

D-24

Personal Computer Data Input for Nuclear Regulatory Commission Licensees

Effective Date
March 24, 2020

A booklet of guidance for data submissions to
NMMSS using electronic formats

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1. INTRODUCTION

1.1. Reporting Guidelines

Refer to the current version of the **NRC Instructions for Completing Nuclear Materials Transaction Reports; NUREG/BR-0006** and **Instructions for Completing Material Balance Report and Physical Inventory Listing NUREG/BR-0007** for specific Nuclear Regulatory Commission (NRC) requirements in reporting data to the NMMSS. These documents specify that data submissions must be made in acceptable electronic forms to the Nuclear Materials Management Safeguards System (NMMSS) and provide the information necessary for completing the source documents (forms) referenced in this directory.

NRC licensees required to report government owned material to NMMSS should refer to the **D-23, Personal Computer Data Input for Department of Energy Contractors** for guidance in the electronic reporting of this material.

1.2. Purpose

This directory provides formatting requirements for the reporting of nuclear material information in electronic file formats to the NMMSS in accordance with the NRC guidelines. A reporting licensee has the option to prepare reported data in an electronic file using the formats presented here using a variety of text editors, XML editors or programmatically in Material Control and Accountability Systems. This data is then saved as a text file and sent to NMMSS via diskette, CD, Zip disk, SIMEX, Direct Link, or electronic mail.

1.3. Acceptable Electronic Formats

The preferred format accepted by NMMSS for electronic data transfer is extensible Markup Language (XML). New technologies are constantly being developed to improve data management. As these methods are tested and analyzed by NMMSS staff, revisions will be made to data input procedures and guidelines. Visit the NMMSS website, www.hss.energy.gov/nmmss, for the latest information and guidelines.

Another alternative for submitting electronic data to NMMSS is the use of the Safeguards Management Software (SAMS) for transcribing reported data into a machine readable format. This software is currently available at no charge from NMMSS.

1.3.1. Extensible Markup Language (XML) File Format

The XML format may also be referred to as tagged data as it is based upon the use of tags (words bracketed by '<' and '>') and attributes (of the form name="value"). The NMMSS XML data submission format uses specific tags to establish the

limits of units of data. An advantage of using XML is that data is represented by tags which identify the values being reported; however, these tags must be entered exactly as specified or they will not be recognizable to the import programs.

The rules for XML files are strict. The following conditions will cause a failure in an XML data import:

- ❑ **A tag entered incorrectly (For example; using the wrong tag name, inserting spaces, or using improper capitalization).**
- ❑ **A missing tag.**
- ❑ **A missing end tag indicator (designated by the /) for every opening tag.**
- ❑ **A data attribute without surrounding quotes.**

Field sizes of reported data may be adjusted to fit the value, instead of requiring additional spaces to meet the allocated size as seen in the 80 Column file formats. The reported data is entered into double quotes to the right of the attribute tag. Then, the file is saved as a text file using a file extension of **.xml** and submitted to NMMSS.

The use of the following characters inside the double quotes surrounding the value may be forced to be accepted by substituting the following code shown in the table below in place of the character. For example; to report a text comment such as `Insert batch id 'Batch6a' in block 24D.` the tag value would need to be expressed as `"Insert batch id 'Batch6a' in block 24D."`

Character	Code
'	'
"	"
&	&
<	<
>	>

Each type of reported data; Inventory, Transaction, and Material Balance, has specific tags as shown in more detail under each section of this document. Data codes, which are necessary to identify the data in the 80 Column file format, are inferred by the XML tag structure and therefore are not required. Refer to the individual data sections for additional details. Additional resources are available about XML online from the following websites:

- ❑ www.w3schools.com
- ❑ www.ucc.ie/xml/

1.4. Understanding the Format Presentation

Within each format table presented in this directory the form identifier is listed along with the block identification number or number character combination found on the

form. XML tables will display the tag identifier (XML attribute) to be used for this block.

The **Type** column defines the form and length of the accepted data. For example, 'Char(1)' indicates that the data will consist of a single character (letter or number) and 'Char(20)' indicates that the data will consist of a combination of 20 characters, letters, and numbers. 'Date' indicates that the data is a calendar date and will be accepted in a specified format. 'Num(11,2)' indicates the data is restricted to numbers and has an overall length of 11 numbers of which two are to the right of the decimal. In the XML format, a numeric value must contain a decimal. For example, if the type is specified as Num(12,3) and the number value to be submitted is the whole number 15; enter 15 as 15.00 (translates to 15.000).

The **Essential** column indicates the minimum data submission requirements for successful file import when a '✓' is present in the column. This column does not indicate the necessity of data required by the NRC to be reported; only the requirement for a successful file import into NMMSS.

The **Note** column lists any remarks that will indicate special instructions, such as the format to be used or a value that remains constant. Note that all dates are to be entered in the format MM/DD/YYYY in XML formatted file. This means that dates will be reported with their two-digit month indication followed by the two digit day indication and then the four digit year. Note that negative numbers are generally permitted and indicated by the placement of a minus sign (-) to the left of the number.

1.5. File Creation

A file extension should be assigned which indicates the type of file format used. For example, an XML file should always end in .xml.

1.6. Data Submission Methods

Contact the NMMSS staff, (301)-903-6251, for additional directions regarding the use of SIMEX, Direct Link, or electronic mail. Electronic data may be mailed through the U.S. Postal Service on electronic media to the following address.

**Peter Dessaules
Program Manager
Office of Nuclear Materials Integration
NMMSS Program, NA-532,
Germantown Building, Room A-378
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1290**

(For classified documents)

**Refer to SIMS for a Classified Address or contact NMMSS at
301-903-6251 or email "NMMSS@nnsa.doe.gov".**

When mailing electronic media to NMMSS label the media with the following information:

- Licensee's RIS (Reporting Identification Symbol of the data source)
- Name and telephone number of the person to contact if there are problems or questions
- Name of the data file
- Any special instructions, comments or explanations

Note: A printed listing of the electronic data may be included with the electronic media and may expedite data processing in the event a damaged disk is received. It is not necessary to include the DOE/NRC forms when submitting data electronically to the NMMSS.

2. TRANSACTION DATA

2.1. Requirements for DOE/NRC Form 741 and Concise Notes

2.1.1. XML File Formatting

An example of transaction submission in XML format is shown below. Additional examples are shown in Appendix B along with the corresponding DOE/NRC forms. This is an example of raw XML produced by SAMS.

```
<TRANSACTIONS VERSION="2">
  <SHIPMENT SHIPPERRIS="ABC" RECEIVERRIS="ABC" TRANSFERNUMBER="00000001"
CORRECTION="1" PROCESSCODE="C" ACTIONCODE="M" NUMBEROFLINES="1"
NATUREOFTRANSACTION="" SHIPPEDFORRIS="" SHIPPEDTORIS="ABC"
TRANSFERAUTHORITY="TR" UKFLAG="" ACTIONDATE="4/25/2011" LICENSENUMBER=""
TOTALGROSSWEIGHT="0" TOTALVOLUME="0" SEALEDSOURCE="" TOTRANSFERAUTHORITY=""
RIS="ABC">
  <CONCISENOTE LINENUMBER="1" ENTRYREFERENCE="ENTRY"
TEXTOFCONCISENOTE="MESSAGE OF CONCISE NOTE" />
  <OBLIGATION>
    <MATERIAL LINENUMBER="1" COUNTRYCODE="CA">
      <ELEMENT ELEMENTWEIGHT="99.0000000" UNIT="">
        <ISOTOPE MATERIALTYPE="20" ISOTOPEWEIGHT="9.0000000" UNIT="" />
      </ELEMENT>
    </MATERIAL>
  </OBLIGATION>
  <MATERIAL PROJECT="A400403709" COEILINENUMBER="309" IAEACOMPCODE=""
TYPEINVENTORYCHANGE="34" OWNER="G" KEYMEASUREPOINT="" MEASUREBASIS=""
OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT="100.0000000"
NETWEIGHT="10.0000000" TOPROJECT="A401001000" TOCOEILINENUMBER=""
BACKREFLINENUMBER="112" LINENUMBER="1" BATCH="BATCH" NUMBEROFITEMS="2">
    <ELEMENT ELEMENTWEIGHT="99.0000000" ELEMENTLOE="10" UNIT="">
      <ISOTOPE MATERIALTYPE="20" WEIGHTPERCENT="10.0000000" ISOTOPEWEIGHT="9.0000000"
ISOTOPELOE="10" UNIT="" />
    </ELEMENT>
  </MATERIAL>
</SHIPMENT>
</TRANSACTIONS>
```

An important part of the XML format is the nesting of the records that make up a 741. In XML there are identifiers called Nodes which correspond to rows in the XML data. The Nodes have identifiers called Attributes which correspond to the data fields. For example, the SHIPMENT Node corresponds to the 741 Header record and the SHIPPERRIS Attribute is the Shipper RIS field of the Header record. Another important element of XML Nodes is that they can contain other nodes as known as nested nodes. The

Shipment Node(parent) can have MATERIAL, CONCISENOTE and OBLIGATION nodes (children). The following shows the nesting of the nodes for a 741.

```
SHIPMENT (header information, Shipper RIS, Receiver RIS etc..)
  CONCISENOTE
    • lines that make up the concise note
  OBLIGATION
    • lines required to report the obligations
    ELEMENT
      Contains element information for OBLIGATION
      ISOTOPE
        Contains isotope information for ELEMENT
  MATERIAL
    • lines required to report the detail lines
    ELEMENT
      Contains element information for MATERIAL
      ISOTOPE
        Contains isotope information for ELEMENT
```

The next sample is the same XML file as above, but has been indented using tabs to make it for readable to the human eye. It will process the same as the raw data. It also emphasizes the nesting of the data rows in the XML.

```
<TRANSACTIONS VERSION="2">
  <SHIPMENT
    SHIPPERRIS="ABC" RECEIVERRIS="ABC" TRANSFERNUMBER="00000001"
    CORRECTION="1" PROCESSCODE="C" ACTIONCODE="M" NUMBEROFLINES="1"
    NATUREOFTRANSACTION="" SHIPPEDFORRIS="" SHIPPEDTORIS="ABC"
    TRANSFERAUTHORITY="TR" UKFLAG="" ACTIONDATE="4/25/2011"
    LICENSENUMBER="" TOTALGROSSWEIGHT="0" TOTALVOLUME="0"
  SEALEDSOURCE="" TOTRANSFERAUTHORITY=""
  RIS="ABC">
  <CONCISENOTE
    LINENUMBER="1" ENTRYREFERENCE="ENTRY"
    TEXTOFCONCISENOTE="MESSAGE OF CONCISE NOTE" />
  <CONCISENOTE
    LINENUMBER="2" ENTRYREFERENCE="ENTRY L2"
    TEXTOFCONCISENOTE="LINE 2" />
  <OBLIGATION>
    <MATERIAL
      LINENUMBER="1" COUNTRYCODE="CA">
      <ELEMENT
        ELEMENTWEIGHT="99.0000000" UNIT="">
        <ISOTOPE
          MATERIALTYPE="20"
          ISOTOPEWEIGHT="9.0000000" UNIT="" />
      </ELEMENT>
```

```
</MATERIAL>
</OBLIGATION>
<OBLIGATION>
  <MATERIAL
    LINENUMBER="2" COUNTRYCODE="AU">
    <ELEMENT
      ELEMENTWEIGHT="9.0000000" UNIT="">
      <ISOTOPE
        MATERIALTYPE="20"
        ISOTOPEWEIGHT="1.0000000" UNIT="" />
      </ELEMENT>
    </MATERIAL>
  </OBLIGATION>
  <MATERIAL
    LINENUMBER="1" PROJECT="ABCD3709" COEILINENUMBER="309"
    IAEACOMPCODE="" TYPEINVENTORYCHANGE="34" OWNER="G"
    KEYMEASUREPOINT="" MEASUREBASIS="" OTHERMEASUREPOINT=""
    MEASUREMETHOD="" GROSSWEIGHT="100.0" NETWEIGHT="10.0"
    TOPROJECT="" TOCOEILINENUMBER="" BACKREFLINENUMBER="112"
    BATCH="BATCH" NUMBEROFITEMS="2">
    <ELEMENT
      ELEMENTWEIGHT="99.00" ELEMENTLOE="10" UNIT="">
      <ISOTOPE
        MATERIALTYPE="20" WEIGHTPERCENT="10.00"
        ISOTOPEWEIGHT="9.000" ISOTOPELOE="10" UNIT="" />
      </ELEMENT>
    </MATERIAL>
  <MATERIAL
    LINENUMBER="0" PROJECT="" COEILINENUMBER="309" IAEACOMPCODE=""
    TYPEINVENTORYCHANGE="34" OWNER="J" KEYMEASUREPOINT=""
    MEASUREBASIS="" OTHERMEASUREPOINT="" MEASUREMETHOD=""
    GROSSWEIGHT="0.0000000" NETWEIGHT="0.0000000" TOPROJECT=""
    TOCOEILINENUMBER="" BACKREFLINENUMBER="" BATCH=""
    NUMBEROFITEMS="3">
    <ELEMENT
      ELEMENTWEIGHT="0.0000000" ELEMENTLOE="0" UNIT="">
      <ISOTOPE
        MATERIALTYPE="" WEIGHTPERCENT="0.000000"
        ISOTOPEWEIGHT="0.0000000" ISOTOPELOE="0" UNIT="" />
      </ELEMENT>
    </MATERIAL>
  </SHIPMENT>
</TRANSACTIONS>
```

This last listing shows the nodes and attributes in their properly nested configuration with information detailing the data requirements.

<TRANSACTIONS Is the main node for 741 transactions
 VERSION="2" This indicates the current version of XML format.
 >
 <SHIPMENT Is a node and a child of TRANSACTIONS

It contains the information from the Header record, data code type 1

SHIPPERRIS="ABC"

Attribute in Shipment node
4 Alphanumeric Characters
Validated by RIS Authority Reference Table

RECEIVERRIS="ABC"

Attribute in Shipment node
4 Alphanumeric Characters
Validated by RIS Authority Reference Table

TRANSFERNUMBER="0000001"

Attribute in Shipment node
8 Alphanumeric Characters
If the datatype is integer then the number will be left padded with zeros during the import process

CORRECTION="1"

Attribute in Shipment node
1 Alphanumeric Character

PROCESSCODE="C"

Attribute in Shipment node
1 Alpha Character
Accepted values A,C or D

ACTIONCODE="M"

Attribute in Shipment node
1 Alpha Character
Validated byActionCode section of StaticData Authority Reference Table

NUMBEROFLINES="1"

Attribute in Shipment node
Integer, non-negative

NATUREOFTRANSACTION=""

Attribute in Shipment node
1 Alpha Character
Validated by TICode section of StaticData Authority Reference Table if required
Also called TI Code

SHIPPEDFORRIS=""

Attribute in Shipment node
4 Alphanumeric Characters
Validated by RIS Authority Reference Table if required
Also called ForAccount

SHIPPEDTORIS="ABC"

Attribute in Shipment node
4 Alphanumeric Characters
Validated by RIS Authority Reference Table if required
Also called ToAccount

TRANSFERAUTHORITY=""

Attribute in Shipment node

17 Alphanumeric Characters

No validation performed.

UKFLAG=""

Attribute in Shipment node

1 Alpha Character

Validated by SpecialIAEACode section of StaticData Authority

Reference Table, acceptable values are blank, N or R

Also called SpecialIAEACode

The IAEA UK reportable indication is only required for transactions involving United Kingdom facilities. Reporting 'R' indicates that the UK data is reportable to the IAEA. Reporting 'N' indicates that the UK data is not reportable to the IAEA. Leave this field blank for data that does not involve the United Kingdom facilities.

ACTIONDATE="4/25/2011"

Attribute in Shipment node

Date in mm/dd/yyyy format

Also called Activity Date

LICENSENUMBER=""

Attribute in Shipment node

10 Alphanumeric Characters

Validated by INMTS Authority Reference Table if required

PORTOFENTRY=""

Attribute in Shipment node

4 Alphanumeric Characters

Discontinued 10/2003

TOTALGROSSWEIGHT="0"

Attribute in Shipment node

Integer, non-negative

Also know as GrossWeight

TOTALVOLUME="0"

Attribute in Shipment node

Integer, non-negative

SEALEDSOURCE=""

Attribute in Shipment node

10 Alphanumeric Characters

No validation occurs at this time.

TOTRANSFERAUTHORITY=""

Attribute in Shipment node

17 Alphanumeric Characters

No longer validated, was used for Contract Transfers.

>

<**CONCISENOTE** a node and a child of Shipment

There may be as many lines as required to send the concise note information

LINENUMBER="1"

Attribute in ConciseNote node
Integer, non-negative

ENTRYREFERENCE="ENTRY"

Attribute in ConciseNote node
20 Alphanumeric Characters

TEXTOFCONCISENOTE="MESSAGE OF CONCISE NOTE"

Attribute in ConciseNote node
60 Alphanumeric Characters

/>

<**OBLIGATION** a node and a child of Shipment

>

<**MATERIAL** a node and a child of Obligation

There may be as many lines as required to report the obligation information

LINENUMBER="1"

Attribute in Material node
Integer, non-negative

COUNTRYCODE="CA"

Attribute in Material node
2 Alpha Character
Validated by CountryCode section of StaticData Authority Reference Table

>

<**ELEMENT** a node and a child of Material

ELEMENTWEIGHT="99.0000000"

Attribute in Element node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
decimal point is not implied

>

<**ISOTOPE** a node and a child of Element

MATERIALTYPE="20"

Attribute in Isotope node
2 Alphanumeric Characters
Validated by MaterialType Authority Reference Table

ISOTOPEWEIGHT="9.0000000"

Attribute in Isotope node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied

/>
</ELEMENT>
</MATERIAL>
</OBLIGATION>

<MATERIAL is a node and a child of Shipment
It contains the information from the Detail records, data code
types 2 and 5

LINENUMBER="1"

Attribute in Material node
Integer, non-negative

TYPEINVENTORYCHANGE="34"

Attribute in Material node
2 Alphanumeric Characters
Validated by list of Codes when required

BATCH="BATCH"

Attribute in Material node
16 Alphanumeric Characters

NUMBEROFITEMS="2"

Attribute in Material node
Integer

OWNER="G"

Attribute in Material node
1 Alpha Character
Validated by OwnerCode section of StaticData Authority Reference Table
Also called Owner Code

PROJECT="ABCDE03709"

Attribute in Material node
10 Alphanumeric Characters
Validated by ProjectNumber Authority Reference Table if required
Also called Project Number

COEILINENUMBER="309"

Attribute in Material node
4 Alphanumeric Characters
Validated by CompCode Authority Reference Table
Also called Comp Code
*IAEA reporting facilities should put their IAEA Comp Code or IAEA
Facility code in this field, NMMSS will translate during the import
process*

GROSSWEIGHT="100.000000"

Attribute in Material node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied

NETWEIGHT="10.000000"

Attribute in Material node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied

KEYMEASUREPOINT=""

Attribute in Material node
2 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

MEASUREBASIS=""

Attribute in Material node
1 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

OTHERMEASUREPOINT=""

Attribute in Material node
2 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

MEASUREMETHOD=""

Attribute in Material node
1 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

TOPROJECT="ABCDEF1000"

Attribute in Material node
10 Alphanumeric Characters
Validated by ProjectNumber Authority Reference Table if required
Only reportable with P ActionCode Project Transfer
Also called ToProject Number

TOCOEILINENUMBER=""

Attribute in Material node
4 Alphanumeric Characters
Validated by CompCode Authority Reference Table
Only reportable with P ActionCode Project Transfer
Also called To Comp Code

BACKREFLINENUMBER="112"

Attribute in Material node
3 Alphanumeric Characters
1st Character is the BackReferenceChangeDigit
2nd and 3rd Characters are BackReferenceLinenumbr
>

<ELEMENT is a node and a child of Material

There must always be one and only one Element per node

for each Material node
ELEMENTWEIGHT="99.000000"
Attribute in Element node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
ELEMENTLOE="10"
Attribute in Element node
Integer
>
<ISOTOPE
MATERIALTYPE="20"
Attribute in Isotope node
2 Alphanumeric Characters
Validated by MaterialType Authority Reference
Table
WEIGHTPERCENT="10.000000"
Attribute in Isotope node
Numeric (16,6)
16 digits of precision and up to 6 decimal places
Decimal point is not implied
ISOTOPEWEIGHT="9.000000"
Attribute in Isotope node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
ISOTOPELOE="10"
Attribute in Isotope node
Integer
/>
</ELEMENT>
</MATERIAL>
</SHIPMENT>
</TRANSACTIONS>

Root Tag <TRANSACTIONS>

Header Information <SHIPMENT>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Shipper RIS	1	Char(4)	✓	
Receiver RIS	2	Char(4)	✓	
Transaction/Transfer Number	3	Char(8)	✓	Right justified Zero fill blanks
Correction Number	4	Char(1)		
Process Code	5	Char(1)	✓	See Appendix A.

Action Code	6	Char(1)	✓
Number of Data Lines	10	Num(5)	✓
TI Code/Nature of Transaction	11	Char(1)	
RIS For Account	12b	Char(4)	
RIS To Account	13b	Char(4)	
Transfer Authority	14	Char(17)	
IAEA UK Reportable ¹	23c	Char(1)	
Action Date	22	Date	MM/DD/YYYY
License Number	15	Char(10)	
Total Gross Weight	24	Num(10)	Whole numbers
Total Volume ²	25	Num(10)	Whole numbers
Sealed Source		Char(10)	List tag only
Receiving Transfer Authority		Char(17)	List tag only

Concise Note Information <CONCISENOTE>

Note: if concise note information is not reported, there is no need to include a Concise Note section.

<u>Field Description</u>	<u>740M</u>	<u>Type</u>	<u>Essential Note</u>
Line Number	7a		
Entry Reference	7b	Char(20)	
Concise Note Text	7c	Char(60)	

Material Description Information <MATERIALDESCRIPTION>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential Note</u>
Description		Char(1000)	

Miscellaneous Information <MISCELLANEOUS>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential Note</u>
Text		Char(1000)	

Obligation Information <OBLIGATION>

Note: if obligated data is not reported, there is no need to include an Obligation section.

Obligation Information <MATERIAL>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential Note</u>
Line Number	17	Num(5)	✓
Country ³	18	Char(2)	

Obligation Information <ELEMENT>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential Note</u>
--------------------------	------------	-------------	-----------------------

¹ The IAEA UK reportable indication is only required for transactions involving United Kingdom facilities. Reporting 'R' indicates that the UK data is reportable to the IAEA. Reporting 'N' indicates that the UK data is not reportable to the IAEA. Leave this field blank for data that does not involve the United Kingdom facilities.

² Report total volume in cubic feet for material transferred to or from a nuclear waste management facility.

³ Call the NMMSS or go to NMMSS.com for the latest list of obligation country.

Obligated Element Weight ⁴	20	Num(19,7)	✓	
				<i>Value must include a decimal point.</i>
Unit of Measure		Char(4)		List tag only

Obligation Information <ISOTOPE>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Material Type	19	Char(2)		
Obligated Isotope Weight ^{5,6}	21	Num(19,7)	✓	
				<i>Value must include a decimal point.</i>
Unit of Measure		Char(4)		List tag only

Detail Information <MATERIAL>

Note: If both the element weight and isotope weight are zero, there is no need to include a Material section.

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Project Number ⁷	26/27 f	Char(10)		
Composition Facility Code	26/27 h	Char(4)		
Type of Inventory Change	26/27 c	Char(2)		
Owner Code	26/27 i	Char(1)		
Key Measurement Point	26/27 j	Char(2)		
Measurement Basis	26/27 k1	Char(1)		
Other Measurement Point	26/27 k2	Char(2)		
Measurement Method	26/27 k3	Char(1)		
Gross Weight	26/27 l	Num(10)		
Net Weight	26/27 m	Num(10)		
Receiving Project Number		Char(10)		List tag only
Receiving Composition Facility Code		Char(4)		List tag only
Back Reference Number ⁸	26/27 a	Char(3)		Zero fill blanks
Line Number	26/27 b	Num(5)	✓	
Batch Name/Identification	26/27 d	Char(16)		ALL Caps
Number of Items	26/27 e	Num(2)		

Detail Information <ELEMENT>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Element Weight ⁵	26/27 n	Num(19,7)	✓ ⁹	

⁴ The RIS must attain authorization from NRC to report to the 3rd decimal. Three decimal reporting is only allowed when reporting Source Material.

⁵ The RIS must attain authorization from NRC to report to the 3rd decimal. Three decimal reporting is only allowed when reporting Source Material.

⁶ Obligated Isotope Weight is required for Enriched Uranium only.

⁷ Project numbers are reported only for government owned material.

⁸ Back Reference Number; the first character is the correction identifier. The second and third characters are the line number referenced. When reported, insert zeros for blank values.

Element Limit of Error	26/27 o	Num(5)	<i>Value must include a decimal point.</i> Whole numbers
Unit of Measure		Char(4)	List tag only

⁹ Element or Isotope weight may be essential to successful file import depending on the specified material type.

Detail Information <ISOTOPE>

<u>Field Description</u>	<u>741</u>	<u>Type</u>	<u>Essential Note</u>
Material Type	26/27 g	Char(2)	
Weight Percent Isotope/Parts Per Million	26/27 p	Num(6,4) ¹⁰	<i>Value must include a decimal point.</i>
Isotope Weight ¹¹	26/27 q	Num(19,7)	✓ ¹² <i>Value must include a decimal point.</i>
Isotope Limit of Error	26/27 r	Num(5)	Whole numbers
Unit of Measure		Char(4)	List tag only

¹⁰ Weight Percent Isotope/Parts Per Million is reported as a percentage except when the material type is 70 (total uranium enriched in U-233), which is reported using 6 numeric digits and converted to decimal form by NMMSS.

¹¹ The RIS must attain authorization from NRC to report to the 3rd decimal. Three decimal reporting is only allowed when reporting Source Material.

¹² Element or Isotope weight may be essential to successful file import depending on the specified material type.

3. INVENTORY DATA

3.1. Requirements for DOE/NRC Form 742C

3.1.1. XML File Formatting

An example of an inventory submission in XML format is shown below. Additional examples are shown in Appendix B along with the corresponding DOE/NRC form. This is an example of raw XML produced by SAMS.

```
<PHYSICALINVENTORY VERSION="2">  
  <INVENTORY RIS="ABC" DATE="1/1/2011">  
    <MATERIAL PROCESSCODE="" SEQUENCENUMBER="1" PROJECT="" COEILINENUMBER=""  
OWNER="" KEYMEASUREPOINT="" MEASUREBASIS="" OTHERMEASUREPOINT=""  
MEASUREMETHOD="" SCRAPPROGRAM="" ENTRYSTATUS="" NUMBEROFITEMS="0" BATCH=""  
LOCATION="" SITEMBA="">  
      <CONCISENOTE PROCESSCODE="" LINENUMBER="1" ENTRYREFERENCE="ENTRY REF"  
TEXTOFCONCISENOTE="TEXT" />  
      <ELEMENT ELEMENTWEIGHT="0.000000" UNIT="">  
        <ISOTOPE MATERIALTYPE="R" WEIGHTPERCENT="0.000000" ISOTOPEWEIGHT="0.000000"  
UNIT="" />  
      </ELEMENT>  
    </MATERIAL>  
  </INVENTORY>  
</PHYSICALINVENTORY>
```

An important part of the XML format is the nesting of the records that make up a 742C. In XML there are identifiers called Nodes which correspond to rows in the XML data. The Nodes have identifiers called Attributes which correspond to the data fields. For example, the Inventory Node corresponds to the 742C Header record and the RIS Attribute is the RIS field of the Header record. Another important element of XML Nodes is that they can contain other nodes as known as nested nodes. The Inventory Node (parent) can have MATERIAL and CONCISENOTE nodes (children). The following shows the nesting of the nodes for a 742C.

```
INVENTORY (RIS and date.)  
  MATERIAL  
    0 to many lines required to report the inventory data  
    ELEMENT  
      Contains element information for MATERIAL  
      ISOTOPE  
        Contains isotope information for ELEMENT  
  CONCISENOTE  
    0 to many lines that make up the concise note
```

The next sample is the same XML file as above, but has been indented using tabs to make it for readable to the human eye. It will process the same as the raw data. It also emphasizes the nesting of the data rows in the XML.

```
<PHYSICALINVENTORY VERSION="2">
  <INVENTORY
    RIS="ABC" DATE="1/1/2011">
    <MATERIAL
      PROCESSCODE="" SEQUENCENUMBER="1" PROJECT="" COEILINENUMBER=""
OWNER=""
      KEYMEASUREPOINT="" MEASUREBASIS="" OTHERMEASUREPOINT=""
MEASUREMETHOD=""
      SCRAPPROGRAM="" ENTRYSTATUS="" NUMBEROFITEMS="0" BATCH=""
LOCATION="" SITEMBA="">
      <CONCISENOTE
        PROCESSCODE="" LINENUMBER="1" ENTRYREFERENCE="ENTRY REF"
TEXTOFCONCISENOTE="TEXT" />
      <ELEMENT
        ELEMENTWEIGHT="0.0000000" UNIT="">
        <ISOTOPE
          MATERIALTYPE="20" WEIGHTPERCENT="0.000000"
ISOTOPEWEIGHT="0.0000000" UNIT="" />
        </ELEMENT>
      </MATERIAL>
    </INVENTORY>
  </PHYSICALINVENTORY>
```

This last listing shows the nodes and attributes in their properly nested configuration with information detailing the data requirements.

```
<PHYSICALINVENTORY VERSION="2">
  <INVENTORY
    RIS="ABC"
      Attribute in Inventory node
      4 Alphanumeric Characters
      Validated by RIS Authority Reference Table
    DATE="1/1/2011"
      Attribute in Inventory node
      Date in mm/dd/yyyy format
      Also called Inventory Report Date
  >
  <MATERIAL
    PROCESSCODE="C"
      Attribute in Material node
      1 Alpha Character
      Accepted values A,C or D
```

SEQUENCENUMBER="1"

Attribute in Material node
Integer, non-negative

BATCH="BATCH"

Attribute in Material node
16 Alphanumeric Characters

NUMBEROFITEMS="2"

Attribute in Material node
Integer

OWNER="G"

Attribute in Material node
1 Alpha Character
Validated by OwnerCode section of StaticData Authority

Reference Table

Also called Owner Code

PROJECT="ABCDE03709"

Attribute in Material node
10 Alphanumeric Characters
Validated by ProjectNumber Authority Reference Table if required
Also called Project Number

COEILINENUMBER="309"

Attribute in Material node
4 Alphanumeric Characters
Validated by CompCode Authority Reference Table
Also called Comp Code

*IAEA reporting facilities should put their IAEACompCode or
IAEAFacilityCode in this field
NMMSS will translate during the import process*

KEYMEASUREPOINT=""
Attribute in Material node
2 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

MEASUREBASIS=""
Attribute in Material node
1 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

OTHERMEASUREPOINT=""
Attribute in Material node
2 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

MEASUREMETHOD=""
Attribute in Material node
1 Alphanumeric Characters
Validated by IAEAFacilityAttachment Authority Reference Table

LOCATION=""
Attribute in Material node
20 Alphanumeric Characters
No validation occurs at this time

SITEMBA=""
Attribute in Material node
20 Alphanumeric Characters
No validation occurs at this time

>

<CONCISENOTE
PROCESSCODE="C"
Attribute in ConciseNote node
1 Alpha Character
Accepted values A,C or D
LINENUMBER="1"
Attribute in ConciseNote node
Integer, non-negative
ENTRYREFERENCE="ENTRY"
Attribute in ConciseNote node
20 Alphanumeric Characters
TEXTOFCONCISENOTE="MESSAGE OF CONCISE NOTE"
Attribute in ConciseNote node
60 Alphanumeric Characters

/>

<ELEMENT
ELEMENTWEIGHT="99.0000000"
Attribute in Element node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied

>

<ISOTOPE
MATERIALTYPE="20"

Attribute in Isotope node
 2 Alphanumeric Characters
 Validated by MaterialType Authority Reference Table
WEIGHTPERCENT="10.000000"
 Attribute in Isotope node
 Numeric (16,6)
 16 digits of precision and up to 6 decimal places
 Decimal point is not implied
ISOTOPEWEIGHT="9.0000000"
 Attribute in Isotope node
 Numeric (19,7)
 19 digits of precision and up to 7 decimal places
 Decimal point is not implied

/>
 </ELEMENT>
 </MATERIAL>
 </INVENTORY>
 </PHYSICALINVENTORY>

Root Tag <PHYSICALINVENTORY>

Header Information <INVENTORY>

<u>Field Description</u>	<u>742C</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
RIS	2	Char(4)	✓	
Inventory Report Date	3	Date	✓	MM/DD/YYYY

Concise Note Information Attached to Header <CONCISENOTE>

Note: if concise note information is not reported, there is no need to include a Concise Note section.

<u>Field Description</u>	<u>740M</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Process Code	5e	Char(1)	✓	See Appendix A.
Line Number	7a	Num(2)		
Entry Reference	7b	Char(20)		
Concise Note Text	7c	Char(60)		

Detail Information <MATERIAL>

Note: If both the element weight and isotope weight are zero, there is no need to include a Material section.

<u>Field Description</u>	<u>742C</u>	<u>Type</u>	<u>Essential</u>	
Process Code	5q	Char(1)	✓	See Appendix A.
Sequence Number ¹³	5i	Num(6)	✓	
Project Number ¹⁴	5e	Char(10)		

¹³ Sequence number should begin at one for the entire inventory or each material type group (Generic MT 20 includes MT 21 – 39 and E1 – E4) and should be consecutively numbered including the total line (composition code 899).

¹⁴ Project numbers are reported only for government owned material.

Composition-Facility Code ¹⁵	5b	Char(4)	
Owner Code	5h	Char(1)	
Key Measurement Point	5l	Char(2)	
Measurement Basis	5m	Char(1)	
Other Measurement Point	5m	Char(2)	
Measurement Method	5m	Char(1)	
Scrap Program	5f	Char(1)	
Entry Status	5n	Char(1)	
Number of Items	5k	Num(5)	
Batch Name/Identification	5j	Char(16)	All Caps
Location of Item	5o	Char(30)	
Site MBA Code	5p	Char(30)	

Concise Note Information Attached to Material (Item) <CONCISENOTE>

Note: if concise note information is not reported, there is no need to include a Concise Note section.

<u>Field Description</u>	<u>740M</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Process Code	5e	Char(1)	✓	See Appendix A.
Line Number	7a	Num(2)		
Entry Reference	7b	Char(20)		
Concise Note Text	7c	Char(60)		

Detail Information <ELEMENT>

<u>Field Description</u>	<u>742C</u>	<u>Type</u>	<u>Essential</u>
Element Weight ¹⁶	5c	Num(19,7)	✓ ¹⁷ Value must include a decimal point.
Unit of Measure		Char(4)	List tag only

Detail Information <ISOTOPE>

<u>Field Description</u>	<u>742C</u>	<u>Type</u>	<u>Essential</u>
Material Type	5a	Char(2)	
Weight Percent Isotope/Parts Per Million	5g	Num(6,4) ¹⁸	Value must include a decimal point.
Isotope Weight ²⁴	5d	Num(19,7)	✓ ²⁵ Value must include a decimal point.
Unit of Measure		Char(4)	List tag only

4. MATERIAL BALANCE DATA

¹⁵ For total lines, this field will always contain "899".

¹⁶ The RIS must attain authorization from NRC to report to the 3rd decimal. Three decimal reporting is only allowed when reporting Source Material.

¹⁷ Element or Isotope weight may be essential to successful file import depending on the specified material type.

¹⁸ Weight Percent Isotope/Parts Per Million is reported as a percentage except when the material type is 70 (total uranium enriched in U-233), which is reported using 6 numeric digits and converted to decimal form by NMMSS.

4.1. Requirements for DOE/NRC Form 742

4.1.1. XML File Formatting

An example of material balance submission in XML format is shown below. Additional examples are shown in Appendix B along with the corresponding DOE/NRC form. This is an example of raw XML produced by SAMS.

```
<MATERIALBALANCEREPORT VERSION="2">  
  <MATERIALBALANCE RIS="YLM" STARTDATE="4/27/2010" ENDDATE="4/26/2011">  
    <MATERIAL PROCESSCODE="" SEQUENCENUMBER="2" DATACODE=""  
MATERIALBALANCECATEGORY="80">  
      <CONCISENOTE PROCESSCODE="" LINENUMBER="1" ENTRYREFERENCE="ENTRY"  
TEXTOFCONCISENOTE="TEXT" />  
      <ELEMENT ELEMENTWEIGHT="0.000000" TYPEINVENTORYCHANGE="MF" OTHERRIS="ACD"  
ENTRYSTATUS="" UNIT="">  
        <ISOTOPE MATERIALTYPE="" ISOTOPEWEIGHT="0.000000" UNIT="" />  
      </ELEMENT>  
    </MATERIAL>  
  </MATERIALBALANCE>  
</MATERIALBALANCEREPORT>
```

An important part of the XML format is the nesting of the records that make up a 742. In XML there are identifiers called Nodes which correspond to rows in the XML data. The Nodes have identifiers called Attributes which correspond to the data fields. For example, the Material Balance Node corresponds to the 742 Header record and the RIS Attribute is the RIS field of the Header record. Another important element of XML Nodes is that they can contain other nodes as known as nested nodes. The Material Balance Node (parent) can have MATERIAL nodes (children). The following shows the nesting of the nodes for a 742.

```
MATERIALBALANCE (RIS and dates.)  
  MATERIAL  
    0 to many lines required to report the Material Balance data  
  ELEMENT  
    Contains element information for MATERIAL  
  ISOTOPE  
    Contains isotope information for ELEMENT  
  CONCISENOTE  
    0 to many lines that make up the concise note
```

The next sample is the same XML file as above, but has been indented using tabs to make it for readable to the human eye. It will process the same as the raw data. It also emphasizes the nesting of the data rows in the XML.

```
<MATERIALBALANCEREPORT VERSION="2">  
  <MATERIALBALANCE  
    RIS="YLM" STARTDATE="4/27/2010" ENDDATE="4/26/2011">
```

```
<MATERIAL
  PROCESSCODE="" SEQUENCENUMBER="2" DATACODE=""
  MATERIALBALANCECATEGORY="80">
  <ELEMENT
    ELEMENTWEIGHT="0.0000000" TYPEINVENTORYCHANGE="MF"
    OTHERRIS="ACD" ENTRYSTATUS="" UNIT="">
    <ISOTOPE
      MATERIALTYPE="" ISOTOPEWEIGHT="0.0000000" UNIT="" />
    </ELEMENT>
  <CONCISENOTE
    PROCESSCODE="" LINENUMBER="1" ENTRYREFERENCE="ENTRY"
    TEXTOFCONCISENOTE="TEXT" />
  </MATERIAL>
</MATERIALBALANCE>
</MATERIALBALANCEREPORT>
```

This last listing shows the nodes and attributes in their properly nested configuration with information detailing the data requirements.

```
<MATERIALBALANCEREPORT VERSION="2">
  <MATERIALBALANCE
    RIS="ABC"
      Attribute in MaterialBalance node
      4 Alphanumeric Characters
      Validated by RIS Authority Reference Table
    STARTDATE="4/27/2010"
      Attribute in MaterialBalance node
      Date in mm/dd/yyyy format
    ENDDATE="4/26/2011"
      Attribute in MaterialBalance node
      Date in mm/dd/yyyy format
  >
  <MATERIAL
    PROCESSCODE=""
      Attribute in Material node
      1 Alpha Character
      Accepted values A,C or D
    SEQUENCENUMBER="2"
      Attribute in Material node
      Integer, non-negative
    DATACODE=""
      Attribute in Element node
      1 Alphanumeric Character
      Allowed values; 3 or 4
      Also known as TypeCode
    MATERIALBALANCECATEGORY="80"
      Attribute in Material node
      2 Alphanumeric Characters
      Validated by RIS Material Balance Category Authority Reference Table
  >
  <ELEMENT
    ELEMENTWEIGHT="0.0000000"
```

Attribute in Element node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
TYPEINVENTORYCHANGE="MF"
Attribute in Element node
2 Alpha Characters
Validated by Inventory Change Type section of StaticData

Authority Reference Table
OTHERRIS="ACD"
Attribute in Element node
4 Alphanumeric Characters
Validated by RIS Authority Reference Table
ENTRYSTATUS=""
Attribute in Element node
1 Alpha Character
Validated by Entry Status section of StaticData Authority

Reference Table
>
<ISOTOPE
MATERIALTYPE="20"
Attribute in Isotope node
2 Alphanumeric Characters
Validated by MaterialType Authority Reference Table
ISOTOPEWEIGHT="9.0000000"
Attribute in Isotope node
Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
/>
</ELEMENT>
<CONCISENOTE
PROCESSCODE=""
Attribute in ConciseNote node
1 Alpha Character
Accepted values A,C or D
LINENUMBER="1"
Attribute in ConciseNote node
Integer, non-negative
ENTRYREFERENCE="ENTRY"
Attribute in ConciseNote node
20 Alphanumeric Characters
TEXTOFCONCISENOTE="MESSAGE OF CONCISE NOTE"
Attribute in ConciseNote node
60 Alphanumeric Characters
/>
</MATERIAL>
</MATERIALBALANCE>
</MATERIALBALANCEREPORT>

Root Tag <MATERIALBALANCEREPORT>

Header Information <MATERIALBALANCE>

<u>Field Description</u>	<u>742</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
RIS	3	Char(4)	✓	
Report Period From	4	Date	✓	MM/DD/YYYY
Report Period To	4	Date	✓	MM/DD/YYYY

Concise Note Information Attached to Header <CONCISENOTE>

Note: if concise note information is not reported, there is no need to include a Concise Note section.

<u>Field Description</u>	<u>740M</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Process Code	5e	Char(1)	✓	See Appendix A.
Line Number	7a	Num(2)		
Entry Reference	7b	Char(20)		
Concise Note Text	7c	Char(60)		

Detail Information <Material>

Note: If both the element weight and isotope weight are zero, there is no need to include a Material section.

<u>Field Description</u>	<u>742</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Process Code	Sec. A & B PC	Char(1)	✓	See Appendix A.
Sequence Number ¹⁹	Sec. A & B SEQ	Num(6)	✓	
Data Code	-	Num(1)	✓	Value is 3 (Receipts) or 4 (Removals)
Material Balance Category ²⁰	Sec A Row # Sec B column 1	Char(2)		Right justified Zero fill blanks

Concise Note Information Attached to Material (Item) <CONCISENOTE>

Note: if concise note information is not reported, there is no need to include a Concise Note section.

<u>Field Description</u>	<u>740M</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Process Code	5e	Char(1)	✓	See Appendix A.
Line Number	7a	Num(2)		
Entry Reference	7b	Char(20)		
Concise Note Text	7c	Char(60)		

Detail Information <ELEMENT>

<u>Field Description</u>	<u>742</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
--------------------------	------------	-------------	------------------	-------------

¹⁹ Sequence number should begin at one for the entire material balance per material type and should be consecutively numbered.

²⁰ Call the NMMSS or go to NMMSS.com for the latest list of Material Balance Categories codes related to Obligations (Section B)

Element Weight ²¹	Sec A column A Sec B Column 2	Num(19,7)	✓ ²²
			<i>Value must include a decimal point.</i>
Inventory Change Type (ICT)	line 22 & 71	Char(2)	
Other RIS	line 11,30, 42,43 & 51	Char(4)	
Entry Status	-	Char(1)	
Unit of Measure	-	Char(4)	List tag only

Detail Information <ISOTOPE>

<u>Field Description</u>	<u>742</u>	<u>Type</u>	<u>Essential Note</u>
Material Type	5	Char(2)	
Isotope Weight ³⁷	Sec A column B Sec B Column 3	Num(19,7)	✓ ³⁸
			<i>Value must include a decimal point.</i>
Unit of Measure	-	Char(4)	List tag only

²¹ The RIS must attain authorization from NRC to report to the 3rd decimal. Three decimal reporting is only allowed when reporting Source Material.

²² Element or Isotope weight may be essential to successful file import depending on the specified material type.

APPENDIX A

PROCESS CODE

PROCESS CODE

DEFINITION: The process code identifies the type of system action to be taken for the data being reported as follows:

1. Process code A is used to signify the initial submittal of data. Use process code C to replacement a data set already submitted to the NMMSS;
2. Process code C is used to signify the replacement of previously reported data. Its use is restricted to the replacement of data in the same reporting month;
3. Process code D applies when the facility intends the deletion of previously reported data. Its use is also restricted to applying only to data in the same reporting month; and
4. Process code Z is used in conjunction with action code D by the receiver to accept a shipper's change without the receiver having to retype the detailed lines.

SPECIAL NOTE: If replacement or deletion of data is desired, it is suggested that the reporting facility ensures that the accounting month to be affected is still "open" (being processed by the NMMSS) by calling the appropriate NMMSS contact since these actions are restricted and based on specified accounting periods.

Example 1

XML format:

```
<TRANSACTIONS>
<SHIPMENT
  SHIPPERRIS="ABC" RECEIVERRIS="DEF" TRANSFERNUMBER="131"
  CORRECTION="" PROCESSCODE="A" ACTIONCODE="A" NUMBEROFLINES="3"
  NATUREOFTRANSACTION="" SHIPPEDFORRIS="" SHIPPEDTORIS=""
  TRANSFERAUTHORITY="" UKFLAG="" ACTIONDATE="12/31/2002"
  LICENSENUMBER="" TOTALGROSSWEIGHT="20081" TOTALVOLUME=""
  SEALEDSOURCE="" TOTRANSFERAUTHORITY="">
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
  OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT=""
  NETWEIGHT="" TOPROJECT="" TOCOEILINENUMBER=""
  BACKREFLINENUMBER="" LINENUMBER="1" BATCH="A BATCH ID"
  NUMBEROFITEMS="1">
<ELEMENT
  ELEMENTWEIGHT="426.00" ELEMENTLOE="" UNIT="" >
  <ISOTOPE
    MATERIALTYPE="10" WEIGHTPERCENT="0.6610"
    ISOTOPEWEIGHT="3.00" ISOTOPELOE="" UNIT="" >
  </ISOTOPE>
</ELEMENT>
</MATERIAL>
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
  OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT=""
  NETWEIGHT="" TOPROJECT="" TOCOEILINENUMBER=""
  BACKREFLINENUMBER="" LINENUMBER="2" BATCH="A BATCH ID"
  NUMBEROFITEMS="1">
<ELEMENT
  ELEMENTWEIGHT="2213.00" ELEMENTLOE="" UNIT="" >
  <ISOTOPE
    MATERIALTYPE="20" WEIGHTPERCENT="2.5305"
    ISOTOPEWEIGHT="56.00" ISOTOPELOE="" UNIT="" >
  </ISOTOPE>
</ELEMENT>
</MATERIAL>
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
  OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT=""
  NETWEIGHT="" TOPROJECT="" TOCOEILINENUMBER=""
  BACKREFLINENUMBER="" LINENUMBER="3" BATCH="A BATCH ID"
  NUMBEROFITEMS="1">
<ELEMENT
  ELEMENTWEIGHT="901.00" ELEMENTLOE="" UNIT="" >
  <ISOTOPE
    MATERIALTYPE="50" WEIGHTPERCENT="99.3340"
    ISOTOPEWEIGHT="895.00" ISOTOPELOE="" UNIT="" >
  </ISOTOPE>
</ELEMENT>
</MATERIAL>
</SHIPMENT>
</TRANSACTIONS>
```


Example 2

XML format:

```
<TRANSACTIONS>
<SHIPMENT
  SHIPPERRIS="ABC" RECEIVERRIS="DEF" TRANSFERNUMBER="00000131"
  CORRECTION="1" PROCESSCODE="A" ACTIONCODE="C" NUMBEROFLINES="4"
  NATUREOFTRANSACTION="" SHIPPEDFORRIS="" SHIPPEDTORIS=""
  TRANSFERAUTHORITY="" UKFLAG="" ACTIONDATE="12/31/2002"
  LICENSENUMBER="" TOTALGROSSWEIGHT="" TOTALVOLUME=""
  SEALEDSOURCE="" TOTRANSFERAUTHORITY="">
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
  OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT=""
  NETWEIGHT="" TOPROJECT="" TOCOEILINENUMBER=""
  BACKREFLINENUMBER="001" LINENUMBER="1" BATCH=""
  NUMBEROFITEMS="-1">
<ELEMENT
  ELEMENTWEIGHT="-426.00" ELEMENTLOE="" UNIT="" >
<ISOTOPE
  MATERIALTYPE="10" WEIGHTPERCENT="0.6610"
  ISOTOPEWEIGHT="-3.00" ISOTOPELOE="" UNIT="" >
</ISOTOPE>
</ELEMENT>
</MATERIAL>
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
  OTHERMEASUREPOINT="" MEASUREMETHOD="" GROSSWEIGHT=""
  NETWEIGHT="" TOPROJECT="" TOCOEILINENUMBER=""
  BACKREFLINENUMBER="101" LINENUMBER="2" BATCH=""
  NUMBEROFITEMS="1">
<ELEMENT
  ELEMENTWEIGHT="430.00" ELEMENTLOE="" UNIT="" >
<ISOTOPE
  MATERIALTYPE="10" WEIGHTPERCENT="0.6976"
  ISOTOPEWEIGHT="3.00" ISOTOPELOE="" UNIT="" >
</ISOTOPE>
</ELEMENT>
</MATERIAL>
<MATERIAL
  PROJECT="" COEILINENUMBER="309" TYPEINVENTORYCHANGE=""
  OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
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Example 3a

NUCLEAR MATERIAL TRANSACTION REPORT

DO ENRC FORM 711
 (ISSUED PREVIOUS EDITIONS ARE OBSOLETE)
 AUTHORIZED BY 10 CFR 11.40, 50, 70, 72, 74, 75, 150 PUBLIC
 (MAY BE VIEWED 50-426, 50-91)

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

APPROVED BY (OMB NO. 316-0043)
 Estimated burden per response to comply with this mandatory collection request is minimal. This information is required for RRI accounting reports that show changes in inventory of nuclear materials. Send comments regarding burden estimate to the Records Management Branch (74-5), U.S. Nuclear Regulatory Commission, Washington DC 20555-4001, or by internet email to records@nrc.gov, and to the local Office of Information and Regulatory Affairs, NRC (OMB) (OMB control number 316-0043) may not conduct or sponsor and a person is not required to respond to the information collection if it does not display a current valid OMB control number. Do not submit information that is not required to be collected.

EXPIRES 12/31/2020

1. SHIPPER'S RIS	2. RECEIVER'S RIS	3. TRANSACTION NO.	4. CORRECTION NO.	5. RECEIVING CODE	6. ACTION CODE
ABC	DEF	131			
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Advanced Physics 123 Anywhere Road Commonstown ZA 1111				0	1 2 3 4 5 6 7 8 9
13. ATTENTION	14. TELEPHONE	15. TELEPHONE	16. ORDER NUMBER	17. REPORT OF SHIPPER TRANSACTIONS LICENSE NO.	
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Example 3a, 3b, 3c, 3d

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Example 4 Physical Inventory Listing

NRC FORM 742CU (MM-YYYY) DATA COLLECTION AND/OR FIELD TO CORRECT 40, 50, 70, 72, 74, 75, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99		U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0058		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY COLLECTION REQUIRED 6 HOURS. THIS INFORMATION IS REQUIRED BY NRC TO FULFILL ITS SAFEGUARDS RESPONSIBILITIES, BILATERAL AGREEMENTS, AND RESPONSIBILITIES AS A PARTICIPANT IN THE US/IAEA SAFEGUARDS AGREEMENT. SEND COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND FOIA/PRIVACY SERVICES BRANCH (T-5 F52), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545-0001, OR BY INTERNET E-MAIL TO NRC-REG-MAIL@NRC.GOV. FOR MORE INFORMATION, CONTACT THE INFORMATION COLLECTION DIVISION, U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545-0001, OR BY TELEPHONE AT 1-800-368-7634. IF A MEASURED TO IMPROVE AN INFORMATION COLLECTION DOES NOT DISPLAY A CURRENTLY VALID OMB CONTROL NUMBER, THE NRC MAY NOT CONTACT A SPONSOR, AND A PERSON IS NOT REQUIRED TO RESPOND TO THE INFORMATION COLLECTION.		EXPIRES: MM/DD/YYYY							
1. NAME AND ADDRESS				2. REPORTING IDENTIFICATION SYMBOL (RIS)											
STREET ADDRESS <i>Advanced Physics</i> <i>123 Anywhere Road</i>				ABC											
CITY <i>Commontown</i>		STATE <i>ZA</i>	ZIP CODE <i>11111</i>	3. INVENTORY DATE <i>12/31/2002</i>		4. LICENSE NUMBER(S)									
5. BATCH DATA															
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E1	864	45	2				J	3							A
E1	865	65	4				J	4							A
6. TOTALS		270	10					5							
To the best of my knowledge and belief, the information given above and in any attached schedules is true, complete, and correct.															
7. SIGNATURE <i>John Doe</i>				8. TITLE MC&A Representative				9. DATE 12/31/2002							
WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.															

Example 4

XML format:

```
<PHYSICALINVENTORY>
<INVENTORY
  RIS="ABC" DATE="12/31/2002" >
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="1" PROJECT=""
    COEILINENUMBER="860" OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
    OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""
    ENTRYSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="99.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE="E1" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="3.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="2" PROJECT=""
    COEILINENUMBER="863" OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
    OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""
    ENTRYSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="61.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE=" E1" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="1.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="3" PROJECT=""
    COEILINENUMBER="864" OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
    OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""
    ENTRYSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="45.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE=" E1" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="2.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="4" PROJECT=""
    COEILINENUMBER="865" OWNER="J" KEYMEASUREPOINT="" MEASUREBASIS=""
    OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""
    ENTRYSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="65.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE=" E1" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="4.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
</INVENTORY
</MATERIAL
```

```
PROCESSCODE="A" SEQUENCENUMBER="5" PROJECT=""  
COEILINENUMBER="899" OWNER="" KEYMEASUREPOINT="" MEASUREBASIS=""  
OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""  
ENTRYSSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">  
<ELEMENT  
  ELEMENTWEIGHT="270.00" UNIT="">  
  <ISOTOPE  
    MATERIALTYPE="20" WEIGHTPERCENT=""  
    ISOTOPEWEIGHT="10.00" UNIT="">  
  </ISOTOPE>  
</ELEMENT>  
</MATERIAL>  
</INVENTORY>  
</PHYSICALINVENTORY>
```

Example 5
Physical Inventory Listing for selected IAEA facilities.

NRC FORM 742CU (MM-YYYY) MANDATORY DATA COLLECTION AUTHORITY: 10 CFR 30, 170.11, 170.12, 170.13, 170.15, 170.16, 170.17, 170.18, 170.19, 170.20, 170.21, 170.22, 170.23, 170.24, 170.25, 170.26, 170.27, 170.28, 170.29, 170.30, 170.31, 170.32, 170.33, 170.34, 170.35, 170.36, 170.37, 170.38, 170.39, 170.40, 170.41, 170.42, 170.43, 170.44, 170.45, 170.46, 170.47, 170.48, 170.49, 170.50, 170.51, 170.52, 170.53, 170.54, 170.55, 170.56, 170.57, 170.58, 170.59, 170.60, 170.61, 170.62, 170.63, 170.64, 170.65, 170.66, 170.67, 170.68, 170.69, 170.70, 170.71, 170.72, 170.73, 170.74, 170.75, 170.76, 170.77, 170.78, 170.79, 170.80, 170.81, 170.82, 170.83, 170.84, 170.85, 170.86, 170.87, 170.88, 170.89, 170.90, 170.91, 170.92, 170.93, 170.94, 170.95, 170.96, 170.97, 170.98, 170.99, 170.100		U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION PHYSICAL INVENTORY LISTING		APPROVED BY OMB: NO. 3150-0058 Estimated burden per response to comply with this mandatory collection request is 6 hours. This information is required by NRC to fulfill its safeguards responsibilities, bilateral agreements, and responsibilities as a participant in the IAEA Safeguards Agreement. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 FE2), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollect@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NECEB-10202, (3160-0058), Office of Management and Budget, Washington, DC 20503. It is means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.		EXPIRES: MM/DD/YYYY												
1. NAME AND ADDRESS <i>Advanced Physics</i> 123 Anywhere Road Common town				2. REPORTING IDENTIFICATION SYMBOL (RIS) ABC														
STATE ZA		ZIP CODE 11111		3. INVENTORY DATE 12/31/2002		4. LICENSE NUMBER(S)												
5. BATCH DATA																		
a. MATERIAL TYPE	b. COMPA CODE	c. ELEMENT WEIGHT	d. ISOTOPE WEIGHT	e. DOE PROJECT NO.	f. SCRAP PROGRAM	g. PERCENT ISOTOPE	h. OTHER CODE	i. SEQUENCE NUMBER	j. BATCH NAME	k. NO. OF ITEMS	l. KEY MEASURE	m. MEASUREMENT BASIS	n. MEASUREMENT POINT	o. MEASUREMENT METHOD	p. STATUS	q. P.E. CODE	r. S.E. CODE	
E3	OGRB	155	112				J	1	Batch0422	10	02	N	N	N				A
E3	OGRB	268	159				J	2	Batch0434	10	02	N	N	N				A
6. TOTALS		423	271					3										
To the best of my knowledge and belief, the information given above and in any attached schedules is true, complete, and correct.								8. TITLE MC&A Representative		9. DATE 12/31/2002								
7. SIGNATURE <i>John Doe</i>																		
WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.																		

Example 5

XML format:

```
<PHYSICALINVENTORY>
<INVENTORY
  RIS="ABC" DATE="12/31/2002">
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="1" PROJECT=""
    COEILINENUMBER="OGRB" OWNER="J" KEYMEASUREPOINT="02"
    MEASUREBASIS="N" OTHERMEASUREPOINT="" MEASUREMETHOD=""
    SCRAPPROGRAM="" ENTRYSTATUS="N" NUMBEROFITEMS="10"
    BATCH="BATCH0422" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="155.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE="E3" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="112.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="2" PROJECT=""
    COEILINENUMBER="OGRB" OWNER="J" KEYMEASUREPOINT="02"
    MEASUREBASIS="N" OTHERMEASUREPOINT="" MEASUREMETHOD=""
    SCRAPPROGRAM="" ENTRYSTATUS="N" NUMBEROFITEMS="10"
    BATCH="BATCH0434" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="268.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE="E3" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="159.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="3" PROJECT=""
    COEILINENUMBER="899" OWNER="" KEYMEASUREPOINT="" MEASUREBASIS=""
    OTHERMEASUREPOINT="" MEASUREMETHOD="" SCRAPPROGRAM=""
    ENTRYSTATUS="" NUMBEROFITEMS="" BATCH="" LOCATION="" SITEMBA="">
    <ELEMENT
      ELEMENTWEIGHT="423.00" UNIT="">
      <ISOTOPE
        MATERIALTYPE="20" WEIGHTPERCENT=""
        ISOTOPEWEIGHT="271.00" UNIT="">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
</INVENTORY>
</PHYSICALINVENTORY>
```

Example 6a
Material Balance Report

DOE/NRC FORM 742U (MM-YYYY) MANDATORY DATA COLLECTION AUTHORIZED BY 10 CFR 30.40, 50, 70, 72, 74, 75, 150, Public Laws 83-703, 93-438, 95-91		U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0004		EXPIRES: MM/DD/YYYY	
MATERIAL BALANCE REPORT				Estimated burden per response to comply with this mandatory collection request: 5 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0004), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.			
1. NAME AND ADDRESS Advanced Physics 123 Anywhere Road Commontown, ZA 11111				2. LICENSE NUMBER(S)		3. REPORTING IDENTIFICATION SYMBOL (RIS) ABC	
				4. REPORT PERIOD (MM/DD/YYYY) FROM: 01/01/2002 TO: 12/31/2002		5. MATERIAL TYPE (Submit separate report for each type) 50	
SECTION A MATERIAL ACCOUNTABILITY							
PC	SEQ			A. ELEMENT WEIGHT		B. ISOTOPE WEIGHT	
A	1	8. BEGINNING INVENTORY -- U.S. GOVT-OWNED		0.00		0.00	
		9. BEGINNING INVENTORY -- NOT U.S. GOVT-OWNED					
		RECEIPTS					
		11. PROCUREMENT FROM DOE RIS					
A	2	FROM:	DEF	11207.00		1112.00	
		13. PROCUREMENT -- FOR THE ACCOUNT OF DOE					
		14. DOD RETURNS -- USE A					
		15. DOD RETURNS -- USE B					
		16. DOD RETURNS -- OTHER USES					
		21. PRODUCTION					
		22. FROM OTHER MATERIALS a. ICT					
		b. ICT					
		c. ICT					
		30. RECEIPTS REPORTED TO DOE/NRC ON DOE/NRC 741 (not listed elsewhere)					
A	3	FROM:	RIS	38.00		25.00	
		GHI					
		34. RECEIPTS -- MISC					
		37. PROCUREMENT BY OTHERS					
		38. DONATED MATERIAL -- FROM U.S. GOVT TO OTHERS					
		39. DONATED MATERIAL -- FROM OTHERS TO U.S. GOVT					
		40. TOTAL (Lines 8-39)					
		REMOVALS					
		41. EXPENDED IN SPACE PROGRAMS					
		42. SALES TO U.S. GOVT RIS TO: RIS					
		TO:					
		43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT RIS					
		TO:					
		44. DOD -- USE A					
		45. DOD -- USE B					
A	4	46. DOD -- OTHER USES		2.00		1.00	
		47. EXPENDED IN U.S. GOVT TESTS					
		48. ROUTINE TESTS					
		49. SHIPPER -- RECEIVER DIFFERENCE					
		51. SHIPMENTS REPORTED TO NRC/DOE ON NRC/DOE 741 (not listed elsewhere)					
		TO: RIS					

Example 6b
Material Balance Report

DOE/NRC FORM 742U (MM-YYYY) MANDATORY DATA COLLECTION AUTHORIZED BY 10 CFR 30, 40, 50, 70, 72, 74, 75, 150, Public Laws 83-703, 93-438, 95-91		U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0004		EXPIRES: MM/DD/YYYY			
MATERIAL BALANCE REPORT				Estimated burden per response to comply with this mandatory collection request: 5 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0004), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.					
1. NAME AND ADDRESS Advanced Physics 123 Anywhere Road Commontown, ZA 11111		2. LICENSE NUMBER(S)		3. REPORTING IDENTIFICATION SYMBOL (RIS) ZZZ		4. REPORT PERIOD (MM/DD/YYYY) FROM 01/01/2002 TO 12/31/2002		5. MATERIAL TYPE (Submit separate report for each type) E2	
SECTION A MATERIAL ACCOUNTABILITY									
PC	SEQ					A. ELEMENT WEIGHT	B. ISOTOPE WEIGHT		
		8. BEGINNING INVENTORY -- U.S. GOVT-OWNED							
A	1	9. BEGINNING INVENTORY -- NOT U.S. GOVT-OWNED				800.00	150.00		
		RECEIPTS							
		11. PROCUREMENT FROM DOE RIS							
		FROM:							
		13. PROCUREMENT -- FOR THE ACCOUNT OF DOE							
		14. DOD RETURNS -- USE A							
		15. DOD RETURNS -- USE B							
		16. DOD RETURNS -- OTHER USES							
		21. PRODUCTION							
A	2	22. FROM OTHER MATERIALS		a. ICT ED	74.00	14.00			
				b. ICT					
				c. ICT					
		30. RECEIPTS REPORTED TO DOE/NRC ON DOE/NRC 741 (not listed elsewhere)							
		FROM: RIS							
		34. RECEIPTS -- MISC							
		37. PROCUREMENT BY OTHERS							
		38. DONATED MATERIAL -- FROM U.S. GOVT TO OTHERS							
		39. DONATED MATERIAL -- FROM OTHERS TO U.S. GOVT							
		40. TOTAL (Lines 8-39)							
		REMOVALS							
		41. EXPENDED IN SPACE PROGRAMS							
		42. SALES TO U.S. GOVT		RIS TO:					
		TO:							
		43. SALES TO OTHERS FOR THE ACCOUNT OF U.S. GOVT				RIS			
		TO:							
		44. DOD -- USE A							
		45. DOD -- USE B							
		46. DOD -- OTHER USES							
		47. EXPENDED IN U.S. GOVT TESTS							
		48. ROUTINE TESTS							
		49. SHIPPER -- RECEIVER DIFFERENCE							
		51. SHIPMENTS REPORTED TO NRC/DOE ON NRC/DOE 741 (not listed elsewhere)							
		TO:		RIS					

Example 6a, 6b

XML format:

```
<MATERIALBALANCEREPORT>
<MATERIALBALANCE
  RIS="ABC" STARTDATE="01/01/2002" ENDDATE="12/31/2002">
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="1" DATACODE="3"
    MATERIALBALANCECATEGORY="11">
    <ELEMENT
      ELEMENTWEIGHT="11207.00" TYPEINVENTORYCHANGE=""
      OTHERRIS="DEF" ENTRYSTATUS="N">
      <ISOTOPE
        MATERIALTYPE="50" ISOTOPEWEIGHT="1112.00">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL>
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="2" DATACODE="3"
    MATERIALBALANCECATEGORY="30">
    <ELEMENT
      ELEMENTWEIGHT="38.00" TYPEINVENTORYCHANGE=""
      OTHERRIS="GHI" ENTRYSTATUS="N">
      <ISOTOPE
        MATERIALTYPE="50" ISOTOPEWEIGHT="25.00">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL >
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="3" DATACODE="4"
    MATERIALBALANCECATEGORY="46">
    <ELEMENT
      ELEMENTWEIGHT="2.00" TYPEINVENTORYCHANGE="" OTHERRIS=""
      ENTRYSTATUS="N">
      <ISOTOPE
        MATERIALTYPE="50" ISOTOPEWEIGHT="1.00">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL >
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="4" DATACODE="4"
    MATERIALBALANCECATEGORY="81">
    <ELEMENT
      ELEMENTWEIGHT="11243.00" TYPEINVENTORYCHANGE="" OTHERRIS=""
      ENTRYSTATUS="N">
      <ISOTOPE
        MATERIALTYPE="50" ISOTOPEWEIGHT="1136.00">
      </ISOTOPE>
    </ELEMENT>
  </MATERIAL >
</MATERIALBALANCE>
<MATERIALBALANCE
  RIS="ZZZ" STARTDATE="01/01/2002" ENDDATE="12/31/2002">
  <MATERIAL
    PROCESSCODE="A" SEQUENCENUMBER="1" DATACODE="3"
    MATERIALBALANCECATEGORY="09">
    <ELEMENT
      ELEMENTWEIGHT="800.00" TYPEINVENTORYCHANGE="" OTHERRIS=""
      ENTRYSTATUS="N">
```

```
        <ISOTOPE
          MATERIALTYPE="E2" ISOTOPEWEIGHT="150.00">
        </ISOTOPE>
      </ELEMENT>
    </MATERIAL >
    <MATERIAL
      PROCESSCODE="A" SEQUENCENUMBER="2" DATACODE="3"
      MATERIALBALANCECATEGORY ="22">
      <ELEMENT
        ELEMENTWEIGHT="74.00" TYPEINVENTORYCHANGE="34" OTHERRIS="">
        <ISOTOPE
          MATERIALTYPE="E2" ISOTOPEWEIGHT="14.00">
        </ISOTOPE>
      </ELEMENT>
    </MATERIAL >
    <MATERIAL
      PROCESSCODE="A" SEQUENCENUMBER="3" DATACODE="4"
      MATERIALBALANCECATEGORY ="81">
      <ELEMENT
        ELEMENTWEIGHT="874.00" TYPEINVENTORYCHANGE="" OTHERRIS=""
        ENTRYSTATUS="N">
        <ISOTOPE
          MATERIALTYPE="E2" ISOTOPEWEIGHT="164.00">
        </ISOTOPE>
      </ELEMENT>
    </MATERIAL >
    <MATERIAL
      PROCESSCODE="A" SEQUENCENUMBER="4" DATACODE="4"
      MATERIALBALANCECATEGORY ="86">
      <ELEMENT
        ELEMENTWEIGHT="320.00" TYPEINVENTORYCHANGE="" OTHERRIS=""
        ENTRYSTATUS="N">
        <ISOTOPE
          MATERIALTYPE="E2" ISOTOPEWEIGHT="20.00">
        </ISOTOPE>
      </ELEMENT>
    </MATERIAL>
  </MATERIALBALANCE>
</MATERIALBALANCEREPORT>
```


41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Transfer Authority																			U	Action Date										C									

Detail Information (Data Code 2)

<u>Field Description</u>	<u>741</u>	<u>80 Column File Format Position</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Shipper RIS	1	1	4	Char(4)	✓	Left justified
Receiver RIS	2	5	8	Char(4)	✓	Left justified
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Zero fill blanks
Correction Number (Change Digit)	4	15	15	Char(1)		
Process Code	5	16	16	Char(1)	✓	See Appendix A.
Action Code	6	18	18	Char(1)	✓	
Data Code	-	19	19	Num(1)	✓	Value is 2
Line Number	26/27 b	20	21	Num(2)	✓	Right justified
Type of Inventory Change	26/27 c	22	23	Char(2)		
Batch Name/Identification	26/27 d	24	39	Char(16)		Left justified All Caps
Number of Items	26/27 e	40	43	Num(4)		Right justified
Project Number ²⁴	26/27 f	44	53	Char(10)		Left justified
Material Type	26/27 g	54	55	Char(2)		Left justified
Composition-Facility Code	26/27 h	56	59	Char(4)		Left justified
Owner Code	26/27 i	61	61	Char(1)		
Key Measurement Point	26/27 j	70	71	Char(2)		Left justified
Measurement Basis	26/27 k1	72	72	Char(1)		
Other Measurement Point	26/27 k2	73	74	Char(2)		Left justified
Measurement Method	26/27 k3	75	75	Char(1)		
Back Reference Number ²⁵	26/27 a	76	78	Char(3)		Zero fill blanks

Note: If both the element weight and isotope weight are zero, there is no need to submit a data line for data code 2 and 5.

Visual representation of field placement in 80 column file formatting of transaction detail information.

741A Detail Information (Data Code 2)																																							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Shipper RIS				Receiver RIS				Transfer Num				CoPC		ACDC		Line#		TIC		Batch ID																4			
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
# Items				Project #				MT		Comp Code		O		KMP Mb OMP Mn B Ref#																									

²⁴ Project numbers are reported only for government owned material.

²⁵ Back Reference Number; the first character is the correction identifier. The second and third characters are the line number referenced. When reported, insert zeros for blank values.

						Zero fill blanks
Correction Number (Change Digit)	4	15	15	Char(1)		
Process Code	5	16	16	Char(1)	✓	See Appendix A.
Action Code	6	18	18	Char(1)	✓	
Data Code	-	19	19	Num(1)	✓	Value is 3
License Number (Import/Export)	15	22	31	Char(10)		Left justified

Note: if no applicable license number is reported, there is no need to submit a data line for data code 3.

Visual representation of field placement in 80 Column File formatting of transaction detail information.

741A Transportation Information (Data Code 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Shipper RIS				Receiver RIS				Transaction Num						CoPC		AQDC		License Number																					

41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Packaging Detail Information (Data Code 4)

<u>Field Description</u>	<u>741</u>	<u>80 Column File Format Position</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Shipper RIS	1	1	4	Char(4)	✓	Left justified
Receiver RIS	2	5	8	Char(4)	✓	Left justified
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Zero fill blanks
Correction Number (Change Digit)	4	15	15	Char(1)		
Process Code	5	16	16	Char(1)	✓	See Appendix A.
Action Code	6	18	18	Char(1)	✓	
Data Code	-	19	19	Num(1)	✓	Value is 4
Total Gross Weight	24	57	66	Num(10)		Right justified Whole number
Total Volume ²⁸	25	67	75	Num(9)		Right justified Whole number

Note: if total gross weight and/or total volume is not reported, there is no need to submit a data line for data code 4.

Visual representation of field placement in 80 Column File formatting of transaction package information.

741A Packaging Information (Data Code 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Shipper RIS				Receiver RIS				Transaction Num						CoPC		AQDC																							

41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
															Total Gross Weight										Total Volume														

²⁸ Report total volume in cubic feet for material transferred to or from a nuclear waste management facility.

Obligation Information (Data Code 7)

<u>Field Description</u>	<u>741</u>	<u>80 Column File Format Position</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Shipper RIS	1	1	4	Char(4)	✓	Left justified
Receiver RIS	2	5	8	Char(4)	✓	Left justified
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Zero fill blanks
Correction Number (Change Digit)	4	15	15	Char(1)		
Process Code	5	16	16	Char(1)	✓	See Appendix A.
Action Code	6	18	18	Char(1)	✓	
Data Code	-	19	19	Num(1)	✓	Value is 7
Line Number	17	20	21	Num(2)		Right justified
Material Type	19	22	23	Char(2)		Left justified
Obligated Element Weight	20	24	34	Num(11,2)	✓	Right justified
<i>The value can contain a decimal point. Only XML format accepts 3 decimal place values.</i>						
Obligated Isotope Weight ²⁹	21	35	45	Num(11,2)		Right justified
<i>The value can contain a decimal point.</i>						
Country ³⁰	18	46	47	Char(2)		Left justified

Note: if obligated data is not reported, there is no need to submit a data line for data code 7.

Visual representation of field placement in 80 Column File formatting of Transaction Obligation information.

741A Obligation Information (Data Code 7)																																																																																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																																															
Shipper RIS				Receiver RIS				Transaction Num							Co	PC	AC	DC	(Line#)	MT	Element Weight											Isotope W																																																						
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																																															
weight							Ctry																																																																															

Concise Note Information DOE/NRC Form 740M (Data Code 6)

<u>Field Description</u>	<u>740M</u>	<u>80 Column File Format Position</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Shipper RIS	5a	1	4	Char(4)	✓	Left justified
Receiver RIS	5b	5	8	Char(4)	✓	Left justified
Transaction/Transfer Number	5c	9	14	Char(6)	✓	Right justified Zero fill blanks
Correction Number (Change Digit)	5d	15	15	Char(1)		
Process Code	5e	16	16	Char(1)	✓	See Appendix A.
Action Code	5f	18	18	Char(1)	✓	
Data Code	-	19	19	Char(1)	✓	Value is 6
Entry Reference	7b	24	39	Char(16)	✓	Left justified

²⁹ Obligated Isotope Weight is required for Enriched Uranium only.

³⁰ Call the NMMSS or go to NMMSS.com for the latest list of obligation country.

Owner Code	5h	68	68	Char(1)		
Process Code	5q	74	74	Char(1)	✓	See Appendix A.
Sequence Number Code ³⁵	5i	75	80	Num(6)	✓	Right justified

Note: If both the element weight and isotope weight are zero, there is no need to submit a data line for data code 1 or 2.

Visual representations of field placement in 80 Column file formatting physical inventory listing header information.																																																																															
733 Header Information (Data Code 1)																																																																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																																								
DC Inv Report Date										RIS				MT		Comp Code				Element Weight																Isotope Wei																																											
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																																								
IP		Mb		OMP		Mm		E		C																																										PC		Sequence #																									

Physical Inventory Listing Detail Information (Data Code 2)

<u>Field Description</u>	<u>742C</u>	<u>80 Column File Format Position</u>			<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>	<u>Type</u>		
Data Code	-	1	1	Num(1)	✓	Value is 2
Inventory Report Date	3	2	9	Date	✓	MMDDYYYY
RIS	2	10	13	Char(4)	✓	Left justified
Material Type	5a	14	15	Char(2)	✓	Left justified
Composition-Facility Code ³⁶	5b	16	19	Char(4)	✓	Left justified
Batch Identification	5j	20	35	Char(16)		Left justified All Caps
Number of Items	5k	36	39	Num(4)		Right justified
Key Measurement Point	5l	40	41	Char(2)		Left justified
Measurement Basis	5m	42	42	Char(1)		
Other Measurement Point	5m	43	44	Char(2)		Left justified
Measurement Method	5m	45	45	Char(1)		
Entry Status	5n	46	46	Char(1)		
Process Code	5q	74	74	Char(1)	✓	See Appendix A.
Sequence Number ³⁷	5i	76	80	Num(5)	✓	Right justified

Note: If both the element weight and isotope weight are zero, there is no need to submit a data line for data code 1 or 2.

³⁵ Sequence number should begin at one for the entire inventory or each material type group (Generic MT 20 includes MT 21 – 39) and should be consecutively numbered including the total line (composition code 899).

³⁶ For total lines, this field will always contain "899"

³⁷ Sequence number should begin at one for the entire inventory or each material type and the pairs of lines (Data Type Code 1 and 2) should be consecutively numbered including the total line (composition code 899). The sequence number for a Data Type Code 1 line should be coded for the corresponding Data Type Code 2 line.

APPENDIX D TRANSACTION SCHEMA

Transaction Schema Version 2

```
<?xml version="2.0" encoding="UTF-8"?>
<!-- edited with XML Spy v4.4 U (http://www.xmlspy.com) by Rick Edwards
(Westinghouse Savannah River Co) -->
<!--W3C Schema generated by XML Spy v4.4 U (http://www.xmlspy.com)-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:element name="TRANSACTIONS">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="SHIPMENT" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="CONCISENOTE"
minOccurs="0" maxOccurs="unbounded">
                <xs:complexType>
                  <xs:attribute
name="LINENUMBER" type="xs:int" use="required">
                    <xs:annotation>
                      <xs:documentation source="Comment LINENUMBER">Integer, non-
negative</xs:documentation>
                    </xs:annotation>
                  </xs:attribute>
                  <xs:attribute
name="ENTRYREFERENCE" type="xs:string" use="required">
                    <xs:annotation>
                      <xs:documentation source="Comment ENTRYREFERENCE">20 Alphanumeric
Characters</xs:documentation>
                    </xs:annotation>
                  </xs:attribute>
                  <xs:attribute
name="TEXTOFCONCISENOTE" type="xs:string" use="required">
                    <xs:annotation>
                      <xs:documentation source="Comment TEXTOFCONCISENOTE">60 Alphanumeric
Characters</xs:documentation>
                    </xs:annotation>
                  </xs:attribute>
                  <xs:anyAttribute/>
                </xs:complexType>
              </xs:element>
            <xs:element name="OBLIGATION"
minOccurs="0" maxOccurs="unbounded">
              <xs:complexType>
                <xs:sequence>
                  <xs:element
name="MATERIAL">
                    <xs:complexType>
                      <xs:sequence>
```

```
<xs:element name="ELEMENT">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="ISOTOPE">
        <xs:complexType>
          <xs:attribute name="MATERIALTYPE"
type="xs:string" use="required">
            <xs:annotation>
              <xs:documentation source="Comment
MATERIALTYPE">2 Alphanumeric Characters
Validated by MaterialType Authority Reference Table
</xs:documentation>
            </xs:annotation>
          </xs:attribute>
          <xs:attribute name="ISOTOPEWEIGHT"
type="xs:decimal" use="required">
            <xs:annotation>
              <xs:documentation source="Comment
ISOTOPEWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
decimal point is not implied </xs:documentation>
            </xs:annotation>
          </xs:attribute>
          <xs:anyAttribute/>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
    <xs:attribute name="ELEMENTWEIGHT" type="xs:decimal"
use="required">
      <xs:annotation>
        <xs:documentation source="Comment
ELEMENTWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
decimal point is not implied</xs:documentation>
      </xs:annotation>
```

```
        </xs:attribute>
        <xs:anyAttribute/>
    </xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="LINENUMBER" type="xs:int" use="required">
    <xs:annotation>
        <xs:documentation source="Comment LINENUMBER">Integer, non-
negative</xs:documentation>
    </xs:annotation>
</xs:attribute>
<xs:attribute name="COUNTRYCODE" type="xs:string" use="required">
    <xs:annotation>
        <xs:documentation source="Comment COUNTRYCODE">2 Alpha Character
Validated by CountryCode section of StaticData Authority Reference Table
</xs:documentation>
    </xs:annotation>
</xs:attribute>
<xs:anyAttribute/>
</xs:complexType>
                                </xs:element>
                                </xs:sequence>
                                <xs:anyAttribute/>
                                </xs:complexType>
                                </xs:element>
                                <xs:element name="MATERIAL"
minOccurs="0" maxOccurs="unbounded">
                                    <xs:complexType>
                                        <xs:sequence>
                                            <xs:element
name="ELEMENT">
                                                <xs:complexType>
                                                    <xs:sequence>
                                                        <xs:element name="ISOTOPE">
                                                            <xs:complexType>
                                                                <xs:attribute name="MATERIALTYPE" type="xs:string"
use="required">
```

```

        <xs:annotation>
            <xs:documentation source="Comment MATERIALTYPE">2
Alphanumeric Characters
Validated by MaterialType Authority Reference Table</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="WEIGHTPERCENT" type="xs:decimal"
use="optional">
        <xs:annotation>
            <xs:documentation source="Comment
WEIGHTPERCENT">Numeric (16,6)
16 digits of precision and up to 6 decimal places
Decimal point is not implied</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ISOTOPEWEIGHT" type="xs:decimal"
use="required">
        <xs:annotation>
            <xs:documentation source="Comment
ISOTOPEWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ISOTOPELOE" type="xs:decimal" use="optional">
        <xs:annotation>
            <xs:documentation source="Comment
ISOTOPELOE">Integer</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:anyAttribute/>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="ELEMENTWEIGHT" type="xs:decimal" use="required">
```

```
<xs:annotation>
  <xs:documentation source="Comment ELEMENTWEIGHT">Numeric (19,7)
  19 digits of precision and up to 7 decimal places
  Decimal point is not implied
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="ELEMENTLOE" type="xs:decimal" use="optional">
  <xs:annotation>
    <xs:documentation source="Comment
ELEMENTLOE">Integer</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:anyAttribute/>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute
name="LINENUMBER" type="xs:int" use="required">
  <xs:annotation>
    <xs:documentation source="Comment LINENUMBER">Integer, non-
    negative</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute
name="TYPEINVENTORYCHANGE" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation source="Comment TYPEINVENTORYCHANGE">2 Alphanumeric
    Characters
    Validated by list of Codes when required</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute
name="BATCH" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation source="Comment BATCH">16 Alphanumeric
    Characters</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute
name="NUMBEROFITEMS" type="xs:int" use="required">
  <xs:annotation>
    <xs:documentation source="Comment
NUMBEROFITEMS">Integer</xs:documentation>
```

```

        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="OWNER" type="xs:string" use="required">
        </xs:annotation>
        <xs:documentation source="Comment OWNER">1 Alpha Character
Validated by OwnerCode section of StaticData Authority Reference Table
Also called Owner Code</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="PROJECT" type="xs:string" use="optional">
        </xs:annotation>
        <xs:documentation source="Comment PROJECT">10 Alphanumeric Characters
Validated by ProjectNumber Authority Reference Table if required
Also called Project Number</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="COEILINENUMBER" type="xs:string" use="optional">
        </xs:annotation>
        <xs:documentation source="Comment COEILINENUMBER">4 Alphanumeric
Characters
Validated by CompCode Authority Reference Table
Also called Comp Code
IAEA reporting facilities should put their IAEACompCode or IAEAFacilityCode
in this field, NMMSS will translate during the import
process</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="GROSSWEIGHT" type="xs:decimal" use="optional">
        </xs:annotation>
        <xs:documentation source="Comment GROSSWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="NETWEIGHT" type="xs:decimal" use="optional">
        </xs:annotation>
        <xs:documentation source="Comment NETWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute
name="KEYMEASUREPOINT" type="xs:string" use="optional">
        </xs:annotation>
        <xs:documentation source="Comment KEYMEASUREPOINT">2 Alphanumeric
Characters
Validated by IAEAFacilityAttachment Authority Reference Table
</xs:documentation>

```



```

        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="NUMBEROFLINES"
type="xs:int" use="required">
        <xs:annotation>
            <xs:documentation
source="Comment NUMBEROFLINES">Integer, non-negative</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="NATUREOFTRANSACTION"
type="xs:string" use="optional">
        <xs:annotation>
            <xs:documentation
source="Comment NATUREOFTRANSACTION">1 Alpha Character
Validated by TICode section of StaticData Authority Reference Table if
required
Also called TI Code</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="SHIPPEDFORRIS"
type="xs:string" use="optional">
        <xs:annotation>
            <xs:documentation
source="Comment SHIPPEDFORRIS">4 Alphanumeric Characters
Validated by RIS Authority Reference Table if required
Also called ForAccount</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="SHIPPEDTORIS"
type="xs:string" use="optional">
        <xs:annotation>
            <xs:documentation
source="Comment SHIPPEDTORIS">4 Alphanumeric Characters
Validated by RIS Authority Reference Table if required
Also called ToAccount</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="TRANSFERAUTHORITY"
type="xs:string" use="optional">
        <xs:annotation>
            <xs:documentation
source="Comment TRANSFERAUTHORITY">17 Alphanumeric Characters
No validation performed</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="UKFLAG"
type="xs:string" use="optional">
        <xs:annotation>
            <xs:documentation
source="Comment UKFLAG">1 Alpha Character
Validated by SpecialIAEACode section of StaticData Authority Reference Table,
acceptable values are blank, N or R
Also called SpecialIAEACode</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ACTIONDATE"
use="required">
        <xs:annotation>
```

```

                                <xs:documentation
source="Comment ACTIONDATE">Date in mm/dd/yyyy format
Also called Activity Date</xs:documentation>
                                </xs:annotation>
                                <xs:simpleType>
                                <xs:restriction
base="xs:string">
                                <xs:pattern
value="\d{2}/\d{2}/\d{4}" />
                                </xs:restriction>
                                </xs:simpleType>
                                </xs:attribute>
                                <xs:attribute name="LICENSENUMBER"
type="xs:string" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment LICENSENUMBER">10 Alphanumeric Characters
Validated by INMTS Authority Reference Table if required</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>
                                <xs:attribute name="PORTOFENTRY"
type="xs:string" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment PORTOFENTRY">4 Alphanumeric Characters
Discontinued 10/2003</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>
                                <xs:attribute name="TOTALGROSSWEIGHT"
type="xs:int" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment TOTALGROSSWEIGHT">Integer, non-negative
Also know as GrossWeight</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>
                                <xs:attribute name="TOTALVOLUME"
type="xs:int" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment TOTALVOLUME">Integer, non-negative</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>
                                <xs:attribute name="SEALEDSOURCE"
type="xs:string" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment SEALEDSOURCE">10 Alphanumeric Characters
No validation occurs at this time</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>
                                <xs:attribute name="TOTTRANSFERAUTHORITY"
type="xs:string" use="optional">
                                <xs:annotation>
                                <xs:documentation
source="Comment TOTTRANSFERAUTHORITY">17 Alphanumeric Characters
No longer validated, was used for Contract Transfers</xs:documentation>
                                </xs:annotation>
                                </xs:attribute>

```

```
                <xs:anyAttribute/>
            </xs:complexType>
        </xs:element>
    </xs:sequence>
    <xs:attribute name="VERSION" type="xs:int" use="required"
fixed="2"/>
    </xs:complexType>
</xs:element>
</xs:schema>
```

APPENDIX E INVENTORY SCHEMA

Inventory Schema Version 2

```
<?xml version="2.0" encoding="UTF-8"?>
<!-- edited with XML Spy v4.4 U (http://www.xmlspy.com) by Rick Edwards
(Westinghouse Savannah River Co) -->
<!--W3C Schema generated by XML Spy v4.4 U (http://www.xmlspy.com)-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:element name="PHYSICALINVENTORY">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="INVENTORY">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="MATERIAL">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element
name="CONCISENOTE">
          <xs:complexType>
            <xs:attribute name="PROCESSCODE" type="xs:string" use="required">
            <xs:annotation>
              <xs:documentation source="Comment PROCESSCODE">1 Alpha Character
Accepted values A,C or D </xs:documentation>
            </xs:annotation>
          </xs:attribute>
          <xs:attribute name="LINENUMBER" type="xs:int" use="required">
            <xs:annotation>
              <xs:documentation source="Comment LINENUMBER">Integer, non-
negative</xs:documentation>
            </xs:annotation>
          </xs:attribute>
          <xs:attribute name="ENTRYREFERENCE" type="xs:string" use="required">
            <xs:annotation>
              <xs:documentation source="Comment ENTRYREFERENCE">20 Alphanumeric
Characters</xs:documentation>
            </xs:annotation>
```

```
</xs:attribute>

<xs:attribute name="TEXTTOFCONCISENOTE" type="xs:string" use="required">

<xs:annotation>

  <xs:documentation source="Comment TEXTTOFCONCISENOTE">60 Alphanumeric
Characters</xs:documentation>

</xs:annotation>

</xs:attribute>

</xs:complexType>

</xs:element>
<xs:element
name="ELEMENT">

  <xs:complexType>

    <xs:sequence>

      <xs:element name="ISOTOPE">

        <xs:complexType>

          <xs:attribute name="MATERIALTYPE" type="xs:byte" use="required">

            <xs:annotation>

              <xs:documentation source="Comment MATERIALTYPE">2
Alphanumeric Characters
Validated by MaterialType Authority Reference Table
</xs:documentation>

            </xs:annotation>

          </xs:attribute>

          <xs:attribute name="WEIGHTPERCENT" type="xs:decimal"
use="required">

            <xs:annotation>

              <xs:documentation source="Comment
WEIGHTPERCENT">Numeric (16,6)
16 digits of precision and up to 6 decimal places
Decimal point is not implied </xs:documentation>

            </xs:annotation>

          </xs:attribute>

          <xs:attribute name="ISOTOPEWEIGHT" type="xs:decimal"
use="required">

            <xs:annotation>
```

```

                <xs:documentation source="Comment
ISOTOPEWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
                </xs:documentation>
            </xs:annotation>
        </xs:attribute>
    </xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="ELEMENTWEIGHT" type="xs:decimal" use="required">
    <xs:annotation>
        <xs:documentation source="Comment ELEMENTWEIGHT">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
    </xs:documentation>
    </xs:annotation>
    </xs:attribute>
</xs:complexType>
                </xs:element>
            </xs:sequence>
        <xs:attribute
name="PROCESSCODE" type="xs:string" use="required">
                <xs:annotation>
                    <xs:documentation source="Comment PROCESSCODE">1 Alpha Character
Accepted values A,C or D</xs:documentation>
                </xs:annotation>
            </xs:attribute>
        <xs:attribute
name="SEQUENCENUMBER" type="xs:boolean" use="required">
                <xs:annotation>
                    <xs:documentation source="Comment SEQUENCENUMBER">Integer, non-
negative</xs:documentation>
                </xs:annotation>
            </xs:attribute>
        <xs:attribute
name="BATCH" type="xs:string" use="required">
                <xs:annotation>
                    <xs:documentation source="Comment BATCH">16 Alphanumeric Characters
                </xs:documentation>
                </xs:annotation>
            </xs:attribute>
        <xs:attribute
name="NUMBEROFITEMS" type="xs:boolean" use="required">
```

```
</xs:annotation>

  <xs:documentation source="Comment
NUMBEROFITEMS">Integer</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="OWNER" type="xs:string" use="required">

  </xs:annotation>

  <xs:documentation source="Comment OWNER">1 Alpha Character
Validated by OwnerCode section of StaticData Authority Reference Table
Also called Owner Code</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="PROJECT" type="xs:string" use="required">

  </xs:annotation>

  <xs:documentation source="Comment PROJECT">10 Alphanumeric Characters
Validated by ProjectNumber Authority Reference Table if required
Also called Project Number</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="COEILINENUMBER" type="xs:string" use="required">

  </xs:annotation>

  <xs:documentation source="Comment COEILINENUMBER">4 Alphanumeric
Characters
Validated by CompCode Authority Reference Table
Also called Comp Code
IAEA reporting facilities should put their IAEACompCode or IAEAFacilityCode
in this field NMMSS will translate during the import process
</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="KEYMEASUREPOINT" type="xs:string" use="required">

  </xs:annotation>

  <xs:documentation source="Comment KEYMEASUREPOINT">2 Alphanumeric
Characters
Validated by IAEAFacilityAttachment Authority Reference
Table</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="MEASUREBASIS" type="xs:string" use="required">

  </xs:annotation>

  <xs:documentation source="Comment MEASUREBASIS">1 Alphanumeric
Characters
Validated by IAEAFacilityAttachment Authority Reference
Table</xs:documentation>

  </xs:annotation>
</xs:attribute>
<xs:attribute
name="OTHERMEASUREPOINT" type="xs:string" use="required">
```

```
</xs:documentation>
<xs:documentation source="Comment OTHERMEASUREPOINT">2 Alphanumeric
Characters
Validated by IAEA Facility Attachment Authority Reference
Table</xs:documentation>
</xs:documentation>
</xs:attribute>
<xs:attribute
name="MEASUREMETHOD" type="xs:string" use="required">
</xs:documentation>
<xs:documentation source="Comment MEASUREMETHOD">1 Alphanumeric
Characters
Validated by IAEA Facility Attachment Authority Reference
Table</xs:documentation>
</xs:documentation>
</xs:attribute>
<xs:attribute
name="LOCATION" type="xs:string" use="required">
</xs:documentation>
<xs:documentation source="Comment LOCATION">20 Alphanumeric Characters
No validation occurs at this time</xs:documentation>
</xs:documentation>
</xs:attribute>
<xs:attribute
name="SITEMBA" type="xs:string" use="required">
</xs:documentation>
<xs:documentation source="Comment SITEMBA">20 Alphanumeric Characters
No validation occurs at this time</xs:documentation>
</xs:documentation>
</xs:attribute>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="RIS" type="xs:string"
use="required">
</xs:documentation>
<xs:documentation
source="Comment RIS">4 Alphanumeric Characters
Validated by RIS Authority Reference Table</xs:documentation>
</xs:documentation>
</xs:attribute>
<xs:attribute name="DATE"
type="xs:string" use="required">
</xs:documentation>
<xs:documentation
source="Comment DATE">Date in mm/dd/yyyy format
Also called Inventory Report Date</xs:documentation>
</xs:documentation>
</xs:attribute>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="VERSION" type="xs:byte"
use="required"/>
</xs:complexType>
```

```
</xs:element>  
</xs:schema>
```

APPENDIX F MATERIAL BALANCE SCHEMA

Material Balance Schema Version 2

```
<?xml version="2.0" encoding="UTF-8"?>
<!-- edited with XML Spy v4.4 U (http://www.xmlspy.com) by Rick Edwards
(Westinghouse Savannah River Co) -->
<!--W3C Schema generated by XML Spy v4.4 U (http://www.xmlspy.com)-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:element name="MATERIALBALANCEREPORT">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="MATERIALBALANCE">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="MATERIAL">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element
name="CONCISENOTE">
          <xs:complexType>
            <xs:attribute name="PROCESSCODE" type="xs:string" use="required">
            <xs:annotation>
              <xs:documentation source="Comment MATERIALTYPE">1 Alpha Character
Accepted values A,C or D</xs:documentation>
            </xs:annotation>
          </xs:attribute>
            <xs:attribute name="LINENUMBER" type="xs:int" use="required">
            <xs:annotation>
              <xs:documentation source="Comment MATERIALTYPE">Integer, non-
negative</xs:documentation>
            </xs:annotation>
          </xs:attribute>
            <xs:attribute name="ENTRYREFERENCE" type="xs:string" use="required">
            <xs:annotation>
              <xs:documentation source="Comment MATERIALTYPE">20 Alphanumeric
Characters</xs:documentation>
            </xs:annotation>
          </xs:attribute>
```

```
<xs:attribute name="TEXTTOFCONCISENOTE" type="xs:string" use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">60 Alphanumeric
Characters</xs:documentation>
  </xs:annotation>
</xs:attribute>
</xs:complexType>
</xs:element>
</xs:element>
name="ELEMENT">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="ISOTOPE">
        <xs:complexType>
          <xs:attribute name="MATERIALTYPE" type="xs:string"
use="required">
            <xs:annotation>
              <xs:documentation source="Comment MATERIALTYPE">2
Alphanumeric Characters
Validated by MaterialType Authority Reference Table
</xs:documentation>
            </xs:annotation>
          </xs:attribute>
          <xs:attribute name="ISOTOPEWEIGHT" type="xs:decimal"
use="required">
            <xs:annotation>
              <xs:documentation source="Comment
MATERIALTYPE">Numeric (19,7)
19 digits of precision and up to 7 decimal places
Decimal point is not implied
</xs:documentation>
            </xs:annotation>
          </xs:attribute>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
```

```
<xs:attribute name="ELEMENTWEIGHT" type="xs:decimal" use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">Numeric (19,7)
    19 digits of precision and up to 7 decimal places
    Decimal point is not implied</xs:documentation>
  </xs:annotation>
</xs:attribute>

<xs:attribute name="TYPEINVENTORYCHANGE" type="xs:string"
use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">2 Alpha Characters
    Validated by Inventory Change Type section of StaticData Authority Reference
    Table</xs:documentation>
  </xs:annotation>
</xs:attribute>

<xs:attribute name="OTHERRIS" type="xs:string" use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">4 Alphanumeric
    Characters
    Validated by RIS Authority Reference Table</xs:documentation>
  </xs:annotation>
</xs:attribute>

<xs:attribute name="ENTRYSTATUS" type="xs:string" use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">1 Alpha Character
    Validated by Entry Status section of StaticData Authority Reference
    Table</xs:documentation>
  </xs:annotation>
</xs:attribute>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute
name="PROCESSCODE" type="xs:string" use="required">
  <xs:annotation>
    <xs:documentation source="Comment MATERIALTYPE">1 Alpha Character
    Accepted values A,C or D</xs:documentation>
```

```

                </xs:annotation>
            </xs:attribute>
            <xs:attribute
name="SEQUENCENUMBER" type="xs:byte" use="required">
                </xs:annotation>
                <xs:documentation source="Comment MATERIALTYPE">Integer, non-
negative</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute
name="DATACODE" type="xs:string" use="required">
                </xs:annotation>
                <xs:documentation source="Comment MATERIALTYPE">1 Alphanumeric
Character
Allowed values; 3 or 4
Also known as TypeCode</xs:documentation>
                </xs:annotation>
            </xs:attribute>
            <xs:attribute
name="MATERIALBALANCECATEGORY" type="xs:byte" use="required">
                </xs:annotation>
                <xs:documentation source="Comment MATERIALTYPE">2 Alphanumeric
Characters
Validated by RIS Material Balance Category Authority Reference
Table</xs:documentation>
                </xs:annotation>
            </xs:attribute>
        </xs:complexType>
    </xs:element>
</xs:sequence>
<xs:attribute name="RIS" type="xs:string"
use="required">
        </xs:annotation>
        <xs:documentation
source="Comment MATERIALTYPE">4 Alphanumeric Characters
Validated by RIS Authority Reference Table</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="STARTDATE"
type="xs:string" use="required">
        </xs:annotation>
        <xs:documentation
source="Comment MATERIALTYPE">Date in mm/dd/yyyy format</xs:documentation>
        </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ENDDATE"
type="xs:string" use="required">
        </xs:annotation>
        <xs:documentation
source="Comment MATERIALTYPE">Date in mm/dd/yyyy format</xs:documentation>
        </xs:annotation>
    </xs:attribute>
</xs:complexType>
</xs:element>
</xs:sequence>
```

```
        <xs:attribute name="VERSION" type="xs:byte"
use="required"/>
    </xs:complexType>
</xs:element>
</xs:schema>
```