RODOS Test Concept: Application Software (Version 4.0F_022)

F I N A L

RODOS REPORT

DECISION SUPPORT FOR NUCLEAR EMERGENCIES

RODOS(RA1)-TN(01)-05

RODOS Test Concept: Application Software (Version 4.0F_022)

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Irmgard Hasemann

Forschungszentrum Karlsruhe / IKET
P.O.Box 3640
D-76021 Karlsruhe
Germany
Email: irmgard.hasemann@rodos.fzk.de

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Management Summary

RODOS is a comprehensive and integrated decision support system for assessing, presenting and evaluating nuclear accident consequences, taking into account the mitigating effect of countermeasures. Its flexible coding allows to cope with differences in site and source term characteristics, in the availability and quality of monitoring data, in national regulations and emergency plans.

Because of the modular architecture of the RODOS system and the flexible design of its interface, many different program modules, databases and other information sources can be accessed through a consistent and intuitive user interface. One of the most characteristic features of the RODOS software is given by the interaction between the application software, i.e. the models or the so-called "external programs" and the system software.

This report gives a comprehensive test example for testing the correct installation of the RODOS system as it contains the results of the most important models in graphical and tabular form. So, the users can compare whether the results produced are idential with those given here. Additionally, this report should help unexperienced users in handling the system, i.e. to activate load lists, to get data from the fix data base, to assign parameter values via the initialization windows, to configure a run based on precalculated and archived data of a previous model in the model chain, to load the results into the Graphics Manager, to display the graphical results in the Main Drawing Window and to show the tabular results in the Text Window.

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1 Introduction

RODOS is a comprehensive and integrated decision support system for assessing, presenting and evaluating nuclear accident consequences, taking into account the mitigating effect of countermeasures. Its flexible coding allows to cope with differences in site and source term characteristics, in the availability and quality of monitoring data, in national regulations and emergency plans.

Because of the modular architecture of the RODOS system and the flexible design of its interface, many different program modules, databases and other information sources can be accessed through a consistent and intuitive user interface. One of the most characteristic features of the RODOS software is given by the interaction between the application software, i.e. the models or the so-called "external programs" and the system software.

Each external program is developed for processing data and calculating endpoints belonging to the corresponding level of information processing. The system software is responsible for the access to the distributed database and external data networks, the communication between the several tasks, the user interface and so on.

Depending on the current situation, the user can choose one of the many external programs to perform the calculations and to evaluate their results.

The results of the external programs cannot only be presented by the graphics system, but are also used as input for other programs, which need these data for further calculations:

Section 2 of this report describes the steps necessary to run the test example. Section 3 presents a wide range of results in graphical and tabular form. In the Appendix the load lists used in the calculations and the ASCII files with input data and results of the external programs are given.

2 Performing the test runs

2.1 Preparations

Start Rodos with "*runrodos*" and user password; the Main Dialogue Window appears.

Start the Graphics: click "*Graphics*" in the Main Dialogue Window; the Main Drawing Window appears.

Define the site for the graphics and the calculations: Select in the Main Drawing Window as follows:

Option → Site Selection → FZK (FZK-Mast) → Apply

Start the Interactive Manager: click "*Interactive*" in the Main Dialogue Winodw; the Interactive Manager Window appears and shows the programs which can be run.

Figure 1 shows for the interactive mode of RODOS how the various program groups play together, and which results of a previous run have to be loaded to run a certain program group. The references to RLSMCprgn should be ignored, as it is not implemented in RODOS-4.0F.

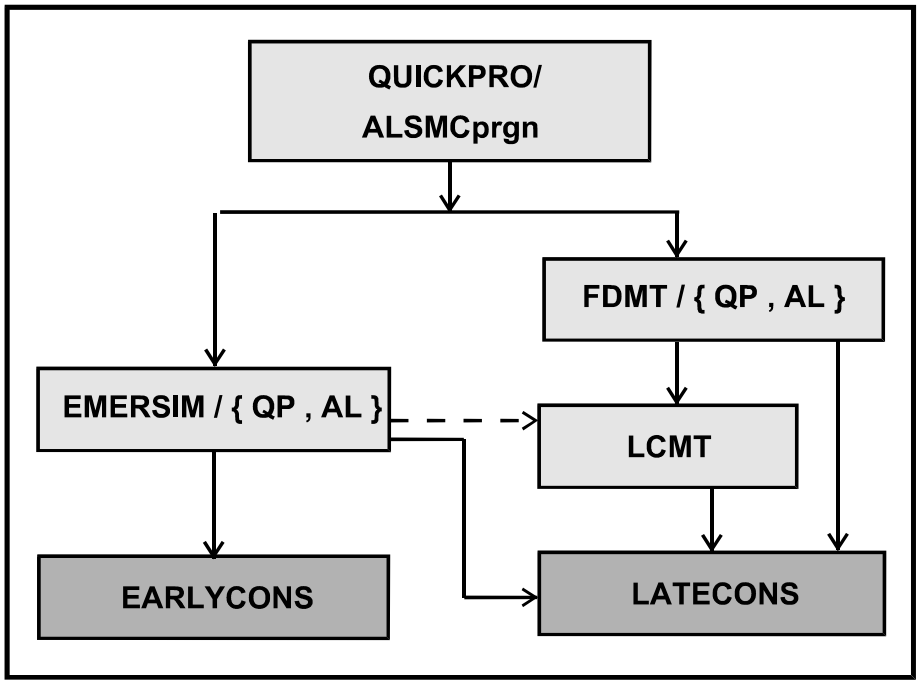


Figure 1: The model chain in RODOS.

2.2 The runs for interactive prognosis: QUICKPRO {ALSMCprogn / RLSMCprogn}

The following instructions have to be performed for all three interactive prognosis runs separately.

2.2.1 Activating the load lists

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor.

Select *ASY* for "Subsystem" and *QuickPrognо* {or *ALSMCprgn* or *RLSMCprgn*} for "Program name".

Click in the menu bar: File → Reset → File → Open

Select from the file names with extension "rodos" the one with comment "Sourceterm: FZK-Sep00: Filt. Vent. + Rel. after 3.5h, Met. FZK-" {or for ALSMCprgn with the comment "Interactive, met.-data from net for ALSMC-Prognosis"}; then click File → Copy. Wait until the Info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group QUICKPRO {ALSMCprogn or RLSMCprogn} and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an Info box shows the completion. Select from the list on the right side the Graphics list and proceed in the same way.

Leave the "Activate Load List" Window with "Close", the Load Editor with File → Quit and the Tool Manager with File → Close.

2.2.2 Activating the necessary file option

Before defining the input data, the "Option" button (in the Menu Bar of the Interactive Manager Window) has to be set to "*temporary*".

2.2.3 Setting up data from FixData-Base for the source term

Press in the Interactive Manager Window "*Configuration*" and choose "*Reassigning Dataset from Fixdata-Base*". Select QUICKPRO {ALSMCprogn or RLSMCprogn} from the list of Target Programs and the Configuration Window appears, where "*temporary*" must be specified at the top.

Choose *QuickPrognо* {or *ALSMCprgn* or *RLSMCprgn*} from the Program List. From the Category List one item has to be activated.

- Select "SourceTerm", press "*ok*", select INEX1-Phase2, press "*Apply*" and wait for the completion box which is closed with "*ok*".

Leave the Configuration Window with "*Close*".

2.2.4 Inserting data with the Initialization Windows

Being returned now to the "Interactive Manager" you select the program group QUICKPRO {or ALSMCprogn or RLSMCprogn} which should be run. In the Start-Box you specify the Run-Id. Before starting the program, some input parameters have to be defined with the help of the Initialization Windows by pressing "*Initializing*". In the Program Initialization Window select QuickProgno {or ALSMCprgn or RLSMCprgn}. In the Dataset Selection Window choose the item "*Previous Initialization*". In the Window "Prognosis: Data group" a list of six categories appears. After having completed the specification for one category press "*Update*" and "*Close*" and select the next category. You have to proceed as follows.

- Calculation nuclides: Click again to *Calculation nuclides.*

  Remove the following nuclides: Rb-88, Sr-89, Zr-95, Ba-140
  Insert the following nuclides: Kr-85m, Sr-91, Te-131m, Cs-136

  The resulting nuclide list contains:

  Kr-85m, Kr-88, Xe-133, Xe-135, I-131, I-132, I-133, I-135, Sr-90, Sr-91, Te-131m, Te-132, Cs-134, Cs-136, Cs-137.

- Date/time of release: Insert 1986 - 4- 26 - 0 - 0

- Meteorology: Click *Meteorological data.*

  – For QUICKPRO: Select "*Read from file*"; the data set name to be specified is MET.INEX1P2D.

  – For ALSMCprgn and RLSMCprgn:
    * Click to *"Land use data"*, choose *"Location-independent land use data from user"*, then insert index "5" (for built-up areas); leave the two windows with "*Update*".
    * Click to *"Source of meteorological data"*, choose *"Meteorological data from user"*, then *"Read from file*"; the data set name to be specified is MET.INEX1P2D; close all these four meteorological windows with "*Update*".

For categories "Reactor power and operation time", "Calculation grid" and "Source term" no parameters have to be modified.

Leave the Window "PROGNOSIS: Data group" by pressing "*Close*", activate your input by pressing "*Apply*" in the "Program Initialization Window" (this takes some time until it is finished) and return with "*Return*" to the Start box.

2.2.5 Performing the prognosis run and checking the input data

After pressing "Start" in the Start box, QUICKPRO {or ALSMCprogn or RLSMCprogn} runs for 48 cycles. Several files are produced showing the input data used in the calculations. These files are stored in the directory / rodos / roextern / outall / *user-id* / *run-id* /. You can look at

them outside the RODOS-system using your normal editor. Or you can load some of them into the graphics of RODOS as described in the Results Section. Check whether they agree with those listed in Appendix B of this report.

2.3 The EMERSIM run based on QUICKPRO {or ALSMCprogn or RLSMCprogn}

The following instructions refer to QUICKPRO (i.e. EMERSIM/QP), but they are also valid for EMERSIM based on ALSMCprogn (EMERSIM/AL) or RLSMCprogn (EMERSIM/RL); only the name must be replaced.

2.3.1 Activating the load lists

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor.

Select *CSY* for "Subsystem" and *EMERSIM* for "Program name".

Click: File → Reset → File → Open

Select from the file names with extension "rodos" the one with comment "INEX1-StartsetB (EmerSim on QuickProgno)"; then click File → Copy. Wait until the Info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group EMERSIM/QP and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an info box shows the completion. Select from the list on the right side the Graphics list and proceed in the same way.

Leave the "Activate Load List" Window with "Close", the Load Editor with File → Quit and the Tool Manager with File → Close.

2.3.2 Loading the Prognosis results

Click in the "Interactive Manager Window" to "Configuration" and select from there "Importing Result-Dataset To" and from the list of "Target Programs" *EMERSIM/QP*. From the "List of Archived Runs" choose the run "QUICKPRO/QuickProgno", on which the EMERSIM calculations will be based. Press "*Apply*" and after the info-message "configuration completed" appears, press "*ok*."

2.3.3 Inserting data with the Initialization Windows

No input data have to be specified with the Initialization windows.

2.3.4 Performing the EMERSIM run and checking the input data

In the "Interactive Manager Window" you select the program group EMERSIM/QP which should be run. In the Start-Box you specify the

Run-Id. After pressing "Start", EMERSIM based on QUICKPRO runs. Several files are produced showing the input data used in the calculations. These files are stored in the directory /rodos/roextern/outall/*user-id*/*run-id*/. The file "EmerSim.Consequences" in the same directory contains a summary of the results. You can look at them outside the RODOS-system using your normal editor. Or you can load some of them into the graphics of RODOS as described in the Results Section. Check whether these files agree with those listed in Appendix B of this report.

2.4 The EARLYCONS run based on EMERSIM/QP {or /AL or /RL}

The following instructions refer also to EARLYCONS based on EMERSIM/AL or EMERSIM/RL; only the name of the EMERSIM results file which has to be loaded must be changed. The load files of EARLYCONS are identical for all three runs.

2.4.1 Activating the load lists

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor. As the Program Group EARLYCONS consists of four programs, the following procedure must be done for all four programs DHM40, SHM40, EEM40 and RESTAB40.

Select *CSY* for "Subsystem" and *DHM40* for "Program name".

Click: File → Reset → File → Open

Select from the file names with extension "rodos" the one with the comment "Load list for calculation of deterministic health effects"; then click File → Copy. Wait until the Info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group EARLYCONS and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an Info box shows the completion. Select from the list on the right side the Graphics list and proceed in the same way (for EEM40 there exists no graphics load list).

Leave the "Activate Load List" Window with "Close", proceed for the other three programs in the same way and finally close the Load Editor with File → Quit and the Tool Manager with File → Close.

2.4.2 Loading the EMERSIM results

Click in the "Interactive Manager Window" to "Configuration" and select from there "Importing Result-Dataset To" and in the list of "Target Programs" *EARLYCONS*. From the "List of Archived Runs" click to the run "EMERSIM/QP/EMERSIM", on which the

EARLYCONS calculations will be based. Press "*Apply*" and after the info-message "configuration completed" appears press "*ok*."

2.4.3 Specification of input data

The EARLYCONS calculations use always (i.e. not only in this example run) only default values, so no input data can be specified with the Initialization windows.

2.4.4 Performing the EARLYCONS run

In the "Interactive Manager Window" you select the program group EARLYCONS which should be run. In the Start-Box you specify the Run-Id. After pressing "Start", EARLYCONS based on EMERSIM/QP runs.

2.5 The FDMT run based on QUICKPRO {or ALSMCprogn or RLSMCprogn}

The following instructions refer to QUICKPRO (i.e. FDMT/QP), but they are also valid for FDMT based on ALSMCprogn (FDMT/AL) or on RLSMCprogn (FDMT/RL); only the name must be replaced.

2.5.1 Activating the load list

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor.

Select *ASY* for "Subsystem" and *FDMT* for "Program name".

Click: File → Reset → File → Open

Select from the file names with extension "rodos" the one with comment "load list for FDMT 4.0 / QuickProgno input {ALSMCprgn input or RLSMCprgn input}"; then click File → Copy. Wait until the info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group FDMT/QP {FDMT/AL or FDMT/RL} and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an info box shows the completion. For the Graphics there exists no load list.

Leave the "Activate Load List" Window with "Close", the Load Editor with File → Quit and the Tool Manager with File → Close.

2.5.2 Loading the Prognosis results

Click in the "Interactive Manager Window" to "Configuration" and select from there "Importing Result-Dataset To" and from the list of "Target Programs" *FDMT/QP*. From the "List of Archived Runs" choose the run "QUICKPRO/QuickProgno", on which the FDMT

calculations will be based. Press "*Apply*" and after the info-message "configuration completed" appears press "*ok*."

2.5.3 Inserting data with the Initialization Windows

Being returned now to the "Interactive Manager" you select the program group FDMT/QP which should be run. In the Start-Box you specify the Run-Id. Before starting the program, no input parameters have to be defined with the help of the Initialization Windows. Instead, during run time input windows open dynamically to define parameters referring to the results presented graphically (see below).

2.5.4 Performing the FDMT run

Make sure, that the Main Drawing Window and the Graphics Manager Window are open; otherwise no pictures will be stored and no data will be archived. In the "Interactive Manager Window" you select the program group FDMT/QP which should be run. In the Start-Box you specify the Run-Id. After pressing "Start", FDMT based on QUICKPRO runs. During run time, input windows open dynamically to specify which results should be provided for graphical presentation (see next section). All these results selected by the user are stored as RLE-files in the directory /rodos/roextern/outall/*user-id*/*run-id*/ and can be loaded also later into the Graphics Window.

After the calculations are finished and the graphic files stored, the users can either start further calculations be specifying "Yes" in another input window or terminate FDMT by "No".

2.5.5 Dynamic input windows during run time

During run time the window "FDMT v4.0: Main Menu" appears where the user selects the results for graphical presentation. A list of four categories is given; make the following selections in two of them:

- Doses:
  - Click to "Dose from other pathways" and activate there additionally to the pathways activated by default (Cloud dose, Ground dose (short term), Ground dose (long term), Inhalation dose), Skin dose, Resuspension dose): Total dose from all pathways except ingestion. Leave the window with "*Update*".
  - Click to "Organ" and deselect there: Thyroid. Leave the window with "*Update*".
  - Click to "Integration time" and activate there: 50 years. Leave the window with "*Update*".
  - Click to "Various" and activate there: normal living exposure. Leave the window with "*Update*".

  Leave the window "Doses" with "*Close*".

- Graphical output type:

  Select "Collective doses" and leave the window with "*Update*".

Leave the "FDMT v4.0: Main Menu" with "*Close*" and FDMT continues by providing the selected results for graphical presentation.

After this is finished the user can select further calculations in the window "FDMT Program loop" (press Yes) or terminate FDMT (press No); leave the window with "*Update*".

2.6 The LCMT run based on FDMT/QP

The following instructions refer to FDMT/QP as base run; but they are also valid for LCMT based on FDMT/AL or FDMT/RL; only the name must be replaced. If you want to include the impact of evacuation in the LCMT calculations, LCMT must be based additionally on the appropriate EMERSIM run (i.e. /QP or /AL or /RL).

2.6.1 Activating the load list

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor.

Select *CSY* for "Subsystem" and *LCMT* for "Program name".

Click: File → Reset → File → Open

Select from the file names with extension "rodos" the one with comment "standard load list lcmt40"[1]; then click File → Copy. Wait until the Info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group LCMT and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an info box shows the completion. For the Graphics there exists no load list.

Leave the "Activate Load List" Window with "Close", the Load Editor with File → Quit and the Tool Manager with File → Close.

2.6.2 Loading the FDMT/QP results

Click in the "Interactive Manager Window" to "Configuration" and select from there "Importing Result-Dataset To" and from the list of "Target Programs" *LCMT*. From the "List of Archived Runs" choose the run "FDMT/QP/FDMT40", on which the LCMT calculations will be

[1] If the impact of evacuation has to be considered, the loadlist "Loadlist for LCMT4 with EMERSIM" has to be activated.

based. Press "*Apply*" and after the info-message "configuration completed" appears press "*ok*". [2]

2.6.3 Inserting data with the Initialization Windows

Being returned now to the "Interactive Manager" you select the program group LCMT which should be run. In the Start-Box you specify the Run-Id. Before starting the program, some input parameters have to be defined with the help of the Initialization Windows by pressing "*Initializing*". In the Program Initialization Window select LCMT. In the Dataset Selection Window choose the item "*Previous Initialization*". In the Window "LCMT4-1.0 C: Selection of tasks" a list of options appears defining the tasks to be calculated. Choose Option 1 (Relocation and agricultural countermeasures), which is the default option, to modify parameters for both types of countermeasures. For this test run changes are only required for the relocation parameters.

- Input for relocation:
  - Press "Selection of input of evacuation", activate "No impact", click to "*Close*" in the dummy-window, then to "*Update*".
  - Press "Selection of relocation criteria", then "Criteria and timings"; change here the values for both, Imposition and Relaxation criteria to 3.000e-02 mSv; click to "*Update*", then to "*Close*".
  - Select "Decontamination options", then "Decontamination only in relocated areas", then choose "Techniques"; deselect here "Skim and burial ploughing - 2 years" by inserting a "0" and finally select the technique "Grass cutting - 14 days" by inserting a "1"; leave the windows with "*Update*", then "*Close*", then again "*Update*" and again "*Close*".

Leave the windows "LCMT: Input for relocation and agricultural countermeasures" and "LCMT: Selection of tasks" both with "*Update*". Activate your input by pressing "*Apply*" in the "Program Initialization Window" (this takes some time until it is finished) and return with "*Return*" to the Start box.

2.6.4 Performing the LCMT run

Make sure, that the Main Drawing Window and the Graphics Manager Window are open; otherwise the run lasts longer and no pictures will be stored. In the "Interactive Manager Window" you select the program group LCMT which should be run. In the Start-Box you have already specified the Run-Id. After pressing "Start", LCMT based on FDMT/QP runs. All results for graphical presentation are stored as

[2] If the impact of evacuation has to be considered, the results of EMERSIM/QP have to be loaded in the same way.

RLE-files in the directory / rodos / roextern / outall / *user-id* / *run-id* / and can be loaded later into the Graphics Window.

At first, LCMT performs the calculations for relocation and decontamination. During that part, no further user input is required. Then, dynamic input windows open for each foodstuff considered (these are milk and leafy vegetables as default, which was not modified in this test run) to define the actions taken into account for agricultural countermeasures. No action, i.e. potential areas for food bans, are calculated by default for each foodstuff considered; if this button is pressed, all other actions specified will be ignored. So, press this button only if you want to calculate *no* agricultural countermeasures.

For this test run, choose

"Disposal or stopping production" and
"Removing from contaminated feed at t = 0"

for **milk**; leave the window with "*Update*". For each of the actions a further window opens to modify the timings; keep the default values and leave these windows with "*Close*".

For the second foodstuff considered (i.e. **leafy vegetables**) choose

"Disposal or stopping production " and
"Agricultural decontamination";

leave the window with "*Update*"; leave the following timing windows without modification with "*Close*". The calculation then continues.

For the action "Agricultural decontamination" a window opens which is (currently still) named "error window"; however it reports not an error, only an information: the selected countermeasure does not reduce the doses and is thus classified as *disallowed*.

2.7 The LATECONS run based on EMERSIM/QP, FDMT/QP and LCMT

The following instructions refer also to LATECONS based on EMERSIM, FDMT and LCMT results produced with the prognosis model ALSMCprgn or RLSMCprgn; the user has to make sure that the correct results are used. The load files of LATECONS are identical for all three runs.

2.7.1 Activating the load lists

Select *"Tools*" in the Main Dialogue Window and the Tool Manager Window appears; choosing *"Load"* opens the Load Editor. As the Program Group LATECONS consists of three programs, the following procedure must be done for all three programs DHM40, SHML40, and LEM40. However, the load list for DHM40 needs not to be copied again as this was already done for the EARLYCONS run. It must also be activated for the Program Group LATECONS.

Select *CSY* for "Subsystem" and *DHM40* for "Program name".

Click: File → Reset → File → Open

Select from the file names with extension "rodos" the one with the comment "Load list for calculation of deterministic health effects"; then click File → Copy. Wait until the Info "copy completed" appears. To see the name of the new file, click File → Reset → File → Open; look for the name with your user-id as extension.

Then click File → Activate ...; select the Program Group LATECONS and from the available lists on the left side the one just produced by copy; press "Apply" and wait until an Info box shows the completion. Select from the list on the right side the Graphics list and proceed in the same way (for LEM40 there exists no graphics load list).

Leave the "Activate Load List" Window with "Close", proceed for the other three programs in the same way and finally close the Load Editor with File → Quit and the Tool Manager with File → Close.

2.7.2 Loading the EMERSIM, FDMT and LCMT results

Click in the "Interactive Manager Window" to "Configuration" and select from there "Importing Result-Dataset To" and in the list of "Target Programs" *LATECONS*. From the "List of Archived Runs" click to the run "EMERSIM/QP/EmerSim", on which the LATECONS calculations will be based. Press "*Apply*" and after the info-message "configuration completed" appears press "*ok*." Do the same to load the FDMT and the LCMT results. It is not possible to load all three runs in one step.

2.7.3 Specification of input data

The LATECONS calculations use always (i.e. not only in this example run) only default values, so no input data can be specified with the Initialization windows.

2.7.4 Performing the LATECONS run

In the "Interactive Manager Window" you select the program group LATECONS which should be run. In the Start-Box you specify the Run-Id. After pressing "Start", LATECONS based on EMERSIM/QP, FDMT/QP and LCMT/QP runs.

3 The results

If the run, for which the results should be presented, is no longer active in the Application List, the data of the old run must first be loaded. This is done in the following way:

Click in the Interactive Manager Window to File → Display Results, select from the list of Program Groups the desired one, mark in the List of Archived Runs the corresponding line and press "*Apply*". The run-id of the selected run is shown in the Application List with the extension *".old"*. Select Graphics in the Control & Services Window. Depending on the program there are two different ways how to proceed:

- For Prognosis {QUICKPRO, ALSMCprogn or RLSMCprogn}, EMERSIM, EARLYCONS and LATECONS: The Graphics Manager Window opens and shows at the top the run-id selected and below the corresponding program group name which has to be pressed. Further buttons appear showing the results available which are structured hierarchically.
- For FDMT and LCMT: A window List of Pictures opens. Click to "*All*" and "*Apply*", if you want to see all pictures stored. If you want to load only some of them, click to the run-id and then make the desired selections in the hierarchy of the results. If you are at the end of one sub-branch, click to the top of that branch again and make the selections for the other sub-branches as wanted. Finally press "*Apply*". Depending on the number of pictures selected, it can take some time until all pictures appear in the Theme Selection Window of the Main Drawing Window.

In both cases, all the graphics just loaded can then be presented in the Main Drawing Window. Activate in the Theme Selection Window the desired picture which then will apear.

With the seventh button from the left side of the Tool Bar ("Open Toolbox for Main Window Actions"), you can mark **detector points** (grid elements), for which the result value is then presented on the map. Select "Actions" and activate "Add detector points"; then click in the map to all the desired cells; pressing the nineth button of the Tool Bar redraws the picture with the detector points in.

The results are presented in detail for two grid cells:

- Cell 1 is without rain; it is located just beyond the inner (2 km) circle between the two sector lines towards SE and has the number 230.
- Cell 2 is with rain for 0.5 hours of 10 mm/h after and before a certain period without rain; it is located just where the sector line towards ESE intersects the 25 km circle and has the number 1194.

3.1 For QUICKPRO

If the Graphics Manager Window does not yet show the correct RunId at the top, click to the corresponding RunId in the Application List and then press Graphics in the Control & Services Window. Click then to "QuickProgno" in the Graphics Manager Window and select under:

- **Con&Depos:** TiConAir, CoGround, CoGroundWet
  The results are presented in the next section.
- **Rad&Doses:** CloudDoseSum, GroundDosSum, InhalDoseSum, Local Skin Dose
  The results are presented in the overnext section.
- **Tables:** MeteoData, STermData, SiteData
  The three files can be loaded into the Text window of RODOS which is opened with the third button from the left in the Tool Bar; then click to List and select the appropriate file. They present input values used for the calculations of QuickPro and are listed in the Appendix of this report.

  The files are also stored in the outall-directory (/rodos/roextern/outall) in the subdirectory /*user-id / run-id*.

3.1.1 Con&Depos

Go to the Main Drawing Window; click to the folder at the top left side and select the Run-Id of the QuickPro-run and then the endpoints one after the other. From the list of nuclides select Cs-137; then for this nuclide the time-integrated air concentrations (TiConAir), the ground concentrations (CoGround) and the ground concentrations due to wet deposition only (CoGroundWet) are shown (see Figure 2 to Figure 4).

The results for all nuclides can be found in tabular form in a separate window which is opened by clicking in the Menu Bar at the top Theme → Properties → Text-Results. Activate the Point-Information Mode, click in the map to the two cells evaluated and the results appear in the text window. The values that should be found are given in Table 1 to Table 3.

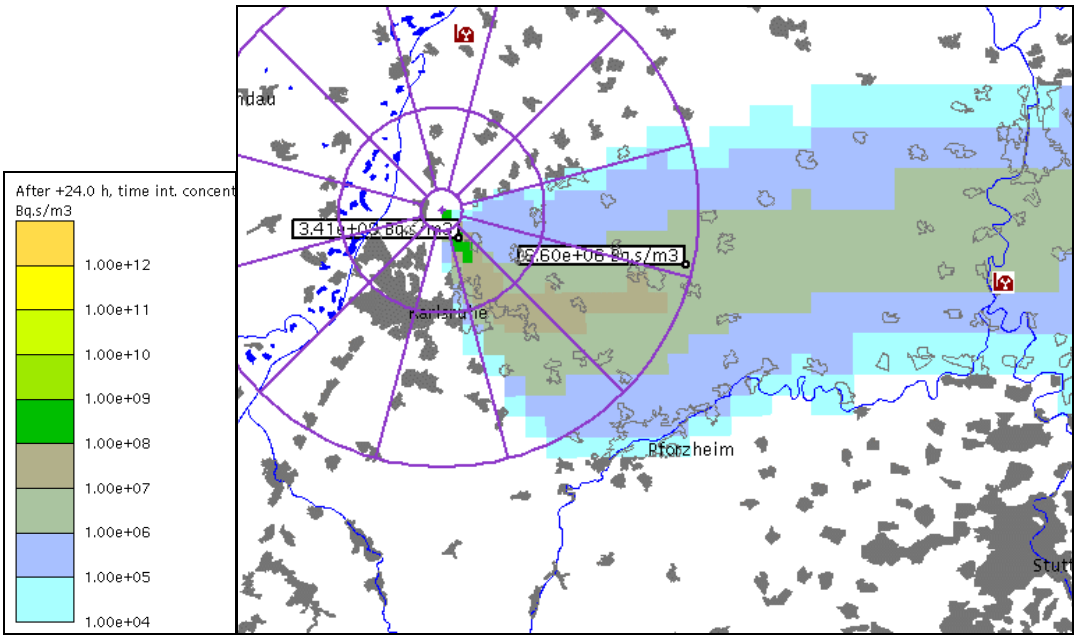


Figure 2: QP. TiConAir - Time integrated air concentrations for Cs-137.

TiConAir	cell (230)	cell (1194)
Kr- 85m	4.18e+10	8.10e+08
Kr- 88	3.63e+10	5.97e+08
Xe-133	2.12e+12	5.33e+10
Xe-135	8.65e+11	1.93e+10
I-131	4.83e+09	9.70e+07
I -132	6.53e+09	1.30e+08
I -133	6.94e+09	1.33e+08
I -135	2.50e+09	4.17e+07
Sr- 90	2.49e+07	4.76e+05
Sr- 91	2.62e+08	4.44e+06
Te-131m	5.47e+08	1.03e+07
Te-132	6.48e+09	1.24e+08
Cs-134	5.64e+08	1.09e+07
Cs-136	2.45e+08	4.75e+06
Cs-137	3.41e+08	6.60e+06

Table 1: QP. TiConAir - Time-integrated air concentrations [Bq*s/m^3].

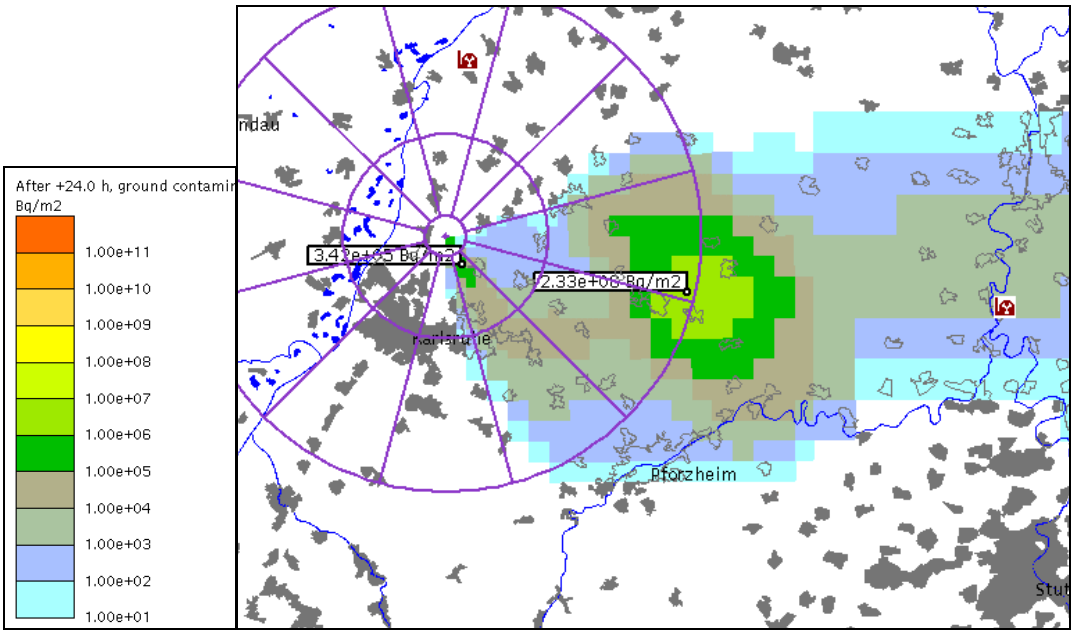


Figure 3: QP. CoGround - Ground concentrations for Cs-137.

CoGround	cell (230)	cell (1194)
Kr- 85m	0.00e+00	0.00e+00
Kr- 88	0.00e+00	0.00e+00
Xe-133	0.00e+00	0.00e+00
Xe-135	0.00e+00	0.00e+00
I-131	3.73e+07	2.09e+07
I -132	5.50e+06	3.73e+07
I -133	2.72e+07	1.54e+07
I -135	1.92e+06	1.07e+06
Sr- 90	2.51e+04	1.68e+05
Sr- 91	4.98e+04	3.36e+05
Te-131m	3.25e+05	2.24e+06
Te-132	5.29e+06	3.62e+07
Cs-134	5.67e+05	3.85e+06
Cs-136	2.32e+05	1.59e+06
Cs-137	3.42e+05	2.33e+06

Table 2: QP. CoGround - Ground concentrations [Bq/m^2].

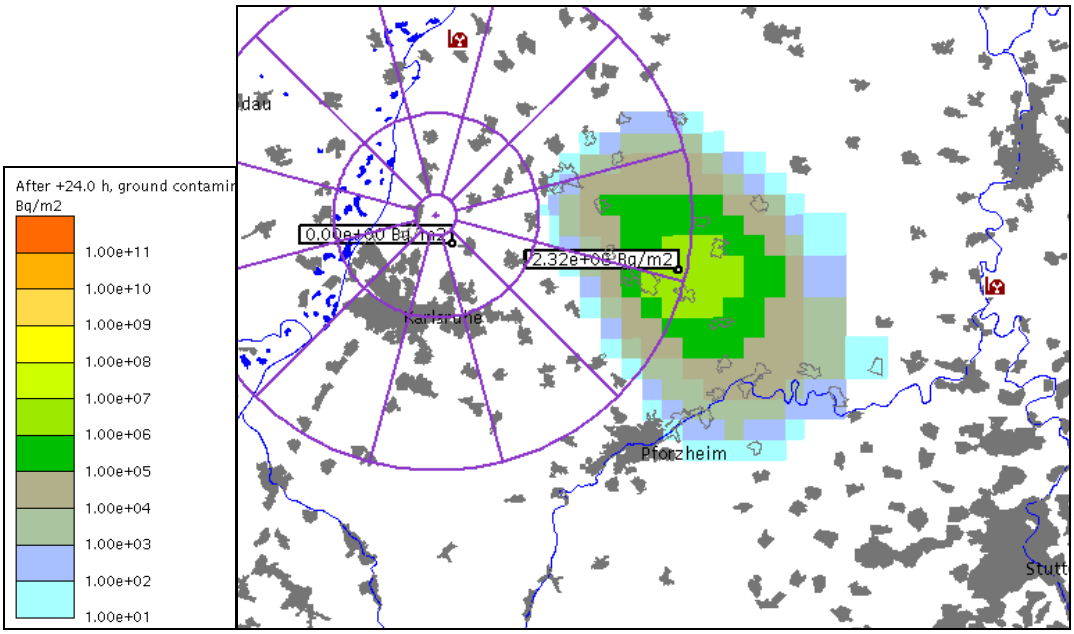


Figure 4: QP. CoGroundWet - Ground concentrations for Cs-137 due to wet deposition only.

CoGroundWet	cell (230)	cell (1194)
Kr- 85m	0.00e+00	0.00e+00
Kr- 88	0.00e+00	0.00e+00
Xe-133	0.00e+00	0.00e+00
Xe-135	0.00e+00	0.00e+00
I-131	0.00e+00	2.02e+07
I -132	0.00e+00	3.72e+07
I -133	0.00e+00	1.48e+07
I -135	0.00e+00	1.03e+06
Sr- 90	0.00e+00	1.67e+05
Sr- 91	0.00e+00	3.35e+05
Te-131m	0.00e+00	2.23e+06
Te-132	0.00e+00	3.61e+07
Cs-134	0.00e+00	3.84e+06
Cs-136	0.00e+00	1.58e+06
Cs-137	0.00e+00	2.32e+06

Table 3: QP. CoGroundWet - Ground concentrations [Bq/m^2] due to wet deposition only.

3.1.2 Rad&Doses

Figure 5 and Table 4 show potential effective doses summed up over all nuclides after an exposure of 24 hours. The ground doses are integrated over 1 day, the inhalation doses are committed doses over 50 years. These results are identical with those calculated in EMERSIM/QP for NoAction-OpenAir (compare section 3.3.2.1).

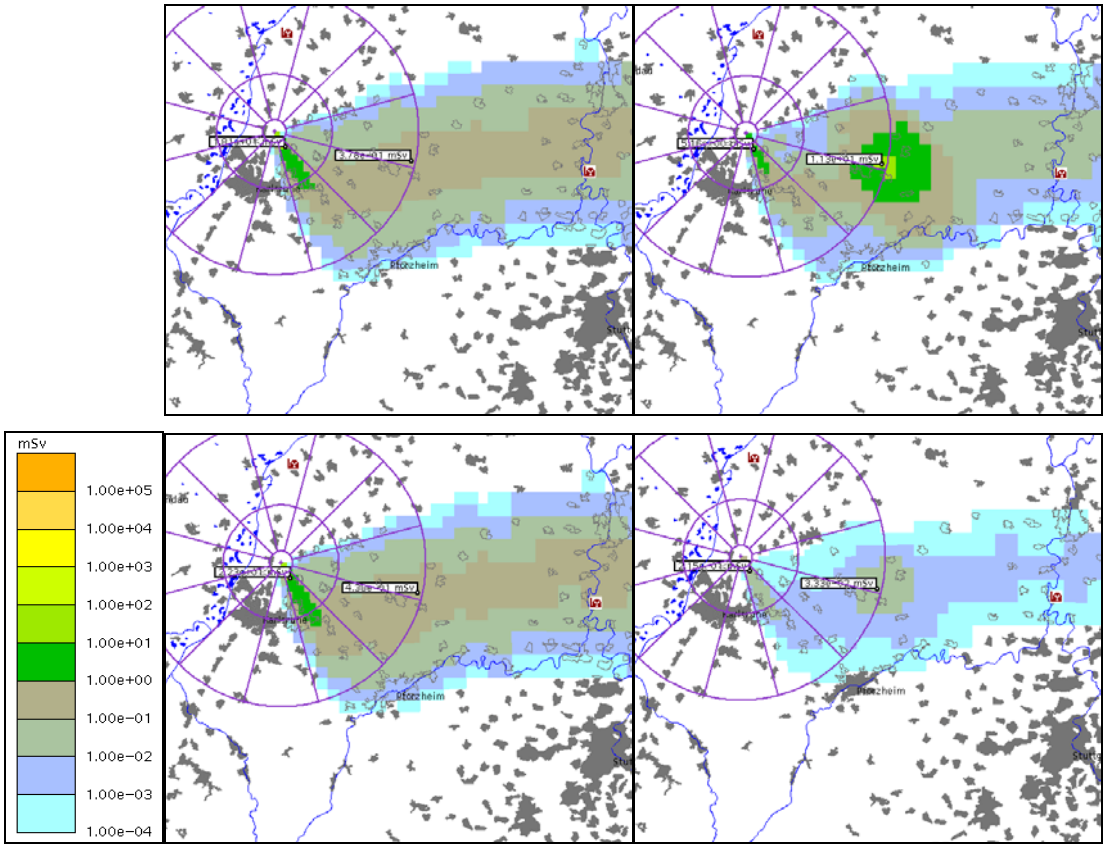


Figure 5: QP. Rad&Doses. Potential doses [mSv], summed up over all nuclides. Effective doses due to Cloud and Ground at the top, due to Inhalation and Local Skin Dose below.

Potential dose [mSv]	cell (230)	cell (1194)
Cloud	1.81e+01	3.78e-01
Ground (1d)	5.16e+00	1.13e+01
Inhalation (50y)	2.23e+01	4.38e-01
Local Skin	2.15e-01	3.33e-02

Table 4: QP. Rad&Doses. Potential effective doses [mSv].

3.2 For ALSMCprogn

If the Graphics Manager Window does not yet show the correct RunId at the top, click to the corresponding RunId in the Application List and then press Graphics in the Control & Services Window. Click then to "ALSMCprgn" and "Prognosis" in the Graphics Manager Window and select under:

- **Con&Depos:** TiConAir, CoGround, CoGroundWet
  The results are presented in the next section.
- **Rad&Doses:** CloudDoseSum, GroundDosSum, InhalDoseSum, Local Skin Dose
  The results are presented in the overnext section.
- **Tables:** MeteoData, STermData, SiteData, NuclideData
  The four files can be loaded into the Text window of RODOS which is opened with the third button from the left in the Tool Bar; then click to List and select the appropriate file. They present input values used for the calculations of ALSMCprogn and are listed in the Appendix of this report. The fifth file InventoryData is an empty file in this test example.

  The files are also stored in the outall-directory (/rodos/roextern/outall) in the subdirectory /*user-id* / *run-id*.

3.2.1 Con&Depos

Go to the Main Drawing Window; click to the folder at the top left side and select the Run-Id of the ALSMCprgn-run and then the endpoints one after the other. From the list of nuclides select Cs-137; then for this nuclide the time-integrated air concentrations (TiConAir), the ground concentrations (CoGround) and the ground concentrations due to wet deposition only (CoGroundWet) are shown (see Figure 6 to Figure 8).

The results for all nuclides can be found in tabular form in a separate window which is opened by clicking in the Menu Bar at the top Theme → Properties → Text-Results. Activate the Point-Information Mode, click in the map to the two cells evaluated and the results appear in the text window. The values that should be found are given in Table 5 to Table 7.

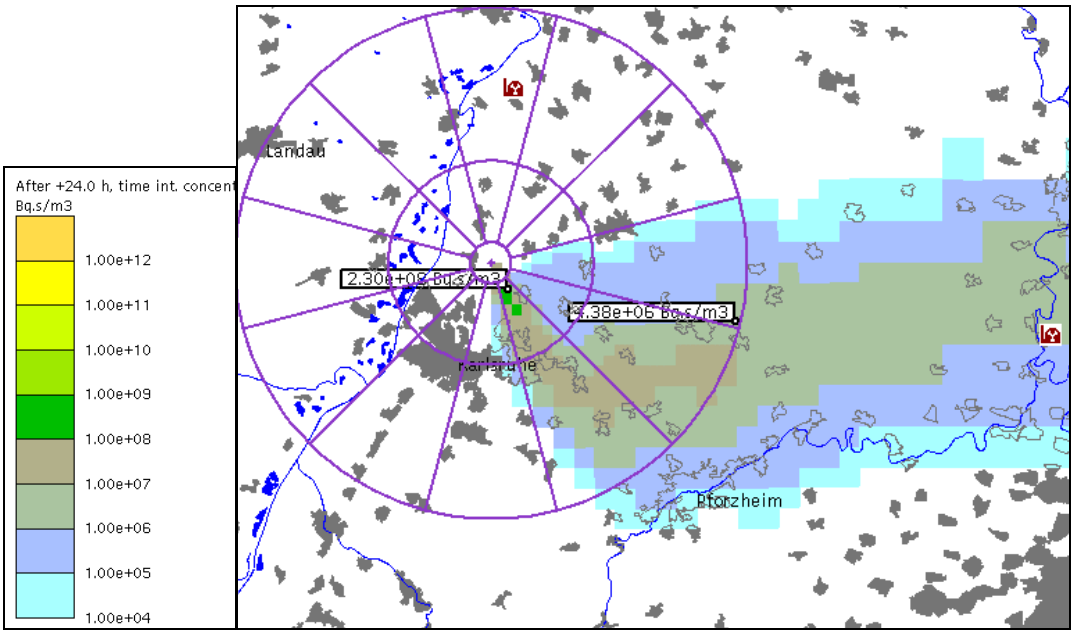


Figure 6: ALSMC. TiConAir - Time integrated air concentrations for Cs-137.

TiConAir	cell (230)	cell (1194)
Kr- 85m	2.84e+10	4.54e+08
Kr- 88	2.47e+10	3.45e+08
Xe-133	1.43e+12	2.89e+10
Xe-135	5.86e+11	1.06e+10
I-131	3.26e+09	6.01e+07
I -132	4.41e+09	8.13e+07
I -133	4.70e+09	8.27e+07
I -135	1.70e+09	2.67e+07
Sr- 90	1.68e+07	3.02e+05
Sr- 91	1.77e+08	2.87e+06
Te-131m	3.68e+08	6.61e+06
Te-132	4.36e+09	7.92e+07
Cs-134	3.81e+08	7.25e+06
Cs-136	1.65e+08	3.15e+06
Cs-137	2.30e+08	4.38e+06

Table 5: ALSMC. TiConAir - Time-integrated air concentrations [Bq*s/m^3].

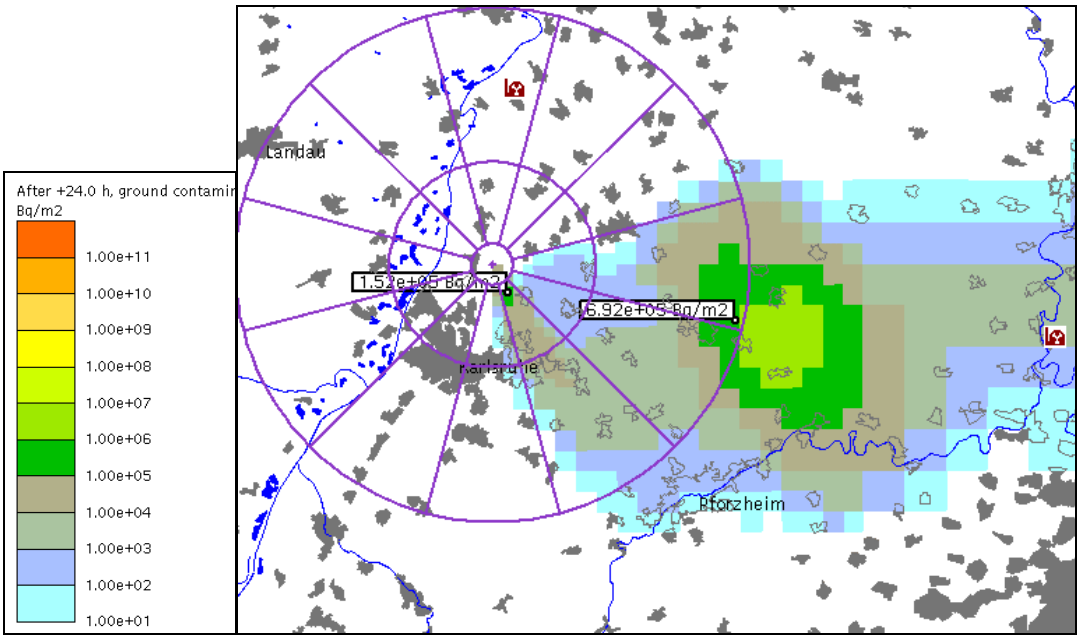


Figure 7: ALSMC. CoGround - Ground concentrations for Cs-137.

CoGround	cell (230)	cell (1194)
Kr- 85m	0.00e+00	0.00e+00
Kr- 88	0.00e+00	0.00e+00
Xe-133	0.00e+00	0.00e+00
Xe-135	0.00e+00	0.00e+00
I-131	1.53e+07	5.96e+06
I -132	2.43e+06	1.03e+07
I -133	1.11e+07	4.36e+06
I -135	7.86e+05	3.10e+05
Sr- 90	1.11e+04	4.64e+04
Sr- 91	2.20e+04	9.31e+04
Te-131m	1.43e+05	6.19e+05
Te-132	2.34e+06	1.00e+07
Cs-134	2.51e+05	1.15e+06
Cs-136	1.03e+05	4.70e+05
Cs-137	1.52e+05	6.92e+05

Table 6: ALSMC. CoGround - Ground concentrations [Bq/m^2].

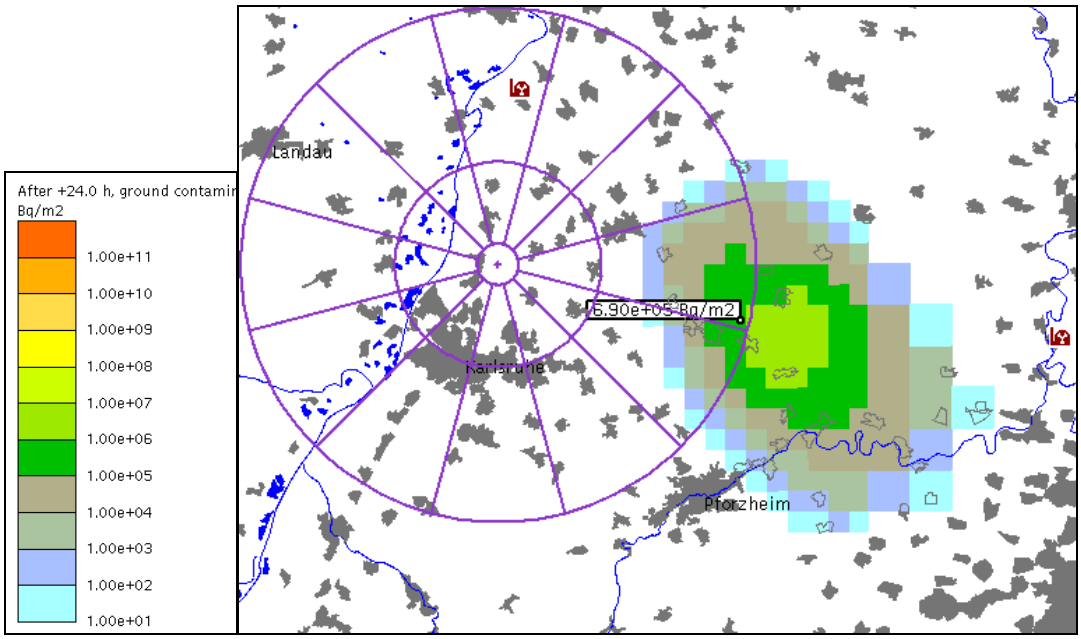


Figure 8: ALSMC. CoGroundWet - Ground concentrations for Cs-137 due to wet deposition only.

CoGroundWet	cell (230)	cell (1194)
Kr- 85m	0.00e+00	0.00e+00
Kr- 88	0.00e+00	0.00e+00
Xe-133	0.00e+00	0.00e+00
Xe-135	0.00e+00	0.00e+00
I-131	0.00e+00	5.68e+06
I -132	0.00e+00	1.03e+07
I -133	0.00e+00	4.15e+06
I -135	0.00e+00	2.95e+05
Sr- 90	0.00e+00	4.62e+04
Sr- 91	0.00e+00	9.27e+04
Te-131m	0.00e+00	6.17e+05
Te-132	0.00e+00	9.97e+06
Cs-134	0.00e+00	1.14e+06
Cs-136	0.00e+00	4.68e+05
Cs-137	0.00e+00	6.90e+05

Table 7: ALSMC. CoGroundWet - Ground concentrations [Bq/m^2] due to wet deposition only.

3.2.2 Rad&Doses

Figure 9 and Table 8 show potential effective doses summed up over all nuclides after an exposure of 24 hours. The ground doses are integrated over 1 day, the inhalation doses are committed doses over 50 years. These results are identical with those calculated in EMERSIM/AL for NoAction-OpenAir (not done in this test example).

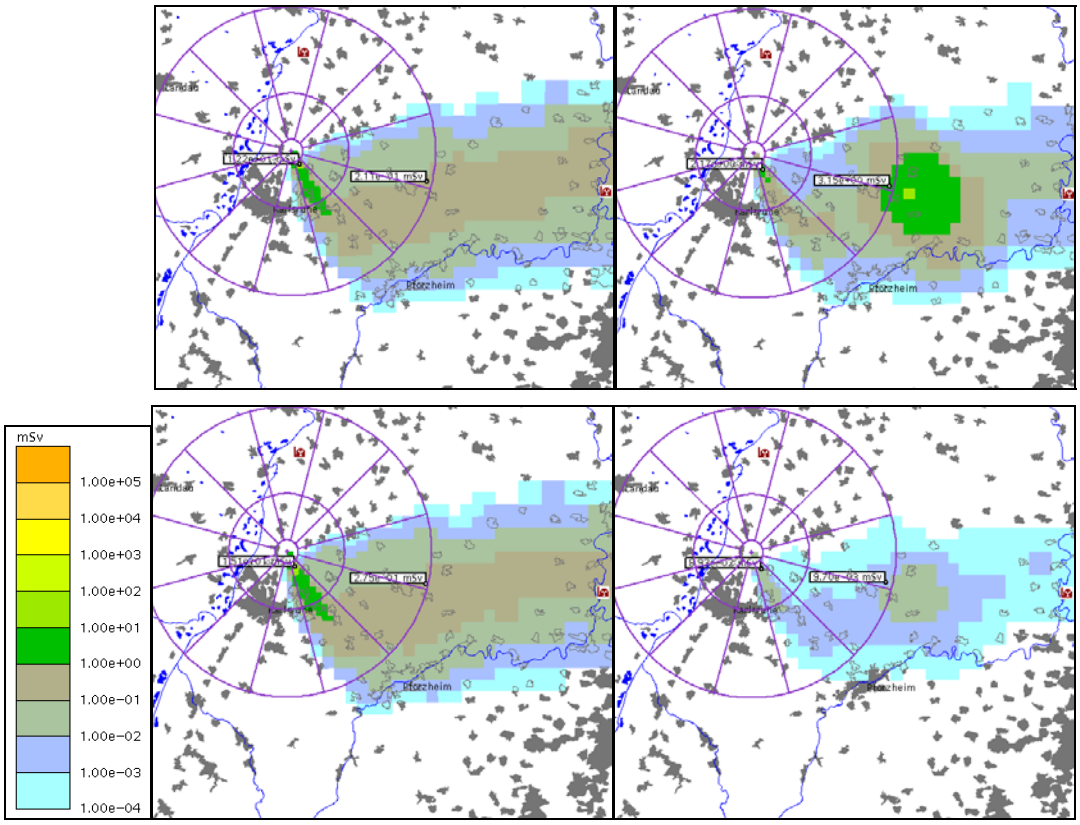


Figure 9: ALSMC. Rad&Doses. Potential doses [mSv], summed up over all nuclides. Effective doses due to Cloud and Ground at the top, due to Inhalation and Local Skin Dose below.

Potential dose [mSv]	cell (230)	cell (1194)
Cloud	1.22e+01	2.11e-01
Ground (1d)	2.17e+00	3.15e+00
Inhalation (50y)	1.51e+01	2.75e-01
Local Skin	8.93e-02	9.70e-03

Table 8: ALSMC. Rad&Doses. Potential effective doses [mSv].

3.3 For EMERSIM/QP

If the Graphics Manager Window does not yet show the correct RunId at the top, click to the corresponding RunId in the Application List and then press Graphics in the Control & Services Window. In the following, examples for "Areas", "Organ Doses" and "Spectra" are given.

3.3.1 Areas affected by countermeasures

Click in the Graphics Manager Window to EmerSim → Areas and select the results for Sheltering, IodineTablets (Children) and Relocation (temporary, permanent). Figure 10 and Figure 11 show the results. If you select Evacuation, there is no area affected; for Iodine tablets to adults only cell no. 230 is affected.

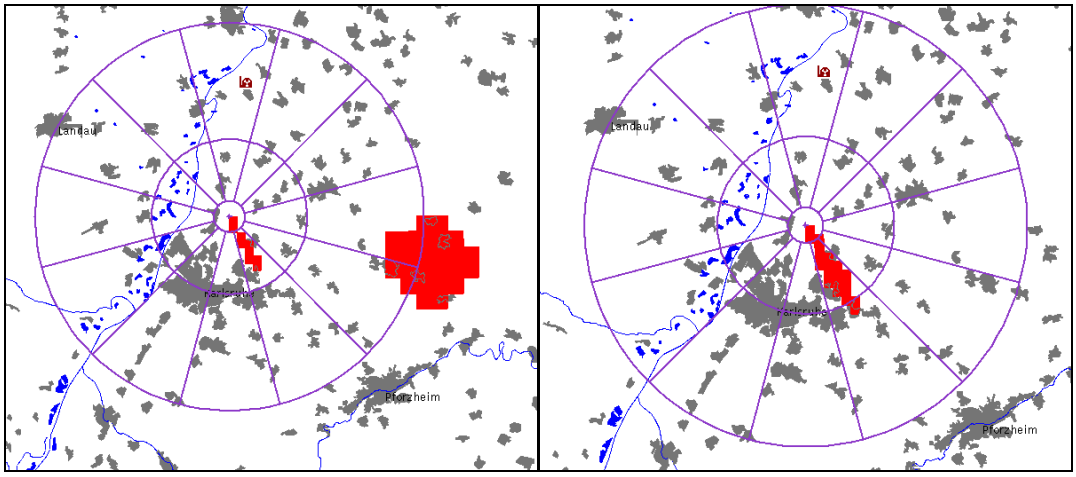


Figure 10: EMERSIM/QP. Areas affected by sheltering (left) and distribution of stable iodine tablets to children (right).

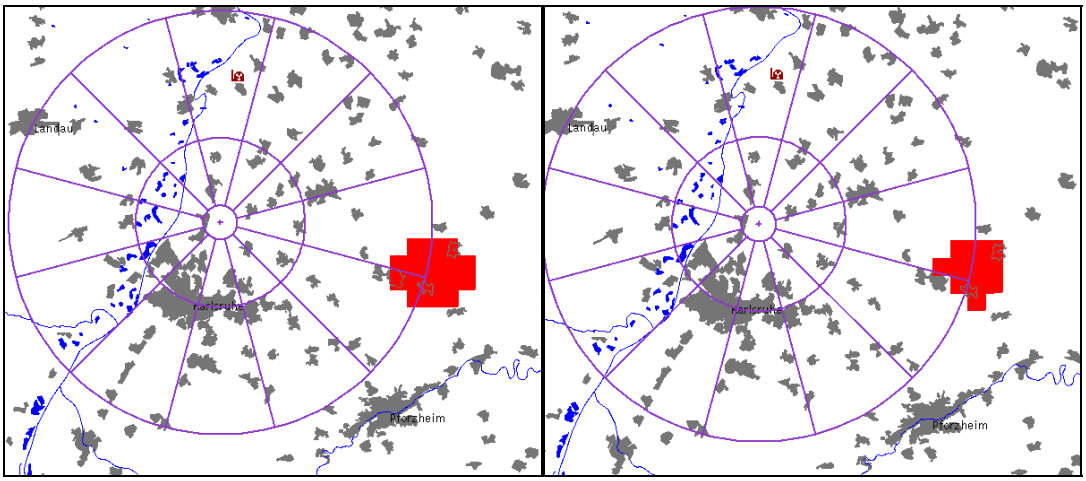


Figure 11: EMERSIM/QP. Areas affected by temporary (left) and permanent relocation (right).

Cell 230 lies in the sheltering area and in both stable iodine tablet areas, but outside the relocation areas. Cell 1194 belongs to the sheltering area and to both types of area with relocation, but not to any stable iodine tablet area.

3.3.2 Organ Doses

The individual organ doses are loaded into the Graphics by clicking to EmerSim → Organ Doses in the Graphics Manager Window. They are calculated assuming no actions (branch NoAction) as well as taking countermeasures into account (branch Action). For NoAction two situations are considered, which have to be selected later in the Theme Selection Window: NormLiv assumes normal living conditions of people, OpenAir calculates for an individual staying outdoors. In the following the results for OpenAir are presented very detailed; for normal living conditions and with countermeasures only some examples are given. The results for local skin dose are shown in a separate section, together for all three scenarios.

3.3.2.1 NoAction: OpenAir

Select in the Graphics Manager Window (after EmerSim → Organ Doses) for the branch → NoAction the following endpoints:

- Cloud → effective
- Ground → effective → 1 day, 7 days, 30 days, 1 year, 50 years
- Inhalation → effective → 1 day, 7 days, 30 days, 1 year, 50 years
- Sum → Bonemarrow, Lung, Skin, Thyroid, Uterus, effective

Then choose in the Theme Selection Window the results for OpenAir.

For all pictures in this section the legend is the same; it is shown below:

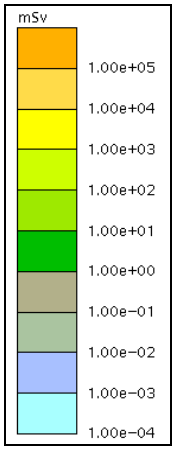


Figure 12 and Table 9 show for OpenAir the individual effective dose for an integration time of 50 years, the sum of all exposure pathways as well as the doses due to cloudshine, groundshine and inhalation separately. As the sum also includes the contribution from skin exposure, it is somewhat larger than the sum of these three pathways presented separately.

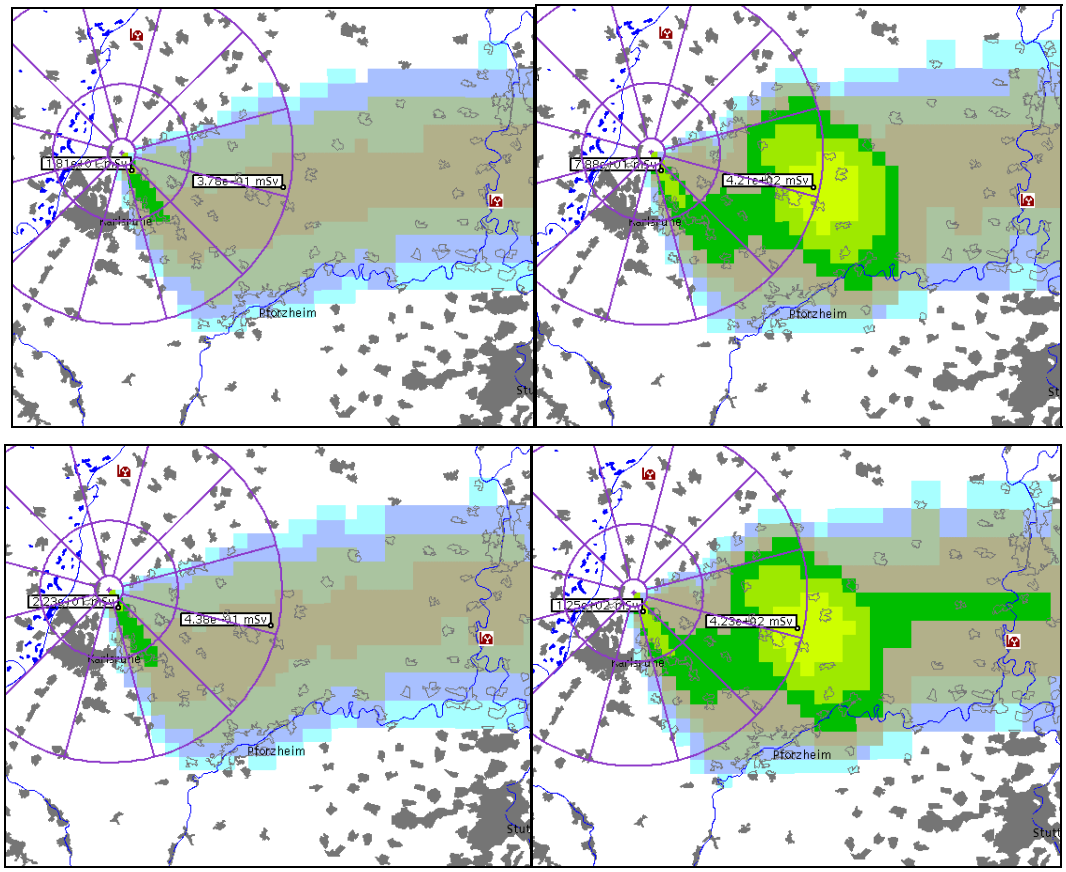


Figure 12: EMERSIM/QP. Effective dose, OpenAir. Dose by Cloud and Ground (50y) at the top, by Inhalation (50y) and Sum over all pathways considered below.

OpenAir	cell (230)	cell (1194)
Cloud	1.81e+01	3.78e-01
Ground (50y)	7.88e+01	4.21e+02
Inhalation (50y)	2.23e+01	4.38e-01
Sum	1.25e+02	4.23e+02

Table 9: EMERSIM/QP. Effective dose [mSv], OpenAir. Dose contributions from different exposure pathways and the sum over all pathways considered.

Figure 13 and Table 10 show for OpenAir the individual effective dose due to groundshine for different integration times.

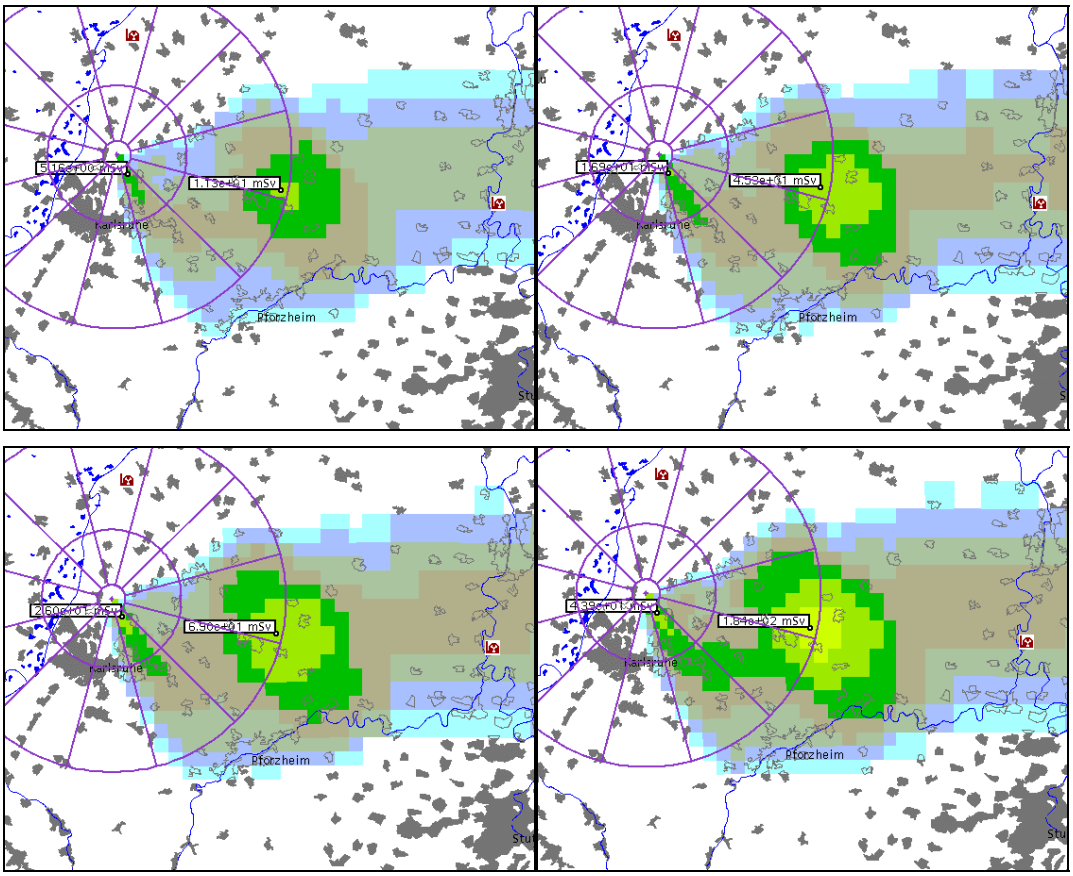


Figure 13: EMERSIM/QP. Effective dose due to Groundshine (OpenAir) for different integration times. 1 and 7 days at the top, 30 days and 1 year below.

OpenAir (Ground)	cell (230)	cell (1194)
1 day	5.16e+00	1.13e+01
7 days	1.69e+01	4.53e+01
30 days	2.60e+01	6.90e+01
1 year	4.39e+01	1.84e+02
50 years	7.88e+01	4.21e+02

Table 10: EMERSIM/QP. Effective dose [mSv] due to Groundshine (OpenAir) for different integration times.

Figure 14 and Table 11 show for OpenAir the individual effective dose due to inhalation for different integration times.

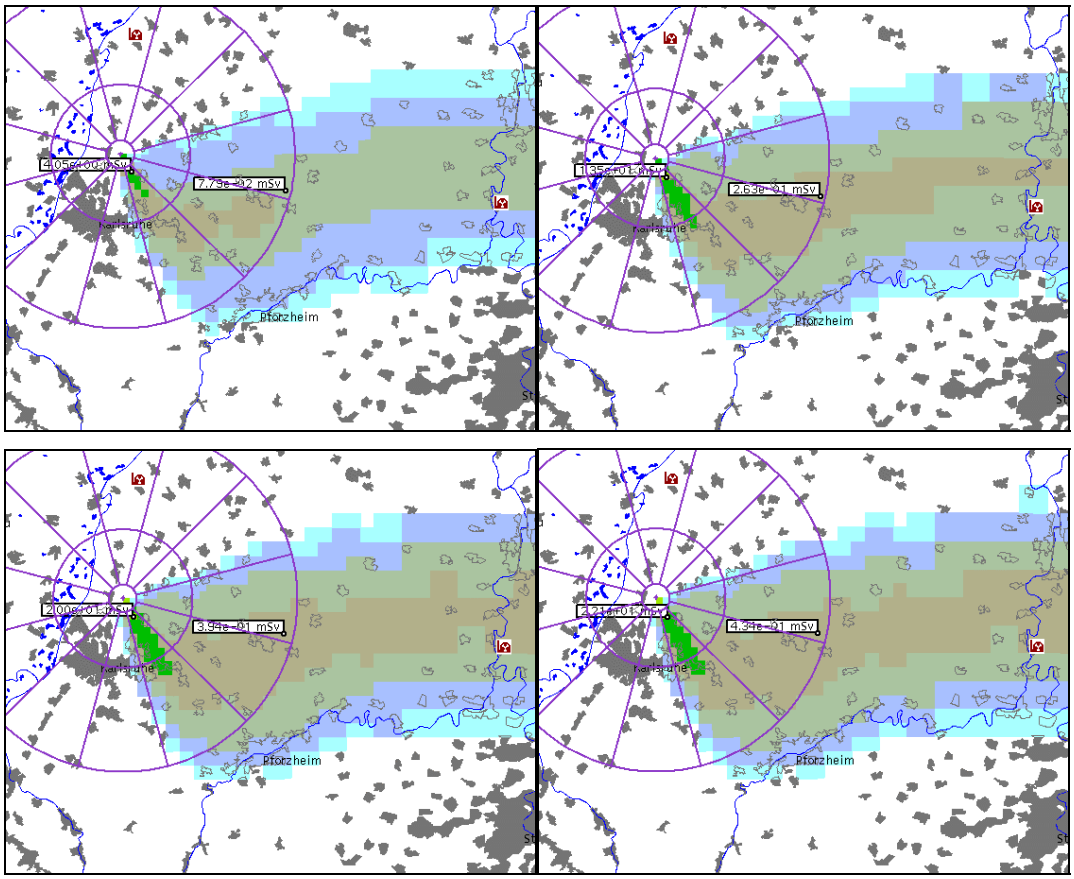


Figure 14. EMERSIM/QP. Effective dose due to Inhalation (OpenAir) for different integration times. 1 and 7 days at the top, 30 days and 1 yer below.

OpenAir (Inhalation)	cell (230)	cell (1194)
1 day	4.05e+00	7.79e-02
7 days	1.35e+01	2.63e-01
30 days	2.00e+01	3.94e-01
1 year	2.21e+01	4.34e-01
50 years	2.23e+01	4.38e-01

Table 11: EMERSIM/QP. Effective dose [mSv] due to Inhalation (OpenAir) for different integration times.

Figure 15 and Table 12 show for OpenAir and different organs the individual dose summed up over all exposure pathways considered.

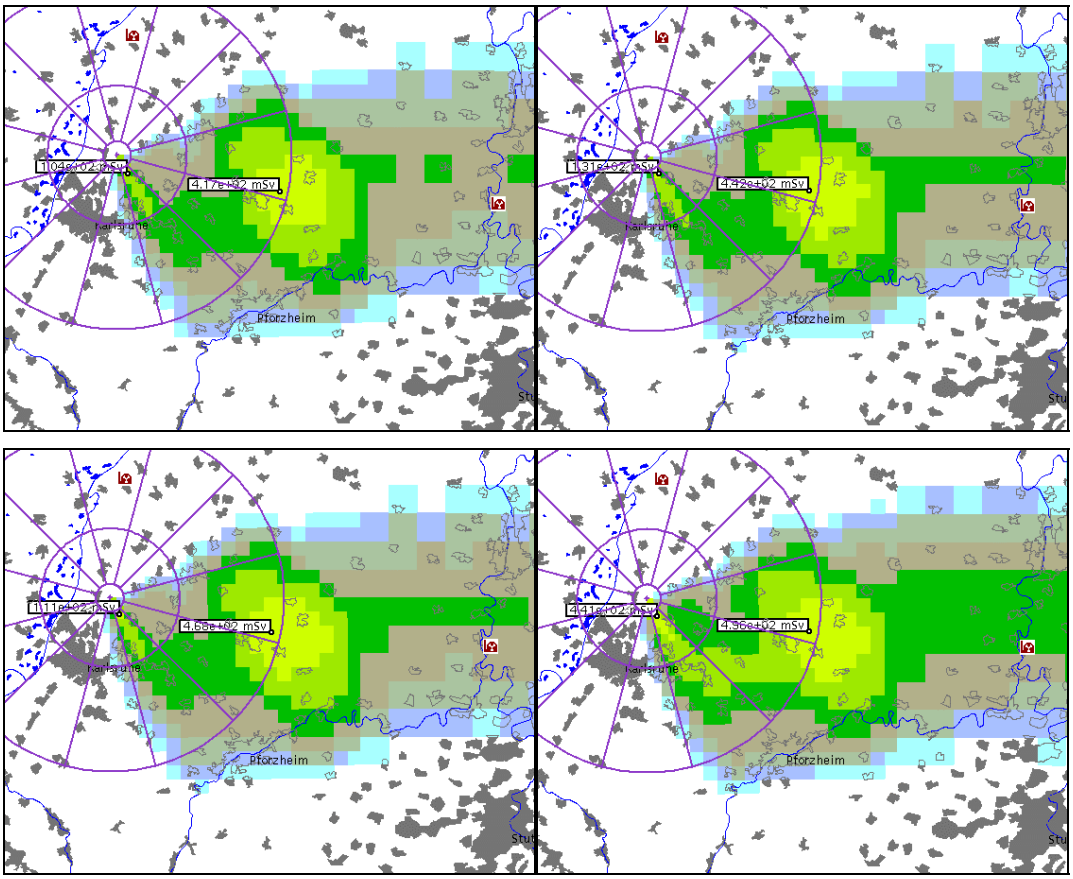


Figure 15: EMERSIM/QP. Organ doses (OpenAir) summed up over all exposure pathways for integration time 50 years. Bone marrow and lung at the top, skin and thyroid below.

OpenAir (Sum)	cell (230)	cell (1194)
Bone marrow	1.04e+02	4.17e+02
Lung	1.31e+02	4.42e+02
Skin	1.11e+02	4.68e+02
Thyroid	4.41e+02	4.96e+02
Uterus	9.53e+01	3.94e+02

Table 12: EMERSIM/QP. Different organ doses [mSv] (OpenAir) summed up over all exposure pathways for integration time 50 years.

3.3.2.2 NoAction: Normal living

If you have performed the test for OpenAir before and your graphical selection is still active, you can directly continue in the Main Drawing Window with the selection for results for NormLiv. Otherwise you have to select in the Graphics Manager Window under Organ Doses → NoAction the following endpoints:

- Cloud → effective
- Ground → effective → 50 years
- Inhalation → effective → 50 years
- Sum → Bonemarrow, Lung, Skin, Thyroid, Uterus, effective

In the Theme Selection Window then choose NormLiv for all these endpoints.

For all pictures in this section the legend is the same; it is shown below:

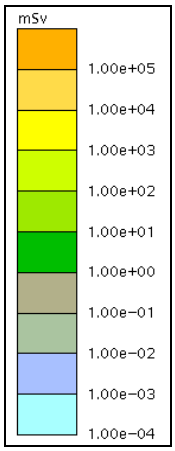


Figure 16 and Table 13 show for NormLiv the individual effective dose for an integration time of 50 years, the sum of all exposure pathways as well as the doses due to cloudshine, groundshine and inhalation separately. As the sum also includes the contribution from skin exposure, it is somewhat larger than the sum of these three pathways presented separately.

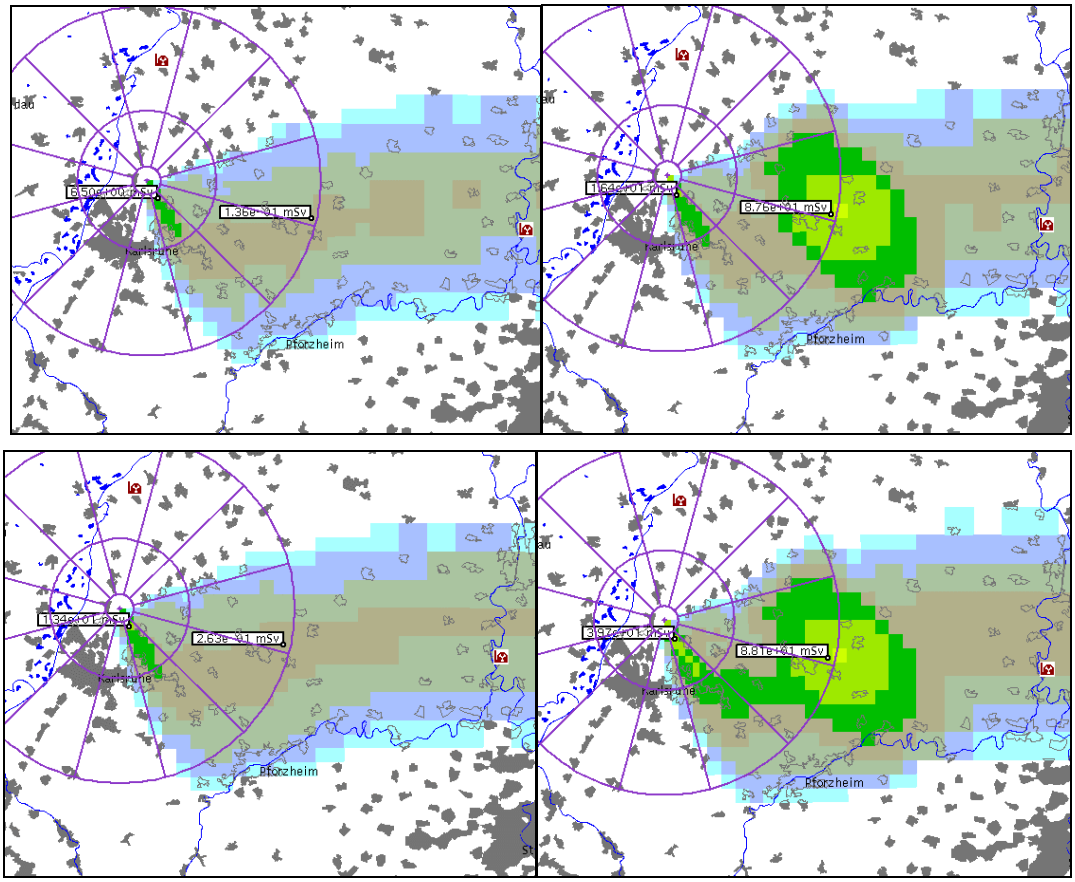


Figure 16: EMERSIM/QP. Effective dose, NormLiv. Cloud and Ground (50y) at the top, Inhalation (50y) and Sum over all pathways considered below.

NormLiv	cell (230)	cell (1194)
Cloud	6.50e+00	1.36e-01
Ground (50y)	1.64e+01	8.76e+01
Inhalation (50y)	1.34e+01	2.63e-01
Sum	3.97e+01	8.81e+01

Table 13: EMERSIM/QP. Effective dose [mSv], NormLiv. Dose contributions from different exposure pathways and the sum over all pathways considered.

Figure 17 and Table 14 show for NormLiv and different organs the individual dose summed up over all exposure pathways considered.

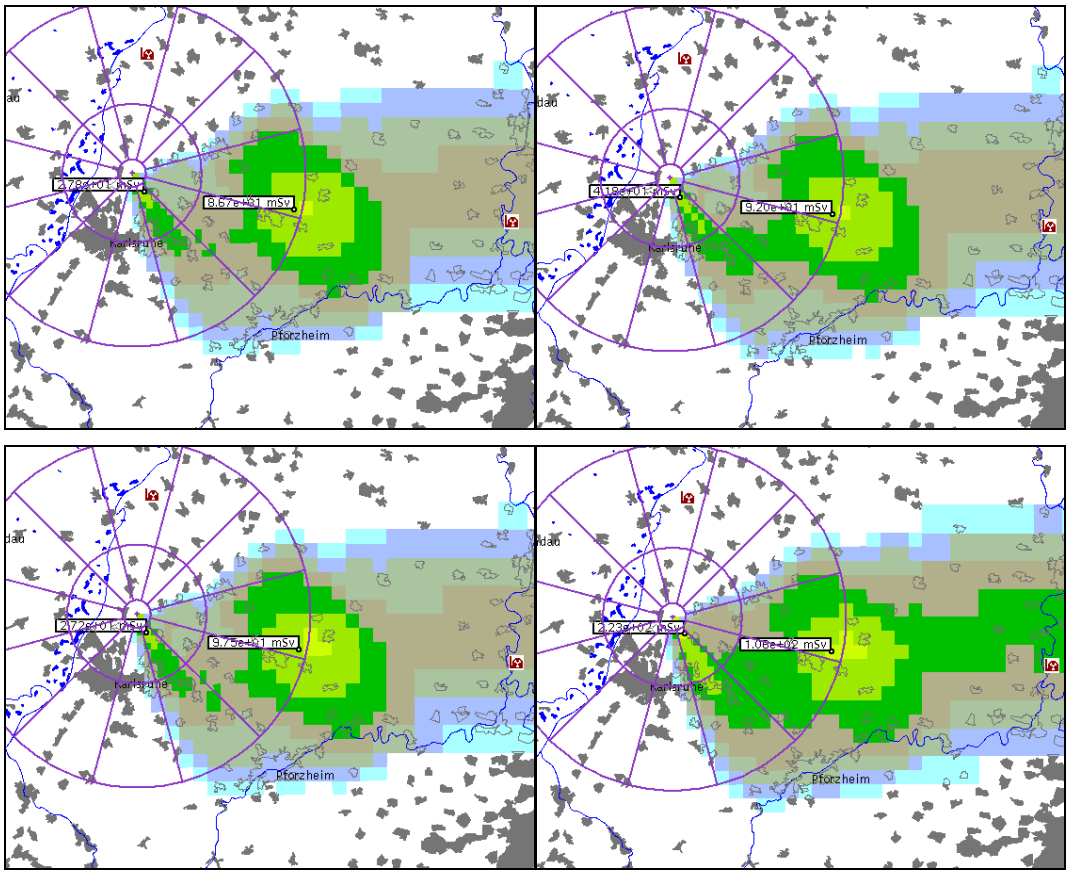


Figure 17: EMERSIM/QP. Organ doses (NormLiv) summed up over all exposure pathways for integration time 50 years. Bone marrow and lung at the top, skin and thyroid below.

NormLiv (Sum)	cell (230)	cell (1194)
Bone marrow	2.78e+01	8.67e+01
Lung	4.18e+01	9.20e+01
Skin	2.72e+01	9.75e+01
Thyroid	2.23e+02	1.06e+02
Uterus	2.49e+01	8.19e+01

Table 14: EMERSIM/QP. Different organ doses [mSv] (NormLiv) summed up over all exposure pathways for integration time 50 years.

3.3.2.3 Action

Select in the Graphics Manager Window the following endpoints:

- Cloud → effective
- Ground → effective → 50 years
- Inhalation → effective → 50 years
- Sum → Bonemarrow, Lung, Skin, Thyroid, Uterus, effective.

In the Theme Selection Window no further selection has to be made.

For all pictures in this section the legend is the same; it is shown below:

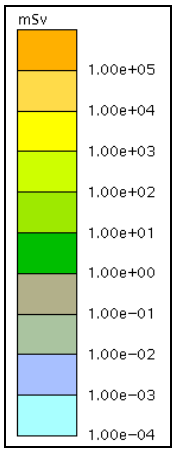


Figure 18 and Table 15 show for Action the individual effective dose for an integration time of 50 years, the sum of all exposure pathways as well as the doses due to cloudshine, groundshine and inhalation separately. As the sum also includes the contribution from skin exposure (which is not presented as a single result), it is somewhat larger than the sum of these three pathways presented separately.

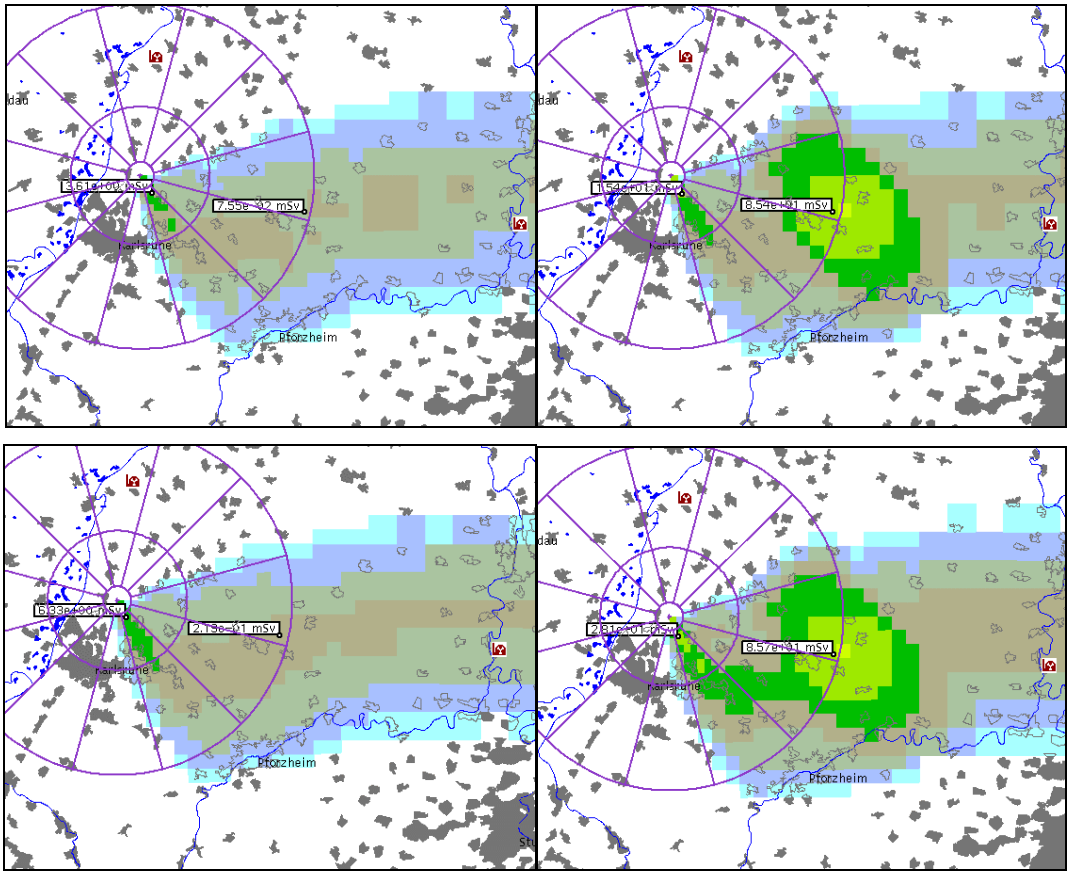


Figure 18: EMERSIM/QP. Effective dose, Action. Cloud and Ground (50y) at the top, Inhalation (50y) and the sum over all pathways considered below.

Action	cell (230)	cell (1194)
Cloud	3.61e+00	7.55e-02
Ground (50y)	1.54e+01	8.54e+01
Inhalation (50y)	6.33e+00	2.19e-01
Sum	2.81e+01	8.57e+01

Table 15: EMERSIM/QP. Effective dose [mSv], Action. Dose contributions from different exposure pathways and the sum over all pathways considered.

Figure 19 and Table 16 show for Action and different organs the individual dose summed up over all exposure pathways considered.

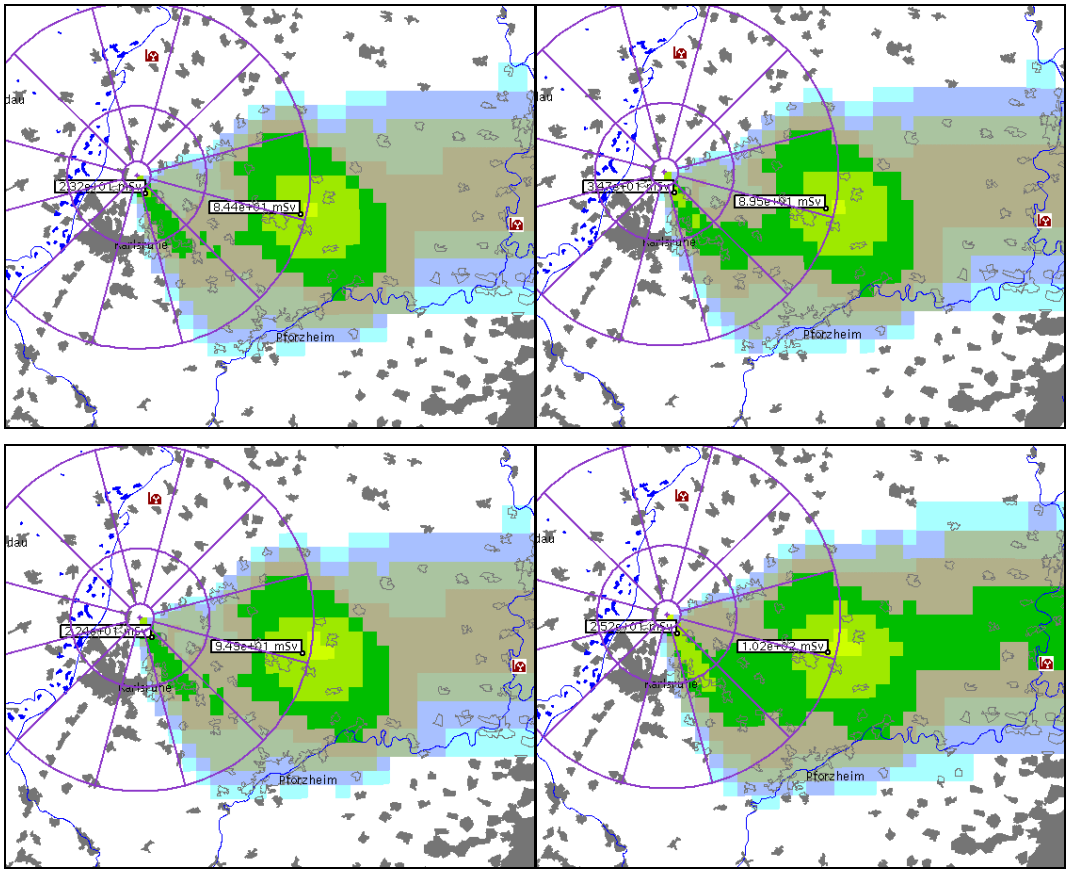


Figure 19: EMERSIM/QP. Organ doses (Action) summed up over all exposure pathways for integration time 50 years; bone marrow and lung at the top, skin and thyroid below.

Action (Sum)	cell (230)	Cell (1194)
Bone marrow	2.32e+01	8.44e+01
Lung	3.47e+01	8.95e+01
Skin	2.24e+01	9.49e+01
Thyroid	2.52e+01	1.02e+02
Uterus	2.09e+01	7.98e+01

Table 16: EMERSIM/QP. Different organ doses [mSv] (Action) summed up over all exposure pathways for integration time 50 years.

3.3.2.4 Local Skin Dose

Select in the Graphics Manager Window (still under "Organ Doses") the following endpoints:

- NoAction → Local Skin Dose
- Action → Local Skin Dose

Figure 20 and Table 17 show the local skin dose for all three scenarios.

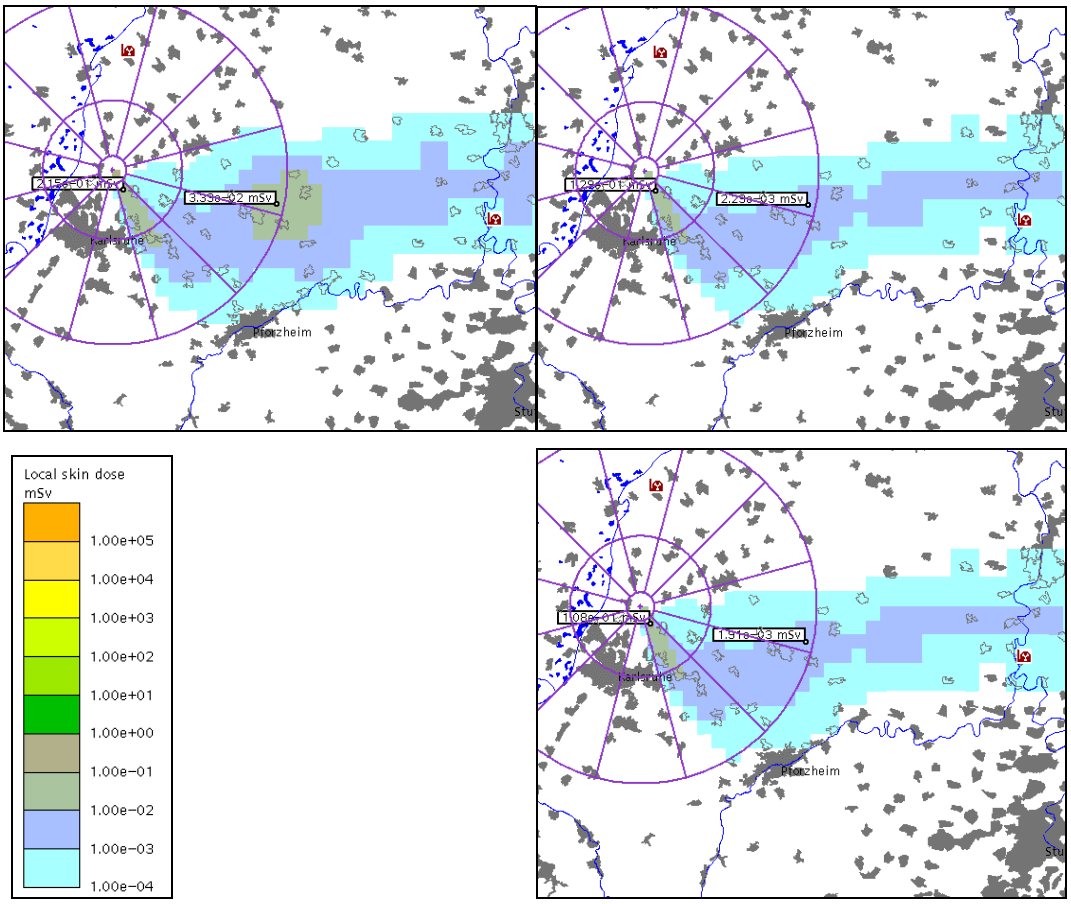


Figure 20: EMERSIM/QP. Local skin dose [mSv]. NoAction (OpenAir and NormLiv) at the top, Action below.

Local Skin Dose	cell (230)	cell (1194)
OpenAir	2.15e-01	3.33e-02
NormLiv	1.29e-01	2.29e-03
Action	1.08e-01	1.91e-03

Table 17: EMERSIM/QP. Local skin dose [mSv] for different scenarios.

3.3.3 Dose frequency distributions (Spectra)

The ten pictures presented here are dose frequency distributions or dose spectra, showing the number of people having received an individual dose [mSv] within a certain dose interval. The results are given for different scenarios, different organs and exposure pathways.

Click in the Graphics Manager Window to EmerSim → Spectra and

- NoAction → Sum → effective

  Then choose in the Theme Selection Window on the left side OpenAir and then NormLiv (see Figure 21).

- Action → Cloud → effective
  → Ground → effective
  → Inhalation → effective
  → Sum → Bonemarrow, Lung, effective

The graphics given in Figure 21 show the dose frequency distribution for the effective dose summed up over all exposure pathways and for the two cases calculated for NoAction: Open Air and Normal living.

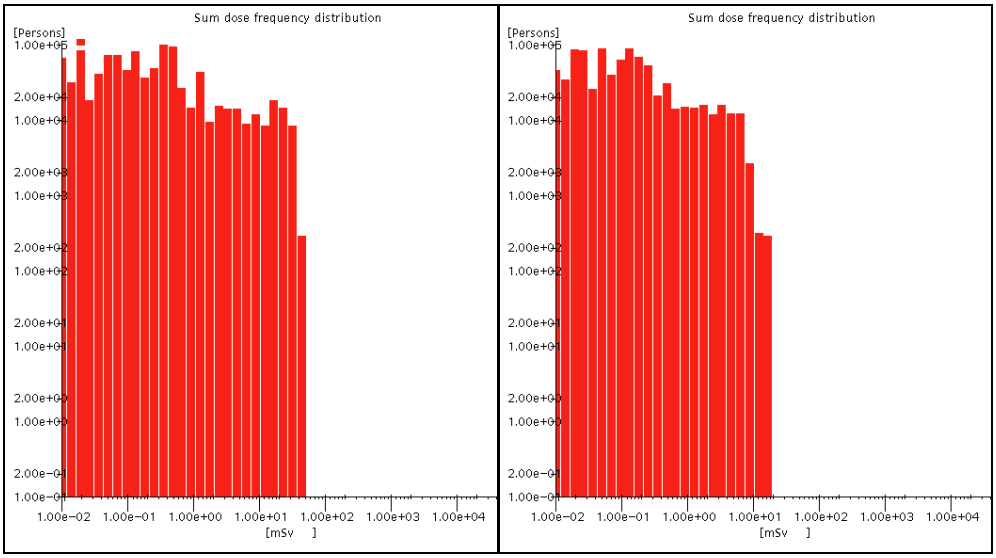


Figure 21: EMERSIM/QP. Spectra for NoAction for effective dose: sum over all pathways; OpenAir (left) and NormLiv (right side).

Figure 22 and Figure 23 show the dose frequency distribution for the calculation with countermeasures (Action). For the effective dose the pathway-specific doses for cloudshine, groundshine and inhalation are presented together with their sum. For two organs (bone marrow and lung) the doses summed up over all pathways are shown.

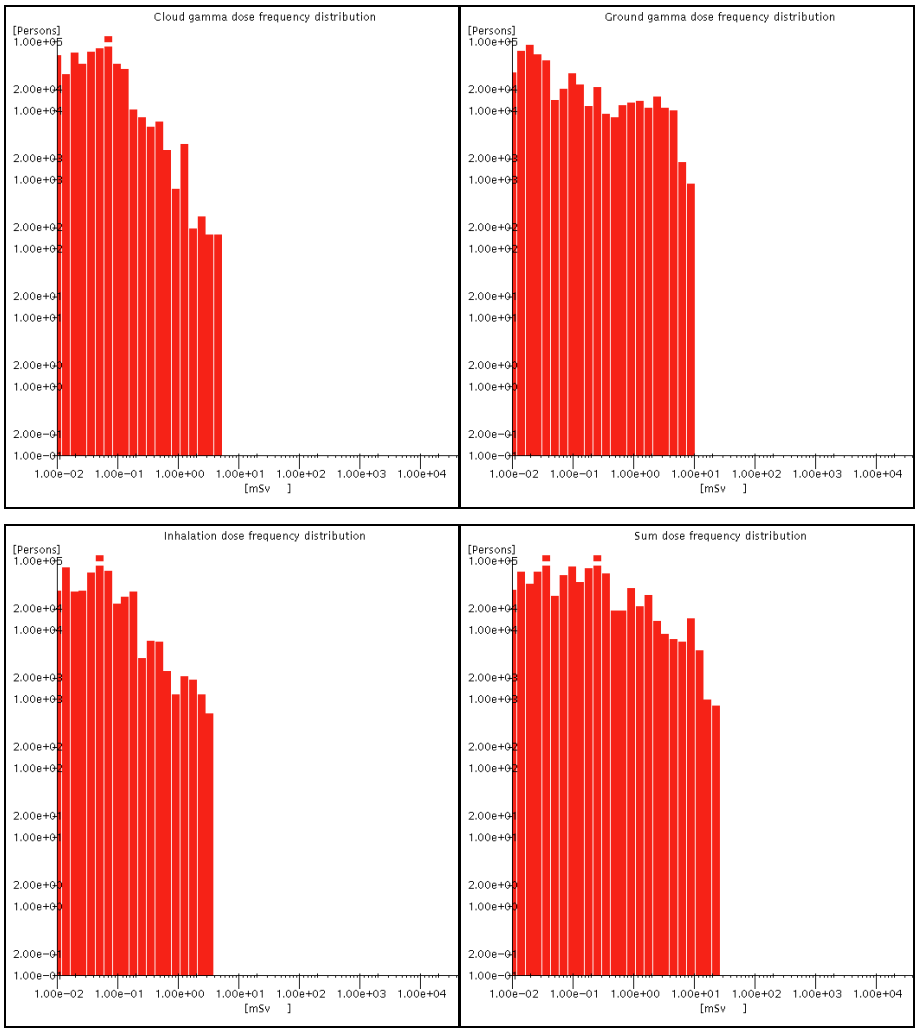


Figure 22: EMERSIM/QP. Spectra for Action for effective dose: cloudshine and groundshine at the top, inhalation and sum below.

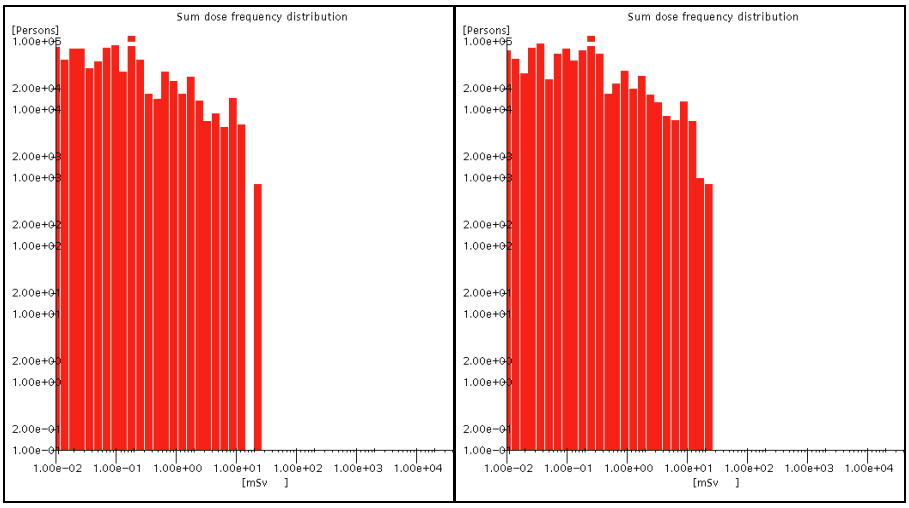


Figure 23: EMERSIM/QP. Spectra for Action for different organs: sum of all exposure pathways; bone marrow (left) and lung (right side).

3.4 For EARLYCONS based on EMERSIM/QP

If the Graphics Manager Window does not yet show the correct RunId at the top, click to the corresponding RunId in the Application List and then press Graphics in the Control & Services Window. For each of the four programs of the program group "EARLYCONS" there is a button in the Graphics Manager Window.

- ***DHM40***: **d**eterministic **h**ealth effects **m**odel
- ***SHM40***: **s**tochastic **h**ealth effects **m**odel
- ***EEM40***: **e**arly **e**conomics **m**odel
- ***RESTAB40***: presentation of **res**ults and **tab**les

3.4.1 DHM40 (Deterministic Health Effects)

There are many possible selections in the Graphics Manager Window:

DHM40 → DetHealth → NoAction → EarlyNumb → MorbLung
MorbThyroid
MorbUterus
MortLung
MortBonem.
MortUterus

→ EarlyTotal → Morbidity
→ Mortality

→ Action → EarlyNumb → *as above*

→ EarlyTotal → Morbidity
→ Mortality

Whatever endpoint you choose, the number of people affected by the corresponding deterministic health effect is zero. These results can also be found in a table described under the RESTAB-section. However, due to different ways of rounding, the numbers are in general not identical.

3.4.2 SHM40 (Stochastic Health Effects)

Click in the Graphics Manager Window to

SHM40 → StoHealth → NoAction → LateNumb
→ Action → LateNumb

Figure 24 shows the total number of stochastic health effects for all three scenarios. To get the total number of health effects in the whole area and the maximal number in a grid cell you have to draw a

polygone around the area in the point-information mode (first button in the Tool Bar above the graphics); press Control and keep it pressed; then start the polygone with the left mouse, click the other edges with the left mouse and complete the polygone with the right mouse. In the text window (as well in the legend window) you can then find the results about the number of stochastic health effects within this area, given in Table 18. The mean value depends on the size of the specified polygone (number of cells analysed) and is therefore not given here.

The total number within the whole area considered can also be found in a table described under the RESTAB-section. However, due to different ways of rounding, the numbers are in general not identical. In Figure 24 also the grid cell with the maximal number is marked; this can be done by activating the button "Show maximum values" in the Toolbox. In this example, the corresponding cell is number 1193.

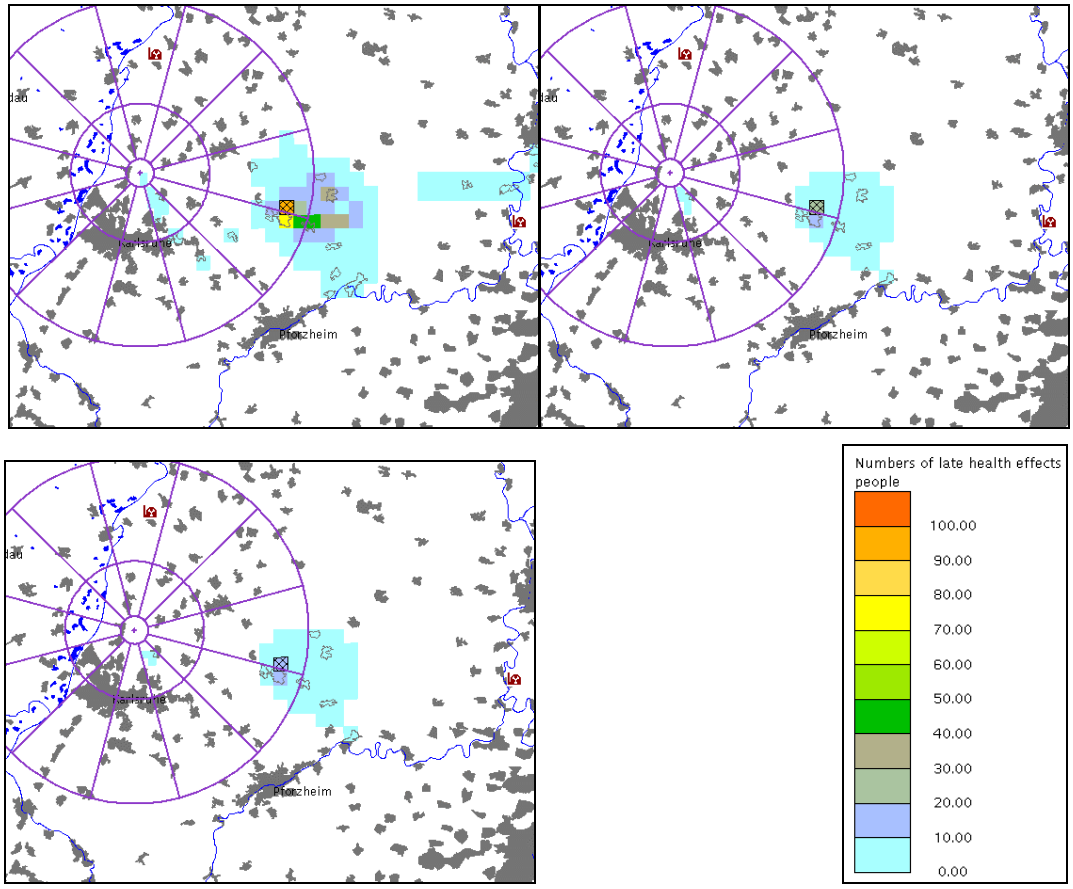


Figure 24: EARLYCONS/QP. Total number of stochastic health effects, OpenAir and NormLiv at the top, Action below.

	OpenAir	NormLiv	Action
Maximal number (cell 1193)	100	21	20
Total number	751	154	147

Table 18: EARLYCONS/QP. Numbers of stochastic health effects.

3.4.3 EEM40 (Early Economic Consequences)

There exist no graphical results for the early economic consequence calculations. The results are only presented in tabular form by RESTAB (see next section).

3.4.4 RESTAB40 (Results and Tables)

Click in the Graphics Manager Window to

RESTAB40 → Tables → Conseq
→ Results

Two files "Tables.outcons" and "Tables.outtab" are loaded into the text window of RODOS which is opened with the third button from the left in the Tool Bar; then click to List and select the appropriate file. They present results of EMERSIM and EARLYCONS and are listed in the Appendix of this report.

The files are also stored in the outall-directory (/rodos/roextern/outall) in the subdirectory /user-id/run-id.

3.5 For FDMT/QP

The three graphical output types for presenting the results from FDMT selected in this example during run time are described in the following: "Maps" shows the results calculated (activities and individual doses) on a map, "TimePlots" gives the results as a function of time in an (x,y)-plot for the maximal grid cell, "Collective doses" presents the pathway specific collective doses on a map. Examples for the type "Frequency distributions" are not shown here.

If you want to see the results from an old (archived) run, they have at first to be loaded into the graphics part of RODOS as described in the beginning of Chapter 2.

3.5.1 Maps

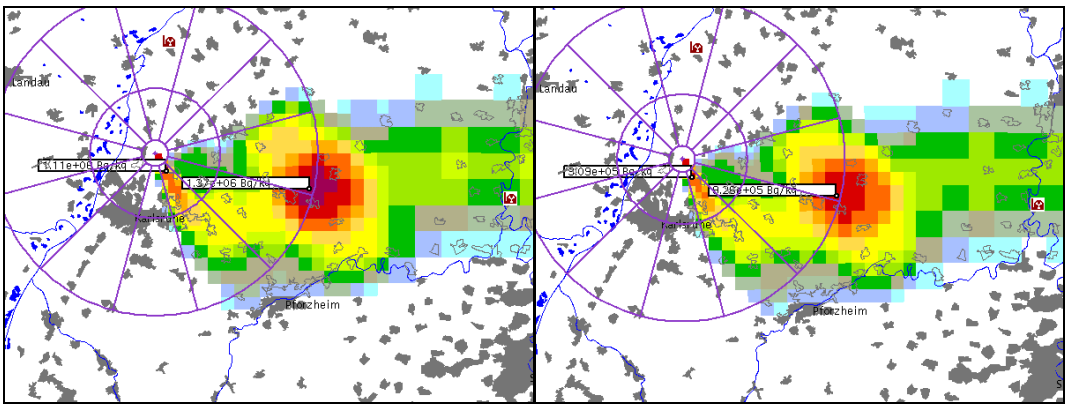
The results presented under "Maps" are subdivided into "Activity in" the feedstuffs and foodstuffs selected and "Dose from" the exposure pathways specified in the input windows during run time. Additionally information can be found on the house type and the population density (not shown here).

3.5.1.1 Activity in

Select in the Theme Selection Window under *run-id* → Maps the following endpoints:

- Activity in → Grass I → all cesium isot. → (max. time);
  Leafy vegs. → all cesium isot. → (max. time);
  Milk → all iodine isot. → (max. time);

Figure 25 shows the activity [Bq/kg] of cesium isotopes for the maximal time point in grass and leafy vegetables and of the iodine isotopes for milk. The legend is the same for all three pictures.



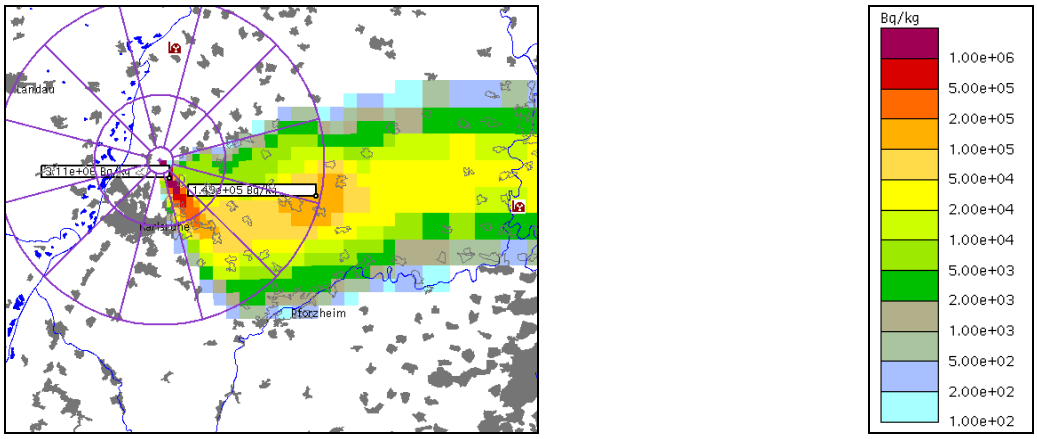


Figure 25: FDMT/QP. Activity [Bq/kg] of cesium isotopes in grass (left) and leafy vegetables (right) at the top, activity [Bq/kg] of iodine isotopes in milk below.

3.5.1.2 Dose from

Select in the Theme Selection Window under *run-id* → Maps the following endpoints:

- Dose from

  → all pathways exc. ing. → all nuclides → adults → eff.dose → 50 yrs → norm liv & potential;
  → all pathways → all nuclides → adults → eff.dose → 50 years → potential;
  → cloud → all nuclides → adults → eff.dose → depos period → normal living;
  → ground → all nuclides → adults → eff.dose → 50 years → normal living;
  → ingestion → all products → all nuclides → adults → eff.dose → 50 years → potential;
  → inhalation → all nuclides → adults → eff.dose → depos period → normal living;
  → skin contamination → all nuclides → adults → eff.dose → depos period → normal living;

Figure 26 shows the individual effective dose due to different exposure pathways (cloudshine, groundshine, inhalation, resuspension, skin contamination) for normal living. The sum of all pathways except ingestion can be seen from Figure 27 for normal living as well as for potential exposure. Ingestion results are only sensible for potential exposure; they are presented in Figure 28 together with the sum of all pathways for potential exposure. All these results are can also be found in tabular form in Table 19; it contains also the results for the sum of all pathways except ingestion. Note, that the legend and scale are different for the different exposure pathways.

***Legends for the various individual doses** in Figure 26 to Figure 28:*

CL - IH

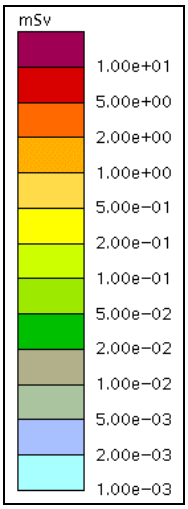


Figure 26 a+c

SK

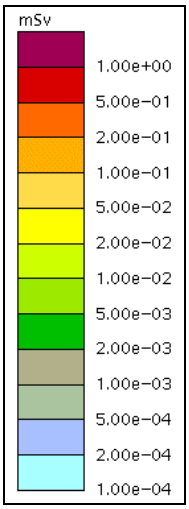


Figure 26d

Doses from all pathways except IG:
normal living GR

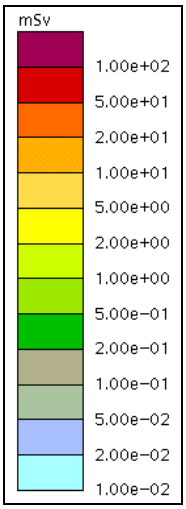


Figure 26b
Figure 27a

potential

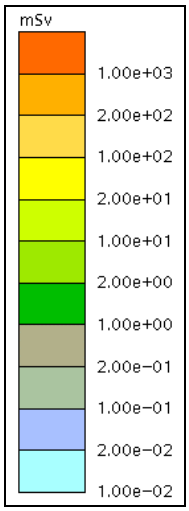


Figure 27b

Doses incl IG (pot.):
IG only and sum

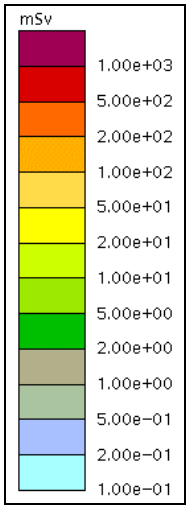


Figure 28a,b

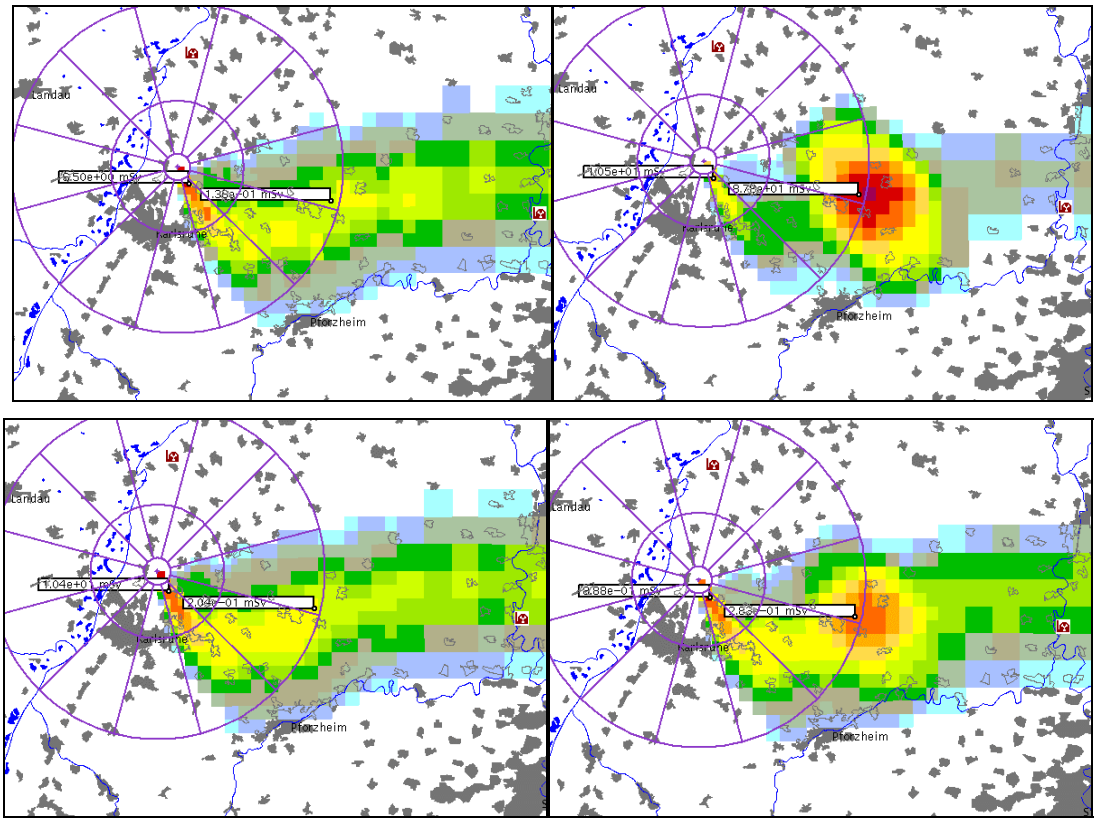


Figure 26: FDMT/QP. Effective dose (for normal living). Cloud and Ground (50y) at the top, Inhalation (50y) and Skin contamination at the bottom (legend see above).

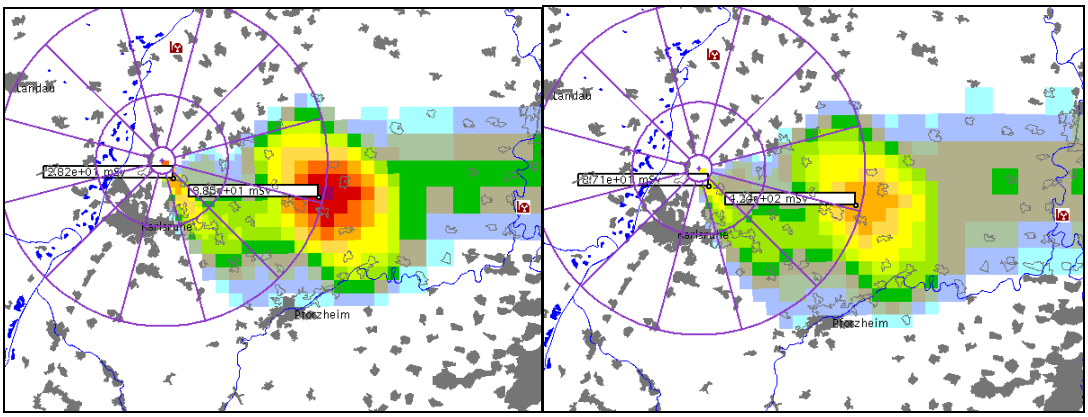


Figure 27: FDMT/QP. Individual effective dose. Sum of all pathways except ingestion for normal living (left) and potential (right).

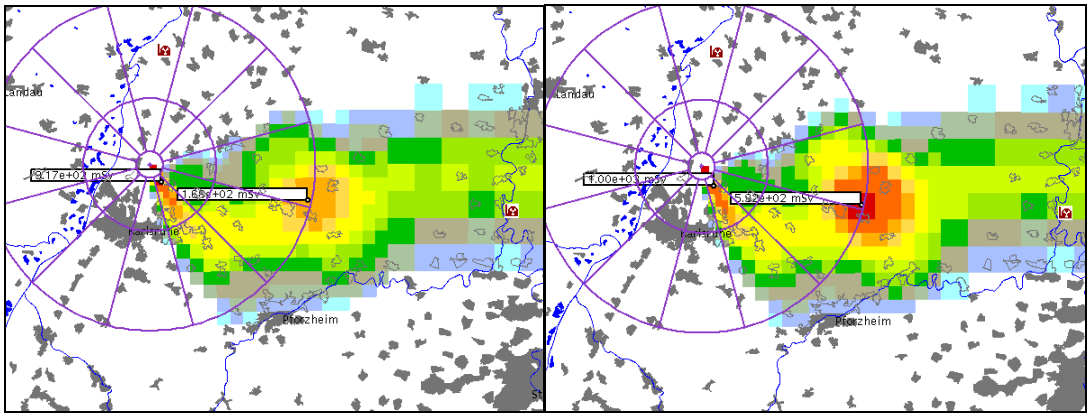


Figure 28: FDMT/QP. Individual effective dose (for potential exposure). Ingestion (left) and sum of all pathways (right).

Individual effective dose	cell (230)	cell (1194)
Cloud, normal living	6.50e+00	1.36e-01
Ground (50y), normal living	1.05e+01	8.78e+01
Inhalation (50y), normal living	1.04e+01	2.04e-01
Resuspension, normal living	1.29e-03	9.10e-03
Skin contamination, normal living	8.88e-01	2.83e-01
Sum of these, normal living	2.82e+01	8.85e+01
Sum of all pathways exc.ingestion, potential	8.71e+01	4.24e+02
Ingestion, potential	9.17e+02	1.68e+02
Sum of all pathways incl. ingestion, potential	1.00e+03	5.92e+02

Table 19: FDMT/QP. Individual effective dose [mSv]. Dose contributions from different exposure pathways and the sums over pathways for normal living and potential exposure.

These doses (except those with ingestion) are also calculated by EmerSim (compare section 3.3.2.2). However, there are some differences.

- The cloud dose values are identical.
- The inhalation doses differ due to different breathing rates used by the two models (3.33E-4 m^3/s by EmerSim, 2.667E-4 m^3/s by FDMT).
- The differences in the ground dose are mainly caused by the dry deposition model used by QuickPro and FDMT. QuickPro conatins only an approximation of the model included in FDMT and ALSMCprogn (which use the identical program routines). Thus, the differences in the ground dose between EmerSim/AL and FDMT/AL would be much smaller (they are not calculated in this test example).

  Another, however minor reason, is the different generation of the dose conversion factor used for the first day. FDMT takes the dose conversion factor integrated over one day. EmerSim integrates the doses over shorter time periods and adds up these dose bricks within the first day.

3.5.2 TimePlots

The results presented under "TimePlots" are subdivided into "Activity in" the feedstuffs and foodstuffs selected, "Dose from" and "Dose rate from" the exposure pathways specified in the input windows during run time. In the following, examples are given only for "Acitivty in" and "Dose from".

3.5.2.1 Activity in

Select in the Theme Selection Window under *run-id* → TimePlots the following endpoints:

- Activity in → Grass I → all cesium isot. → at (1194)
  Milk → all iodine isot. → at (230)

Figure 29 shows the activity [Bq/kg] in grass by all cesium isotopes and in milk by all iodine isotopes as a function of time for the maximal grid cell, which is cell number 1194 for cesium and 230 for milk.

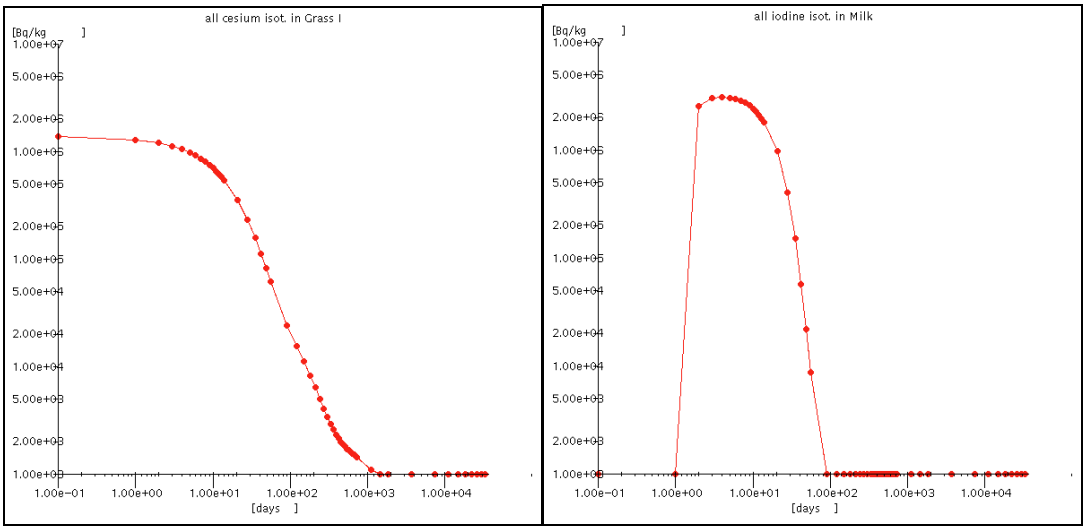


Figure 29: FDMT/QP. Time plots for activity of cesium isotopes in grass (left) and of iodine isotopes in milk (right) at the maximal grid cell (1194 for cesium, 230 for iodine).

3.5.2.2 Dose from

Select in the Theme Selection Window under *run-id* → TimePlots the following endpoints:

- Dose from

→ all pathways exc. ing.	→	all nuclides at (1194)	→ adults → eff.dose → → potential
→ ingestion → all products	→	all nuclides at (230)	→ adults → eff.dose → → potential

Figure 30 shows the potential individual effective dose [mSv] due to all exposure pathways excluding ingestion and to ingestion only for the maximal grid cell, which is different for both items. For the normal living dose for all pathways excluding ingestion (which is not shown here), the maximal cell is different (no. 1195)

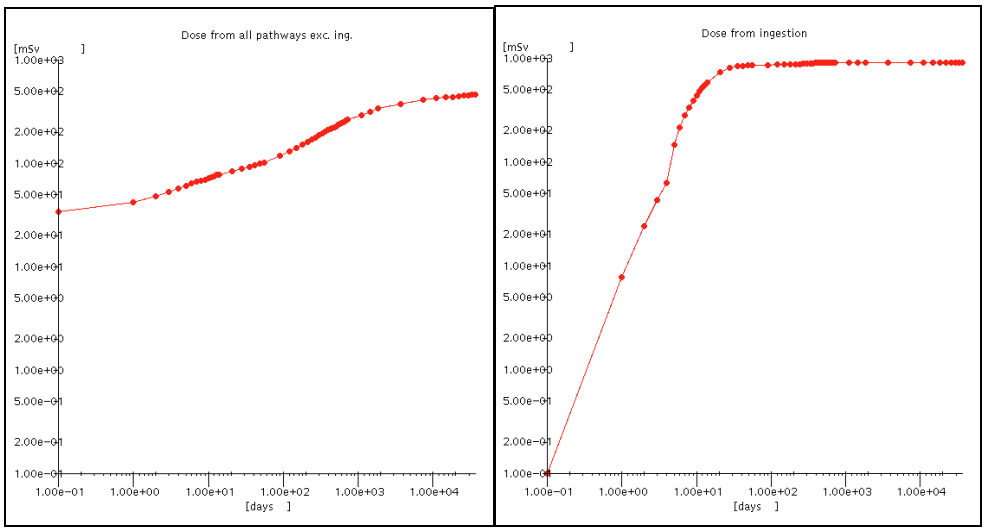


Figure 30: FDMT/QP. Time plots of potential individual effective doses [mSv] due to all pathways except ingestion (left) and from ingestion only (right) for the corresponding maximal grid cell.

3.5.3 Collective doses

Select in the Theme Selection Window under *run-id* → Collective Doses → Col.dose from the following endpoints:

- all pathways exc. ing. → all nuclides → adults → eff.dose → 50 years → normal living
- ingestion → all products → all nuclides → adults → eff.dose → 50 years → potential

Figure 31 shows two examples for collective effective doses for adults, summed up over all nuclides and integrated over 50 years. Note, the different scale for both pictures in this Figure.

- At the top, the sum of all pathways except ingestion is shown for normal living conditions. Grid cells, where no people are living, have a collective dose of 0. This result for collective doses is identical with that calculated by LATECONS.
- At the bottom, the potential ingestion dose summed up over all foodstuffs can be seen. As in FDMT, the collective dose by ingestion is calculated according to the production method, it depends on the foodstuff production in a grid cell, not on the the number of people living there. Thus, the result is different to that calculated in LATECONS.

Table 20 gives the maximal collective dose in a grid cell (which is different for the two cases) and the total collective dose in the whole area, which can be obtained by drawing a polygone.

	all pathways exc. IG	IG only
Maximal collective dose	416 manSv in cell no 1193	787 manSv in cell no 2416
Total collective dose	3.39E3 manSv	2.34E4 manSv

Table 20: FDMT/QP. Maximal and total collective doses.

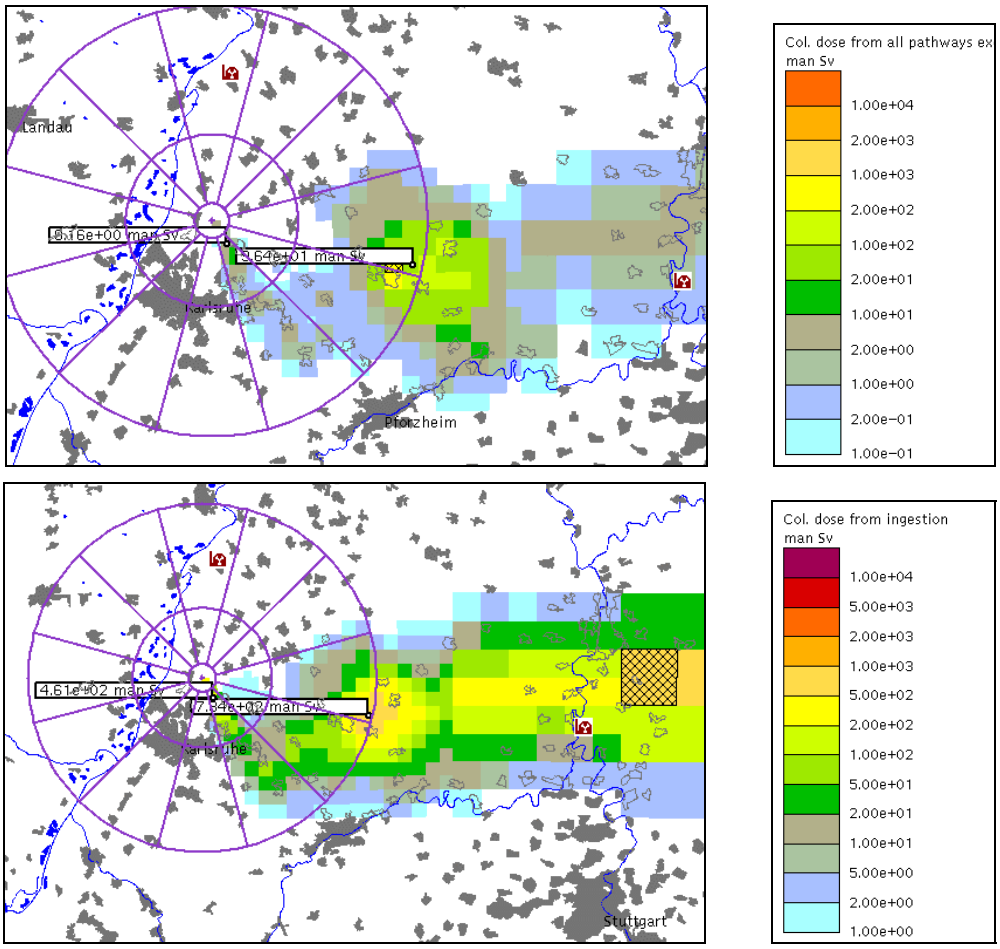


Figure 31: FDMT/QP. Collective doses [manSv], adults, 50 years, for all pathways except ingestion (normal living, top) and ingestion only (potential, bottom).

3.6 For LCMT (based on FDMT/QP)

The Theme Selection Window for the graphical presentation of the results from LCMT shows the item "Relocation" subdivided into the different decontamination strategies selected and one item for each of the various foodstuffs selected (in this test run these are "milk" and "leafy vegetables") subdivided into the agricultural countermeasures applied as well as for NO ACTION.

lcmt40	→	Relocation	→	Decon Status
			→	GrassCuttingT14D/...
			→	NoDecontaminate/...
			→	SkimBurialPlT90D/...
	→	leafy vegetables	→	AgrD/
			→	Disp/
			→	NO_ACTIONS/
	→	milk	→	Disp/
			→	NO_ACTIONS/
			→	Rmov,T=0/

3.6.1 Relocation

In this test example relocation was considered together with decontamination in relocated areas. As the intervention doses calculated exceed the relocation criteria specified (i.e. 30 mSv) in some grid cells, the relocation area and thus the decontamination area are greater than zero.

- At first, the results ***without performing any decontamination strategy*** are discussed. Select in the Theme Selection Window under

  Relocation → NoDecontaminate

  the following endpoints:

  → Area
  → People
  → Return time
  → Individual dose received → Sum over pathways → aadu → oeff

  The corresponding diagrams are shown in Figure 32 (area and people) and Figure 33 (return time and dose received). Here it is assumed that relocation takes place in those grid cells where the intervention level is exceeded; however no decontamination strategy is performed at any grid cell. Thus, the individual dose received gives the effective dose summed up over all exposure pathways. aadu stands for the *a*ge group "*adu*lts", oeff denotes the *o*rgan "*eff*ective dose".

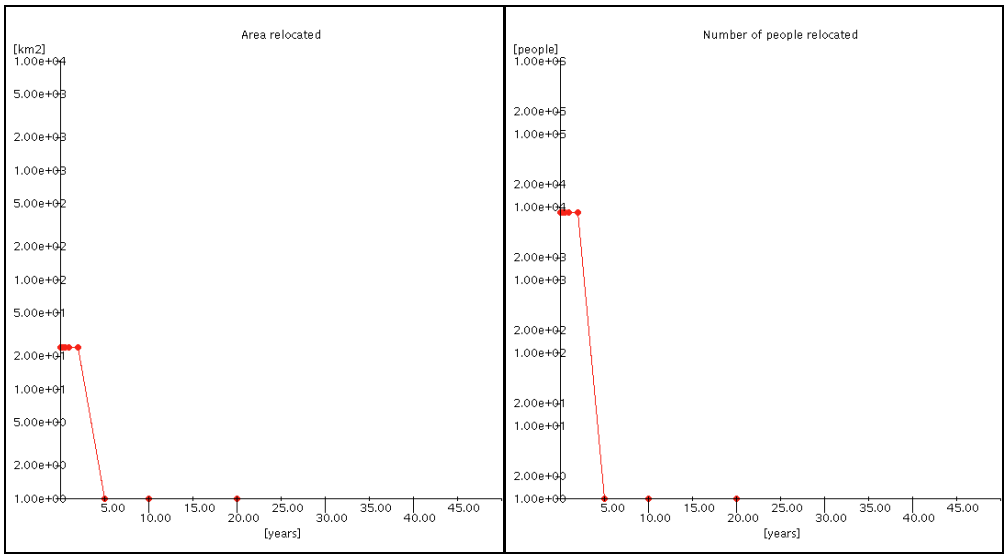


Figure 32: LCMT/QP. Relocation - NoDecontaminate. Size of the area (left) and number of people (right) affected by relocation as a function of time.

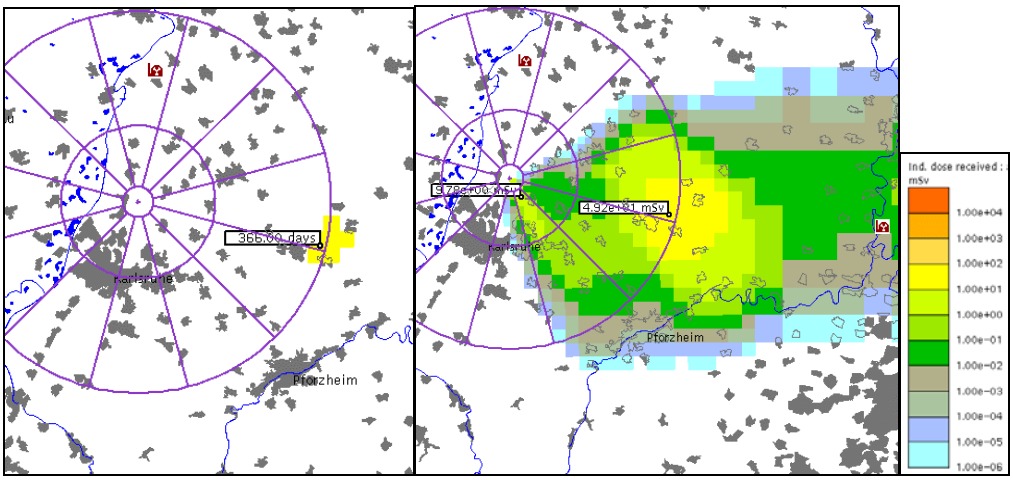


Figure 33: LCMT/QP. Relocation - NoDecontaminate. Return time (left) and individual effective dose received (sum over pathways, adults).

- The same endpoints can be selected for each ***decontamination*** strategy applied. Figure 34 shows the return time and the individual effective dose received (sum over pathways, adults) assuming relocation and the most effective selected decontamination strategy SkimBurialPIT90D.

  Select under Relocation → SkimBurialPIT90D
  → Return time

  and

→ Individual dose received →Sum over pathways
→ aadu → oeff

to get these results.

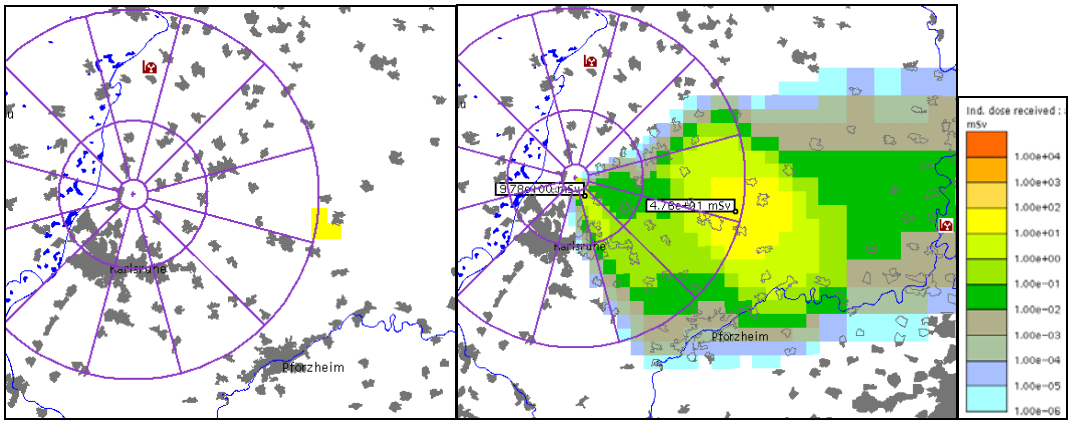


Figure 34: LCMT/QP. Relocation with decontamination. Return time (left) and individual effective dose received (sum over pathways, adults) assuming decontamination strategy SkimBurialPlT90D.

3.6.2 Agricultural countermeasures

For each foodstuff, there is one item "NO_ACTIONS" and then all the countermeasures considered are listed. For each countermeasure, there are several subitems: Amount banned, Production Lost, Remaining ban, Resource 1, Text file.

In the following "NO_ACTIONS" results are presented for both, leafy vegetables and milk. Results *with* countermeasures are only shown for the foodstuff milk and the action "Removal from contaminated feed at time T = 0" ("Rmov,T=0").

If you choose the action "AgrD" considered for leafy vegetables, you can read "*Action disallowed*" in the Theme Selection Window. It means, that this action does not lead to any reduction in dose and is therefore classified as "*disallowed*". This information is also given in an error window which opens during run time.

3.6.2.1 NO_ACTIONS

Select in the Theme Selection Window

leafy vegetables → NO_ACTIONS → Potential ban
milk → NO_ACTIONS → Potential ban

Figure 35 shows the area banned as a function of the ban duration for the foodstuffs leafy vegetables and milk assuming no actions.

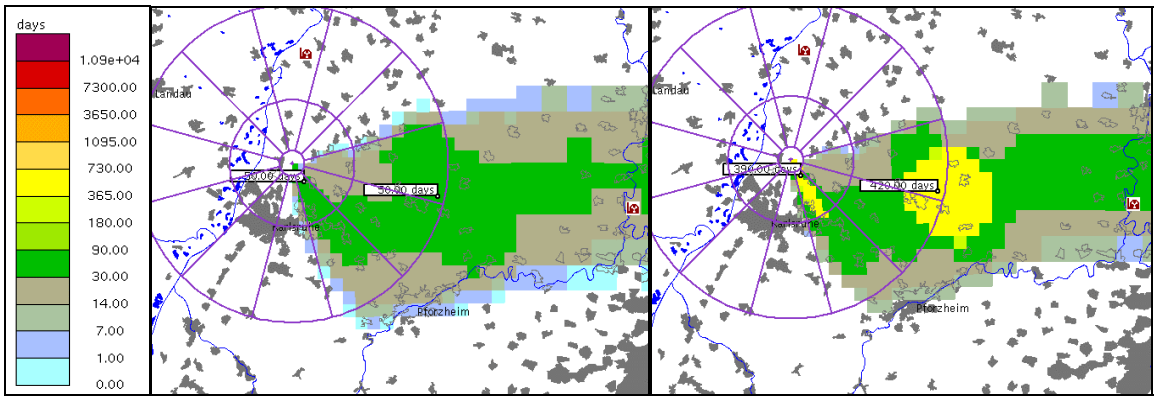


Figure 35: LCMT. Duration of potential bans for leafy vegetables (left) and milk (right) assuming no actions.

3.6.2.2 For milk: Action Removal from contaminated feed at time T = 0 ("Rmov,T=0")

For milk, click to the action "Rmov,T=0" and select the different endpoints one after the other.

- The Amount banned and the Production lost as a function of time are given in Figure 36.

- The Remaining ban after performing the agricultural action "Removal from contaminated feed at time T = 0" is presented in Figure 37. Additionally, the time-dependent amount of stored feed daily required (Resource 1) for this action is shown in this figure.

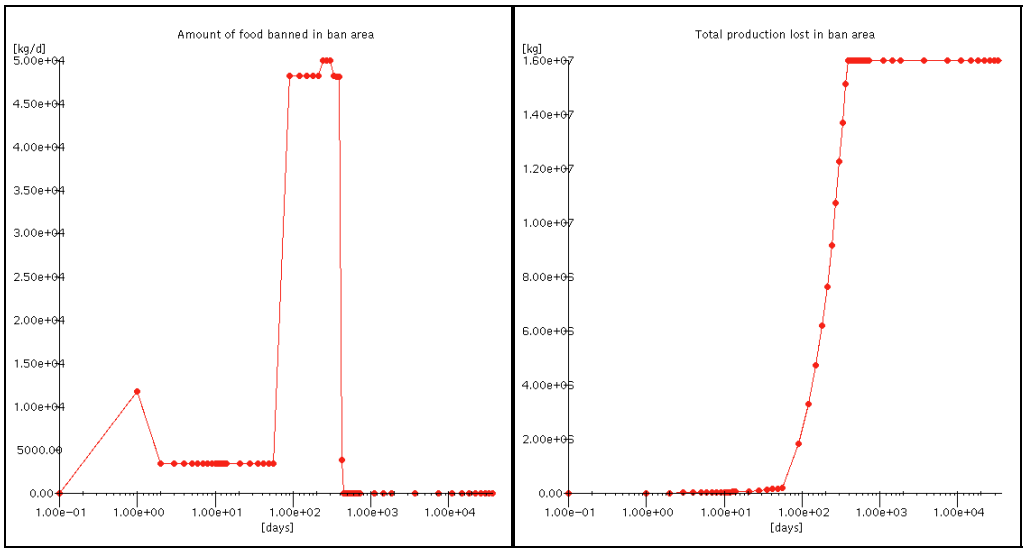


Figure 36: LCMT. Results for milk and the action "Removal from contaminated feed at time T = 0" (Rmov,T=0): Amount banned (left) and Production lost (right).

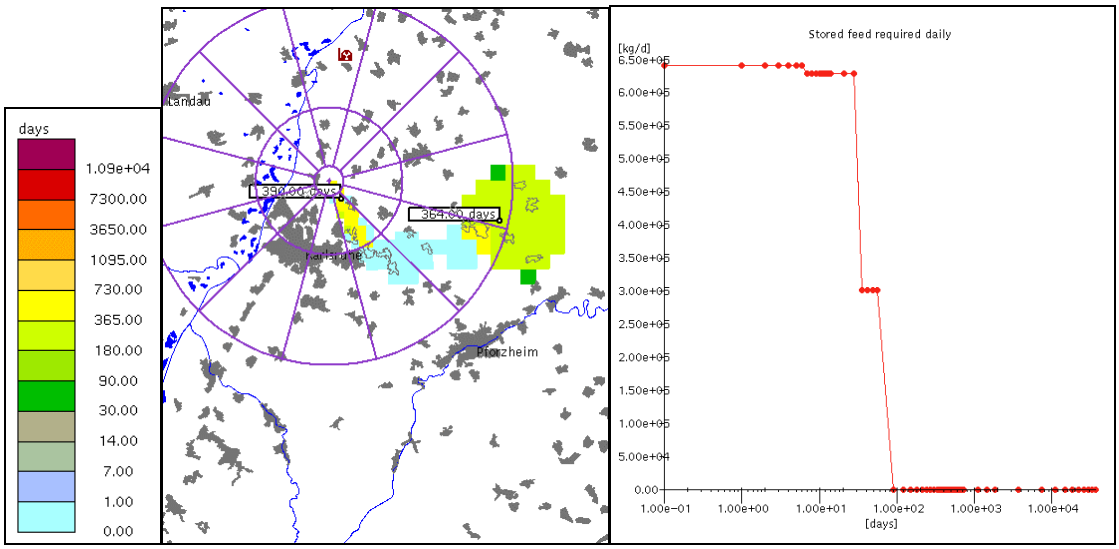


Figure 37: LCMT. Results for milk and the action "Removal from contaminated feed at time T = 0" (Rmov,T=0): Remaining ban (left) and Resource 1 (right).

- The item Text file shows the tables presented below which compare the collective doses without and with the selected action for effective dose and thyroid dose.

```
File: /fdsk4/rodos/roextern/outall/user4/lcmtqp5/lcmt40.fmil.Rmov,T=0

 Collective dose in the ban area (manSv)
 ***************************************

  Organ: effective
                 Time (years)         NO_ACTIONS     Rmov,T=0
                 ************         ******************************
                 1.000000E+00         3.2829E+03        4.0415E+02
                 2.000000E+00         3.4248E+03        4.5197E+02
                 5.000000E+00         3.4772E+03        5.0446E+02
                 5.000000E+01         3.5709E+03        5.9809E+02

  Organ: thyroid
                 Time (years)         NO_ACTIONS     Rmov,T=0
                 ************         ******************************
                 1.000000E+00         4.2499E+04        5.7764E+03
                 2.000000E+00         4.2626E+04        5.8169E+03
                 5.000000E+00         4.2664E+04        5.8544E+03
                 5.000000E+01         4.2715E+04        5.9056E+03


 Total quantity requiring disposal = 1.6706E+07 kg.
```

3.7 For LATECONS based on EMERSIM/QP, FDMT/QP and LCMT/QP

If the Graphics Manager Window does not yet show the correct RunId at the top, click to the corresponding RunId in the Application List and then press Graphics in the Control & Services Window. For each of the three programs of the program group "LATECONS" there is a button in the Graphics Manager Window. However, for DHM40 (deterministic health effects) there are no results available in this program group.

- ***DHM40***: **d**eterministic **h**ealth effects **m**odel
- ***SHML40***: **s**tochastic **h**ealth effects **m**odel considering **l**ate countermeasures
- ***LEM40***: **l**ate **e**conomics **m**odel

3.7.1 SHML40 (Stochastic Health Effects)

Here, late consequences to people are presented, namely collective effective doses and the total number of stochastic health effects (cancers) in the population. As the number of cancers is calculated by multiplying the collective dose by the risk factor (5.0E-2), the pattern of the results on the map looks similar.

The results are shown here for normal living conditions (NoAction) and with the combinations of countermeasures as defined in LCMT (Action), where each set of results is given for the ingestion pathway separately (OnlyIG, considering in the Action-case only the agricultural countermeasures), for the sum over all pathways except ingestion (AllPathExcIG, considering in the Action-case only the evacuation, relocation, different decontamination strategies) and for the sum over all pathways including ingestion (AllPath, considering in the Action-case both types of protective measures). As in the last case a lot of combinations is possible, only two of them are provided for graphical presentation: the ones leading to the lowest and the highest consequences, i.e. with the most and the worst effective action combination.

3.7.1.1 Collective Doses

Click in the Graphics Manager Window to

SHML40 → CollDoses → NoAction → AllPath;
→ Action → AllPath;

For Action select in the Theme Selection Window *reloc+ SkimBurialPlT90D+Disp*; this combination of countermeasures (i.e. relocation with the decontamination strategy skim burial ploughing

after 90 days together with food disposal as agricultural action) leads to the highest reduction in dose among those actions selected in LCMT.

Figure 38 shows the collective effective doses taking into account the contribution from all exposure pathways without action (normal living; for ingestion it is identical with potential exposure) and with the most effective set of countermeasures.

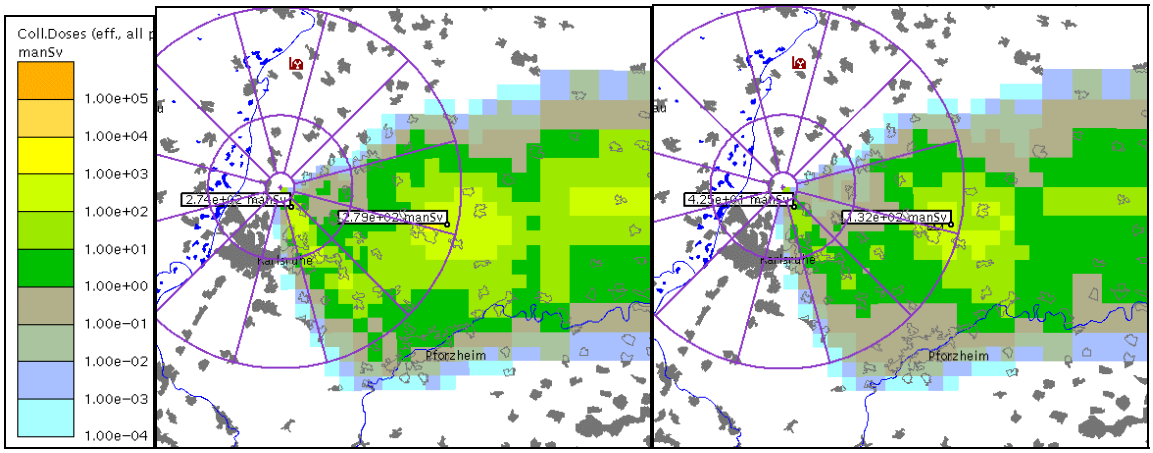


Figure 38: LATECONS/QP. Collective effective doses [manSv]. Sum of all pathways, for NoAction (left) and Action (most effective countermeasure combination: reloc+SkimBurialPlT90D+Disp).

3.7.1.2 Stochastic health effects

Click in the Graphics Manager Window to

SHML40 → StoHealth → NoAction → AllPathExcIG;
→ OnlyIG;
→ AllPath;
→ Action → AllPath;

For Action select in the Theme Selection Window *reloc+ SkimBurialPl T90D+Disp*; this combination of countermeasures (i.e. relocation with decontamination strategy Skim Burial Plouhing after 90 days together with food disposal as agricultural countermeasure) leads to the highest reduction in dose and thus in the lowest number of cancers among those actions selected in LCMT.

Figure 39 shows the number of stochastic health effects assuming normal living conditions (respectively potential exposure in the case of ingestion) for the sum of all pathways except ingestion and for ingestion only. The sum of all pathways including ingestion is shown in Figure 40 for NoAction and for the most effective action combination. .

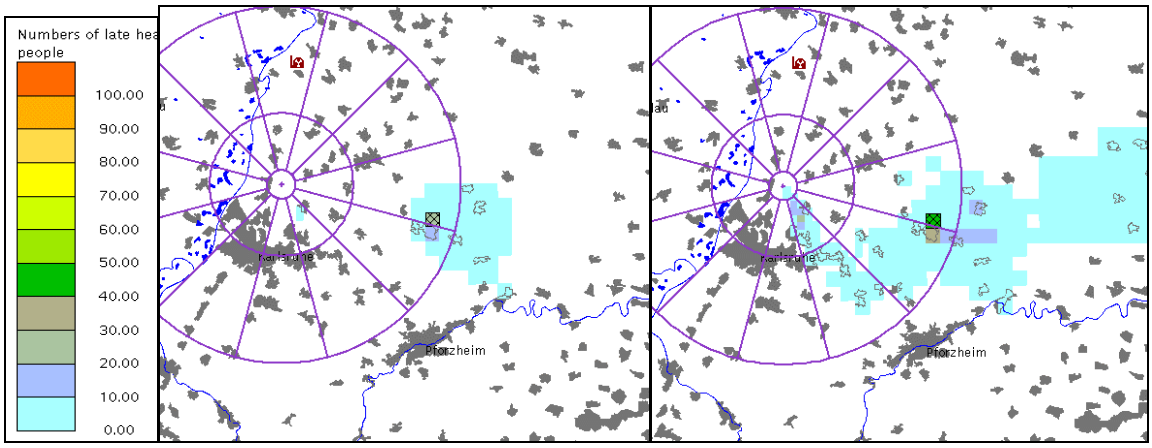


Figure 39: LATECONS/QP. Number of stochastic health effects, No Action. Sum of all pathways except ingestion (left) and ingestion pathway.

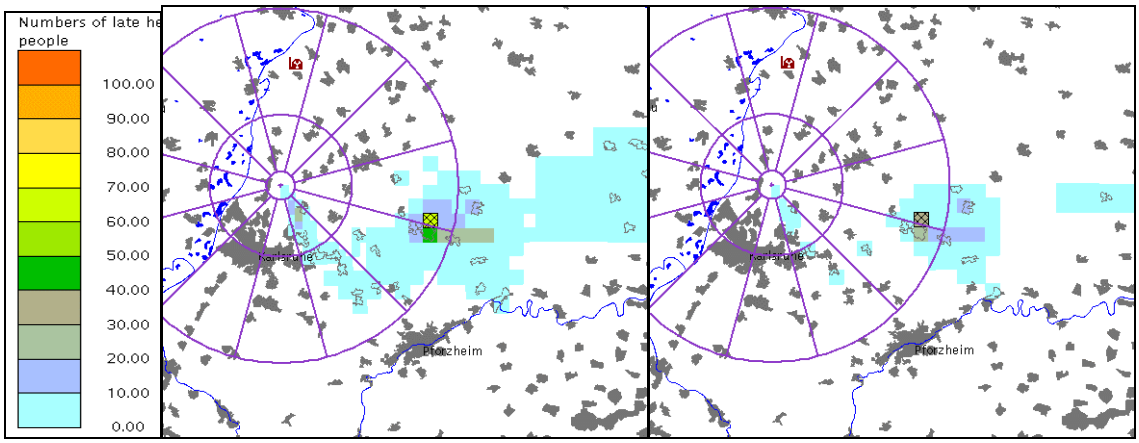


Figure 40: LATECONS/QP. Number of stochastic health effects, Sum of all pathways. NoAction (left) and Action (most effective countermeasure combination: reloc+SkimBurialPlT90D+Disp).

Figure 39 and Figure 40 show the number of health effects in each grid cell. The grid cell with the maximum value is marked by a cross. To get the *total* number of health effects *in the whole area* under consideration and the maximal number occurring in any grid cell you have to draw a polygone around this area as follows:

Select the point-information mode (first button in the Tool Bar above the graphics); press Control and keep it pressed; then start the polygone with the left mouse, click the other edges with the left mouse and complete the polygone with the right mouse. In the text window (as well as in the Legend Window) you can then find the results about the number of stochastic health effects within this area.

If your polygone comprises all grid cells considered you will find the values given in Table 21 for the case NoAction. The mean value shown in the graphics depends on the size (number of cells analysed) of the

specified polygone and is therefore not given in this report. Note, that the maximal result is calculated for grid cell no. 1193, and not for grid cell 1194 which was shown in the pictures of the previous sections.

The sum within the whole area considered can also be found in the table "Tables.outlat" which is loaded into the text window of RODOS by selecting LatTable in the Graphics Manager Window. However, due to different ways of rounding, the numbers are in general not identical. The file is also stored in the outall-directory (/rodos/roextern/outall) in the subdirectory */user-id/run-id*.

NoAction	AllPath	AllPathExcIG	OnlyIG
Maximum	63	21	42
Sum	805	152	653

Table 21: LATECONS/QP. Number of stochastic health effects, No Action.

3.7.2 LEM40 (Late Economic Consequences)

There exist no graphical results for the late economic consequence calculations. The results are only presented in tabular form.

Click in the Graphics Manager Window to

LEM40 → EcoTable

The file "Tables.outeco" is loaded into the text window of RODOS which is opened with the third button from the left in the Tool Bar. It presents results of the economics part of LATECONS and is listed in the Appendix of this report.

This file is also stored in the outall-directory (/rodos/roextern/outall) in the subdirectory */user-id/run-id*.

4 Test protocol

4.1 QUICKPRO

Results are identical with Patch F_02.

4.2 ALSMCprogn

Test example works now.

4.3 EMERSIM (QP)

Results of areas affected by countermeasures and no action doses are identical with Patch F_02.

Results for normal living doses and doses with actions can be different due to different location factors. The location factors depend on the population distribution which has been corrected. Thus, also all results for spectra (number of people within certain dose intervals) are different now.

4.4 EARLYCONS

The error due to loading only parts of an array is corrected.

Changes due to new population data.

4.5 FDMT

The correct version is installed, i.e. the groundshine doses are ok now.

Changes due to new population data.

4.6 LCMT

The run is based on correct FDMT results now.

Changes due to new population and production data.

4.7 LATECONS

The run is based on correct FDMT (and thus LCMT) results now.

Changes due to new population data.

4.8 Other modifications

The topographical, population and production data files are corrected.

5 Appendix A: The load files

The load lists given here are the original load lists of the user *rodos* which are copied to the actual user id. That means, the ASSIGN files mentioned are the default files and not yet the ones modified by the initialization procedure or by reassigning data from fix data base. However, the run-ids generated by the configuration process ("Importing Result-Dataset To") are adapted.

5.1 Load lists for the Atmospheric Dispersion Modules

In the following, the load lists for the atmospheric dispersion modules QUICKPRO and ALSMCprogn are listed.

5.1.1 QUICKPRO

```
BEGIN LOAD ASY: QuickProgno 'Sourceterm: FZK-Feb00: Filt. Vent. + Rel. after
3.5h , Met. FZK-Februa97';

     CANLAG:
          ANLTYP [1:4], [1:1], [1:32000] <
           ANLTYP [1:4] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
          BlockName [1:32], [1:1], [1:32000] <
           BlockName [1:32] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
          SiteName [1:32], [1:1], [1:32000] <
           SiteName [1:32] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
     END CLASS

     CLOGAM:
          FAKO [1:8][1:10][1:6][1:4][1:2], [1:1], [1:32000] <
           FAKO [1:8][1:10][1:6][1:4][1:2] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
     END CLASS

     CMetFen:
          CDI30 [1:1][1:48], [1:1], [1:32000] <
           CDI30 [1:1][1:48] (ASY: QuickProgno, CMetFen)
           Edit: Default;
          CDI30X [1:1], [1:1], [1:32000] <
           CDI30X [1:1] (ASY: QuickProgno, CMetFen)
           Edit: Default;
          FNAME [1:12], [1:1], [1:32000] <
           FNAME [1:12] (ASY: QuickProgno, CMetFen)
           Edit: Default;
     END CLASS

     CNUKSD:
          CISOTOP [1:7][1:68], [1:1], [1:32000] <
           CISOTOP [1:7][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
          CISOTYP [1:4][1:68], [1:1], [1:32000] <
           CISOTYP [1:4][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
          CRHLISO [1:1][1:68], [1:1], [1:32000] <
           CRHLISO [1:1][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
     END CLASS

     CSTRMX:
          CAEBLK [1:16], [1:1], [1:32000] <
           CAEBLK [1:16] (ASY: QuickProgno, CSTRMX)
           Edit: Default;
          CAECAT [1:16], [1:1], [1:32000] <
           CAECAT [1:16] (ASY: QuickProgno, CSTRMX)
           Edit: Default;
          COMFR1 [1:80], [1:1], [1:32000] <
           COMFR1 [1:80] (ALL: PROGRAM0, Quellterm)
           Edit: FZK-Sep00;
```

```
     COMFR2 [1:80], [1:1], [1:32000] <
      COMFR2 [1:80] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     CRLGID [1:16], [1:1], [1:32000] <
      CRLGID [1:16] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     CSTFIL [1:16], [1:1], [1:32000] <
      CSTFIL [1:16] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

DALLGM:
     IAUTO [], [1:1], [1:32000] <
      IAUTO [] (ASY: QuickProgno, DALLGM)
      Edit: Default;
     IPROGN [], [1:1], [1:32000] <
      IPROGN [] (ASY: QuickProgno, DALLGM)
      Edit: Default;
END CLASS

DANLAG:
     ANLBHE [], [1:1], [1:32000] <
      ANLBHE [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     ANLBWI [], [1:1], [1:32000] <
      ANLBWI [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     ANLKAM [], [1:1], [1:32000] <
      ANLKAM [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     BlockLat [], [1:1], [1:32000] <
      BlockLat [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     BlockLong [], [1:1], [1:32000] <
      BlockLong [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IANLEI [], [1:1], [1:32000] <
      IANLEI [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IANRAU [], [1:1], [1:32000] <
      IANRAU [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IANTGE [], [1:1], [1:32000] <
      IANTGE [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     NofSectors [], [1:1], [1:32000] <
      NofSectors [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     SiteLat [], [1:1], [1:32000] <
      SiteLat [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     SiteLong [], [1:1], [1:32000] <
      SiteLong [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     StartAngle [], [1:1], [1:32000] <
      StartAngle [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     ZoneRadii [1:3], [1:1], [1:32000] <
      ZoneRadii [1:3] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
END CLASS

DEPOS:
     AWASH [1:4], [1:1], [1:32000] <
      AWASH [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     BWASH [1:4], [1:1], [1:32000] <
      BWASH [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
END CLASS

DNUKSD:
     ISOYES [1:68], [1:1], [1:32000] <
      ISOYES [1:68] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
     NISOT [], [1:1], [1:32000] <
      NISOT [] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
     RHLISO [1:68], [1:1], [1:32000] <
      RHLISO [1:68] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
END CLASS
```

```
DSTRM0:
     ACS137 [1:24], [1:1], [1:32000] <
      ACS137 [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     AI131 [1:24], [1:1], [1:32000] <
      AI131 [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARBQ3 [1:24][1:3], [1:1], [1:32000] <
      ARBQ3 [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARBQ7 [1:24][1:7], [1:1], [1:32000] <
      ARBQ7 [1:24][1:7] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARISO [1:24][1:68], [1:1], [1:32000] <
      ARISO [1:24][1:68] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARNOB [1:24], [1:1], [1:32000] <
      ARNOB [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     IAEMOD [1:2], [1:1], [1:32000] <
      IAEMOD [1:2] (ASY: QuickProgno, DSTRM0)
      Edit: Default;
     IRLGRP [], [1:1], [1:32000] <
      IRLGRP [] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     IRLTYP [1:12], [1:1], [1:32000] <
      IRLTYP [1:12] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ISTFIL [1:2], [1:1], [1:32000] <
      ISTFIL [1:2] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     PROZF3 [1:24][1:3], [1:1], [1:32000] <
      PROZF3 [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     PROZF7 [1:24][1:7], [1:1], [1:32000] <
      PROZF7 [1:24][1:7] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

DSTRMD:
     DRLSDM [], [1:1], [1:32000] <
      DRLSDM [] (ASY: QuickProgno, DSTRMD)
      Edit: Default;
END CLASS

DSTRMP:
     ANTJOD [1:24][1:3], [1:1], [1:32000] <
      ANTJOD [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     DRLSPM [], [1:1], [1:32000] <
      DRLSPM [] (ASY: QuickProgno, DSTRMP)
      Edit: Default;
     HFS [1:24], [1:1], [1:32000] <
      HFS [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     QH [1:24], [1:1], [1:32000] <
      QH [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

DSTRMX:
     ANTAER [1:16], [1:1], [1:32000] <
      ANTAER [1:16] (ASY: QuickProgno, DSTRMX)
      Edit: Default;
     BEGFRE [], [1:1], [1:32000] <
      BEGFRE [] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

Gitter:
     ZEIT [], [1:1], [1:32000] <
      ZEIT [] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     ZEITL [], [1:1], [1:32000] <
      ZEITL [] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
END CLASS

MetFen:
     BUILDHEIGHT [], [1:1], [1:32000] <
      BUILDHEIGHT [] (ASY: QuickProgno, MetFen)
```

```
      Edit: Default;
     BUILDWIDTH [], [1:1], [1:32000] <
      BUILDWIDTH [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IBUILDWAKE [], [1:1], [1:32000] <
      IBUILDWAKE [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IDAY [], [1:1], [1:32000] <
      IDAY [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IHOUR [], [1:1], [1:32000] <
      IHOUR [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IMN [], [1:1], [1:32000] <
      IMN [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IMON [], [1:1], [1:32000] <
      IMON [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IRAU [], [1:1], [1:32000] <
      IRAU [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IRGTYP [], [1:1], [1:32000] <
      IRGTYP [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IWR30 [1:48], [1:1], [1:32000] <
      IWR30 [1:48] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IWR30X [], [1:1], [1:32000] <
      IWR30X [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     IYEAR [], [1:1], [1:32000] <
      IYEAR [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     METINP [1:3], [1:1], [1:32000] <
      METINP [1:3] (ASY: QuickProgno, MetFen)
      Edit: Default;
     REG30X [], [1:1], [1:32000] <
      REG30X [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     REGI30 [1:48], [1:1], [1:32000] <
      REGI30 [1:48] (ASY: QuickProgno, MetFen)
      Edit: Default;
     RWG30 [1:48], [1:1], [1:32000] <
      RWG30 [1:48] (ASY: QuickProgno, MetFen)
      Edit: Default;
     RWG30X [], [1:1], [1:32000] <
      RWG30X [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     TREGDA [], [1:1], [1:32000] <
      TREGDA [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     TREGST [], [1:1], [1:32000] <
      TREGST [] (ASY: QuickProgno, MetFen)
      Edit: Default;
     ZREF [], [1:1], [1:32000] <
      ZREF [] (ASY: QuickProgno, MetFen)
      Edit: Default;
END CLASS

MetStamm:
     HGHT [1:3], [1:1], [1:32000] <
      HGHT [1:3] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     HMIS [1:6], [1:1], [1:32000] <
      HMIS [1:6] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     PY1 [1:6][1:3][1:2], [1:1], [1:32000] <
      PY1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     PZ1 [1:6][1:3][1:2], [1:1], [1:32000] <
      PZ1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     QY1 [1:6][1:3][1:2], [1:1], [1:32000] <
      QY1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     QZ1 [1:6][1:3][1:2], [1:1], [1:32000] <
      QZ1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     STETA1 [1:6][1:3][1:2], [1:1], [1:32000] <
      STETA1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
```

```
            VABLAG [1:4], [1:1], [1:32000] <
             VABLAG [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            WPE [1:6][1:2], [1:1], [1:32000] <
             WPE [1:6][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
      END CLASS

      PointSet:
            aType [1:32], [1:1], [1:32000] <
             aType [1:32] (ASY: QuickProgno, PointSet)
             Edit: Default;
            zInDelta [1:2], [1:1], [1:32000] <
             zInDelta [1:2] (ASY: QuickProgno, PointSet)
             Edit: Default;
      END CLASS

END LOAD
```

5.1.2 ALSMCprogn

```
BEGIN LOAD ASY: ALSMCprgn 'Interactive, met.-data from net for ALSMC-
Prognosis';

     CANLAG:
          ANLTYP [1:4], [1:1], [1:32000] <
           ANLTYP [1:4] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
          BlockName [1:32], [1:1], [1:32000] <
           BlockName [1:32] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
          SiteName [1:32], [1:1], [1:32000] <
           SiteName [1:32] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
     END CLASS

     CLOGAM:
          FAKO [1:8][1:10][1:6][1:4][1:2], [1:1], [1:32000] <
           FAKO [1:8][1:10][1:6][1:4][1:2] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
     END CLASS

     CMetFen:
          CDI30 [1:1][1:48], [1:1], [1:32000] <
           CDI30 [1:1][1:48] (ASY: ALSMCprgn, CMetFen)
           Edit: ALSMC-IPrgnNet;
          CDI30X [1:1], [1:1], [1:32000] <
           CDI30X [1:1] (ASY: ALSMCprgn, CMetFen)
           Edit: ALSMC-IPrgnNet;
          FNAME [1:12], [1:1], [1:32000] <
           FNAME [1:12] (ASY: ALSMCprgn, CMetFen)
           Edit: ALSMC-IPrgnNet;
     END CLASS

     CNUKPD:
          CNUKL [1:7][1:15], [1:1], [1:32000] <
           CNUKL [1:7][1:15] (ASY: ALSMCprgn, CNUKPD)
           Edit: ALSMC-IPrgnNet;
     END CLASS

     CNUKSD:
          CISOTOP [1:7][1:68], [1:1], [1:32000] <
           CISOTOP [1:7][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
          CISOTYP [1:4][1:68], [1:1], [1:32000] <
           CISOTYP [1:4][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
          CRHLISO [1:1][1:68], [1:1], [1:32000] <
           CRHLISO [1:1][1:68] (ALL: PROGRAM0, Nuklide_Dosis)
           Edit: Default00;
     END CLASS

     CSTRMX:
          CAEBLK [1:16], [1:1], [1:32000] <
           CAEBLK [1:16] (ASY: ALSMCprgn, CSTRMX)
           Edit: ALSMC-IPrgnNet;
          CAECAT [1:16], [1:1], [1:32000] <
           CAECAT [1:16] (ASY: ALSMCprgn, CSTRMX)
           Edit: ALSMC-IPrgnNet;
          COMFR1 [1:80], [1:1], [1:32000] <
           COMFR1 [1:80] (ALL: PROGRAM0, Quellterm)
           Edit: FZK-Sep00;
          COMFR2 [1:80], [1:1], [1:32000] <
           COMFR2 [1:80] (ALL: PROGRAM0, Quellterm)
           Edit: FZK-Sep00;
          CRLGID [1:16], [1:1], [1:32000] <
           CRLGID [1:16] (ALL: PROGRAM0, Quellterm)
           Edit: FZK-Sep00;
          CSTFIL [1:16], [1:1], [1:32000] <
           CSTFIL [1:16] (ALL: PROGRAM0, Quellterm)
           Edit: FZK-Sep00;
     END CLASS

     DANLAG:
          ANLBHE [], [1:1], [1:32000] <
           ANLBHE [] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
          ANLBWI [], [1:1], [1:32000] <
           ANLBWI [] (ALL: PROGRAM0, Anlage)
           Edit: FZK-Mast;
```

```
     ANLKAM [], [1:1], [1:32000] <
      ANLKAM [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     BlockLat [], [1:1], [1:32000] <
      BlockLat [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     BlockLong [], [1:1], [1:32000] <
      BlockLong [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IANLEI [], [1:1], [1:32000] <
      IANLEI [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IANTGE [], [1:1], [1:32000] <
      IANTGE [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     NofSectors [], [1:1], [1:32000] <
      NofSectors [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     SiteLat [], [1:1], [1:32000] <
      SiteLat [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     SiteLong [], [1:1], [1:32000] <
      SiteLong [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     StartAngle [], [1:1], [1:32000] <
      StartAngle [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     ZoneRadii [1:3], [1:1], [1:32000] <
      ZoneRadii [1:3] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
END CLASS

DEPOS:
     AWASH [1:4], [1:1], [1:32000] <
      AWASH [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     BWASH [1:4], [1:1], [1:32000] <
      BWASH [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
END CLASS

DNUKRE:
     IREDNU [1:15], [1:1], [1:32000] <
      IREDNU [1:15] (ASY: ALSMCprgn, DNUKRE)
      Edit: ALSMC-IPrgnNet;
     MXXRED [], [1:1], [1:32000] <
      MXXRED [] (ASY: ALSMCprgn, DNUKRE)
      Edit: ALSMC-IPrgnNet;
END CLASS

DNUKSD:
     ISOYES [1:68], [1:1], [1:32000] <
      ISOYES [1:68] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
     NISOT [], [1:1], [1:32000] <
      NISOT [] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
     RHLISO [1:68], [1:1], [1:32000] <
      RHLISO [1:68] (ALL: PROGRAM0, Nuklide_Dosis)
      Edit: Default00;
END CLASS

DSTRM0:
     ACS137 [1:24], [1:1], [1:32000] <
      ACS137 [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     AI131 [1:24], [1:1], [1:32000] <
      AI131 [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARBQ3 [1:24][1:3], [1:1], [1:32000] <
      ARBQ3 [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARBQ7 [1:24][1:7], [1:1], [1:32000] <
      ARBQ7 [1:24][1:7] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARISO [1:24][1:68], [1:1], [1:32000] <
      ARISO [1:24][1:68] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ARNOB [1:24], [1:1], [1:32000] <
      ARNOB [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     IAEMOD [1:2], [1:1], [1:32000] <
```

```
      IAEMOD [1:2] (ASY: ALSMCprgn, DSTRM0)
      Edit: ALSMC-IPrgnNet;
     IRLGRP [], [1:1], [1:32000] <
      IRLGRP [] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     IRLTYP [1:12], [1:1], [1:32000] <
      IRLTYP [1:12] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     ISTFIL [1:2], [1:1], [1:32000] <
      ISTFIL [1:2] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     PROZF3 [1:24][1:3], [1:1], [1:32000] <
      PROZF3 [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     PROZF7 [1:24][1:7], [1:1], [1:32000] <
      PROZF7 [1:24][1:7] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

DSTRMD:
     DRLSDM [], [1:1], [1:32000] <
      DRLSDM [] (ASY: ALSMCprgn, DSTRMD)
      Edit: ALSMC-IPrgnNet;
END CLASS

DSTRMP:
     ANTJOD [1:24][1:3], [1:1], [1:32000] <
      ANTJOD [1:24][1:3] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     DRLSPM [], [1:1], [1:32000] <
      DRLSPM [] (ASY: ALSMCprgn, DSTRMP)
      Edit: ALSMC-IPrgnNet;
     HFS [1:24], [1:1], [1:32000] <
      HFS [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
     QH [1:24], [1:1], [1:32000] <
      QH [1:24] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

DSTRMX:
     ANTAER [1:16], [1:1], [1:32000] <
      ANTAER [1:16] (ASY: ALSMCprgn, DSTRMX)
      Edit: ALSMC-IPrgnNet;
     BEGFRE [], [1:1], [1:32000] <
      BEGFRE [] (ALL: PROGRAM0, Quellterm)
      Edit: FZK-Sep00;
END CLASS

Gitter:
     ZEIT [], [1:1], [1:32000] <
      ZEIT [] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     ZEITL [], [1:1], [1:32000] <
      ZEITL [] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
END CLASS

IOSwitches:
     mkConcData [1:1], [1:1], [1:32000] <
      mkConcData [1:1] (ASY: ALSMCprgn, IOSwitches)
      Edit: ALSMC-IPrgnNet;
     mkPuffData [1:1], [1:1], [1:32000] <
      mkPuffData [1:1] (ASY: ALSMCprgn, IOSwitches)
      Edit: ALSMC-IPrgnNet;
END CLASS

MetFen:
     BUILDHEIGHT [], [1:1], [1:32000] <
      ANLBHE [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     BUILDWIDTH [], [1:1], [1:32000] <
      ANLBWI [] (ALL: PROGRAM0, Anlage)
      Edit: FZK-Mast;
     IBUILDWAKE [], [1:1], [1:32000] <
      IBUILDWAKE [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IDAY [], [1:1], [1:32000] <
      IDAY [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IDRYFIELD [], [1:1], [1:32000] <
      IDRYFIELD [] (ASY: ALSMCprgn, MetFen)
```

```
      Edit: ALSMC-IPrgnNet;
     IHIRLM [], [1:1], [1:32000] <
      IHIRLM [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IHOUR [], [1:1], [1:32000] <
      IHOUR [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     ILSP [1:2], [1:1], [1:32000] <
      ILSP [1:2] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IMN [], [1:1], [1:32000] <
      IMN [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IMON [], [1:1], [1:32000] <
      IMON [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IPENTPF [], [1:1], [1:32000] <
      IPENTPF [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IRGTYP [], [1:1], [1:32000] <
      IRGTYP [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     ISMODE [], [1:1], [1:32000] <
      ISMODE [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IWR30 [1:48], [1:1], [1:32000] <
      IWR30 [1:48] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IWR30X [], [1:1], [1:32000] <
      IWR30X [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     IYEAR [], [1:1], [1:32000] <
      IYEAR [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     LINMCF [], [1:1], [1:32000] <
      LINMCF [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     LUse_Switch [1:2], [1:1], [1:32000] <
      LUse_Switch [1:2] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     LUse_Value [], [1:1], [1:32000] <
      LUse_Value [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     METINP [1:3], [1:1], [1:32000] <
      METINP [1:3] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     PDurationHH [], [1:1], [1:32000] <
      PDurationHH [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     PDurationMN [], [1:1], [1:32000] <
      PDurationMN [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     REG30X [], [1:1], [1:32000] <
      REG30X [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     REGI30 [1:48], [1:1], [1:32000] <
      REGI30 [1:48] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     RWG30 [1:48], [1:1], [1:32000] <
      RWG30 [1:48] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     RWG30X [], [1:1], [1:32000] <
      RWG30X [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     TREGDA [], [1:1], [1:32000] <
      TREGDA [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     TREGST [], [1:1], [1:32000] <
      TREGST [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
     ZREF [], [1:1], [1:32000] <
      ZREF [] (ASY: ALSMCprgn, MetFen)
      Edit: ALSMC-IPrgnNet;
END CLASS

MetStamm:
     HGHT [1:3], [1:1], [1:32000] <
      HGHT [1:3] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
     HMIS [1:6], [1:1], [1:32000] <
      HMIS [1:6] (ALL: PROGRAM0, Ausbreit_und_Ablager)
      Edit: Default00;
```

```
            PY1 [1:6][1:3][1:2], [1:1], [1:32000] <
             PY1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            PZ1 [1:6][1:3][1:2], [1:1], [1:32000] <
             PZ1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            QY1 [1:6][1:3][1:2], [1:1], [1:32000] <
             QY1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            QZ1 [1:6][1:3][1:2], [1:1], [1:32000] <
             QZ1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            STETA1 [1:6][1:3][1:2], [1:1], [1:32000] <
             STETA1 [1:6][1:3][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            VABLAG [1:4], [1:1], [1:32000] <
             VABLAG [1:4] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
            WPE [1:6][1:2], [1:1], [1:32000] <
             WPE [1:6][1:2] (ALL: PROGRAM0, Ausbreit_und_Ablager)
             Edit: Default00;
        END CLASS

        ModelPars:
            MaxMCFIterat [], [1:1], [1:32000] <
             MaxMCFIterat [] (ASY: ALSMCprgn, ModelPars)
             Edit: ALSMC-IPrgnNet;
        END CLASS

        PointSet:
            aType [1:32], [1:1], [1:32000] <
             aType [1:32] (ASY: ALSMCprgn, PointSet)
             Edit: ALSMC-IPrgnNet;
            zInDelta [1:2], [1:1], [1:32000] <
             zInDelta [1:2] (ASY: ALSMCprgn, PointSet)
             Edit: ALSMC-IPrgnNet;
        END CLASS

        SHirlam:
            Provider [1:32], [1:1], [1:32000] <
             Provider [1:32] (ASY: ALSMCprgn, SHirlam)
             Edit: ALSMC-IPrgnNet;
            Region [1:32], [1:1], [1:32000] <
             Region [1:32] (ASY: ALSMCprgn, SHirlam)
             Edit: ALSMC-IPrgnNet;
        END CLASS

        SSysPars:
            OpMode [1:32], [1:1], [1:32000] <
             OpMode [1:32] (ASY: ALSMCprgn, SSysPars)
             Edit: ALSMC-IPrgnNet;
            RunningState [1:32], [1:1], [1:32000] <
             RunningState [1:32] (ASY: ALSMCprgn, SSysPars)
             Edit: ALSMC-IPrgnNet;
            STermOrigin [1:32], [1:1], [1:32000] <
             STermOrigin [1:32] (ASY: ALSMCprgn, SSysPars)
             Edit: ALSMC-IPrgnNet;
            SimState [1:32], [1:1], [1:32000] <
             SimState [1:32] (ASY: ALSMCprgn, SSysPars)
             Edit: ALSMC-IPrgnNet;
        END CLASS

        Switches:
            SDemoUse [1:1], [1:1], [1:32000] <
             SDemoUse [1:1] (ASY: ALSMCprgn, Switches)
             Edit: ALSMC-IPrgnNet;
            SRealTime [1:1], [1:1], [1:32000] <
             SRealTime [1:1] (ASY: ALSMCprgn, Switches)
             Edit: ALSMC-IPrgnNet;
        END CLASS

    END LOAD
```

5.2 Load list for EMERSIM/QP

This is the load list for EMERSIM based on QUICKPRO-results; the corresponding test run of QUICKPRO has the run-id *qp5*.

```
BEGIN LOAD CSY: EmerSim 'INEX1-StartsetB ( EmerSim on QuickProgno)';

     ARFLAG:
          KENGIA [1:2520], [1:1], [1:32000] <
           KENGIA [1:2520] (CSY: EmerSim, ARFLAG)
           Edit: Default;
          KENGIC [1:2520], [1:1], [1:32000] <
           KENGIC [1:2520] (CSY: EmerSim, ARFLAG)
           Edit: Default;
          KENGSE [1:2520], [1:1], [1:30000] <
           KENGSE [1:2520] (CSY: EmerSim, ARFLAG)
           Edit: Default;
     END CLASS

     CANLAG:
          BlockName [1:32], [1:1], [1:32000] <
           BlockName [1:32] (ASY: QuickProgno, CANLAG)
           Archive: qp5 (1,1);
          SiteName [1:32], [1:1], [1:32000] <
           SiteName [1:32] (ASY: QuickProgno, CANLAG)
           Archive: qp5 (1,1);
     END CLASS

     CSTRM0:
          COMFR1 [1:80], [1:1], [1:32000] <
           COMFR1 [1:80] (ASY: QuickProgno, CSTRMX)
           Archive: qp5 (2,1);
          COMFR2 [1:80], [1:1], [1:32000] <
           COMFR2 [1:80] (ASY: QuickProgno, CSTRMX)
           Archive: qp5 (2,1);
     END CLASS

     DANLAG:
          BlockLat [], [1:1], [1:32000] <
           BlockLat [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          BlockLong [], [1:1], [1:32000] <
           BlockLong [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          NofSectors [], [1:1], [1:32000] <
           NofSectors [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          SiteLat [], [1:1], [1:32000] <
           SiteLat [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          SiteLong [], [1:1], [1:32000] <
           SiteLong [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          StartAngle [], [1:1], [1:32000] <
           StartAngle [] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
          ZoneRadii [1:3], [1:1], [1:32000] <
           ZoneRadii [1:3] (ASY: QuickProgno, DANLAG)
           Archive: qp5 (1,1);
     END CLASS

     DOSBAU:
          DBAUCL [1:2520][1:5][1:48], [1:1], [1:32000] <
           DBAUCL [1:2520][1:5] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
          DBAUGR [1:2520][1:5][1:48], [1:1], [1:32000] <
           DBAUGR [1:2520][1:5] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
          DBAUIH [1:2520][1:6][1:5][1:48], [1:1], [1:32000] <
           DBAUIH [1:2520][1:6][1:5] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
          DBAUSL [1:2520][1:48], [1:1], [1:32000] <
           DBAUSL [1:2520] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
          DBAUSLW [1:2520][1:48], [1:1], [1:32000] <
           DBAUSLW [1:2520] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
          DBAUSO [1:2520][1:6][1:48], [1:1], [1:32000] <
           DBAUSO [1:2520][1:6] (ASY: QuickProgno, BAUDOS)
           Archive: qp5 (3,1);
```

```
      DBAUSOW [1:2520][1:6][1:48], [1:1], [1:32000] <
       DBAUSOW [1:2520][1:6] (ASY: QuickProgno, BAUDOS)
       Archive: qp5 (3,1);
      DINTGR [1:2520][1:6][1:7], [1:1], [1:32000] <
       DINTGR [1:2520][1:6][1:7] (ASY: QuickProgno, BAUDOS)
       Archive: qp5 (3,1);
      PODOCL [1:2520][1:7][1:48], [1:1], [1:32000] <
       PODOCL [1:2520][1:7] (ASY: QuickProgno, PotDos)
       Archive: qp5 (3,1);
      PODOGR [1:2520][1:7][1:48], [1:1], [1:32000] <
       PODOGR [1:2520][1:7] (ASY: QuickProgno, PotDos)
       Archive: qp5 (3,1);
END CLASS

DSTERM:
      BEGFRE [], [1:1], [1:32000] <
       BEGFRE [] (ASY: QuickProgno, DSTRMX)
       Archive: qp5 (2,1);
END CLASS

INTERV:
      BEGEVA [], [1:1], [1:32000] <
       BEGEVA [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      BEGSHE [], [1:1], [1:32000] <
       BEGSHE [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      BGSHEV [], [1:1], [1:32000] <
       BGSHEV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILE2MSV [1:5], [1:1], [1:32000] <
       DILE2MSV [1:5] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILE4MSV [1:5], [1:1], [1:32000] <
       DILE4MSV [1:5] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILIOEMSV [], [1:1], [1:32000] <
       DILIOEMSV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILIOKMSV [], [1:1], [1:32000] <
       DILIOKMSV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILSHMSV [1:5], [1:1], [1:32000] <
       DILSHMSV [1:5] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILUPMSV [], [1:1], [1:32000] <
       DILUPMSV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DILUTMSV [], [1:1], [1:32000] <
       DILUTMSV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DUREVA [], [1:1], [1:32000] <
       DUREVA [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DURSHE [], [1:1], [1:32000] <
       DURSHE [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      DUSHEV [], [1:1], [1:32000] <
       DUSHEV [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      IARTYP [], [1:1], [1:32000] <
       IARTYP [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      IEGMOD [1:5], [1:1], [1:32000] <
       IEGMOD [1:5] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      IHAND [1:2], [1:1], [1:32000] <
       IHAND [1:2] (CSY: EmerSim, INTERV)
       Edit: Default;
      JAEVA [], [1:1], [1:32000] <
       JAEVA [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      JAIOD [], [1:1], [1:32000] <
       JAIOD [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      JASHE [], [1:1], [1:32000] <
       JASHE [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      OUTEVA [], [1:1], [1:32000] <
       OUTEVA [] (ALL: PROGRAM0, Massnahmen)
       Edit: INEX1-StartsetB;
      RIOTAB [], [1:1], [1:32000] <
```

```
            RIOTAB [] (ALL: PROGRAM0, Massnahmen)
            Edit: INEX1-StartsetB;
      END CLASS

      InDataPars:
           MaxSCycle [], [1:1], [1:32000] <
            MaxSCycle [] (ASY: QuickProgno, RunPars)
            Archive: qp5 (3,1);
      END CLASS

      PSetDim:
           MaxPointSet [], [1:1], [1:32000] <
            MaxPointSet [] (ASY: QuickProgno, PSetDim)
            Archive: qp5 (1,1);
      END CLASS

      PointSet:
           aType [1:32], [1:1], [1:32000] <
            aType [1:32] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           nCoords [], [1:1], [1:32000] <
            nCoords [] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           xCoords [1:4096], [1:1], [1:32000] <
            xCoords [1:4096] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           yCoords [1:4096], [1:1], [1:32000] <
            yCoords [1:4096] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           zAreas [1:4096], [1:1], [1:32000] <
            zAreas [1:4096] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           zInCenter [1:2], [1:1], [1:32000] <
            zInCenter [1:2] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
           zInDelta [1:2], [1:1], [1:32000] <
            zInDelta [1:2] (ASY: QuickProgno, PointSet)
            Archive: qp5 (1,1);
      END CLASS

END LOAD
```

5.3 Load list for FDMT/QP

This is the load list for FDMT based on QUICKPRO-results; the corresponding test run of QUICKPRO has the run-id *qp5*.

```
BEGIN LOAD ASY: FDMT40 'load list for FDMT 4.';

      genpar:
           feednames [1:32][1:160], [1:1], [1:100] <
            feednames [1:32][1:160] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgage [1:5], [1:1], [1:100] <
            flgage [1:5] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgagehea [1:5], [1:1], [1:100] <
            flgagehea [1:5] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgauto [], [1:1], [1:100] <
            flgauto [] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgfeea [1:160], [1:1], [1:100] <
            flgfeea [1:160] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgfooa [1:160], [1:1], [1:100] <
            flgfooa [1:160] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgfood [1:160], [1:1], [1:100] <
            flgfood [1:160] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flggraph [1:5], [1:1], [1:100] <
            flggraph [1:5] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
           flgintf [1:6], [1:1], [1:100] <
            flgintf [1:6] (ASY: FDMT40, genpar)
            Edit: FDMT_assign;
```

```
      flgnuca [1:22], [1:1], [1:100] <
       flgnuca [1:22] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgnucd [1:22], [1:1], [1:100] <
       flgnucd [1:22] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgorg [1:12], [1:1], [1:100] <
       flgorg [1:12] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgorghea [1:12], [1:1], [1:100] <
       flgorghea [1:12] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgpath [1:11], [1:1], [1:100] <
       flgpath [1:11] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgtim [1:5], [1:1], [1:100] <
       flgtim [1:5] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      flgvar [1:6], [1:1], [1:100] <
       flgvar [1:6] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      fooanames [1:32][1:100], [1:1], [1:100] <
       fooanames [1:32][1:100] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      foodnames [1:32][1:160], [1:1], [1:100] <
       foodnames [1:32][1:160] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      iday [], [1:1], [1:100] <
       IDAY [] (ASY: QuickProgno, MetFen)
       Archive: quickPrg (2,1);
      ihour [], [1:1], [1:100] <
       IHOUR [] (ASY: QuickProgno, MetFen)
       Archive: quickPrg (2,1);
      iminut [], [1:1], [1:100] <
       IMN [] (ASY: QuickProgno, MetFen)
       Archive: quickPrg (2,1);
      imonth [], [1:1], [1:100] <
       IMON [] (ASY: QuickProgno, MetFen)
       Archive: quickPrg (2,1);
      iyear [], [1:1], [1:100] <
       IYEAR [] (ASY: QuickProgno, MetFen)
       Archive: quickPrg (2,1);
      nloc [], [1:1], [1:100] <
       nloc [] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
      nnuc [], [1:1], [1:100] <
       NNUKL [] (ASY: QuickProgno, DNUKPD)
       Archive: quickPrg (2,1);
      nucna [1:8][1:15], [1:1], [1:100] <
       CNUGRF [1:8][1:15] (ASY: QuickProgno, CNUKGO)
       Archive: quickPrg (2,1);
      resatmref [], [1:1], [1:100] <
       resatmref [] (ASY: FDMT40, genpar)
       Edit: FDMT_assign;
END CLASS

grid:
      aType [1:32], [1:1], [1:100] <
       aType [1:32] (ASY: QuickProgno, PointSet)
       Archive: quickPrg (1,1);
      nCoords [], [1:1], [1:100] <
       nCoords [] (ASY: QuickProgno, PointSet)
       Archive: quickPrg (1,1);
      xCoords [1:4096], [1:1], [1:100] <
       xCoords [1:4096] (ASY: QuickProgno, PointSet)
       Archive: quickPrg (1,1);
      yCoords [1:4096], [1:1], [1:100] <
       yCoords [1:4096] (ASY: QuickProgno, PointSet)
       Archive: quickPrg (1,1);
END CLASS

insysd:
      acair [1:2520][1:15][1:48], [1:1], [1:100] <
       ADIFSU [1:2520][1:15] (ASY: QuickProgno, ACOOUT)
       Archive: quickPrg (3,1);
      ach3su [1:2520][1:15][1:48], [1:1], [1:100] <
       ACH3SU [1:2520][1:15] (ASY: QuickProgno, ACOOUT)
       Archive: quickPrg (3,1);
      deposw [1:2520][1:15][1:48], [1:1], [1:100] <
       ACH2WU [1:2520][1:15] (ASY: QuickProgno, ACOOUT)
       Archive: quickPrg (3,1);
      fraction [1:2520][1:3][1:48], [1:1], [1:100] <
```

```
          IODFRAC [1:2520][1:3] (ASY: QuickProgno, ACOOUT)
          Archive: quickPrg (3,1);
        itimes [1:48], [1:1], [1:100] <
          itimes [1:48] (ASY: FDMT40, insysd)
          Edit: FDMT_assign;
        litski [1:128][1:20], [1:1], [1:100] <
          litski [1:128][1:20] (ASY: FDMT40, insysd)
          Edit: FDMT_assign;
        litskr [1:128][1:100], [1:1], [1:100] <
          litskr [1:128][1:100] (ASY: FDMT40, insysd)
          Edit: FDMT_assign;
        ntin [], [1:1], [1:100] <
          ntin [] (ASY: FDMT40, insysd)
          Edit: FDMT_assign;
        reraf [1:2520][1:48], [1:1], [1:100] <
          REFELD [1:2520] (ASY: QuickProgno, ACOOUT)
          Archive: quickPrg (3,1);
        resatm [1:2520][1:5][1:48], [1:1], [1:100] <
          RESATM [1:2520][1:5] (ASY: QuickProgno, DEPOS)
          Archive: quickPrg (3,1);
    END CLASS

END LOAD
```

5.4 Load list LCMT

This is the load list for LCMT based on QUICKPRO- and FDMT/QP-results; the corresponding test run of QUICKPRO has the run-id *qp5,* the run-if of the FDMT/QP run is *fdmtqp5*.

```
BEGIN LOAD CSY: LCMT40 'standard load list lcmt4';

    fdmtlcmtc:
        agegrp [1:4][1:5], [1:1], [1:100] <
          agegrp [1:4][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        animal [1:4][1:12][1:5], [1:1], [1:100] <
          animal [1:4][1:12][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        feedst [1:4][1:22][1:5], [1:1], [1:100] <
          feedst [1:4][1:22][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        foodst [1:4][1:35][1:5], [1:1], [1:100] <
          foodst [1:4][1:35][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        organs [1:4][1:12], [1:1], [1:100] <
          organs [1:4][1:12] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        plant [1:4][1:22][1:5], [1:1], [1:100] <
          plant [1:4][1:22][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        prodfo [1:4][1:34][1:5], [1:1], [1:100] <
          prodfo [1:4][1:34][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
        rawfoo [1:4][1:34][1:5], [1:1], [1:100] <
          rawfoo [1:4][1:34][1:5] (ASY: FDMT40, fdmtlcmtc)
          Archive: fdmtqp5 (1,1);
    END CLASS

    fdmtlcmth:
        itinthea [1:11], [1:1], [1:100] <
          itinthea [1:11] (ASY: FDMT40, fdmt_hea)
          Archive: fdmtqp5 (1,1);
        lfgrohea [1:2520], [1:1], [1:100] <
          lfgrohea [1:2520] (ASY: FDMT40, fdmt_hea)
          Archive: fdmtqp5 (1,1);
        lfinhhea [1:2520], [1:1], [1:100] <
          lfinhhea [1:2520] (ASY: FDMT40, fdmt_hea)
          Archive: fdmtqp5 (1,1);
        lstagehea [1:4][1:5], [1:1], [1:100] <
          lstagehea [1:4][1:5] (ASY: FDMT40, fdmt_hea)
          Archive: fdmtqp5 (1,1);
        lstorghea [1:4][1:4], [1:1], [1:100] <
          lstorghea [1:4][1:4] (ASY: FDMT40, fdmt_hea)
          Archive: fdmtqp5 (1,1);
        nagehea [], [1:1], [1:100] <
```

```
       nagehea [] (ASY: FDMT40, fdmt_hea)
       Archive: fdmtqp5 (1,1);
      ndosgrohea [1:11][1:15][1:5][1:4][1:5], [1:1], [1:100] <
       ndosgrohea [1:11][1:15][1:5][1:4][1:5] (ASY: FDMT40, fdmt_hea)
       Archive: fdmtqp5 (1,1);
      ndosinhhea [1:11][1:15][1:5][1:4][1:5], [1:1], [1:100] <
       ndosinhhea [1:11][1:15][1:5][1:4][1:5] (ASY: FDMT40, fdmt_hea)
       Archive: fdmtqp5 (1,1);
      ndosreshea [1:11][1:15][1:5][1:4][1:5], [1:1], [1:100] <
       ndosreshea [1:11][1:15][1:5][1:4][1:5] (ASY: FDMT40, fdmt_hea)
       Archive: fdmtqp5 (1,1);
      norghea [], [1:1], [1:100] <
       norghea [] (ASY: FDMT40, fdmt_hea)
       Archive: fdmtqp5 (1,1);
END CLASS

fdmtlcmti:
      iecreg [1:2520], [1:1], [1:100] <
       iecreg [1:2520] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ilreg [1:2520], [1:1], [1:100] <
       ilreg [1:2520] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      innuci [1:10], [1:1], [1:100] <
       innuci [1:10] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      iplfeed [1:8][1:22][1:5], [1:1], [1:100] <
       iplfeed [1:8][1:22][1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      iplrfood [1:8][1:34][1:5], [1:1], [1:100] <
       iplrfood [1:8][1:34][1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      irffos [1:35][1:5], [1:1], [1:100] <
       irffos [1:35][1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ldepd [1:3], [1:1], [1:100] <
       ldepd [1:3] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      nani [1:5], [1:1], [1:100] <
       nani [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ndepd [], [1:1], [1:100] <
       ndepd [] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      nnucing [], [1:1], [1:100] <
       nnucing [] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      npla [1:5], [1:1], [1:100] <
       npla [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      nplfeed [1:22][1:5], [1:1], [1:100] <
       nplfeed [1:22][1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      nplrfood [1:34][1:5], [1:1], [1:100] <
       nplrfood [1:34][1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      nprodfo [1:5], [1:1], [1:100] <
       nprodfo [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ntfes [1:5], [1:1], [1:100] <
       ntfes [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ntfos [1:5], [1:1], [1:100] <
       ntfos [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
      ntrfos [1:5], [1:1], [1:100] <
       ntrfos [1:5] (ASY: FDMT40, fdmtlcmti)
       Archive: fdmtqp5 (1,1);
END CLASS

fdmtlcmtr:
      acairilast [1:3][1:2520][1:10], [1:1], [1:100] <
       acairilast [1:3][1:2520][1:10] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      crfos [1:35][1:15][1:5], [1:1], [1:100] <
       crfos [1:35][1:15][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      dcfing [1:10][1:5][1:12], [1:1], [1:100] <
       dcfing [1:10][1:5][1:12] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      deccon [1:15], [1:1], [1:100] <
       deccon [1:15] (ASY: FDMT40, fdmtlcmtr)
```

```
       Archive: fdmtqp5 (1,1);
      deposlast [1:3][1:2520][1:15], [1:1], [1:100] <
       deposlast [1:3][1:2520][1:15] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      deposwlast [1:3][1:2520][1:15], [1:1], [1:100] <
       deposwlast [1:3][1:2520][1:15] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      dtfos [1:35][1:5], [1:1], [1:100] <
       dtfos [1:35][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      fcdbmcf [1:35][1:5], [1:1], [1:100] <
       fcdbmcf [1:35][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      fcdbproc [1:35][1:5], [1:1], [1:100] <
       fcdbproc [1:35][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      foodcr [1:56][1:5][1:35][1:5], [1:1], [1:100] <
       foodcr [1:56][1:5][1:35][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      foodprod [1:2520][1:34], [1:1], [1:100] <
       foodprod [1:2520][1:34] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      kontas [1:3][1:2520][1:15][0:22], [1:1], [1:100] <
       kontas [1:3][1:2520][1:15][0:22] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      nindpotgro [1:56][1:5][1:12][1:15][1:5], [1:1], [1:100] <
       nindpotgro [1:56][1:5][1:12][1:15][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      nindpotres [1:56][1:5][1:12][1:15][1:5], [1:1], [1:100] <
       nindpotres [1:56][1:5][1:12][1:15][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      nspafeed [1:56][1:10][1:22][0:12][1:5], [1:1], [1:100] <
       nspafeed [1:56][1:10][1:22][0:12][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      nsparfood [1:56][1:10][1:34][0:12][1:5], [1:1], [1:100] <
       nsparfood [1:56][1:10][1:34][0:12][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      popudens [1:2520], [1:1], [1:100] <
       popudens [1:2520] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      resusef [1:15][1:4][1:5], [1:1], [1:100] <
       resusef [1:15][1:4][1:5] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
      timelcm [1:56], [1:1], [1:100] <
       timelcm [1:56] (ASY: FDMT40, fdmtlcmtr)
       Archive: fdmtqp5 (1,1);
END CLASS

genparlcm:
      flgagehea [1:5], [1:1], [1:100] <
       flgagehea [1:5] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      flgorghea [1:12], [1:1], [1:100] <
       flgorghea [1:12] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      iday [], [1:1], [1:100] <
       iday [] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      imonth [], [1:1], [1:100] <
       imonth [] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      inhabi [1:2520], [1:1], [1:100] <
       inhabi [1:2520] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      landuse [1:2520][1:5], [1:1], [1:100] <
       landuse [1:2520][1:5] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      nloc [], [1:1], [1:100] <
       nloc [] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      nnuc [], [1:1], [1:100] <
       nnuc [] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      nprod [], [1:1], [1:100] <
       nprod [] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      nucna [1:8][1:15], [1:1], [1:100] <
       nucna [1:8][1:15] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
      soiltype [1:2520], [1:1], [1:100] <
       soiltype [1:2520] (ASY: FDMT40, genpar)
       Archive: fdmtqp5 (1,1);
```

```
END CLASS

grid:
     aType [1:32], [1:1], [1:100] <
      aType [1:32] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     delta [], [1:1], [1:100] <
      delta [] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     llCornerX [], [1:1], [1:100] <
      llCornerX [] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     llCornerY [], [1:1], [1:100] <
      llCornerY [] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     nCoords [], [1:1], [1:100] <
      nCoords [] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     xCoords [1:4096], [1:1], [1:100] <
      xCoords [1:4096] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
     yCoords [1:4096], [1:1], [1:100] <
      yCoords [1:4096] (ASY: FDMT40, grid)
      Archive: fdmtqp5 (1,1);
END CLASS

lcmtfdatr:
     FADDUR [1:9], [1:1], [1:100] <
      FADDUR [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FADTIM [1:9], [1:1], [1:100] <
      FADTIM [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FAMDUR [1:5], [1:1], [1:100] <
      FAMDUR [1:5] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FAMTIM [], [1:1], [1:100] <
      FAMTIM [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FBSTOP [1:35], [1:1], [1:100] <
      FBSTOP [1:35] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCCDURS [], [1:1], [1:100] <
      FCCDURS [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCCDURV [], [1:1], [1:100] <
      FCCDURV [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCCTIM [], [1:1], [1:100] <
      FCCTIM [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCDDUR [1:9], [1:1], [1:100] <
      FCDDUR [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCDSTART [], [1:1], [1:100] <
      FCDSTART [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FCLDUR [], [1:1], [1:100] <
      FCLDUR [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FRDDUR [1:3][1:9], [1:1], [1:100] <
      FRDDUR [1:3][1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FRDFRC [1:9], [1:1], [1:100] <
      FRDFRC [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FRDTIM [1:9], [1:1], [1:100] <
      FRDTIM [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FRMTIM [1:9], [1:1], [1:100] <
      FRMTIM [1:9] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FSBCM [], [1:1], [1:100] <
      FSBCM [] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     FSTTIM [1:2][1:35], [1:1], [1:100] <
      FSTTIM [1:2][1:35] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
     GRPLIM [1:5][1:5], [1:1], [1:100] <
      GRPLIM [1:5][1:5] (CSY: LCMT40, lcmtfdatr)
      Edit: LCMT40_assign;
END CLASS
```

```
lcmtoggle:
     Toggle_Flag [1:38], [1:1], [1:100] <
      Toggle_Flag [1:38] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
     Toggle_Name [1:60][1:38], [1:1], [1:100] <
      Toggle_Name [1:60][1:38] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
     iWIndex1 [], [1:1], [1:100] <
      iWIndex1 [] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
     iWIndex2 [], [1:1], [1:100] <
      iWIndex2 [] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
     iWIndex3 [], [1:1], [1:100] <
      iWIndex3 [] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
     iWIndex4 [], [1:1], [1:100] <
      iWIndex4 [] (CSY: LCMT40, lcmtoggle)
      Edit: LCMT40_assign;
END CLASS

lcmtrdatr:
     RCCONS [], [1:1], [1:100] <
      RCCONS [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCIMPR1 [], [1:1], [1:100] <
      RCIMPR1 [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCIMPR2 [], [1:1], [1:100] <
      RCIMPR2 [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCMAXT [], [1:1], [1:100] <
      RCMAXT [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCPDUR [], [1:1], [1:100] <
      RCPDUR [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCRELR1 [], [1:1], [1:100] <
      RCRELR1 [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCRELR2 [], [1:1], [1:100] <
      RCRELR2 [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
     RCTDUR [], [1:1], [1:100] <
      RCTDUR [] (CSY: LCMT40, lcmtrdatr)
      Edit: LCMT40_assign;
END CLASS

lcmttask:
     CTSKL [1:4][1:1], [1:1], [1:100] <
      CTSKL [1:4][1:1] (CSY: LCMT40, lcmttask)
      Edit: LCMT40_assign;
     CTSKX [1:4][1:1], [1:1], [1:100] <
      CTSKX [1:4][1:1] (CSY: LCMT40, lcmttask)
      Edit: LCMT_auto;
     CTSKY [1:4][1:3], [1:1], [1:100] <
      CTSKY [1:4][1:3] (CSY: LCMT40, lcmttask)
      Edit: LCMT40_assign;
END CLASS

lcmtxdatr:
     fWaste [1:14], [1:1], [1:100] <
      fWaste [1:14] (CSY: LCMT40, lcmtxdatr)
      Edit: LCMT40_assign;
     fWorkEff [1:14], [1:1], [1:100] <
      fWorkEff [1:14] (CSY: LCMT40, lcmtxdatr)
      Edit: LCMT40_assign;
     fWorkRate [1:14], [1:1], [1:100] <
      fWorkRate [1:14] (CSY: LCMT40, lcmtxdatr)
      Edit: LCMT40_assign;
END CLASS

lcmtxdec:
     IFACT [1:3][1:5], [1:1], [1:32000] <
      IFACT [1:3][1:5] (CSY: LCMT40, lcmtxdec)
      Edit: LCMT40_assign;
     ITECHN [1:2][1:14], [1:1], [1:32000] <
      ITECHN [1:2][1:14] (CSY: LCMT40, lcmtxdec)
      Edit: LCMT40_assign;
     ITSXD1 [1:3], [1:1], [1:32000] <
      ITSXD1 [1:3] (CSY: LCMT40, lcmtxdec)
```

```
            Edit: LCMT40_assign;
          ITSXD2 [1:3], [1:1], [1:32000] <
            ITSXD2 [1:3] (CSY: LCMT40, lcmtxdec)
            Edit: LCMT40_assign;
     END CLASS

     lcmtxfoo:
          ITSXC4 [1:3], [1:1], [1:32000] <
            ITSXC4 [1:3] (CSY: LCMT40, lcmtxfoo)
            Edit: LCMT40_assign;
          ITSXF2 [1:35], [1:1], [1:32000] <
            ITSXF2 [1:35] (CSY: LCMT40, lcmtxfoo)
            Edit: LCMT40_assign;
          ITSXOF [1:11], [1:1], [1:32000] <
            ITSXOF [1:11] (CSY: LCMT40, lcmtxfoo)
            Edit: LCMT40_assign;
     END CLASS

     lcmtxrel:
          ITSXA [1:4], [1:1], [1:32000] <
            ITSXA [1:4] (CSY: LCMT40, lcmtxrel)
            Edit: LCMT40_assign;
          ITSXAR [1:5], [1:1], [1:32000] <
            ITSXAR [1:5] (CSY: LCMT40, lcmtxrel)
            Edit: LCMT40_assign;
          ITSXC1 [1:2], [1:1], [1:32000] <
            ITSXC1 [1:2] (CSY: LCMT40, lcmtxrel)
            Edit: LCMT40_assign;
          ITSXC2 [1:2], [1:1], [1:32000] <
            ITSXC2 [1:2] (CSY: LCMT40, lcmtxrel)
            Edit: LCMT40_assign;
          ITSXOR [1:11], [1:1], [1:32000] <
            ITSXOR [1:11] (CSY: LCMT40, lcmtxrel)
            Edit: LCMT40_assign;
     END CLASS

     lcmtxtask:
          ITSXM [1:5], [1:1], [1:32000] <
            ITSXM [1:5] (CSY: LCMT40, lcmtxtask)
            Edit: LCMT40_assign;
     END CLASS

END LOAD
```

5.5 Load lists for EARLYCONS

These are the load lists of the programs in the program group EARLYCONS, based on QUICKPRO- and EMERSIM/QP-results; the corresponding test run of QUICKPRO has the run-id *qp5*; the run-id of the EMERSIM-run is *emerqp5*.

5.5.1 Load list for DHM

```
BEGIN LOAD CSY: DHM40 'Load list for calculation of deterministic health
effects';

     DOSFEL:
          DCLAC [1:2520][1:1][1:4], [2:2], [1:100] <
            DCLAC [1:2520][1:1][1:4] (CSY: EmerSim, DOSFEL)
            Archive: emerqp5 (6,0);
          DCLNO [1:2520][1:2][1:4], [2:2], [1:100] <
            DCLNO [1:2520][1:2][1:4] (CSY: EmerSim, DOSFEL)
            Archive: emerqp5 (3,0);
          DGRAC [1:2520][1:1][1:5][1:4], [2:2], [1:100] <
            DGRAC [1:2520][1:1][1:5][1:4] (CSY: EmerSim, DOSFEL)
            Archive: emerqp5 (6,0);
          DGRAC1 [1:2520][1:1][1:4], [2:2], [1:100] <
            DGRAC1 [1:2520][1:1][1:4] (CSY: EmerSim, DOSFEL)
            Archive: emerqp5 (6,0);
          DGRNO [1:2520][1:2][1:5][1:4], [2:2], [1:100] <
            DGRNO [1:2520][1:2][1:5][1:4] (CSY: EmerSim, DOSFEL)
            Archive: emerqp5 (3,0);
          DGRNO1 [1:2520][1:2][1:4], [2:2], [1:100] <
            DGRNO1 [1:2520][1:2][1:4] (CSY: EmerSim, DOSFEL)
```

```
          Archive: emerqp5 (3,0);
        DIHAC [1:2520][1:1][1:5][1:4], [2:2], [1:100] <
          DIHAC [1:2520][1:1][1:5][1:4] (CSY: EmerSim, DOSFEL)
          Archive: emerqp5 (6,0);
        DIHNO [1:2520][1:2][1:5][1:4], [2:2], [1:100] <
          DIHNO [1:2520][1:2][1:5][1:4] (CSY: EmerSim, DOSFEL)
          Archive: emerqp5 (3,0);
    END CLASS

    POPULA:
        RBEV [1:2520], [3:3], [1:100] <
          RBEV [1:2520] (CSY: EmerSim, Popula)
          Archive: emerqp5 (2,0);
    END CLASS

    PointSet:
        aType [1:32], [1:1], [1:32000] <
          aType [1:32] (CSY: EmerSim, PointSet)
          Archive: emerqp5 (1,0);
        nCoords [], [1:1], [1:32000] <
          nCoords [] (CSY: EmerSim, PointSet)
          Archive: emerqp5 (1,0);
        xCoords [1:4096], [1:1], [1:32000] <
          xCoords [1:4096] (CSY: EmerSim, PointSet)
          Archive: emerqp5 (1,0);
        yCoords [1:4096], [1:1], [1:32000] <
          yCoords [1:4096] (CSY: EmerSim, PointSet)
          Archive: emerqp5 (1,0);
        zAreas [1:4096], [1:1], [1:32000] <
          zAreas [1:4096] (CSY: EmerSim, PointSet)
          Archive: emerqp5 (1,0);
    END CLASS

    RATINF:
        FIEX [1:2520][1:4], [2:2], [1:100] <
          FIEX [1:2520][1:4] (CSY: EmerSim, RATINF)
          Archive: emerqp5 (3,0);
        FIEXAC [1:2520][1:4], [2:2], [1:100] <
          FIEXAC [1:2520][1:4] (CSY: EmerSim, RATINF)
          Archive: emerqp5 (6,0);
        STEX [1:2520][1:4], [2:2], [1:100] <
          STEX [1:2520][1:4] (CSY: EmerSim, RATINF)
          Archive: emerqp5 (3,0);
        STEXAC [1:2520][1:4], [2:2], [1:100] <
          STEXAC [1:2520][1:4] (CSY: EmerSim, RATINF)
          Archive: emerqp5 (6,0);
    END CLASS

    RSKDAT:
        IPZ [1:4][1:4], [2:2], [1:100] <
          IPZ [1:4][1:4] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        ITEND [1:4], [2:2], [1:100] <
          ITEND [1:4] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        ITIME [1:4][1:4], [2:2], [1:100] <
          ITIME [1:4][1:4] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        KONST [1:3][1:2], [2:2], [1:100] <
          KONST [1:3][1:2] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        NOGBT [1:3][1:2], [2:2], [1:100] <
          NOGBT [1:3][1:2] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        THETA0 [1:3][1:2], [2:2], [1:100] <
          THETA0 [1:3][1:2] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        THETAI [1:3][1:2], [2:2], [1:100] <
          THETAI [1:3][1:2] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        THRESH [], [2:2], [1:100] <
          THRESH [] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
        VPAR [1:3][1:2], [2:2], [1:100] <
          VPAR [1:3][1:2] (CSY: DHM40, RSKDAT)
          Edit: DHM40_assign;
    END CLASS

END LOAD
```

5.5.2 Load list for SHM

```
BEGIN LOAD CSY: SHM40 'Load list for calculation of stochastic health
effects';

     DOSFEL:
          DCLAC [1:2520][1:1], [2:2], [1:100] <
           DCLAC [1:2520][1:1][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DCLNO [1:2520][1:2], [2:2], [1:100] <
           DCLNO [1:2520][1:2][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DGRAC [1:2520][1:1], [2:2], [1:100] <
           DGRAC [1:2520][1:1][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DGRNO [1:2520][1:2], [2:2], [1:100] <
           DGRNO [1:2520][1:2][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DIHAC [1:2520][1:1], [2:2], [1:100] <
           DIHAC [1:2520][1:1][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DIHNO [1:2520][1:2], [2:2], [1:100] <
           DIHNO [1:2520][1:2][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DSKAC [1:2520][1:1], [2:2], [1:100] <
           DSKAC [1:2520][1:1][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DSKNO [1:2520][1:2], [2:2], [1:100] <
           DSKNO [1:2520][1:2][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
     END CLASS

     EHE:
          IEARLY [], [2:2], [1:100] <
           IEARLY [] (CSY: SHM40, EHE)
           Edit: SHM40_assign;
          TEARSK [1:2520][1:2][1:3], [2:2], [1:100] <
           TEARSK [1:2520][1:2][1:3] (CSY: DHM40, EHE)
           Archive: ACTUAL (2,0);
     END CLASS

     LHE:
          RSKFAC [], [2:2], [1:100] <
           RSKFAC [] (CSY: SHM40, LHE)
           Edit: SHM40_assign;
     END CLASS

     POPULA:
          RBEV [1:2520], [3:3], [1:100] <
           RBEV [1:2520] (CSY: EmerSim, Popula)
           Archive: emerqp5 (2,0);
     END CLASS

     PointSet:
          aType [1:32], [1:1], [1:32000] <
           aType [1:32] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          nCoords [], [1:1], [1:32000] <
           nCoords [] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          xCoords [1:4096], [1:1], [1:32000] <
           xCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          yCoords [1:4096], [1:1], [1:32000] <
           yCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          zAreas [1:4096], [1:1], [1:32000] <
           zAreas [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
     END CLASS

END LOAD
```

5.5.3 Load list for EEM

```
BEGIN LOAD CSY: EEM40 'Load list for early economic module';

     EMERECO:
```

```
          DUREV [], [2:2], [1:100] <
           OUTEVA [] (CSY: EmerSim, INTERV)
           Archive: emerqp5 (6,0);
          EARISK [1:2520][1:3][1:2][1:3], [3:3], [1:100] <
           EARISK [1:2520][1:3][1:2][1:3] (CSY: DHM40, EHE)
           Archive: ACTUAL (2,0);
          IARTYP [], [2:2], [1:100] <
           IARTYP [] (CSY: EmerSim, INTERV)
           Archive: emerqp5 (4,0);
          JAEVA [], [2:2], [1:100] <
           JAEVA [] (CSY: EmerSim, INTERV)
           Archive: emerqp5 (6,0);
          KENNEV [1:2520], [2:2], [1:100] <
           KENNEV [1:2520] (CSY: EmerSim, ARFLAG)
           Archive: emerqp5 (5,0);
          LSECAR [1:2520], [2:2], [1:100] <
           LSECAR [1:2520] (CSY: EmerSim, ARFLAG)
           Archive: emerqp5 (5,0);
          LZONAR [1:2520], [2:2], [1:100] <
           LZONAR [1:2520] (CSY: EmerSim, ARFLAG)
           Archive: emerqp5 (5,0);
          RBEV [1:2520], [2:2], [1:100] <
           RBEV [1:2520] (CSY: EmerSim, Popula)
           Archive: emerqp5 (2,0);
          STONAC [1:2520][1:1], [4:4], [1:100] <
           STONAC [1:2520][1:1] (CSY: SHM40, LHE)
           Archive: ACTUAL (3,0);
          STONUM [1:2520][1:2], [4:4], [1:100] <
           STONUM [1:2520][1:2] (CSY: SHM40, LHE)
           Archive: ACTUAL (3,0);
     END CLASS

     UCOST:
          DISHE [], [3:4], [1:100] <
           DISHE [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          UEHMT [1:2][1:2], [3:3], [1:100] <
           UEHMT [1:2][1:2] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          UEVACC [], [2:2], [1:100] <
           UEVACC [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          UEVLOI [], [2:2], [1:100] <
           UEVLOI [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          UEVTRA [], [2:2], [1:100] <
           UEVTRA [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          UHELE [], [3:4], [1:100] <
           UHELE [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
          ULHMT [], [4:4], [1:100] <
           ULHMT [] (CSY: EEM40, UCOST)
           Edit: EEM40_assign;
     END CLASS

END LOAD
```

5.5.4 Load list for RESTAB

```
BEGIN LOAD CSY: RESTAB40 'Load list for presentation of result tables)';

     ARENUM:
          AREAB0 [], [1:2], [1:100] <
           AREAB0 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          AREAB1 [], [1:2], [1:100] <
           AREAB1 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          AREAB2 [], [1:2], [1:100] <
           AREAB2 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          AREAB4 [], [1:2], [1:100] <
           AREAB4 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          AREAIA [], [1:2], [1:100] <
           AREAIA [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          AREAIC [], [1:2], [1:100] <
           AREAIC [] (CSY: EmerSim, NUMBER)
```

```
      Archive: emerqp5 (5,0);
     AREATU [], [1:2], [1:100] <
      AREATU [] (CSY: EmerSim, NUMBER)
      Archive: emerqp5 (5,0);
     AREAUM [], [1:2], [1:100] <
      AREAUM [] (CSY: EmerSim, NUMBER)
      Archive: emerqp5 (5,0);
END CLASS

CANLAG:
     SiteName [1:32], [1:2], [1:32000] <
      SiteName [1:32] (CSY: EmerSim, CANLAG)
      Archive: emerqp5 (1,0);
END CLASS

COSTS:
     CEHLET [1:3], [1:2], [1:100] <
      CEHLET [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (3,0);
     CEHMTT [1:3], [1:2], [1:100] <
      CEHMTT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (3,0);
     CEHTOT [1:3], [1:2], [1:100] <
      CEHTOT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (3,0);
     CEVACT [1:3], [1:2], [1:100] <
      CEVACT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (2,0);
     CEVLIT [1:3], [1:2], [1:100] <
      CEVLIT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (2,0);
     CEVTOT [1:3], [1:2], [1:100] <
      CEVTOT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (2,0);
     CEVTRT [1:3], [1:2], [1:100] <
      CEVTRT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (2,0);
     CLHLET [1:3], [1:2], [1:100] <
      CLHLET [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (4,0);
     CLHMTT [1:3], [1:2], [1:100] <
      CLHMTT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (4,0);
     CLHTOT [1:3], [1:2], [1:100] <
      CLHTOT [1:3] (CSY: EEM40, CCOST)
      Archive: ACTUAL (4,0);
END CLASS

EARNUM:
     NBMMT [1:3], [1:2], [1:100] <
      NBMMT [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NLUMB [1:3], [1:2], [1:100] <
      NLUMB [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NLUMT [1:3], [1:2], [1:100] <
      NLUMT [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NTHMB [1:3], [1:2], [1:100] <
      NTHMB [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NTOMB [1:3], [1:2], [1:100] <
      NTOMB [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NTOMT [1:3], [1:2], [1:100] <
      NTOMT [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NUTMB [1:3], [1:2], [1:100] <
      NUTMB [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
     NUTMT [1:3], [1:2], [1:100] <
      NUTMT [1:3] (CSY: DHM40, EHE)
      Archive: ACTUAL (3,0);
END CLASS

LATNUM:
     NSTOC [1:3], [1:2], [1:100] <
      NSTOC [1:3] (CSY: SHM40, LHE)
      Archive: ACTUAL (3,0);
     SCOLAC [1:1][1:5], [1:2], [1:100] <
      SCOLAC [1:1][1:5] (CSY: EmerSim, DOSFEL)
      Archive: emerqp5 (6,0);
```

```
          SCOLNO [1:2][1:5], [1:2], [1:100] <
           SCOLNO [1:2][1:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
     END CLASS

     POPNUM:
          POPUB0 [], [1:2], [1:100] <
           POPUB0 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUB1 [], [1:2], [1:100] <
           POPUB1 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUB2 [], [1:2], [1:100] <
           POPUB2 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUB4 [], [1:2], [1:100] <
           POPUB4 [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUIA [], [1:2], [1:100] <
           POPUIA [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUIC [], [1:2], [1:100] <
           POPUIC [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUTU [], [1:2], [1:100] <
           POPUTU [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
          POPUUM [], [1:2], [1:100] <
           POPUUM [] (CSY: EmerSim, NUMBER)
           Archive: emerqp5 (5,0);
     END CLASS

     POPULA:
          RBEV [1:2520], [1:1], [1:100] <
           RBEV [1:2520] (CSY: EmerSim, Popula)
           Archive: emerqp5 (2,0);
     END CLASS

     PointSet:
          aType [1:32], [1:1], [1:32000] <
           aType [1:32] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          nCoords [], [1:1], [1:32000] <
           nCoords [] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          xCoords [1:4096], [1:1], [1:32000] <
           xCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          yCoords [1:4096], [1:1], [1:32000] <
           yCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          zAreas [1:4096], [1:1], [1:32000] <
           zAreas [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
     END CLASS

END LOAD
```

5.6 Load lists for LATECONS

These are the load lists of the programs in the program group LATECONS, based on QUICKPRO-, FDMT/QP and LCMT-results; the corresponding test run of QUICKPRO has the run-id *qp5*; the run-id of the FDMT/QP-run is *fdmtqp5* and of the LCMT-run it is *lcmtqp5*.

5.6.1 Load list for DHM

The load list required here for LATECONS is the same as for DHM40 in the program group EARLYCONS. However, it can be possible, that this load list appears twice in the data base; the two files are then identical.

5.6.2 Load list for SHML

```
BEGIN LOAD CSY: SHML40 'Load list for calculation of stochastic health
effects';

     CANLAG:
          SiteName [1:32], [4:4], [1:32000] <
           SiteName [1:32] (CSY: EmerSim, CANLAG)
           Archive: emerqp5 (1,0);
     END CLASS

     DOSFEL:
          DCLAC [1:2520][1:1], [2:2], [1:100] <
           DCLAC [1:2520][1:1][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DCLNO [1:2520][1:2], [2:2], [1:100] <
           DCLNO [1:2520][1:2][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DGRAC [1:2520][1:1], [2:2], [1:100] <
           DGRAC [1:2520][1:1][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DGRNO [1:2520][1:2], [2:2], [1:100] <
           DGRNO [1:2520][1:2][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DIHAC [1:2520][1:1], [2:2], [1:100] <
           DIHAC [1:2520][1:1][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DIHNO [1:2520][1:2], [2:2], [1:100] <
           DIHNO [1:2520][1:2][5:5][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
          DSKAC [1:2520][1:1], [2:2], [1:100] <
           DSKAC [1:2520][1:1][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (6,0);
          DSKNO [1:2520][1:2], [2:2], [1:100] <
           DSKNO [1:2520][1:2][5:5] (CSY: EmerSim, DOSFEL)
           Archive: emerqp5 (3,0);
     END CLASS

     EHE:
          IEARLY [], [2:2], [1:100] <
           IEARLY [] (CSY: SHML40, EHE)
           Edit: SHML40_assign;
          TEARSK [1:2520][1:2][1:3], [2:2], [1:100] <
           TEARSK [1:2520][1:2][1:3] (CSY: DHM40, EHE)
           Archive: ACTUAL (2,0);
     END CLASS

     FDMT_CON:
          DCLNL [1:2520], [1:1], [1:32000] <
           doscloheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
          DGRNL [1:2520], [1:1], [1:32000] <
           dosgroheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
          DIGNL [1:2520], [1:1], [1:32000] <
           dosingheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
          DIHNL [1:2520], [1:1], [1:32000] <
           dosinhheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
          DIRNL [1:2520], [1:1], [1:32000] <
           dosresheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
          DSKNL [1:2520], [1:1], [1:32000] <
           dosskcheac [1:2520] (ASY: FDMT40, fdmt_con)
           Archive: fdmtqp5 (1,0);
     END CLASS

     FRODO:
          ActionsFH [1:16][1:36], [1:1], [1:32000] <
           ActionsFH [1:16][1:36] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          ActionsRH [1:16][1:6], [1:1], [1:32000] <
           ActionsRH [1:16][1:6] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          AgesHLTH [1:4][1:1], [1:1], [1:32000] <
           AgesHLTH [1:4][1:1] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          DSAVFOO [1:2520][1:36], [2:2], [1:32000] <
           FCDOSHLTH [1:2520][1:1][1:1][1:36] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
```

```
          DSAVREL [1:2520][1:6], [2:2], [1:32000] <
           RDDOSHLTH [1:2520][1:6] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          IEVAC [], [1:1], [1:32000] <
           ITSXC1 [2:2] (CSY: LCMT40, lcmtxrel)
           Archive: lcmtqp5 (1,0);
          OrgansHLTH [1:4][1:1], [1:1], [1:32000] <
           OrgansHLTH [1:4][1:1] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          nActionsFH [], [1:1], [1:32000] <
           nActionsFH [] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          nActionsRH [], [1:1], [1:32000] <
           nActionsRH [] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
     END CLASS

     LHE:
          RSKFAC [], [2:2], [1:100] <
           RSKFAC [] (CSY: SHML40, LHE)
           Edit: SHML40_assign;
     END CLASS

     POPULA:
          RBEV [1:2520], [3:3], [1:100] <
           RBEV [1:2520] (CSY: EmerSim, Popula)
           Archive: emerqp5 (2,0);
     END CLASS

     PointSet:
          aType [1:32], [1:1], [1:32000] <
           aType [1:32] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          nCoords [], [1:1], [1:32000] <
           nCoords [] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          xCoords [1:4096], [1:1], [1:32000] <
           xCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          yCoords [1:4096], [1:1], [1:32000] <
           yCoords [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
          zAreas [1:4096], [1:1], [1:32000] <
           zAreas [1:4096] (CSY: EmerSim, PointSet)
           Archive: emerqp5 (1,0);
     END CLASS

END LOAD
```

5.6.3 Load list for LEM

```
BEGIN LOAD CSY: LEM40 'Load list for late economics module';

     CANLAG:
          SiteName [1:32], [7:7], [1:32000] <
           SiteName [1:32] (CSY: EmerSim, CANLAG)
           Archive: emerqp5 (1,0);
     END CLASS

     FRDEC:
          AREDC [1:6], [3:3], [1:32000] <
           DCEAREA [1:6] (CSY: LCMT40, lcmteconrd)
           Archive: lcmtqp5 (1,0);
          ActionsRH [1:16][1:6], [1:1], [1:32000] <
           ActionsRH [1:16][1:6] (CSY: LCMT40, lcmtOldHLT)
           Archive: lcmtqp5 (1,0);
          DCWaste [1:6], [3:3], [1:32000] <
           DCWaste [1:6] (CSY: LCMT40, lcmteconrd)
           Archive: lcmtqp5 (1,0);
          DCWorkEff [1:6], [3:3], [1:32000] <
           DCWorkEff [1:6] (CSY: LCMT40, lcmteconrd)
           Archive: lcmtqp5 (1,0);
          DCWorkRate [1:6], [3:3], [1:32000] <
           DCWorkRate [1:6] (CSY: LCMT40, lcmteconrd)
           Archive: lcmtqp5 (1,0);
          IEDEC [], [3:3], [1:32000] <
           IEDEC [] (CSY: LCMT40, lcmteconrd)
           Archive: lcmtqp5 (1,0);
          POPDC [1:6], [3:3], [1:32000] <
           DCEPOP [1:6] (CSY: LCMT40, lcmteconrd)
```

```
      Archive: lcmtqp5 (1,0);
     TDEC [1:6], [3:3], [1:32000] <
      DCESTRT [1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     nActionsRH [], [1:1], [1:32000] <
      nActionsRH [] (CSY: LCMT40, lcmtOldHLT)
      Archive: lcmtqp5 (1,0);
END CLASS

FRFOB:
     ActionsFH [1:16][1:36], [1:1], [1:32000] <
      ActionsFH [1:16][1:36] (CSY: LCMT40, lcmtOldHLT)
      Archive: lcmtqp5 (1,0);
     FCStratL [1:60][1:36], [4:4], [1:32000] <
      FCELongName [1:60][1:36] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     FCStratS [1:16][1:36], [4:4], [1:32000] <
      FCEShortName [1:16][1:36] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     FDISP [1:12][1:5], [4:4], [1:32000] <
      FCEDispose [1:12][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     FLOST [1:12][1:5], [4:4], [1:32000] <
      FCEProdLost [1:12][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     FOONAM [1:4][1:5], [4:4], [1:32000] <
      FCEFood [1:4][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     FRESO [1:2][1:12][1:5], [4:4], [1:32000] <
      FCEResource [1:2][1:12][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     IMAP [1:2][1:12][1:5], [4:4], [1:32000] <
      iMapQuan [1:2][1:12][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     NFOO [], [4:4], [1:32000] <
      nEFood [] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     NSALLOW [1:12][1:5], [4:4], [1:32000] <
      iEStratAllow [1:12][1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     NSTRAT [1:5], [4:4], [1:32000] <
      nEStratAllow [1:5] (CSY: LCMT40, lcmtECONF)
      Archive: lcmtqp5 (1,0);
     nActionsFH [], [1:1], [1:32000] <
      nActionsFH [] (CSY: LCMT40, lcmtOldHLT)
      Archive: lcmtqp5 (1,0);
END CLASS

FRLHE:
     ILHE [], [5:5], [1:32000] <
      ILHE [] (CSY: SHML40, LHE)
      Archive: ACTUAL (1,0);
     STTNAC [1:2520][1:6][1:36], [5:5], [1:32000] <
      STTNAC [1:2520][1:6][1:36] (CSY: SHML40, LHE)
      Archive: ACTUAL (3,0);
     STTNUM [1:2520], [5:5], [1:32000] <
      STTNUM [1:2520] (CSY: SHML40, LHE)
      Archive: ACTUAL (3,0);
END CLASS

FRREL:
     AREPM [1:11][1:6], [2:2], [1:32000] <
      RCEAREAPRM [1:11][1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     ARETM [1:11][1:6], [2:2], [1:32000] <
      RCEAREATMP [1:11][1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     DTREC [], [2:2], [1:32000] <
      RCEMAXT [] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     IREL [1:6], [2:2], [1:32000] <
      RELYES [1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     POPPM [1:11][1:6], [2:2], [1:32000] <
      RCEPOPPRM [1:11][1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     POPTM [1:11][1:6], [2:2], [1:32000] <
      RCEPOPTMP [1:11][1:6] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
     RETIME [1:11], [2:2], [1:32000] <
      RETIME [1:11] (CSY: LCMT40, lcmteconrd)
      Archive: lcmtqp5 (1,0);
```

```
END CLASS

NAMES:
     CURR [1:4], [1:6], [1:32000] <
      CURR [1:4] (CSY: LEM40, NAMES)
      Edit: LEM40_assign;
END CLASS

UCOST:
     DISHE [], [5:5], [1:32000] <
      DISHE [] (CSY: LEM40, UCOST)
      Edit: LEM40_assign;
     RDIS [], [2:4], [1:32000] <
      RDIS [] (CSY: LEM40, UCOST)
      Edit: LEM40_assign;
     RINT [], [2:4], [1:32000] <
      RINT [] (CSY: LEM40, UCOST)
      Edit: LEM40_assign;
END CLASS

UDEC:
     UDECCONS [1:14], [3:3], [1:32000] <
      UDECCONS [1:14] (CSY: LEM40, UDEC)
      Edit: LEM40_assign;
     UDECEQU [1:14], [3:3], [1:32000] <
      UDECEQU [1:14] (CSY: LEM40, UDEC)
      Edit: LEM40_assign;
     UDECFAC [1:5], [3:3], [1:32000] <
      UDECFAC [1:5] (CSY: LEM40, UDEC)
      Edit: LEM40_assign;
     UDECMAN [1:14], [3:3], [1:32000] <
      UDECMAN [1:14] (CSY: LEM40, UDEC)
      Edit: LEM40_assign;
END CLASS

UFOOD:
     UCAMELIOR [1:33], [4:4], [1:32000] <
      UCAMELIOR [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCDECONT [1:33], [4:4], [1:32000] <
      UCDECONT [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFDDISP [1:33], [4:4], [1:32000] <
      UCFDDISP [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFDLOST [1:33], [4:4], [1:32000] <
      UCFDLOST [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFDPROC [1:33], [4:4], [1:32000] <
      UCFDPROC [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFDSTR [1:33], [4:4], [1:32000] <
      UCFDSTR [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFEEDREPL [1:33], [4:4], [1:32000] <
      UCFEEDREPL [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCFEEDREQ [1:33], [4:4], [1:32000] <
      UCFEEDREQ [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
     UCSORBENT [1:33], [4:4], [1:32000] <
      UCSORBENT [1:33] (CSY: LEM40, UFOOD)
      Edit: LEM40_assign;
END CLASS

ULHEF:
     UHELE [], [5:5], [1:32000] <
      UHELE [] (CSY: LEM40, ULHEF)
      Edit: LEM40_assign;
     ULHMT [], [5:5], [1:32000] <
      ULHMT [] (CSY: LEM40, ULHEF)
      Edit: LEM40_assign;
END CLASS

UREL:
     DEPMP [1:4], [2:2], [1:32000] <
      DEPMP [1:4] (CSY: LEM40, UREL)
      Edit: LEM40_assign;
     UCCAP [1:3], [2:2], [1:32000] <
      UCCAP [1:3] (CSY: LEM40, UREL)
      Edit: LEM40_assign;
     UCLAN [], [2:2], [1:32000] <
```

```
            UCLAN [] (CSY: LEM40, UREL)
            Edit: LEM40_assign;
           UCLOI [], [2:2], [1:32000] <
            UCLOI [] (CSY: LEM40, UREL)
            Edit: LEM40_assign;
           URLAC [], [2:2], [1:32000] <
            URLAC [] (CSY: LEM40, UREL)
            Edit: LEM40_assign;
           URLTR [], [2:2], [1:32000] <
            URLTR [] (CSY: LEM40, UREL)
            Edit: LEM40_assign;
     END CLASS

END LOAD
```

6 Appendix B: The input protocol files

In the following the files are listed which give the input data used in the calculations. They are created by QUICKPRO / ALSMCprogn and EmerSim /QP and stored under the RODOS-directory / rodos/ roextern / outall / *user-id* / *run-id* /. Compare these files with the one produced by your test run. Most of them can also be loaded into the Text window of the Main Drawing Window of RODOS.

6.1 QUICKPRO / ALSMCprogn

6.1.1 Prognose.SiteData

```
================================================================================
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 10:54:15
Run identification  : user4.qp5
================================================================================
================================================================================
INFORMATION ABOUT THE PLANT
================================================================================

Reactor : FZK-Mast
Type    : DEMO

Thermal power           [MW] :         3733
Burn-up (999<=>equil.) [days]:          999

Stack height             [m] :      1.5E+02
Building width           [m] :      4.0E+01
Building height          [m] :      4.0E+01

geogr. latititude     [Deg.] :  4.90925E+01
geogr. longitude      [Deg.] :  8.42580E+00

================================================================================
Width of inner square grid cells [m] : 1000.
================================================================================
Start of calculation (date,time)     : 26. 4.1986 at  0: 0
( Start of calculation = Begin of initial release )
================================================================================
```

6.1.2 QuickPro: Prognose.MeteoData

```
================================================================================
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 10:54:16
Run identification  : user4.qp5
================================================================================
DATA CATEGORY "METEOROLOGY" : INPUT DATA
================================================================================

Data input from file : MET.INEX1P2D
--------------------

Measuring height for wind [m]     100.

Consider initial plume broadening yes
+ Lateral building dimension [m]   40.
+ Building height [m]              40.
  * NOTE: Substitution of default values for site.
```

Surface roughness length: 1.5 m <=> Index = 2

10-Minutes averages

(Time = time after start of release)

number	windspeed [m/s]	winddir. [Grad]	diffcat	rainrate [mm/h]
1	4.000	330.0	4	.000
2	4.000	330.0	4	.000
3	4.000	330.0	4	.000
4	4.000	330.0	4	.000
5	4.000	330.0	4	.000
6	4.000	330.0	4	.000
7	4.000	330.0	4	.000
8	4.000	330.0	4	.000
9	4.000	330.0	4	.000
10	4.000	260.0	4	.000
11	4.000	260.0	4	.000
12	4.000	260.0	4	.000
13	4.000	260.0	4	.000
14	4.000	260.0	4	.000
15	4.000	260.0	4	.000
16	4.000	245.0	4	10.000
17	4.000	245.0	4	10.000
18	4.000	245.0	4	10.000
19	5.000	260.0	4	.000
20	5.000	260.0	4	.000
21	5.000	260.0	4	.000
22	5.000	260.0	4	.000
23	5.000	260.0	4	.000
24	5.000	260.0	4	.000
25	5.000	270.0	4	.000
26	5.000	270.0	4	.000
27	5.000	270.0	4	.000
28	5.000	270.0	4	.000
29	5.000	270.0	4	.000
30	5.000	270.0	4	.000
31	5.000	270.0	4	.000
32	5.000	270.0	4	.000
33	5.000	270.0	4	.000
34	5.000	270.0	4	.000
35	5.000	270.0	4	.000
36	5.000	270.0	4	.000
37	5.000	270.0	4	.000
38	5.000	270.0	4	.000
39	5.000	270.0	4	.000
40	5.000	270.0	4	.000
41	5.000	270.0	4	.000
42	5.000	270.0	4	.000
43	5.000	270.0	4	.000
44	5.000	270.0	4	.000
45	5.000	270.0	4	.000
46	5.000	270.0	4	.000
47	5.000	270.0	4	.000
48	5.000	270.0	4	.000
49	5.000	270.0	4	.000
50	5.000	270.0	4	.000
51	5.000	270.0	4	.000
52	5.000	270.0	4	.000
53	5.000	270.0	4	.000
54	5.000	270.0	4	.000
55	5.000	270.0	4	.000
56	5.000	270.0	4	.000
57	5.000	270.0	4	.000
58	5.000	270.0	4	.000
59	5.000	270.0	4	.000
60	5.000	270.0	4	.000
61	5.000	270.0	4	.000
62	5.000	270.0	4	.000

63	5.000	270.0	4	.000
64	5.000	270.0	4	.000
65	5.000	270.0	4	.000
66	5.000	270.0	4	.000
67	5.000	270.0	4	.000
68	5.000	270.0	4	.000
69	5.000	270.0	4	.000
70	5.000	270.0	4	.000
71	5.000	270.0	4	.000
72	5.000	270.0	4	.000
73	5.000	270.0	4	.000
74	5.000	270.0	4	.000
75	5.000	270.0	4	.000
76	5.000	270.0	4	.000
77	5.000	270.0	4	.000
78	5.000	270.0	4	.000
79	5.000	270.0	4	.000
80	5.000	270.0	4	.000
81	5.000	270.0	4	.000
82	5.000	270.0	4	.000
83	5.000	270.0	4	.000
84	5.000	270.0	4	.000
85	5.000	270.0	4	.000
86	5.000	270.0	4	.000
87	5.000	270.0	4	.000
88	5.000	270.0	4	.000
89	5.000	270.0	4	.000
90	5.000	270.0	4	.000
91	5.000	270.0	4	.000
92	5.000	270.0	4	.000
93	5.000	270.0	4	.000
94	5.000	270.0	4	.000
95	5.000	270.0	4	.000
96	5.000	270.0	4	.000
97	5.000	270.0	4	.000
98	5.000	270.0	4	.000
99	5.000	270.0	4	.000
100	5.000	270.0	4	.000
101	5.000	270.0	4	.000
102	5.000	270.0	4	.000
103	5.000	270.0	4	.000
104	5.000	270.0	4	.000
105	5.000	270.0	4	.000
106	5.000	270.0	4	.000
107	5.000	270.0	4	.000
108	5.000	270.0	4	.000
109	5.000	270.0	4	.000
110	5.000	270.0	4	.000
111	5.000	270.0	4	.000
112	5.000	270.0	4	.000
113	5.000	270.0	4	.000
114	5.000	270.0	4	.000
115	5.000	270.0	4	.000
116	5.000	270.0	4	.000
117	5.000	270.0	4	.000
118	5.000	270.0	4	.000
119	5.000	270.0	4	.000
120	5.000	270.0	4	.000
121	5.000	270.0	4	.000
122	5.000	270.0	4	.000
123	5.000	270.0	4	.000
124	5.000	270.0	4	.000
125	5.000	270.0	4	.000
126	5.000	270.0	4	.000
127	5.000	270.0	4	.000
128	5.000	270.0	4	.000
129	5.000	270.0	4	.000
130	5.000	270.0	4	.000
131	5.000	270.0	4	.000
132	5.000	270.0	4	.000
133	5.000	270.0	4	.000
134	5.000	270.0	4	.000
135	5.000	270.0	4	.000

136	5.000	270.0	4	.000
137	5.000	270.0	4	.000
138	5.000	270.0	4	.000
139	5.000	270.0	4	.000
140	5.000	270.0	4	.000
141	5.000	270.0	4	.000
142	5.000	270.0	4	.000
143	5.000	270.0	4	.000
144	5.000	270.0	4	.000

FURTHER INFORMATION ABOUT METEOROLOGY

30-Minutes averages

(Time = time after start of release)

time [h]	windspeed [m/s]	winddir. [Grad]	diffcat	rainrate [mm/h]
.0	4.000	330.0	4	.000
.5	4.000	330.0	4	.000
1.0	4.000	330.0	4	.000
1.5	4.000	260.0	4	.000
2.0	4.000	260.0	4	.000
2.5	4.000	245.0	4	10.000
3.0	5.000	260.0	4	.000
3.5	5.000	260.0	4	.000
4.0	5.000	270.0	4	.000
4.5	5.000	270.0	4	.000
5.0	5.000	270.0	4	.000
5.5	5.000	270.0	4	.000
6.0	5.000	270.0	4	.000
6.5	5.000	270.0	4	.000
7.0	5.000	270.0	4	.000
7.5	5.000	270.0	4	.000
8.0	5.000	270.0	4	.000
8.5	5.000	270.0	4	.000
9.0	5.000	270.0	4	.000
9.5	5.000	270.0	4	.000
10.0	5.000	270.0	4	.000
10.5	5.000	270.0	4	.000
11.0	5.000	270.0	4	.000
11.5	5.000	270.0	4	.000
12.0	5.000	270.0	4	.000
12.5	5.000	270.0	4	.000
13.0	5.000	270.0	4	.000
13.5	5.000	270.0	4	.000
14.0	5.000	270.0	4	.000
14.5	5.000	270.0	4	.000
15.0	5.000	270.0	4	.000
15.5	5.000	270.0	4	.000
16.0	5.000	270.0	4	.000
16.5	5.000	270.0	4	.000
17.0	5.000	270.0	4	.000
17.5	5.000	270.0	4	.000
18.0	5.000	270.0	4	.000
18.5	5.000	270.0	4	.000
19.0	5.000	270.0	4	.000
19.5	5.000	270.0	4	.000
20.0	5.000	270.0	4	.000
20.5	5.000	270.0	4	.000
21.0	5.000	270.0	4	.000
21.5	5.000	270.0	4	.000
22.0	5.000	270.0	4	.000
22.5	5.000	270.0	4	.000
23.0	5.000	270.0	4	.000
23.5	5.000	270.0	4	.000

6.1.3 ALSMCprogn: Prognose.MeteoData

```
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 10:08:04
Run identification  : user4.alsmc5
================================================================================
DATA CATEGORY "LOCAL SCALE MODEL CHAIN" : INPUT DATA
================================================================================

Specifications for dispersion model
===================================
Turbulence parameterisation number      1
Consider land-use for dry deposition no
Consider initial plume broadening    yes
+ Lateral building dimension [m]      40.
+ Building height [m]                 40.

Location-independent landuse data by user
=========================================
Specified land use corresponds to
- roughness length [m]   =  1.0000
- roughness length index =       2

Date and time specifications
============================
Start of calculation     (date,time) = 26. 4.1986 at  0: 0
(Start of calculation = Begin of initial release )
End   of calculation     (date,time) = 27. 4.1986 at  0: 0
(End of calculation   = Start of calc. + 24 hours)

Meteorological data from user
=============================


================================================================================
DATA CATEGORY "METEOROLOGY" : INPUT DATA
================================================================================


Data input from file : MET.INEX1P2D
-----------------------------------


Measuring height for wind [m]           100.


            10-Minutes averages
     ------------------------------------
     (Time = time after start of release)
     ------------------------------------

   time  windspeed   winddir.   diffcat rainrate
  [min]      [m/s]    [Grad]             [mm/h]
    10.      4.000     330.0        4     .000
    20.      4.000     330.0        4     .000
    30.      4.000     330.0        4     .000
    40.      4.000     330.0        4     .000
    50.      4.000     330.0        4     .000
    60.      4.000     330.0        4     .000
    70.      4.000     330.0        4     .000
    80.      4.000     330.0        4     .000
    90.      4.000     330.0        4     .000
   100.      4.000     260.0        4     .000
   110.      4.000     260.0        4     .000
   120.      4.000     260.0        4     .000
   130.      4.000     260.0        4     .000
   140.      4.000     260.0        4     .000
   150.      4.000     260.0        4     .000
   160.      4.000     245.0        4   10.000
   170.      4.000     245.0        4   10.000
   180.      4.000     245.0        4   10.000
```

190.	5.000	260.0	4	.000
200.	5.000	260.0	4	.000
210.	5.000	260.0	4	.000
220.	5.000	260.0	4	.000
230.	5.000	260.0	4	.000
240.	5.000	260.0	4	.000
250.	5.000	270.0	4	.000
260.	5.000	270.0	4	.000
270.	5.000	270.0	4	.000
280.	5.000	270.0	4	.000
290.	5.000	270.0	4	.000
300.	5.000	270.0	4	.000
310.	5.000	270.0	4	.000
320.	5.000	270.0	4	.000
330.	5.000	270.0	4	.000
340.	5.000	270.0	4	.000
350.	5.000	270.0	4	.000
360.	5.000	270.0	4	.000
370.	5.000	270.0	4	.000
380.	5.000	270.0	4	.000
390.	5.000	270.0	4	.000
400.	5.000	270.0	4	.000
410.	5.000	270.0	4	.000
420.	5.000	270.0	4	.000
430.	5.000	270.0	4	.000
440.	5.000	270.0	4	.000
450.	5.000	270.0	4	.000
460.	5.000	270.0	4	.000
470.	5.000	270.0	4	.000
480.	5.000	270.0	4	.000
490.	5.000	270.0	4	.000
500.	5.000	270.0	4	.000
510.	5.000	270.0	4	.000
520.	5.000	270.0	4	.000
530.	5.000	270.0	4	.000
540.	5.000	270.0	4	.000
550.	5.000	270.0	4	.000
560.	5.000	270.0	4	.000
570.	5.000	270.0	4	.000
580.	5.000	270.0	4	.000
590.	5.000	270.0	4	.000
600.	5.000	270.0	4	.000
610.	5.000	270.0	4	.000
620.	5.000	270.0	4	.000
630.	5.000	270.0	4	.000
640.	5.000	270.0	4	.000
650.	5.000	270.0	4	.000
660.	5.000	270.0	4	.000
670.	5.000	270.0	4	.000
680.	5.000	270.0	4	.000
690.	5.000	270.0	4	.000
700.	5.000	270.0	4	.000
710.	5.000	270.0	4	.000
720.	5.000	270.0	4	.000
730.	5.000	270.0	4	.000
740.	5.000	270.0	4	.000
750.	5.000	270.0	4	.000
760.	5.000	270.0	4	.000
770.	5.000	270.0	4	.000
780.	5.000	270.0	4	.000
790.	5.000	270.0	4	.000
800.	5.000	270.0	4	.000
810.	5.000	270.0	4	.000
820.	5.000	270.0	4	.000
830.	5.000	270.0	4	.000
840.	5.000	270.0	4	.000
850.	5.000	270.0	4	.000
860.	5.000	270.0	4	.000
870.	5.000	270.0	4	.000
880.	5.000	270.0	4	.000
890.	5.000	270.0	4	.000
900.	5.000	270.0	4	.000
910.	5.000	270.0	4	.000

920.	5.000	270.0	4	.000
930.	5.000	270.0	4	.000
940.	5.000	270.0	4	.000
950.	5.000	270.0	4	.000
960.	5.000	270.0	4	.000
970.	5.000	270.0	4	.000
980.	5.000	270.0	4	.000
990.	5.000	270.0	4	.000
1000.	5.000	270.0	4	.000
1010.	5.000	270.0	4	.000
1020.	5.000	270.0	4	.000
1030.	5.000	270.0	4	.000
1040.	5.000	270.0	4	.000
1050.	5.000	270.0	4	.000
1060.	5.000	270.0	4	.000
1070.	5.000	270.0	4	.000
1080.	5.000	270.0	4	.000
1090.	5.000	270.0	4	.000
1100.	5.000	270.0	4	.000
1110.	5.000	270.0	4	.000
1120.	5.000	270.0	4	.000
1130.	5.000	270.0	4	.000
1140.	5.000	270.0	4	.000
1150.	5.000	270.0	4	.000
1160.	5.000	270.0	4	.000
1170.	5.000	270.0	4	.000
1180.	5.000	270.0	4	.000
1190.	5.000	270.0	4	.000
1200.	5.000	270.0	4	.000
1210.	5.000	270.0	4	.000
1220.	5.000	270.0	4	.000
1230.	5.000	270.0	4	.000
1240.	5.000	270.0	4	.000
1250.	5.000	270.0	4	.000
1260.	5.000	270.0	4	.000
1270.	5.000	270.0	4	.000
1280.	5.000	270.0	4	.000
1290.	5.000	270.0	4	.000
1300.	5.000	270.0	4	.000
1310.	5.000	270.0	4	.000
1320.	5.000	270.0	4	.000
1330.	5.000	270.0	4	.000
1340.	5.000	270.0	4	.000
1350.	5.000	270.0	4	.000
1360.	5.000	270.0	4	.000
1370.	5.000	270.0	4	.000
1380.	5.000	270.0	4	.000
1390.	5.000	270.0	4	.000
1400.	5.000	270.0	4	.000
1410.	5.000	270.0	4	.000
1420.	5.000	270.0	4	.000
1430.	5.000	270.0	4	.000
1440.	5.000	270.0	4	.000

6.1.4 Prognose.NuclideData

```
================================================================================
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 10:54:15
Run identification  : user4.qp5
================================================================================
NUCLIDES SELECTED FOR CALCULATION
================================================================================

Total number of selected nuclides: 15

Selected noble gas isotopes ( 4 nuclides)
Kr- 85m 4.48E+00 h
Kr- 88  2.84E+00 h
Xe-133  5.25E+00 d
```

```
Xe-135  9.10E+00 h

Selected iodine isotopes ( 4 nuclides)
I -131  8.02E+00 d
I -132  2.30E+00 h
I -133  2.08E+01 h
I -135  6.61E+00 h

Selected aerosol isotopes ( 7 nuclides)
Sr- 90  2.86E+01 a
Sr- 91  9.50E+00 h
Te-131m 3.00E+01 h
Te-132  7.63E+01 h
Cs-134  2.06E+00 a
Cs-136  1.13E+01 d
Cs-137  3.02E+01 a

Selected special isotopes ( 0 nuclides)
```

6.1.5 Prognose.STermData

```
================================================================================
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 10:54:16
Run identification  : user4.qp5
================================================================================
DATA CATEGORY "SOURCE TERM" : INPUT SPECIFICATIONS
================================================================================

Source term Comment
-------------------
INEX1-Phase2 : Source-term for Phase 2 of exercise INEX1
for use in RODOS/RESY

Release starts at   12.0 hours after the end of the chain reaction

             Activity released [Bq] for nuclides per time interval
                     (time = hours after start of release)
             ------------------------------------------------------

      time   Activity released [Bq] for nuclides
     [hrs]     Kr- 85m    Kr- 88     Xe-133     Xe-135     I -131     I -132
       .00   2.00E+15   2.00E+15   1.00E+17   4.00E+16   2.50E+14   3.00E+14
       .50   3.80E+16   3.40E+16   1.80E+18   7.60E+17   4.10E+15   5.60E+15
      1.00   2.00E+15   2.00E+15   1.00E+17   4.00E+16   2.50E+14   3.00E+14
      1.50   ------ no nuclides released ------
      2.00   ------ no nuclides released ------
      2.50   ------ no nuclides released ------
      3.00   ------ no nuclides released ------
      3.50   ------ no nuclides released ------
      4.00   ------ no nuclides released ------
      4.50   ------ no nuclides released ------
      5.00   ------ no nuclides released ------
      5.50   ------ no nuclides released ------
      6.00   ------ no nuclides released ------
      6.50   ------ no nuclides released ------
      7.00   ------ no nuclides released ------
      7.50   ------ no nuclides released ------
      8.00   ------ no nuclides released ------
      8.50   ------ no nuclides released ------
      9.00   ------ no nuclides released ------
      9.50   ------ no nuclides released ------
     10.00   ------ no nuclides released ------
     10.50   ------ no nuclides released ------
     11.00   ------ no nuclides released ------
     11.50   ------ no nuclides released ------
       Sum   4.20E+16   3.80E+16   2.00E+18   8.40E+17   4.60E+15   6.20E+15

      time   Activity released [Bq] for nuclides
     [hrs]     I -133     I -135     Sr- 90     Sr- 91     Te-131m    Te-132
```

.00	3.50E+14	1.50E+14	2.00E+12	2.00E+13	3.00E+13	4.00E+14
.50	6.00E+15	2.20E+15	2.10E+13	2.30E+14	4.80E+14	5.60E+15
1.00	3.50E+14	1.50E+14	.00E+00	.00E+00	.00E+00	.00E+00
1.50	------ no nuclides released ------					
2.00	------ no nuclides released ------					
2.50	------ no nuclides released ------					
3.00	------ no nuclides released ------					
3.50	------ no nuclides released ------					
4.00	------ no nuclides released ------					
4.50	------ no nuclides released ------					
5.00	------ no nuclides released ------					
5.50	------ no nuclides released ------					
6.00	------ no nuclides released ------					
6.50	------ no nuclides released ------					
7.00	------ no nuclides released ------					
7.50	------ no nuclides released ------					
8.00	------ no nuclides released ------					
8.50	------ no nuclides released ------					
9.00	------ no nuclides released ------					
9.50	------ no nuclides released ------					
10.00	------ no nuclides released ------					
10.50	------ no nuclides released ------					
11.00	------ no nuclides released ------					
11.50	------ no nuclides released ------					
Sum	6.70E+15	2.50E+15	2.30E+13	2.50E+14	5.10E+14	6.00E+15

time	Activity released [Bq] for nuclides		
[hrs]	Cs-134	Cs-136	Cs-137
.00	2.50E+13	1.00E+13	1.50E+13
.50	4.80E+14	2.10E+14	2.90E+14
1.00	2.50E+13	1.00E+13	1.50E+13
1.50	------ no nuclides released ------		
2.00	------ no nuclides released ------		
2.50	------ no nuclides released ------		
3.00	------ no nuclides released ------		
3.50	------ no nuclides released ------		
4.00	------ no nuclides released ------		
4.50	------ no nuclides released ------		
5.00	------ no nuclides released ------		
5.50	------ no nuclides released ------		
6.00	------ no nuclides released ------		
6.50	------ no nuclides released ------		
7.00	------ no nuclides released ------		
7.50	------ no nuclides released ------		
8.00	------ no nuclides released ------		
8.50	------ no nuclides released ------		
9.00	------ no nuclides released ------		
9.50	------ no nuclides released ------		
10.00	------ no nuclides released ------		
10.50	------ no nuclides released ------		
11.00	------ no nuclides released ------		
11.50	------ no nuclides released ------		
Sum	5.30E+14	2.30E+14	3.20E+14

time	height of	rel.therm. -- fractions of	total iodine release---			
	release	power	elementary	org.bound	aerosol	sum
[hrs]	[m]	[MW]	[%]	[%]	[%]	[%]
.00	1.00E+02	.00E+00	1.00E+02	.00E+00	.00E+00	100.00
.50	1.00E+02	.00E+00	1.00E+02	.00E+00	.00E+00	100.00
1.00	1.00E+02	.00E+00	1.00E+02	.00E+00	.00E+00	100.00
1.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
2.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
2.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
3.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
3.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
4.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
4.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
5.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
5.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
6.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
6.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
7.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #

7.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
8.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
8.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
9.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
9.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
10.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
10.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
11.00	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #
11.50	.00E+00	.00E+00	.00E+00	.00E+00	1.00E+02	100.00 #

NOTE(S)

#) No iodine release!
   Here, 100% aerosol iodine was inserted.

FURTHER INFORMATION ABOUT THE SOURCE TERM

Activity released [Bq] summed over calculation nuclides
in nuclide groups per time interval
(time = hours after start of release)

time	Nuclide - Group			
[hrs]	noblegas	iodine	aerosols	spezials
.00	1.44E+17	1.05E+15	5.02E+14	.00E+00
.50	2.63E+18	1.79E+16	7.31E+15	.00E+00
1.00	1.44E+17	1.05E+15	5.00E+13	.00E+00
1.50	------ no nuclides released ------			
2.00	------ no nuclides released ------			
2.50	------ no nuclides released ------			
3.00	------ no nuclides released ------			
3.50	------ no nuclides released ------			
4.00	------ no nuclides released ------			
4.50	------ no nuclides released ------			
5.00	------ no nuclides released ------			
5.50	------ no nuclides released ------			
6.00	------ no nuclides released ------			
6.50	------ no nuclides released ------			
7.00	------ no nuclides released ------			
7.50	------ no nuclides released ------			
8.00	------ no nuclides released ------			
8.50	------ no nuclides released ------			
9.00	------ no nuclides released ------			
9.50	------ no nuclides released ------			
10.00	------ no nuclides released ------			
10.50	------ no nuclides released ------			
11.00	------ no nuclides released ------			
11.50	------ no nuclides released ------			
Sum	2.92E+18	2.00E+16	7.86E+15	.00E+00

Activity release rate [Bq/s] for nuclides per time interval
(time = hours after start of release)

time	Activity release rate [Bq/s] for nuclides					
[hrs]	Kr- 85m	Kr- 88	Xe-133	Xe-135	I -131	I -132
.00	1.11E+12	1.11E+12	5.56E+13	2.22E+13	1.39E+11	1.67E+11
.50	2.11E+13	1.89E+13	1.00E+15	4.22E+14	2.28E+12	3.11E+12
1.00	1.11E+12	1.11E+12	5.56E+13	2.22E+13	1.39E+11	1.67E+11
1.50	------ no nuclides released ------					
2.00	------ no nuclides released ------					
2.50	------ no nuclides released ------					
3.00	------ no nuclides released ------					
3.50	------ no nuclides released ------					
4.00	------ no nuclides released ------					
4.50	------ no nuclides released ------					
5.00	------ no nuclides released ------					
5.50	------ no nuclides released ------					
6.00	------ no nuclides released ------					
6.50	------ no nuclides released ------					
7.00	------ no nuclides released ------					
7.50	------ no nuclides released ------					

```
 8.00   ------ no nuclides released ------
 8.50   ------ no nuclides released ------
 9.00   ------ no nuclides released ------
 9.50   ------ no nuclides released ------
10.00   ------ no nuclides released ------
10.50   ------ no nuclides released ------
11.00   ------ no nuclides released ------
11.50   ------ no nuclides released ------

 time   Activity release rate [Bq/s] for nuclides
[hrs]     I -133     I -135     Sr- 90     Sr- 91     Te-131m    Te-132
  .00   1.94E+11   8.33E+10   1.11E+09   1.11E+10   1.67E+10   2.22E+11
  .50   3.33E+12   1.22E+12   1.17E+10   1.28E+11   2.67E+11   3.11E+12
 1.00   1.94E+11   8.33E+10    .00E+00    .00E+00    .00E+00    .00E+00
 1.50   ------ no nuclides released ------
 2.00   ------ no nuclides released ------
 2.50   ------ no nuclides released ------
 3.00   ------ no nuclides released ------
 3.50   ------ no nuclides released ------
 4.00   ------ no nuclides released ------
 4.50   ------ no nuclides released ------
 5.00   ------ no nuclides released ------
 5.50   ------ no nuclides released ------
 6.00   ------ no nuclides released ------
 6.50   ------ no nuclides released ------
 7.00   ------ no nuclides released ------
 7.50   ------ no nuclides released ------
 8.00   ------ no nuclides released ------
 8.50   ------ no nuclides released ------
 9.00   ------ no nuclides released ------
 9.50   ------ no nuclides released ------
10.00   ------ no nuclides released ------
10.50   ------ no nuclides released ------
11.00   ------ no nuclides released ------
11.50   ------ no nuclides released ------

 time   Activity release rate [Bq/s] for nuclides
[hrs]     Cs-134     Cs-136     Cs-137
  .00   1.39E+10   5.56E+09   8.33E+09
  .50   2.67E+11   1.17E+11   1.61E+11
 1.00   1.39E+10   5.56E+09   8.33E+09
 1.50   ------ no nuclides released ------
 2.00   ------ no nuclides released ------
 2.50   ------ no nuclides released ------
 3.00   ------ no nuclides released ------
 3.50   ------ no nuclides released ------
 4.00   ------ no nuclides released ------
 4.50   ------ no nuclides released ------
 5.00   ------ no nuclides released ------
 5.50   ------ no nuclides released ------
 6.00   ------ no nuclides released ------
 6.50   ------ no nuclides released ------
 7.00   ------ no nuclides released ------
 7.50   ------ no nuclides released ------
 8.00   ------ no nuclides released ------
 8.50   ------ no nuclides released ------
 9.00   ------ no nuclides released ------
 9.50   ------ no nuclides released ------
10.00   ------ no nuclides released ------
10.50   ------ no nuclides released ------
11.00   ------ no nuclides released ------
11.50   ------ no nuclides released ------
```

6.2 EmerSim

6.2.1 EmerSim.ActionData

```
================================================================================
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 11:16:16
Run identification  : user4.emerqp5
================================================================================
DATA CATEGORY "ACTIONS" : INPUT DATA
================================================================================

ILs for eff.dose; thyroid (stable iodine)
********************************************************************************
*              ACTIONS: DEFINITION OF POTENTIAL AREAS                          *
********************************************************************************


                                  Dose Intervention Levels [mSv]
                                     effective    thyroid
                                  ==============================
 - Evacuation                            100.0
 - Sheltering                             10.0
 - Stable iodine - adults                                250.0
 - Stable iodine - chldrn. age 5          50.0
 - Relocation    - temporary              30.0
 - Relocation    - permanent             100.0


********************************************************************************
*                    ACTIONS: ACTIONS CONSIDERED TO BE CARRIED OUT             *
********************************************************************************
Sheltering    : Yes
Evacuation    : Yes
Stable iodine : Yes


********************************************************************************
                               ACTIONS: TIMING
********************************************************************************
 The release starts at     12.0 hours after the end of the chain reaction.
 All times below are given in hours after the end of the chain reaction.
 Very large times mean <maximum possible till end of prognosis>.
 ------------------------------------------------------------------------------
 Source term : Comment
 ---------------------
 INEX1-Phase2 : Source-term for Phase 2 of exercise INEX1
 for use in RODOS/RESY
 ********************************************************************************


 Timing for sheltering in area <SHELTERING ONLY>
 -----------------------------------------------
 Begin of sheltering                      [hrs.] :           .0
 Duration of sheltering                   [hrs.] :     100000.0

 Timing for sheltering in area <SHELTERING + EVACUATION>
 -------------------------------------------------------
 Begin of sheltering                      [hrs.] :           .0
 Duration of sheltering                   [hrs.] :           .0


 Timing for evacuation
 ---------------------
 Begin of evacuation                      [hrs.] :          .0
 Duration of ride out of evacuation area  [hrs.] :          .0
 Duration of absence from evacuation area [days] :     3.0E+01


 Timing for stable iodine
 ------------------------
 Time of intake of stable iodine          [hrs.] :          .0
```

6.2.2 EmerSim.outgrid

```
 ================================================================================
 Site and plant      : FZK * FZK-Mast
 Date and time       :  9-Jul-01 * 11:16:00
 Run identification  : user4.emerqp5
================================================================================
 INFORMATION ABOUT PLANT AND EMERGENCY PLANNING ZONES
 ================================================================================

 Reactor : FZK-Mast
 geogr. latititude     [Deg.] :  4.90925E+01
 geogr. longititude    [Deg.] :  8.42580E+00

 Emerg.planning zones for site : FZK
 geogr. latititude     [Deg.] :  4.90925E+01
 geogr. longititude    [Deg.] :  8.42580E+00
 Radii of emerg. zones   [km] :    2.0  10.0  25.0
 Number of EP sectors         :           12
 Start angle sector 1  [Deg.] :      -15.000
```

7 Appendix C: The result files

In the following the files are listed which present results from EMERSIM, EARLYCONS (module RESTAB40) and LATECONS (modules SHML40 and LEM40), based on QUICKPRO. These files are stored under the RODOS-directory /rodos / roextern / outall / *user-id* / *run-id* /. They can also be loaded into the Text window of the Main Drawing Window of RODOS.

7.1 EmerSim/QP (based on QUICKPRO)

7.1.1 EmerSim.Consequences

```
-----------------------------------------------------
Site and plant      : FZK * FZK-Mast
Date and time       :  9-Jul-01 * 11:16:23
Run identification  : user4.emerqp5


=====================================================
I                                                   I
I TOTAL CALCULATION AREA AND POPULATION             I
I                                                   I
=====================================================

TOTAL CALCULATION AREA [km**2]    28287.0
POPULATION IN TOTAL CALC. AREA 12545151.0

=====================================================
I                                                   I
I AREA AND POPULATION OF THE AREAS WITH ACTIONS     I
I                                                   I
=====================================================

NO ACTION :
-----------
AREA [km**2]     28167.0
POPULATION    12474443.0

SHELTERING :
------------
AREA [km**2]       109.0
POPULATION       60587.1

EVACUATION (ACTION LEVEL) :
---------------------------
AREA [km**2]          .0
POPULATION            .0

DISTRIBUTION OF IODINE TABLETS TO ADULTS :
------------------------------------------
AREA [km**2]         1.0
POPULATION         289.5

DISTRIBUTION OF IODINE TABLETS TO CHILDREN :
--------------------------------------------
AREA [km**2]        20.0
POPULATION       15904.9

TEMPORARY RELOCATION :
----------------------
AREA [km**2]        64.0
POPULATION       37570.4
```

```
PERMANENT RELOCATION :
----------------------
AREA [km**2]        44.0
POPULATION       22570.7

=====================================================
I                                                   I
I COLLECTIVE DOSES (manSv)                          I
I                                                   I
=====================================================

NO ACTION - OPEN AIR :
----------------------
 LUNG                           16133.99
 BONE MARROW                    15084.83
 THYROID                        20489.35
 UTERUS                         14230.42
 EFFECTIVE                      15461.73

NO ACTION - NORMAL LIVING :
---------------------------
 LUNG                            3617.61
 BONE MARROW                     3320.53
 THYROID                         5565.23
 UTERUS                          3126.91
 EFFECTIVE                       3466.68

WITH COUNTERMEASURES :
----------------------
 LUNG                            3531.04
 BONE MARROW                     3245.98
 THYROID                         5332.01
 UTERUS                          3055.93
 EFFECTIVE                       3378.55

=====================================================
I                                                   I
I MAXIMUM INDIVIDUAL DOSES [mSv]                    I
I                                                   I
=====================================================

NO ACTION - OPEN AIR :
----------------------

CLOUD Gamma eff. Dose =     18.06
INHAL commi eff. Dose =     22.30
INHAL Adult THY. Dose =    321.53
INHAL Child THY. Dose =    707.36
LOCAL Skin 24 h  Dose =       .22

Ground Dose Int. Times=       1 d       7 d      30 d      1 y      50 y
GROUND Gamm eff. Dose =     11.38     45.60     69.41    184.40    421.28
CLO+GRO_Gam eff. Dose =     23.21     46.02     69.82    184.78    421.66
CLO+GRO+INH eff. Dose =     45.51     57.24     70.23    185.22    422.10

NO ACTION - NORMAL LIVING :
---------------------------

CLOUD Gamma eff. Dose =      7.22
INHAL commi eff. Dose =     13.38
INHAL Adult THY. Dose =    192.92
INHAL Child THY. Dose =    424.42
LOCAL Skin 24 h  Dose =       .13

Ground Dose Int. Times=       1 d       7 d      30 d      1 y      50 y
GROUND Gamm eff. Dose =      3.19     12.77     19.43     51.54    117.42
CLO+GRO_Gam eff. Dose =      8.18     13.02     19.68     51.79    117.67
CLO+GRO+INH eff. Dose =     20.95     23.39     25.30     52.04    117.92

WITH COUNTERMEASURES :
----------------------

CLOUD Gamma eff. Dose =      6.01
```

```
 INHAL commi eff. Dose =      7.39
 INHAL Adult THY. Dose =    106.87
 INHAL Child THY. Dose =     48.30
 LOCAL Skin 24 h  Dose =       .11

 Ground Dose Int. Times=       1 d       7 d      30 d      1 y      50 y
 GROUND Gamm eff. Dose =      1.14     10.72     17.39     49.49    115.38
 CLO+GRO_Gam eff. Dose =      6.36     10.93     17.59     49.70    115.58
 CLO+GRO+INH eff. Dose =     13.75     15.92     17.80     49.90    115.79


-------------------------------------------------------------
Average Pathway Doses in Evac. & Sheltering Areas
-------------------------------------------------------------
 Evacuation :     Cloud        7dGround   50yInhalation
                   .000           .000           .000
 Sheltering :     Cloud        7dGround   50yInhalation
                  2.410          20.291          2.925

-------------------------------------------------------------
%-Contributions of Pathway Doses in Evac. & Sheltering Areas
-------------------------------------------------------------
 Evacuation :Cloud    7dGround   50yInhalation
               .00         .00         .00
 Sheltering :Cloud    7dGround   50yInhalation
              9.40       79.18       11.42
```

7.2 EARLYCONS based on QUICKPRO and EMERSIM/QP

7.2.1 Tables.outcons

```
*****************************************************************************
Site       : FZK
Date/Time  :  9-Jul-01 11:20:27 *** User/Run : user4 earco5
*****************************************************************************
*               COUNTERMEASURES: CONSEQUENCES (POTENTIAL ACTIONS)            *
*****************************************************************************


                           Areas [km**2] with intervention
                         ------------------------------------------------------
                  no     sheltering         evacuation          distribut. stab. iodine
                action                 actual_lvl    upper_lvl     adults      children
-----------------------------------------------------------------------------------------
With action    2.817E+04    1.090E+02     .000E+00     .000E+00    1.000E+00    2.000E+01


                           Persons in areas  with intervention
                         ------------------------------------------------------
                  no     sheltering         evacuation          distribut. stab. iodine
                action                 actual_lvl    upper_lvl     adults      children
-----------------------------------------------------------------------------------------
With action    1.247E+07    6.059E+04     .000E+00     .000E+00    2.895E+02    1.590E+04


*****************************************************************************
*          COUNTERMEASURES: CONSEQUENCES (WITH THE CONSIDERED ACTIONS)        *
*****************************************************************************


                              Collective doses and health effects
                            ---------------------------------------
                 eff. dose             det. effects          stoch.som.effects
                (50 a, Sv)        morbidity    mortality             mortality
-------------------------------------------------------------------------------
Open air          1.546E+04            0            0                7.730E+02
Normal living     3.467E+03            0            0                1.730E+02
```

```
With action        3.379E+03           0           0                 1.690E+02
```

```
                                    Costs [Mega-EURO]
                                 ----------------------------------------
                      health effect:          action:
                    determin.   stoch.som.   evacuation               total sum
-------------------------------------------------------------------------------
Open air            .000E+00    4.540E+01     .000E+00                 4.540E+01
Normal living       .000E+00    9.310E+00     .000E+00                 9.310E+00
With action         .000E+00    8.887E+00     .000E+00                 8.887E+00
```

7.2.2 Tables.outtab

```
 ---------------------------------------------------
  Site       : FZK
  Date/Time  :  9-Jul-01 11:20:20 *** User/Run : user4 earco5
  ***************************************************
  *           C O N S E Q U E N C E S                *
  ***************************************************


  TOTAL COMPUTATION AREA AND POPULATION :
  --------------------------------------
  TOTAL COMPUTATION AREA [km**2]    28286.9
  POPULATION IN TOTAL COMP. AREA 12545151.0

  AREAS AND POPULATION
  WITH DOSES ABOVE INTERVENTION LEVELS:
  -------------------------------------
  NO ACTION :
  ----------
  AREA [km**2]     28167.0
  POPULATION    12474443.0

  SHELTERING :
  ------------
  AREA [km**2]       109.0
  POPULATION       60587.1

  EVACUATION (ACTUAL INTERVENTION LEVEL):
  ---------------------------------------
  AREA [km**2]          .0
  POPULATION            .0

  EVACUATION (UPPER  INTERVENTION LEVEL):
  ---------------------------------------
  AREA [km**2]          .0
  POPULATION            .0

  DISTRIBUTION OF IODINE TABLETS TO ADULTS:
  -----------------------------------------
  AREA [km**2]         1.0
  POPULATION         289.5

  DISTRIBUTION OF IODINE TABLETS TO CHILDREN:
  -------------------------------------------
  AREA [km**2]        20.0
  POPULATION       15904.9

  TEMPORARY RELOCATION :
  ----------------------
  AREA [km**2]        64.0
  POPULATION       37570.4

  PERMANENT RELOCATION :
  ----------------------
  AREA [km**2]        44.0
  POPULATION       22570.7
```

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

```
   ==================================
   I                                I
   I            OPEN AIR            I
   I                                I
   ==================================
```

100% OF POPULATION IN OPEN AIR:

COLLECTIVE DOSES (manSv):

LUNG	16133.99
BONE MARROW	15084.83
THYROID	20489.35
UTERUS	14230.42
EFFECTIVE	15461.73

NUMBERS OF PERSONS WITH HEALTH EFFECTS:

DETERMINISTIC EFFECTS:

LUNG FUNCTION IMPAIRMENT	0
HYPOTHYROIDISM	0
SUM	0
DEATH (PULMONARY SYNDROME)	0
DEATH (HEMATOPOIETIC SYND.)	0
SUM	0
MENTAL RETARDATION	2
PRE/NEO-NATAL DEATHS	0

STOCHASTIC EFFECTS:

ADDITIONAL CANCER DEATHS	773

COSTS (Mega-EURO):

DETERM. EFFECTS : MEDICAL TREATMENT	.000
DETERM. EFFECTS : LOSSES TO ECONONOMY	.000
SUM :	.000
STOCH. EFFECTS : MEDICAL TREATMENT	14.779
STOCH. EFFECTS : LOSSES TO ECONOMY	30.622
SUM :	45.401

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

```
   ==================================
   I                                I
   I        NORMAL RESIDENCE        I
   I          IN BUILDINGS          I
   I                                I
   ==================================
```

COLLECTIVE DOSES (manSv):

LUNG	3617.61
BONE MARROW	3320.53

```
 THYROID                          5565.23
 UTERUS                           3126.91
 EFFECTIVE                        3466.68


NUMBERS OF PERSONS WITH HEALTH EFFECTS:
---------------------------------------

DETERMINISTIC EFFECTS:
--------------------------
 LUNG FUNCTION IMPAIRMENT     0
 HYPOTHYROIDISM               0
 SUM                          0

 DEATH (PULMONARY SYNDROME)   0
 DEATH (HEMATOPOIETIC SYND.)  0
 SUM                          0

 MENTAL RETARDATION           0
 PRE/NEO-NATAL DEATHS         0

STOCHASTIC EFFECTS:
--------------------------
 ADDITIONAL CANCER DEATHS     173

-------------------------------------------------


COSTS (Mega-EURO):
------------------------------------------

  DETERM. EFFECTS : MEDICAL TREATMENT         .000
  DETERM. EFFECTS : LOSSES TO ECONONOMY       .000
              SUM :                           .000

  STOCH.  EFFECTS : MEDICAL TREATMENT        3.031
  STOCH.  EFFECTS : LOSSES TO ECONOMY        6.279
              SUM :                          9.310

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx


   ================================
   I                              I
   I            RESULTS           I
   I             WITH             I
   I        COUNTERMEASURES       I
   I                              I
   ================================


COLLECTIVE DOSES (manSv):
--------------------------
 LUNG                             3531.04
 BONE MARROW                      3245.98
 THYROID                          5332.01
 UTERUS                           3055.93
 EFFECTIVE                        3378.55


NUMBERS OF PERSONS WITH HEALTH EFFECTS:
---------------------------------------

DETERMINISTIC EFFECTS:
--------------------------
 LUNG FUNCTION IMPAIRMENT     0
 HYPOTHYROIDISM               0
 SUM                          0

 DEATH (PULMONARY SYNDROME)   0
 DEATH (HEMATOPOIETIC SYND.)  0
 SUM                          0
```

```
 MENTAL RETARDATION           0
 PRE/NEO-NATAL DEATHS         0

STOCHASTIC EFFECTS:
-------------------------
 ADDITIONAL CANCER DEATHS     169

--------------------------------------------------


COSTS (Mega-EURO):
------------------------------------------

 EVACUATION TRANSPORT COSTS                    .000
 EVACUATION ACCOMMODATION COSTS                .000
 EVACUATION LOSS OF INCOME                     .000
             SUM :                             .000

  DETERM. EFFECTS : MEDICAL TREATMENT          .000
  DETERM. EFFECTS : LOSSES TO ECONONOMY        .000
             SUM :                             .000

  STOCH.  EFFECTS : MEDICAL TREATMENT         2.893
  STOCH.  EFFECTS : LOSSES TO ECONOMY         5.994
             SUM :                            8.887

**************************************************
```

7.3 LATECONS based on QUICKPRO, FDMT/QP and LCMT

7.3.1 Tables.outlat

```
-------------------------------------------------
Site       : FZK
Date/Time  :  9-Jul-01 11:54:31 *** User/Run : user4 latco5
-------------------------------------------------



WITHOUT Consideration of early protectice actions
and risks for deterministic health effects


***********************************************
*           C O N S E Q U E N C E S           *
***********************************************


C O L L E C T I V E   D O S E  [manSv]:
=======================================

No countermeasures:
-------------------
* without IG                    3.392E+03
* only IG                       1.348E+04
* all pathways                  1.687E+04


With countermeasures:
---------------------

* Without IG and for different deco-strategies
  ------------------------------------------
   1  NoDecontaminate           3.097E+03
   2  SkimBurialPlT90D          2.996E+03
   3  GrassCuttingT14D          3.108E+03
```

```
* Only IG and for different food-strategies
  ----------------------------------------
   1  Disp                      3.506E+03
   2  Rmov,T=0                  1.105E+04

* All pathways and different strategies
  -------------------------------------
                              NoDecontamin    SkimBurialPl    GrassCutting
                                  ate             T90D            T14D
  Disp                         6.603E+03       6.501E+03       6.614E+03
  Rmov,T=0                     1.414E+04       1.404E+04       1.415E+04


N U M B E R   O F   H E A L T H   E F F E C T S
================================================

No countermeasures:
-------------------
* without IG                          170
* only IG                             674
* all pathways                        844


With countermeasures:
---------------------

* Without IG and for different deco-strategies
  -------------------------------------------
   1  NoDecontaminate               155
   2  SkimBurialPlT90D              150
   3  GrassCuttingT14D              155

* Only IG and for different food-strategies
  ----------------------------------------
   1  Disp                          175
   2  Rmov,T=0                      552

* All pathways and different strategies
  -------------------------------------
                              NoDecontamin    SkimBurialPl    GrassCutting
                                  ate             T90D            T14D
  Disp                            330             325             330
  Rmov,T=0                        707             702             707
```

7.3.2 Tables.outeco

```
-------------------------------------------------
Site       : FZK
Date/Time  :  9-Jul-01 11:54:43 *** User/Run : user4 latco5
-------------------------------------------------


  ****************************************************************
  ****************************************************************
  ***                                                          ***
  ***  RODOS - ECONOM:  CALCULATION OF ECONOMIC CONSEQUENCES   ***
  ***                                                          ***
  ****************************************************************
  ****************************************************************


  THE FOLLOWING COST CATEGORIES ARE CALCULATED IN THIS RUN:
```

COUNTERMEASURE COSTS
****

RELOCATION COSTS YES

INPUT VALUES FOR RELOCATION COSTS:

TRANSPORT COSTS	(EURO/CAP):	5.000E+01		
ACCOMODATION COSTS	(EURO/CAP*A):	1.970E+03		
LOSS-OF-INCOME COSTS	(EURO/CAP*A):	1.961E+04		
LOST CAPITAL SERVICES	(EURO/CAP):	1.100E+04	5.650E+04	1.050E+04
VALUE OF LAND COSTS	(EURO/M**2):	1.400E+01		

DECONTAMINATION COSTS YES

INPUT VALUES FOR DECONTAMINATION COSTS:

	DECO TECHNIQUE	MANPOWER EURO/manhr	CONSUMABLES EURO/KM**2	EQUIPMENT EURO/KM**2
2	SkimBurialPlT90D	2.160E+01	.000E+00	7.300E+03
3	GrassCuttingT14D	2.160E+01	.000E+00	1.170E+04

FOOD BAN COSTS YES

INPUT VALUES FOR COSTS OF AGRICULTURAL COUNTERMEASURES:

NR.	STRATEGY / RESOURCES	FOODSTUFF:	fmil	fvel
	food prod.lost (EURO/KG)		2.960E-01	5.410E-01
	food disposal (EURO/KG)		6.000E+01	6.000E+01
4	feed required (EURO/KG)		1.370E-01	

LATE HEALTH EFFECT COSTS YES
****

INPUT VALUES FOR LATE HEALTH EFFECTS COSTS:

COSTS FOR LOSSES-TO-ECONOMY	(EURO/CAP*A):	2.200E+04
COSTS FOR MEDICAL TREATMENT	(EURO/CAP):	1.200E+05

****
****
***
*** RODOS - ECONOM: CALCULATION OF ECONOMIC CONSEQUENCES ***
***
****
****

RESULTS OF THE COST CALCULATIONS IN "MONETARY UNITS (M.U.)": M.U. = EURO

RELOCATION COSTS FOR DECO-TECHNIQUE NO. 1 (NoDecontaminate):
****

	1ST YEAR	2ND YEAR	3-5 YEARS	6-10 YEARS	>11 YEARS	TOTAL
TRANSPORT	5.074E+06	.000E+00	.000E+00	.000E+00	.000E+00	5.074E+06
ACCOMMODATION	3.341E+07	1.763E+06	.000E+00	.000E+00	.000E+00	3.518E+07
LOSS-OF-INCOME	3.326E+08	1.755E+07	.000E+00	.000E+00	.000E+00	3.502E+08
LOSS-OF-CAPITAL/LAND	8.813E+07	1.856E+08	.000E+00	.000E+00	.000E+00	2.738E+08
TOTAL RELOCATION	4.592E+08	2.049E+08	.000E+00	.000E+00	.000E+00	6.642E+08

RELOCATION COSTS FOR DECO-TECHNIQUE NO. 2 (SkimBurialPlT90D):
****

	1ST YEAR	2ND YEAR	3-5 YEARS	6-10 YEARS	>11 YEARS	TOTAL
TRANSPORT	.601E+06	.000E+00	.000E+00	.000E+00	.000E+00	1.601E+06
ACCOMMODATION	1.054E+07	5.562E+05	.000E+00	.000E+00	.000E+00	1.110E+07
LOSS-OF-INCOME	1.049E+08	5.536E+06	.000E+00	.000E+00	.000E+00	1.105E+08
LOSS-OF-CAPITAL/LAND	3.651E+07	6.683E+07	.000E+00	.000E+00	.000E+00	1.033E+08
TOTAL RELOCATION	1.536E+08	7.292E+07	.000E+00	.000E+00	.000E+00	2.265E+08

RELOCATION COSTS FOR DECO-TECHNIQUE NO. 3 (GrassCuttingT14D):
****

	1ST YEAR	2ND YEAR	3-5 YEARS	6-10 YEARS	>11 YEARS	TOTAL
TRANSPORT	3.530E+06	.000E+00	.000E+00	.000E+00	.000E+00	3.530E+06
ACCOMMODATION	2.324E+07	1.226E+06	.000E+00	.000E+00	.000E+00	2.447E+07
LOSS-OF-INCOME	2.314E+08	1.221E+07	.000E+00	.000E+00	.000E+00	2.436E+08
LOSS-OF-CAPITAL/LAND	6.780E+07	1.353E+08	.000E+00	.000E+00	.000E+00	2.031E+08
TOTAL RELOCATION	3.259E+08	1.487E+08	.000E+00	.000E+00	.000E+00	4.747E+08

DECONTAMINATION COSTS:
****

	1ST YEAR	2ND YEAR	3-5 YEARS	TOTAL
2 SkimBurialPlT90D	5.518E+10			5.518E+10
3 GrassCuttingT14D	2.787E+10			2.787E+10

FOOD BAN COSTS:
****

COSTS FOR EACH STRATEGY ALLOWED AND SELECTED AND FOR EACH FOODSTUFF SELECTED

* FOODSTUFF: 1 fmil

STRATEGY	PROD LOST	FOOD DISP	RESOURCE 1	RESOURCE 2	TOTAL
1 Disp	4.613E+05	.000E+00	.000E+00	.000E+00	4.613E+05
2 Rmov,T=0	4.945E+06	1.002E+09	3.673E+06	.000E+00	1.011E+09

* FOODSTUFF: 2 fvel

STRATEGY	PROD LOST	FOOD DISP	RESOURCE 1	RESOURCE 2	TOTAL
1 Disp	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

COSTS FOR EACH STRATEGY ALLOWED AND SELECTED (SUM OVER FOODSTUFFS SELECTED)

Disp	4.613E+05
Rmov,T=0	1.011E+09

TOTAL COUNTERMEASURE COSTS FOR FOOD C/M Disp AND DIFFERENT DECO TECHNIQUES:
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No. 1	NoDecontaminate	6.646E+08
No. 2	SkimBurialPlT90D	5.541E+10
No. 3	GrassCuttingT14D	2.835E+10

TOTAL COUNTERMEASURE COSTS FOR FOOD C/M Rmov,T=0 AND DIFFERENT DECO TECHNIQUES:
==========

No. 1	NoDecontaminate	1.675E+09
No. 2	SkimBurialPlT90D	5.642E+10
No. 3	GrassCuttingT14D	2.936E+10

LATE HEALTH EFFECT COSTS WITHOUT COUNTERMEASURES:
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MEDICAL TREATMENT COSTS	1.584E+07
LOSSES-TO-ECONOMY COSTS	3.282E+07
TOTAL COSTS	4.867E+07

LATE HEALTH EFFECT COSTS WITH COUNTERMEASURES:
****

ASSUMING FOOD C/M Disp AND DIFFERENT DECO TECHNIQUES:

DECO TECHNIQUE:	NoDecontamin ate	SkimBurialPl T90D	GrassCutting T14D
MEDICAL TREATMENT COSTS	5.727E+06	5.628E+06	5.727E+06
LOSSES-TO-ECONOMY COSTS	1.187E+07	1.166E+07	1.187E+07
TOTAL COSTS	1.759E+07	1.729E+07	1.759E+07

ASSUMING FOOD C/M Rmov,T=0 AND DIFFERENT DECO TECHNIQUES:

DECO TECHNIQUE:	NoDecontamin ate	SkimBurialPl T90D	GrassCutting T14D
MEDICAL TREATMENT COSTS	1.317E+07	1.307E+07	1.317E+07
LOSSES-TO-ECONOMY COSTS	2.728E+07	2.707E+07	2.728E+07
TOTAL COSTS	4.044E+07	4.014E+07	4.044E+07

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