Jeff Combs, President, The Ux Consulting Company, USA
Bradford Leach, Vice President NYMEX Research Department, USA

Uranium Futures Contract by NYMEX and UxC

Uranium Futures: Part I by UxC

This is what can be considered the third in a series of papers examining the role of the market with respect to the expansion of nuclear power. The first, presented in September 2004 when the price was still below US$20, warned of the fragile state of nuclear fuel supply due to the unusual evolution of the market and the over-reliance on spot prices as indicators of the future scarcity of supply, especially for uranium. The issue was that the nature of the market itself represented a problem when it came to assuring future uranium supplies to support the growth of nuclear power. In fact, of the key issues to be addressed with respect to assuring future supplies, the first discussed was the role of price and market information, and the need for improvement in these areas.

By the time the second paper was given in September 2006, price had increased by more than 250% to US$48.50. At that time, we gave the market a grade of D+, as production was actually declining due to a series of mine problems and the otherwise sluggish response of production, raising the question of whether sufficient supplies would be forthcoming in the future.

Since that second paper, the uranium price has gone on a wild ride, almost trebling to US$136 (a sevenfold increase from the time of the first paper), before declining almost 25% to US$90 at the time this is being written (Figure 1). During this ride, price has changed by more than US$133, US$87.50 of this being an increase and US$46 representing a decline after hitting the US$136 mark.

Recent experience has shown that the development of the market, with its past government involvement and over-reliance on spot prices, has been less than ideal. Certainly, price increases were heavily influenced by speculation and various mine problems, but these price movements would not have been as extreme if previous prices had been more indicative of supply scarcity than was the case. Currently, prices are very volatile, complicating procurement and investment decisions. Clearly, there is room for better price and market information and mechanisms to ameliorate price risk to support the expansion of nuclear power as well as the operation of current nuclear plants.

INTRODUCTION OF URANIUM FUTURES

In May of this year, the New York Mercantile Exchange (NYMEX) introduced a uranium futures contract which settles financially on the Ux U_3O_8 price. This was done in response to requests that NYMEX received for such a product, as well as NYMEX's desire to offer a full complement of energy futures contracts. NYMEX offers futures contracts for crude oil, electricity, coal, natural gas, propane and other energy commodities. For its part, Ux Consulting saw the need for more price information, as well as a way for market participants to hedge their price risk in the volatile market that had developed.

Around the time of the launch, NYMEX and UxC conducted a series of seminars discussing the new uranium futures contract. These were held in New York, Atlanta, Washington, DC, and London, and a number of individual meetings were conducted with interested companies to explain the new contract. In September, NYMEX is sponsoring a hedging workshop to be held in Washington, DC. Thus, there has been a considerable effort to educate the market about the new contract.

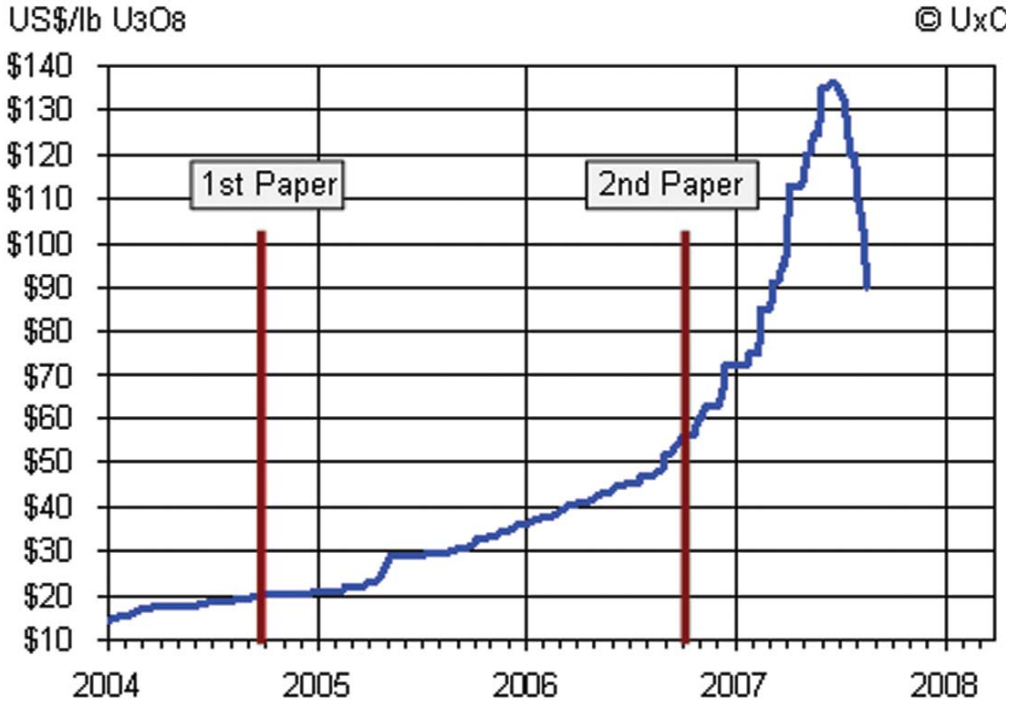

Figure 1. Ux U_3O_8 Prices, 2004-2007

As part of its semi-annual market survey, in July UxC asked a series of questions relating to the introduction of the uranium futures contracts, as well as companies' attitudes toward the use of uranium derivatives and their views on the need for transparency and liquidity in the market. While the survey is not yet complete, sufficient responses have been received to provide a good indication of the industry's views on the questions asked. From this standpoint, preliminary results are presented below, followed by a discussion of the uranium futures contract and its developments over the past several months.

REACTION TO INTRODUCTION OF FUTURES MARKET

We asked companies surveyed to provide their views on the introduction of the uranium futures contract. The choices were: positive, negative, neutral, and undecided. In all, over 90% of the companies that had made a decision (a handful were undecided) responded positive or neutral, with positive slightly outweighing neutral, with the remainder, primarily utilities, indicating that they had a negative reaction. A portion of those who were neutral to the contract noted that there was little volume so far, suggesting that their views could change in the future if volume increases.

This generally positive to neutral view of futures is in contrast to how respondents felt about the introduction of nuclear fuel banks to promote nonproliferation goals, another question on the survey. When companies were asked to state whether the establishment of fuel banks would be beneficial or harmful to the market, a little over one half said that fuel banks would be harmful.

Both futures and fuel banks are concepts that have been around for years (fuel banks go back over 50 years to Eisenhower's Atoms for Peace speech), but both have received renewed attention recently. Both seek to mitigate risk, with the function of futures to reduce price risk, while fuel banks address supply risk, but only a particular type of supply risk - that associated with countries which agree to forgo enrichment and reprocessing. Further, a number of respondents that stated that fuel banks would be harmful thought that their establishment would divert supplies from the market (thus increasing supply risk for utilities not given supply guarantees) and also increase price risk due to political involvement and potential distortions of the market.

USEFULNESS OF FORWARD PRICE INFORMATION

Almost two-thirds of survey participants found forward price information generated by futures contracting to be useful. A large percentage of those who did not currently find forward price information useful stated that forward prices were likely to become more important and useful as more transactions take place and when some of the volatility of prices abates.

USE OF DERIVATIVES

When asked whether they would use uranium derivatives (futures, forwards and options), a slight majority (53%) said they would, while the rest said that they would not. However, some respondents that said "no" indicated that they could use derivatives in the future, so their responses were somewhat qualified. Also, it should be noted that as far as utilities are concerned, our questions were addressed to fuel buyers and not risk managers or the trading desk within a utility, and these other groups ultimately might be the ones to use derivatives.

APPROVAL TO USE FUTURES

When we asked respondents whether their companies were approved to trade futures, only about 10% said they were. However, when asked whether they were in the process of getting approval, another 14% said "yes," bringing the total with approval or currently seeking approval to about 25%. Others said that while they had not started the process of getting approval, they were planning to start it later this year. It should also be noted that some companies indicated that they did not have time to pursue approval now, but did not rule it out in the future, or did not have the need to use futures as they were not yet in production.

TRANSPARENCY AND LIQUIDITY

With the rapid increase in price earlier this year and the equally rapid (but not as extensive) decline in price more recently, issues of price transparency and market liquidity have received greater attention. Thus, we decided to ask about views on transparency and liquidity in our survey. Preliminary results of the survey show that, in general, market participants believe that the market is neither transparent nor liquid. Less that 5% of the respondents believed that the market was transparent (over 95% believed it was not), while a little more than a quarter thought it was liquid.

Note that when we asked these questions, we did not define either transparency or liquidity, leaving it to the respondent to answer the questions according to their concept of these conditions. However, we also gave participants the ability to offer comments in addition to their answers. With respect to the question on transparency, we received no additional comments at this stage of the survey. In contrast, on the subject of liquidity, we received a number of comments, many which were revealing as they provided some insight as to what respondents thought about this concept.

Examining these comments, it is clear that some respondents think that liquidity simply means the ability to buy or sell material, or to acquire it when needed. However, liquidity means more than this - it is the ability to convert an asset into cash quickly, a condition that is associated with a high level of trading activity and one that translates into little impact on its price when an asset is sold.

There is no question that at the time of this writing, which roughly coincides with the time of the survey, the uranium market is extremely illiquid. Sellers are unable to sell the quantities they need, and when they do sell material, such sales occur at large discounts to the then market price. An example of this was when a supplier sold 50,000 pounds of uranium at a price of US$105, US$15 less than the published price at that time. Conversely, when price was increasing at a rapid rate, uranium could only be purchased at a premium to then published prices. In both cases, the level of trading activity was quite low, and thus not characteristic of a liquid market.

DEVELOPMENT OF A PHYSICAL EXCHANGE

When asked whether they would like to see the development of a physical exchange to increase price transparency and market liquidity, an overwhelming 80% of the respondents said that they would.

CONCLUSION

The extent to which uranium futures will be used is still to be determined. Whatever happens, futures do provide additional price information and, if used widely enough, ability to hedge price risk. Survey results indicate that a large portion of the market recognizes this. It is evident that there is a lack of transparency and liquidity in the market, both based on responses gathered in our survey and observation of market events, and that market participants want something done about this.

It should also be clear by now that the market has to operate well if nuclear power is to expand to its fullest potential. While for utilities it may seem like the worst is over now that prices are declining, a growing nuclear power regime would place a considerable burden on supplies and would create the need for massive investments in production capability. Without a well-functioning market to provide price signals and avenues to address price risk, these investments would be problematic in both timing and amount.

Finally, without a well functioning market, no amount of government supply guarantees or fuel banks are going to convince countries to build reactors and at the same time not enrich or reprocess uranium. To the extent that future government involvement with supply impairs the operation of the market, as it has in the past, constructions like fuel banks and government supply assurances can be counterproductive, as a number of survey respondents believe.

Uranium Futures: Part II by NYMEX

THE DEVELOPMENT OF NYMEX URANIUM FUTURES

On trade date 7 May, NYMEX launched a uranium futures contract market which settles financially on the Ux Consulting month-end price for U_3O_8. After researching the underlying market in early 2007, NYMEX prioritized the development and introduction of uranium futures contracts due to the extraordinary recent advance in spot U_3O_8 pricing. In the view of NYMEX, the 3-year spot price increase of 1000% presented a compelling argument for expedited development of futures contract price risk management for the international uranium fuel industry. To reflect the high visibility and international character of the uranium fuel industry, NYMEX listed the futures market in two venues: the CME Globex® trading platform and the NYMEX ClearPort® clearing platform. NYMEX uses the CME Globex® trading platform as its principal electronic trading venue. CME Globex® is a global electronic trading system for futures and options. The NYMEX ClearPort® clearing platform provides a means to eliminate transaction credit risk through conversion of over-the-counter contracts to futures contracts which are financially protected by the NYMEX clearinghouse.

FUTURES CONTRACT TERMS AND CONDITIONS

The UX uranium futures contract terms and conditions were submitted to the Commodity Futures Trading Commission (CFTC) prior to the launch of the contract on trade date 7 May.

- The UX contract is financially settled based on the floating month-end spot Ux U_3O_8 price published in Ux Weekly for the contract month by Ux Consulting Company, LLC (UxC).
- The contract quantity is 250 pounds of U_3O_8.
- 60 consecutive months are listed at all times.
- The contract is priced in US dollars and cents per pound of U_3O_8. The minimum price fluctuation is US$0.05 per pound.
- Termination of trading is the last Monday of the contract month that is a business day.
- The payment date is 10 business days following each contract month.
- The contract also includes a rule titled Exchange of Futures for, or in Connection with Product and Exchange of Futures for, or in Connection with Swap Transactions. This rule allows futures contracts to be opened or closed with over-the-counter cash market contracts.

MARKET ACTIVITY

This section will provide information that presents uranium futures market activity from the commencement of trading from 7 May to 17 August. Futures market activity is a combination of volume and total open interest (futures contracts that have not been closed).

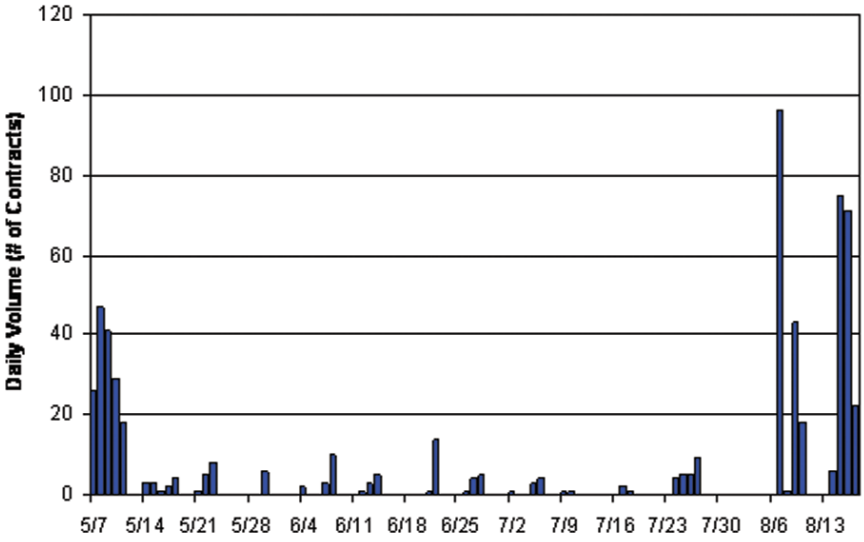

Figure 2. NYMEX UX Uranium Futures Daily Volume (5/7/07-8/17/07)

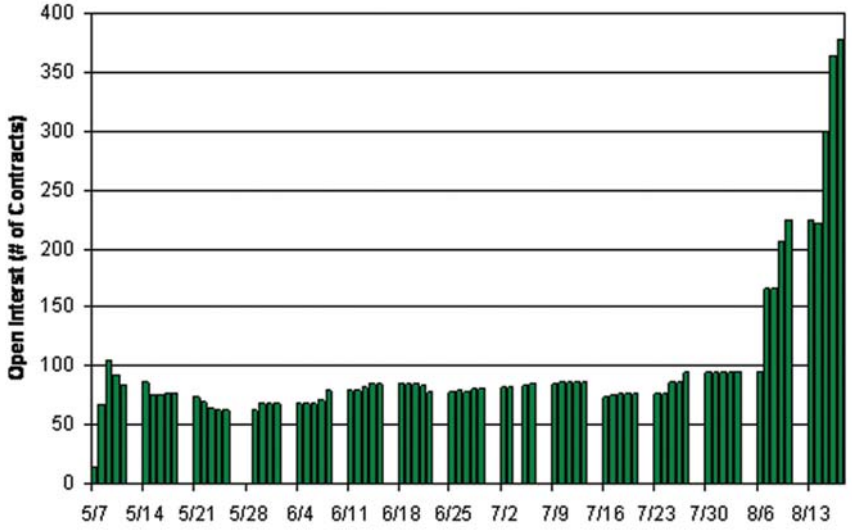

Figure 3. Daily NYMEX UX Futures Open Interest (5/8/07-8/17/07)

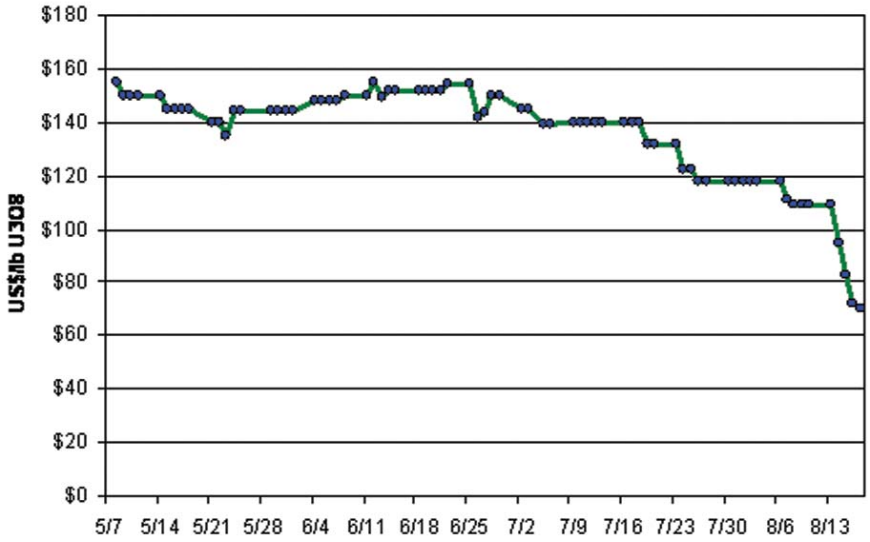

Figure 4. NYMEX UX 12/07 Daily Prices

VOLUME

As indicated in *Figure 2*, since the futures market launch on trade date 7 May, a total of 644 contracts have traded through 17 August. This total represents 161,000 pounds of U_3O_8. Of this total, 64% of the trades have taken place during the 14 trading days in August. Of the months listed for trading, December 2007 has been the most actively traded accounting for 50% of the total volume. The first listed month, June 2007, now closed, accounted for 17% of the volume total.

OPEN INTEREST

As of 17 August, total open interest is 378 contracts which represent 94,500 lbs of U_3O_8. *Figure 3* traces the growth of NYMEX uranium futures open interest growth. The December 2007 contract accounts for 42% of total open interest. As with volume, the most dramatic growth of open interest has taken place during the 14 trading days of partial month August 2007.

FUTURES PRICES

As of 17 August, the settlement price for the December 2007 contract was US$70. This represents a decline of 55% from the life-of-market high price of US$155 on 8 May, the second day of trading (*Figure 4*). As of 17 August, thirteen consecutive contract months have open interest, with December 2008 as the last month. The December 2008 contract settled at US$85 on 17 August.

HISTORICAL VOLATILITY

In the operation of organized futures markets, annualized volatility is used to set futures margins which provide financial protection to the NYMEX clearinghouse. If a liquid options market is available, implied volatility is used as a primary determinant of margin level as it is a forward looking measure. As a UX options contract market has not yet been introduced, historical volatility is used to primarily determine original margin levels. As of 17 August, the historical volatility for the December 2007 contract is 84% (*Figure 5*). By contrast, natural gas and crude oil 30-day historical volatilities were 51% and 27%, respectively, as of 17 August.

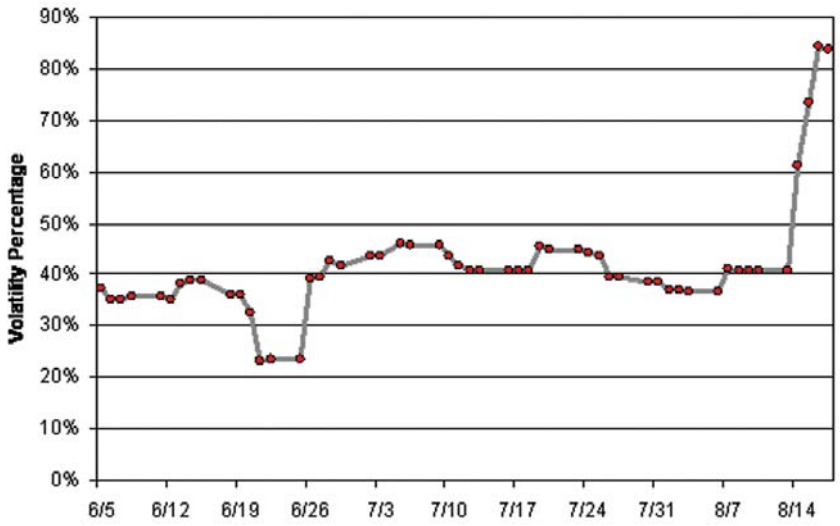

Figure 5. 20-Day Historical Volatility for the 12/07 UX Futures Contract

CONCLUSION

The development and introduction of NYMEX UX uranium futures was expedited due to the recent rapid increase in price during the last three years. Since the introduction of uranium futures on trade date 7 May 2007, activity as characterized by volume and open interest has increased over the life of the market. This increase is likely driven by industry uncertainty related to future price direction. As noted, the December 2007 contract has declined 55% from the life-of-market high of US$155. This decline supports the need for further development of the NYMEX UX uranium futures contract as a financial risk management tool for the uranium fuel industry to reduce its exposure to volatile U_3O_8 prices. The operation of the futures contract is also serving as a price discovery mechanism which is providing additional monthly forward pricing visibility for the uranium fuel industry. NYMEX is pleased with the early use of the UX futures contract and plans to continue its efforts to develop this market.