

The Nuclear Materials Management and Safeguards System (NMMSS)



2015 Annual
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Training
Meeting

Accuracy

Accountability

Performance



May 11-14, 2015

Las Vegas, NV

Reporting Small Quantities to NMMSS

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Overview



- Introduction
- Reportable Units
- One-Party Transactions (A-M)
- Reporting to NMMSS



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Introduction



- NRC regulations require each licensee who transfers or receives SNM to complete a DOE/NRC Form 741, *Nuclear Material Transaction Report*
- DOE also requires NRC licensees to report to NMMSS all receipts, transfers, and inventories of government-owned, -leased, or -loaned material in their possession
- Reportable units depend on the type of material



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Reportable Units



■ Source Material

– Depleted Uranium

- kg Uranium
- kg U-235

– Natural Uranium

- kg Uranium
- No U-235 reported

– Thorium

- kg Thorium
- No isotope reported

NUREG/BR-0006:

If the quantity is equal to or greater than 0.5 of the reporting unit, the quantity should be rounded **up** to the next whole reporting unit.

If the quantity is less than 0.5 of the reporting unit, the quantity should be rounded **down** to the next whole reporting unit.



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Reportable Units



■ Special Nuclear Material (SNM)

- Enriched Uranium
 - Grams U, Grams U-235
- U-233
 - Grams U, Grams U-233
- Uranium in Cascades
 - Grams U, Grams U-235

NUREG/BR-0006:

If the quantity is equal to or greater than 0.5 of the reporting unit, the quantity should be rounded **up** to the next whole reporting unit.

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Reportable Units



- Special Nuclear Material (SNM)
 - Plutonium
 - Grams Pu
 - Grams Pu fissile (Pu-239 + Pu-241)
 - Pu-238 ($\geq 10\%$ Pu-238 by weight)
 - 0.1 grams Pu, 0.1 grams Pu-238

NUREG/BR-0006:

If the quantity is equal to or greater than 0.5 of the reporting unit, the quantity should be rounded **up** to the next whole reporting unit.

If the quantity is less than 0.5 of the reporting unit, the quantity should be rounded **down** to the next whole reporting unit.



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Reportable Units



■ DOE-owned Other Materials:

- Enriched Lithium Kilograms Li
- Deuterium 0.1 kg D₂
- Pu-242 Grams Pu, Grams Pu-242
 (≥20% Pu-242 by weight)
- Americium-241 Grams Am, Grams Am-241
- Americium-243 Grams Am, Grams Am-243
- Curium Grams Cm, Grams Cm-246
- Neptunium-237 Grams Np
- Tritium 0.01 Grams H-3
- Californium micrograms Cf-252



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*What about small quantities
that are less than
a reportable unit??*

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One-Party Transactions (A-M)



- On-site losses or miscellaneous shipments
 - Multiple shipments, where each shipment was less than a reportable quantity (i.e., no DOE/NRC Form 741 required)
 - Use A-M transaction to account for sum total of X units shipped that is equal to or greater than a reportable quantity
 - Examples:
 - Material discharged to the air by a fuel cycle facility
 - Plutonium decay in spent fuel
 - U-235 burned in a reactor



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One-Party Transactions (A-M)



- On-site gains or miscellaneous receipts
 - Multiple receipts, where each receipt was less than a reportable quantity (i.e., no DOE/NRC Form 741 required)
 - Use A-M transaction to account for sum total of X units received that is equal to or greater than a reportable quantity
 - Examples:
 - Material recovered from a burial site
 - Laboratory receipt of multiple shipments of LEU samples containing a gram or less of uranium



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One-Party Transactions (A-M)



■ Inventory Adjustments

– Rounding Adjustment

- A total of X units added to or removed from your site inventory due to rounding (“Round then sum” vs “Sum then round”)
- Use A-M transaction during inventory reconciliation with NMMSS

– Nuclear Material Unexpectedly Found at Site

- A total of X units found at your site, not currently on inventory
- Use A-M transaction to add X units to your site inventory



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Reporting to NMMSS



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- If you SHIP a reportable quantity to another site, report the shipment to NMMSS
 - Report the shipment to NMMSS by submitting the DOE/NRC Form 741
 - If the receiving facility does not have a Reporting Identification Symbol (RIS), contact NMMSS/DOE/NRC for assistance
 - DO NOT adjust your NMMSS book value to document the shipment of a reportable unit of material with an A-M transaction



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Reporting to NMMSS



NNSA



- If you **RECEIVE** a reportable quantity from another site, report the shipment to NMMSS
 - Report the receipt to NMMSS by submitting the DOE/NRC Form 741
 - If the shipping facility does not have an RIS, contact NMMSS/DOE/NRC for assistance
 - **DO NOT** adjust your NMMSS book value to document the receipt with an A-M transaction



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Reporting to NMMSS



- If you **IMPORT** a reportable quantity, report the receipt to NMMSS
 - Report the receipt to NMMSS by submitting the DOE/NRC Form 741
 - If the foreign shipping facility does not have an RIS, contact NMMSS/DOE/NRC for assistance
 - **DO NOT** adjust your NMMSS book value to document the receipt with an A-M transaction

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Reporting to NMMSS



NNSA



- If you EXPORT a reportable quantity, report the shipment to NMMSS
 - Report the shipment to NMMSS by submitting the DOE/NRC Form 741
 - If the foreign receiving facility does not have an RIS, contact NMMSS/DOE/NRC for assistance
 - DO NOT adjust your NMMSS book value to document the shipment with an A-M transaction



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Guidance



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- NUREG/BR-0006, *Instructions for Completing Nuclear Material Transaction Reports*
- NMMSS Staff! 😊

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*Proper reporting allows us
to maintain an effective NMMSS*

Thank you for your help!

