

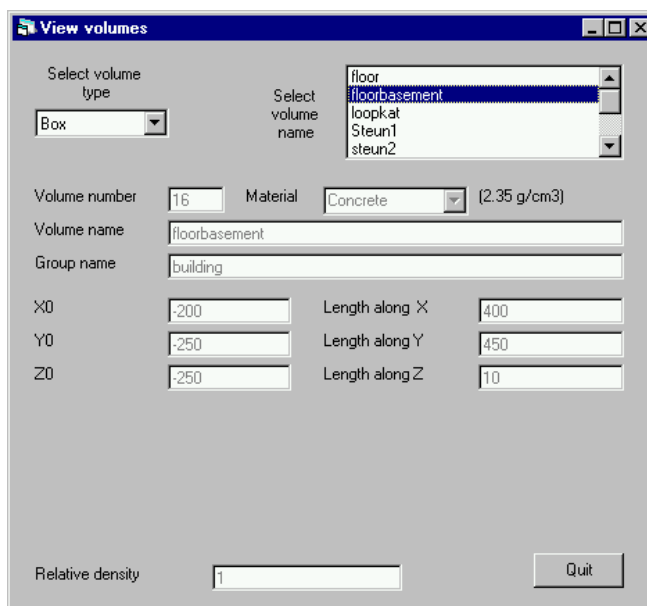
## 4.4. View menu.

The view menu allows the display of the different parameters of a Take object.

### View

#### Volumes

The view volume form displays the parameter of the volume objects in the current take. The volumes are first organised by volume type. A volume is then selected by the volume name. The parameters are displayed in the following form.



**View volumes**

Select volume type: Box

Select volume name: floorbasement

Volume number: 16    Material: Concrete (2.35 g/cm3)

Volume name: floorbasement

Group name: building

X0: -200    Length along X: 400

Y0: -250    Length along Y: 450

Z0: -250    Length along Z: 10

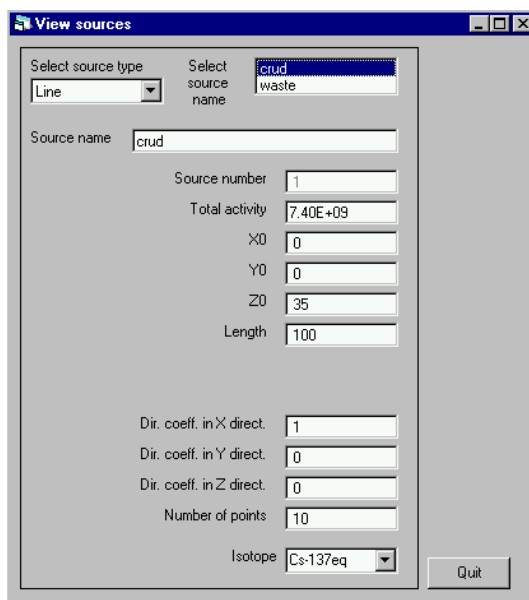
Relative density: 1

Quit

### View

#### Sources

The parameters of a selected source are displayed in the following form. Selecting the appropriate source type followed by the source name does the selection of the source.



**View sources**

Select source type: Line

Select source name: crud

Source name: crud

Source number: 1

Total activity: 7.40E+09

X0: 0

Y0: 0

Z0: 35

Length: 100

Dir. coeff. in X direct: 1

Dir. coeff. in Y direct: 0

Dir. coeff. in Z direct: 0

Number of points: 10

Isotope: Cs-137eq

Quit

## View

### *Source Spectrum*

The interpretation of the results or the selection of an adequate build-up factor can be supported by the knowledge of the source spectrum. The ***View Source spectrum*** command allows you to view the distribution of the photon energy of the source. The source is selected by clicking its name in the dropdown box. The spectrum is given as a bar chart with the photons per disintegration as a function of standard energy indices (see section 3.2.2.).

## View

### *Build-up factors*

The build-up factor of the standard materials can be viewed with this command. Select the energy and the main free path region of your interest. The graphs are given for all standard materials.

## View

### *Attenuation coeff.*

The attenuation coefficients for the standard materials can be viewed with this command. Selecting this command results in a table with the attenuation coefficients for all standard materials at different photon energies.

## View

### *Measured Dose rates*

Information of a specific measured dose rate set can be viewed by selecting its name in the following form. The data is displayed in the main graphical area as a set of points corresponding to the position of the measurements in the set. The measurement can be shown as a value or can be translated to a range colour displayed on the position of the measurement. The range can be shown with fixed levels or relative levels.

When the option relative levels is chosen the range of the measurements is divided into 8 equally spaced ranges from minimum to maximum value. The fixed levels are given below

1	
0.5	
0.2	
0.1	
0.05	mSv/h
0.02	
0.01	
0.005	



## 4.5. Draw menu.

The draw menu controls the parameters of the main graphical area.



### Draw

#### *Redraw*

The redraw function draws the geometry based on the last set of draw parameters. This function is used mainly during the geometry building phase. It allows a quick refresh of the geometry displayed on the screen taking into account the last changes.

The function can also be used to refresh the screen when too many data is displayed on top of the geometry.



### Draw

#### *Saved view*

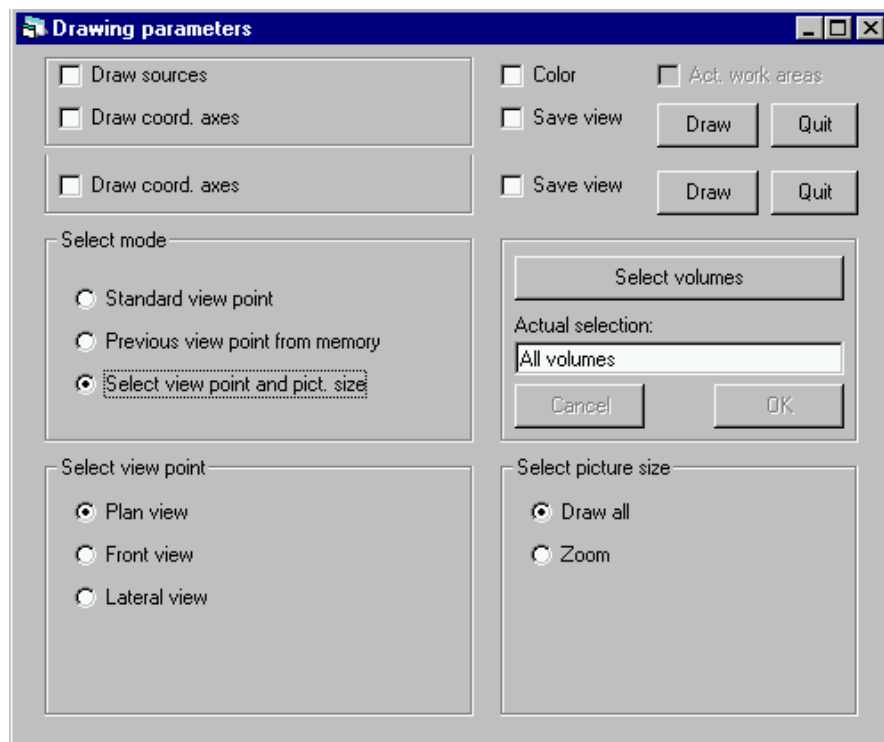
The saved view function draws the geometry based on saved drawing parameters. This function allows a quick switch from the current view to a view preferred by the user. A set of drawing parameters must be saved before using this function.



### Draw

#### *New view*

This function allows the definition of new draw parameters. The parameters are set in the



following form:

Display options:

*Draw sources:*

The defined sources are displayed in red on the geometry when the sources check box is clicked.

*Draw coord. axes:*

The co-ordinate axes are displayed when this option is chosen. You can use the default setting of the tick-marks or you can select the spacing from the *Axis ticks (cm)* drop-down box

*Color:*

The volumes in the geometry are drawn in a color corresponding with its material. This display option is useful during the geometry building phase.

*Save view:*

The save view option saves the current drawparameters. These parameters are recalled with the ***Draw Saved view*** command from the menu bar.

*Act. work areas:*

Draws the defined and activated work area's on the geometry (see also ***Edit work area's***).

*Select view point:*

The user can select the standard viewpoint that corresponds with an isoview. Other views possible are

- Plan view (projection on the xy-plane)
- Front view (projection on the xz-plane)
- Lateral view (projection on the yz-plane)
- Rotation (a freely oriented view by selection of the azimuth and elevation angle)

They are selected with the *select view point* option buttons.

The size and the centre point of the display can be given through the selection of the Zoom option. Draw all resizes the viewing window to include all objects.

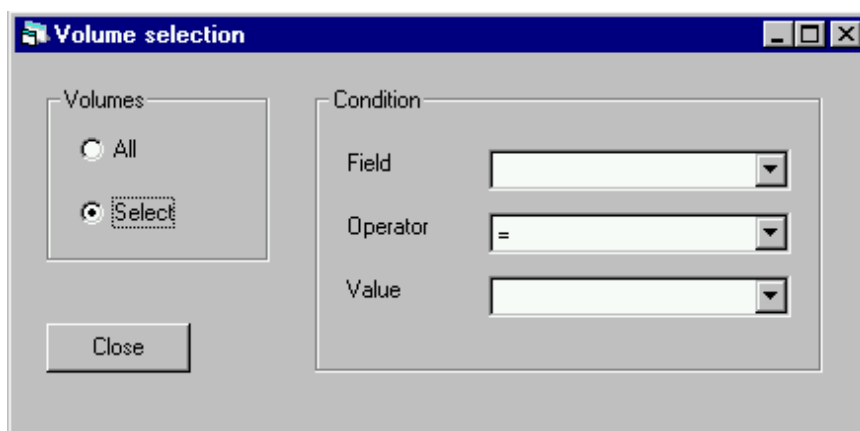
You can zoom into an area on screen by dragging a box on the screen. This is achieved by pressing the left mouse key at a corner of the region of interest, and moving the pointer, with the mouse key down to the other corner and then releasing it. You return to the original drawing parameters by clicking the right mouse key.

**Select volumes**

:The volumes to be displayed can be selected by using the select volumes. There you can define the conditions to display the volume with the operators =, <>, <, >, <= and >=, operating on the following properties:

*volume number, name, group, x0, y0, z0, W, L, H, orientation x, y, z, resolution, density, material and type.*

The value to compare with can be entered in the value field:



## 4.6. Calculation menu.

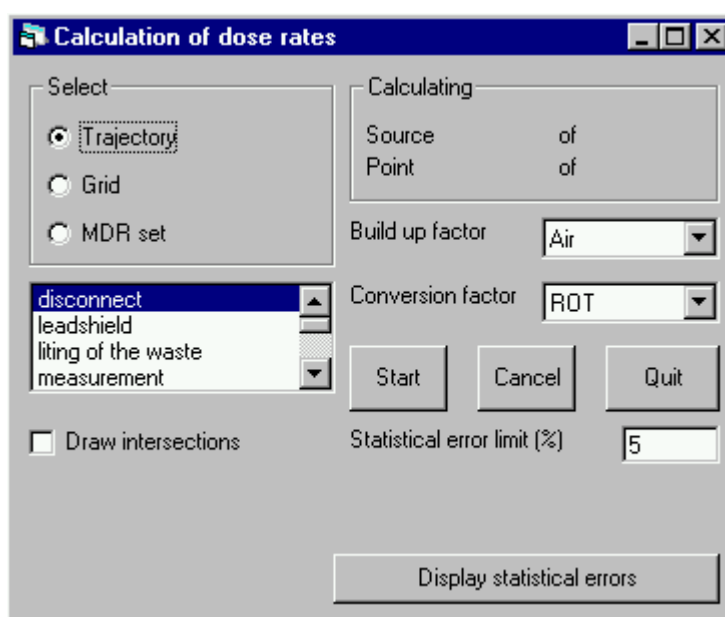
The calculation menu permits the calculation of doses or of source strengths in a saved take.



### Calculate

#### *Dose rate*

The dose calculation can be performed once the definition of the geometry, sources, trajectories, grids or MDR set is done. The option button lets you choose between trajectories, grids and MDR sets. The calculation is started by selecting the *Start* button



The dose calculation is performed based on a point-kernel method using the infinite media build-up technique. The calculations can be performed for the selected trajectory or the selected grid. The build-up material can be chosen in the build-up factor selection box. This must be done with due care. The build-up factors for the different materials can be viewed with the *View Build-up factors* command. The Effective dose conversion factor is limited at present to the rotational geometry based on the ICRP 51 (1987) publication. Other conversion factors will become available in later version.

The contribution to the dose of the volume sources are calculated using random sampling in the source volume. The number of random points used in the calculation is defined in the source definition and can be changed to reach the required accuracy.

A value for the statistical error limit can be introduced in the form. A dose calculation result with a statistical error greater than the limit set will cause a warning message to be displayed in the calculation form. The positions where these statistical errors occur can be viewed by pressing the *Display statistical errors* button. This action results in a table with the errors for the different dose points and different sources. The positions where errors larger than the

limit set occur can be displayed on the model by selecting the table followed by pressing the *draw* button

## Calculate

### *Source strengths*

Source strengths can be calculated based on the Take information and a measured dose rate set. Before starting this calculation you have to calculate the dose for the first estimate at the positions of the MDR set.

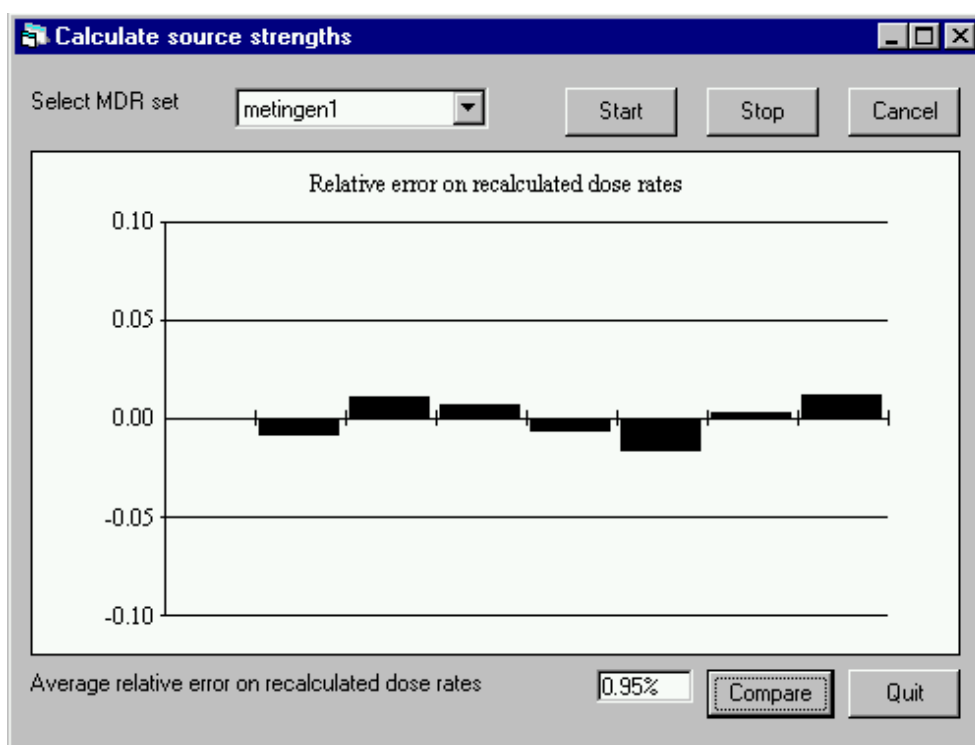
The MDR set is selected from the drop-down box. The result of the calculation is a SSA set with the multiplying factors converting the defined source strengths to newly calculated source strengths.

*Start*: Starts the calculations

*Stop*: Stops the calculation and makes an SSA set with the same name as the MDR set.

*Cancel*: cancels the calculation without making an SSA set

*Compare*: Compares the calculated with the measured dose values.



## 4.7. Results menu.

The results of the simulations can be examined with the commands in this menu.



### Results

#### *Trajectories*

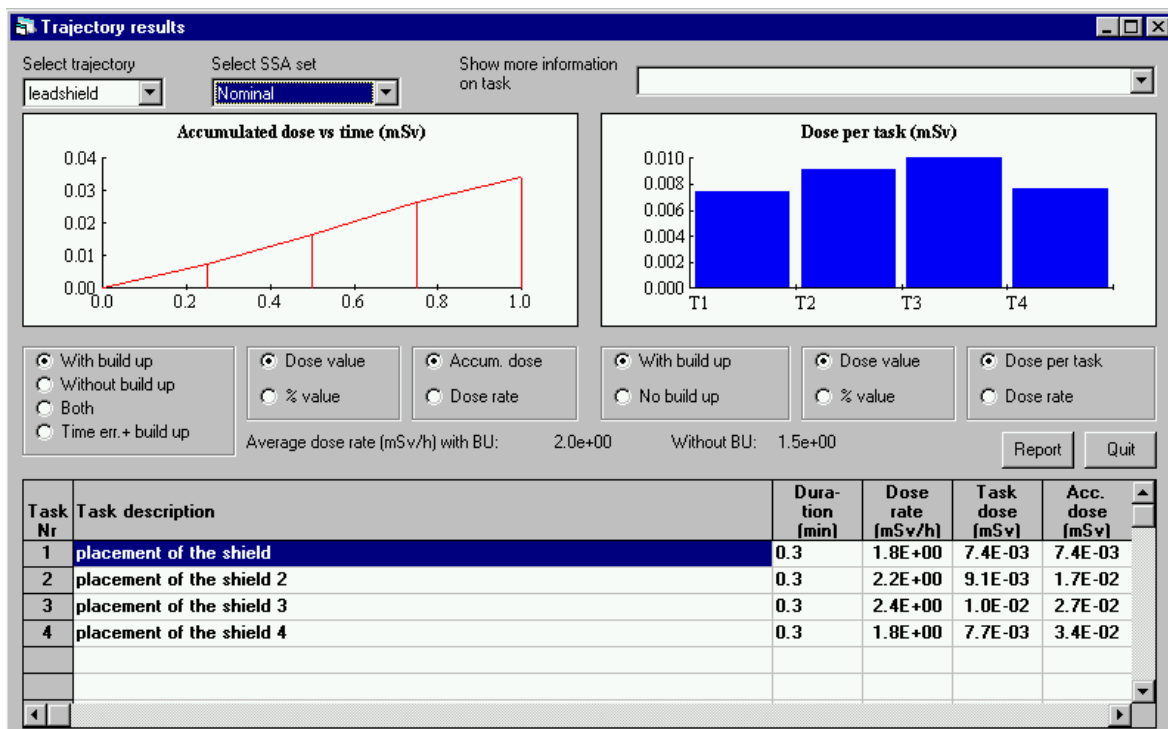
The results of the trajectory calculation can be viewed by selecting the results-trajectory command.

The selection box in the left upper corner of the form enables the selection of the trajectory of interest. The SSA selection box allows the biasing of the result with an earlier defined SSA-set.

Two graphs are displayed one of the accumulated dose or dose rate versus time, the other of the dose or dose rate per task. The graphs can be displayed in absolute values or in %-values.

A selection can be made to show the results with or without build-up calculations.

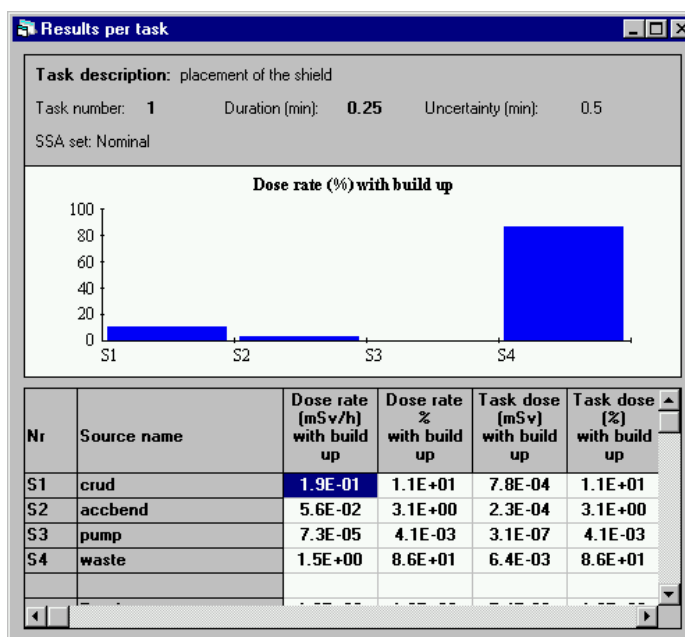
The influence of the uncertainty in the task duration on the accumulated dose can be displayed by selecting "time err.+ buildup".





### Show more information on task:

Detailed information about a specific task can be displayed by selecting the task in the selection box in the right upper part of the result form. This information includes details about the contribution of every source in the Take to the specific task.



Dose rate (mSv/h), Dose rate (%), Task dose (mSv) and Task dose (%) are immediately displayed. The influence of build-up can be studied by scrolling the table to the left. The task display window is removed from the screen by double-clicking inside the window.

### Report:

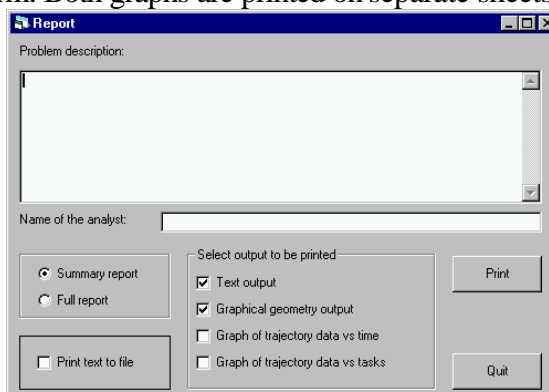
The report button allows the user to print the results of the displayed trajectory.

A problem description and the name of the analyst can be entered in the report window.

With the selection button a summary or a full report can be printed. The type of output in the *select output to be printed* selection box.

The graphical geometry output is based on the properties of the last draw operation.

The properties of the graphs of the trajectory data vs. time or task, are taken from the settings in the results form. Both graphs are printed on separate sheets.



The screenshot shows a window titled "Report" with the following fields and options:

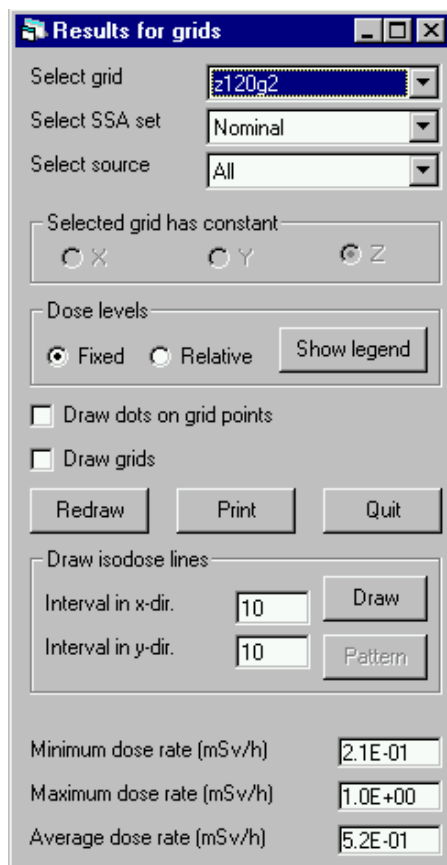
- Problem description:** A text area for entering the problem description.
- Name of the analyst:** A text input field.
- Select output to be printed:**
  - Summary report
  - Full report
  - Text output
  - Graphical geometry output
  - Graph of trajectory data vs time
  - Graph of trajectory data vs tasks
- Print text to file:**
- Buttons:** "Print" and "Quit".



## Results

### Grids

The results of a grid calculation can be examined with this command it generates the following window:

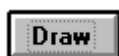


The grid to be displayed is chosen from the grid selection box. The results can be biased by the use of a SSA set chosen from the SSA set selection box. The dose values can be represented with the use of coloured dots or with the use of isodoselines. The resolution of the interpolation to draw the isodose lines is entered in the "Interval in the x-dir." and "Interval in the y-dir." box. Higher values of these parameters result in smoother curves. The dose level selection box offers a choice between fixed and relative dose levels. The selection of fixed dose levels results in a series of levels that are adapted to most working zones.

1	
0.5	
0.2	
0.1	
0.05	mSv/h
0.02	
0.01	
0.005	

The selection of relative dose levels divides the entire range into eight equally spaced levels.

The grid lines are displayed with the *Draw grids* selection. The maximum, minimum and the average dose level on the grid are displayed on the bottom of the form.



Draws the isodoselines of the selected grid on the geometry. This is performed without restrictions on the drawing parameters.



Fills a colour pattern corresponding to the levels of the isodoselines. This function is only available for x-, y- or z-projections of the geometry.

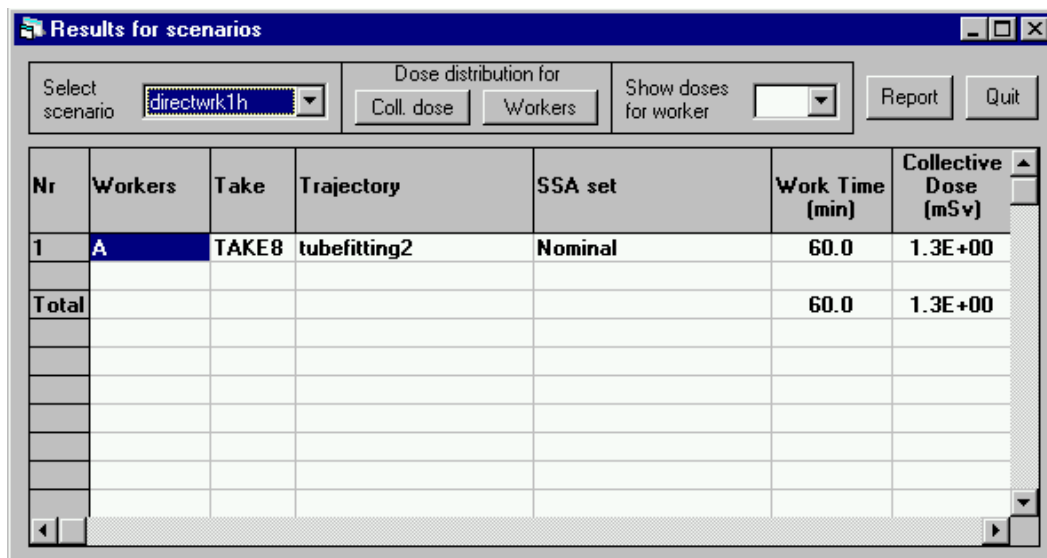


Refreshes the graphics output area. The information of the selected grid will only be shown when the option *draw dots on grid points* or *draw grids* are selected.



### Scenario

The results of a scenario calculation can be displayed by using this command. The result form is presented below:



Nr	Workers	Take	Trajectory	SSA set	Work Time (min)	Collective Dose (mSv)
1	A	TAKE8	tubefitting2	Nominal	60.0	1.3E+00
<b>Total</b>					<b>60.0</b>	<b>1.3E+00</b>

The scenario is selected from the *select scenario* drop-down box. The results of the scenario are directly displayed in the table.

A graphical representation of the collective dose as a function of trajectory is displayed with the *Coll. dose* button. The dose distribution per worker is displayed when the worker button is clicked.

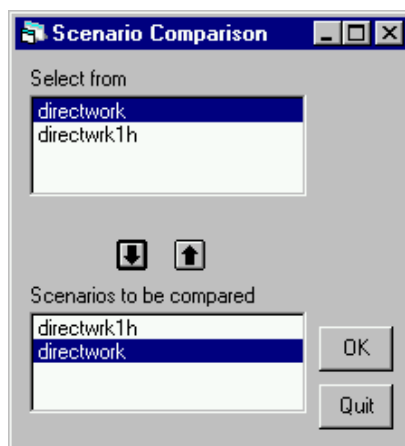
Dose information for a specific worker is displayed after selecting the worker in the *worker dose* drop-down box.

Clicking on the report button can print these results.

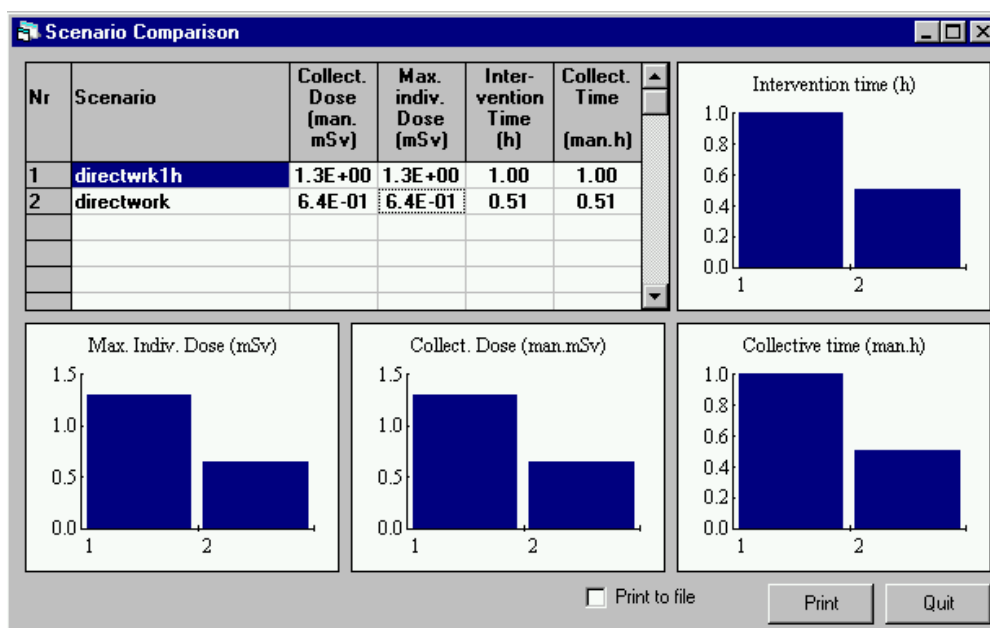
## Results

### *Scenario comparison*

Several scenarios can be compared with each other with this command. The first form that appears on the screen is the selection form:



By selecting the scenario and moving them to the scenario's to be compared box a set is created ready to be displayed after pressing the ok button.



The results include graphs and tables as shown on the figure. The printed report, generated after pressing the *print* button, only contains tables. The results can also be printed on file.

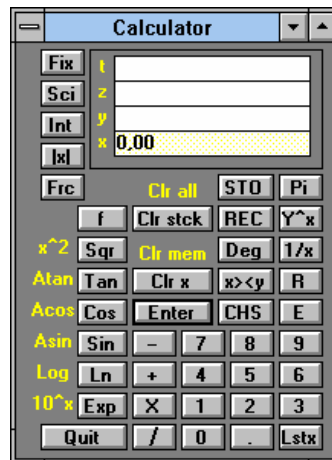
## 4.8. Tools Menu.

The tools menu is a group of useful tools to design or evaluate the Take.

### Tools

#### *Calculator*

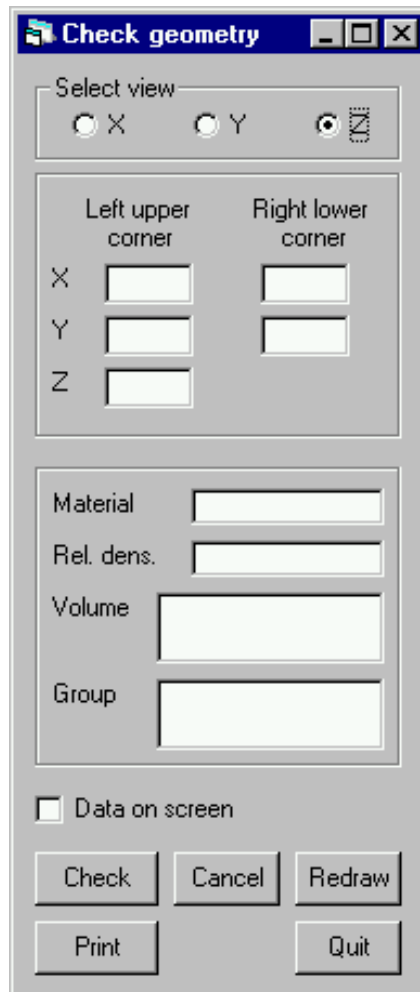
The calculator allows you to make calculations to prepare your input. The result of the calculation can be entered in the input boxes by clicking the right mouse button with the pointer positioned in the appropriate input box.



## Tools

### *Geometry Check*

This tool allows you to investigate your geometry. Performing a cut along the x-, y- or z-axis can do this.



The *Select view* options allows the users to select the type of cut. The area of interest is selected by entering the left upper corner and right lower corner co-ordinates or by dragging a box on the graphics area.

The cut is performed by pressing the *Check* button. The area of interest will be filled with a colour corresponding to the material in the cut. The constant value of the x-, y- or z-cut must be entered directly in the input box. Information about the volumes at a certain position in the model can be made visible by double-clicking that position on the screen. The form will show the material, the relative density, the volume name and the group name.

The *Data on screen* option enables the display of the material name and density on the graphical screen.

*Redraw* clears the results of check geometry.

*Print* makes a hardcopy of the graphical screen

## Tools

### *MDR merge*

Measured dose rate sets can be merged using this command. This command is used to combine different set of measurements in order to perform a source strength calculation. The new merged set can be given a name a description and a date and time of creation. The sets to be merged must be copied to the sets to be merged box. When the selection is finished you can merge the sets by pressing the *merge* button.



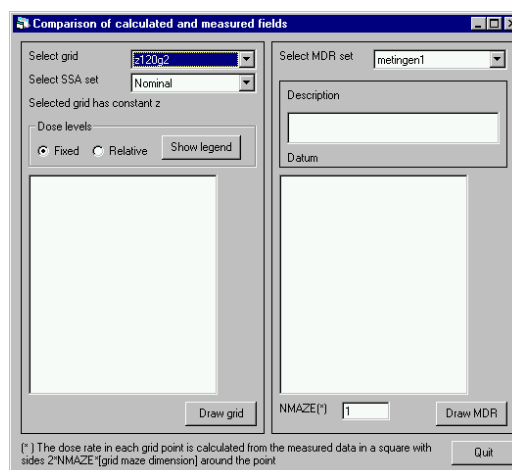
## Tools

### *Dose maps*

Maps of measured dose rates sets can be compared with calculated maps by using this tool. The comparison is only possible when the MDR set has a constant x-, y- or z-value. The calculations on a grid are selected with the *select grid* drop-down list. The results can be based on a selected SSA set chosen from the *Select SSA* drop-down list.

The MDR set is chosen from the *select MDR* set drop-down list.

The validity of this comparison is dependent upon the number of points of your MDR set. The maps are based on an interpolation, the tool will prohibit the display of MDR data set map when the interpolation cannot be performed properly. This is mostly the case when there are not enough measuring points or when the distribution over the area of interest is not good.



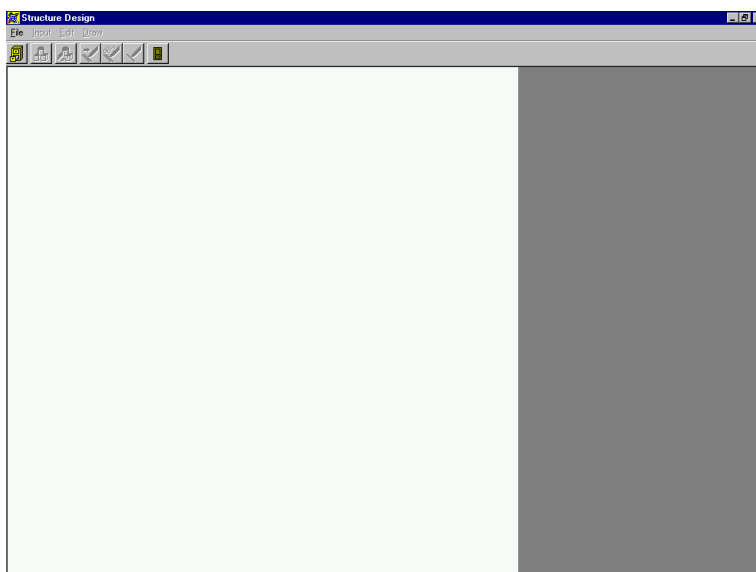
## Tools



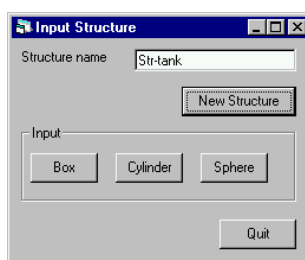
## Structure design

This tool allows you to make a database of objects frequently used in your models. As an example you can make a series of standard containers that are used in your environment. The input of the geometry's is comparable with the inputs in the main program. Note that the objects have to be in the desired orientation, only translations of the structure objects are allowed in the Take definition.

Before starting create a database with the *File create database* command. Then open the database with *File Open database*.



A new structure is defined by selecting **Input**. The form allows you to enter the box, cylinder and sphere volumes. All these volumes are combined with the structure name. A structure name always starts with "Str-". The volumes in a structure can be changed with the **Edit volumes** command. Material mixtures can be created with the **Edit material mixture** command. Volume sequences can also be changed in structures with the **Edit Volume**



*sequence* command.

A structure can be drawn with the standard **draw** commands. However note that you have to select the structure before you select *draw*.

## Tools


### Toolbar

Activates or deactivates the toolbar.

## 5. Questions and program follow -up

The VISIPLAN program is under further development therefore we welcome every suggestion to ameliorate the software.

Software problems you may encounter, during the use of the program, can be reported to use of the form given below. We will respond as soon as possible to your request.

 <p><b>VISIPLAN Program follow-up</b></p>	
<p>Send to:</p> <p>Dr F.Vermeersch          Nuclear Studies          Radiation Control Departement          Boeretang 200          B-2400 Mol          Belgium</p>	
<p>Date:          Your name:          Address:</p> <p>Version ♦ Windows 95          Serial number:          (See front page of user's guide)</p> <p>Phone:          E-mail:</p>	<p>Follow-up SCK•CEN</p>
<p>Problem description (Error message number).</p>	

