

The

Whither the Spot Uranium Market?

Ux

WEEKLY

One of the outstanding features of the spot uranium market so far this year is that volume has been quite low, approximately 6 million pounds U_3O_8 equivalent. On an annualized basis, this is far less than the yearly volume during the 1990s, which has averaged about 30 million lbs U_3O_8 e. The question is whether this is an aberration or part of a larger trend, and if it is a trend, what are the implications for the market.

A historic view of spot volume—The chart on page 2 shows that during the 1990-1995 period, spot uranium volume varied between 30 million lbs U_3O_8 e to over 40 million lbs (in 1995). After 1995, spot volume dropped to about 20 million lbs in both 1996 and 1997 and stands to be much less this year. In this respect, there has definitely been a downward trend in spot volume during the second half of the 1990s.

What happened?—The downward trend in spot volume began after spot prices shot upwards during the first part of 1996. Spot volume during the second half of the year was only 8 million lbs U_3O_8 e compared to first-half volume of 14 million lbs. This was no coincidence. After the price increase, utilities began to exercise upward quantity flexibilities in their existing long-term contracts, taking more deliveries under these contracts and greatly reducing their potential to buy on the spot market.

Other factors contributing to shrinking spot market volume from a utility standpoint were operational problems with and premature shutdowns of reactors, mainly in the U.S., and downward revisions in inventory policies, primarily by non-U.S. utilities. Certain utilities which have traditionally made spot purchases had no need to buy when their reactors were off line or when supplies from a prematurely shut down reactor became available to other reactors in their system.

Spot buying by producers and traders also fell. Producers have not been as active defending the market as they have in the past, and the reduction in trader spot buying reflects their changed role in the market. In the past, traders were more market makers, seeking to push the market to its bottom or top more quickly by their selling or buying activity. Now, traders act more as conduits for CIS supplies instead of actively trading in the spot market.

Is uranium becoming more like enrichment?—Declining spot volume in uranium raises the question whether the uranium market is becoming more like enrichment, where spot volume has declined to the point that it now represents a minor percentage of total activity. From the standpoint of industry structure, uranium has become more like enrichment in that now it is dominated by a handful of major suppliers. To the extent that these suppliers are successful in capturing market share by committing current and prospective projects under long-term contracts, future spot demand will be reduced. Large uranium producers have also sought to purchase the Russian HEU feed and deliver it through their long-term contracts, in a manner similar to what USEC is doing with the HEU SWU.

Implications for prices—Obviously, low spot volume has been a major contributor to low prices this year, as well as the general decline in price that has been witnessed since the middle of 1996. As long as spot volume remains low, it is more likely that price will be under downward pressure. Of course, the level of price depends on the balance between spot supply and demand, so price could increase even with low spot demand if spot supply were also low. However, low spot demand leaves the market much more vulnerable to the appearance of any large blocks of supply.

This brings up an interesting question. If spot uranium volume stays low, will producers want to continue referencing spot prices in long-term contracts, given the potential for spot prices to be pushed to lower levels. The use of market price contracts in uranium represents a major difference between uranium and enrichment, and one reason that enrichers have shied away from this practice is the thinness of the spot enrichment market.

A key factor influencing future spot demand in the current market is how utilities exercise the quantity flexibilities in their long-term contracts. As discussed above, the decline in spot volume was largely a function of utilities exercising upward quantity flexibilities. If this trend changes, and there is some evidence that it is, spot demand could begin to grow again. Important questions are how much growth will occur and whether this growth will catch the market off-guard as it has at times in the past.

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**Weekly
Ux Prices**

U_3O_8
\$9.70
(-0.20)

CIS U_3O_8
\$9.05
(Unch.)

NEWS BRIEFS

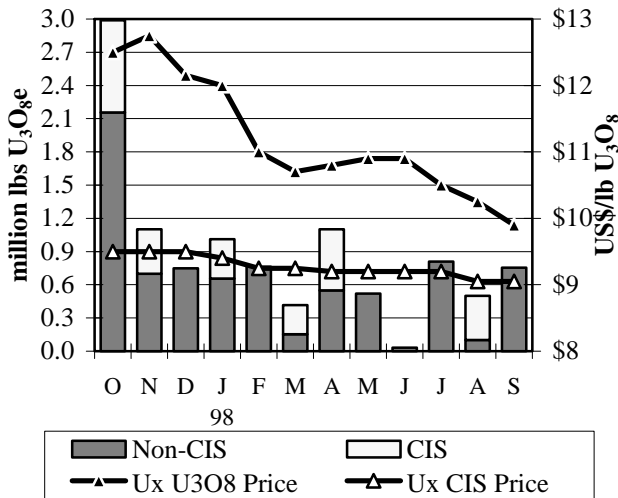
Incumbent party prevails in Australian elections—Prime Minister John Howard's Liberal-National coalition government narrowly won re-election in Australia on Saturday, and in the process suffered a reduced majority in Parliament. Poll results out of Australia indicate that the coalition's old majority of over 40 seats is now down to a reported eight seats.

The election news is positive for Australia's uranium industry as the main opposition Labor Party, led by Kim Beazley, had threatened to immediately enact a "no new mines" policy which aimed to prevent the start-up of future uranium mines in Australia. The election result keeps the Liberal-National coalition in power for the next three years, giving it a chance to push through its tax reform agenda which was a major issue in the recent election.

USEC begins AVLIS siting process, releases 10K—USEC Inc. announced on Monday that it has initiated a site selection process for a new production facility utilizing AVLIS, its next-generation laser-based uranium enrichment process. Currently, sites are being considered to host this new hi-tech facility and a decision on the selected site is expected early next year. Prospective sites will be evaluated based on environmental and socio-economic factors, construction and operating costs, and community support. The new AVLIS enrichment facility is expected to cost over \$2 billion to build with a construction workforce of 1,900 expected. The completed facility is expected to employ approximately 1,300 workers in technical, manufacturing and administrative areas.

USEC Inc. has released its annual report (SEC form 10-K) for fiscal year 1998 (FY98), which ended June 30, 1998. The company reported that based on total

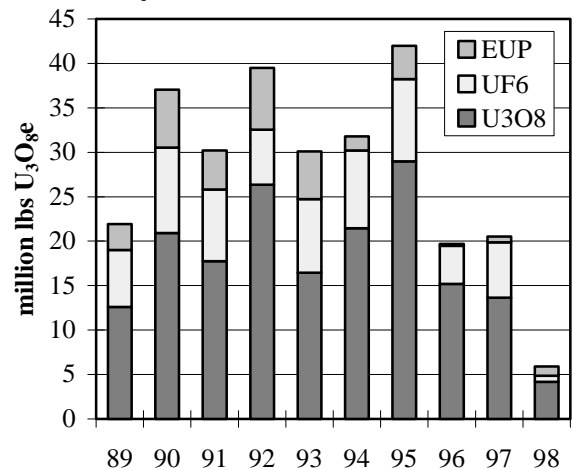
Ux Month-end Prices vs. Volume by Origin



— Industry Calendar —

- **October 4-7**—NEI's International Uranium Fuel Seminar '98 will be held in Tucson, Arizona.
- **November 18-20**—Uranium Asia-Market Outlook '98 presented by IBC Asia in Guangzhou, China.
- **April 11-14, 1999**—NEI's Fuel Cycle '99 will be held in Austin, Texas.
- **May 16-19, 1999**—WNFM's 26th Annual Meeting will be held in Beaver Creek, Colorado.

Annual Spot Uranium Volume, 1989-1998



revenue of \$1.421.2 billion, U.S. SWU customers accounted for 63 percent of the total, Asian customers represented 31 percent, while European and other customers made up the remaining 6 percent. The company also reported that no one customer accounted for more than 10% of revenue in either FY97 or FY98. Uranium sales to electricity customers increased to \$40.8 million in FY98, compared with \$25.9 million in FY97.

Under the contract for the Russian HEU agreement, USEC ordered 4.4 million SWU in calendar year 1998, of which 0.8 million SWU had been delivered by June 30, 1998. The company purchased 3.6 million SWU derived from HEU at a cost of \$315.8 million for FY98. USEC has committed orders for 5.5 million SWU annually in calendar years 1999, 2000 and 2001 at an annual cost of \$475.8 million. Although the quantities and pricing mechanism for establishing prices for SWU purchases from 1999 through 2001 have been set, the prices are subject to adjustment based on U.S. inflation.

The company estimates the value of its long-term requirements SWU contracts with utilities at \$3.8 billion through FY2001 and \$7.2 billion through FY 2009.

Urenco files for license to increase Gronau capacity—Urenco Deutschland has filed an applica-

NEWS BRIEFS cont...

tion with the North Rhine-Westphalia state government for a nuclear license to increase its Gronau gas centrifuge enrichment plant capacity to 4.0 million SWU per year. Gronau currently has an enrichment capacity of 1.0 million SWU/yr, but is in the process of expanding that capacity to 1.8 million SWU/yr by 2003 or 2004.

In June, Urenco announced that it was planning to approximately double the Gronau plant capacity in the not too distant future. Company officials at that time reported there were plans to construct a new plant at Gronau with a capacity of 1.5 million SWU/yr. If the recent license request is granted, Urenco could expand capacity by another 2.2 million SWU/yr.

PNC era ends, new entity begins—Japan's Power Reactor and Nuclear Fuel Development Corp. (PNC) ended operations this past Wednesday and was replaced on Thursday by the Japan Cycle Development Institute, which is aiming to improve operations following a series of nuclear mishaps and cover-ups committed by PNC. The Japanese Diet enacted two bills in May to replace PNC with the new entity.

The new company will engage in "pragmatic research" to establish a nuclear recycling system that will focus on development of fast-breeder reactors and disposal of spent fuel. The company will continue the Japanese nuclear recycling program which seeks to make use of plutonium from spent fuel. However, within five years from its inception, the new company will withdraw from overseas uranium exploration, ura-

Ux Month-End Spot U₃O₈ Prices, Volume, Leadtime and Number of Transactions

Month	Ux Price		Volume (mill lbs U ₃ O _{8e})	Average	# of Trans
	U ₃ O ₈	CIS		Leadtime Months	
Sep '97	\$10.85	\$9.00	6.5	3.3	18
Oct	\$12.50	\$9.50	3.0	4.4	12
Nov	\$12.75	\$9.50	1.1	4.0	3
Dec	\$12.15	\$9.50	0.8	5.3	3
Jan '98	\$12.00	\$9.40	1.0	2.7	3
Feb	\$11.00	\$9.25	0.8	3.0	3
Mar	\$10.70	\$9.25	0.4	6.0	4
Apr	\$10.80	\$9.20	1.1	6.0	5
May	\$10.90	\$9.20	0.5	5.3	3
Jun	\$10.90	\$9.20	0.03	6.0	1
Jul	\$10.50	\$9.20	0.8	5.3	3
Aug	\$10.25	\$9.05	0.5	3.0	3
Sep	\$9.90	\$9.05	0.8	3.7	6

anium enrichment and the development of advanced thermal reactors. One of the company's objectives will be to operate in a manner more transparent to the public.

WPSC to buy MG&E share of Kewaunee—Wisconsin Public Service Corp. (WPSC) finalized an agreement on Wednesday to buy Madison Gas & Electric Co.'s (MG&E) 17.8 percent share in the Kewaunee Nuclear Power Plant. The agreement is expected to be completed in 2000 and will increase WPSC ownership in the 503 MWe BWR to 59 percent. As part of the deal, WPSC has agreed to build a natural gas-fired combustion turbine for MG&E. The 83 MWe unit will serve MG&E customers during peak times. MG&E will also be granted an option to purchase electricity from WPSC for two years following the date of transfer of ownership and will receive revenue from its share of facilities linked to the nuclear plant.

More importantly for WPSC, the sale of MG&E's share permits the go-ahead for the \$90 million project to replace the two steam generators at Kewaunee to keep the reactor operating until at least 2013. MG&E opposed replacing the steam generators and favored shutting down the plant down in 2002, since its cost in replacing the steam generators would have run around \$17 million. The steam generators are expected to be replaced shortly after the share transfer is completed.

MG&E states that its main reason for exiting the nuclear power business is because of internal projections that indicate other low-cost electricity could meet its customers' needs. Additionally, the company feels exiting the business will eliminate financial risk for investors and customers when unexpected outages occur.

Cameco offers US\$125 million of Preferred

September Spot Statistics		
	September 1998-YTD	
U ₃ O _{8e} Volume (million lbs)	0.8	5.9
# Transactions	6	31
Avg. Quantity	0.1	0.2
Avg. Leadtime (months)	3.7	4.3
U ₃ O ₈	0.7	4.2
UF ₆	-0-	0.7
EUP	0.1	1.0
U.S. Buyers	0.8	3.4
Non-U.S. Buyers	-0-	2.5
Non-CIS Origin	0.8	4.3
CIS Origin	-0-	1.6
Actual Demand Purchases	0.8	5.1
Discretionary Purchases	-0-	0.8
1998 Delivery	0.4	4.4
1999 Delivery	0.4	1.5
SWU Volume (000 SWU)	23	590
Conversion Vol. (000 kgU in UF ₆)	38	1,579

NEWS BRIEFS cont...

Securities—Cameco Corporation has filed a registration statement with the U.S. Securities and Exchange Commission for an offering of \$125 million of preferred securities in the U.S. The offering can be increased by up to another \$18.75 million pursuant to the underwriters' overallotment option.

The net proceeds from the offering will be used by Cameco to replace a portion of the short-term financing used in acquiring Uranerz Exploration and Mining Limited (UEM) and Uranerz USA, which was completed on August 11, 1998. The offering is being underwritten by a syndicate managed by Merrill Lynch & Co., and also includes Morgan Stanley Dean Witter, PaineWebber Incorporated, Prudential Securities Incorporated and Salomon Barney.

AEP has fourth restart meeting w/NRC—American Electric Power (AEP) officials met with the U.S. NRC on Tuesday to discuss restart schedules for the company's two off-line Cook units. Earlier this month, AEP told the NRC that it expects to return Cook 1 to service by the end of the first quarter of 1999 and Cook 2 approximately 90 days thereafter. Topics of discussion included restart schedule progress, finalization of restart plan strategies, completeness of engineering reviews, restart performance indicators and proposed regulatory submittals to the NRC.

China commences work on Fast Neutron Reactor—China began construction of its first fast neutron reactor power station last Monday, which is scheduled to be finished by 2003, according to Li Zhongping, deputy director of the China Fast Reactor Engineering Headquarters. This new pilot plant, located in southwestern Beijing, will be used to generate thermal power of 65 MWt and electric power of 20 MWe. Additionally, the reactor will serve as the foundation for building China's first commercial fast neutron reactor power station in the early 21st century. Li has stated this new reactor design is believed to be more efficient and has a higher utilization rate of uranium at 60 to 70 percent, compared with existing PWRs at 1 percent.

Deregulation news—U.S. Energy Secretary Bill Richardson turned authority to ensure the nation's electricity grid remains reliable and efficient over to the **Federal Regulatory Commission (FERC)**. With this authority under the Federal Power Act, FERC can now divide the country into regional districts to coordinate movement of electricity supplies within the districts. Although the Energy Department never exercised this type of authority, FERC has been faced with transmission reliability issues as states deregulate their electric-

ity markets, so it is therefore more appropriate for the agency to take on this responsibility. FERC can now establish boundaries among independent system operators (ISO's) to ensure electricity suppliers have fair access to transmission power lines in a particular region.

Cuba's reactor suspended indefinitely—Cuban President Fidel Castro announced in a speech to the Fifth National Congress of Committees for the Defense of the Revolution that the country's soviet-designed VVER-440 Juragua reactor, which began construction under Soviet aid, has been suspended indefinitely. Although work on the reactor has been suspended since 1992, Cuban authorities discussed plans for resurrecting the project which drew critical concern from voices in Washington. Moscow alluded to the possibility of resuming work on the reactor in March of last year, but had not taken any action on the issue in recent months. The reactor, which began construction in 1980, has cost \$1 billion and would cost another \$750 million and take four years to finish.

Ux Price Definitions

*The Ux Prices indicate, subject to the terms listed, the most competitive spot offers available for the respective product or service, of which The Uranium Exchange Company (Ux) is aware. The **Ux U₃O₈** price includes conditions for quantity, delivery timeframe, origin and location considerations while the **Ux CIS U₃O₈** price is the most competitive price for deliveries up to six months forward without regard to specific quantity or location. Both U₃O₈ prices are published weekly. The **Ux Conversion** price considers spot offers for delivery up to twelve months forward. The **Ux UF₆** value represents the sum of the conversion and U₃O₈ components as discussed above and, therefore, does not necessarily represent the most competitive UF₆ offers available. The **Ux SWU** price considers spot offers for deliveries up to twelve months forward. The Conversion, UF₆ and SWU prices are published the last Monday of each month.*

The Ux Prices represent neither an offer to sell nor a bid to buy the products or services listed.

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THE MARKET

Uranium—The most recent downward trend in the restricted price which began in July continued in September, as price weakened late in the month with a small flurry of deals being completed and/or evaluated. With last month's volume coming in at just over 750 thousand pounds U₃O₈ equivalent in six transactions, and a similar volume currently under evaluation, the market is seeing each transaction eat away at the restricted price. This is not surprising as the end of the year approaches and suppliers seek to lock up sales in what for them has been a dismal year.

At the end of September, the Ux month-end restricted price fell \$0.35 to \$9.90/lb, while the TradeTech price dropped almost \$0.50 to \$9.75. However, the largest price drop last month, at \$0.60, was seen in the low end of Nukem's price range, which declined to \$9.60. The NuclearFuel price range at the end of the month also dropped and narrowed to \$9.80-10.20. The cumulative affects of these price changes caused the restricted industry average price (IAP) to decline by \$0.38 to \$9.86/lb.

So far in 1998, the annual volume of non-restricted material has only been a fraction of the level seen over the past five years. With this decline in non-restricted market activity, the CIS price has stayed in the \$9/lb price range for the last 16 months. After falling slightly in August, published CIS uranium spot prices remained

unchanged in September, keeping the non-restricted IAP hovering just above the \$9.00/lb level.

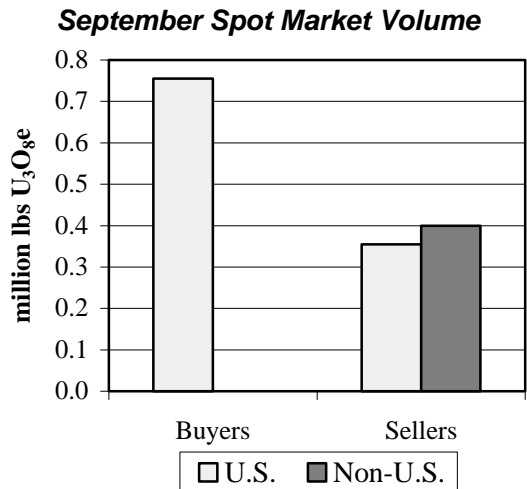
Conversion—In the face of minimal demand and the availability of aggressive supplies, the month-end prices for conversion fell once again in September. The current price levels are at their lowest since early 1993, prior to the shutdown of Sequoyah Fuels' facility. The Ux price dropped \$0.25 to \$3.75/kgU. The TradeTech price also fell to \$3.75, while the Nukem price range remained constant at \$4.00-5.15 keeping the IAP, which fell by \$0.17/kgU, up above the \$4/kgU mark.

Enrichment—Following two months of moderate activity, spot enrichment volume fell back to lower levels during September. With only one transaction last month involving 23 thousand SWU in the form of EUP, the spot enrichment IAP remained unchanged, at \$86 for restricted and \$84 for non-restricted SWU, with the non-restricted prices ranging from \$83 to \$85. This marks the fourth month that the IAP has been at these levels. Last month's small transaction brings the total spot volume for the year up to 590 thousand SWU.

Ux Spot Prices	
Weekly (10/5/98)	
U₃O₈	\$9.70
Quantities: 3-500,000	
Delivery: 4 months	
Origin/Location:	
Open/U.S. convertor	
Non-CIS/All others	
Matched/Any location	
CIS U₃O₈	\$9.05

Industry Spot Prices							
	NuclearFuel		NUKEM		TRADE	Ux	Avg.
	Low	High	Low	High	TECH		
Weekly (10/5/98)							
U ₃ O ₈ (\$/lb)	(10/5)				(9/30)		
Restricted	9.30	9.90	—	—	9.75	9.70	9.68
Non-restr.	8.80	9.10	—	—	9.05	9.05	9.02
Month-end (9/30/98)							
U ₃ O ₈ (\$/lb)	(9/21)					(9/28)	
Restricted	9.80	10.20	9.60	10.00	9.75	9.90	9.86
Non-restr.	8.80	9.10	9.05	9.20	9.05	9.05	9.04
Conversion (\$/kgU)	—	—	4.00	5.15	3.75	3.75	4.02
UF₆ (\$/kgU)							
Restricted	—	—	—	—	29.35	29.62	29.49
Non-restr.	—	—	—	—	27.45	27.39	27.42
SWU (\$)							
Restricted	—	—	—	86.00	86.00	86.00	86.00
Non-restr.	—	—	83.00	—	84.00	85.00	84.00

Note: Definitions of these prices vary among companies. They are listed strictly for comparison purposes and are in U.S. dollars. Nukem's SWU price shows limits on its price range.



In Remembrance

Four guys were out on the golf course. As one of them was teeing off at the 10th hole, which was next to the highway, they saw a funeral procession go by. Instead of teeing off, the guy removed his cap and placed it on his chest until the funeral had passed.

At this point, the other three said, "You know, that was the most touching thing I've ever seen." And the guy answers, "Well, I was married to her for 15 years. It was the least I could do!"