

NBL PO News

Fiscal Year 2023 | Edition 3

INNOVATE. COLLABORATE. DELIVER.

From the Director



We're happy to announce a new staff member, Ms. Christina Santisi. Christina is responsible for sales and inventory management, financial management, and quality management elements.

Ms. Santisi has 17 years of professional experience, including 5 years supporting the Department of Energy (DOE).

Ms. Santisi has gained extensive knowledge of NNSA programs. Her hobbies include hiking, traveling, and reading.

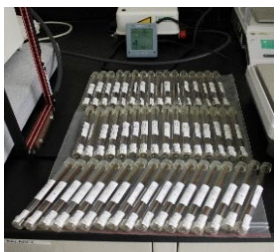
As always, we welcome any and all feedback. Comments, concerns, or complaints can be addressed to me at peter.mason@nnsa.doe.gov, or to NBLSales@nnsa.doe.gov

NBL Program Office (NBL PO) Mission Activities:

Safeguards Measurement Evaluation (SME) Program Update: Invitations to participate in the SME Program were sent on April 3, 2023, which, among the usual assortment of uranium materials, includes the return of UF_6 materials for isotopic composition. We have begun the process of ordering and shipping. We currently do not run the SME as a campaign, so anyone interested can reach out and enroll in the program at any time. Contact Christina at NBLSales@nnsa.doe.gov if interested.

UF_6 Update: NBL PO is happy to announce the resumption of UF_6 availability, both for the Proficiency Testing program and for Certified Reference Material (CRM) sales. Our existing materials were successfully transferred to new 2S cylinders and shipped to the Oak Ridge National Laboratory (ORNL). A laboratory at ORNL was renovated, and three sampling manifolds are dedicated to NBL PO use. We are currently working to identify two new UF_6 materials as CRM candidates in the 6-8% enriched range and in the 15-20% enriched range.

C112A (26g) Cleaning and Repackaging: Our C112A (26g) natural uranium metal units in the NBL Center were running low, and during our annual inventory assessment we noted that some units exhibited excessive oxidation and scaling. Y-12 retrieved bulk packaged units from long-term storage and shipped them to ORNL for cleaning/repackaging. ORNL has completed cleaning and repackaging 100 units of C112A (26g) natural uranium metal and returned the newly packaged materials to the shelves at Y-12's NBL Center.



Pu Metal C126B Update: Los Alamos National Laboratory has begun the initial purification of the batch of plutonium to be used in the production of C126B. Currently, purification, casting, and processing into individual units is tentatively scheduled to be completed at the end of this year. The NBL PO is working with DOE labs and utilizing National Institute of Standards and Technology (NIST) resources to finalize sampling and characterization plans for the measurement campaign leading to certification.

C115 – DU Metal Replacement: The inventory of C115 (75g) DU metal CRMs is very low and that material size has been pulled from our price list. There are still 53 units of C115 (1g) remaining for sale. The uranium content of this material was originally certified in 1975, and the isotopics in 2011. The NBL PO, working with Y-12, have identified two candidate DU metal materials to serve as C115A. NBL PO met with Y-12 metallurgists in June to discuss processing approaches for producing discrete units. Currently, NBL PO plans two unit sizes for C115A: a 20–30-gram rod suitable for cutting to custom size either by ORNL or the end-user, and a 1 gram piece. Please contact NBL PO if you have comments or suggestions regarding this future material.

Neptunium CRM: The NBL PO received 10 grams of a purified neptunium oxide that was processed by sequential anion and cation exchange at ORNL. A small sample of the material is currently being analyzed by a variety of methods to determine impurity content and stoichiometry. We expect results in July/August, and we will use those results to assess the suitability of the material in its current form to serve as a CRM and to develop production and characterization plans.

U-233 (C111A) Replacement: The NBL PO has an approximately 5-year supply of C111A U-233 spike remaining. Each unit consists of 5 mg 99.49% U-233 in nitrate solution in a glass ampule. The NBL PO has gram quantities of 99.98% U-233 to serve as replacement. Recently, we reached out to our primary customers to survey needs, and preliminarily we are planning on producing two

unit sizes of C111B: a 5 mg U-233 in nitric acid solution in a glass ampule, and a μg -sized unit to serve the needs of low-level analyses. Feel free to contact us with questions, comments, or suggestions.

Plutonium Isotopic Standards Update:

C137A: Data evaluation for C137A is underway, and we expect to issue a new certificate in late summer, along with a revision to the original C137 certificate. The C137A will be available as 1 mg Pu as dry nitrate.

C136A: Analytical samples of the candidate CRM have been distributed to the participating DOE analytical laboratories for measurements leading to certified values. NBL PO hopes to receive all analytical data for C136A by the end of the 2023 calendar year.

C138A: Lawrence Livermore National Laboratory plans to begin purification and production of C138A later this summer, followed by the final measurement campaign. NBL PO hopes to have all three of the original NBS plutonium isotopic standards updated with new certified values by the end of 2024.

Other Activities: The Y-12 NBL Center continues to pack and ship our materials in a timely and efficient manner. The vast majority of domestic shipments are sent less than 60 days of receipt of the order. A number of non-DOE domestic shipments are performed within 20 days. Additionally, NBL PO continues to work closely with Y-12 and ORNL to identify any remaining items that need repackaging, and we include those tasks in our annual inventory assessment for planning purposes.

ORNL continues to progress on the renovation of an alternate CRM storage location to serve as a “continuity of operations” site should Y-12 be unable to ship for an extended period of time. Y-12 completed a shipment of a number of our key small-quantity U and Pu CRMs to ORNL and will complete the movement of remaining identified key materials throughout the year.