

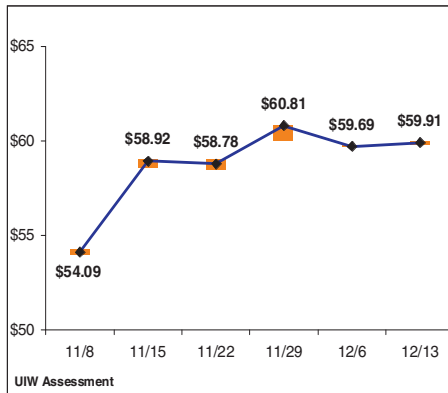


URANIUM INTELLIGENCE WEEKLY

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Vol. IV, No. 50, December 13, 2010

UPP: \$59.91/lb U3O8



WEEKLY ROUND-UP:

Trade Volume in 2010 Breaks Record

- **This year's total spot-market trade volume will break the previous record — set in 1990.** But the remainder of 2010 is expected to be quiet, with the Uranium Price Panel returning a spot price of \$59.91/lb U3O8 for Friday, largely unchanged from the previous Friday's \$59.69/lb (p2).
- **Kang Rixin oversaw China National Nuclear Corp.'s transformation from a small, money-losing utility into a global nuclear powerhouse; an era ended when he was sentenced to life imprisonment on corruption charges last month.** Now his successor is struggling to retain CNNC's status as China's premier nuclear company (p3).
- **Global X Chief Executive Bruno del Ama says it was "sheer luck" that the company's new uranium fund was launched one day after an apparently erroneous report about plans for a substantial increase in new nuclear capacity in China, and Areva's multibillion-dollar long-term uranium supply contract.** But as uranium fund launches go, the timing was fortuitous (p4).
- **With the US Department of Energy's nuclear loan guarantee program in the doldrums, the industry is looking for other ways to jump-start nuclear newbuild in the US** (p5).
- **After months of waiting for the US Nuclear Regulatory Commission (NRC) to move on the issue of whether the Department of Energy (DOE) was entitled to withdraw its application for the Yucca Mountain repository, the US Court of Appeals for the District of Columbia said it will hear the case early next year.** Parties have until the end of January 2011 to file their briefings, and oral arguments are expected to take place around March and April. This might push the NRC to make a decision in the meantime, although any appeals to a Commission decision would be made through the courts. Early this year, the DOE said it would be withdrawing a license application filed with the NRC in June 2008 to use the Nevada site as a repository for high-level radioactive waste. The decision is being challenged in the appeals court by Aiken County, South Carolina, along with the states of South Carolina and Washington — areas that are concerned about nuclear waste in their regions — with amicus briefs filed by the National Association of Regulatory Commissioners and the Nuclear Energy Institute. An Atomic Safety and Licensing Board said in June that the DOE did not have the right to rescind the application; the DOE has appealed the decision to the NRC (UIW Jul.6,p5).

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- **Rumors that Myanmar has nuclear ambitions are discussed in three diplomatic cables from the US embassy in Rangoon released last week by Wikileaks, although the cables add few new facts to the discussion.** Another two suggest the country may have produced uranium from a site near the Chinese border (p6).
- **Tokyo Electric Power Co. is back in the black three-and-a-half years after an earthquake knocked out the world's largest nuclear power plant.** But with power demand falling in Japan the utility has become increasingly dependent on overseas projects to offset declining earnings at home (p7). ☼

MARKET

Spot Price Remains Stable Near \$60/lb

The Uranium Price Panel returned a spot price of \$59.91/lb U3O8 for Friday, largely unchanged from the previous Friday's \$59.69/lb. Although 2010's 41.6 million lbs U3O8 in spot market trade volume breaks the previous record of 40.6 million lbs traded in 1990, according to industry consultant TradeTech, market participants say they expect the remainder of the year to be fairly quiet.

Although the price often eases toward the end of the year, as sellers try to unload additional material before they close their books, that has not yet happened this year. That has pleased some sellers, and (unpleasantly) surprised some buyers. "I wasn't expecting it [the price] to keep going up like this," a US utility buyer told UIW.

It's possible that Taipower will find a seller before the end of the year — but it's unlikely given the Taiwanese utility's habit of asking for rebids, which takes extra time. The utility is looking for 250,000 lbs and/or 150,000 lbs U3O8 (or equivalent in UF6). Bids are due Dec. 21, with delivery before Mar. 31, 2011.

The United Arab Emirates' (UAE's) Emirates Nuclear Energy Corporation (Enec) has already started accepting and reviewing bids for fuel-supply contracts for its planned reactors, according to two market participants.

Market participants last week were still puzzling over news that Russia's Tenex was looking to buy 1.3 million lbs U3O8 over 10 years (UIW Dec.6,p2). Said one: "I don't think it suggests they have a shortfall. I think it suggests they want to be an all-services player" — a broker, a trader, etc. Said another: "It makes no sense to me ... maybe it's an exercise in price discovery."

US Nuclear Regulatory Commission Chairman Gregory Jaczko visited Honeywell's Metropolis Works Plant in southern Illinois Thursday, and also met with unionized workers who have been locked out of the plant for months. On Jun. 28, with labor contract talks deadlocked, the company shut its United Steel Workers members out of the plant, the only facility in the US that produces UF6. Since Sep. 4, salaried and replacement workers have been running it instead. The two sides were scheduled to return to the negotiating table today and tomorrow.

The massive budget bill the House has passed includes provisions US uranium miners wanted that would restrict the Department of Energy's (DOE's) ability to put its massive inventory on the market. The bill blocks the DOE from selling, bartering or transferring more than 3.3 million lbs U3O8e over the course of this fiscal year, excepting uranium for initial cores.

Furthermore, it says the DOE can't use uranium to pay for programs not funded by Congress. Some lawmakers and staffers on Capitol Hill were angry the DOE skirted the appropriations process during the last fiscal year, which ended in September, paying Usec in UF6 for decontamination and decommissioning (D&D) work at the old gaseous diffusion enrichment plant in southern Ohio (UIW Oct.5,p2).

The provision in the House budget bill may or may not succeed in blocking the DOE from paying its new D&D contractor with uranium this fiscal year. It depends on the Senate passing a version of the budget bill (that may happen this week) that contains the same provision, and on the DOE obeying Congress. ☼

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URANIUM PRICE PANEL

For the week ended December 10, 2010

Weekly Spot Market Prices

	Change	Dec.		Nov.				Oct.			Sep.			
		13	6	29	22	15	8	1	25	18	11	4	27	20
Price (\$/lb U3O8)	0.22	59.91	59.69	60.81	58.78	58.92	54.09	50.64	50.40	48.33	48.03	46.58	45.70	46.67
Total Assessments	-1.00	14.00	15.00	15.00	17.00	14.00	14.00	15.00	13.00	15.00	16.00	12.00	14.00	11.00
% within 1 StDev	-14.76	78.57	93.33	86.67	85.71	85.71	78.57	66.67	76.92	86.67	87.50	91.67	78.57	72.73
Low (\$/lb U3O8)	1.00	59.00	58.00	60.00	56.00	58.00	52.00	49.75	49.00	47.00	47.00	46.00	45.00	45.00
High (\$/lb U3O8)	0.50	61.00	60.50	62.00	61.00	60.00	56.00	52.00	51.25	49.25	49.00	48.00	47.00	48.00
Variability*	0.16	0.25	0.09	0.81	0.56	0.46	0.31	0.32	0.15	0.28	0.22	0.00	0.60	0.50

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.

The Rise and Fall Of Kang Rixin

When Kang Rixin, who oversaw China National Nuclear Corp.'s transformation from a small, money-losing utility to a global nuclear powerhouse, was sentenced to life imprisonment on corruption charges last month, an era ended. Now his successor is struggling to retain CNNC's status as China's premier nuclear company.

As CNNC's stature rose, so too did Kang's. The 57-year-old former nuclear engineer maneuvered himself to the highest echelons of power in Beijing. But according to charges leveled against him in China, he also accepted some 660 million yuan (\$96 million) in bribes, setting himself up for a dramatic fall from grace during a prominent anticorruption campaign in the summer of 2009.

It remains unclear how exactly Kang's fall and imprisonment will alter the burgeoning Chinese nuclear industry; even the exact details of Kang's conviction (such as the companies and individuals who bribed him) are hidden behind a veil of secrecy so thick that only hints of his actual crimes have leaked to the Chinese media. What is certain is that the actions taken against Kang this autumn will serve as a stark warning to other leading industry figures in China; in short order he was stripped of his Communist Party membership Oct. 18, and on Nov. 19 sentenced to life imprisonment by the Beijing No. 1 Intermediate Court (UIW Nov.22,p9).

The life sentence, while severe, is at least not the death sentence that has been meted out to other Chinese officials found guilty of corruption. The leniency appears to follow from a court declaration that Kang had cooperated with the investigation, confessed details unknown to the court, accepted his wrongdoings and returned all the bribes, according to China News Service. Kang has not appealed the ruling.

A Smooth Ascent

Despite Kang's dismal current circumstances, his career to August 2009 was enormously impressive. A native of the northern Shaanxi province, Kang's decision to study reactor engineering at Shanghai Jiao Tong University, followed by 18 years of research at the China Atomic Energy Institute (CAEI), was not typical at the time. Indeed, when Kang graduated from the university in 1978, China was over a decade away from commissioning its first nuclear power plant. But his education and subsequent research experience enabled Kang to smoothly ascend to the top ranks of China's nuclear industry once he shifted over to CNNC in 1996 and Beijing made the firm decision to push strongly for expanded nuclear power.

Kang oversaw a dramatic expansion of CNNC, with an equally impressive improvement to its bottom line. Before Kang took charge as managing director in 2003, CNNC had been losing money for 13 years. In 2003, its business income was 13 billion yuan. With an annual growth rate of 23%, this figure grew to 36.6 billion yuan in 2008. Meanwhile, profits rose at an annual clip of 82%, from 240 million yuan in 2004 to 4.7 billion yuan in 2008.

Kang credited this success to a profit-oriented approach, which meant eliminating inefficiencies, according to a Xinhua News Service article of Nov. 15, 2006 titled "Recreate CNNC." Kang told Xinhua that he was especially proud of his stringent financial management of the Qinshan III nuclear power plant in Zhejiang province (where he oversaw construction of two 650 MW Candu reactors), calling it the "Qinshan Miracle." "Our average expenditure was 15 million yuan [\$1.8 million] a day at Qinshan, and we had 51 and a half months to spend 23.9 billion yuan [\$2.9 billion] in the budget, how can we not have a stringent management?" he said.

He told Xinhua that when the government audited Qinshan's financial statements in 2004 the audit was completed in less than half the allocated time. "Even if you come to Qinshan in 10 or 20 years, you will not find any problems with us," Kang said. Speaking more broadly of his time at the helm of CNNC, Kang boasted that "not a single investment lost money."

Among admirers on his staff, Kang was seen as low-key, down-to-earth and loyal, according to Law Enforcement Weekly. But others said that he made capricious decisions and introduced a strict hierarchical system inside CNNC. For instance, whenever he entered the office, everybody had to stand up to greet him. Whatever the truth, few were expecting Kang's swift downfall.

Kang's last public appearance was on Jul. 27, 2009, when he signed a framework agreement on behalf of CNNC at the State Diaoyutai Guesthouse with Binzhou city government to build the Taohuajiang nuclear power plant in Hunan province. A week later Kang was forced out of office after it was publicly announced that he was under investigation for accepting what was then reported to be 1.8 billion yuan (\$263 million) in bribes.

It's unclear where these bribes came from, though they were reportedly paid from 2004 to 2009. Kang received payments in exchange for business favors, including awarding projects and granting promotions or jobs, according to the China News Service. Some press reports have also fingered Areva, which successfully bid during Kang's tenure as managing director of CNNC to build two EPRs at Taishan, in Guangdong province, for China Guangdong Nuclear (CGN). Areva completely denies these charges, pointing out that Kang was the head of CNNC, not CGN (UIW Aug.17'09,p1). However, CNNC also owns 40% of CGN, and Kang's level of involvement in the Taishan decision is publically unknown.

But Kang's fall also came in the context of a wider national anticorruption campaign (since July 2010 alone, Kang was the fifth ministerial level official punished for corruption offences, according to Xinhua), as well as other corruption charges in the nuclear power industry — most somehow related to Areva.

In August Jiang Xinseng, former president of the China National Technical Import and Export Corporation, was jailed for 20 years for leaking state secrets. (In fall 2008, the muckraking Caijing magazine reported that Jiang was sus-

pected of disclosing a Taishan bid price to Areva). And before that, in January 2008, CGN Vice President Shen Rugang was asked to resign from his post for suspected involvement in helping Areva win the Taishan bid, according to Caijing on Dec. 7, 2008.

A Diminished CNNC?

Within a week of Kang's dismissal, Sun Qin was named his successor. Sun had worked at CNNC for 12 years when he was appointed deputy director of the National Defense Science and Industry Bureau in 2005, and later deputy director of the National Energy Bureau.

Though an old hand in the nuclear sector, Sun has to work very hard to keep CNNC the No. 1 nuclear powerhouse in China. According to a China Business News article on Aug. 14, 2009, CNNC was suffering from a severe brain drain; many key personnel had jumped ship to CGN or one of China's five utility majors eager to have a greater role in the nuclear sector (UIW Nov.1,p3). And while both CGN and CNNC have two operational nuclear power plants (Daya Bay and Ling Ao for CGN, and Qinshan and Tianwan for CNNC), CGN has considerably more new plants planned and under construction.

Indeed, it's all CNNC can do to defend its traditional turf as manager of all fuel-cycle activities for the nuclear power sector; in 2008, CGN was granted the right to import nuclear materials into the country, and it's already making noises about conducting its own domestic uranium exploration.

But beyond the rivalry between the two nuclear behemoths, it's unclear what effect Kang's conviction will have on the way things are done in China's nuclear industry. The website sina.com.cn, China's largest online news portal, has maintained an opinion poll on the matter since August 2009 that's managed to attract some 1,873 participants. Some 43.7% agreed that Kang's achievements as head of CNNC overshadow his mistakes, with 33.1% disagreeing and the remaining 23.2% undecided. In the same poll, 51.3% don't foresee Kang's investigation impacting China's nuclear power industry. ☼

Sophie Xu, Beijing

As Price Rises, New Uranium Fund Debuts

When New York-based fund manager Global X launched a uranium fund last month, a torrent of publicity billed it as a first-of-a-kind venture, a new way for investors to profit from the global nuclear renaissance. Though Global X's Uranium Total Return ETF is, indeed, the first of its kind, it is by no means the first uranium fund: at least four others have been around for years.

The fact that Global X's uranium fund (ticker: URA) got so much publicity can likely be attributed less to innovation than to skillful marketing and fortuitous timing: On Nov. 4, Beijing's China Daily had reported (apparently erroneously) that China was significantly increasing its goal for new

nuclear capacity, and Areva had announced a multibillion-dollar long-term uranium supply contract with China Guangdong Nuclear Power Co. (UIW Nov.8,p2).

Those and other factors generated thunderous buzz about China's growing demand for uranium, and dozens of ancillary articles about the recent run-up in the spot price. Global X, which had filed a prospectus for URA with the US Securities and Exchange Commission in April, launched the fund Nov. 5, riding the wave of publicity. But Global X Chief Executive Bruno del Ama tells UIW the timing was coincidental. "That was sheer luck," he said.

URA's share price immediately shot up from about \$17 to \$19, before plunging to \$16.53 Nov. 16; since then it has risen more or less steadily to over \$20. Del Ama says demand for the fund has been "incredible," and that it now has over \$100 million in assets. Those assets came from individual investors, but also from big institutions. "Almost all of the big Schedule I banks in Canada have been very active in this fund ... about half the fund exposure is in Canada," he says.

Del Ama and Jose C. Gonzalez, who are co-founders, officers, and board members of Global X, are responsible for day-to-day management of the new uranium fund. Before launching Global X in 2008, Gonzalez was running broker-dealer GWM Group, Inc. (a different company than the wealth manager of the same name that is owned by Italy's Pallavicini family), and del Ama was working for Philadelphia-based Radian Asset Assurance. Del Ama left Radian, but Gonzalez stuck with GWM; now Global X and GWM share an office.

The Exchange-Traded Fund

URA's distinction is that it's the only uranium exchange-traded fund (ETF). An ETF is like a mutual fund, but more easily tradeable and more tax-efficient. Only authorized participants (broker-dealers like Goldman Sachs or Gonzalez's GWM) can buy URA on the primary market, and only in blocks of 50,000 or 100,000 shares. But they don't buy them for cash. Instead, they trade uranium-company stocks for shares of URA. The fact that Global X does all its buying and selling in-kind, rather than in cash, creates significant tax benefits compared to mutual funds.

URA tracks the Solactive Global Uranium Return Index, which is maintained by Frankfurt's Structured Solutions. Structured Solutions adjusts the mix of stocks twice a year but, at the moment, it includes familiar names like Cameco (17.58%), Uranium One (12.96%), Paladin (11.06%), Denison (5.99%) and Uranium Energy Corp. (5.99%), among others. The mix of stocks an authorized participant must trade for shares of URA is the same as the mix of stocks in the Solactive index.

The ETF, as a financial product, has been available in the US since 1993 and in Europe since 1999. According to del Ama, they're the "fastest-growing segment of any financial market clearly in the US but probably globally as well[.] ... It's making mutual funds to some extent a little bit more obsolete." This is perhaps not a surprising position for the

head of a company that offers a range of ETFs, focusing on everything from countries like China and Brazil to commodities like gold and lithium.

Other Uranium Funds

There aren't any other funds in the uranium world that work precisely like URA. But, there are at least four other funds that investors interested in uranium can buy into: the Uranium Participation Corp. (U.TO), the Global Uranium Fund (GUR.TO), the World Uranium Total Return Index Tracker (URAX) and the Uranium-Focused Energy Fund (UF-UN.TO).

The Denison-managed Uranium Participation Corp., created in 2005, stands out from the rest because it actually owns physical uranium, rather than uranium-company stocks. Investors can buy shares of Uranium Participation Corp. on the Toronto Stock Exchange and essentially own a piece of the company's inventory, which as of Oct. 31 consisted of 7.25 million lbs U3O8 and 2.37 million kgU as UF6 with a market value of some C\$744 million.

There used to be another physical uranium fund: Uranium Limited. But Uranium Participation Corp. bought out Uranium Limited in March, adding 1.7 million lbs U3O8 and 412,000 kgU as UF6 to its holdings (UIW Jan.19,p4). A couple of longtime uranium-market hands, Jim Cornell and Tony Schillmoller, tried to raise up to C\$150 million to start another such fund, to be called Uranium Investment Corp., but weren't able to attract enough investor interest (UIW Jan.4,p2).

Toronto's Brompton Group started the Global Uranium Fund in 2007, which is also traded on the Toronto Stock Exchange. The fund now has about \$17 million in assets under management by UBS, which has invested them in a portfolio including: Cameco (14.6%), Uranium One (13.1%), Paladin (9.1%), Fronteer Development Group (8.0%), Denison (7.5%) and others.

France's Societe General issued the World Uranium Total Return Index Tracker in 2007 with a limited life span of eight years, meaning it can be traded (on the London Stock Exchange) until its termination in 2016. It follows Societe Generale's World Uranium Total Return Index, which is not traded. It consisted earlier this year of BHP Billiton (14.7%), Rio Tinto (14.4%), Cameco (11.7%), Ivanhoe Mines (10.4%), Equinox Minerals (9.2%), among others.

The Middlefield Group's Uranium Focused Energy Fund, listed on the Toronto Stock Exchange, includes mostly uranium companies, with a smattering of other energy-related companies, too. A closed-end investment fund, it was launched in 2007 and will terminate at the end of 2013. It now has about C\$76 million in assets, invested in Uranium One, Cameco, Paladin, Uranium Participation Corp., and Uranerz, among other companies. ☼

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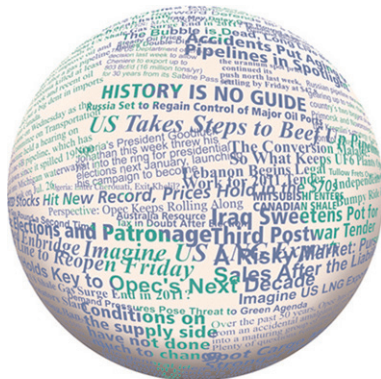
After the Nuclear Loan Guarantee Program

The US Department of Energy's nuclear loan guarantee program seems on track to run out of resources before achieving its goal. Now discussion has turned to other ways to jump-start nuclear newbuild in the US.

The DOE has \$18.5 billion of nuclear loan guarantee authority, of which it has already conditionally committed \$8.3 billion to the partners building two AP1000s at Plant Vogtle in Georgia (UIW Jun.21,p6). It's in advanced negotiations with companies that want to build an EPR at Calvert Cliffs in Maryland and two ABWRs at the South Texas Project.

However, if the program's goal is help the nuclear industry secure enough financing to launch a rebirth — proving that new-builds in the US can be completed on time and on (a reasonable) budget — four or five reactors probably isn't going to be enough.

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The Obama administration has admitted as much, asking Congress to give the program a \$36 billion boost so more reactors could be built. But lawmakers aren't cooperating (UIW Aug.2,p5). Instead, the House last week provided only \$7 billion in additional authority — enough to help finance perhaps one additional project — in a continuing resolution to fund the government through September.

And then there's the question of whether the companies backing the Maryland and Texas projects would even accept the loan guarantees if the DOE offered them. Both are merchant generation projects, judged by the White House's Office of Management and Budget (OMB) to be riskier than Vogtle, which is in a regulated market. As a result, they are being asked to pay higher credit subsidy fees. With no carbon price, low gas prices and lagging electricity demand, the higher financing cost may be more than the projects will bear (UIW Sep.27,p4).

If DOE doesn't help the merchant generators, it may instead help Scana and its partners build two AP1000s at the VC Summer plant in South Carolina's regulated market. But with pre-construction already underway, the VC Summer partners say they'll likely build with or without the loan guarantee (UIW Nov.29,p5).

The DOE's loan guarantee program appears headed for failure. Unless there are significant changes, including a resolution to the credit subsidy issue and a more significant boost in loan guarantee authority, it will be unable to fulfill its original mission: supporting enough newbuild to bring down costs from a first-of-a-kind level and convince private investors that nuclear is a safe bet.

So What's Next?

At the high-powered, morning-long New Millennium Nuclear Energy Summit in Washington Tuesday, lawmakers, Obama administration officials and industry executives gathered under spotlights and before television cameras to discuss a range of nuclear issues, including this one. It was also a topic of discussion at the small Nuclear Investment & Project Finance conference in Washington on Nov. 16-17.

The two most popular ideas discussed at these events were the creation of a Clean Energy Deployment Administration (CEDA) and the imposition of a national clean energy standard (CES).

Sen. Jeff Bingaman, a New Mexico Democrat, and Sen. Lisa Murkowski, an Alaska Republican — chairman and ranking member, respectively, of the Senate's Energy and Natural Resources Committee — introduced a bill last year that would have created CEDA. An independent agency within DOE, it would have provided loans and loan guarantees to companies to help finance clean energy technologies, including nuclear. The idea was that it would use a portfolio investment approach and to try to become self-sustaining over the long term (UIW Apr.20,p3).

That's an idea that received backing at the summit from Nuclear Energy Institute President Marv Fertel, US Energy Secretary Steven Chu and Barclay's Capital Managing Director James Asselstine.

Bingaman also introduced a bill this year to create a national renewable energy (RES) standard, requiring utilities to get 15% of their electricity from renewable sources and efficiency improvements by 2021 (UIW Sep.27,p5). But it looks like that bill's going nowhere, unless its sponsors transform it into a CES bill by allowing utilities to meet its requirements with nuclear and clean coal, too.

NRG Energy Chief Executive David Crane, also at the Summit, supported the RES idea, and Chu said it was something Congress and the administration "have to consider very seriously." They both talked about a goal of 50% clean energy by 2050.

Congress almost certainly will not create CEDA or impose a CES before the end of this year. And starting next year it will be divided, with Democrats controlling the Senate and Republicans controlling the House, which is sure to lead to paralysis on many issues. However, since leaders from both sides have backed these two proposals in the past, it's possible they might still win approval.

Other ideas aired at the Summit and the conference included: having the government sign long-term power purchase agreements with newbuild project owners to improve their financing prospects; changing the rules to allow US export credit agencies to support domestic nuclear projects; convincing the World Bank and/or other international institutions to change their rules and support nuclear projects; lowering barriers to utility company mergers to allow for the creation of bigger companies, which could carry bigger projects — like nuclear power plants — on their balance sheets with less trouble; and creating a nuclear industry self-insurance pool to cover reactor construction risk. ☼

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Leaked Cables Relate Rumors About Myanmar's Nuclear Activities

Three diplomatic cables from the US embassy in Rangoon released last week by Wikileaks reported on rumors that Myanmar (formerly Burma) has nuclear ambitions, but added few additional facts to the debate. Another two suggest the country may have produced uranium from a site near the Chinese border.

A pair of cables from 2004 relate rumors of a nuclear reactor being built in Magwe Division, in central Myanmar, and the construction of an underground facility in the same area with North Korean assistance. A 2009 cable notes that a source who had previously claimed Myanmar and North Korea were engaged in peaceful nuclear cooperation had retracted his story, saying the two sides were only having "exploratory conversations." Larry Dinger, the Rangoon embassy's charge d'affaires, comments that Myanmar-North Korean "cooperation remains opaque. Something is certainly happening; whether it includes 'nukes' is a very open question," he writes.

Rumors have been coming out of Myanmar for years that the military junta running the country is secretly trying

to develop civil and/or military nuclear programs, perhaps with North Korean assistance (UIW Aug.10'09,p6). In June, former International Atomic Energy Agency (IAEA) senior inspector Robert Kelley and the opposition group Democratic Voice of Burma released a report claiming the country was trying to develop both nuclear power and nuclear weapons but was doing a poor job. It was based on information provided by a defector from Myanmar (UIW Jun.28,p8).

Other nonproliferation analysts questioned Kelley's claims. Institute on Science and International Security head David Albright, in a letter to Sen. Jim Webb (D-Virginia), said the defector's information "remains secondhand and requires confirmation," and that some of the objects in photographs the defector had provided, which Kelley claimed were nuclear-related, could also have non-nuclear uses. In the end, Kelley had not "presented anything that is a smoking gun," Albright concluded. In an interview with ProPublica, former IAEA Deputy Director Olli Heinonen agreed, saying "There is no single piece which puts your mind at rest telling that this is solely for nuclear purposes and for nothing else."

Although Myanmar's government insists it is not pursuing nuclear weapons, it's no secret the country would like to have a nuclear program. Russia's Atomstroyexport agreed in 2007 to begin negotiations with Myanmar on a nuclear research center that could include a 10 MW research reactor, but there's no evidence they've started construction (Feb.19'08,p5). The 2009 cable released by Wikileaks last week notes that a source told US embassy officials that "Russia has proposed a commercial deal, and that GOB [Government of Burma] cannot afford it."

Uranium

Meanwhile, a 2007 cable released by Wikileaks outlines the contents of documents that a source provided to the embassy. They describe a shipment valued at €534 million of 112 metric tons of mixed ore from Maw Chi (in Kayah state) to China, according to the cable. Because of the secrecy with which the ore was treated, the source who provided the documents suspected it was uranium. The documents said it was a mix of tin, tungsten and scheelite.

A 2008 cable says a Burmese civilian offered to sell the embassy up to 2,000 kg of uranium ore from Kayah state, and provided a 7 cm long vial half-full of what he claimed was U-238, as a sample. The embassy packed up the vial in a diplomatic pouch and sent it via a commercial flight to Aberdeen Proving Ground in the US state of Maryland for testing. US Federal Aviation Administration Rules ban transportation, in most cases, of radioactive materials on passenger flights (UIW Jul.6,p7).

Myanmar has uranium deposits at Magwe, Taungdwingyi, Kyaukphygon (Mogok), Kyauksin, and Paongpyin (Mogok), according to the country's energy ministry. Those are all in central Burma, while Kayah state is in the northeast, on the Chinese border. ☸

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Tepco Back In the Black

Three-and-a-half years after an earthquake knocked out the world's largest nuclear power plant, the Tokyo Electric Power Co. (Tepco) is back in the black — but with power demand falling in Japan, it has become increasingly dependent on overseas projects to offset declining earnings at home.

In just a few minutes after the Chuetsu-Oki earthquake struck on Jul. 16, 2007, Tepco lost output from seven reactors, representing more than 8 gigawatts of marketable electricity. The extended outage at the Kashiwazaki-Kariwa complex on the coast of the Sea of Japan forced the utility to scramble for replacement power and move up thermal projects — and the result was two years of red ink.

Tepco is not only Japan's largest utility, serving the capital and its surrounding metropolis, but is also one of the world's largest private nuclear power plant operators. It has 17 reactors divided between the Kashiwazaki site and Fukushima in the northern half of Honshu.

A successful stock offering this past summer netted 450 billion yen (\$5.45 billion), most of which will be set aside for construction of the first unit of the planned (albeit delayed) new Higashidori nuclear plant as well as additional thermal power plants and other projects.

Tepco's president, Masataka Shimizu, in early fall announced that his company plans to spend as much as one trillion yen over the next 10 years to expand into overseas markets. The plans call for helping to develop nuclear power plants in the United States (where it has a stake in the South Texas Project), and Vietnam. The utility also intends to invest in thermal projects and some other "new energy" sources in other developing countries.

Milestone at KK

A major milestone in the utility's recovery took place Nov. 18 when technicians began bringing KK's Unit-5 back to full power; it will be the fourth of the seven KK reactors to resume commercial operation, along with Units 1, 6 and 7. Though the power and revenue is certainly welcome, the success may be as much psychological as it is material. For the first time since the earthquake, a majority of the units are now in operation instead of the other way around (UIW Jul.12,p7).

Indeed, Tepco is rapidly closing in on something close to normal operations at the site considering routine shutdowns for refueling and maintenance often take plants offline. "It was rare [before the earthquake] for us to have all seven units operating at the same time," says Hiro Hasegawa, manager of corporate communications. In fact, Unit 6, the second of the plants to be brought back, is currently out of commission for these routine operations.

Events have confirmed the wisdom of initially concentrating on restoring Units 6 and 7 since their return to commercial operation helped put Tepco back in the black. Net income for fiscal year 2009 was a positive 133.7 billion yen compared with an 84.5 billion yen loss the previous year.

Through fiscal 2009, the outage cost in total 285 yen billion for increased fuel and electrical energy expenditures less 35 billion yen in nuclear-fuel cost savings and other back-end expenses, according to the latest financial statement.

The continuing outages at Kashiwazaki contributed to Tepco's 53.3% nuclear power plant capacity factor for fiscal 2009, which helped depress the overall national capacity of 65.7%. (In addition to Tepco, the Chubu Power Co's Hamaoka 5 unit is still down a year and a half after the Shizuoka Bay Earthquake, as geologists puzzle over the high movement it recorded compared with nearby units).

Japan's anemic capacity factor in recent years weighs heavily on Japan's nuclear industry. It lags well behind that of other nations, including South Korea, which regularly boasts plant capacity factors of 90% or higher. (Tepco's best year in 1999 was 84%; it was running at 74% just prior to the quake).

There has been much talk in the industry about steps to improve working efficiency, such as stretching out the normal 13-month period between safety inspections. The government now allows utilities to take longer periods between inspections, but many are reluctant to move aggressively on this while the public continues to harbor safety concerns stemming from earthquakes and the beginning of the long-delayed mixed-oxide fuel program.

Tepco is fully committed to the so-called "pluthermal" program and for closing the nuclear fuel cycle. One of its Fukushima boiling-water reactors this summer became the third in Japan to load MOX fuel. In September, Tepco announced that it would invest 130.4 billion yen in Japan Nuclear Fuel Ltd. to help maintain the troubled Rokkasho reprocessing plant and other fuel-cycle projects.

The nuclear fuel company, which recently announced another two-year delay due to difficulties surrounding the last stage of the process, put out a call for a 400 billion yen capital increase for its projects. Tepco's investment boosts its

stake in JNFL to 28.6 percent. The three power-plant constructors, Toshiba, Hitachi and Mitsubishi Heavy industries, are expected to kick in a billion yen each.

Four New Reactors?

Tepco has four new nuclear plants on the drawing boards, two at the Fukushima Daiichi site and two more at Higashidori in the northern Aomori prefecture. However, with starting dates being continually postponed, it is anybody's guess when work will begin on any of these. The official dates for Fukushima 7 and 8 are 2016 and 2017 respectively; for Higashidori 1, 2017, and for Unit 2 "2020 or later." However, Tepco tells UIW that the next plant to start, early next year, will be Higashidori 1, pending a final government sign-off.

The main reason for the postponements is persistent stagnation in electric power demand. "Ten to 20 years ago Japanese were hungry for power," says Hasegawa. "But our demand is falling, has been falling, and will continue to fall." So not surprisingly, Tepco is turning to foreign markets.

Its investment this year in the South Texas Project Units 3 and 4 was the first time a Japanese electric power utility, as opposed to a builder, had invested in an overseas nuclear power project (UIW May10,p3). The next obvious target is Vietnam, where Japan has a leg up on Units 3 and 4 at the Ninh Thuan site. For Tepco, success depends a lot on the design that is ultimately selected. Says the Tepco spokesman: "We're sure the ABWR is most suitable for Vietnam, but they may choose a PWR."

Beyond Vietnam, the utility is unsure of its next market, but it is clear on the need for more private-sector and governmental aid in securing nuclear plant orders in developing nations. Tepco has been active in this year's formation of "Team Japan," the alliance of government, constructors and operators more formally known as JINED, Japan International Nuclear Development Co., formally started in October (UIW Jun.7,p6). One of Tepco's vice presidents, Ichiro Takekuro, heads the new organization. ☼

Todd Crowell, Tokyo

BRIEFS

FRANCE

After more than a year of talks, the Kuwait Investment Authority (KIA) last week agreed to purchase a 4.8% stake in Areva for €600 million (\$795 million), a deal approved by Areva's supervisory board on Dec. 11. In her announcement of the deal, French Finance Minister Christine Lagarde said that Areva had an implied valuation of €11.5 billion (\$15.2 billion), implying that the KIA stake only dilutes 92% of Areva's shares — quite close to the government's ownership in the company (the implied valuation of a 4.8% stake for €600 million is €12.5 billion, or \$16.6 billion). This closely corresponds to the combined direct and indirect shares of the French government, which also agreed to inject an additional €300 million into Areva, which, with the KIA stake, represents 7.2% of the company's shares. As part of the agreement, the French state promised to undertake its "best efforts" to list Areva's shares on the stock market in the first half of 2011.

INDIA

Coal India, the country's largest coal producer, may invest in Nuclear Power Corp. (NPC) in order to help NPC meet its goal of increasing capacity to 63,000 MW by 2032. The possible joint venture might also include the government-owned Coal India utilizing its expertise in open-cast and underground coal mines to assist in uranium mining. NPC's chairman and managing director, S.K. Jain, told the Business Standard: "Coal India would pump in money toward equity with NPC for various nuclear projects[...] ... Coal India's investment will be quite crucial. We will have the next meeting in this month." Coal India has yet to determine how much it would invest. NPC has several other joint ventures, including with Indian Oil Corp., National Aluminium, a combination of Bharat Heavy Electricals and Alstom, and with National Thermal Power Corp. It is reportedly set to enter into a similar arrangement with Steel Authority of India and Indian Railways. NPC also has a JV with Larsen & Toubro to produce special steels and ultra-heavy forgings.

LITHUANIA

Lithuania lashed out last week as it absorbed the collapse of the tendering process for its Visaginas nuclear power plant after South Korea's Kepco withdrew its bid, the only valid one submitted (UIW Dec.6,p3). Continuing Vilnius's claims that Moscow had orchestrated a campaign against it, Lithuanian Energy Minister Arvydas Sekmokas pointed to the G20 summit in Seoul, in which "a series of memorandums were signed" between Russia and South Korea, as well as North Korea's recent attack on a South Korean island. "Those are three facts that we see," Sekmokas told the Delfi news website, and "we did not see any understandable reasons" for the withdrawal of the Kepco bid. While Sekmokas said he had no proof of a Russian campaign, "we had unexpected turns, when some big European company was interested in the project and then suddenly withdrew, trying to explain its move with this or that reason." In this view, Moscow was trying to kill the Lithuanian project as a means of helping two Russian-backed nuclear power projects in Belarus and Kaliningrad.

NIGER

France lacked a "clear strategy" in Niger to balance its counterterrorism objectives with its desire to promote good governance and constitutional rule, officials told US diplomats in September 2009. This came during a meeting in Paris between US, French and European Union officials to discuss West African security, according to a cable released by WikiLeaks. These worries proved prescient: Over the following year, Paris was forced to confront not only a coup in Niger, but also the kidnapping of seven uranium workers (including two French citizens) at an Areva compound in northern Niger (UIW Sep.27,p5). The workers were kidnapped by Al Qaeda in the Islamic Maghreb (Aqim), which was already a major concern

at the 2009 meeting. While Aqim is "commonly understood" to have only 150 fighters in the Sahel, a French official in the ministry of defense said, "It has significant financial resources for obtaining weapons and logistic support such as vehicles and radios from profitable illicit trafficking networks, including arms, people, drugs and other contraband." Of even greater concern, continued the official, is Aqim's "apparent success in securing large ransom sums for kidnapped westerners."

UKRAINE

A 30-mile exclusion zone around the doomed Chernobyl plant will be officially opened to tourists next year, the Emergency Situations Ministry announced today. The area was evacuated and sealed in the aftermath of the explosion of Chernobyl's Reactor No. 4 on Apr. 26, 1986. Some 2,500 employees work at the site today, although their exposure to radiation reportedly is monitored and their shifts adjusted to maintain it at safe levels. Several hundred evacuees have returned to their villages in the area despite a government ban. A few firms now offer tours to the restricted area, although these are considered illegal and safety is not guaranteed. Emergency Situations Ministry spokeswoman Yulia Yershova said travel routes that are both medically safe and informative are being developed. She did not give an exact date when the tours will begin. "There are things to see there if one follows the official route and doesn't stray away from the group," Yershova told the Associated Press. "Though it is a very sad story." The ministry also said Monday that a new sarcophagus for the reactor should be finished by 2015. It would cover the the original iron-and-concrete structure that is cracking, threatening to collapse and leak radiation.

UNITED STATES

Electricite de France (EDF) subsidiary UniStar plans to continue to pursue a construction and operating license (COL) from the Nuclear Regulatory Commission (NRC) for a third reactor at the Calvert Cliffs nuclear plant in Maryland. This despite Constellation's defection from what was once a joint venture between the Baltimore-based utility that owns the site and the French state-backed utility (UIW Nov.1,p7). In a Nov. 19 letter, the NRC asked UniStar to explain, given its 100% French ownership, how it complies with the legal prohibition against any entity "owned, controlled, or dominated" by a foreign company getting a COL. Last week, UniStar executives told the NRC that because US citizens hold key positions in the company, it complies with the law. However, UniStar Chairman Steven Wolfram (a US citizen) told the NRC he expects "for other reasons that, at an appropriate time, we will be looking to bring in a US partner for the Calvert Cliffs 3 project," according to his prepared remarks. In addition to pursuing a COL, EDF has since Constellation's exit also continued to pursue a loan guarantee from the US Department of Energy to help finance Calvert Cliffs 3.

UNITED STATES

The US civil nuclear cooperation ("123") agreements with Australia and Russia had both finished their 90-day Congressional reviews as of the end of last week, clearing the way for them to take effect. That means US utilities won't face a pause in Australian yellowcake imports, and the way will be smoothed for greater Russian involvement in the US nuclear market (UIW May17,p4). If Congress hadn't stayed in session for the requisite 90 days, the Obama administration would have been forced to resubmit the agreements to a new Congress in January and start the 90-day clock again (UIW Oct.18,p10). While the Australian 123 was anodyne, the Russian agreement was controversial: Rep. Ileana Ros-Lehtinen, a Florida Republican who will chair the House Committee on Foreign Affairs in the next Congress, supports the Australia agreement, but had pledged to try to block the Russian agreement, citing Russia's cooperation with Iran on its nuclear program (UIW Nov.22,p9). ☼

ENERGY INTELLIGENCE URANIUM MARKET UPDATE

For the week ended December 10, 2010

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

Monthly Spot Market Prices

	Change	2010								
		Nov.	Oct.	Sep.	Aug.	Jul.	Jun.	May	Apr.	Mar.
Uranium (\$/lb U3O8)										
Low	+8.00	+54.00	46.00	45.00	44.00	41.50	40.50	40.50	40.50	40.50
High	+10.00	+60.50	50.50	47.00	46.25	43.00	41.75	41.75	41.75	42.00
Conversion (\$/kgU)										
Low	-	+11.00	11.00	9.00	10.00	6.00	6.00	5.50	5.50	5.50
High	-	+13.00	13.00	13.00	12.50	11.00	7.50	7.50	7.50	7.50
Enrichment (\$/SWU)										
Low	-	+153.00	153.00	153.00	153.00	153.00	153.00	149.00	157.00	157.00
High	+1.00	+155.00	154.00	154.00	155.00	155.00	158.00	157.00	159.00	159.00

Spot Bids and Offers

Buyer or Seller	Category	Due by	('000 lbs U3O8)	('000 Kgs U)	('000 SWU)	Form	Delivery	Origin
Buyer:	Non-US Utility	12/21/10	400			U3O8	3/31/2011	US Legal
Buyer:	Non-US Utility		100-200			U3O8		Unknown

Term Bids or Offers

Buyer or Seller	Category	Due by	('000 lbs U3O8)	('000 Kgs U)	('000 SWU)	Form	Delivery	Origin
Buyer:	Non-US Intermediary		1,300			U3O8 or UF6	Over 10 Years	US Legal

Term Evaluations

Buyer or Seller	Category	Due by	Uranium Qty.	Conversion Qty.	SWU Qty.	Form	Delivery	Origin
			('000 lbs U3O8)	('000 Kgs U)	('000 SWU)			
Buyer:	US Utility	11/2/2010	2,800			U3O8	2012-2022	US Legal
Buyer:	US Utility	10/22/2010	2,000			U3O8	2013-2019	US Legal

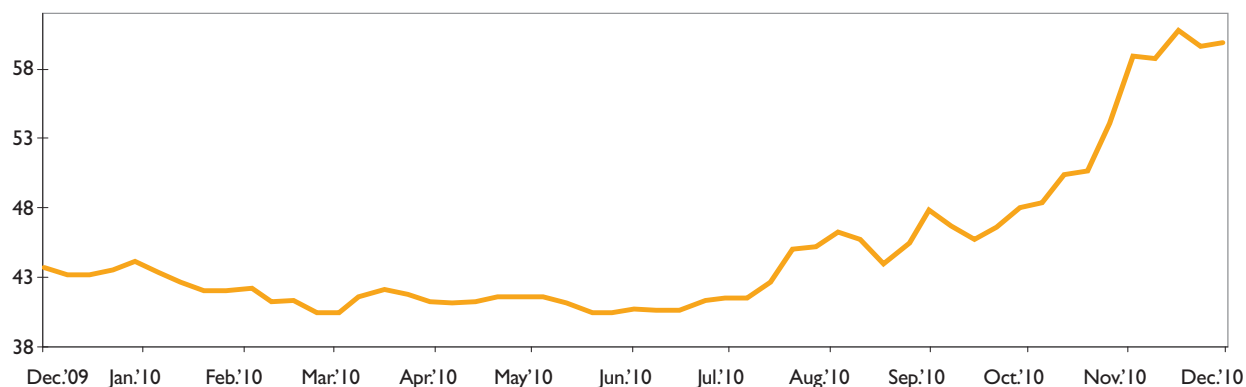
No Spot Evaluations

No Spot Transactions

No Term Transactions

(\$/lb U3O8)

Uranium Price Panel Over the Previous Year



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