


Nuclear Materials Management and Safeguards System (NMMSS)

User Guide



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Section 1

Introduction

1.1 System Description

The Nuclear Materials Management and Safeguards System (NMMSS) is the U.S. government's information system containing current and historic data on the possession, use, and shipment of nuclear materials. This centralized database contains accounting data and other related nuclear industry information collected from government and commercial nuclear facilities and provides output reports to those facilities and other interested parties, primarily U.S. government offices charged with the management and safeguarding of nuclear materials. All data reported to the NMMSS is retained on directly accessible files and is available for producing reports for its users. As many as 1,000 output reports – routine and requested – are distributed monthly to nuclear facilities and other users of the data. As the official central U.S. government nuclear materials accounting system, the NMMSS satisfies many users nationwide and also materially assists the U.S. government in its monitoring of nuclear materials covered by international nuclear nonproliferation agreements.

1.2 Documentation and Reporting

All Reporting Identification Symbol (RIS) nuclear material transactions, material balances, and inventories are documented in accordance with the instructions provided in this User Guide. The NMMSS should be used to accumulate and distribute information concerning nuclear materials transactions, material balances, and inventories. Submissions should be made in the times specified by DOE directives. The national database should provide nuclear materials information relating to safeguards, materials management and production, inventory quantities and valuations, and other information requested or required by DOE and NRC. The national database also serves as the centralized reporting facility to provide the information required under the provisions of the United States/International Atomic Energy Agency (IAEA) Safeguards Agreement and required foreign obligations reporting.

All NMMSS data submissions that are mailed should be sent to the following,

Classified Inner Envelope: ATTN: <i>(Intended Recipient)</i> U. S. Department of Energy P. O. Box A Germantown, MD 20875-0963	Classified Outer Envelope: ATTN: <i>(HS-1.22 & Intended Recipient)</i> U. S. Department of Energy P. O. Box A Germantown, MD 20875-0963	Unclassified Address: HS-1.22/NMMSS U. S. Department of Energy 1000 Independence Ave.,SW Washington, DC 20585
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The correct manuals to use when reporting nuclear material information to NMMSS follows,

- (1) NMMSS User Guide 1.0 is used to report all United States (U.S.) Government owned (owner code G) nuclear materials and non-Government owned (owner code J) nuclear materials located on a DOE site. See Section 2.3, Reportable Elements and Isotopes/ Weight Units/ Rounding.
- (2) NRC NUREG-BR 0006 and NRC NUREG-0BR0007 are used to report non-Government owned (owner code J) nuclear materials located at a licensee facility.
- (3) Facilities, projects, and programs under the cognizance of the Office of Civilian Radioactive Waste Management subject to NRC regulation must use the rules, standards, and criteria specified by the NRC or the NRC Agreement State.

1.3 NMMSS Forms

Data collection forms identified and described in this document (See Appendix A – NMMSS Forms) or the electronic equivalent are used to document and report nuclear materials transactions, material balances, and inventories in accordance with the instructions provided in the NMMSS User Guide.

Any computer-generated form should contain all information necessary for proper documentation and reporting of nuclear materials transactions, material balances and inventories. Samples of the paper forms are provided in Appendix A for informational purposes. The paper forms that are used are available from the Office of Resource Management NMMSS staff and online at the DOE Directives website (www.directives.doe.gov).

1.4 Use of Reporting Identification Symbol (RIS)

Data entered into the NMMSS is keyed to sets of RISs. Detailed information on the establishment, maintenance, and deactivation of an individual RIS is provided in Section 15 of the NMMSS User Guide.

Unless a shipment is covered by one of the exclusions (e.g., shipments to DoD), in other DOE Orders or Manuals, or other agreements, reportable quantities of accountable nuclear material are shipped only to facilities with a valid RIS. Following annual review of RIS information, cognizant DOE line management provide to the Office of Resource Management a locally generated memorandum verifying the information listed for the RISs under their purview, or noting any changes. The memorandum may be submitted via facsimile, e-mail, or online, as appropriate. The Office of Resource Management NMMSS staff makes an updated copy of the RIS directory available on an annual basis.

1.5 Corrections to Data Submitted

Corrections of data previously submitted to NMMSS and found to be in error must be submitted to NMMSS within 1 working day following verbal notification of the error.

1.6 Reconciliation of Facility Inventory Data with NMMSS

Reconciliation of inventory data is required of facilities following September submissions. The process to be followed is set forth in Section 13, Inventory Reporting.

1.7 Classification of NMMSS Information

Data submitted to NMMSS must be classified, marked, transmitted, and handled commensurate with DOE M 470.4-4, *Information Security*, DOE M 475.1-1B, *Manual for Identifying Classified Information*, and applicable DOE classification guidance.

Classified information is exempt from public disclosure under the Freedom of Information Act (FOIA). (See 5 U.S.C. 552.) Unclassified information collected in NMMSS is subject to public disclosure. Exemption from disclosure can be requested. (See exemption categories in DOE 471.3-1, *Guide to Identifying Official Use Only Information*, dated 4-9-03.) A respondent may specifically request that data be withheld under the applicable FOIA exemption; however, the final determination with regard to disclosure or nondisclosure of information is made by DOE. DOE regulations for handling proprietary information of a private business, foreign government, or an international organization [10 CFR 1004.11(b)] allow a respondent to advise DOE that data submitted on the forms should not be made available to the public. A new written justification need not be submitted each time data is submitted if the respondent's views with regard to the confidentiality of the information requested have not changed.

1.8 NMMSS Support

Assistance, comments and inquiries may be directed to (e-mailto:NMMSS@hq.doe.gov) the following address.

Office of Information Management
HS-1.22/ Germantown Building
U. S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
Attn: NMMSS

1.9 Specifications for Software and Hardware

Software and hardware systems used to implement NMMSS follow guidelines promulgated by the DOE CIO's office in accordance with OMB Circular A-130 and the Clinger-Cohen Act of 1996. One of the goals of these standards is to ensure compatibility of systems and databases and thereby decrease the costs associated with non-standard or incompatible systems.

1.10 NMMSS Program Management and Quality Control

The DOE Chief Information Office (CIO) and the DOE Management Control Program provide information concerning quality assurance for the NMMSS database and program. (See DOE O 413.1A, *Management Control Program*, dated 4-18-02.) In the CIO's Office, the DOE Information Architecture program helps ensure compliance with OMB Circular A-130, *Management of Federal Information Resources* (2003) and the Clinger-Cohen Act of 1996 by promoting standard architectural practices, providing a framework for corporate systems modernization, and establishing an information architecture vision aligned with the Department's strategic goals.

Section 2

General Information for Reporting

This section provides general information that can be used when preparing reports sent to NMMSS and additional guidance where appropriate. Three major types of information are submitted to NMMSS: transactions, material balances, and inventories. Additional guidance for these specific types of reporting is provided in subsequent sections.

2.1 Reporting Data to NMMSS

Facilities should be reporting to NMMSS electronically. Facilities are encouraged to use the NMMSS software package, Safeguards Management of Software, to edit site data prior to submitting electronic data to NMMSS. This software may be obtained from the Office of Resource Management.

If electronic means are unavailable, reporting using paper forms is permitted; however, it must be coordinated through the DOE cognizant security authority. Under emergency conditions or if a special, non-standard report is required, paper forms are acceptable.

NOTES: In this document, paper forms and numbers (e.g., DOE/NRC Form (F) 741) are mentioned for instructional purposes. The fact that a paper form is available does not relieve the facility from the requirement to report electronically.

2.2 Data Accuracy

DOE line management is responsible for ensuring that the NMMSS accurately reflects nuclear material inventory data at license-exempt facilities, and DOE-owned nuclear material inventory data at licensed facilities.

2.3 Reportable Elements and Isotopes / Weight Units / Rounding

2.3.1 Reportable elements and isotopes

Table 2-1. Nuclear Material Reporting Units and Characteristics.

Name of Material	MT Code	Reporting Weight Unit Report to Nearest Whole Unit	Element Weight	Isotope Weight	Isotope Weight %
Depleted Uranium	10	Whole Kg	Total U	U-235	U-235
Enriched Uranium	20	Whole Gm	Total U	U-235	U-235
Plutonium-242 ¹	40	Whole Gm	Total Pu	Pu-242	Pu-242
Americium-241 ²	44	Whole Gm	Total Am	Am-241	–
Americium-243 ²	45	Whole Gm	Total Am	Am-243	–
Curium	46	Whole Gm	Total Cm	Cm-246	–
Californium	48	Whole Microgram	–	Cf-252	–
Plutonium	50	Whole Gm	Total Pu	Pu-239+Pu-241	Pu-240
Enriched Lithium	60	Whole Kg	Total Li	Li-6	Li-6
Uranium-233	70	Whole Gm	Total U	U-233	U-232 (ppm)
Normal Uranium	81	Whole Kg	Total U	–	–
Neptunium-237	82	Whole Gm	Total Np	–	–
Plutonium-238 ³	83	Gm to tenth	Total Pu	Pu-238	Pu-238
Deuterium ⁴	86	Kg to tenth	D ₂ O	D ₂	
Tritium ⁵	87	Gm to hundredth	Total H-3	–	–
Thorium	88	Whole Kg	Total Th	–	–
Uranium in Cascades ⁶	89	Whole Gm	Total U	U-235	U-235

1 Report as Pu-242 if the contained Pu-242 is 20 percent or greater of total plutonium by weight; otherwise, report as Pu 239-241.

2 Americium and Neptunium-237 contained in plutonium as part of the natural in-growth process are not required to be accounted for or reported until separated from the plutonium.

3 Report as Pu-238 if the contained Pu-238 is 10 percent or greater of total plutonium by weight; otherwise, report as plutonium Pu 239-241.

4 For deuterium in the form of heavy water, both the element and isotope weight fields should be used; otherwise, report isotope weight only.

5 Tritium contained in water (H₂O or D₂O) used as a moderator in a nuclear reactor is not an accountable material.

6 Uranium in cascades is treated as enriched uranium and should be reported as material type 89.

2.3.2 Reportable weight units

Weights are reported in the metric weight units specified for each nuclear material as shown in Section 2.3.1, Reportable elements and isotopes.

2.3.3 Rounding

Both element and isotope weights are reported if they round to a reportable quantity. In cases where the element is a reportable quantity, but the isotope is not a reportable quantity, the material is still be reported, but for the isotope, enter 0 (zero). In cases where the isotope is a reportable quantity, but the element is not a reportable quantity, the material is still be reported but for the element enter 0 (zero). (See Table 2-2 below)

Nuclear material transactions should be documented and reported as accurately as possible to reflect the actual quantity of material transferred. If a transaction of discrete items, each of which is less than a reportable quantity, sum to a reportable quantity, the transaction should be recorded to most accurately reflect the actual quantity involved. The shipper and receiver decide how to ensure appropriate accounting documentation in NMMSS. Both the shipper and receiver must agree on the method to use. If the shipper and receiver cannot agree, refer to the Office of Resource Management to decide how best to document the transaction.

Quantities reported as shown in Table 2-2 below with fractions of $\frac{1}{2}$ or greater rounded upwards and fractions of less than $\frac{1}{2}$ of a reporting unit reported as the number zero (0).

NOTES: When performing general calculations not related to discrete items in a transaction do the calculation first before rounding.

For software development purposes, sites or facilities may use more significant digits than provided in the tables.

Table 2-2. Rounding Policy.

Quantity	Action
Equal to or greater than 0.5 of the reporting unit	Report to the nearest whole reporting unit
Less than 0.5 of the reporting unit	Report as 0 (zero)

2.4 Format of Units

Metric units are required for reporting to NMMSS.

NMMSS does not accept slashes (\ and /), semi-colons (;), colons (:), question marks (?) or number sign (#). Do not use those characters when entering data.

For the definitions of data elements, e.g., field length and whether a numeric or alpha character is allowed, see NMMSS Reports D-23 (for DOE) and D-24 (for NRC), available from the Office of Resource Management NMMSS staff.

2.4.1 Weights in Kilograms

If weights are recorded in pounds at the site, the conversion factor 0.45359 kg/pound is used for conversion when reporting to NMMSS.

2.4.2 Volume Units

Measurements that have been made and records that have been kept in volume units should be converted to the reporting unit for the specific material type. Material properties and equations in the CRC Handbook of Chemistry and Physics are used to convert gas or liquid volumes to the appropriate units.

2.4.3 Definition of Year

A year is defined as 365.2422 days.

2.4.4 Parts per Million (PPM) Calculations

Use the following abbreviations for parts per million calculations.

- ppmv for Volume Basis
- ppm for Mass Basis

NOTE: The calculation for ppm of U-232 in total uranium is a mass basis.

- ppma for Number of Atoms Basis

2.5 Limits of Error on Transfers of Special Nuclear Material and Tritium

DOE contractors determine and notify DOE of limits of error on transfers of SNM and/or tritium (except in the case of tritium in reservoirs), as required by DOE directive. Such notification is made on a DOE/NRC F 741. Limits of error are recorded on all copies of the form.

2.6 Material Type Codes

The following table provides the material type (MT) codes used by DOE for reporting nuclear materials. Note that other entities (e.g., IAEA) may use different codes for the same materials.

Table 2-3. Nuclear Material Type Codes.

Type Code	Type Description	Reporting Unit	Type Code	Type Description	Reporting Unit
	Uranium Depleted in U-235		44	Americium 241	gm
10	Total		45	Americium 243	gm
11	<0.21% U-235	kg	46	Curium	gm
12	0.21 to < 0.24% U-235	kg	48	Californium	microgram
13	0.24 to < 0.26% U-235	kg		Plutonium	
14	0.26 to < 0.28% U-235	kg	50	Total	gm
15	0.28 to < 0.31% U-235	kg	51	< 4.00% Pu-240	gm
16	0.31 to < 0.50% U-235	kg	52	4.00 < 7.00% Pu-240	gm
17	0.50 to < 0.60% U-235	kg	53	7.00 < 10.00% Pu-240	gm
18	0.60 to < 0.710% U-235	kg	54	10.00 < 13.00% Pu-240	gm
	Uranium Enriched in U-235		55	13.00 < 16.00% Pu-240	gm
20	Total		56	16.00 < 19.00% Pu-240	gm
21	> 0.712 to < 0.90% U-235	gm	57	19.00% and above Pu-240	gm
22	0.90 to < 1.15% U-235	gm		Lithium Enriched in Li-6	
23	1.15 to < 1.60% U-235	gm	60	Total	kg
24	1.60 to < 2.00% U-235	gm	61	>Normal (7.42%) to < 55.00%	kg
25	2.00 to < 2.60% U-235	gm	62	55.00 to < 80.00%	kg
26	2.60 to < 2.90% U-235	gm	63	80.00% and above	kg
27	2.90 to < 3.10% U-235	gm		Uranium Enriched in U-233	
28	3.10 to < 3.40% U-235	gm	70	Total	gm
29	3.40 to < 3.90% U-235	gm	71	< 5 ppm U-232	gm
30	3.90 to < 4.10% U-235	gm	72	5 to < 10 ppm U-232	gm
31	4.10 to < 5.00% U-235	gm	73	10 to < 50 ppm U-232	gm
32	5.00 to < 10.00% U-235	gm	74	50 ppm and above U-232	gm
33	10.00 to < 20.00% U-235	gm	81	Normal U	
34	20.00 to < 35.00% U-235	gm		Total	
35	35.00 to < 45.00% U-235	gm		0.710 to ≤ 0.712% U-235	kg
36	45.00 to < 80.00% U-235	gm	82	Np 237 Total	gm
37	80.00 to < 92.00% U-235	gm	83	Pu 238 Total	gm to tenth
38	92.00 to < 94.00% U-235	gm	86	D ₂ Total	kg to tenth
39	94.00% and above U-235	gm	87	Tritium Total	gm to hundredth

	Plutonium 242		88	Thorium Total	kg
40	Total	gm	89	U in Cascades Total	gm
41	20% thru 60%	gm	90	This series is available for local use	
42	> 60%	gm			

2.7 Owner Codes

The codes in the following table are used to identify ownership of nuclear material for transactions and inventory reporting. For instructions regarding the proper owner code to be used in a particular circumstance, contact the NMMSS staff in the Office of Resource Management.

Table 2-4. Owner Codes.

Owner Code	Type of Ownership of Material
G	U.S. Government owned material
J	All other non U.S. Government owned material

2.8 Action Codes

Action codes are a 1-character alphabetic code letter which describe the shipper's or receiver's intent in issuing the DOE/NRC Form 741

Table 2-5. Action Code (AC).

Action Code (AC)	Block 6
A	Shipper's original data
B	Receiver's data accepting shipper's weights without measurement
C	Shipper's adjustment or acknowledgment
D	Receiver's adjustment or acknowledgment
E	Receiver's independent measurement or determination
J ¹	Receiver's interim data reporting material in transit or project receipts
M	One-party transaction
N ²	Known delay in receiver reporting of at least 10 days but less than 30 days
P	In-place transfers between projects
R	Identifies a one-party transaction to remove the WR obligation on material.
S ³	Receiver's data accepting shipper's weights under a safeguards closure
T	Contested weights
U ⁴	Known delay in receiver reporting of at least 30 days
X	Shipper's side of an obligation exchange
Y	Receiver's side of an obligation exchange

- 1 Action code J identifies receiver's interim reporting of project receipt of DOE production or research materials that are in transit at the end of the month or that have been received but not reported. A transaction with action code J must be followed with action code B, E, or S.
- 2 A transaction with action code N must be followed with action code B, E, or S. Note: NRC defines action code N differently from DOE, and NRC does not use action code S.
- 3 Safeguards closure only for certain facilities. Restricted to DOE sites, owner code G, shipper and receiver can't be the same, TI is blank, can't use with a V RIS, and detail lines are reported.
- 4 A transaction with action code U must be followed with action code B, E, or S.

2.9 Processing Code

Use the appropriate 1-character, alphabetic processing code letter to identify the specific type of processing action required of NMMSS.

Table 2-6. Processing Code (PC).

Processing Code (PC)	Block 5
A	Entry of new data set
C	Replacement of data set
D	Deletion of data set

2.10 Nuclear Material Properties

Nuclear material properties (e.g., half-lives) can be found online at www.nndc.bnl.gov. Refer to the CRC Handbook of Chemistry and Physics for other material properties and equations.

2.11 Radioactive Decay

Facilities send data on reportable quantities of radioactive decay to the NMMSS on a DOE/NRC F 741 in accordance with instructions in Section 3 this User Guide. The shipping facility should calculate and report decay on material in transit up to the first day of the month in which the material was shipped. Using a locally generated report or memorandum, the shipper should inform the receiver of the date on which decay for the items being shipped was last calculated. The receiving facility should calculate decay for the entire month in which the shipment was received or in which the shipment was in transit at the report date; however, no decay should be reported until the end of the month in which the material is actually received. For material in transit over the period from the end of one month through the beginning of another, the receiving facility should calculate and report decay for a 2-month period, i.e., the month in which the material was shipped and the month in which it was received.

Radioactive decay is reported in accordance with the following tables.

Table 2-7. Half Life and Daily Decay Factors.

Radioactive Half-life and Decay Constants				
<i>Source:</i> Brookhaven National Laboratory, National Nuclear Data Center, Nuclear Wallet Cards, 6th Edition, January 2000				
Element	Isotope	Half-Life	Standard Deviation	Daily Decay Constant (days⁻¹)
Americium	241	432.2 y	0.700 y	0.00000439
Curium	242	162.8 d	0.200 d	0.00425766
Curium	244	18.10 y	0.020 y	0.00010485
Californium	252	2.645 y	0.008 y	0.00071749
Plutonium	238	87.7 y	0.300 y	0.00002164
Plutonium	241	14.290 y	0.006 y	0.00013280
Hydrogen (Tritium)	3	12.33 y	0.060 y	0.00015392

Table 2-8. Decay Factors for Monthly Reporting Periods. *

			Decay Factors for months—Days in month			
Element	Isotope	Deduct From	28	29	30	31
Americium	241	E&I	0.000123	0.000127	0.000132	0.000136
Curium	242	E only	0.119215	0.123472	0.127730	0.131987
Curium	244	E only	0.002936	0.003041	0.003145	0.003250
Californium	252	I only	0.020090	0.020807	0.021525	0.022242
Plutonium	238	E&I	0.000606	0.000628	0.000649	0.000671
Plutonium	241	E&I	0.003719	0.003851	0.003984	0.004117
Hydrogen (Tritium)	3	E only	0.004310	0.004464	0.004617	0.004771

*"E only" means that the calculated Decay Weight is to be deducted from the Element Weight. "I only" means that the calculated Decay Weight is to be deducted from the Isotope Weight. "E&I" means that the calculated Decay Weight is to be deducted from the weights of both Element and Isotope.

Table 2-9. Decay Factors for Quarterly Reporting Periods.

			Decay Factors for Quarters—Days in Quarter			
Element	Isotope	Deduct From	89	90	91	92
Americium	241	E&I	0.000391	0.000395	0.000399	0.000404
Curium	242	E only	0.378932	0.383189	0.387447	0.391705
Curium	244	E only	0.009332	0.009436	0.009541	0.009646
Californium	252	I only	0.063857	0.064575	0.065292	0.066010
Plutonium	238	E&I	0.001926	0.001948	0.001969	0.001991
Plutonium	241	E&I	0.011820	0.011952	0.012085	0.012218
Hydrogen (Tritium)	3	E only	0.013698	0.013852	0.014006	0.014160

2.11.1 Daily Decay Constants

Daily decay constants are calculated using the formula below (unless half-lives are stated in days).

$$\text{Decay Constant (days}^{-1}\text{)} = \text{Ln}(2) / (T_{1/2} * 365.2422) \text{ where—}$$
$$T_{1/2} = \text{Half Life (years)}$$

2.11.2 Days, Months, and Quarters Decay Calculations

Decay calculations are made for days, months, and quarters. Month and quarter decay factors are provided for the convenience of the user.

To calculate decay, use the following formula.

$$Q_t = Q_o * e^{(-d * C)}$$

where—

Q_t = quantity of material left at time t after undergoing decay

Q_o = initial quantity of material before calculating decay

d = number of days

C = decay constant from table. Can be either days, months, or quarters.

2.12 Nuclear Material Blending Transactions

2.12.1 Reporting

Blending or crossovers of materials are reported to the NMMSS to ensure accurate records of the facility's material inventory. The report to the NMMSS would show the reduction in one or more quantities and the increase in another.

- (1) Inventory change code 22 (from other materials) is used to show the gain in material.
- (2) Code 71 (degradation to other materials) is used to show the reduction of material.

2.12.2 Matching and Sequencing

The NMMSS has been programmed to recognize a blending or crossover operation by the order in which the codes 22 and 71 are presented. The lines of data on DOE/NRC 741 are to appear in sequence. That is, a line or lines with code 22 should be followed by matching line or lines with code 71. There are two methods of matching codes 22 and 71. One method is to pair code 22 with the corresponding 71, a second method is to list a series of code 22s followed by corresponding 71 s (See Table 2-10 for an example).

Table 2-10. Blending Transaction Example.

Row Number	Type Inventory Code	Summary Material Type
1	22	10
2	22	10
3	22	50
4	22	50
5	22	50
6	71	20
7	71	81
8	71	83
9	71	83
10	71	83

2.12.3 Multiple Sets of Code 22/71 Combinations

When reporting a blending transaction with multiple sets of code 22/71 combinations, the position of the 22 in the data set must correspond to the position of the 71 in the data set. For example, row number 1 must correspond to row number 6. This case represents the blending of material from summary MT 10 to summary MT 20. Row 2 must correspond with row 7 in the data set, etc. For specific format requirements, refer to the guidance for electronic format data submissions.

2.12.4 Additional Instructions for Blending Transactions

- (1) As an internal transaction, RIS entries should be identical.
- (2) Use action code M.
- (3) The two data lines, codes 22 and 71, should agree in terms of quantities, plus or minus a reportable unit.
- (4) Plutonium blending operations should also be reported. For such blending operations, only the element weight (total plutonium) is compared. The different MTs of plutonium account for the different isotopes of plutonium. For example, the reportable isotope for MT 50 is Pu-239+241. The reportable isotope for MT 83 is Pu-238. When blending these

plutonium MTs, there is no direct relationship between the individual isotope weights.

- (5) For blending operations with different accountable nuclear materials, the relative quantity (mass) of each accountable material is to be maintained.

2.13 Normal Operation Losses (NOLs), Measured Discards and Accidental Losses

The instructions in this Section are provided to supplement the reporting procedures for NOLs, measured discards and accidental losses. Losses and discards are reported using a DOE/NRC F 741.

Use the following procedure when reporting NOLs, measured discards or accidental losses.

1. License-exempt and/or licensed contractors not subject to the requirements of the U.S./IAEA Safeguards Agreement should use one of the following. (See Section 4 for transaction definitions.)
 - (a) Use A-M transactions to remove loss or discard material from active inventory for subsequent shipment to a waste management site.
 - (b) Use A-A transactions to remove material from active inventory when—
 - 1 it is shipped to a waste management site,
 - 2 it has been discharged to the atmosphere or the ground, or
 - 3 it has been consumed in use.
2. License-exempt and/or licensed contractors subject to the requirements of the U.S./IAEA Safeguards Agreement use A-A transactions.
3. If 1. (a) or 1. (b) above applies, one of the letters listed below may be appended to the facility's 3-character RIS, as appropriate. The 3-character identifier should be entered as the shipper's RIS in block 1 of DOE/NRC F 741 or as the receiver's RIS in block 2. The 3-character identifier should be on file with the NMMSS before it is used for reporting to the system. The following letters are for use by all reporting facilities.

A—discharge to the atmosphere,

G—discharge to the ground or a body of water or stream,

I—discharge to run-off, and

R—consumed during use.

NOTE: It is understood that recovery of material discharged to the ground as a result of an accidental loss may not be possible.

4. The use of codes H and L is optional for non-licensed contractors not under IAEA reporting requirements.

Use the following letters only by license-exempt contractors subject to the requirements of the U.S./IAEA Safeguards Agreement and licensed contractors.

H—a waste holding area from which material could be recovered

L—a lagoon, holding pond, or tank from which material could be recovered.

5. Enter code 74 as the inventory change code in block 26c or 27c of DOE/NRC F 741, as appropriate, when reporting NOLs or measured discards.
6. Enter code 75 as the inventory change code in block 26c or 27c of DOE/NRC F 741, as appropriate, when reporting accidental losses.
7. When reporting the return to active inventory of material previously reported as a NOL, measured discard, or accidental loss, follow the instructions below. (See Appendix B for additional information.)
 - a) A previously reported NOL, measured discard, or accidental loss may be reversed through the adjustment process.
 - b) An A-B transaction with no inventory change code, (transfer from a V RIS, or waste disposition area, to a facility) may be reported to the NMMSS as a receipt on line 30 of the MBR generated for the receiving facility. [NOTE: This applies only if the waste disposition area is an onsite waste holding area (H) or a lagoon (L).]

2.14 Waste and Burial Sites

A waste disposition area on the site subject to both DOE and NRC reporting requirements is assigned at least one 4-character RIS. The first three characters should correspond to the DOE or the NRC RIS for the facility. It is only required that one 3-character RIS be assigned for reporting data for the waste disposition area. The assignment of more than one RIS to a waste disposition area is at the discretion of DOE line management.

Use the following procedure for site closure or decommissioning, or if the receiver requires documentation.

- a) Document transactions of waste material using DOE/NRC F 741.
- b) For transfers of nuclear material from a waste disposition area (i.e., a 3-character RIS with a fourth character H, G, or L appended) to a waste management site (V RIS), the applicable composition/facility code is entered in block 26h of the DOE/NRC F 741 documenting the transfer.
- c) Transfers to or from a waste management site (V RIS), including transfer from one waste management site to another, and transfers identified with character H appended to the RIS, is reported to the NMMSS on a DOE/NRC F 741.
- d) Shippers and receivers evaluate and make changes and adjustments to records, as necessary, based upon remeasurement.

Section 3

General Instructions for Transaction Reporting

This Section provides general instructions for transaction reporting. In addition to the instructions in this Section, specific procedures for completing each form and for submitting the data to NMMSS are contained in Sections 4 and 5.

Each facility should maintain documentation of authorities and responsibilities for MC&A functions, including the process and authorized signatures required to transfer nuclear material. The shipper should verify that the receiver is authorized to receive the amount and type of material that is to be shipped. Each shipper is responsible for advising and obtaining authorization from the intended receiver of proposed shipments of nuclear material and for providing all pertinent advance information. Specific notification requirements applicable to individual facilities are contained in the RIS Directory (available from the Office of Resource Management NMMSS staff).

3.1 Physical Transfer Reporting Timelines

Data on all transactions occurring during a calendar month is submitted no later than 8 working days following the end of the month during which the transactions occurred or as specified by DOE directive. These extra days are justified as time needed for monthly closure of the books for reasons of monthly adjustments. Table 3-1 shows deadlines for distribution of DOE/NRC F 741.

Table 3-1. Submission Dates for Physical Transfer of Material.

Type of Physical Transfer Requiring DOE/NRC F 741 Preparation and Distribution	Reporting Timelines
Shipper distributes to NMMSS and receiver for domestic shipment	1 workday after receipt of shipment
Domestic receiver distributes to NMMSS and Shipper on domestic shipment	10 workdays after receipt of shipment
Shipper distributes to NMMSS shipment and foreign receiver's side of the form	1 workday after receiving the foreign receiver's data
Domestic distribution to NMMSS reporting material received from foreign shipper	10 workdays after receipt of shipment
Corrections to submitted data sent to NMMSS and other party	1 workday after correction

3.2 Transaction Documentation Methods

Facilities should distribute transaction documentation electronically unless manual/paper submission is coordinated through the DOE cognizant security authority. Nuclear material types, elements, and isotopes are to be reported, and their respective reporting units are specified in Section 2.6, Material Type Codes. For each detail line of shipper/receiver data entries on DOE/NRC F 741, material quantities reported by assay may be summarized, but only within detailed MT assay ranges (e.g., for enriched uranium, within 10 to 20 percent U-235 or within 80 to 92 percent U-235, as appropriate) required for reporting inventory (See Section 13, Inventory Reporting).

3.2.1 Electronic Method

Procedures and instructions in this User Guide apply except that signatures on transaction documents are not required. Internal controls ensure that data transmitted has been properly authorized. The sender and recipient of electronic data produce hard copies as needed by organizations according to Section 3.3, Distribution of DOE/NRC F 741.

The hard copies contain the information normally included on DOE/NRC F 741. For activities involving NRC or Agreement State licensees, the electronic method of handling and transmitting transfer data follow all requirements of 10 CFR 74, *Material Control and Accounting of Special Nuclear Material*.

3.2.2 Manual Method

Facilities with a low volume of reporting activity may prepare DOE/NRC F 741 in paper form if coordinated with the DOE cognizant security authority. Such facilities are encouraged to convert to electronic form preparation in coordination with the NMMSS staff in the Office of Resource Management.

3.2.3 Agreement of Transaction Data

Data sent to NMMSS should agree on a line-for-line-basis with data sent between the shipper and receiver on DOE/NRC F 741, or electronic equivalent.

3.3 Distribution of DOE/NRC F 741

Transaction information is generally distributed electronically; however, a few small facilities continue to use the paper DOE/NRC F 741. Transaction information concerning any DOE/NRC F 741 should be classified using appropriate guidance and following the procedures contained in DOE M 475.1-1A, *Identifying Classified Information*, and should be marked with appropriate

classification markings and transmitted following procedures contained in DOE M 470.4-4, *Information Security*.

Use the following procedures during distribution regardless of use of either the electronic or paper transaction format.

- a) If an electronic format is used, do not also distribute a paper copy unless specifically requested by the recipient.
- b) It is recognized that some field elements or site offices do not desire copies of transaction information in any format but, instead, rely on NMMSS reports to satisfy local needs.
- c) As an absolute minimum requirement for distribution of transactions information, copies should be provided to the other party to the transaction and to the Office of Resource Management NMMSS staff at RIS QFA. For one-party transactions, the facility generating the transaction should also provide a copy to the Office of Resource Management NMMSS staff at RIS QFA.

Distribution is illustrated in Table 3-2.

Table 3-2. Distribution.

Type of Transaction	Other Party To Transaction	QFA	Shipper's Field Element (If Requested)	Receiver's Field Element (If Requested)
Shipment of Material	Yes	Yes	Yes	Yes
Receipt of Material	Yes	Yes	Yes	Yes
One-party Transaction	Yes	Yes	Yes	Yes

3.4 Shipper-Receiver Differences

The in-transit accounting rule that DOE has adopted states that when nuclear material leaves the shipper, it officially goes on the receiver's books in NMMSS.

Consult DOE M 470.4-6, Nuclear Material Control and Accountability for requirements on evaluating shipper-receiver differences.

3.5 Amendments or Adjustments to Previously Issued DOE/NRC F 741

When one party makes an adjustment to a transaction, DOE line management should ensure that contractors under their jurisdiction document the adjustment on a DOE/NRC F 741 or electronic equivalent. For specific instructions regarding corrections or adjustments, see Sections 4 and 5. Contractors should transmit the completed form to the other party to the transaction within 1 workday after obtaining the adjustment data.

3.6 Transactions/Transfers within the U.S. (non-DoD)

Also see Section 4, Nuclear Material Transaction Reporting Instructions SHIPPER and Section 5, Nuclear Material Transaction Reporting Instructions RECEIVER.

3.6.1 DOE Transfers of Nuclear Material to Licensees

DOE contractors who receive authorization and requests for distribution of nuclear material to a licensee, pursuant to 42 U.S.C. 2073, 2093, and 2111, document such transfers using DOE/NRC F 741.

3.6.2 DOE Transfers of Nuclear Material from Licensees

Transfer documents for nuclear material shipped to DOE for credit or service by a licensed facility should be prepared and distributed by the shipper in accordance with the requirements of the CFR. When such material is received it should be documented by the receiver using DOE/NRC F 741.

3.6.3 DOE Internal Project Transfers

It is required that transfers of material between DOE projects under the same RIS be reported to the NMMSS (i.e. a change in project numbers). Reporting is accomplished by submitting DOE F DP-749 or by electronic data submission. Instructions for internal project transfers follow the general instructions for transaction reporting with the special guidance shown below. Facilities transmitting data to the NMMSS by automated means need not complete DOE F DP-749, but should also follow the data format defined below.

3.6.3.1 Negative Values

Enter a minus sign or a dash preceding the digits to show a negative number.

3.6.3.2 Transaction Identification Information

(columns 1–18 on DOE F DP-749)

Shipper columns 1–4. Enter the shipper’s or originator’s RIS for transactions involving project transfers, left justified.

Receiver columns 5–8. For project transfers enter the receiver’s RIS left justified. The shipper’s and receiver’s RISs should be the same.

Columns 9–14, Internal Transaction Number. Enter the number that indicates a specific transfer in a transfer series. An alphanumeric journal entry number may be used in lieu of the transfer number.

Column 15, Correction Number. When a shipper or receiver issues a corrected document to adjust data previously reported, an alphanumeric character is appended to the original transfer number to identify the transaction as a correction. For correction or adjustment entries, this is a required data field. For all other transactions, this field is left blank.

Column 16, Processing Code (PC). Enter the appropriate 1-character, alphabetic code from the list below to identify the specific type of processing action required.

A—initial entry of data to report a transaction.

C—replacement of data for a transaction. An initial entry cannot be replaced after the close of a processing period.

D—deletion of a transaction. An initial entry cannot be deleted after the close of a processing period.

Column 17. Make no entry.

Column 18, Action Code (ACT CODE). Code letter P is preprinted on the form to identify in-place transfers between projects.

3.6.3.3 Header Information

Header Information—Data Record Number 1.

Column 19, Data Code. Code number 1 is preprinted on the form.

Columns 20–21, Number of Lines. Enter numeric digits (01-99) to indicate the total number of detail information lines pertaining to a specific transaction.

Columns 22–23. Make no entry.

Columns 24-33, Sealed Source Serial Number. Make no entry.

Columns 34–50, Contract/Identification Number. Use is optional.

Columns 51-69. Make no entry.

Columns 70–77, Action Date. Enter the date the activity occurs. In the event of a correction, the date to be entered here is the date of the activity and not the date of the original transaction. The numbers representing the month should be entered in the first two columns, the day of the month in the next two columns, and the year in the final four columns. For example, January 5, 2000, would be recorded as:

MO		DAY		YEAR			
0	1	0	5	2	0	0	0

Columns 78–80. Make no entry.

3.6.3.4 Detail Information

Detail Information—Data Record Number 2.

Column 19, Data Code. Code number 2 is preprinted on the form.

Columns 20–21, Line Number. Enter a sequential number (01-99) for one transaction to identify a discrete line.

Columns 22–31, from Project Number. Enter the project number from which the material is being transferred, left justified.

Columns 32–35, From Composition Code. Enter the numeric code that identifies the chemical and/or physical form of the material under the project number from which it is being transferred, left justified. A complete set of composition codes is available from the NMSS operator.

Columns 36–45, To Project Number. Enter the project number to which the material is being transferred, left justified.

Columns 46–49, To Composition Code. Enter the numeric code that identifies the chemical and/or physical form of the material under the project number from which it is being transferred, left justified.

Columns 50–51, Material Type. Enter the appropriate two-digit numeric code to identify the type of nuclear material being reported. See Table 2-1.

Column 52, Owner Code. Code letter G is preprinted on the form.

Columns 53–63, Element Weight. Enter the metric weight of the contained nuclear material.

- Enter decimal units, when required, in columns 62 and/or 63 (segregated by broken lines).
- To show negative numeric data, enter a minus sign in the column preceding the first digit. In instances where negative data are

shown in whole units or tenths of a unit, zeros should be entered in the remaining decimal places with a minus sign in the column preceding the first digit.

Columns 64–69, Weight percent Isotope. For each line, enter the weight percent of the isotope U-235, Li-6, Pu-240, Pu-242, or Pu-238 reported to not more than four decimal places. For U-233, enter the parts per million of U-232 right justified to column 69.

Columns 70–80, Isotope Weight. Enter the metric weight of accountable isotopes using instructions for rounding off data in paragraph 41a(5) above.

- Enter decimal units, when required, in columns 79 and/or 80 (segregated on DOE F DP-749 by broken lines).
- To show negative numeric data, enter a minus sign in the column preceding the first digit. In instances where negative data are shown in whole units or tenths of a unit, zero(s) should be entered in the remaining decimal places(s) with a minus sign in the column preceding the first digit

3.7 Transactions/Transfers Involving DoD

In any instance where either a contractor of U.S. Government facility has a transaction involving a shipment to or receipt from DoD pursuant to 42 U.S.C. 2121(b), or 2121(c) (which address DOE and mutual defense activities) such facility should prepare and distribute DOE/NRC F 741 in accordance with instructions provided in Section 6 and any additional guidance which may be provided by DOE line management or the DOE cognizant security authority.

Except for transfers of nuclear material in naval cores and associated items, transactions should be documented in accordance with the instructions provided in Section 6.

3.8 Transactions of Foreign Obligated Material

See Sections 4, 5, and 8 in this User Guide for additional information.

When tracking foreign obligated materials within the U.S, each facility submits information necessary to track materials among facilities that use foreign obligation codes.

The shipper is responsible for supplying foreign obligation information for each shipment. Refer to Section 8 for detailed information. If the resolution of a shipper-receiver difference on a line of data results in a reduction of the shipper's value to an amount less than the obligated amount, the obligated amount should also be reduced. The obligated amount may not be greater than the amount of like material shipped.

3.9 Transactions Involving International Accounts

International transfer data should be handled according to the instructions in Section 7 of this User Guide. For DOE exports, guidelines once set forth in the International Nuclear Materials Tracking System (INMTS) are included in Section 7.

Foreign nations, foreign regional organizations, supranational organizations, or foreign facilities (hereinafter referred to collectively as foreign entities) may receive or return U.S. Government-owned material obtained by sale, lease, grant, donation, or loan from contractor facilities, or from NRC or Agreement State licensees, pursuant to 42 U.S.C. 2074 and 2094 and 42 U.S.C. 2112 or 2121 (c).

For a transaction involving an export/import, the facility should prepare both the shipper's and the receiver's data and distribute the forms.

- (a) For exports, the shipper should request that the foreign receiver sign and return the DOE/NRC F 741 to the shipping facility to document the transfer.
- (b) For imports, if the foreign shipper's data are incomplete or unknown, the receiver should contact the DOE cognizant security authority for further guidance.

For international transfers that are covered by more than one export/import license, a separate DOE/NRC F 741 should be prepared for the material covered by each individual export/import license. See Section 7 for details.

Tracking imported material having foreign accounting obligations requires the use of special tracking procedures. See Section 7 for details.

3.10 Facility Transfers and Receipts Concerning a Foreign Entity

When transferring material to a foreign entity, the shipper should include with the shipment a copy of DOE/NRC F 741 containing the shipper's data. (See Sections 7, 8, and 9 and refer to DOE line management or the DOE cognizant security authority for guidance and further instructions.)

When receiving material from a foreign entity, refer to Sections 7, 8, and 9 and refer to DOE line management or the DOE cognizant security authority for guidance and further instructions.

3.11 Non-Physical Transfer of Nuclear Material

DOE/NRC F 741 or electronic equivalent is used to record a change in ownership or financial responsibility.

3.12 Special Requirements

3.12.1 Other Types of Receipts and Removals

Various other types of receipts and removals including, but not limited to, production, transfers to and from other materials, sales, decay, losses, inventory changes, and inventory differences (see Section 11), should be documented using DOE/NRC F 741 or electronic equivalent. Such other types of receipt and removal data involving reportable quantities should be documented and reported consistent with the use of inventory change codes specified in the instructions for Block 26c in Section 4 and Block 27c in Section 5. See also Appendix B.

3.12.2 Reporting of Nuclear Material in Transit for Domestic Shipments

Material in transit at the end of a reporting period is entered into the intended receiver's inventory. A facility making a shipment of nuclear material and/or initiating a DOE/NRC F 741 during the last 5 calendar days of a month, on the day of shipment, provide the intended receiver with the information shown below to facilitate the reporting of material balance, transaction, and inventory data. The information specified below should be transmitted to the receiver by telephone on the agreed day of shipment, with confirmation by facsimile, Internet, or other electronic means (e.g., SIMEX). This requirement may be satisfied by the timely distribution of DOE/NRC F 741 data via appropriate telecommunications systems when both the shipper and receiver possess such capabilities.

1. Transfer series (shipper's RIS, receiver's RIS, and transaction number).
2. Material types. See Section 2.6, Material Type Codes.
3. Total element weights and (if warranted) isotope weights, weight percent and/or parts per million (based on estimates, if necessary). See Section 2.6, Material Type Codes.
4. Project number (for owner code G material).
5. Obligation tracking data, blocks 17 through 21.
6. Number of items.
7. Composition codes.
8. Owner codes.
9. Date of shipment.

3.12.3 Delayed Receiver Measurements

In cases where the receiver can not determine independent measured values for a shipment within 10 calendar days of receipt of the shipment, and there is no agreement in place whereby the receiver can accept shipper's values, the receiver should confirm receipt of the material with either an action code N, U, or S. (See Section 2.8, Action Codes, and the footnotes to Table 2-5 for additional information).

3.12.4 Mixtures of U-233 and U-235

For the case where reportable quantities of U-233 and U-235 are mixed together, a transaction on a DOE/NRC F 741 should contain two lines and be reported as follows.

Line 1 should be reported with MT 20. The element weight should be the total uranium weight. The isotope weight should be the isotopic weight of U-235.

Line 2 should be reported with MT 70. The element weight should be the total uranium weight. The isotope weight should be the isotopic weight of U-233.

Section 4

Nuclear Material Transaction Reporting Instructions

SHIPPER

The instructions that follow provide specific guidance in the preparation of the DOE/NRC F 741 or the electronic equivalent. The file formats for reporting electronically are maintained by the NMMSS staff in the Office of Resource Management and can be provided upon request.

The shipper of the material should complete the shipper's portion of DOE/NRC F 741 by completing the numbered blocks as follows:

BLOCK 1, Shipper's RIS. Enters the shipper's facility RIS his/her facility, normally a 3-character field. Under some circumstances, a 4-character RIS should be entered (e.g. appending a letter to the end of a 3-character RIS to denote discharge of material to air or ground). See subsequent Chapters for special instructions for importers and exporters of nuclear materials. This block should be completed for the following types of transactions.

- (1) Transfers between facilities.
- (2) Transfers between RISs within a facility.
- (3) Transfers between facilities and DoD.
- (4) Transfers between domestic and foreign facilities.
- (5) Loan/lease, sale or donation.
- (6) One-party transactions (e.g., transactions with a M action code)
- (7) Corrections to the above transactions.

BLOCK 2, Receiver's RIS. Enter the receiver's RIS, normally 3-characters when the transaction is a transfer of material from the shipper to another facility. Care should be taken to ensure that the receiving facility's RIS is reported and not the RIS for the agent handling the shipment. The shipper or originator enters its facility's RIS in this block for a one-party transaction (e.g., a transaction with a M action code). This field is completed for the types of transactions listed for BLOCK 1 above. See Section 7 for special instructions concerning imports and exports of nuclear materials.

BLOCK 3, Transaction Number. Enter a consecutive number for the same shipper-receiver combination and ensures that a number is not skipped in the series or duplicated. (NOTE: An exception to the consecutive numbering requirement is allowed when a facility has pre-assigned or reserved numbers for programmatic needs, but the shipment does not subsequently occur. This applies to both physical and nonphysical transfers of material.) For one-party transactions, it is desirable that the shipper enter the appropriate journal entry number to identify the transaction as it occurs (e.g., 000105), the first two digits indicating the year, the next two digits indicating the month (i.e., 01 through 12), and the last two digits identifying the specific transaction in the month. (The example above is for transaction 5 for January of 2000.) Do not prefix or suffix the transfer series number. For one-party or in-place transactions between projects or uranium enrichment contracts, an alphanumeric number may be used when necessary to maintain uniqueness.

BLOCK 4, Correction Number. This block is used to correct or adjust a previously issued DOE/NRC F 741. In preparing the corrected copy, the shipper or receiver should enter in blocks 1, 2, and 3, the same shipper RIS, receiver RIS, and transaction number (transfer series) used in the original report, and then enter in block 4 a consecutive correction number, beginning with 1 (numeral one). The corrected copy should clearly identify the items being corrected. The party making the adjustment should notify the other party to the transaction that an adjustment is necessary and follow up by issuing a corrected DOE/NRC F 741. The correction number is a 1-character field. An alpha correction number may be used by a facility when the correction does not affect the other facility. The shipper and/or receiver should enter the date the adjustment is entered in the facility records in block 22b or 22e, as appropriate. The shipper and receiver distribute the corrected copy in accordance with the distribution pattern for the original DOE/NRC F 741. This field should be completed when:

- (1) A shipper or receiver issues a corrected DOE/NRC F 741 to adjust data previously reported to the NMMSS;
- (2) A correction affects another facility. A numeric character is required, action code C for the shipper and action code D for the receiver [also see blocks 26a and 27a for further guidance (back reference line number)];
 - (a) For each detail line in block 26 or 27 being corrected, two lines should appear on the corrected copy one with the data originally submitted and the other with the correct data. The line containing the original data should show the number of items, element weight, isotope weight, and limits of error as negative quantities. (For correcting lines that were originally negative, add a positive quantity.) The corrected line should show current quantities in these data fields.
 - (b) For each detail line in block 26 or 27 being deleted, the original line should be repeated, with the number of items, element weight,

isotope weight, and limits of error shown as negated quantities. (For deleting lines that were originally negative, add a positive quantity.)

- (3) Either the shipper or receiver makes an adjustment. The other party to the transaction should either accept the adjustment or acknowledge that an adjustment has been made;
- (4) It is necessary to adjust or correct any data element in a M action code (one-party) transaction reported in a previous period. Either a numeric or an alphabetic character may be used;
- (5) Scrap material is recovered or remeasured for a more accurate total value for the amount of nuclear material in the original shipments. The DOE/NRC F 741 for the original shipments should be corrected by prorating the total amount of the correction according to the amounts of the original shipments. When this method is determined to be impracticable, e.g., for reprocessing campaigns, measurements on several shipments of material recovered simultaneously may be reported as a correction to a single document with additional details provided to the other party.

BLOCK 5, Processing Code. Enter the appropriate 1-character, alphabetic code to identify the specific type of processing action required.

A—initial entry of data.

C—replacement of data. An entire data set may be replaced at any time prior to the close of the processing period in which the initial entry was made with the concurrence of the other party to the transaction.

D—deletion of data. Data may be deleted at any time prior to the close of the processing period in which the initial entry was made.

BLOCK 6, Action Code. Enter a code letter from the list below which describes the shipper's purpose in issuing the DOE/NRC F 741. The action code field is a 1-character alpha field.

A—shipper's original data (requires completion of block 22a, action date of shipment).

C—shipper's adjustment or acknowledgment of receiver's adjustment (requires completion of block 22b, action date of shipper's correction).

M—one-party transaction, (e.g., an onsite gain or loss) reported on DOE/NRC F 741 (or electronic equivalent), and requires completion of block 22a, 20b, 22c, or 22e.

R—a one-party transaction to remove the WR obligation on material.

X—a shipper's side of an obligation exchange.

BLOCK 7. Enter the number of pages if the submission is classified as Secret. **NOTE:** The block is reserved for paper copy submissions only.

BLOCK 8, Shipper. No data required. This information is not captured in the NMMSS but is for documentation purposes or desired by one or more users of the transaction information.

Block 8a. Enter the name and address of the shipper.

Block 8b. Enter the appropriate possession license number if the shipper is a licensee. (Do not enter an export/import license number in this block.)

Block 8c, Attention. Enter the name of a specific individual to be contacted concerning the shipment.

Block 8d, Telephone. Enter the telephone number of the individual identified in block 8c.

BLOCK 9, Receiver. No data required. This information is not captured in the NMMSS, but is for documentation purposes or desired by one or more users of the transaction information.

Block 9a. Enter the name and address of the receiver.

Block 9b, License Number. Enter the receiver's possession license number if the receiver is a licensee. (Do not enter an export/import license number in this block.)

Block 9c. Attention. Enter the name of the individual designated by the receiver to be contacted concerning receipt of the shipment.

Block 9d, Telephone. The shipper enters the telephone number of the individual identified in block 9c.

BLOCK 10, Number of Data Lines. Enter the total number of detail information lines supplied in block 26 for the shipper's transaction data. The total number of data lines should be between 01 and 99.

BLOCK 11, Nature of Transaction.

Table 4-1. Nature of Transaction Indicator (TI) Code.

Nature of Transaction Code (TI)	Block 11
A	Initiates loan/lease
B	Transfers loan/lease
C	Transfer of leased/loaned material with no change in loan/lease responsibility
D	Return of leased/loaned material to DOE for credit
E	Sale for DOE
F	Pursuant to an enriching service agreement
G	Sale to DOE
R	Transfer from Government to private inventory other than by sale or enriching service agreement
S	Transfer from private to Government inventory other than by sale or enriching service agreement

- (1) This block is to be completed for DOE-owned material under lease or loan agreements, material sold or donated by or to DOE. See Table 4-1 for TI codes.
- (2) If applicable, enter the appropriate code from the list in Table 4-1.
- (3) This list is not applicable to one-party transactions.
- (4) This block is not to be completed for transfers of DOE-owned contract nuclear material within or between DOE programs, transfers of material owned by other U.S. Government agencies, transfers of privately owned material, or transfers to DOE under 42 U.S.C. 2121(b) or (c), as amended.

BLOCK 12, For Account.

- (1) The shipper completes block 12 if the material is either DOE-owned leased/loaned material or DOE-owned contract material being transferred to a licensee or foreign entity, if the shipment represents a sale or donation of privately owned material to DOE, or if the DOE field element or site office having programmatic responsibility for the material being transferred is different from both the shipper's and receiver's DOE field elements or site offices.
- (2) Enter the address of the facility or entity having lease or loan financial responsibility for the material in block 12a and the RIS in block 12b.
- (3) For shipments by DoD, under 42 U.S.C. 2121(b) with the exception of transfers of Navy cores and associated items, the initiator of the DOE/NRC F 741 enters the appropriate RIS for the DOE shipping point reported in

block 12a. For transfers of Navy cores and associated items from DoD to DOE, under 42 U.S.C. 2121(b) the RIS QZD is entered in block 12b.

BLOCK 13, To Account.

- (1) The shipper completes this block if the material is either DOE -owned leased/loaned material or DOE-owned contract material being transferred to a licensee or foreign entity, if the shipment represents a sale or donation of privately owned material to DOE, or the DOE field element or site office having programmatic responsibility for the material being transferred is different from both the shipper's and receiver's DOE field elements or site offices.
- (2) Enter the address of the facility or entity having lease or loan financial responsibility for the material in block 13a and the RIS in block 13b.
- (3) For shipments to DoD, under 42 U.S.C. 2121(b) (with the exception of transfers of Navy cores and associated items), the initiator of DOE/NRC F 741 enters the appropriate RIS for the DoD first destination point reported. For transfers of Navy cores and associated items from DOE to DoD under 42 U.S.C. 2121(b) the RIS QZD is entered in block 13b.

BLOCK 14, Transfer Authority—Contract, Nuclear Material Draft or Order Number.

- (1) Enter transfer authority for DOE-owned materials as may be appropriate, e.g., DOE contract or usage agreement number, loan/lease agreement number, draft number, SNM order number, purchase order number, letter of authorization, and so forth. Block 14 data is not required for domestic shipments.
- (2) If the shipment is to a foreign country, enter the DOE foreign contract number if applicable.
- (3) The shipper ensures that it has appropriate authorization and approval to ship the material to the receiver before its movement.
- (4) An entry is optional otherwise, and if not one of the cited cases, the block may be used for local purposes.

BLOCK 15, Export/Import Information.

- (1) Make no entry when reporting the following.

- (a) One-party transactions (i.e., action code M).
 - (b) Transfers that reflect change in ownership or financial responsibility (i.e., all nonphysical transfers of nuclear material other than project transfers).
 - (c) Transfers between two RISs at the same location.
- (2) For all export/import transfers, the shipper or originator enters the following:
- (a) Specific NRC export/import license number if shipping arrangements are handled by an agent who is required to obtain a NRC license to export/import. If more than one export/import license is applicable to a transfer, a separate DOE/NRC F 741 should be prepared for each license.
 - (b) GEN-LIC, if the transfer is authorized under a general license.
 - (c) LIC-EXEMPT, if the transfer is exempt from licensing.
 - (d) Authorizing shipper's export declaration (SED) number if applicable. The SED number should correspond with the foreign contract number in block 14.
 - (e) DOE line management or the DOE cognizant security authority should assign and monitor SED numbers.
- (3) For further instructions for transfers of nuclear material between the U.S. and foreign nations, foreign regional organizations, or supranational organizations, see Section 7.

BLOCK 16, Material Type and Description. This information is not captured in the NMMSS but is for documentation purposes or is desired by one or more users of the transaction information.

BLOCK 17, Obligations Accounting, Line Number. Enter sequential line number. (See also Section 8.)

BLOCK 18, Obligations Accounting, Country of Obligation. Enter the two-character country or entity designation related to the line number entered in block 17. (See Section 8 and the Section 8 table of foreign obligation codes).

BLOCK 19, Obligations Accounting, Material Type. Enter the 2-character MT to which the obligation is attached. Refer to tables in Section 8. The only MTs to be reported are 10, 20, 50, 70, 81, and 88. (See Section 8.)

BLOCK 20, Obligations Accounting, Obligated Element Weight. Enter the element weight of the amount obligated. (See also Section 8.)

BLOCK 21, Obligations Accounting, Obligated Isotope Weight (for Enriched Uranium (in U-235 and or U-233) only). Enter the isotope weight of the amount obligated to the nearest gram. (See also Section 8.)

BLOCK 22, Action Date. The action date for a transaction is entered in one of the blocks below. Enter numerical date (MMDDYYYY).

Block 22a, Shipment. Enter the date of the transaction (i.e., date of physical or nonphysical transfer of material). (See Section 7 for special instructions for importers or exporters of nuclear materials.)

Block 22b, Shipper's Correction. When either shipper's or receiver's data on a previously issued DOE/NRC F 741 is adjusted, the shipper enters either the date of shipper's adjustment or acknowledgment of receiver's adjustment.

BLOCK 23, Miscellaneous Data.

Block 23a, Miscellaneous. This information is not captured in the NMMSS but is for documentation purposes or desired by one or more users of the transaction information.

Block 23b, Concise Note Attached (DOE/NRC F 740M). This information is captured in NMMSS. Facilities engaged in the import and/or export of nuclear materials (see Section 7) and facilities selected under the U.S./IAEA Safeguards Agreement (see Section 9) may prepare a Concise Note to report additional information. The shipper places a code letter X in the 1-character field to indicate that a Concise Note is attached, if applicable. See Section 7 for special instructions for importers and exporters of nuclear materials.

Block 23c. This information is captured in NMMSS. U.S. importers and/or exporters of nuclear material should use this field only if the other party to the transaction is the United Kingdom. Check the appropriate box to identify the specific type of processing action required (See Section 7).

BLOCK 24, Total Gross Weight. Enter the total gross weight of the shipment in kilograms if the transfer is between physically separated facilities. For transfers of nuclear material to or from contractor waste management sites, completion of this block is optional.

BLOCK 25, Total Volume. The shipper should enter the total volume, in cubic meters, if the transfer is to a DOE or NRC licensed waste management site, otherwise no entry is required.

BLOCK 26, Shipper's Data.

Block 26a, Back Reference Number.

- (1) This field is used to reference previously reported data for change purposes.
- (2) The field is comprised of a change digit and a back reference line number.
- (3) This field is optional for corrections with the following:
 - a) Action code C.
 - b) Action codes M and I when reporting adjustments.
- (4) If the back reference number is reported, both the back reference change digit and back reference line number should be reported. For further guidance, contact the NMMSS operator.
- (5) The back reference change digit represents the change digit of the document being corrected for a nullifying entry and the change digit of the document now being completed for a correcting entry. For further guidance, contact the NMMSS operator.
- (6) The back reference line number represents the line number being corrected for a nullifying entry and the line number of the corresponding nullifying line for a correcting entry. For further guidance, contact the NMMSS operator.

Block 26b, Line Number. Enter a sequential number (e.g., 01 through 99 for each transaction) to identify a discrete line. The total number of discrete lines should agree with the number shown in block 10. For paper submission, if more lines of data are to be reported than can be accommodated on one page, prepare an additional DOE/NRC F 741.

Block 26c, Type of Inventory Change. Enter from Table 4-2 or 4-3 the two-digit code. For a full description of each change code, see the corresponding line explanations in Section 11, Material Balance Reporting. Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 9. For shipments to burial sites, see Section 2.14.

Table 4-2. Inventory Change Code—Receipts.

Inventory Change Code	Blocks 26c and 27c Other Receipts
11	Procurement from DOE
13	Purchase Procurement—For Account of DOE
14	DoD Returns—Use A
15	DoD Returns—Use B
16	DoD Returns—Other Uses
21	Production
22	From Other Materials
30	Receipts reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere)
34	Receipts—Miscellaneous
37	Procurement by Others
38	Donated Material—from DOE to Others
39	Donated Material—from Others to DOE

Table 4-3. Inventory Change Code—Removals.

Inventory Change Code	Blocks 26c and 27c Other Removals
41	Expended in Space Programs
42	Sales to DOE
43	Sales to Others for the Account of DOE
44	DoD—Use A
45	DoD—Use B
46	DoD—Other Uses
47	Expended by DOE Tests
48	Routine Tests
51	Shipments reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere)
54	Shipments - Miscellaneous
58	Donated Material—to DOE by Others
59	Donated Material—to Others by DOE
65	Rounding Bias (used for A-M transactions)
71	Degradation to Other Materials
72	Decay
73	Fission and Transmutation
74	Normal Operational Losses/Measured Discards
75	Accidental Losses
76	Approved Write-offs
77	Inventory Differences

Block 26d, Identification (Batch Name). Facilities engaged in the import and/or export of nuclear materials should see Chapter Section 7 for additional requirements; facilities selected under the U.S./IAEA Safeguards Agreement should see Section 9 for additional requirements.

- (1) If this block is not used for import/export or IAEA reporting purposes, other data may be entered.
- (2) An entry is required on import or export transactions. Importers should use the batch name used by the shipper.
- (3) Batch name is limited to 16 characters with the right hand eight characters unique to the reporting facility for the duration of the material balance period in which reported. Uniqueness of batch name within the RIS should be maintained. However, the receiver should use the same batch name used by the shipper. If the receipt of material results in a duplicate of an existing batch name, a subsequent

internal transaction should be created to change one of the duplicate batch names.

Block 26e, Number of Items. Enter the number of similar items (e.g., cylinders, packs, drums, bottles, tank vessels) to which the line of data pertains.

- (1) When reporting fuel pins, rods, or plates, report the number of separate fuel pins, rods, or plates involved.
- (2) When reporting fuel assemblies, report the number of complete assemblies represented by the line entry.
- (3) For transfers of bulk material in a single container, enter the number 1. No entry is required when reporting transactions involving RISs assigned to facilities on the same site (i.e., paired RISs). Leave blank if an M action code is used.

Block 26f, Project Number. Project numbers are structured upon the DOE budget and reporting classification codes, and identify the Headquarters and field elements or site offices having programmatic responsibility for each project. Indices of current project identifications are maintained and issued annually (NMMSS Report T-141) to organizations engaged in DOE production and research programs. Project numbers are required for all G owner code transactions with the following specifications.

- (1) If the material is loan/lease material, the project number is QGD04LLEASE
- (2) All export/import transactions involving DOE-owned material require the project number R50000000G on the foreign entity's side of the data indicating that the material, though located outside the U.S., should remain DOE -owned.

Block 26g, Material Type. Enter one of the numeric codes from the table of nuclear material type codes in Section 2.6 to identify the nuclear material involved in the transaction. Facilities engaged in the import and/or export of nuclear materials should see Section 7 for special instructions.

Block 26h, Composition/Facility Code. Enter the code that identifies the physical and/or chemical form of the nuclear material at the time the transaction occurs. A complete set of composition codes, which consists of available nuclear material composition codes and descriptions, may be obtained from the NMMSS staff in the Office of Resource Management (referred to as Composition of Ending Inventory—COEI codes).

- (1) No entry is required for inventory difference or rounding bias data (e.g., inventory change code 65 or 77 entries).
- (2) Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 9.

Block 26i, Owner Code. Enter one of the 1-character alphabetic codes from the table in Section 2.7, Owner Codes, to identify the material ownership at the time the shipment is made. If the ownership of material on inventory is changed, a transaction should be submitted to the NMMSS reporting the change. The change is reported by an A–M transaction (in-place transfer).

Block 26j, Key Measurement Point. Required only for facilities selected under the U.S./IAEA Safeguards Agreement; see Section 9, if applicable.

Block 26k, Measurement Identification. If selected under the U.S./IAEA Safeguards Agreement (see Section 9), report the following data:

- (1) Measurement basis.
- (2) Other measurement point.
- (3) Measurement method.

Block 26l, Gross Weight. Enter the gross weight of the line entry in rounded kilograms, i.e., weight of material plus packaging and container weight. An approximate or estimated gross weight figure is acceptable.

Block 26m, Net Weight. Enter the net weight of the line entry in the reportable units, i.e., weight of material excluding packaging and container weight. An approximate or estimated net weight figure is acceptable.

Block 26n, Element Weight. For each line, enter the metric weight of the contained nuclear material as prescribed in Section 2.3.1. (See Section 2.3.3 for rounding policy.)

Block 26o, Element Limit of Error. For transactions involving SNM or tritium, measurement uncertainties are to be entered as weight quantities in accordance with the established reporting unit for the MT.

Block 26p, Weight % Isotope. For each line, enter the weight percent of the isotopes U-235, Li-6, Pu-240, Pu-242, and Pu-238, as applicable, to not more than four decimal places.

- (1) For U-233, enter the parts per million of U-232 in whole numbers.
- (2) When reporting fission and transmutation, inventory difference or rounding bias for enriched uranium only; enter the approximate original weight percent of U-235 of the material with which the transaction is associated.
- (3) When reporting transactions involving more than one assay range of one or more materials, data pertaining to each assay range of a material should be entered on a separate line.

Block 26q, Isotope Weight. For each line, enter the metric weight of accountable isotopes. See Section 2.3.3 for rounding policy.

Block 26r, Isotope Limit of Error. For transactions involving SNM or tritium, measurement uncertainties are to be entered as weight quantities in accordance with the established reporting unit for the MT.

Block 26s, Signature of Authorized Official and Date Signed. When submitting the data as paper copy the following apply.

- (1) The shipper's authorized representative must sign the DOE/NRC F 741 and enter the date signed.
- (2) For facilities that use computer-linked telecommunications systems in the transfer of data, the signature requirement is waived.
- (3) For both imports and exports, the requirement to sign the non-DOE portion of a DOE/NRC F 741 only verifies that the individual providing the information is authorized to do so. It was never, nor is it now, intended that a signature on the non-DOE portion indicate an assumed responsibility for proper shipment or receipt of materials.
- (4) If facilities wish, they may provide a disclaimer with the signature on the non-DOE portion to indicate that they are only signing as authorized transmitters of the data to the NMMSS.

BLOCK 27, Receiver's Data. Shipper makes no entry.

Section 5

Nuclear Material Transaction Reporting Instructions

RECEIVER

The receiver should complete the receiver's portion of the DOE/NRC F 741 form by making entries in the numbered blocks as described below.

BLOCK 1, Shipper's RIS. Enters the shipper's facility RIS his/her facility, normally a 3-character field. Under some circumstances, a 4-character RIS should be entered (e.g. appending a letter to the end of a 3-character RIS to denote discharge of material to air or ground). See subsequent Chapters for special instructions for importers and exporters of nuclear materials. This block must be completed for the following types of transactions.

- (1) Transfers between facilities.
- (2) Transfers between RISs within a facility.
- (3) Transfers between facilities and DoD.
- (4) Transfers between domestic and foreign facilities.
- (5) Loan/lease, sale or donation.
- (6) One-party transactions (e.g., transactions with a M action code)
- (7) Corrections to the above transactions.

BLOCK 2, Receiver's RIS. Enter the receiver's RIS, normally 3-characters when the transaction is a transfer of material from the shipper to another facility. Care should be taken to ensure that the receiving facility's RIS is reported and not the RIS for the agent handling the shipment. The shipper or originator enters its facility's RIS in this block for a one-party transaction (e.g., a transaction with a M action code). This field is completed for the types of transactions listed in paragraphs 1a(1) through 1a(7) above. See Section 7 for special instructions concerning imports and exports of nuclear materials.

BLOCK 3, Transaction Number. Enter a consecutive number for the same shipper-receiver combination and ensures that a number is not skipped in the series or duplicated. (NOTE: An exception to the consecutive numbering requirement is allowed when a facility has pre-assigned or reserved numbers for programmatic needs, but the shipment does not subsequently occur. This applies to both physical and nonphysical transfers of material.) For one-party transactions, it is desirable that the shipper enter the appropriate journal entry number to identify the transaction as it occurs (e.g., 000105), the first two digits indicating the year, the next two digits indicating the month (i.e., 01 through 12), and the last two digits identifying the specific transaction in the month. (The example above is for transaction 5 for January of 2000.) Do not prefix or suffix the transfer series number. For one-party or in-place transactions between projects or uranium enrichment contracts, an alphanumeric number may be used when necessary to maintain uniqueness.

BLOCK 4, Correction Number. This block is used to correct or adjust a previously issued DOE/NRC F 741. In preparing the corrected copy, the shipper or receiver should enter in blocks 1, 2, and 3, the same shipper RIS, receiver RIS, and transaction number (transfer series) used in the original report, and then enter in block 4 a consecutive correction number, beginning with 1 (numeral one). The corrected copy should clearly identify the items being corrected. The party making the adjustment should notify the other party to the transaction that an adjustment is necessary and follow up by issuing a corrected DOE/NRC F 741. The correction number is a 1-character field. An alpha correction number may be used by a facility when the correction does not affect the other facility. The shipper and/or receiver must enter the date the adjustment is entered in the facility records in block 22b or 22e, as appropriate. The shipper and receiver should distribute the corrected copy in accordance with the distribution pattern for the original DOE/NRC F 741. This field should be completed when:

- (1) A shipper or receiver issues a corrected DOE/NRC F 741 to adjust data previously reported to the NMMSS;
- (2) A correction affects another facility. A numeric character is required, action code C for the shipper and action code D for the receiver [also see blocks 26a and 27a for further guidance (back reference line number)];
 - (a) For each detail line in block 26 or 27 being corrected, two lines should appear on the corrected copy one with the data originally submitted and the other with the correct data. The line containing the original data should show the number of items, element weight, isotope weight, and limits of error as negative quantities. (For correcting lines that were originally negative, add a positive quantity.) The corrected line must show current quantities in these data fields.
 - (b) For each detail line in block 26 or 27 being deleted, the original line should be repeated, with the number of items, element weight,

isotope weight, and limits of error shown as negated quantities. (For deleting lines that were originally negative, add a positive quantity.)

- (3) Either the shipper or receiver makes an adjustment. The other party to the transaction must either accept the adjustment or acknowledge that an adjustment has been made;
- (4) It is necessary to adjust or correct any data element in a M action code (one-party) transaction reported in a previous period. Either a numeric or an alphabetic character may be used;
- (5) Scrap material is recovered or remeasured for a more accurate total value for the amount of nuclear material in the original shipments. The DOE/NRC F 741 for the original shipments should be corrected by prorating the total amount of the correction according to the amounts of the original shipments. When this method is determined to be impracticable, e.g., for reprocessing campaigns, measurements on several shipments of material recovered simultaneously may be reported as a correction to a single document with additional details provided to the other party.

BLOCK 5, Processing Code. Enter the appropriate 1-character, alphabetic code to identify the specific type of processing action required.

A—initial entry of data.

C—replacement of data. An entire data set may be replaced at any time prior to the close of the processing period in which the initial entry was made with the concurrence of the other party to the transaction.

D—deletion of data. Data may be deleted at any time prior to the close of the processing period in which the initial entry was made.

BLOCK 6, Action Code. Enter the alphabetic code from the table in Section 2.8 that describes the receiver's purpose in issuing the DOE/NRC F 741. The action code is a 1-character alpha field.

B—identifies receiver's data accepting shipper's weights and requires completion of block 22c. This action code is not to be used if the receiver intends to make delayed measurements.

D—identifies receiver's adjustment or acknowledgment of shipper's adjustment and requires completion of block 22e.

E—identifies receiver's independent measurement or determination (including rounding) and requires completion of block 22d.

J—identifies receiver’s interim reporting of project receipts of DOE production or research materials that are in transit at the end of the month or that have been received but not reported. A transaction with action code J should be followed with action code B, E, or S.

M—identifies one-party transactions, (e.g., an onsite gain or loss) reported on DOE/NRC F 741 (or electronic equivalent), and requires completion of block 22a, 22b, 22c, or 22e.

N—identifies known delay for independent measurements of at least 10 days but for less than 30 days. A transaction with action code N should be followed by an action code of B, E, or S.

U—identifies known delay for independent measurements of at least 30 days. A transaction with action code U should be followed by an action code of B, E, or S.

S—identifies receiver’s data accepting shipper’s weights under safeguards closure arrangement and requires completion of block 22c. (Use restricted to DOE contractor sites where an approved shipper-receiver agreement is in effect.)

T—identifies contested weights.

Y—identifies the receiver’s side of an obligation exchange.

BLOCK 22, Action Date. The action date for a transaction is entered in one of the blocks below. Enter numerical date (MMDDYYYY).

Block 22c, Receipt. Enter the date the material is received if the receiver is accepting shipper’s values without making independent measurements.

- (1) For safeguards closures, enter the date the safeguards closure was performed.
- (2) The receiver also should use this block to report the date of receipt of material involved in nonphysical transfers, one-party transactions (i.e., transactions with M action code), project number changes and transactions in which weights are contested. See Section 7 for special instructions for importers or exporters of nuclear materials.

Block 22d, Receiver’s Measurement. Enter the date that independent measurements are performed.

Block 22e, Receiver’s Correction. When either the shipper’s or the receiver’s data on a previously issued DOE/NRC F 741 is adjusted, the receiver enters the date of the receiver’s adjustment or acknowledgment of shipper’s adjustment.

BLOCK 23, Miscellaneous Data.

Block 23a, Miscellaneous. This information is not captured in the NMMSS but is for documentation purposes or desired by one or more users of the transaction information.

Block 23b, Concise Note Attached (DOE/NRC F 740M). This information is captured in NMMSS. Facilities engaged in the import and/or export of nuclear materials (see Section 7) and facilities selected under the U.S./IAEA Safeguards Agreement (see Section 9) may prepare a Concise Note to report additional information. The shipper places a code letter X in the 1-character field to indicate that a Concise Note is attached, if applicable. See Section 7 for special instructions for importers and exporters of nuclear materials.

Block 23c. This information is captured in NMMSS. U.S. importers and/or exporters of nuclear material should use this field only if the other party to the transaction is the United Kingdom. Check the appropriate box to identify the specific type of processing action required (See Section 7).

BLOCK 27, Receiver's Data.

Block 27a, Back Reference Number. This field is optional for corrections with action codes D or M, and I when an adjustment is made.

- (1) This field is used to reference previously reported data for change purposes.
- (2) The field is comprised of a change digit and a back reference line number.
- (3) This field is optional for corrections with the following:
 - a. Action code C.
 - b. Action codes M and I when reporting adjustments.
- (4) If the back reference number is reported, both the back reference change digit and back reference line number should be reported. For further guidance, contact the NMMSS staff in the Office of Resource Management.
- (5) The back reference change digit represents the change digit of the document being corrected for a nullifying entry and the change digit of the document now being completed for a correcting entry. For further guidance, contact the NMMSS staff in the Office of Resource Management.

- (6) The back reference line number represents the line number being corrected for a nullifying entry and the line number of the corresponding nullifying line for a correcting entry. For further guidance, contact the NMMSS staff in the Office of Resource Management.

Block 27b, Line Number. Enter a sequential number (e.g., 01 through 99 for each transaction) to identify a discrete line. The total number of discrete lines must agree with the number shown in block 10. For paper submission, if more lines of data are to be reported than can be accommodated on one page, prepare an additional DOE/NRC F 741.

Block 27c, Type of Inventory Change. Enter from Table 5-1 or 5-2 the two-digit code. For a full description of each change code, see the corresponding line explanations in Section 11, Material Balance Reporting. Facilities selected under the U.S./IAEA Safeguards Agreement should also see Section 9. For shipments to burial sites, see Section 2.

Table 5-1. Inventory Change Code—Receipts.

Inventory Change Code	Blocks 26c and 27c Other Receipts
11	Procurement from DOE
13	Purchase Procurement—For Account of DOE
14	DoD Returns—Use A
15	DoD Returns—Use B
16	DoD Returns—Other Uses
21	Production
22	From Other Materials
30	Receipts reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere)
34	Receipts—Miscellaneous
37	Procurement by Others
38	Donated Material—from DOE to Others
39	Donated Material—from Others to DOE

Table 5-2. Inventory Change Code—Removals.

Inventory Change Code	Blocks 26c and 27c Other Removals
41	Expended in Space Programs
42	Sales to DOE
43	Sales to Others for the Account of DOE
44	DoD—Use A
45	DoD—Use B
46	DoD—Other Uses
47	Expended by DOE Tests
48	Routine Tests
51	Shipments reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere)
54	Shipments - Miscellaneous
58	Donated Material—to DOE by Others
59	Donated Material—to Others by DOE
65	Rounding Bias (used for A-M transactions)
71	Degradation to Other Materials
72	Decay
73	Fission and Transmutation
74	Normal Operational Losses/Measured Discards
75	Accidental Losses
76	Approved Write-offs
77	Inventory Differences

Block 27d, Identification (Batch Name). Facilities engaged in the import and/or export of nuclear materials should see Section 7 for additional requirements; facilities selected under the U.S./IAEA Safeguards Agreement should see Section 9 for additional requirements.

- (1) If this block is not used for import/export or IAEA reporting purposes, other data may be entered.
- (2) An entry is required on import or export transactions. Importers must use the batch name used by the shipper.
- (3) Batch name is limited to 16 characters with the right hand eight characters unique to the reporting facility for the duration of the material balance period in which reported. Uniqueness of batch name within the RIS should be maintained. However, the receiver must use the same batch name used by the shipper. If the receipt of material results in a duplicate of an existing batch name, a subsequent internal transaction should be created to change one of the duplicate batch names.

Block 27e, Number of Items. Enter the number of similar items (e.g., cylinders, packs, drums, bottles, tank vessels) to which the line of data pertains.

- (1) When reporting fuel pins, rods, or plates, report the number of separate fuel pins, rods, or plates involved.
- (2) When reporting fuel assemblies, report the number of complete assemblies represented by the line entry.
- (3) For transfers of bulk material in a single container, enter the number 1. No entry is required when reporting transactions involving RISs assigned to facilities on the same site (i.e., paired RISs). Leave blank if an M action code is used.

Block 27f, Project Number. Project numbers are structured upon the DOE budget and reporting classification codes, and identify the Headquarters and field elements or site offices having programmatic responsibility for each project. Indices of current project identifications are maintained and issued annually (NMMSS Report T-141) to organizations engaged in DOE production and research programs. Project numbers are required for all G owner code transactions with the following specifications.

- (1) If the material is loan/lease material, the project number is QGD04LLEASE
- (2) All export/import transactions involving DOE-owned material require the project number R50000000G on the foreign entity's side of the data indicating that the material, though located outside the U.S., should remain DOE -owned.

Block 27g, Material Type. Enter one of the numeric codes from the list of MTs in Table 2-3 to identify the nuclear material involved in the transaction. Facilities engaged in the import and/or export of nuclear materials should see Section 7 for special instructions.

Block 27h, Composition/Facility Code. Enter the code that identifies the physical and/or chemical form of the nuclear material at the time the transaction occurs. A complete set of composition codes, which consists of available nuclear material composition codes and descriptions, may be obtained from the NMMSS staff in the Office of Resource Management (referred to as Composition of Ending Inventory—COEI codes). No entry is required for inventory difference or rounding bias data (e.g., inventory change code 65 or 77 entries). Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 9.

Block 27i, Owner Code. Enter one of the 1-character alphabetic codes from the table in Section 2.7 to identify the material ownership at the time the shipment is made. If the ownership of material on inventory is changed, a transaction should be submitted to the NMMSS reporting the change. The change is reported by an A–M transaction (in-place transfer).

Block 27j, Key Measurement Point. Required only for facilities selected under the U.S./IAEA Safeguards Agreement; see Section 9, if applicable.

Block 27k, Measurement Identification. If selected under the U.S./IAEA Safeguards Agreement (see Section 9), report the following data:

- (1) Measurement basis.
- (2) Other measurement point.
- (3) Measurement method.

Block 27l, Gross Weight. Enter the gross weight of the line entry in rounded kilograms, i.e., weight of material plus packaging and container weight. An approximate or estimated gross weight figure is acceptable.

Block 27m, Net Weight. Enter the net weight of the line entry in the reportable units, i.e., weight of material excluding packaging and container weight. An approximate or estimated net weight figure is acceptable.

Block 27n, Element Weight. For each line, enter the metric weight of the contained nuclear material as prescribed in Section 2.3.

Block 27o, Element Limit of Error. For transactions involving SNM or tritium, measurement uncertainties are to be entered as weight quantities in accordance with the established reporting unit for the MT.

Block 27p, Weight % Isotope. For each line, enter the weight percent of the isotopes U-235, Li-6, Pu-240, Pu-242, and Pu-238, as applicable, to not more than four decimal places.

- (1) For U-233, enter the parts per million of U-232 in whole numbers.
- (2) When reporting fission and transmutation, inventory difference or rounding bias for enriched uranium only; enter the approximate original weight percent of U-235 of the material with which the transaction is associated.
- (3) When reporting transactions involving more than one assay range of one or more materials, data pertaining to each assay range of a material should be entered on a separate line.

Block 27q, Isotope Weight. For each line, enter the metric weight of accountable isotopes. See Section 2.3.3 for rounding policy.

Block 27r, Isotope Limit of Error. For transactions involving SNM or tritium, measurement uncertainties are to be entered as weight quantities in accordance with the established reporting unit for the MT.

Block 27s, Signature of Authorized Official and Date Signed. When submitting the data as paper copy the following apply.

- (1) For facilities that use computer-linked telecommunications systems in the transfer of data, the signature requirement is waived.
- (2) Otherwise, the shipper's authorized representative must sign the DOE/NRC F 741 and enter the date signed.
- (3) For both imports and exports, the requirement to sign the non-DOE portion of a DOE/NRC F 741 only verifies that the individual providing the information is authorized to do so. It was never, nor is it now, intended that a signature on the non-DOE portion indicate an assumed responsibility for proper shipment or receipt of materials.
- (4) If facilities wish, they may provide a disclaimer with the signature on the non-DOE portion to indicate that they are only signing as authorized transmitters of the data to the NMMSS.

Section 6

Nuclear Material Transaction Reporting Instructions

DOE to DoD

6.1 Transfers from DOE to DoD

6.1.1 Weapons Transfers

SNM in weapons should not be transferred to DoD under 42 U.S.C. §2121(b) until DOE has received direction from the President.

- (1) DOE line management does not transfer nuclear material to DoD, or authorize contractor facilities to make such transfers, until receiving prior written authorization for specific transfers.
- (2) Contractors that are the transferring organization do not ship materials without having prior written authority from DOE line management having jurisdiction for this purpose.
- (3) DOE line management and the contractor retains written authorization on file for audit purposes.
- (4) DoD is not required to have a license to possess nuclear material for the purposes identified above.

6.1.2 Non-Weapons Transfers

- (1) In addition to the conditions identified in paragraph 1a, above, a non-weapon transfer of SNM to DoD under 42 U.S.C. §2121(b) requires the completion of DOE/NRC F 741.
- (2) With the exception of SNM transfers to the Naval Reactors program, authorization for non-weapon transfers of SNM to DoD under 42 U.S.C. §2121(b) should be obtained either from the program office responsible for the DOE-DoD activity, or from the Defense Programs Administrator when there is no DOE programmatic interface with DoD.
- (3) Authorization for SNM transfers to the Naval Reactors program should be obtained from the Deputy Assistant Secretary for Naval Reactors, NNSA.

6.1.3 Transfers of Material in the Possession of Licensees to DoD

NRC is expected to advise all 42 U.S.C. §2131 license holders that whenever licensees are required to deliver SNM to DoD, the licensee should determine from DoD whether the material is being requested by DoD under the conditions of either 42 U.S.C. §2131 or 42 U.S.C. §2121(b), as amended.

6.1.3.1 Transfers of Material to DoD as Licensees Under 42 U.S.C. §2131

When delivery is to be made to the DoD, the licensee follows the normal procedures that NRC has in effect for transfers between licensees.

6.1.3.2 Transfers of Material to DoD Pursuant to 42 U.S.C. §2121(b)

1. When delivery is to be made, the licensee advises the DoD installation to contact the DOE Headquarters, Office of Resource Management for obtaining a determination of which DOE line management is to maintain liaison with DoD and the licensee concerning the disposition of the material.
2. The responsible Departmental Element, in coordination with and through the appropriate Headquarters elements, issues a letter to the DoD installation, with copies to the licensee and all appropriate DOE personnel, approving the transfer to DoD and designating the appropriate DOE line management as liaison with DoD and the licensee office in handling the transfer to DoD.
3. When the licensee is ready to deliver the product ordered by the DoD or DoD contractor, the DOE or site office designated as liaison for the licensee advises the licensee to initiate a DOE/NRC F 741 in accordance with the preparation and distribution instructions that apply to licensees, showing a DOE RIS as the receiving RIS for the nuclear material in block 2. The receiving RIS for such transfers should be a DOE organization and not a contractor organization.
4. Further, if the receiving RIS is other than the NNSA Service Center (RIS AAA), a copy of the shipping document should be sent to AAA and so reflected in the "Distribution of Copies" block. Line management designated as the liaison with DoD and the licensee should ensure the following.
 - Nature of transaction (TI) code D is entered in block 11 to indicate material is being returned to DOE.
 - The licensee is shown as the shipper in block 8, and as the entity having financial responsibility for the material in block 12.
 - The receiving RIS assigned by the designated DOE line management is shown as the receiver in block 9, with a parenthetical entry giving the name and address of the DoD organizational unit or contractor to whom physical delivery is made.

- DOE and the designated DOE line management are shown as assuming financial responsibility for the material in block 13.
 - The letter from the responsible Departmental Element is referenced in block 23.
5. From the data on the DOE/NRC F 741 prepared by the licensee, the NMR for the designated receiving RIS prepares a DOE/NRC F 741 from DOE to DoD using one of the following RISs for the receiving DoD installation.
- QZA for Air Force,
 - QZB for Army, or
 - QZD for Navy.
6. After DoD has received the material, the NMR of the designated receiving RIS signs as receiver in block 27s of the licensee's DOE/NRC F 741 using the data furnished by DoD.
7. The following statement should be entered in block 14 by the NMR of the receiving RIS.
- Acceptance of the material in its existing form is in the best interest of the U.S. Government.*
8. The NNSA Service Center is provided a copy of the completed DOE/NRC F 741. The nuclear material transferred to DoD pursuant to 42 U.S.C. 2121(b) should not contain any foreign obligated material.

6.1.4 Other Nuclear Material Transfers

When nuclear material, other than SNM, is associated with weapons being transferred to DoD, the procedures described in Section 6.1, Transfers from DOE to DoD, are followed. When nuclear material, other than SNM, is not associated with weapons and is being transferred to DoD, the procedures and authorization necessary for making such transfers to licensees apply. Therefore, DoD should obtain and possess the material in the capacity of a licensee under a licensee RIS.

6.1.5 Transfer Documents

All transfers to DoD should be documented on DOE/NRC F 741 in accordance with the instructions in this User Guide. Preparation of DOE/NRC F 741 should vary with the nature of the transfers, as indicated below.

6.1.5.1 Transfers of Training Account Material

Complete instructions for such transfers are contained in Technical Manual, TP100-4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Material*, published under the authority of the Secretaries of the Army, Navy, and Air Force for use by the Defense Special Weapons Agency and DOE. DOE elements that need this information should contact the NNSA Service Center.

6.1.5.2 Transfers of War Reserve Stockpile Items Containing Nuclear Materials

Complete instructions for such transfers are contained in Section 3 of Technical Manual TP100-4.

6.1.5.3 Other Transfers of SNM

Transfers of nuclear materials contained in Navy cores and associated items are reflected in DoD memorandum inventory accounts maintained by the Naval Reactors Laboratory Field Office. The distribution of DOE/NRC F 741 for such transfers is in accordance with the distribution described in Section 3, appropriately modified to provide copies to the Naval Reactors Laboratory Field Office.

Other SNM Transfers under 42 U.S.C. §2121(b) are reflected in DoD memorandum inventory accounts maintained by the NNSA Service Center. The distribution of DOE/NRC F 741 for such transfers, excluding those described in Section 6.1.1, Weapons Transfers, should be in accordance with the distribution described in Section 3, appropriately modified to provide copies to the NNSA Service Center as per Section 6.2 below.

6.2 Distribution of DOE/NRC F 741

Distribution of DOE/NRC F 741 for transfers of weapon-related materials is shown in Technical Manuals TP100-1 and TP100-4. Distribution of DOE/NRC F 741 for transfers of Navy cores and/or other SNM transfers as follows.

6.2.1 Navy Cores

- (1) Copies 1, 2, 3, and 5 are forwarded to the receiver.
- (2) Copy 4 is sent to the shipper's DOE cognizant security authority.
- (3) Copy 6 is forwarded, as appropriate, to either of the following.

U.S. Department of Energy
Manager, NNSA Service Center

PO Box 5400
Albuquerque, NM 87115
Attn: Manager, Technical Security Department (RIS AAA)

OR

U.S. Department of Energy
Manager, Naval Reactors Laboratory Field Office
P.O. Box 109
West Mifflin, PA 15122-0109
Attn: PAA Nuclear Material Representative

(4) Copy 7 is retained by the shipper.

The shipper should instruct the receiver to perform the following.

- (1) complete block 27 on copies 1, 2, 3, and 5;
- (2) return copy 1 to the shipper;
- (3) retain copy 2 for filing;
- (4) mail copy 3 to the shipper's DOE cognizant security authority; and
- (5) mail copy 5 to either the NNSA Service Center or the Naval Reactors Laboratory Field Office, as appropriate.

6.2.2 Other Transfers of Nuclear Material

All transfers of nuclear material under 42 U.S.C. §2121(b) should also be documented on DOE/NRC F 741. Distribution should be made as follows.

- (1) Copies 1, 2, 3, and 5 are forwarded to the receiver.
- (2) Copy 4 is sent to the shipper's DOE cognizant security authority.
- (3) Copy 6 is forwarded to—

Manager, NNSA Service Center
National Nuclear Security Administration—USDOE
P.O. Box 5400
Albuquerque, NM 87115
Attn: Manager, Technical Security Department (RIS AAA)

(4) Copy 7 is retained by the shipper.

The shipper should instruct the receiver to perform the following.

- (1) complete block 27 on copies 1, 2, 3, and 5;
- (2) return copy 1 to the shipper;

- (3) retain copy 2 for filing;
- (4) mail copy 3 to the shipper's DOE cognizant security authority; and
- (5) mail copy 5 to the address for the NNSA Service Center shown above.

6.3 Transfers from DoD to DOE

6.3.1 Training Account Material

Transfer of training account material should be made by DoD as described in Technical Manual TP100-4, Section 3, for nuclear material transfers to U.S. DoD (RIS QZE) and Section 6 for transfers of SNM and source material to the training account (RIS QZC). The instructions prescribe the use of DoD Form 1348 to document the transfer. DOE elements having need for the information should contact the NMR at RIS AAA.

6.3.2 War Reserve Stockpile

Transfer of war reserve stockpile items containing nuclear materials should be made by DoD as described in Technical Manual TP100-4, Section 3, for nuclear material transfers to U.S. DoD (RIS QZE). The instructions prescribe the use of DoD Form 1348 to document the transfer. DOE elements having need for the information should contact the NMR at RIS AAA.

6.3.3 Other Transfers

Other than the transfers referred to above, DoD does not prescribe a form for the shipping DoD installation to document the transfer. However, for any such transfers, the receiving facility must provide DoD with appropriate acknowledgment of receipt, and ensure that DoD documentation of the transfer contains all essential information. In addition, the receiving facility is required to provide the NNSA Service Center or the Naval Reactors Laboratory Field Office with copies of any documentation of the transfer; i.e., receipt acknowledgment or DOE/NRC F 741, as appropriate. DOE line management should maintain a receipted copy of such documents for audit purposes. The basic information that should be included on the transfer document is as follows.

- (1) Date of shipment.
- (2) Name and address of the shipper.
- (3) Description of the nuclear materials (including information as to the purpose for which it was used).
- (4) Type of material.
- (5) If available, the quantity of material by element and isotope.
- (6) Date of receipt.

- (7) Receiver's name and address.
- (8) Signature of the receiving facility's authorized representative.

6.3.4 Transfer Documents

All transfers of nuclear material from DoD should be documented on DOE/NRC F 741.

6.3.4.1 Preparation

The receiver should prepare a DOE/NRC F 741 promptly, completing all appropriate blocks, with the exception of block 26, in accordance with the instructions in Section 5.

6.3.4.2 Distribution

1. One copy to the receiver's DOE cognizant security authority.
2. One copy to either the NNSA Service Center or the Naval Reactors Laboratory Field Office, as appropriate.
3. One copy retained by the receiver.

6.4 Prohibition on Use of Foreign Obligated Material

Material that has a foreign obligation attached under an Agreement for Cooperation in the Peaceful Uses of Nuclear Energy should not be shipped to or received by a facility with a Q RIS.

Section 7

Nuclear Material Transaction Reporting Instructions U.S. and Foreign Nations, Foreign Regional Organizations, or Supranational Organizations

Section 7 provides instructions for the preparation and distribution of DOE/NRC F 741 for transfers of nuclear material between the U.S. and foreign nations, foreign regional elements, or supranational organizations. DOE organizations or contractors who ship to or receive nuclear materials from foreign entities should need to prepare DOE/NRC F 741.

For exports of nuclear material formerly under the INMTS guideline, the following information is designed to assist DOE and NMMSS in accounting for and controlling the export/import of nuclear materials. If the imported or exported nuclear material has foreign obligations, see Section 8 for further instructions. Additional information on export/import requirements can be obtained from the Office of Defense Nuclear Nonproliferation through DOE line management.

7.1 Transfers to a Foreign Entity

The shipper should ensure that appropriate authorization and approval to transfer the nuclear material has been obtained. For exports, this may require either a specific license from the NRC Office of International Programs or a foreign contract number and Shippers Export Declaration (SED) from the Department of Commerce. Contact the cognizant DOE office for further instruction.

7.1.1 Foreign Contract Numbers and Shipper's Export Declarations

- (1) For Government to Government (typically lab to lab) transfers of relatively small quantities of nuclear material, an NRC export license may not be required. Fax a request for foreign contract number to the NMMSS operator. Include the receiving facility, country, end use, and type of transaction (sale, lease, donation, etc.). Contact the cognizant DOE office for request forms and further instruction.
- (2) The NMMSS operator should complete the foreign contract number request with the appropriate RISs and the foreign contract number should be assigned and faxed back to the requesting facility.

- (3) The facility should fax this information to the NMMSS staff in the Office of Resource Management prior to completing the 741 form to authorize the shipment.
- (4) When a contract number is required, the contract number must be inserted in the transfer authority field (block 14) of the 741 form. When an SED is required, the alphanumeric code for the SED must be inserted in the license field (block 15) of the 741 form. Contact the cognizant DOE office for additional information.

7.1.2 Specific Export Licenses

- (1) For larger quantities of nuclear material that exceed specified threshold limits, a specific export license from the NRC Office of International Programs may be required. Contact the NRC Office of International Programs for further specific license information.
- (2) If required, the facility should complete an NRC Form 7, applying for a specific license.
- (3) Once the NRC has issued a license for the export (XSOU for source material, XB for byproduct material, XSNM for special nuclear material, XW for waste, etc.), the facility may ship the amount of specified material up to the authorized amount. The export of the authorized material may be in one or in many individual shipments.
- (4) When completing the 741 form for the export, the facility inserts the assigned export license number in the license field. The DOE contract (if any in block 9 of the NRC Form 7 application) should be inserted in the transfer authority field. If there is no DOE contract number, leave this field blank. If no license is required, the facility may enter LIC-EXEMPT in the license field. If the material is covered under a general license, the facility may enter GEN-LIC in the license field. It is important in preparing DOE/NRC F 741 that the entry in block 2 be the proper international nuclear facility code for the receiver's facility. (Refer to the NMMSS International Nuclear Facilities Codes Directory, which lists the names and corresponding RISs of international nuclear facilities identified to possess source and/or SNM and verified with the NMMSS Staff in the Office of Resource Management.)
- (5) The receiver's name and address, which are not necessarily the same as the name and address of the facility, should be entered in block 9a. This data is not captured by NMMSS.
- (6) Transfers of material under a mutual defense agreement should be identified by entering QZF in block 2 of DOE/NRC F 741 for transfers to France or QZG for transfers to the United Kingdom.
- (7) Owner code G (U.S. Government owned) or J (other owned), as appropriate, should be entered in block 26i to reflect material ownership.
- (8) Facilities engaged in the import and/or export of nuclear materials also should follow the special instructions in this section and Section 8 of this User Guide. No entry is required in block 15 for transfers of material under a mutual defense agreement.

Transfers under 42 U.S.C. §2121(c) involving defense activities, other than those for which responsibility has been specifically assigned by Headquarters, must be coordinated through the Manager, NNSA Service Center.

- (9) In addition to any other markings, transfers of nuclear material to the United Kingdom must be reported in block 23c.

7.2 Transfers from a Foreign Entity

- (1) The receiver, in preparing DOE/NRC F 741, should enter in block 1 the proper RIS for the shipper's facility. In block 8a, enter the shipper's name and address, which are not necessarily the same as the name and address of the facility. This data is not captured by NMMSS.
- (2) Transfers of material under a mutual defense agreement should be identified by entering QZF in block 1 of DOE/NRC F 741 for transfers from France or QZG for transfers from the United Kingdom.
- (3) Owner code G or J, as appropriate, should be entered in block 27i to reflect material ownership.
- (4) No entry is required in block 15 for transfers of material under a mutual defense agreement. Transfers of material originally shipped under 42 U.S.C. §2121(c) involving defense activities, other than those for which responsibility has been specifically assigned by Headquarters, must be coordinated through the Manager, NNSA Service Center.
- (5) In addition to any other markings, transfers of nuclear material from the United Kingdom must be reported in block 23c.
- (6) Facilities engaged in the import and/or export of nuclear material should also follow the special instructions in this section and Section 8 of this User Guide.

7.3 Batch Formation and Naming

For the import of material from a foreign nation or entity, use the shipper's batch identification. Reporting of inventory changes on DOE/NRC F 741 under the U.S./IAEA Safeguards Agreement is done at the batch level of detail; and under an agreement between the U.S. Government and the IAEA, imports and exports also should be reported at the batch level of detail. Special instructions for importers and exporters are in Section 7.4 and in Sections 8 and 10 of this User Guide.

Data on a batch are contained on a single detail line of DOE/NRC F 741. All material in a single batch should have the same value for all of the following data elements.

- (1) Type of inventory change (required under the U.S./IAEA Safeguards

Agreement only).

- (a) Batch name.
 - (b) Number of items.
 - (c) Composition/facility code.
- (2) Key measurement point (required under the U.S./IAEA Safeguards Agreement only).
- (3) Measurement identification code, i.e., measurement basis, other measurement point, and measurement method (required under the U.S./IAEA Safeguards Agreement only).

If the material in a single batch has multiple values for data elements, the data for the batch must be listed on two or more detail lines, with common data elements repeated. An example of a batch requiring more than one line would be irradiated fuel containing both uranium and plutonium. The data for such a batch would be listed using one line for uranium data and one line for plutonium data.

7.4 Facilities Engaged in the Import and/or Export of Nuclear Materials

U.S. importers and/or exporters of nuclear materials are required to use DOE/NRC F 741 for documentation of all transactions. In addition, U.S. facilities involved in importing or exporting are required to complete the portion of the DOE/NRC F 741 normally completed by the other facility involved in a transfer.

U.S. importers and exporters need to complete both the shipper's and the receiver's portion of the form. The required signing of the non-DOE portion of a DOE/NRC F 741 should indicate only that the signing individual is authorized to provide the information to the NMMSS and should not imply any responsibility for proper shipment or receipt of the materials reflected on the non-DOE side of the document. Facilities engaged in the import and/or export of nuclear materials need to complete the numbered blocks on DOE/NRC F 741 as specified in Sections 2,3,4, and 5 of this User Guide.

The following instructions are specific for importers and exporters of nuclear materials and apply only to shipments containing 1 gram or more of SNM or 1 kilogram or more of source material.

BLOCK 1, Shipper's RIS. The U.S. exporting facility should enter its RIS in block 1. The U.S. importing facility should enter the foreign shipper's RIS from the NMMSS International Nuclear Facilities Codes Directory.

BLOCK 2, Receiver's RIS. The U.S. exporting facility should enter the foreign receiver's RIS from the NMMSS International Nuclear Facilities Codes Directory. The U.S. importing facility should enter its RIS.

BLOCK 14, Transfer Authority. For exports, the U.S. exporter should enter the authorizing contract or foreign contract number as applicable, in accordance with the procedures set forth in Section 7.1, Transfers to a Foreign Entity. For imports, the U.S. importer should enter the authorizing contract, if applicable.

BLOCK 15, Export or Import Transfers, License Number. The U.S. facility should enter the appropriate authorizing SED number or specific license number in this field if applicable. If no SED or license is required, the facility can enter LIC-EXEMPT or GEN-LIC for a general license. See Section 4 for further guidance.

BLOCKS 17-21, Obligation Information. For imports or exports involving foreign obligated material, the U.S. facility should complete these fields. (See Section 8).

NOTE: Only EURATOM¹ and U.S. non-obligated material may be transferred under a Mutual Defense Agreement.

BLOCK 23c, U.K. Reportable. U.S. exporters or importers involved in a transfer with the United Kingdom should enter the transfer category in this block by checking one of the following.

- (1) A transfer of material pursuant to the U.S./U.K. Mutual Defense Agreement, check NO.
- (2) A transfer of material for military use but not pursuant to the U.S./U.K. Agreement, check NO.
- (3) A transfer of material for peaceful use, check YES.

BLOCK 26d, Identification (Item/Batch Name).

¹ EURATOM is comprised of 27 member states: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Hungary, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

- (1) A U.S. facility that is an exporter completing the shipper's data should create a batch name that should be unique to that transaction within the facility. For fuel assemblies, pins, sealed sources, and UF₆ cylinders, the batch name should be its identification number. In addition, fuel assemblies, pins, sealed sources, and UF₆ cylinders should each be separate batches.
- (2) A U.S. facility that is an importer completing the shipper's portion of the data for the foreign facility should obtain and use the shipper's batch name as provided by the shipper.
- (3) If data previously reported on a batch are being corrected, the same batch name must be used on the correction document as on the original document. If the batch name is being corrected, the "was" line should show the batch name originally reported and the "should be" line should show the correct batch name.

BLOCK 26g, Material Type.

- (1) A U.S. facility that is an exporter completing the shipper's data should enter the correct U.S. MT code from the table in Section 2.6.
- (2) A U.S. facility that is an importer completing the shipper's data for a foreign facility should convert the IAEA element code provided by the shipper to the U.S. MT code from Table 7-1. If the foreign facility does not provide an IAEA element code, the U.S. facility should supply the appropriate U.S. MT code and attach a Concise Note to this effect.

Table 7-1 Material Type Codes and IAEA Element Codes—Import Export.

Description	U.S. Material Type Code	IAEA Element Code
Depleted Uranium	10	D
Enriched Uranium	20	EG
Plutonium	50	P
Normal Uranium	81	N
Thorium	88	T
All Others	(All Other Codes)	(Blank)

BLOCK 27d, Identification (Batch Name). Whether the U.S. facility is an importer completing the receiver's data or an exporter completing the receiver's portion of the data for a foreign facility, the U.S. facility should enter the same batch name as entered in block 26d.

BLOCK 27g, Material Type.

- (1) A U.S. facility that is an importer completing the receiver's data should enter the correct U.S. MT code from the list of material types in block 26g.

- (2) A U.S. facility that is an exporter completing the receiver's data for the foreign facility should enter the same MT code as entered in block 26g.

7.5 Distribution of DOE/NRC F 741

Distribution of DOE/NRC F 741 data should be in accordance with the following procedures.

7.5.1 Secondary Distribution of DOE/NRC F 741

The NMMSS (QFA) should make secondary distribution of DOE/NRC F 741 at the close of the process month for the countries/entities with which the United States has bilateral agreements for cooperation that require report distribution. This distribution is made for Australia, Canada, EURATOM, and Japan through the DOE/NNSA Office of International Regimes and Agreements.

- (1) For transactions involving 42 U.S.C. §2121(c), Material for EURATOM, the shipper must prepare and distribute an additional copy of the receipted DOE/NRC F 741 to the NNSA Service Center.
- (2) Copy 2 of DOE/NRC F 741 should accompany the shipment if it contains 1 or more grams of SNM or 1 or more kilograms of source material.

7.5.2 Transfers of Material to or from the United Kingdom (QZG)

For Transfers of Material to or from the United Kingdom (QZG) under the Mutual Defense Program, the distribution instructions below should apply.

7.5.2.1 Classified RD/FRD Information

If the data documenting the transfer is classified RD/FRD, 9 copies of the DOE/NRC F 741 are to be distributed as below.

Copies 1–5 OUTER ENVELOPE

Chief, Joint Atomic Information Exchange Group
8725 John J Kingman Road
Mail Stop 6201
Ft. Belvoir, VA 22060-6201
Attn: JAIEG

INNER ENVELOPE

Chief, Joint Atomic Information Exchange Group
8725 John J Kingman Road
For: (name of recipient)
Ft. Belvoir, VA 22060-6201
Attn: JAIEG

Copy 6.

OUTER ENVELOPE

U.S. Department of Energy
P.O. Box 23865
Washington, D.C. 20026-3865

INNER ENVELOPE

U.S. Department of Energy
NNSA Office of Operations and Construction Management
P.O. Box 23865
Washington, D.C. 20026-3865

Copy 7.

Chief, Joint Atomic Information Exchange Group
Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, VA 22310-3398

Copy 8.

NNSA Service Center
P.O. Box 5400
Albuquerque, NM 87115
Attn: Manager, Technical Security Department

Copy 9. Retain for internal use.

The shipper/receiver should need to include a letter of transmittal to the Chief, Joint Atomic Information Exchange Group requesting that copies 1 through 5 of DOE/NRC F 741 be forwarded [for ultimate transmittal to Atomic Weapons Establishment (AWE)] to—

British Embassy

Washington, D.C.
Attn: Atomic Coordinating Office

The shipper/receiver needs to also instruct the British Defense Staff to sign two copies of the DOE/NRC F 741 documenting the transfer, and to forward one copy to the DOE shipper/receiver and one copy to—

NNSA Service Center
RIS AAA
P.O. Box 5400
Albuquerque, NM 87115
Attn: Manager, Technical Security Department

7.5.2.2 Loan of Weapons Material Transfer

If the transfer represents a loan of weapons material, both the DOE/NRC F 741 and the letter of transmittal should include a reference to a U.S. loan authorization.

7.5.2.3 Sale of Nuclear Material Transfer

If the transfer represents a sale of nuclear material to the United Kingdom, record the transaction as Purchased by Aldermaston (PALD) or Purchased by Aviation Ministry (PAM) sales authorization, as appropriate.

7.5.2.4 Unclassified or Classified NSI

If the DOE/NRC F 741 documenting the transfer is unclassified, or classified NSI, three copies (copies 6 and copies 8–9) of the form are to be distributed according to the locations noted in Section 7.5.2.1. Copy 1-5 and 7 are not required by the Joint Atomic Information Exchange Group; however, copies 1-5 are to be distributed to the U.S. DOE locations noted in Section 7.5.2.1.

Section 8

Nuclear Material Transaction Reporting

Foreign Obligations Tracking

Special procedures should be used to implement the reporting requirements of the U.S. Bilateral Agreements for Peaceful Nuclear Cooperation. These agreements for cooperation are necessary to allow the U.S. Nuclear Industry to trade with foreign countries/entities, per Section 123 of the Atomic Energy Act of 1954.

The agreements require that the U.S. track and report the foreign-obligated nuclear materials and produced nuclear materials from these countries/entities within the boundaries of the U.S.

A foreign obligation can be defined as a commitment by one government to another to treat nuclear materials, nonnuclear materials, equipment and components in a manner consistent with the agreement signed between the two governments.

In addition to these agreements for cooperation, the U.S. has a requirement to track and report to Russia the imports, exports, and use of the Former Soviet Union down-blended highly-enriched uranium.

Facilities that are importers and/or exporters of nuclear material also should comply with Sections 7 and 9.

Material that has a foreign obligation attached under an Agreement for Cooperation in the Peaceful Uses of Nuclear Energy may not be shipped to or received by a facility with a Q RIS.

8.1 Imports

For U.S. facilities importing nuclear material with foreign obligations, the relevant obligation information should be supplied by the appropriate Government agency (DOE, Department of State, and NRC) in advance of the receipt. This Government notification should supply the U.S. facility with the information necessary to complete blocks 17-21, if applicable.

For imports, the foreign obligation information can be—

- (1) country/entity from which the nuclear material was shipped, and/or
- (2) country/entity attaching third-party obligations.
- (3) In most cases, for imports from a country that has made the entire shipment subject to the agreement, the total import quantity should be obligated. If only a portion of the shipment is subject to an agreement (third party

obligation), that amount should be clearly specified on the documentation. These should be identified as such in the Government notification supplied to the U.S. facility in advance of the import.

For completion of blocks 17-21, the Government notification should supply the following,

- (1) the country/entity code of obligation,
- (2) the material type, and
- (3) the amount obligated.

Table 8-1. Foreign Obligation Codes.

Country/Entity	Obligation Codes *
31	Australia
32	Canada
33	EURATOM
34	Japan
35	Peoples Republic of China
36	Czech Republic
91	Australia and EURATOM
92	Canada and EURATOM
WR	Former Soviet Union Weapons

*NOTE: For any other obligation codes not included above, contact the Office of Resource Management for further instructions.

Table 8-2. Material Type Codes, IAEA Element Codes, and Quantities for Source and SNM—Obligations Tracking.

Type	Domestic Code	IAEA Code	Reportable Obligated Quantity *
Natural Uranium	MT 81	N	Kilogram Uranium
Depleted Uranium	MT 10	D	Kilogram Uranium
Thorium	MT 88	T	Kilogram Thorium
Plutonium	MT 50	P	Gram Plutonium
High Enriched Uranium	MT 20 ≥ 20%	EG	Gram Total Uranium for Element Gram U-235 for Isotope
Low Enriched Uranium	MT 20 < 20%	EG	Gram Total Uranium for Element Gram U-235 for Isotope
Uranium-233	MT 70	EK	Gram Total Uranium for Element Gram U-233 for Isotope

*For foreign obligations tracking, only the element weight is required except for uranium enriched in U-235 or U-233.

BLOCK 17, Line Number. The facility should enter a sequential number (01 through 99)

for each obligated country or material. If there is more than one separate obligation or more than one obligated material type, enter the appropriate numbers in the subsequent lines.

BLOCK 18, Country of Obligation. For each obligation line, enter the code from Table 8-1 that represents the country/entity of obligation.

BLOCK 19, Material Type. For each obligation line, enter the domestic code from Table 8-2 that represents the material obligated. The only material types to be reported are 10, 20, 50, 70, 81, and 88.

BLOCK 20, Obligated Element Weight. Enter the element weight of the amount obligated. Refer to Table 8-2.

BLOCK 21, Obligated Isotope Weight (for Enriched Uranium in U-235 and or U-233 only). Enter the isotope weight of the amount obligated to the nearest gram.

8.2 Domestic Transfers

The U.S. shipper should assign the appropriate obligations on the material, if any, and complete the line number, country/entity of obligation, material type and obligated weight entries, as applicable.

The U.S. receiver should complete the matching obligation information as assigned by the shipper, if accepting shipper's values. If receiver does not accept shipper's weights, the receiver's weights should be recorded for the foreign obligated material.

BLOCK 17, Line Number. The facility should enter a sequential number (01 through 99) for each obligated country or material. If there is more than one separate obligation or more than one obligated material type, enter the appropriate numbers in the subsequent lines.

BLOCK 18, Country of Obligation. For each obligation line, enter the code from Table 8-1 that represents the country/entity of obligation.

BLOCK 19, Material Type. For each obligation line, enter the domestic code from Table 8-2 that represents the material obligated. The only material types to be reported are 10, 20, 50, 70, 81, and 88.

BLOCK 20, Obligated Element Weight. Enter the element weight of the amount obligated. Refer to Table 8-2.

BLOCK 21, Obligated Isotope Weight (for Enriched Uranium in U-235 and or U-233 only). Enter the isotope weight of the amount obligated to the nearest gram.

8.3 Internal Facility Transactions

For internal transactions (e.g., burn-up, decay, production, measured discards, accidental losses or gains, category changes, fission and transmutation, inventory differences, etc.), enter the line number, country/entity of obligation, material type and obligated weights, if applicable in Blocks 17-21.

8.4 Exports

For exports, the U.S. shipper should complete, the shipper's and receiver's DOE/NRC F 741.

If the U.S. shipper is exporting foreign obligated material, the U.S. shipper should complete blocks 17-21 for each obligated country/entity or material exported.

NOTE: If the export requires a NRC export license, the license should specifically permit the export of that obligated material on the face of the license. See Sections 7 and 9 for additional information on imports and exports.

Section 9

Nuclear Material Transaction Reporting

IAEA Safeguards Agreements

Special procedures should be used to implement some of the reporting requirements of the U.S./IAEA Safeguards Agreement.

Section 9 provides direction for use of these special procedures for facilities that have been selected either under the terms of the U.S./IAEA Safeguards Agreement or Protocol. Such facilities should note that all requirements and procedures in other sections of the User Guide apply, in addition to the special requirements shown below.

Facilities selected under the U.S./IAEA Safeguards Agreement that are importers and/or exporters of nuclear material also should comply with Sections 7 and 8.

For further guidance, refer to Code 10 of the Subsidiary Arrangements to the U.S./IAEA Safeguards Agreement.

9.1 Batch Formation and Naming

Reporting of inventory changes on DOE/NRC F 741 under the U.S./IAEA Safeguards Agreement is at the batch level of detail. In general, the data on a batch are contained on a single detail line of DOE/NRC F 741.

All material in a single batch should have the same value for all of the following data elements:

- (1) type of inventory change,
- (2) batch name,
- (3) number of items,
- (4) composition/facility code,
- (5) key measurement point, and
- (6) measurement identification code (i.e., measurement basis, other measurement point, and measurement method).

If the material in a single batch has multiple values for data elements, the data for the batch must be listed on two or more detail lines, with common data elements repeated. An example of a batch requiring more than one line would be irradiated fuel containing both uranium and plutonium. The data for such a batch would be listed using one line for uranium data and one line for plutonium data.

If a facility selected by the IAEA receives a shipment, the receiver's data must be reported with a one-to-one, line-by-line correspondence to the shipper's data rather than at the batch level of detail.

If inventory change code 22 or 71 is entered in block 26c or 27c, as applicable, the batch name in block 26d or 27d must be composed of the appropriate character code from Table XV-18, followed by a unique sequence number (e.g., EN-800423). (The IAEA does not require the reporting of category changes of enrichment for enriched uranium.) For each entry with an inventory change code of 22, there must be a corresponding entry with an inventory change code of 71 with the same batch name.

Guidance for reporting de-exemption for use or quantity and exemption for use, quantity, or termination due to non-nuclear use should be provided by the Office of Resource Management, and the Office of International Regimes and Agreements. A description of de-exemption codes (e.g., DU, DQ, EU, EQ, etc.) is given in Code 10 of the Subsidiary Arrangements to the U.S./IAEA Safeguards Agreement.

9.2 DOE/NRC F 741 Instructions

Facilities selected by the IAEA are required to use DOE/NRC F 741 for documentation of all transactions, including transfers between the IAEA material balance areas (MBAs) within the facility and certain other types of onsite inventory changes. Specific instructions for these onsite inventory changes should be provided by the Office of International Regimes and Agreements on a case-by-case basis.

Facilities notified of selection by the IAEA should complete the numbered blocks on DOE/NRC F 741 as specified in other sections of this User Guide with the following additional requirements.

BLOCK 23b, Concise Note Attached.

The domestic shipper or receiver places an X in the appropriate box to indicate whether or not a Concise Note is attached to the DOE/NRC F 741.

DOE/NRC F 740M. A Concise Note should be used by the shipper or receiver to supply additional nuclear materials transaction data in free text format, either at the reporting facility's option or as required by the facility

attachment or transitional facility attachment. See Section 10 for further information on Concise Notes.

BLOCK 26, Shipper Data.

Block 26c, Type of Inventory Change. When reporting types of transactions denoted by codes DU, DQ, EU, EQ, or TU, a special code should be required in this block. Special codes and procedures should be provided by the Office of International Regimes and Agreements on a case-by-case basis.

Block 26d, Identification (Item/Batch Name).

- (1) The shipper should create a unique batch name. For guidance regarding the number of characters in a batch name, contact the NMMSS operator. For fuel assemblies, pins, sealed sources, and UF₆ cylinders, the batch name should be its identification number. A batch name should not appear more than once on a single DOE/NRC F 741 unless the data for a single batch requires more than one line.
- (2) If inventory change code 22 or 71 is entered in block 26c or 27c or transaction code DU, DQ, EU, EQ, or TU is being reported, see Section 7 of this User Guide for guidance in constructing a batch name.
- (3) If data previously reported on a batch is being corrected, the same batch name must be used on the correction document as on the original document. If the batch name is being corrected, the “was” line should show the batch name originally reported and the “should be” line should show the correct batch name.

Block 26h, Composition/Facility Code. Special codes and procedures should be provided by the Office of International Regimes and Agreements on a case-by-case basis.

Block 26j, Key Measurement Point. Enter the appropriate flow key measurement point code of the facility attachment or transitional facility attachment.

Block 26k, Measurement Identification consists of measurement basis, other measurement point, and measurement method as shown below.

- (1) Measurement Basis. Enter the appropriate code from the following list.

N—batch data are based on measurements made at another MBA, and this is the first time the data are being reported for this MBA.

L—batch data are based on measurements made at another MBA, the data are being reported for the MBA and this is the second, third, etc., time.

M—batch data are based on measurements made at this MBA, and this is the first time the data are being reported for this MBA.

T—batch data are based on measurements made at this MBA, and this is the second, third, etc., time the data are being reported for this MBA.

- (2) Other Measurement Point. If an M was entered for the measurement basis, enter the appropriate code to indicate the key measurement point if different from the key measurement point indicated by the code in block 26j.
- (3) Measurement Method. If two or more measurement methods having different measurement uncertainties may be employed at a particular key measurement point, enter the appropriate code to indicate the method used for measurement, as agreed with the IAEA.

BLOCK 27, Receiver's Data.

Block 27c, Type of Inventory Change. Fill out as per instructions above for block 26c.

Block 27d, Identification (Item/Batch Name). Enter the same batch name as the shipper entered in block 26d.

- If a batch name has not been assigned, see Section 7 of this Manual for guidance in constructing a batch name.
- If the material is being imported, the receiver should use the batch name provided by the shipper.

Block 27h, Composition/Facility Code. Fill out as per instructions above for block 26h.

Block 27j, Key Measurement Point. Fill out as per instructions above for block 26j.

Block 27k, Measurement Identification. Fill out as per instructions above for block 26k.

Section 10

Nuclear Material Transaction Reporting

Concise Note

10.1 Conditions for Concise Note Submissions

Facilities are to submit a Concise Note under the following circumstances.

- (1) Facilities selected under the U.S./IAEA Safeguards Agreement or Protocol are required to submit Concise Notes to accompany submission of transaction, material balance and physical inventory data, as appropriate, for conveying explanatory information to the IAEA.
- (2) Facilities engaged in the import and/or export of nuclear materials that for any reason cannot use the same batch name as the shipper or if the shipper fails to supply a batch name, the importer should supply his own batch names and attach a Concise Note to that effect.
- (3) If the shipper fails to supply its IAEA facility code or the IAEA material type code, a Concise Note should be prepared stating that the data was not supplied.
- (4) Facility attachments or transitional facility attachments for selected facilities may specify circumstances under which Concise Notes are required to be submitted to the IAEA accompanying other reports. Such Concise Notes are used to convey to the Foreign State the required data items associated with reported accounting data.

10.2 DOE/NRC F 740 M Instructions

BLOCK 1, Name and Address. Leave blank.

BLOCK 2, Attachment to. Place a check mark or an X in the appropriate box to indicate whether this explanatory information should be attached to a DOE/NRC F 741, 742, or 742C.

BLOCK 3, RIS. Enter the RIS for your facility to which the explanatory information in this

report applies.

BLOCK 4, Reporting Period. Complete this block if 2b or 2c was checked, indicating that this concise note is attached to a DOE/NRC F 742C, Physical Inventory Listing. Enter the beginning and ending dates of the reporting period as shown on DOE/NRC F 742 or F 742C.

BLOCK 5, Transaction Data. Complete this block only if box 2a was checked, indicating that this F 740M is attached to a DOE/NRC F 741. All entries in this block should be identified to those on the DOE/NRC F 741. Fill in the blocks as follows.

Block 5a. Enter shipper's RIS.

Block 5b. Enter receiver's RIS.

Block 5c. Enter the unique transaction number.

Block 5d, Correction Number. Used when DOE/NRC F 741 is a correction to a previous report.

Block 5e, Processing Code. Enter the same code as was used in the DOE/NRC F 741.

Block 5f, Action Code. If a DOE/NRC F 740M is attached enter the same action code as in block 6 of the DOE/NRC F 741. Otherwise enter action code M.

BLOCK 6, Reporting Date. Complete this block if box 2a or 2c was checked. Copy the date shown on DOE/NRC F 741 or 742C.

BLOCK 7. The actual explanatory data and the other data necessary to link the explanatory data to the parts of the report to which they apply. Complete this block as follows.

Block 7a, Line Number. Enter the consecutive number beginning with one (01) for each explanatory reference.

Block 7b, Entry Reference.

(1) If the explanatory information entered on this line of the DOE/NRC F 740M applies to the entire DOE/NRC F 741, 742, or 742C, enter the words, "Whole Report."

- (2) If the explanation applies to the data on a specific batch on a DOE/NRC F 741 or 742C, copy the batch name exactly as it appears on DOE/NRC F 741 or 742C.
- (3) If the explanation applies to a specific material balance category on a DOE/NRC F 742, enter the two-digit number of the material balance category.
- (4) If the explanation applies to material balance categories 11, 30, 42, 43, or 51, enter the RIS shown on the line of the DOE/NRC F 742.
- (5) If the explanation applies to categories 22 or 71, enter the 2-character inventory change type (ICT) as shown on that line of the DOE/NRC F 742.
- (6) If DOE/NRC F 740M action code is M, enter “General.”

Block 7c, Text of Concise Note. Enter any 43 characters, letters, numbers, or special characters per line. Up to 99 lines of text may be used for any one explanation.

BLOCK 8. The DOE/NRC F 740M is to be signed by an authorized representative of the facility.

BLOCK 9. Enter the title of the person signing the form.

BLOCK 10. Enter the date the form was signed.

10.3 Computer-Readable Format

DOE/NRC F 740M may be put into computer-readable format following additional guidance in NMMSS Reports D-22 and D-23.

10.4 Distribution

The Concise Note should be submitted at the same time as the submission of the data to which the Concise Note refers. If associated with a DOE/NRC F 741, 742, and/or 742C, copies of DOE/NRC F 740M should be attached as applicable. Under certain circumstances, a DOE/NRC F 740M can be submitted as a stand alone document (e.g., to comply with IAEA reporting requirements).

Section 11

Material Balance Reporting

General

Section 11 provides instructions to DOE license-exempt contractors and NRC and Agreement State licensees that are DOE contractors for the preparation and distribution of DOE/NRC F 742, Material Balance Report, (MBR) or its electronic equivalent.

Section 12 contains special MBR instructions for facilities that have been selected under the terms of either the U.S./IAEA Safeguards Agreement or Protocol. The calculations for, and preparation of, the MBR to be provided to the IAEA should be performed by NMMSS. Before the report is dispatched to the IAEA, NMMSS should provide a copy to the facility concerned to ensure that the data is correct.

A MBR must be prepared either by the NMMSS staff in the Office of Resource Management or by the facility. A facility may place a standing request with NMMSS to have an NMMSS-generated MBR, DOE/NRC F 742, provided to the facility in lieu of submission of reports. In such cases, the facility that receives the NMMSS-generated report must reconcile the facility's balances to the NMMSS. Reconciling transactions must be submitted if NMMSS balances are to be changed.

11.1 Submission Requirements for MBRs

MBRs must be submitted either

- (1) annually, by September 30 for all facilities and additionally as directed by the DOE cognizant security authority; or
- (2) as specified in facility attachments or transitional facility attachments for DOE facilities selected under the provisions of the U.S./IAEA Safeguards Agreement.

11.2 Nuclear Material in Transit

Nuclear material in transit at the end of a reporting period should be included in the receiver's reported inventory as if it had reached the intended receiver within the reporting period (in transit rule).

11.3 Radioactive Decay

Radioactive decay should be reported on MBRs on an annual basis when the decay has reached reportable quantities or at a more frequent reporting interval if required by the DOE cognizant security authority.

11.4 Classification and Security Requirements

The submitted MBR, whether submitted on paper or electronically, should be classified using appropriate classification guidance and following the procedures contained in DOE M 475.1-1B, *Manual for Identifying Classified Information* and should be marked with appropriate classification markings and transmitted following procedures contained in DOE M 470.4-4, *Information Security*.

11.5 Reporting Units

- (1) Quantities should be reported by element and isotope weight in metric units. Refer to Section 2.6 and the table below if necessary.

Table 11-1. Material Type Codes Used For Specific Circumstances.

	Name of Material	Material Type Code
Losses—Weapons and Nonweapons (See 42 U.S.C. §2121(b) Material)	Uranium-Depleted in U-235	11
	Uranium-Enriched in U-235	21
	Plutonium	51
	Lithium-Enriched in Li-6	61
	Uranium-Enriched in U-233	71
Losses (See 42 U.S.C. §2121(c) Material)	Uranium-Depleted in U-235	11
	Uranium-Enriched in U-235	21
	Plutonium	51
	Lithium-Enriched in Li-6	61
	Uranium-Enriched in U-233	71
Scrap Data	Uranium-Depleted in U-235	10
	> 0.711% to < 10.00%	21
	10.00% and above	33
	Plutonium	51
Total—Inventory Data	Uranium-Depleted in U-235	10
	Uranium-Enriched in U-235	20
	Plutonium-242	40
	Plutonium	50
	Lithium-Enriched in Li-6	60
	Uranium-Enriched in U-233	70

- (2) Enter the element weight, i.e., total weight of all isotopes contained in the element being reported in column A.
- (3) Enter the isotope weight, i.e., weight of the isotopes for the element being reported in

column B.

- (4) Convert volume measurements that have been made or records that are kept in volume units to the reporting unit for the material type.
- (5) If the degree of precision to which facility records are kept is greater than that required for reporting purposes, use the rounding procedures defined in section 2.3.

11.6 DOE/NRC F 742 Instructions

Data submitted on paper should be reported as follows.

BLOCK 1. Enter the name and address of the facility.

BLOCK 2. Enter the appropriate possession license numbers if the reporting facility is a licensed contractor.

BLOCK 3, RIS. Enter the RIS under which the material being reported is or was held. Submit a separate DOE/NRC F 742 for each RIS.

BLOCK 4, Report Period. Enter inclusive dates (MM/DD/YYYY).

BLOCK 5, Material Type. Enter the name of the material (See Section 2.3.1).

NOTE: Submit a separate report for each type.

BLOCK 6a, Process Code. Leave blank.

BLOCK 6b, Correction ID. Leave blank.

SECTION A MATERIAL ACCOUNTABILITY

LINE 7, DOE/NRC F 740M Attached. Only required for facilities selected under the U.S./IAEA Safeguards Agreement.

LINE 8, Beginning Inventory—U.S. Government Owned. Enter inventory of U.S. Government owned material as of opening of business on the first day of the report period covered by the DOE/NRC F 742. These figures should not differ from line 80 of the DOE/NRC F 742 submitted at the close of the preceding report period.

LINE 9, Beginning Inventory—Not U.S. Government Owned. Enter inventory of non-DOE-owned material as of the opening of business on the first day of the

report period covered by the DOE/NRC F 742. These figures should not differ from line 81 of the DOE/NRC F 742 submitted at the close of the preceding report period.

LINE 11, Procurement from DOE. Enter quantities of material purchased from DOE during the report period. (Quantities entered on line 11 should not be entered on line 30.)

LINE 13, Procurement for the Account of DOE. Enter quantities of material procured from domestic and foreign sources that increase the assets of DOE. Returns of DOE-owned leased material from licensees and foreign entities should be entered on line 30. The following are examples of procurement to be reported on line 13.

- (1) Material acquired under the terms of an international agreement for cooperation with foreign entity.
- (2) Material previously sold by DOE to a licensee or foreign entity and then repurchased by DOE.
- (3) Material procured from private owners.

LINE 14, DoD Returns—Use A. Enter quantities of material in returns of weapons and weapons components issued to DoD under Presidential directive.

LINE 15, DoD Returns—Use B. Enter quantities of material contained in returns of training material issued to DoD under Presidential directive.

LINE 16, DoD Returns—Other Uses. Enter quantities of material in returns of reactor cores, fission chambers, and other material issued to DoD under Presidential directive for use in military non-weapons programs (e.g., nuclear research and development, propulsion, or electric power generation programs).

LINE 21, Production. Enter quantities of material obtained through transmutation.

- (1) For production reactors, production should be reported in the period during which transmutation takes place in the reactor.
- (2) For reactors other than production reactors, production should be reported no less often than upon discharge from the reactor. If the operation of the reactor for the year long period October 1 through September 30, results in nuclear production of 5 kilograms or more of enriched uranium or plutonium, production must be reported on DOE/NRC F 742 as of September 30, and no less often than annually.
- (3) Differences between reactor calculations and dissolution measurements should be reported on line 21. Production of insignificant quantities of material (quantity is less than 0.5 of the reporting unit for a specific material type), as in a materials testing reactor, need not be reported unless the material is to be recovered or a reporting requirement is imposed by the DOE cognizant security

authority.

LINE 22, From Other Materials. Enter receipts from other material balances as a result of intentional blending or crossovers. Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 12 for additional requirements. Examples of receipts to be reported on LINE 22 are given below.

- (1) In a production reactor, normal uranium should become depleted uranium during operation of the reactor. LINE 22 on the depleted uranium MBR for the facility operating the reactor should indicate receipts from the normal uranium balance. Correspondingly, LINE 71 on the normal uranium MBR for the facility should reflect removals to the depleted uranium balance.
- (2) The blending of depleted and enriched uranium in the proper proportions should result in normal uranium. LINE 22 on the normal uranium MBR should indicate receipts from the depleted and enriched uranium balances. Correspondingly, LINE 71 on the depleted and enriched uranium MBRs should reflect removals to the normal uranium balance.

LINE 30, Receipts Reported to DOE/NRC on DOE/NRC F 741. Enter, by transfer series, all receipts for the report period not entered on lines 11-16, 34, 37, 38, and 39. If more space is needed than is provided on DOE/NRC F 742, prepare a sub-schedule entitled “Receipts Reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere).” Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 12 for additional requirements.

LINE 34, Receipts—Miscellaneous. Enter quantities of material received in two-party transactions where only receiver’s data are reported. Examples include receipts of material (not reported elsewhere) from facilities that have not been assigned a RIS, and receipts from licensees that are not required to document or report transactions.

LINE 37, Procurement by Others. Enter quantities of material purchased by the facility for its own account from *in situ* material, which it had been holding under lease from the DOE, or, material that the facility is processing for a non-DOE facility against a non-DOE purchase order.

LINE 38, Donated Material—from U.S. Government to Others. Enter quantities of material donated, i.e., change in ownership without transfer of funds, which increase the reporting facility’s non-U.S. Government-owned inventory and decrease the assets of the U.S. Government.

LINE 39, Donated Material—from Others to the U.S. Government. Enter quantities of material donated, i.e., change in ownership without transfer of funds, which increase the assets of U.S. Government and decreases the reporting facility’s non-U.S. Government owned inventory.

LINE 40, Total. Enter the total of lines 8–39.

LINE 41, Expended in Space Programs. Enter quantities of material transferred for use

in a space vehicle (e.g., for propulsion or nuclear auxiliary power system). The reporting facility should provide the DOE cognizant security authority the following details with respect to ultimate disposition of the material.

- (1) Date vehicle was launched into space or placed into orbit, or if vehicle misfired or failed to orbit, losses of material associated therewith (if attempts at recovery have been made and there is some recovery, only material not recovered should be reported on line 41).
- (2) Project name.
- (3) Launch site.
- (4) Any other pertinent information.

LINE 42, Sales to U.S. Government. Enter quantities of material sold during the reporting period. (Quantities entered on line 42 should not be entered on line 51.)

LINE 43, Sales to Others for the Account of U.S. Government. Enter quantities of U.S. Government owned material sold to other Government agencies, licensees, and foreign entities.

LINE 44, DoD—Use A. Enter quantities of material in shipments of weapons and weapons components to DoD under Presidential directive.

LINE 45, DoD—Use B. Enter quantities of material in shipments of Training Material to DoD under Presidential directive.

LINE 46, DoD—Other Uses. Enter quantities of material in shipments of reactor cores, fission chambers, and other material to DoD under Presidential directive for use in military non-weapons programs (e.g., nuclear research and development, propulsion, or electric power generation programs).

LINE 47, Expended in U.S. Government Tests. Enter quantities of material expended in U.S. tests authorized by the President.

LINE 48, Routine Tests. Enter quantities of source material expended in routine testing associated with weapons-related research and development activities. The use of line 48 for the reporting of other than source material requires prior approval by the DOE cognizant security authority.

LINE 49, Shipper-Receiver Difference. Leave blank.

LINE 51, Shipments Reported to DOE/NRC (on DOE/NRC F 741). Enter, by transfer series, all shipments for the reporting period not entered on lines 42–46, 54, 58, and 59. If more space is needed than is provided on DOE/NRC F 742, prepare a sub schedule entitled “Shipments Reported to DOE/NRC on DOE/NRC F 741 (not listed elsewhere).” Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 12 for additional requirements.

LINE 54, Shipments—Miscellaneous. Enter quantities of material shipped in two-party transactions where only shipper's data are reported. Examples include shipments (not reported elsewhere) to facilities that have not been assigned a RIS, and shipments to licensees that are not required to document or report transactions.

LINE 58, Donated Material—to U.S. Government by Others. Enter quantities of material donated i.e., change in ownership without transfer of funds, which decrease the reporting facility's non-U.S. Government owned inventory and increase the assets of the U.S. Government.

LINE 59, Donated Material—to Others by the U.S. Government. Enter quantities of material donated i.e., change in ownership without transfer of funds, which decrease the assets of the U.S. Government and increase the reporting facility's non-U.S. Government owned inventory.

LINE 65, Rounding Bias. Enter any rounding bias quantity that is technically supportable.

LINE 71, Degradation to Other Materials. Enter removals to other material balances as a result of intentional blending degradation, or crossovers. Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 12 for additional requirements. Examples of removals to be reported on line 71 are given below.

- (1) In a production reactor, normal uranium should become depleted uranium during operation of the reactor. Line 71 on the normal uranium MBR for the facility operating the reactor should indicate removals to the depleted uranium balance. Correspondingly, line 22 on the depleted uranium MBR for the facility should reflect receipts from the normal uranium balance.
- (2) The blending of depleted and enriched uranium in the proper proportions should result in normal uranium. Line 71 on the depleted and enriched uranium MBRs should indicate removals to the normal uranium balance. Correspondingly, line 22 on the normal uranium MBR should reflect receipts from the depleted and enriched uranium balances.

LINE 72, Decay. Apply the appropriate decay factor as indicated in Section 2.10 and enter the calculated radioactive decay on line 72.

LINE 73, Fission and Transmutation. Enter quantities of material consumed as a result of exposure in a device.

- (1) For DOE production reactors, material consumed should be reported on a current basis, i.e., as transmutation and burn-up take place in the reactor.
- (2) For reactors other than production reactors, material consumed should be reported no less often than upon discharge from the reactor. If the operation of the reactor for the year long period October 1 through September 30 results in a nuclear loss of 5 kilograms or more of enriched uranium or plutonium, the quantity of material consumed must be reported on line 73 of DOE/NRC F 742 as of September 30 and no less often than annually.

- (3) Differences between reactor-calculated quantities of material consumed and the quantities measured after dissolution should be reported on line 73.

LINE 74, NOLs/Measured Discards. Enter known quantities of material, determined by measurement or by estimate on the basis of measurement, which have been intentionally removed from inventory and disposed of by approved methods. NOLs/measured discards result when known quantities of nuclear material are separated from a process or operation as waste during processing and are determined to be uneconomical to recover. Facilities selected under the U.S./IAEA Safeguards Agreement should see Section 7 for additional requirements. Examples of quantities to be reported on line 74 of DOE/NRC F 742 are—

- (1) discards to cribs, tanks, settling ponds, or waste management sites; and
- (2) discards in contaminated equipment, laundry, or shoe covers.

LINE 75, Accidental Losses. Enter known quantities of material, determined by measurement or by estimate on the basis of measurement to have been inadvertently lost as a result of an operational accident.

LINE 76, Approved Write-offs. Enter known quantities of “good” materials that, with prior approval by the DOE cognizant security authority, have been removed from inventory records. Approved write-offs are usually restricted to “good” material that has been used in such a manner as to lose its identity and for which nuclear material accountability is deemed no longer necessary. If material that was previously removed as a write-off is returned to active inventory, enter a negative quantity on line 76 to reestablish nuclear material accountability.

LINE 77, Inventory Difference. Enter the algebraic difference between the physical inventory and its corresponding book inventory after determining that all known additions and removals have been reflected in the book inventory. Inventory difference may be either a positive or negative quantity. A gain of material is reflected by a negative inventory difference, and should be indicated by a negative (minus) sign.

LINE 80, Ending Inventory—U.S. Government Owned. Enter, as appropriate, the inventory as of the close of business of the last day of the reporting period. If a physical inventory is to be used as the basis for ending inventory reported on lines 80 and 81, the physical inventory must be adjusted for all additions and removals occurring between the time of the physical inventory and the close of the report period. The ending inventory entered on lines 80 and 81 should agree with the respective totals for the material type submitted to the NMMSS on DOE/NRC F 742C, Physical Inventory Listing.

LINE 81, Ending Inventory— Not U.S. Government Owned. Enter, as appropriate, the inventory as of the close of business of the last day of the reporting period.

LINE 82, Total. Enter total of lines 41–81. The total reported on line 82 should agree with the total reported on line 40.

LINE 83, Bias Adjustment. Not applicable to contractors.

SECTION B FOREIGN OBLIGATIONS

The total amount of obligated nuclear material on hand as of the date of the report (amount on line 80 or 81 or the sum of lines 80 and 81) should be accounted for by material type, but may not exceed physical inventory. The following entries, by column, are required.

BLOCK 1: Country of Obligation. Enter the 2-character country or entity designation from Table 11-2.

Table 11-2. Foreign Obligation Codes.

Country/Entity	Obligation Codes *
31	Australia
32	Canada
33	EURATOM
34	Japan
35	Peoples Republic of China
36	Czech Republic
91	Australia and EURATOM
92	Canada and EURATOM
WR	Former Soviet Union Weapons

*NOTE: For any other obligation codes not included above, contact the NMMSS Operator for further instructions.

BLOCK 2: Element Weight. Enter the element weight of the amount obligated from Table 11-3. The only material types to be reported are 10, 20, 50, 70, 81, and 88.

Table 11-3. Material Type Codes, IAEA Element Codes, and Quantities for Source and SNM—Obligations Tracking.

Type	Domestic Code	IAEA Code	Reportable Obligated Quantity*
Natural Uranium	MT 81	N	Kilogram Uranium
Depleted Uranium	MT 10	D	Kilogram Uranium
Thorium	MT 88	T	Kilogram Thorium
Plutonium	MT 50	P	Gram Plutonium
High Enriched Uranium	MT 20 ≥ 20%	EG	Gram Total Uranium for Element Gram U-235 for Isotope
Low Enriched Uranium	MT 20 < 20%	EG	Gram Total Uranium for Element Gram U-235 for Isotope
Uranium-233	MT 70	EK	Gram Total Uranium for Element Gram U-233 for Isotope

*For foreign obligations tracking, only the element weight is required except for uranium enriched in U-235 or U-233.

BLOCK 3, Isotope Weight. For enriched uranium (in U-235 and or U-233) only. Enter the isotope weight of the amount obligated to the nearest gram.

BLOCK 4, Total Weight. Enter the totals for columns 2 and 3. These totals represent the total obligated material at the facility.

SECTION C CERTIFICATION

DOE/NRC F 742 should be signed and dated by the reporting facility's authorized representative.

11.7 Distribution

Do not send a copy of DOE/NRC F 742 data to the NMMSS if arrangements have been made to receive a NMMSS generated MBR or if reporting electronically. If DOE/NRC F 742 is prepared in paper form, copies of each should be distributed to NMMSS and also to other recipients, if any, in accordance with instructions provided by the DOE cognizant security authority.

Section 12

Material Balance Reporting

IAEA Safeguards Agreement or Protocol

Special procedures should be used to implement some of the reporting requirements of the U.S./IAEA Safeguards Agreement. Section 12 provides instructions for use of these special procedures for facilities that have been selected under the terms of either the U.S./IAEA Safeguards Agreement or Protocol. Such facilities should note that all requirements and procedures in other sections of the User Guide apply in addition to the special requirements of this section.

12.1 DOE/NRC F 742 Instructions

DOE/NRC F 742 or its electronic equivalent should be completed by filling in the numbered blocks or lines listed in Section 11 with the additional instructions shown below.

Table 12-1. Inventory Change Type (ICT) Codes—IAEA.

ICT Code	From Balance	To Balance
DN	Depleted Uranium	Normal Uranium
DE	Depleted Uranium	Enriched Uranium
ND	Normal Uranium	Depleted Uranium
NE	Normal Uranium	Enriched Uranium
ED	Enriched Uranium	Depleted Uranium
EN	Enriched Uranium	Normal Uranium

LINE 7, DOE/NRC F 740M Attached. Place an X in the appropriate box. Concise Notes are optional unless required by facility attachments or transitional facility attachments. DOE/NRC F 740M, Concise Note, should be used by selected facilities to supplement material balance data on DOE/NRC F 742. Instructions for preparation and distribution of DOE/NRC F 740M are provided in Section 10.

LINE 22, From Other Materials. For each entry on this line, fill in the appropriate 2-character ICT code (see Table 12-1) in the space provided to indicate the source and destination material balances for the inventory change being reported. The IAEA does not require the reporting of category changes for enriched uranium.

LINE 30, Receipts Reported to DOE/NRC on DOE/NRC F 741. Reporting of receipts of material for facilities selected by the IAEA may require additional procedures. Contact the Office of Resource Management for further information.

(See also code 10 of the Subsidiary Arrangements to the U.S./IAEA Safeguards Agreement.)

LINE 51, Shipments Reported to DOE/NRC (on DOE/NRC F 741 Shipments of material for facilities selected by the IAEA may require additional procedures. Contact the Office of Resource Management for further information. (See, also code 10 of the Subsidiary Arrangements to the U.S./IAEA Safeguards Agreement.

LINE 71, Degradation to Other Materials. For each entry on this line, enter the appropriate 2-character ICT code (Degradation), as shown in Table 12-1, in the space provided to indicate the source and destination material balances for the inventory change being reported.

Section 13

Inventory Reporting

Section 13 provides instructions to license-exempt contractors and NRC and Agreement State licensees that are contractors for the preparation and distribution of DOE/NRC F 742C, Physical Inventory Listing. Facilities transmitting data electronically to the NMMSS do not need to complete DOE/NRC F 742C but should follow the data format defined in these instructions. Data submitted should accurately reflect data entered on the related DOE/NRC F 742C, if F 742C is prepared. If data is submitted to NMMSS electronically, do not also submit the paper form.

Special instructions for facilities selected by the IAEA under the terms of the Safeguards Agreement or Protocol are provided in Section 12.

Inventory reports should be submitted to the NMMSS—

- (1) By September 30 or as required by DOE directive or additionally as directed by the DOE cognizant security authority; or
- (2) as specified in facility attachment or transitional facility attachments for DOE facilities selected under the provisions of the U.S./IAEA Safeguards Agreement.

Reports are due to the Office of Resource Management no later than the 15th calendar day of the month following the due date of the inventory report.

Nuclear material in transit at the end of a reporting period should be included in the receiver's reported inventory as if it reached the intended receiver within the reporting period (in transit rule).

13.1 Nuclear Material Composition Codes and Descriptions

Nuclear material composition codes and descriptions may be found in the inventory profile report (I-17 report from NMMSS) developed by DOE, their contractors, and NRC. The report is to be used as a guide for reporting the inventory composition code on DOE/NRC F 742C. A facility selected by the IAEA should report the IAEA material description code as appropriate.

The inventory profile report (I-17) should be updated by the Office of Resource Management NMMSS staff. The report is divided into an inventory data section (lines 005–899) and a miscellaneous data section (lines 900–998). Each section is arranged according to process, usage, chemical, and physical form. The report is designed so that additional lines can be added as necessary to both the inventory data section and the miscellaneous data section. Any proposed changes in the format are to be reported to the Office of Resource Management.

13.2 Nuclear Material Type Codes

Material type codes, descriptions, and reporting units are given in Section 2.

In addition to Section 2, for specific circumstances for inventory reporting also use the table below.

Table 13-1. Material Type Codes Used For Specific Circumstances.

	Name of Material	Material Type Code
Losses—Weapons and Nonweapons (See 42 U.S.C. §2121(b) Material)	Uranium-Depleted in U-235	11
	Uranium-Enriched in U-235	21
	Plutonium	51
	Lithium-Enriched in Li-6	61
	Uranium-Enriched in U-233	71
Losses (See 42 U.S.C. §2121(c) Material)	Uranium-Depleted in U-235	11
	Uranium-Enriched in U-235	21
	Plutonium	51
	Lithium-Enriched in Li-6	61
	Uranium-Enriched in U-233	71
Scrap Data	Uranium-Depleted in U-235	10
	> 0.711% to < 10.00%	21
	10.00% and above	33
	Plutonium	51
Total—Inventory Data	Uranium-Depleted in U-235	10
	Uranium-Enriched in U-235	20
	Plutonium-242	40
	Plutonium	50
	Lithium-Enriched in Li-6	60
	Uranium-Enriched in U-233	70

13.3 Reconciliation of Facility Data with NMMSS

Reconciliation of facility data is required annually of facilities after submission of inventory and by and by time frame specified by DOE directive. The process is as follows:

1. The facility submits its inventory for the period just ended and is provided with the results of processing in NMMSS.

2. Preliminary reports are available upon request from the NMMSS for facility use in comparing facility data to NMMSS balances.
3. The data at the facility and comparable data in the NMMSS are compared and adjustments are made to the facility books or to NMMSS, as appropriate, regarding balances of material by type, ownership code, and project number (if DOE-owned), and foreign obligation, if applicable.

Reconciliation of facility data with NMMSS more frequently than the annual periods required above is permissible.

13.4 DOE/NRC F 742C Instructions

The instructions that follow correspond to those data fields and columns appearing on DOE/NRC F 742C. To obtain instructions for electronic reporting, contact the NMMSS staff in the Office of Resource Management. Whether reporting electronically or by DOE/NRC F 742C, the following instructions apply.

BLOCK 1, Name and Address. Enter reporting facility information.

BLOCK 2, DOE/NRC Form 740M Attached. Check the appropriate box.

BLOCK 3, RIS. Enter the RIS of the reporting facility.

BLOCK 4, Inventory Date. Enter the ending date on which the MBR is based.

BLOCK 5, Process Code. Leave blank.

BLOCK 6, Correction ID. Leave blank.

BLOCK 7, License Numbers. Leave blank.

BLOCK 8, Batch Data.

Block 8a, Material Type. Enter the material type code that reflects the material assay range unless, the material is being reported under one of the following categories.

- (a) Losses—Weapons and Nonweapons [42 U.S.C. §2121(b), Material]. For material reported by assay range, use the **appropriate material** type code from Table 13-1.
- (b) Losses—42 U.S.C. §2121(c) Material. For material reported by assay range, use the appropriate material type code from Table 13-1.
- (c) Scrap Data (Lines 971–974). If reporting scrap generated onsite, recovered onsite, reclassified onsite, or declared to the Central

Scrap Management Office, use the appropriate material type code from Table 13-1.

Block 8b, Composition Code. Enter the code that identifies the physical and/or chemical form of the nuclear material at the time the transaction occurs. A complete set of composition codes, which consists of available nuclear material composition codes and descriptions, may be obtained from the Office of Resource Management NMMSS staff (referred to as Composition of Ending Inventory—COEI codes).

Block 8c, Element Weight. Enter element weights as per the instructions in Section 11 for DOE/NRC F 742.

Block 8d, Isotope Weight. Enter isotope weights as per the instructions in Section 11 for DOE/NRC F 742.

Block 8e, DOE Project Number. Make no entry unless reporting DOE owned material.

Block 8f, Scrap Program. Leave blank.

Block 8g, Weight percent Isotope. Leave blank.

Block 8h, Owner Code. Enter the appropriate code from Section 2.7.

Block 8i, Sequence Number. Enter the line sequence numbers consecutively. Do not repeat or skip numbers.

Block 8j, Batch Name. No entry required. Can be used locally by reporting facility.

Block 8k, Number of Items. Leave blank.

Block 8l, Key Measurement Point. Leave blank.

Block 8m, Measurement ID (Measurement Basis, Other Measurement Point, Measurement Method). Leave blank.

Block 8n, Entry Status. Leave blank.

Block 8o, MBA. Leave blank.

Block 8p, Site/Item Description Code. Leave blank.

BLOCK 9, Totals. Enter the total inventory reported in the above categories. This total should agree with the sum of the quantities entered on Line 80 and 81 on the DOE/NRC F 742.

BLOCK 10, Signature. The report, if submitted as a hard copy, should be signed by an authorized representative of the facility.

BLOCK 11, Title. Enter the title of the person submitting the report.

BLOCK 12, Date. Enter the date the report was submitted.

13.5 DOE/NRC F 742C Data Distribution

Provide the physical inventory listing to NMMSS and to others as specified by the DOE cognizant security authority.

Section 14

Inventory Reporting

U.S./IAEA Safeguards Agreement

Special procedures must be used to implement some of the reporting requirements of the U.S./IAEA Safeguards Agreement. Section 14 provides instructions for facilities that have been selected either under the terms of the U.S./IAEA Safeguards Agreement or Protocol. Such facilities should note that all requirements and procedures in the main body of this User Guide apply, in addition to the special requirements of this section. Refer to Section 13 for specific data entry instructions.

14.1 Batch Formation and Naming

The U.S./IAEA Safeguards Agreement requires inventories to be reported at the batch level of detail. The nuclear material may be in bulk form or contained in a number of separate items. Typical batches for inventory reporting are given in facility attachments or transitional facility attachments.

In general, all of the data for one batch should be entered on one line of DOE/NRC F 742C. Material in any one batch should have only one value for the following elements:

- (1) batch identification;
- (2) number of items;
- (3) inventory composition code;
- (4) key measurement point; and
- (5) measurement identification (i.e., measurement basis, other measurement point, and measurement method).

If a batch has more than one value for any other data element, the data should be listed on two or more lines, with all data elements completed for each line, even if this requires that some batch data be repeated.

A typical case where two lines would be required for the data on one batch would be a batch of irradiated fuel containing both uranium and plutonium. In this case, one line would be used for the uranium data, and a second for the plutonium data. The two lines should have identical entries for

all data elements except for project number (if applicable), material type code, element weight, weight percent isotope, and isotope weight.

Section 15

Reporting Identification Symbol (RIS)

Each contractor and facility Reporting Identification Symbol (RIS) is associated with a specific DOE element. A RIS consists of a minimum of three alphabetic characters, and in special circumstances, a maximum of four characters. This and other information concerning instructions for RIS lettering conventions can be obtained from the Office of Resource Management.

15.1 Requests for New RISs or Revision of RIS Information

DOE line management forwards requests for new RISs or revisions of RIS information and any requests for activation, or deactivation, of a RIS accompanied with the effective date of activation, deactivation, and/or transfer, to the following address:

Office of Information Management
HS-1.22/ Germantown Building
U. S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
Attn: NMMSS

15.2 Establishing a RIS

15.2.1 RIS Request

- (1) A request from the MC&A field representative, who may be either a DOE Federal or contractor employee, is routed to the DOE cognizant security authority for review and approval.
- (2) A DOE Headquarters (HQ) sponsoring program office approves activities for which the RIS is requested.
- (3) The request is then sent from the DOE cognizant security authority, through the appropriate HQ program office, for coordination with the Office of Resource Management to establish the RIS required for DOE approved activities.

15.2.2 RIS Justification

Justification must exist before a new RIS can be established. The following is a list of common reasons for requesting a new RIS. The facility should:

- (1) anticipate Departmental authorization to contain an inventory of nuclear materials within the next 12 months;
- (2) be involved in international shipments or receipts of nuclear materials; or
- (3) be storing or processing material under International Atomic Energy Agency safeguards.

A facility that does not meet the above criteria, but believes a RIS is necessary for operations, can request a RIS by submitting proper justification and documentation through the DOE Cognizant Security Authority to the Office of Resource Management by following the procedure outlined in section 15.1.1 above.

15.3 RIS Application

NMMSS staff in the Office of Resource Management should work with each facility to identify reports that should be submitted for each RIS.

To establish a new RIS, the DOE cognizant security authority should provide the following information to be listed in the NMMSS directory.

15.3.1 Facility/RIS Information

- Facility name.
- Date RIS issued.
- Contract number.
- Code of responsible financial organization.
- DOE field element or site office RIS.
- Contractor type.
- Operation type.
- FAX Numbers.
 - Classified.
 - Unclassified.
- FAX verification number.
 - Classified.

- Unclassified.
- Secure Information Management and Exchange Network (SIMEX) routing indicator.
- Additional information on facility/RIS.

15.3.2 Contact Information

- Nuclear materials representative (NMR).
 - Name.
 - Telephone number.
- Alternate NMR (NOTE: More than one alternate NMR is allowed).
 - Name.
 - Telephone number.
- Nuclear materials financial representative.
 - Name.
 - Telephone number.
- Authorized contact for information changes.
 - Name.
 - Telephone number.
- Any additional contact/inquiry information.

15.3.3 Mailing Information

- Addresses (including facility name and unclassified address).
- For a classified address, use guidance from the Safeguards and Security Information Management System (SSIMS). Contact a cognizant security authority for the current phone number. Do not enter a classified address with this data.
- Any additional financial and mailing information.

15.3.4 Shipping Address and Information

15.3.5 Additional Information not Covered Elsewhere

15.3.6 Logistical Information

The following logistical information is required for RIS directory appendices and program controls. Enter “N/A” where requested data is not applicable.

- Effective date nuclear materials should be transferred from old contractor/facility (enter old RIS) to new contractor/facility.
- Effective date the DOE office should assume responsibility for the new RIS.
- Frequency of the new RIS inventory reporting.
- Level of classification for transactions, inventory, and material balance reports (MBRs) throughput for the new RIS and for related reporting products from NMMSS.
- Mode of transmitting input data from the new RIS to NMMSS.
- Cost center for new RIS’s financial activity.
- Authorized contacts (may be different from NMR or alternate) and phone numbers.

15.4 RIS Deactivation

RIS deactivation should occur when a facility’s authorization to store/handle nuclear materials inventory is withdrawn. Before deactivation, all open transactions should be resolved and all inventory removed to a balance of zero.

The NMR of the RIS being deactivated should initiate and receive certification from the Office of Resource Management that no project numbers exist for that RIS. If there are project numbers associated with the RIS that is to be deactivated, the project numbers should be cancelled or changed to reflect proper status of the material.

An assessment by the MC&A field representative should conclude the following.

- (1) All physical MC&A activities have been terminated.
- (2) All material has been shipped from the facility.
- (3) The balance for that RIS in NMMSS is zero (0).
- (4) No investigations or audits are under way concerning any aspect of MC&A.

Notification of deactivation is sent from the DOE cognizant security authority to the Office of Resource Management, who should deactivate the RIS.

A waste facility's RIS should not be removed except with specific approval of the responsible Departmental Element through the DOE cognizant security authority and upon coordination with the Office of Resource Management.

A parent RIS should not be deactivated when a sub-RIS is still active.

15.5 Revising RIS Directory Page

The following procedure must be followed to change information entered on a facility's RIS directory page.

1. Make a copy of both sides of the page from the RIS directory for each affected RIS.
2. Draw a line through the outdated/erroneous information on the copy.
3. Immediately above the strike-out, print the new information clearly.
4. Submit the pages marked for change to the NMR, or other authorized person who should sign and date all directory pages on which changes have been recorded. Unsigned changes cannot be made.
5. Send page changes to the DOE cognizant security authority for approval and forwarding to the Office of Resource Management.

Appendix A

NMMSS Forms

This appendix contains examples of the forms utilized by NMMSS users:

- DOE/NRC FORM 740M Concise Note
- DOE/NRC FORM 741 Nuclear Material Transaction Report
- DOE/NRC FORM 742 Material Balance Report
- DOE/NRC FORM 742C Physical Inventory Listing
- DOE F DP-749 ADP Transcription Sheet

Appendix B

**DOE Contractor Reporting Procedure for Normal
Operational Losses/Measured Discards and
Accidental Losses**

Table B-1. DOE Contractor Reporting Procedure for Normal Operational Losses/Measured Discards and Accidental Losses.

Types of Transactions Shipper (S) Receiver (R)		Action Code S R		Applicable to (Type of Facility)	Description from Viewpoint Of the Facility	Inventory Change Code (use code) S R		Project Number S R		Data Generated By NMMSS
Facility RIS with H, I, L appended	Facility RIS with H, I, L appended	M (one single party entry)		1. Non-Lic DOE contr. (non-IAEA) 2. FAC under IAEA 3. Lic contr.	Material written off to reflect internal changes to waste disposition areas inventory—removed from facility's inventory	Single entry: 65, 72, 76, 77		Single entry: not required		None
Facility is same as Receiver	Facility is same as Shipper	M (one single party entry)		1. Non-Lic DOE contr. (non-IAEA)	NOL/MD/AL not to atmosphere, or ground and not coincident with transfer to burial site—removed from facility's inventory	Single entry: 74, 75 or 48		Single entry: req. if G owner code		None
Facility RIS	Facility RIS with A, G, R appended (same site as Shipper)	A	N/A	1. Non-lic DOE contr. (non-IAEA) 2. Fac under IAEA 3. Lic contr.	NOL/MD/AL ¹ to atmosphere, ground, or consumed in research—removed from shipper's inventory	74, 75 or 48	N/A	Req. for owner code G	N/A	Receiver
Facility RIS	Facility RIS with H, I, L appended (same site as Shipper)	A	N/A	1. Fac. under IAEA 2. Lic. contr. 3. See note ³	NOL/MD/AL ¹ to a retained waste holding area—removed from shipper's inventory	74, 75	N/A	Req. for owner code G	N/A	Receiver when type fac = 1 or 2 None when type fac = 3
Facility RIS	VVV	A	B/E	1. Non-Lic. DOE contractor (non-IAEA) 2. Facility under IAEA 3. Licensed contractor	NOL/MD/AL ¹ removed from shipper's inventory coincident with the removal to a burial site	74, 75 or 48	not req. (leave blank)	Req. for owner code G	not req. (leave blank)	None
FAC > VVV		A	B/E ²	1. Non-Lic. DOE contractor non-IAEA)	Transfer of material to burial site where material previously removed from shipper's inventory by M transaction—no effect to shipper's records	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	None
Facility RIS with H or L appended	VVV	A	B/E ²	1. Fac. under IAEA 2. Lic. contr. 3. See footnote	Transfer of material from a retained waste holding area to the burial site	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	None

Types of Transactions Shipper (S) Receiver (R)		Action Code S R		Applicable to (Type of Facility)	Description from Viewpoint Of the Facility	Inventory Change Code (use code) S R		Project Number S R		Data Generated By NMMSS
Facility RIS with I or G appended	VVV	A	B/E ²	1. Non-Lic. DOE contr. (non-IAEA) 2. Fac. under IAEA 3. Lic. contr.	Material previously written off as discarded to the ground now being recovered and transferred to a burial site	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	None
Facility RIS with I or G appended	VVV	A	B/E ²	1. Non-Lic. DOE contr. (non-IAEA) 2. Fac. under IAEA 3. Lic. contr.	Material previously written off as discarded to the ground now being recovered and transferred to a burial site	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	None
Facility RIS with H, I, L appended	Facility RIS (same site as,Shipper)	N/A	B/E ²	1. Fac. under IAEA 2. Lic. contr. 3. See footnote 3	Transfer of material from a retained waste holding area back to facility's inventory	N/A	N/A	N/A	req. if G owner code	Shipper when type fac = 1 or 2 None when type fac = 3
VVV	Facility RIS	A ²	B/E	1. Non-Lic. DOE contr. (non IAEA) 2. Fac. under IAEA 3. Lic. contr.	Material being retrieved from a burial site for some specific use—increases receiver's inventory	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	req. if G owner code	None
VVV	Facility RIS	A ²	B/E	1. Non-Lic. DOE contr. (non IAEA)	Material previously written off as NOL/MD/AL and transferred to a burial site—now being returned to the facility—NOL REVERSAL	not req. (leave blank)	74, 75 or 48	not req. (leave blank)	req. if G owner code	None
VVV	Facility RIS with A, G, I appended	A ²	B/E	Burial site shipping is specifically identified contractor's waste disposition area	Material previously written off as NOL/MD/AL ¹ and transferred to a burial site—now being dissipated to atmosphere or ground or transferred to an incinerator from burial site—not to be treated as NOL/MD/AL ¹	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	not req. (leave blank)	None

¹NOL/MD/AL—Normal Operational Loss/Measured Discard/Accidental Loss

²For DOE burial site, applicable shipper or receiver data is not reported to NMMSS

³Reporting under this method is optional for non-licensed DOE contractors not under IAEA reporting requirements

FAC = DOE contractor facility, VVV = Burial Site

Facility fourth character indicates a discharge to: A = atmosphere, G = ground, H = on-site waste holding area, I = toxic substance control act incinerator, L = lagoon, tank or holding pond, R = consumed in research

NOTE: All other data elements are the same as normal requirements.

Appendix C

Supplementary Instructions

Appendix C provides shorthand tables to further assist personnel in determining the information needed for nuclear material reporting.

EXPLANATORY NOTES.

General. The RISs used and For/To accounts are as follows.

- (1) ANY—any RIS except DoD RISs,
- (2) CON—any contractor RISs,
- (3) LIC—licensee RISs,
- (4) FOR—foreign RISs,
- (5) CONV—contractor V RISs,
- (6) SEP for isotopic separation facility RISs, and
- (7) DoD for Department of Defense RISs.

Within the tables, specific numbers are shown in parentheses to highlight some of the following notes.

1. For those transaction types where there is a difference between shipper's and receiver's reporting requirements, an S and an R should exist in this column to reflect the differences. Only those data items that have different requirements should be separated into the S row and R row. All other common data items should exist on the row between the S and R.
2. When to licensee, shipper RIS may be ANY, receiver RIS must be LIC. When from licensee, receiver RIS may be ANY, shipper RIS must be LIC.
3. For and to accounts both contain contractor RIS when owner is G, there is no change in ownership, and shipper and /or receiver have licensee or foreign RIS. RISs identify the DOE contractors having programmatic responsibility for the material before and after shipment.
4. DoD or mutual defense side of entry is not applicable.
5. Must contain a regular DoD RIS or a valid Q military installation RIS to reflect points of first destination for DoD receipts or pickup points for DoD returns.

6. Required only when shipper has a licensee or foreign RIS; then it should be contractor RIS.
7. Should be licensee RIS if shipper owner code is A or B, foreign entity RIS if shipper owner code is S.
8. Should be licensee RIS if receiver owner code is A or B, foreign entity RIS if receiver owner code is S.
9. For/to accounts cannot be equal.
10. For/to accounts should be equal.
11. Required only when receiver has a licensee or foreign RIS; then it should be contractor RIS.
12. Appropriate licensee or foreign RIS in the account if shipper's owner code is an A, B, or S; contractor in the account if shipper's owner code is G and shipper has a licensee or foreign RIS; the field is blank otherwise.
13. Shipper or receiver RIS must be in the V series.
14. Appropriate licensee or foreign RIS in the account if receiver's owner code is an A, B, or S; contractor in the account if receiver's owner code is G and receiver has a licensee or foreign RIS; the field is blank otherwise.
15. QZA, QZB, and QZD are restricted to material types 20, 40, 50, 70, and 83.
16. If the DOD's RIS is QZE the Inventory Change code should be deemed to be either 14 or 44; if the RIS is QZC the IC code should be either 15 or 45; if the RIS is QZA, QZB, or QZD the IC code should be either 16 or 46.

Table C-1. Instructions for Preparation of Transaction Data Items.

Transaction Type	S/R (1)	TI Code	S RIS	R RIS	For Account	To Account	Owner Code Required
1. DOE-owned material; transfer between contractors		Blank	CON	CON	Blank	Blank	G
2. Transfer of non-DOE owned		Blank	ANY	ANY	Blank	Blank	J
3. DOE-owned project material transfers to/from licensees (non-lease or loan)		Blank	(2)	(2)	(3)	(3)	G
4. Initiates loan/lease of DOE-owned material	S	A	ANY	ANY	(6)	LIC, FOR	G
	R	A	ANY	ANY	(6)	LIC, FOR	G
5. Transfer of leased/loaned material; change in financial responsibility		B	ANY	ANY	(7,9)	(8,9)	G,J
6. Transfer of leased/loaned material; no change in financial responsibility	S	C	ANY	ANY	(7,10)	(7,10)	G,J
	R	C	ANY	ANY	(8,10)	(8,10)	G,J
7. Leased/loaned material returned to DOE for credit	S	D	ANY	ANY	LIC, FOR	(11)	G,J
	R	D	ANY	ANY	LIC, FOR	(11)	G,J
8. Sale for account of DOE	S	E	ANY	ANY	(12)	LIC, FOR	G,J
	R	E	ANY	ANY	(12)	LIC, FOR	J
9. Enriching service procurement (feed receipt)	S	F	ANY	SEP	LIC, FOR	Blank	J
	R	F	ANY	SEP	LIC, FOR	Blank	J
10. Enriching service sale (product shipment)	S	F	SEP	ANY	Blank	LIC, FOR	J
	R	F	SEP	ANY	Blank	LIC, FOR	J
11. Procurement of privately owned material by DOE	S	G	ANY	ANY	LIC, FOR	(11)	J
	R	G	ANY	ANY	LIC, FOR		G,J
12. Donated material to others by DOE		R	(Same requirement as transaction Type 8)				
13. Donated material to DOE by others		S	(Same requirement as transaction Type 11)				
14. In-place transactions	In-place transaction should change ownership. Use data requirements of applicable transaction type as a guide. Shipper and receiver must be same RIS.						
15. In-place project transfer	Shipper and receiver must be same RIS. Use DOE Form DOE/NRC F 741.						
16. Exports; shipments to foreign countries (R RISs)	Transactions are prepared in the same manner as transfers to/from licensees except reporting entity must report both sides.						
17. Imports; receipts from foreign countries (R RISs)	Transactions are prepared in the same manner as transfers to/from licensees except reporting entity must report both sides.						
18. Inventory changes—removal		Blank	ANY	ANY	(12)	Blank	G, J
19. Inventory changes—receipt		Blank	ANY	ANY	Blank	(14)	G, J
20. Transfers involving waste facilities (V RISs)		Blank	(13)	(13)	Blank	Blank	G, J
21. Shipper or receiver adjustment	Must have an entry in correction field (block 4). Used to correct prior entries, therefore, prepare the adjusting entry using the same guidelines as the original entry for data records numbers 2 and 5, back out the original line entry in error and add the correct entry. Any of the permissible owner codes for the applicable transaction type should be accepted independently without the presence of a required owner code.						

Table C-2. Instructions When Either the DoD or Mutual Defense Is Involved.

	S RIS	R RIS	TI Code	Action Code	For Account	To Account	Owner Code Required
1. Transfer to DoD (4, 16)	CON	DoD (15)	Blank	A, C	Blank	(5)	G
2. Transfer from DoD (4, 16)	DoD	CON	Blank	B, D, E	(5)	Blank	G
3. Transfer from DoD (16)	DoD	DoD (16)	Blank	M	Blank	Blank	G
4. Transfer to Mutual Defense; Loan/Lease	CON	QZF or QZG	A	A, C	Shipper	Shipper	G
5. Transfer to Mutual Defense; Return of Loaned Material	CON	QZF or QZG	Blank	A, C	Receiver	Receiver	J
6. Transfer to Mutual Defense; Sale	CON	QZF or QZG	E	A,C	Blank	Receiver	G
7. Transfer from Mutual Defense; Loan of Material	QZF or QZG	CON	Blank	B, D, E	Shipper	Shipper	J
8. Transfer from Mutual Defense; Return of Loaned/Leased Material	QZF or QZG	CON	D	B, D, E	Receiver	Receiver	G
9. Transfer from Mutual Defense; Sale to DOE	QZF or QZG	CON	Blank	B, D, E	Blank	Receiver	J

Appendix D

Acronyms and Abbreviations

ANSI	American National Standards Institute
CFR	Code of Federal Regulations
COEI	Composition of Ending Inventory
CRD	Contractor Requirements Document
DoD	Department of Defense
DOE	Department of Energy
FOIA	Freedom of Information Act
IAEA	International Atomic Energy Agency
ICT	inventory change type
ID	inventory difference
INMTS	International Nuclear Materials Tracking System
MBA	material balance area
MBR	material balance report
MC&A	materials control and accountability
MT	material type
NDA	nondestructive assay
NMR	nuclear materials representative
NMMSS	Nuclear Materials Management Safeguards System
NNSA	National Nuclear Security Administration
NOL	normal operational loss
NRC	Nuclear Regulatory Commission
PC	processing code
RIS	reporting identification symbol
SED	shipper's export declaration
SIMEX	Secure Information Management and Exchange Network
SNM	special nuclear materials
TI	transaction indicator
U.S.C.	United States Code