€32.04
	Long-Term	**$40.00**	€35.11
EUP	NA Spot**	*$1,109*	€ 973
	NA Term**	*$1,249*	€1,096

take advantage of this week's NEI IUFS meetings in Boston for face-to-face discussions to better understand how the market will develop over the next year. A U.S. utility is evaluating offers based on its U_3O_8 request with deliveries starting in 2021. A non-U.S. utility is evaluating offers for EUP or components seeking over 10.8 million pounds U_3O_8 equivalent with delivery in 2021-2029. Another non-U.S. utility has shortlisted offers for EUP or its components with delivery in 2019-2023 and options through 2028. A third non-U.S. utility has shortlisted offers for an EUP request with delivery in 2019-2025.

Although the term market remains moderately active, there have not been as many opportunities for sellers to make new term offers over the past month, and most reported offers continue to be either fixed-priced or market-related. However, with the continued increases in both the spot and forward price curves and the gap between spot and term falling, utilities (and sellers) are now once again considering base-escalated pricing. The gap closes slightly more this month as the Ux Long-Term (LT) U_3O_8 Price remains unchanged at $31.50 per pound.

Conversion

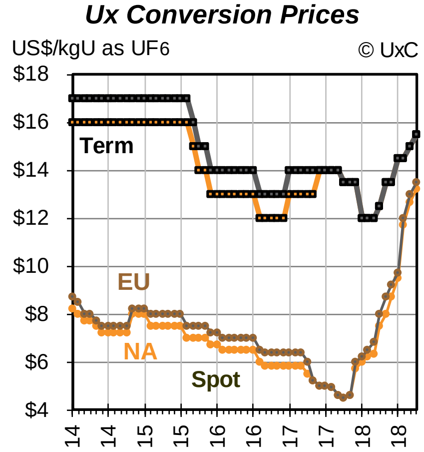
The spot conversion market once again remains quiet with no new demand or transactions reported over the past week. Several entities continue discussions for spot or near-term material and the IAEA is nearing its final selection for spot EUP. Based on reported offer levels, the spot Ux North American (NA) Conversion Price increases by $0.60 this month to $13.25 per kgU. The Ux European (EU) Conversion Price also increases to $13.50, up $0.50 for the month. It should also be noted that the range in offer prices for spot delivery has also increased with the upper end of the range now well within the $14 range depending on contract conditions.

In the term market, a non-U.S. utility is evaluating offers for about four million kgU of conversion as EUP or components with delivery in 2021-2029. Another non-U.S. utility has shortlisted EUP/component offers with delivery in 2019-2023 and options through 2028. A third non-U.S. utility has shortlisted EUP offers with delivery in 2019-2025. A fourth non-U.S. utility is finalizing its selection for 2023-2026 delivery. Based on the range of offers reported over the past month, the Ux NA and EU Long-Term (LT) Conversion Prices increase to $15.50 per kgU, both up $0.50 for the month.

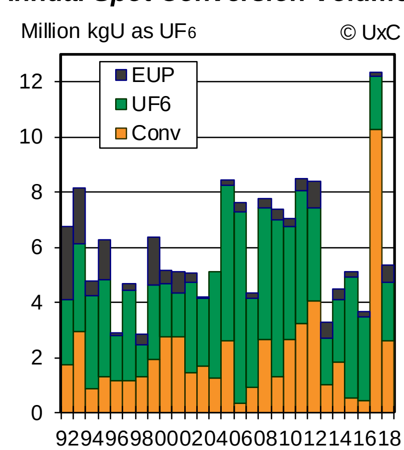
UF_6

As noted above, activity over the past month for conversion, including that contained in UF_6 has been very limited. And although several utilities have continued to discuss opportunities to purchase UF_6 and there have been a few requests (including a recent non-utility RFP) that had UF_6 options, there have not been any UF_6 spot transactions reported thus far for the month. Of the activity that has been reported with respect to offers, the Ux NA UF_6 Price increases by $2.50 to $86.15 per kgU for the month. The calculated Ux

Ux Conversion Prices



Annual Spot Conversion Volumes



NA and EU UF_6 Values come in at $86.15 and $86.40 per kgU, respectively.

Enrichment & EUP

Spot activity during September has been limited and there were no transactions reported over the past week, although new demand is expected. In addition, several buyers remain interested in spot/near-term delivery, and the IAEA is nearing its selection for spot EUP. Of the quieter activity that has been tracked, offers have continued to pull back resulting in a rising spot price. Based on this month's offer activity, the spot Ux SWU Price increases by $1.50 to $36.50 per SWU. It should also be noted that this increase represents the first non-dollar increment of the Ux SWU Price indicator. Historically the SWU prices were well above the $50 level and spent year's above the $100 level, and given the much more limited number of deals for either spot or term, dollar increments fit the market very well. However, in today's market with the recent decline of the spot indicator into the $30 range, a dollar increment is a much larger percentage and this month's indicator update is more representative of today's market.

While no new demand or contract awards were reported over the past week, the term market remains moderately active. Two U.S. utilities are evaluating offers for SWU (and/or EUP), one with deliveries starting in 2021, and the other in 2022. A non-U.S. utility is evaluating offers for EUP or components with delivery in 2021-2029 for about 4.3 million SWU. Two non-U.S. utilities have shortlisted EUP and/or component offers, the first with 2019-2023 delivery (with options through 2028), and the other with 2019-2025 delivery. Over the past month, several utilities received new term enrichment offers and pricing in these offers reflected a couple bands. Based on the more competitive range in the latest rounds of offers, the Ux Long-Term (LT) SWU Price remains unchanged for the month at $40.00 per SWU.

Although similar to last month with increases in all three component prices but with the optimal tails continuing on its downward trend, this month's greater increase in the enrichment price more than offset the smaller increases in both the uranium and conversion prices. As a result, the optimal tails assay – based on spot indicators – marked only its second small increase for the year moving to 0.144$^{w}/_{o}$, but still remaining at near all-time historic low levels.

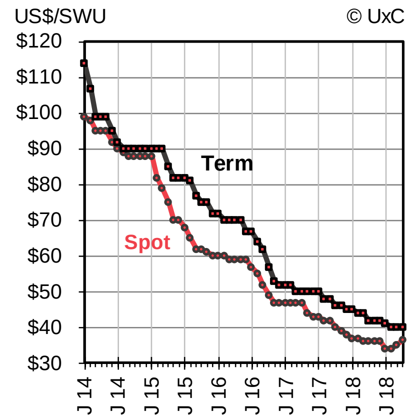
Calculated Enriched Uranium Product (EUP) Values at Various Tails Assays

Current Optimal Tails: **0.144$^{w}/_{o}$**

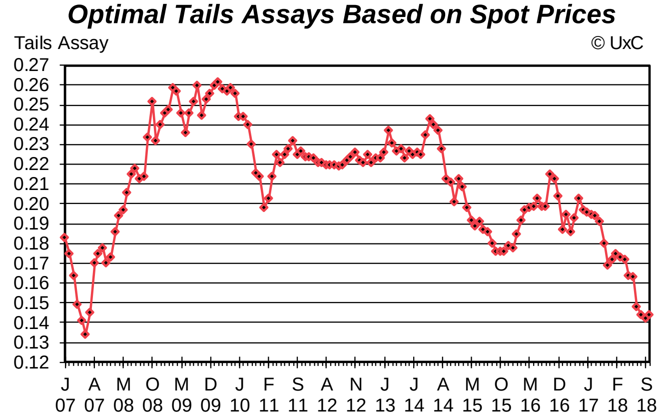
Tails	0.15$^{w}/_{o}$	0.20$^{w}/_{o}$	0.25$^{w}/_{o}$	0.30$^{w}/_{o}$	0.35$^{w}/_{o}$
FtoP	7.754	8.415	9.219	10.219	11.496
StoP	8.801	7.690	6.871	6.231	5.710
EUP$	**$989**	**$1,006**	**$1,045**	**$1,108**	**$1,199**

Calculations based on Ux spot indicators using a 4.50$^{w}/_{o}$ product assay.
FtoP: Feed to Product ratio. StoP: SWU to Product ratio.
EUP $: US$ per kgU of enriched UF_6.
EUP $ = (UF_6 Price * FtoP) + (SWU Price * StoP)

Ux SWU Prices



Optimal Tails Assays Based on Spot Prices



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 (with a Monday cut-off time of 2:30pm Eastern Time). *The **Ux U_3O_8 Price**® (Spot) includes conditions for delivery timeframe (≤ 3 months), quantity (≥ 100,000 pounds), and origin considerations, and is published weekly. †The **Ux U_3O_8 Monthly Average Price** (Spot MAP) represents the average of all weekly Ux U_3O_8 Prices for the month. The **Ux 3-Year** and **5-Year U_3O_8 Forward Prices** reflect UxC's estimate of prices for U_3O_8 delivery 36 and 60 months forward taking into account market activity and other indicators, using the same quantity and origin specifications as the Spot indicator. The **Ux LT U_3O_8 Price** (Long-Term) includes conditions for escalation (from current quarter), delivery timeframe (≥36 months), and quantity flexibility (up to ±10%) considerations. The **Ux Conversion Prices** consider offers for delivery up to twelve months forward (Spot) and base-escalated long-term offers (Term) for multi-annual deliveries with delivery in North America (NA) or Europe (EU). The **Ux NA UF_6 Price** includes conditions for delivery timeframe (6 months), quantity (50-150,000 kgU), and delivery considerations. *The **Ux NA** and **EU UF_6 Values** represent the sum of the component U_3O_8 (multiplied by 2.61285) and conversion spot prices as discussed above and, therefore, do not necessarily represent the most competitive UF_6 spot offers available. The **Ux SWU Price** (Spot) considers spot offers for deliveries up to twelve months forward. 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$^{w}/_{o}$ and a tails assay of 0.30$^{w}/_{o}$, 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 spot Ux U_3O_8 and Forward Prices, are published the last Monday of each month. 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. (Units: U_3O_8 = US$ per pound, Conversion/UF_6: US$ per kgU, SWU: US$ per SWU, EUP: US$ per kgU)*

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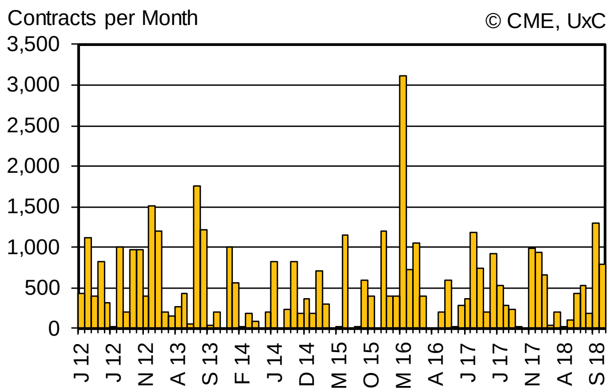
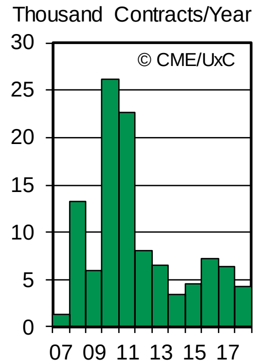
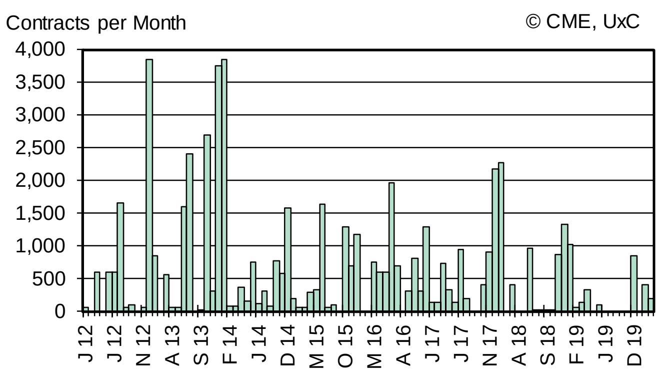
CME/NYMEX UX Futures Activity

Total Contracts by Transaction Month, **by Transaction Year**

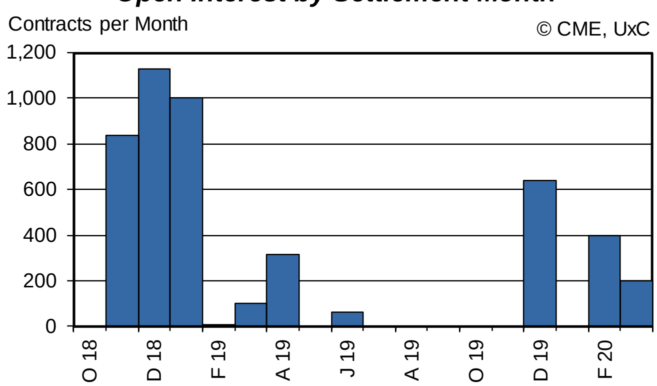




Total Contracts by Settlement Month



Open Interest by Settlement Month



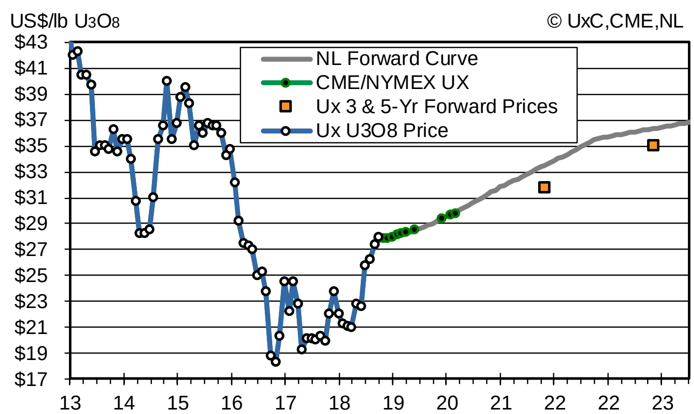
CME Uranium U_3O_8 (UX) Futures

Activity as of October 26, 2018

Settlement	Price	Volume	Open
Jan 2017	**$24.50**	133	N/A
Feb 2017	**$22.25**	133	N/A
Mar 2017	**$24.50**	733	N/A
Apr 2017	**$22.75**	333	N/A
May 2017	**$19.25**	133	N/A
Jun 2017	**$20.10**	941	N/A
Jul 2017	**$20.15**	200	N/A
Oct 2017	**$19.95**	400	N/A
Nov 2017	**$22.00**	900	N/A
Dec 2017	**$23.75**	2,166	N/A
Jan 2018	**$22.50**	2,267	N/A
Mar 2018	**$21.10**	400	N/A
Jun 2018	**$22.55**	963	N/A
Jul 2018	**$25.70**	25	N/A
Aug 2018	**$26.20**	6	N/A
Sep 2018	**$27.30**	12	N/A
Oct 2018	**$27.85**	12	0
Nov 2018	**$27.85**	874	840
Dec 2018	**$27.85**	1,326	1,129
Jan 2019	**$27.95**	1,018	1,000
Feb 2019	**$28.10**	54	8
Mar 2019	**$28.20**	128	102
Apr 2019	**$28.30**	328	314
Jun 2019	**$28.55**	95	60
Dec 2019	**$29.35**	840	640
Feb 2020	**$29.65**	400	400
Mar 2020	**$29.80**	200	200
*From May 2007	**Totals:**	**109,678***	**4,693**

U_3O_8

Ux U_3O_8 Price vs. CME/NYMEX Forward UX Price Curve



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 Numerco Limited (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 up to 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_3O_8 Price**. On a daily basis with a cut-off time of 2:30 pm Eastern Time, 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.*