Nuclear Safeguards Reporting System Requirements Specification

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Nuclear Security and Isotope Technology Division

NUCLEAR SAFEGUARDS REPORTING SYSTEM REQUIREMENTS SPECIFICATION

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ACRONYMS

BA	adjusted ending book inventory
CSA	comprehensive safeguards agreement
DI	shipper/receiver difference
HTR	high-temperature reactor
IAEA	International Atomic Energy Agency
ICR	inventory change report
KMP	key measurement point
MBA	material balance area
MBR	material balance report
MUF	material unaccounted for
NMA	nuclear material accountancy
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
PB	physical beginning inventory
PE	physical ending inventory
PIL	physical inventory listing
PIT	physical inventory taking

1. INTRODUCTION

1.1 BACKGROUND

States enter into safeguards agreements with the International Atomic Energy Agency (IAEA) to fulfill their nuclear non-proliferation commitments. Each nonnuclear-weapon State party to the *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT) [1] is required, pursuant to Article III, to conclude a comprehensive safeguards agreement (CSA) with the IAEA.

IAEA document INFCIRC/153 (corrected), *The Structure and Content of Agreements between the Agency and States required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons* (hereinafter INFCIRC/153) [2], provides the basis for CSAs in connection with the NPT. Under a CSA, the State undertakes to accept IAEA safeguards on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, under its jurisdiction, or carried out under its control. The State, through its safeguards regulatory authority, must provide the IAEA correct and complete safeguards information as required by INFCIRC/153, and detailed in *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols* [3], on its nuclear material (i.e., forms, amounts, flows, locations, uses, and transfers); nuclear facilities and locations outside of facilities; and nuclear fuel cycle-related activities and locations. These reporting obligations and the IAEA's verification activities are designed to allow the IAEA to establish and maintain the nuclear material inventory of the State by verifying the reports submitted.

This document aims to provide information regarding the system requirements of software designed for comprehensive safeguards reporting.

1.2 INTENDED AUDIENCE

The intended audiences of this document include the computer software analysts and developers tasked with designing a system to fulfill nuclear material accountability reporting requirements to the IAEA, as well as those who test software against the requirements. This document is not meant to supersede existing IAEA requirements or guidance on reporting obligations. It attempts to interpret those requirements in a way that is most useful to individuals and groups who are experts in development of automated information systems, rather than subject matter experts in nuclear safeguards.

1.3 SCOPE

The scope of this document is to provide the reader with discrete and verifiable software requirements for CSA nuclear material accountancy reporting. Section 2 provides background on CSA reporting and nuclear material accounting. Section 3 describes CSA reporting in the fixed format, and Section 4 describes CSA reporting in the labeled format. References are provided in Section 5.

Depending on State-specific agreements, additional requirements and procedures may be necessary and are outside the scope of this document.

2. NUCLEAR MATERIAL ACCOUNTING AND REPORTING

2.1 NUCLEAR MATERIAL ACCOUNTING

Nuclear material is accounted for within a structure of material balance areas (MBAs). MBAs are defined by the *IAEA Safeguards Glossary* [4] as "an area in or outside of a facility such that:

(a) The quantity of nuclear material in each transfer into or out of each 'material balance area' can be determined; and

(b) The physical inventory of nuclear material in each 'material balance area' can be determined when necessary, in accordance with specified procedures, in order that the material balance for Agency safeguards purposes can be established."

The MBA structure used for material reporting, and which establishes the requirements of the content, format, and timing of nuclear material reports, is specified in Subsidiary Arrangements–General Parts and Attachments to a CSA, which is negotiated between each State and the IAEA. The General Part of the Subsidiary Arrangement is divided into subparts, called codes. Code 10 specifies the format and content of accounting reports to be submitted to the IAEA by the State and provides detailed procedures to be followed for reporting. Figure 2-1 depicts the legal basis for Code 10 reporting.
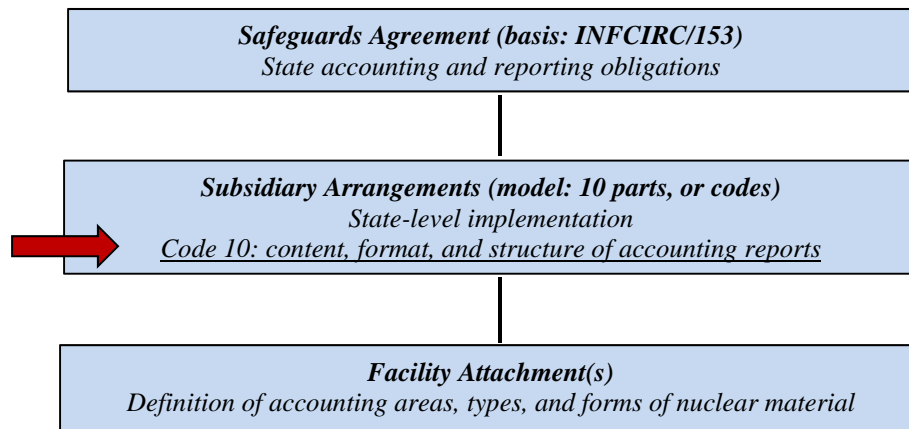
Figure 2-1. Legal basis for Code 10 accounting reports.

Furthermore, facility attachments describe the individual facilities and the manner in which safeguards will be applied. They also specify how Code 10 will be applied in producing records and preparing reports for the facility. Therefore, in determining how to formulate reporting software, developers must consult both the State's Subsidiary Arrangement and facility attachments for guidance.

There are three types of nuclear material accounting to report: inventory changes (Inventory Change Report–ICR), physical inventories (Physical Inventory Listing–PIL), and material balances (Material Balance Report–MBR).

The ICR shows all changes in quantities of nuclear material in an MBA, recording the date the change occurred or was established. ICR reporting criteria specify identification and descriptive information for each batch of nuclear material, date of inventory change, shipper, and receiver of nuclear material. ICRs must be sent to the IAEA within 30 days of the end of the month in which the change occurs. For example, if an inventory change is made on June 17, 2014, the ICR report is due to the IAEA by July 30, 2014 (i.e., June 30 plus 30 days).

The PIL provides a statement of the physical inventory at the time of the inventory taking. PILs list all batches as separate entries, with each entry specifying the identification and descriptive information for each. PILs are attached to the MBA and must be submitted to the IAEA within 30 days of the date of inventory taking.

The purpose of the MBR is to report all nuclear material moved into or out of an MBA within the reporting period. The report contains separate entries for each type of safeguarded nuclear material within the MBA and indicates the material balance(s) for all nuclear material present in the MBA. MBAs are due to the IAEA within 30 days of the end of the material balance period.

In addition to nuclear material accounting reports, States can inform the IAEA of other information as text in the form of a Concise Note or Textual Report. Options for reporting text depend on the format of Code 10 for a State.

2.2 CODE 10

Code 10 specifications are the primary reference when addressing IAEA nuclear material accounting and reporting issues. There are two versions of Code 10, each having different reporting formats but both providing for the necessary data elements for reporting compliance as outlined in safeguards agreements.

One format utilizes fixed field definitions (i.e., fixed format) and the other flexible field definitions (i.e., labeled format). Each specification is available from the IAEA website (http://www.iaea.org) by searching on "SG-FM-1171." Only one of the formats can be used by a State and is determined by its Subsidiary Arrangement. Both formats provide the necessary information for the implementation of IAEA safeguards, but there are procedural differences between each. Table 2-1 describes some of the key differences.

Table 2-1. Fixed versus labeled Code 10 formats

Fixed format Code 10	Labeled format Code 10
• Based on the 80-column card format from the early 1970s.	• Data fields are defined by labels and may also contain subfields.
• Has additional procedures because of physical restrictions associated with fixed lengths of numeric data fields.	• Specific procedures related to numeric data field lengths are not necessary. • Format requires advanced information systems.
• Is practical for States with a developing or moderate nuclear program.	• Reports must be in electronic format; paper forms are not possible.
• Reporting by electronic means is possible and highly recommended by the IAEA.	• Data fields have variable lengths. • Additional data fields can be added, if so negotiated. • Well-suited for States with well-developed nuclear programs and fuel cycle.

The IAEA has been working to develop a new reporting format based on >XML technology. As of the writing of this document, the format has not been finalized.

All nuclear material accounting reports are at the MBA level. For each MBA, reports are numbered sequentially beginning with 1 and increase by 1 with no gaps or duplication. Report numbers are independent of the report type. Within each MBA report, entries are also numbered sequentially beginning with 1 and increase by 1 with no gaps or duplication. For example:

```
MBA: NNA1                    MBA: NNA2
       Report 1, Entry 1           Report 1, Entry 1
       Report 1, Entry 2           Report 1, Entry 2
       Report 1, Entry 3           Report 2, Entry 1
       Report 2, Entry 1           Report 2, Entry 2
       .                           .
       .                           .
       .                           .
```

The combination of MBA, report number, and entry number uniquely identifies an accounting entry.

2.3   GENERAL BUSINESS RULES

- All reports must be in one of the official languages of the IAEA.

- Clear distinction should be made between the letter O and the number zero. Throughout Code 10, the letter is shaped as Ø, and the number is shaped as 0.

- The codes specified in Code 10 must be used in nuclear material accounting reports and cannot be translated into another alphabet.

- The only data field that can be in another alphabet is the batch name. If a non-Latin (i.e., non-English) alphabet is used for batch names, procedures should be discussed and established with the IAEA beforehand.

- All reports are on an MBA basis.

- Reporting codes (such as MBA or Facility Code) must be the same as those used in the corresponding facility attachment.

    – The following codes are defined in Code 10:
        ▪ Inventory change
        ▪ Key measurement
        ▪ Material description
        ▪ Element type
        ▪ Weight unit
        ▪ Isotope type
        ▪ Measurement basis

    – The following are also specified in more detail in the facility attachment:
        ▪ Inventory change code
        ▪ Key measurement code
        ▪ Material description code
        ▪ Measurement basis code

2.4   GOOD GENERAL PRACTICES

- The State needs to know if material in transit has reached its destination, and therefore, the safeguards information system should have the capability to relate and record shipment and receipt records that match. With exports and imports, the State will not have the corresponding nuclear material accounting reports, but the State should have confirmation from the trading partner that the material

involved was actually imported or exported. That confirmation information should be recorded in the State system. It is possible that there will be a one-to-one match of shipment and receipt records. There can also be one shipment record with several corresponding receipt records. In a similar manner, there can be multiple shipment records with only one corresponding receipt record. Furthermore, a shipment–receipt set of matched records may have several shipment records and several receipt records.

- With domestic transfers, it is useful to include a feature indicating that a corresponding receipt of shipment record has not been received within a given time, after which an investigation will be initiated.

- The IAEA sends reports to the State on the Agency's transit matching results, so it is a good practice for the State to be able to generate reports based on transit matching status for comparison to the IAEA information.

- A follow-up procedure should be implemented by the operator to notify the State when foreign transfers are not confirmed within a given time, including allowances for possible increased transit times as compared with domestic transfers.

3. FIXED FORMAT

A fixed format report consists of one header record followed by up to 99 accounting entry records. All reports have a report number, and all entries have an entry number. The 99-entry-records restriction is a good example of the physical limitations associated with a fixed format report. Only two columns are available for the entry number, thus any report with more than 99 entries must continue with a new report number. Therefore, a good practice is to limit fixed format reports to 90 entries, which allows for the possibility of adding records to the report later if it becomes necessary.

As many reports as necessary should be used to report the accounting entries. For example:

> Header Record (Report number: n)
> Entry Record: 1
> Entry Record: 2
> Entry Record: 3
> .
> .
> .
> Entry Record: 99
> Header Record (Report number: n+1)
> Entry Record: 1
> Entry Record: 2
> .
> .

Entries are listed sequentially without gaps.

The IAEA uses the combination of MBA code, report number, and entry number to reference a specific entry (e.g., MBA NNA2, report number 24, entry number 16). Within each MBA, reports are numbered sequentially (regardless of report type) and without gaps or duplication in the sequence. For example:

1. PIL report number for MBA NNA2: 24
2. ICR report number for MBA NNA2: 25
3. PIL report number for MBA NNA2: 26
4. MBR report number for MBA NNA2: 27
5. PIL report number for MBA NNA2: 28

Multiple reports of different types can be sent to the IAEA in a single submission, but they should be sent in sequential order.

The different types of records, such as ICRs, PILs, and MBRs are designated by the Record Identification data field, column 80 of each record. Each record type and its associated designation are listed in Table 3-1.

Table 3-1. Record types

Column 80 value	Record type	Form
1	ICR header record	R.01.1/c
2	ICR entry record	R.01.1/c
3	ICR entry record (additional isotopes) *a*	R.01.2
4	PIL header record	R.02.c
5	PIL entry record	R.02/c
6	MBR header record	R.03
7	MBR entry record	R.03
"C"	Concise note	

a A separate ICR form (R.01.2) contains data fields for reporting additional isotopes. This form is used only when required in the relevant facility attachment. The header information for this form is the same as in R.01.1/c.

Data Field Justification

- All numeric data fields are right justified.
- All alphanumeric fields are left justified.

Appendix C, *Fixed Format Reporting Codes*, contains the reporting codes used in fixed format Code 10 reporting. Appendix D, *Fixed Format Reporting Examples*, provides completed examples of the various types of fixed format reports discussed below.

3.1   HEADER RECORD FORMAT

Regardless of type, each nuclear material accounting report begins with a header record. The header must include information on country, facility, MBA, period covered by the report, report number, and a report type identification number. The system requirements for these categories are the same for ICRs, PILs, and MBRs. Table 3-2 below provides the format for each header data field.

Table 3-2. Format for header records

Record position	Length	Data field name	Format	Code 10 paragraph
1–2	2	Country Code	Alphabetic	2
3–4	2	Unused (left blank)	n/a	
5–8	4	Facility Code	Alphanumeric	2
9–12	4	MBA Code	Alphanumeric	2
13–18	6	Reporting Period From Date (ICR and MBR)	Numeric YYMMDD	3
19–24	6	Reporting Period To Date (ICR and MBR) or Inventory Date (PIL)	Numeric YYMMDD	3
25–27	3	Number of Entries	Numeric, right justified	Appendix to Code 10
28–69	42	Unused (left blank) for electronic reporting and IAEA use	n/a	
70–73	4	Report Number	Numeric, right justified	4

Table 3-2. Format for header records (continued)

Record position	Length	Data field name	Format	Code 10 paragraph
74–79	6	Unused (left blank) for electronic reporting and IAEA use	n/a	
80	1	Record Identification	Numeric	Appendix to Code 10

Business Rules: *Header Records*

- Each report must begin with a header record.

- Header records for ICRs and MBRs have the same format.

- Header records for PILs are identical to those of ICRs and MBRs *except* instead of reporting on a date range, the PIL reports only the date of the (effective) inventory taking.

Below are detailed descriptions and associated business rules for each data field in a header record.

Data Field: *Country Code*

- Definition: Code of the reporting country.
- Business Rule:
  - The current list of possible codes is provided in Appendix A, *IAEA Country Codes*.

Data Field: *Facility Code*

- Definition: Facility code of the facility being reported.
- Business Rules:
  - The facility code is specified in the facility attachment agreed to with the IAEA.
  - The first character(s) in the facility code are the same as the country code for the State.

Data Field: *MBA Code*

- Definition: MBA code of the MBA being reported.
- Business Rules:
  - The MBA code is specified in the facility attachment agreed to with the IAEA.
  - The first character(s) of the MBA code are the same as the country code for the State.

Data Field: *Reporting Period From Date*

- Definition: For ICRs, the beginning date of the reporting period; for MBRs, the beginning date of the material balance period.
- Business Rules:
  - For ICRs, the beginning date must be at least equal to the earliest inventory change date in the report. This rule does not apply for corrections, additions, and deletions.
  - For MBRs, it must be 1 day after the date of the PIL that ended the previous material balance period.
  - For MBRs, it must be 1 day after the ending date of the previous material balance period.
  - If reporting for the MBA begins with an ICR, the beginning date of the first material balance period should begin with the earliest inventory change date of the ICRs reported before the first

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PIL. If the first material balance period begins with a "null" PIL, the beginning date of the first ICR must be 1 day following the date of the null PIL.
– For PIL reports, this data field is left blank.
– The date format is YYMMDD.

Data Field: *Reporting Period To Date/Inventory Date*

- Definition: For ICR reports, the ending date of the reporting period. For MBRs, the ending date of the material balance period. For PIL reports, the date of the physical inventory taking.
- Business Rules:
  – For ICRs, the ending date must be at least equal to the latest inventory change date in the report. This rule does not apply for corrections, additions, and deletions.
  – For MBRs, it must be the same date as the PIL at the end of the current material balance period.
  – For MBRs, the date is the same as that for the physical inventory taking at the end of the current material balance period.
  – For PIL reports, the date of the inventory taking, this must be the same as the last date of the corresponding material balance period.
  – The date format is YYMMDD.

Data Field: *Number of Entries*

- Definition: Number of entries in the report, including the header record.
- Business Rules:
  – The number is the total for all 80-character records contained in a report. The header record and all entries in the report are included.
  – The maximum number for the data field is 100 (99 entries plus 1 for the header record).
  – If less than three columns are needed, the value is right justified.

Data Field: *Report Number*

- Definition: Number of the report.
- Business Rules:
  – All reports submitted to the IAEA must be numbered consecutively, beginning with 1 and increasing by 1, without any gaps. Report numbers are assigned regardless of the report type (e.g., PIL 1, ICR 2, ICR 3, PIL 4, MBR 5, ICR 6).
  – If an electronic system is implemented to replace a manual (i.e., hard copy) procedure, the first report number in the electronic system must be the next number in the sequence. For example, if the last hard copy report submitted to the IAEA was 124, the first report number of the electronic system must be 125.
  – If less than four columns are needed, the value is right justified.

Data Field: *Record Identification*

- Definition: Header record type.
- Business Rules:
  – If the header record is for an ICR report, this value must be 1.
  – If the header record is for a PIL report, this value must be 4.
  – If the header record is for an MBR report, this value must be 6.

3.2 INVENTORY CHANGE REPORTS

Over time, the inventory of nuclear material at an MBA may change due to shipments; receipts; nuclear transformation (e.g., production of plutonium and consumption of uranium); transfers to waste; process losses; and accidental gains or losses of material. Most inventory changes involve the movement of material across the MBA border; however, several inventory changes (e.g., nuclear transformations, uranium category changes and blending) occur within the MBA boundaries. These inventory changes must be reported to the IAEA in an ICR, indicating the key measurement point (KMP) involved in the change. ICRs must be sent to the IAEA within 30 days of the end of the month in which the change occurs.

The paper form for ICRs is also referenced as Form R.01.1/c. An example of the R.01.1/c form is provided in Appendix B, *Fixed Format Reporting Forms*. Electronic submissions follow the same format as paper forms except that some data fields on the paper form (e.g., Header Signature) may not apply to electronic submissions. Table 3-3 describes the record format for ICRs submitted electronically.

Table 3-3. Record format for inventory change reports

Record position	Length	Data field name	Format	Code 10 paragraph
1–2	2	Entry Number	Numeric	7
3	1	Continuation	Alphabetic	8,55
4–9	6	Date of Inventory Change	Numeric: YYMMDD	9
10–13	4	MBA/Country From	Alphanumeric	10
14–17	4	MBA/Country To	Alphanumeric	10
18–19	2	Type of Inventory Change	Alphabetic	11
20	1	KMP Code	Alphanumeric	12
21–28	8	Name or Number of Batch	Alphanumeric	13
29–32	4	Number of Items in Batch	Numeric	14
33–36	4	Material Description	Alphanumeric	15
37	1	Element	Alphabetic	16
38–45	8	Weight of Element	Alphanumeric	17
46–47	2	Weight Unit	Alphabetic	18
48–55	8	Weight of Fissile Isotopes	Alphanumeric	8
56	1	Isotope Code	Alphabetic	20
57–71	15	Unused (left blank)	n/a	
72	1	Measurement Basis	Alphabetic	21
73	1	Concise Note[a]	Alphabetic	22
74–77	4	Correction To: Report Number[b]	Numeric	23
78–79	2	Correction To: Entry Number[b]	Numeric	23
80	1	Record Identification (2 for ICRs)	Numeric	

[a] This data field is left blank unless a concise note is attached that refers to the record.
[b] This data field is left blank unless the record is a correction to a previous record.

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Business Rules: *ICR*

- Report all changes in quantities of nuclear material in an MBA on the date the change occurred or was established.

- The beginning date of the reporting period must be the same date or prior to the earliest inventory change date in the report entries (excluding corrections and additions).

- The ending date of the period must be on or after the same date as the latest inventory change date in the report entries.

- If there is no inventory at an MBA when safeguards assessment begins, an ICR reporting the receipt of material will be the first accounting report normally received by the IAEA. Another option is for the first nuclear material accounting report to be a null PIL, indicating there are no batches on the inventory.

- Inventory changes that occur on the same date as a physical inventory taking (PIT) are to be reflected in the corresponding PIL.

Below are detailed descriptions and associated business rules for each data field in an ICR entry record.

Data Field: *Entry Number*

- Definition: Reference number of the accounting entry.
- Business Rules:
  – Within a report number, the entry numbers always begin with 1 and increase sequentially with no gaps or duplications.
  – There is a maximum of 99 entries in a report. If more than 99 lines are to be listed, two or more reports should be prepared, each of which should bear a different number.

Data Field: *Continuation*

- Definition: A new, continuation, or inactive entry.
- Business Rules:
  – Leave blank for a new entry.
  – Enter C for a continuation entry. For additional information on continuations, refer to Section 3.5.2 of this document.
  – C is not allowed for the first entry on a report unless it is a correction to a previously reported C entry.
  – Enter A to indicate that the content of the line in question should not influence any of the nuclear material accounts, which means the line is inactive as described in Section 3.5.7 of this document, which address deletions.

Data Field: *Date of Inventory Change*

- Definition: Date the inventory change occurred or was established.
- Business Rules:
  – The date must be within the time defined by the From and To dates in the corresponding header record of the report.
  – If the record is a correction to a previous report, the date must be within the header date period of the report being corrected.

- If the record is in addition to a previous report, the date must be within the header date period of the report to which the entry is to be added.
- The date should not be later than the date the entry was reported to the IAEA.

Data Field: *MBA/Country From*

- Definition: Shipper of the nuclear material.
- Business Rules:
  - For shipments, the code of the reporting MBA must be used.
  - For imports, the code of the shipping country can be reported if the shipping MBA in that country is not known.
  - Domestic receipts must indicate the shipping MBA.
  - For inventory changes that do not involve a transfer of materials to or from the MBA (e.g. nuclear production of plutonium), the code of the reporting MBA should be used.

Data Field: *MBA/Country To*

- Definition: Receiver of the nuclear material.
- Business Rules:
  - For receipts, the code of the reporting MBA must be used.
  - For exports, the code of the receiving country can be reported if the receiving MBA in that country is not known.
  - Domestic shipments must indicate the receiving MBA.
  - For inventory changes that do not involve a transfer of materials to or from the MBA (e.g., nuclear production of plutonium), the code of the reporting MBA should be used.

Data Field: *Type of Inventory Change*

- Definition: Type of inventory change.
- Business Rules:
  - The list of possible codes is provided in Appendix C.
  - The facility attachment also lists those inventory change codes that are expected in the facility.
  - This information need not be repeated if this is a continuation entry.
  - An increase or decrease in a given batch content (codes RM and RP, respectively) should be reported simultaneously in separate entries as if they were inventory changes. This procedure may also be used whenever a batch ceases to exist altogether (i.e., all material is transferred into another batch, when a batch is simply renamed).
  - A shipper/receiver difference (DI) is calculated by subtracting the receiver weight from the shipper weight; a negative DI is an increase in the inventory, and a positive DI is a decrease.
  - When the category changes as a result of blending, enrichment, or irradiation, the entry should be as follows:
    - First character: "original" element code.
    - Second character: "resulting" element code.

Data Field: *KMP Code*

- Definition: A KMP is a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory. KMPs thus include but are not limited to the inputs and outputs, including measured discards, and storages in MBAs.

- Business Rules:
  - The practice is for flow KMP codes in ICRs to be numbers, but it is possible for letters to be used, if the KMP structure requires more than 10 KMPs and the use of letters is agreed in the facility attachment. For some inventory change codes (e.g., rebatching), the asterisk (*) may be specified in the facility attachment.
  - Valid KMP codes are listed in the State's facility attachment.
  - This information need not be repeated if this is a continuation entry.

Data Field: *Name or Number of Batch*

- Definition: Name or number given to a batch of nuclear material.
- Business Rules:
  - Batch names/numbers are designated by the State.
  - Where possible, batch names/numbers should be unique.
  - Each batch of nuclear material must have a name or number.
  - The name can consist of letters, numbers, and special characters such as commas and hyphens.
  - The special characters of colon (:), semi-colon (;), slash (/), and number sign (#) should be avoided if there are expectations the State will change to the labeled format Code 10 at some point in the future.
  - The shipment from one MBA and the receipt in another MBA of a given batch of nuclear material should be reported under the same batch name.
  - No two batches sent from the same shipper to the same receiver relating to material of the same material description on the same date should bear the same name.
  - This information need not be repeated if this is a continuation entry.

Data Field: *Number of Items in Batch*

- Definition: A count of the items in a batch.
- Business Rules:
  - Several items can be grouped into a single batch if those items have similar material characteristics as defined in the facility attachment.
  - It is possible for the number of items to be zero for some type of bulk materials and when the number would not be meaningful.
  - If the number of items is greater than four digits, additional entries should be reported, as described in the continuation procedure in Section 3.5.2 of this document.

Data Field: *Material Description*

- Definition: The physical, chemical, packaging, and irradiation status of a batch.
- Business Rules:
  - The list of possible codes provided in Appendix C should be used unless otherwise indicated in the relevant facility attachment.
  - Valid material description codes used in the MBA are defined in the State's facility attachment.
  - The first character describes the physical form of the material.
  - The second character describes the chemical form of the material.
  - The third character describes the type of containment for the material.
  - The fourth character describes the irradiation status of the material.
  - This information need not be repeated if this is a continuation entry.

Data Field: *Element*

- Definition: Element of the nuclear material being reported.
- Business Rules:
  – The list of possible codes provided in Appendix C should be used unless otherwise indicated in the relevant facility attachment.
  – If in a given MBA the code for unified uranium (U) is used, D, N, and E cannot be used.
  – If uranium categories D, N, and E are used for uranium accounting in the MBA, U cannot be used.

Data Field: *Weight of Element*

- Definition: Weight of the element noted in the Element data field, including the decimal point.
- Business Rules:
  – Weight units vary depending on the element being reported. The list of possible values is included in Appendix C.
  – If desired, data may be rounded but not beyond the nearest integer of the unit used. (This may necessitate the reporting of rounding adjustments in MBRs.) If rounded, the weights of individual items in a batch should be added together before the sum is rounded. (Digits 1–4 should be rounded down. Digits 5–9 should be rounded up.)
  – The system design should consider the level of significance to be reported to the IAEA and also should be reflected in facility records.
  – In reporting weight data, the decimal point should be considered as a separate character.
  – Shipper/receiver differences may have to be expressed by negative quantities, in which case the minus sign (which is also a separate character) should be placed in the same data field as, and just in front of, the number. In addition, there may be other specific accounting procedures where negative values will need to be reported, such as for the return of discharged fuel to a reactor core.
  – For weights exceeding the eight-character length limit, additional entries should be reported as described in the continuation procedure in Section 3.5.2 of this document.
  – The sum of the weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Weight Unit*

- Definition: Weight unit used in the Weight of Element data field.
- Business Rules:
  – Use g for reporting grams of weight. This value should be left justified.
  – Use kg for reporting kilograms of weight.
  – Depleted uranium, natural uranium, and thorium are reported in kilograms.
  – Enriched uranium, unified uranium, and plutonium are reported in grams.

Data Field: *Weight of Fissile Isotopes*

- Definition: Weight of the uranium isotope in the entry, including the decimal point.
- Business Rules:
  – This data field is only for enriched uranium or unified uranium reporting. For all other reporting, it should be left blank, unless the facility attachment requires the fissile weight for depleted and/or natural uranium. The reporting of depleted and natural fissile content is used only for specific facility types and will be a point of negotiation in the facility attachment. Otherwise, the

data field must be blank (i.e., a zero should not be reported), except for enriched and unified uranium.

– All fissile weights are reported in grams.
– For weight exceeding the eight-character length limit, additional entries should be reported as described in the continuation procedure in Section 3.5.2 of this document.
– The sum of weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Isotope Code*

- Definition: Type of uranium isotope being reported.
- Business Rules:
    – This data field is only for enriched uranium or unified uranium reporting.
    – The list of possible codes is provided in Appendix C.
    – Other isotopes are not reported for uranium or other elements unless specified in the relevant facility attachment.

Data Field: *Measurement Basis*

- Definition: The source of weight values for a batch of nuclear material, including whether the batch weights are established in the reporting MBA or in another MBA and whether the batch weights have been reported before by the MBA.
- Business Rule(s):
    – The list of possible codes is provided in Appendix C.
    – The codes to be used in an MBA are specified in the relevant facility attachment.
    – It is necessary to know and track the origin of the nuclear material quantities in a batch.
    – The correct code to report can be determined by knowing if the batch quantities are measured/established in the reporting MBA and if it is the first time the amounts are being reported.

In the flowchart shown in Figure 3-1, the decision process for determining the measurement basis is specified. The data field is named Measurement Basis (i.e., determination of the nuclear material amounts) and does not necessarily indicate a measurement had been made. One example of this is the calculation of produced plutonium contained in discharged power reactor fuel.
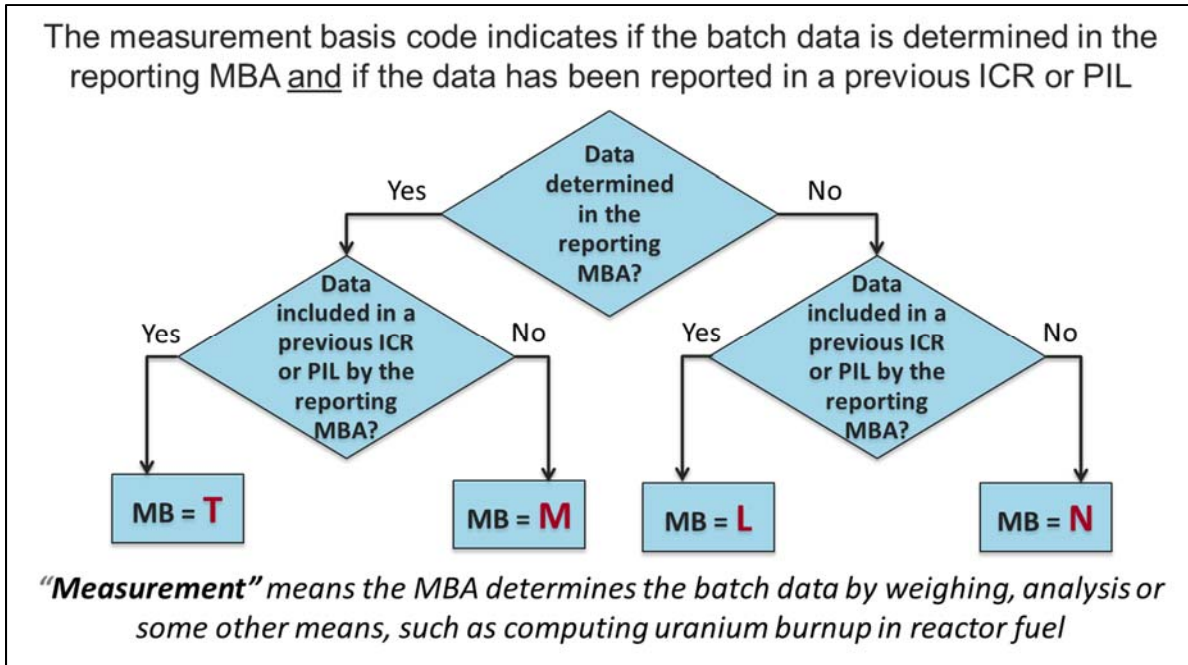
Figure 3-1. Flowchart for determining the measurement basis code.

The following diagram (Figure 3-2) provides an example of how the measurement basis changes as a fuel assembly moves from the manufacturer to the reactor, into the reactor core, discharge from the core and then shipment from the reactor MBA.
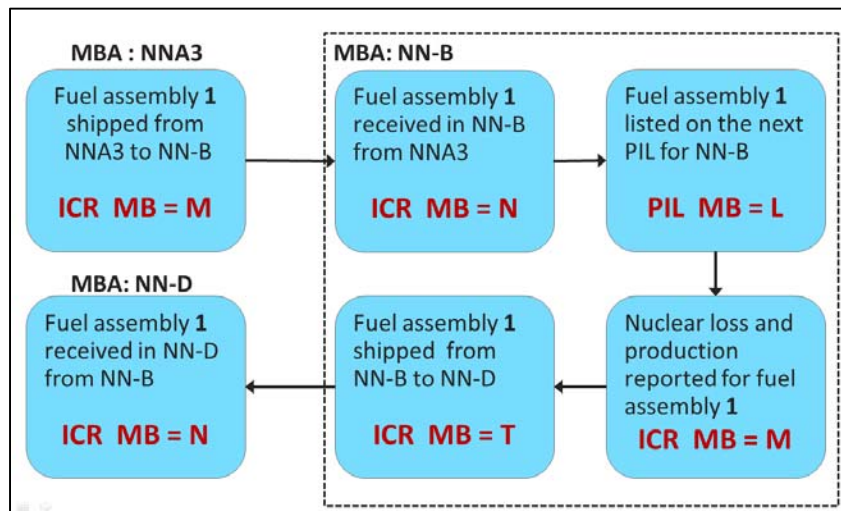
Figure 3-2. Example of how measurement basis is applied.

In MBA NNA3, the fuel assembly is completed, the amount of nuclear material is determined, and the assembly is shipped (MB = M) to the reactor MBA NN-B prior to the next PIL for NNA3. Upon receipt in NN-B, the shipper values are reported, and because the amounts were determined in another MBA (NNA3) and this is the first time the values have been reported in an accounting report for NN-B, MB = N.

When the assembly is listed on the first PIL for NN-B, MB = L because the weights have been determined in another MBA (i.e., NNA3) and the amounts have been reported on a previous accounting report (i.e., an ICR from NN-B for the receipt).

Once the nuclear loss and production of uranium and plutonium have been calculated, those amounts are reported with MB = M because NN-B has determined the values and this is the first time those are being reported. Likewise, when the fuel assembly is reported on the next PIL for NN-B, those amounts would also be reported with MB = M, reflecting the original assembly weights adjusted by the nuclear loss and production.

After remaining in the reactor spent fuel storage for (typically) a number of years during which the assembly would be listed on the interleaving PILs with MB = T, the shipment of the assembly would also be reported with MB = T.

Receipt of the fuel assembly in MBA NN-D would be reported with MB = N because this is the first time the weights have been reported by NN-D and the amounts were determined in another MBA (i.e., NN-B).

Data Field: *Concise Note Indicator*

- Definition: Indicates if a concise note is attached that refers to the accounting record.
- Business Rule:
  – An X indicates that there is a concise note record for this entry.
  – If the entry is left blank, no concise note is attached.

Data Field: *Correction to Report Number*

- Definition: Report number in which a record will be added, corrected, or deleted.
- Business Rules:
  – A valid report number must be included for the MBA.
  – If this data field is left blank, the Correction to Entry Number data field must also be blank.
  – An ICR can only be corrected by another ICR, a PIL can only be corrected by another PIL, and an MBR can only be corrected by another MBR.

Data Field: *Correction to Entry Number*

- Definition: Entry number of the Correction to Report Number data field related to an addition, correction, or deletion.
- Business Rules:
  – If this data field is not left blank, the Correction to Report Number data field cannot be blank.
  – For corrections and deletions, the entry number in the referenced report must be given.
  – For additions, the entry number must be one greater than the entries in the referenced report, including all previous additions, and must be less than 100.

Data Field: *Record Identification*

- Definition: Record type.
- Business Rule:
  – For an ICR report, this value must be 2.

3.2.1 Inventory Change Reports for Additional Isotopes

As noted in Table 3-1, the ICR form for additional isotopes (R.01.2) is used only when it is required by the relevant facility attachment. If the facility attachment does provide for such use, the following business rules apply. An example of the R.01.2 form is provided in Appendix B.

Business Rules: *ICR (Additional Isotopes)*

- Additional isotope reporting is only for ICRs.

- Data are recorded as a percentage of the element weight.

- Each percentage has a maximum of six positions, one of which is a decimal point.

- For a batch with uranium and plutonium, two-line entries are needed, one for each element.

- The measurement basis should be the same as that for the primary ICR entry to which the isotope entry refers.

3.3 PHYSICAL INVENTORY LISTINGS

Each MBA contains an inventory of nuclear material that must be reported to the IAEA. The timing of the (effective) inventory taking is normally specified in the facility attachment. This inventory is reported as a PIL, indicating the batches present at each inventory KMP. The PIL provides a complete statement of the physical inventory of an MBA at the time of the physical inventory taking. The PIL is due to the IAEA within 30 days after taking the physical inventory.

The paper form for PILs is also referenced as Form R.02/c. An example of the R.02/c form is provided in Appendix B. Electronic submissions follow the same format as paper forms, except that some data fields on the paper form (e.g., header signature) may not apply to electronic submissions.

Table 3-4 describes the record format for PILs submitted electronically.

Table 3-4. Record format for physical inventory listings

Record position	Length	Data field name	Format	Code 10 paragraph
1–2	2	Entry Number	Numeric	31
3	1	Continuation	Alphabetic	32
4–19	16	Unused (left blank)	n/a	
20	1	KMP Code	Alphanumeric	33,12
21–28	8	Name or Number of Batch	Alphanumeric	13
29–32	4	Number of Items in Batch	Numeric	14
33-36	4	Material Description	Alphanumeric	15
37	1	Element	Alphabetic	16
38–45	8	Weight of Element	Alphanumeric	17
46–47	2	Weight Unit	Alphabetic	18
48–55	8	Weight of Fissile Isotopes	Alphanumeric	19
56	1	Isotope Code	Alphabetic	20
57–71	15	Unused (left blank)	n/a	

Table 3-4. Record format for physical inventory listings (continued)

Record position	Length	Data field name	Format	Code 10 paragraph
72	1	Measurement Basis	Alphabetic	21
73	1	Concise Note[a]	Alphabetic	22
74–77	4	Correction To: Report Number[b]	Numeric	23
78–79	2	Correction To: Entry Number[b]	Numeric	23
80	1	Record Identification (5 for PILs)	Numeric	

[a]This data field is left blank unless a concise note is attached that refers to the record.
[b]This data field is left blank unless the record is a correction to a previous record.

Business Rules: PILs

- List all batches as separate entries. Typical batches in the MBA are defined in the relevant facility attachment.

- The PIL must be dispatched along with the associated MBR, as required in the safeguards agreement.

- The listing provides one entry for each batch of nuclear material present in the MBA as of midnight on the date of the PIT or on an agreed date (usually the last day) of a PIT that takes several days.

- If there is nuclear material in the MBA when the MBA comes under safeguards, an initial PIL is submitted listing all the nuclear material batches.

- A PIL should be prepared even if at the time of the PIT there is no nuclear material in the MBA. Such a "null" PIL should contain the heading information and a one-line entry with "A" in position 3. The remainder of the line should be blank.

- If there is no inventory of nuclear material when the MBA comes under safeguards, a null initial PIL is not required but it is a good practice to provide one to the Agency.

- A PIL should be attached to each MBR or set of MBRs for different material categories pertaining to the same period.

- There are situations, due to rounding, when the physical inventory will not exactly match the information reported on the PIL. For reporting purposes, the weights of individual items in the batch shall be added together before rounding to the nearest unit. The corresponding values reported for inventory on the PIL and MBR must agree.

Below are detailed descriptions and associated business rules for each data field in an ICR entry record.

Data Field: *Entry Number*

- Definition: Reference number of the accounting entry.
- Business Rules:
  – Within a report number, the entry numbers always begin with 1 and increase sequentially with no gaps or duplication.
  – There is a maximum of 99 entries in a report. If more than 99 lines are to be listed, additional reports should be prepared, each of which should bear a different number.

Data Field: *Continuation*

- Definition: A new, continuation, or inactive entry.
- Business Rules:
  – Leave blank for a new entry.
  – Enter C for a continuation entry. For additional information on continuations, refer to the continuation procedure in Section 3.5.2 of this document.
  – "C" is not allowed for the first entry on a report unless it is a correction to a previously reported C entry.
  – Enter A to indicate that the content of the line in question should not influence any of the nuclear material accounts, which means the line is inactive as described in Section 3.5.7 of this document, which addresses deletion.

Data Field: *KMP Code*

- Definition: A KMP is a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory. KMPs thus include but are not limited to the inputs and outputs, including measured discards, and storages in MBAs.
- Business Rules:
  – The practice is for inventory KMP codes in PILs to be letters, but numbers may be used if the KMP structure requires more than 26 KMPs and the use of numbers is agreed in the facility attachment. However, this option is rarely used, and the best solution is for another MBA to be established. This situation is common with MBAs for locations outside facilities.
  – Only inventory KMP codes in the facility attachment can be used.
  – This information need not be repeated if this is a continuation entry.

Data Field: *Name or Number of Batch*

- Definition: Name or number given to the batch of nuclear material reported in this entry.
- Business Rules:
  – Batch Names/Numbers are designated by the State.
  – Where possible, batch names/numbers should be unique.
  – Each batch of nuclear material must have a name or number.
  – The name can consist of letters, numbers, and special characters such as commas and hyphens.
  – The special characters of colon (:), semi-colon (;), slash (/), and number sign (#) should be avoided if there are expectations the State will change to the labeled format Code 10 at some point in the future.
  – This information need not be repeated if this is a continuation entry.

Data Field: *Number of Items in Batch*

- Definition: A count of the number of items in a batch.
- Business Rules:
  – Several items can be grouped into a single batch as long as those items have similar material characteristics, as defined in the facility attachment.
  – It is possible for the number of items to be zero for some types of bulk materials and when the number would not be meaningful.
  – If the number of items is greater than four digits, additional entries should be reported, as described in the continuation procedure in Section 3.5.2 of this document.

Data Field: *Material Description*

- Definition: The physical, chemical, packaging, and irradiation status of a batch.
- Business Rules:
  – The list of possible codes provided in Appendix C should be used unless otherwise indicated in the relevant facility attachment.
  – Valid material description codes used in the MBA are defined in the State's facility attachment.
  – The first character describes the physical form of the material.
  – The second character describes the chemical form of the material.
  – The third character describes the type of containment for the material.
  – The fourth character describes the irradiation status of the material.
  – This information need not be repeated if this is a continuation entry.

Data Field: *Element*

- Definition: Element of the nuclear material being reported.
- Business Rules:
  – The list of possible codes provided in Appendix C should be used unless otherwise indicated in the relevant facility attachment.
  – If in a given MBA the code for unified uranium (U) is used, D, N, and E cannot be used.
  – If uranium categories (D, N, or E) are used for uranium accounting in the MBA, U cannot be used.

Data Field: *Weight of Element*

- Definition: The weight of the element noted in the Element data field.
- Business Rules:
  – Weight units vary depending on the element being reported. The list of possible values is included in Appendix C.
  – If desired, data may be rounded, but not beyond the nearest integer of the unit used. (This may necessitate the reporting of rounding adjustments in MBRs.) If rounded, the weights of individual items in a batch should be added together before the sum is rounded. (Digits 1–4 should be rounded down. Digits 5–9 should be rounded up.)
  – The system design should consider the level of significance to be reported to the IAEA and also should be reflected in facility records.
  – In reporting weight data, the decimal point should be considered as a separate character.
  – For weights exceeding the eight-character length limit, additional entries should be reported, as described in the continuation procedure in Section 3.5.2 of this document.
  – The sum of the weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Weight Unit*

- Definition: Weight unit used in reporting the Weight of Element data field.
- Business Rules:
  – Use g for reporting grams of weight. This value should be left justified.
  – Use kg for reporting kilograms of weight.
  – Depleted uranium, natural uranium, and thorium are reported in kilograms.
  – Enriched uranium, unified uranium, and plutonium are reported in grams.

Data Field: *Weight of Fissile Isotopes*

- Definition: Weight of the uranium isotope in the entry, including the decimal point.
- Business Rules:
  – This data field is only for enriched uranium or unified uranium reporting. For all other reporting, it should be left blank, unless the facility attachment requires the fissile weight for depleted and/or natural uranium. The reporting of depleted and natural fissile content is used only for specific facility types and will be a point of negotiation in the facility attachment. Otherwise, the data field must be blank (i.e., a zero should not be reported), except for enriched and unified uranium.
  – All fissile weights are reported in grams.
  – For weight exceeding the eight-character length limit, additional entries should be reported, as described in the continuation procedure in Section 3.5.2.
  – The sum of weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Isotope Code*

- Definition: Type of uranium isotope being reported.
- Business Rules:
  – This data field is only for enriched uranium or unified uranium reporting.
  – Other isotopes are not reported for uranium or other elements unless specified in the State's relevant facility attachment.
  – The list of possible codes is provided in Appendix C.

Data Field: *Measurement Basis*

- Definition: This data field is used to describe the source of weight values for a batch of nuclear material. It indicates if the batch weights are established in the reporting MBA or in another MBA. It also specifies if the MBA has reported the batch weights before.
- Business Rules:
  – The list of possible codes is provided in Appendix C.
  – The codes to be used in an MBA should be specified in the relevant facility attachment.
  – It is necessary to know and track the origin of the nuclear material quantities in a batch.
  – The correct code to report can be determined by knowing if the batch quantities are measured/established in the reporting MBA and if it is the first time the amounts are being reported.

Figure 3-2 in Section 3.2 provides an example of how the measurement basis can change as a fuel assembly moves from the manufacturer to the reactor, into the reactor core, discharge from the core, and then shipment from the reactor MBA.

Data Field: *Concise Note Indicator*

- Definition: Indicates if a concise note is attached that refers to the accounting record.
- Business Rules:
  – X indicates that there is a concise note record for this entry.
  – Left blank if no concise note is attached.

Data Field: *Correction to Report Number*

- Definition: Report number in which a record will be added, corrected, or deleted.
- Business Rules:
  – Must be a valid report number for the MBA.
  – If this data field is blank, the Correction to Entry Number data field must also be blank.
  – An ICR can only be corrected by another ICR, a PIL can only be corrected by another PIL, and an MBR can only be corrected by another MBR.

Data Field: *Correction to Entry Number*

- Definition: Entry number of the Correction to Report Number data field related to an addition, correction, or deletion.
- Business Rules:
  – If this data field is not blank, the Correction to Report Number data field cannot be blank.
  – For corrections and deletions, there must be an entry number in the referenced report.
  – For additions, the entry must be one greater than the entries in the referenced report (including all previous additions) and must be less than 100.

Data Field: *Record Identification*

- Definition: Record type.
- Business Rule:
  – For a PIL report, this value must be 5.

3.4   MATERIAL BALANCE REPORTS

MBRs provide a nuclear material accounting balance for each type of nuclear material in an MBA. An MBR sent to the IAEA should reflect information in the corresponding MBA records for a facility. For the reported material balance period and each nuclear material account, the MBR must be consistent with:

- the physical inventory at the end of the previous material balance period, which is also the physical beginning inventory (PB) of the period to be reported (i.e., the current period);

- the total of each inventory change type dated within the current period;

- the physical inventory at the end of the current material balance period;

- adjustments to the inventory, such as those due to rounding; and

- any material unaccounted for (MUF).

The balance begins 1 day after the date of the previous PIL and ends on the date of the PIL at the end of the balance period. The report for the time period between the consecutive PILs is referred to as the MBR. The MBR must be sent to the IAEA within 30 days of the end of the material balance period.

The paper form for MBRs is also referenced as Form R.03. An example of the R.03 form is provided in Appendix B. Electronic submissions follow the same format as paper forms except that some data fields on the paper form (e.g., header signature) may not apply to electronic submissions.

Table 3-5 describes the record format for MBRs submitted electronically.

Table 3-5. Record format for material balance reports

Record position	Length	Data field name	Format	Code 10 paragraph
1–2	2	Entry Number	Numeric	31
3	1	Continuation	Alphabetic	32
4–17	14	Unused (left blank)	n/a	
18–21	4	Entry Name	Alphabetic	11, 48
22–36	15	Unused (left blank)	n/a	
37	1	Element	Alphabetic	16
38–45	8	Weight of Element	Alphanumeric	17
46–47	2	Weight Unit	Alphabetic	18
48–55	8	Weight of Fissile Isotopes	Alphanumeric	19
56	1	Isotope Code	Alphabetic	20
57–72	16	Unused (left blank)	n/a	
73	1	Concise Note[a]	Alphabetic	22
74–77	4	Correction To: Report Number[b]	Numeric	23
78–79	2	Correction To: Entry Number[b]	Numeric	23
80	1	Record Identification (7 for MBRs)	Numeric	

[a]This data field is left blank unless the record indicates a concise note is attached to the record.
[b]This data field is left blank unless the record is a correction to a previous record.

Business Rules: *Material Balance Report*

- An MBR must be prepared for each category of nuclear material in the MBA, the codes of which are provided in Appendix C.

- The MBR must show the material balance(s) of all nuclear material present in the MBA.

- The MBR must cover the time period between two consecutive physical inventory takings.

- The MBR must include the PB inventory, ending book inventory, and physical ending inventory (PE).

- An MBR must be prepared even if at the time of physical inventory taking there was no nuclear material in the MBA and there were no transactions during the material balance period. Such a null MBR should contain the heading information, and a one-line entry with A in position 3. The remainder of the line should be blank.

- No MBR is required for a category of nuclear material that is established only upon shipment of that material, and for the exclusive purpose of reporting such a shipment, see the Category Change procedure in Section 3.5.3 of this document. Nevertheless, it is possible for a State to report an MBR for the shipped material.

- MBRs should be prepared on the basis of unrounded nuclear material quantity data obtained from the accounting records.

- The preparation of entry data requires summation (straightforward or algebraic); this should be done with unrounded data.

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- For reporting, the MBR data may be rounded, but not beyond the nearest integer unit (i.e., gram or kilogram, depending on the type of material).

- The use of rounding in any of the reports (i.e., ICRs, PILs, or MBRs) will generally necessitate the calculation and reporting of rounding adjustments in MBRs.

- The reporting period to which the MBR pertains should be deemed to be closed at midnight of the "To" date indicated; that is, any inventory change taking place on that date should be considered as being covered by the MBR. The next material balance period should begin at zero hour of the next day.

- Several MBRs may be transmitted together under the same report number.

Below are detailed descriptions and associated business rules for each data field in an MBR entry record.

Data Field: *Entry Number*

- Definition: Reference number of the accounting entry.
- Business Rules:
  – Within a report number, the entry numbers always begin with 1 and increase sequentially with no gaps or duplications.
  – There is a maximum of 99 entries in a report. If more than 99 lines are to be listed, two or more reports should be prepared, each of which should bear a different number.

Data Field: *Continuation*

- Definition: A new, continuation, or inactive entry.
- Business Rules:
  – Leave blank for a new entry.
  – Enter C for a continuation entry. For additional information on continuations, refer to the continuation procedure in Section 3.5.2 of this document.
  – C is not allowed for the first entry on a report unless it is correcting a C entry in a previous report.
  – Enter A to indicate that the content of the line in question should not influence any of the nuclear material account, which means the line is inactive as described in Section 3.5.7 of this document, which addresses deletion.

Data Field: *Entry Name*

- Definition: Type of inventory, adjustment, or summarized MBR entry.
- Business Rules:
  – Accounting entries as defined in paragraph 48 of Code 10 should be reported
  – If any inventory changes are reported during the material balance period, those must be summarized and reported using the corresponding inventory change code. The list of possible codes is provided in Appendix C.
  – Summarized inventory changes are reported as separate entries, one for each inventory change code.
  – Rounding adjustments or materials unaccounted for should be reported, if necessary.

Data Field: *Element*

- Definition: Element of the nuclear material being reported.

- Business Rules:
  - The list of possible codes provided in Appendix C should be used unless otherwise indicated in the relevant facility attachment.
  - If in a given MBA the code for unified uranium (U) is used, D, N, and E cannot be used.
  - If uranium categories (D, N, or E) are used for uranium accounting in the MBA, U cannot be used.

Data Field: *Weight of Element*

- Definition: Weight of the element noted in the Element data field.
- Business Rules:
  - If desired, data may be rounded, but not beyond the nearest integer of the unit used. (This may necessitate the reporting of rounding adjustments in MBRs.) If rounded, the weights of individual items in a batch should be added together before the sum is rounded. (Digits 1–4 should be rounded down. Digits 5–9 should be rounded up.)
  - The system design should consider the level of significance to be reported to the IAEA and also should be reflected in facility records.
  - In reporting data, the decimal point should be considered as a separate character.
  - The system design should consider the level of significance to be reported to the IAEA and also should be reflected in facility records.
  - Shipper/receiver differences, MUF, and rounding adjustments may have to be expressed by negative quantities, in which case the minus sign (which is also a separate character) should be placed in the same data field as, and just in front of, the number. In addition, there may be other specific accounting procedures where negative values will need to be reported, such as for the return of discharged fuel to a reactor core.
  - For weights exceeding the eight-character length limit, additional entries should be reported, as described in the continuation procedure in Section 3.5.2 of this document.
  - The sum of the weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Weight Unit*

- Definition: Weight unit used in reporting the Weight of Element data field.
- Business Rules:
  - Weight units vary depending on the element being reported.
  - Use g for reporting grams of weight. This value should be left justified.
  - Use kg for reporting kilograms of weight.
  - Depleted uranium, natural uranium, and thorium are reported in kilograms.
  - Enriched uranium, unified uranium, and plutonium are reported in grams.

Data Field: *Weight of Fissile Isotopes*

- Definition: Weight of the uranium isotope in the entry, including the decimal point.
- Business Rules:
  - This data field is only for enriched uranium or unified uranium reporting. For all other reporting, it should be left blank, unless the facility attachment requires the fissile weight for depleted and/or natural uranium. The reporting of depleted and natural fissile content is used only for specific facility types and will be a point of negotiation in the facility attachment. Otherwise, the data field must be blank (i.e. a zero should not be reported), except for enriched and unified uranium.
  - All fissile weights are reported in grams.

- For weight exceeding the 8-character length, additional entries should be reported, as described in the continuation procedure.
- The sum of weights in all continuation entries for an entry must equal the total to be reported for the batch.

Data Field: *Isotope Code*

- Definition: Type of uranium isotope being reported.
- Business Rules:
  - This data field is only for enriched uranium or unified uranium reporting.
  - Isotopes are not reported for other elements unless specified in the facility attachment.
  - The list of possible codes is provided in Appendix C.

Data Field: *Concise Note Indicator*

- Definition: Indicates if a concise note accompanies the report to provide an explanation of or amplification to the entry.
- Business Rules:
  - X indicates that there is a concise note record for this entry.
  - Left blank if no concise note is attached.

Data Field: *Correction to Report Number*

- Definition: Report number in which a record will be added, corrected, or deleted.
- Business Rules:
  - Must be a valid report number for the MBA.
  - If this data field is blank, the "Correction to entry number" data field must also be blank.
  - An MBR can be corrected at any time but only by another MBR.

Data Field: *Correction to Entry Number*

- Definition: Entry number of the Correction to Report Number data field related to an addition, correction, or deletion.
- Business Rules:
  - If this data field is not blank, the Correction to Report Number data field cannot be blank.
  - For corrections and deletions, must be an entry number in the referenced report.
  - For additions, must be one greater than the entries in the referenced report (including all previous additions) and must be less than 100.

Data Field: *Record Identification*

- Definition: Record type.
- Business Rule:
  - For an MBR report, this value must be 7.

3.5 ADDITIONAL REPORTING PROCEDURES

There are times when a State may need to provide information that does not fit into the standard ICR, PIL, or MBR report format, or may need to report adjustments to reports already submitted to the IAEA. This section describes the methods for submitting supplemental remarks for an MBA, report, or entry

(concise notes); stating values that are larger than the allocated data field length (continuation); and making corrections, additions, and deletions to previous reports.

3.5.1   Concise Notes

The purpose of the concise notes record is to allow the submitter to include supplemental information on an MBA, report, or entry. In some cases, concise notes are required by the relevant facility attachment.

Concise notes provide textual amplification to nuclear material accounting reports and are included in the electronic record transmission to the IAEA. The reference to the item to which the note applies is contained in the concise note entry itself and therefore no header record is necessary. An example of the concise notes paper form is provided in Appendix B.

Table 3-6 describes the entry record format for concise notes submitted electronically. The format is the same for PIL, ICR, and MBR reports.

Table 3-6. Record format for concise notes entries

Record position	Length	Data field name	Format	Required field	Code 10 paragraph
1	1	Record Identifier (Always contains C for a concise note)	Alphabetic	Yes	Appendix to Code 10
2–5	4	MBA Code	Alphanumeric	Yes	Appendix to Code 10
6–9	4	Report Number	Numeric	Optional	Appendix to Code 10
10–11	2	Entry Number	Numeric	Optional	Appendix to Code 10
12–79	68	Note	Alphanumeric	Yes	Appendix to Code 10
80	1	Record Identifier (Always contains C for a concise note)	Alphabetic	Yes	Appendix to Code 10

Business Rules: *Concise Notes*

- If the Concise Note data field in a nuclear material accounting report entry is not blank (i.e., contains X), there must be a corresponding concise note record that refers to the accounting entry.

- To include a concise note entry that refers only to an MBA, enter the MBA number and leave the Report and Entry data fields blank.

- To include a concise note entry that refers only to a report, enter the MBA and report numbers and leave the Entry data field blank.

- To include a concise note entry that refers to an entry, enter the MBA number, report number, and entry number, and report X in the Concise Note data field of the relevant ICR, PIL or MBR entry.

- For a concise note reported with reference to an MBA, report number, and line entry, that record should be in a nuclear material accounting report.

- Multiple lines of text can be reported for a single concise note.

- When multiple lines of text are reported for a single concise note, they should be reported sequentially and organized in the same order as the concise note is meant to be read.
- When multiple lines of text are reported for a single concise note, the MBA Code, Report Number, and Entry Number data fields should be entered for all lines.

3.5.2   Continuation (C)

Because of the column length restrictions associated with fixed format reporting, it may not be possible to enter a complete value within the number of allocated columns. This situation occurs when:

- The element/isotope weight requires more than eight digits, including decimal point and minus sign (if present);

- A batch consists of several types of material; and

- The number of items in a batch is more than 9999.

In these cases, use the continuation procedure.

The record format for a continuation is the same as the record format for the type of report to which it applies. That is, use the ICR record format for continuation of an ICR entry, the PIL record format for continuation of a PIL entry, and the MBR format for the continuation of an MBR entry.

Business Rules: *Continuation Line*

- Column 3 of the continuation record should contain the character C.

- There is no limit to the number of continuation records that an entry can have.

- Each continuation record must have its own unique entry number.

- Entry numbers of continuation records must sequentially follow the entry being continued. (For example, the entry number for a continuation record that applies to entry 12 should be 13.)

- Weight of element values are added.
  - For example, if the weight of element in the entry record is 70000000 and the weight of element in the continuation record is 40000000, the total weight reported will be 110000000.
  - Applies to ICRs, PILs, and MBRs.

- Items from the same batch that have different element codes are reported by using continuation records.
  - For example, if a batch contains both enriched uranium and plutonium, report one element as an entry record and use the continuation procedure to report the second.
  - Batch reporting applies only to ICRs and PILs.

- Number of items in batch values are added.
  - For example, if the number of items in the entry record is 6000 and the number of items in the continuation record is 7000, the total number of items reported in the batch will be 13000.
  - This applies only to ICRs and PILs.

- Entering the following data fields in continuation records is optional:
  - ICR and PIL
    - KMP Code
    - Name or Number of Batch
    - Material Description
  - ICR
    - Date of Inventory Change
    - MBA Country From
    - MBA Country To
    - Type of Inventory Change

In the example illustrated in Figure 3-3, the PB total element weight of enriched uranium (Element code = E) to be reported is 101375460.7 g, and the isotope weight is 1297341.25 g. The eight-character limitation on element weight and isotope weight requires the use of continuation entries (entry numbers 2 and 3).

Adding the three entries for element weight (99999999 + 1375461 + 0.7 = 101375460.7) and isotope weight (1297342 + 0.25 + 0 = 1297342.25) yields the correct values. Continuation entries for ICRs and PILs are made similarly.

MATERIAL BALANCE REPORT (MBR) FORM R.03

COUNTRY....**Neptune**..........

FACILITY..........**NNA-**...............

MATERIAL BALANCE AREA.....**NNA2**...............

REPORTING PERIOD, FROM ......**950520**............TO......**960429**.................

REPORT NO. ....**8**...

PAGE NO. .....**1**....... OF ....**1**....... PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	CONCISE NOTE	REPORT NO.	ENTRY NO.
1		PB	E	99999999	g	1297341	G			7
2	C		E	1375461	g	0.25	G			7
3	C		E	0.7	g	0	G			7
										7
										7

Total element weight: 101375460.7 g

Total fissile weight: 1297341.25 g

Figure 3-3. Continuation entry example for weights greater than eight digits.

Continuation entries can also be used when there is more than one element in a batch. In Figure 3-4, batch 045C8 contains both enriched uranium (element = E) and plutonium (element = P), both of which must be reported as separate entries. Continuation entries for MBRs and PILs are made similarly.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY..........Neptune...............
FACILITY.........NND-................
MATERIAL BALANCE AREA.............NND1....................

PERIOD COVERED BY REPORT FROM.....960501.......... TO......960531................
REPORT NO........6................
PAGE NO...1... OF ....1...PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO REPORT NO.	ENTRY NO.	
																			1
1		960530	NN-B	NND1	RD	3	045C8	1	BQ1G	E	165507	g	1338	G	N				2
2	C							0		P	1556	g			N				2
																			2
																			2
																			2

Optional to repeat information in the shaded fields

Enriched uranium (entry 1)

Plutonium (entry 2)

Figure 3-4. Continuation entry example for multiple elements in a batch.

3.5.3   Category Change

Where various categories of uranium are blended and accordingly combined into a single category, or where the category for uranium changes as a result of activities such as blending, the resulting change should be reported by means of an entry in the pertinent reports if the State's facility attachment so indicates. A category change is reported in the same way as any other inventory change.

Category changes are used to report increases and decreases in nuclear material accounts as the result of uranium changing from one category (i.e., enriched, natural, or depleted) to another. Such changes typically occur in enrichment plants, fuel fabrication plants, and on-load reactors. However, if an MBA reports in terms of "unified uranium," category changes do not apply and are not reported.

For MBRs, the consolidated category changes should be reported as a decrease for the material balance pertaining to the category in which the uranium which has changed category originated, and as an increase for the material balance pertaining to the resulting uranium category. The keyword appropriate for category change is the same as for ICR, and the element, unit, and weight of fissile isotopes will be reported pursuant to the category covered in the MBR. If the resulting uranium category is established only upon shipment and for the exclusive purpose of such a shipment, it will be reported only in the relevant ICR, and no MBR shall be required for that category.

In nuclear material balances, the accounts of the two categories of uranium involved will be affected; one will increase, and the other will decrease by the same amount. The inventory change codes are EN, ED, NE, ND, DE, and DN; the letters indicate the types of uranium involved (E = enriched, N = natural, D = depleted) and can be read as abbreviations, wherein the first character indicates the original category of uranium and the second character shows the resulting category after the category change has taken place. For example, NE is read "natural to enriched," as it indicates a category change from natural uranium to enriched uranium.

For example, in the case where 10 kg of natural uranium is blended with enriched uranium, the natural uranium account will decrease by 10 kg, and the enriched uranium account will increase by 10,000 g, with an inventory change code of NE (i.e., natural to enriched).

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When material changes from one category to another, only the element code with the higher enrichment (E > N > D) need be reported in an ICR. However, for MBRs, reporting an entry for both categories (i.e., each element code) is a good practice and results in complete MBR reports for each type of material.

3.5.4 Rebatching

Rebatching refers to an entry that reports a change in a batch name or structure. Rebatching reporting guidelines, if required, are specified in a facility's attachment. Reductions in batches are reported with an inventory change code as RM (rebatching, minus), and increases are reported as RP (rebatching, plus), as shown in Figure 3-5.

Figure 3-5. Example of rebatching change in batch structure.

Rebatching reporting can also be used to report a batch name change, as shown in Figure 3-6.

Figure 3-6. Example of rebatching to change the batch name.

Business Rules: *Rebatching*

- Rebatching only reflects the name or structure of the inventory, so the overall inventory must not change.

- When reporting rebatching, the sum of all RM entries must equal the sum of all RP entries.

3.5.5 Corrections

The purpose of the correction record is to provide the submitter with a way to make modifications to previous reporting submissions. Corrections can be made to report entries and concise notes. Changes to report headers are handled separately.

Business Rules: *Correction*

- Corrections can be made to report headers or entry records.

- The report header or entry record being corrected must be one that has been previously reported.

- An ICR can only be corrected by another ICR; a PIL can only be corrected by another PIL; and an MBR can only be corrected by another MBR.

3.5.5.1 Modifications to accounting report header records

It is possible, but not common, that a change is needed to the header entry for a nuclear material accounting report that has been sent to the IAEA. The fixed format Code 10 does not provide a mechanism for the State to report a correction, addition, or deletion of ICR, PIL, and MBR accounting report headers. Therefore, the IAEA needs to be involved if any changes are to be made and will update header information in the IAEA system on behalf of the State.

Typically, header changes are needed when the IAEA quality assurance process detects a possible problem in a header entry and after the IAEA corresponds with the State to resolve the problem. Once changes are made at the IAEA, it is necessary for the State to reflect the changes in the corresponding State and facility records.

3.5.5.2 Modifications to accounting report entry records

The record format to correct an entry record that has already been sent to the IAEA is the same as the record format for the type of report to which it applies (except as noted below). That is, use the ICR record format for correction to an ICR entry, the PIL record format for a PIL entry, and the MBR format for an MBR entry.

Except for deletions, all data fields must be reported, even those that do not change. It is not correct to report only the data fields that have changed. See Figure 3-7.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY..........Neptune.................
FACILITY.........NND-...................
MATERIAL BALANCE AREA............NND3...................

PERIOD COVERED BY REPORT FROM.....140301......... TO.....140331...........
REPORT NO........202.....................
PAGE NO...1... OF ....1....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA			ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)				REPORT NO.	ENTRY NO.	
1		140305	NND3	NNA1	SD	3	401123	1	FQJB	N	1301	KG			M				2
																			2
																			2
26		140305	NND3	NNA1	SD	3	401864	1	FQJB	N	380	KG			M				2
																			2
																			2

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY..........Neptune.................
FACILITY.........NND-...................
MATERIAL BALANCE AREA............NND3...................

PERIOD COVERED BY REPORT FROM......140401......... TO.....140430...........
REPORT NO........203.....................
PAGE NO...1... OF ....1....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA			ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)				REPORT NO.	ENTRY NO.	
1		140305	NND3	NNA1	SD	3	401864	1	FQJB	N	386	KG			M		202	26	2
																			2

Original report entry — **Correct report entry** — **Identifies report and entry being corrected**

Figure 3-7. Example of correction to an accounting report entry.

Business Rules: *Corrections to Accounting Records*

- There is no time limit on when an entry record can be corrected. However, any change must be reported once it is determined to be needed.

- A record can be corrected as often as necessary.

- Once a record is corrected, the correction becomes the active accounting entry and is used for safeguards.

- The first correction to an accounting entry refers to the entry being corrected (the original entry). If another correction is needed, it must cross-reference with the most recent correction, and not to the original entry.

- For example, the flowchart in Figure 3-8 represents two corrections to an original entry, following the principle shown in Figure 3-7.
  – The originally reported entry was MBA NN-B, Report Number 34, and Entry Number 61.
  – The first correction record (MBA NN-B, Report Number 41, and Entry Number 14) refers to the original entry.

– The second correction (MBA NN-B, Report Number 52, Entry Number 2) refers to the first correction entry (MBA NN-B, Report Number 41, Entry Number 14) and not to the original entry.
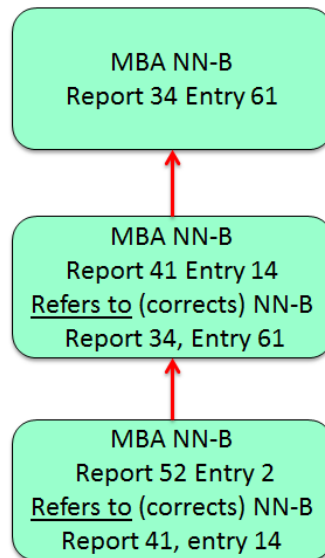
Figure 3-8. Example of multiple corrections to one entry.

- A correction record must include all data fields, even those that have not changed.

- All data fields follow the rules in the report specifications document for the relevant entry record.

- If a record that is corrected has an attached concise note and if it is desired that the reference to that concise note is to be carried forward with the correcting entry, the Concise Note data field in the correcting entry needs to be entered.

- If an entry has been deleted, the entry reporting the deletion can later be corrected, if necessary. In other words, a deleted entry can be undeleted.

- The following entry record data fields cannot be corrected using Code 10 procedures:
  – MBA Code
  – Report Number
  – Entry Number

Correspondence with IAEA instructions is necessary to make changes to entry numbers, report numbers, and MBA codes. If changes are needed, the IAEA can make them to its system on behalf of the State. Depending on what needs to be changed, the IAEA may recommend possible courses of action. In any case, the IAEA will not make any changes in State information without approval from the State. Also, any changes made at the IAEA should also be reflected in the facility and State records.

Once a record is corrected, the correction becomes the active accounting entry and is used for safeguards. A correction record may be marked as inactive, but it is not removed from the IAEA information system. The next correction of the entry must refer to the most recent correction(s) and not the original entry.

3.5.5.3   Modifications to concise notes

The fixed format Code 10 does not define a mechanism to correct or delete a concise note. Nevertheless, it is possible that changes to a concise note may be needed. In addition, the concise note information is affected when a correction is made to the accounting entry to which the concise note is attached.

Business Rule(s): *Corrections to Concise Notes*

- To correct a concise note, report a new concise note that contains the desired text with the same reference to MBA, report number, and entry number as in the original concise note.

- If a concise note is added that refers to a specific MBA, report number, and entry number and that accounting entry did not have a concise note attached, the accounting entry needs to be corrected to set the Concise Note data field (column 73) to X.

- Concise notes that refer to the MBA, or MBA and report number, can be added without modifying the Concise Note data field in any entry.

- If an MBA, report, or entry that has an attached concise note is corrected, and if it is desired that the reference to that concise note be carried forward with the correcting entry, the information contained in the Concise Note data field in the correcting records must be entered.

- When correcting a concise note, the new text should also indicate if it is an update or correction to a previous concise note.

- To remove a concise note reference from an accounting entry, a correction must be submitted that changes the Concise Note data field to blank, which results in the most recent correction not having a concise note.

3.5.6   Additions

It is possible for a report to include entries that are additions to previous nuclear material accounting reports.

All data fields must be reported, even those that do not change. It is not correct to report only the data fields that have changed. See Figure 3-9.

Business Rule(s): *Addition to an Accounting Report*

- To add an entry to a previous report, follow the same guidelines as when reporting a correction to an entry record; however, instead of referring to an entry already reported, refer to the next available entry number (the highest, plus 1).
- For example, Figure 3-10 represents two additions, following the principle shown in Figure 3-9.
  – The originally reported entry was MBA NNA1, Report Number 118, and having the highest (last) Entry Number of 82.
  – The first addition record occurs as part of MBA NNA1, Report Number 122, Entry Number 32, which refers to Report Number 118, Entry Number 83. In this way, the new entry (83) is added to Report Number 118.
  – The second addition to MBA NNA1, Report Number 118 occurs in Report Number 124, which refers to MBA NNA1, Report Number 118, Entry Number 84.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY.........**Neptune**........ PERIOD COVERED BY REPORT FROM.....**140501**............ TO......**140531**........

FACILITY.........**NNB-**........... REPORT NO........**76**...................

MATERIAL BALANCE AREA............**NN-B**............ PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	FROM	TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
1		140519	NND3	NN-B	RD	1	FUEL8734	1	BV2F	E	170980	G	5130	G	N				2
2		140519	NND3	NN-B	RD	1	FUEL8735	1	BV2F	E	170905	G	5127	G	N				2
																			2
34		140519	NND3	NN-B	RD	1	FUEL8767	1	BV2F	E	170923	G	5128	G	N				2
																			2

Error: entry 35 omitted

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY.........**Neptune**........ PERIOD COVERED BY REPORT FROM.....**140601**............ TO......**140630**........

FACILITY.........**NNB-**........... REPORT NO........**77**...................

MATERIAL BALANCE AREA............**NN-B**............ PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	FROM	TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
1		140519	NND3	NN-B	RD	1	FUEL8768	1	BV2F	E	170937	G	5128	G	N		76	35	2
																			2

Entry 1 of report 77 adds entry 35 to report 76

Figure 3-9. Addition of an accounting entry to a previous report.

- If more than one addition is submitted, the entry number should continue to increase sequentially by 1.

- Because of the restricted maximum of 99 entries for a report, additions to reports already consisting of 99 entries are required to be part of a new report.

- Additions can be submitted at any time.

- Addition records are subject to the same content, requirement, and validation rules as regular ICR, PIL, and MBR records.

3.5.7 Deletions

Fixed format Code 10 does not specifically define the procedure for deleting a record. To delete a record, mark a record as being deactivated (e.g., deleted) by reporting a correction to the record with an A in position 3 of the correcting record.
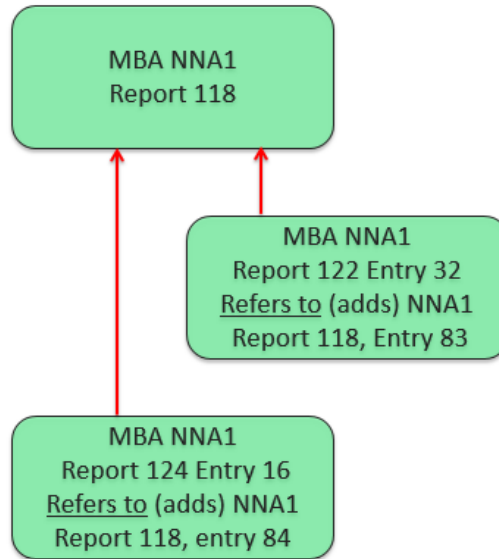
Figure 3-10. Example of reporting additions.

Business Rule(s): *Deletions to Entry Records*

Figure 3-11 illustrates the reporting of a deletion.

A deleted record can be corrected later if necessary by providing a new entry with a reference to the deleted record.

Deletion records need only report the entry number, the letter A in position 3, and the report number and entry number of the record to be deleted, in the Correction To data fields.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY...........**Neptune**.................
FACILITY.........**NND-**.......................
MATERIAL BALANCE AREA..............**NND3**.......................

PERIOD COVERED BY REPORT FROM.....**140901**............. TO.......**140930**..................
REPORT NO.........**181**.........................
PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA				ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)					REPORT NO.	ENTRY NO.	
1	3	4	10	14	18	20	21	29	33	37	38	46	48		56	72	73	74	78	80
																				2
																				2
16		140918	NND3	VV	SF	5	FUEL0114	1	BV2F	E	180051	G	5420		G	N				2
17		140918	NND3	VV	SF	5	FUEL0114	1	BV2F	E	180051	G	5420		G	N				2
																				2
																				2

Error: entry reported twice

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY...........**Neptune**.................
FACILITY.........**NNB-**.......................
MATERIAL BALANCE AREA...............**NN-B**.......................

PERIOD COVERED BY REPORT FROM.....**141001**............. TO.......**141031**..................
REPORT NO.........**182**.........................
PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA				ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)					REPORT NO.	ENTRY NO.	
1	3	4	10	14	18	20	21	29	33	37	38	46	48		56	72	73	74	78	80
1	A																	181	17	2
																				2

Entry 1 with 'A' in position 3 indicates an inactive entry. The deletion is made by replacing (correcting) entry 17 in report 181 with the inactive entry

Figure 3-11. Example of reporting a deletion.

4. LABELED FORMAT

The labeled format Code 10 was first developed and used in the late 1970s when it became clear that larger countries joining the NPT needed a mechanism to address the data field size limitations of the fixed format Code 10. Labeled format offers variable lengths for the data fields, which are defined by labels instead of positions. Specific procedures related to data field length are not necessary, and additional data fields can be added if so negotiated. Unlike the fixed format structure, all reports prepared in labeled format must be submitted in electronic form; reporting on paper forms is not an option.

Both the fixed format and labeled format Code 10 versions provided the necessary information for the IAEA to implement safeguards.

As in the fixed format, the basic reporting entity is an MBA. The same three types of accounting reports are used: ICRs, PILs, and MBRs. In addition, concise notes or textual report entries can be submitted to the IAEA to provide additional explanation and clarification at the country, facility, MBA, report, or entry level. Unlike fixed format Code 10, there are no separate forms for each report type.

Appendix E, *Labeled Format Reporting Codes,* contains the reporting codes used in labeled format Code 10 reporting. Appendix F, *Labeled Format Reporting Examples*, provides completed examples of the various types of labeled format reports discussed below.

4.1   SPECIFICATION OF DATA ELEMENTS

Nuclear material accounting reports (i.e., ICR, PIL, MBR) are identified by the report number (label 001), report type (label 010), and MBA (label 307). All associated entries must be reported in sequence by entry number (label 002) and within the entry, elements should be in label sequence.

The maximum number of characters permitted in an accounting entry is defined by the lengths specified in Code 10 for each data element, including the delimiter characters listed below.

A nuclear material accounting entry within a report is formed by a set of data elements, beginning with label 001 through the last label necessary to report the entry. Following the pound sign (#) after the last data element in an entry, the next entry begins with label 001. If the next entry has a different report number, type of report, or MBA, that indicates a new report must be filed.

One transmission of information can include multiple accounting reports, with entries for each report provided in sequence by entry number.

With the labeled format, data elements are identified by a unique three-digit number called a label. A label may identify a unique or composite data element. In the latter case, the components are internally separated by delimiters.

The following delimiters are used in the labeled format:

- colon (:)   to separate the label number and the content of the data element
- slash (/)   to separate data items within a composite data element
- semi-colon (;)   to separate data items within a composite data element
- pound sign (#)   to indicate the end of a data element

Thus, a data element entry begins with the label number, followed by a colon, followed by one or more data values separated by a slash or semi-colon, and ends with the pound sign.

The preferred date format for reporting is eight characters and must follow the IAEA standard of year–month–day (YYYYMMDD). If a State wishes to use a six-digit date (YYMMDD), that will need to be negotiated with the IAEA.

The delimiters form an integral part of the data element and must be reproduced as such in the reports transmitted to the IAEA. In exceptional cases, deviations from the standard set of delimiters may be agreed upon if the recording devices available to the State do not support the delimiters listed above. The delimiters may not be used within a data field as reported information (e.g., a delimiter cannot be used as a character in a batch name).

4.2   INVENTORY CHANGE REPORTS

Each ICR may consist of two types of records. The first type indicates changes in the inventory of nuclear material. The second type gives additional textual information related to concise notes that is not accommodated in any of the data elements included in the first report type (see Section 4.5 for discussion of concise note entries).

Table 4-1 describes the report format for ICRs. Where square brackets [ ] are used, either of the options given may be chosen. For example, the report date may be reported as an eight-digit date (YYYYMMDD) or a six-digit date (YYMMDD).

Table 4-1. Report format for inventory change reports

Label	Data field name	Format	Comment(s)
001	Reference Number	**/**·***…***#	
002	Entry Number/Total Number of Entries	***…***/***…***#	
003	Report Date	[********][******]#	
006	Encoder's Name	***…***#	
010	Report Type	*#	
015	Reporting Period	[********/********] [******/******]#	
207	Facility Code	****#	
307	MBA Code	****#	
309	Entry Status and Cross Reference Code	*/**·***…***/***…***#	
310	State Accounting System Record Identification	***…***	Optional
370	Shipper of Nuclear Material	**/****#	Required for imports, exports, and transfers between MBAs within the State
372	Receiver of Nuclear Material	**/****#	Required for imports, exports, and transfers between MBAs within the State
390	Concise Note Indicator	*#	Required if entry is referenced by a concise note submitted in same report
407	Key Measurement Point Code	**#	
411	Type of Inventory Change	**#	
412	Date of Inventory Change	[********][******]#	
430	Material Description Code	*/*/*/*#	
435	Operator's Material Description Code	*/***…***#	Optional if operator's code differs from Agency code*a*

Table 4-1. Report format for inventory change reports (continued)

Label	Data field name	Format	Comment(s)
436	Operator's Material Description Text	***…***#	Optional
445	Non-Latin Alphabet Identification	*#	Required if entry includes non-Latin letters[b]
446	Batch Name	***…***#	
447	Shipper's Batch Name	***…***#	
469	Measurement Identification Code	*/***…***/***…***#	
470	Number of Items in Batch	***…***#	
600–800	Weight Data	***…***#	If label 600 or 630 is used, label 640, 660, or 670 must also be reported.

[a]Agency code is represented by label 430, Material Description Code.
[b] If non-Latin letters are used in the entry (e.g., in the batch name or encoder's name), a one-letter code (agreed upon with the IAEA) is placed in this data element. Otherwise this label should not be used.

Business Rules: *ICR*

- All entries have variable length, unless the permitted or prescribed number of characters is specifically indicated. Variable length is indicated by three asterisks followed by ellipses and three more asterisks: ***…***. Where only 2 asterisks are used (**), the data field contains two characters.
- Each ICR must contain at least one entry (i.e., record) of the first type, indicating a change in the inventory of nuclear material.

Below are detailed descriptions and associated business rules for each data field in an ICR record.

Data Field: *Reference Number*

- Definition: Unique report identifier for filing, processing, sorting, and reference purposes.
- Format: 001:**/**;***…***#
    – code ØI for accounting entries or code NC for concise note entries;
    – slash (/);
    – country code;
    – semi-colon (;); and
    – the numeric report number assigned by the reporting authority.

- Business rules:
    – Report number must be unique for any given MBA.
    – All reports, regardless of type, are numbered consecutively with respect to each MBA.

Data Field: *Entry Number/Total Number of Entries*

- Definition: Number for the specific entry within the set of ØI or NC entries contained in the report.
- Format: 002:***…***/***…***#
    – sequential number of the ØI or NC entry;
    – slash (/); and
    – total number of ØI or NC entries in the report.

- Business rules:
  – Always start with 1 within each set of ØI and NC entries.
  – The total number of ØI or NC entries may be omitted, as well as the preceding slash in entries except for the first ØI and NC entry of a report, where it is mandatory.

Data Field: *Report Date*

- Definition: Date when the report was produced.
- Format: 003:[*******][*****]#
  – the [four] [last two] digits of the current year;
  – the two-digit designation of the month; and
  – the two-digit designation of the day.

- Business rules:
  – As indicated by the square brackets in the data field format, the year can be indicated either with four digits or with the last two digits; therefore, the entry format can be either eight or six characters long. Unless specifically agreed otherwise, a four-digit year should be reported.
  – The State can decide what they would like to use for the report date, such as the date the report was prepared for dispatch to the IAEA.
  – The report date should not be after the date of dispatch.
  – The date should be on or after the period ending date of the ICR.

Data Field: *Encoder's Name*

- Definition: Official responsible for the report.
- Format: 006:***…***#
  – family name;
  – a comma (,); and
  – the initials.

- Business rule:
  – A maximum of 30 characters may be used.

Data Field: *Report Type*

- Definition: Type of report.
- Format: 010:*#
  – Single character.

- Business rule:
  – I for ICR

Data Field: *Reporting Period*

- Definition: Beginning and ending dates of the period covered by the ICR.
- Format: 015:[*******/*******] [*****/*****]#
  – [eight][six] digits for the beginning date (as in the label Report Date above);
  – slash (/); and
  – [eight][six] digits for the ending date (as in the label Report Date above).

- Business rules:
  - The specified period should include the dates of inventory change reported in all new entries in the report.
  - The inventory change dates of corrections, additions, or deletions are not included in the date period.

Data Field: *Facility Code*

- Definition: Identification code of the facility containing the reporting MBA.
- Format: 207:****#
  - four-character code.

- Business rule:
  - The facility code is specified in the relevant facility attachment.

Data Field: *MBA Code*

- Definition: Identification code of the MBA submitting the report.
- Format: 307:****#
  - four-character code.

- Business rule:
  - The MBA code is specified in the relevant facility attachment.

Data Field: *Entry Status and Cross Reference Code*

- Definition: Status of the entry and, when necessary, provides a reference to a previously reported entry.
- Format: 309:*/**;***…***/***…***#
  - one-character code to designate the status of the entry:
    - N for new entries,
    - U for invalid entries to be ignored,
    - C for entries serving as corrections to earlier ones,
    - D for entries deleting the one referenced by this entry, and
    - A for an entry to be added to previous report.
  - slash (/); this and the following reference codes are mandatory if the entry status code is C, D, or A. For N, they are not applicable; for U, they are optional.
  - country code (same as in label 001, Reference Number);
  - semi-colon (;);
  - the report number assigned by the reporting authority as specified in the label 001 of the entry being referenced;
  - slash (/); and
  - entry number of the entry to be referenced (first subfield 002 of that entry), or in the case of an additional entry, the number of the entry as it will appear in the report to which the entry is being added.

- Business rules:
  - If the entry is serving as a correction to an earlier one (C), the remainder of the entry should contain the same data elements and values of the referenced line entry except for those elements being corrected.

- If the entry is deleting the one referenced by this entry, the data elements for the remainder of the entry are optional.

Data Field: *State Accounting System Record Identification*

- Definition: Unique identifier in the State accounting system that references the data contained in the State report.
- Format: 310:***…***
- Business rules:
  - Optional.
  - Maximum of 40 characters may be used.

Data Field: *Shipper of Nuclear Material*

- Definition: Shipper of nuclear material received by the MBA indicated in label 307.
- Format: 370: **/****#
  - country code;
  - slash (/); and
  - MBA (or, for imports, facility or country) code.

- Business rules:
  - This data field is mandatory when reporting domestic receipt of nuclear material from another MBA, or import of nuclear material; otherwise, it may be omitted.
  - If an import is reported and the shipping MBA (or facility) code is unknown to the receiver, it is sufficient to report only the country code.

Data Field: *Receiver of Nuclear Material*

- Definition: Receiver of nuclear material that has been shipped by the MBA indicated in label 307.
- Format: 372: **/****#
  - country code;
  - slash (/); and
  - MBA code (or, for exports, facility or country code).

- Business rules:
  - This data field is mandatory when reporting domestic transfer of nuclear material to another MBA, or export of nuclear material; otherwise, it may be omitted.
  - If an export is reported and the receiving MBA (or facility) code is unknown to the shipper, it is sufficient to report only the country code.

Data Field: *Concise Note Indicator*

- Definition: Indicates a concise note is included in the report or attached to it.
- Format: 390: *#
- Business rules:
  - Optional.
  - Y indicates the presence of a concise note.

Data Field: *Text of Concise Note*

- Definition: Text that provides clarifications, amplifications, and other unformatted information.
- Format: 391: ***…***#
- Business rules:
  – Optional.
  – Concise note can be written in free format, using only Latin (i.e., English) capital letters, numerals, and permitted special symbols.
  – A maximum of 2,000 characters of text may be reported in a single nuclear material accounting entry.

Data Field: *Key Measurement Point Code*

- Definition: The appropriate KMP code.
- Format: 407:**#
- Business rule:
  – The KMP codes to be used for a specific MBA are defined in the relevant facility attachment.

Data Field: *Type of Inventory Change*

- Definition: Type of inventory change reported.
- Format: 411: **#
  – Two alphabetic characters (see Appendix E-1).

- Business rules:
  – All transactions and operations are related to individual batches, unlike in MBRs, where the same codes denote consolidated entries.
  – In addition to the inventory changes, the inventory may be adjusted in accordance with the results of measurements performed in the MBA on nuclear material previously recorded and reported on shipper's data and can be reported as the shipper/receiver difference.
  – Changes in batch identification and/or content may also be reported.
  – The inventory change codes to be used for a specific MBA are defined in the relevant facility attachment.

Data Field: *Date of Inventory Change*

- Definition: Date on which the change in inventory occurred or was established.
- Format: 412: [********][******]#
  – [eight][six] numeric digits (as in label 003)

- Business rule:
  – Either eight or six digits, depending on whether all four or the last two digits of the year are used.

Data Field: *Material Description Code*

- Definition: The physical and chemical form, containment, and irradiation status and quality of the nuclear material in the batch.
- Format: 430: */*/*/*#
  – Four-character code (see Appendix E-2 for codes).

- Business rules:
  - The domestic shipment of a given batch from one MBA and its receipt in another MBA must be reported with the same material description code.
  - If the codes are used in hard-copy communications, the slashes may be omitted.
  - The material description codes to be used for a specific MBA are defined in the relevant facility attachment.

Data Field: *Operator's Material Description Code*

- Definition: May be used to indicate that the operator's material description code is identical to the code used by the IAEA.
- Format: 435:*/***…***#
  - Y indicates that the codes are identical, and N indicates that the codes are different and that the operator's material description code follows.
  - Slash (/), if operator's code follows.
  - Operator's material description code.

- Business rules:
  - If the operator's material description code differs from the code used by the IAEA, the operator's own code may be shown here.
  - The operator's material description code can be reported as a maximum of 12 characters.

Data Field: *Operator's Material Description (Text)*

- Definition: Permits the inclusion of a textual description of the batch if the operator so wishes or has otherwise agreed in the facility attachment.
- Format: 436: ***…***#
  - Maximum of 100 characters.

- Business rule:
  - Text should be composed of Latin capital letters, numerals, and permitted special characters.

Data Field: *Non-Latin Alphabet Identification*

- Definition: Indicates non-Latin letters are used in the entry (e.g., in the encoder's name).
- Format: 445: *#
- Business rules:
  - Entry should consist of a single-letter code agreed upon with the IAEA.
  - If only Latin letters are used in the entry, this label should not be used.

Data Field: *Batch Name*

- Definition: Batch name of the nuclear material being reported.
- Format: 446: ***…***#
- Business rules:
  - When the ICR is reporting a receipt, the batch name may be assigned by the reporting MBA or may be the same one used by the shipper, as reported in label 447, Shipper's Batch Name (see next data field).
  - The batch name reported should be unique to the reporting MBA for any transaction on a single date.

      – A maximum of 16 characters can be used.

Data Field: *Shipper's Batch Name*

- Definition: Shipper's batch name when known.
- Format: 447: ***…***#
- Business rules:
  - Only used in ICR entries reporting a receipt.
  - This entry should be the batch name the shipper uses in the ICR entry reporting the shipment.
  - If the shipper's batch name is unknown, the keyword UNKNOWN should be reported.
  - A maximum of 16 characters can be used.

Data Field: *Measurement Identification Code*

- Definition: Measurement basis used, and if applicable, the KMP and/or method of measurement.
- Format: 469: */***…***/ ***…***#
  - Measurement basis code, consisting of one of the following letters:
    - N, if the batch data are based on measurements made at another MBA;
    - L, if the batch data are based on measurements made at another MBA and have been reported for the present MBA in a preceding ICR or PIL;
    - M, if the batch data are based on fresh measurements made at the MBA; and
    - T, if the batch data are based on measurements made at the present MBA and have been reported in a preceding ICR or PIL, and the measurements have not been repeated.

  - Slash (/), if other data items follow.
  - In cases noted by M as defined above, indicate the KMP where the measurement was made if it differs from the KMP names in the data element under label 407 (otherwise code not needed).
  - Slash (/), if other data item follows.
  - In cases denoted by M or T as defined above, indicate the method used for the measurement.

- Business rules:
  - Measurement Identification Code N can only be used for reporting the original receipt of nuclear material, unless specified otherwise in the facility attachment.
  - The measurement basis codes to be used for a specific MBA are defined in the relevant facility attachment.

Data Field: *Number of Items in Batch*

- Definition: Number of similar items in a batch.
- Format: 470: ***…***#
- Business rules:
  - In the case of bulk material (when the number would not be meaningful), a zero should be placed in this data field.
  - The number must be an integer.

Data Field: *Weight Data*

- Definition: Labels 600–800 provide the quantities of the nuclear material in the batch represented by the entry. The pertinent labels 600–800 should be used.
- Format: 600:***…***# 610: ***…***# 620:***…***# … etc. … 800:***…***#

- Labels 600–800 each follow the same format:
  - numerical label;
  - colon (:);
  - the numerical expression of the weight of the element (i.e., isotope or their combination of isotopes), as indicated by the label; and
  - weight expressed as g for weight given in grams, or as kg for weight given in kilograms.

- Business rules:
  - The weight data relate either to a specific chemical element or to its isotopes.
  - The weight data are to be expressed in the following units:
    - grams of plutonium (and its isotopes, if appropriate);
    - grams of total uranium for enriched uranium;
    - grams of isotopes of uranium; and
    - kilograms of natural uranium, depleted uranium, and thorium.

  - If label 600 (unified uranium) or 630 (enriched uranium) is used, label 640 (enriched/unified uranium U_{233} content), 660 (enriched/unified uranium $U_{233} + U_{235}$ content), or 670 (enriched/unified uranium U_{235} content) must also be reported.
  - Data covered by labels 650, 680, 690, 710, 720, 730, 740, 750, 760, 770, and 780 are optional, unless they are required by the facility attachment.
  - Weights reported to a higher precision than milligrams will be rounded to the nearest milligram.
  - While it is recommended that data be reported in unrounded figures, the data may be rounded, but not beyond the nearest integer to the unit used, which may necessitate the reporting of rounding adjustments in MBRs.
  - Rounding should be done by first adding the weights of the individual items in the batch and then rounding their sum.
  - Element and isotope weights may be reported in different units depending on the material.

4.3 PHYSICAL INVENTORY LISTINGS

Like ICRs, each PIL may consist of two types of records. The first type presents nuclear material batch data, and the second type provides concise notes and textual reports (see Section 4.5).

Table 4-2 describes the report format for PILs. Appendix E contains the reporting codes used in labeled format Code 10 reporting.

Table 4-2. Report format for physical inventory listings

Label	Data field name	Format	Comment(s)
001	Reference Number	**/**;***…***#	
002	Entry Number/Total Number of Entries	***…***/***…***#	
003	Report Date	[********][******]#	
006	Encoder's Name	***…***#	
010	Report Type	*#	
015	Reporting Period	[********/********] [******/******]#	
207	Facility Code	****#	
307	MBA Code	****#	

Table 4-2. Report format for physical inventory listings (continued)

Label	Data field name	Format	Comment(s)
309	Entry Status and Cross Reference Code	*/**;***…***/***…***#	
310	State Accounting System Record Identification	***…***	Optional
390	Concise Note Indicator	*#	Required if entry is referenced by a concise note submitted in same report
407	Key Measurement Point Code	**#	
430	Material Description Code	*/*/*/*#	
435	Operator's Material Description Code	*/***…***#	Optional if operator's code differs from Agency code[a]
436	Operator's Material Description Text	***…***#	Optional
445	Non-Latin Alphabet Identification	*#	Required if entry includes non-Latin letters[b]
446	Batch Name	***…***#	
469	Measurement Identification Code	*/***…***/***…***#	
470	Number of Items in Batch	***…***#	
600–800	Weight Data	***…***#	If label 600 or 630 is used, label 640, 660, or 670 must also be reported.

[a]Agency code is represented by label 430, Material Description Code.
[b]If non-Latin letters are used in the entry (e.g., in the batch name or encoder's name), a one-letter code (agreed upon with the IAEA) is placed in this data element. Otherwise this label should not be used.

Business Rules: *PIL*

- All entries can have variable length, unless the permitted or prescribed number of characters is specifically indicated.

- Each PIL must contain at least one entry (i.e., record) indicating a change in the inventory of nuclear material.

- A PIL must be prepared even if there was no nuclear material in the MBA at the time of the physical inventory taking. Such a PIL, known as a null or zero PIL, should have a single entry including the following data elements:
  – 001, reference number;
  – 002, entry number;
  – 003, report date;
  – 006, encoder's name;
  – 010, report type;
  – 015, reporting period;
  – 207, facility code;
  – 307, MBA code;
  – 309, entry status and cross reference code with a value of U; and
  – 310, state accounting system record identification (optional).

Below are detailed descriptions and associated business rules for each data field in a PIL record.

Data Field: *Reference Number*

- Definition: Unique report identifier for filing, processing, sorting, and reference purposes.
- Format: 001:**/**;***…***#
    - code ØI for accounting entries or code NC for concise note entries;
    - slash (/);
    - country code;
    - semi-colon (;); and
    - the numeric report number assigned by the reporting authority.

- Business rules:
    - Report number must be unique for any given MBA.
    - All reports, regardless of type, are numbered consecutively with respect to each MBA.

Data Field: *Entry Number/Total Number of Entries*

- Definition: Number for the specific entry within the set of ØI or NC entries contained in the report
- Format: 002:***…***/***…***#
    - sequential number of the ØI or NC entry;
    - slash (/); and
    - total number of ØI or NC entries in the report.

- Business rules:
    - Always start with 1 within each set of ØI and NC entries.
    - The total number of ØI or NC entries may be omitted, as well as the preceding slash in entries except for the first ØI and NC entry of a report, where it is mandatory.

Data Field: *Report Date*

- Definition: Date when the report was produced.
- Format: 003:[********][******]#
    - the [four] [last two] digits of the current year;
    - the two-digit designation of the month; and
    - the two-digit designation of the day.

- Business rules:
    - The year can be indicated either with four digits or with the last two digits; therefore, the entry format can be either eight or six characters long.
    - The State can decide what they would like to use for the report date, such as the date the report was prepared for dispatch to the IAEA.
    - The report date should not be after the date of dispatch.

The date should be on or after the date of the physical inventory taking.

Data Field: *Encoder's Name*

- Definition: Official responsible for the report.
- Format: 006:***…***#
    - family name;
    - a comma (,); and

– the initials.

- Business rule:
  – A maximum of 30 characters may be used.

Data Field: *Report Type*

- Definition: Type of report.
- Format: 010:*#
  – Single character.

- Business rule:
  – P for PIL

Data Field: *Reporting Period*

- Definition: Date of a physical inventory taking and the corresponding PIL.
- Format: 015:[********] #
  – [eight][six] digits for the date of the PIL (as for Report Date data field);

- Business rules:
  – The data field indicates the date of physical inventory taking.
  – If the actual taking of the inventory lasts more than 1 day, common in large facilities, the IAEA and the facility will agree on a single date for purposes of nuclear material accounting.
  – The PIL date must be the same as the period ending date of the corresponding MBR.

Data Field: *Facility Code*

- Definition: Identification code of the facility containing the reporting MBA.
- Format: 207:****#
  – Four-character code.

- Business rule:
  – The facility code is specified in the relevant facility attachment.

Data Field: *MBA Code*

- Definition: Identification code of the MBA submitting the report.
- Format: 307:****#
  – Four-character code.

- Business rule:
  – The MBA code is specified in the relevant facility attachment.

Data Field: *Entry Status and Cross Reference Code*

- Definition: Status of the entry and, when necessary, provides a reference to a previously reported entry.
- Format: 309:*/**;***…***/***…***#
  – One-character code to designate the status of the entry:

- N for new entries;
- U for invalid entries to be ignored;
- C for entries serving as corrections to earlier ones;
- D for entries deleting the one referenced by the current entry; and
- A for an entry to be added to the previous report.

 – Slash (/); this and the following reference codes are mandatory if the entry status code is C, D, or A. For N, they are not applicable; for U, they are optional.
 – Country code (same as in label 001, Reference Number);
 – semi-colon (;);
 – the report number assigned by the reporting authority as specified in the label 001 of the entry being referenced;
 – slash (/); and
 – entry number of the entry to be referenced (i.e., first subfield 002 of that entry), or in the case of an additional entry, the number of the entry as it will appear in the report to which the entry is being added.

- Business rules:
  – If the entry is serving as a correction to an earlier one (C), the remainder of the entry should contain the same data elements and values of the referenced line entry except for those elements being corrected.
  – If the entry is deleting the one referenced by this entry, the data elements for the remainder of the entry are optional.

Data Field: *State Accounting System Record Identification*

- Definition: Unique identifier in the State accounting system that references the data contained in the State report.
- Format: 310:***…***
- Business rules:
  – Optional.
  – Maximum of 40 characters may be used.

Data Field: *Concise Note Indicator*

- Definition: Indicates a concise note is included in the report or attached to it.
- Format: 390: *#
- Business rules:
  – Optional.
  – Y indicates the presence of a concise note.

Data Field: *Text of Concise Note*

- Definition: Text that provides clarifications, amplifications, and other unformatted information.
- Format: 391: ***…***#
- Business rules:
  – Optional.
  – Concise note can be written in free format, using only Latin capital letters, numerals, and permitted special symbols.

- A maximum of 2,000 characters of text may be reported in a single nuclear material accounting entry.

Data Field: *Key Measurement Point Code*

- Definition: The appropriate KMP code.
- Format: 407:**#
- Business rule:
    – The appropriate KMP code is assigned in the facility attachment.

Data Field: *Material Description Code*

- Definition: The physical and chemical form, containment, and irradiation status and quality of the nuclear material in the batch.
- Format: 430: */*/*/*#
    – Four-character code (see Appendix E-2 for codes)

- Business rules:
    – The domestic shipment of a given batch from one MBA and its receipt in another MBA must be reported with the same material description code.
    – If the codes are used in hard-copy communications, the slashes may be omitted.
    – The Material Description Code is specified in the relevant facility attachment.

Data Field: *Operator's Material Description Code*

- Definition: May be used to indicate that the operator's material description code is identical to the code used by the IAEA.
- Format: 435:*/***…***#
    – Y indicates that the codes are identical; letter N indicates that the codes are different and that the operator's material description code follows.
    – Slash (/), if operator's code follows.
    – Operator's material description code.

- Business rules:
    – If the operator's material description code differs from the code used by the IAEA, the operator's own code may be shown here.
    – The operator's material description code can be reported as a maximum of 12 characters.

Data Field: *Operator's Material Description (Text)*

- Definition: Permits the inclusion of a textual description of the batch if the operator so wishes or has otherwise agreed in the facility attachment.
- Format: 436: ***…***#
    – Maximum of 100 characters

- Business rule:
    – Text should be composed of Latin capital letters, numerals, and permitted special characters.

Data Field: *Non-Latin Alphabet Identification*

- Definition: Indicates non-Latin letters are used in the entry (e.g., in the encoder's name).
- Format: 445: *#
- Business rules:
  – Entry should consist of a single-letter code agreed upon with the IAEA.
  – If only Latin letters are used in the entry, this label should not be used.

Data Field: *Batch Name*

- Definition: Batch name of the nuclear material being reported.
- Format: 446: ***…***#
- Business rules:
  – The batch name reported should be unique to the reporting MBA for the inventory date.
  – A maximum of 16 characters may be used.

Data Field: *Measurement Identification Code*

- Definition: Measurement basis used, and if applicable, the KMP and/or method of measurement.
- Format: 469: */***…***/ ***…***#
  – Measurement basis code, consisting of one of the letters:
    - N, if the batch data are based on measurements made at another MBA;
    - L, if the batch data are based on measurements made at another MBA and have been reported for the present MBA in a preceding ICR or PIL;
    - M, if the batch data are based on fresh measurements made at the MBA; and
    - T, if the batch data are based on measurements made at the present MBA and have been reported in a preceding ICR or PIL and the measurements have not been repeated;

  – Slash (/), if other data items follow.
  – In cases denoted by M as defined above, indicate the KMP where the measurement was made if it differs from the KMP names in the data element under label 407; otherwise not needed.
  – In cases denoted by M or T as defined above, indicate the method used for the measurement.

- Business rules:
  – It is possible for M to be on a PIL (e.g., if a batch is manufactured and it is reported for the first time because of an inventory taking).
  – When a batch is remeasured during a material balance period and that is the only activity for the batch, the next PIL should indicate M, even if the weights did not change.

Data Field: *Number of Items in Batch*

- Definition: Number of similar items in the batch.
- Format: 470: ***…***#
- Business rules:
  – In the case of bulk material (when the number would not be meaningful), a zero should be placed in this data field.
  – The number must be an integer.

Data Field: *Weight Data*

- Definition: Labels 600–800 provide the quantities of the nuclear material in the batch represented by the entry. The pertinent labels 600–800 should be used.
- Format: 600:***…***# 610: ***…***# 620:***…***# … etc. … 800:***…***#
  - Labels 600–800 each follow the same format:
  - numerical label;
  - colon (:);
  - the numerical expression of the weight of the element (i.e., isotope or their combination of isotopes), as indicated by the label; and
  - weight expressed as g for weight given in grams, or as kg for weight given in kilograms.

- Business rules:
  - The weight data relates either to a specific chemical element or its isotopes.
  - The weight data are to be expressed in the following units:
    - grams of plutonium (and its isotopes, if appropriate);
    - grams of total uranium for enriched uranium;
    - grams of isotopes of uranium; and
    - kilograms of natural uranium, depleted uranium, and thorium.

  - If label 600 (unified uranium) or 630 (enriched uranium) is used, label 640 (enriched/unified uranium U_{233} content), 660 (enriched/unified uranium U_{233} + U_{235} content), or 670 (enriched/unified uranium U_{235} content) must also be reported.
  - Data covered by labels 650, 680, 690, 710, 720, 730, 740, 750, 760, 770, and 780 are optional, unless they are required by the facility attachment.
  - Weights reported to a higher precision than milligrams will be rounded to the nearest milligram.
  - While it is recommended that data be reported in unrounded figures, the data may be rounded, but not beyond the nearest integer to the unit used, which may necessitate the reporting of rounding adjustments in MBRs.
  - Rounding should be done by first adding the weights of the individual items in the batch and then rounding their sum.

4.4 MATERIAL BALANCE REPORTS

Like ICRs and PILs, each MBR may consist of two types of records. The first type presents nuclear balance data, and the second type of MBR record provides concise notes giving textual information (see Section 4.5).

Table 4-3 describes the report format for MBRs. Appendix E contains the reporting codes used in labeled format Code 10 reporting.

Table 4-3. Report format for material balance reports

Label	Data field name	Format	Comment(s)
001	Reference Number	**/**:***…***#	
002	Entry Number/Total Number of Entries	***…***/***…***#	
003	Report Date	[********][******]#	
006	Encoder's Name	***…***#	
010	Report Type	*#	

Table 4-3. Report format for material balance reports (continued)

Label	Data field name	Format	Comment(s)
015	Reporting Period	[********/********] [******/******]#	
207	Facility Code	****#	
307	MBA Code	****#	
309	Entry Status and Cross Reference Code	*/**;***…***/***…***#	
310	State Accounting System Record Identification	***…***	Optional
390	Concise Note Indicator	*#	Required if entry is referenced by a concise note submitted in same report
411	Type of Inventory Change	**# or ****# for rounding adjustments	
445	Non-Latin Alphabet Identification	*#	Required if entry includes non-Latin letters[a]
600-800	Weight Data	***…***#	If label 600 or 630 is used, label 640, 660, or 670 must also be reported.

[a] If non-Latin letters are used in the entry (e.g., in the batch name or encoder's name), a one-letter code (agreed upon with the IAEA) is placed in this data element. Otherwise this label should not be used.

Business Rules: *MBR*

- All entries have variable length, unless the permitted or prescribed number of characters is specifically indicated.

- Each MBR must contain at least one entry (i.e., record) of the first type, indicating the nuclear material balance.

- An MBR must be prepared even if at the time of the physical inventory taking there was no nuclear material in the MBA and there were no transactions during the material balance period. Such an MBR should contain a single entry including the following data elements:

  – 001, reference number;
  – 002, entry number;
  – 003, report date;
  – 006, encoder's name;
  – 010, report type;
  – 015, reporting period;
  – 207, facility code;
  – 307, MBA code;
  – 309, entry status and cross reference code with a value of U; and
  – 310, state accounting system record identification (optional).

Below are detailed descriptions and associated business rules for each data field in an MBR record.

Data Field: *Reference Number*

- Definition: Unique report identifier for filing, processing, sorting, and reference purposes.
- Format: 001:**/**;***…***#
  – code ØI for accounting entries or code NC for concise note entries;
  – slash (/);
  – country code;
  – semi-colon (;); and
  – the numeric report number assigned by the reporting authority.

- Business rules:
  – Report number must be unique for any given MBA.
  – All reports, regardless of type, are numbered consecutively with respect to each MBA.

Data Field: *Entry Number/Total Number of Entries*

- Definition: Number for the specific entry within the set of ØI or NC entries contained in the report.
- Format: 002:***…***/***…***#
  – sequential number of the ØI or NC entry;
  – slash (/); and
  – total number of ØI or NC entries in the report.

- Business rules:
  – Always start with 1 within each set of ØI and NC entries.
  – The total number of ØI or NC entries may be omitted, as well as the preceding slash in entries except for the first ØI and NC entry of a report, where it is mandatory.

Data Field: *Report Date*

- Definition: Date when the report was produced.
- Format: 003:[********][******]#
  – the [four] [last two] digits of the current year;
  – the two-digit designation of the month; and
  – the two-digit designation of the day.

- Business rules:
  – The year can be indicated either with four digits or with the last two digits; therefore, the entry format can be either eight or six characters long.
  – The State can decide what they would like to use for the report date (i.e., date the report was prepared for dispatch to the IAEA).
  – The report date should not be after the date of dispatch.
  – The date should be on or after the period ending date of an MBR.

Data Field: *Encoder's Name*

- Definition: Official responsible for the report.
- Format: 006:***…***#
  – family name;
  – a comma (,); and
  – the initials.

- Business rule:
  - A maximum of 30 characters may be used.

Data Field: *Report Type*

- Definition: Indicates the type of report.
- Format: 010:*#
  - Single character.

- Business rule:
  - M for MBR.

Data Field: *Reporting Period*

- Definition: Beginning and ending dates of the period covered by the ICR.
- Format: 015:[********/********] [******/******]#
  - [eight][six] digits for the beginning date (as in the Report Date data field);
  - slash (/); and
  - [eight][six] digits for the ending date (as in the Report Date data field).

- Business rules:
  - The specified period should include the dates of inventory change reported in all new entries in the report.
  - The beginning date is 1 day after the date of the previous PIL.
  - For the first MBR reported for an MBA where reporting does not begin with an initial PIL, the date should be that of the first inventory change for the MBA.
  - The ending date of the MBR must be the same as the inventory date of the corresponding PIL.

Data Field: *Facility Code*

- Definition: Identification code of the facility containing the reporting MBA.
- Format: 207:****#
  - Four-character code.

- Business rule:
  - The facility code is specified in the relevant facility attachment.

Data Field: *MBA Code*

- Definition: Identification code of the MBA submitting the report.
- Format: 307:****#
  - Four-character code.

- Business rule:
  - The MBA code is specified in the relevant facility attachment.

Data Field: *Entry Status and Cross Reference Code*

- Definition: Status of the entry and, when necessary, provides a reference to a previously reported entry.

- Format: 309:*/**;***…***/***…***#
  - One-character code to designate the status of the entry:
    - N for new entries;
    - U for invalid entries to be ignored;
    - C for entries serving as corrections to earlier ones;
    - D for entries deleting the one referenced by this entry; and
    - A for an entry to be added to previous report.

  - Slash (/); this and the following reference codes are mandatory if the entry status code is C, D, or A. For N, they are not applicable; for U, they are optional.
  - Country code (same as in label 001, Reference Number);
  - semi-colon (;);
  - the report number assigned by the reporting authority as specified in label 001 of the entry being referenced;
  - slash (/); and
  - entry number of the entry to be referenced (i.e., first subfield 002 of that entry), or in the case of an additional entry, the number of the entry as it will appear in the report to which the entry is being added.

- Business rules:
  - If the entry is serving as a correction to an earlier one (C), the remainder of the entry should contain the same data elements and values of the referenced line entry, except for those elements being corrected.
  - If the entry is deleting the one referenced by the current entry, the data elements for the remainder of the entry are optional.

Data Field: *State Accounting System Record Identification*

- Definition: Unique identifier in the State accounting system that references the data contained in the State report.
- Format: 310:***…***
- Business rules:
  - Optional.
  - Maximum of 40 characters may be used.

Data Field: *Concise Note Indicator*

- Definition: Indicates a concise note is included in the report or attached to it.
- Format: 390: *#
- Business rules:
  - Optional.
  - Y indicates the presence of a concise note.

Data Field: *Text of Concise Note*

- Definition: Text that provides clarifications, amplifications, and other unformatted information.
- Format: 391: ***…***#
- Business rules:
  - Optional.

–   Concise note can be written in free format, using only Latin capital letters, numerals, and permitted special symbols.
–   A maximum of 2,000 characters of text may be reported in a single nuclear material accounting entry.

Data Field: *Type of Inventory Change*

- Definition: Type of inventory change reported.
- Format: 411: **# or 411:****# for rounding adjustments
    –   two alphabetic characters (see Appendices E-1 and E-4); and
    –   when indicating rounding adjustments, code is four alphabetic characters.

- Business rules:
    –   The code denotes consolidated entries (i.e., the sums of all individual operations with the same code over the material balance period), unlike ICRs, in which all transactions and operations are related to individual batches.
    –   In MBRs, the inventory change code can relate to inventories and adjustments not reported in ICRs.
    –   If the entry includes rounding adjustments, the code should be entered as RAXX, where XX stands for the code of the entry to which the rounding adjustment pertains (see Appendix E-4 for additional details).

Data Field: *Non-Latin Alphabet Identification*

- Definition: Indicates non-Latin letters are used in the entry (e.g., in the encoder's name).
- Format: 445: *#
- Business rules:
    –   Entry should consist of a single-letter code agreed upon with the IAEA.
    –   If only Latin letters are used in the entry, this label should not be used.

Data Field: *Weight Data*

- Definition: Labels 600–800 provide the quantities of the nuclear material in the batch represented by the entry. The pertinent labels 600–800 should be used.
- Format: 600:***…***# 610: ***…***# 620:***…***# … etc. … 800:***…***#
    –   Labels 600–800 each follow the same format:
        ▪   numerical label;
        ▪   colon (:);
        ▪   the numerical expression of the weight of the element (i.e., isotope or their combination of isotopes), indicated by the label; and
        ▪   weight expressed as g for weight given in grams, or as kg for weight given in kilograms.

- Business rules:
    –   The weight data relates either to a specific chemical element or to its isotopes.
    –   The weight data are to be expressed in the following units:
        ▪   grams of plutonium (and its isotopes, if appropriate);
        ▪   grams of total uranium for enriched uranium;
        ▪   grams of isotopes of uranium; and
        ▪   kilograms of natural uranium, depleted uranium, and thorium.

- – If label 600 (unified uranium) or 630 (enriched uranium) is used, label 640 (enriched/unified uranium U_{233} content), 660 (enriched/unified uranium $U_{233} + U_{235}$ content), or 670 (enriched/unified uranium U_{235} content) must also be reported.
- – Data covered by labels 650, 680, 690, 710, 720, 730, 740, 750, 760, 770, and 780 are optional, unless they are required by the facility attachment.
- – Weights reported to a higher precision than milligrams will be rounded to the nearest milligram.
- – While it is recommended that data be reported in unrounded figures, the data may be rounded, but not beyond the nearest integer to the unit used, which may necessitate the reporting of rounding adjustments in MBRs.
- – Rounding should be done by first adding the weights of the individual items in the batch and then rounding their sum.

- • See Appendix E-3 for a list of the individual numeric labels in this data element.

4.5   CONCISE NOTE ENTRIES

The second type of ICRs, PILs, and MBRs provide concise notes, which give additional textual information not accommodated in any of the data elements. The format is the same for a concise note entry whether it appears in an ICR, PIL, or MBR. Table 4-4 describes the report format.

Table 4-4. ICR, PIL, or MBR concise note report format

Label	Data field name	Format	Required field
001	Reference Number	**/**;***…***#	
002	Entry Number/Total Number of Entries	***…***/***…***#	
003	Report Date	[********][******]#	
099	Concise Note Reference	*/***…***#	Optional
207	Facility Code	****#	
307	MBA Code	****#	
391	Text of Concise Note	***…***#	

Business Rules: *Concise Note Entry*

- • The data recorded for labels 001, 207, and 307 must be the same as those recorded for the entry of the first type to which the concise note refers, with NC replacing ØI in label 001.

Below are detailed descriptions and associated business rules for each data field in a record containing concise notes.

Data Field: *Reference Number*

- • Definition: Unique report identifier for filing, processing, sorting, and reference purposes.
- • Format: 001:**/**;***…***#
  - – code ØI for accounting entries or code NC for concise note entries;
  - – slash (/);
  - – country code;
  - – semi-colon (;); and
  - – the numeric report number assigned by the reporting authority.

- Business rules:
  - Report number must be unique for any given MBA.
  - All reports, regardless of type, are numbered consecutively with respect to each MBA.

Data Field: *Entry Number/Total Number of Entries*

- Definition: Number for the specific entry within the set of ØI or NC entries contained in the report.
- Format: 002:***…***/***…***#
  - sequential number of the ØI or NC entry;
  - slash (/); and
  - total number of ØI or NC entries in the report.

- Business rules:
  - Always start with 1 within each set of ØI and NC entries.
  - The total number of ØI or NC entries may be omitted, as well as the preceding slash in entries except for the first ØI and NC entry of a report, where it is mandatory.

Data Field: *Report Date*

- Definition: Date when the report was produced.
- Format: 003:[********][******]#
  - the [four] [last two] digits of the current year;
  - the two-digit designation of the month; and
  - the two-digit designation of the day.

- Business rules:
  - The year can be indicated either with four digits or with the last two digits; therefore, the entry format can be either eight or six characters long.
  - The State can decide what they would like to use for the report date (e.g., date the report was prepared for dispatch to the IAEA).
  - The report date should not be after the actual date of dispatch.

Data Field: *Concise Note Reference*

- Definition: Entry or report to which the concise note refers.
- Format: 099:*/***…***#
  - E, if it is related to a specific entry; in this case followed by a
    - slash (/); and
    - the number of the entry in question or;

  - R, if the concise note refers to the report as a whole.

- Business rules:
  - Only used in concise note entries.
  - Should refer the entry (if appropriate) to the report or to a specific accounting entry in the ØI report with the same report number.

Data Field: *Facility Code*

- Definition: Identification code of the facility containing the reporting MBA.

- Format: 207:****#
  – Four-character code.

- Business rule:
  – The facility code is specified in the relevant facility attachment.

Data Field: *MBA Code*

- Definition: Identification code of the MBA submitting the report.
- Format: 307:****#
  – Four-character code.

- Business rule:
  – The MBA code is specified in the relevant facility attachment.

Data Field: *Text of Concise Note*

- Definition: Free-format text that provides clarifications, amplifications, and other unformatted. information (e.g., relevant burn-up values, relevant aspects of the operational program)
- Format: 391:***…***#
- Business rules:
  – Text is free format, but can use only Latin capital letters, numerals, and permitted special symbols.
  – Maximum of 2,000 characters may be used in a single entry.

4.6 TEXTUAL REPORTS

If desired, freely formulated information not incorporated into accounting reports may be reported to the IAEA as separate sets of records accumulated into any number of textual reports. Such reports should be formatted as free-standing concise notes. Table 4-5 describes the report format.

Table 4-5. Textual report format

Label	Data field name	Format	Required field
001	Reference Number	**/**;***…***#	
002	Entry Number/Total Number of Entries	***…***/***…***#	
003	Report Date	[********][******]#	
010	Report Type	*#	Optional
099	Concise Note Reference	*/***…***#	Optional
207	Facility Code	****#	Optional
307	MBA Code	****#	Optional
391	Text of Concise Note	***…***#	

Business Rules: *Textual Reports*

- Each textual report must have a unique reference code and consist of at least one record.

- A textual report should be subdivided into an appropriate number of records.

- If the text of the note refers to a specific facility and/or MBA, labels 207 (facility code) and/or 307 (MBA code) may be used.

- If a reference to a specific accounting report is desired, labels 010 (report type) and 099 (concise note reference) may also be used.

Below are detailed descriptions and associated business rules for each data field in a textual report.

Data Field: *Reference Number*

- Definition: Unique report identifier for filing, processing, sorting, and reference purposes.
- Format: 001:**/**;***…***#
  - code NC;
  - slash (/);
  - country code;
  - semi-colon (;); and
  - the numeric report number assigned by the reporting authority.

- Business rules:
  - Report number must be unique for any given MBA.
  - All reports, regardless of type, are numbered consecutively with respect to each MBA.

Data Field: *Entry Number/Total Number of Entries*

- Definition: Number for the specific entry within the set of ØI or NC entries contained in the report.
- Format: 002:***…***/***…***#
  - sequential number of the ØI or NC entry;
  - slash (/); and
  - total number of ØI or NC entries in the report.

- Business rules:
  - Always start with 1 within each set of ØI and NC entries.
  - The total number of ØI or NC entries may be omitted, as well as the preceding slash in entries except for the first ØI and NC entry of a report, where it is mandatory.

Data Field: *Report Date*

- Definition: Date when the report was produced.
- Format: 003:[********][******]#
  - the [four] [last two] digits of the current year;
  - the two-digit designation of the month; and
  - the two-digit designation of the day.

- Business rule:
  - The year can be indicated either with four digits or with the last two digits; therefore, the entry format can be either eight or six characters long.

Data Field: *Report Type*

- Definition: Type of report.

- Format: 010:*#
  – Single character.

- Business rules:
  – T should be used for textual report.
  – Optional; may use if referring to a specific accounting report.

Data Field: *Concise Note Reference*

- Definition: Entry or report to which the concise note refers.
- Format: 099:*/***…***# or 099:* /***…***/***…***#
  – R, if the concise note refers to a report as a whole; in this case followed by a
    ▪ slash (/); and
    ▪ report number to which the concise note refers;

  – E, if it is related to a specific entry; in this case followed by a
    ▪ slash (/);
    ▪ report number;
    ▪ another slash (/); and
    ▪ the entry number within the report to which the concise note refers.

- Business rule:
  – Optional; may be used if referring to a specific accounting report.

Data Field: *Facility Code*

- Definition: Identification code of the facility containing the reporting MBA.
- Format: 207:****#
  – Four-character code.

- Business rules:
  – Optional.
  – The facility code is specified in the relevant facility attachment.

Data Field: *MBA Code*

- Definition: Identification code of the MBA submitting the report.
- Format: 307:****#
  – Four-character code.

- Business rules:
  – Optional.
  – The MBA code is specified in the relevant facility attachment.

Data Field: *Text of Concise Note*

- Definition: Free-format text that provides clarifications, amplifications, and other unformatted information (e.g., relevant burn-up values, relevant aspects of the operational program).
- Format: 391:***…***#

- Business rules:
  - Text is free format, but can use only Latin capital letters, numerals, and permitted special symbols.
  - Maximum of 2,000 characters may be used in a single entry.

5. REFERENCES

[1] *Treaty on the Non-Proliferation of Nuclear Weapons*, INFCIRC/140 (Vienna: International Atomic Energy Agency [IAEA], 1970).

[2] *The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, INFCIRC/153 (Corrected) (Vienna: International Atomic Energy Agency [IAEA], 1972).

[3] *Nuclear Material Accounting Handbook*, Services Series 15 (Vienna: IAEA, 2008).

[4] *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols*, Services Series 21 (Vienna: IAEA, 2012).

[5] *Safeguards Implementation Practices Guide on Provision of Information to the IAEA*, Services Series 33 (Vienna: IAEA, 2016).

[6] *IAEA Safeguards Glossary*, International Nuclear Verification Series No. 3 (Vienna: IAEA, 2001).

APPENDIX A. IAEA COUNTRY CODES

APPENDIX A. IAEA COUNTRY CODES

Table A-1. Country codes used in fixed and labeled format reports.

LIST OF IAEA COUNTRY CODES FOR NUCLEAR MATERIAL ACCOUNTANCY PURPOSES 2003-05-01			
EURATOM	W	LIBYAN ARAB JAMAHIRIYA	LI
ABACC	Y	LIECHTENSTEIN	LN
AFGHANISTAN	AF	LITHUANIA, REPUBLIC OF	LT
ALBANIA	AL	LUXEMBOURG	LX
ALGERIA	DZ	MACAO	ME
ANDORRA	AD	MADAGASCAR	RM
ANGOLA	AG	MALAWI	MW
ANTIGUA AND BARBUDA	AB	MALAYSIA	MY
ARGENTINA	RA	MALDIVES	MD
ARMENIA	AM	MALI	ML
AUSTRALIA	AS	MALTA	MT
AUSTRIA	AU	MARSHALL ISLANDS	MH
AZERBAIJAN	AR	MARTINIQUE	MQ
BAHAMAS	BA	MAURITANIA	MU
BAHRAIN	BH	MAURITIUS	MS
BANGLADESH	BD	MEXICO	MX
BARBADOS	BB	MICRONESIA, FEDERATED STATES OF	MF
BELARUS, REPUBLIC OF	BY	MONACO	MC
BELGIUM	BL	MONGOLIA	MN
BELIZE	BZ	MONTSERRAT	MR
BENIN	BE	MOROCCO	MA
BERMUDA	BM	MOZAMBIQUE	MB
BHUTAN	BT	MYANMAR	BU
BOLIVIA	BO	NAMIBIA	NM
BOSNIA AND HERZEGOVINA	HB	NAURU	NU
BOTSWANA	RB	NEPAL	NP
BRAZIL	BR	NETHERLANDS	NL
BRITISH VIRGIN ISLANDS	BV	NETHERLANDS ANTILLES	NA
BRUNEI DARUSSALAM	BN	NEW CALEDONIA	NC
BULGARIA	BG	NEW ZEALAND	NZ
BURKINA FASO	HV	NICARAGUA	NI
BURUNDI	RU	NIGER	NG
CAMBODIA	KR	NIGERIA	NF
CAMEROON	TC	NIUE	NE
CANADA	CN	NORWAY	NO
CAPE VERDE	CV	OMAN	AO
CAYMAN ISLANDS	CM	PACIFIC ISLANDS	PC
CENTRAL AFRICAN REPUBLIC	CA	PAKISTAN	PK
CHAD	CD	PALAU, REPUBLIC OF	PU
CHILE	CE	PALESTINE	PT
CHINA,PEOPLE'S REPUBLIC OF(*)	X	PANAMA	PA
COLOMBIA	CO	PAPUA NEW GUINEA	PN
COMOROS	KM	PARAGUAY	PY
CONGO, PEOPLE'S REPUBLIC OF	CB	PERU	PE
COOK ISLANDS	KS	PHILIPPINES	PI
COSTA RICA	CR	POLAND	PL

LIST OF IAEA COUNTRY CODES FOR NUCLEAR MATERIAL ACCOUNTANCY PURPOSES 2003-05-01			
COTE D'IVOIRE	CI	PORTUGAL	PO
CROATIA	CT	PUERTO RICO	PR
CUBA	CU	QATAR	SQ
CYPRUS	CY	REPUBLIC OF MOLDOVA	MO
CZECH REPUBLIC	CZ	ROMANIA	RO
DEMOCRATIC PEOPLE'S REP. OF KOREA	KD	RUSSIA	Z
DEMOCRATIC REPUBLIC OF THE CONGO	CK	RWANDA	RW
DENMARK	DK	SAINT HELENA	SH
DJIBOUTI	DJ	SAINT KITTS AND NEVIS	SK
DOMINICA	DM	SAINT LUCIA	SC
DOMINICAN REPUBLIC	DO	SAINT VINCENT AND THE GRENADINES	VG
ECUADOR	EC	SAMOA	SS
EGYPT	ET	SAN MARINO	SM
EL SALVADOR	SV	SAO TOME AND PRINCIPE	ST
EQUATORIAL GUINEA	GE	SAUDI ARABIA	SA
ERITREA	ER	SENEGAL	SE
ESTONIA, REPUBLIC OF	EA	SERBIA AND MONTENEGRO	IU
ETHIOPIA	EP	SEYCHELLES	SY
FIJI	IF	SIERRA LEONE	SL
FINLAND	SF	SINGAPORE	SG
FRANCE	F	SLOVAKIA	SX
FRENCH GUIANA	GF	SLOVENIA	VE
GABON	GA	SOLOMON ISLANDS	SB
GAMBIA	GM	SOMALIA	SO
GEORGIA	GO	SOUTH AFRICA	AZ
GERMANY	DF	SPAIN	ES
GHANA	GH	SRI LANKA	CL
GREECE	GR	SUDAN	SN
GREENLAND	GL	SURINAME	SI
GRENADA	GD	SWAZILAND	SD
GUATEMALA	GT	SWEDEN	SW
GUINEA BISSAU	GI	SWITZERLAND	CH
GUINEA, REPUBLIC OF	GN	SYRIAN ARAB REPUBLIC	SR
GUYANA	GU	TAJIKISTAN	TK
HAITI	RH	THAILAND	TH
HOLY SEE	HS	THE FORMER YUGOSLAV RP OF MACEDONIA	MK
HONDURAS	HO	TOGO	TG
HUNGARY	HU	TOKELAU	TL
IAEA TOKYO FIELD OFFICE	IJ	TONGA	TO
IAEA TORONTO FIELD OFFICE	IC	TRINIDAD AND TOBAGO	TT
ICELAND	IS	TUNISIA	TN
INDIA	IN	TURKEY	TR
INDONESIA	RI	TURKMENISTAN	TM
INTERNATIONAL ATOMIC ENERGY AGENCY	IA	TUVALU	TU
IRAN, ISLAMIC REPUBLIC OF	IR	UGANDA	EU
IRAQ	IQ	UKRAINE	RK
IRELAND	ID	UNITED ARAB EMIRATES	AE
ISRAEL	IL	UNITED KINGDOM	Q
ITALY	IT	UNITED REPUBLIC OF TANZANIA	TA
JAMAICA	AJ	UNITED STATES OF AMERICA	U

Table A-1. Country codes used in fixed and labeled format reports (continued).

LIST OF IAEA COUNTRY CODES FOR NUCLEAR MATERIAL ACCOUNTANCY PURPOSES 2003-05-01			
JAPAN	J	URUGUAY	GY
JORDAN	HJ	UZBEKISTAN	KT
KAZAKHSTAN	KA	VANUATU	VU
KENYA	KN	VENEZUELA	NV
KIRIBATI	KI	VIET NAM, SOCIALIST REPUBLIC OF	RV
KOREA, REPUBLIC OF	KO	VIRGIN ISLANDS (USA)	VI
KUWAIT	KW	WESTERN SAHARA	SJ
KYRGYZSTAN	KY	YEMEN, REPUBLIC OF	EN
LAO PEOPLE'S DEMOCRATIC REPUBLIC	LA	ZAMBIA	RZ
LATVIA, REPUBLIC OF	LV	ZIMBABWE	MI
LEBANON	RL		
LESOTHO	LS		
LIBERIA	LB	(*) CODE FOR TAIWAN, CHINA: TW	

Notes to the country code list:

1. Euratom uses W for all MBA codes for the nonnuclear weapon States. Foreign partners should indicate the nonnuclear weapon States with the partner country code of W.
2. For the nuclear weapon States of France (F) and the United Kingdom (Q), which are members of Euratom, the codes F and Q are reported on their own and not under the Euratom code W.
3. When reporting imports and exports, if the partner MBA or Facility Code is not known, report the partner country code.

APPENDIX B. FIXED FORMAT REPORTING FORMS

APPENDIX B-1. INVENTORY CHANGE REPORT FORM R.01.1/C

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c																		

COUNTRY..................
FACILITY.................................
MATERIAL BALANCE AREA...

PERIOD COVERED BY REPORT FROM.................. TO..........................
REPORT NO...................................
PAGE NO...... OF ....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA					MEASUR. BASIS	CONCISE NOTE	CORRECTION TO	
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	▓			REPORT NO.	ENTRY NO.
1	3	4	10	14	18	20	21	29	33	37	38	46	48	56	72	73	74	78 80
																		2
																		2
																		2
																		2
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Figure B-1. Inventory Change Report form R.01.1/c.

B-3

APPENDIX B-2. INVENTORY CHANGE REPORT FORM R.01.2 FOR ADDITIONAL ISOTOPES

INVENTORY CHANGE REPORT (ICR) FORM R.01.2

COUNTRY ....

FACILITY ....

MATERIAL BALANCE AREA ....

PERIOD COVERED BY REPORT: FROM .... TO ....

REPORT No. ....

PAGE No. .... OF .... PAGES   SIGNATURE ....

Figure B-2. Inventory Change Report form R.01.2.

APPENDIX B-3. PHYSICAL INVENTORY LISTING FORM R.02/C

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/c															

COUNTRY.....:..........

FACILITY............................

DATE..

REPORT NO. ....

MATERIAL BALANCE AREA.....................

PAGE NO. .... OF .... PAGES

SIGNATURE:

ENTRY NO.	CONTINUATION	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA					MEASUR.BASIS	CONCISE NOTE	CORRECTION TO		
						ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)				REPORT NO.	ENTRY NO.	

Figure B-4. Physical Inventory Listing report form R.02/c.

B-5

APPENDIX B-4. MATERIAL BALANCE REPORT FORM R.03

MATERIAL BALANCE REPORT (MBR) FORM R.03										
COUNTRY.................			REPORTING PERIOD, FROM ....TO........................							
FACILITY............................			REPORT NO.							
MATERIAL BALANCE AREA........................			PAGE NO. .... OF .... PAGES				SIGNATURE:			

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)		CONCISE NOTE	CORRECTION TO		
									REPORT NO.	ENTRY NO.	6
											7
											7
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											7
											7

Figure B-4. Material Balance Report form R.03.

APPENDIX B-5. CONCISE NOTE REPORTING FORM

CONCISE NOTE

COUNTRY: _____   ATTACHED TO REPORT NUMBER: _____   DATE: _____

FACILITY: _____

MBA: _____   SIGNATURE:

MBA	REPORT	ENTRY	TEXT OF CONCISE NOTE (UP TO 68 CHARACTERS PER LINE)
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C
C			C

Figure B-5. Concise Note form.

APPENDIX C. FIXED FORMAT REPORTING CODES

APPENDIX C. FIXED FORMAT REPORTING CODES

Table C-1. Inventory change codes (columns 19–20).

Keyword	Code	Explanation
Receipt foreign	RF	Nuclear material imported into [Country].
Receipt domestic	RD	Domestic receipt of nuclear material from another MBA.
Receipt at starting point	RS	Domestic receipt of nuclear material at starting point of safeguards pursuant to Article 34(c) of the CSA.
Receipt from nonsafeguarded activity	RN	Domestic receipt of nuclear material from non-safeguarded (permitted military) activity.
Nuclear production	NP	Production of special fissionable materials in a reactor (Pu, U_{233}).
Deexemption, use	DU	Reapplication of safeguards on nuclear material previously exempted therefrom pursuant to Article 37 of the CSA.
Deexemption, quantity	DQ	Reapplication of safeguards on nuclear material previously exempted therefrom pursuant to Article 37 of the CSA.
Shipment foreign	SF	Nuclear material exported out of [Country].
Shipment domestic	SD	Domestic transfer of nuclear material to another MBA.
Shipment to nonsafeguarded activity	SN	Domestic transfer of nuclear material to nonsafeguarded (i.e., permitted military) activity.
Nuclear loss	LN	Consumption of nuclear material due to its transformation into other element(s) or isotope(s) as a result of a nuclear reaction.
Measured discard	LD	Operational loss (i.e., loss of a measured or estimated [on the basis of measurement]) quantity of nuclear material from processing that has been disposed of in such a way that it is not suitable for further nuclear use).
Transfer to retained waste	TW	Transfer to the retained waste category of measured nuclear material that is deemed to be irrecoverable, to be stored at the MBA, and to be deleted from the inventory of the MBA.
Transfer from retained waste	FW	Retransfer of material, which had been stored at the MBA as retained waste, to the nuclear material inventory. This applies whenever material in the retained waste category is removed from storage either for processing at the MBA or for shipment from the MBA.
Exemption, use	EU	Exemption of nuclear material from safeguards pursuant to Article 36 of the CSA.
Exemption, quantity	EQ	Exemption of nuclear material from safeguards pursuant to Article 37 of the CSA.
Termination	TU	Termination of safeguards on nuclear material pursuant to Article 35 of the CSA.
Accidental loss	LA	Irretrievable and inadvertent loss of a known quantity of nuclear material as a result of an operational accident.
Accidental gain	GA	Nuclear material unexpectedly found to be present in the MBA, except when detected in the course of a physical inventory taking.
Shipper/receiver difference	DI	The difference between the batch quantity reported as received (always on shipper's data) and the quantity as measured by the operator of the receiving MBA.
Decrease in batch content	RM	The quantity by which the batch mentioned in the entry is diminished. Used for the application of batch follow-up in the MBA.
Increase in batch content	RP	The quantity of material added to the batch mentioned in the entry from another batch. Used for the application of batch follow-up in the MBA.

Table C-2. Material description code—character (1): physical form (column 33).

Note: There are two possible sets of material description codes that can be specified in Code 10, and they are mutually exclusive. The older set of codes is still used by some States, so reference to the relevant Code 10 is necessary to determine which are to be used. The codes described below more completely define nuclear material batches, although both sets provide what is necessary for the implementation of IAEA safeguards.

Keyword	Code	Explanation
Fuel elements	B	Complete fuel elements for a given reactor system (e.g., assemblies or bundles)
Fuel components	D	Components of fuel elements (e.g., pins and plates)
Powders	F	Powders, nonceramic: any powdered material other than ceramic grade oxides and carbides
Powder, ceramic	G	Powders, ceramic grade: high-fired oxide or carbide specially prepared for ceramic fuel manufacture
Formed, green	H	Green pellets and particles: formed by pressing or granulating mixtures of ceramic grade powder with a binder, before sintering
Ceramics	J	Ceramic pellets and particles: as above, after debonding and sintering
Coated particles	K	Ceramic particles that have been given a protective coating (e.g., of SiC)
Solids, other	Ø	Solid materials other than those specified above (e.g., ingots, billets, extrusion pieces), but not mixed materials
Liquids	N	Aqueous solutions, organic, or other liquids
Residues, scrap	R	Residues and scrap arises from production process, intended to be recycled or recovered
Sealed sources	QS	Sources of radiation consisting of permanently encapsulated fissile materials
Waste, solid	T	Solid wastes intended for disposal
Waste, liquid	U	Liquid wastes intended for disposal
Small samples, specimens	V	Analytical samples or specimens, collected together into a single batch

Table C-3. Material description code—character (2): chemical form (column 34).

Keyword	Code	Explanation
Elemental	D	Unalloyed metal
Fluoride	E	Any fluoride except hexafluorides
Hex	G	Hexafluoride
Nitrate	J	Nitrate
ADU	K	Ammonium diuranate
Dioxide	Q	Dioxide
Trioxide	T	Trioxide
Oxide (3/8)	U	Oxide with formula M_3O_8
Other oxides	R	Other oxides, including mixtures of different oxides of the same element
Carbide	W	Carbide
Oxide/graphite	X	Oxide/graphite mixture: (e.g., high-temperature reactor [HTR] fuels)
Carbide/graphite	Y	Carbide/graphite mixture: (e.g., HTR fuels)
Nitride	Z	Nitride
Organic	1	Organic compounds
Other compounds	2	Other compounds, salts, and their mixtures
Al alloys	3	Aluminum and Al–Si alloys
Si alloys	4	Silicium alloys (except Al–Si alloys) and silicides
Zr alloys	5	Zirconium alloys
Mo and Ti alloys	6	Binary and ternary alloys with molybdenum and titanium
Other alloys	7	Alloys other than those above
Miscellaneous	Ø	Materials of various chemical forms collected together into a single batch (e.g., analytical samples and specimens)

Table C-4. Material description code—character (3): containment (column 35).

Keyword	Code	Explanation
Uncontained	1	Materials not in containers: free-standing items including fuel elements and components, if uncrated
Fuel units	2	Discrete fuel units and components, in shipping or storage containers
Flask	3	Powders, nonceramic: any powdered material other than ceramic-grade oxides and carbides
In-core	4	Reactor, in-core fuel elements only
Vessel, calibrated	5	Process vessels and tanks, calibrated
Vessel, uncalibrated	6	Process vessels and tanks, uncalibrated; pipes
Tray	7	Open trays, racks, skips
Birdcage	8	Special, critically safe container
"Container" and volume range		**(liters)**
Sample bottles and other small containers	A	<0.5
Bottles, fibrepacks, cans	E	0.5–1
Bottles, fibrepacks, cans	G	>1–5
Bottles, fibrepacks, cans, and UF_6 cylinders	H	>5–10
Fibrepacks, cans	J	>10–15
Fibrepacks, drums	K	>15–20
Drums	L	>20–50
Drums	M	>50–100
Drums, barrels	N	>100–200
Drums, barrels	Q	>200–500
UF_6 cylinders (2 t)	R	>500–1,000
Drums, barrels (10–14 t)	U	>1,000–5,000
Large containers (e.g., tank trucks)	V	>5,000
Other containers	Ø	

Table C-5. Material description code—character (4): irradiation status and quality (column 36).

Keyword	Code Non-irradiated	Code Irradiated	Explanation
Fresh fuel	F		Fresh fuel elements or assemblies
Irradiated		G	Irradiated fuel prior to reprocessing
Manufactured	A	H	Manufactured articles (other than complete fuel elements) for which no sampling is possible, but which are suitable for nondestructive measurement
Pure, stable	B	J	Homogeneous material that has been produced to tight specifications governing purity and stability of both physical and chemical form (e.g., product, intermediate product, certain feed materials)
Pure	C	K	Materials conforming to high purity specifications that may be slightly heterogeneous or less stable than the ones categorized as "pure, stable" (e.g., certain intermediate products, clean scrap and recycle, feed materials)
Heterogeneous	D	L	Heterogeneous materials of generally similar composition that do not conform to purity specifications (e.g., most scrap and recycle)
Variable	E	M	Heterogeneous materials of variable and/or mixed composition, possibly low in nuclear material content (e.g., dirty scrap, leached hulls, waste)

Table C-6. Element code (column 37).

Keyword	Code
Depleted uranium	D
Natural uranium	N
Enriched uranium	E
Uranium, unified	U
Plutonium	P
Thorium	T

Table C-7. Elements and corresponding weight units (columns 46–47).

Element	Unit
Plutonium	Grams
Total uranium for enriched uranium	Grams
Thorium	Kilograms (or, if desired, grams)
Natural uranium	Kilograms (or, if desired, grams)
Depleted uranium	Kilograms (or, if desired, grams)
Unified uranium	Grams if the entry refers to enriched uranium
Unified uranium	Kilograms if the entry refers to depleted or natural uranium. All unified uranium may, if desired, be reported in grams.

Table C-8. Isotope codes (column 56).

Description	Code
For fissile isotope content of U_{235} only	G
For fissile isotope content of U_{233} plus U_{235}	J
For fissile isotope content of $U_{233\ only}$	K

Table C-9. Measurement basis code (column 72).

Keyword	Code	Explanation
Measured	M	The batch data are based on measurements made at the MBA, including KMPs on its boundary.
Measured elsewhere	N	The batch data are based on measurements made at another MBA.
Tagged	T	The batch data are based on measurements previously made at the same MBA and have been reported for that MBA in an ICR or PIL, and the measurements have not been repeated.
Labeled	L	The batch data are based on measurements previously made at another MBA and have been reported for the present MBA in an ICR or PIL without remeasurement.

Table C-10. MBR entry name.

Keyword	Code	Explanation
Physical beginning inventory	PB	PB should be equal to the PE of the previous MBR relating to the same category of material.
Inventory changes: for keywords and codes relating to various types of inventory change, see Appendix C, Table C-1.		For each type of inventory change, as applicable for the MBA in question, one consolidated entry should be made for the entire material balance period; list increases in the inventory first and then decreases therein; receipts of nuclear material at the facility should be entered on shipper's data. Category changed as a result of blending, enrichment, or irradiation should be reported as indicated in Section 3.5.3 of this document.
Ending book inventory	BE	The algebraic sum of the PB and the inventory changed, not including any rounding adjustments reported in the MBR.
Shipper/receiver difference	DI	One consolidated entry should be made for all shipper/receiver differences over the entire reporting period, if applicable.
Adjusted ending book inventory	BA	The algebraic sum of the PB and of the inventory changed over the period, adjusted to take account of the shipper/receiver differences.
Physical ending inventory	PE	The sum of all measured and derived batch quantities of nuclear material on hand at the date of the physical inventory taking.
MUF	MF	Material unaccounted for: calculated as the difference between adjusted ending book inventory and the physical inventory.
Rounding adjustment to entry XX	RAXX	The quantity to be added to the rounded sum to make it equal to the sum of the rounded terms. A rounding adjustment is made to an entry in the MBR on which the IAEA has been informed differently through ICRs and PILs, to bring the MBR entry into agreement with the corresponding figures established on the basis of ICRs and PILs. The rounding adjustments should be coded RAXX, where XX stands for the code of the entry to which the rounding adjustment pertains (e.g., RALN means a rounding adjustment to the consolidated entry on the nuclear loss). In the case of a rounding adjustment to the ending book inventory, adjusted ending book inventory, or MUF, the following formulae should be used, respectively: $$RABE = PB + IC_{MBR} - BE$$ $$RABA = PB + IC_{MBR} - DI - BA$$ $$RAMF = BA - PE - MF$$ Where IC_{MBR} represents the sum of the consolidated inventory changes as reported in the MBR, taken with the appropriate sign indicating increases or decreases.

APPENDIX D. FIXED FORMAT REPORT EXAMPLES

APPENDIX D-1. INVENTORY CHANGE REPORT EXAMPLES

Example 1—Fixed format receipt domestic of spent fuel.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**..................

FACILITY.........**NND-**.......................

MATERIAL BALANCE AREA...............**NND1**.........................

PERIOD COVERED BY REPORT FROM......**141201**............. TO.......**141231**..................

REPORT NO.........**15**........................

PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	▮	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO REPORT NO.	ENTRY NO.	
																			1
1		141215	NN-B	NND1	RD	3	045C8	1	BQ1G	E	163257	G	1306	G	N				2
2	C	141215	NN-B	NND2	RD	3	045C8	0		P	1498	G			N				2
																			2
																			2
																			2
																			2
																			2
																			2
																			2
																			2

D-3

Example 2—Addition of an entry to a previous report: Report 64, entry 1 is added as entry 24 to report 63.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**..................
FACILITY.........**NNB-**........................
MATERIAL BALANCE AREA...............**NN-B**........................

PERIOD COVERED BY REPORT FROM......**021101**............ TO.......**021130**..................
REPORT NO.........**63**..........................
PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO REPORT NO.	ENTRY NO.	
																			1
1		021122	NND3	NN-B	RD	1	IBL-0901	1	BV2F	E	170994	G	5163	G	N				2
2		021122	NND3	NN-B	RD	1	IBL-0902	1	BV2F	E	170927	G	5162	G	N				2
																			2
																			2
23		021122	NND3	NN-B	RD	1	IBL-0923	1	BV2F	E	170938	G	5161	G	N				2
																			2

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**..................
FACILITY.........**NNB-**........................
MATERIAL BALANCE AREA...............**NN-B**........................

PERIOD COVERED BY REPORT FROM......**021201**............ TO.......**021231**..................
REPORT NO.........**64**..........................
PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO REPORT NO.	ENTRY NO.	
																			1
1		021122	NND3	NN-B	RD	1	IBL-0924	1	BV2F	E	170896	G	5160	G	N		63	24	2
																			2

Entry 1 of report 64 is used by the IAEA as entry 24 of report 63.
This addition process also applies to PILs and MBRs.
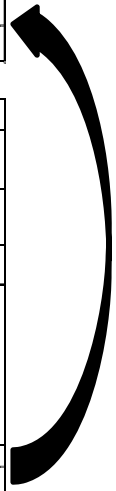
Example 3—Correction of an entry in a previous report: Report 127, entry 1 corrects entry 18 in to report 126.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**................. PERIOD COVERED BY REPORT FROM......**061001**............. TO.......**061031**.................

FACILITY ....**NND-**....................... REPORT NO.........**126**.........................

MATERIAL BALANCE AREA..............**NND3**....................... PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

| ENTRY NO. | CONTINUATION | DATE OF INVENTORY CHANGE | MBA/COUNTRY | | TYPE OF INVENTORY CHANGE | KMP CODE | NAME OR NUMBER OF BATCH | NUMBER OF ITEMS IN BATCH | MATERIAL DESCRIPTION | ACCOUNTANCY DATA | | | | | ISOTOPE CODE | MEASUR. BASIS | CONCISE NOTE | CORRECTION TO | | |
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)					REPORT NO.	ENTRY NO.	
																					1
1		061001	NND3	NNA1	SD	3	CONT0367	1	FQJB	N	1298	KG				M				2
																					2
																					2
18		061001	NND3	NNA1	SD	3	CONT9833	1	FQJB	N	100	KG				M				2
																					2
																					2

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**................. PERIOD COVERED BY REPORT FROM......**061101**............. TO.......**061130**.................

FACILITY ....**NNB-**....................... REPORT NO.........**127**.........................

MATERIAL BALANCE AREA..............**NN-B**....................... PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

| ENTRY NO. | CONTINUATION | DATE OF INVENTORY CHANGE | MBA/COUNTRY | | TYPE OF INVENTORY CHANGE | KMP CODE | NAME OR NUMBER OF BATCH | NUMBER OF ITEMS IN BATCH | MATERIAL DESCRIPTION | ACCOUNTANCY DATA | | | | | ISOTOPE CODE | MEASUR. BASIS | CONCISE NOTE | CORRECTION TO | | |
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)					REPORT NO.	ENTRY NO.	
																					1
1		061001	NND3	NNA1	SD	3	CONT9833	1	FQJB	N	105	KG				M			126	18	2
																					2

Entry 1 of report 127 corrects the weight reported in report 126, entry 18. All data fields, including those that have not changed, must be reported. This correction process also applies to PILs and MBRs.

D-5

Example 4—Deletion of an entry in a previous report: Report 182, entry 1 deletes (deactivates) entry 17 in report 181.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**.................   PERIOD COVERED BY REPORT FROM......**070401**............ TO.......**070430**.................

FACILITY.........**NND-**......................   REPORT NO.........**181**.........................

MATERIAL BALANCE AREA...............**NND3**......................   PAGE NO...**1**... OF ....**2**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
																			1
																			2
																			2
16		070422	NND3	VV	SF	5	FUEL0114	1	BV2F	E	170994	G	5163	G	N				2
17		070422	NND3	VV	SF	5	FUEL0114	1	BV2F	E	170994	G	5163	G	N				2
																			2
																			2

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**.................   PERIOD COVERED BY REPORT FROM......**141001**............ TO.......141**031**...................

FACILITY.........**NNB-**......................   REPORT NO.........182.........................

MATERIAL BALANCE AREA...............**NN-B**......................   PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY FROM	MBA/COUNTRY TO	TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)	ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
																			1
1	A																181	17	2
																			2

Entry 1 of report 182 deletes (deactivates) one of the duplicate entries reporting batch FUEL0114 in report 182. Either one of the duplicate entries (16 or 17) could be deactivated. Deactivation is indicated by an A in position 3 (Continuation). This deletion process also applies to PILs and MBRs.
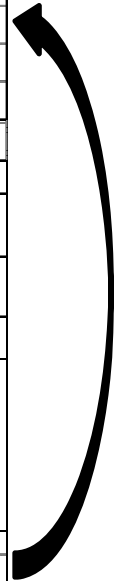
Example 5—Category change from natural uranium to enriched uranium.

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c

COUNTRY............**Neptune**..................
FACILITY.........**NNA-**........................
MATERIAL BALANCE AREA..............**NNA2**........................

PERIOD COVERED BY REPORT FROM......**171201**............. TO.......**171231**..................
REPORT NO.........**10**........................
PAGE NO...**1**... OF ....**1**....PAGES   SIGNATURE

ENTRY NO.	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA				ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (g)				REPORT NO.	ENTRY NO.	
1	3	4	10	14	18	20	21	29	33	37	38	46	48	56	72	73	74	78	80
1		171211		NNA2	NE	3	S144-976	1	GQJB	E	1000	G	7.120	G	T				2
																			2
																			2
																			2
																			2
																			2
																			2
																			2
																			2
																			2
																			2

Inventory change code NE indicates the batch of uranium has been removed from the natural uranium account and has been added to the enriched uranium account.

With category changes, the element of the higher enrichment (in this case, enriched uranium, element code E) must be reported.

Because the element reported is enriched uranium, the fissile weight is also required. The element and fissile weights will increase the enriched uranium account; the element weight will decrease the natural uranium account.

D-7

APPENDIX D-2. PHYSICAL INVENTORY LISTING EXAMPLES

Example 1—Physical inventory listing.

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/c															
COUNTRY .....**NN**..........						DATE...................**160812**.................................									
FACILITY ....**NNB-**................. MATERIAL BALANCE AREA ......**NN-B**...............						REPORT NO. ....**1**....................................... PAGE NO. .....**1**....... OF ....**3**........ PAGES					SIGNATURE:				

ENTRY NO.	CONTINUATION	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA			ISOTOPE CODE	MEASUR. BASIS	CONCISE NOTE	CORRECTION TO		
							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)				REPORT NO.	ENTRY NO.	
1	3	20	21	29	33	37	38	46	48	56	72	73	74	78	80
1		A	IBI500	1	BV1F	E	172575	g	5248	G	N				5
2		A	IBI501	1	BV1F	E	172629	g	5264	G	N				5
3		A	IBI502	1	BV1F	E	172649	g	5257	G	N				5
4		A	IBI503	1	BV1F	E	172565	g	5260	G	N				5
5		A	IBI504	1	BV1F	E	172577	g	5255	G	N				5
6		A	IBI505	1	BV1F	E	172529	g	5253	G	N				5
7		A	IBI506	1	BV1F	E	172548	g	5256	G	N				5
8		A	IBI507	1	BV1F	E	172619	g	5252	G	N				5
9		A	IBI508	1	BV1F	E	172516	g	5241	G	N				5
10		A	IBI509	1	BV1F	E	172572	g	5240	G	N				5
11		A	IBI580	1	BV1F	E	172614	g	5253	G	N				5
12		A	IBI588	1	BV1F	E	172590	g	5259	G	N				5
13		A	IBI589	1	BV1F	E	172481	g	5247	G	N				5
14		A	IBI590	1	BV1F	E	172611	g	5265	G	N				5
15		A	IBI591	1	BV1F	E	172482	g	5243	G	N				5
16		A	IBI592	1	BV1F	E	172561	g	5249	G	N				5
17		A	IBI593	1	BV1F	E	172544	g	5251	G	N				5
18		A	IBI594	1	BV1F	E	172481	g	5235	G	N				5
19		A	IBI595	1	BV1F	E	172460	g	5234	G	N				5
20		A	IBI596	1	BV1F	E	172512	g	5238	G	N				5
21		A	IBI597	1	BV1F	E	172607	g	5240	G	N				5
22		A	IBI598	1	BV1F	E	172614	g	5244	G	N				5
23		A	IBI599	1	BV1F	E	172602	g	5249	G	N				5
24		A	IBI610	1	BV1F	E	171986	g	5221	G	N				5
25		A	IBI611	1	BV1F	E	172514	g	5247	G	N				5
26		A	IBI612	1	BV1F	E	172534	g	5250	G	N				5
27		A	IBI613	1	BV1F	E	172566	g	5249	G	N				5
28		A	IBI614	1	BV1F	E	171837	g	5222	G	N				5
29		A	IBI615	1	BV1F	E	171968	g	5227	G	N				5
30		A	IBI616	1	BV1F	E	172497	g	5244	G	N				5

Example 2—Reporting a PIL where no batches of nuclear material are in an MBA (i.e., a null PIL).

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/c															

COUNTRY.....**NN**........

FACILITY.......**NNA-**................

MATERIAL BALANCE AREA.....**NNA2**............

DATE.....**171001**...

REPORT NO. ....**37**...

PAGE NO. ....**1**.... OF .....**1**...... PAGES

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							ACCOUNTANCY DATA						CORRECTION TO		
ENTRY NO.	CONTINUATION	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)		MEASUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	4
1	A														5
															5
															5
															5
															5
															5
															5

Only one entry can be reported, with an A in position 3. This indicates an inactive entry and meets the criteria that a report must have at least one entry.

It is not correct to report one batch with a weight of zero, because that implies nuclear material (e.g., a small amount that rounds to zero) is on the inventory.

APPENDIX D-3. MATERIAL BALANCE REPORT EXAMPLES

Example 1—Material balance report.

MATERIAL BALANCE REPORT (MBR) FORM R.03

COUNTRY......**NN**...........

FACILITY......**NNB-**.....................

MATERIAL BALANCE AREA......**NN-B**..................

REPORTING PERIOD, FROM ...**160813**..TO....**160816**........

REPORT NO. **32**

PAGE NO. ...**1**...... OF ......**1**........ PAGES

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ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	ACCOUNTANCY DATA WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	CONCISE NOTE	CORRECTION TO REPORT NO.	ENTRY NO.	
1		PB	E	99999999	G	2600313	G				7
2	C	PB	E	21704095	G	0	G				7
3		RD	E	22038883	G	671462	G				7
4		LN	E	797389	G	427759	G				7
5		SF	E	12538288	G	131686	G				7
6		SD	E	6049136	G	61383	G				7
7		BA	E	99999999	G	2650947	G				7
8	C	BA	E	24358165	G	0	G				7
9		PE	E	99999999	G	2650947	G				7
10	C	PE	E	24358165	G	0	G				7
11		PB	P	387072	G						7
12		NP	P	186998	G						7
13		SF	P	97944	G						7
15		BA	P	426551	G						7

Note the use of continuation entries (2, 8, and 10) for reporting numbers greater than eight digits (including any decimal point).

Example 2—Reporting an MBR where no batches of nuclear material are on the physical beginning inventory, none are on the physical ending inventory, and no transactions (i.e., ICRs) have occurred during the material balance period (i.e., a null MBR).

				MATERIAL BALANCE REPORT (MBR) FORM R.03								

COUNTRY....**NN**..........

REPORTING PERIOD, FROM ....**160916**......TO.....**171001**..........

FACILITY.....**NNA-**................

REPORT NO. ....**38**...

MATERIAL BALANCE AREA.......**NNA2**.............

PAGE NO. .....**1**..... OF ....**1**...... PAGES

SIGNATURE:

1   5   9   25   28   31   45 52   70   74   80

												6

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	■	CONCISE NOTE	REPORT NO.	ENTRY NO.	
									CORRECTION TO		
1	3	18	37	38	46	48	56	73	74	78	80
1	**A**										7
											7
											7
											7
											7
											7
											7
											7
											7
											7
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> **Only one entry can be reported, with an A in position 3. This indicates an inactive entry and meets the criteria that a report must have at least one entry.**
>
> **It is not correct to report the physical beginning inventory (PB), adjusted ending book inventory (BA), and physical ending inventory (PE) as zero because this implies an inventory with small amounts that round to zero.**

Example 3—Category change reporting in an MBR.

MATERIAL BALANCE REPORT (MBR) FORM R.03												

COUNTRY.....**Neptune**.......... REPORTING PERIOD, FROM ......**170115**............TO.......**171220**.................

FACILITY.........**NNA-**................. REPORT NO. ....**11**......................................

MATERIAL BALANCE AREA......**NNA2**.............. PAGE NO. .....**1**....... OF ....**1**........ PAGES SIGNATURE

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	ACCOUNTANCY DATA				ISOTOPE CODE	CONCISE NOTE	CORRECTION TO		
				WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)				REPORT NO.	ENTRY NO.	
1	3	18	37	38	46	48		56	73	74	78	80
1		PB	E	7891.650	G	197.230	G					7
2		NE	E	1000.000	G	7.120	G					7
3		BA	E	7929.650	G	245.230	G					7
4		PE	E	8889.150	G	204.150	G					7
5		MF	E	-38.000	G	-48.000	G					7
6		PB	N	5.319	KG							7
7		NE	N	1.000	KG							7
8		BA	N	4.319	KG							7
9		PE	N	4.319	KG							7

In fixed format Code 10, it is not required to report the entry name of NE in the natural uranium account.

However, it is a good practice to report the entry name of NE and adds clarity to the material balance of natural uranium.

The effect on the accounts is a decrease to the element weight in the natural uranium account.

The entry name NE indicates a category change of natural uranium to enriched uranium is reported for the enriched uranium account, with an element code of E.

The effect on the accounts is an increase to the element and fissile weights of the enriched uranium inventory.

APPENDIX D-4. CONCISE NOTE EXAMPLE

			CONCISE NOTE	

COUNTRY: **NN**   ATTACHED TO REPORT NUMBER: _ _ **112**___   DATE: _**20171015**_

FACILITY: **NNH-**

MBA: **NN-H**   SIGNATURE:

	MBA	REPORT	ENTRY	TEXT OF CONCISE NOTE (UP TO 68 CHARACTERS PER LINE)	
C	**NN-H**	**13**	**1**	**This is a Concise Note that refers to a specific line entry in report 112 for MBA NN-H**	C
C				**(The Concise Note indicator in entry 1 of report 13 should contain 'Y')**	C
C					C
C					C
C	**NN-H**	**13**		**By leaving the entry number blank means this Concise Note applies to all entries of report 112 for MBA NN-H**	C
C				**(Note that the Concise Note indicator is not set in the individual line entries for this Concise Note)**	C
C					C
C					C
C	**NN-H**			**For a Concise Note that refers to the MBA in general and not to a specific report and/or entry, leave the report and**	C
C				**(Note that the Concise Note indicator is not set in any line entries for this Concise Note)**	C
C					C
C					C
C					C
C					C
C					C
C					C
C					C
C					C
C					C
C					C

APPENDIX E. LABELED FORMAT REPORTING CODES

APPENDIX E-1. TYPE OF INVENTORY CHANGES

Table E-1. Type of inventory changes (label 411)

Keyword	Code	Explanation
Receipt foreign	RF	Nuclear material imported into [Country].
Receipt domestic	RD	Domestic receipt of nuclear material from another MBA.
Receipt at starting point	RS	Domestic receipt of nuclear material at starting point of safeguards pursuant to Article 34(c) of the CSA.
Receipt from nonsafeguarded activity	RN	Domestic receipt of nuclear material from nonsafeguarded (i.e., permitted military) activity.
Nuclear production	NP	Production of special fissionable materials in a reactor (Pu, U_{233}).
Deexemption, use	DU	Reapplication of safeguards on nuclear material previously exempted therefrom pursuant to Article 37 of the CSA.
Deexemption, quantity	DQ	Reapplication of safeguards on nuclear material previously exempted therefrom pursuant to Article 37 of the CSA.
Shipment foreign	SF	Nuclear material exported out of [Country].
Shipment domestic	SD	Domestic transfer of nuclear material to another MBA.
Shipment to nonsafeguarded activity	SN	Domestic transfer of nuclear material to nonsafeguarded (i.e., permitted military) activity.
Nuclear loss	LN	Consumption of nuclear material due to its transformation into other element(s) or isotope(s) as a result of a nuclear reaction.
Measured discard	LD	Operational loss (i.e., loss of a measured or estimates [on the basis of measurement] quantity of nuclear material from processing that has been disposed of in such a way that it is not suitable for further nuclear use).
Transfer to retained waste	TW	Transfer to the retained waste category of measured nuclear material, which is deemed to be irrecoverable, to be stored at the MBA and to be deleted from the inventory of the MBA.
Transfer from retained waste	FW	Retransfer of material, which had been stored at the MBA as retained waste, to the nuclear material inventory. This applies whenever material in the retained waste category is removed from storage either for processing at the MBA or for shipment from the MBA.
Exemption, use	EU	Exemption of nuclear material from safeguards pursuant to Article 36 of the CSA.
Exemption, quantity	EQ	Exemption of nuclear material from safeguards pursuant to Article 37 of the CSA.
Termination	TU	Termination of safeguards on nuclear material pursuant to Article 35 of the CSA.
Accidental loss	LA	Irretrievable and inadvertent loss of a known quantity of nuclear material as a result of an operational accident.
Accidental gain	GA	Nuclear material unexpectedly found to be present in the MBA, except when detected in the course of a physical inventory taking.
Category change (with the appropriate code as shown)	EN ED NE ND DE DN	The quantity of uranium that has changed category as a result of blending, enrichment, depletion, or burn-up. The first letter denotes the original, the second letter the resulting category: (E = enriched, N = natural, D = depleted uranium). The material description codes (labels 430 and, if appropriate, 435) should be those for the resulting material. The weight data (in labels 610, 620, 630, 640, 660, 670, 770, and 780, as appropriate) should be provided for both the originating and the resulting categories. These entries should be consolidated into the material balance for both categories.

Table E-1. Type of inventory changes (label 411) (continued)

Keyword	Code	Explanation
Shipper/receiver difference	DI	The difference between the batch quantity report as received (always on shipper's data) and the quantity of the same batch as measured by the operator of the receiving MBA.
Decrease in batch content	RM	The quantity by which the batch mentioned in the entry is diminished due to rebatching.
Increase in batch content	RP	The quantity of material by which the batch mentioned in the entry is increased due to rebatching.

APPENDIX E-2. MATERIAL DESCRIPTION CODE

Note: There are two possible sets of material description codes that can be specified in Code 10, and they are mutually exclusive. The older set of codes is still used by some States, so reference to the relevant Code 10 is necessary to determine which are to be used. The codes described below more completely define nuclear material batches, although both sets provide what is necessary for the implementation of IAEA safeguards.

Table E-2. Physical form (label 430, first subfield)

Keyword	Code	Explanation
Fuel elements	B	Complete fuel elements for a given reactor system (e.g., assemblies or bundles)
Fuel components	D	Components of fuel elements (e.g., pins and plates)
Powders	F	Powders, nonceramic: any powdered material other than ceramic-grade oxides and carbides
Powder, ceramic	G	Powders, ceramic grade: high-fired oxide or carbide specially prepared for ceramic fuel manufacture
Formed, green	H	Green pellets and particles: formed by pressing or granulating mixtures of ceramic-grade powder with a binder, before sintering
Ceramics	J	Ceramic pellets and particles: as above, after debonding and sintering
Coated particles	K	Ceramic particles that have been given a protective coating (e.g., of SiC)
Solids, other	Ø	Solid materials other than those specified above (e.g., ingots, billets, extrusion pieces), but not mixed materials
Liquids	N	Aqueous solutions, organic, or other liquids
Residues, scrap	R	Residues and scrap arising from the production process, intended to be recycled or recovered
Sealed sources	QS	Sources of radiation consisting of permanently encapsulated fissile materials
Waste, solid	T	Solid wastes intended for disposal
Waste, liquid	U	Liquid wastes intended for disposal
Small samples, specimens	V	Analytical samples or specimens, collected together into a single batch

Table E-3. Chemical form (label 430, second subfield)

Keyword	Code	Explanation
Elemental	D	Unalloyed metal
Fluoride	E	Any fluoride except hexafluorides
Hex	G	Hexafluoride
Nitrate	J	Nitrate
ADU	K	Ammonium diuranate
Dioxide	Q	Dioxide
Trioxide	T	Trioxide
Oxide (3/8)	U	Oxide with formula M_3O_8
Other oxides	R	Other oxides, including mixtures of different oxides of the same element
Carbide	W	Carbide
Oxide/graphite	X	Oxide/graphite mixture: (e.g., HTR fuels)
Carbide/graphite	Y	Carbide/graphite mixture: (e.g., HTR fuels)
Nitride	Z	Nitride
Organic	1	Organic compounds
Other compounds	2	Other compounds, salts, and their mixtures
Al alloys	3	Aluminum and Al–Si alloys
Si alloys	4	Silicium alloys (except Al–Si alloys) and silicides
Zr alloys	5	Zirconium alloys
Mo and Ti alloys	6	Binary and ternary alloys with molybdenum and titanium
Other alloys	7	Alloys other than those above
Miscellaneous	Ø	Materials of various chemical forms collected together into a single batch (e.g., analytical samples and specimens)

Table E-4. Containment (label 430, third subfield)

Keyword	Code	Explanation
Uncontained	1	Materials not in containers: free-standing items including fuel elements and components, if uncrated
Fuel units	2	Discrete fuel units and components, in shipping or storage containers
Flask	3	Powders, non-ceramic: any powdered material other than ceramic-grade oxides and carbides
In-core	4	Reactor, in-core fuel elements only
Vessel, calibrated	5	Process vessels and tanks, calibrated
Vessel, uncalibrated	6	Process vessels and tanks, uncalibrated; pipes
Tray	7	Open trays, racks, skips
Birdcage	8	Special, critically safe container
"Container" and volume range		**(liters)**
Sample bottles and other small containers	A	<0.5
Bottles, fibrepacks, cans	E	0.5–1
Bottles, fibrepacks, cans	G	>1–5
Bottles, fibrepacks, cans, and UF_6 cylinders	H	>5–10
Fibrepacks, cans	J	>10–15
Fibrepacks, drums	K	>15–20
Drums	L	>20–50
Drums	M	>50–100
Drums, barrels	N	>100–200
Drums, barrels	Q	>200–500
UF_6 cylinders (2 t)	R	>500–1,000
Drums, barrels (10–14 t)	U	>1,000–5,000
Large containers (e.g., tank trucks)	V	>5,000
Other containers	Ø	

Table E-5. Irradiation status and quality (label 430, fourth subfield)

Keyword	Code Non-irradiated	Code Irradiated	Explanation
Fresh fuel	F		Fresh fuel elements or assemblies
irradiated		G	Irradiated fuel prior to reprocessing
Manufactured	A	H	Manufactured articles (other than complete fuel elements) for which no sampling is possible, but which are suitable for nondestructive measurement
Pure, stable	B	J	Homogeneous material that has been produced to tight specifications governing purity and stability of both physical and chemical form (e.g., product, intermediate product, certain feed materials)
Pure	C	K	Materials conforming to high purity specifications, which may be slightly heterogeneous or less stable than the ones categorized as "pure, stable" (e.g., certain intermediate products, clean scrap and recycle, feed materials)
Heterogeneous	D	L	Heterogeneous materials of generally similar composition that do not conform to purity specifications (e.g., most scrap and recycle)
Variable	E	M	Heterogeneous materials of variable and/or mixed composition, possibly low in nuclear material content (e.g., dirty scrap, leached hulls, waste)

APPENDIX E-3. WEIGHT DATA LABELS

Table E-6. Individual numeric labels for weight data

Label	Data field name	Numeric data
600	Unified uranium	Weight of element
610	Natural uranium	Weight of element
620	Depleted uranium	Weight of element
630	Enriched uranium	Weight of element
640	Enriched/unified uranium U_{233} content	Weight of isotope
650	Enriched/unified uranium U_{234} content	Weight of isotope
660	Enriched/unified uranium $U_{233} + U_{235}$ content	Weight of isotopes
670	Enriched/unified uranium U_{235} content	Weight of isotope
680	Enriched/unified uranium U_{236} content	Weight of isotope
690	Enriched/unified uranium U_{238} content	Weight of isotope
700	Plutonium	Weight of element
710	Plutonium Pu_{238} content	Weight of isotope
720	Plutonium Pu_{239} content	Weight of isotope
730	Plutonium Pu_{240} content	Weight of isotope
740	Plutonium Pu_{241} content	Weight of isotope
750	Plutonium Pu_{242} content	Weight of isotope
760	Plutonium $Pu_{239} + Pu_{241}$ content	Weight of isotopes
770	Natural uranium fissile content	Weight of isotope
780	Depleted uranium fissile content	Weight of isotope
800	Thorium	Weight of element

APPENDIX E-4. MATERIAL BALANCE REPORT ENTRY NAMES

Table E-7. Entry names that only appear in material balance reports

Keyword	Code	Explanation
Physical beginning inventory	PB	PB should be equal to the PE of the previous MBR relating to the same category of material.
Inventory changes		For each type of inventory change as applicable for the MBA in question, one consolidated entry should be made for the entire material balance period.
Ending book inventory	BE	The algebraic sum of the PB and the inventory changes, not including any rounding adjustments reporting in the MBR.
Shipper/receiver difference	DI	One consolidated entry should be made for all shipper/receiver differences over the entire reporting period, if applicable.
Adjusted ending book inventory	BA	The algebraic sum of the PB and of the inventory changed over the period, adjusted to take account of the shipper/receiver differences.
Physical ending inventory	PE	The sum of all measured and derived batch quantities of nuclear material on hand at the date of the physical inventory taking.
MUF	MF	Material unaccounted for: calculated as the difference between the adjusted ending book inventory and the PE.
Rounding adjustment to entry XX	RAXX	The quantity to be added to the rounded sum to make it equal to the sum of the rounded terms. A rounding adjustment is made to an entry in the MBR on which the IAEA has been informed differently through ICRs and PILs, to bring the MBR entry into agreement with the corresponding figures established on the basis of ICRs and PILs.
		The rounding adjustments should be coded RAXX, where XX stands for the code of the entry to which the rounding adjustment pertains (e.g., RALN means a rounding adjustment to the consolidated entry on the nuclear loss).
		In the case of a rounding adjustment to the ending book inventory, adjusted ending book inventory, or MUF, the following formulae should be used, respectively:
		$RABE = PB + IC_{MBR} - BE$ $RABA = PB + IC_{MBR} - DI - BA$ $RAMF = BA - PE - MF$
		Where IC_{MBR} represents the sum of the consolidated inventory changes as reported in the MBR, taken with the appropriate sign indicating increases or decreases.

APPENDIX F. LABELED FORMAT REPORT EXAMPLES

Example 1—Labeled format receipt domestic,

(See the following page for the data string that reports this inventory change.)

LABEL	ICR DATA ELEMENT
001: OI / NN ; 000015 #	REFERENCE NUMBER
002: 1 / 1 #	ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20150124 #	REPORT DATE
006: NAME, I #	ENCODER'S NAME
010: I #	REPORT TYPE
015: 20141201 / 20141231 #	REPORTING PERIOD
099: / #	CONCISE NOTE REFERENCE
207: NND- #	FACILITY CODE
307: NND1 #	MBA CODE
309: N / ; / #	ENTRY STATUS AND CROSS REFERENCE CODE
310: #	STATE ACCOUNTABILITY SYSTEM RECORD IDENTIFICATION
370: NN / NN-B #	SHIPPER OF NUCLEAR MATERIAL
372: NN / NND1 #	RECEIVER OF NUCLEAR MATERIAL
390: #	CONCISE NOTE INDICATOR
391: #	TEXT OF CONCISE NOTE
407: 3 #	KEY MEASUREMENT POINT CODE
411: RD #	TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
412: 20141215 #	DATE OF INVENTORY CHANGE
430: B / Q / 1 / G #	MATERIAL DESCRIPTION CODE
435: / #	OPERATOR'S MATERIAL DESCRIPTION CODE
436: #	OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445: #	NON-LATIN ALPHABET IDENTIFICATION
446: 045C8 #	BATCH NAME
447: #	SHIPPER'S BATCH NAME
469: N / / #	MEASUREMENT IDENTIFICATION CODE
470: 1 #	NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600: _____ #	610: _____ #	620: _____ #	630: **163257G** #	640: _____ #
650: _____ #	660: _____ #	670: **1306G** #	680: _____ #	690: _____ #
700: **1498G** #	710: _____ #	720: _____ #	730: _____ #	740: _____ #
750: _____ #	760: _____ #	800: _____ #		

> **Note that only one entry is necessary to report two elements (uranium and plutonium), whereas in fixed format two separate entries are required. Labels 630 and 670 are for the uranium element and isotope weights; label 700 reports the plutonium weight.**

001:OI/NN;15#002:1/1#003:20150124#006:NAME, I
#010:I#015:20141201/20141231#207:NND-#307:NND1
#309:N#370:NN/NN-B#372:NN/NND1#407:3#411:RD
#412:20141215#430:B/Q/1/G#446:045C8#469:N
#470:1#630:163275G#670:1306G#700:1498G#

Example 3—Addition of an entry to a previous report.

LABEL   ICR DATA ELEMENT

001: OI / NN ; 000064   #   REFERENCE NUMBER
002:        1   /   1   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20170110   #   REPORT DATE
006: NAME, I   #   ENCODER'S NAME
010: I   #   REPORT TYPE
015: 20171201 / 20171231   #   REPORTING PERIOD
099:                 /   #   CONCISE NOTE REFERENCE
207: NNB-   #   FACILITY CODE
307: NN-B   #   MBA CODE
309: A / NN ; 63 / 24   #   ENTRY STATUS AND CROSS REFERENCE CODE
310:                                 #   STATE ACCOUNTABILITY SYSTEM RECORD IDENTIFICATION
370: NN / NND3   #   SHIPPER OF NUCLEAR MATERIAL
372:        /   #   RECEIVER OF NUCLEAR MATERIAL
390:                                 #   CONCISE NOTE INDICATOR
391:                                 #   TEXT OF CONCISE NOTE
407: 1   #   KEY MEASUREMENT POINT CODE
411: RD   #   TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
412: 20171122   #   DATE OF INVENTORY CHANGE
430: B / V / 2 / F   #   MATERIAL DESCRIPTION CODE
435:              /   #   OPERATOR'S MATERIAL DESCRIPTION CODE
436:                                 #   OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445:                                 #   NON-LATIN ALPHABET IDENTIFICATION
446: IBL-0924   #   BATCH NAME
447:                                 #   SHIPPER'S BATCH NAME
469:        N   /   #   MEASUREMENT IDENTIFICATION CODE
470: 1   #   NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600:	#	610:	#	620:	#	630: 170896G	#	640:	#
650:	#	660:	#	670: 5160G	#	680:	#	690:	#
700:	#	710:	#	720:	#	730:	#	740:	#
750:	#	760:	#	800:	#				

Entry 1 in report 64 is being added as entry 24 in report 63 (not shown). Because entry 24 is being added, this means report 64 has 23 entries prior to this addition. After this addition is applied, report 63 will have 24 entries, and if another entry is added to report 63, the next added entry would be number 25. An addition entry must contain all data fields. This addition process also applies to PILs and MBRs.

Example 4—Correction of an entry in a previous report.

LABEL   ICR DATA ELEMENT

001:    OI   /   NN   ; 000127   #   REFERENCE NUMBER
002:        1   /   1   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20061215   #   REPORT DATE
006: NAME, I   #   ENCODER'S NAME
010: I   #   REPORT TYPE
015:    20061101 / 20061130   #   REPORTING PERIOD
099:                /   #   CONCISE NOTE REFERENCE
207: NND-   #   FACILITY CODE
307: NND3   #   MBA CODE
309:    C   /   NN   ;   126 / 32   #   ENTRY STATUS AND CROSS REFERENCE CODE
310:                                   #   STATE ACCOUNTABILITY SYSTEM RECORD IDENTIFICATION
370:   NN   /   NND3   #   SHIPPER OF NUCLEAR MATERIAL
372:   NN   /   NNA1   #   RECEIVER OF NUCLEAR MATERIAL
390:                                   #   CONCISE NOTE INDICATOR
391:                                   #   TEXT OF CONCISE NOTE
407: 3   #   KEY MEASUREMENT POINT CODE
411: SD   #   TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
412: 20061001   #   DATE OF INVENTORY CHANGE
430: F / Q / J / B   #   MATERIAL DESCRIPTION CODE
435:              /   #   OPERATOR'S MATERIAL DESCRIPTION CODE
436:                                   #   OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445:                                   #   NON-LATIN ALPHABET IDENTIFICATION
446: CONT9833   #   BATCH NAME
447:                                   #   SHIPPER'S BATCH NAME
469: M   /   #   MEASUREMENT IDENTIFICATION CODE
470: 1   #   NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600:	#	610:	**105KG** #	620:	#	630:	#	640:	#
650:	#	660:	#	670:	#	680:	#	690:	#
700:	#	710:	#	720:	#	730:	#	740:	#
750:	#	760:	#	800:	#						

> **Entry 1 of report 127 corrects the weight reported in report 126, entry 18. All data fields, including those that have not changed, must be reported. This correction process also applies to PILs and MBRs.**

Example 5—Deletion of a previously reported record.

LABEL   ICR DATA ELEMENT

001:    OI   /   NN   ; 000543   #   REFERENCE NUMBER
002:         1   /   1   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20060322   #   REPORT DATE
006: NAME, I   #   ENCODER'S NAME
010: I   #   REPORT TYPE
015:    20060201 / 20060228   #   REPORTING PERIOD
099:                  /   #   CONCISE NOTE REFERENCE
207: NNA-   #   FACILITY CODE
307: NNA3   #   MBA CODE
309:    D   /   NN   ;   542 / 172   #   ENTRY STATUS AND CROSS REFERENCE CODE
310:                                      #   STATE ACCOUNTABILITY SYSTEM RECORD IDENTIFICATION
370:             /   #   SHIPPER OF NUCLEAR MATERIAL
372:             /   #   RECEIVER OF NUCLEAR MATERIAL
390:                                      #   CONCISE NOTE INDICATOR
391:                                      #   TEXT OF CONCISE NOTE
407:                                      #   KEY MEASUREMENT POINT CODE
411:                                      #   TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
412:                                      #   DATE OF INVENTORY CHANGE
430:                                      #   MATERIAL DESCRIPTION CODE
435:             /   #   OPERATOR'S MATERIAL DESCRIPTION CODE
436:                                      #   OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445:                                      #   NON-LATIN ALPHABET IDENTIFICATION
446:                                      #   BATCH NAME
447:                                      #   SHIPPER'S BATCH NAME
469:                         /   #   MEASUREMENT IDENTIFICATION CODE
470:                                      #   NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600: _____ #   610: _____
650: _____ #   660: _____
700: _____ #   710: _____
750: _____ #   760: _____

Entry 172 in report 542 (not shown) is being deleted by entry
number 1 in report 543 for MBA NNA3. The D in the first subfield
of label 309 indicates the deletion, and the other subfields show
the country code and the report/entry to be deleted. This deletion
process also applies to PILs and MBRs.

Example 6—Category change in an ICR.

LABEL   ICR DATA ELEMENT

001:   **OI / NN   ; 000010**   #   REFERENCE NUMBER
002:         **1   /   1**   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: **20160124**   #   REPORT DATE
006: **NAME, I**   #   ENCODER'S NAME
010: **I**   #   REPORT TYPE
015:        **20151201 / 20151231**   #   REPORTING PERIOD
099:                /   #   CONCISE NOTE REFERENCE
207: **NNA-**   #   FACILITY CODE
307: **NNA2**   #   MBA CODE
309:    **N /   ;   /**   #   ENTRY STATUS AND CROSS REFERENCE CODE
310:                                      #   STATE ACCOUNTABILITY SYSTEM RECORD IDENTIFICATION
370:                /   #   SHIPPER OF NUCLEAR MATERIAL
372:                /   #   RECEIVER OF NUCLEAR MATERIAL
390:                                      #   CONCISE NOTE INDICATOR
391:                                      #   TEXT OF CONCISE NOTE
407: **3**   #   KEY MEASUREMENT POINT CODE
411: **NE**   #   TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
412: **199201**   #   DATE OF INVENTORY CHANGE
430: **G / Q / J / B**   #   MATERIAL DESCRIPTION CODE
435:                /   #   OPERATOR'S MATERIAL DESCRIPTION CODE
436:                                      #   OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445:                                      #   NON-LATIN ALPHABET IDENTIFICATION
446: **S144-976**   #   BATCH NAME
447:                                      #   SHIPPER'S BATCH NAME
469:    **T /   /**   #   MEASUREMENT IDENTIFICATION CODE
470: **1**   #   NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600:	#	610:	**1.000K** #	620:	#	630:	**1000G** #	640:	#
650:	#	660:	#	670:	**7.120G** #	680:	#	690:	#
700:	#	710:	#	720:	#	730:	#	740:	#
750:	#	760:	#	800:	#				

| The inventory change code NE (label 411) indicates the batch of uranium has been removed from the natural uranium account and has been added to the enriched uranium account. | In labeled format Code 10, the amount leaving the natural uranium account (label 610) and the amounts being added to the enriched and fissile accounts (labels 630 and 670) must be reported. |

Example 7—Labeled format PIL (one entry, which shows one batch of nuclear material).

LABEL

PIL DATA ELEMENT

001: OI / NN ; 14 # REFERENCE NUMBER
002: 1 / 628 # ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20160914 # REPORT DATE
006: NAME, I # ENCODER'S NAME
010: P # REPORT TYPE
015: 20160820 / # REPORTING PERIOD
099: / # CONCISE NOTE REFERENCE
207: NNB- # FACILITY CODE
307: NN-B # MBA CODE
309: N / ; / # ENTRY STATUS AND CROSS REFERENCE CODE
390: # CONCISE NOTE INDICATOR
391: # TEXT OF CONCISE NOTE
407: A # KEY MEASUREMENT POINT CODE
430: B / V / 1 / F # MATERIAL DESCRIPTION CODE
435: / # OPERATOR'S MATERIAL DESCRIPTION CODE
436: # OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445: # NON-LATIN ALPHABET IDENTIFICATION
446: IBL960 # BATCH NAME
447: # SHIPPER'S BATCH NAME
469: L / / # MEASUREMENT IDENTIFICATION CODE
470: 1 # NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600:	#	610:	#	620:	#	630: 171991G	#	640:	#
650:	#	660:	#	670: 5234G	#	680:	#	690:	#
700:	#	710:	#	720:	#	730:	#	740:	#
750:	#	760:	#	800:	#				

Example 8—Reporting a PIL where no batches of nuclear material are in an MBA (i.e., a null PIL).

LABEL   **PIL DATA ELEMENT**

001: OI / NN ; 000023   # REFERENCE NUMBER
002:      1   /   1   # ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20171022   # REPORT DATE
006: NAME, I   # ENCODER'S NAME
010: P   # REPORT TYPE
015:    20171001   /   # REPORTING PERIOD
099:                    /   # CONCISE NOTE REFERENCE
207: NNA-   # FACILITY CODE
307: NNA2   # MBA CODE
309:   U   /   ;   /   # ENTRY STATUS AND CROSS REFERENCE CODE
390:                                   # CONCISE NOTE INDICATOR
391:                                   # TEXT OF CONCISE NOTE
407:                                   # KEY MEASUREMENT POINT CODE
430:        /   /   /   # MATERIAL DESCRIPTION CODE
435:                /   # OPERATOR'S MATERIAL DESCRIPTION CODE
436:                                   # OPERATOR'S MATERIAL DESCRIPTION (TEXT)
445:                                   # NON-LATIN ALPHABET IDENTIFICATION
446:                                   # BATCH NAME
447:                                   # SHIPPER'S BATCH NAME
469:                    /   # MEASUREMENT IDENTIFICATION CODE
470:                                   # NUMBER OF ITEMS IN BATCH

WEIGHT DATA:

600: _____ #   610: _____ #   620: _____ #   630: _____ #   640: _____ #
650: _____ #   660: _____ #   670: _____ #   680: _____ #   690: _____ #
700: _____ #   710: _____ #   720: _____ #   730: _____ #   740: _____ #
750: _____ #   760: _____ #   800: _____ #

Only one entry can be reported, with a U in the first subfield of label 309. This indicates an inactive entry and meets the criteria that a report must have at least one entry.

It is not correct to report one batch with a weight of zero, because that implies nuclear material (e.g., a small amount that rounds to zero) is on the inventory.

Example 9—Labeled format MBR.

LABEL		MBR DATA ELEMENT
001: **OI / NN ; 15**	#	REFERENCE NUMBER
002: fill in below	#	ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: **20150914**	#	REPORT DATE
006: **NAME, I**	#	ENCODER'S NAME
010: **M**	#	REPORT TYPE
015: **19942015 / 20160820**	#	REPORTING PERIOD
099: /	#	CONCISE NOTE REFERENCE
207: **NNB-**	#	FACILITY CODE
307: **NN-B**	#	MBA CODE
309: **N / ; /**	#	ENTRY STATUS AND CROSS REFERENCE CODE
390:	#	CONCISE NOTE INDICATOR
391:	#	TEXT OF CONCISE NOTE
411: fill in below	#	TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
445:	#	NON-LATIN ALPHABET IDENTIFICATION

002: /	411:	610: Natural	620: Depleted	630: Enriched	670: U-235	700: Plutonium	800: Thorium
1 / 7	PB			124358164G	2650947G		
2 / 7	RD			17173193G	520797G		
3 / 7	LN			682078G	375138G		
4 / 7	SF			24928031G	262295G		
5 / 7	SD			6056242G	63396G		
6 / 7	BA			109865006G	2470915G		
7 / 7	PE			109865006G	2470915G		
		This is an example material balance report for the enriched uranium account. Although in theory only, a single report number could be used to report all material balances, this is not good practice. A separate report number should be used for each nuclear material account in the MBA (i.e., one report number for natural uranium, another for depleted uranium, etc.)					
/							

Example 10—MBR with category change (enriched uranium account).

LABEL   MBR DATA ELEMENT

001:    **OI   /   NN   ; 000011**   #   REFERENCE NUMBER
002: fill in below   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: **20160120**   #   REPORT DATE
006: **NAME, I**   #   ENCODER'S NAME
010: **M**   #   REPORT TYPE
015:        **20150115   / 20151220**   #   REPORTING PERIOD
099:                 **/**   #   CONCISE NOTE REFERENCE
207: **NNA-**   #   FACILITY CODE
307: **NNA2**   #   MBA CODE
309:    **N   /   ;   /**   #   ENTRY STATUS AND CROSS REFERENCE CODE
390:   #   CONCISE NOTE INDICATOR
391:   #   TEXT OF CONCISE NOTE
411: fill in below   #   TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
445:   #   NON-LATIN ALPHABET IDENTIFICATION

002: /	411:	610: Natural	620: Depleted	630: Enriched	670: U-235	700: Plutonium	800: Thorium
1 / 5	PB			7891.650G	197.230G		
2 / 5	NE			1000.000G	7.120G		
3 / 5	BA			8891.650G	204.350G		
4 / 5	PE			8889.150G	204.150G		
5 / 5	MF			2.500G	0.200G		

The category change entry NE should be reported for both the enriched and natural uranium accounts. Report number 11 (label 001) is for the enriched account; report number 12 (Example 9) is the natural uranium account.

Example 11—MBR with category change (natural uranium account).

LABEL   MBR DATA ELEMENT

001: **OI / NN ; 000012** #	REFERENCE NUMBER
002: fill in below #	ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: **20160120** #	REPORT DATE
006: **NAME, I** #	ENCODER'S NAME
010: **M** #	REPORT TYPE
015: **20150115 / 20151220** #	REPORTING PERIOD
099: / #	CONCISE NOTE REFERENCE
207: **NNA-** #	FACILITY CODE
307: **NNA2** #	MBA CODE
309: **N / ; /** #	ENTRY STATUS AND CROSS REFERENCE CODE
390: #	CONCISE NOTE INDICATOR
391: #	TEXT OF CONCISE NOTE
411: fill in below #	TYPE OF INVENTORY CHANGE, TYPE OF ACCOUNTING ENTRY
445: #	NON-LATIN ALPHABET IDENTIFICATION

002: /	411:	610: Natural	620: Depleted	630: Enriched	670: U-235	700: Plutonium	800: Thorium
1 / 4	**PB**	**5.319K**					
2 / 4	**NE**	**1.000K**					
3 / 4	**BA**	**4.319K**					
4 / 4	**PE**	**4.319K**					

The category change entry NE for the natural account only reports the element weight.

Example 12—Concise note.

LABEL   CONCISE NOTE DATA ELEMENT

001: **NC   /   NN   ; 000013**   #   REFERENCE NUMBER
002: **1   /   1**   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: **20170930**   #   REPORT DATE
099: **E   /   1**   #   CONCISE NOTE REFERENCE
207: **NNH-**   #   FACILITY CODE
307: **NN-H**   #   MBA CODE
391: **Maximum of 2000 charcacters**   #   TEXT OF CONCISE NOTE

**This example shows a concise note that refers to entry 1 of report 13 for
MBA NN-H. The report number is not included in the report numbering sequence
for PILs, ICRs, MBRs, and textual reports. Concise notes are reported separately
from the entry reporting nuclear material accounts.**

Example 13—Textual report.

LABEL   TEXTUAL REPORT DATA ELEMENT

001: NC   /   NN   ; 000014   #   REFERENCE NUMBER
002:          1   /   1   #   ENTRY NUMBER / TOTAL NUMBER OF ENTRIES
003: 20170930   #   REPORT DATE
010: T   #   REPORT TYPE
099:         R   /   11   #   TEXTUAL REPORT REFERENCE
207: NNH-   #   FACILITY CODE
307: NN-H   #   MBA CODE
391: Maximum of 2000 charcacters   #   TEXTUAL REPORT

> **A textual report is included in the numbering sequence along with nuclear material accounting reports (PILs, ICRs, and MBRs). This is an example of a textual report that applies to report 11 for MBA NN-H.**