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Instructions for the Preparation and Distribution of Material Status Reports

(DOE/NRC Forms 742 and 742C)

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Office of Nuclear Material Safety and Safeguards

ABSTRACT

U.S. Nuclear Regulatory Commission (NRC) regulations require each licensee who is authorized to possess special nuclear material (SNM) or obligated source material to prepare and submit, in computer-readable format, reports concerning SNM received, produced, possessed, transferred, consumed, disposed of, or lost. This NUREG contains the reporting instructions for licensees to follow in making these reports.

Paperwork Reduction Act Statement

The information collections contained in this NUREG are covered by Department Of Energy (DOE)/NRC Forms 742 and 742C, which the Office of Management and Budget (OMB) approved under approval numbers 3150-0004 and 3150-0058. The estimated burden per response to comply with this mandatory collection request is 2 hours for small licensees and 5 hours for large licensees to complete DOE/NRC Form 742 and 2 hours for small licensees and 6 hours for large licensees to complete DOE/NRC Form 742C. The information is required by NRC to fulfill its safeguards responsibilities, bilateral agreements, and responsibilities as a participant in the US/IAEA Safeguards Agreement. Send comments regarding burden estimates to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0004, 3150-0058). Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

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ABBREVIATIONS

A	addition to inventory
BI	beginning inventory
CFR	*Code of Federal Regulations*
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
EI	ending inventory
FA	facility attachment
IAEA	International Atomic Energy Agency
ICR	inventory change report
ICT	inventory change type
ID	inventory difference
IDC	
MBA	material balance area
MBR	material balance report
MUF	material unaccounted for
NMMSS	Nuclear Materials Management and Safeguards System
NRC	U.S. Nuclear Regulatory Commission
PIL	physical inventory list
Pu	plutonium
R	removal from inventory
RA	rounding adjustment
RIS	reporting identification symbol
SAMS	Safeguards Management Software
SNM	special nuclear material
TFA	transitional facility attachment
U	uranium
U.S. GOVT	United States Government

U.S. NUCLEAR REGULATORY COMMISSION
INSTRUCTIONS FOR THE PREPARATION AND DISTRIBUTION OF MATERIAL STATUS REPORTS

DOE/NRC FORMS 742, "MATERIAL BALANCE REPORT," AND 742C, "PHYSICAL INVENTORY LISTING"

1 INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) jointly use a Nuclear Materials Management and Safeguards System (NMMSS). This system is the U.S. national database used by DOE and NRC for tracking certain nuclear material.

Common reporting forms and formats are used to minimize the reporting burden on licensees[1] required to provide nuclear material data to one or both agencies in accordance with current regulations or contractual obligations. In this manner, licensees can file one report to meet the reporting requirements of both the NRC and DOE. Compliance with specific reporting requirements is monitored by the agency that requires the specific data. NRC regulations require that licensees submit the reports in computer-readable form. A licensee may use any blank blocks on the paper DOE/NRC forms for other business purposes.

DOE requires all NRC licensees to report to the NMMSS all receipts, transfers, and inventories of U.S. Government-owned, loaned, or leased material in their possession. Licensees must file a DOE/NRC Form 742, "Material Balance Report," and a DOE/NRC Form 742C, "Physical Inventory Listing," to report quantities of 0.5 or greater of the reporting unit specified in DOE Orders Series 470 (DOE Order 470.4, "Safeguards and Security Program," and DOE M 470.4-6, "Nuclear Material Control and Accountability").

1.1 Material Status Reports

DOE/NRC Forms 742 and 742C are the means for submitting material balance and inventory data to the NMMSS. The information must be completed in accordance with the instructions in this NUREG and must be submitted in computer-readable format. Instructions for creating the computer-readable submittal appear in NMMSS Report D-24, "Personal Computer Data Input for NRC Licensees."

Licensees use DOE/NRC Form 742 to report a summary of activity for a specified material within a given time period. The report conveys activities such as the beginning balance, shipments and receipts involving other facilities, how much material has decayed, how material has been downblended, and the ending balance. This information is useful to validate a facility's ending inventory.

Licensees use DOE/NRC Form 742C to report a facility's inventory as of a specified date. The report lists, for each material type category, the amount of material in the facility's possession or

[1] The term "licensee" here denotes an NRC or Agreement State licensee or an NRC certificate holder.

in transit to the facility at the time of the inventory process. The form can show each individual batch or summarize totals of "like" batches. The totals for each material type category must match the ending balance in the corresponding material balance report (DOE/NRC Form 742).

The NMMSS relies heavily on the quality of the data reported by the facilities involved in nuclear activities. The data submitted to the NMMSS are subject to evaluation according to the restrictions placed on nuclear activity by the policies of various governing agencies of the United States. The NMMSS accepts the data after they are verified as acceptable within the restrictions of the system.

1.2 Regulatory Authority

NRC regulations require each licensee who possessed during a reporting period special nuclear material (SNM) in a quantity totaling 1 gram or more of contained uranium (U)^{235}, U^{233}, or plutonium to prepare and submit in computer-readable format reports concerning SNM received, produced, possessed, transferred, consumed, disposed of, or lost. The reporting periods for facilities subject to Title 10, Section 74.51, "Nuclear Material Control and Accounting for Strategic Special Nuclear Material," of the *Code of Federal Regulations* (10 CFR 74.51) are October 1 to March 31 and April 1 to September 30 of each year. These reports must be filed within 30 days of the end of the period covered by the report, unless the NRC authorizes an alternate date. Reports for facilities subject to 10 CFR 74.19(c), 10 CFR 74.31(c)(5), 10 CFR 74.33(c)(4), or 10 CFR 74.33(c)(6) are to be made and filed within 60 days of beginning the physical inventory, unless the NRC authorizes an alternate date. If licensees are reporting pursuant to 10 CFR Part 75, "Safeguards on Nuclear Material—Implementation of U.S./IAEA Agreement," they are to dispatch reports as soon as possible but no later than 30 days from the start of the physical inventory taken as part of the licensee's material control and accounting procedures. All other licensees, including those subject to 10 CFR 150.17, "Submission to Commission of Source Material Reports," shall submit a report no later than March 31 of each year.

Licensees must complete a separate DOE/NRC Form 742 and 742C for each material type (E1, E2, E3, E4, 50, 70, 83, and 89) of SNM for which a reportable quantity is possessed or a reportable inventory change has occurred during the period. For SNM, reportable quantities are defined as 1 gram or more; for source material, the reportable quantity is 1 kilogram or more. For reporting purposes, quantities of 0.5 or more are to be rounded up to the next whole unit.

Each Federal or State licensee that possessed during a reporting period 1 kilogram or more of foreign obligated source material (material types 10, 81, and 88) must submit a statement of foreign obligated source material inventory. DOE/NRC Form 742 may be used. The reporting period is October 1 to September 30 of each year (unless the NRC authorizes an alternate period). The reports must be filed as specified in facility attachments (FAs) if the licensee is reporting pursuant to 10 CFR Part 75 for all source material and SNM.

In addition, each licensee that possesses, or that had possessed in the previous reporting period, 1 kilogram or more of uranium or thorium source material pursuant to the operation of enrichment services, downblending uranium that has an initial enrichment of the U^{235} isotope of 10 percent or more, or the fabrication of mixed-oxide fuels shall complete and submit DOE/NRC Forms 742 and 742C for all source material that the licensee has received, produced,

possessed, transferred, consumed, disposed of, or lost. These reports are to be submitted within 30 days of September 30 of each year or with the licensee's annual material balance reports required under 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste"; 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material"; and 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters under Section 274."

SNM and source reports shall be submitted for each reporting identification symbol (RIS) account, including all holding accounts.

Refer to DOE Orders 470.4 and DOE M 470.4-6 for U.S. Government-owned material holdings.

1.3 Preparation and Submission of DOE/NRC Forms 742 and 742C in Computer-Readable Format

NMMSS Report D-24 provides instructions for preparing DOE/NRC Forms 742 and 742C in computer-readable format as required for submittal. The Safeguards Management Software (SAMS) is a miniature version of the NMMSS. This software allows the user to import and export data; make edit checks; generate various reports; and create material balance, inventory data, and transaction data. It has the capability to export data into the required NMMSS predefined computer-readable format outlined in NMMSS Report D-24. The SAMS program may be obtained from the NMMSS operator free of charge.

All reporting forms must include proprietary information when necessary to provide an adequate response. An application to withhold such information from public disclosure may be made, and will be disposed of, in accordance with the provisions of 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding." If any of this information is of particular sensitivity, the licensee may request that the information not be physically transmitted to the International Atomic Energy Agency (IAEA). Such a request must refer to, and conform with, 10 CFR 75.12, "Communication of Information to IAEA."

Licensees can submit data to the NMMSS via the following three methods:

(1) Telephonic Transfers to the NMMSS

A licensee may submit DOE/NRC Forms 742 and 742C electronically by using a modem. To establish an electronic connection with the NMMSS, licensees must contact the NMMSS security officer to request the establishment of a connection with the direct link. If the facility is a valid facility for the type of link requested (classified or unclassified), the security officer will provide the requester with the appropriate forms to complete.

Upon receipt of the completed forms, the security officer will create a user identification and password and establish an account for the facility. The user identification and password will then be forwarded to the user facility along with a password acknowledgment form. The licensee will sign the acknowledgment form and return it to the security officer, who will then activate the user identification and password.

(2) Data Submittals on Computer Media

Licensees should submit DOE/NRC Forms 742 and 742C in computer-readable format unless reporting under 10 CFR 40.64(b). NMMSS Report D-24 provides instructions on packaging, data format requirements, acceptable media types, and the mailing address for the submittal of data on computer media.

(3) New or Modified Methods of Transferring Electronic Data

The NRC may authorize new or modified methods of transferring electronic DOE/NRC Form 742 and 742C data to the NMMSS. Licensees may confirm authorization to use additional methods for the transfer of these data by contacting the NMMSS operator's program administrator.

1.4 Documentation and Distribution

The completed DOE/NRC Forms 742 and 742C must be submitted to the NMMSS operator. Before submitting data, licensees should confirm the address of the NMMSS and the method of providing data by calling the NMMSS operator. Note that the specific documentation and distribution instructions depend on whether the completed DOE/NRC Form 742 or 742C contains classified or unclassified information.

Any DOE/NRC Form 742 or 742C that is classified must be documented and handled in accordance with all pertinent security requirements. All other submissions that are not classified are considered to be proprietary material control and accounting information, and licensees may request that it be withheld as defined by 10 CFR 2.390. Each person who is to receive a copy of the report must be verified as a qualified recipient before distribution. Licensees should confirm the address before sending documents to the NMMSS or other recipients. In addition, they should formally provide classification guidance to the NMMSS after a decision to classify, declassify, or make any change in previously submitted guidance. When submitting Safeguards Information, licensees should also submit a Concise Note Form 740M stating that the submission is Safeguards Information and should be handled in accordance with 10 CFR 73.21, "Requirements for the Protection of Safeguards Information."

Licensees should distribute the completed report as follows:

- Submit one copy of the completed report and all supporting subschedules and lists to the NMMSS. All RIS holders are encouraged to review their RIS information yearly and notify the NMMSS that the data are correct or make changes.

- Retain one copy for licensee files.

1.5 Reconciliation

Every reporting period, a reconciliation shall be performed between the data the licensee has reported to the NMMSS and the projected balances that the NMMSS has developed. The NMMSS operator provides reports of generated balances. This process shall be considered

complete when the licensee resolves any differences between the reported and the generated

balances, including those listed for foreign obligated materials. The reconciliation should be completed within 30 calendar days of when the licensee was notified of the discrepancy, and it should include all accounts held by the licensee, including holding accounts.

Facilities should ensure that their weight totals in DOE/NRC Form 742C equal the weight totals in DOE/NRC Form 742 for each material type. The totals in DOE/NRC Form 742C should be an arithmetic sum of the weights listed on the batch data lines of DOE/NRC Form 742C. Generally, the totals on DOE/NRC Forms 742 and 742C should agree with the values maintained and used at the site. However, if reported DOE/NRC Form 742 and 742C values differ from site-maintained values because of such issues as rounding because of different units of measurement/reporting, then the site should submit a concise note explaining the difference.

2 INSTRUCTIONS FOR COMPLETING DOE/NRC FORM 742, "MATERIAL BALANCE REPORT"

Licensees should complete DOE/NRC Form 742 in accordance with the instructions in this NUREG and in NMMSS Report D-24, as appropriate. NMMSS Report D-24 provides instructions and examples for the preparation of required electronic submittals to the NMMSS.

The following numbered instructions correspond to the numbered blocks and lines on DOE/NRC Form 742 to be completed by licensees.

1. NAME AND ADDRESS—Leave blank.

2. LICENSE NUMBER(S)—Leave blank.

3. REPORTING IDENTIFICATION SYMBOL (RIS)—Enter the RIS that has been assigned and under which the source material or SNM being reported is or was held. Submit a separate report for each RIS and any holding account.

4. REPORT PERIOD—Enter the inclusive dates. The beginning date for the reporting period must be the next consecutive date after the ending date of the previous report.

5. MATERIAL TYPE—Enter the appropriate material type code for the material being reported, as follows:

CODE	DESCRIPTION
10	Depleted uranium
E1	Uranium enriched greater than normal but less than 5 percent
E2	Uranium in enrichment of 5 percent or more but less than 20 percent
E3	Uranium in enrichment of 20 percent or more but less than 80 percent
E4	Uranium in enrichment of 80 percent or more
50	Plutonium
70	U^{233}
81	Normal uranium
83[2]	Plutonium $(Pu)^{238}$
88	Thorium
89	Uranium in cascade

Complete a separate DOE/NRC Form 742 for each SNM or source material type even in cases where two or more types are combined.

When U^{235} and U^{233} are mixed, report the total element weight of the mixture in the element weight column of both the U^{235} report and the U^{233} report, and reflect this fact in a concise note (DOE/NRC Form 740M) for each report.

[2] Report as Pu^{238} if the contained Pu^{238} is greater than 10 percent of total plutonium by weight. Otherwise, report as plutonium.

2.1 Section A, "Material Accountability"

PROCESS CODE—Enter process code A, C, or D; use process codes C and D to modify report data for only the current processing period:

- A refers to the initial entry of data.
- C refers to the replacement of data. Data may be replaced at any time before the close of the processing period in which the initial entry was made.
- D refers to the deletion of data. Data may be deleted at any time before the close of the processing period in which the initial entry was made.

Reported material balance reports may be modified for the current processing periods. Use process code C for replacement and D for deletion:

- Submit a form with the RIS, report period, material type, sequence number, and process code C with the unique identifier for the line to be replaced.
- Submit a form with the RIS, report period, material type, sequence number, and process code D with the unique identifier for the line to be deleted.
- Submit a form with the RIS, report period, material type with no sequence number, and process code D to delete all matching records.
- Submit a form with the RIS, report period, and process code D to delete the entire material balance within the reporting dates.

SEQUENCE NUMBER—All detail lines that contain data must have a sequence number. Enter a numerical value in sequential order beginning with 1. Do not repeat or skip numbers.

Use columns A and B to enter all numeric data by element and isotope weight.[3]

COLUMN A—ELEMENT WEIGHT[3]

Enter the total element weight of the SNM or source material being reported. If Pu^{238}, report to the nearest 0.1 gram. Report all other SNM to the nearest gram and all other source material to the nearest kilogram.

Optionally, if using XML format, source material may be reported to three decimal places; however, both shipper and receiver must report to the same decimal place. If reporting to three decimal places, the reporting unit is to the nearest thousandth of a kilogram. For example, both the shipper and receiver may report 1655 grams as 1.655 kilograms. However, for consistency, the licensee must continue to report to the same decimal place for that material type. If at any time during the stated material balance period, source material has been reported to the third

[3] Round up fractions of 0.5 or greater. If the quantity to be entered is less than 0.5 of the reporting unit, round down to the next whole reporting unit.

decimal on a transaction, the corresponding material balance report must be reported to the same decimal place for consistency.

COLUMN B—ISOTOPE WEIGHT[3]

In the case of enriched uranium or U^{233}, enter the weight of the isotope U^{235} or U^{233} as appropriate; in the case of plutonium, enter the weight of the isotopes Pu^{239} and Pu^{241}, and in the case of Pu^{238}, enter the weight of the isotope Pu^{238}. If Pu^{238}, report to the nearest 0.1 of a gram. If depleted uranium, enter the weight of the isotope U^{235} to the nearest kilogram. Make no entry for other source material.

8. BEGINNING INVENTORY—U.S. GOVT-OWNED—Enter the inventory of U.S. Government-owned SNM or source material as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 8 (columns A and B) must agree with the reconciled quantities on line 80 (ENDING INVENTORY) of the report submitted for the previous reporting period.

9. BEGINNING INVENTORY—NOT U.S. GOVT-OWNED—Enter the inventory of SNM or source material that is not owned by the U.S. Government as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 9 (columns A and B) must agree with the reconciled quantities on line 81 (ENDING INVENTORY) of the report submitted for the previous reporting period.

RECEIPTS

11. PROCUREMENT FROM DOE—Enter quantities of SNM (or source material) that have been purchased from DOE during the reporting period and reported to the NRC on DOE/NRC Form 741, “Nuclear Materials Transaction Report.” This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. SNM or source material quantities entered on line 11 are not entered on line 30.

13. PROCUREMENT FOR THE ACCOUNT OF DOE—Enter quantities of SNM (or source material) that have been purchased for the account of DOE during the reporting period and reported to the NRC on DOE/NRC Form 741. This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. SNM or source material quantities entered on line 13 are not entered on line 30.

14. DOD RETURNS—USE A—Leave blank.

15. DOD RETURNS—USE B—Leave blank.

16. DOD RETURNS—OTHER USES—Leave blank.

21. PRODUCTION—Enter the calculated net quantity of plutonium or U^{233} produced in the fuel and/or blanket material of a reactor during the reporting period. For licensees reporting under 10 CFR Part 75, if the fuel from which the plutonium or U^{233} produced was removed or discharged from the reactor during this reporting period, enter the discharged quantity on line 21 directly after the word “Production.”

Uranium mines and mills should account for uranium mined/milled as production for the reporting period.

22. FROM OTHER MATERIALS—Enter increases resulting from the introduction of another material into the material balance being reported. If the added quantity is the result of blending, burnup, or enrichment, identify the balance supplying the material by entering the appropriate inventory change type (ICT) code from the following list:

EN	Enriched to normal
ED	Enriched to depleted
NE	Normal to enriched
ND	Normal to depleted
DE	Depleted to enriched
DN	Depleted to normal
EE	Enriched (low/high) to enriched (high/low)

EE can refer to a change from low enrichment to high, or from high enrichment to low (i.e., any combination of the E1 through E4 material type codes).

Enrichment facilities not subject to 10 CFR Part 75 requirements may enter 22 to indicate a change type or as directed by the NRC. This can be any combination of material types (10, 20, 81, and 89), but it must be reported on each corresponding form for each material type.

30. RECEIPTS REPORTED TO NRC ON DOE/NRC 741 (NOT LISTED ELSEWHERE)—Enter the SNM or source material received from others and reported on DOE/NRC Form 741 and not listed elsewhere on this form. This may be done by listing individual receipts by RIS as reported on DOE/NRC Form 741 or a total of receipts from each individual RIS during the report period.

34. RECEIPTS—MISC.—Complete a DOE/NRC Form 741 reporting the cumulative miscellaneous receipts (ICT 34). This requirement includes nuclear material removed from inventory but now returned to inventory, if not accounted for elsewhere.

37. PROCUREMENT BY OTHERS—Leave blank.

38. DONATED MATERIAL—FROM U.S. GOVT TO OTHERS—Enter the amount of material received as a donation from the U.S. Government.

39. DONATED MATERIAL—FROM OTHERS TO U.S. GOVT—Enter the amount of material received as a donation by others to the account of the U.S. Government.

40. TOTAL—Enter the sums of columns A and B (lines 8 through 39).

REMOVALS

41. EXPENDED IN SPACE PROGRAMS—Leave blank.

42. SALES TO U.S. GOVT—Enter quantities of SNM or source material that have been sold to the U.S. Government during the reporting period and that have been reported to the NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 42 are not entered on line 51.)

43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT—Enter quantities of SNM that have been sold for the account of the U.S. Government during the reporting period and that have been reported to the NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 43 are not entered on line 51.)

44. DOD—USE A—Leave blank.

45. DOD—USE B—Leave blank.

46. DOD—OTHER USES—Leave blank.

47. EXPENDED IN U.S. GOVT TESTS—Leave blank.

48. ROUTINE TESTS—Leave blank.

49. SHIPPER-RECEIVER DIFFERENCE—Leave blank.

51. SHIPMENTS REPORTED TO NRC/DOE on DOE/NRC 741 (NOT LISTED ELSEWHERE)—Enter the quantities of SNM or source material shipped to others and reported to the NRC on DOE/NRC Form 741 but not listed elsewhere on this form. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period.

54. SHIPMENTS—MISC.—A DOE/NRC Form 741 reporting the cumulative miscellaneous shipments (ICT 54) must be completed. Facilities reporting pursuant to 10 CFR Part 75 should also include transfers to burials on this line rather than on line 74.

58. DONATED MATERIAL—TO U.S. GOVT BY OTHERS—Enter the amount of nuclear material removed by a donation to the U.S. Government.

59. DONATED MATERIAL—TO OTHERS BY THE U.S. GOVT—Enter the amount of nuclear material removed from a U.S. Government account by donation to others.

65. ROUNDING ADJUSTMENT—Enter the quantity of nuclear material that is removed (as a positive number) or added (as a negative number) to the inventory as a result of rounding activities encountered by the licensee.

71. DEGRADATION TO OTHER MATERIALS—Enter decreases resulting from the introduction of other material into the material balance being reported. If the decreased

quantity is the result of blending, burnup, or enrichment, identify the balance losing the material by entering the appropriate code from the list in line 22 above.

72. DECAY[4]—Enter the amount of radioactive decay that occurred during the reporting period for plutonium and Pu^{238}. When the SNM being reported is plutonium (material type 50), enter the amount of radioactive decay of the isotope Pu^{241} if the decay is 1 gram or more.

When the SNM being reported is Pu^{238}, enter the amount of radioactive decay of the isotope Pu^{238} if the decay is 0.1 gram or more.

73. FISSION AND TRANSMUTATION—Enter the calculated quantities of SNM lost by fission and transmutation in a reactor.

74. NORMAL OPERATIONAL LOSSES/MEASURED DISCARDS—Normal operational losses and measured discards are material that has been discarded, whether in the form of solids, liquids, or gases, as determined by measurement or by estimate on the basis of measurement.

All material that leaves the inventory through the process of normal operational losses/measured discards must be accounted for on a DOE/NRC Form 741 (if not previously reported in the period covered by this report). To account for these discards, use the established RIS types described below.

If the discard is to a lagoon or pond, append an L to the receiver's RIS. Measured discards to the atmosphere or ground should be documented as an onsite transfer with the licensee RIS as shipper and receiver. If the material goes off the inventory into a holding area (refer to the term "holding account" in the glossary in Appendix D) for later removal to a burial site, append an H to the receiver's RIS. When the material is eventually shipped to a burial site, the transfer series on the DOE/NRC Form 741 will show the shipper's RIS with an H appended and the appropriate V-series RIS in the receiver's block. Alternatively, the licensee may return the material from the holding account to the primary RIS and then ship the material from the primary RIS. Such activities must also be documented on DOE/NRC Form 741. Remove discards from inventory only when the material has been disposed of (a) by transfer to an authorized recipient or holding area as provided in the regulations in 10 CFR Part 40, "Domestic Licensing of Source Material," or 10 CFR Part 74, (b) as authorized pursuant to 10 CFR 20.2002, "Method for Obtaining Approval of Proposed Disposal Procedures," (c) as provided in 10 CFR 20.2003, "Disposal by Release into Sanitary Sewerage," 10 CFR 20.2004, "Treatment or Disposal by Incineration," or 10 CFR 20.1302, "Compliance with Dose Limits for Individual Members of the Public" (related to concentrations in effluents to unrestricted areas), or (d) as provided in corresponding Agreement State regulations. Note that the establishment of L or H accounts requires prior NRC approval.

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[4] Round up fractions of 0.5 or greater. If the quantity to be entered is less than 0.5 of the reporting unit, round down to the next whole reporting unit.

75. ACCIDENTAL LOSSES—Accidental loss is the irretrievable and inadvertent loss of a known quantity of SNM or source material as the result of an operational accident, as determined by measurement or by estimate on the basis of measurement.

76. APPROVED WRITE-OFFS—Leave blank.

77. INVENTORY DIFFERENCE—Inventory difference (ID) is the difference between physical inventory and book inventory after the book has been adjusted for all receipts and removals. A negative entry reports a gain. A positive entry reports a loss.

Reactors should not report an ID to the NMMSS. At the time of physical inventory, the value assigned to an SNM item (e.g., assembly, rod, fragment, sealed container) should be recorded identically on both the book inventory and the physical inventory. At a reactor, unlike at facilities that process SNM for some end use, adjustments to the values assigned to items (representing factors such as nuclear loss, decay, and production rounding) are explainable and should be reported as such.

80. ENDING INVENTORY—U.S. GOVT-OWNED—Enter the ending inventory that is owned by the U.S. Government as of the end of the last day of the period covered by this report.

81. ENDING INVENTORY—NOT U.S. GOVT-OWNED—Enter the ending inventory that is not owned by the U.S. Government as of the last day of the period covered by this report.

82. TOTAL—Enter the sums of lines 41 through 81. The totals reported on this line must agree with those on line 40.

83. BIAS ADJUSTMENT—The ID bias adjustment is that quantity of material that should be added to or subtracted from the ID quantity on line 77 to produce the best estimate of an unbiased ID. The adjustment represents the algebraic summation of the impact of measurement system biases on each component of the measured plant material balance. Include on this line the sum of the bias adjustments for the ID for the current period. This line should also include any prior period adjustments. Do not include bias adjustments that have already been applied to the source data in the material balance equation.

Note that the total ending inventories must match the total inventory reported on DOE/NRC Form 742C for a material type.

2.2 Section B, "Foreign Obligations"

The total amount of obligated nuclear material on hand as of the end of the reporting period must be accounted for by material type. It may not exceed the physical inventory.

The following column entries are required:

1. COUNTRY OF OBLIGATION—Enter the unique obligated code for each category of nuclear material. Appendix C lists the codes. The NMMSS operator can provide an updated listing.

2. ELEMENT WEIGHT—Enter the element weight (plutonium, uranium, or thorium) of the obligated SNM or source material in the reporting units specified for column A of Section A of the form (see Section 2.1 of this NUREG).

3. ISOTOPE WEIGHT—Enter the appropriate isotope weight; if enriched uranium or U^{233}, enter weight to the nearest gram of U^{235} or U^{233}, as appropriate. If plutonium, make no entry.

4. TOTAL WEIGHT—Enter the totals for columns 2 and 3. These totals represent the total obligated material at the facility. The total weight of obligated nuclear material may not exceed the total element and isotope weight reported on line 82.

2.3 Section C, "Certification"

SIGNATURE, TITLE, AND DATE—An authorized representative of the licensee shall sign the report, if submitted as a hard copy. If submitted electronically, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that only the authorized licensee personnel have prepared and issued the report.

3 INSTRUCTIONS FOR COMPLETING DOE/NRC FORM 742C, "PHYSICAL INVENTORY LISTING"

DOE/NRC Form 742C describes the status of the nuclear material reported on lines 80 and 81 of DOE/NRC Form 742, as of the end of the reporting period. There are two separate sets of procedures for filing DOE/NRC Form 742C, one for licensees required to report pursuant to 10 CFR 74.13, "Material Status Reports," or 10 CFR 150.17 and the other for licensees required to report under 10 CFR Part 75.

The instructions for completing the form are presented separately for the two categories of licensees.

3.1 Licensees Reporting Under 10 CFR 74.13 or 10 CFR 150.17

The following numbered instructions correspond to the numbered blocks or lines to be completed by licensees on DOE/NRC Form 742C. Source material with no foreign obligation and that is not used in enrichment services, downblending of uranium that has an initial enrichment of U^{235} of 10 percent or more, or the fabrication of mixed-oxide fuels is exempt from this requirement.

1. NAME AND ADDRESS—Leave blank.

2 REPORTING IDENTIFICATION SYMBOL (RIS)—Enter the RIS of the reporting facility.

3. INVENTORY DATE—Enter the ending date of the reporting period for the material balance report.

4. LICENSE NUMBER(S)—Leave blank.

5. BATCH DATA—The basic reporting unit is the batch, defined as "a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of separate items."

   A batch may have only one value for the following:

   - batch name
   - number of items
   - composition/facility code
   - key measurement point
   - measurement basis
   - scrap program
   - owner code

   In general, enter all of the data for one batch on one line of block 5 of DOE/NRC Form 742C. An exception is when a single discrete item contains more than one material (e.g., irradiated fuel containing both uranium and plutonium); in this case, use a

separate line for the data for each material, and enter on the first line all data common to all materials in the batch.

5a. MATERIAL TYPE CODE—Enter the appropriate SNM type code, as follows:

CODE	DESCRIPTION
10	Depleted uranium
E1	Uranium enriched greater than normal but less than 5 percent
E2	Uranium in enrichment of 5 percent or more but less than 20 percent
E3	Uranium in enrichment of 20 percent or more but less than 80 percent
E4	Uranium in enrichment of 80 percent or more
50	Plutonium
70	U^{233}
81	Normal uranium
83	Pu^{238}
88	Thorium
89	Uranium in cascade

5b. COMPOSITION/FACILITY (COMP/FAC) CODE—Enter the appropriate code from the following table.

CODE[5]	DESCRIPTION
860	In reactors and critical assemblies
861	In cooling basins
862	In conversion and fabrication processes
863	In recovery processes
864	Material not in process
865	Unirradiated scrap awaiting recovery
866	Unirradiated scrap awaiting disposal
899	Inventory total line

5c. ELEMENT WEIGHT—Enter the element weight as instructed for columns A and B of Section A of DOE/NRC Form 742 (see Section 2.1 of this NUREG).

5d. ISOTOPE WEIGHT—Enter the isotope weights as instructed for columns A and B of Section A of DOE/NRC Form 742 (see Section 2.1 of this NUREG).

5e. DOE PROJECT NO.—Make no entry unless reporting U.S. Government-owned material. See DOE Orders Series 470 for guidance.

5f. SCRAP PROGRAM—Leave blank.

5g. WEIGHT PERCENT ISOTOPE—Leave blank.

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[5] See Appendix A of this document for more detailed code instructions. Enrichment facilities not subject to the requirements in 10 CFR Part 75 are authorized to continue using the inventory composition codes that the NRC has authorized for use.

5h. OWNER CODE—This code describes the ownership of the material at the time it was in the shipper's possession. Enter the appropriate code from the list below:

G U.S. Government-owned
J Not U.S. Government-owned

Refer to the glossary in Appendix D of this document for further description of U.S. Government-owned material.

5i. SEQUENCE NUMBER—Enter the line number. Number lines consecutively beginning with 1. Do not repeat or skip numbers.

5j. BATCH NAME—No entry required. The licensee can use this block as desired.

5k. NO. OF ITEMS—No entry required. The licensee can use this block as desired.

5l. KEY MEASUREMENT POINT—Leave blank.

5m. MEASUREMENT I.D.—Leave blank.

5n. ENTRY STATUS—Leave blank.

5o. MATERIAL BALANCE AREA (MBA)—Leave blank.

5p. SITE IDC—Leave blank.

5q. PROCESS CODE—Enter process code A, C, or D; use process codes C and D to modify report data for only the current processing period:

- A refers to the initial entry of data.
- C refers to the replacement of data. Data may be replaced at any time before the close of the processing period in which the initial entry was made.
- D refers to the deletion of data. Data may be deleted at any time before the close of the processing period in which the initial entry was made.

Reported material balance reports may be modified for the current processing periods. Use process code C for replacement and D for deletion:

- Submit a form with the RIS, report period, material type, sequence number, and process code C with the unique identifier for the line to be replaced.
- Submit a form with the RIS, report period, material type, sequence number, and process code D with the unique identifier for the line to be deleted.

- Submit a form with the RIS, report period, material type with no sequence number, and process code D to delete all matching records.

- Submit a form with the RIS, report period, and process code D to delete the entire material balance within the reporting dates.

6. TOTALS—Enter the total inventory reported in the above categories for element weight (5c), isotope weight (5d), and the next sequence number. These total elemental and isotopic weights must agree with the sum of the quantities entered on lines 80 and 81 on the DOE/NRC Form 742 for each individual material type being reported.

7. SIGNATURE—An authorized representative of the licensee shall sign the report, if submitted as hard copy. Otherwise, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that only authorized licensee personnel have prepared and issued the report.

8. TITLE—Enter the title of the person submitting the report (required only for paper submission).

9. DATE—Enter the date the report was submitted (required only for paper submission).

Submit the data as specified in Section 1.3 of this document.

Refer to DOE Order 470.4 and DOE M 470.4-6 for U.S. Government-owned material holdings. Reporting data for U.S. Government-owned inventory in an expanded level of detail to comply with DOE reporting requirements also meets the NRC's inventory reporting requirements. The total of U.S. Government-owned inventory on which inventory data are reported must agree with the quantity entered on line 80 (ENDING INVENTORY—U.S. GOVT-OWNED) on DOE/NRC Form 742.

3.2 Licensees Reporting Under 10 CFR Part 75

The instructions in this section apply only to facilities that the NRC has notified by letter, as provided in 10 CFR 75.11, "Installation Information," that they have been identified under the U.S./IAEA Safeguards Agreement. Facilities that are required to submit initial inventory reports under 10 CFR 75.32, "Initial Inventory Report," and for which a physical inventory is not performed shall prepare DOE/NRC Form 742 according to the instructions in Section 2.1, completing lines 2, 3, 4, 80, 81, and 82. The information in the initial inventory report may be based upon the licensee's book record. Facilities reporting under this section must file subsequent material balance reports based upon a physical inventory and are required to attach a completed DOE/NRC Form 742C. Such reports are required with respect to each physical inventory taken as part of the material control and accounting procedures required by 10 CFR 75.21, "General Requirements." Unless otherwise specified by license conditions, such reports shall be dispatched as soon as possible and in any event within 30 days after the start of the physical inventory.

After completion of DOE/NRC Form 742C, the licensee should prepare the submittal in computer-readable format following the instructions in NMMSS Report D-24.

The following numbered instructions correspond to the numbered blocks or columns to be completed by licensees on the physical inventory listing:

1. NAME AND ADDRESS—Leave blank.

2. REPORTING IDENTIFICATION SYMBOL (RIS)—Enter the RIS of the reporting facility.

3. INVENTORY DATE—Enter the ending date for the period covered by the material balance report.

4. LICENSE NUMBER(S)—Leave blank.

5. BATCH DATA—The basic reporting unit is the batch, defined as "a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of separate items."

   A batch may have only one value for the following:

   - batch name
   - number of items
   - composition/facility code
   - key measurement point
   - measurement basis
   - scrap program
   - owner code

   In general, enter all of the data for one batch on one line of block 5 of DOE/NRC Form 742C. One exception is when a single discrete item contains more than one material (e.g., irradiated fuel containing both uranium and plutonium); in such a case, use a separate line for the data for each material, and enter on the first line all data common to all materials in the batch entered.

5a. MATERIAL TYPE—Enter the appropriate SNM type code, as follows:

CODE	DESCRIPTION
10	Depleted uranium
20[6]	Enriched uranium
50	Plutonium

[6] If reporting enriched uranium (material type 20), enter the appropriate enrichment level code in lieu of 20, as follows:

CODE	DESCRIPTION
E1	Greater than normal but less than 5 percent
E2	5 percent or more, but less than 20 percent
E3	20 percent or more, but less than 80 percent
E4	80 percent or more

70	U^{233}
81	Normal uranium
83	Pu^{238}
88	Thorium
89	Uranium in cascade

5b. COMPOSITION/FACILITY (COMP/FAC) CODE—Enter the appropriate code from the list developed during the formulation and negotiation of the FA or transitional facility attachment (TFA).

5c. ELEMENT WEIGHT—Enter the weight of the contained SNM or source material in the same units as specified for Section A of DOE/NRC Form 742 (see Section 2.1 of this document).

5d. ISOTOPE WEIGHT—Enter the isotope weight. If enriched uranium or U^{233}, enter the weight to the nearest gram of U^{235} or U^{233}, as appropriate. If plutonium, enter the sum of Pu^{239} and Pu^{241} to the nearest gram. If Pu^{238}, enter the weight of the isotope Pu^{238} to the nearest 0.1 gram. For depleted uranium, enter the U^{235} isotope weight to the nearest kilogram. Make no entry for other source material.

Optionally, if using XML format, source material may be reported to three decimal places; however, both shipper and receiver must report to the same decimal place. If reporting to three decimal places, the reporting unit is to the nearest thousandth of a kilogram. For example, both the shipper and receiver may report 1655 grams as 1.655 kilograms. However, the licensee must continue to report to the same decimal place for consistency.

5e. DOE PROJECT NO.—Make no entry unless reporting U.S. Government-owned material. See DOE Order Series 470 for guidance.

5f. SCRAP PROGRAM—Make no entry unless reporting U.S. Government-owned material. See DOE Order Series 470 for guidance.

5g. WEIGHT PERCENT ISOTOPE—Enter the weight percent of the isotope U^{235} if uranium enriched or depleted in U^{235}. If plutonium, enter the weight percent of the isotope Pu^{240}. If Pu^{238}, enter the weight percent of the isotope Pu^{238}. Report weight percent to at least two, but not more than four, decimal places, depending on the accuracy of the measurement method (for example, XX.XXXX%). For U^{233}, enter the parts per million of U^{232}. This column does not apply for normal uranium or thorium. Use separate lines to report material of different enrichments.

5h. OWNER CODE—This code describes the ownership of the material at the time it was in the shipper's possession. Enter the appropriate code from the list below:

G	U.S. Government-owned
J	Not U.S. Government-owned

Refer to the glossary in Appendix D of this document for further description of U.S. Government-owned material.

5i. SEQUENCE NUMBER—Enter the line number. Use consecutive numbers beginning with 1. Do not repeat or skip numbers.

5j. BATCH NAME—Enter a unique identifier for the batch as defined in block 5. If the batch is a discrete item with a unique identifying serial number or name (e.g., a fuel assembly, sealed source, or uranium hexafluroide cylinder), enter the identification number of the batch name. Note that the same batch name must not appear twice in the same report for the same material type.

5k . NO. OF ITEMS—If the batch is composed of a number of discrete items, enter the number of items. If the batch is bulk material, or if the number of items is not meaningful, enter 1. If more than one line is used to report data on the batch, enter the number of data items on each line.

5l. KEY MEASUREMENT POINT—Enter the code for the appropriate inventory key measurement point, as specified in the FA or TFA.

5m. MEASUREMENT I.D.—Fill in the three sections of this data field as described below.

5m1. MEASUREMENT BASIS—Enter the pertinent code from the following:

- N is used if batch data are based on measurements made in an IAEA MBA (RIS) other than the reporting MBA (RIS).
- L is used if batch data are based on measurements made in another IAEA MBA (RIS) and have been previously reported by the reporting MBA (RIS) in a DOE/NRC Form 741 or a DOE/NRC Form 742C.
- M is used if batch data are based on measurements made in the reporting IAEA MBA (RIS) and the data were not previously reported.
- T is used if batch data are based on measurements in the reporting IAEA MBA (RIS) and have been previously reported for that MBA (RIS) in a DOE/NRC Form 741 or 742C.

5m2. OTHER MEASUREMENT POINT—If the batch data are based on measurements made at a different key measurement point from the one specified above, enter the identification of the key measurement point at which the measurements were made.

5m3. MEASUREMENT METHOD—In some cases, the FA or TFA may provide codes for identifying the measurement method used. In such cases, enter the appropriate code.

5n. ENTRY STATUS—Enter N (for New entry).

5o. MBA—Leave blank.

5p. SITE IDC—Leave blank.

5q. PROCESS CODE—Enter process code A, C, or D; use process codes C and D to modify report data for only the current processing period:

- A refers to the initial entry of data.
- C refers to the replacement of data. Data may be replaced at any time before the close of the processing period in which the initial entry was made.
- D refers to the deletion of data. Data may be deleted at any time before the close of the processing period in which the initial entry was made.

Reported material balance reports may be modified for the current processing periods. Use process code C for replacement and D for deletion:.

- Submit a form with the RIS, report period, material type, sequence number, and process code C with the unique identifier for the line to be replaced.
- Submit a form with the RIS, report period, material type, sequence number, and process code D with the unique identifier for the line to be deleted.
- Submit a form with the RIS, report period, material type with no sequence number, and process code D to delete all matching records.
- Submit a form with the RIS, report period, and process code D to delete the entire material balance within the reporting dates.

6. TOTALS—Enter the total inventory reported in the above categories for element weight (5c), isotope weight (5d), and the next sequence number. This total must agree with the sum of the quantities entered on lines 80 and 81 on DOE/NRC Form 742.

7. SIGNATURE—An authorized representative of the licensee must sign the form, if submitted as hard copy. Otherwise, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that only authorized licensee personnel have prepared and issued the report.

8. TITLE—Enter the title of the person who signed the report (required only for paper submission).

9. DATE—Enter the date the report was signed (required only for paper submission).

APPENDIX A

COMPOSITION CODE INSTRUCTIONS

860 In Reactors and Critical Assemblies

Enter this code for special nuclear material (SNM) or source material in reactors, test piles, and critical assemblies, and for SNM being used for radiation studies. Use code 864 to report excess, spare, or transiently used fuel elements.

861 In Cooling Basins

Enter this code for irradiated SNM or source material in cooling basins held for future recovery or disposal (including reactor-produced SNM). Use this code also for spent fuel in dry storage.

862 In Conversion and Fabrication Processes

Enter this code for SNM or source material in conversion or fabrication processes that change its chemical or physical form. Sealed sources, unopened receipts, and ultimate products maintained under tamper-safe conditions are not considered to be "in process." Use this code also to reflect uranium within an enrichment plant (i.e., cascade).

863 In Recovery Processes

Enter this code for SNM or source material in a recovery process (i.e., nuclear material in the process of being separated from original fuel and other reactor products, and nuclear material in the process of being removed from undesired materials and converted to usable forms).

864 Materials Not in Process

Enter this code for SNM or source material in all unopened receipts, sealed sources, and ultimate products maintained under tamper-safe conditions.

865 Unirradiated Scrap Awaiting Recovery

Enter this code for SNM or source material in unirradiated scrap material that is awaiting in-house or offsite recovery.

866 Unirradiated Scrap Awaiting Disposal

Enter this code for SNM or source material in unirradiated scrap material that is awaiting transfer to an authorized disposal facility.

899 Inventory Total Line

Enter the cumulative total reported for a given material type.

APPENDIX B

DOE/NRC FORM 742, “MATERIAL BALANCE REPORT,” (BLANK) AND

DOE/NRC FORM 742C, “PHYSICAL INVENTORY LISTING” (BLANK)

DOE/NRC FORM 742
(09-2014)
MANDATORY DATA COLLECTION
AUTHORIZED BY 10 CFR 30, 40, 50, 70, 72, 74, 75, 150; Public Laws 83-703, 93-438, 95-91

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

MATERIAL BALANCE REPORT

APPROVED BY OMB: NO. 3150-0004 EXPIRES: 08/31/2017

Estimated burden per response to comply with this mandatory collection request: 2 hours for small licensees and 5 hours for large licensees. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0004), 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.

1. NAME AND ADDRESS	2. LICENSE NUMBER(S)	3. REPORTING IDENTIFICATION SYMBOL (RIS)
	4. REPORT PERIOD (MM/DD/YYYY) FROM / TO	5. MATERIAL TYPE (Submit separate report for each type)

SECTION A — MATERIAL ACCOUNTABILITY

PC	SEQ		A. ELEMENT WEIGHT	B. ISOTOPE WEIGHT
		8. BEGINNING INVENTORY -- U.S. GOVT-OWNED		
		9. BEGINNING INVENTORY -- NOT U.S. GOVT-OWNED		
		RECEIPTS		
		11. PROCUREMENT FROM DOE RIS		
		FROM:		
		13. PROCUREMENT -- FOR THE ACCOUNT OF DOE		
		14. DOD RETURNS -- USE A		
		15. DOD RETURNS -- USE B		
		16. DOD RETURNS -- OTHER USES		
		21. PRODUCTION		
		22. FROM OTHER MATERIALS a. ICT		
		b. ICT		
		c. ICT		
		30. RECEIPTS REPORTED TO DOE/NRC ON DOE/NRC 741 (not listed elsewhere)		
		FROM: RIS		
		34. RECEIPTS -- MISC		
		37. PROCUREMENT BY OTHERS		
		38. DONATED MATERIAL -- FROM U.S. GOVT TO OTHERS		
		39. DONATED MATERIAL -- FROM OTHERS TO U.S. GOVT		
		40. TOTAL (Lines 8-39)		
		REMOVALS		
		41. EXPENDED IN SPACE PROGRAMS		
		42. SALES TO U.S. GOVT RIS TO: RIS		
		TO:		
		43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT RIS		
		TO:		
		44. DOD -- USE A		
		45. DOD -- USE B		
		46. DOD -- OTHER USES		
		47. EXPENDED IN U.S. GOVT TESTS		
		48. ROUTINE TESTS		
		49. SHIPPER -- RECEIVER DIFFERENCE		
		51. SHIPMENTS REPORTED TO NRC/DOE ON NRC/DOE 741 *(not listed elsewhere)*		
		TO: RIS		

NRC FORM 742 (09-2014) Page 1

DOE/NRC FORM 742
(09-2014)
10 CFR 30, 40, 50, 70, 72, 74, 75, 150; Public Laws 83-703, 93-438, 95-91

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

MATERIAL BALANCE REPORT (Continued)

SECTION A (Continued) **MATERIAL ACCOUNTABILITY**

PC	SEQ		A. ELEMENT WEIGHT	B. ISOTOPE WEIGHT
		54. SHIPMENTS -- MISC		
		58. DONATED MATERIAL -- TO U.S. GOVT BY OTHERS		
		59. DONATED MATERIAL -- TO OTHERS BY U.S. GOVT		
		65. ROUNDING ADJUSTMENT		
		71. DEGRADATION TO OTHER MATERIALS a. ICT		
		b. ICT		
		72. DECAY		
		73. FISSION AND TRANSMUTATION		
		74. NORMAL OPERATIONAL LOSSES/MEASURED DISCARDS		
		75. ACCIDENTAL LOSSES		
		76. APPROVED WRITE-OFFS		
		77. INVENTORY DIFFERENCE		
		80. ENDING INVENTORY -- U.S. GOVT OWNED		
		81. ENDING INVENTORY -- NOT U.S. GOVT OWNED		
		82. TOTAL (Lines 41-81)		
		83. BIAS ADJUSTMENT		

SECTION B **FOREIGN OBLIGATIONS**

PC	SEQ	1. COUNTRY OF OBLIGATION	2. ELEMENT WEIGHT	3. ISOTOPE WEIGHT
		4. TOTAL WEIGHT		

SECTION C **CERTIFICATION**

To the best of my knowledge and belief, the information given above and in any attached schedules is true, complete, and correct.

SIGNATURE (See instructions for provisions on confidentiality)	TITLE	DATE

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL, AND/OR CRIMINAL PENALTIES. NRC REGULATIONSREQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001MAKES 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.

NRC FORM 742 (09-2014) Page 2

NRC FORM 742C
(09-2014)
MANDATORY DATA COLLECTION
AUTHORIZED BY 10 CFR 30, 40, 50, 70, 72, 74, 75, 150; Public Laws 83-703, 93-438, 95-91

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

PHYSICAL INVENTORY LISTING

APPROVED BY OMB: NO. 3150-0058 EXPIRES: 08/31/2017

Estimated burden per response to comply with this mandatory collection request: 2 hours for small licensees and 8 hours for large licensees. This information is required by NRC to fulfill its safeguards responsibilities, bilateral agreements, and responsibilities as a participant in the US/IAEA Safeguards Agreement. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0058), 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.

1. NAME AND ADDRESS

STREET ADDRESS

CITY | STATE | ZIP CODE | 3. INVENTORY DATE

2. REPORTING IDENTIFICATION SYMBOL (RIS)

4. LICENSE NUMBER(S)

5. BATCH DATA

a. MATERIAL TYPE	b. COMP/FAC CODE	c. ELEMENT WEIGHT	d. ISOTOPE WEIGHT	e. DOE PROJECT NO.	f. SCRAP PROGRAM	g. WEIGHT PER CENT ISOTOPE	h. OWNER CODE	i. SEQUENCE NUMBER	j. BATCH NAME	k. NO. OF ITEMS	l. KEY MEASURE POINT	m. MEASUREMENT I.D. MEAS BASIS	OTHER MEAS POINT	MEAS METHOD	n. ENTRY STATUS	o. MBA	p. SITE IDC	q. PROCESS CODE
6. TOTALS																		

7. SIGNATURE | 8. TITLE | 9. DATE

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.

NRC FORM 742C (09-2014) To the best of my knowledge and belief, the information given above and in any attached schedules is true, complete, and correct.

APPENDIX C

OBLIGATION CODES

Material Balance Code	Obligation Entity
85	Australia
86	Canada
87	EURATOM[1]
88	Japan
89	People's Republic of China
C1	Russia
A8	Switzerland
A1	Argentina
A2	Brazil
A3	Chile
D1	India
D2	Republic of Korea
D3	Taiwan
D4	Vietnam, Socialist Republic of
C4	Japan/Russia
C5	EURATOM/Russia
C6	Australia/Japan/Russia
C7	Canada/Japan/Russia
C8	EURATOM/Japan/Russia
B1	LES Centrifuge Enrichment/Japan
B2	Australia/Japan/LES Centrifuge Enrichment
B3	Canada/Japan/LES Centrifuge Enrichment
B4	EURATOM/Japan/LES Centrifuge Enrichment
B5	Australia/EURATOM/Japan/LES Centrifuge Enrichment
B6	Canada/EURATOM/Japan/LES Centrifuge Enrichment
B7	China/Japan/LES Centrifuge Enrichment
A9	Australia/Canada/EURATOM/Japan/LES Centrifuge Enrichment
94	Australia/Japan
95	Canada/Japan
96	EURATOM/Japan
97	Australia/EURATOM/Japan
98	Canada/EURATOM/Japan
99	China/Japan

[1] EURATOM comprises 28 member states: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the UK.

I1	Australia/Canada
I2	Australia/Canada/EURATOM
A4	LES Centrifuge Enrichment
91	Australia/EURATOM
92	Canada/EURATOM
A5	LES Centrifuge Enrichment/Australia
A6	LES Centrifuge Enrichment/Canada
A7	LES Centrifuge Enrichment/EURATOM
C2	Australia/Russia
C3	Canada/Russia
93	Former Soviet Union Weapons

Note: Updated information on valid obligations codes is available from the NMMSS staff.

APPENDIX D

GLOSSARY

GLOSSARY

Accountability—The determination of, and current record maintenance of, special nuclear material and source material quantities associated with transfers, measured discards, inventories, and inventory differences that might result from theft, diversion, or other unidentified loss mechanisms.

Agreement State—A State that has signed an agreement with the U.S. Nuclear Regulatory Commission under which the State regulates the use of byproduct, source, and small quantities of special nuclear material in that State.

Book inventory—The algebraic sum of the most recent physical inventory of the material balance area and of all inventory changes that have occurred since the physical inventory was taken.

Concise note—Additional nuclear material transaction, material balance, or inventory data supplied, in free text format, by facilities engaged in the import and/or export of nuclear materials, by facilities selected under the provisions of the agreement between the United States and the International Atomic Energy Agency (IAEA) for the application of safeguards in the U.S./IAEA Safeguards Agreement, any facility that would like to transmit any additional explanatory nuclear material information.

EURATOM—As of January 2008, an organization consisting of member countries Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

Foreign obligated nuclear material—Source material or special nuclear material that is subject to the terms and conditions of an agreement that the U.S. Government has entered into with another government or group of governments.

Highly enriched uranium (HEU)—Uranium enriched to 20 percent or greater in the isotope uranium-235.

Holding account—Typically identified by four-character reporting identification symbols (RISs) ending in the letter H assigned by the U.S. Nuclear Regulatory Commission. Some enrichment facilities have holding accounts identified by three-character RISs beginning with the letter V. Regardless of the RIS, these accounts usually acquired inventory from the shipment of licensed material from the primary RIS in use at the licensee. Typically, a small number of licensees have used these accounts for nuclear materials not expected to be immediately processed, reprocessed, or disposed. However the licensed nuclear materials in holding accounts are still in the licensee's possession and must be included in inventories reported to the Nuclear Materials Management and Safeguards System.

Inventory difference (ID)—The arithmetic difference between a book inventory and the corresponding physical inventory that closes the material balance period. It is calculated by subtracting the ending inventory (EI) and removals from inventory (R) from the beginning inventory (BI) and additions to inventory (A) during the period between physical inventories.

Mathematically, ID can be expressed as:

$$ID = (BI + A - R) - EI$$

where (BI + A - R) is the book inventory.

Inventory reconciliation—The adjustment of the book record quantity of both elements and fissile isotopes to reflect the results of a physical inventory. In a broad sense, inventory reconciliation involves the activities of calculating (1) the inventory difference (ID) for the material balance period in question, (2) the uncertainty value associated with the ID, (3) the active inventory for the period, and (4) any bias adjustment and/or prior period adjustment associated with the ID value.

Low-enriched uranium (LEU)—Uranium enriched below 20 percent in the isotope uranium-235.

Material balance period—The time span to which a material or physical inventory pertains.

Nuclear Materials Management and Safeguards System (NMMSS)—The national database and information system for select nuclear materials controlled by the U.S. Government. This system was created to support national safeguards and management objectives in domestic and international programs. The system stores data on nuclear material transactions and inventories and produces a wide range of printed reports for use by the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission and those licensees they regulate. The system is used to satisfy the nuclear materials information requirements of agreements between the United States and foreign entities. In addition, the system provides the reporting interface between facilities selected under the provisions of the U.S./International Atomic Energy Agency Safeguards Agreement.

Physical inventory—A physical determination of the quantity of nuclear material on hand at a given time. The methods of physical inventory and the associated measurements vary, depending on the material to be inventoried and the process involved. A book inventory between physical inventory takings can be determined based on the physical inventory quantity from the prior period together with all subsequent inventory changes associated with the determination of that book inventory. The primary purpose of a physical inventory is to confirm the absence of (or to detect) a loss, theft, or diversion of special nuclear material.

Report Period—Period inclusive of defined dates (e.g., October 1, 2005, through September 30, 2006). Reports for a reporting period, such as inventory, material balance, and related transactions reports, must assure that no dates are undocumented between the previous and current submittals.

Reporting identification symbol (RIS)—A unique combination of three or four letters that is assigned to each reporting organization by the U.S. Nuclear Regulatory Commission for the purpose of identification in the Nuclear Materials Management and Safeguards System database.

Shipper-receiver difference—The difference between what a shipper claims a shipment of special nuclear material contained and what the receiver claims it received, where both the shipper's and receiver's values are based on measurement.

Source material—Uranium or thorium, or any combination thereof, in any physical or chemical form; or ores that contain by weight 0.05 percent or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special nuclear material (SNM)—Plutonium, uranium-233, and uranium enriched in the isotope 233 or 235.

U.S. Government owned—Nuclear material that, while used by a licensee as part of its activities, is actually an asset owned by a Federal government agency such as the U.S. Department of Energy (DOE). These materials may be bulk materials, discrete radiation sources, or finished products. Such materials may represent a lease or loan arrangement with a Government agency. U.S. Government-owned materials are typically represented by an owner code of G on shipping information (i.e., DOE/U.S. Nuclear Regulatory Commission (NRC) Form 741) and inventory documentation (i.e., DOE/NRC Forms 742 and 742C). One way a licensee determine whether nuclear material in its possession is U.S. Government owned is to review the licensee's DOE/NRC Form 741 documentation listing the original receipt of the material. If such material is U.S. Government owned, it will have an owner code of G entered on the licensee's portion of the form.

APPENDIX E
SUPPLEMENTAL INSTRUCTIONS FOR POSSESSORS OF NUCLEAR MATERIAL OUTSIDE FACILITIES REPORTING PURSUANT TO THE U.S.-IAEA CARIBBEAN TERRITORIES SAFEGUARDS AGREEMENT MODIFIED SMALL QUANTITIES PROTOCOL (INFCIRC/366) ON DOE/NRC FORMS 742C AND 742

SUPPLEMENTAL INSTRUCTIONS FOR POSSESSORS OF NUCLEAR MATERIAL OUTSIDE FACILITIES REPORTING PURSUANT TO THE U.S.-IAEA CARIBBEAN TERRITORIES SAFEGUARDS AGREEMENT MODIFIED SMALL QUANTITIES PROTOCOL (INFCIRC/366) ON DOE/NRC FORMS 742C AND 742

1. Introduction

INFCIRC/366, "U.S.-IAEA Caribbean Territories Safeguards Agreement," is an agreement between the U.S. Government and the International Atomic Energy Agency (IAEA) for the application of safeguards in connection with the Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty). Under Article 60 of INFCIRC/366, the United States is obligated to submit an initial inventory report on all nuclear material in its Caribbean territories to IAEA. Nuclear material, by IAEA definition, includes all uranium, plutonium, and thorium holdings in the relevant territories in any chemical and/or physical form. U.S. Caribbean territories include Puerto Rico and the U.S. Virgin Islands, as defined in Title 10 of the *Code of Federal Regulations* (10 CFR) 75.4, "Definitions." The United States fulfills this reporting commitment via information collected in concert with the regulations contained in 10 CFR Part 75, ''Safeguards on Nuclear Material—Implementation of US/IAEA Agreement." This section provides instruction for licensees reporting inventory under 10 CFR 75.32, "Initial Inventory Report," and 10 CFR 75.35, "Material Status Reports," pursuant to INFCIRC/366.

2. General Instructions

The instructions in this appendix apply only to possessors of nuclear material outside facilities (possessors), as defined in 10 CFR 75.4. **Nuclear material outside facilities means nuclear material which is not in a facility, and is customarily used in amounts of one effective kilogram or less.** Possessors are required to submit initial inventory under 10 CFR 75.32 by preparing U.S. Department of Energy (DOE)/U.S. Nuclear Regulatory Commission (NRC) Form 742C according to the instructions in Section 2.1, "Instructions for Completing DOE/NRC Form 742C, 'Physical Inventory Listing.'" The information in the initial inventory report may be based on the licensee's book record. Possessors reporting under this section must file subsequent material balance reports based on a physical inventory and are required to attach a completed DOE/NRC Form 742 according to the instruction in Section 2.2, "Instructions for Completing DOE/NRC Form 742, 'Material Balance Report.'" Such reports are required with respect to each physical inventory taken as part of the material control and accounting procedures required by 10 CFR 75.21, "General Requirements." Unless otherwise specified by license conditions, such reports shall be dispatched as soon as possible and in any event within 30 days after the start of the physical inventory. The reports must be filed as specified in the facility attachment (FA) for possessors, which the NRC will provide to applicable licensees required to report pursuant 10 CFR 75.

Nuclear Material Management and Safeguards System (NMMSS) Report D-24 provides instructions and examples for the preparation of required electronic submittals to the NMMSS.

2.1. Instructions for Completing DOE/NRC Form 742C, "Physical Inventory Listing"

The following numbered instructions correspond to the numbered blocks or columns to be completed by the possessors on the physical inventory listing:

1. NAME AND ADDRESS—Leave blank.

2. REPORTING IDENTIFICATION SYMBOL (RIS)—Enter the RIS of the possessor of nuclear material outside facilities that is reporting inventory.

3. INVENTORY DATE—Enter the ending date for the period covered by the material balance report.

4. LICENSE NUMBER(S)—Leave blank.

5. BATCH DATA—The basic reporting unit is the batch, defined as "a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of separate items."

   A batch may have only one value for the following:

   - batch name
   - number of items
   - composition/facility code
   - key measurement point
   - measurement basis
   - scrap program
   - owner code

   In general, enter all of the data for one batch on one line of block 5 of DOE/NRC Form 742C. **All batches that contain a known weight of nuclear material, even if the element or isotope weight rounds to zero reportable units, is to be reported.** A concise note (Form 740M) shall be submitted to provide the actual measurement for any batch that rounds to zero reportable units.

5a. MATERIAL TYPE—Enter the appropriate special nuclear material (SNM) type code, as follows:

CODE	DESCRIPTION
10	Depleted uranium
20[1]	Enriched uranium
50	Plutonium
70	U^{233}
81	Normal uranium
83	Pu^{238}
88	Thorium
89	Uranium in cascade

5b. COMPOSITION/FACILITY (COMP/FAC) CODE—Enter the appropriate code from the list provided in the facility attachment.

5c. ELEMENT WEIGHT—Enter the weight of the contained SNM or source material in the same units as specified for Section A of DOE/NRC Form 742 (see Section 2.2 of this appendix).

5d. ISOTOPE WEIGHT—Enter the isotope weight. If enriched uranium or uranium-233 (U^{233}), enter the weight to the nearest gram of uranium-235 (U^{235}) or U^{233}, as appropriate. If plutonium, enter the sum of plutonium-239 (Pu^{239}) and plutonium-241 (Pu^{241}) to the nearest gram. If plutonium-238 (Pu^{238}), enter the weight of the isotope Pu^{238} to the nearest 0.1 gram. For natural and depleted uranium, enter the U^{235} isotope weight to the nearest gram, reporting to three decimal places. Make no entry for other source material.

5e. DOE PROJECT NO.—Make no entry unless reporting U.S. Government-owned material. See DOE Order Series 470 for guidance.

5f. SCRAP PROGRAM—Make no entry unless reporting U.S. Government-owned material. See DOE Order Series 470 for guidance.

5g. WEIGHT PERCENT ISOTOPE—Enter the weight percent of the isotope U^{235} if uranium enriched or depleted in U^{235}. If plutonium, enter the weight percent of the isotope plutonium-240 (Pu^{240}). If Pu^{238}, enter the weight percent of the isotope Pu^{238}. Report weight percent to at least two, but not more than four, decimal places, depending on the accuracy of the measurement method (for example, "XX.XXXX%"). For U^{233}, enter the

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[1] If reporting enriched uranium (material type 20), enter the appropriate enrichment level code in lieu of 20, as follows:

CODE	DESCRIPTION
E1	Greater than normal but less than 5 percent
E2	5 percent or more, but less than 20 percent
E3	20 percent or more, but less than 80 percent
E4	80 percent or more

parts per million of uranium-232 (U^{232}). For depleted uranium with an enrichment of 0.5 percent or less, if enrichment is unknown enter “0.3%”. This column does not apply for normal uranium or thorium. Use separate lines to report material of different enrichments.

5h. OWNER CODE—This code describes the ownership of the material at the time it was in the shipper’s possession. Enter the appropriate code from the list below:

G U.S. Government-owned
J Not U.S. Government-owned

Refer to the glossary in Appendix D to this document for further description of U.S. Government-owned material.

5i. SEQUENCE NUMBER—Enter the line number. Use consecutive numbers beginning with 1. Do not repeat or skip numbers.

5j. BATCH NAME—Enter a unique identifier for the batch as defined in block 5. If the batch is a discrete item with a unique identifying serial number or name (e.g., industrial radiography cameras, medical isotope generators), enter the identification number of the batch name. Note that the same batch name must not appear twice in the same report for the same material type.

5k . NO. OF ITEMS—If the batch is composed of a number of discrete items, enter the number of items. If the batch is bulk material, or if the number of items is not meaningful, enter 1. If more than one line is used to report data on the batch, enter the number of data items on each line.

5l. KEY MEASUREMENT POINT— Enter the appropriate code from the list provided in the facility attachment.

5m. MEASUREMENT I.D.— Enter the appropriate code from the list provided in the facility attachment.

5m1. MEASUREMENT BASIS— Enter the appropriate code from the list provided in the facility attachment.

5m2. OTHER MEASUREMENT POINT— Enter the appropriate code from the list provided in the facility attachment.

5m3. MEASUREMENT METHOD— Enter the appropriate code from the list provided in the facility attachment.

5n. ENTRY STATUS—Enter N (for New entry).

5o. MBA—Leave blank.

5p. SITE IDC—Leave blank.

5q. PROCESS CODE—Enter process code A, C, or D; use process codes C and D to modify report data for only the current processing period:

- A refers to the initial entry of data.
- C refers to the replacement of data. Data may be replaced at any time before the close of the processing period in which the initial entry was made.
- D refers to the deletion of data. Data may be deleted at any time before the close of the processing period in which the initial entry was made.

Reported material balance reports may be modified for the current processing periods. Use process code C for replacement and D for deletion:

- Submit a form with the RIS, report period, material type, sequence number, and process code C with the unique identifier for the line to be replaced.
- Submit a form with the RIS, report period, material type, sequence number, and process code D with the unique identifier for the line to be deleted.
- Submit a form with the RIS, report period, material type with no sequence number, and process code D to delete all matching records.
- Submit a form with the RIS, report period, and process code D to delete the entire material balance within the reporting dates.

6. TOTALS—Enter the total inventory reported in the above categories for element weight (5c), isotope weight (5d), and the next sequence number. This total must agree with the sum of the quantities entered on lines 80 and 81 on DOE/NRC Form 742.

7. SIGNATURE—An authorized representative of the licensee must sign the form, if submitted as hard copy. Otherwise, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that only authorized licensee personnel have prepared and issued the report.

8. TITLE—Enter the title of the person who signed the report (required only for paper submission).

DATE—Enter the date the report was signed (required only for paper submission).

2.2. Instructions for Completing DOE/NRC Form 742, "Material Balance Report"

The following numbered instructions correspond to the numbered blocks and lines on DOE/NRC Form 742 to be completed by licensees.

1. NAME AND ADDRESS—Leave blank.

2. LICENSE NUMBER(S)—Leave blank.

3. REPORTING IDENTIFICATION SYMBOL (RIS)—Enter the RIS that has been assigned and under which the source material or SNM being reported is or was held. Submit a separate report for each RIS and any holding account.

4. REPORT PERIOD—Enter the inclusive dates. The beginning date for the reporting period must be the next consecutive date after the ending date of the previous report.

5. MATERIAL TYPE—Enter the appropriate material type code for the material being reported, as follows:

CODE	DESCRIPTION
10	Depleted uranium
E1	Uranium enriched greater than normal but less than 5 percent
E2	Uranium in enrichment of 5 percent or more but less than 20 percent
E3	Uranium in enrichment of 20 percent or more but less than 80 percent
E4	Uranium in enrichment of 80 percent or more
50	Plutonium
70	U^{233}
81	Normal uranium
83[2]	Pu^{238}
88	Thorium
89	Uranium in cascade

Complete a separate DOE/NRC Form 742 for each SNM or source material type even in cases where two or more types are combined.

When U^{235} and U^{233} are mixed, report the total element weight of the mixture in the element weight column of both the U^{235} report and the U^{233} report, and reflect this fact in a concise note (DOE/NRC Form 740M) for each report.

Section A, "Material Accountability"

PROCESS CODE—Enter process code A, C, or D; use process codes C and D to modify report data for only the current processing period:

- A refers to the initial entry of data.
- C refers to the replacement of data. Data may be replaced at any time before the close of the processing period in which the initial entry was made.
- D refers to the deletion of data. Data may be deleted at any time before the close of the processing period in which the initial entry was made.

[2] Report as Pu^{238} if the contained Pu^{238} is greater than 10 percent of total plutonium by weight. Otherwise, report as plutonium.

Reported material balance reports may be modified for the current processing periods. Use process code C for replacement and D for deletion:

Submit a form with the RIS, report period, material type, sequence number, and process code C with the unique identifier for the line to be replaced.

- Submit a form with the RIS, report period, material type, sequence number, and process code D with the unique identifier for the line to be deleted.

- Submit a form with the RIS, report period, material type with no sequence number, and process code D to delete all matching records.

- Submit a form with the RIS, report period, and process code D to delete the entire material balance within the reporting dates.

SEQUENCE NUMBER—All detail lines that contain data must have a sequence number. Enter a numerical value in sequential order beginning with 1. Do not repeat or skip numbers.

Use columns A and B to enter all numeric data by element and isotope weight.[3]

COLUMN A—ELEMENT WEIGHT[3]

Enter the total element weight of the SNM or source material being reported. If Pu^{238}, report to the nearest 0.1 gram. Report all other SNM to the nearest gram and all other source material to the nearest kilogram.

COLUMN B—ISOTOPE WEIGHT[3]

In the case of enriched uranium or U^{233}, enter the weight of the isotope U^{235} or U^{233} as appropriate. In the case of plutonium, enter the weight of the isotopes Pu^{239} and Pu^{241}, and in the case of Pu^{238}, enter the weight of the isotope Pu^{238}. If Pu^{238}, report to the nearest 0.1 of a gram. If natural or depleted uranium, enter the weight of the isotope U^{235} to the nearest gram. Make no entry for other source material.

8. BEGINNING INVENTORY—U.S. GOVT-OWNED—Enter the inventory of U.S. Government-owned SNM or source material as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 8 (columns A and B) must agree with the reconciled quantities on line 80 (ENDING INVENTORY) of the report submitted for the previous reporting period.

9. BEGINNING INVENTORY—NOT U.S. GOVT-OWNED—Enter the inventory of SNM or source material that is not owned by the U.S. Government as of the beginning of business on the first day of the period covered by the report. The quantities reported on line 9 (columns A and B) must agree with the reconciled quantities on line 81 (ENDING INVENTORY) of the report submitted for the previous reporting period.

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[3] Round up fractions of 0.5 or greater. If the quantity to be entered is less than 0.5 of the reporting unit, round down to the next whole reporting unit.

RECEIPTS

11. PROCUREMENT FROM DOE—Enter quantities of SNM (or source material) that have been purchased from DOE during the reporting period and reported to the NRC on DOE/NRC Form 741, "Nuclear Materials Transaction Report." This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. SNM or source material quantities entered on line 11 are not entered on line 30.

13. PROCUREMENT FOR THE ACCOUNT OF DOE—Enter quantities of SNM (or source material) that have been purchased for the account of DOE during the reporting period and reported to the NRC on DOE/NRC Form 741. This may be done by listing individual receipts for each individual RIS as reported on DOE/NRC Form 741 or a total of receipts for each individual RIS during the reporting period. SNM or source material quantities entered on line 13 are not entered on line 30.

14. DOD RETURNS—USE A—Leave blank.

15. DOD RETURNS—USE B—Leave blank.

16. DOD RETURNS—OTHER USES—Leave blank.

21. PRODUCTION—Leave blank.

22. FROM OTHER MATERIALS—Leave blank.

30. RECEIPTS REPORTED TO NRC ON DOE/NRC 741 (NOT LISTED ELSEWHERE)—Enter the SNM or source material received from others and reported on DOE/NRC Form 741 and not listed elsewhere on this form. This may be done by listing individual receipts by RIS as reported on DOE/NRC Form 741 or a total of receipts from each individual RIS during the report period.

34. RECEIPTS—MISC.—Complete a DOE/NRC Form 741 reporting the cumulative miscellaneous receipts (ICT 34). This requirement includes nuclear material removed from inventory but now returned to inventory, if not accounted for elsewhere.

37. PROCUREMENT BY OTHERS—Leave blank.

38. DONATED MATERIAL—FROM U.S. GOVT TO OTHERS—Enter the amount of material received as a donation from the U.S. Government.

39. DONATED MATERIAL—FROM OTHERS TO U.S. GOVT—Enter the amount of material received as a donation by others to the account of the U.S. Government.

40. TOTAL—Enter the sums of columns A and B (lines 8 through 39).

REMOVALS

41. EXPENDED IN SPACE PROGRAMS—Leave blank.

42. SALES TO U.S. GOVT—Enter quantities of SNM or source material that have been sold to the U.S. Government during the reporting period and that have been reported to the NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 42 are not entered on line 51.)

43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT—Enter quantities of SNM that have been sold for the account of the U.S. Government during the reporting period and that have been reported to the NRC on DOE/NRC Form 741. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period. (SNM or source material quantities entered on line 43 are not entered on line 51.)

44. DOD—USE A—Leave blank.

45. DOD—USE B—Leave blank.

46. DOD—OTHER USES—Leave blank.

47. EXPENDED IN U.S. GOVT TESTS—Leave blank.

48. ROUTINE TESTS—Leave blank.

49. SHIPPER–RECEIVER DIFFERENCE—Leave blank.

51. SHIPMENTS REPORTED TO NRC/DOE on DOE/NRC 741 (NOT LISTED ELSEWHERE)—Enter the quantities of SNM or source material shipped to others and reported to the NRC on DOE/NRC Form 741 but not listed elsewhere on this form. This may be done by listing individual shipments by RIS as reported on DOE/NRC Form 741 or a total of shipments to each individual RIS during the reporting period.

54. SHIPMENTS—MISC.—A DOE/NRC Form 741 reporting the cumulative miscellaneous shipments (ICT 54) must be completed. Possessors reporting pursuant to 10 CFR Part 75 should also include transfers to burials on this line rather than on line 74.

58. DONATED MATERIAL—TO U.S. GOVT BY OTHERS—Enter the amount of nuclear material removed by a donation to the U.S. Government.

59. DONATED MATERIAL—TO OTHERS BY THE U.S. GOVT—Enter the amount of nuclear material removed from a U.S. Government account by donation to others.

65. ROUNDING ADJUSTMENT—Enter the quantity of nuclear material that is removed (as a positive number) or added (as a negative number) to the inventory as a result of rounding activities encountered by the licensee.

71. DEGRADATION TO OTHER MATERIALS—Enter decreases resulting from the introduction of other material into the material balance being reported. If the decreased quantity is the result of blending, burnup, or enrichment, identify the balance losing the material by entering the appropriate code from the list in line 22 above.

72. DECAY[4]—Enter the amount of radioactive decay that occurred during the reporting period for plutonium and Pu^{238}. When the SNM being reported is plutonium (material type 50), enter the amount of radioactive decay of the isotope Pu^{241} if the decay is 1 gram or more.

When the SNM being reported is Pu^{238}, enter the amount of radioactive decay of the isotope Pu^{238} if the decay is 0.1 gram or more.

73. FISSION AND TRANSMUTATION—Enter the calculated quantities of SNM lost by fission and transmutation in a reactor.

74. NORMAL OPERATIONAL LOSSES/MEASURED DISCARDS—Normal operational losses and measured discards are material that has been discarded, whether in the form of solids, liquids, or gases, as determined by measurement or by estimate on the basis of measurement.

All material that leaves the inventory through the process of normal operational losses/measured discards must be accounted for on a DOE/NRC Form 741 (if not previously reported in the period covered by this report). To account for these discards, use the established RIS types described below.

If the discard is to a lagoon or pond, append an L to the receiver's RIS. Measured discards to the atmosphere or ground should be documented as an onsite transfer with the licensee RIS as shipper and receiver. If the material goes off the inventory into a holding area (refer to the term "holding account" in the glossary in Appendix D) for later removal to a burial site, append an H to the receiver's RIS. When the material is eventually shipped to a burial site, the transfer series on the DOE/NRC Form 741 will show the shipper's RIS with an H appended and the appropriate V-series RIS in the receiver's block. Alternatively, the licensee may return the material from the holding account to the primary RIS and then ship the material from the primary RIS. Such activities must also be documented on DOE/NRC Form 741. Remove discards from inventory only when the material has been disposed of (1) by transfer to an authorized recipient or holding area as provided in the regulations in 10 CFR Part 40, "Domestic Licensing of Source Material," or 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material," (2) as authorized pursuant to 10 CFR 20.2002, "Method for

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[4] Round up fractions of 0.5 or greater. If the quantity to be entered is less than 0.5 of the reporting unit, round down to the next whole reporting unit.

Obtaining Approval of Proposed Disposal Procedures," (3) as provided in 10 CFR 20.2003, "Disposal by Release into Sanitary Sewerage," 10 CFR 20.2004, "Treatment or Disposal by Incineration," or 10 CFR 20.1302, "Compliance with Dose Limits for Individual Members of the Public" (related to concentrations in effluents to unrestricted areas), or (4) as provided in corresponding Agreement State regulations. Note that the establishment of L or H accounts requires prior NRC approval.

75. ACCIDENTAL LOSSES—Accidental loss is the irretrievable and inadvertent loss of a known quantity of SNM or source material as the result of an operational accident, as determined by measurement or by estimate on the basis of measurement.

76. APPROVED WRITE-OFFS—Leave blank.

77. INVENTORY DIFFERENCE—Inventory difference (ID) is the difference between physical inventory and book inventory after the book has been adjusted for all receipts and removals. A negative entry reports a gain. A positive entry reports a loss.

80. ENDING INVENTORY—U.S. GOVT-OWNED—Enter the ending inventory that is owned by the U.S. Government as of the end of the last day of the period covered by this report.

81. ENDING INVENTORY—NOT U.S. GOVT-OWNED—Enter the ending inventory that is not owned by the U.S. Government as of the last day of the period covered by this report.

82. TOTAL—Enter the sums of lines 41 through 81. The totals reported on this line must agree with those on line 40.

83. BIAS ADJUSTMENT—The ID bias adjustment is that quantity of material that should be added to or subtracted from the ID quantity on line 77 to produce the best estimate of an unbiased ID. The adjustment represents the algebraic summation of the impact of measurement system biases on each component of the measured plant material balance. Include on this line the sum of the bias adjustments for the ID for the current period. This line should also include any prior period adjustments. Do not include bias adjustments that have already been applied to the source data in the material balance equation.

Note that the total ending inventories must match the total inventory reported on DOE/NRC Form 742C for a material type.

Section B, "Foreign Obligations"

This section only applies to licensees that possess obligated nuclear material in their inventory within a reporting period. **This section does not apply to licensees that have not possessed or transferred (received or shipped) foreign obligated material within a reporting period.**

The total amount of obligated nuclear material in inventory as of the end of the reporting period must be accounted for by material type. It may not exceed the total amount of physical

inventory for a given material type, also known as a "negative obligations balance." Facilities should use especial care to avoid a negative obligations balance at the time of facility reconciliation. The NMMSS may report a negative obligations balance for a facility at any given time within a material balance period because of the delay in reporting shipments versus receipts; however, the NMMSS will not be able to reconcile a facility for a material balance period until the foreign obligations at the facility is balanced.

The following column entries are required:

1. COUNTRY OF OBLIGATION—Enter the unique obligated code for each category of nuclear material. Appendix C to this document lists the codes. The NMMSS operator can provide an updated listing.

2. ELEMENT WEIGHT—Enter the element weight (plutonium, uranium, or thorium) of the obligated SNM or source material in the reporting units specified for column A of Section A of the form (see Section 2.1 of this NUREG).

3. ISOTOPE WEIGHT—Enter the appropriate isotope weight; if enriched uranium or U^{233}, enter weight to the nearest gram of U^{235} or U^{233}, as appropriate. If plutonium, make no entry.

4. TOTAL WEIGHT—Enter the totals for columns 2 and 3. These totals represent the total obligated material at the facility. The total weight of obligated nuclear material may not exceed the total element and isotope weight reported on line 82.

Section C, "Certification"

SIGNATURE, TITLE, AND DATE—An authorized representative of the licensee shall sign the report, if submitted as a hard copy. If submitted electronically, each licensee must establish internal procedures to ensure that the information provided in the report is accurate and that only the authorized licensee personnel have prepared and issued the report.