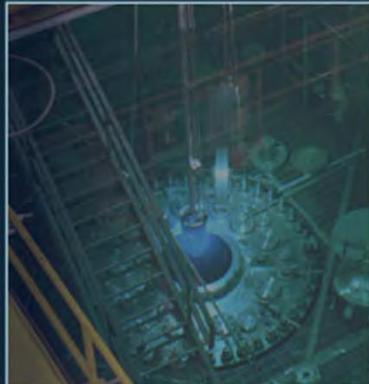


ACCURACY

PERFORMANCE

ACCOUNTABILITY

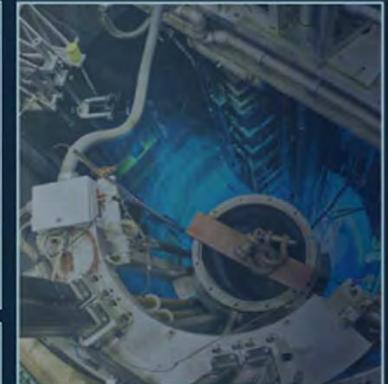


THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS  2013

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NMMSS Overview

Gary L. Hirsch
Project Lead

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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- NMMSS – Nuclear Material Management and Safeguards System
 - It is the US Government’s database used to track movements and inventories of nuclear materials.

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NNSA



■ NMMSS

- Owned by Department of Energy (DOE)/NNSA –NA73
- Nuclear Regulatory Commission (NRC) has interagency contract
- Operated by Protection Strategies, Inc. (PSI)

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- NMMSS Supports the US government in:
 - Treaty commitments
 - Congressional law
 - Domestic rules and regulations
 - Business Practices
 - Health & Safety issues
 - Public Trust
 - Government needs

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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- Staff Introductions
 - Analysts
 - Programmers

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Analyst

301-903-XXXX

- Karen Antizzo, X-0872, Export License, Contract Numbers
- John Ballard, X-0092, Training, DOE Reconciliations, Daily Processing Errors
- Mitch Hembree, X-6299, NRC Reconciliations, Obligations Accounting
- Debbie Larabay, X-6148, NRC Reconciliations, Report Distribution

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NNSA



- Mary McConnell, X-6240, NRC Reconciliations, IAEA Reports
- T McDonnell, X-0885, NRC Reconciliations, Daily Processing Errors, Special Request, DOE Financial System
- Len Myers, X-2180, Special Request, Annual Country Report, DOE Financial System
- Mike Nightingale, X-1328, Report Classification, Report Distribution

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- Greg Perry, X-3656, Website, Newsletter, Daily Processing
- Pat Smith, X-6860, NRC Reconciliation

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Programmers

- Rick Edwards, 803-725-0875, SAMS programming
- Andy Kerns, 301-903-4694, installation support for SAMS
- Kathi Parker, 301-903-8840, Fillable Forms support



■ Size of NMMSS

- The NMMSS database is ~ 47 gigs
 - Contains inventory records dating back to 1966
 - Contains transaction records dating back to 1950
 - Contains material balance records dating back to 1965

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NMMSS 2013

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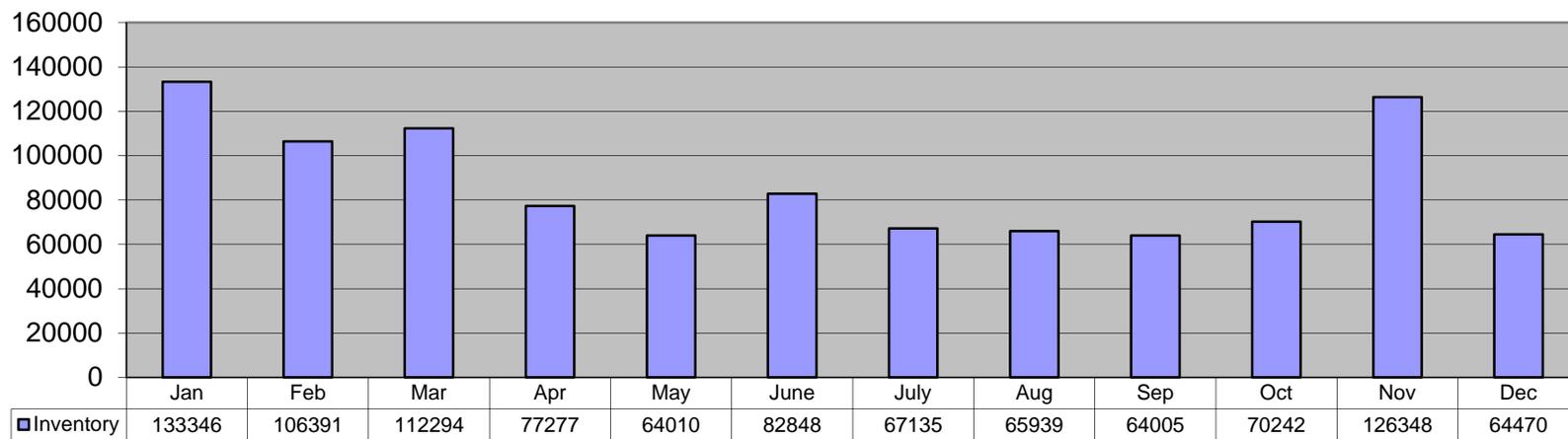
2012 in Review

- NMMSS processed 1,034,305 inventory records
- NMMSS processed 18,631 transactions
- NMMSS produced and distributed 14,448 standard reports



2012 in Review

**Daily Processing
Number of Inventory Records
January 2012 - December 2012**



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

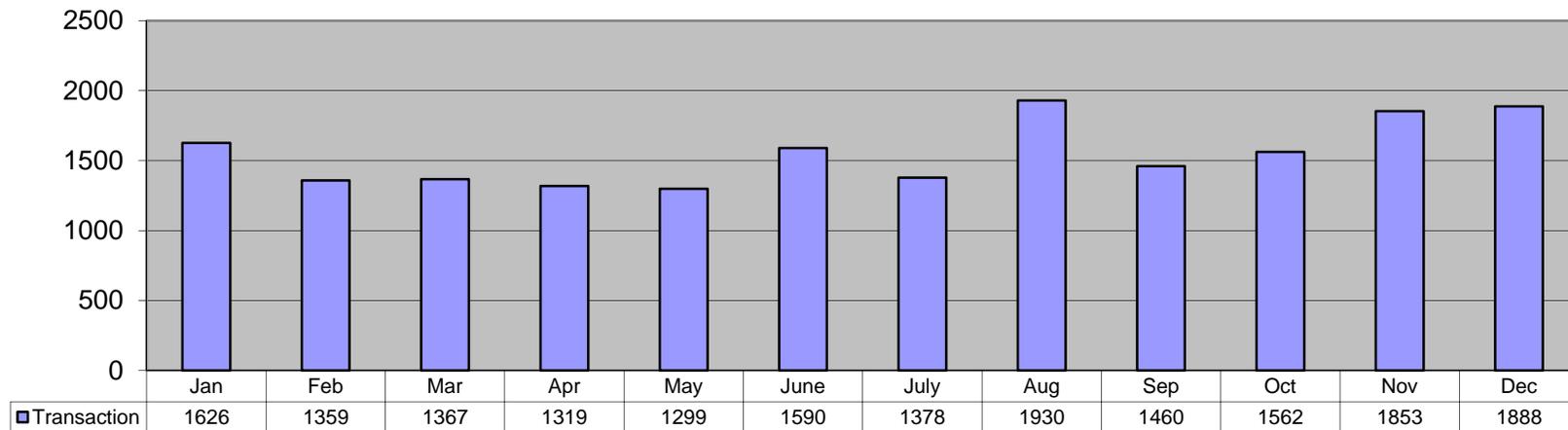
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2012 in Review

**Daily Processing
Number of Transaction Records
January 2012 - December 2012**



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

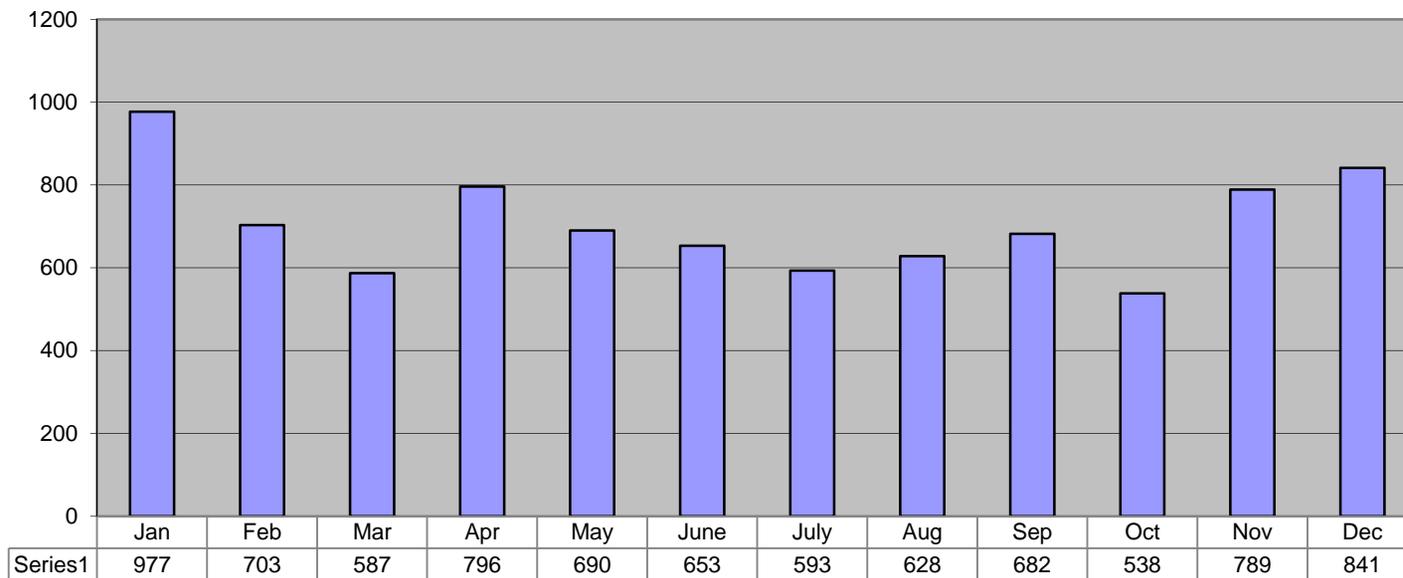
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2012 in Review

Standard NMMSS Reports Issued
January 2012 - December 2012



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2012 in Review

- Report Distributions
 - Daily, Monthly, Semi-Monthly, Quarterly, Semi-Annual, Annual, As requested
- Report Categories
 - Transaction
 - Financial
 - Allotment
 - Material Balance
 - Inventory
 - International

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

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2012 in Review

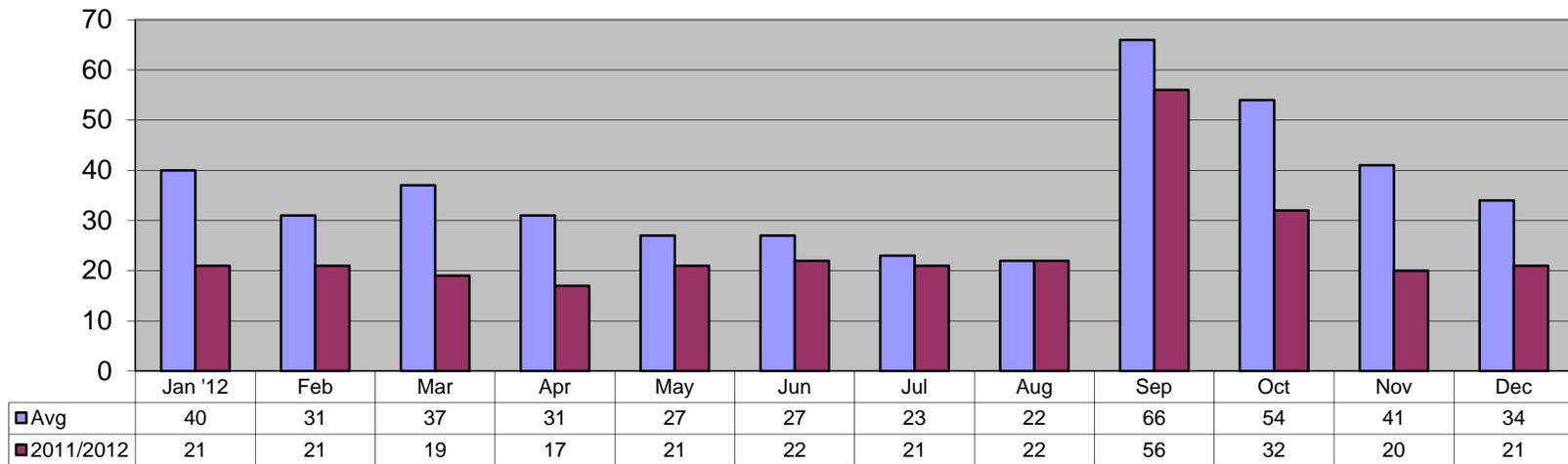
- NMMSS completed 49 special requests
 - Standard and/or adhoc reports requiring analysis
 - Survey work packages
 - Database Inquiries

- NMMSS closed 12 processing months
 - Averaged 24 days for 2012 – down from 29 days for 2011



2012 in Review

**Closing of the Accounting Month
(Number of days closed after month end)
January 2012 - December 2012**



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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2012 in Review

- NMMSS conducted 5 training courses for end-users
 - 3 NRC Training Course in Germantown, MD
 - 1 DOE NMMSS II Course in Germantown, MD
 - 1 DOE NMMSS I Course in Oak Ridge, TN
 - A total of 50 students attended the training

- NMMSS updated the database software capabilities
 - Operational / Processing
 - Enhancements
 - Reporting



2012 in Review

– Reconciliation

- DOE Reconciliation September 2012

- 49 RIS Codes required to be reconciled with NMMSS
- 41 were received by 10/15/2012
- 31 were reconciled within 2 days of receipt
- Closed month on 11/26/2012, 18 days ahead of last year and 10 days ahead of average

- NRC Reconciliations

- NMMSS received 267 Material Status Reports (MSRs) for 2012
- 33 were reconciled on the same day as receipt
- Average is 13 days from receipt to closure



■ 2013 NMMSS Activities

- Moved NMMSS to upgraded server April 2013
- Issued the DOE Users Guide April 2013
- DOE Financial Module - Thursday
- Obligations Accounting Module - Thursday
- Fillable Forms for reporting - Wednesday

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– Training

- Upcoming for 2013 and 2014
 - NRC Training Course
 - » July 2013, Germantown, MD
 - » December 2013, Germantown, MD
 - » March 2014, Germantown, MD
 - » July 2014, Germantown, MD
 - » December 2014, Germantown, MD

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- NMMSS I

- » September 2013, Germantown, MD
- » February 2014, Germantown, MD
- » September 2014, Germantown, MD

- NMMSS II

- » June 2013, Idaho Falls, ID
- » June 2014, Germantown, MD



- NMMSS is working to get all sites to report electronically and in the XML 2 format
 - Current Reporting for NMMSS
 - 3 electronic formats (XML2, XML1, 80 Column)
 - Paper
 - 65% of RIS Codes are reporting electronically
 - 56% of RIS Codes are reporting in XML2

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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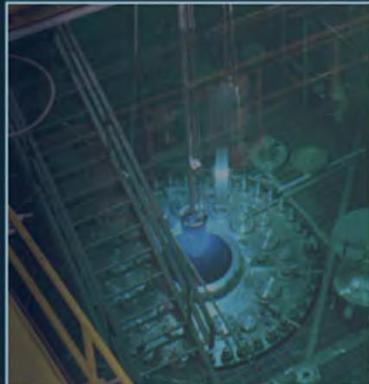


■ Questions?

ACCURACY

PERFORMANCE

ACCOUNTABILITY

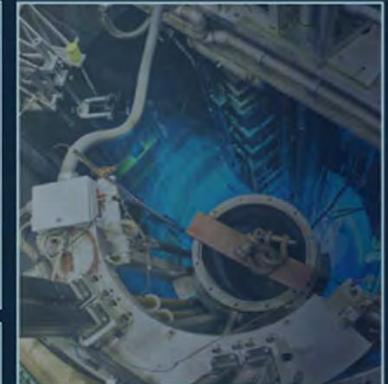


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FUNDAMENTALS

INPUTS (I) PROCESS (P) OUTPUTS (O)

Mister "T" McDonnell

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NRC and DOE

One System Two Sets of Rules

- Input (I) data using the same forms with slightly different information
- Processed (P) in the same database
- Output (O) report results based on needs of the customer
- Highlight reporting differences between NRC and DOE



TRANSACTIONS

- Transactions
 - (I) Electronic or hard copy
 - *Update on NMMSS Fillable Forms and SAMS 8.0* (Wednesday 22, 14:00)
 - (P) NMMSS edit check
 - (P) Monthly close-out
 - (O) Reports generated
 - TJ-001X – Daily Transaction and Errors
 - TJ-045 – Shipments, Receipts, Gains, and Losses
 - TJ-011B – Transactions by Material Type and Facility

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMSS)

NMSS 2013

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741

DOE/NRC FORM 741
(8-2011). Previous editions are obsolete.
 MANDATORY DATA COLLECTION
 AUTHORIZED BY 10 CFR 30.40, 50, 70, 72, 74, 75, 150,
 Public Laws 85-703, 93-438, 95-61

**U.S. DEPARTMENT OF ENERGY
 AND
 U.S. NUCLEAR REGULATORY COMMISSION**

APPROVED BY OMB: NO. 3160-0003 EXPIRES: 06/31/2014

Estimated burden per response to comply with this mandatory collection request: 1 hour and 15 minutes. This information is required for IAEA accounting reports that show changes in inventory of nuclear materials. Send comments regarding burden estimate to the Information Services Branch (7-5 P53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollections@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NRC-10002, (2150-0003), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

NUCLEAR MATERIAL TRANSACTION REPORT

| | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 1. SHIPPER'S NRC | | 2. RECEIVER'S NRC | | 3. TRANSACTION NO. | | 4. CONNECTION NO. | | 5. PACKAGING CODE | | 6. ACTION CODE | | 7. DECLARATION CODE (Required for Foreign Secret) | |
| 8. NAME AND ADDRESS OF SHIPPER | | 9. LICENSE NO. | | 10. NAME AND ADDRESS OF RECEIVER | | 11. LICENSE NO. | | 12. NO. OF DATA LINE | | 13. SHIPPED FOR ACCOUNT OF | | 14. NATURE OF TRANSACTION | |
| 15. ATTENTION | | 16. ATTENTION | | 17. ATTENTION | | 18. ATTENTION | | 19. ATTENTION | | 20. ATTENTION | | 21. DEFINITION OF CODES | |
| 22. TRANSFER AUTHORITY - CONTRACT, RM DRAFT, OR ORDER NUMBER | | 23. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | | 24. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | | 25. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | | 26. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | | 27. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | | 28. REPORT OR IMPORT TRANSMITTAL LICENSE NO. | |
| 29. MATERIAL TYPE AND DESCRIPTION | | 30. MATERIAL TYPE AND DESCRIPTION | | 31. MATERIAL TYPE AND DESCRIPTION | | 32. MATERIAL TYPE AND DESCRIPTION | | 33. MATERIAL TYPE AND DESCRIPTION | | 34. MATERIAL TYPE AND DESCRIPTION | | 35. MATERIAL TYPE AND DESCRIPTION | |
| 36. MISCELLANEOUS | | 37. MISCELLANEOUS | | 38. MISCELLANEOUS | | 39. MISCELLANEOUS | | 40. MISCELLANEOUS | | 41. MISCELLANEOUS | | 42. MISCELLANEOUS | |
| 43. TOTAL GROSS WEIGHT | | 44. TOTAL GROSS WEIGHT | | 45. TOTAL GROSS WEIGHT | | 46. TOTAL GROSS WEIGHT | | 47. TOTAL GROSS WEIGHT | | 48. TOTAL GROSS WEIGHT | | 49. TOTAL GROSS WEIGHT | |
| 50. SHIPPER'S DATA | | 51. SHIPPER'S DATA | | 52. SHIPPER'S DATA | | 53. SHIPPER'S DATA | | 54. SHIPPER'S DATA | | 55. SHIPPER'S DATA | | 56. SHIPPER'S DATA | |
| 57. RECEIVER'S DATA | | 58. RECEIVER'S DATA | | 59. RECEIVER'S DATA | | 60. RECEIVER'S DATA | | 61. RECEIVER'S DATA | | 62. RECEIVER'S DATA | | 63. RECEIVER'S DATA | |

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

DOE/NRC FORM 741 (8-2011)



INVENTORIES

- Inventories
 - (I) Electronic or hard copy
 - (P) NMMSS edit check
 - (P) Facility reported versus NMMSS book
 - (P) Inventory reconciliation
 - (O) Reports
 - I-010E – Inventory Data Listing
 - I-027 – Inventory by Facility
 - I-027C – Inventory by Facility with Cost
- Material Summary Report (MSR) – Inventory and Material Balance M742 and 742C

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NMMSS 2013

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NNSA



MATERIAL BALANCE

■ Material Balance

- (I) Electronic or hard copy
- (P) NMMSS edit check
- (P) Reported versus Book
- (P) Reconciliation
- (O) Reports
 - M-742A – By Facility
 - M-742C – By Facility with Cost
 - M-742D – Reports vs. NMMSS Book Material Balance

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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INTERNATIONAL

■ International

- *Nuclear Material Import/Export Process and Requirements*
(Wednesday May 22, 08:30)
- *International Transit Matching Processes and Requirements*
(Wednesday May 22, 10:30)
- *Overview of Obligations Accounting* (Thursday May 23, 08:30)
- (I) Electronic or hard copy as part of 741
- (P) NMMSS edit check
- (P) Monthly close-out
- (O) Reports generated
 - IA-OBL-O5 – Obligation Summary Report

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FINANCIAL

■ Financial

- (I) Electronic or hard copy as part of 742C
- (P) After monthly/inventory reconciliation
- (O) Reports
 - TJ-045C – Transaction Detail for Shipments, Receipts, and Onsite Gains and Losses with Cost
 - FN-001 – Financial Inventory Summary
 - M-742C – Material Balance Report by Facility with Cost
 - I-027C – Inventory by Facility with Cost

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AUTHORITY REFERENCE FILE

- Authority Reference File
 - (I) Contact Information, Contractor/Licensee
 - (P) Comp Code (741 block 26/27h.)
 - (P) License Authority
 - (P) Material Type – Alpha / Numeric (NRC / DOE)
 - (P) Project Number
 - (P) Reporting Identification Symbol (RIS)
 - (P) Edit checks
 - (O) Reports
 - D-002 – DOE Directory of RIS
 - D-003 – NRC Directory of RIS
 - D-015 – International Nuclear Facilities

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RECONCILIATION REPORTS

| REPORTS | DOE | NRC |
|--|-----|-----|
| M-742A – Material Balance Report By Facility | | X |
| M-742D – Reports vs. NMMSS Book Material Balance | | X |
| IA-OBL-O5 – Obligation Summary Report | X | X |
| TJ-011B – Transactions by Material Type and Facility | | X |
| I-010E – Inventory Data Listing | | X |
| A-200 – Summary of Ending Inventory Comparison | X | X |
| A-210 – Project Material Balance | X | |
| TJ-045 – Shipments, Receipts, Gains, and Losses | X | |

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REQUIREMENTS & REPORTING

- DOE
 - Requirement
 - DOE Order 474.2 Chg. 2 *Nuclear Material Control & Accountability*
 - Reporting
 - *NMMSS User's Guide Rev. 2.0*
 - *D23 Personal Computer Data Input for DOE Contractors*
- NRC
 - Requirement
 - 10CFR40 Domestic Licensing of Source Material
 - 10CFR70 Domestic Licensing of Special Nuclear Material
 - Reporting
 - NUREG/BR-0006, Rev.7 *Instructions for Completing Nuclear Material Transaction Reports*
 - NUREG/BR-0007, Rev.6 *Instructions for the Preparation and Distribution of Material Status Reports*
 - *D24 Personal Computer Data Input for NRC Licensees*

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MATERIALS

| MATERIAL | DOE | NRC | MATERIAL | DOE | NRC |
|--------------------|-----|-----|-----------------|-----|-----|
| Depleted Uranium | X | X | Litium 6 | X | |
| Enriched Uranium | X | X | Plutonium 242 | X | |
| Thorium | X | X | Americium 241 | X | |
| Plutonium | X | X | Americium 243 | X | |
| Natural Uranium | X | X | Curium 244 | X | |
| Uranium in Cascade | X | X | Curium 246 | X | |
| Uranium 233 | X | X | Neptunium 237 | X | |
| Plutonium 238 | X | X | Tritium | X | |
| | | | Deuterium | X | |
| | | | Californium 252 | X | |

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Nuclear Materials Management & Safeguards System

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NMMSS

U.S. Department of Energy / U.S. Nuclear Regulatory Commission
Nuclear Materials Management & Safeguards System

ATTENTION

On October 1, 2010 the NMMSS program moved to the National Nuclear Security Administration's (NNSA) Office of Materials Integration (NA-73). New mailing address information can be found under "NMMSS Contacts."

Learn more

- NMMSS Information, Reports & Forms
- International
- Training
- SAMS Overview

Related Links

Press Releases

Headlines

SPECIAL ANNOUNCEMENT

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

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NMMSS 2013

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TRAINING

- *NMMSS Resources* (Monday May 20, 11:45)
- NMMSS NRC Training Course
 - Sept 10-13, 2013 Germantown, MD
 - Dec 3-5, 2013 Germantown, MD
- DOE MCA-112 NMMSS I
 - Sept 10-13, 2013 Germantown, MD
- DOE MCA-212 NMMSS II
 - June 11-13, 2013 Idaho Falls, ID

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QUESTIONS?

ACCURACY

PERFORMANCE

ACCOUNTABILITY

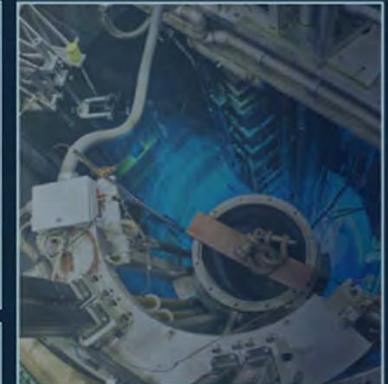


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DOE Reconciliation

John Ballard
PSI
DOE Lead



DOE/NNSA Reconciliation

■ Reconciliation

- Facility reported physical inventory balance matches NMMSS generated balances by Reporting Identification Symbol (RIS), material type, owner code, and project number
- Foreign obligations totals match NMMSS generated balances by country code and material type



DOE/NNSA Reconciliation

Why Reconcile?

- Confirms balance of SNM with audit trail of all accountable material reports
 - Balances generated from reported transactions compared to facility reported physical inventory
- Future Months cannot be closed in NMMSS until September closing
- NMMSS reports show facility balances for report recipients

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

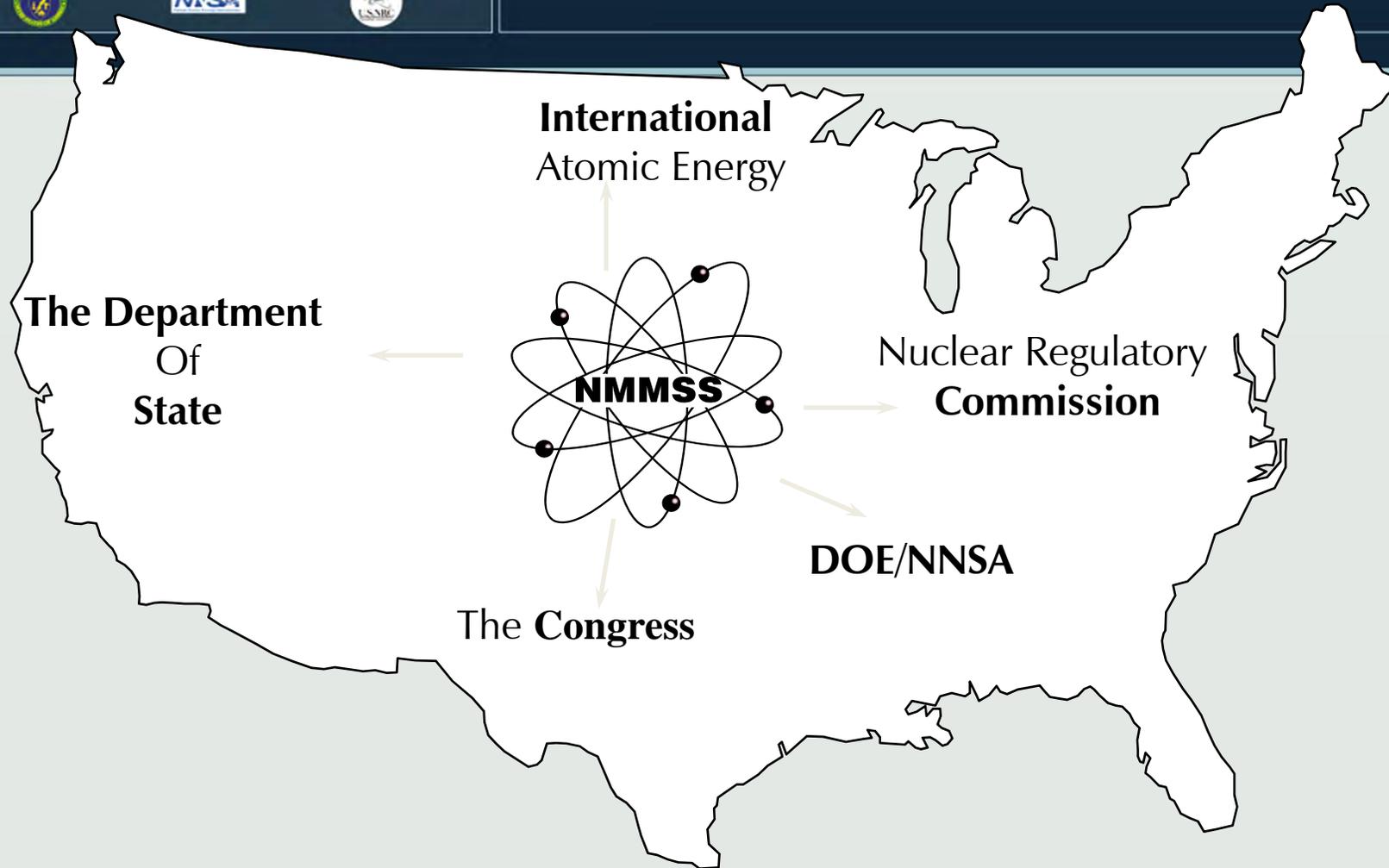
NMMSS 2013

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NMMSS Data Users





DOE/NNSA Reconciliation

■ Steps for DOE Reconciliation

1. Facility submits physical inventory to NMMSS dated September 30 for each RIS
2. If NMMSS records show foreign obligation balance on IA-OBL-05 (Obligation Material Balance Report), facility is asked to confirm balances by country code and material type
3. NMMSS generates preliminary reports and informs facility of result
4. If differences exist, Preliminary NMMSS reports or differences sent to facility



DOE/NNSA Reconciliation

5. Facility identifies source of discrepancy and makes appropriate adjustments to transactions or inventory balance
6. After new adjustments by facility, NMMSS generates preliminary reports and notifies facility of results
7. After all inventory differences have been resolved and foreign obligation totals verified, NMMSS informs facility that reconciliation is complete

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NMMSS 2013

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DOE/NNSA Reconciliation

- Reconcile per DOE O 474.2 Chg 2: 11-19-2012
 - NMMSS User Guide-Rev. 2.0 April 2013
 - DOE M 470.4-6 Cancelled (Some sites continue to use as part of contractual obligation)

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NMMSS 2013

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DOE/NNSA Reconciliation

- DOE/NNSA Reconciliation annually on September 30
- All RIS's with a NMMSS reportable quantity on September 30 must reconcile prior to NMMSS closing of September

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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DOE/NNSA Reconciliation

- September 30 inventory reporting
 - Transactions due by October 10
 - Site inventory due by October 15



DOE/NNSA Reconciliation

■ Reconciliation Obstacles

– Transactions

- Missing shipments and receipts
- Missing corrections
- Decay not reported
- Normal operating loss not reported
- Rounding not reported
- Incorrect dates reported
 - October instead of September

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

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DOE/NNSA Reconciliation

- Reconciliation Obstacles
 - Inventory
 - September 30 date not used
 - Project numbers
 - Missing lines
 - Total lines for each material type

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

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DOE/NNSA Reconciliation

■ Reconciliation Obstacles

– Foreign Obligations

- Totals verified by country code and material type after physical inventory reconciliation completed
 - Email from facility verifying totals

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

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DOE/NNSA Reconciliation

- Reconciliation Obstacles
 - Transactions with September 30 or prior date sent to NMMSS after facility reconciliation completed and September is still open month
 - Facility notified that they are not reconciled

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DOE/NNSA Reconciliation

- 49 facilities were required to reconcile September 2012
- September was closed on November 26, 2012
- Earliest close since 2007

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NMMSS 2013

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DOE/NNSA Reconciliation

- NMMSS Reconciliation Closing Dates
 - September 2008 was closed March 2009
 - September 2009 was closed January 2010
 - September 2010 was closed December 30, 2010
 - September 2011 was closed December 14, 2011
 - September 2012 was closed November 26, 2012



DOE/NNSA Reconciliation

- September 2012 Facility Reconciliation
 - Almost half of facilities were reconciled on the date they reported
 - 80% of facilities were reconciled by October 22
 - Almost all of facilities were reconciled by October 31
- These results show timely/accurate reporting by facilities

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DOE/NNSA Reconciliation

- When September is closed
 - Final September fiscal Year external reports generated and distributed (372 reports and 125 financial reports)
 - Next October 2012 was closed December 3, 2012 (Cannot be closed prior to September closing)
 - November 2012 closed on schedule December 21

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DOE/NNSA Reconciliation

- Trends in recent years
 - More facilities comparing their facility balances with NMMSS records monthly/quarterly
 - Shortens reconciliation times



DOE/NNSA Reconciliation

- Reports to help stay balanced during year
 - TJ-1X – Daily activity by facility
 - Monthly reports and preliminary September reports
 - A-200 - Shows any differences
 - A-210 – Material balance by project number
 - M-742 – Material balance report
 - TJ-45 – Transactions
 - IA-OBL-05 – Foreign obligation balance

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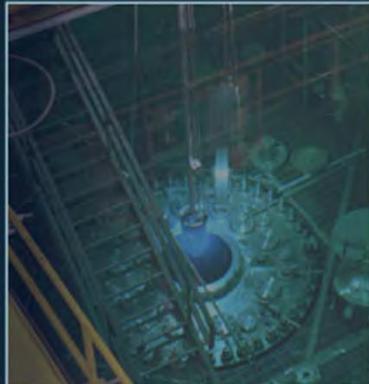
DOE/NNSA Reconciliation

Questions?

ACCURACY

PERFORMANCE

ACCOUNTABILITY

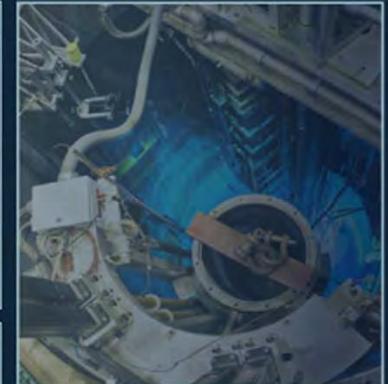


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NRC Reconciliation

Pat Smith
PSI
NRC Lead

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NRC Reconciliation

- NRC Reconciliation requirements per NUREG/BR-0007, Rev. 6
- All RIS's must submit an MSR (Material Summary Report) (Form 742, 742C) to NMMSS under the following conditions:
 - A RIS has a reportable quantity as of their inventory date
 - A RIS has shipped or received a reportable quantity during the material balance reporting period

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NRC Reconciliation

- All NRC licensees are required to report their physical inventory to NMMSS each year if they:
 - possess one gram or more of special nuclear material (SNM) (plutonium, uranium-233, or uranium-235 contained in enriched uranium)
 - one kilogram or more of foreign obligated source material (natural uranium, depleted uranium, or thorium) are required to report their physical inventory to NMMSS each year

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NRC Reconciliation

- Licensees who possess less than 350 grams of SNM are required to report their physical inventory to NMMSS between January 1 and March 31 of each year
- Licensees possessing 350 grams or more of SNM shall continue reporting their physical inventory to NMMSS as previously performed (a minimum of once a year)
- Reporting physical inventories require a licensee to complete and submit both a Material Balance Report (DOE/NRC Form-742) and Physical Inventory Listing (DOE/NRC Form742C)



NRC Reconciliation

Reporting Requirements for Special Nuclear Materials

Inventories for the following materials must be reported to NMMSS if quantity is within reportable range (1 unit or greater).

| Special Nuclear Material | Material Type | Units |
|--------------------------|---------------|---------------|
| Enriched Uranium* | 20 | Whole Gram |
| Plutonium | 50 | Whole Gram |
| Uranium-233 | 70 | Whole Gram |
| Plutonium-238 | 83 | Tenth of Gram |
| Uranium in Cascades | 89 | Whole Gram |

* NRC Reporting of Enriched Uranium

| | |
|------------|---|
| E-1 | Greater than 0.711% but less than 5.00% |
| E-2 | 5.00% or more, but less than 20.00% |
| E-3 | 20.00% or more, but less than 80.00% |
| E-4 | 80.00% or more |

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NRC Reconciliation

Reporting Requirements for Source Materials

- All Government-owned source material is reportable per DOE regulations

| Source Material | Material Type | Units |
|------------------|---------------|----------------|
| Depleted Uranium | 10 | Whole Kilogram |
| Normal Uranium | 81 | Whole Kilogram |
| Thorium | 88 | Whole Kilogram |

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NRC Reconciliation

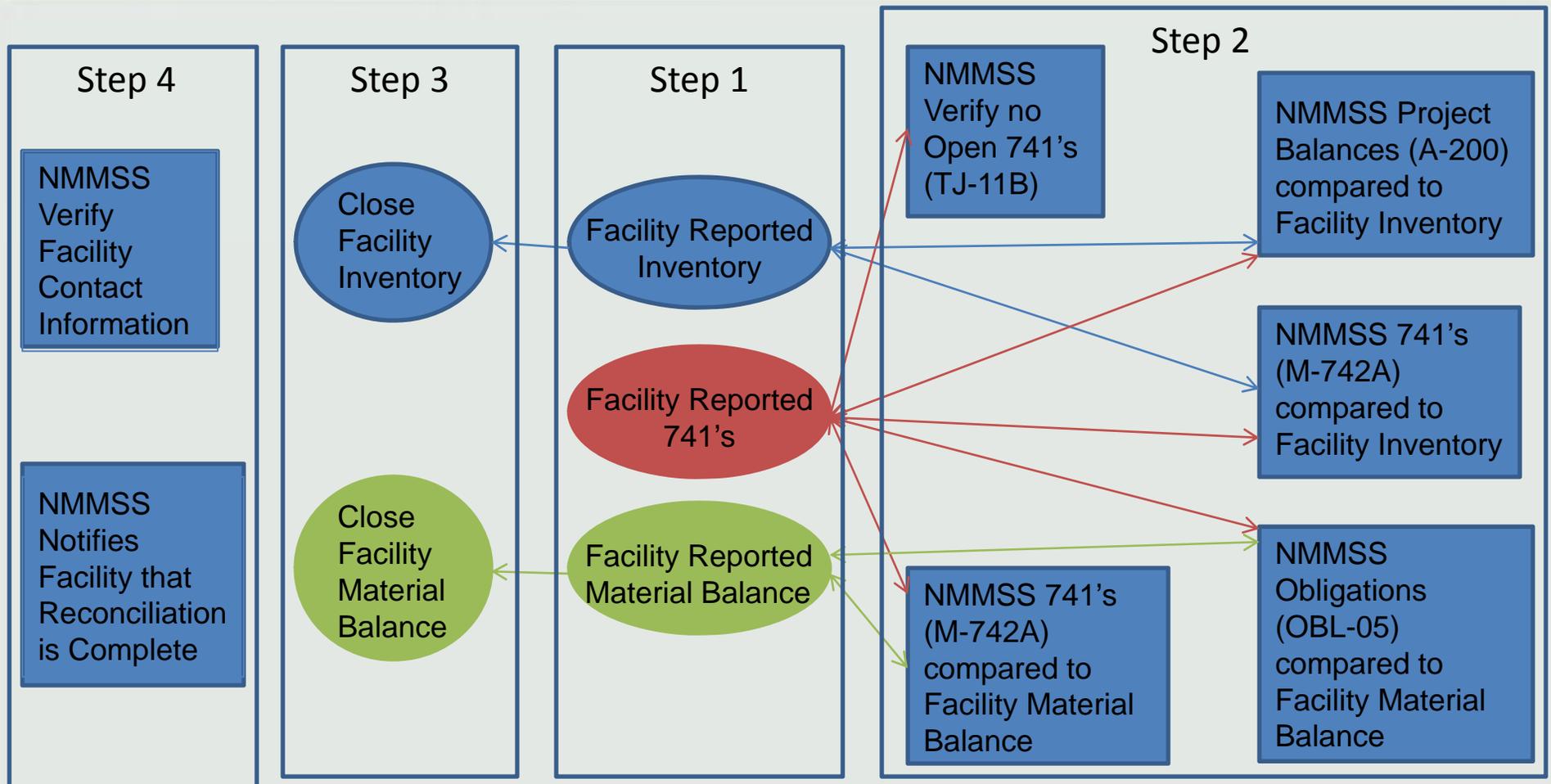
Reporting Requirements for Other Nuclear Materials

- All Government owned material is reportable per DOE regulations

| Other Nuclear Material | Material Type | Units |
|------------------------|---------------|-----------------------|
| Americium-241 | 44 | Whole Gram |
| Americium-243 | 45 | Whole Gram |
| Curium | 46 | Whole Gram |
| Californium-252 | 48 | Whole Microgram |
| Lithium-6 | 60 | Whole Kilogram |
| Neptunium-237 | 82 | Whole Gram |
| Deuterium | 86 | Tenth of Kilogram |
| Tritium | 87 | Hundredth of Kilogram |



NRC Reconciliation Process



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NRC Reconciliation

- NMMSS generated reports used in NRC reconciliation
 - I-010E Inventory data listing
 - M-742A Material balance report by Action Date
 - M-742R Material balance report – Reported by facility
 - IA-OBL-05 Obligations report
 - TJ-011B Open transactions report
 - TJ-045 Transaction detail report
 - A-200 Summary of ending inventory comparison by project

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NRC Reconciliation

- Based on NMMSS records
 - 343 facilities were required to reconcile in 2012
 - 268 facilities were reconciled
 - 75 remaining to be reconciled - NRC guidance requested

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NRC Reconciliation

Questions?

ACCURACY

PERFORMANCE

ACCOUNTABILITY

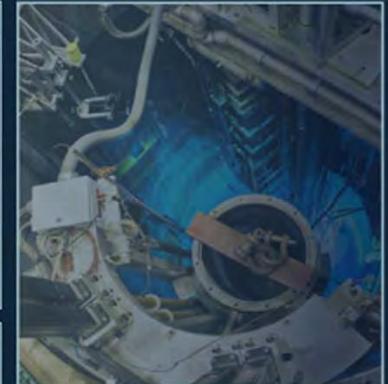


THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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Import/Export & Obligation Review

Presented by:
Mitch Hembree
NMMSS

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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Import/Export & Obligations Review

Primary Driver for Import/Export & Foreign Obligations

- License required to import/export nuclear material
- Foreign obligations = Assurances that material or equipment is transferred pursuant to an Agreement for Peaceful Nuclear Cooperation
- Agreements for Cooperation are necessary, per Section 123 of the Atomic Energy Act of 1954, as amended
- Allow U.S. to trade nuclear material and equipment with foreign countries

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Import/Export & Obligations Review

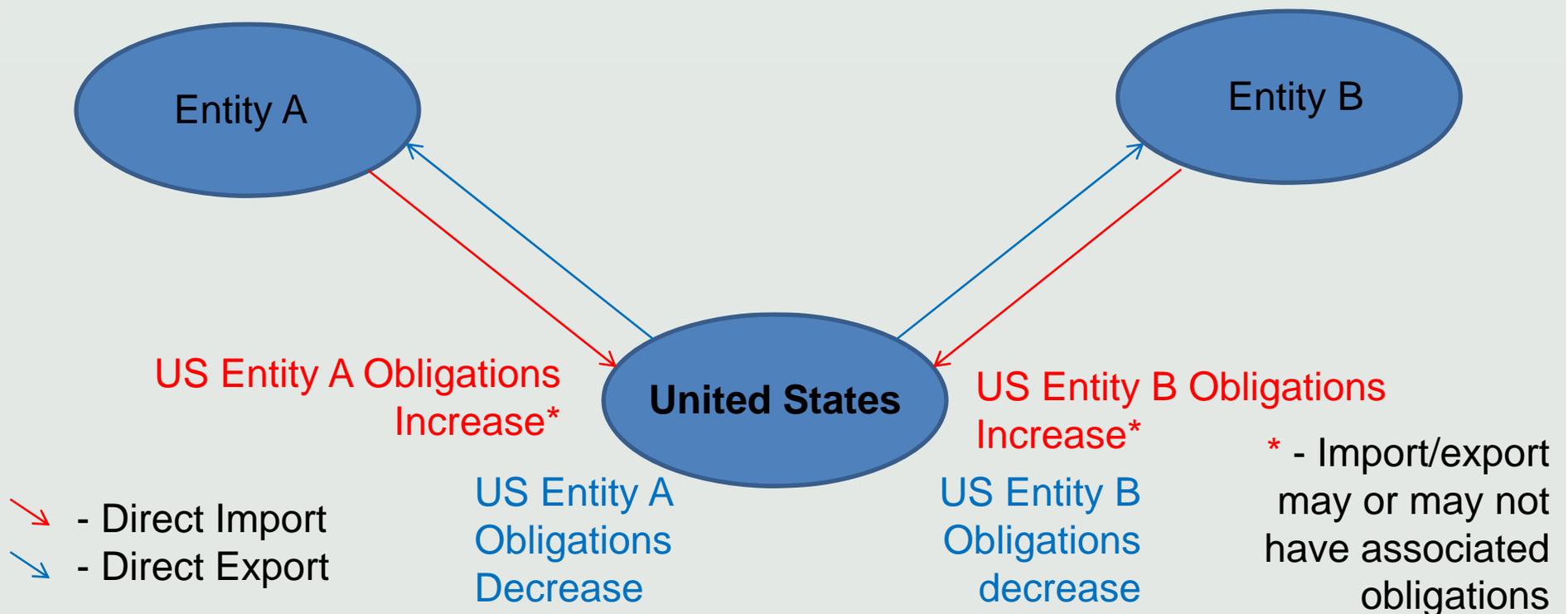
Conditions that Drive Imports/Exports & Obligations

- Direct Import
- Direct Export
- Indirect Import
- Indirect Export
- Retransfer



Import/Export & Obligations Review

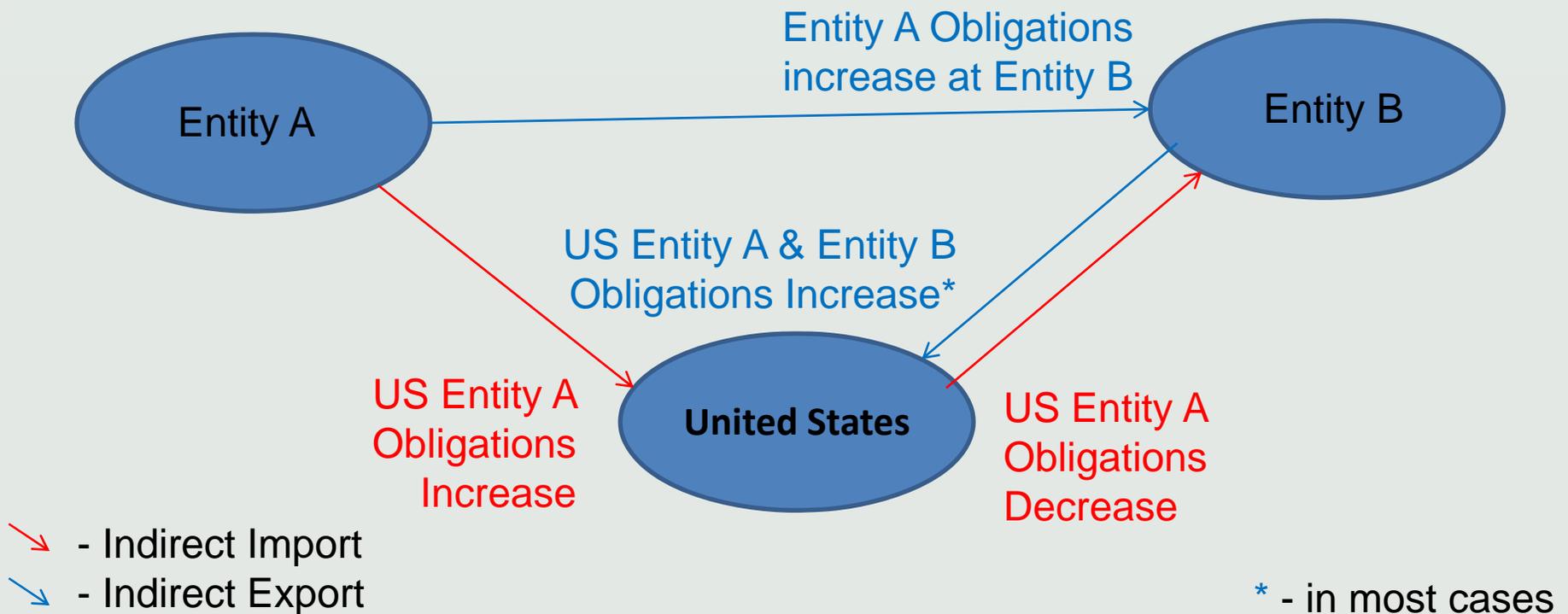
Direct Import and Export





Import/Export & Obligations Review

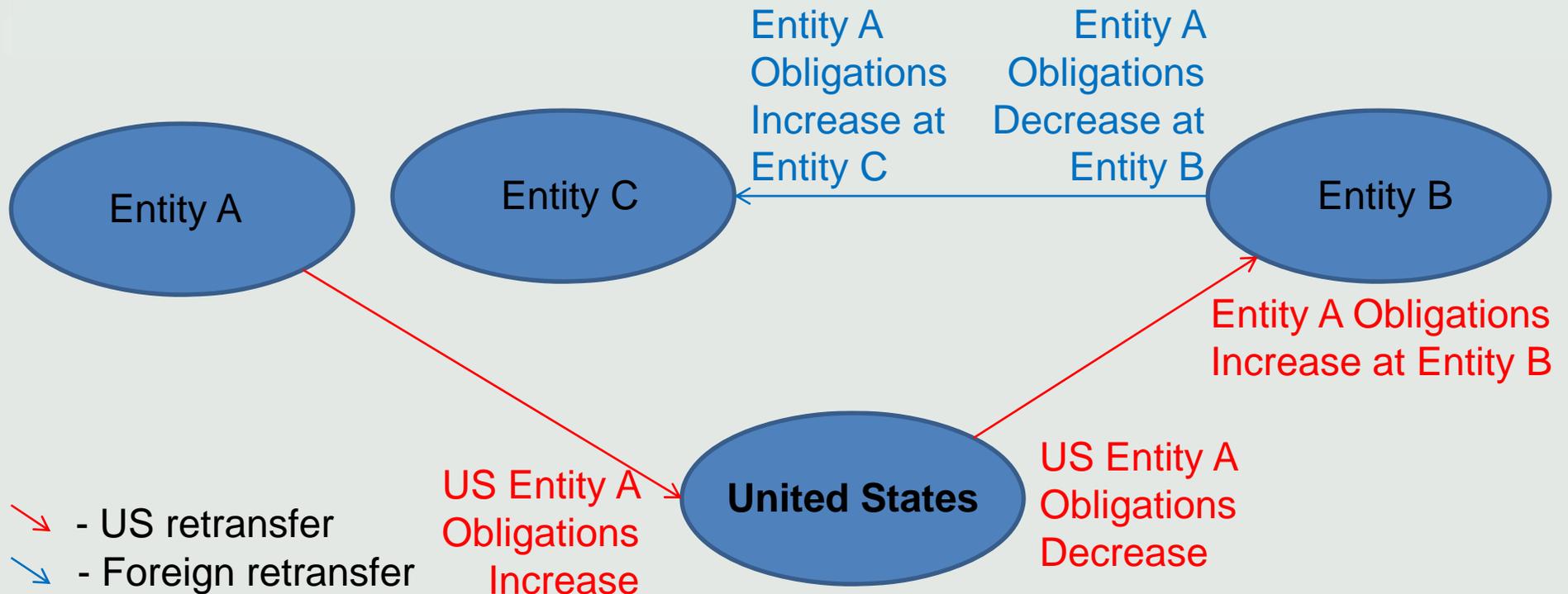
Indirect Import and Export





Import/Export & Obligations Review

Retransfer



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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Import/Export & Obligations Review

How are Obligations Associated with Nuclear Material?

- Imports/exports of material
- Nuclear production/on-site increases
- Retransfers
- Nuclear loss/on-site decreases

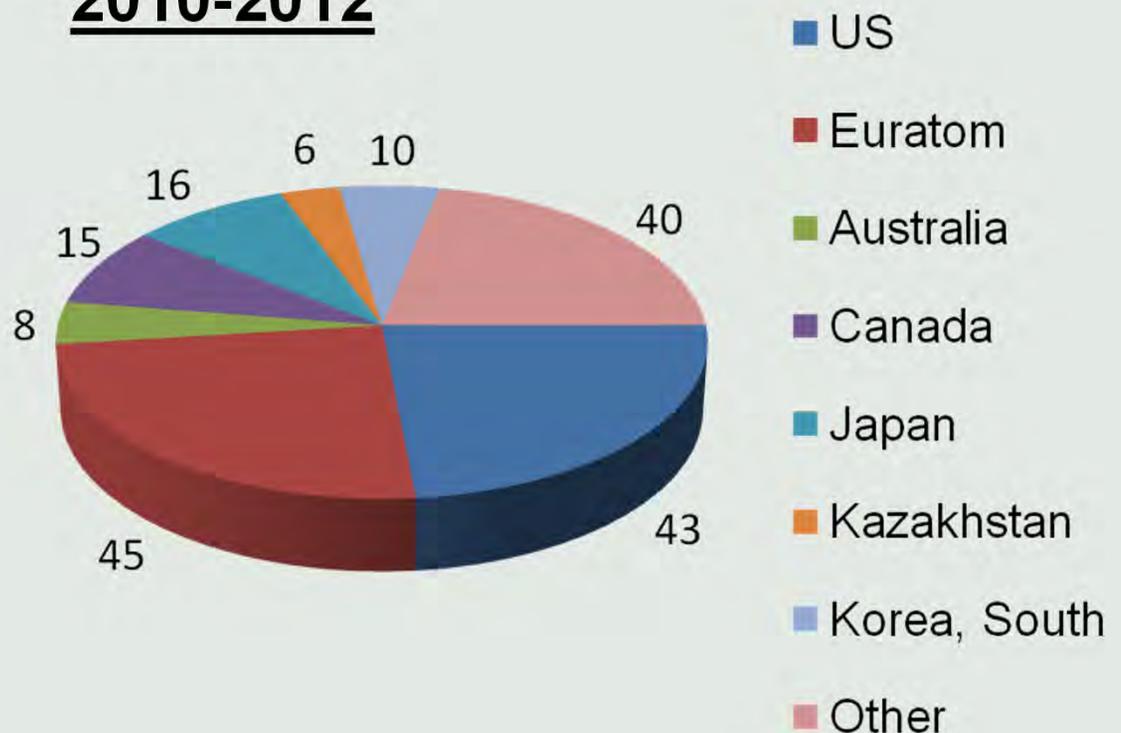


Import/Export & Obligations Review

Number of Facilities with Import/Export Activity

2010-2012

- Total Entities: 183
- European Atomic Energy Community (Euratom) consists of the following countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom

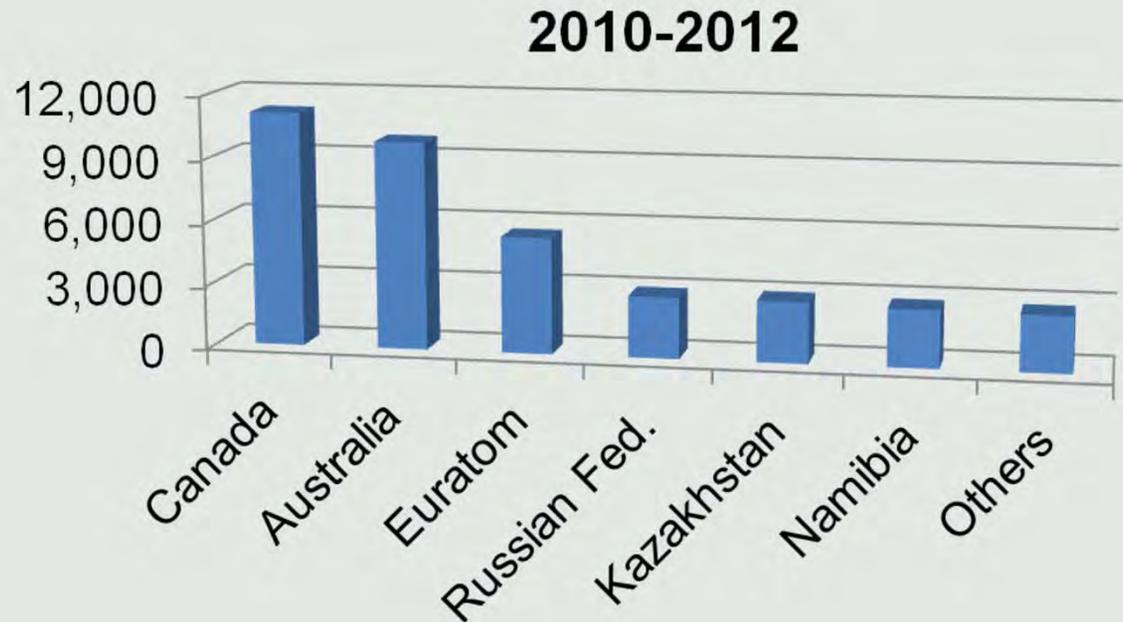




Import/Export & Obligations Review

Total Nuclear Material Imported to US (Metric Tons)

- Canada
- Australia
- Euratom
- Russian Federation
- Kazakhstan
- Namibia

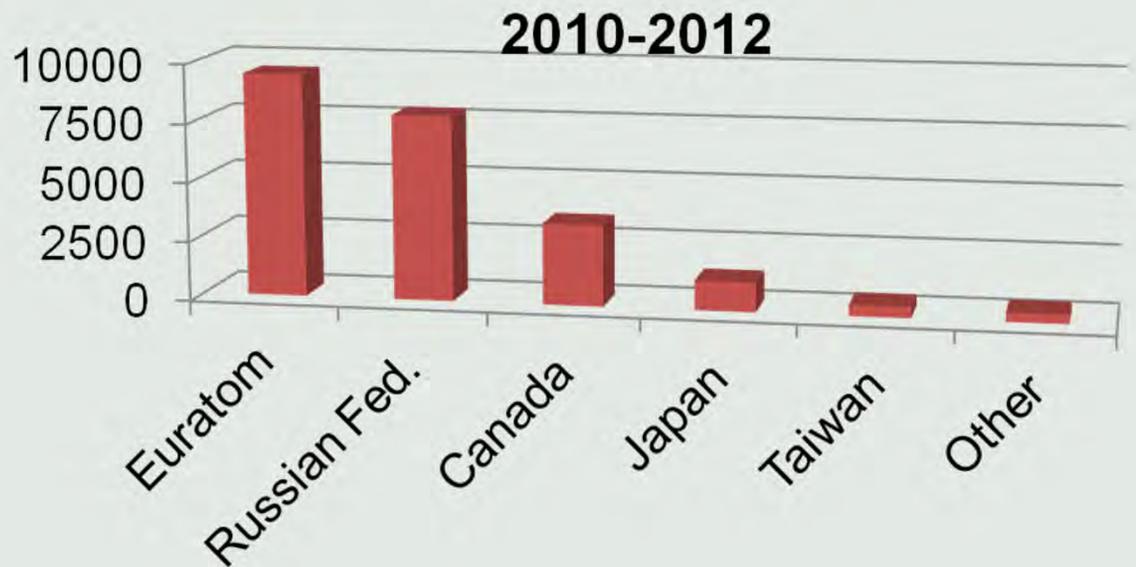




Import/Export & Obligations Review

Total Nuclear Material Exported from US (Metric Tons)

- Euratom
- Russian Federation
- Canada
- Japan
- Taiwan

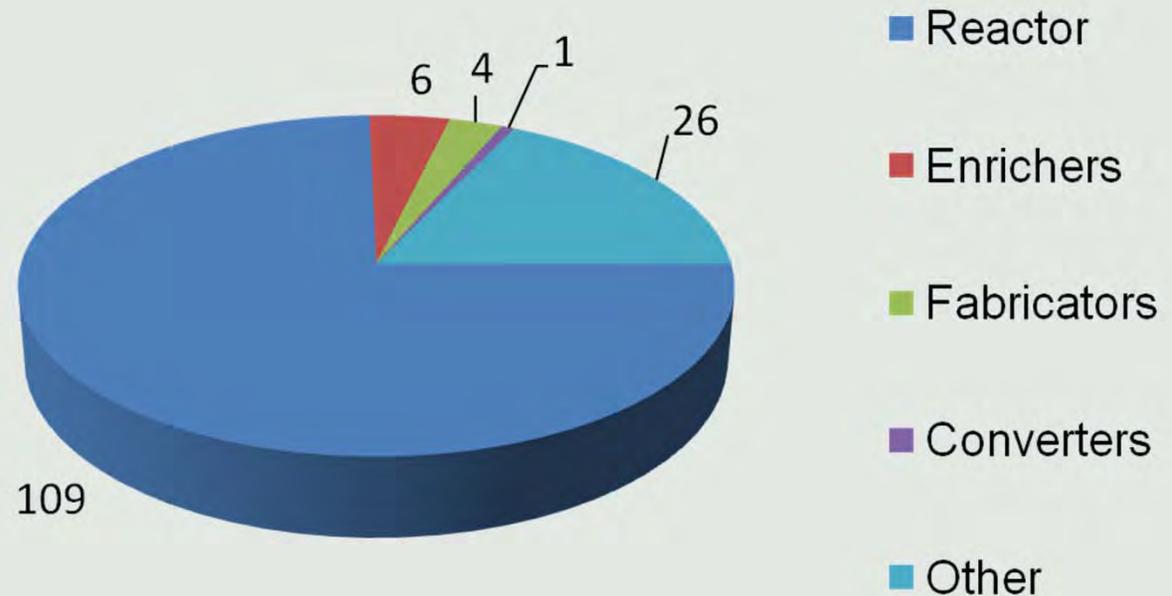




Import/Export & Obligations Review

Number of US Facilities with Obligation Balances Through 2012

Total US Facilities: 183

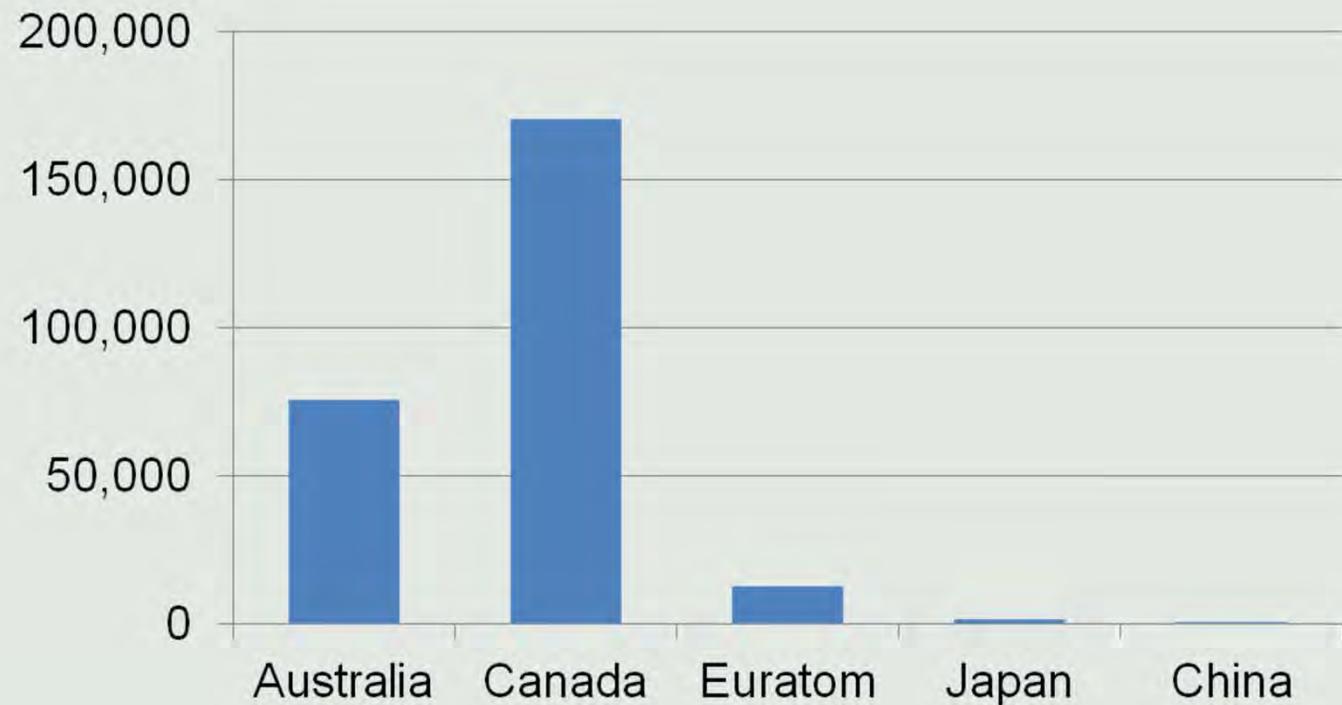




Import/Export & Obligations Review

Total Obligations (by Entity) in the U.S. as of January 2012 (Metric Tons)

- Australia
- Canada
- Euratom
- Japan
- China



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Import/Export & Obligations Review

Uses for Imported/Exported & Obligated Material

- Conversion and enrichment plants
- Enriched uranium to fuel fabrication plants
- Return of spent fuel from foreign research reactors
- Fuel assemblies for foreign reactors
- Nuclear production



Import/Export & Obligations Review

Import/Export Material Types

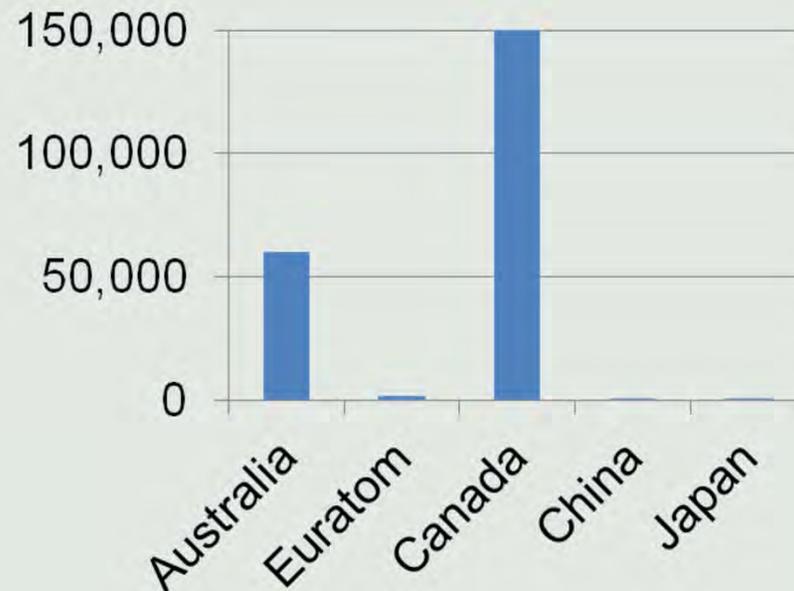
| Type | Domestic Code | Import/Export Code | Reportable Unit of Measurement |
|------------------|---------------|--------------------|--------------------------------|
| Depleted Uranium | 10 | D | Kilogram Uranium |
| Enriched Uranium | 20 | EG | Gram Uranium Gram U-235 |
| Plutonium | 50 | P | Gram Plutonium |
| Natural Uranium | 81 | N | Kilogram Uranium |
| Thorium | 88 | T | Kilogram Thorium |



Import/Export & Obligations Review

Distribution of Depleted Uranium (MT 10)

Obligations 2011 Inventory
(Metric Tons)

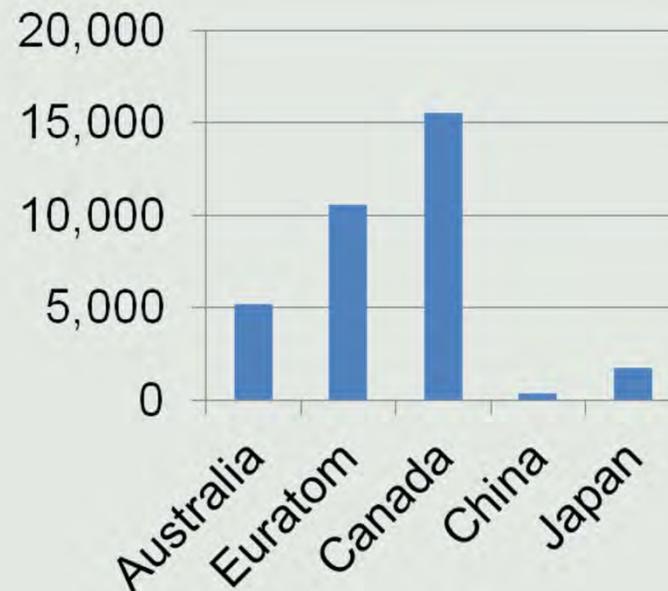




Import/Export & Obligations Review

Distribution of Enriched Uranium (MT 20)

Obligations 2011 Inventory
(Metric Tons)

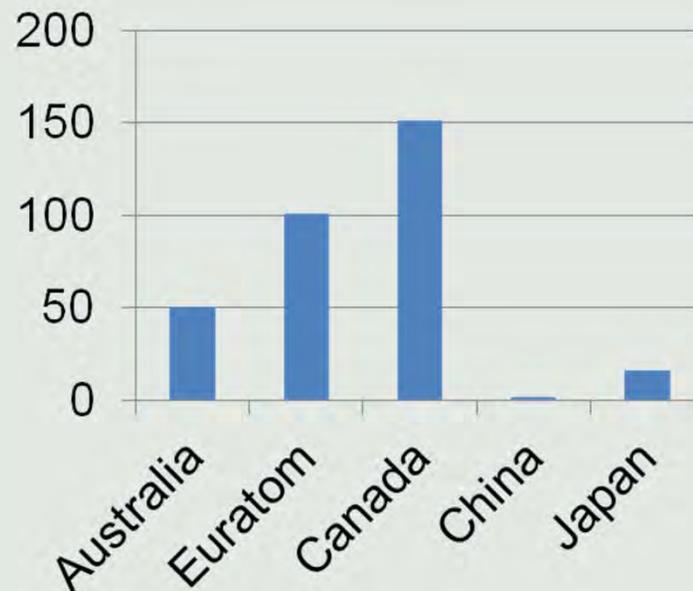




Import/Export & Obligations Review

Distribution of Plutonium (MT 50)

Obligations 2011 Inventory
(Metric Tons)

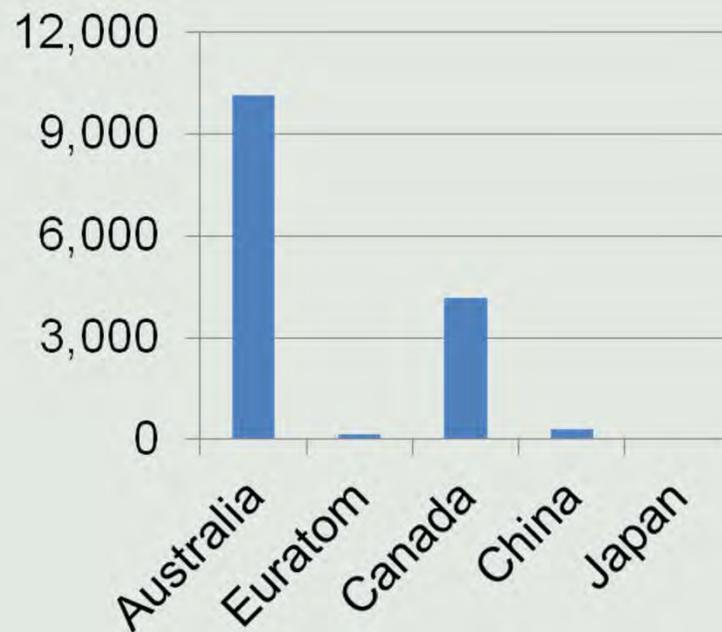




Import/Export & Obligations Review

Distribution of Natural Uranium (MT 81)

Obligations 2011 Inventory (Metric Tons)





Import/Export & Obligations Review

NMMSS Obligation Activities

- Monthly obligation inventory reports sent to various Agreement Countries
- Annual obligation inventory reports send to various agreement entities

| Entity | Required | Monthly | Annually |
|-------------|----------|---------|----------|
| Australia | √ | √ | √ |
| Canada | √ | √ | √ |
| Euratom | √ | √ | √ |
| Japan | √ | √ | √ |
| Switzerland | √ | √ | √ |
| China | | | √ |
| Chile | | | √ |
| Brazil | | | √ |
| Argentina | | | √ |

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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Import/Export & Obligations Review

New NMMSS Obligation Activity

- Maintain transfer and retransfer information contained in foreign government notifications or other diplomatic documents from U.S. Agreement partners
- Pair foreign government notifications to NMMSS transaction data (transit matching)
- Perform notification follow-up with facilities as necessary based on transit matching activity
- Investigate inquiries from Agreement partners concerning foreign obligated nuclear material

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Import/Export & Obligations Review

Import/Export Process & Requirements

Wednesday
May 22, 2013
8:30AM

Overview of Obligations Accounting

Thursday
May 23, 2013
8:30AM

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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Import/Export & Obligations Review

Questions?

ACCURACY

PERFORMANCE

ACCOUNTABILITY



THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)
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NMMSS Contacts, Resources and Other Information

Jim Crabtree
NNSA Office of Nuclear Material Integration
NMMSS Program

May 20, 2013

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Outline

- People
- NMMSS Website
 - NRC Reporting Instructions
 - DOE Reporting Instruction
- Training
- RIS Directories
- Software
 - SAMS
 - Fillable Forms that Generate XML Files
- Communications

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NMMSS Federal Staff

| | | |
|------------------|------------------------------------|--------------|
| Pete Dessauls | DOE NMMSS Federal Program Manager | 301-903-4525 |
| Brian Horn | NRC Program Manager | 301-492-3122 |
| Jim Crabtree | DOE NMMSS Operations Lead | 301-903-6008 |
| Santiago Aguilar | NRC International Point-of-Contact | 301-492-3569 |

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NMMSS Operations Contractor Contacts

| | | |
|----------------------|---|---------------------|
| Gary Hirsch * | PSI Team Lead/IAEA Reporting Lead | 301-903-6870 |
| John Ballard* | DOE Lead, Training Lead | 301-903-0092 |
| Pat Smith* | NRC Lead | 301- 903-6860 |
| Len Myers * | Special Requests/DIMS/Foreign Obligations | 301-903-2180 |
| Karen Antizzo | DOE/NNSA Users Guide, Export Licenses | 301-903-0872 |
| Mitch Hembree* | Foreign Obligations, NRC Reconciliation | 301-903-6299 |
| Debbie Larabay | NRC Reconciliation/Reports Distribution | 301-903-6148 |
| Mary McConnell | IAEA Reporting, NRC Reconciliation | 301-903-6140 |
| T. McDonnell* | Special Requests, Project Numbers, DIMS | 301-903-0885 |
| Mike Nightingale | Classification, Report Distribution | 301-903-1328 |
| Greg Perry | NMMSS Website, NMMSS Letter | 301-903-3656 |

* At the meeting

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NMMSS Software Staff/Contacts

| | | |
|---------------------|--------------------------------------|-----------------------------------|
| Rick Edwards | NMMSS Software, SAMS | 803-725-0875 |
| Andy Kerns | NMMSS Software, SAMS, Fillable Forms | 301-903-5765 |
| Kathy Parker | Fillable Forms, DIMS | katherine.parker @nnsa.doe.gov |

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NMMSS Website

- www.nnsa.energy.gov/nmmss
- Links to NRC Reporting Instructions
 - NUREG/BR-0006, Revision 7
 - NUREG/BR-0007, Revision 6
- DOE/NNSA Reporting Instructions
 - NMMSS Users Guide
- List of NMMSS contacts
- Newsletters

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

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NMMSS Website (Continued)

- NMMSS Forms
- Code Tables: Obligation Codes, Action Codes, Transaction Codes, Use Codes
- DOE and NRC Electronic Input Manuals; D-23 and D-24
- XML Data Submission Schema
- DOE/NRC 741 Crosswalk to SAMS
- Meeting Announcements

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NMMSS Training Courses

- DOE NMMSS I - Introductory Training for DOE NMMSS Users/Data Submitters
- DOE NMMSS II - Advanced Training for DOE NMMSS Users
 - Use codes, To and For accounts, transfer to and from DoD, international reporting, annual Reconciliation, blending transactions, DOD, project numbers

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NMMSS courses

- NMMSS for NRC Licensees
 - Similar to DOE NMMSS I
 - Introductory Course
 - Now includes a model on reconciliation of material status reports
- Individualized Site Training

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Upcoming Training Dates 2013

| Date | Course | Location |
|-------------------|-------------------------|----------------|
| June 11-13, 2013 | DOE NMMSS II | INL, Idaho |
| July 23-25, 2013 | NMMSS for NRC Licensees | Germantown, MD |
| Sept. 10-13, 2013 | DOE NMMSS I | Germantown, MD |
| Dec. 3-5, 2013 | NMMSS for NRC Licensees | Germantown, MD |

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Upcoming Training Dates 2014

| Date | Course | Location |
|-------------------|-------------------------|----------------|
| Feb. 25-28, 2014 | DOE NMMSS I | Germantown, MD |
| March 25-27, 2014 | NMMSS for NRC Licensees | Germantown, MD |
| June 10-12, 2014 | DOE NMMSS II | Germantown, MD |
| July 15-17, 2014 | NMMSS for NRC Licensees | Germantown, MD |
| Sept. 9-12, 2014 | DOE NMMSS I | Germantown, MD |
| Dec. 2-4, 2014 | NMMSS for NRC Licensees | Germantown, MD |

THE NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM (NMMSS)

NMMSS 2013

USERS ANNUAL TRAINING MEETING

MAY 20-23, 2013 - ST. LOUIS, MISSOURI



Software/Directories

- SAMS 8.0.
 - Facility-based version of NMMSS Software
- Fillable forms (work in progress)
 - DOE/NRC 741
 - DOE/NRC 742
 - DOE/NRC 742C
- Directories
 - D-2 RIS Directory for DOE/NNSA Facilities
 - D-3 RIS Directory for NRC Licensees
 - D-15 RIS Directory for International Facilities

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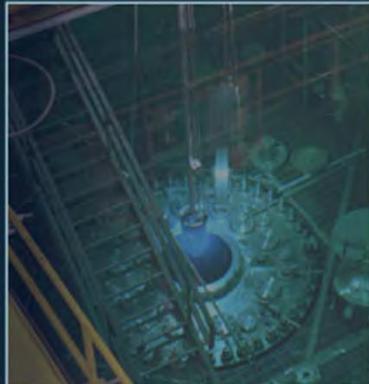
Questions/Resources

- Website
 - <http://www.nnsa.energy.gov/nmmss>
- NMMSS Newsletter
- Jim Crabtree: 301-903-6008
 - james.crabtree@nnsa.doe.gov
- NMMSS Operations Staff
 - NMMSS@nnsa.doe.gov
 - Contact list on NMMSS Website
 - Gary Hirsh, Team Leader

ACCURACY

PERFORMANCE

ACCOUNTABILITY

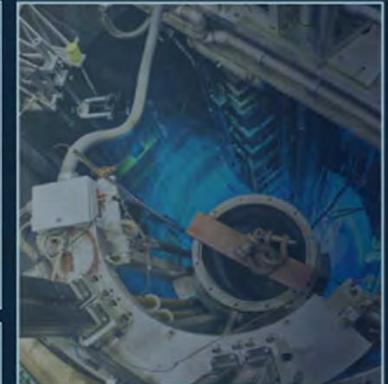


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Foreign Obligations

Rose Martyn

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Foreign Obligations Tracking – Why?

- US, Canada, Australia, etc. treaties/agreements for peaceful uses of uranium
- Exports tied to assurances of peaceful uses
- Obligation quantities are based on 741 transactions
- Annual reports provided by NMMSS to countries with agreements



Obligation Tracking

- Tracked by codes – increases with receipts, decreases with shipments
 - ❑ Receipts – Codes/quantities noted on 741 (Domestic)
 - ❑ Receipts – NRC notices for international shippers
 - ❑ Shipments – Codes based on obligations supplied – Noted on 741 (Domestic)
 - ❑ Shipments – Codes/quantities must be authorized on NRC Export License and based on receipts (International)

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NRC notice for import with foreign obligations

NRC Notice for Future Import

NRC has received the attached Annex I Parts A&B.

EUR 38/2013, Parts A & B, and

EUR 39/2013, Parts A & B

These notices are part of the annual forecast that your organization agreed to receive pursuant to the EURATOM/U.S. Nuclear cooperation agreement.

These notices include shipment dates, mass quantity, third country obligation requirements, among others. These notices are also subject to the EURATOM/U.S. Nuclear cooperation agreement and will be considered as part of the originally approved annual forecast for 2013.

Please let us know if you have any concerns about these notices. Otherwise, there is no need to reply back.

Respectfully,

Santiago Aguilar

Import/Export Licensing Analyst

Material Control and Accounting Branch

Nuclear Regulatory Commission

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NMMSS Obligation codes

NMMSS Obligation Codes – Updated September 2010

Transaction MB Description

Code Code

- 31 85 AUSTRALIA
- 32 86 CANADA
- 33 87 EURATOM*
- 34 88 JAPAN
- 35 89 PEOPLES' REPUBLIC OF CHINA
- 37 A8 SWITZERLAND
- 38 A1 ARGENTINA
- 39 A2 BRAZIL
- 40 A3 CHILE
- 70 B1 LES CENTRIFUGE ENRICHMENT/JAPAN
- 71 B2 AUSTRALIA/JAPAN/ LES CENTRIFUGE ENRICHMENT
- 72 B3 CANADA/JAPAN/ LES CENTRIFUGE ENRICHMENT
- 73 B4 EURATOM/JAPAN/ LES CENTRIFUGE ENRICHMENT
- 74 B5 AUSTRALIA/EURATOM/JAPAN/ LES CENTRIFUGEENRICHMENT
- 75 B6 CANADA/EURATOM/JAPAN/ LES CENTRIFUGE ENRICHMENT
- 76 B7 CHINA/JAPAN/ LES CENTRIFUGE ENRICHMENT
- 77 A9 AUSTRALIA/CANADA/EURATOM/JAPAN/ LES CENTRIFUGE ENRICHMENT

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NMMSS obligation Codes

NMMSS Obligations continued

- 81 94 AUSTRALIA/JAPAN
- 82 95 CANADA/JAPAN
- 83 96 EURATOM/JAPAN
- 84 97 AUSTRALIA/EURATOM/JAPAN
- 85 98 CANADA/EURATOM/JAPAN
- 86 99 CHINA/JAPAN
- 87 11 AUSTRALIA/CANADA
- 88 12 AUSTRALIA/CANADA/EURATOM
- 90 A4 LES CENTRIFUGE ENRICHMENT
- 91 91 AUSTRALIA/EURATOM
- 92 92 CANADA/EURATOM
- 93 A5 LES CENTRIFUGE ENRICHMENT/AUSTRALIA
- 94 A6 LES CENTRIFUGE ENRICHMENT/CANADA
- 95 A7 LES CENTRIFUGE ENRICHMENT/EURATOM
- WR 93 FORMER SOVIET UNION WEAPONS

*Euratom is comprised of the following 27 member states: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Hungary, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden and The United Kingdom

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Euratom Codes translated to NMMSS codes

| | | |
|---|-----------------------|----|
| A | US/Euratom | 33 |
| C | Canadian/Euratom | 92 |
| D | Canadian/US/Euratom | 92 |
| N | Euratom only | 33 |
| P | Euratom only | 33 |
| S | Australian/Euratom | 91 |
| T | Australian/US/Euratom | 91 |



Japan Obligation Codes

| | | |
|-------|---|----|
| AQUW | Australia (A) /England (Q)/US(U)/Euratom(W) | 84 |
| AU | Australia (A) /US(U) | 81 |
| C | Canada (C) | 82 |
| CU(O) | Canada (C)/ US(U(Old)) | 82 |
| CUW | Canada (C)/ US(U)/ Euratom (W) | 85 |
| FW | France (F)/ Euratom (W) | 83 |
| O | Other | 34 |
| U | US(U) | 34 |
| U(O) | US(U(Old)) | 34 |

New Japan-US bilateral agreement was concluded in 1988. (Old agreement was done in 1968)

US obligation items which was received from US after 1988 are coded as U (US(-New)).

US obligation items which was received between 1968 and 1988 are coded as U(O) (U(Old)).

In the viewpoint from Japan, these items has been controlled by new agreement items or old agreement items.



Issues

- Too many codes
- Fungibility not always accepted – must receive physical material before shipping obligation
- Problem shipping obligation when the balance is low and receipt has not occurred
- Correction documents are problematic, especially for both fabricator and utility
- Reporting MBR's is delayed due to reconciling each obligation code before submitting