

A Simple Computer Program to Collect and to Manage Data of the Shipments of Radioactive Material

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INTRODUCTION

According to the Italian Legislation the authorized carriers have to provide data of all performed shipments to ANPA (the Italian Competent Authority for Transport of RAM). Some carriers (major) with a large number of shipments are able to provide data on magnetic support, other carriers (minor) provide data only by the standard sheet (on quarterly basis) according to the authorization Decree issued by the Ministry of Industry. An input data processor for personal computer called TRIME has been developed by ANPA, to assist the minor carriers to manage and to record the data concerning their shipments.

Purposes of the TRIME input processor are to make easy the data management for those carriers that own a personal computer but no capability to develop such program and to improve the quality of the data they have to provide.

THE TRIME INPUT PROCESSOR

TRIME program allows carriers to enter data regarding the shipments of radioactive material in an archive file, to print out records of the shipments performed on a quarterly basis, to modify data and to organize the data files according to a standard format.

TRIME is distributed to 'minor' carriers free of charge on request. The data recorded with the standard format can be stored into TRARAD.

TRARAD (TRANsport RADioactive) is a relational data base that contains data regarding the transport of radioactive material (except for rail mode) since 1987 used by ANPA to perform compliance assurance actions and other purposes. In Appendix I is shown the flow of data shipments to be stored into TRARAD.

TRIME runs on personal computer with operating system MS-DOS (release 3.3 or later version) IBM compatible with a hard-disk and 80 columns printer. A user guide explains in more detail how to install and to use the program.

When running, the program shows the following MAIN MENU (Figure 1):

TRIME	
<ul style="list-style-type: none"> -1- To enter new shipment data -2- To revise shipment data -3- To print shipment data -4- To copy data on file (floppy) -5- To make backup -6- To setup -7- To display shipment data -X- Exit 	
CHOICE: █	Records: 0

Figure 1 Main menu.

Choice 1 of the menu allows to enter the data by a single window as shown in Figure 2 . Other choices of TRIME allow to manage an archive of consignors and consignees, to print out data, etc, to simplify the data input. It is possible to assign an identification number at each consignor or consignee; this facility allows to recall all information about a consignor or consignee (name, address, etc) typing the assigned number only.

Progressive: 1	
Consignor company name :	████████████████████
Consignor address :	████████████████████
Consignor city :	████████████████████ Province : █
Consignee company name :	████████████████████
Consignee address :	████████████████████
Consignee city :	████████████████████ Province : █
Previous carrier :	████████████████████ Following carrier : ████████████████████
Number of packages :	█0 Height : █0 Length : █0 Width : █0
Package type :	█ Mark : ████████████████████
Package mass :	█0.00 Unit of measure: █ Package category : █
Transport index :	█0.0 Fissile Class : █
Symbol radionuclide :	█ Mass number : █0 Physical state : █
Metastable :	█
Source mass :	█0.00 Unit of measure : █
Activity :	█0.0000 Unit of measure : █
Shipment date (start) :	█-█ Shipment date (end) : █-█

Figure 2 To enter new shipment data.

Input of some data, such as packages number, package type and so on, are checked by some program built-in functions to verify the compliance of the data with the standard format. In Table I are reported the fields and the kind of checks that TRIME performs (some of these check will be implemented in the new release). When the check gives an incorrect result, the cursor flashes and a warning message is displayed until the data are correctly inserted.

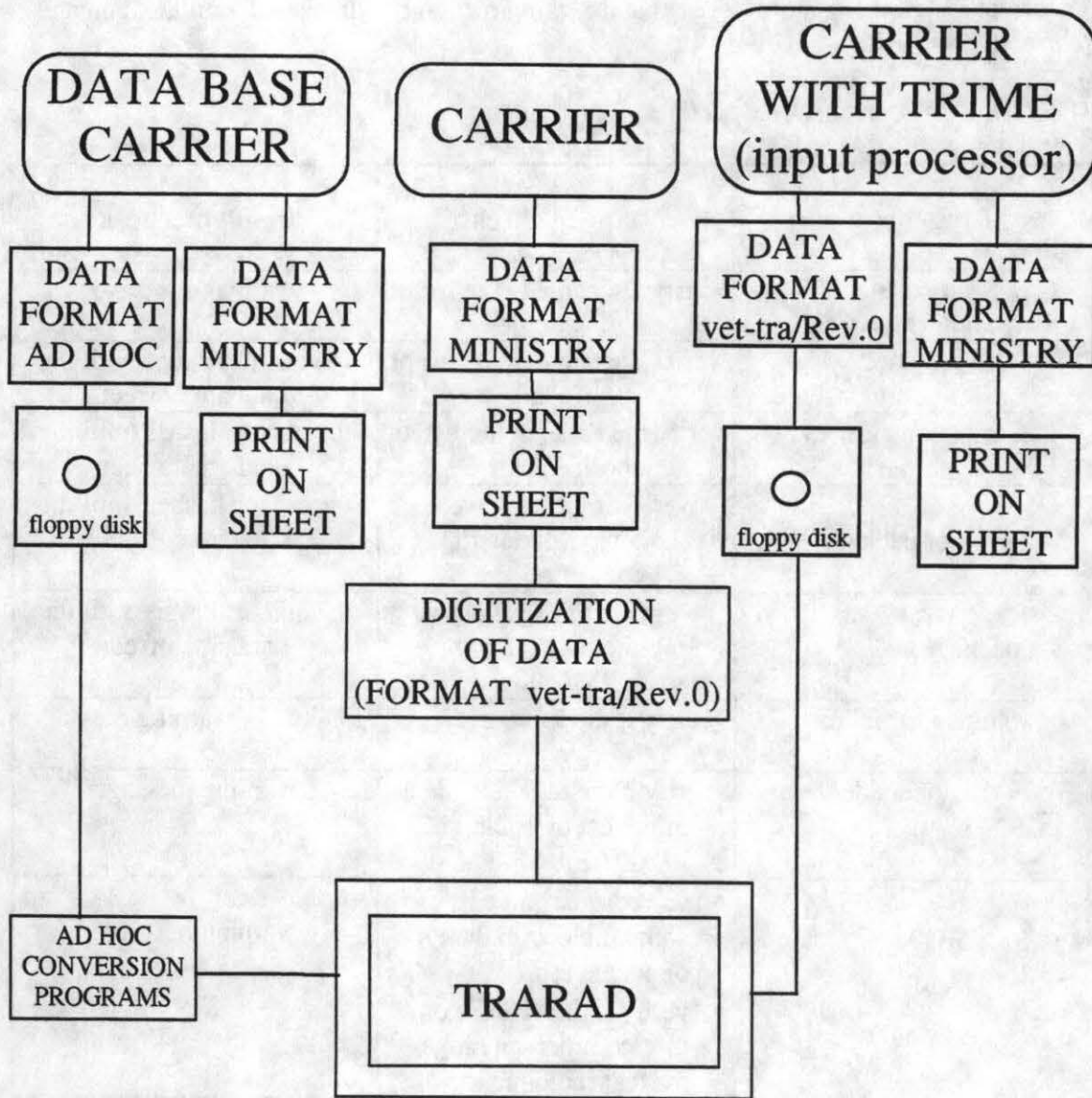
TABLE I Main checks input data

fields checked	type of check	result of check
city name of consignor or consignee	verify the name in the list of major cities	warning message
province of consignor or consignee	verify the name in the list of province	the cursor flashes until the data are correct
identification number of carrier	verify the name in the list of authorized carriers	the cursor flashes until the data are correct
type of package	verify if the package is Excepted, Industrial, Type A or Type B	the cursor flashes until the data are correct
package category	verify if the category is White, II- Yellow or III- Yellow	the cursor flashes until the data are correct
Transport Index	verify if the value is ≤ 10	if $TI > 10$ warning message
radionuclide	verify if the radionuclide is in the list of Table I of IAEA SS.6	warning message
activity	<ul style="list-style-type: none"> • verify if the value is compatible with the type of package; • verify if the value is on the "commercial range" for that radionuclide 	warning message

CONCLUSIONS

The lessons learned by the use of TRIME are the following:

- the program can simplify the work of the carrier to provide data to the competent authority;
- the checks on the input data, built into the program, can improve the quality of data. On this way is the future work for the new release of TRIME.



FLOW OF SHIPMENTS DATA