

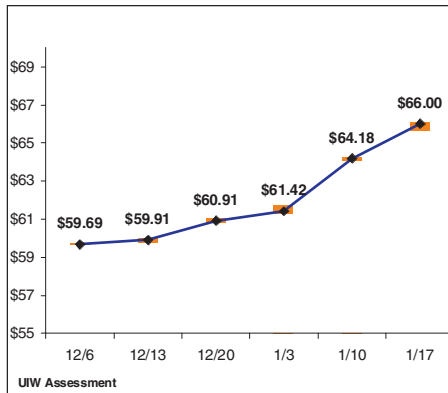


# URANIUM INTELLIGENCE WEEKLY

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## UPP: \$66.00/lb U3O8



## WEEKLY ROUNDUP:

### Weekly Roundup: Price Hits \$66

- **The Uranium Price Panel raised the spot price to \$66/lb U3O8 for Friday — up \$1.82/lb from the previous week (p2).**
- **China’s State Council Research Office warns that the fast pace of new-build in the country could “threaten the long-term healthy development of nuclear power.” (p3).**
- **Chinese President Hu Jintao begins a state visit to the US today. High on the list of topics for discussion will be his country’s efforts to reign in North Korea, although the visit is unlikely to produce substantive change on the issue.** The two countries have “divergent agendas,” David Shambaugh, director of the China Policy Program at George Washington University, told PBS Newshour. “The only thing we can agree on is that we both don’t want an implosion of the north.” Iran is also on the agenda as the P5+1 group (US, Britain, France, Germany, Russia and China) prepare for a new round of talks with the Iranians in Istanbul, Turkey Jan. 21-22. Iranian President Mahmoud Ahmadinejad said Tuesday that “Iran is making progress in nuclear energy” and that “100,000 resolutions” will not derail the effort. Iran last week took several international envoys on a tour of its nuclear facilities, although Russia, China and the European Union refused the Iranian invitation — while the US, Britain and France were not given one.
- **Cameco is keeping a low profile about troubles at its Port Hope conversion plant.** But a UIW investigation suggests the plant is producing well below capacity. Meanwhile, plans to spend “hundreds of millions” on a revamp have reportedly been scaled back (p3).
- **Will the UK government subsidize nuclear newbuild after all?** It appears so — although the route would be through a proposed Green Investment Bank (GIB), into which the government would inject some £1 billion directly from its budget by its 2012 launch (p5).
- **Turkey’s talks with Japan over a 5,600 MW nuclear plant in Sinop are described as being “dynamic” — after South Korea’s Kepco bowed out (p6).**
- **Usec is bargaining to keep its electricity prices down at its gaseous diffusion plant in Paducah, while pitching to revive a plan to re-enrich government depleted uranium stocks (p7).**
- **Uranium One almost doubled production in 2010.** Last week it reported output of 7.4 million lbs U3O8, up 108% from 2009’s 3.6 million lbs U3O8 (p8). Rio Tinto’s output, on the other hand, fell 20% last year (p9).

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*Editor’s note: As of next week, UIW will be re-named Nuclear Intelligence Weekly to reflect the broadening scope of our industry coverage. More details will be provided to readers in the next issue. ☼*

# MARKET

## Taipower On Shopping Spree As Spot Price Heads Skyward

The Uranium Price Panel (UPP) returned a spot price of \$66/lb U3O8 for Friday, up \$1.82/lb from the previous Friday. Producers say they expect the price to keep rising, while buyers say they think it will settle back to a level between \$60/lb U3O8 and \$65/lb U3O8.

Both sides agree that recent increases are based on a small number of transactions. "When things are moving rapidly like this, it only takes one deal" to push the price up, said a producer. Buyers uniformly professed to be puzzled by the run-up that has boosted the spot price some 59% over the past six months.

Buyers, sellers and traders seem to agree that supply remains thin, with relatively few pounds of production available to the market and some sellers reluctant to part at this point with the material they have on the assumption the price rise will continue. Meanwhile, the usual banks are said to be buying relatively small quantities, and there's demand from China, India, the UAE, Taiwan and Germany.

China National Nuclear Corp. (CNNC), China's largest nuclear power developer, announced that it would invest 800 billion yuan (\$121.5 billion) in nuclear energy projects by 2020, aiming to have 16 GW in operation and another 20 GW under construction by the end of 2015, People's Daily reported. It plans to increase revenues from 2010's 41.9 billion yuan (\$6.4 billion) to 100 billion yuan (\$15.2 billion) by the end of 2015. It also plans to raise additional funds by listing its subsidiary CNNC Nuclear Power Co. in the first half of this year.

Taiwanese utility Taipower reportedly agreed to buy 400,000 lbs U3O8 from Russia's Internexco in late December or early January for about \$62/lb U3O8. At that time, the UPP price was \$61.42/lb U3O8. Internexco reportedly made at least two other spot sales to Taipower last year (UIW Sep.7,p2).

With that deal behind it, Taipower is already out again, looking for another 400,000 lbs U3O8 equivalent (as U3O8 or UF6). The utility wants bids by next week for a 150,000 lb lot and a 250,000 lb lot, for delivery in July. "The Taipower guys are fairly astute on the market," a producer said. Based on the response

they got to their first RFP and their analysis of the market, they probably decided the price was headed up for a while and they'd better buy some more before it rose too far, he said.

German utilities RWE, E.On and EnBW are expected to hit the market to do some buying in the first quarter of this year, "which they haven't been doing for years," a producer tells UIW. Berlin in September lengthened the lifetimes of Germany's 17 reactors by an average of 12 years (UIW Sep.7,p3).

On the supply side, Rio Tinto's Energy Resources of Australia (ERA) has revealed that its 2010 production was even lower than previously predicted and almost 2.5 million lbs U3O8 below its actual sales last year (see story). While the company sold 11.08 million lbs U3O8 in 2010, it only produced 8.61 million lbs. This shortfall "was covered by a combination of inventory management, flexibility of timing shipments to customers, loans and purchases of uranium oxide," according to ERA. Uranium One, on the other hand, reported that its 2010 production was 108% above its 2009 production (see story). Market sources say, however, that most if not all of that material is already committed.

### US-Russia 123

Some market participants have been talking about how the new US-Russia civil nuclear cooperation agreement might change the market. A buyer says one effect might be more US utilities getting conversion from Russia, perhaps by paying for UF6 with U3O8. Adding more conversion to the world market would presumably put downward pressure on conversion prices, which have recently showed some life.

A uranium producer said his company would likely have to do some research to be prepared to deliver to St. Petersburg. But, other than that, he didn't see the 123 changing much for him. "We don't see this as a big deal," he said. "We don't think it'll be a major change in the trade pattern."

Any effect at all is likely a long way off, given the slow pace of implementation of nuclear cooperation agreements, even after they've been formally approved. "Sometimes it takes the DOE [US Department of Energy] a couple years to notice that a 123 has been signed," a buyer told UIW.

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## URANIUM PRICE PANEL

For the week ended January 14, 2011

### Weekly Spot Market Prices

Price (\$/lb U3O8)	Change	Jan.		Dec.			Nov.			Oct.				
		17	10	3	20	13	6	29	22	15	8	1	25	18
	1.82	66.00	64.18	61.42	60.91	59.91	59.69	60.81	58.78	58.92	54.09	50.64	50.40	48.33
Total Assessments	1.00	16.00	15.00	15.00	14.00	14.00	15.00	15.00	17.00	14.00	14.00	15.00	13.00	15.00
% within 1 StDev	-18.33	75.00	93.33	86.67	78.57	78.57	93.33	86.67	85.71	85.71	78.57	66.67	76.92	86.67
Low (\$/lb U3O8)	3.00	65.00	62.00	60.00	60.00	59.00	58.00	60.00	56.00	58.00	52.00	49.75	49.00	47.00
High (\$/lb U3O8)	1.25	67.50	66.25	63.25	62.00	61.00	60.50	62.00	61.00	60.00	56.00	52.00	51.25	49.25
Variability*	0.25	0.50	0.25	0.54	0.28	0.25	0.09	0.81	0.56	0.46	0.31	0.32	0.15	0.28

The Uranium Price Panel (UPP) represents the average price assessment reported by active spot market participants for a transaction of 100,000 lbs of U3O8 by book transfer on the date given. In the UPP, participants are assigned a market position of seller, buyer or intermediate. Each week Energy Intelligence eliminates assessments that are statistical outliers, and double-checks the market position of intermediates. It then uses random elimination to maintain an equal number of buyer and seller assessments in the final average. "Variability" represents the absolute range of conceivable final averages resulting from this random elimination. "High" and "Low" assessments represent the extremes of the non-eliminated market assessments. For a detailed explanation of the price panel methodology, see [www.energyintel.com](http://www.energyintel.com).

## Chinese Government Office Issues Stark Warning

One of China's key advisory bodies, the State Council Research Office (Scro), last week joined a growing body of critics of China's nuclear newbuild, saying the current momentum could "threaten the long-term healthy development of nuclear power."

Highlighting staffing issues, technology choices and safety issues, Scro, which serves as an advisory unit to the State Council — the senior executive body of the Chinese government — recommended that the amount of nuclear capacity put into operation by 2020 be capped at 70 GWe.

In the broad outlines of its critique, the Scro report parallels a series of remarkable criticisms from within the Chinese nuclear firmament over the past several years. In 2009, the head of China's National Energy Administration (NEA), Zhang Guobao, complained that nuclear power may be developing "too fast" in some regions: "We'd rather move slower and achieve less than incur potential safety concerns in terms of nuclear energy" (UIW Sep.28'09,p8).

Zhang was joined in his criticism that year by Li Ganjie, the director of China's safety regulator, the National Nuclear Safety Administration, or NNSA (UIW Apr.5,p3). "At the current stage, if we are not fully aware of the sector's over-rapid expansions, it will threaten construction quality and operation safety of nuclear power plants," Li told a conference sponsored by the International Atomic Energy Agency (IAEA).

### Improving Safety

The Scro report was remarkable not only for the scope but also the detail of its criticism. For instance, it listed the vast number of nuclear employees needed to staff operational reactors (each reactor calls for a team of 800 to 1,000 workers, 400 of whom need to be nuclear-related professionals, said the report), and then stated that the current pace of new-build "continues to dilute the high-end talent," and noted a lack of "adequate training."

The problem becomes even more acute for the NNSA and other nuclear regulators. The NNSA has a staff of "still less than 1,000," said the report, "even after restructuring." Moreover, the NNSA is unable to pay salaries competitive with the nuclear operators, which affects both the "stability" and "talent" of regulatory staff. And this isn't the only problem facing the NNSA.

The NNSA should become an independent body under the State Council, Scro said; it's currently subordinate to the environment ministry. Scro also advocated the passage of a "basic law" concerning nuclear safety, saying that "the independence of regulatory authorities is not enough." Safety regulations are one aspect of the basic nuclear law currently under review by the government (UIW Nov.29,p3).

There are also problems in construction, said Scro, which contended that nuclear power equipment has an "unstable product quality," due in part to a lack of uniformity in tech-

nical standards. Such standards need to be established, recommended Scro, and manufacturers should conduct joint research to improve equipment-manufacturing capacity.

### Second-Generation Technology: A Bad Bet?

Most interestingly, Scro warned that China could come to regret its current reliance on second-generation reactor technology (the current technology of choice in China is the CPR-1000, itself derived from a decades-old French technology). With a great number of these units starting construction in this decade, China could face a substantial fleet of second-generation reactors still operating by 2070 and 2080.

"By then," said the report, "three generations of models of nuclear power" will have been adopted, and presumably adopted by the rest of the world, meaning that China's safety risk "is much higher than other countries." Therefore, the government ought to carefully control the number of second-generation units built, said the Scro report, and "the scale should not be too large."

Indeed, Scro recommends "adhering to the AP1000 route" of reactor technology, and an unswerving commitment on the part of developers to domestic AP1000 construction and the development of the CAP-1400, the Chinese-evolved AP1000 technology. After the current wave of second-generation reactors that have already been approved go forward, Scro said, "the new nuclear power projects should in principle be" AP1000s.

### Impact Uncertain

Despite the prominence and length of the Scro report, its impact is unclear. Indeed, just as Scro released its report, the State Council approved the first two units of the Xudabao nuclear plant on Hulu Island in Liaoning. Construction of the first unit is expected to start in September, with a total of six AP1000s eventually planned, according to AsianPower, which listed the general contractor as China Nuclear Power Engineering.

"It's not so important," Arnaud Lefevre-Baril, the president of Dynabond Powertech, a consultant that helps Western nuclear firms in the Chinese market, said of Scro. "It's just one of the departments that belongs to the State Council." Scro may be most analogous to the Congressional Budget Office or the Government Accountability Office in the US — it can issue an independent and even scathing report, but this only guarantees a change in policy to the extent that the people in charge pay attention. ☸

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## Port Hope Underproducing With Revamp Scaled Back

Cameco's Port Hope conversion plant, which was down for 20 months during 2007-09, shut down again for much of the third quarter of 2010. It's back up now, but it is apparently producing well below capacity, and the company's plans to spend "hundreds of millions" to revamp it have reportedly been scaled back for financial reasons.

The Canadian company releases production figures for its Fuel Services division only as an aggregate figure, declining to offer individual numbers for each of the facilities within the division: the Port Hope UF6, UO2 and fuel-manufacturing plants; and the Springfields UF6 plant in the UK. Those facilities have a combined capacity of 21.5 million kgU, and likely turned out 15 million-16 million kgU by the end of 2010.

It's impossible to know from this data exactly how much UF6 the company produced in 2010, but it is clear it wasn't even close to the company's 17.5 million kgU UF6 capacity. Alan Beauchamp, the media relations manager at Springfields Fuels, tells UIW that, "For the calendar year, what I can tell you, we finished slightly ahead of our year plan at just under 5,000 tons [UF6 production]." (Cameco has a toll-conversion agreement with Springfields through 2016 for up to 5,000 metric tons).

That means, if the Fuel Services division's 2010 production was 15.5 million kgU, that the Port Hope UF6 plant would have turned out only about 7.4 million kgU, about 59% of its capacity — assuming the UO2 and fuel-manufacturing plants were both working at 80% of their capacities (2.8 million kgU for UO2 and 1.2 million kgU, respectively), and Cameco got about 4.9 million kgU out of Springfields. Even putting Port Hope UO2 and fuel-manufacturing production at zero only brings Port Hope UF6 production up to 10.6 million kgU (about 85% of capacity).

Only Cameco knows why it's underproducing, and company spokesman Murray Lyons declined UIW's requests for an interview with any executive from the Fuel Services division. Market sources are divided: One buyer tells UIW that, "When the spot price was [\$7-\$8/kgU], they were losing money, so they were happier to have the plant idle a little bit rather than sell at a loss. Now [that] the price is up, they're not actively marketing, because they don't want to depress it." A couple of other sources say Cameco is actively marketing its conversion services but not finding buyers.

Since June, spot-conversion prices have nearly doubled, and long-term conversion prices have risen substantially. Some of this is surely due to Honeywell locking out the workers at its conversion plant in Metropolis, Illinois, and ConverDyn announcing it wouldn't conclude any long-term contracts for the plant's services at anything under \$15/kgU — which seems to have set a new base price for conversion for the time being (UIW Jan.3,p5). But Cameco's underproduction must also be helping to keep prices firm.

### Shut Down, Again

Contributing to Cameco's low UF6 production level this year was yet another outage at its Port Hope plant. The plant was shut down from July 2007 to September 2008, and then again from December 2008 to June 2009. In February of 2010, Cameco spokesman Lyle Krahn said he was not aware of any further planned shutdowns of the UF6 plant that would limit production, according to the local Northumberland News.

Just a few months later, though, Cameco shut the plant down, and production for Cameco's Fuel Services division dropped from 4.5 million kgU in the second quarter of 2010

to 2.3 million kgU in the third quarter. Cameco's third-quarter filings called the break in operations, which lasted from Jul. 18 to Oct. 4, a "planned annual maintenance shutdown." A well-placed source, however, tells UIW that part of the time was spent on retraining necessitated by a series of "small incidents."

Both the Canadian Nuclear Safety Commission (CNSC) and Cameco say the regulator did not force the shutdown. "The CNSC had no part in the shutdown of the Port Hope conversion plant last summer," the CNSC's Aurele Gervais told UIW by e-mail. Cameco's Lyons said by e-mail, "The Canadian Nuclear Safety Commission did not dictate the length of this year's maintenance shutdown at Port Hope UF6 conversion."

But UIW's source insists the shutdown was about more than just maintenance. "It was maintenance primarily, but there was training to do for [the UF6 operators]. While the CNSC did not issue a direct statement, there were some concerns from [the] regulator on some minor events taking place, but they are very rigid on for [sic] the protection of the community," the source wrote in an e-mail.

### Environmental Problems

Even as its production drags, the Port Hope plant, which sits on the Lake Ontario waterfront, has forced Cameco to grapple with environmental issues, old and new.

It was the discovery in 2007 that arsenic and uranium had been leaking through the floor that led Cameco to shut down the UF6 plant in July of that year. It remained closed for some 14 months as the company removed the top two feet of soil underneath the plant — almost 1,000 cubic meters — to reduce contamination, according to the Northumberland News. But that wasn't enough to prevent toxic substances from reaching the harbor, the company admitted in May 2008.

During that shutdown, the company spent \$60 million on upgrades to the UF6 plant and to address subsurface contamination issues beneath the plant, and another \$18 million on upgrades in the UO2 plant on the same site, according to Northumberland Today, another local news source. "We want to make sure employees are more cognizant of issues that could cause problems in the future and just raise the bar in terms of the performance of the plant and the employees," the paper quoted Cameco spokesman Bob Kelly as saying.

Cameco brought the plant back up in September 2008, but had to shut it down again in December of the same year: the first shutdown had led to a contract dispute with Honeywell, which had been Cameco's sole hydrofluoric acid supplier for decades (UIW Mar.16'08,p6). The plant restarted in June 2009, but the problems just kept coming.

In the following months, the UF6 plant suffered five reportable incidents, including a release of hydrofluoric acid in the loading zone, a release of UF6 in the flame reactor building, a leak of "a few liters" of uranium-contaminated condensation into the sanitary sewer, and elevated levels of fluoride contamination in the air, according to the Northumberland News. The company reportedly announced it was launching an internal investigation.

In June 2010, Cameco “voluntarily” shut down its UO2 plant in Port Hope to investigate the cause of elevated uranium emissions. In July 2010, there was a release of UF6 from the UF6 plant while an operator was disconnecting a UF6 cylinder, according to Cameco’s third-quarter compliance report. In August, Cameco reported that, “based on a preliminary investigation, more than 1,000 kg of Freon ... may have been released between April 2009 and August 2010.”

## Vision 2010

Aside from these modern environmental problems, Cameco is also trying to figure out how to deal with legacy issues on its site. The company has for a decade or so been planning a comprehensive redevelopment of its Port Hope site, which it calls Vision 2010.

According to a 2006 project description, Vision 2010 involves additional environmental cleanup and demolishing about two-thirds of the site’s 30 buildings. New structures would replace some of the old, including those for storing UO2 drums and UF6 cylinders, and a receiving building. Cameco’s Bob Steane called the project “a Cameco-financed project reaching into the hundreds of millions of dollars ... It’s not in the billions, but it’s definitely in the hundreds of millions,” according to a 2008 Northumberland Today article.

The Canadian government is spending C\$280 million or so cleaning up low-level radioactive waste in the town of Port Hope destined for either of two waste-management facilities in the area — and it has agreed to accept some 150,000 cubic meters of historic waste from Cameco’s site, too.

But by June 2009, Andy Oliver, then Cameco’s vice president for fuel services, told Northumberland Today that the Vision 2010 plan would be scaled back. “The world around us has changed considerably in the past couple of years, which requires Cameco to look closely at all of its current proposed future capital expenditures and see if they are still appropriate and keeping within our means,” he said. That meant that Vision 2010 probably won’t include as much new construction as planned, he said, although he did not reveal details of the new plan.

Cameco’s Lyons wouldn’t say much about the status of the Vision 2010 plan earlier this month, either: “Cameco expects to provide additional information about the scope of its Vision 2010 project in 2011,” he told UIW by e-mail. “The project will not affect production, but rather improve the ability of Cameco to operate the UF6 and UO2 conversion plans on the site.” ☼

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## UK Government May Subsidize New Nuclear

After years of stating that it would do no such thing, the UK government appears to be paving the way for an indirect subsidy of new nuclear projects. The proposed Green Investment Bank (GIB), into which the government would

inject some £1 billion directly from its budget by its 2012 launch, appears to be grouping nuclear newbuild into areas it could invest in.

Although the government is still firming up the exact form of the GIB — still in play, for instance, are whether it would be a bank or a fund, and the exact financial mechanisms by which it would promote green technologies — it would be a semi-independent institution with considerable government backing. Beyond the £1 billion coming directly from government coffers, the GIB would also receive the proceeds from assorted (though as yet unspecified) government assets.

“In spite of the incredibly tough financial position that we find ourselves in as an incoming government,” the government is committed to the GIB, Justine Greening, an MP and the Treasury’s economic secretary, on Jan. 12 told the Environmental Audit Committee (EAC) of the House of Commons. “From our perspective, we see that the primary purpose of the green bank is to help finance Britain’s green infrastructure.”

In a December tender for consultancy services released by the Business Innovation and Skills (Bis) department, one of the three lead departments developing the GIB, the government listed “low-carbon power generation” among the three initial “target sectors on which the GIB may initially focus to mobilise additional private sector finance,” and “wind farm investment, new nuclear investment and grid investment” as the three targeted low-carbon subsectors.

## Controversial Semantics

This development was less than enthusiastically received by Caroline Lucas, an MP from Brighton and the first MP from the Green Party. Lucas was quick to label any potential GIB investment in new nuclear a subsidy.

“If the Treasury provides a guarantee for investor’s capital invested in the bank, then that could help the bank keep its cost of capital lower than it would otherwise be,” Lucas said. “In other words, that is an implicit subsidy. So on the one hand, in the Bis tender it’s clearly saying new nuclear, on the other hand, if that were to be funded by the GIB, that could be seen, I think, as a subsidy.”

Greening denied this. “The fact is that the Decc [the Department of Energy and Climate Change] guidelines are very clear that there will not be a subsidy. And then what you’re talking about is the potential for a potential green bank to potentially then [finance a nuclear project] ... and I think that is to my mind a leap too far. We’ve been very clear-cut in the coalition agreement, we’ve been very clear-cut by issuing Decc guidelines.”

Indeed, the government — which is formed from a coalition between the Conservative Party and the anti-nuclear Liberal Democrats — has consistently declared that it won’t back any nuclear subsidies (UIW May17,p7). Chris Huhne, a Liberal Democrat and the head of Decc, declared as much in a statement to parliament on Oct. 23:

“I should like to take the opportunity to reconfirm the Government’s policy that there will be no public subsidy for

new nuclear power. To be clear, this means that there will be no levy, direct payment or market support for electricity supplied or capacity provided by a private sector new nuclear operator, unless similar support is also made available more widely to other types of generation.”

The second sentence of this declaration, of course, hardly clarifies the first. If the government-backed GIB did support new nuclear, it would certainly do it while also supporting other types of generation. Last week, therefore, Lucas was less than satisfied by Greening’s reply.

“So would you agree that it would be a subsidy were the Green Investment Bank to fund new nuclear ... is that a subsidy?” asked Lucas.

“Well I don’t think it’s fair for me to sort of jump the gun and say what a Green Investment Bank will or won’t be investing in,” Greening said. “What I can assure you is that we’re going to stick to the guidelines that Decc has issued.”

“But that doesn’t make sense,” interjected Lucas. “I’m sorry. With respect, it’s clear in the tender that new nuclear is being proposed to be funded by the Green Investment Bank. It’s also clear that if it is a bank, then that means that there will be some degree of government support to it, ergo, some kind of subsidy.”

Utilities hoping to build new nuclear plants are certainly taking notice of the possibility of GIB support.

In an Oct. 15 letter to the EAC, a subsidiary of French utility EDF that would most likely build the first reactors in the UK if newbuild actually proceeds, was less than subtle in its recommendation: “The GIB should have within its scope all low-carbon technologies that can make a major contribution to UK environmental and security of supply objectives. Support for a subset of technologies would distort the UK energy market.” ☼

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## Turkey Hoping Japan Will Have More ‘Strategic’ Mindset

In the wake of last year’s failed talks with South Korea’s Kepco, Turkey is betting on successful negotiations with a consortium of Japanese businesses for the construction of a massive 5,600 MW nuclear plant in Sinop. Talks between the two sides are being described as “dynamic,” and Turkish observers say that, while a potential deal with the Japanese could flop at the last minute, they are optimistic given Japan’s commitment to increase its “strategic presence” in the region.

Talks with Kepco collapsed in November despite a preliminary agreement, worth an estimated \$20 billion, signed last summer. Reports indicate that when the two sides met during the G20 summit in Seoul they had hoped to finalize key issues such as financing, ownership structure, electricity price and according to one report, waste management and

decommissioning. Ultimately, however, the South Koreans’ proposal did not satisfy the Turks for a variety of undisclosed reasons, though financing, as one would expect, appeared to be at the core. A South Korean ministry official pointed to disagreements over electricity price, while Turkish Trade Minister Taner Yildiz mentioned treasury guarantees (UIW Nov.15,p7).

More broadly, the Turks want the Sinop plant to be 100% financed by the foreign contractor — essentially the same arrangement as the four-reactor project in Akkuyu that Russia is contracted to build — with investment returns coming from future electricity sales. For the South Koreans, however, this entailed enormous risk, and they were hoping to negotiate conditions more similar to those they won in the United Arab Emirates — i.e., an \$18.6 billion, four-reactor plant supported through significant host-country financing, with Kepco participation in plant operation (UIW Oct.18,p7). As a revealing editorial in the Korea Herald in November stated, “Imagine that construction will be frozen for political reasons or as a result of social unrest. In that case Korean suppliers would suffer tremendously, and worst of all it would take decades to get back investments.”

Turks are faulting the South Koreans for failing to “think strategically.” “To understand why negotiations with Korea couldn’t go forward you should look at the Russian agreement, because this is one of the best agreements that Turkey can get. It’s a reference model right now,” said Hasan Ozertem, an analyst at the International Strategic Research Organization in Ankara. “Russia is providing finance ... and Russia is making this investment out of strategic foresight. In the medium and long term, Russia will benefit, but in the short term Russia is taking a great risk.”

As Ozertem explained, South Korea’s government was also unwilling to back Kepco’s ambitions in Turkey. “Unlike Russia, [the South Koreans] don’t see this as a strategic investment, but an economic one,” he said, suggesting that the Koreans failed to see the “larger picture” — i.e., that they are passing up an opportunity for strategic exposure to an emerging, democratic market in Europe. “They just couldn’t take the long-term risks,” he said.

### Enter Tokyo

Japan, by contrast, appears willing to do so. A memorandum of understanding has been signed, and Ozertem says the Russian model is being studied. “The Japanese are more courageous than the Koreans to take the initiative, and in this sense the negotiations between Turkey and Japan right now are very dynamic,” said Ozertem. “Japan is taking this project strategically. It is important for them to have this asset [the proposed Sinop plant] on the Black Sea coast because from here they can find new partners and new business opportunities in the Mideast and Turkey’s neighboring countries.”

Reports indicate that Toshiba, Tokyo Electric Power (Tepeco) and Itochu are involved in the negotiations, as well as Japanese government officials. Both sides announced after signing a memorandum of understanding on Dec. 24 that

they needed at least three months to hammer out details for an agreement. To be sure, the South Koreans are not completely out of the picture, and in light of the initiative from Japan, a traditional rival, they have shown renewed interest, according to Ozertem.

But in December, the Turkish ambassador to South Korea, Erdogan Iscan, said Kepco would have to come up with an improved proposal. (Japan and South Korea, though rivals, on Dec. 20 signed an agreement for nuclear energy cooperation, though the document must first be ratified by both countries' parliaments. Japanese Foreign Minister Seiji Maehara said that the agreement allows for Japanese firms to export reactor components for newbuild in third countries.)

For their part, the Russians are not participating in negotiations for the Sinop plant, Deputy Prime Minister Igor Sechin said Dec. 16 after returning from a visit to Turkey — though previously his boss, Vladimir Putin, had not ruled out the possibility that Moscow could do so. Indeed, there appear to be at least nominal talks between Ankara and both France and Russia. “We are working on these proposals, but we will give priority to Japan,” Yildiz told reporters earlier this month (UIW Jan.10,p9). While the French proposal could be a wild card, the Russian one has little chance of success. Given Turkey’s dependence on Russian energy supplies, now increased by the Rosatom project in Akkuyu, where construction of the first reactor is scheduled to begin in 2013, it would seem counterintuitive to award the Sinop facility to Moscow.

#### Kepeco’s Lithuanian Negotiations

Despite setbacks in Turkey, the South Koreans, who are aiming for \$400 billion in nuclear energy contracts by 2030, may still be able to follow up their success in UAE with a victory in Europe. Although Kepco pulled out of the Lithuanian newbuild tender in November, reports indicate that the two sides are engaged in talks.

The Lithuanians, at least, are scrambling to keep the Koreans interested. Kepco’s last-minute exit from the tender was made after the company learned its bid was the only eligible one, a tactical move to negotiate better conditions (UIW Dec.6,p3). Lithuanian officials are refusing to comment on current talks — if talks are indeed taking place — although local media reported that Sarunas Vasiliaskas, director of the Visaginas NPP project, traveled to Seoul in early January.

Ominously, Lithuanian President Dalia Grybauskaitė recently said that a new plant might never see the light of day. Originally, the project was a joint effort between Lithuania, Latvia and Estonia, with Poland joining later. But after a series of egregious mistakes by the Lithuanians, the whole thing appears moribund. Estonia has suggested it would soon back out and instead build its own small reactor by 2025, and Polish officials are virtually boycotting their Lithuanian counterparts over minority rights in Lithuania and troubles at the oil refinery in Mazeikiiai. Relations between the two neighbors were described by The Economist as the worst in the EU. ☹

Gary Peach, Riga

## Usec Floats Two Plans To Help Keep Itself Afloat

Lagging behind its competitors in the switch from anachronistic gaseous-diffusion technology to modern centrifuge technology, Usec unveiled two gambits last week apparently meant to pressure the US government into providing assistance. It issued what appears to be a public plea for a good deal from its federally owned primary electricity supplier, and put in a pitch for reviving a plan to re-enrich government depleted uranium stocks.

“We made this announcement simply because the future of the plant has been an open question in the local community,” Usec spokesman Jeremy Derryberry told UIW. “We wanted to make our intentions known and outline the key issues — economic considerations and tails — that will determine the future of the Paducah plant.”

Usec issued a statement Jan.11 saying it was “working to extend the operation of the Paducah Gaseous Diffusion Plant (GDP) beyond May 2012,” and suggesting its power supply contract with the Tennessee Valley Authority (TVA), which ends May 31, 2012, is the deciding factor. It reads like a threat from Usec that if it doesn’t get a good price from TVA on a new power contract, it’ll shut down the GDP.

Usec leases the plant from the Department of Energy (DOE), but that agreement doesn’t expire until 2016 and can be renewed, although its Nuclear Regulatory Commission operating license expires at the end of 2013. The company says it has enough Freon to last through 2019. Furthermore, Usec’s 2002 agreement with the DOE requires it to keep the GDP producing at least 3.5 million SWU per year until six months before it has completed a centrifuge-enrichment facility capable of producing the same amount; that is not going to happen before May 2012. Given the timing of all these factors, it seems that Usec’s threat to shut down the Paducah GDP in May 2012 is about the TVA power supply contract.

Usec and the TVA have been talking about the terms of a post-2012 power supply agreement since at least 2009. The stakes are high for both sides. Usec’s 2009 annual report says 70%-75% of its GDP production cost is electricity, and that “if power costs rise and mitigating steps are unavailable or insufficient, production at the Paducah GDP could become uneconomic, which will adversely affect the long-term viability of our business.” TVA’s 2010 annual report says Usec’s Paducah plant accounted for five percent of TVA’s total operating revenues of \$10.9 billion — about \$545 million. So it’s no wonder the negotiations have been dragging on, and have now gone public.

Each side could probably live without the other. TVA spokesman Scott Brooks tells UIW that Usec has been a good customer and that, “TVA always attempts to offer its customers the lowest possible prices, along with superior reliability and service.” But what if the two sides can’t reach an agreement? “We’d have to make up that revenue somewhere else,” he said. There may be some pressure on TVA from Washington, because of the jobs Usec provides, and because Usec’s the only American enrichment company, but

at least some in the DOE believe the country could get along just fine without Usec (UIW Oct.11,p4).

The Paducah plant is connected to the grid, rather than directly to TVA's coal-fired Shawnee generating station about 10 miles northwest of Paducah. That means it can buy power from other suppliers. In fact, Usec already buys "some non-firm power from other providers," according to Derryberry. He would not say whether the company could get all the power it needs from non-TVA suppliers, but he did say it was talking to alternative suppliers. "We are in negotiations with TVA and other parties for power contracts beyond May 2012. Given the nature of these negotiations, we would not want to discuss the status or participants," he told UIW.

Usec says it plans to make a decision in the first half of this year on whether to keep the plant open past the end of its current power supply contract with TVA.

### Re-Enriching Tails

In addition to pushing for a good electricity price from TVA post-2012, Usec's statement Tuesday said: "To support extended operations, [Usec] is also examining the potential of re-enriching a portion of the Department of Energy's (DOE) depleted uranium stockpile." When asked about this proposal, DOE spokeswoman Jen Stutsman replied by e-mail that "The Department of Energy has not yet received a specific proposal from [Usec], but will give due consideration to any proposal we receive in the future."

Usec's re-enrichment plan was an issue in Congress in 2008 (UIW Apr.7'08,p4). It wasn't as visible in 2009 and 2010, but during those years legislation was pending that would have directed the DOE to "seek to enter into a contract" with Usec for the re-enrichment of 50% of "cylinders of uranium tailings, with an assay of such value as the Secretary finds economically suitable, located at Government-owned sites in Paducah, Kentucky, and Portsmouth, Ohio." It also directed the Secretary to "sell or contract for the sale of the product of re-enrichment."

However, the bills — introduced in the House by Rep. Ed Whitfield (R-Kentucky), and the Senate by Sen. Sherrod Brown (D-Ohio) — were referred to committee and died there. Usec's lobbying disclosure forms show it spent plenty of its time and money pushing the Whitfield and Brown bills, although to no avail. Derryberry believes the plan has a better chance now. "A confluence of factors makes now the perfect time to move forward with this program: Uranium prices are at a level where the government can obtain significant value from this material and Paducah has spare capacity opening up to perform the work before we shut it down and transition to ACP," he told UIW.

Because of overhead costs, Usec has to produce 5.5 million to 6 million SWU a year at Paducah to make it profitable, an industry source tells UIW. Usec likely faces a future gap when it won't have enough contracts to justify running the plant at that level, probably during the ACP ramp-up when it will be obliged to keep Paducah running. To fill this gap, Usec does not need all 700,000 tU of tails DOE has at the Paducah and Portsmouth sites. "Our sugges-

tion is to make use of only a small subset of the stored cylinders to produce amounts that will not have an adverse impact on the domestic uranium industry," Derryberry said.

In 2008, the Government Accountability Office estimated that about one-third of the DOE tails had U-235 concentrations high enough to make them profitable to re-enrich at a uranium price of \$200/kilogram (about \$91/lb). With the price around \$66/lb now, even less of DOE's inventory is worth re-enriching. The tails that are not worth re-enriching will be deconverted at facilities built at Portsmouth and Paducah for some \$529 million by Uranium Disposition Services (UDS), a joint venture involving Energy Solutions, Areva and Burns & Roe (UIW Oct.26'09,p6).

Derryberry would not give additional details of Usec's plans, saying only that the company has "discussed with DOE the potential of enriching a portion of the Department's depleted uranium stockpile and our hope is that further discussions could take place in a timely manner. We prefer not to speculate right now on the shape or form of any potential agreements, but we do not want to structure an agreement that would have a negative impact on the uranium industry."

The Uranium Producers of America (UPA) in the past have worked to limit DOE's efforts to put government uranium on the market, where it would compete with privately produced yellowcake. UPA President Paul Goranson told UIW last week that, "In general, if the quantities consumes the high assay tails from the excess inventory, fits in with the 2008 Excess Inventory Management Plan quantities, and could be pushed to the long term market, it certainly is in line with UPA's position." The Management Plan limits DOE sales to 10% of US requirements annually (about 5 million lbs U3O8); Usec says "The amount of natural uranium that would be sold annually under such a program represents less than 2.5 percent of global uranium demand," which is roughly 4.5 million lbs U3O8. ☼

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## Uranium One Production Doubles

Uranium One reported 2010 production of 7.4 million lbs U3O8, up 108% from 2009's 3.6 million lbs U3O8. The vast majority came from the company's shares of the Akdala, South Inkai, Karatau and Kharasan projects in Kazakhstan (see table).

In August, Uranium One said production was going so well at South Inkai that it was raising its expected 2010 production from 6.8 million lbs U3O8 to 7 million lbs U3O8. And indeed, South Inkai did not disappoint, boosting production 106% year-on-year, from 2.1 million lbs U3O8 to 4.4 million lbs U3O8, according to a company statement last week.

Uranium One also got its first production out of the Akbastau and Zarechnoye projects. When Atomredmetzoloto (Armz) took a 51% stake in Uranium One last year, Uranium One took over the Russian company's 50% stake in Akbastau and 49.67% stake in Zarechnoye (UIW Nov.15,p7). Armz's



acquisition closed Dec. 27, and Uranium One recorded production from the two projects of 34,000 lbs U3O8 from that date until the end of the year.

Akbastau and Zarechnoye, which are both still ramping up toward full production, turned out a combined 881.2 tU (2.3 million lbs U3O8) in 2009 (UIW Jun.1,p4). The two mines have a combined annual production capacity of 5,000 tU (13 million lbs U3O8), according to Kazatomprom. That roughly 6.5 million lbs U3O8 will now go to Uranium One; the company has said that adding the two mines to its portfolio would increase its steady state production from about 10 million lbs U3O8 to about 16 million lbs U3O8.

Uranium One also announced last week that it had more than doubled its sales from 3.2 million lbs U3O8 in 2009 to 6.9 million lbs U3O8 in 2010. ☞

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## Production Falls at Both Rossing and Ranger

Production of uranium concentrates from Rio Tinto's two mines fell 20% last year, netting the London-based company some 11.38 million lbs U3O8 in equity production. The fall came primarily on the back of lower grades at both Namibia's Rossing and Australia's Ranger mines.

While the company's Northern Territory subsidiary Energy Resources of Australia (ERA) warned this summer that production would fall below previous expectations (and sales obligations),

the final results were more dramatic than expected. In July, the company revised its 2010 outlook from just over 4,410 tU to a range of 3,646-3,986 tU; by October it announced another downward revision to 3,307 tU. The final result was 3,216 tU (8.36 million lbs U3O8) of drummed production, nearly 28% below the initial outlook (UIW Oct.18,p3).

ERA blamed this failure to meet even the second down-

ward-revised outlook on "completed but undrummed production on hand at the end of the year," and indeed, the Rio Tinto production figure that reports this larger undrummed number was 3,312 tU (8.61 million lbs U3O8). But fourth-quarter undrummed production of 2.80 million lbs U3O8 also benefited from dramatically improved ore grades at the millhead (0.27% uranium oxide compared to 0.18% in the September quarter), an improvement that was offset, according to Rio Tinto, by "slightly lower throughput and lower mill recoveries." It gave no explanation for these lowered rates.

Meanwhile, Rossing saw a similar decline, with 2010 production falling 13% from 9.15 million lbs U3O8 to 8 million lbs due to unexplained lower average feed grade. Production was down on the previous year in every quarter of 2010. ☞

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## Quarterly Reports: Uranium One

Project	Production (in million lbs U3O8)	2010	2009	% Chg.	Q4'10	Q4'09	% Chg.
Akdala	Total (100%)	2.753	2.686	2%	0.714	0.759	-6%
	Kazatomprom (30%)	0.826	0.806	2	0.214	0.228	-6
	Uranium One (70%)	1.927	1.890	2	0.500	0.532	-6
South Inkai	Total (100%)	4.445	2.160	106	1.143	0.781	46
	Kazatomprom (30%)	1.334	0.648	106	0.343	0.234	46
	Uranium One (70%)	3.112	1.512	106	0.800	0.547	46
Karatau*	Total (100%)	4.306	0.146	2845	1.400	—	—
	Armz (50%)	2.153	0.073	2845	0.700	—	—
	Uranium One (50%)	2.153	0.073	2845	0.700	0.073	858
Kharasan	Total (100%)	0.667	0.272	145	0.333	0.094	255
	Energy Asia (40%)	0.267	0.109	145	0.133	0.038	255
	Kazatomprom (30%)	0.200	0.082	145	0.100	0.028	255
	Uranium One (30%)	0.200	0.081	146	0.100	0.028	255
	<b>Total Uranium One-Attributable Production</b>		<b>7.392</b>	<b>3.556</b>	<b>108%</b>	<b>2.100</b>	<b>1.180</b>
<b>Total Uranium One Sales</b>		<b>6.900</b>	<b>3.200</b>	<b>116%</b>	<b>2.900</b>	<b>1.500</b>	<b>93%</b>

\*Uranium One acquired Karatau Dec.21,2009, so 2009 data represent production from that date until the end of the year.

Sources: Uranium one filings, UIW calculations.

## CANADA

A cargo ship on the way from Canada to China, which was hit by a storm that knocked open two of the 840 drums of uranium it was carrying earlier this month, has returned to port in Ladysmith, British Columbia. The ship left Vancouver Dec. 23 carrying Cameco U308 and an oil rig and “encountered severe weather,” according to a Jan. 14 company statement. On Jan. 3, when the ship was between Hawaii and the Midway Islands, Cameco learned that “sea containers, loaded with drums filled with uranium concentrate, had shifted and two opened drums were outside of their sea container.” The company says the uranium remained “safely sealed off in one of the ship’s cargo holds,” and “the crew is safe and the environment is protected.” On Cameco’s recommendation, the ship turned around and headed back to Canada where, by Sunday, a Cameco team had “commenced preliminary assessment work in preparation to enter the ship’s hold.” According to the company, “Once the extent of the remediation work [needed] has been determined, Cameco will work with Transport Canada to finalize a location where the cargo will be cleaned up, repackaged and shipped to its original destination” which, according to Canada’s National Post, was Zhanjiang.

## EGYPT

The government will issue a tender for its first nuclear power plant by the end of the month, the country’s energy minister, Hassan Younes, told Reuters on Jan. 16, adding that it’s already under review by the state council. “We have already received interest for the bid from companies in all parts of the world including France, the United States, China, Russia and Japan,” he said. The government plans to choose the winning bid by the summer of next year, after which it hopes to see a large plant built at Al Dabaa, on the Mediterranean coast. In a press release earlier this month, the energy ministry revealed that Egypt would seek proposals for four reactors with individual capacities of 900 MW to 1,650 MW. Meanwhile Egypt’s two largest construction firms, Orascom Construction Industries (OCI) and Arab Contractors, announced in a joint statement the same day that they have “already initiated discussions with international nuclear technology providers to form a bidding consortium for this project.”

## FRANCE

Ministers are considering selling off up to a quarter of EDF’s nuclear-generated electricity to rival French suppliers by April, with implementation possible by September, according to newswire reports quoting Energy Minister Eric Besson Friday. The price is likely to be around €42 (\$56) per megawatt hour, but rivals including GDF Suez and French independent Poweo are pushing for as low as €35/MWh. The final decision will be President Nicolas Sarkozy’s. EDF Chief Executive Henri Proglio has repeatedly asked for €42/MWh, saying anything lower would unfairly disadvantage EDF. Rivals argue a lower level would allow them to compete on an even keel, while also keeping French electricity prices lower for retail customers.

## INDIA

Indian Oil Corp. (IOC) last week entered a joint-venture agreement with the Nuclear Power Corp. of India, Ltd. (NPCIL) to jointly build domestic reactors. By law, only NPCIL and its subsidiaries can legally construct and operate nuclear power plants, but other entities can take minority stakes. The IOC agreement comes only a week after NPCIL and state-owned National Aluminum Co. (Nalco) announced they were in talks for Nalco to take stakes in Indian nuclear power projects (UIW Jan.10,p9). And last April NPCIL inked a deal with India’s National Thermal Power Corp. (NTPC) for two reactors. An NPCIL official told the Hindu’s Business Line publication that IOC is interested in purchasing a 49% stake in the seventh and eighth units at NPCIL’s Rajasthan plant for some 126 billion rupees (\$2.73 billion). This equity structure appears in line with the Nalco and NTPC deals.

## NAMIBIA

Concerned the deal could ultimately help supply Iran with yellowcake, the US government in 2009 pushed Canada to block the sale of a Canadian-owned uranium project in Namibia, according to diplomatic cables released by Wikileaks and published by Norway’s Aftenposten newspaper over the weekend. The deal in question was George Forrest International’s (GFI’s) proposed C\$579 million acquisition of Forsys Metals, which owns the Valencia deposit in Namibia. A widely held industry view was that GFI didn’t have the cash to pay for the deal, and rumors circulated at the time that the Belgium-based company was seeking financing from the United Arab Emirates or even Iran (UIW Apr.3’09,p7). An Aug.12, 2009 cable noted that Iran was searching for additional uranium supplies, and charged murkily that, “The United States has information that links George Forrest International to ongoing discussions with senior Iranian officials. These discussions may be related to [Iran’s] efforts to acquire uranium ore.” An Aug.13, 2009 cable from the US Embassy in Ottawa back to Washington, said Canada shared US concerns about the GFI-Forsys deal. Shortly thereafter, Ottawa put the deal on hold pending an investigation (UIW Aug.24’09,p5). By the end of the month, Belgium-based GFI had withdrawn its offer (UIW Aug.31’09,p7).

## RUSSIA

The US-Russia 123 Agreement took effect Jan. 11 with an exchange of diplomatic notes in Moscow between US Ambassador John Beyrle and Russian Deputy Foreign Minister Sergey Ryabkov (UIW Dec 13,p10). The deal is something of an historic event — although both countries have dozens of nuclear cooperation agreements (NCAs) with other countries, the world’s two largest nuclear powers did not have one between themselves (two previous US-Russia nuclear agreements concluded in 1973 and 1990 were not comprehensive in scope, and in any case had long since expired). Now the two sides must prioritize areas for cooperation — and therein lies potential for friction. Moscow clearly has its sights set on a joint enrichment venture in the US, while the primary US focus is on efforts to support arms control and nonproliferation. Both sides have expressed a desire to collaborate on advanced reactors and fuel-cycle technologies.

## UKRAINE

The government is studying sites for a Russian fuel fabrication plant in the Yellow Water (Dnepropetrovsk) region in the village of Smolin (Kirovohrad Oblast) in southwestern Ukraine, according to an announcement by Russia’s Tvel, which will build the plant. “Spaces in these locations were selected as potential sites suitable for construction of the plant,” Tvel said in a statement. The announcement leaves open the question of where plans are headed for a three-way venture between Kazakhstan, Ukraine and Russia for a joint fuel-fabrication venture — with the fabrication plant in Russia — announced last September (UIW Sep.20,p3).

## UNITED STATES

Members of the public have until the end of January to comment on panel members provisionally selected to carry out a study of cancer risk around licensed nuclear facilities in the US. The committee was selected by the National Academy of Sciences (NAS) Nuclear Radiation and Studies Board (NRSB), which was requested to carry out the study by the Nuclear Regulatory Commission. John E. Burris, president of the Burroughs Wellcome Fund, is provisional chair, according to an NAS web posting Jan. 11. The assessment will be carried out in two consecutive phases, with Phase 1 aimed at identifying “scientifically sound approaches” for an epidemiological study of cancer risks, the NRSB said. The first phase is slated to begin on Sep. 1 and last 15 months. ☞

# ENERGY INTELLIGENCE URANIUM MARKET UPDATE

For the week ended January 14, 2011

Previously known as the Nukem Weekly Report and the Nukem Price Bulletin

## Monthly Spot Market Prices

	Change	2010	Dec.	Nov.	Oct.	Sep.	Aug.	Jul.	Jun.	May	Apr.
<b>Uranium (\$/lb U3O8)</b>											
Low	+5.50		+59.50	+54.00	46.00	45.00	44.00	41.50	40.50	40.50	40.50
High	+1.00		+61.50	+60.50	50.50	47.00	46.25	43.00	41.75	41.75	41.75
<b>Conversion (\$/kgU)</b>											
Low	-		+11.00	+11.00	11.00	9.00	10.00	6.00	6.00	5.50	5.50
High	-0.50		+12.50	+13.00	13.00	13.00	12.50	11.00	7.50	7.50	7.50
<b>Enrichment (\$/SWU)</b>											
Low	-		+153.00	+153.00	153.00	153.00	153.00	153.00	153.00	149.00	157.00
High	-		+155.00	+155.00	154.00	154.00	155.00	155.00	158.00	157.00	159.00

## Spot Bids and Offers

Buyer or Seller	Category	Due by	Uranium Qty. (‘000 lbs U3O8)	Conversion Qty. (‘000 Kgs U)	SWU Qty. (‘000 SWU)	Form	Delivery	Origin
Buyer:	Non-US Utility	Jan-10	400			U3O8 or UF6	Jul-10	Unknown

## No Term Bids or Offers

## No Term Evaluations

## No Spot Evaluations

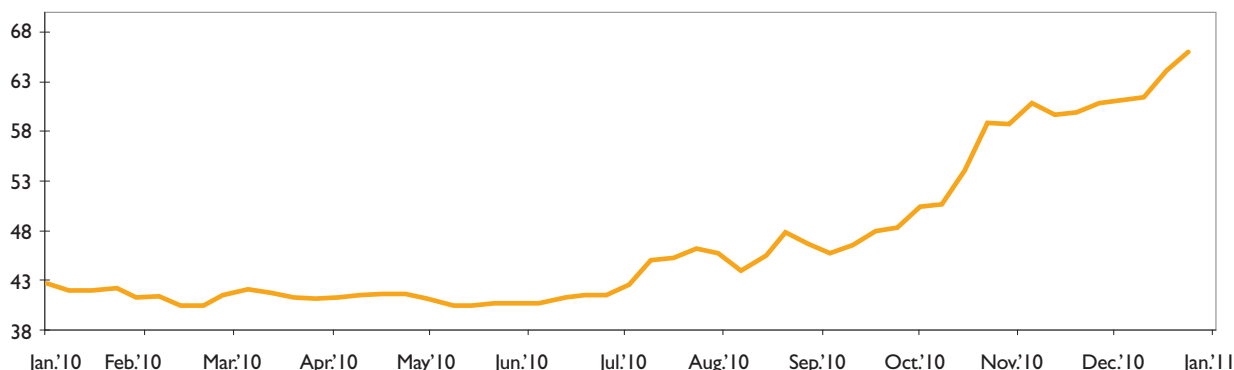
## Spot Transactions

Buyer or Seller	Category	Due by	Uranium Qty. (‘000 lbs U3O8)	Conversion Qty. (‘000 Kgs U)	SWU Qty. (‘000 SWU)	Form	Delivery	Origin
Buyer:	Non-US Utility	12/21/10	400				3/31/2011	Unknown

## No Term Transactions

(\$/lb U3O8)

## Uranium Price Panel Over the Previous Year



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