



















Contents: X-ray

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X-ray

General

X-ray images can be digitised and saved in conjunction with the intraoral X-ray recording system VistaRay (CCD) and VistaScan. Every X-ray image is assigned to the currently selected patient.

All X-ray images are stored as the original data and are not modified by DBSWIN.

If X-ray images are edited with the image processing functions, this does not affect the original image. The information added can be undone any time as desired.

If you have assigned an X-ray image to the wrong patient, you can always assign it to the correct patient. In the original image, this activity is documented by the entry of the operator's data and the original patient. This can be carried out at the following two places:

1. In the X-ray module before saving using the menu option *Image/Save under*
2. In Light Table using the menu option Image Sort. During save procedure of the original data this action will also involve saving of the data concerning the operator and the patient.

Measurement of X-ray images

X-ray images taken with a calibrated recording device (CCD sensor, transmitted light scanner) can be measured with the aid of the processing module. This should only be carried out after initial calibration using a clearly defined structure (e.g. metal ball or pin). The accuracy of the measurement greatly depends on sensor placement (relative to the object and radiation source).

Please read the warning note on length and angle measurement in the *Image processing* chapter.

Data backup

As a general rule, you should back up your data regularly. When using the X-ray module (e.g. VistaRay), regular backups of the DBSWIN database directory are absolutely essential!

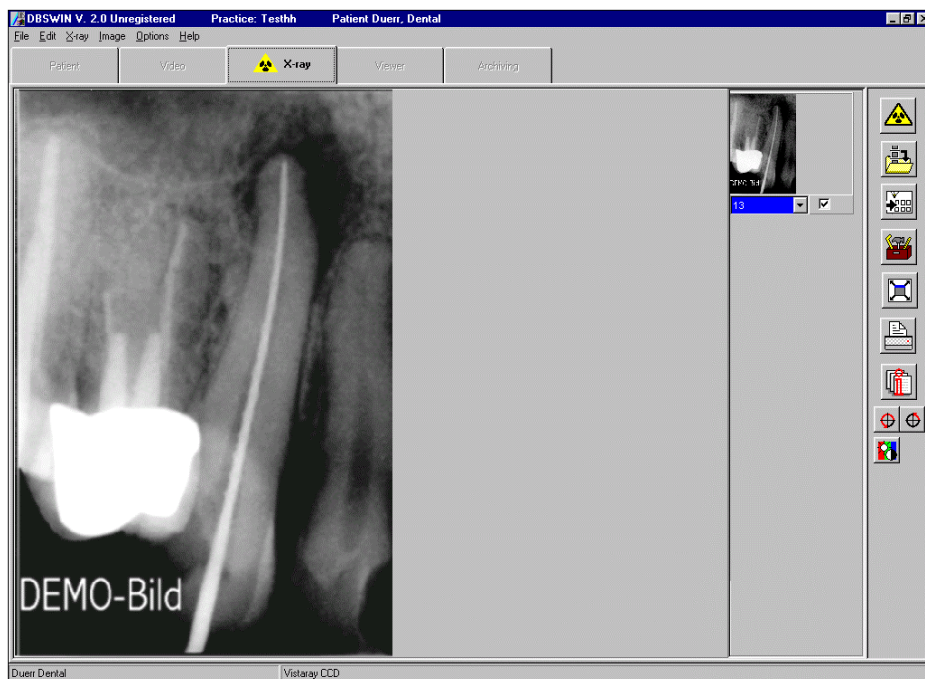
Please read the Data backup section in the *Further information* chapter.

Legal Requirements

In most countries it is necessary to carry out a regular Consistency Check of the X-ray system being used according to the legal requirements designed for dental surgeries in operation. Here, the X-ray source, the image recording system (CCD-Sensor, storage plate with scanner) and image display techniques (software, diagnosis monitor) are all important.


See _Legal Requirements

X-ray view



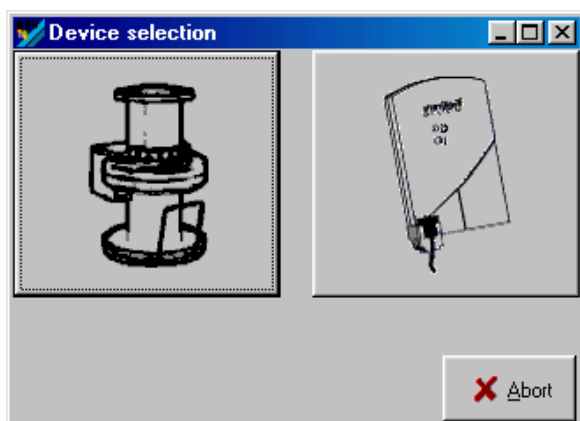
Functions

Take X-ray image (Menu Xray)

Press the  icon to initiate recording of an X-ray image.

If VistaRay(CCD) and VistaScan are both activated, then a selection window will pop up and the required appliance must be selected. If only one of the two systems has been activated, then this step is omitted.

Appliance selection





To deactivate the VistaRayCCD or VistaScan module

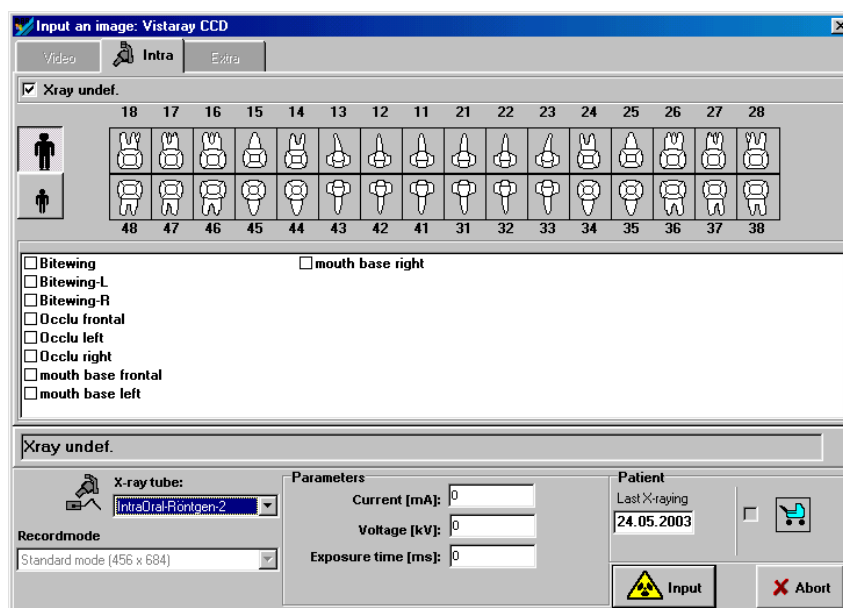
X-ray image configuration

Before the X-ray is taken, a dialog box appears in which you can select or enter the X-ray recording parameters.

Depending on which actual image types (INTRA, EXTRA [Ceph, Pano]) the X-ray system being used can process, the appropriate functions available will be displayed (e.g. neither VistaScan-INTRA nor VistaRay(CCD) can process EXTRA image types). The Standard imaging mode for the selected INTRA- or EXTRA- X-ray image will be displayed and can then be altered as required. (The standard mode can be defined under Configuration/Module/VistaScan or VistaRay(CCD).)

An image (single tooth, Bitewing, OPG etc.) can be selected either before or after actual imaging.

The current imaging system will be displayed (VistaRay(CCD)  or VistaScan ) in the lower left corner of the window.

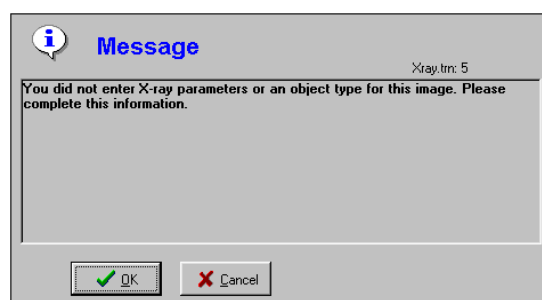
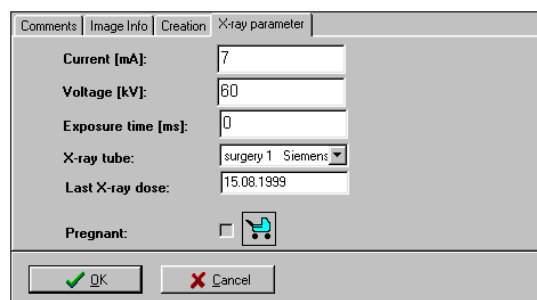


For information purposes, the date of the last X-ray image of the selected tooth (object type) is displayed if an earlier X-ray exists.

Two additional patient-related values (last X-ray and, in the case of female patients, pregnancy) are displayed. These values are required for keeping a complete X-ray report and may be modified. In the *Last X-ray* field, DBSWIN automatically shows the date of the last X-ray image taken of the patient in the surgery. You can update this value.

Compulsory entry of X-ray recording parameters

If the check box *X-ray parameter entry is compulsory* in the *X-Ray* section under *Configuration/Practice* is checked, the X-ray dose parameters (mA, kV, ms) must be entered. You will be prompted once more to enter these (figure below on left) if these parameter fields contain no data (figure below on right). Once the image has been saved, X-ray parameters can only be modified at a later point in time if the check box *Editing X-ray parameters is always allowed* in the *X-Ray* section under *Configuration/Practice* is checked!

Entry of X-ray dose parameters

DBSWIN suggests dose values, if an X-ray of the selected object (e.g. tooth) with the currently selected X-ray device has already been stored. If this is the case, the existing values are used as the parameters. Otherwise DBSWIN uses the standard settings of the selected X-ray device defined under *Configuration/Modules/X-Ray*. If you use different recording values for the X-ray device, these are to be entered manually.

The standard settings of common X-ray parameters can be set under *Configuration/Modules/X-Ray* for each X-ray device and each object type (e.g. single tooth for intraoral devices).

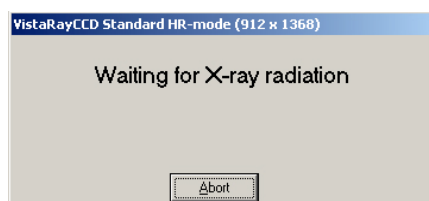
Please note that these standard settings can only be modified by users with the required access authorisation (administrator)!



Read an image

Once you have entered the X-ray parameters, press the *Read* pushbutton, and the following dialog is displayed.

VistaRayCCD recording window

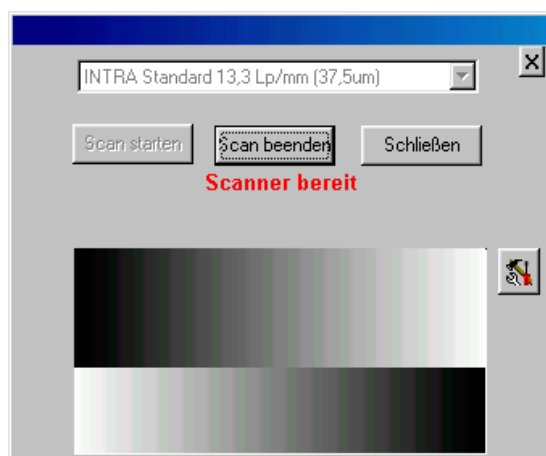




VistaScan recording window

VistaScan goes into image standby mode (the LEDs show green), when the key *Scan starten* is activated. As soon as the image plate is read by the VistaScan, the imaging window displays the current line information and the VistaScan sequence. Providing this window is not closed, further image plates can be fed into the system.

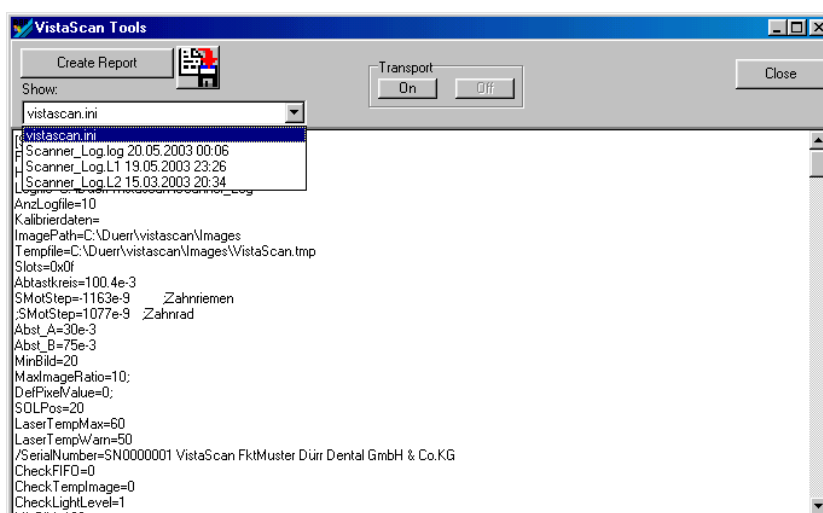


Only after all the currently available scans have been read, should the cassette be removed, otherwise stray light may enter the system!



Should any problems arise (e.g. storage plate is not completely transported through the unit) before, during or after scanning, then the scanning process can be interrupted and, using the  icon, a report file can be produced. Selection of  allows the current contents of the window to be saved. Three different files can be opened, which must then be given different names on saving.

- Report
- VistaScan System File (vistascan.ini)
- Scanner-Log-data

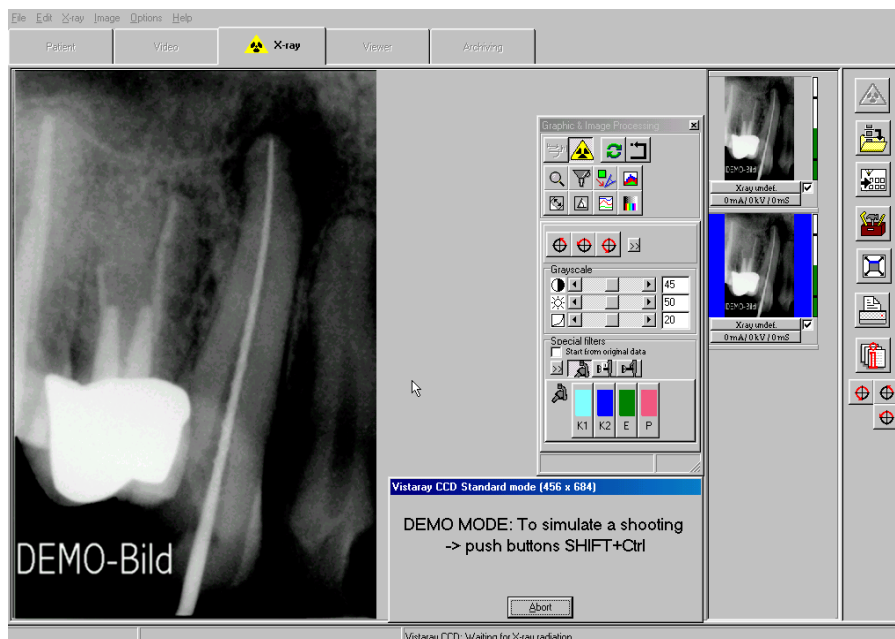


Message "Too much stray light"

When carrying out intraoral imaging all the entry slots of VistScan must be closed using the covers provided! (See Operating Instructions 9000-618-24/30)

Check the lighting conditions (< 1000 Lux) at the entry to the scanner and reduce available ambient light in this area if necessary.

When the imaging window is open, all new X-rays will be displayed in the image strip on the right.



The last image recorded (highlighted in blue in the image strip) will be displayed large in the left hand window and can be analysed using the Image Editing Functions. Selecting (click) another image from the strip brings this to the active window.

All images stored in the image strip also show a colour bar to the right: this displays the Dose Equivalent Value of the image. This value serves only as a guideline for the optimal setting of the Dose Parameters (only possible if there is no extreme over or under exposure). A satisfactory setting is shown by a green bar, a red bar shows a critical setting. There is both a lower and an upper critical limit (marks within the bar) after which the bar colour changes to red.

Procedure in the event of a red bar:

Bar is red and low: Increase radiation dose or amplification of the imaging system

Bar is red and high: Decrease radiation dose or amplification of the imaging system

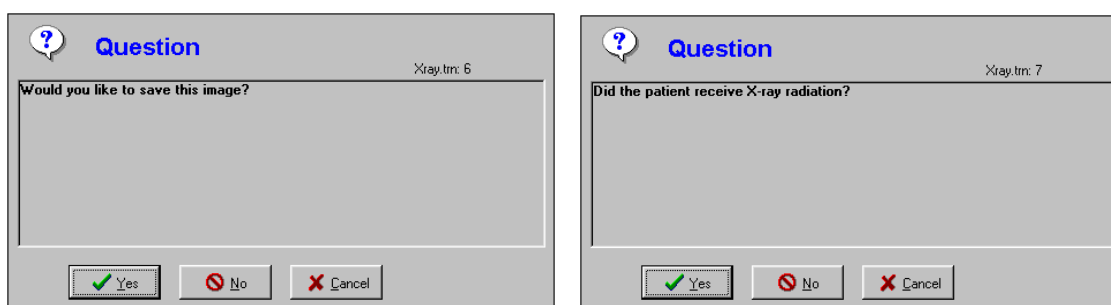


Save images (Menu Xray)

⚠ When you press the *Save images* pushbutton, only the images marked ☒ are stored in the database. Undefined is a valid image object type.

Before saving images for the currently selected patient, you should make sure that the correct object type (tooth number) has been selected.

To discard an image, respond to the prompts of the dialogs shown below by **selecting NO two times**.



If you respond to the prompt whether the patient has received X-ray radiation with **Yes**, the X-ray images are stored without exception and marked as *hidden*.



Save and transfer images to lighttable (Menu Xray)

If you click on this pushbutton, all images marked ☒ and assigned to an object type (e.g. Intra tooth number) are stored and transferred to the light table for further processing. There they appear in the image clipboard of the image selection box and can be put on the lighttable using drag&drop.

Before saving the images to the patient selected you should make sure that an object type (tooth number and/or kind of image) was assigned to the image correctly.



Image processing (Menu Xray)

You can process the active image by activating the processing box. To do this, press the *Image processing* pushbutton, double click in the image area or click with the right mouse button within the image to open the context menu and select *Image Processing*. Please refer to the *Image processing* chapter in the manual or the online help for a detailed description of these functions.



Full screen

Click on the  pushbutton to display the image in full screen mode.

Press the ESC key or open the context menu with the right mouse button and click on *Full screen* to exit the full screen mode.



Print

Click on the *Print* pushbutton to prepare the image for printing. Refer to the *Printing* chapter in the manual or the online help for further information.



Image information

To display or edit the information on the active image, press the *Information about active image* pushbutton. This displays the image information window for the current image.

On the *Commentary* page, you can enter text information to describe the image. The hotkey texts can be copied to the text area with the right mouse button. **The first commentary can only be entered once and cannot be edited once it has been saved.**

The image type, image size, object type (e.g. tooth number) and object area (e.g. tooth area) are displayed on the *Image Info* page. Press the *Object type/Selection* pushbutton, for example, to select the tooth number of the „main object“, and confirm your selection with OK. When you specify the object area, the previously selected main object is displayed on a blue background, and you can mark other teeth which are part of the image. Text information for all marked

objects is shown in the *Area* section; related objects within a quadrant are displayed with a hyphen between the beginning and ending object of the range (e.g. 12,13,14 -> 12-14).

The *Creation* page shows the creation data of the image and the name of the operator who has created the image.

The *X-ray parameters* page displays the values entered so far; these values may be edited.



Rotate 90° clockwise

The active image is rotated 90° clockwise.



Rotate 90° counterclockwise

The active image is rotated 90° counterclockwise.



Rotate 180°

The active image is rotated 180°.

Image activation (Menu Xray)

Click on an image in the image strip to display it in the main window. You can activate the previous image by selecting the *Activate previous image* item in the *X-ray* menu.

Marking images to be stored


At the lower edge of the images in the image area you see a check box marked ☒ when the image has been taken. Clicking on this box allows the image to be selected or deselected ☐ for storing purposes.




Only images that are checked ☒ are saved or transferred to the light table.

Assigning images

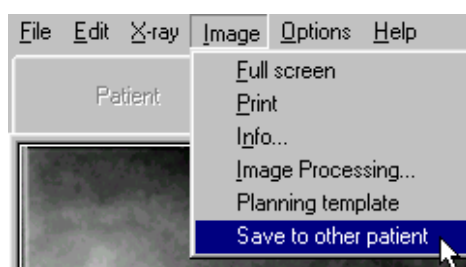
Certain X-ray parameters and further image information can be assigned to images in the image strip, such as the X-ray format (Intra, Extra), the type of object (e.g. tooth number or type of exposure).

In order to assign the object type either click on the symbol ☐ Xray undefiniert ☒ at the lower border of the relevant image within the image strip and then select the chosen type from the list provided, or select the icon .

X-ray parameters and further image information can be assigned either by clicking on the symbol at the lower border of the relevant image within the image strip, or by selecting the icon .

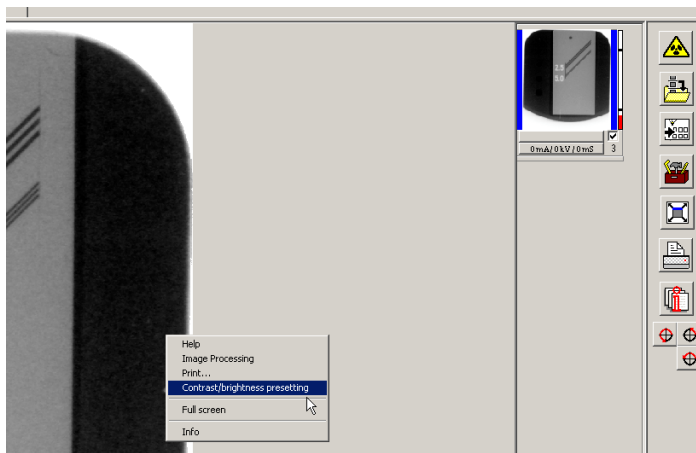
Assign image to a different patient

If an image must be assigned to a patient other than the one in the active window, then the currently active image can be assigned to the correct patient by selecting */Image/Save as* and choosing the correct patient from the patient list.

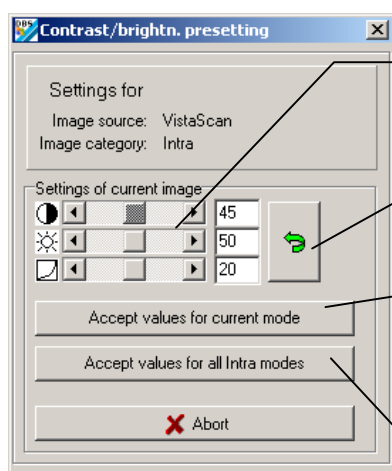


Setting Brightness and Contrast values for new images under VistaScan

The image processing box must be closed! After a right-hand mouseclick inside the image area it is possible to activate the menu using the option *Brightness/Contrast Pre-setting* in the appropriate window.



The changes made to the brightness and contrast as well as the gamma values are shown directly in the currently visible image and can be saved to serve as set values for new images under the same VistaScan mode or for all modes of the same type (i.e. Intra or Extra).



Adjust desired values of luminance, contrast and gamma.

Reset luminance, contrast and gamma.

Store current settings of the VistaScan mode just selected.

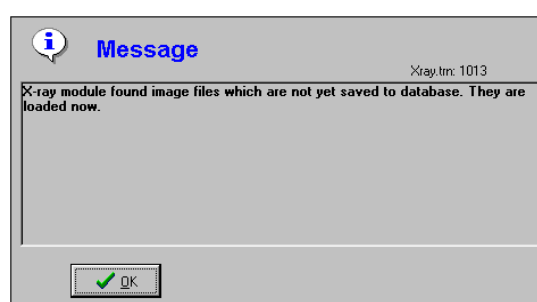
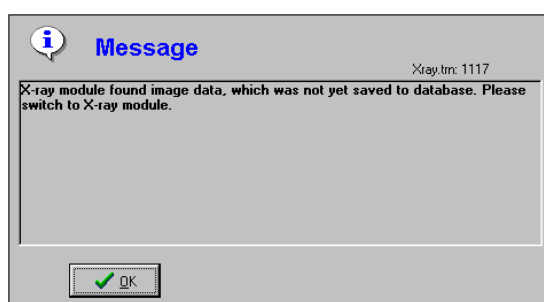
Save current setting for all Intra or Extra modes



Procedure after a computer crash

If the computer crashes while you are in the X-ray program module during or after an X-ray recording, the images recorded are not lost!

When you restart DBSWIN, the following dialog is displayed. It tells you that there are image data (in the X-ray recording system or temporary on the hard disk) which have not been stored in the DBSWIN database.

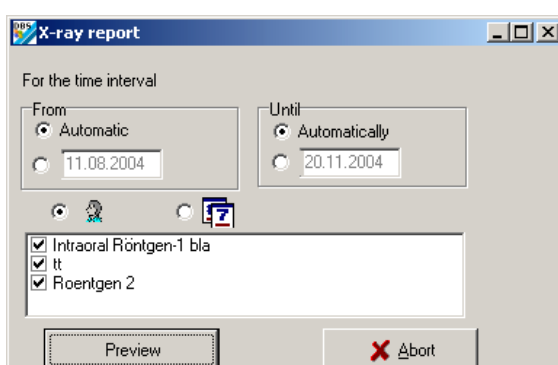


When you select the X-ray program module, a dialog indicates that one or several images of a patient have not been stored in the database. This dialog is only displayed if the image(s) found belong to the currently selected practice. **The program will prompt you to select the correct patient so that the images can be read in.**

X-ray report

Use the *X-ray/Print X-ray report* menu bar to print the X-ray report or display a preview of the printout. **All X-ray images created are displayed, including those marked as *hidden*.**

Determining the time interval for printing



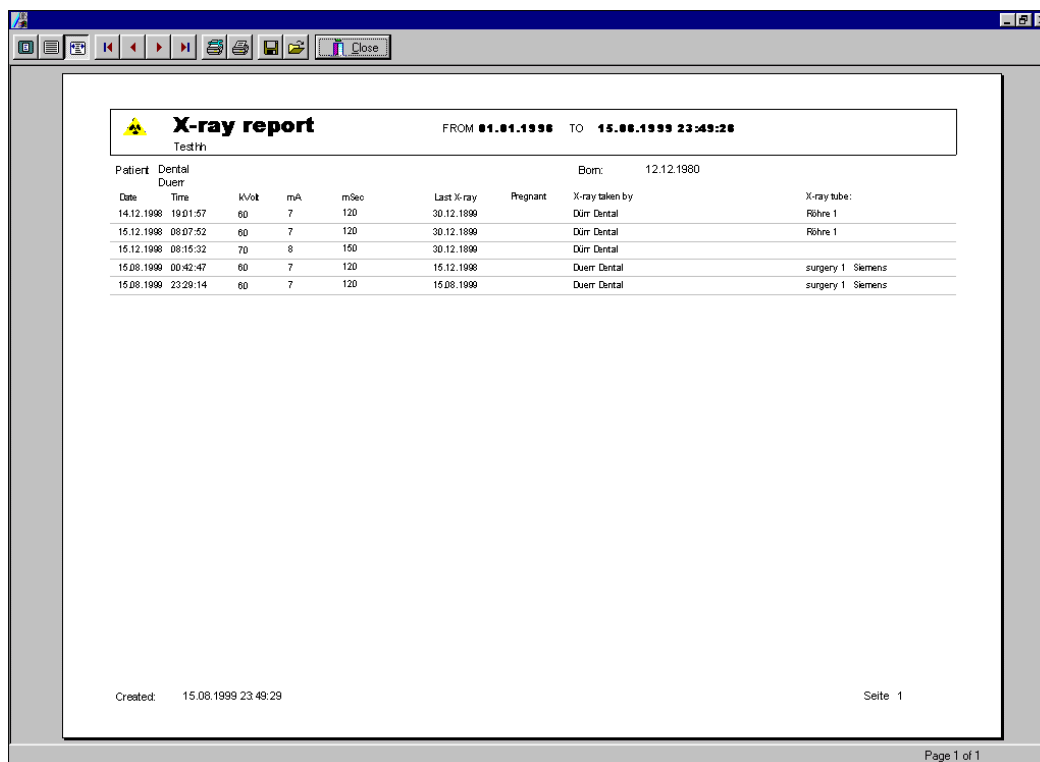
The X-ray report can be printed for a specific time interval. Enter the desired dates. Press the Preview pushbutton to display the X-ray report on the screen.

If the time interval in the dialog is set to *Automatic*, DBSWIN will suggest the last printout date as the *FROM* date and the system clock date as the *TO* date.

This list can be sorted alphabetically by patient name or chronologically.

Additionally, selection can take place according to one or more X-ray appliances where the X-ray station information has been stored during X-ray processing. X-ray treatment without this X-ray station information is always displayed.

Example of an X-ray report



X-ray report FROM 01.01.1998 TO 15.08.1999 23:49:28

Testth

Patient: Derrtal
Duerr

Born: 12.12.1980

Date	Time	kVot	mA	mSec	Last X-ray	Pregnant	X-ray taken by	X-ray tube:
14.12.1998	19:01:57	60	7	120	30.12.1999		Durr Dental	Röhre 1
15.12.1998	08:07:52	60	7	120	30.12.1999		Durr Dental	Röhre 1
15.12.1998	08:15:32	70	8	150	30.12.1999		Durr Dental	
15.08.1999	00:42:47	60	7	120	15.12.1998		Durr Dental	surgery 1 Siemens
15.08.1999	23:29:14	60	7	120	15.08.1999		Durr Dental	surgery 1 Siemens

Created: 15.08.1999 23:49:29

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Pushbutton function overview



Page display: *Zoom to fit / Zoom to 100% / Zoom to page width*



Page display: *First page / Previous page / Next page / Last page*



Printer: *Printer setup / Print*



File: *Save / Load*

The currently displayed X-ray report can be saved to any path and under any file name.
A saved X-ray report can be loaded and displayed.



Preview: *Close*

X-ray Consistency Check (Menu Xray)

See X-ray Consistency Check