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UxC Update

November 2023

A periodic newsletter to keep our clients up-to-date on developments within our company

Here in the United States, we will soon be celebrating our Thanksgiving holiday. With 2023 rapidly nearing the end, we thought it timely to recap the year as well as thank each and every one of you for allowing us the opportunity to serve you over the past year. We hope that



UxC's market insights and analysis, data, price information, and other services continue to effectively support your business activities. Over the past year, the nuclear power and fuel markets have remained extremely dynamic with many improving signs for the industry but also many open questions about the future. At UxC, we have spent the past year digging deeper into all the latest important market trends. The following company update presents our team's numerous accomplishments since our last update and also discusses our future plans.

Recent and Upcoming Special Reports

UxC has been busy issuing several new special reports over the past few months. These in-depth topical reports are designed to complement our standard products, such as our *Market Outlooks*, by examining key topics in greater detail.

Special Reports Published in 2023:



Uranium Production Cost Study (UPCS)—In September, UxC issued the latest biennial edition of its industry-leading report on uranium production costs. The UPCS complements the *Uranium Suppliers Annual (USA)* and provides production cost curves for operational, planned, and potential uranium projects to identify where expanded and new uranium supply will come from among over 100 worldwide projects to meet future nuclear fuel demand. Production cost curves for individual projects are presented by geographic region and mining method. UPCS also provides an extensive review of various factors impacting production costs.



Small, Advanced, and Micro Reactor Assessments (SAMRA)—UxC has been at the forefront of market analysis and forecasting for innovative small modular reactors (SMR) and other advanced reactor designs, including major reports issued in 2010 and 2013 along with ongoing detailed coverage in our other nuclear-power related products over the past decade. In October, UxC's team of nuclear reactor market experts completed a new special report that specifically assesses the global landscape of small, advanced, and micro reactors (SAMRs). This new SAMRA report includes profiles and evaluations of all leading SAMR designs, a detailed market analysis of how SAMRs can fit into the future energy mix, global forecasts for SAMRs and future market size projections through 2050, along with critical discussions on the outlook for this emerging market and its implications for the broader nuclear industry. SAMRA is discounted for subscribers of the *Nuclear Power Outlook*.



Nuclear Zirconium Alloy Market—Nuclear-grade zirconium alloys and products are used in the fabrication of nuclear fuel assemblies for most current and future reactor designs. In November, UxC published the latest edition of its special *Nuclear Zirconium Alloy Market* report, which includes updated analysis of the various sectors that make up the nuclear-grade zirconium sponge, alloy, component, and tubing markets. Using proprietary demand modeling and other unique research results, we identify the latest major trends in the zirconium industry by analyzing the

global and regional supply and demand balances through 2040 for nuclear-grade zirconium sponge, alloy, and tubing as well as the supply and demand situation based on reactor fuel types. The Zirconium report is discounted for subscribers of the *Fabrication Market Outlook*.

Upcoming Special Reports:



Conversion & Enrichment Supplier Assessments (CESA)—In December, UxC will be publishing its annual CESA report, which provides profiles of each supplier in the conversion and enrichment markets as well as unbiased, quantitative evaluations of the major suppliers through a detailed risk matrix approach. CESA allows utilities to compare suppliers and gauge the relevant risks within their current and potential future supply portfolios. For suppliers, investors, and others active or interested in following conversion and/or enrichment supply, CESA provides an independent and unique evaluation methodology to identify how each supplier ranks within the current fuel cycle market. The CESA is discounted for subscribers of the *Conversion Market Outlook* and *Enrichment Market Outlook*.



Uranium Suppliers Annual (USA)—Also in December, UxC will issue its latest USA, which contains comprehensive data and information on all the world's uranium suppliers, including detailed sections on planned producers, junior/exploration companies, and intermediaries. Included in the USA are future production forecasts, operational considerations, supplier/project risk analyses, production cost estimates, mill capacities, project reserves, and supplier/facility summaries. The report also examines supplier marketing strategies, allowing buyers to understand the capabilities and motivations of suppliers, as well as the political, social, and economic environments in which they operate. The USA is discounted for subscribers of the *Uranium Market Outlook*.



Global Nuclear Fuel Inventories (GNFI)—UxC plans to publish the fifth edition of its biennial special report on *Global Nuclear Fuel Inventories* in mid-2024. The new GNFI report will include further enhancements over previous editions to provide the latest information and insights related to nuclear fuel inventories around the world. This includes updated data and analysis of all utility, supplier, trader/financial, and government inventory levels, plus new insights into the level of utility forward coverage rates and their evolution in the coming years. The GNFI also contains forecasts for future inventory buying and disposition as well as a look at inventory policy impacts on the uranium, conversion, and enrichment sectors. Plus, the GNFI offers analysis of the market impacts of inventories and key considerations for all market entities. The GNFI is discounted for subscribers to any of the front-end *Market Outlook* reports.

Speeches, Articles, and Achievements by UxC Personnel

UxC experts have also been quite busy in recent months contributing to various industry publications, events as well as media interviews.

Jonathan Hinze, President, gave the Keynote on the topic at the World Nuclear Fuel Cycle (WNFC) conference in The Hague, Netherlands in April on the topic of "The Big Squeeze: Bottlenecks in the Fuel Cycle." Jonathan also moderated a lively panel on "The Current Landscape & Where We're Headed" at this year's World Nuclear Fuel Market (WNFM) Annual Meeting in Ljubljana, Slovenia.

In October, Jonathan gave a presentation entitled "Inventories Status Check: Too Low, Too High, or Just Right" at the NEI International Uranium Fuel Seminar (IUFS) in Charlotte, North Carolina. Also in October, Jonathan was pleased to be invited to Massachusetts Institute of Technology (MIT) to tour MIT's research reactor and give students and faculty a presentation on the nuclear fuel markets.



Jonathan was also interviewed by numerous media outlets over the past year, including in stories published or aired by *The Wall Street Journal*, *MarketWatch*, *The Economist*, *Barron's*, *Financial Times*, *CNBC*, *Bloor Street Capital*, and *S&P Global Intelligence*.

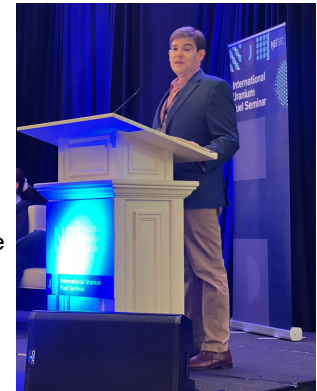
Nick Carter, Executive Vice President, Uranium, gave a paper on "Global Uranium Supply and Demand Dynamics Amid Heightened Geopolitical Risk" at the IAEA's International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle (URAM-2023) in Vienna, Austria in May. Nick also gave a Keynote Speech on the Uranium Market at the Red Cloud Fall Mining Showcase 2023 in Toronto, Canada in November.



Anna Bryndza, Executive Vice President, International, completed her three-year term serving as Chairperson of the WNA's Fuel Cycle Members Forum (FCMF) with final sessions held in January in London and in April in The Hague.

Carlyn Greene, Senior Vice President, Fuel Cycle, presented a paper entitled "Spent Fuel: The Gordian Knot of Nuclear Power" at the INMM Spent Fuel Management Seminar in Washington, DC in January. Carlyn also participated in this year's NEI Used Fuel Management Conference held in Las Vegas, Nevada in April.

Philip Johnson, Senior Vice President, Fuel Cycle, participated in several small and advanced reactor conferences, including Reuters Events' SMR & Advanced Reactor 2023 Conference in May in Atlanta, Georgia, and U.S. Nuclear Infrastructure Council's Advanced Reactor Summit in June in Charlotte. In addition, Philip moderated a panel on "New Reactor Growth and the Fuel Cycle" at the NEI IUFS in Charlotte in October.



Christian Rengifo, Senior Consultant, International Nuclear Policy, participated in SZW's Central & Eastern Europe Nuclear Industry Congress in Prague, Czechia in September. Christian will also be participating in SZW's European Nuclear Industry Congress in London, UK in December, where he will be presenting a paper on "Nuclear Power Outlook in Western Europe."

Nuclear Fuel Training Seminars

In June of this year, UxC successfully held its latest Nuclear Fuel Training Seminar in Vienna, Austria. This was our second seminar in Vienna, and we again had a sold-out event like in 2022 in Atlanta. 52 total participants joined the seminar from 17 countries representing 26 companies including utilities, producers, intermediaries, and investors. For three full days, UxC experts guided our seminar participants through intensive sessions focused on the latest issues throughout the front-end nuclear fuel cycle markets in addition to various lively networking opportunities.

We are also excited to announce that we will be holding our next Nuclear Fuel Training Seminar in **Atlanta, Georgia, USA on June 24-27, 2024**. The seminar will be held at the Intercontinental Hotel Buckhead. This will be an extra special seminar as we are planning a unique event to celebrate UxC's 30th anniversary during the seminar. We look forward to welcoming participants from across the globe to what has become a premier nuclear industry event. Registration will open in January 2024, so please save the date!



For additional information regarding the June 2024 seminar in Vienna, please contact Eric Webb.

UxC Sponsorship of Atomic Runners

For the fourth year running, UxC again hosted a Virtual 5K Atomic Runners event, and this year was again special as UxC pledged to donate money for every kilometer recorded by the group to a charitable cause in Ukraine. The 2023 Atomic Runners for Peace event saw 435 km covered across 9 countries and 5 continents, which surpassed the impressive totals from the past three years. With your help, UxC donated in 2023 a total of \$5,000 to the ANS-ENS Ukrainian Nuclear Workers Humanitarian Fund.



Participants sent pictures and comments to UxC, which were published in the July 31st edition of our *Ux Weekly* newsletter. Photos submitted by all our 2023 Virtual 5K participants can be found here:

<https://www.uxc.com/p/fun/UxCPictures.aspx?gallery=Atomic%20Runners%202023>



We were also proud to help organize and join several Atomic Runs at industry conferences this year. These included early morning runs at the WNFC in The Hague in April, WNFM in Ljubljana in June, NEI NFSF in DC in July,



and NEI IUFS in Charlotte in October. We ran in the rain, the dark, the heat, and even while dodging Dutch bicyclists. Nothing can stop Atomic Runners!

Please contact Anna Bryndza if you want more information on the Atomic Runners running group.

The Year Ahead

UxC is excited about the prospects for the nuclear industry, and we will be striving for additional improvements to our products and services in the coming year. **UxC will be celebrating 30 years in 2024**, and we are excited to commemorate this big milestone with all our friends and colleagues around the world. Some of the highlights of our plans for the coming year will be our *Nuclear Fuel Training Seminar* in Atlanta in late June, our next *Global Nuclear Fuel Inventories* report, and another successful *Atomic Runners Virtual 5K*. UxC will also be advancing plans next year with the Tellus Science Museum in Georgia to expand its coverage of nuclear energy, with a special emphasis on SAMRs.

Lastly, let us hope that, in addition to further momentum for global nuclear power, 2024 will bring with it peaceful ends to the hostilities in Ukraine and the Middle East.

For more information on UxC activities and reports, please visit our website at www.uxc.com.