

## Shock and Sadness

*We at UxC wish to express our deepest sympathy for the people of Japan following the catastrophic earthquake and ensuing massive tsunami that struck the nation on Friday, March 11, 2011. Based on our direct knowledge of the Japanese people as family, friends, and business associates, we are confident that they will endure this disaster with courage and grace and, in time, recover from the effects of this tragic event. We also are optimistic that they will succeed in prudently handling the serious nuclear events triggered by the sudden, overwhelming, and nearly simultaneous natural disasters that struck the north-eastern part of Honshu.*

The reactor incidents in Japan are clearly something that we would rather not have to analyze but that is our job, and this is by far the largest single development to hit the market in some time. We also want to state at the outset that the full impact of these incidents is unknown so any observations offered here will necessarily be of a preliminary nature. A discussion of what has transpired so far is covered in a news brief on page 3 and will not be repeated here. The salient points are as stated below.

Three nuclear reactors (units 1, 2, and 3 of Fukushima-I in northeast Japan) have experienced loss of coolant accidents (LOCAs) and station blackouts as a result of Friday's earthquake and resulting tsunami. Primary containment of core radioactive materials is reported to be maintained, but fuel failures within the containment have occurred. The secondary containment structures for units 1 and 3 have experienced hydro-

gen gas explosions. As we were going to press, we learned that there was an explosion at unit 2.

### **Impact on Nuclear Power**

In the aftermath of the accidents, countries around the world have been making pronouncements relating to the future of nuclear power. Russia's Prime Minister Vladimir Putin has said it will not affect Russia's nuclear power's program. China has made similar announcements, as have officials in South Korea. This is important since these are three of the countries that have been leading the nuclear renaissance.

On the other end of the spectrum, Germany's Chancellor Angela Merkel announced that her government intends to suspend for three months the recent new law to extend the life of that country's 17 reactors to analyze the impacts of the Japanese situation. While some of this may be related to upcoming state elections, we would not be surprised to see at least some of the reactors shut down sooner as a result of increased anti-nuclear sentiment in Germany.

We would tend to discount any statements from governments (unless they result in definitive actions like Germany's) since it is too early to know all of the ramifications from the incidents in Japan. These positions could well change over time as more information becomes available and particularly when the political reaction is fully factored in.

Obviously, this development is not good for nuclear power. It immediately impacts the level of installed nuclear

**Ux U<sub>3</sub>O<sub>8</sub> Price: (3/14/11)  
\$60.00 (-\$6.50)**

**Ux LT U<sub>3</sub>O<sub>8</sub> Price: (2/28/11)  
\$73.00**

capacity by the Japanese reactors taken off-line by the incident. There could be additional reactors in Japan directly affected by the incident and taken off line. Clearly, Fukushima Daiichi Units 1, 2, and 3 will be decommissioned, and other units at that site may also not be restarted. This event almost certainly will result in a delay in new reactor builds in Japan.

Other countries that could be affected by the development are those susceptible to tsunamis that are currently considering nuclear, such as Indonesia or the Philippines. These countries will likely delay, if not cancel, plans to build reactors. Other reactors planned in coastal areas, including those in China, may have to be re-evaluated or built with additional safeguards (adding to costs).

This incident could also affect the prospects for nuclear power in other countries that are not subject to the same seismic or geographical situations as Japan. Germany's moratorium is one example but obviously Germany was not an engine of nuclear growth. The question is what will happen in countries like Italy that already abandoned its nuclear program once. Italy's government has announced that it will proceed as before with plans to build new reactors; however a country-wide referendum is scheduled for June this year, and if a majority vote is reached, the country's nuclear power ban will be reestablished.

It should still be pointed out that nuclear power is too important a part of the world's energy mix to be abandoned to any appreciable degree. Oil prices are

rising and recent political developments underscore the undesirability of a long-term dependence on foreign oil. Concerns about climate change raise issues with other fossil fuels and highlight nuclear's advantage in this area.

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### ***Impact on the Market***

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The impact on the nuclear fuel markets comes in several ways. Since this is not good news for nuclear power, there has been an almost immediate kneejerk reaction of a sell-off, both in terms of equities and the commodity, as considerable uncertainty has been interjected into the market. Frankly, we were surprised that price did not show more of a reaction on Friday. While the full scale of this incident was not known on Friday (and is still not fully known), by afternoon EDT it was known that reactors were damaged. The delayed reaction is a sign of a still immature market.

The market reacted as we would have expected today (Monday) with our daily price (the UxC BAP) experiencing by far its largest one-day drop since it was started in June 2009.

Still, despite these developments, it is the case that the market has had fairly

strong fundamentals for some time now and even after a slight retrenchment after the sell-off of the most recent tranche of DOE inventory, price was again recovering. From this perspective, the news is hitting a market that has been under upward pressure for some time now, a fact that tends to mitigate the impact on price, as opposed to it occurring when the market was under general downward pressure. If this were the case, you could have seen a full capitulation.

In an odd way, the German reaction likely has the largest immediate impact from a country perspective. Germany was certainly not a factor in the nuclear renaissance, but when it passed its reactor life extension law, in a way it created new demand for the market, as German utilities had to enter the market to cover these needs. Now that Germany has suspended this law for three months (see page 4), this demand is potentially removed from the market, which has a downward impact on price.

In the short term, or until price falls sufficiently to stimulate new buying interest, recent developments will make it less likely that investors will enter the

market for financial reasons as the prospects for nuclear power are not as good as before. In addition, investors are now confronted with a situation that they really do not understand, a circumstance that is not conducive to investment or speculation.

Going forward, the shutdown of reactors in Japan mean that less fuel will be consumed, possibly causing a deferral of deliveries under long-term contracts or a sale of any excess inventory that is built up. It is also possible that other reactors will be temporarily shut down for inspection or retrofitting as a result of the incident. As mentioned above, it is likely that the rate of global nuclear growth will be slowed, resulting in a slower growth of uranium demand.

However, the effects are not just limited to the demand side. Any reduction in the prospects for nuclear power expansion makes it less likely that there will be entry and investment on the production side. There could also be more consolidation on the supply side, to the extent that nuclear power growth and market prospects dim and smaller companies are less willing to take on the risk to bring properties into production. The-

#### **Fukushima Daiichi Sequence of Events**

- The fifth largest earthquake in recorded history struck in the Pacific Ocean near northeastern Japan
- Japanese nuclear reactors on the nearby coast automatically shut down as designed
- Offsite electrical power at the Fukushima-I site with six reactors was lost and this disabled the normal coolant flow through the operating reactors' coolant systems (RCSs)
- The emergency core cooling systems activated as designed, using dedicated diesel generators to supply electricity to auxiliary pumps that deliver water to the RCSs under emergency conditions
- The tsunami created by the earthquake overran the seawall surrounding the plant and flooded portions of the buildings housing the diesel generators.
- As a result of this series of events, two units experienced loss of coolant accidents (LOCAs) and the nuclear fuel was uncovered by water, causing its temperature to rise rapidly and generate steam
- The steam reacted with the fuel rod cladding material and produced hydrogen gas
- In two units (units 1 and 3), this hydrogen gas migrated to the secondary containment building and ignited, blowing off the roofs and upper sides of the buildings
- Reports indicate that the structural integrity of the primary containment structure, which houses the core's radioactive materials, has been maintained in units 1 and 3
- The second hydrogen explosion (at unit 3) knocked out emergency cooling capability at unit 2
- As we were going to press, we learned that an explosion was reported at unit 2

### Special UxC Policy Watch

UxC will be issuing a special edition of its Policy Watch briefing service providing additional details on how the recent events have and could impact nuclear-related policies of various countries around the world, as many countries with nuclear power programs or contemplating such programs have issued statements relating to their future intentions with respect to nuclear power.

se developments would tend to place upward pressure on price.

### Perspective

There are some in the industry that think the market will quickly digest this news and move on, but we think it is much more likely that this story is not going to go away for a long time. In this regard, the aftershocks of the "mediaquake" that followed the earthquake and particularly the coverage of the reactor problems in Japan will persist long after the aftershocks of the earthquake itself. We still do not know the full extent of the reactor damage as explosions continue to take place, even as this is written. For the sake of the Japanese people, we hope that all of the issues surrounding the earthquake are resolved quickly. The market, whatever its future course, will take care of itself.

## News Briefs

### Overview of nuclear events following the earthquakes and tsunami in Japan

As all readers will know, an earthquake measuring 9.0 on the Richter magnitude scale struck off the northeast coast of Japan near the city of Sendai at 2:46 p.m. on Friday, March 11. A tsunami approximately 30 feet high then slammed the island's Pacific Ocean coast, which hosts four nuclear power plants with 14 reactors located on approximately 150 miles of coastline.

Unit 1 at the Fukushima-I site was the first to show signs of a serious situation

after automatic emergency shutdown when offsite electrical power was lost and the emergency core cooling system (ECCS) failed because the emergency diesel generators that power the ECCS were knocked out by the tsunami. This led to a very challenging accident scenario: a loss of coolant accident (LOCA) coupled with a station blackout (SBO).

Without the capability to deliver more water to the reactor core, which has high thermal inertia after shutdown and contains large quantities of radioactive materials that generate heat as they decay, the water in the reactor coolant system (RCS) heated up quickly and began to evaporate. The fuel temperature exceeded design specifications and the rods containing 70 tons of irradiated enriched uranium began to fail. This breached the first line of defense from the release of radioactive materials.

Tokyo Electric Power Company (TEPCO), the plant operator, responded by securing and using mobile electrical power generating sources to pump seawater into the RCS. Steam reacting with hot zircaloy fuel rod cladding generated hydrogen gas that passed by some means (perhaps by safety relief valves) through the RCS and primary containment structure to the secondary containment, which is the upper portion of the block-shaped building. A hydrogen explosion blew off the top and sides of that building in what looked on video like the sudden popping of an inflated balloon. Fortunately, it appears that the integrity of the primary containment structure has been maintained to a large degree. In-core radioactive materials are confined in the primary containment structure. The status of the radioactive materials located in the spent fuel storage pool is not known.

As events continued to unfold, units 2 and 3 at the Fukushima-I site were suffering from a similar situation. Last night, the secondary containment structure of unit 3 exploded in what appears to be a similar manner as unit 1. Both units 2 and 3 are being flooded with

## Industry Calendar

- March 21-22, 2011  
**Paydirt's 2011 U Conference**  
<http://paydirt.com.au/>  
Hilton Hotel Adelaide  
Adelaide, Australia
- March 28-29, 2011  
**2011 Carnegie International Nuclear Policy Conference**  
Carnegie Endowment/Int'l Peace  
<http://www.carnegieendowment.org/>  
Ronald Reagan Center  
Washington, DC, USA
- March 28-31, 2011  
**Building the Value Chain for Small Modular Reactors**  
Infocast  
<http://www.infocastinc.com/>  
Almas Temple Club  
Washington, DC, USA
- April 5-8, 2011  
**World Nuclear Fuel Cycle**  
NEI/WNA  
<http://www.nei.org/newsandevents/>  
Swissotel Chicago  
Chicago, IL, USA
- May 9-11, 2011  
**Nuclear Energy Assembly**  
NEI  
<http://www.nei.org/newsandevents/>  
Grand Hyatt Washington  
Washington, DC, USA
- May 12-13, 2011  
**China Nuclear Energy Congress**  
China Decision Makers  
<http://www.chinadecisionmakers.com/>  
Crowne Plaza Hotel  
Beijing, China
- May 23-24, 2011  
**Platts Small Modular Reactors**  
Platts Nuclear Energy  
<http://www.platts.com/Conference>  
Mandarin Oriental Washington  
Washington, DC, USA
- June 5-7, 2011  
**38<sup>th</sup> Annual WNFN**  
World Nuclear Fuel Market  
<http://www.wnfm.com/annualmeeting/>  
Barcelo Renacimiento Hotel,  
Seville, Spain
- June 6-8, 2011  
**AtomEXPO 2011**  
Rosatom  
<http://2011.atomexpo.ru/en>  
Manezh Central Exhibition Hall  
Moscow, Russia

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

seawater in an attempt to keep those cores cooled below dangerously high temperatures that can cause fuel damage and even fuel melting. The most recent reports point out that the unit 2 reactor fuel became fully uncovered by water during the sequence of events that occurred there. It is thought that fuel in units 1 and 3 was only partially uncovered. Consequently, the damage to unit 2 would likely exceed the damage to the other units.

At this hour, it appears that the reactors at the Onagawa site north of Fukushima-I and the Fukushima-II and Tokai sites to the south are in full safe shutdown mode.

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### ***German government suspends the life extension of the country's nuclear units***

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On March 14, German Chancellor Angela Merkel held a press conference, whereby she revealed the government's status on life extensions of some of the country's nuclear units following the Japanese earthquake that affected nuclear units at Fukushima.

The government has decided to suspend for three months the 2010 law that paved the way for life extensions of Germany's 17 nuclear units. During this moratorium, safety analyses of all reactors will be carried out to determine whether the country's reactors are safe in view of the events that took place in Japan. Although no additional details were available about the implementation of the safety studies, it was mentioned that, for example, issues related to cooling systems would be part of such analyses. It is expected that additional safety measures would be required for some of the country's units, but currently it is not clear what these measures will be.

The decision also means that two older nuclear power plants will be taken off the grid shortly – at least for now – pending a full safety investigation in the wake of the explosions at a nuclear plant in Japan, Merkel told reporters. According to available information, this could affect

the Biblis A and the Neckarwestheim 1 units. Chancellor Merkel is planning to meet with the leaders of the German states that host nuclear reactors, as well as with nuclear operators to discuss further issues concerning the moratorium. Finally, Chancellor Merkel acknowledged that the geological situation in Japan is different than that in Germany, but that public safety is the highest priority of the government.

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### ***Southern Company remains committed to building new reactors at Vogtle***

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Southern Company does not believe construction of two AP1000 reactors at the Vogtle nuclear power plant in Georgia will be delayed by the nuclear issues in Japan. "We do not anticipate that events in Japan will impact our construction schedule or our ability to stay on budget," said Southern Company spokesman Todd Terrell in a quote to the *Associated Press*. Georgia Public Service Commission, which is responsible for regulating the state's utilities, has also stated that it does not believe the events in Japan will significantly delay the process for licensing and building new reactors at Vogtle. "The Vogtle site was evaluated for the most severe earthquake that might occur once in a 10,000 year period. The reactor design selected for AP1000 design greatly exceeds that requirement for the Vogtle site," said a statement from the Georgia PSC. The NRC could issue a combined construction and operating license that allows the Southern Company to build new reactors at Vogtle towards the end of 2011, and construction on the reactors could be completed in 2016 and 2017.

In related news, Luminant released a statement today (Monday) on the licensing process for two new Mitsubishi Advanced Pressurized Water Reactors at its Comanche Peak nuclear power plant. The company says it continues to monitor events in Japan but remains committed to pursuing development of the reac-

tors. "We will work in close concert with the United States Nuclear Regulatory Commission and industry groups to incorporate lessons learned from the events in Japan into the ongoing process of designing, licensing and building of our proposed units," said the statement.

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### ***Rep. Ed Markey leads call for moratorium on new nuclear***

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Reacting to the events in Japan, Rep. Ed Markey (D-MA) called for a "time-out" on new nuclear build until current and potential safety features can be more thoroughly examined, singling out the Westinghouse AP1000 as susceptible should a similar event occur in the United States. (For the record, UxC is unaware of any aspect of the AP1000 that makes it any more vulnerable than any other plant design, nuclear or otherwise.)

"Any plant that is being considered for a seismically vulnerable area in the United States obviously should be reconsidered right now," said Rep. Markey in an interview with CNN. "[The Westinghouse AP1000], according to one of the senior scientists at the Nuclear Regulatory Commission, would 'shatter like a glass cup' under the kind of stress that we're seeing in Japan right now. So, we just need to call a time-out and examine whether or not those safety features, which are going to be necessary in the future, are built into new nuclear power plants in our country."

The sentiment was echoed by other Congressmen, including Joe Lieberman (I-CT), who called for the U.S. to "quietly, quickly put the brakes on [nuclear] until we can absorb what has happened." Conversely, among the ranks of politicians standing beside nuclear power are Rep. Phil Gingrey (R-GA), Rep. Frank Pallone (D-NJ), and Sen. Chuck Schumer (D-NY). "The bottom line is we do have to free ourselves from dependence on foreign oil," said Sen. Schumer.

Rep. Markey did concede that risk is neither unique to nuclear nor unmanageable. "It's possible that nuclear pow-



er plants can be built in a way that's safe; we shouldn't be building them on seismic faults."

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### ***India reacts to events in Japan***

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In a statement before Parliament in reaction to the events in Japan, India's Prime Minister Manmohan Singh said that the nation is now working to strengthen its nuclear regulatory authority. "The Department of Atomic Energy and its agencies including the Nuclear Power Corporation of India have been instructed to undertake an immediate technical review of all safety systems of our nuclear power plants particularly with a view to ensuring that they would be able to withstand the impact," said Singh. The Prime Minister also pointed out that reactors in India safely withstood the 2004 tsunami as well as an earthquake in 2002.

Nuclear Power Corporation of India Ltd. (NPCIL), which owns and operates the nation's 20 reactors, issued a press release on March 13 regarding the situation. Eighteen of India's reactors are pressurized heavy water reactors as opposed to the boiling water reactors at Japan's Fukushima Daiichi nuclear plant, and NPCIL said, "The PHWRs are of different design than that of BWRs and have multiple, redundant and diverse shutdown systems as well as cooling water systems." NPCIL also operates two small boiling water reactors but said that both of these units were upgraded a few years ago with additional safety features. "The event of Japan will be reviewed in detail in due course as the detailed information becomes available. Resulting out of such a review, any reinforcement as needed in Indian reactors will be implemented," said NPCIL's press release.

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### ***GE-Hitachi's ESBWR gets design approval from NRC***

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On March 9, the U.S. Nuclear Regulatory Commission (NRC) announced that it issued final design approval (FDA) and completed a final safety evaluation re-

port for GE-Hitachi's Economic Simplified Boiling Water Reactor. The final approval means that the NRC has determined the ESBWR is technically acceptable; however, the design is not yet fully certified. Full certification from the NRC could be completed this fall. "Our technical experts have asked tough questions to ensure GE-Hitachi has appropriately addressed the NRC's requirements, and after their extensive technical evaluation they're satisfied with the ESBWR design," said NRC Office of New Reactors director Michael Johnson. "If the Commission agrees with the staff, we'll move on to fully certifying the design, incorporating it into our regulations using a rule-making process that includes a public comment period."

In a press release, GE-Hitachi stated that the final design approval from the NRC "clears the way for the ESBWR to be built in countries around the world that recognize the FDA of a reactor design as acceptance by the 'country of origin'." The ESBWR design has been referenced in an application from DTE Energy for a proposed reactor at the Fermi II nuclear power plant that is now under review by the NRC. Outside of the U.S., both India and Poland are among the nations considering ordering ESBWRs.

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### ***NRC to grant 20-year license renewal for Vermont Yankee nuclear power plant***

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In a March 10 press release, the U.S. Nuclear Regulatory Commission (NRC) announced that it will renew the license for the Vermont Yankee nuclear power plant for another 20 years. The current 40-year license for the plant expires on March 21, 2012. Although the NRC will allow the plant to continue operation, its fate is still uncertain because the Vermont legislature must vote in order to keep the facility operational. In January 2010, Vermont's legislature voted against allowing the reactor to operate past March 2012. If the legislature does not vote either this year or early next

year to allow Vermont Yankee to continue operating, Entergy may be forced to close the plant in spite of receiving a 20-year license extension from the NRC.

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### ***Westinghouse signs agreement on AP1000 information sharing with Endesa***

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In a March 8 press release, Westinghouse announced that it signed an agreement with Spanish utility Endesa to share information on the AP1000 reactor's technology. The agreement, which provides Endesa with additional information on design and performance, could potentially lead to the development of AP1000 reactors in either Spain or South America. Westinghouse President of Operations Ric Perez stated that the deal is "reflective of the ever-increasing interest in the AP1000 by potential customers throughout Europe."

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### ***License applications for new reactors at North Anna and Comanche Peak set back***

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The license application process for new reactors at Dominion's North Anna nuclear power plant and Luminant Energy's Comanche Peak nuclear power plant is facing a delay of about 18 months due to design changes with Mitsubishi Heavy Industries' Advanced Pressurized Water Reactor (APWR). Dominion is proposing a single APWR at North Anna, and Luminant is proposing two APRWs at Comanche Peak. Environmental reviews for both projects have been unafflicted, but the NRC has determined that it will need more time to complete safety evaluations so that it can evaluate structural changes made by Mitsubishi to the APWR design.

Previously, the safety review for Comanche Peak had been scheduled for completion in December 2011, and the safety review for North Anna had been scheduled for completion in February 2012; however, the NRC now expects to complete the final safety review for Comanche Peak units in June 2013 and to complete the safety review for the new

reactor at North Anna in July 2013. Following completion of the safety reviews, completion of the hearing process for both projects is now expected in November 2013.

### **AREVA and Rolls Royce sign cooperation agreement to support new UK reactors**

AREVA and Rolls Royce have agreed to establish a strategic partnership to manufacture components for new reactors in the UK and other nations. The agreement calls for the companies to create a plan for meeting the demand for complex components for new reactors in the UK. "We look forward to sharing processes, knowledge and skills to ensure that UK industry can perform a key role in manufacturing the new plants to be built in Britain and abroad. We want solid relationships with a series of international companies that can work with us globally. We are looking for strong ties and this new agreement is a major step in the direction," said AREVA CEO Anne Lauvergeon.

### **Opposition leader Mahamadou Issoufou elected President of Niger**

Veteran opposition leader Mahamadou Issoufou won a run-off election in key uranium exporting nation Niger on Saturday to become its new President and return the nation to civilian rule. In February 2010, Niger's previous President, Mamadou Tandja, was ousted in a military coup after he illegally extended his rule beyond the constitutional limit of two terms. Niger was ruled for more than a year by a military junta that promised to hand over power to a new civilian government. Issoufou won 58 percent of the vote. The other candidate in the run-off election was Seini Oumarou, who had served as Prime Minister under under Tandja.

### **Uranium One improves 2010 earnings on record revenue**

Uranium One Inc. reported an adjusted

net loss of US\$12 million for 2010 compared to an adjusted net loss of \$36 million for 2009. Revenue increased by 115% to \$327 million compared to \$152 million in 2009, due to higher sales volumes. Attributable sales volumes for 2010 increased by 116% to a record 6.9 million pounds at an average price of \$48 per pound, compared to 3.2 million pounds sold during 2009 at an average price of \$47 per pound.

The company's total attributable production during 2010 was a record 7.4 million pounds, which was 106% higher than total attributable production of 3.6 million pounds during 2009. The average total cash cost per pound sold was \$13 during 2010, compared to \$16 per pound sold during 2009. The total attributable production guidance for 2011 is 10.5 million pounds, consisting of 1.8 million pounds from Akdala; 3.4 million pounds from South Inkai; 2.4 million pounds from Karatau; 1.2 million pounds from Akbastau; 1.0 million pounds from Zarechnoye; 0.3 million pounds from the Powder River Basin of Wyoming; 0.2 million pounds from Honeymoon in South Australia; and 0.2 million pounds from Kharasan.

The average cost per pound sold for Uranium One is expected to be approximately \$18 per pound in 2011, based on costs of \$14 per pound at Akdala, \$19 per pound at South Inkai, \$12 per pound at Karatau, \$18 per pound at Akbastau, \$21 per pound at Zarechnoye, \$25 per pound at the Powder River Basin, and \$35 per pound at Honeymoon. Attributable sales for 2011 and 2012 are expected to be 9.5 million pounds and 12.0 million pounds, respectively.

Uranium One noted management

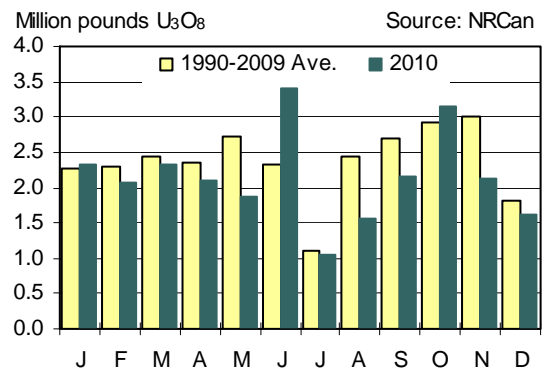
### **Canadian Monthly Uranium Shipments** (million pounds U<sub>3</sub>O<sub>8</sub>)

	2003	2004	2005	2006	2007	2008	2009	2010
<b>J</b>	2.63	3.00	2.97	1.39	1.86	2.05	3.00	2.34
<b>F</b>	1.81	2.41	2.82	1.52	1.21	1.54	2.75	2.08
<b>M</b>	3.00	2.77	2.13	1.57	1.20	1.82	2.07	2.34
<b>A</b>	2.22	2.80	3.20	1.56	2.36	2.09	1.86	2.10
<b>M</b>	0.98	2.58	2.53	2.66	2.82	2.90	1.65	1.89
<b>J</b>	1.22	2.30	2.80	2.41	1.36	2.26	1.81	3.42
<b>J</b>	0.96	0.74	1.78	0.86	2.21	1.01	1.09	1.05
<b>A</b>	2.41	2.61	3.60	3.31	1.76	2.06	1.45	1.55
<b>S</b>	2.42	2.51	3.16	2.42	1.57	0.87	1.85	2.16
<b>O</b>	2.98	3.33	2.12	2.39	2.26	2.80	3.40	3.14
<b>N</b>	3.32	3.34	4.32	3.33	3.27	1.88	2.76	2.13
<b>D</b>	1.89	1.61	1.32	2.02	1.78	1.35	2.66	1.61
	<b>25.84</b>	<b>30.02</b>	<b>32.75</b>	<b>25.43</b>	<b>23.66</b>	<b>22.63</b>	<b>26.34</b>	<b>25.81</b>

**Note:** Values reported are of mine shipments and do not reflect deliveries to end users.

Source: Natural Resources Canada

### **2010 Canadian Monthly U Shipments vs. Monthly Average Shipments**



changes – Mr. Vadim Zhivov, Director General of ARMZ and a director of Uranium One, was appointed President of Uranium One on closing of the ARMZ transaction. Mr. Chris Sattler was appointed Chief Executive Officer on February 1, 2011.

### **Denison reports 2010 results**

Denison Mines Corp. on March 10 released financial results for the three months and the year ended December 31, 2010. The company reported revenues of US\$39.2 million for the three months and US\$128.3 million for the year ended December 31, 2010. Net loss was US\$12.3 million for the three months and US\$14.2 million for the year.

Production totaled 234,000 pounds U<sub>3</sub>O<sub>8</sub> for the fourth quarter and 1,442,000 pounds U<sub>3</sub>O<sub>8</sub> for the year. Uranium sales topped 449,000 pounds U<sub>3</sub>O<sub>8</sub> at an average sales price of

US\$49.97 per pound for the fourth quarter and were 1,839,000 pounds U<sub>3</sub>O<sub>8</sub> at an average price of US\$47.67 per pound for the year. As of December 31, 2010, Denison had 87,000 pounds U<sub>3</sub>O<sub>8</sub> available for sale.

In Canada, the McClean Lake joint venture produced 1,731,000 pounds U<sub>3</sub>O<sub>8</sub> for the year ended December 31, 2010, compared with 3,609,000 pounds U<sub>3</sub>O<sub>8</sub> for the year ended December 31, 2009. Denison's share of this production totaled 389,000 pounds for the 2010 period compared to the 812,000 pounds produced in the 2009 period. Ore feeding at McClean mill was completed in June 2010, and the mill was placed on standby in August 2010. Inventory available for sale from Canadian production was 19,000 pounds U<sub>3</sub>O<sub>8</sub> at December 31, 2010.

In the U.S., Denison's White Mesa mill produced 229,000 pounds U<sub>3</sub>O<sub>8</sub> during the fourth quarter and 1,053,000 pounds U<sub>3</sub>O<sub>8</sub> for the year. As of December 31, 2010, a total of 92,800 tons of conventional ore were stockpiled at the mill containing approximately 369,000 pounds U<sub>3</sub>O<sub>8</sub> and 1,732,000 pounds V<sub>2</sub>O<sub>5</sub> (vanadium). Furthermore, Denison

had approximately 392,000 pounds U<sub>3</sub>O<sub>8</sub> contained in alternate feed material stockpiled at the mill as of December 31, 2010. Production costs from White Mesa were US\$39.30 per pound U<sub>3</sub>O<sub>8</sub> for the quarter and US\$38.46 per pound for the year. Inventory available for sale from U.S. production was 68,000 pounds U<sub>3</sub>O<sub>8</sub> as of December 31, 2010. Also in the U.S., Denison began development of its Pinenut mine in Arizona in the fourth quarter. Production is expected to commence from Pinenut in 2012.

In 2011, Denison expects production to total 1.2 million pounds U<sub>3</sub>O<sub>8</sub> from ore in stockpile, from the Beaver, Pandora, and Arizona 1 mines, and also from the alternate feed circuit at the White Mesa mill. White Mesa is scheduled to continue processing conventional ore during most of 2011 and the cash cost of production is expected to average approximately US\$43.50 per pound U<sub>3</sub>O<sub>8</sub> net of vanadium credits. The increased cash cost is attributable to an over 200% increase in the cost of sulfuric acid as compared to 2010.

Uranium sales in 2011 are forecast to be approximately 1.3 million pounds U<sub>3</sub>O<sub>8</sub>. Just over 500,000 pounds U<sub>3</sub>O<sub>8</sub> of this total will be sold into long-term contracts and the remainder will be sold on the spot market.

1,153,104 pounds U<sub>3</sub>O<sub>8</sub>, which was 0.2% higher than the third quarter of 2010 and up 30% from the fourth quarter of 2009.

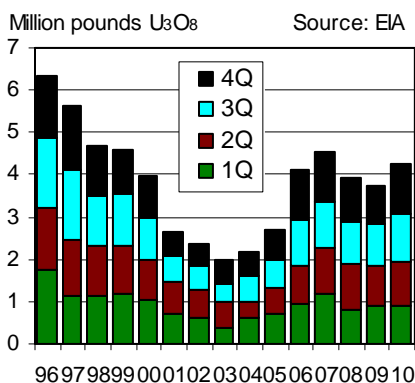
During the fourth quarter of 2010, U.S. uranium was produced from five U.S. uranium facilities: White Mesa mill (Utah), Alta Mesa ISR project (Texas), Crow Butte ISR project (Nebraska), La Palangana ISR project (Texas), and the Smith Ranch-Highland ISR project (Wyoming).

### **VostGOK completes feasibility study at Novokonstantinovskoye deposit**

The technical working group on uranium production in Ukraine met on March 1 to discuss the first draft of the feasibility study of the Novokonstantinovskoye deposit being developed by the country's uranium producer, Eastern Mining and Processing Combine (VostGOK). The feasibility study was drafted jointly by VostGOK and the research institute UkrNIPpromtekhologii.

The draft document covers land and water resources of the region, local infrastructure, explored uranium resources, ore mining and processing, and the mining schedule. It is planned that mining will commence in 2011. The draft feasibility study is to be revised over the course of the next two weeks. The final study, which meets international standards, will help VostGOK to increase its ability to attract capital to develop the Novokonstantinovskoye deposit. The company hopes to secure bank loans to augment state funding. According to the study, within the next five years, the deposit, which rejoined VostGOK in September 2010, will reach

### **U.S. Concentrate Production**



### **U.S. uranium production up 14% in 2010**

The U.S. Energy Information Administration (EIA) reported February 8 that U.S. uranium production totaled 4,235,015 pounds U<sub>3</sub>O<sub>8</sub> in 2010. This amount is 14% higher than the 3,708,358 pounds produced in 2009. For the fourth quarter of 2010, U.S. uranium production was

**EIA: Production of Uranium Concentrate in the United States**

(Pounds U<sub>3</sub>O<sub>8</sub>)

	1996	1997	1998	1999	2000	2001	2002 <sup>e</sup>	2003 <sup>e</sup>	2004 <sup>e</sup>	2005	2006	2007	2008	2009	2010 <sup>P</sup>
1Q	1,734,427	1,149,050	1,151,587	1,196,225	1,018,683	709,177	620,952	400,000	600,000	709,600	931,065	1,162,737	810,189	880,036	876,084
2Q	1,460,058	1,321,079	1,143,942	1,132,566	983,330	748,298	643,432	600,000	400,000	630,053	894,268	1,119,536	1,073,315	982,760	1,055,102
3Q	1,691,796	1,631,384	1,203,042	1,204,984	981,948	628,720	579,723	400,000	588,738	663,068	1,083,808	1,075,460	980,933	956,657	1,150,725
4Q	1,434,425	1,541,052	1,206,003	1,076,897	973,585	553,060	500,000	600,000	600,000	686,456	1,196,485	1,175,845	1,058,386	930,097	1,153,104
<b>Total</b>	<b>6,320,706</b>	<b>5,642,565</b>	<b>4,704,574</b>	<b>4,610,672</b>	<b>3,957,545</b>	<b>2,639,256</b>	<b>2,344,107</b>	<b>2,000,000</b>	<b>2,282,406</b>	<b>2,689,178</b>	<b>4,105,626</b>	<b>4,533,578</b>	<b>3,922,823</b>	<b>3,749,550</b>	<b>4,235,015</b>

<sup>P</sup> Preliminary. <sup>e</sup> Estimate. <sup>r</sup> Revised data. - The 4th quarter 2002, 2003, 1st, 2nd and 4th quarter 2004 production amounts were estimated by rounding to the nearest 100,000 pounds to avoid disclosure of individual company data. This also affects the 2003 and 2004 annual production. (Total may vary due to independent rounding)

its design capacity of 2,500 tU (~6.5 million pounds U<sub>3</sub>O<sub>8</sub>) per year.

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### ***Australia paving way for uranium sales to UAE***

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Australia's Foreign Affairs Minister Kevin Rudd stated March 9 that his country has begun negotiations on a bilateral agreement with the United Arab Emirates (UAE) that would specify the peaceful use of nuclear energy as a precursor to uranium sales. Rudd said negotiations will take as long as necessary to get the agreement right.

The UAE has signed the Nuclear Non-Proliferation Treaty and Rudd said that the country is taking a responsible approach to nuclear power generation. The UAE hopes to begin using nuclear power for electricity by 2017. Opposition Foreign Affairs spokeswoman Julie Bishop welcomed the announcement but said it highlights the Australian Government's "hypocrisy" in refusing to sell uranium to India. Meanwhile, Greens Senator Scott Ludlam said the move is "profoundly unhelpful" to global non-proliferation efforts.

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### ***Mining stops at Ezulwini after worker perishes in mine accident***

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First Uranium Corp. announced March 14 that a temporary work stoppage has been initiated at the Ezulwini gold and uranium mine in South Africa after a worker died in a mine accident. The company stated that the incident occurred on Saturday, March 12, when the ground caved-in at the mine's 33 Level. The South African Department of Mineral Resources has subsequently issued a work stoppage order. The company provided no indication of when the order would be lifted to recommence mining activities.

The Ezulwini mine was also shut down in November 2010 following another fatal accident of a miner at the mine. First Uranium has been actively working to repair the Ion Exchange (IX) portion of the uranium circuit at Ezulwini, which the

company expects to occur later this month.

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### ***Ur-Energy enters long-term sales agreement***

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Ur-Energy announced March 10 that it entered into its first long-term uranium sales agreement with a U.S. utility. The company's release did not specifically name the utility, but did state that it was "one of the largest producers and transporters in the United States." The agreement will use uranium produced from Ur-Energy's Lost Creek project in Sweetwater County, Wyoming. The contract calls for deliveries over a three-year period at a defined price for the term of the agreement.

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### ***Energy Fuels files motion to dismiss SMA lawsuit***

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On March 11, *Bloomberg* reported that Energy Fuels Inc. filed a motion in a Colorado district court to dismiss the Sheep Mountain Alliance's (SMA) lawsuit filed on Energy Fuels' radioactive materials license for the company's proposed Pinon Ridge uranium and vanadium mill, located near Naturita, Colorado. This follows last Monday's announcement (see *UxW25-10*, March 7, 2011) that the State of Colorado issued Energy Fuels a Radioactive Materials License for the Pinon Ridge uranium/vanadium mill to operate the proposed facility at a daily capacity of 500 short tons of uranium and vanadium ore.

SMA is an anti-nuclear, environmental group that recently asked a Denver judge to revoke Energy Fuels' license. Energy Fuels' motion to dismiss SMA's lawsuit joins in the arguments posed in the Colorado Department of Public Health's (CDPHE) February 23 motion to also dismiss the SMA's lawsuit. Energy Fuels' motion argues that SMA's "interpretation of the applicable statutes, as set forth in its First Claim for Relief, is legally incorrect, and that, as a result, the Court must dismiss that claim." A judge has yet to provide a ruling on the case.

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### ***WDEQ release Draft Deep Disposal Well Permit at Lance***

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On March 9, Peninsula Energy Ltd. was advised by the Wyoming Department of Environmental Quality (WDEQ) that the U.S. Environmental Protection Agency (USEPA) had been informed that Peninsula's application for an Underground Injection Control (UIC) Class 1 area permit is complete and technically adequate. This notification from the WDEQ allows for the final approval of five deep disposal wells in the Ross permit area of the greater Lance projects, located in Wyoming. The USEPA is now reviewing the application material and draft permit. Issuance of the permit would grant Peninsula's wholly-owned subsidiary, Strata Energy Inc., permission to drill disposal wells at the Ross deposit of the Lance projects. Once issued, Peninsula will be allowed to inject low-level wastes into brackish groundwater at depths in excess of 8,000 feet.

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### ***Peninsula's Permit to Mine application deemed complete; announces Karoo drill results***

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Peninsula Energy Ltd. announced March 14 that the Land Quality Division of the Wyoming Department of Environmental Quality (WDEQ/LQD) has deemed Peninsula's application for a Permit to Mine the Ross ISR project complete and adequate for technical review. WDEQ/LQD notified Peninsula via a letter that the Ross ISR project application is complete without any further comment. This review by the WDEQ/LQD was completed nearly two weeks ahead of typical statutory timeframes as many previous ISR applications have taken up to nine months to receive a similar completeness notification.

The Permit to Mine application was submitted to WDEQ/LQD District III office on January 13, 2011. Peninsula will be in contact with the WDEQ/LQD in the future regarding the application, which is one of two primary permits necessary to conduct ISR operations at the initial production center of the Lance



projects.

Peninsula Energy Ltd. announced March 15 the first result from resource delineation drilling on Project Site 22 at the Karoo uranium project, located in South Africa. This initial drill program was conducted with a dedicated diamond coring rig that cleared blocked drill holes and re-logged historic holes using a down hole gamma probe to validate the mineralization that was originally defined in an exploration campaign originally defined in the 1970s. The objective of the program at Site 22 was to confirm the location and grade of the historic drill results. Highlights of drill intercepts at Karoo include: 7.7 feet grading 0.3796% U<sub>3</sub>O<sub>8</sub>, 4.4 feet grading 0.3210% U<sub>3</sub>O<sub>8</sub>, 3.6 feet grading 0.2152% U<sub>3</sub>O<sub>8</sub>, and 4.9 feet grading 0.2351% U<sub>3</sub>O<sub>8</sub>.

Peninsula confirmed 15 significant intercepts out of 43 holes logged at the Karoo project's initial program. The company plans to commence a program of reverse circulation (RC) drilling in the next month to obtain samples of uranium and molybdenum for geochemical analysis, which will provide quality assurance and quality control on these areas.

### Aura announces assays from Reguibat

Aura Energy Ltd. announced March 10 assay results from the initial resource drilling program at the company's Reguibat project in Mauritania. Highlights

from these assays include: 4.5 meters grading 0.1863% U<sub>3</sub>O<sub>8</sub>, 3 meters grading 0.1312% U<sub>3</sub>O<sub>8</sub>, and 3 meters grading 0.1417% U<sub>3</sub>O<sub>8</sub>.

Aura began drilling the Reguibat project in November 2010 and to date has drilled 2,022 holes. From this drilling, the company has determined that mineralization is near-surface with local mineralization up to 8 meters in thickness.

### Forum and Mega option the Maurice Bay project from Cameco

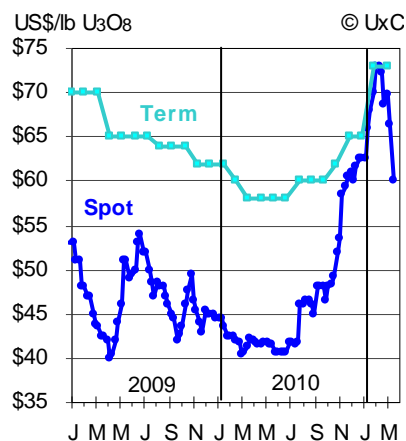
Forum Uranium Corp. on March 8 entered into an option agreement with Cameco Corp. where Forum and Mega Uranium Ltd. may jointly earn a 60% interest in the Maurice Bay project, which is located in the Athabasca Basin. The project covers an area of 98 square kilometers in the northwest portion of the Athabasca Basin and hosts a historical (non-NI 43-101) resource estimate of 1.5 million pounds U<sub>3</sub>O<sub>8</sub>.

Cameco owns an 87.5% stake in the project and AREVA holds the remaining 12.5% stake. Forum and Mega may jointly earn a 60% interest in the property by committing C\$750,000 to exploration within 15 months of the closing date, and incurring additional optional expenditures of C\$250,000 by the second anniversary of the agreement, and a further C\$3 million on or before the fourth anniversary of the agreement for a

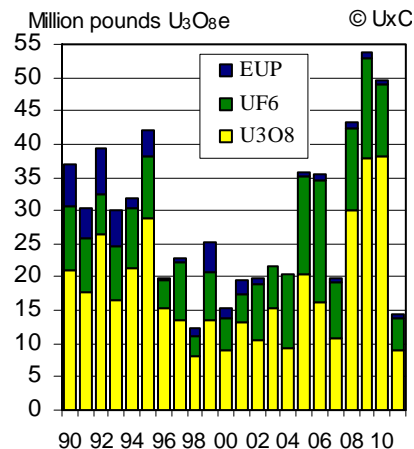
total expenditure of C\$4 million. Also, Forum and Mega must make option payments of C\$60,000 upon closing, C\$80,000 by the first anniversary, C\$110,000 by the second anniversary, and C\$150,000 by the third anniversary for a total of C\$400,000 in cash option payments.

The Maurice Bay project received most of its historical exploration work in

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



### Annual Spot Uranium Volumes

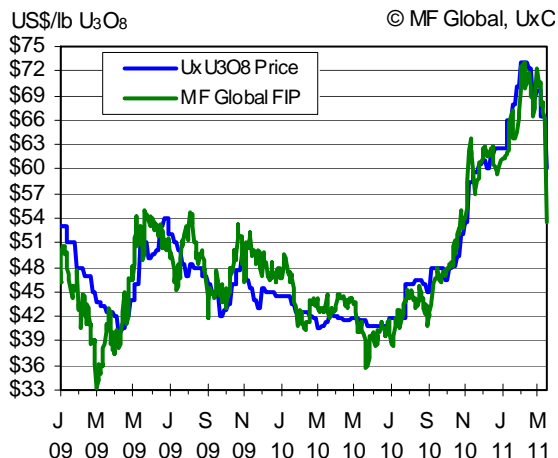


the late 1970s and early 1980s. Forum and Mega have selected five areas to be covered by surveys that are slated to begin shortly and drilling is expected to follow later this year on the project's previously drilled Zone 2A prospect.

### Forte announces assay results from A238

On March 14, Forte Energy NL announced assay results from 17 drill holes at the A238 prospect, located in Mauritania. Highlights of the results received include: 17 meters grading 0.033% U<sub>3</sub>O<sub>8</sub>, 20 meters grading 0.022% U<sub>3</sub>O<sub>8</sub>, 8 meters grading 0.036% U<sub>3</sub>O<sub>8</sub>, and 13 meters grading 0.0456% U<sub>3</sub>O<sub>8</sub>. These drill results will be incorporated into a preliminary maiden JORC compliant resource at the A238 prospect. Forte plans to continue drilling the prospect throughout the coming months to add resources to its pending maiden resource estimate.

### Ux U<sub>3</sub>O<sub>8</sub> Price vs. MF Global FIP



# The Market

## Uranium Spot Market

Last week, interest in the market was reflected by the participation in the DOE auction facilitated by USEC. This auction resulted in 18 bids received from 11 parties that totaled 2.4 million kgU of UF<sub>6</sub> (almost 6.3 million pounds U<sub>3</sub>O<sub>8</sub>e). The bids were reported to be within the previous market bid range of \$183-\$188 per kgU (about \$65-\$67 per pound U<sub>3</sub>O<sub>8</sub> assuming a \$13 conversion value). Four bidders won various portions of the overall quantity reported at 349,988 kgU or 914,466 pounds U<sub>3</sub>O<sub>8</sub>e. After the initial DOE announcement and the issuing of the RFP associated with the material discussed above, the spot market experienced an almost immediate drop in price. After the initial price decline, the spot price started showing an upward turn in the days just prior to last week's auction. Then, during Thursday and into Friday, there were reports of additional spot sales at subsequently higher prices. As news started to spread of the disaster in Japan, initial reactions on the nuclear market were starting to emerge late in the day on Friday, but these were not large enough to have any

noticeable impact on price as the BAP dropped only slightly, although buyers had started to pull away from the market which remained well offered.

By early Monday morning, things had changed dramatically as initial buying interest just about disappeared. A seller issued an RFP to sell up to 500,000 pounds U<sub>3</sub>O<sub>8</sub> with bids due by this Friday (March 18). By early afternoon a portion of this material had been placed. A couple of transactions were reported on Friday and several more today. Over the past week, a total of 12 transactions have been added to the database totaling two million pounds U<sub>3</sub>O<sub>8</sub>e, bringing the monthly totals to 17 transactions involving 2.6 million pounds U<sub>3</sub>O<sub>8</sub>e.

As a result of the most recent information about today's activity, the Ux U<sub>3</sub>O<sub>8</sub> Price falls by \$6.50 this week to \$60.00 per pound. This 10% drop over the past week is the largest single-week drop since the financial crisis occurred near the end of 2008. And, since the first week of February when the spot price hit \$73, there has been an almost 18% decline in the spot price over the past five weeks.

For some time now, we have remarked about the volatility in the spot

Ux Price Indicators (€Equiv**)			
<b>Weekly (3/14/11)</b>		1 US\$ = .71478€	
<b>Ux U<sub>3</sub>O<sub>8</sub> Price</b>	<b>\$60.00</b>	<b>€42.89</b>	
<b>Mth-end (2/28/11)</b>		1 US\$ = .72439€	
<b>U<sub>3</sub>O<sub>8</sub></b>	Spot	<b>\$69.75</b>	€50.53
	Long-Term	<b>\$73.00</b>	€52.88
<b>Conversion</b>	NA Spot	<b>\$13.00</b>	€9.42
	NA Term	<b>\$15.75</b>	€11.41
	EU Spot	<b>\$13.00</b>	€9.42
<b>EU Term</b>		<b>\$16.00</b>	€11.59
	NA Price	<b>\$194.00</b>	€140.53
<b>UF<sub>6</sub> Spot</b>	NA Value*	<b>\$195.25</b>	€141.43
	EU Value*	<b>\$195.25</b>	€141.43
<b>SWU</b>	Spot	<b>\$155.00</b>	€112.28
	Long-Term	<b>\$152.00</b>	€110.11
<b>EUP</b>	NA Spot**	<b>\$2,961</b>	€2,145
	NA Term**	<b>\$3,057</b>	€2,214

uranium market. After seeing the price increase for a long period of time, the market had become quite skittish, reacting to every piece of news. It is thus not surprising that the market reacted the way that it did to the news out of Japan, which was a complete shock and certainly one of the most significant events in the history of the market. The implication of the reactor incidents in Japan are discussed in the cover.

## UxC Broker Average Price

The UxC Broker Average Price (BAP) realized increases through the beginning

UxC Market Statistics				
Monthly (Mar)	Spot		Term	
	Volume	# Deals	Volume	# Deals
<b>U<sub>3</sub>O<sub>8</sub>e</b> (million lbs)	2.6	17	0	0
<b>Conv.</b> (thousand kgU)	W	5	0	0
<b>SWU</b> (thousand SWU)	0	0	0	0
2011 Y-T-D	Spot		Term	
	Volume	# Deals	Volume	# Deals
<b>U<sub>3</sub>O<sub>8</sub>e</b> (million lbs)	14.4	79	87.9	9
<b>Conv.</b> (thousand kgU)	>2,600	25	W	2
<b>SWU</b> (thousand SWU)	W	1	W	2

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

## UxC Leading Price Indicators

Three-month forward looking price indicators, with publication delayed one month. Readings as of Feb 2011.

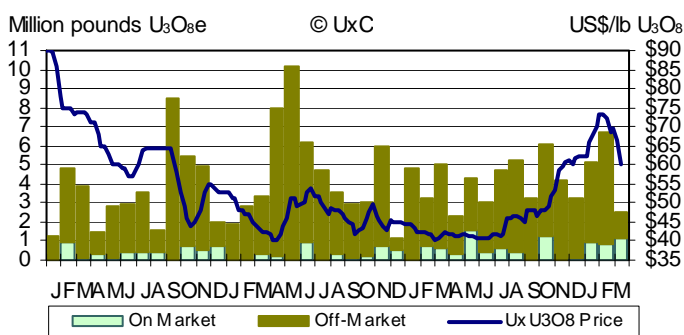
**Uranium** (Range: -17 to +17) **+5** [down 2 points]

**Conversion** (Range: -16 to +16) **+7** [up 2 points]

**Enrichment** (Range: -18 to +18) **+3** [unchanged]

**Platts Forward Uranium Indicator** **\$64.00-\$71.00**  
A forward one-week outlook. As of 3/11/11 (US\$/lb)

## Ux U<sub>3</sub>O<sub>8</sub> Price vs. Spot Volume by Method



## Japanese Earthquake and Tsunami Relief Efforts

American Red Cross

[http://american.redcross.org/site/PageServer?pagename=ntld\\_main](http://american.redcross.org/site/PageServer?pagename=ntld_main)

British Red Cross

<http://www.redcross.org.uk/Donate-Now/Make-a-single-donation/Japan-Tsunami-Appeal>

Direct Relief International

<http://www.directrelief.org/EmergencyResponse/2011/JapanEarthquakeTsunami.aspx>

of the week, but turned slightly by week's end. The midpoint showed \$66.50 on Tuesday, up \$0.44 on the day. From there, the indicator increased by a total of \$1.67 into Thursday at \$68.17 before turning over on Friday to \$68.08, down \$0.09 on the day. Today's UxC BAP is \$59.83, down \$8.25 on the day and down \$6.23 from last Monday's \$66.06. Today's decline is the largest single day drop since UxC started collecting daily price data on June 15, 2009. The BA Bid is \$58.17, down \$7.46 from last week's \$65.63 and the BA Offer is \$61.50, down \$5.00 from last week's \$66.50.

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### **Fund Implied Price (FIP)**

Fund Implied Prices (FIP) spiked slightly in the middle of the week before turning over sharply after the weekend due to the events in Japan. The MF Global FIP began the week at \$67.66 on Tuesday before pushing up to \$68.25, up \$0.59 on Wednesday. From there, the FIP began its downward slide as it dropped by a total of \$2.14 over the next two days to \$66.11 on Friday. Today's FIP dropped significantly to \$53.49, down \$12.62 on the day and down \$14.37 from last Monday's FIP. The latest FIP information can be found in the chart on page 9.

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

The CME Group futures market for uranium witnessed light activity last week as

a total of 4 contracts (1,000 pounds U<sub>3</sub>O<sub>8</sub>) were booked. The week's first activity was on Monday, March 7, when 1 contract (250 pounds U<sub>3</sub>O<sub>8</sub>) was booked at \$70 for the June 2011 contract month. Prices remained relatively unchanged until Thursday, March 10, when the remaining 3 contracts (750 pounds U<sub>3</sub>O<sub>8</sub>) were booked at \$67.50, also for the June 2011 contract month. With last week's increase in contracting, the March contracting total moves to 355 contracts (88,750 pounds U<sub>3</sub>O<sub>8</sub>), and the 2011 annum total increases to 3,375 contracts (843,750 pounds U<sub>3</sub>O<sub>8</sub>). Open interest is down 2 contracts (500 pounds U<sub>3</sub>O<sub>8</sub>) from last week, and now stands at 15,667 contracts (3,916,750 pounds U<sub>3</sub>O<sub>8</sub>).

A question hot on the minds of many in the industry remains about how the futures market will be impacted by the events in Japan. An increase in bids on the market today has shown that prices are declining and that only a limited amount of transactions have been shown as cleared on the Globex exchange. However, there could be a considerable amount of contracts cleared in over the counter (OTC) trading in the coming days. All cleared contracting for this week will be reported in next week's *Ux Weekly*.

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### **Uranium Term Market**

New demand emerged over the past

week in the term market. A non-U.S. utility issued its RFP for delivery starting in 2012 and options through 2032 for both feed and EUP. The utility is seeking about 250,000 pounds U<sub>3</sub>O<sub>8</sub>e with delivery in 2012, which can be bid on separately. Other options include offers through just the 2022 time period and through 2032. Deliveries vary depending on time period and total just over 2.9 million pounds U<sub>3</sub>O<sub>8</sub>e for the full request. A non-U.S. utility is awaiting offers for two term requests, one of which involves just over two million pounds U<sub>3</sub>O<sub>8</sub> equivalent as either uranium or UF<sub>6</sub> with delivery over the 2012 to 2019 time period. Another non-U.S. utility is looking for sizeable quantities with delivery starting in 2015. A non-U.S. utility that was evaluating offers based on its request for up to 600,000 pounds U<sub>3</sub>O<sub>8</sub> per year in 2011 and 2012 has made its decision. Several other utilities also continue to evaluate off-market requests, and reports continue to surface that multiple buyers are approaching the mid-term market seeking offers.

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### **Conversion & Enrichment**

As noted above, a non-U.S. utility entered the term market with a request that included feed and EUP options. Conversion services involved in this request total about 1.12 million kgU. The enrichment portion totals just over one million SWU.

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## **Ux Price Indicator Definitions**

*The Ux 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. 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.*

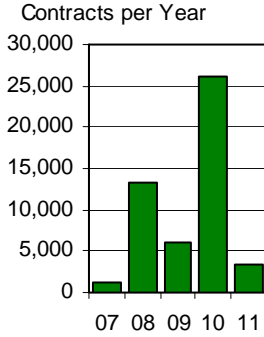
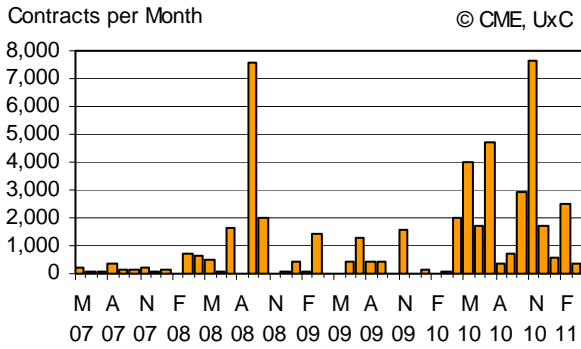
The Platts Forward Uranium Indicator price range belongs to Platts, a McGraw Hill Company, and is published with permission. Definitions of these prices are available from their original source.

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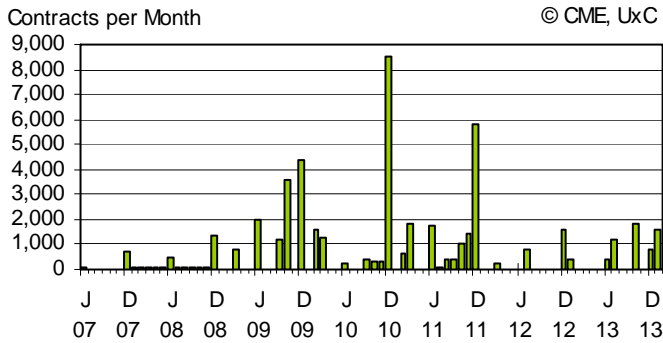
**The Ux Consulting Company, LLC**  
1501 Macy Drive  
Roswell, GA 30076, USA  
Phone: +1 (770) 642-7745  
Fax: +1 (770) 643-2954  
Internet: <http://www.uxc.com/>

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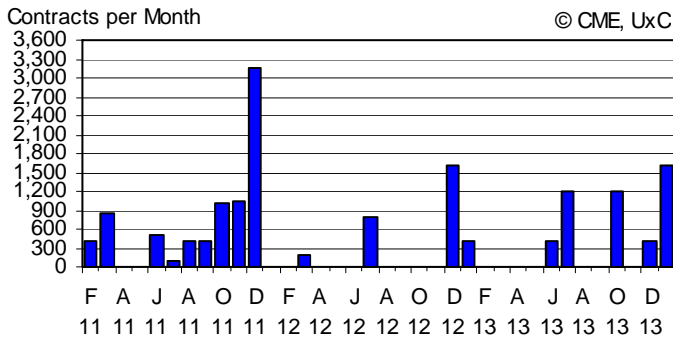
### NYMEX Ux Futures Activity Total Contracts by Transaction Month, by Transaction Year



### Total Contracts by Settlement Month



### Open Interest by Settlement Month

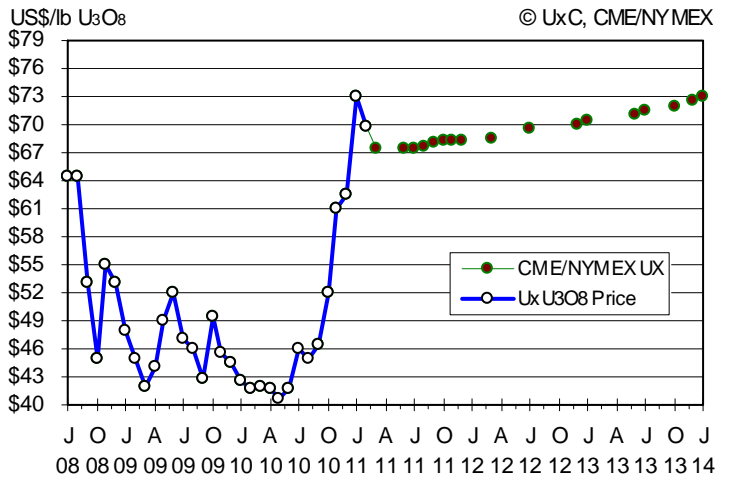


### CME UxC Uranium U<sub>3</sub>O<sub>8</sub> (UX) Futures

#### Activity as of March 11, 2011

Settlement	Price	Volume	Open
Dec 2010	\$62.50	8,522	N/A
Jan 2011	\$73.00	4	N/A
Feb 2011	\$69.75	600	N/A
Mar 2011	\$67.50	1,798	850
Jun 2011	\$67.50	1,761	502
Jul 2011	\$67.50	102	100
Aug 2011	\$67.75	400	400
Sep 2011	\$68.00	400	400
Oct 2011	\$68.25	1,001	1,000
Nov 2011	\$68.25	1,459	1,057
Dec 2011	\$68.25	5,819	3,155
Mar 2012	\$68.50	200	200
Jul 2012	\$69.50	800	800
Dec 2012	\$70.00	1,600	1,600
Jan 2013	\$70.50	400	400
Jun 2013	\$71.00	400	400
Jul 2013	\$71.50	1,200	1,200
Oct 2013	\$72.00	1,800	1,200
Dec 2013	\$72.50	803	403
Jan 2014	\$73.00	1,600	1,600
*From May 2007		<b>Totals:</b>	<b>50,003*</b>
			<b>15,667</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, ICAP Energy, and MF Global (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)

