

## 2014 U<sub>3</sub>O<sub>8</sub> Production Review

Worldwide uranium production totaled 145 million pounds in 2014, dropping 6% from 154 million pounds in 2013. This ended the trend of consecutive production increases over the past several years as producers finally reacted to industry calls for cutbacks and deferrals in light of lower spot and long-term prices. At this time last year, UxC projected 2014 world production would reside in a range of 150-153 million pounds U<sub>3</sub>O<sub>8</sub>, so the 9 million-pound decline more than exceeded expectations.

UxC's URM Base Demand Case totaled 172 million pounds U<sub>3</sub>O<sub>8</sub> in 2014. With secondary supplies accounting for 43 million pounds U<sub>3</sub>O<sub>8</sub>e in 2014, the addition of 2014 world production amounted to total supply of 188 million pounds U<sub>3</sub>O<sub>8</sub>e, resulting in a supply surplus of ~16 million pounds U<sub>3</sub>O<sub>8</sub>e. However, this is down significantly from the surplus of 40 million pounds U<sub>3</sub>O<sub>8</sub>e in 2013, and is a key reason behind why uranium prices have firmed up over the last several months.

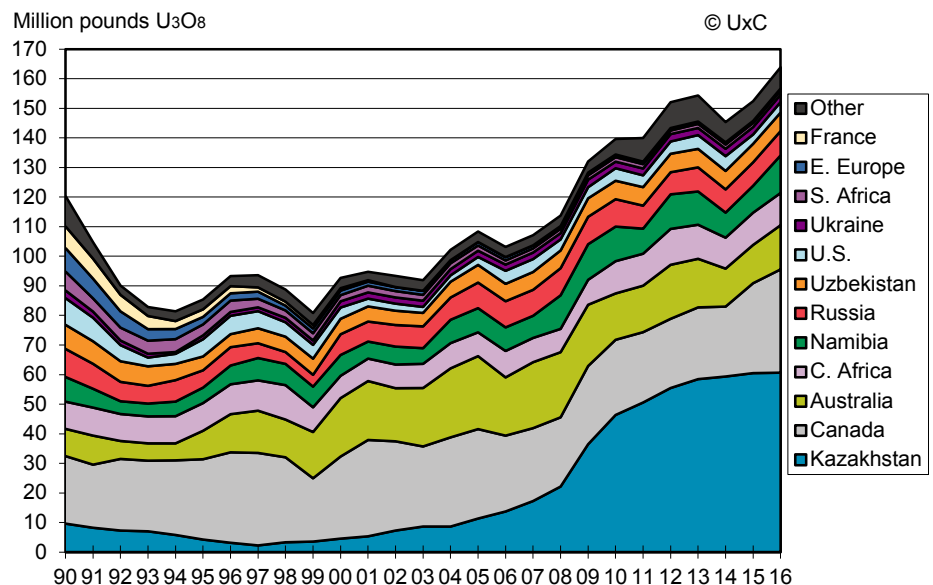
Once again for the sixth straight year, **Kazakhstan** was the king of uranium-producing countries, accounting for 59.4 million pounds U<sub>3</sub>O<sub>8</sub> in 2014 and 41% of the world total. For 2015, Kazatomprom expects Kazakh production to increase by almost 3% to 23,400 tU (~60.8 million pounds U<sub>3</sub>O<sub>8</sub>), as some ISR projects continue to ramp-up and the country benefits from a favorable exchange rate.

AREVA's majority-owned KATCO joint venture (51% AREVA, 49% Kazatomprom) remained the world's largest in-situ recovery (ISR) project, producing 11.2 million pounds U<sub>3</sub>O<sub>8</sub> from the Muynkum/Tortkuduk deposits in 2014, which was 21% higher than 2013's 9.3 million pounds U<sub>3</sub>O<sub>8</sub>. The 2014 increase is attributable to 447 tU (~1.2 million pounds U<sub>3</sub>O<sub>8</sub>) of slurry material from 2013 that was not calcined until early 2014. However, Kazatomprom reported a slightly lower figure for the KATCO project at 10.7 million pounds U<sub>3</sub>O<sub>8</sub>. The nominal capacity of Muynkum/Tortkuduk is 4,000 tU (~10.4 million pounds U<sub>3</sub>O<sub>8</sub>), which is AREVA's target for 2015. Production from Karatau LLP's (50% Kaza-

Ux Price Indicators					
<b>Weekly Ux U<sub>3</sub>O<sub>8</sub> Price<sup>®</sup> (4/20/15)</b>		<b>\$38.85 (-\$0.15)</b>			
<i>Month-end (3/30/15)</i>					
U <sub>3</sub> O <sub>8</sub>	Spot	<b>\$39.50</b>	UF <sub>6</sub> Spot	NA Price	<b>\$109.00</b>
	Long-Term	<b>\$49.00</b>		NA Value*	<b>\$110.71</b>
Conversion	NA Spot	<b>\$7.50</b>	SWU	EU Value*	<b>\$111.21</b>
	NA Term	<b>\$16.00</b>		Spot	<b>\$79.00</b>
	EU Spot	<b>\$8.00</b>		Long-Term	<b>\$90.00</b>
	EU Term	<b>\$17.00</b>	EUP	NA Spot*	<b>\$1,624</b>
				NA Term*	<b>\$2,033</b>
*Calculated values					

tomprom, 50% Uranium One) Budenovskoye 2 ISR mine was 5.4 million pounds U<sub>3</sub>O<sub>8</sub>, which was slightly lower than the 5.5 million pounds U<sub>3</sub>O<sub>8</sub> produced in 2013. Cameco's majority-owned JV Inkai (60% Cameco, 40% Kazatomprom) yielded 5.0 million pounds U<sub>3</sub>O<sub>8</sub>, which was 6% lower than the 5.3 million pounds U<sub>3</sub>O<sub>8</sub> in 2013. The production decline at Inkai was due to delays in bringing on new wellfields as a result of abnormally heavy snowfall and rapid spring melt in 2014. For 2015, JV Inkai is targeting production of 5.2 million pounds U<sub>3</sub>O<sub>8</sub> from blocks 1 and 2. The South Inkai ISR project, which is part of the Betpak Dala JV (70% Uranium One, 30% Kazatomprom), extracted 5.2 million pounds U<sub>3</sub>O<sub>8</sub>

### Uranium Production: Historical & Planned

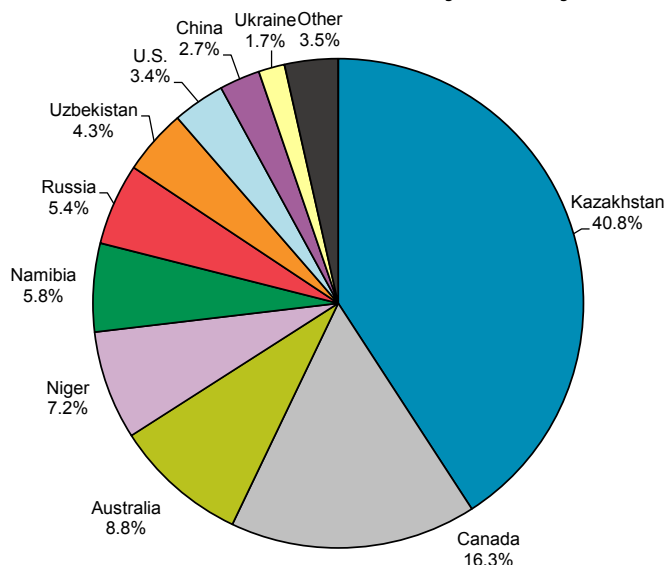


from its wellfields, which was 1% lower than in 2013. The Akdala ISR project, which is also part of the Betpak Dala JV, produced 2.6 million pounds  $U_3O_8$ , which was also 1% lower than in 2013. The Akbastau JV (50% Kazatomprom, 50% Uranium One) achieved output of 4.1 million pounds  $U_3O_8$  from the Budenovskoye 1, 3, and 4 deposits, which was 6% higher than in 2013 as the project continued to ramp-up toward its nominal capacity of 5.2 million pounds  $U_3O_8$ . Zarechnoye JSC (49.67% Kazatomprom, 49.67% Uranium One, and 0.66% Kara Balta) processed 2.3 million pounds  $U_3O_8$  in 2014, which was 6% lower than in 2013.

For Kazatomprom's three 100%-owned ISR mining groups (Stepnoye, Taukent, and RU-6), 2014 production totaled 8.7 million pounds  $U_3O_8$ . There are several uranium projects in Kazakhstan with Asian ownership interests or offtake agreements. JV Kendala, through which Japan's Itochu Corporation has an offtake agreement, produced 4.7 million pounds  $U_3O_8$  from the Central Myunkuduk ISR project. At APPAK LLP (65% Kazatomprom, 25% Sumitomo Corp., and 10% Kansai Electric), production totaled 2.3 million pounds  $U_3O_8$  from the Western Myunkuduk ISR project. Production at Kharasan 1 (Kyzylkum LLP – 40% Energy Asia, 30% Kazatomprom, and 30% Uranium One) totaled 2.2 million pounds  $U_3O_8$ , which was 14% higher than in 2013. At Kharasan 2 (Baiken U LLP – 95% Energy Asia, 5% Kazatomprom), production amounted to 3.0 million pounds  $U_3O_8$ , which is 32% higher than in 2013. The Sino-Kazakh Semizbai U LLP (51% Kazatomprom, 49% CGNPC) produced 3.0 million pounds  $U_3O_8$  in 2014 from the Semizbai and Irkol ISR projects. Semizbai yielded 1.9 million pounds  $U_3O_8$  while Irkol processed 1.1 million pounds  $U_3O_8$ .

**Canada** again takes silver in 2014 with production of 23.6 million pounds  $U_3O_8$ , accounting for 16.3% of world production. However, Canadian production declined by 2.6% in

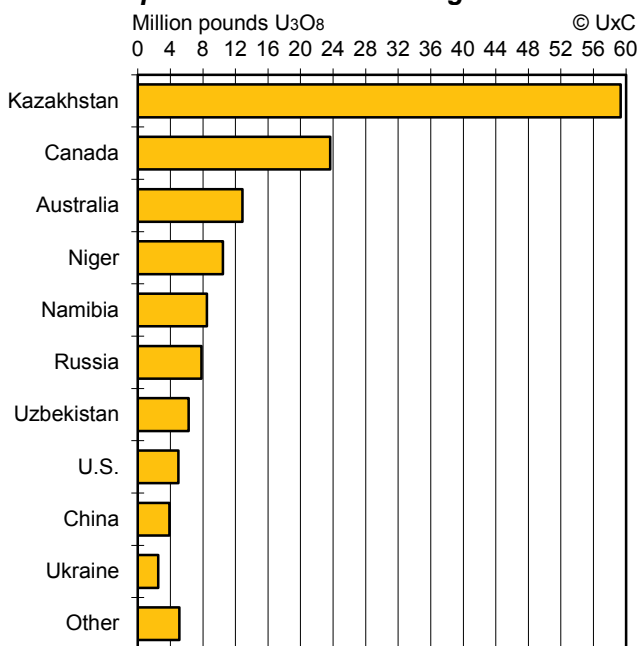
### 2014 Production Shares by Country



2014, mainly due to a 6% decline in production at the McArthur River underground mine, which experienced a labor strike that resulted in an unplanned shutdown of the operation for 18 days during the third quarter of 2014. Despite the strike, Cameco's majority-owned McArthur River mine remained the world's largest uranium mine, yielding 19.1 million pounds  $U_3O_8$  in 2014 compared to 20.1 million pounds  $U_3O_8$  in 2013. Meanwhile, Cameco's Rabbit Lake mine saw production increase 2% to 4.2 million pounds  $U_3O_8$  as a result of the planned timing of production stopes, coupled with slightly improved ore grades. Inaugural production from Cameco's majority-owned Cigar Lake mine totaled 340,000 pounds  $U_3O_8$  in 2014, which was lower than the initial target of 2-3 million pounds  $U_3O_8$  as jet boring of the mine was halted from July until September to allow the ore body to freeze more thoroughly in localized areas. For 2015, Cigar Lake is expected to produce between 6 million and 8 million pounds  $U_3O_8$ .

**Australia** finished third among uranium-producing countries in 2014 despite the fact that production fell 22% to 12.8 million pounds  $U_3O_8$  from 16.4 million pounds in 2013. The country accounted for 8.8% of world production. The majority of the decline was due to the absence of processing of lower-grade stockpiled ores at Rio Tinto/Energy Resources of Australia's Ranger project in the Northern Territory. Uranium processing did not resume at Ranger until early October and yielded almost 2.6 million pounds  $U_3O_8$  in 2014, which was 61% lower than the 6.5 million pounds produced in 2013. Production from BHP Billiton's Olympic Dam mine in South Australia slid slightly to 8.6 million pounds  $U_3O_8$  in 2014 compared to 8.8 million pounds  $U_3O_8$  in 2013. In April 2014, production commenced from Quasar Resources' majority-owned Four Mile ISR project in South Australia, with total production for 2014 reaching an impressive 1.7 million pounds  $U_3O_8$ . Uranium captured from Four Mile is processed at the Beverley plant. Production from the Beverley ISR mine was halted at the end of 2013.

### 2014 Top 10 Uranium Producing Countries



Niger kept pace ahead of Namibia as the fourth largest uranium-producing country in 2014, accounting for 10.5 million pounds  $U_3O_8$  and 7.2% of world production. However, total production dropped 9%, mainly due to fewer pounds from heap leaching at AREVA's SOMAÏR (Arlit) open pit operation. The SOMAÏR mine produced 6.1 million pounds  $U_3O_8$  in 2014, which was down almost 15% from production of 7.1 million pounds  $U_3O_8$  in 2013. AREVA's majority-owned COMINAK (Akouta) underground mine extracted 3.9 million pounds  $U_3O_8$  in 2014, which was nearly identical to 2013. CNNC has not reported production from its majority-owned Azelik mine in Niger, but UxC estimates production of 500,000 pounds  $U_3O_8$  in 2014, which is well below its target nominal capacity of 1.8 million pounds  $U_3O_8$ . Furthermore, CNNC announced in February of this year that Azelik production has been temporarily suspended due to poor economics.

Southern African production – Namibia, Malawi, and South Africa – totaled 10.7 million pounds  $U_3O_8$  in 2014, which was 31% lower than 2013's 15.6 million pounds  $U_3O_8$ . Most responsible for the decline was the cessation of production at Paladin Energy's Kayelekera open pit operation in Malawi in May 2014 and significantly lower production from Rio Tinto's Rössing open pit mine in Namibia. **Namibia** placed fifth among the world's largest uranium producing countries at 8.5 million pounds  $U_3O_8$ , which was 25% lower than in 2013. Rio Tinto's majority-owned Rössing mine processed only 3.4 million pounds  $U_3O_8$  in 2014, a decline of 36% from 2013 and a result of operational changes made in response to weak market conditions. Southeast of the Rössing mine, Paladin Energy's Langer Heinrich open pit mine yielded almost 5.1 million pounds  $U_3O_8$ , a decline of 7% from 2013's 5.4 million pounds  $U_3O_8$  as the company focused on reducing operating costs and improving process efficiencies.

Paladin Energy's Kayelekera mine in **Malawi** produced only 0.96 million pounds  $U_3O_8$  in 2014 before being placed

on care and maintenance in late May 2014. In 2013, Kayelekera production was just shy of 3 million pounds  $U_3O_8$ . The company said the Kayelekera shutdown was a direct consequence of the continuing deterioration in the uranium price at that time.

Uranium production in **South Africa** stemmed primarily from AngloGold Ashanti's Vaal River operation, which produced 1.3 million pounds  $U_3O_8$  in 2014 as a by-product of gold. This was down slightly from 1.4 million pounds  $U_3O_8$  in 2013. Sibanye Gold commenced uranium operations from its Cooke operation (formerly Ezulwini) and accumulated a stockpile of 180,000 pounds  $U_3O_8$  at the end of 2014. Uranium production for 2015 from Cooke is forecast to be 250,000 pounds  $U_3O_8$ .

**Russia** again took sixth place among uranium-producing countries in 2014, as the country produced an estimated 7.8 million pounds  $U_3O_8$ , which was slightly lower than production of 8.2 million pounds in 2013. Russia's flagship Priargunsky underground mine (JSC PIMCU) produced 5.1 million pounds  $U_3O_8$ , which was 8% lower than in 2013. JSC PIMCU stated the reduction is primarily attributed to the temporary suspension of operations at Mine No. 2 and optimization of mining operations at existing mines. Russia's two ISR projects, Dalur and Khiagda, produced an estimated 1.6 million pounds  $U_3O_8$  and 1.2 million pounds  $U_3O_8$ , respectively, in 2014.

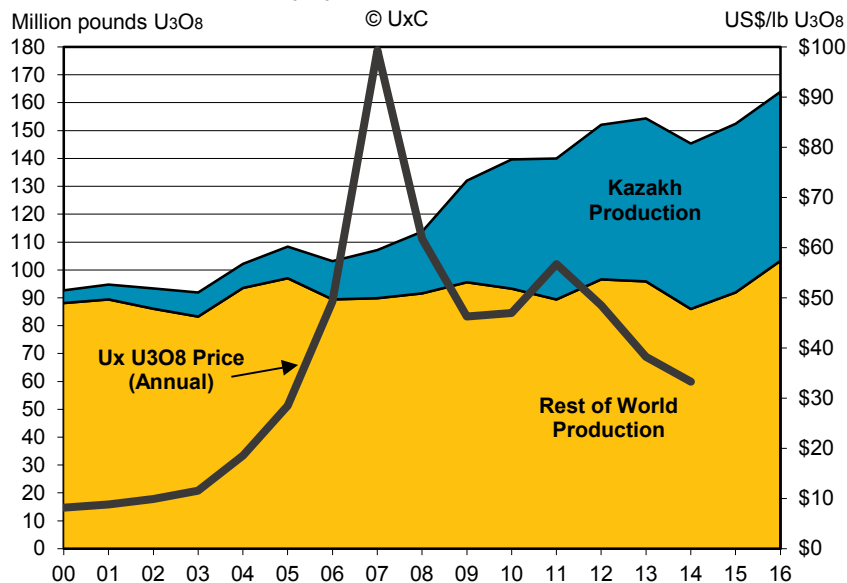
**Uzbekistan's** Navoi Mining and Metallurgical Combine (NMMC) processed an estimated 6.3 million pounds  $U_3O_8$  from the Nurabad, Uchkuduk, and Zafarabad ISR mining divisions in 2014. Although some older mines have been depleted, NMMC continues to work on placing a number of new mines into production and is continuing with modernization efforts.

**Ukraine's** VostGOK yielded an estimated 2.5 million pounds  $U_3O_8$  in 2014. However, it has been reported that the company has been experiencing difficulties obtaining some

reagents necessary for production. The Hydrometallurgical plant reportedly halted production for at least a month until VostGOK managed to secure supplies of ammonia carbonate from China.

**U.S.** production gained 7% in 2014 to 5.0 million pounds  $U_3O_8$  from 4.7 million pounds  $U_3O_8$  in 2013. Cameco's Smith Ranch-Highland ISR operation in Wyoming extracted 2.1 million pounds  $U_3O_8$  in 2014, up 26% from 2013 with new mine units and the North Butte satellite contributing to production. For 2015, Cameco expects to produce 1.4 million pounds  $U_3O_8$  from Smith Ranch-Highland, with the decrease a result of market conditions leading the company to defer some wellfield development. Cameco's Crow Butte ISR operation in Nebraska produced 590,000 pounds  $U_3O_8$  in

**Annual Ux  $U_3O_8$  Price vs. Uranium Production**



2014, which was 16% lower than 2013's 706,000 pounds  $U_3O_8$  due to a declining head grade. For 2015, Cameco expects Crow Butte to only produce 300,000 pounds  $U_3O_8$  as the head grade is expected to decline and no new wellfields are being developed under the current mine plan. Uranium One's Willow Creek ISR project in Wyoming yielded 563,000 pounds  $U_3O_8$  in 2014, which was 40% lower than 2013's 940,000 pounds  $U_3O_8$ . Production from existing wellfields at Willow Creek continues, but all new wellfield installation and construction activities were suspended at the end of Q2 2013 due to low uranium prices. In its second year of operation, Ur-Energy ramped up production at its Lost Creek ISR operation in Wyoming to 548,000 pounds  $U_3O_8$  in 2014 from 131,000 pounds  $U_3O_8$  in 2013. For 2014, Ur-Energy anticipated Lost Creek production will be near 600,000 pounds  $U_3O_8$ . Uranerz's Nichols Ranch ISR uranium project, which commenced production in June 2014, processed 199,000 pounds  $U_3O_8$  in 2014 and is currently ramping-up with a plan to reach near 500,000 pounds  $U_3O_8$  in 2015. In South Texas, Uranium Energy Corp.'s (UEC) Palangana ISR mine processed 27,000 pounds  $U_3O_8$  in 2014, as the company is operating the mine at a reduced pace and has deferred further pre-extraction expenditures in adapting to the challenging post-Fukushima environment. Energy Fuels' White Mesa mill in Blanding, Utah was the only operating conventional mill in the U.S, producing 942,000 pounds  $U_3O_8$  in 2014 sourced from conventional ore (552,000 pounds  $U_3O_8$ ) and alternate feed materials and other processing (390,000 pounds  $U_3O_8$ ). The 2014 production figure for White Mesa was 6% lower than 2013 production of 1.0 million pounds  $U_3O_8$ .

**2015 Outlook** – Based on formal company production plans, 2015 worldwide production is expected to reside in a range of 151-153 million pounds  $U_3O_8$ . Production declines are expected to stem from BHP Billiton's Svedala mill at Olympic Dam being out of service for several months. Subsequently, UxC estimates Olympic Dam production will likely drop by ~3 million pounds  $U_3O_8$  in 2015. Additionally, there is uncertainty surrounding how quickly Rössing's Final Product Recovery (FPR) will be back online following a fire there in February, which damaged cacliners that are in the process of being replaced. The most significant gain in 2015 production is expected to come from Canada, which is slated to increase 2015 production by almost 7 million pounds  $U_3O_8$  with ramp-up of the Cigar Lake underground mine to between 6-8 million pounds  $U_3O_8$ . Kazatomprom is also expected to increase production by over 2% to 23,400 tU (~60.8 million pounds  $U_3O_8$ ) in 2015.

With spot uranium prices still under \$40 per pound  $U_3O_8$ , UxC forecasts that some production targets could still be reduced in 2015. Also, with a number of new projects still ramping-up, production targets often tend to be overly optimistic. Accordingly, UxC forecasts that 2015 world production will likely reside in a range of 148-152 million pounds  $U_3O_8$ . Given projected demand of 177 million pounds  $U_3O_8$

for 2015 and secondary supplies totaling ~39 million pounds  $U_3O_8$ , a net surplus in the range of 10-14 million pounds  $U_3O_8$  is anticipated.

## News Briefs

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### Judge in Japan rules against restart of Takahama 3 and 4

The Fukushima District Court in Japan has approved a provisional injunction that prevents Kansai Electric Power Co. from restarting Units 3 and 4 at the Takahama nuclear power plant. The ruling was in response to a lawsuit filed by nine residents of Fukui and other prefectures. The court's decision comes in spite of approval by the Nuclear Regulation Authority (NRA) for Kansai's plans to restart the two reactors. Kansai Electric is appealing the ruling. "After verifying the details of the decision statement, we will move swiftly to submit an appeal and make the best efforts to claim and substantiate the safety of Units 3 and 4 at Takahama Nuclear Power Station in order for the Court to revoke the decision of provisional disposition as early as possible so that impact to the process toward resumption of operation should be minimized," said the utility in an April 14 press release.

The two units were expected to resume operation in November 2015, but the court's ruling is likely to delay the restart. The court's presiding judge, Hideaki Higuchi, is viewed as unfavorable to nuclear energy based on a ruling he issued a ruling last year against the restart of Units 3 and 4 at the Ohi nuclear power plant. The NRA has stated that in spite of the court's ruling, it sees no reason to change its regulatory process.

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### Court could decide Wednesday whether to block restart of Sendai 1 and 2

This Wednesday (April 22), the Kagoshima district court in Japan is expected to decide whether to issue a provisional injunction that would block the restart of Units 1 and 2 at the Sendai nuclear power plant. The two reactors at Sendai are expected to be the first in Japan to resume operation. If the court decides against an injunction, Sendai 1 and 2 could be back online as early as June 2015.

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### EIA reference case sees total U.S. nuclear generation increasing 6% by 2040

In its recently released *2015 Annual Energy Outlook*, the U.S. Energy Information Administration (EIA) has projected that nuclear energy will account for a lower percentage of total U.S. electricity generation in 2040 when compared to today; however, its expectations for nuclear capacity have increased compared to its *2014 Annual Energy Outlook*. In its reference case, the EIA sees total U.S. electricity generation increasing to 4,797 billion kilowatt hours in 2040 as compared to 3,836 billion kWh in 2013. The reference case sees total electricity generation from nuclear power increasing by 6% to 833 billion kWh in 2040 as compared to its level of 789

billion kWh in 2013. Nuclear’s share of total electricity generation in 2040 under the reference case is expected to be 16%, which represents a slight increase when compared to last year’s EIA projections. Nuclear power was responsible for 19.4% of total electricity generation in 2013. The EIA’s 2015 reference case sees retirement of nuclear capacity from 2013 to 2020 to be 4 gigawatts less than what was projected by the 2014 reference case. The full EIA Annual Energy Outlook is available at [http://www.eia.gov/forecasts/aeo/pdf/0383\(2015\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2015).pdf).

**China’s State council approves construction of indigenous reactors**

China’s State Council has granted authorization for construction of two demonstration reactors at the Fuqing nuclear power plant using the nation’s indigenous Hualong-1 design. The construction of the two 1,150-megawatt reactors, Units 5 and 6 at Fuqing, was previously approved by China’s National Development and Reform Commission. China has full intellectual property rights for the Hualong-1 reactor, as opposed to China’s CPR-1000 reactor design based on French technology, where AREVA retains some intellectual property rights. Site preparation for Fuqing 5 are already in progress, and full construction on the reactor is likely to begin in mid-2015.

**ConverDyn lawsuit hearing scheduled**

The U.S. District Court has scheduled a status conference hearing for the case “14-cv-1012: ConverDyn V. Moniz et al.” The status conference will occur on May 8, 2015, at 9:45AM in Washington D.C. with the Honorable Judge Reggie B. Walton presiding.

Judge Walton previously delayed an earlier status conference set for December 18, 2014 as the Court had not received summary judgment motions filed by both parties due to a number of pending dispositive motions on its docket. On June 13, 2014, ConverDyn filed for declaratory and injunctive relief against Ernest J Moniz, Secretary of the U.S. Department of Energy (DOE), and the U.S. DOE for violations of the U.S. Enrichment Corporation Privatization Act. ConverDyn said it brought this action to stop the DOE from unlawfully transferring large quantities of uranium currently in the government’s possession in various forms. The injunction, declares, “The transfers would have an immediate and ongoing impact on the market for uranium conversion services, would harm the United States’ domestic conversion industry, and threaten the United States’ energy security and energy dependence.”

**Turkey marks start of work on first nuclear power plant**

Turkey held a ceremony on April 14 to mark the start of work on its first nuclear power plant at Akkuyu. The plant will eventually have four 1,200 megawatt VVER 1200 reactors. Despite the groundbreaking ceremony, full official con-

<b>EIA - U.S. Nuclear Power Plant Operations</b>					
Yr	Net Gen. (MMkWh)	Summer Net Cap. (MkW)	Capacity Factor (%)	Operable Reactors	Nuclear % of Net Generation
73	83,479	22,683	53.5%	42	4.5%
74	113,976	31,867	47.8%	55	6.1%
75	172,505	37,267	55.9%	57	9.0%
76	191,104	43,822	54.7%	63	9.4%
77	250,883	46,303	63.3%	67	11.8%
78	276,403	50,824	64.5%	70	12.5%
79	255,155	49,747	58.4%	69	11.4%
80	251,116	51,810	56.3%	71	11.0%
81	272,674	56,042	58.2%	75	11.9%
82	282,773	60,035	56.6%	78	12.6%
83	293,677	63,009	54.4%	81	12.7%
84	327,634	69,652	56.3%	87	13.6%
85	383,691	79,397	58.0%	96	15.5%
86	414,038	85,241	56.9%	101	16.6%
87	455,270	93,583	57.4%	107	17.7%
88	526,973	94,695	63.5%	109	19.5%
89	529,355	98,161	62.2%	111	17.8% *
90	576,862	99,624	66.0%	112	19.1%
91	612,565	99,589	70.2%	111	19.9%
92	618,776	98,985	70.9%	109	20.1%
93	610,291	99,041	70.5%	110	19.1%
94	640,440	99,148	73.8%	109	19.7%
95	673,402	99,515	77.4%	109	20.1%
96	674,729	100,784	76.2%	109	19.6%
97	628,644	99,716	71.1%	107	18.0%
98	673,702	97,070	78.2%	104	18.6%
99	728,254	97,411	84.9%	104	19.6%
00	753,895	97,860	88.1%	104	19.8%
01	768,826	98,159	89.3%	104	20.0%
02	780,064	98,657	90.6%	104	20.3%
03	763,733	99,209	87.8%	104	19.7%
04	788,527	99,988	90.1%	104	19.9%
05	781,987	99,988	89.3%	104	19.3%
06	787,218	100,334	89.6%	104	19.4%
07	806,426	100,266	91.3%	104	19.4%
08	806,207	100,755	91.1%	104	19.6%
09	798,854	101,004	90.3%	104	20.2%
10	806,966	101,167	91.1%	104	19.6%
11	790,205	101,419	89.1%	104	19.2%
12	769,331	101,855	86.1%	104	19.0%
13	789,016	99,240	89.9%	100	19.4%
J	73,064	99,225	99.0%	100	19.4%
F	62,639	99,225	93.9%	100	19.3%
M	62,397	99,225	84.5%	100	18.8%
A	56,385	99,225	78.9%	100	18.9%
M	62,947	99,225	85.3%	100	19.4%
J	68,138	99,225	95.4%	100	19.0%
J	71,940	99,225	97.4%	100	18.7%
A	71,129	99,225	96.3%	100	18.5%
S	67,535	99,225	94.5%	100	19.9%
O	62,391	99,225	84.5%	100	19.8%
N	65,140	99,225	91.2%	100	20.5%
D	73,363	98,621	99.5%	99	21.8%
14	797,068	98,621	91.7%	99	19.5%

\* 1989 includes non-utility facilities.

struction on the plant is unlikely to begin until early 2017. The first of four reactors at Akkuyu could be completed as early as 2021.

Turkish Energy Minister Taner Yildiz and Rosatom Direc-

tor General Sergey Kiriyyenko laid the cornerstone for the construction of the plant during the Akkuyu groundbreaking ceremony. Yildiz told *World Nuclear News*, “[Economic] development cannot take place in a country without nuclear energy.” He further stated that if the Akkuyu plant had been constructed a decade ago, then Turkey would have saved an average of US\$14 billion in natural gas purchases.

### EDF says construction continuing for Unit 3 at Flamanville

In an April 20 press release, EDF confirmed that construction was continuing for Unit 3 at the Flamanville nuclear power plant in spite of previously discovered reactor vessel anomalies (*UxW29-15*, Apr. 13, 2015). According to the press release, AREVA and EDF are currently making preparations for new testing procedures to demonstrate that reactor equipment complies with new safety standards.

EDF said in a statement that the manufacturing techniques used in the Flamanville 3 reactor vessel complied with regulations. “On the basis of the information available at this stage, EDF can confirm that work can continue on Flamanville’s EPR site,” stated EDF’s release. AREVA is scheduled to supply two EPR reactors at Hinkley Point in England, and EDF is currently in talks with the requisite authorities to build the Hinkley Point facility.

### Cameco signs uranium supply agreement with India

Cameco Corp. announced on April 15 that it signed a supply agreement with India’s Department of Atomic Energy (DAE) to supply 7.1 million pounds  $U_3O_8$  under a long-term contract that extends through 2020. The landmark uranium supply deal is Cameco’s first with India. Currently, India operates 21 nuclear reactors for 6,000 MWe of nuclear capacity. Another six reactors for 4,300 MWe are currently under construction in the country, and are slated to come online in 2017. By 2032, India projects over 45,000 MWe in nuclear capacity.

Cameco President and CEO Tim Gitzel told *The Wall Street Journal* on April 15 that the value of the supply agreement will be determined by market pricing at the time of delivery. Based on today’s spot Ux  $U_3O_8$  Price of \$38.85, 7.1 million pounds  $U_3O_8$  would be worth approximately US\$276 million.

The export of Canada’s uranium to India for civil nuclear power purposes was authorized under the Canada-India Nuclear Cooperation agreement, which entered into force in September 2013. Cameco President and CEO Tim Gitzel stated, “This contract opens the door to a dynamic and expanding uranium market. Much of the long-term growth we see coming in our industry will happen in India and this emerging market is key to our strategy.”

### Denison announces successful completion of winter 2015 drill season

Denison Mines Corp. announced on April 15 that it suc-

## Industry Calendar

- April 21-23, 2015  
**World Nuclear Fuel Cycle**  
NEI/WNA  
<http://www.wnfc.info/>  
Marriot Prague Hotel, Prague, Czech Republic
- April 23-24, 2015  
**Asia Nuclear Business Platform**  
Industry Platform  
<http://www.nuclearbusiness-platform.com/asia>  
Hong Kong Convention and Exhibition Centre, China
- May 12-14, 2015  
**NAYGN/Nuclear Energy Assembly**  
NEI  
<http://www.nei.org/newsandevents/>  
Marriott Marquis Washington, Washington, DC, USA
- May 21-22, 2015  
**China Nuclear Energy Congress**  
China Decision Makers  
<http://www.cdmc.org.cn/2015/cnec/>  
Beijing, China
- June 7-9, 2015  
**WNFM 42<sup>nd</sup> Annual Meeting**  
World Nuclear Fuel Market  
<http://www.wnfm.com/annualmeeting/>  
Le Méridien Etoile, Paris, France
- June 9-10, 2015  
**AusIMM International Uranium Conference 2015**  
AusIMM  
<http://www.uranium2015.ausimm.com.au/>  
Adelaide Convention Centre, Adelaide, Australia
- June 9-11, 2015  
**2<sup>nd</sup> MENA Nuclear Energy Summit 2015**  
Neoventure Corp.  
<http://event.neoventurecorp.com/nuclear/mena>  
Istanbul, Turkey
- June 23-25, 2015  
**UxC Utility Nuclear Fuel Procurement Seminar**  
The Ux Consulting Company, LLC  
<http://www.uxc.com/>  
W Buckhead, Atlanta, GA, USA
- July 12-15, 2015  
**U.S. Women In Nuclear (WIN) Conference**  
Nuclear Energy Institute  
<http://www.nei.org/Conferences>  
Hilton Austin, Austin, TX, 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)

cessfully completed its winter 2015 exploration drilling campaign in Saskatchewan’s Athabasca Basin. Under the winter 2015 drill program, Denison completed a total of 30,400 meters in 61 drill holes across seven projects. Furthermore, Denison reported that an additional 12,700 meters was completed in 32 drill holes on projects operated by Denison’s Joint Venture (JV) partners.

At the company’s Wheeler River project, 26 drill holes were completed for a total of 17,700 meters during the winter 2015 drill program. The best drill result was found in hole

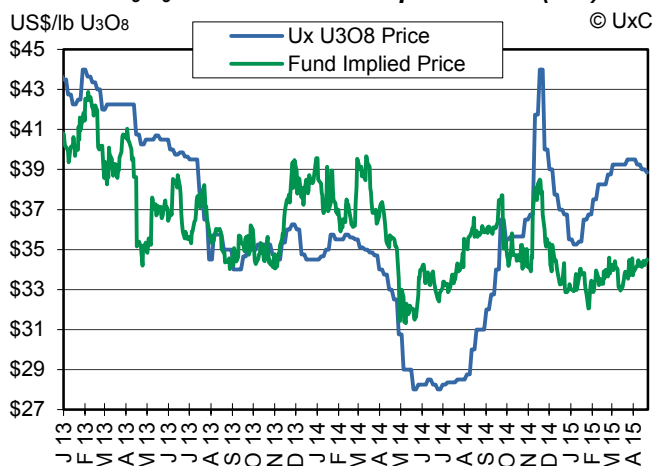
WR-584B, which intersected 9.0%  $U_3O_8$  over 4.6 meters. Additionally, 14 drill holes were completed to explore for additional zones of mineralization located south of Wheeler River's Gryphon Zone. Targets located south of Gryphon returned weak uranium mineralization in the basement near the unconformity, which the company will further explore as part of the upcoming summer 2015 drill program.

At the Mann Lake uranium project, Denison reported that drilling in 2015 was designed to explore for extensions of uranium mineralization intersected in 2014 drill programs. In total, 7,570 meters was completed in 11 drill holes in the 2015 winter drill campaign, with hole MN-060 returning the best hole of 9.8%  $U_3O_8$  over 3.5 meters at the unconformity. The company reported that the final drill hole of the season was stopped short of the target depth due to spring break-up. Project operator, Cameco Corp., plans to complete the drill hole in June. Mann Lake is located 20 kilometers southwest of the McArthur River uranium mine and is a JV with Cameco (52.5% and operator), Denison (30%), and AREVA Resources Canada Inc. (17.5%).

At the Hatchet Lake uranium property, a total of 2,547 meters of drilling was completed in nine drill holes at the Tuning Fork grid area. This program intersected intense basement clay alteration with elevated uranium values. Denison contends that the intensity of the alteration and geochemical results warrant further drilling in the future. Hatchet Lake is a JV with Anthem Resources Inc. (41.9%) and Denison (58.1%), which is the project operator.

Denison also participated in drilling programs at seven other properties during the winter 2015 program. Six of these properties were operated by AREVA Resources Canada. The Denison-operated programs were completed at Moore Lake, Lynx Lake, Crawford Lake, Hatchet Lake, Turkey Lake, and Waterbury Lake. Denison will continue its exploration program this summer, with drilling expected to occur on eight properties: Wheeler River, Bell Lake, Murphy Lake, Waterbury Lake, Jasper Lake, Stevenson River, Crawford Lake, and Bachman Lake.

**Ux  $U_3O_8$  Price vs. Fund Implied Price (FIP)**



## Forte Energy files new license application over Kuriskova

Forte Energy NL announced on April 16 that its Slovakian subsidiary, Ludovika Energy, had filed a new exploration license for the same area as the Kuriskova uranium deposit in Slovakia. The current Kuriskova exploration license has been valid for 10 years and will expire on April 19, 2015. The Slovakian Ministry of the Environment issued a statement on April 16 that it will deny Ludovika's application for a further license extension. Thus, Forte expects to receive official notification in due course. The company was denied a license extension that the Ministry of the Environment was reluctant to grant another 10-year extension, although there was no legal reason to deny the extension.

Therefore, in accordance with the Ministry, Ludovika Energy has applied for a new exploration license covering 14.73 square kilometers, including the area of the currently defined Kuriskova resource area. It is estimated that the new license will be granted in the normal course of business for an initial 4-year period with the ability to extend that term to 10 years. Furthermore, the company stated that it will take all measures necessary to protect its interest in Slovakia.

## Fission announces drill results from R780E zone at PLS project

Fission Uranium Corp. announced on April 16 that it received assay results from four drill holes at the R780E zone of the PLS property. Highlights include: 10.5 meters grading 1.6%  $U_3O_8$ , 4.0 meters grading 5.40%  $U_3O_8$ , and 1.5 meters grading 14.07%  $U_3O_8$ . Fission reported that the 2015 winter drill program is now complete with a total of 28,296 meters drilled in 88 drill holes.

## Vimy Resources upgrades Mulga Rock resource

On April 20, Vimy Resources Ltd. announced the results from the updated Ambassador resource estimate for its Mulga Rock uranium project in Australia. The estimate was completed by Coffey Mining and is based on an extensive infill uranium project that was completed earlier this year. The key highlights from the upgrade at the Ambassador deposit include: a 30% increase in average grade to 0.061%  $U_3O_8$ ; a 33% increase in the Ambassador resource to 37.5 million pounds  $U_3O_8$ , and a 12% increase in total Mulga Rock resources to 72.7 million pounds  $U_3O_8$  at 0.055%  $U_3O_8$ .

The Mulga Rock uranium project is 100%-owned and operated by Vimy Resources and is located approximately 240 kilometers east of Kalgoorlie. The Mulga Rock East deposit comprises both the Princess and Ambassador deposits, which will form the first stage of potential mine development at Mulga Rock. To date, Mulga Rock has realized 813 aircore and RC drill holes for a combined total depth of 53,926, and a further 229 diamond drill holes for 12,148 meters.

# The Market

## Uranium Spot Market

Although market activity may pick up this week as many are gathered at the WNFC meetings in Prague, the spot market has been very quiet in the weeks leading up to the conference. Only a limited amount of activity has been reported over the past week. Since the last week or so of March, spot activity has declined notably as buyers have appeared to be inactive. And after price increases almost every week since the beginning of the year, the recent flattening and slipping of the spot price has done little in the way of enticing buyers back to the market. However, some interest remains, and a non-U.S. utility entered the spot market over the past week seeking delivery of about 260,000 pounds U<sub>3</sub>O<sub>8</sub>. Based on recent activity as well as current bids and offers, the Ux U<sub>3</sub>O<sub>8</sub> Price declines this week by \$0.15 to \$38.85 per pound.

The recent Indian term U<sub>3</sub>O<sub>8</sub> award, discussed below and on page 6, has given some a more hopeful outlook on the market. A number of market participants are now looking towards the next round of mid or longer-term requests to hit the market to see if that will spark more activity in the spot market. At least one non-U.S. utility is expected to enter the market in the near term for a term U<sub>3</sub>O<sub>8</sub> request.

## UxC Broker Average Price

The UxC Broker Average Price (BAP) began the week on Tuesday down \$0.07 to \$39.06. After dropping to \$39.00 on Wednesday and remaining there through Thursday, the midpoint broke below the \$39.00 level on Friday at \$38.88, down \$0.12 on the day. Today's UxC BAP is \$38.88, unchanged on the day and down \$0.25 from last Monday's \$39.13. The

BA Bid is \$38.50 down \$0.25 from last Monday's \$38.75 and the BA offer is \$39.25 down \$0.25 from last Monday's \$39.50.

## Fund Implied Price (FIP)

Fund Implied Prices (FIP) began Tuesday up \$0.19 to \$34.32. By week's end on Friday, the FIP was showing \$34.22, unchanged from Thursday. With the lack of activity in the spot market over the past couple of weeks, and the slight decline in the physical spot price, it is not surprising that the FIP has registered little movement over the past week. Today's FIP is \$34.50, up \$0.28 from Friday and up \$0.37 from Monday's \$34.13. The latest FIP information can be found in the chart on page 7.

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

The CME Group futures market for uranium remained unchanged during the week as no new contracts were booked. Pricing realized the most substantial change with the strip dropping an average of approximately \$0.30 throughout the week. For the latest futures market prices, please refer to the table on page 10.

As there were no new contracts booked during the week, the 2015 annum total again remains unchanged at 1,192 contracts (298,000 pounds U<sub>3</sub>O<sub>8</sub>). Total open interest also remained unchanged from last week at 4,539 contracts (1,134,750 pounds U<sub>3</sub>O<sub>8</sub>).

## Uranium Term Market

Additional activity was reported over the past week as a producer announced a term contract award with India involving about 7.1 million pounds U<sub>3</sub>O<sub>8</sub> with delivery through 2020 (see page 6). A U.S. utility is nearing its final decision based on offers for term delivery starting in 2018. Limited

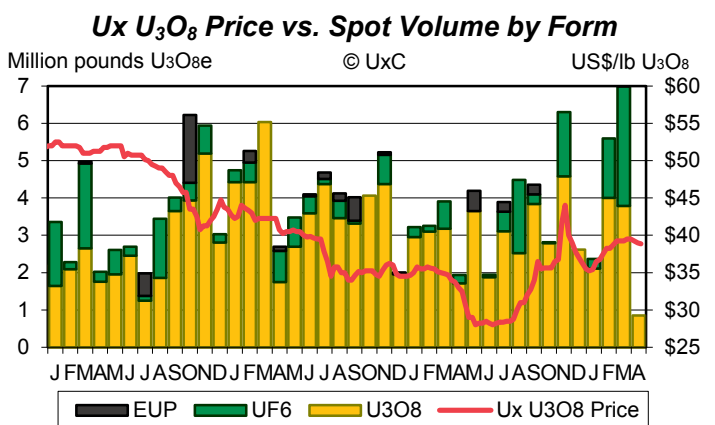
UxC Market Statistics				
Monthly (Apr)	Spot		Term	
	Volume	# Deals	Volume	# Deals
U <sub>3</sub> O <sub>8</sub> e (million lbs)	0.8	8	W	4
Conv. (thousand kgU)	0	0	0	0
SWU (thousand SWU)	0	0	0	0
2015 Y-T-D				
	Spot		Term	
	Volume	# Deals	Volume	# Deals
U <sub>3</sub> O <sub>8</sub> e (million lbs)	15.9	94	W	7
Conv. (thousand kgU)	>2,000	16	W	2
SWU (thousand SWU)	W	3	W	4

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. 2015.

Uranium (Range: -17 to +17)	0 [up 1 point]
Conversion (Range: -16 to +16)	0 [unchanged]
Enrichment (Range: -18 to +18)	-5 [up 1 point]
<b>Platts Forward Uranium Indicator</b>	<b>\$38.50-\$39.50</b>
A forward one-week outlook.	As of 4/17/15 (US\$/lb)



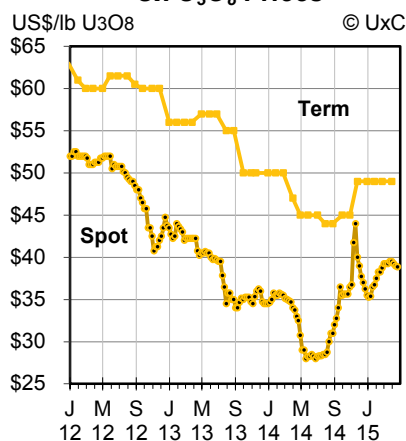
## Gambling

When I go to casinos, the most ridiculous sign I see is the one that says: "If you have a gambling problem, call 1-800-GAMBLER."

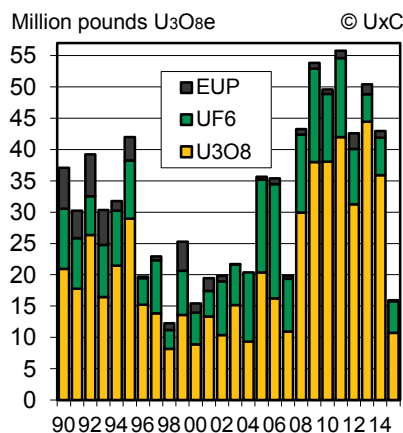
I thought about it for a moment and dialed the number. When they answered I said, "I have an ace and a six. The dealer has a seven. What do I do?"



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



**Annual Spot Uranium Volumes**



off-market demand interest continues, and additional demand is still expected over the next couple of months. As noted last week, after this latest round of awards, the term market could quiet down for a short period. However, a non-U.S. utility is expected to enter the market shortly with what could be a sizeable term request, and another non-U.S. utility is likely to post its term request for UF<sub>6</sub>/EUP for five or six reloads with delivery starting in 2017. Thus, term activity could potentially pick up as we head into late spring.

one for UF<sub>6</sub>/EUP in the next couple of months, and the other could enter the market over the next several weeks for conversion services.

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

As many market participants are enjoying the week in Prague, conversion has been one of the discussion topics in the working groups and hallway meetings; yet, conversion market activity continues to be quiet. Over the past week, no new spot or term demand or transactions involving conversion were reported. A non-U.S. utility is nearing a selection based on its evaluation of offers for conversion contained in EUP with delivery later this year and into 2016. In the term market, a non-U.S. utility is evaluating offers for up to 400,000 kgU as conversion services with delivery over the 2016 to 2019 time period. Outside of this, activity is relatively low with no awards or new demand reported for the week. A couple of non-U.S. utilities are planning to enter the market,

**Ux Price Indicators (€ Equiv\*\*)**

<b>Weekly (4/20/15)</b>		1 US\$ = .93115€	
<b>Ux U<sub>3</sub>O<sub>8</sub> Price</b>		<b>\$38.85</b>	<b>€36.18</b>
<b>Mth-end (3/30/15)</b>		1 US\$ = .92424€	
<b>U<sub>3</sub>O<sub>8</sub></b>	Spot	<b>\$39.50</b>	<b>€36.51</b>
	Long-Term	<b>\$49.00</b>	<b>€45.29</b>
<b>Conversion</b>	NA Spot	<b>\$7.50</b>	<b>€6.93</b>
	NA Term	<b>\$16.00</b>	<b>€14.79</b>
	EU Spot	<b>\$8.00</b>	<b>€7.39</b>
<b>UF<sub>6</sub> Spot</b>	EU Term	<b>\$17.00</b>	<b>€15.71</b>
	NA Price	<b>\$109.00</b>	<b>€100.74</b>
<b>SWU</b>	NA Value*	<b>\$110.71</b>	<b>€102.31</b>
	EU Value*	<b>\$111.21</b>	<b>€102.78</b>
<b>EUP</b>	Spot	<b>\$79.00</b>	<b>€73.01</b>
	Long-Term	<b>\$90.00</b>	<b>€83.18</b>
<b>EUP</b>	NA Spot**	<b>\$1,624</b>	<b>€1,501</b>
	NA Term**	<b>\$2,033</b>	<b>€1,879</b>

**Enrichment & EUP**

The enrichment market has been quiet over the past week with no new demand or transactions reported for either spot or term delivery. A non-U.S. utility is evaluating offers for EUP with delivery later this year and into 2016, and several others continue to pursue options for either SWU or EUP. While a U.S. utility is also evaluating offers for spot delivery, little other spot enrichment activity has been recently reported. In the term market, activity remains moderate, but a recent round of evaluations is expected to reach a conclusion in the near term. A U.S. utility is finalizing its evaluation of offers for over a million SWU with delivery starting after 2020. Another U.S. utility is evaluating offers for term delivery starting in 2016. A couple of non-U.S. utilities are expected to enter the market over the next quarter, one seeking about five or six reloads and the other for mid-term delivery.

**Ux Price Indicator Definitions**

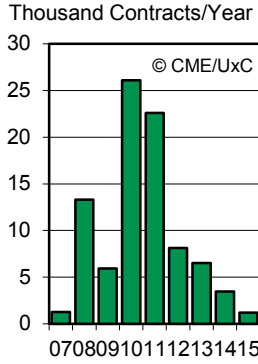
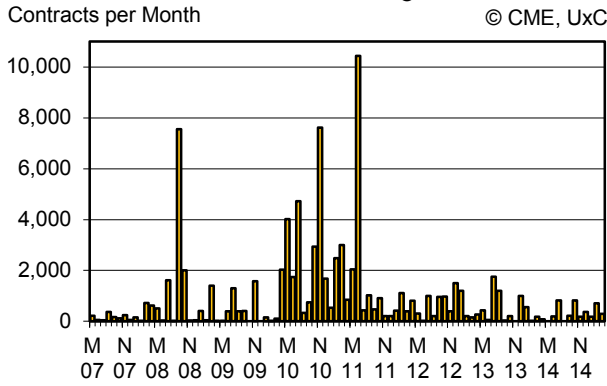
The Ux Spot Prices indicate, subject to the terms listed, the most competitive offers available for the respective product or service of which The Ux Consulting Company, LLC (UxC) is aware, taking into consideration information on bid prices for these products and services and the timing of bids and offers as well. The Ux U<sub>3</sub>O<sub>8</sub> Price (Spot) includes conditions for delivery timeframe (≤ 3 months), quantity (≥ 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 (≥ 24 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 (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.

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.

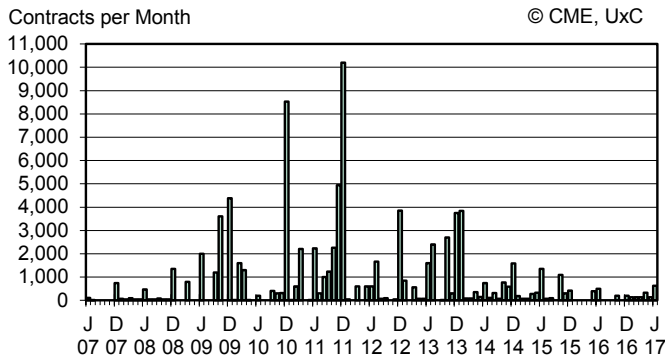
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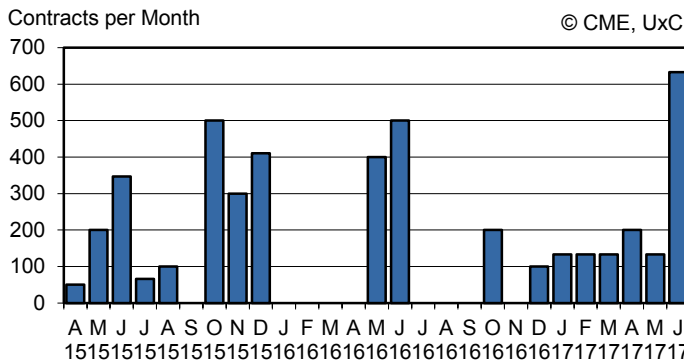
**CME/NYMEX UX Futures Activity**  
**Total Contracts by Transaction Month, by Transaction Year**



**Total Contracts by Settlement Month**



**Open Interest by Settlement Month**

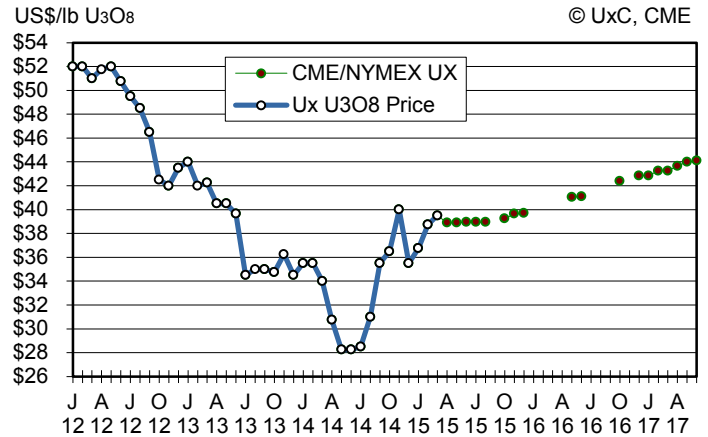


**CME Uranium U<sub>3</sub>O<sub>8</sub> (UX) Futures**

**Activity as of April 17, 2015**

Settlement	Price	Volume	Open
Jul 2014	\$28.50	115	N/A
Aug 2014	\$31.00	315	N/A
Sep 2014	\$35.50	75	N/A
Oct 2014	\$36.50	772	N/A
Nov 2014	\$40.00	584	N/A
Dec 2014	\$35.50	1,582	N/A
Jan 2015	\$36.75	186	N/A
Feb 2015	\$38.75	66	N/A
Mar 2015	\$39.50	69	N/A
Apr 2015	\$38.90	282	50
May 2015	\$38.90	332	200
Jun 2015	\$38.95	1,351	347
Jul 2015	\$38.95	66	66
Aug 2015	\$38.95	100	100
Oct 2015	\$39.25	1,100	500
Nov 2015	\$39.65	300	300
Dec 2015	\$39.70	418	411
May 2016	\$41.05	400	400
Jun 2016	\$41.10	500	500
Oct 2016	\$42.40	200	200
Dec 2016	\$42.85	200	100
Jan 2017	\$42.85	133	133
Feb 2017	\$43.25	133	133
Mar 2017	\$43.25	133	133
Apr 2017	\$43.65	333	200
May 2017	\$44.00	133	133
Jun 2017	\$44.10	633	633
<b>*From May 2007</b>	<b>Totals:</b>	<b>88,500*</b>	<b>4,539</b>

**Ux U<sub>3</sub>O<sub>8</sub> 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 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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**Ux U<sub>3</sub>O<sub>8</sub> Price vs. UxC Broker Average Price (BAP)**

