Signa ™ LX Release 9.0
Release Notes/Errata

2291042-100 Revision 1(9/01)

Operating Documentation

Chapter 1
Release Notes

Purpose and Scope

This chapter provides additional information that is not available in the current Learning and Reference Guide. This chapter is divided into sections based on applications.

Safety

WARNING: Do not use Projection Images for localization.

CAUTION: All people, patients and others, in the scan room must wear a hearing protection device such as ear plugs.

CAUTION: All patients should be monitored for increased temperature during the scan acquisition. If the patient reports discomfort due to warming, stop the scan.

Scan Prescription

Spin Echo Type-in PSD “T1MEMP”

Flip angle is a programmable field for a Spin Echo pulse sequence if “t1memp” is typed into the PSD Filename type-in field. It must be completed to successfully prescribe a SE acquisition.

TR/Flip Angle Relationship for Optimal T1 Contrast

TR	Optimum T1 Flip Angle
200	100
250	93
300	88
350	83
400	80
450	76
500	73
550	70
600	68
650	65
700	63
750	61
800	59
850	57
900	56

Dynamic R1

The optional Dynamic R1 is used with a 3D FSE pulse sequence if, after Auto Prescan is completed, the R2 value is less than 6. For optimum SNR results with Dynamic R1, make sure that the Receive Gain value, R2, is 14 or higher before proceeding to scan.

Procedure

1. Prescribe a large single slab 3D FSE acquisition and [Save Series] > [Prepare to Scan] > [Auto Prescan].
2. View the R2 value displayed above the Auto Prescan button. If the R2 value is less than 6, then Dynamic R1 can improve the SNR.

2291042-100 Rev. 1 (09/19/01) 37F

3. The current 3DFSE series is highlighted. Copy/Paste it in the RX Manager. Place the cursor in the PSD Name field and type-in "3dfser1".
4. Perform Auto Prescan and view the R2 value. If it is greater than or equal to 14, proceed to [Scan].
5. If the R2 value is 13 or smaller, click [Manual Prescan].
6. In the Manual Prescan window, click and drag the Digital Gain (R2) slider bar to increase the value to 14.
7. Click [Done] to exit the Manual Prescan window.
8. Click [Scan].

Bolus Chasing

Copying and Pasting a SmartStep (Multi-Station) Series

To copy and paste a SmartStep series, follow these steps:

1. Select (highlight) the first station of the arterial series.
2. Click and drag with the right mouse button and select [Copy].
3. Select (highlight) the first station on the venous series.
4. Click and drag with the right mouse button and select [Paste] to paste the arterial series. This places the arterial series at the bottom of the Rx Manager.
5. Prescan the pasted arterial series. This places the venous and mask series appropriately in the Rx Manager.
6. Scan as usual.

Auto Scan in SmartStep

When acquiring a SmartStep scan, auto scan is automatically turned off after the 3-Plane localizer is acquired. You must manually start the next acquisition.

Fluor Triggering (FT MRA)

Real Time Imaging in FT MRA

During the real time imaging portion of the FTMRA acquisition, the NEX is defaulted to 1 and FatSat is turned off to improve the time per frame. Once the 3D acquisition starts, FatSat is turned back on and the NEX you prescribed is used.

SAT Bands in FT MRA

To improve the contrast visualization during a FTMRA acquisition, you can now prescribe explicit SAT bands in Real Time imaging along the S/I direction by setting UserCV 19 to 0. The default SAT band is 8cm in the S/I direction. Seven centimeters will be outside the FOV and one centimeter will be inside the FOV.

For axial planes, the concatenated SAT will be a better choice as it is closer to the imaging slice. You can select concatenated SAT by setting UserCV 19 to 1. This is useful for monitoring contrast in the axial plane for example, carotid and liver imaging. For body MRA, coronal or sagittal planes are often used where fixed S/I SAT is appropriate.

SmartPrep

The manual incorrectly references the tracker volume in SmartPrep as centimeters. The tracker volume (a cross hair cursor) is displayed in millimeters.

Gradient Mode

The zoom gradient is designed for high gradient amplitudes and fast slew rates within a smaller volume than the whole body gradient. The limitations described below help ensure that the zoom gradient is used when it could improve image quality over the whole body mode.

Coils & Planes	Maximum FOV S/I	Maximum FOV A/P	Maximum FOV R/L
All Coils Except CTL All Planes	35	44	44
CTL Coil Sagittal & Sagittal Obliques Frequency= S/I (Not Swapped)	35	44	N/A
CTL Coil Frequency=A/P (Swapped)	Choose Whole Body	Choose Whole Body	N/A

Delayed Enhancement and cardiac PSDs (FastCARD, FGRET, SPIRAL and FIESTA) using the Zoom Mode can have up to a 44cm FOV in all directions.

2291042-100 Rev. 1 (09/19/01) 37F

The table below identifies off center limitations for the Zoom Mode.

	Offcenter FOV Limits for R/L or A/P	Offcenter FOV Limits for S/I
Axials or Coronals	12 cm	N/A
Sagittal	15 cm	N/A
Real Time Imaging	15 cm or use Whole Body	15 cm
Fluoro Triggering MRA	12 cm or use Whole Body	12 cm

Zoom or Whole Body Type-In Mode

In addition to using the pulldown menu, you can now type in Whole or Zoom in the Grad Mode text field. The Whole mode is defaulted on. The images are annotated for Z (for Zoom) or W (for Whole) after the FOV annotation.

Reordering Series in the Rx Manager

Any series in the NEW or INRX states can be rearranged within the Rx Manager. These series can be moved before or after other series in the NEW or INRX state, they cannot be moved before or after series in the ACT or SCND state.

Procedure

1. Click a NEW or INRX series in the RX Manager to highlight it.
2. Click right mouse button and drag to [Cut].
3. Click the series that you want the cut series to appear after. For example, if you want to move the last series in the RX Manager to the next series to be scanned, click the last SCND series. If there is an ACT series in the RX Manager, click the ACT series. You cannot paste a cut series in front of an ACT series.
4. Click right mouse button and drag to [Paste].

Blurring Cancellation and FSE-XL with FSEOPT or FRFSE-XL

There is a User CV, Blurring Cancellation, available with FSE-XL (Fast Spin Echo “Accelerated) or FRFSE-XL (Fast Recovery Fast Spin Echo “Accelerated”). It uses a multiple NEX technique to average signals and thus reduce ghosting artifact. While reducing ghost-like artifacts, it may increase scan time.

Use FSE-XL with FSEOPT (Fast Spin Echo Optimized) or FRFSE-XL with blurring cancellation for breath-hold abdominal imaging when a dual acquisition is required. It uses a sequential slice order that can result in a fewer mis-registration problems that typically occur with interleaved slice order.

Blurring cancellation is most effective when the echo from the center k-space phase encoding represents the middle of the echo train. It has minimum effect when the center k-space echo represents the beginning or end of the echo train.

Since Blurring Cancellation uses multiple NEX, it is not compatible with the following NEX selections: 0.5 NEX and odd NEX if NPW is turned on. Blurring Cancellation is compatible with 1 NEX and 2 NEX with NPW, but image resolution may be degraded. Blurring Cancellation may increase scan time with 1 NEX. When other NEX values are selected, they are not impacted negatively by blurring cancellation.

Blurring cancellation is accessed by selecting FSE-XL and typing in FSEOPT (Fast Spin Echo Optimization) at the PSD Name prompt line or selecting FRFSE-XL from the pulse sequence pop-up menu.

Using the following table for instructions on obtaining Blurring Cancellation for the following PSDs:

PSD	Select from the PSD Screen	Type in PSD
FSE	FSE-XL	FSEOPT
FRFSE	FRFSE-XL	-----
IR	FSE-IR	FRFSEOPT

Classic Imaging Option with FRFSE-XL or FSEOPT

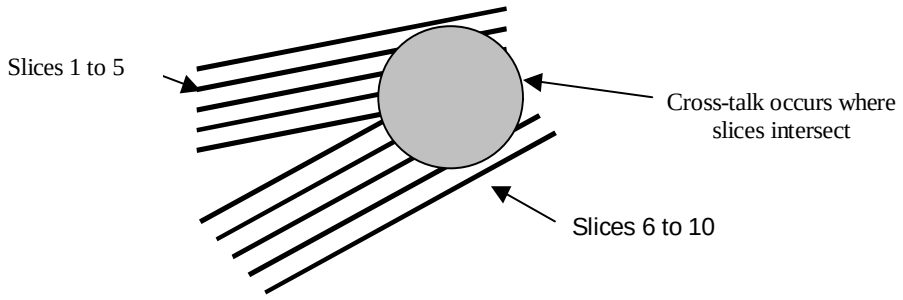
The [Classic] Imaging Option with either the FRFSE-XL or FSE with FSE OPT pulse sequences can be used to potentially reduce image artifacts in the spine or pelvis. This imaging artifact is created when phase and frequency are swapped. "Classic" (not to be confused with "Classic Fat Sat") derives its name from the original implementation of the basic spin echo sequence. It is the inversion of the amplitude of the slice selection gradient during the 90 degree excitation pulse relative to the amplitude of the slice selection gradient(s) during the 180 degree refocusing pulse(s). However, chemical shift (or shimming) differences can also cause incomplete refocusing of off-resonant signals and image artifacts may still be seen. Since [Classic] is sensitive to the center frequency, performing manual prescan will insure proper center frequency.

2291042-100 Rev. 1 (09/19/01) 37F

Graphic Prescription

Multi-Slice, Multi-Angle Capability

You can now prescribe multiple groups of slice locations, each with a unique tilt angle (obliquity) on all GE Signa® MRI systems. This capability is referred to as Multi-Slice, Multi-Angle, or MSMA. MSMA is available for any 2D FSE, Spin Echo, and Multi-Planar Gradient Echo sequences. When MSMA is used, cross-talk can occur in areas where slice groups intersect one another. The data for multiple groups are generally acquired in an interleaved slice acquisition order. For example, two groups of five slice locations are prescribed and the groups intersect one another. The first group contains image numbers 1 to 5; the second group, 6 to10. Interleaved slice acquisition order will result in the image data being gathered as follows: 1/3/5/7 and 9 are gathered first, then the system goes back and collects data for 2/4/6/8 and 10. Collecting the data in this manner will result in cross-talk where groups intersect. Care should be taken to avoid overlapping groups on top of the anatomy of interest.



MSMA with FSE-XL

If multiple slices with multiple angles are acquired using a FSE-XL pulse sequence, a user CV becomes available. Selecting “1” (Sequential) results in a Multi-Slice Multi-Group (MSMG) acquisition. Selecting “0” (Interleaved) results in a Multi-Slice Multi-Angle (MSMA) acquisition. Interleaved is the default selection.

MSMA means that all prescribed slices are acquired within a single acquisition and MSMG means all data is collected for the slices in one group before the system goes on to the next group. During a MSMG acquisition, there is a time interval of one TR period from the end of one group acquisition to the start of the next group. This allows spins to return to a state of equilibrium, thus reducing the possibility of cross-talk. Three angled groups of slices therefore results in three separate acquisitions.

MSMA is compatible with FSE-XL, GRE, and SE pulse sequences. Note that artifacts ranging from dark banding to low SNR to tissue contrast changes are likely to occur when MSMA angles intersect. To avoid these cross-talk artifacts, do

not intersect the slices within the anatomy of interest. Note that Sequential Gradient Echo/and Sequential Fast GRE/SPGR sequences will not exhibit this cross-talk because slices are acquired one at a time.

See the Signa LX/i Beginning MRI Imaging Manual, Direction #2292261-100 for more information on Graphic Prescription.

Fallback Key

The fallback key is no longer available. To approximate the fallback key functionality, on the Graphic Prescription screen:

1. Select the center slice (or the slice identifying the area of interest)
2. Highlight the window.
3. Select [Reset Center].

Alternatively, use the 3-Plane Localizer and explicitly set the FOV by placing the cursor on the area of interest.

SPGR

Dual SPGR is no longer a type-in PSD. Instead:

- select Out Of Phase TE
- then select 2 echoes on the Timing screen
- Finally, select SPGR on the Pulse Sequence screen

DW-EPI

You can now perform a dual-spin echo diffusion weighted EPI acquisition. On the User CV screen, change CV 12 - Dual Spin Echo Dif. from 0 (off) to 1 (on). When on, an additional refocusing pulse is applied in the diffusion sequence before the readout. This additional pulse reduces the eddy currents and minimizes image distortion; however it will increase the minimum TE by 10-14 ms.

Spectroscopy

CSI Grid

The CSI grid noted on the CSI spectroscopy screen and in the manual is not available for this release.

2291042-100 Rev. 1 (09/19/01) 37F

Viewer

Reference Image

In addition to the features listed in the Signa LX Release 9.0 New Features Manual (2298979-100) manual regarding Reference Image, you may also use the Scroll button.

Partial Annotation Under User Preferences

Two annotation fields have been added to the Partial Annotation selection accessed from the User Preference window:

1. Date of Birth which is located in the upper right corner of the viewport.
2. Slice thickness and slice spacing which is added to the lower left corner of the viewport.

Tick Marks Under User Preferences

The Tick Mark selections from the User Preferences window have changed to Vertical or Horizontal rather than Shown or Hidden.

Browser Sort Feature

The Sort function in the Browser menu bar allows two sorting methods for Series:

- Sort by PPS status (Complete or Defer).
- Sort by Series number.

Accelerator Commands

In addition to the commands listed in the Signa LX Release 9.0 New Features Manual (2298979-100) the following accelerator commands are available:

Functionality	Accelerator Command
Angle	ang
Ellipse	el
Rectangle	rect
Screen Save	scnsave
Scroll	scroll

Protocol Desktop

Reorganizing Site Protocols

Site protocols in the Protocol Desktop can now be reorganized within a protocol category (head, neck/cervical, chest/thoracic, upper extremity, abdomen/lumbar, pelvis or lower extremity). To reorganize your site's protocols within a category:

1. Click Protocol Desktop Icon.
2. Click [Protocol Rx].
3. Click [Site] library from patient protocol area.
4. Click the humanoid region you wish to reorganize.
5. Select (highlight) the protocol you wish to reorder.
6. Click and drag with the right mouse button and select [Protocol Cut].
7. Click [Confirm] to cut the selection from the pop-up screen.
8. Select (highlight) the protocol that the cut protocol will be placed below.
9. Click and drag with the right mouse button and select [Protocol Paste].
10. Type in a new name for the protocol.
11. Click [Accept] to save the reordering of this protocol.

2291042-100 Rev. 1 (09/19/01) 37F

HIS/RIS Protocol Text Field

If you have a protocol associated with a patient in the HIS/RIS database, loading the patient information into the Signa database will automatically insert the protocol name in the Protocol Text field on the Protocol page.

Protocols

Modify all your FRFSE and Dual SPGR protocols to use the appropriate PSD selections from the PSD screen rather than the type-in PSDs.

Editing Protocols

If you need to edit patient or prescription information you must select the patient from the HIS/RIS schedule and allow it to download, then pull down a protocol. If one is already entered, click on new series, then click on [Full Information]. You can now edit the patient information.

High Order Shimming

Overview

The High Order Autoshim feature is designed for optimizing the magnetic field homogeneity on a patient-by-patient basis over a selected region of interest. The shimming is achieved using the gradient coils and five high order resistive shim coils. This feature is designed to improve the local field homogeneity for fat suppression, spectroscopy, spiral scanning and functional imaging applications.

Running High Order Autoshim

This section describes the basic routine for in-vivo high order shimming with a patient, and provides a brief explanation of the options available in each screen.

1. Choose one out of the four series from the GE/other/HighOrderAutoshim protocol. The choice depends on the expected maximum FOV (<32cm or <48cm) and the Gradient coil (WB for WHOLE-BODY or ZM for ZOOM) to be used during clinical scanning. This HOS scan should be run just prior to the actual main series, and at the same bed location. A change in the Gradient coil used and/or bed location for other series with the same patient may require a rerun of the HOS scan.
2. Accept the series and run the scan without changing any parameters.
3. When the scan completes, the High Order Shim processing window will come up automatically.
4. When the reconstruction is complete, the images will be displayed in the basic screen, as in figure 1.

2291042-100 Rev. 1 (09/19/01) 37F

Selecting a region of interest (ROI)

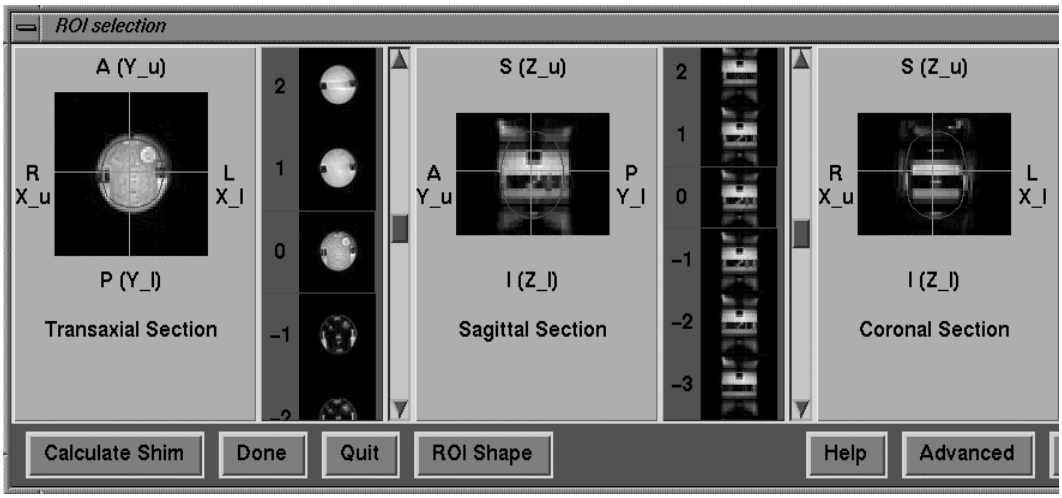


Figure 1: Magnitude Images in the basic screen

To select an ROI, you can select any slice from the corresponding scrollbar in each direction. You may also select the slice by using the two green intersection lines on each of the three images (Axial, Sagittal & Coronal). The selected ROI may be either rectangular or elliptical.

You may drag and resize the ROI on any image. The ROI displayed on the other two images will be updated accordingly.

In the basic screen, you may select any of the following features, by clicking on the appropriate button:

- **ROI Shape** - to select between rectangular and oval shape.
- **Green lines** - to off-center the intersection between all three displayed images.
- **Calculate Shim** - to run the shim values calculation with the current ROI selection.
- **Done** - to download the calculated values to the Shim supply and exit.
- **Quit** - to exit without download.
- **Help** - has instructions for manipulating the ROI and the green lines, as follows:
- **Phase / Magnitude Maps** - to toggle between displaying phase or magnitude images.
- **Advanced** - to open the ADVANCED window for additional choices, see below for details.

1. Manipulate the ROI on the images so that it occupies the desired region.
2. Click on Calculate Shim. Now the optimum values to improve the magnet homogeneity within the specified ROI volume are calculated. To view the details of the calculation, go to the Advanced screen.
3. When the calculation is complete, the Done button will highlight.
4. Click on Done. At this point, the new values for the central frequency and linear shims are transferred to the system, and the five high order shim currents are downloaded to the shim supply channel by channel.
5. Once all the downloads are complete, the High Order Shim basic screen will close.
6. If a problem exists with the download, use the Advanced screen log window to view the details, or review the log file generated in /usr/g/service/log/ho.log.

NOTE:

- Change ROI shape by clicking on 'ROI Shape' button, select either "rectangle" or "oval."
- To move the ROI, place cursor inside the ROI and drag.
- To resize the ROI, place cursor outside the ROI and drag.
- To move the intersecting planes one by one, place cursor on one of the green lines outside the ROI and drag.

Features of the Advanced screen

Although its use is not restricted, the Advanced screen will typically be used for spectroscopy.

To review the shim calculation results, save a shim-set of data, recall a previously saved set, manually enter values, or remove one or more of the shim channels, click on Advanced in the basic screen, as seen in figure 1. The Advanced screen as seen in figure 2 appears.

2291042-100 Rev. 1 (09/19/01) 37F

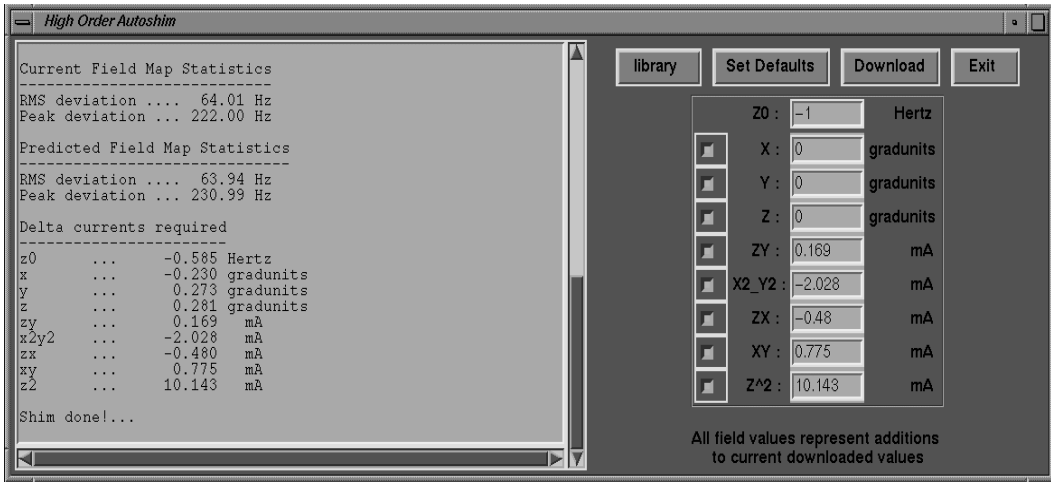


Figure 2: Advanced screen

In the Advanced screen, you may select any of the following features by clicking on the appropriate button:

- **Log window** - to review a log of the shim calculation and download details. An estimate as to the quality of the improvement after the channels are updated can be seen by looking at the change in RMS deviation between the Current and Predicted Map statistics.
- **Library -** to open the LIBRARY window, to either save a shim-set or recall a previously saved one. See below for details.
- **Set defaults -** to select a set of predefined shim values, corresponding to resetting all values to the original system values.
- **Download -** to load the current set of shim values to the Shim supply.
- **Exit -** to return to the basic screen window.
- **ON/OFF** for each shim [small button alongside each channel, default is ON]- to remove a linear and/or high order shim channel from the current shim set, i.e. not to use it for updating the system or downloading to the Shim supply. More than one can be removed for this purpose.
- **Field -** difference value to be added to this channel, entered automatically after use of Calculate Shim, or manually using this screen.
- **Field range of value** - in table 2-1. These are suggested ranges for each channel based on expected changes in field homogeneity, and are not necessarily typical values.

The numbers in each channel are add-on values to whatever is already in that channel. Any positive or negative value within the ranges defined is valid.

Channel	Units	Lower limit	Upper limit
Zo	frequency in Hertz	-500	+500
X	linear shim in gradunits	-20	+20
Y	linear shim in gradunits	-20	+20
Z	linear shim in gradunits	-20	+20
ZY	**high order shim in mA**	- 500	+ 500
$X^2\_Y^2$	**high order shim in mA**	- 500	+ 500
ZX	**high order shim in mA**	- 500	+ 500
XY	**high order shim in mA**	- 500	+ 500
Z^2	**high order shim in mA**	- 500	+ 500

Table 2-1: Suggested range of valid values for each channel

Features of the Library screen

The library feature will typically be used if you save data related to phantoms. To save a shim-set of data, recall a previously saved set, or manually adjust a previously saved set, click on Library in the Advanced screen, as seen in figure 2. The Library screen as seen in figure 3 appears.

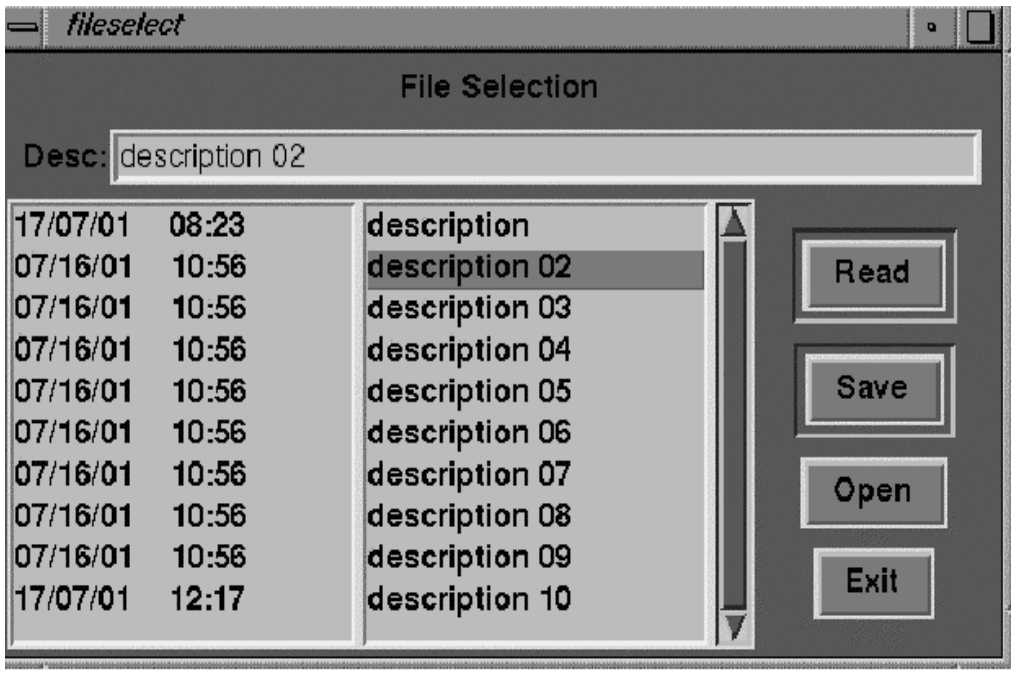


Figure 3: Library screen

2291042-100 Rev. 1 (09/19/01) 37F

In the Library screen, you may select any of the following features by clicking on the appropriate button:

- **Desc -** to give the new file a description, which will appear in the list in place of the current description line. The first line is reserved for the default linear shim values.
- **Read -** to read the current set of shim values from the Shim supply and linear shims, and present the difference between these and the highlighted set in the Library in the Advanced screen.
- **Save -** to save the currently displayed set of shim values to the selected description file.
- **Open -** to open an editor with a previously saved set of shim values, which are afterwards read in as the difference between these values and the currently downloaded set.
- **Exit -** to return to the Advanced screen.

Starting Your Mobile System

The procedure to power on your Mobile system has changed slightly from the steps in your Volume 1 of your Learning and Reference Guide (2292261-100).

Once your Mobile sites have been configured, start your system this way:

1. Locate and press the **On/Off** Power button on the Octane component.
2. Once the Login screen appears, type in `mobile` for the login name and `adw2.0` for the password.
3. Select a hospital/facility from the list at the Mobile Site Setup Window.
4. Click pm the Mobile Site Setup window.
5. Click [Activate site] on the Mobile Site Activation window.
6. Click [Done] on the Mobile Site Setup window.
7. Click [Yes] on the Exit Mobile GUI menu.
8. Click [Reboot] and then click [Enter] on the Login screen.
9. Click [Signa] and the click [Enter] on the Login screen.
10. Type in `adw2.0` as the password.

    The system displays the selected facility's information.

2291042-100 Rev. 1 (09/19/01) 37F

Chapter 2
Errata

Purpose and Scope

The chapter identifies known problems or issues in this release of the system. The chapter is divided into sections based on applications. In addition, this chapter provides descriptions of the situation in “What Happens” and then “Workarounds” to resolve the problem.

Scan Prescription

What Happens: If the system is paused during an Inversion Recovery “type” of acquisition, image artifacts maybe created on the odd or even images.

Work Around: Do not pause an Inversion Recovery “type” (for example; Inversion Recovery, IR Prepared, FLAIR, FSE IR or STIR) acquisitions.

What Happens: The Cardiac Vascular Imaging pulse sequences FastGRE ET (FGRE-ET) may exhibit ghosting on the bottom half of the center slice images.

Work Around: The ghosting can be reduced by turning on Echo Tuning Mode (CV3) and Manual Echo Alignment (CV6) on the User CV page. Please refer to your Signa 9.0 New Features manual for information on these CVs.

What Happens: The fat saturation pulse for FGRE-ET will not be effective for low receive bandwidth protocols.

Work Around: The fat saturation pulse in FGRE-ET is applied once every slice and will give a much better fat suppression levels if a minimum TR and a high receive bandwidth (125kHz) is used.

What Happens: A 2D Fast Vascular PC may exhibit severe ghosting on the edges of the FOV if the number of cardiac phases are set to [Auto].

Work Around: Do not set the cardiac phases to [Auto] but explicitly enter the cardiac phases to the number of phases as was determined by the [Auto] option.

What Happens: A Copy and Paste of the 4 station 12 series meta series yields all arterial series no matter from what meta series (mask, arterial, or venous) they were copied. Arterial means all series are labeled with "A" in the RX manager.

Work Around: Any multi-station series when it is in the NEW state in the Rx Manager has to be an arterial prescription. So if the you cut or copy and pastes a mask or venous prescription, it will generate only an arterial prescription. Mask and venous are automatically generated after all arterial stations are prescanned.

What Happens: Smart Step multi-station series can not be viewed or edited once saved to the Rx Manager.

Work Around: To avoid set up issues for Smart Step multi-stations, viewing or editing is not allowed. Represcribe your Smart Step multi-station series.

What Happens: If localizers are scanned inferior to superior for a Smart Prep scan, the subsequent mask and arterial series are added to the RX Manager in the incorrect order. For example:
Added incorrectly in this order:
2 A/1, 2A/2, 2M/1, 2M/2, 2M/3, and 2A/3
Should have entered the series in this order:
2M/1, 2M/2, 2M/3, 2A/1, 2A/2, and 2A/3

Work Around: To correct for this incorrect order, clicking Auto Step twice, once before mask and once after, this causes the series to be scanned in the correct order.

What Happens: Auto prescan may fail if the receive bandwidth is between 2.0 kHz and 8 kHz, the maximum number of slices for an acquisition is chosen and the minimum TR is used.

Work Around: To avoid an Auto Prescan failure, do one of the following:

- Increase the receive bandwidth to greater than 8 kHz.
- Don't use the maximum number of slices.
- Increase the minimum TR.

What Happens: When prescribing a 28 slice, slightly oblique, 3D Fast SPGR series; your acquired images may exhibit some slice wrap.

Work Around: Increase the angle or number of slices and rescan.

What Happens: The scan timing panel for TE with a FRFSE protocol with blurring cancellation will indicate the minimum TE. This is the average of the first two physical echoes not the time of the first possible echo. This will cause the advised maximum TE to appear to be shorter than expected for the given echo train length.

Work Around: None, the resultant image will be annotated with the correct TE.

What Happens: The scan timing panel for TE with a Single Shot Fast Spin Echo version 2 (SSFSE) protocol will provide an erroneous maximum TE. In addition, the system will prompt you to enter a TE that is not in the acceptable range for this protocol.

Work Around: Lower your TE in increments of one until a TE is accepted by the system.

What Happens: An existing site protocol with the new 9.0 SSFSE version 3 will now have a new fields for TR and will no longer have a maximum TE option. The SSFSE protocols will not download without first updating these protocols.

Work Around: Revise all existing SSFSE protocols for the TE and TR fields.

What Happens: When you [Copy/Paste] in scan a 2D Fast TOF SPGR sequence with IR Prepared, the system will blank the Prep Time and the TR fields.

Work Around: Refill in the fields in this order: TR and then Prep Time.

What Happens: When you [Copy/Paste] a Fast Card sequence and change the plane's orientation, the tagging parameters are cleared.

Work Around: Tagging parameters are always cleared with a [Copy/Paste]**,** reselect the Tag and select for the new plane's orientation.

What Happens: Regardless of whether the localizer is a single or dual oblique, when multi-slice, multi-group axial oblique images are prescribed with a relatively small angle, the number of slices per acquisition is decreased. This can result in an increase in number of acquisitions for the protocol. For example, if multi-slice, multi-group axial oblique images are prescribed from a single oblique sagittal image, the following maximum slices/acquisition can be observed:

- 8 slices with 270 degrees angle (no oblique)
- 9 slices with 273 degree oblique
- 10 slices with 280 degree or greater oblique

Work Around: Increase the angle of at least one of the axial groups to acquire the desired number of slices per acquisition.

What Happens: When using Auto-N coil, you may see signal drop off or part of the image missing at the ends of the FOV in the superior and interior direction.

Work Around: It is recommended when using Auto N-coil for the CTL coil to select [TOP], [MID] or [BOT] for the coil (either USA or CTL) and 1 for Auto on the User Control Variables screen. This should improve the drop off issue but may not eliminate it entirely.

What Happens: A coronal Echo Planar Imaging (EPI) acquisition is acquired with a 128x128 matrix. When the parameteric correlation coefficient images are overlayed on an anatomy (SPGR image) the images show loss of signal along the occipital cortex of the brain. If the EPI is a diagnostic scan, then this signal loss artifact makes the images unusable.

Work Around: Acquire the images in the axial plane with a 64x64 matrix. Matrix values $\geq$ 128 will cause image distortion.

What Happens: Certain EPI-GRE or EPI-SE protocols prescriptions may result in an “AP” error being logged and recon aborting.

Work Around: Avoid EPI-GRE or EPI-SE protocols with high phase matrix resolution, high number of shots and minimum TE combinations, especially 16 shots with a phase matrix higher than 64.

What Happens: If a multi-phase, gated, GRE EPI prescription is not completed in a specific order the system will incorrectly display the wrong maximum number of phases.

Work Around: Complete a multi-phase, gated, GRE-EPI prescription in the following order:

1. Complete all Patient Information parameters.
2. Complete all Patient Position fields.
3. Complete all Imaging Parameters fields and select Gating as an Imaging Option.
4. Complete all Scan Timing fields.
5. Complete all Acquisition fields.
6. Complete all Scan Range fields.
7. Open Graphic RX and prescribe slice locations.
8. Open Gating window and complete all fields including # of phases. Follow the rule that the # of phases/slices must equal 1, 2, or 3.

What Happens: [None] key in Imaging Options for T1Flair does not turn off any of the options.

Work Around: [None] key is not available for T1Flair’s imaging options. The valid imaging Options are Tailored RF, Sequential, and Variable Bandwidth. These are always defaulted on and are grayed out.

What Happens: If a T1Flair is imaged with Phase Correction selected, the images will exhibit high phase ghosting/ringing and a smearing effect across the image.

Work Around: Turn off Phase Correction for ALL T1Flair images.

Graphic Prescription

What Happens: The graphic prescription lines on occasion may change color making it difficult to see the graphic prescription lines.

Work Around: Press and hold the Shift key and select the [Accept] key on the Graphic Rx screen. Reselect the Graphic Rx and the lines will display correctly.

What Happens: If IVI is running in the background while setting up a Graphic Prescription or the Sat bands, the system performance may slow down and unexpected behaviors may occur with either Graphic Prescription or the Sat band set up.

Work Around: Pause IVI while in the Graphic Prescription or the Sat screen.

What Happens: Images prescribed from a 3 plane localizer that have large left or right offsets may not be at the prescribed location.

Work Around: For a large left and right offset, use a different series as your localizer image.

Spectroscopy

What Happens: If you have the multi-nuclear spectroscopy option and are doing a fluorine spectroscopy exam, it may fail to download.

Work Around: Download a phosphorous sequence before downloading the fluorine spectroscopy exam. This step is not necessary if the previous acquisition was a fluorine exam and the system has not been reset or rebooted.

What Happens: The spectroscopy PDS presscsi, steamcsi, and prose (which includes probe-p, probe-s, and probeSI) have been modified to allow the temperature to be saved in a protocol in user CV 15. This CV previously contained a steady state activation flag that was removed, however previously saved protocols will still have this value set (CV15) to 0.

Work Around: If your Field Service engineer has run the protocolup script (which updates protocols), User CV 15 will be set to the default body temperature of 37C and everything will be correct. However, if the script was not run, you will notice a shift in your spectra (peaks not where you would expect them to be). Contact your Field Service engineer to run protocolup. In the meantime, copy down the protocol and re-enter the values from scratch.

Message Window

What Happens: An erroneous message appears in the message window of Signa 9.0 systems: “Unable to open Host/VM SampleData dat file!”.

Work Around: Please ignore this erroneous message, it does not effect your system.

Display

What Happens: Selecting the Reference Image view port and requesting paging using the Accelerator Line will not page the Reference Image but will page the main view port image.

Work Around: You can not page a Reference Image.

What Happens: An exam that contains multiple exams may not post the Reference Image correctly. For example, a multiple exam with a cervical spine with sagittal and oblique axials plus a lumbar spine with sagittal and oblique axials. This exam may display as the Reference Image for the lumbar spine axials the cervical spine axials *not* the sagittal lumbar spine.

Work Around: At the accelerator command line, type in the following command to change ALL reference images to the desired reference image RIA #(series number) ##(image number). For example, RIA 5 7. This may not work for all cases.

IVI

What Happens: The speed and performance of IVI with high resolution acquisitions may be reduced.

Work Around: None.

What Happens: IVI in interactive mode may have very low resolution image while turning and rotating the volume of interest.

Work Around: Stop rotating and turning the data set, a full resolution image will display.

What Happens: IVI creates a corrupted VOI after the [Apply Cut].

Work Around: Rotate the VOI data using the rotate handles to eliminate the corrupted data.

Reformat

What Happens: Curved reformat will not trace in the second, third or fourth quadrants as in previous releases. Once the trace is halted, the trace will not restart.

Work Around: Use the upper left hand corner to perform the curved reformat. Use the second, third and fourth qaudrants to display the axial, sagittal and coronal views.

Functool 2000

What Happens: The Functool CSI's color map changes the scale dependant on the signal available in the image range (metabolites) being viewed. The problem is emphasized on the lactate and lipid map and may give the appearance that lactate is present. **Diagnoses should not be made on the basis of color maps alone! The spectra should always be consulted for diagnoses.**

Work Around: Widen the scale of the image using the color slide. **The color maps should only be viewed in conjunction with the spectra to provide a diagnoses.**

Archive

What Happens: A FRFSE-XL image acquired on Signa Select Software can not be displayed on a Signa LX and MR/i 8.3 M5 system.

Work Around: Consult your local field service engineer for the appropriate IOS patch to resolve this inability to display a FRFSE-XL image on a Signa LX and MR//i 8.3 M5 system.