

# SOFTWARE FOR RECORDS AUDITING DURING INSPECTIONS

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## ABSTRACT

Early when the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) began operating, it started to establish its own inspection procedures, including the auditing of records and the comparison thereof with reports. **This procedure**, established by the Nuclear Material Accounting Area of ABACC in the second semester of 1994, ~~consist of~~ is **implemented according** to three working papers named VR-A (summary form), VR-B (comparison form) and VR-C. (updating form). One special characteristic of the procedure is that it must be completely performed during the inspection in order to provide a preliminary summary of the results of books auditing to the Operator/National Authority. With the main purposes of making easier the completion of the form by the inspectors and having the results in electronic media in order to facilitate the evaluation of the results and the follow-up of discrepancies, a software was developed to be utilized in field during the inspections using a notebook. The software was completed in 1999 and started to be used in **routine** basis in the beginning of 2000. The software allows completing the VR-A, VR-B and VR-C forms with the following advantages: a) organizes the activities to be performed; b) checks all the information entered, for example, MBA codes, algebraic sign of element/isotope weight, etc.; c) checks the relationship between different fields to assure that the numeric information entered by the inspector is correct; d) No calculations need to be performed by the inspector manually; and e) have a mechanism of error detection that do not allow to finalize the auditing if there is a discrepancy between the inspection data and the book data. During the pre-inspection the inspectors receive one diskette with the necessary data to perform the records auditing of the applicable MBA, which is immediately entered in the computer notebook. After the inspection is completed, during the post-inspection activities the inspectors return the diskette with the results of the auditing activities that is immediately processed and the discrepancies determined. A more detailed description of the software is presented in the paper.

## 1. INTRODUCTION

In December 1991 the Agreement between Brazil and Argentina for the Exclusively Peaceful Uses of Nuclear Energy (The Bilateral Agreement) [1] entered into force. The agreement, inter alia, determines the control over all nuclear materials in all nuclear activities in both countries. To verify this commitment, the Common System of Accounting and Control of Nuclear Materials (SCCC) was established and the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) was created to administer and apply the SCCC [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 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 these 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 [4,5].

## 2. ABACC's RECORDS AUDITING

The ABACC's records auditing procedure was described in detail in [6]. For completeness reason and to facilitate de understanding of this paper, a briefly explanation is presented here.

### 2.1 Objectives

The purpose of the accounting inspection activities is to verify the correctness of the documents at the facility level and the consistency between the operator accounting records and

- source documents
- accounting reports

in order to assure the validity of the information utilized in the analysis of possible diversions of nuclear material.

### 2.2 Procedures

The auditing procedures were established taking into account the special characteristics of the inspectorate and considering the experiences obtained by ABACC in their inspections before the Quadripartite Agreement entered into force. The main characteristics of the procedures are

- to receive from the operator/National Authority a declaration of the value of the Book Inventory
- to be completely performed during the inspection in order to provide a preliminary summary of the results on books auditing to the operator/National Authorities at the end of the inspection

and three working papers are used:

- **VR-A:** the summary forms,

There is one VR-A form for each element present in the MBA. The VR-A contains the preliminary summary of the results of the auditing (**validated** with the inspector signature) and the operator's declaration of the book value (**validated** with operator or National Authority representative signature)

- **VR-B:** the reporting forms,

These forms are used to compare the ICRs with the values in the operator's ledger

- **VR-C:** the updating forms,

These forms are used, essentially, to update the accounting data that was not yet sent to ABACC

### 2.3 Auditing Activities

The auditing activities performed during the inspection can be divided in 6 steps (See figure 1):

- step 1: Checking the correctness of the supporting and operational documents and its consistency with the ledgers data in the facility (This activity is not reflected in any form),
- step 2: Verifying the closing of books of the last inspection (VR-A forms, lines 1,2 and 3)
- step 3: Making a comparison between the ICRs sent to ABACC and the accountancy data in the ledger of the operator (VR-B forms, VR-A forms line 4),
- step 4: Updating the information with the accounting data that were not yet sent to ABACC, (VR-C forms and VR-A forms line 5),
- step 5: calculating the value of closing book inventory, based on data computed during the inspection (VR-A line 6), and comparing with the ledger value recorded by the operator (VR-A line 7). Line 8 (line 6 – line7) must be equal to zero to assure that there is neither error in the values verified by the inspector nor in the ledger values of the facility (self consistency error detection).
- step 6: receiving the VR-A forms with operator/National Authority (NA) signature and give them a copy of this form, **signed by the inspector**

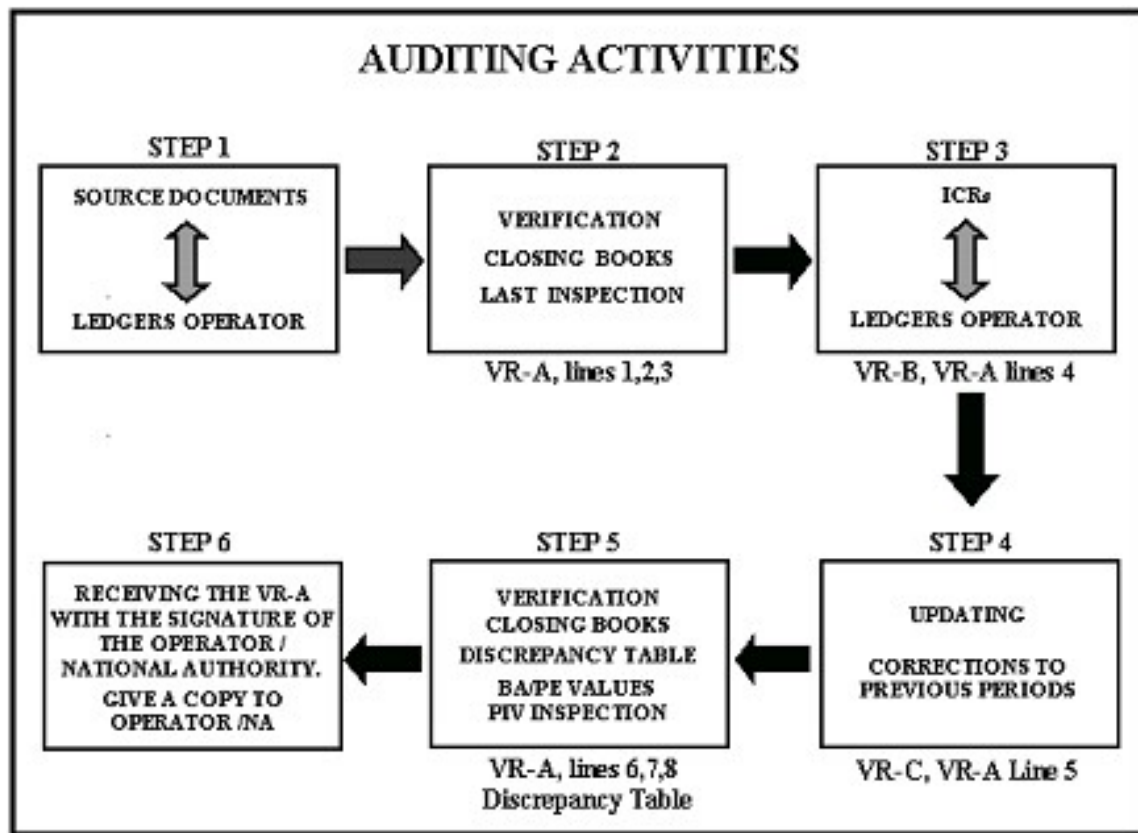


Figure 1

## 2.4 Evaluation and Follow-Up

After the inspection, to evaluate the results of the auditing, the accountancy area that also is responsible for the follow up of the pending actions, processes the information contained in the three forms. For example, in 1999, the auditing activities generated 1028 pending actions from 130 inspections performed in that year. The way to solve these pending actions is to compare the entry lines from the accountings reports with lines entered by the inspector in the VR-A, VR-B and VR-C forms.

## 3. SOFTWARE FOR RECORDS AUDITING

With the main purposes of:

- Facilitating the completion of the forms by the inspectors without the necessity of performing calculations
- Having the possibility of inputting data provided by the operator in electronic media, and
- Having the results in electronic media in order to facilitate the evaluation of the results and automate the follow-up of discrepancies

a software was developed to be utilized in field during the inspections using a notebook and a portable printer .The software was completed in 1999 and started to be used in routines basis in the beginning of 2000. The software allows completing the VR-A, VR-B and VR-C forms with the following advantages:

- Organizes the activities to be performed;
- Checks all the information entered, for example, MBA codes, algebraic sign of element/isotope weight, etc
- Checks the relationship between different fields to assure that the numeric information entered by the inspector is correct;
- Have a mechanism of error detection that do not allow to finalize the auditing if there is a discrepancy .between the inspection data and the book data

The Menu Bar has 5 Menu pads. In the next sections is described the main function of each menu pad is described.

### 3.1 Auditing (Menu Pad 1)

The completion of the forms is performed in this option. In Figure 2 is shown the screen that used to organize the inspector activities is shown.

Figure 2

~~In~~ This screen is defines the characteristic of the auditing showing the Material Balance Area Code (MBA), the inspection number, the inspection type (Interim or Physical Inventory Verification) and the element. and It is possible to distinguish 2 main zones:

- The View and Correct zone, where it is possible to view and correct:
  - The Initial and Close Inventories declared in the operators book ([Inventories] Push Button)
  - The Book Adjusted (BA) and Physical Ending (PE) declared by the operator in a PIV auditing ([VR-A (PIV)] Push Button - only enabled in PIV auditing)
  - The Comments form, this form is used to put any comment that they considered important or to provide specific instructions to solve pending questions ([Comments ] Push Button)
- The Auditing zone, It is where the Forms are completed

- Doing the Step 2 **one completes** lines 2 and 3 of VR-A, ([VR-A (Lin 2-3)] Push Button).
- Doing the Step 4 **one completes** VR-C form ([VR-C] Push Button, only enabled after the step 3 is completed).
- Doing the Step 5 **one verifies that** line 8 of VR-A is equal to zero. ([VR-A (Lin 7-8)] Push Button, only enabled after the step 4 is completed). If **the-line 8 if different from** zero the auditing must be revised and this step cannot be completed

Only when the Step 5 is completed the [Finalize] Push Button is **enabled and it** is possible to finish **the Steps 2 to 5** for **a** given element. The software automatically **generates** one screen of this type for each element present in the MBA.

## ACKNOWLEDGMENTS

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