

An analysis of uranium exploration and price

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The primary production of uranium has been less than reactor requirements since the mid-1980s and secondary sources have had to make up the difference. By 2002, world uranium production provided only about 54% of world reactor requirements. This dependence on secondary supplies is projected to continue into the near future. Over the longer term, however, primary production will need to expand.

One result of the abundance of secondary sources has been a consistently depressed market price for uranium over the past several decades. These low market prices led to the curtailment of exploration and the closing and/or consolidation of many uranium production companies and production centres. Consequently, during this time the level of uranium exploration has been at low levels and mainly oriented towards development.

Yet, after 2020, when secondary sources of uranium are expected to decline in availability, reactor requirements will have to be increasingly met by primary production. To meet this increasing demand, primary production capability will need to increase significantly. As a first step, new exploration will be needed to provide the increased resource base necessary to support this expansion. A barrier to new exploration has been the low price for uranium.

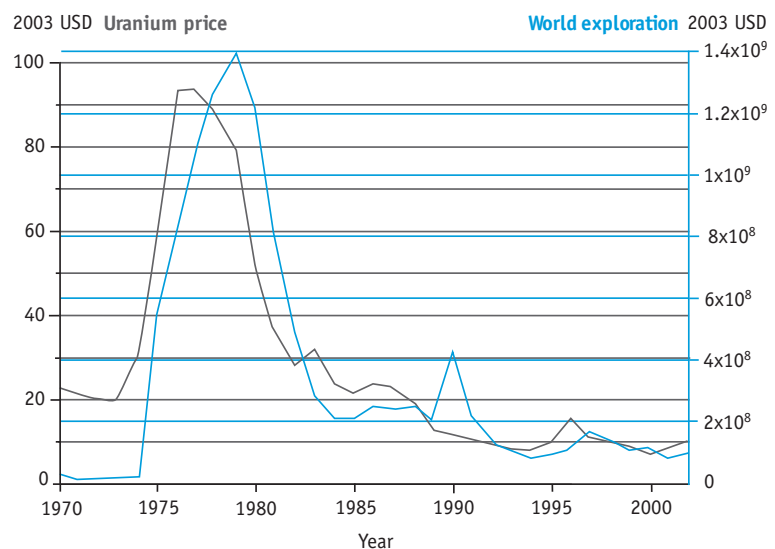
Over the past several years, though, there has been a significant increase in the market

price of uranium. Since the beginning of 2001, the price of uranium has rebounded from lows not seen since the early-1970s, and had almost doubled by July 2004.¹

Yet, despite the significance of this increase in relative terms, this price rise remains relatively modest at this point when compared with the historic peaks of the 1970s or even the short-lived peak in the mid-1990s, especially when viewed in constant terms (see Figure 1).

Will this increase in market price result in the increased exploration needed to support new production capability? To answer this question, a review of the data collected over the past 40 years was conducted to

Figure 1. World exploration and uranium price, in 2003 US dollars (1970-2002)



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attempt to determine whether exploration could be expected to respond to this price recovery, and in what time frame increased exploration could be expected to result.

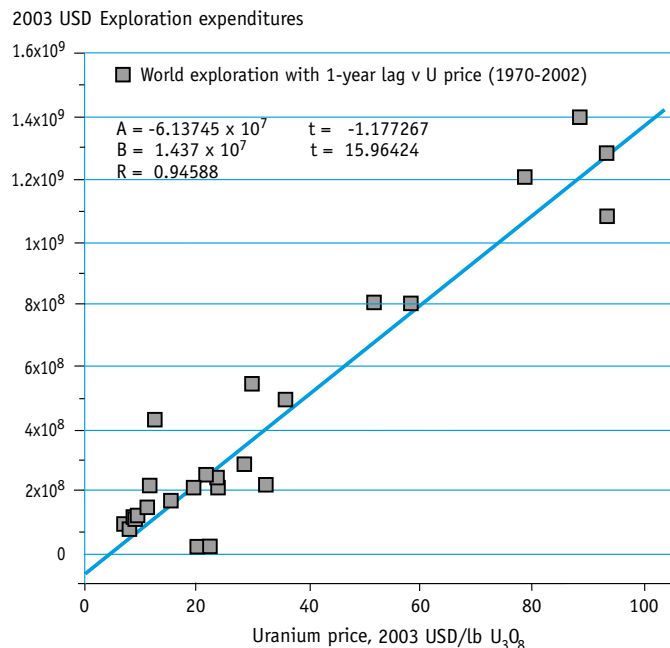
Data on uranium exploration was taken from the OECD/NEA series of publications entitled *Uranium Resources, Production and Demand* (known as the Red Book). The data there represent the total amount of money spent on exploration within a given country regardless of whether the source was domestic or foreign. Data on the price of uranium was taken from NUEXCO/TradeTech and was the annual average of the end-of-month unrestricted exchange values (without premiums).²

A look at Figure 1 indicates a possible correlation between price and exploration and further points to a time lag between a change in uranium price and changes in exploration expenditures. For world expenditures, the best correlation was observed with a one-year delay (see Figure 2).

The improvement in correlation when a time delay is introduced corresponds logically to the delays as the influence of the uranium price change works its way through the decision-making process in the exploration companies, as well as the time needed to initiate field studies once a decision has been reached. The results suggest that exploration is a competitive and open sector of the uranium industry, sensitive to uranium price, and aggressively responds to market signals.

The results indicate that even relatively modest price increases are followed by increases in exploration expenditures. Data for 2004 exploration expenditures is not yet available to verify whether market behaviour is

Figure 2. World exploration expenditures versus uranium price (2003 USD, 1970-2002)



indeed following as predicted, but press reports are providing circumstantial, anecdotal evidence that exploration activity is already picking up in Australia, Canada and the United States, thus leading to the conclusion that data will likely show an increasing trend.

Analysis using surface drilling data, a more direct measure of exploration activity, was also conducted to see if this would lead to a better predictor. Adequate data on surface drilling was available for Australia, Canada and the United States for the period 1975-2002. When plotted, however, the results were similar and showed no improvements over the results provided in Figure 2.

With reactor requirements to be increasingly met by primary production in the coming years, it is necessary to ensure that sufficient new discoveries of uranium are made to enable the expansion of production capability as secondary sources decline. Increased exploration activity will be needed to pro-

vide the resource base required to build new or expand existing production capability. An analysis of historical information indicates that past price increases have resulted in increased exploration. Recent price increases can therefore be expected to begin the increased exploration needed to support the expansion of uranium production capability. ■

Notes

1. TradeTec, LLC (from www.uranium.info/index.html).
2. Total exploration expenditure includes exploration and development expenditures. Exploration includes the costs of all types of surveys, including: surface and underground drilling, logging, test mining and other costs related to the search for new deposits or extensions to known deposits. Prior to 1989 world data does not include the countries associated with the former Soviet Union and certain other non-western countries, e.g. China and Mongolia, and so represents only a sample of world activity and not the entire population. The inflation index used to convert to constant 2003 dollars was the Producer Price Index. Historical values of this index were obtained from <http://www.jsc.nasa.gov/bu2/inflation/ppi/inflatePPI.html>.