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## A Lot of Confusion over Tails

In recent weeks, we have been inundated with requests to react to a certain "analysis" on the impact of changing tails Last week, we participated and the marginal cost of in an investor conference in electricity - the relative tails assay came up time and time again. For these reasons and the likelihood that the impact of possible changes in enrichment tails is derived on a different assay on uranium demand basis than the optimal is not perfectly understood transaction tails assay for in this industry, we will focusutilities. on this subject here.

While there is clearly some react in another way - to substitution of enrichment for uranium that is taking place in the current market Allowing utilities the environment, the question is how much change is actually occurring. The investment community, as well as some in this industry, tend to focus on changes in the optimal transaction tails, which is simply the tails assay that minimizes fuel cost given published uranium and years ago this optimal tails the optimal transactions was 0.35w/o but now is around 0.25w/o. This has led some to conclude that uranium demand will decline by 15% (we have also heard numbers as a high as 40 million lbs U3O8).

and whether they have any There are also some excess capacity to sustain second and third order operations at lower tails. The optimal operating tails As demand shifts from depends on such things as uranium to enrichment, assay on uranium demand. how the plant is configured SWU prices rise. We are Toronto, and the subject of importance of these factors intensify in the future. As depends on the technology enrichment prices rise, the deployed - but suffice it to say that the optimal operating tails for enrichers of uranium price. In this

Over time, enrichers can limit the tails flexibilities they offer in new contracts. decreases in another way: flexibility to lower tails assays substantially has a high cost to an enricher since the enricher has to build capacity to meet this potential need (or be prepared to buy uranium to reduction in this source of overfeed). These limitations supply to the market. will restrict the ability of utilities to transact below certain tails assays. This enrichment prices. Several brings up the possibility that generate a given amount of tails assay may fall to 0.20w/o, but transaction tails choices may become limited so that a utility cannot select a tails assay normal enrichment below 0.25w/o, for example.activities. Thus, the downward

effects at play here as well. seeing this to some extent now, but this will likely optimal tails will tend to increase for any given level respect, static representations of tails assay choices do not reflect the dynamic interaction of enrichment prices with uranium prices.

Uranium supply potentially historically, uranium supply has been increased by enrichers re-enriching tails material. As this material is depleted and as new tails material comes out at lower assays, there will be a

Moreover, as tails assays decline, the amount of enrichment work needed to uranium from tails increases, increasing the cost of such uranium and reducing the supply of enrichment available for

adjustment of tails is limited Simply put, these dynamic both by physical enrichment factors mean that a

There are a number of problems with this approach conditions in enrichment to deriving the impact of changing tails. First, one needs to distinguish between the transaction tails in utility contracting and the operating tails actually employed by enrichers. In the past when uranium prices were much This relationship between lower and the optimal tails was much higher, enrichers tails is diagramed in the with low marginal costs were actually operating at a shows a wide range of lower tails assay than the average transaction tails assay. This meant more uranium was being they were actually enriching, in which case they simply turned around and sold the excess uranium. (USEC was an example of this.) So when transaction tails assays declined in response to higher uranium prices, utilitytransaction tails assay. The (especially if this supply is uranium demand went down, but so did supply due taller than what is shown, to uranium sales by

enrichers.

As transaction tails fall. enrichers have two choices SWU for uranium will be - lower their operating tails or go into the market and buy uranium to overfeed their plants. Their decision on whether or not to lower their operating tails depends on the best way that they can optimize their own costs

capacity and the terms and declining optimal contracts. (Of course, here have far less effect on the we are assuming that an enricher would not want to the lower limit of tails flexibility stated in the contract.)

transaction and operating chart to the left. This chart transaction tails but a much prices for enrichment. more narrow range of operating tails. Actions taken by utilities are delivered to enrichers than represented on the left side because of the move to of the column, and actions by enrichers on the right side. The substitution of SWU for uranium relates to happening in many cases is the height of the box labeled operating tails, not lower tails, but are the height of the column that represents the range of amount of uranium

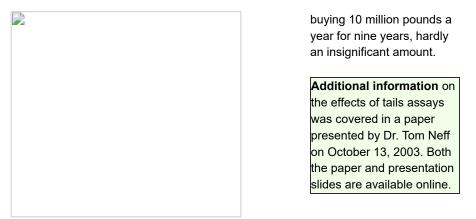
operating tails box may be

but as long as it is not as extensive as the range of transaction tails assays, then the substitution of less than that indicated by the transaction tails assay range.

transaction tails assay may actual uranium supply/demand balance operate at a tails lower than than many seem to expect. Enrichment capacity will be shifted from tails stripping and underfeeding to utility contracts, reducing the supply of secondary market uranium by some proportion to the amount of reduction in primary utility demand for uranium and increasing

> Finally, while reactor requirements are falling lower tails, in reality overall utility requirements are not falling very much. What is that utilities are nominating continuing to buy the same from older, lower-price contracts). This can be observed in utility behavior, and can be inferred by the fact that uranium prices have continued to rise.

From this standpoint, utility inventory demand is increasing, and this demand is not reflected in the WNA or other reactor requirements forecasts. (Note that in addition to utility inventory demand, there is also inventory demand on the part of investor/hedge funds as well as producers, and this demand is not reflected in demand forecasts.) This inventory demand is not necessarily trivial. For instance, if utilities collectively want to add six months of inventory supply (about 90 million pounds), this would be equivalent to



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