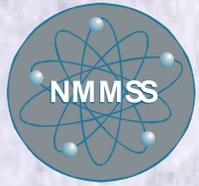


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Update of the NMMSS D-24 Directory

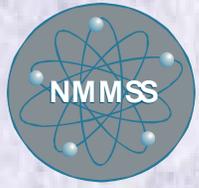
Ron Bonifay
Jessica Norles
NAC International



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Guidance for Electronic Data Submission

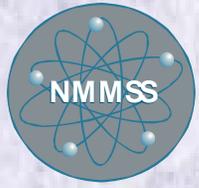
- D-23 - Personal Computer Data Input for Department of Energy (DOE) Contractors
- D-24 - Personal Computer Data Input for Nuclear Regulatory Commission (NRC) Licensees



Purpose of the D-24

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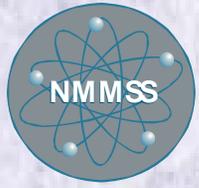
- Provides formatting requirements for the reporting of nuclear material information in electronic file formats to the Nuclear Materials Management Safeguards System (NMMSS), in accordance with the Nuclear Regulatory Commission (NRC) guidelines.



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Options for Electronic Reporting

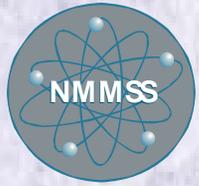
- Electronic file prepared in the formats presented in the D-24, using a variety of site specific material control and accountability software applications
- Safeguard Management Software (SAMS)



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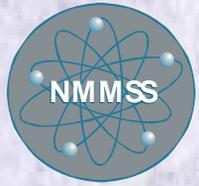
Acceptable Electronic Formats

- Extensive Markup Language (XML)
- 80 Column File



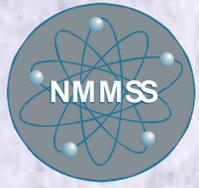
XML Format

- XML sometimes referred to as tagged data
- Data is represented by Tags (words bracketed and related Attributes)
- Tags readily identify values being reported
- Tags must be entered exactly as specified, or they will not be recognized by the NMMSS import programs



XML Conditions Causing Import Failure

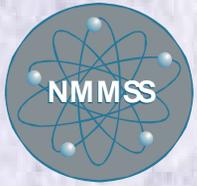
- A Tag entered incorrectly (wrong tag name, inserting spaces, or improper capitalization)
- Missing Tag
- Missing end Tag Indicator (designated by /) for every opening tag.
- A Tag Attribute without surrounding quotes



80 Column Format

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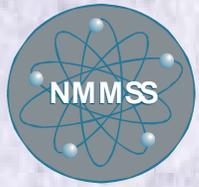
- Directly correlates the columnar position of data in the text file with the related position on the hard copy of the NMMSS forms.
- Identity of data in 80 Column format is recognized by its columnar position in the file.
- Allocated spaces for each data field are constant and not interchangeable
- Each line of data begins with a data code, (record type) identifying the type of data.



Transaction Data Codes

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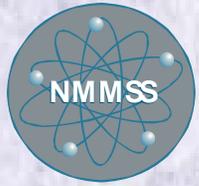
Code	Data
1	Header Information
2	Detail Information
3	Import/Export License
4	Gross Weight
5	Detail Information (quantitative)
6	Concise Note Information
7	Reporting Obligated Material



Inventory Data Codes

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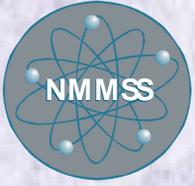
Code	Data
1	Header information including quantitative data and the <u>sequence numbers</u> for each record
2	Used by selected IAEA facilities contains data fields only required for IAEA facilities, i.e., key measurement points, measurement bias, batch identification



Reporting Inventory Sequence Numbers

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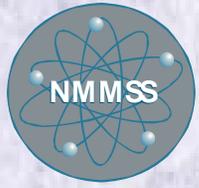
- Who?
 - All licensees submitting inventory should report sequence numbers
- What?
 - Sequence numbers as specified by instructions in NUREG/BR-0007 - *Enter the line number; number lines consecutively; do not repeat or skip numbers*
- Why?
 - Reduces the possibility of NMMSS importing duplicate files; instructions contained in NUREG/BR-0007 p. 13, 8i



Material Balance Data Codes

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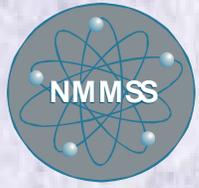
Code	Data
3	Receipts
4	Removals
4	Obligated Material Balance Categories



File Creation

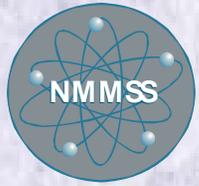
- Review each data file created to verify that no extraneous characters were added
- Assign a file extension to indicate the type of file. Example: 80 column format may end in **.txt** or any other preferred variation; an XML file should always end in **.xml**

Electronic Data Submission Methods



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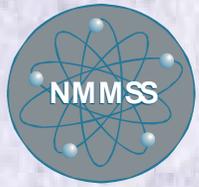
- Direct Link
- Internet (requires encryption)
- Diskettes
- SAMS



D-24 Proposed Changes

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- Transaction Section
 - Eliminate references to TI Codes and To/For Accounts
 - Revise wording to the instructions for IAEA UK Reportable information
 - Eliminate references to project numbers (applicable to government owned material only)
 - Provide extra space in the 80 column format for reactor facilities to track obligations per fuel element (data not captured by NMMSS, site use only)

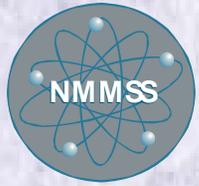


D-24 Proposed Changes

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- Transaction Section, continued
 - Removed country code for Czech Republic; (included in Euratom)
 - Added country of obligation codes

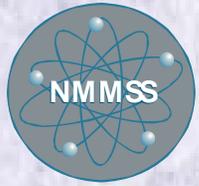
31 Australia	83 Euratom/Japan
32 Canada	84 Australia/Euratom/Japan
33 Euratom	85 Canada/Euratom/Japan
34 Japan	86 China/Japan
35 People's Republic of China	91 Australia/Euratom
37 Switzerland	92 Canada/Euratom
81 Australia/Japan	WR Former Soviet Union weapons material
82 Canada/Japan	



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D-24 Proposed Changes

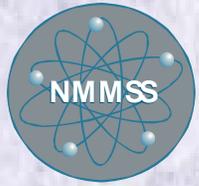
- Inventory Section
 - Revised wording in footnote to clarify effective date for inventory reporting
- Material Balance Section
 - Removed obligated material balance code
 - for Czech Republic (included in Euratom)



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D-24 Proposed Changes

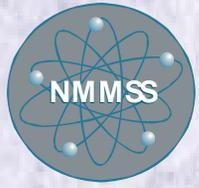
- **Material Balance Section, continued**
 - Revise wording, to change the Obligated Material Balance Categories numbering from 85 to A1
 - Add note: Material Balance Categories greater than 99 are assigned alpha numeric characters



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D-24 Proposed Changes

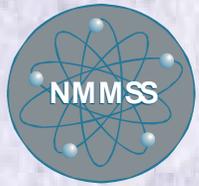
- Material Balance Section, continued
 - Add Material Balance Categories
 - 94 Australia/Japan (81)
 - 95 Canada/Japan (82)
 - 96 Euratom/Japan (83)
 - 97 Australia/Euratom/Japan (84)
 - 98 Canada/Euratom/Japan (85)
 - 99 China /Japan (86)
 - A1 Switzerland (37)



Future Changes

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- The need for additional Obligation Country Codes and Material Balance Category Codes is anticipated as power reactors continue to purchase Japanese reactor vessel closure heads (RVCH)
- The next set of codes will be issued to Calvert Cliffs Nuclear Power Plant with obligations to Australian/Euratom/Canada; it is anticipated that codes 80 and 90 will be assigned to the country and material balance category, respectively



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 C along with the corresponding DOE/NRC forms.

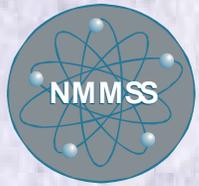
Root Tag <TRANSACTIONS>

Header Information <SHIPMENT>

<u>Field Description</u>	<u>741</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential Note</u>
Shipper RIS	1	SHIPPERRIS	Char(4)	✓
Receiver RIS	2	RECEIVERRIS	Char(4)	✓
Transaction/Transfer Number	3	TRANSFERNUMBER	Char(6)	✓
Correction Number	4	CORRECTION	Char(1)	
Process Code	5	PROCESSCODE	Char(1)	✓ See Appendix A.
Action Code	6	ACTIONCODE	Char(1)	✓
Number of Data Lines	10	NUMBEROFLINES	Num(2)	✓
TI Code/Nature of Transaction ¹	11	NATUREOFTRANSACTION	Char(1)	
RIS For Account ²	12b	SHIPPEDFORRIS	Char(4)	

¹ Leave blank.

² Leave blank.

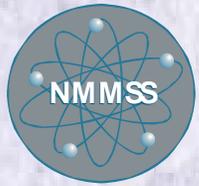


<u>Transactions - XML</u>	<u>741</u>	<u>XML Attribute</u>	<u>Type</u>	
IAEA UK Reportable ³	23c	UKFLAG	Char(1)	R indicates 'yes'; N indicates 'no'
Action Date	22	ACTIONDATE	Date	MMDDYYYY
License Number	15	LICENSENUMBER	Char(10)	
Total Gross Weight	24	TOTALGROSSWEIGHT	Num(10)	Whole numbers
Total Volume	25	TOTALVOLUME	Num(9)	Whole numbers
Concise Note Indicator	23b	CONCISENOTEIND	Char(1)	X indicates notes
Sealed Source Serial Number		SEALEDSOURCE	Char(10)	List tag only
Receiving Transfer Authority		TOTRANSFERAUTHORITY	Char(17)	List tag only

Concise Note Information <CONCISENOTE>

<u>Field Description</u>	<u>740M</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential Note</u>
Line Number	7a	LINENUMBER	Num(2)	*✓
Entry Reference	7b	ENTRYREFERENCE	Char(16)	*✓
Concise Note Text	7c	TEXTOFCONCISENOTE	Char(39)	*✓

³ The IAEA UK reportable indication is only required for transactions involving United Kingdom facilities. Reporting 'R' indicates that the data is reportable as IAEA/United Kingdom data. Reporting 'N' indicates that the data is not reportable as IAEA/United Kingdom. Leave this field blank for data that does not involve the United Kingdom facilities.



Transactions - XML

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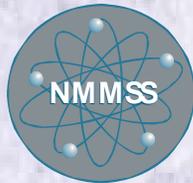
Detail Information

<MATERIAL>

<u>Field Description</u>	<u>I41</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
Material Type	26/27 g	SUMMARYMATERIALTYPE	Char(2)	✓	
Project Number ⁹	26/27 f	PROJECT	Char(10)		
Composition Facility Code	26/27 h	COEILINENUMBER	Char(4)		
Type of Inventory Change	26/27 c	TYPEINVENTORYCHANGE	Char(2)		
Owner Code	26/27 i	OWNER	Char(1)	✓	
Key Measurement Point	26/27 j	KEYMEASUREPOINT	Char(2)		
Measurement Basis	26/27 k1	MEASUREBASIS	Char(1)		
Other Measurement Point	26/27 k2	OTHERMEASUREPOINT	Char(2)		
Measurement Method	26/27 k3	MEASUREMETHOD	Char(1)		
Gross Weight	26/27 l	GROSSWEIGHT	Num(5)		
Net Weight	26/27 m	NETWEIGHT	Num(5)		
Receiving Project Number		TOPROJECT	Char(10)		List tag only
Receiving Composition Facility Code		TOCOEILINENUMBER	Char(4)		List tag only

⁹ Leave Blank (required when reporting government owned material).

80 Column Formatting

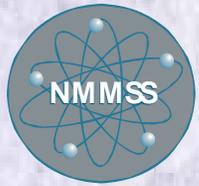


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Detail Information (Data Code 2)

<u>Field Description</u>	<u>741</u>	<u>80 Column File</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 Repeat for each line
Receiver RIS	2	5	8	Char(4)	✓	Left justified Repeat for each line
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Repeat for each line
Correction Number (Change Digit)	4	15	15	Char(1)		Repeat for each line
Process Code	5	16	16	Char(1)	✓	Repeat for each line See Appendix A.
Action Code	6	18	18	Char(1)	✓	Repeat for each line
Data Code	-	19	19	Num(1)	✓	Value is 2
Line Number	26/27 b	20	21	Num(2)	✓	Zero fill blanks
Type of Inventory Change	26/27 c	22	23	Char(2)		
Batch Name/Identification	26/27 d	24	39	Char(16)		Left justified
Number of Items	26/27 e	40	43	Num(4)		Right justified
Project Number ¹⁶	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	26/27 a	76	78	Char(3)		Adjustments Only Zero fill blanks

¹⁶ Leave blank (required when reporting government owned material).



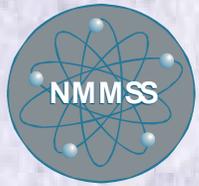
80 Column Formatting

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Quantitative Detail Information (Data Code 5)

<u>Field Description</u>	<u>741</u>	<u>80 Column File</u>			<u>Essential</u>	<u>Note</u>
		<u>Format Position</u>		<u>Type</u>		
		<u>Begin</u>	<u>End</u>	<u>Type</u>		
Shipper RIS	1	1	4	Char(4)	✓	Left justified Repeat for each line
Receiver RIS	2	5	8	Char(4)	✓	Left justified Repeat for each line
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Repeat for each line
Correction Number (Change Digit)	4	15	15	Char(1)		Repeat for each line
Process Code	5	16	16	Char(1)	✓	Repeat for each line
Action Code	6	18	18	Char(1)	✓	Repeat for each line
Data Code	-	19	19	Num(1)	✓	Value is 5
Line Number	26/27 b	20	21	Num(2)	✓	
Gross Weight	26/27 l	22	26	Num(5)		Right justified
Net Weight	26/27m	27	31	Num(5)		Right justified
Miscellaneous Field ¹⁹		32	33	Num(4)		Right justified

¹⁹Miscellaneous field, available for use to report obligations per fuel element, this information may be reported, but is not captured by NMMSS.



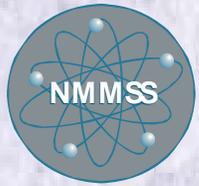
80 Column formatting

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 Repeat for each line
Receiver RIS	2	5	8	Char(4)	✓	Left justified Repeat for each line
Transaction/Transfer Number	3	9	14	Char(6)	✓	Right justified Repeat for each line
Correction Number (Change Digit)	4	15	15	Char(1)		Repeat for each line
Process Code	5	16	16	Char(1)	✓	Repeat for each line
Action Code	6	18	18	Char(1)	✓	Repeat for each line
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>Do not enter a decimal point; element decimal values are read from columns 33 and 34.</i>						
Obligated Isotope Weight ¹	21	35	45	Num(11,2)		Right justified
<i>Do not enter a decimal point; isotope decimal values are read from columns 44 and 45</i>						
Country*	18	46	47	Char(2)		Right justified

31 Australia	83 Euratom/Japan
32 Canada	84 Australia/Euratom/Japan
33 Euratom*	85 Canda/Euratom/Japan
34 Japan	86 China/Japan
35 Peoples Republic of China	91 Australia/Euratom
37 Switzerland	92 Canada/Euratom
81 Australia/Japan	WR Former Soviet Union Weapons Material
82 Canda/Japan	

*EURATOM comprises the following member states: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Hungry, Lativa, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.



3. INVENTORY DATA

3.1. Requirements for DOE/NRC Form 742C

3.1.1. XML File Formatting

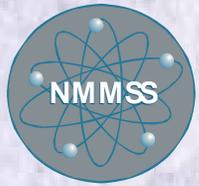
<u>Field Description</u>	<u>742C</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential</u>	<u>Note</u>
RIS	3	RIS	Char(4)	✓	
Inventory Report Date ²²	4	DATE	Date	✓	MMDDYYYY
Concise Note Indicator	2	CONCISENOTEIND	Char(1)		X indicates notes

Detail Information

<LINEITEM>

<u>Field Description</u>	<u>742C</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential</u>
Sequence Number	8i	LINENUMBER	Num(5)	✓
Number of Items	8k	NUMBEROFITEMS	Num(2)	✓
Batch Name/Identification	8j	BATCH	Char(16)	

²²The Inventory Report Date must be last day of the month (e.g., 09302001). Effective October 1, 2003 this may be reported for any day of the month.



3. INVENTORY DATA

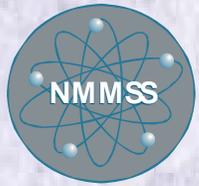
3.1. Requirements for DOE/NRC Form 742C

3.1.1. XML File Formatting

Detail Information <MATERIAL>

<u>Field Description</u>	<u>742C</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential</u>
Material Type	8a	SUMMARYMATERIALTYPE	Char(2)	✓
Project Number ²⁵	8e	PROJECT	Char(10)	

²⁵ Leave Blank (required when reporting government owned material).



3.1.2. 80 Column File Formatting

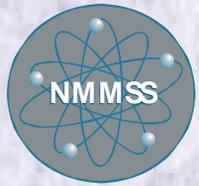
Physical Inventory Listing Header Information (Data Code 1)

<u>Field Description</u>	<u>742C</u>	<u>80 Column File Format Position</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Data Code	-	1	1	Num(1)	✓	Value is 1
Inventory Report Date ³⁰	4	2	9	Date	✓	MMDDYYYY
RIS	3	10	13	Char(4)	✓	Left justified
Material Type Code	8A	14	15	Char(2)	✓	Left justified
Composition-Facility Code	8B	16	19	Char(4)	✓	Left justified
Element Weight	8C	20	32	Num(13,2)		Right justified
<i>Do not enter a decimal point; element decimal values are read from columns 31 and 32.</i>						
Isotope Weight	8D	33	45	Num(13,2)		Right justified
<i>Do not enter a decimal point; isotope decimal values are read from columns 44 and 45.</i>						
Project Number ³²	8E	46	55	Char(10)		Left justified
Scrap Program	8F	56	56	Char(1)		Leave blank
Weight Percent Isotope/Parts Per Million	8G	61	66	Num(6,4)		Right justified
<i>Do not enter a decimal point; weight percent decimal values are read from columns 63 to 66.</i>						
Owner Code	8H	68	68	Char(1)		
Sequence Number Code	8I	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.

³⁰ The Inventory Report Date must be last day of the month (e.g., 09302001). Effective October 1, 2003 this may be reported for any day of the month.

³² Leave blank (required when reporting government owned material).

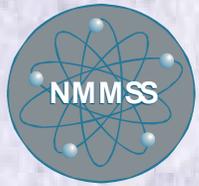


Physical Inventory Listing Detail Information (Data Code 2)

Selected IAEA facilities only.

<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 ³⁶	4	2	9	Date	✓	MMDDYYYY
RIS	3	10	13	Char(4)	✓	Left justified
Material Type	8A	14	15	Char(2)	✓	Left justified
Composition-Facility Code	8B	16	19	Char(4)	✓	Left justified
Batch Identification	8J	20	35	Char(16)		Left justified
Number of Items	8K	36	39	Num(4)		Right justified
Key Measurement Point	8L	40	41	Char(2)		Left justified
Measurement Basis	8M1	42	42	Char(1)		
Other Measurement Point	8M2	43	44	Char(2)		Left justified
Measurement Method	8M3	45	45	Char(1)		
Entry Status	8N	46	46	Char(1)		
Concise Note Indicator	2	47	47	Char(1)		X indicates notes
Sequence Number	8I	76	80	Num(5)		Right justified

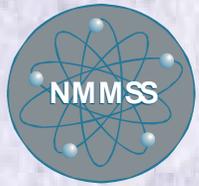
³⁶ The Inventory Report Date must be last day of the month (e.g., 09302001). Effective October 1, 2003 this may be reported for any day of the month.



Physical Inventory Listing Header Information for Reporting Total Lines- COEI 899 (Data Code 1)

<u>Field Description</u>	<u>742C</u>	<u>80 Column</u>		<u>Type</u>	<u>Essential</u>	<u>Note</u>
		<u>Begin</u>	<u>End</u>			
Data Code	-	1	1	Num(1)	✓	Value is 1
Inventory Report Date ³⁶	4	2	9	Date	✓	MMDDYYYY
RIS	3	10	13	Char(4)	✓	Left justified
Material Type	8A	14	15	Char(2)	✓	Left justified
Composition-Facility Code	8B	16	19	Char(4)	✓	Left justified Value is 899
Element Weight	9C	20	32	Num(13,2)	✓	Right justified <i>Do not enter a decimal point; element decimal values are read from columns 31 and 32.</i>
Isotope Weight	9D	33	45	Num(13,2)		Right justified <i>Do not enter a decimal point; isotope decimal values are read from columns 44 and 45.</i>
Sequence Number	9I	76	80	Num(5)		Right justified

³⁶The Inventory Report Date must be last day of the month (e.g., 09302001). Effective October 1, 2003 this may be reported for any day of the month.



4. MATERIAL BALANCE DATA

4.1. Requirements for DOE/NRC Form 742

4.1.1. XML File Formatting

Detail Information <ISOTOPE>

<u>Field Description</u>	<u>742</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential Note</u>
Isotope Weight	column B	ISOTOPWEIGHT	Num(13,2)	

* Obligated Material Balance Categories, 85 – A1 are assigned to obligated countries in the categories are listed below:

85 – Australian Obligations (31)

86 – Canada Obligations (32)

87 – Euratom Obligations (33)

88 – Japan Obligations (34)
(WR)

89 – People’s Republic of China Obligations (35)

90 – Czech Republic Obligations (36)

91 – Australia and Euratom Obligations (91)

92 – Canada and Euratom Obligations (92)

93 – Former Soviet Union Weapons Obligations

94 – Australia/Japan (81)

95 – Canada/Japan (82)

96 – Euratom/Japan (83)

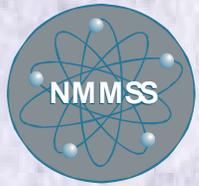
97 – Australia/Euratom/Japan (84)

98 – Canada/Euratom/Japan (99)

99 – China/Japan (86)

A1* – Switzerland (37)

* Material Balance Categories greater than 99 are assigned alpha numeric characters i.e. A1, A2, A3, etc.



4. MATERIAL BALANCE DATA

4.1. Requirements for DOE/NRC Form 742

4.1.2. 80 Column File Formatting

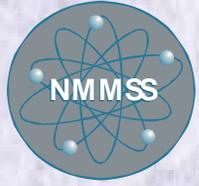
Detail Information <ISOTOPE>

<u>Field Description</u>	<u>742</u>	<u>XML Attribute</u>	<u>Type</u>	<u>Essential Note</u>
Isotope Weight	column B	ISOTOPEWEIGHT	Num(13,2)	

* **Obligated Material Balance Categories, 85 – A1 are assigned to obligated countries in the categories are listed below:**

- | | |
|--|---|
| 85 – Australian Obligations (31) | 90 – Czech Republic Obligations (36) |
| 86 – Canada Obligations (32) | 91 – Australia and Euratom Obligations (91) |
| 87 – Euratom Obligations (33) | 92 – Canada and Euratom Obligations (92) |
| 88 – Japan Obligations (34) | 93 – Former Soviet Union Weapons Obligations (WR) |
| 89 – People’s Republic of China Obligations (35) | 94 – Australia/Japan (81) |
| | 95 – Canada/Japan (82) |
| | 96 – Euratom/Japan (83) |
| | 97 – Australia/Euratom/Japan (84) |
| | 98 – Canada/Euratom/Japan (99) |
| | 99 – China/Japan (86) |
| | A1* – Switzerland (37) |

* Material Balance Categories greater than 99 are assigned alpha numeric characters i.e. A1, A2, A3, etc.



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D-24 Proposed Revisions

Questions ?