



On A Knife Edge

This year has been replete with world-altering events, some of which – none more than Russia's unprovoked invasion of Ukraine – have already fundamentally changed the nuclear industry. The nuclear fuel markets have been buffeted by several new and confounding challenges, especially in the conversion and enrichment markets. Considering these dramatic shifts, it is hard to believe that exactly one year ago our cover story was titled "Conversion and Enrichment: Quiet, but Not Forgotten" (UxW35-48). Well, these markets are far from forgotten today as concerns over future supplies and further price increases reign supreme in today's altered world. Despite all that has already occurred in 2022 – and perhaps because of it – we continue to observe a market that remains highly susceptible to additional shocks. The multitude of risks overhanging the three front-end fuel markets are even more concerning given the tenuous nature of each of these markets today.

The obvious issue at the top of all market participants' watch list is the situation with Russian supplies. It is notable that deliveries of Russian EUP and fuel assemblies have continued despite the increasingly difficult environment for ensuring reliable flow of material. To date, UxC is aware of only limited changes to the total volumes delivered to utilities from Russian suppliers. However, there has naturally been a near complete halt to all new contracting, and most open market utilities appear to appreciate the potential that not all deliveries may be fully carried out through their contractual end dates. Meanwhile, governments in the U.S., Europe, and elsewhere have hotly debated the topic of Russian nuclear fuel supplies, but we have yet to see any concrete actions taken to sanction or prevent additional deliveries. As the war in Ukraine remains depressingly real and highly volatile, changes on the ground there could still result in efforts to quickly end Russian nuclear imports in certain markets. Thus, as we have discussed in previous covers, any rapid reduction in Russian imports in the open markets would have far-reaching and highly consequential impacts on all three front-end commodity markets.

Importantly, there are other factors beyond the flow of Russian material that cannot be ignored. Due primarily to the changes in the enrichment markets following Russia's war, we have rapidly gone from a situation of oversupply in SWU to one of scarcity, at least in the open markets. Going forward, western enrichers will need to provide their SWU in greater amounts for EUP needs, meaning that tails assays must rise. This is naturally pushing up conversion and uranium demand, but also quickly reducing supply of UF₆, as these enrichers are no longer able to do the same level of underfeeding as before. Conversion was already extremely tight prior to the war, and now we are seeing that any small change in supply is having huge ramifications as prices for conversion services and UF₆ continue to climb. The planned restart of Metropolis next April will not instantly alleviate this supply tightness, and any delays to the facility's restart or other production issues (e.g., further hiccups with Orano's ramp-up of the Philippe Coste plant) could have outsized impacts on both near- and medium-term conversion market conditions.

This brings us to the uranium market. While there is clearly a greater understanding of the risks to supply and potential for further price increases in conversion and enrichment as seen in the results to our recent summer market survey (UxW36-41), there appears to be an underappreciation of the radically transformed situation in uranium. As we have repeatedly discussed in several recent covers, producers have held back on mined supply over the past 4-5 years, while secondary demand from financials and other spot buyers has rapidly depleted the mobile/excess inventories overhanging the market. New and idled production is now clearly on the horizon, but we have already seen that even the best operators in the industry, like Cameco and Kazatomprom, have encountered a few hitches in their efforts to expand output. Miners that have been inactive or are working to bring on greenfield projects could encounter even more significant delays, especially in light of ongoing impacts from tight global supply chains and complicated labor markets in the post-COVID world. Thus, while rising demand and falling secondary supplies means the industry will need to rely more and more on actual mined production, we can see at least a few scenarios where mine output fails to match demand. Moreover, even if production is sufficient, there are growing challenges to transportation of U₃O₈ among other logistical factors that have raised the risks to future uranium supply certainty. And, while inventories may be sufficient to meet smaller gaps in supply in the near- and medium-term, this will come at a cost and remain finite. Thus, anyone who believes uranium is plentiful and supplies will definitely be there when we need them has not been paying enough attention.

The moral of this story is that all three front end nuclear fuel cycle markets are today in a much more precarious situation than they have been in a very long time. Conversion has long been the weakest link, and this is unlikely to change anytime soon. Enrichment, which was once in abundance, is now a true pinch point, at least in the open market. Thanks to COVID, SPUT, and Russia, uranium market fundamentals are also now at their most imperiled state since 2007. Moreover, the interconnectedness of the markets is once again on full display, and any potential hiccup in one sector can quickly reverberate throughout the fuel cycle.

By focusing on the multitude of compounding risks, we run the risk of sounding alarmist, so it is important to emphasize that beyond identifying short-term options to cover utility needs, there are certainly numerous ways that the industry can constructively work its way out of this unsettled situation given sufficient time and effort. Suppliers have already been receiving market signals that should support additional production, although further price increases could certainly be in store to incent new supplies. This is especially true in uranium, as large amounts of U_3O_8 will likely be needed to fill the rising supply gap projected for later this decade and beyond. Thus, as the global future demand outlook appears rather positive, producers have every reason to respond to this call for new output. However, given the unique conditions of the markets today, and the potential for any single domino to fall that could cause an additional shock, we must appreciate how quickly new challenges can arise, especially when it comes to near-term market conditions. And, as the events of recent years have taught us, we must be ready to expect the unexpected. Predicting when the next shock will hit is beyond anyone's capabilities, but assuming that another shock is unlikely would be rather foolish knowing what we already know today. And, if such a shock – big or small – does materialize, we are hesitant to believe the front-end markets will respond in a muted fashion. There is only minimal flex left in the system.

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