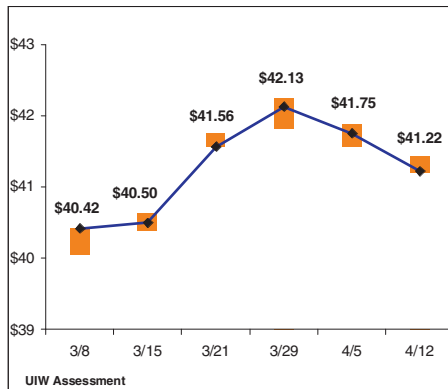


URANIUM INTELLIGENCE WEEKLY

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Vol. IV, No. 15, April 12, 2010

UPP: \$41.22/lb U3O8



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. Bars represent the range of conceivable final averages that might result when random elimination is used to balance market positions within the panel.

WEEKLY ROUND-UP:

Spot Price Dips Again

- **The spot price sank slightly last week to \$41.22/lb U3O8, remaining in the low \$40s, where it's been locked since November (p2).**
- **The US Department of Energy's expanded nuclear loan guarantee program could be in trouble. The Congressional Budget Office says the department hasn't provided \$360 million to cover potential shortfalls in loan repayments (p3).**
- **Kazakhstan fulfilled a long-held pledge to become the world's leading uranium producer in 2009, while Cameco was the top company producer, although only by a narrow margin (p4).**
- **Spending by the International Atomic Energy Agency on developing country newbuild programs is on the increase (p6).**
- **US President Barack Obama won an early victory Monday at his two-day nuclear summit in Washington: Ukraine announced that it would eliminate its stockpiles of Russian-origin highly enriched uranium (HEU) by 2012. "This is something that the United States has tried to make happen for more than 10 years," said White House spokesman Robert Gibbs. Canada made a similar announcement Monday, pledging to return spent US-origin fuel from the Chalk River medical isotope facility in Ontario over the next eight years, according to the Toronto Star.**
- **In the next few months Iran plans to start mass producing a second-generation centrifuge while testing a new, third-generation model unveiled Friday to mark National Day of Nuclear Technology in Tehran. Ali Akbar Salehi, head of the Atomic Energy Organization of Iran, said that "God willing," the third-generation machines would have a capacity of "approximately" 10 SWU per machine compared with about 2.5 SWU/machine for the first-generation models, although most experts agree the machines operate at much less than that.**
- **Meanwhile in Washington, a new National Intelligence Estimate (NIE) on Iran's nuclear program is expected to differentiate between weaponization research and development activities, with the former ongoing while little is happening on development. A recently released CIA report for Congress on Iran is inconclusive although it states the extended shutdown of the Esfahan conversion facility, which began last August for maintenance, together with IAEA reports indicates Iran may have nearly exhausted its uranium stockpile. The report was produced by the CIA's Weapons Intelligence, Nonproliferation and Arms Control Center, known as WINPAC.**
- **CNNC Overseas Uranium Holding has extended its cash offer to acquire Khan Resources at C\$0.96 per share while awaiting approval for the deal from the Chinese government. The old deadline was Apr. 6; the new one is May 25. ☼**

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MARKET

Suppliers Lament Another Price Downturn

The Uranium Price Panel returned a price of \$41.22/lb U3O8 for last week, down \$0.53/lb U3O8 from the previous week's \$41.75. That's the second straight weekly decline. Though there have been ups and downs, the price has been becalmed in the low-\$40 range since November and market sources say there's no sign that's going to change any time soon.

"It's not a pretty picture from a producer's point of view," said a producer.

Ukraine's Energoatom on Saturday extended the deadline for submitting bids on its conversion and enrichment RFQs from Apr. 10 to Apr. 27. The state-owned company is looking for conversion and SWU for reloads for two of its VVER-1000 fleet in 2011, and for three more from 2012 to 2015.

For its conversion RFQ, the company is asking for delivery in July of 182.2 tU as natural UF6, in December of 187.3 tU as natural UF6, and annual delivery from 2011 to 2015 of 519.6 tU as UF6. Energoatom appears eager to supply its own U3O8 to the converter. Ukrainian-origin yellowcake, it explains, is "a preferred option." It also leaves open the option for physical delivery or for book transfer at an enrichment facility.

For its enrichment RFQ, Energoatom is requesting delivery or book transfer of enriched UF6 at Westinghouse's Swedish fabrication facility. It's looking for 23.9 tU at 3.44% enrichment in January 2011, 20.5 tU at 3.52% the following May, and annual delivery of 61.5 tU at 3.8% from 2012 through 2015. Energoatom does not specify a particular tails assay, but an assay of around 0.3% would mean total requests of 1.5 million SWU. While using Energoatom-supplied feed material is, again, "a preferred

option," the company leaves open the door to using feed material from the supplier.

Interested bidders so far include Usec, Urenco, Tenex, Areva, Cameco and Converdyn, according to an Energoatom source, who added that others "are interested as well."

Japanese Reloads

Mitsui applied last week for a Nuclear Regulatory Commission license to export up to 50,927 kgU as UO2 from Global Nuclear Fuel-Americas in North Carolina between September and November to Global Nuclear Fuel-Japan for fabrication. The material is ultimately destined for Hokuriku Electric Power Company's Shika Unit 2. It includes Canadian uranium converted in Canada and enriched and reconverted in the US; Nigerien uranium converted in Canada, enriched in the US, and reconverted in the US; and Kazakh uranium converted and enriched in France, and reconverted in the US.

Mitsui also applied last week for a license to export up to 2,215 kgU as UO2 from Global Nuclear Fuel-Americas to Global Nuclear Fuel-Japan for fabrication between September and October. That material — mined in Kazakhstan, converted and enriched in Russia, and reconverted in the US — is eventually headed for Hokuriku's Shika Unit 1.

Areva applied last week for a license to export up to 35,772 kgU as UO2 between August 2010 and March 2011 to Nuclear Fuel Industries in Japan for fabrication. The material is of Kazakh and Russian origin, converted and enriched in Russia, and reconverted in the US. It's headed for Tokyo Electric Power Co.'s Fukushima I units 1-5. ☼

URANIUM PRICE PANEL

For the week ended April 9, 2010

Weekly Spot Market Prices

Price (\$/lb U3O8)	Change	Apr.			Mar.			Feb.			Jan.			
		12	5	29	22	15	8	1	22	15	8	1	25	18
	-0.53	41.22	41.75	42.13	41.56	40.50	40.42	41.38	41.25	42.25	42.00	42.00	42.67	43.35
Total Assessments	3.00	14.00	11.00	14.00	11.00	12.00	13.00	11.00	11.00	13.00	12.00	14.00	15.00	16.00
% within 1 StDev	1.95	92.86	90.91	92.86	90.91	91.67	92.31	90.91	90.91	92.31	91.67	92.86	93.33	93.75
Low (\$/lb U3O8)	-0.75	40.75	41.50	41.50	41.25	40.00	40.00	40.50	41.00	42.00	42.00	41.50	42.00	43.00
High (\$/lb U3O8)	0.00	42.00	42.00	42.50	42.00	41.00	41.00	42.00	41.50	42.50	43.00	43.50	44.00	43.75
Variability*	-0.06	0.25	0.31	0.44	0.19	0.25	0.38	0.50	0.63	0.50	0.50	1.00	0.58	0.40

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.

Congress Skeptical About DOE's FY2011 Budget Proposal

The Department of Energy (DOE) faces a potential \$560 million hole in its \$28.4 billion budget request for the fiscal year starting in October, according to lawmakers working through the annual appropriations process. The gap, they say, is the result of underfunding two signature nuclear programs, one calling for a tripling in loan guarantee authority for new reactors and the other ending a plan to transfer stockpiled uranium to pay for cleanup work at Portsmouth in 2011 (UIW Feb.1,p3).

Energy Secretary Steven Chu insists expanding nuclear loan guarantee authority from \$18.5 billion to \$54.5 billion would be budget neutral, since nuclear loan guarantee recipients are required to pay credit subsidy fees. But the Congressional Budget Office (CBO) says the expansion will cost the government \$360 million, despite recipients' credit subsidy payments. "The administration says the risk subsidy model is adequate. CBO seems to think differently," a Congressional staffer told UIW.

CBO hasn't officially "scored" the DOE's loan guarantee expansion proposal, because a bill has not been officially introduced in Congress proposing it. The \$360 million figure under discussion on Capitol Hill is an unofficial number, based on CBO's previous evaluations that nuclear loan guarantee costs are 1% of the total, a Congressional staffer told UIW. DOE spokeswoman Ebony Meeks suggested that number is irrelevant: "OMB [Office of Management and Budget] and DOE agree that the Congressional Budget Office scoring is not necessary and, indeed, redundant with the credit scoring we already do in our credit subsidy."

Now lawmakers have to decide who to believe — the CBO or the administration — and Republicans appear to be leading the charge in favor of the CBO's analysis, while Democrats sit on the fence. Rep. Rodney Frelinghuysen, Republican of New Jersey and the ranking minority member of the subcommittee of the House Appropriations Committee that deals with the DOE's budget, took the issue up during a recent hearing. "I'm ... gratified to see the requests for \$36 billion in additional loan guarantee authority for nuclear power plants," he told Chu. "But I ask why the administration has failed to include \$360 million that the committee must set aside to cover this new authority."

Along with Frelinghuysen, Sen. Bob Bennett, Republican of Utah, ranking minority member of the Senate Appropriations subcommittee that oversees the DOE's budget, "agrees with the House of Representative's assessment of needing to find the funds to cover the nuclear loan guarantee program's cost," according to a spokeswoman. Democratic members of the House and Senate appropriations subcommittees that oversee DOE declined to comment.

Chu has argued that for nuclear projects, saying "The cost [to DOE] is essentially nothing because the nuclear loans are essentially self-financed" (UIW, Feb.1,p3). And spokeswoman Meeks added, "The law requires that we fully cover the cost of our credit risk through credit subsidy and we have a process in place to do that." While the DOE's budget

proposal includes \$500 million in credit subsidies to cover the cost of loans for loan guarantee recipients involved in other types of energy projects, there's no equivalent fund available for nuclear projects. The thinking is that companies that are big enough to build new reactors are big enough to pay their own credit subsidies.

Credit Subsidies

The debate over the size of the credit subsidies that recipients of DOE loan guarantees (which come with Treasury Department loans) should have to pay has been raging for years — and there is no sign of it ending anytime soon. The DOE, the OMB, and the companies building two new AP1000s at Georgia's Plant Vogtle are believed to be closing in on an agreement for a credit subsidy fee of 0.5% to 1.5%, according to **John Reed, Chairman and Chief Executive of Concentric Energy Advisors.**

Nevertheless, haggling could still be fierce: The difference between the two figures, though only 1%, represents about \$145 million, which the companies would have to pay up front. The project is backed by regulated utility Georgia Power (a Southern Co. subsidiary), which has said it could build the project without a DOE loan guarantee, says Reed. So if the credit subsidy fee gets too high, it will make more sense for the Vogtle partners to finance the project without DOE-guaranteed government loans.

With a 1% fee, would the government loans still be a good deal for the Vogtle partners? "The answer is 'probably,'" says Reed. "I think you are going to see regulated utilities begin to ask questions about whether it's worth it if the CSF [credit subsidy fee] were to go above 1.5%. At some point the savings you buy with the guarantee might not be worth the cost."

Reed says he expects the next loan guarantee to go to a merchant generator within the next couple of months, for instance Unistar, for an EPR at Calvert Cliffs; NRG, for two ABWRs at the South Texas Project; or even Luminant, for two US-APWRs at Comanche Peak. The credit subsidy fees for any of those projects are likely to be significantly higher than for Vogtle, Reed says. While Georgia Power is backing the loans for Vogtle, Unistar, NRG, and Luminant, are planning to back their new units only with revenues generated by those new units. That makes their projects riskier, requiring higher credit subsidy fees.

In the protracted DOE-OMB debate over appropriate levels, OMB officials have argued for fees as high as 7-10%, UIW has been told.

Pain for Utilities or Pain for Producers?

Aside from the loan guarantees, lawmakers are also concerned about the DOE's plan to reauthorize the Uranium Enrichment Decontamination and Decommissioning Fund (UE D&D Fund) to the tune of \$200 million, \$183.7 million of which would pay for cleanup work at the old gaseous diffusion enrichment plant near Piketon, Ohio. This would avoid uranium inventory selling, a method tried this year (via Usec) to achieve the same end, but which caused a huge outcry among American uranium producers and was blamed for depressing spot market prices.

What might be good news for producers is bad news for utilities — and they are already protesting. Calling the proposal a “\$200 million tax on the industry,” the Nuclear Energy Institute (NEI) says it is “appalled” and asserted “the industry has fully met its ... \$2 billion-plus obligation” under the 1992 statute that created the fund.

However, the fund is still short of what it needs to cover the clean-up costs, despite federal government payments and utility assessments, so the DOE is proposing to remedy the situation through its reauthorization request. “This proposal reiterates the ongoing need to decontaminate, decommission and remediate the uranium processing facilities, and the shared responsibility of both industry and the Federal government for these costs,” says spokeswoman Jenni Lee.

Sources in Congress say the reauthorization has allies among Democrats who support it as an environmental cleanup, and among delegations from the states which host the enrichment facilities (Ohio and Kentucky). But it also has well-placed opponents: Frelinghuysen called the request “an ill-considered repetition of a proposal which was rejected by Congress last year.” Bennett slammed the idea, telling Chu DOE wants “to tax utilities to generate \$200 million. Well that was a nonstarter last year. I think it will be a nonstarter this year. That leaves a \$200 million hole in your budget.”

“There are a lot of minority [Republican] members that oppose [the reauthorization], but there are [a] considerable number of members in the majority [Democrats] that like it,” one Congressional staffer tells UIW. “Still, I think it’s going to be very difficult for something like this to go through.” ☼

Sam Trantum, Washington

King of the Mountain: Uranium Production in 2009

With global uranium production up nearly 15% in 2009, heavyweight producers are vying for stakes in the annual production league tables like front-runners in a horse race — sometimes by company and in other cases by country. But as UIW’s examination of the figures reveals, the run-away winner by country, at least, was Kazakhstan, while in the company category Cameco held on by a thread.

That, however, did not prevent Areva boasting in its recently released annual reference document that with a 36% increase in “production” it had become “the world’s leading producer of uranium.” Canada’s Cameco more modestly labeled itself “one of the world’s largest uranium producers,” and did, in fact, hold onto the top spot (by company) — though only just, as measured by the amount of uranium production to which it could claim an equity stake.

But top production by company pales in comparison to top production by country — Kazakhstan delivered 14,020 metric tons of uranium in 2009. And when Kazatomprom proclaimed at the end of December that Kazakhstan “has led the world in ura-

nium production,” it had good reason to boast. For the first time since becoming a global competitor in the post-Soviet era it had delivered on its promise to become the world’s leading producer.

Meanwhile, its skyrocketing output played a significant role in the annual production increases enjoyed by the two giants — Cameco (with Inkai) and Areva (with Katco) — as well as by Uranium One (with South Inkai), Atomredmetzoloto (Armz, with Zarechnoye, Akbastau and Karatau) and of course Kazatomprom.

Similarly, improved results in both Niger and Namibia contributed to gains for Paladin, Areva and Sopamin, the Nigerien governmental organization that owns and now markets a share of the pounds out of Areva’s Nigerien mines.

Differing Scales

UIW is reporting equity uranium production by company, meaning the production to which a company holds title through its equity stake in a project. Areva, in contrast, considers itself the top producer according to a different rubric — it counts uranium production by the amount marketed, or in its words, “production likely to be sold/distributed to Areva by the mining joint venture.”

This rubric attributes to Areva, for instance, 49% of the Kazakh production from its Katco joint venture that actually belongs to Kazatomprom, but which Areva (which holds the remaining 51%) markets. It similarly attributes to Rio Tinto all the production from its Rossing and Ranger mines, even though Rio Tinto actually holds title to only a majority stake in each mine.

By this measure, Areva is the top producer, with 8,623 tU in 2009, followed in order by Cameco, Rio Tinto and Kazatomprom. But this measurement is nearly impossible to verify, particularly in Kazakhstan, where the exact nature of commercial relationships behind joint ventures is typically not made public.

Because of this opacity, UIW also does not report on producers’ total sales, although that measure has been used at times to establish (or declare) supremacy in the uranium market. By this rubric, Cameco would most likely lead, with 2009 sales of 13,033 tU (33.9 million lbs U3O8).

Uranium Production by Project

Project	% Global		% Annual		
	Prod.	Chg.	2009*	2008*	2007*
McArthur River	15%	15%	7,338	6,383	7,199
Ranger	9	-2	4,422	4,527	4,589
Rossing	7	2	3,518	3,447	2,582
Katco	6	131	3,132	1,356	871
Priargunsky	6	-2	3,004	3,050	3,037
Olympic Dam	6	-12	2,981	3,383	3,388
Arlit	4	4	1,808	1,743	1,750
Rabbit Lake	3	6	1,447	1,367	1,548
Akouta & Akola	3	11	1,435	1,289	1,403
McClellan Lake	3	11	1,388	1,250	734
Total	100%	15%	50,327	43,853	41,279
Total Sum	76%		40,392	35,586	33,147

* tU.

Source: Company data, Areva, WNA, UIW.

But many companies are quite secretive about their sales, and total sales also do not represent primary production. Considerable secondary supply — notably that from the Russian-US HEU-LEU program — is sold into the market by Areva, Cameco and Nukem. And all of these companies, in addition to other producers and traders, frequently sell material purchased from the spot market.

Kazakhstan Supreme

In any other year, Canada's 13% increase in uranium production without additional new mines would have been the talk of the uranium world. But in 2009 Kazakhstan's output jumped 64% to 14,020 tU, more than the total produced by Niger and Uzbekistan combined. This was a sensational accomplishment, and achieved during a tumultuous year for Kazakhstan's state producer, as Kazatomprom saw a complete turnover in its senior management (UIW May26'09,p3).

Kazatomprom's new management appears as dedicated to maintaining this lead as the man many in the industry credit with achieving it, Moukhtar Dzhakishev, now jailed. Expecting production problems and extinguished secondary supply to contribute to a crunch by 2016, Kazatomprom plans to boost the country's production to 18,000 tU this year.

"At that," said Kazatomprom executive Nurlan Ryspanov in an elated December press release, "Kazakhstan will be a top uranium producer in the world in the period of peak demand for uranium."

It's unclear to what extent further dramatic production boosts from the Central Asian powerhouse are likely. Further increases may be restrained by shortages of skilled labor and equipment or the Kazakh industry's old bete noir, sulfuric acid. Others worry that the current boost is exploiting the best deposits, and that what is left may not be enough to achieve a second dramatic ramp-up.

But Kazakhstan's uranium industry has proved skeptics wrong before, and could very well do so again. Meanwhile, as Kazakhstan's fortunes go, so, too, do those of many leading producers.

Russia's Armz is a telling example: Most of its 25% production jump in 2009 (to 4,624 tU) was due to its Kazakh

operations (several of which have been turned over to Uranium One, in which Armz now has a stake). Actual Russian uranium production increased by a measly 1.22%, to 3,564 tU. This came from very modest increases at the country's two smaller ISR operations, Dalur (463 tU) and Khiagda (97 tU); the country's central uranium operation, Priargunsky, saw annual production fall slightly, from 3,050 tU to 3,004 tU.

Also noteworthy is the Katco ISR joint venture, which aimed to produce 1,500 tU but which actually produced 3,132 tU. Although this was below an eventual goal of 4,000 tU, it nevertheless represented a 131% increase over the previous year, and made it the world's fourth-largest uranium operation and the largest using ISR.

A Shifting Global Landscape

Beyond Kazakhstan, Canada saw a significant production boost thanks largely to Cameco's efforts (UIW Mar.22,p4). The last of the big three producers by country, Australia, suffered a 6% production downturn thanks largely to the autumn accident at BHP's Olympic Dam. That mine, which contains the planet's biggest uranium reserves so far discovered, slipped to sixth place against other producing mines, churning out only 2,981 tU.

Australian production wasn't helped by the country's other two operating mines. Ranger's 2009 production slipped 2% to 4,422 tU, while Heathgate's Beverley kept steady at 559 tU. (Heathgate, a subsidiary of privately held US company General Atomics, does not release production figures. UIW's figures for the Beverley mine are calculated using the public data released from BHP Billiton, Rio Tinto and the Australian government.)

Several other key global producers saw very little change last year, including Uzbekistan, China, the US, and Ukraine. However, Africa proved why, after Central Asia, industry experts point to it for increased future long-term supply. In 2009 Malawi put itself on the map with initial production from Paladin's Kayelekera mine, which pumped out 104 tU.

More striking was Namibia, which thanks to a 21% production boost from Paladin's Langer Heinrich, saw its annual output increase by 6% to 4,624 tU. Paladin now joins Uranium One as junior miners on the list of the top ten

Uranium Production by Country

Project	% Global		% Annual		
	Prod.	Chg.	2009*	2008*	2007*
Kazakhstan	28%	65%	14,020	8,521	6,637
Canada	20	13	10,174	9,000	9,480
Australia	16	-6	7,962	8,470	8,603
Namibia	9	6	4,624	4,364	2,879
Russia	7	1	3,564	3,521	3,413
Niger	6	7	3,243	3,032	3,153
Uzbekistan	5	2	2,350	2,300	2,550
USA	3	2	1,532	1,501	1,800
China	2	4	800	769	712
Ukraine	2	-4	800	830	900
Total	100%	15%	50,327	43,853	41,279

* tU.
Source: Company data, Areva, WNA, UIW.

Equity Uranium Production by Company

Project	% Global		% Annual		
	Prod.	Chg.	2009*	2008*	2007*
Cameco	15%	16%	7,572	6,526	7,614
Kazatomprom	15	32	7,500	5,691	4,956
Areva	13	27	6,427	5,042	4,722
Rio Tinto	11	0	5,438	5,461	4,911
Armz	9	25	4,624	3,687	3,527
BHP Billiton	6	-12	2,981	3,383	3,388
Navoi	5	2	2,350	2,300	2,550
Uranium One	3	25	1,336	1,065	784
Paladin	2	32	1,210	917	296
Sopamin	2	7	1,107	1,038	1,093
Total	100%	15%	50,327	43,853	41,279

* tU.
Source: Company data, Areva, WNA, UIW

global uranium producers. Sopamin, which remained on that list in 2009, is hardly a junior miner; it merely holds an equity stake in Areva-operated uranium mines.

Well north of Namibia into West Africa is Niger, where 2009 production jumped 7% to 3,243 tU. This came as a result of an unexplained 11% production hike at Akouta and Akola to 1,435 tU (the mill for the underground mines has a capacity of 2,000 tU/year), and a 4% increase at Arlit, where the mill for the underground mine also has a 2,000 tU/year capacity.

Areva is currently working to increase Arlit's mill capacity to 3,000 tU/year, while also building the mine at Imouraren, targeted for a 2013 commissioning. Yet as soon as this summer Niger expects to see commercial pounds from another new uranium mine, the Chinese-operated Azelik project (UIW Mar.8,p4). ☞

Phil Chaffee, London

Tvel Signs Fuel Deal With Slovakia

Slovenske Elektranarne, a Slovenian utility 66% owned by Italy's Enel, and Russia's state-owned Tvel announced last week they had signed a long-term fuel supply agreement for Mochovce Units 3 and 4. The two units are under construction and expected to come on line over the next 2-3 years.

The deal covers a six-year period — 2012-17 — and foresees the delivery of two start-up fuel loads and five reloads for each of the Russia-designed VVER-440 reactors on which construction was started in 1987, a year after the Chernobyl accident, and suspended five years later.

In addition, Russian President Dmitry Medvedev and his Slovenian counterpart Ivan Gasparovic discussed the possibility of building a fuel fabrication plant in the Central European country. Tvel CEO Yuri Olenin said such a project would be advantageous for Russia since it would give Tvel easier access to the European Union's nuclear energy market.

In the past Russian officials have floated the idea of building a fuel fab plant somewhere in Europe, particularly Slovakia, as a hedge against Ukraine, where Tvel would also like a plant but has run into competition from Westinghouse and difficulties negotiating with Ukraine's government (UIW Jul.13'09,p3).

Ties with Slovakia were reinforced in 2008 when Tvel signed a five-year fuel supply deal for Mohovce (Units 1 and 2) and Bogunice (Units 3 and 4), which takes effect in October. They also signed an option agreement for collaboration after 2015 on long-term fuel production for Russian-type power units.

Meanwhile, Atomstroyexport last September offered its new MIR (Modernized International Reactor) to both Slovakia and the Czech Republic as the basis for future cooperation (UIW Oct.19'09,p4). ☞

IAEA Beefs Up Assistance For Newbuild

With a number of countries looking at renewing or starting nuclear programs, it's hardly a surprise that the International Atomic Energy Agency's (IAEA) Nuclear Power Division is increasing spending on technical assistance aimed at facilitating newbuild. But within the agency, some officials are casting a caustic eye at the list of potential new entrants — questioning either their level of commitment to building reactors or their underlying reasons for wanting to develop nuclear programs.

“A lot of it isn't going to happen and a lot of it shouldn't happen,” one official told UIW, explaining that he equates the level of commitment to newbuild with the monetary amount the country is willing to spend upfront to get it to happen. As an example, he said: “When they are serious they send their own people,” adding that “Vietnam is still having the IAEA pay for their guys to come to Vienna.”

Historically the agency's Technical Cooperation (TC) program allocated less than 10% of its annual budget to helping countries develop nuclear power programs. In 2009, the program disbursed \$85.4 million, of which 4.8% went to nuclear power and 5.3% to nuclear fuel cycle projects. This year the amount is expected to be higher — with the combined amount on the order of 12% of the total.

“We went from 13 national and regional projects in '07-'08 to 36 in the current cycle which is a tripling in the number of projects,” said Anne Starz, Technical Head for Infrastructure and Planning. In all there are 58 countries participating in 36 projects, including a handful of regional projects with 12 to 20 countries in each.

“Sometimes we call them newcomers, but that's a misnomer as some have had programs in the past and are restarting or resuming them,” Starz, who is American, said. The projects cover “what it would mean to undertake nuclear power in their country. ... Before they get going they should understand their international obligations and issues.”

A Balancing Act

But in an agency as diffuse and politically charged as the IAEA, agreement on precisely what those obligations and issues are is not always easy to achieve.

For example, the agency is obliged to encourage all newcomers to adhere to the Convention on Nuclear Safety, which disallows government nuclear organizations to combine regulatory and promotional functions in one agency. Article Eight of the Convention (which took effect in 1996) states that governments should take steps to “ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.”

But in many countries, regulatory and promotional functions are effectively combined within government-run nuclear organizations. And the IAEA itself, of course, is a

balancing act — with one division facilitating new programs while another casts a wary eye over the list of potential new entrants from a proliferation standpoint, while a third concerns itself with safety regulation.

Thus it is hardly surprising that when Jordan recently submitted plans for a nuclear energy organization that combined the promotional-regulatory functions, a dispute broke out within the agency over whether it was acceptable. “It was a fundamental violation of the Nuclear Safety Convention,” the IAEA official argued, “but someone else in the agency said it was OK.”

While many would argue that the TC program is essentially promotional in nature, its defenders argue that it is more of a nuclear facilitator than a promoter. They point to the fact that the TA staff devote much effort to reminding newcomers to nuclear energy what they are getting into.

This involves broaching topics — like waste — with the wisdom of hindsight. “This is the year of waste for these projects,” said Starz. “We have a publication coming out from my department with policies and strategies for waste management and nuclear power projects.”

Notwithstanding the lack of obvious solutions to the waste problem in the United States and other developed countries with nuclear programs, one of the agency’s favorite “case studies” on the waste issue is South Korea because of what the agency sees as a parallel to developing countries today seeking nuclear programs. An agrarian postwar society with low per-capita incomes and very little in the way of science and technology when it embarked on a nuclear program in the late 1950s, South Korea acquired a small research reactor in 1962 and eventually built 20 reactors. “They had low access to capital ... and very low foreign exchange reserves, and yet there was a way,” Starz said.

Prime Minister Chung Un-chan said Mar. 11 that South Korea plans to build 18 new reactors by 2030, at which point nuclear would be contributing 59% of the nation’s electricity compared to about 35% today, according to the government’s website.

However, South Korea is now facing the same issue bedeviling the industry in most advanced nuclear nations — that of where to put the spent fuel. “They didn’t plan for waste at the beginning and now there is a lot of public discourse about waste options,” Starz said.

Regional Approaches

Countries thinking about the longer-term consequences of nuclear energy find benefit in banding together — hence the regionally based nuclear projects coordinated by the IAEA, one each for Europe and Latin American and another “two or three” for Asia, including one project covering the member states of the Gulf Cooperation Council (GCC).

Originally the GCC, or at least some of its member states, wanted to study the feasibility of developing reactors on a regional basis. Kuwait and the UAE wanted to move faster, and discussions soon bogged down in questions about where the plant would be located, financing, and shared grid capacity — some point out that the region simply doesn’t have enough of it to make a regional plant feasible.

But the biggest stumbling block was the question of who ultimately would shoulder the burden for the plant’s safe operation. “Regional approaches to nuclear energy take time to negotiate,” Starz said. “It takes an awful lot of energy to negotiate the benefits and liabilities. The benefits are easier to divide than the liabilities.”

Similar problems are proving a stumbling block for the Baltic states, even though, as Starz put it, “That’s in an area where the grids are already connected and there is already a lot of regional cooperation.”

However, if regional reactor projects don’t prove feasible, states with emerging nuclear programs can benefit by sharing in other areas. “There are lots of things that can be done, like sharing training and research and data for environmental impact statements,” Starz said. So that’s what the GCC is doing. “Where the vision at first was a nuclear power plant, now they’re thinking of infrastructure for sharing opportunities.” ☸

Stephanie Cooke, Vienna

CHINA

China National Nuclear Corp. (CNNC) plans to acquire an additional 200,000 tons of uranium resources overseas to boost its overseas ore production by 1,000 tons a year, according to the company's website, which does not specify whether the amounts are metric. Domestically, China produced 800 metric tons of contained uranium (tU) in 2009 (see story). According to a recent CNNC presentation, China's uranium requirements will increase from 1,200-1,500 tU per year in 2009 to a range of 6,450 tU-8,200 tU/yr by 2020. Chinese interests own stakes in Kazakhstan's Semizbai, Irkol, and Zhalpak operations, which are expected to bring the country 1,100 tU/yr once they reach full production, Nukem President and Chief Executive Jeff Faul told a Nuclear Energy Institute conference in Austin in October. China has stakes in projects in Namibia, Central African Republic, South Africa, and Niger; its African production could reach 1,500 tU/yr by 2015, Faul said. China also has stakes in exploration or future development projects in Australia, Jordan, Kyrgyzstan, and Mongolia.

FRANCE

France's Total appears to be angling for a role in the UAE's \$20 billion nuclear newbuild project even though it was part of the losing French bid in December (UIW Jan.4,p3). "Our adventure is as an investor," Total chief executive Christophe de Margerie told the Financial Times in an interview published today. "It is clear that we are a company interested in managing big projects, being in charge of operations. Areva is not our cup of tea because [it's] a manufacturer." De Margerie also explained that while Total would be willing to be a partner with Abu Dhabi in the project, "If it were considered to be anti-Areva, we'd have to think about it." The loss of the Abu Dhabi contract has caused much recrimination in Paris, particularly from Areva and EDF, the state-owned utility that was brought in at the last minute to try to help salvage the French bid (UIW Jan.25,p3). Areva head Anne Lauvergeon has since claimed the Koreans' APR-1400 is inferior to the French EPR, and while de Margerie didn't go quite so far, he told the Financial Times that the Korean reactor was simply cheaper and quicker to build.

ITALY

France's EDF and Italy's Enel took another major step last week toward realizing their ambitious nuclear newbuild plans in Italy, this time inking agreements with Finmeccanica subsidiaries Ansaldo Energia and Ansaldo Nucleare. According to a memorandum of understanding (MOU), Ansaldo Nucleare will contribute to the Enel/EDF partnership with "the study, design and commissioning activities of nuclear systems" and "for the licensing process." Ansaldo Energia, meanwhile, will assist with the qualification and tender process for "the supply of equipment, installation and engineering systems." The agreement with Ansaldo Nucleare is particularly significant, as it has worked with US reactor vendor Westinghouse over the past two decades to develop the AP1000. Together with the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), the Finmeccanica subsidiary tested key safety features of the American reactor design: a Westinghouse spokeswoman in October told UIW that something more specific than a technical partnership agreement "is being discussed between the two companies for the Italian market" (UIW Oct.5'09,p6). Those discussions were almost certainly not helped by last week's MOU with EDF and Enel, which have explicitly committed to developing Areva's EPR.

UKRAINE

Russia may help finance the completion of two long-stalled reactor projects in Ukraine. Meeting with Ukraine's new prime minister Mykola Azarov on Saturday, Russian Prime Minister Vladimir Putin

said that "[w]e discussed cooperation on nuclear power and the possibility of Russia financing work on the third and fourth units of the Khmelnytsky nuclear power plant in the amount of \$5 billion-\$6 billion." Both reactors were under construction in 1990 when the newly independent Ukrainian parliament, with the Chernobyl disaster fresh in mind, issued a moratorium on new reactors. Although the moratorium was lifted by 1993, the Khmelnytsky VVER-1000 reactors were never completed. The Ukrainian government has plans to commission Khmelnytsky-3 and -4 in 2015 and 2016, respectively.

UNITED KINGDOM

Urenco's net income jumped 32% in 2009 to €343 million (\$466 million), despite a slight (less than 1%) year-on-year revenue decrease to €1.12 billion (\$1.52 billion). The company attributed the net income boost to higher earnings before interest, tax, depreciation and amortization (EBITDA in 2009 was up 2% from 2008), lower depreciation because of an extension of assumed core equipment lifetimes and lower net finance costs based in part on marked-to-market of hedged positions. Urenco chalked up the EBITDA increase to production cost reductions stemming from economies of scale after 2009 capacity increases at its three European enrichment plants (mostly at Almelo and Gronau, with only a slight increase at Capenhurst), which took total capacity from 11 million SWU to 12.2 million SWU. It expects its capacity to rise again this year as it brings part of its Urenco USA plant online (UIW Mar.15,p3). Urenco is aiming for 18 million SWU capacity by 2015. Also, the European enrichment company's order book grew 8% in 2009, reaching €19.5 billion and extending to 2025. Still, the news wasn't all good: Urenco's liabilities grew by 23% from 2008 to 2009 and its cash and cash equivalents fell 40%.

UNITED STATES

The "initial measurement program" of the test loop at Global Laser Enrichment's (GLE) Wilmington, North Carolina facility has been "successfully completed," according to a statement from Australia's Silex Systems. "This means that the technology has met key enrichment performance criteria, and that activities going forward, including further Test Loop measurements, will focus increasingly on the engineering design effort for a potential commercial production facility," said Silex Chief Executive Michael Goldsworthy. Additional modifications and testing of the test loop, which went on line in July 2009, are planned throughout 2010. The GLE partners are expecting the Nuclear Regulatory Commission to decide in December 2011 whether to issue them a license for an enrichment plant. Although the project appears to be progressing, it has fallen behind schedule (UIW Mar.8,p8).

UNITED STATES

Mestena Uranium produced 480,000 lbs U308 in 2009 and plans to produce about 650,000 lbs U308 in 2010. Its 2009 production included 105,000 lbs in Q1, 135,000 lbs in both Q2 and Q3 and 105,000 lbs in Q4. Combined with production figures released publicly by the other two producers with US operations, total US production in 2009 amounted to 3.75 million lbs U308: 1 million in Q1; 940,000 in Q2; 828,000 in Q3; and 963,000 in Q4. Those figures differ from the figures the US Energy Information Agency has released, based on production from Mestena's Alta Mesa, Denison's White Mesa, and Cameco's Crow Butte and Smith Ranch/Highland, which totaled 3.98 million lbs U308 for the year (UIW Mar.22,p4). The EIA asks producers for amounts of "drummed" yellowcake, which may account for the slight difference in the total. ☼

ENERGY INTELLIGENCE URANIUM MARKET UPDATE

For the week ended April 9, 2010

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

Monthly Spot Market Prices

	Change	2010					2009			
		Mar.	Feb.	Jan.	Dec.	Nov.	Oct.	Sep.	Aug.	Jul.
Uranium										
Low (\$/lb U3O8)	-0.75	+40.50	+41.25	+42.00	+42.00	+42.00	+42.00	+42.00	+47.00	+47.50
High	-0.25	+42.00	+42.25	+45.50	+45.00	+47.00	+47.00	+47.00	+47.00	+54.00

March Spot Conversion (\$/kg U)

Low	5.50
High	7.50

March Spot SWU (\$/SWU)

Low	157.00
High	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	4/27/2010		520		UF6	2010	Unknown
Buyer:	Non-US Utility			180		UF6	9/1/2010	Unknown

Term Bids or 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	4/27/2010		2,598		UF6	2011-2015	Unknown
Buyer:	Non-US Utility	4/27/2010			1,500	UF6	2011-2015	Unknown
Buyer:	Non-US Utility				260	SWU	2014-2015	Unknown
Buyer:	Non-US Utility				3,900	SWU	2013-2025	Unknown

Term Evaluations

Buyer or Seller	Category	Due by	Uranium Qty. ('000 lbs U3O8)	Conversion Qty. ('000 Kgs U)	SWU Qty. ('000 SWU)	Form	Delivery	Origin
Buyer:	US Utility		4,500			U3O8	2011-2018	Unknown
Buyer:	US Utility				1,000	SWU	2012/13-2015/16	Unknown

Spot Evaluations

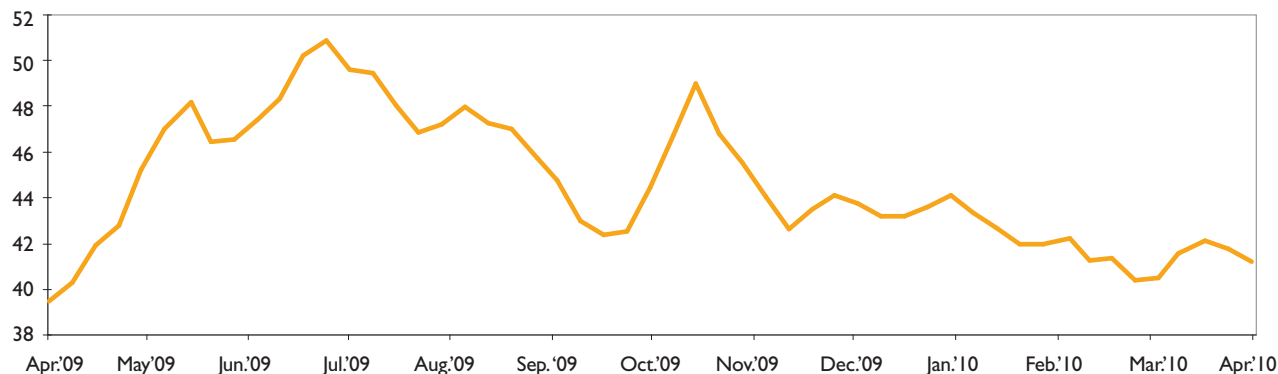
Buyer or Seller	Category	Due by	Uranium Qty. ('000 lbs U3O8)	Conversion Qty. ('000 Kgs U)	SWU Qty. ('000 SWU)	Form	Delivery	Origin
Buyer:	Non-US Utility	4/7/2010	100			U3O8 or UF6	9/31/2010	Unknown
Buyer:	Non-US Utility	4/7/2010	200			U3O8 or UF6	9/31/2010	Unknown

No Spot Transactions

No Term Transactions

(\$/lb U3O8)

Uranium Price Panel Over the Previous Year



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