

## Why GAO Did This Study

The United States must generally account for nuclear material it has obtained under nuclear cooperation agreements with foreign partners. The agreements generally impose certain conditions, including that the material be used for peaceful purposes.

Material subject to such conditions is called “obligated.” The United States relies on NMMSS to track obligated material and to help demonstrate U.S. compliance with agreements. Material not subject to agreement conditions is called “unobligated.” Some forms of uranium, such as LEU, are used to maintain the nuclear weapons in the U.S. stockpile, but the U.S. inventory of unobligated LEU is declining.

GAO was asked to review the practice of obligation exchanges and the reliability of certain NMMSS data. This report examines (1) the number of obligation exchanges in the United States since 2003, and the reasons for them, and (2) how DOE and NRC ensure such exchanges are accurately tracked and reported through NMMSS. GAO analyzed NMMSS data and agency documents and interviewed agency officials, DOE contractors, and NRC licensees, among other steps.

## What GAO Recommends

GAO recommends that DOE and NRC (1) clarify in guidance when facilities may carry negative obligation balances and (2) develop an early-warning monitoring capability in NMMSS to alert DOE when the inventory of unobligated LEU is particularly low. DOE and NRC neither agreed nor disagreed with GAO’s recommendations but stated that they have ongoing efforts that may address GAO’s recommendations.

View [GAO-16-713](#). For more information, contact David C. Trimble at (202) 512-3841 or [trimbled@gao.gov](mailto:trimbled@gao.gov).

## NUCLEAR MATERIAL

# Agencies Have Sound Procedures for Managing Exchanges but Could Improve Inventory Monitoring

## What GAO Found

In the United States, from October 1, 2003, through November 30, 2015, there were 817 exchanges of nuclear material that carried obligations to foreign partners under nuclear cooperation agreements. These exchanges allowed the obligated nuclear material to be transferred between U.S. facilities without physically moving it. For example, if a facility had a certain amount of obligated nuclear material and another facility had at least the same amount and type of unobligated material (which is not subject to the same conditions as obligated material), the facilities could exchange the obligations on their material so that each facility had a portion of both types of material without physically moving it.

- **Numbers of exchanges.** Of the 817 exchanges, 802 were conducted by Nuclear Regulatory Commission (NRC)-licensed facilities—private companies and other entities involved in commercially producing nuclear energy. Of the remaining exchanges, 14 were conducted by contractors that run Department of Energy (DOE) laboratories and weapons-production sites, and 1 by an NRC licensee that does both commercial and DOE work.
- **Reasons for exchanges.** NRC licensees said they conducted exchanges primarily to meet their utility customer demand, as well as to avoid the high costs and safety risks associated with physically transporting nuclear material. DOE contractors said they conducted exchanges primarily to avoid physically moving nuclear material stored at a specific site.

DOE and NRC have procedures to ensure accurate tracking and reporting of data on obligation exchanges through the Nuclear Materials Management and Safeguards System (NMMSS). GAO tested elements of these procedures and generally found them to be reliable. But, GAO identified two issues that may impact the agencies’ ability to effectively monitor nuclear material inventories.

- First, some facilities have carried negative obligation balances for extended periods. A negative obligation balance occurs when a facility conducts an exchange without having enough of a given material in its physical inventory to cover the exchange. In certain circumstances, negative balances may place the United States at risk of noncompliance with nuclear agreements. Negative balances have occurred because DOE and NRC have not addressed this issue in documented guidance on when facilities may carry such balances, which is inconsistent with federal internal control standards.
- Second, while unobligated low-enriched uranium (LEU) could be used to correct any future negative obligation balances, the U.S. inventory of it is declining and NMMSS does not have an early-warning monitoring capability to alert DOE when the inventory is particularly low. Federal internal control standards state that agencies should establish activities to monitor internal control systems and evaluate the results, but DOE officials said that the LEU inventory is currently sufficient and no early warning capability is needed. Without developing such a capability in NMMSS, DOE officials cannot know when the inventory of unobligated LEU becomes so low that supplies may not be available to correct negative obligation balances, thereby putting the United States at risk of not complying with its nuclear agreements.