

# **ABACC's RECORDS AUDITING PROCEDURES**

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## **ABSTRACT**

Early in the beginning of its operations in 1992, ABACC started to establish its inspections procedures including the auditing of records and its comparison with the reports. ABACC's Accounting Area is responsible for its implementation and, also, evaluation and follow-up of discrepancies.

The procedures for records auditing were developed taking into account special characteristics of ABACC's inspectorate and the experience of almost three years with inspections.

The main characteristic of the procedures for records auditing, a detailed description of the method and the forms used are presented in the paper.

## **1. INTRODUCTION**

In December 1991, the Agreement between Brazil and Argentina for the Exclusively Peaceful Uses of Nuclear Energy entered into force /1/. The agreement, inter alia, determines the control over all nuclear materials in all nuclear activities in both countries. To verify this commitment, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) was created and the Common System of Accounting and Control of Nuclear Materials (SCCC) established /2/.

The Quadripartite Agreement, signed among Argentina, Brazil, the International Atomic Energy Agency (IAEA) and ABACC, entered into force on 4 March 1994 /3/.

The Secretariat of ABACC started its operations in July 1992 and immediately began with the development and implementation of its automated accounting system for Personal Computers. In the beginning of September 1992, ABACC receive the Initial Report on the inventories of nuclear material (as of 30 June 1992) present in all nuclear activities of each State Party, and simultaneously, began to receive the nuclear accounting reports in a routine basis /4/

Once the Quadripartite Agreement entered into force, ABACC sent the Initial Report (as of 31 March 1994) to the IAEA on 30 April 1994 and began to receive from the States Parties and sent to the IAEA all nuclear accounting reports according to the formats established in Code 10 /5/.

Early in the beginning of its operations, ABACC started to establish its inspection procedures including the auditing of records and its comparison with the reports. ABACC's Accounting Area is responsible for the implementation of this procedures, its evaluation and follow-up of discrepancies

The inspections began in March 1993 and, as of June 1994, almost all inspections have been carried out jointly by ABACC and the IAEA /6,7/.

## **2. ABACC's RECORDS AUDITING PROCEDURES**

### **2.1 OBJECTIVES**

The accounting inspection activities have the purpose of verifying the correctness and consistency between:

- a) the source documents (including operational records whenever necessary) and the book values
- b) the book values and the accounting reports (Inventory Change Report - ICR, Material Balance Report - MBR and Physical Inventory Listing - PIL)

These objectives must be achieved independently so the operator keeps his records in paper or in computerized form.

### **2.2 PREMISES**

The development of the procedures for records auditing were made taking into account the special characteristics of ABACC's inspectorate.

- The majority of the inspectors (around thirty five inspectors from each country) does not work permanently for ABACC, but for the National Authorities of Brazil or Argentina or any other official organization in either country. They are convoked by ABACC whenever necessary only for the inspection period (Brazilian inspectors carry out inspections in Argentina and Argentinean inspectors conduct inspections in Brazil).
- The staff of inspectors includes:
  1. Safeguards experts who usually carry out inspections at a national level, but apply different procedures,
  2. Experts on several areas of safeguard's interest (NDA, DA, operation and design of various types of facilities, etc.), but with little experience in records auditing and accounting reports,

These particularities require that records auditing, including verification of operational records, supporting documents and comparison with accounting reports have the following characteristics:

- be completely performed during the inspection;
- make use of working papers easy to complete and to evaluate, which clearly permits identification of discrepancies;
- limit to a minimum the necessity of consulting the inspectors out of the inspection period.

Furthermore, the following additional requirements were incorporated after about three years of experience with the inspections:

- to provide a preliminary summary of the results on records auditing to the operator/National Authority at the end of the inspection;
- to receive from the operator/National Authority a declaration on the value of the Book Inventory as of the date of the inspection;
- to avoid any action by the inspectors over the operators ledgers (such as a signature or take a copy of it);
- to avoid unnecessary overlapping between inspections;
- to automatically generate the working papers to be used for the records auditing.

When this generation takes place a consistency check is automatically done between the accountancy database (from reports data) and the auditing database (from inspection data).

The procedure developed under these premises, was implemented in Fox Pro for Windows and makes use of three working papers named VR-A, VR-B and VR-C(see below).

## 2.3 SCHEME

The auditing period is defined as the period of time between the previous (Date0) and the present inspection dates (see Fig. 1). This auditing period is divided in:

- a) the period for which the inventories changes were reported to ABACC,
- b) the period for which inventories changes have occurred but were not yet reported to ABACC (updating period).

The auditing periods usually have no overlapping, except if there is an entry correction or a non resolved discrepancy corresponding to a previous auditing period, when it is necessary to verify those entries that do not belong to the present auditing period.

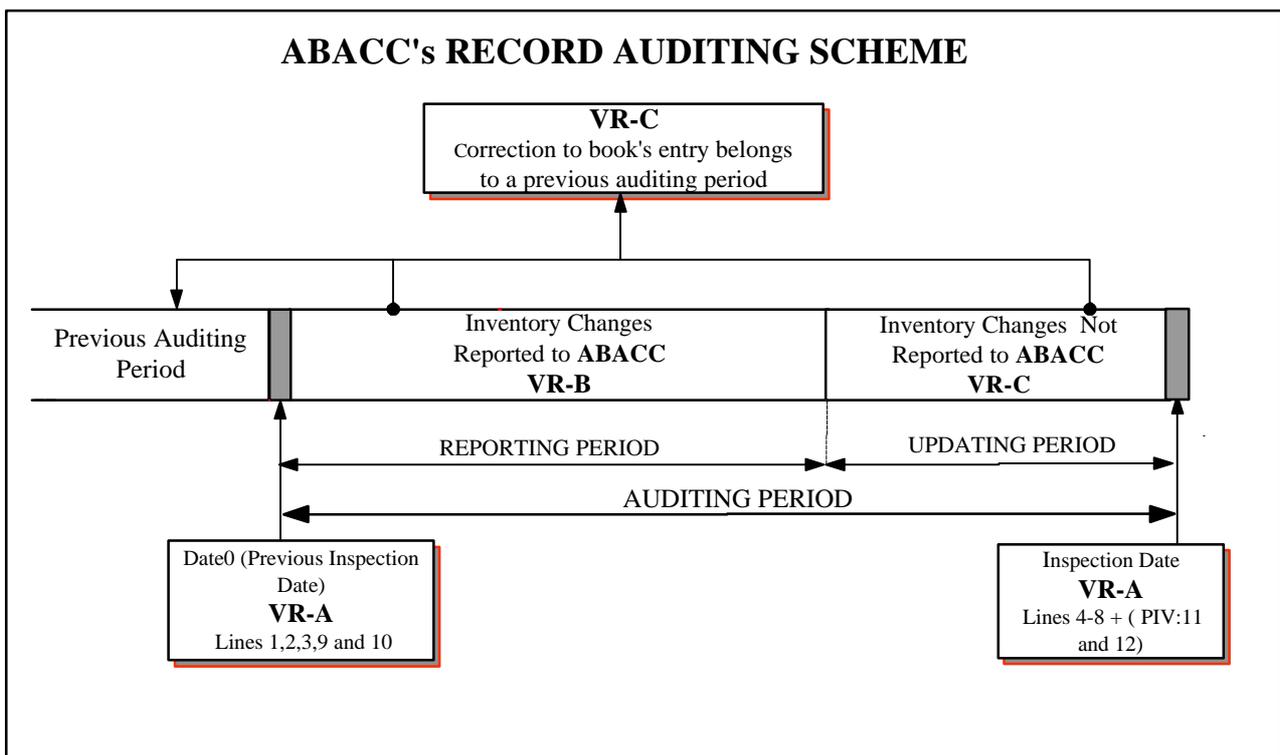


Figure 1

## 2.4 ACTIVITIES

The accounting activities performed during the inspection can be divided in 6 steps (Fig 2):

- 1) Checking the correctness of the supporting and operational records and its consistency with the accountancy data in the facility, and, if necessary, requesting the appropriate corrections to the book before beginning step 2.
- 2) Checking that the book inventory value verified on the date of the previous (Date0) inspection is correct (VR-A form, lines 1,2 and 3).
- 3) Making a comparison between the accounting reports sent to ABACC and the accountancy data in the facility since Date0 (VR-B form and VR-A form line 4).
- 4) Updating the information with the accounting data that were not sent to ABACC, including corrections to entries in the book, having a date previous to Date0 (VR-C form and VR-A line 5). Additionally, for physical inventory verification inspections, the lines 11 and 12 of VR-A must be completed and the values of MUF must be included in VR-C.
- 5) Calculating the book inventory based on data computed during the inspection (VR-A line 6), and comparing with the book value recorded by the operator (VR-line 7 and 8); fill in the discrepancy table.
- 6) Receiving the completed VR-A form with operator/National Authority (NA) signature and give a copy of it to the operator/NA.

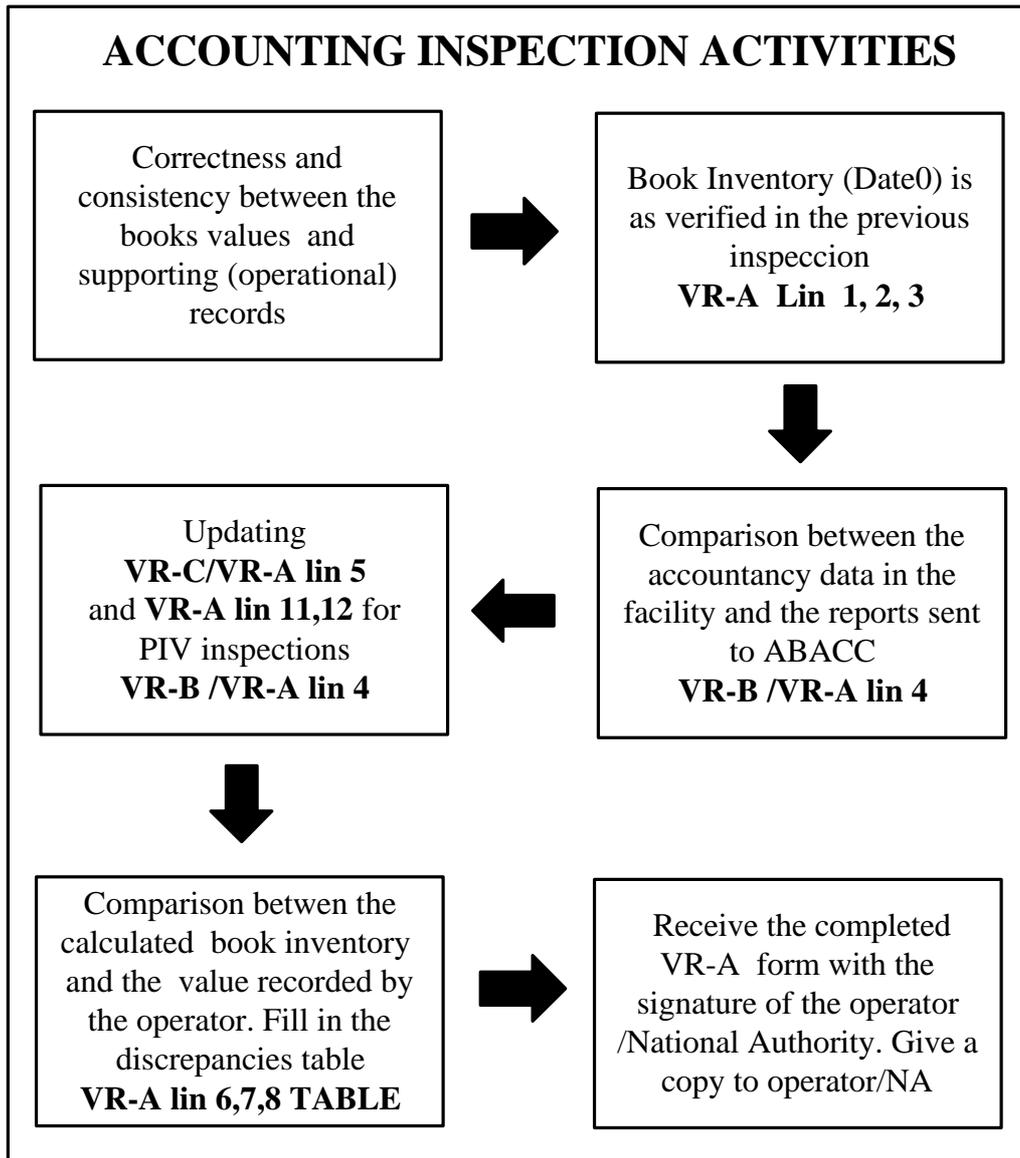


Figure 2

### 3. WORKING PAPERS

The working papers are generated automatically by the software developed. The inputs are the material balance area (MBA), the previous and the present inspection number (thus defines the auditing period), the type (interim or PIV) and inspection date. This information is printed in all the working papers and defines a unique set of parameters that characterizes the inspection. The letters X, Y, W and Z, shown in the forms with bold and italic character, indicate data that are printed when the working paper is generated.

#### 3.1 VR-A FORM

The VR-A form (See Fig. 3) contains the preliminary summary of the results of the auditing, the book values as of Date0, the inspection date and the cross checking

between the databases. There is one VR-A for each element present in the MBA. This form has the signature of the inspectors and of the operator or National Authority representative to whom a copy of the completed forms must be given.

<b>VR-A FORM</b>					
INSPECTION TO: <b>ZZZZ</b>					
TYPE: <b>ZZZZZZZZ</b>		FROM <b>YY/YY/YY</b> TO <b>WW/WW/WW</b>	NUMBER: <b>ZZZ</b>		
<b>ELEMENT: X</b>	L	WEIGHT			
	I	ELEMENT	ISOTOPE		
	N				
BOOK INVENTORY VERIFIED ON <b>YY/YY/YY</b>	1	<b>ZZZZ.ZZ ZZ</b>	<b>ZZ.ZZ G</b>		
BOOK INVENTORY ON <b>YY/YY/YY</b>	2				
DIFFERENCE (1-2) [MUST BE EQUAL TO ZERO]	3				
TOTAL INVENTORY CHANGES VERIFIED (B.X)	4				
TOTAL INVENTORY CHANGES NOT REPORTED (C.X)	5				
BOOK INVENTORY CALCULATED (2+4+5)	6				
BOOK INVENTORY ON <b>WW/WW/WW</b>	7				
DIFFERENCE (6-7) [MUST BE EQUAL TO ZERO]	8				
ABACC BOOK INVENTORY ON <b>YY/YY/YY</b>	9	<b>ZZZZ.ZZ ZZ</b>	<b>ZZ.ZZ G</b>		
DIFFERENCE ABACC/BOOK ON <b>YY/YY/YY</b> (1-9)	10	<b>ZZZZ.ZZ ZZ</b>	<b>ZZ.ZZ G</b>		
BOOK ADJUSTED (BA)	11				
PHYSICAL ENDING (PE)	12				
TOTAL DISCREPANCIES FOR ELEMENT: <b>X</b> VR-B and VR-C FORMS					
	1	2	3	4	5
<b>N</b>					
<b>M</b>					
<b>N</b> : Does Not Modify Inventory Values <b>M</b> : Modify Inventory Values <b>1</b> : ABACC <b>2</b> : Rounding <b>3</b> : Reports Not Delayed <b>4</b> : Reports Delayed and Corrections <b>5</b> : Not Resolved					
INSPECTORS SIGNATURE			OPERATOR/NA SIGNATURE		
Observation: By signing the receipt of this form, the operators/NA agrees solely with values of lines 2 and 7.					

Figure 3

Lines 1,2 and 3 are used to complete the activity of item 2 above. The value printed in line 1 is the book inventory verified in a previous inspection dated Date0 (line 7 of VR-A concerning that inspection); line 2 must be completed with the book value at Date0 that is verified in the present inspection and line 3 is completed with the difference between the

lines 1 and 2. Line 3 must be equal to zero to assure the continuity in the accountancy data (the book value at Date0 is as verified in the previous inspection )

The value printed in line 9 is the book inventory on Date0 obtained from the accountancy reports sent to ABACC and the value in line 10 is the difference between lines 1 and 9. When line 10 is not equal to zero the inspector receives particular instructions concerning the cause for the value of the line. As an example, this line would be different from zero if a correction to an entry having a date previous to Date0 has been reported; in this case, the inspector is instructed to verify the correction and confirm the difference. This procedure is devised to assure the consistency between the data obtained from inspection (line 1) and the data obtained from accountancy reports (line 9).

Line 4 and line 5 represent respectively the total flow of the element X for the reporting and updating period that was verified during the inspection. This values are obtained from VR-B and (VR-C) respectively.

The value of line 6 is calculated as the sum of lines 2, 4 and 5 and represents the book value on the inspection date obtained from the inventory changes verified during the inspection. Line 7 must be completed with the book value on the inspection date and line 8 is completed with the difference between lines 6 and 7. Line 8 must be equal to zero to assure that there is neither error in the values verified by the inspector nor in the book values of the facility.

In case of inspections for physical inventory verification (PIV), lines 11 and 12 are displayed in the form and must be completed with the book adjusted (BA) and physical ending (PE) values.

### DISCREPANCIES CODES

When there is no discrepancy the code is **NO**. In any other case, the code is formed by two characters: the first indicates if the discrepancy modifies or not the inventory value and the second indicates the type and the follow-up of the discrepancy. It is mandatory to the inspector to fill in the corresponding field.

#### FIRST CHARACTER

Code	Description
M	Modifies the inventory value
N	Does not modify the inventory value

#### SECOND CHARACTER

Code	TYPE	Description	Follow-up
1	ABACC	ABACC error transcription	ABACC must correct his accounting database.
2	ROUNDING ADJUSTMENT	The difference between the accountancy data in the report and in the facility is due to an rounding adjustment.	This rounding adjustment must be reported in the next material balance report (MBR)
3	NOT DELAYED	Inventory change not reported but with possibility that the correspondent report reach ABACC within the time limits foreseen in SCCC.	The inventory change must be reported and the comparison with the inspectors data must performed.
4	DELAYED AND CORRECTIONS	Inventory change not reported but without possibility that the correspondent report reach ABACC within the time limits foreseen in SCCC. Any correction to an entry with date previous to Date0.	The inventory change must be reported and the comparison with the inspectors data must performed
5	NOT RESOLVED	Discrepancy that not was possible to resolved during the inspection	The inspector must be require to the operator/NA to send an inform to explain the discrepancy.

Table 1

The discrepancy table is a summary of the discrepancies (defined as any difference between the accountancy value recorded by ABACC and the facility records) obtained from the VR-B and VR-C. The inspector shall complete the table with the total number of discrepancies having the same code detected during the inspection for the Element X. Discrepancy codes are described in table 1. For example, if VR-B has 4 discrepancies of M3 type and VR-C has 2, the cell of the discrepancy table defined by the row M and the column 3 must be completed with the number 6.

Finally, the completed form is signed by the inspectors and by the representatives either of the operator or of the National Authority. With this signature the operator/national authority agrees solely with the values of lines 2 and 7 and the form is considered as a declaration on the value of the book inventory as of the date of the inspection.

### 3.2 VR-B FORM

This form is used to compare the accounting reports sent to ABACC and the accounting records in the facility. The form is practically an image of the Inventory Change Report (ICR) (see Fig. 4). Each inventory change reported having a date later than Date0 is printed in one line which is followed by a blank line. The line is identical to

the line reported except for the sign of the weight of element and isotope. We consider positive (negative) all inventory change that means an increase (decrease) of the inventory at the MBA. If any discrepancy is found, the correct value must be filled in the field immediately below. Only the fields that have differences must be completed. Besides, the inspector must fill in the discrepancy code (see Table 1).

The inventory changes are presented sorted by date and grouped by element. For each group there is a table showing in line 1 the algebraic sum of the inventories changes that represent the total flow of the element X that was reported to ABACC; in line 2 the inspector must enter the value of flow verified during the inspection considering all the discrepancies found in the inspection; and the line 3 is the difference between the lines 1 and 2. The line 2 must be transcribed to line 4 of VR-A concerning that element.

<b>VR-B FORM</b>																			
INSPECTION TO: <b>ZZZZ</b>										NUMBER: <b>ZZZ</b>				FROM <b>YY/YY/YY</b> TO <b>WW/WW/WW</b>					
RE PORT Nro	EN TRY Nro	C O N T	DATE OF INVENTORY CHANGE	MBA		IN VEN TO RY CH AN GE	K M P	NAME OR NUMBER OF BATCH	NUM BER ITEMS IN BATCH	MATE RIAL DES CRIP TION	E L E M E N T	ACCOUNTANCY DATA			CORRECTION TO		DISCRE PANCY CODE		
				FROM	TO							WEIGHT OF ELEMENT	Kg/ g	WEIGHT OF FISSILE ISOTOPES	I S O T	M		N	REPORT Nro.
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ
ZZZ	ZZ	Z	ZZZZZZZZ	ZZZZ	ZZZZ	ZZ	Z	ZZZZZZZZZZ	ZZZZ	ZZZ		ZZZZZZ.ZZ	Z	ZZZZZ.ZZ	Z	Z	Z	ZZZZ	ZZ

TOTAL INVENTORIES CHANGES REPORTED		L	REF
TOTAL INVENTORIES CHANGES VERIFIED	ZZZZZZ.ZZ	Z	ZZZZZ.ZZ
DIFFERENCE (1-2)			1
			2
			3

†This line must be transcribed to **VR-A (line 4)** for element X

**Discrepancies Codes:** N: Does Not Modify Inventory Values M: Modify Inventory Values  
 1: ABACC 2: Rounding 3: Reports Not Delayed 4: Reports Delayed and Corrections 5: Not Resolved

Figure 4



area to make the evaluation of the results of the inspection concerning the accounting inspection activities. Any doubt about the results is discussed before the inspector return to his respective organization.

The data contained in line 7 of VR-A and in the discrepancies' table are entered in the inspection database.

To make the follow-up of the discrepancies a flag is entered to the inspection database and, only when all the discrepancies of the inspection are solved, this flag is removed.

The National Authority is informed of all the discrepancies for the country in the beginning of each month, jointly with any inconsistency in the accountancy reports and the timeliness of the reports sent to ABACC in the previous month. The discrepancy remain in the list until being solved.

#### **4. CONCLUSIONS**

The procedure developed has shown to be satisfactory to fulfill the objective of ABACC as far as record auditing is concerned.

Furthermore, it is important to point out:

- the completion of the forms entails the resolution of all the discrepancies that can be solved in the field during the inspection,
- giving a copy of VR-A to the operator/NA has shown to be useful since this speed up the resolution of pending discrepancies,
- line 8 of VR-A has been useful to detect mistakes in the VR-B and VR-C forms during the inspection and, in some cases, to detect errors in the book of the operator.

#### **5. REFERENCES**

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