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1- OVERVIEW

This document details the procedure for checking body, head and surface coil signal-to-noise values.

Note

Proprietary procedures (SPT and TLT) are available for GE use and to customers with a valid Advanced Service Package Limited License. For Head and Body, refer to SPT Full Test Mode procedure. For Surface Coils, refer to the TLT procedure.

In this measurement, two back-to-back scans are performed. The SNR Tool uses an ROI that covers 80% of the phantom image, and measures a mean pixel value minus 1024. The result is the *signal value*. The two images are then subtracted to obtain the *noise image*. The 80% ROI is placed on the noise image and the standard deviation, divided by the square root of two, is the *noise value*. The signal-to-noise ratio (SNR) is the signal divided by the noise. No image artifacts are allowed in any SNR scan.

SNR reflects primarily the state of the RF sub-system of the scanner, but as the gradients are used to spatially isolate the slice/volume, it can be used in the ***TwinSpeed*** scanner to check for comparative performance between the different gradient coils. It is important to use the same GradMode throughout any test section.

2- BODY SCANS

2-1 Tools Required

Note

The Body SNR Sphere Phantom, 46-265635G4, is not provided with the System. If the Body SNR sphere is needed, the customer must order it. A Body Loader is provided with the system.

- Body SNR Sphere, 46-265635G4
- SPT Body Loader, 2135652-2, or Long Body Loader, 46-287902G1

2-2 Initial Conditions

- No image artifacts
- System Gain Calibration complete
- Gradient Calibration complete and in spec

2-3 Body Scan Procedure

1. At the operator workspace, select the scan icon  in the desktop control panel.

2. If necessary, exit out of any previous exams by selecting **[End Exam]**.

3. Click on **[New Pt]** and enter the following:

   Id: **geservice**
   Name: **snr check**
   Weight (lb.): **111**

Note

On the *Patient Information* screen, up to 32 characters can be typed in the Exam Description field as comments. On the *Patient Position* screen, up to 29 characters can be typed in the Series Description field as comments. (The comments are displayed on the Report Header Info screen.)

CAUTION

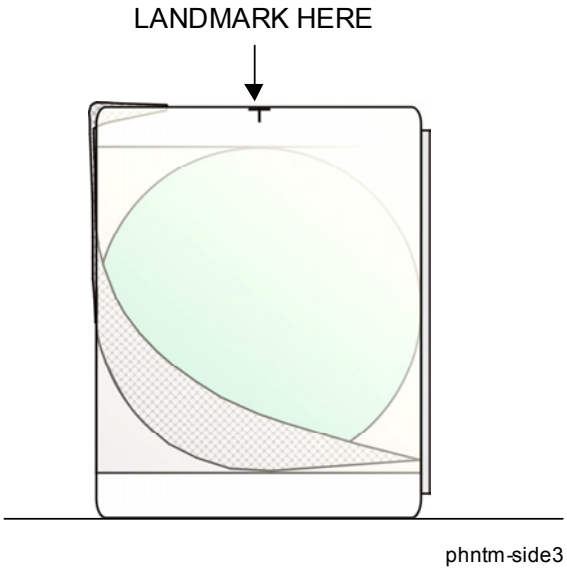
Possible equipment damage. Completely remove the Quad Head Coil from the cradle before performing any body scans. Failure to do so may damage the Head Coil T/R Network.

4. Remove the head coil, if present, from the cradle.

WARNING!

POISON HAZARD! THE PHANTOM CONTAINS NICKEL CHLORIDE, A SUSPECTED CARCINOGEN. DO NOT INGEST. DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO STATE AND FEDERAL REGULATIONS.

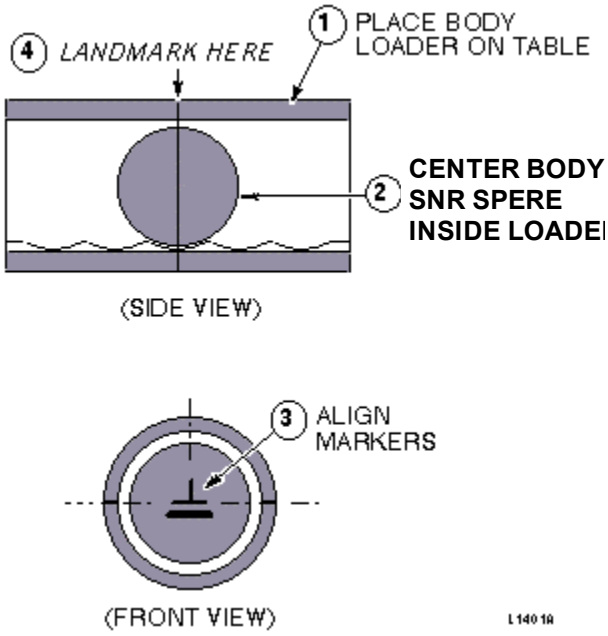
5a. **Setup using SPT Loader:** Position the SPT body loader and body SNR sphere on the table and landmark per Illustration 2-1A. Check the temperature indicator on the SNR sphere. Make sure that the temperature is 22° C ± 2° C before starting the procedure.



SIDE VIEW

SPT BODY LOADER AND BODY SNR SPHERE PHANTOM SETUP
ILLUSTRATION 2-1A

5b. **Setup using Long Body Loader:** Position the body SNR sphere in the center of the long body loader and landmark per Illustration 2-1B. Check the temperature indicator on SNR sphere. Make sure that the temperature is 22° C ± 2° C before starting the procedure.



LONG BODY LOADER AND BODY SNR SPHERE PHANTOM SETUP
ILLUSTRATION 2-1B

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

6. At the operator workspace, set Patient Protocols to **Service**.

7. In the Protocol field, type **o.13.1** (o=Other, 13=protocol number, 1=series number) **<Enter>**. For ***TwinSpeed***, set the **GradMode** to the desired selection.

   or

   Click on "Other" and select protocol **13** and series **1** from the menu, then click on **[Accept]** to load the SNR Check (Body, Axial) protocol. For ***TwinSpeed***, set the **GradMode** to the desired selection.

***Non-proprietary** procedure:*

At the operator workspace, prepare the system for an SNR Check (Body, Axial) scan using the scan protocol (**o.13.1**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

8. Press MOVE TO SCAN. **Allow phantom solution to settle for 20 minutes before starting scan**.

   Note

   SNR scans are particularly susceptible to flow artifacts. Artifacts appear as ovals or swirls in phantom image on subtracted image. They will cause excessively high noise measurements. If a problem exists, allow the phantom to settle for an additional 15-20 minutes and rescan using the same settings.

9. Click on **[Autoview]**, just below the Autoview image display screen; your images will be displayed automatically.

10. Click on **[Save Series]**.

11. Click on **[Auto Prescan]**. After prescan, check the R_1 value. R_1 must equal 11 to get valid results. Record R_1, R_2, TG, and system frequency values in the Data Sheet at the end of this document, *Body SNR Data.* If R_1 does not equal 11, some of the items to check are the following:

    a. Check for proper cable length to preamp.

    b. Ensure that GRADCAL has been performed.

    c. Ensure that slice thickness is within specification.

    d. Download TPS again, then on the **Service Desktop** click on **[Reset TPS]**. Repeat steps 1 through 10.

12. Click on **[Scan]**. After scan #1 is complete, click on **[Scan]** again (two back-to-back scans).

13. After the series #1 back-to-back scans are complete, click on **[New Series]**.

*The following two steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

14. In the Protocol field, type **o.13.2** (o=Other, 13=protocol number, 2=series number) and press **<Enter>**. For ***TwinSpeed***, select the same **GradMode**.

    or

    Click on "Other" and select protocol **13** and series **2** from the menu, then click on **[Accept]** to load the SNR Check (Body, Sagittal) protocol. For ***TwinSpeed***, select the same **GradMode**.

***Non-proprietary** procedure:*

At the operator workspace, prepare the system for an SNR Check (Body, Sagittal) scan using the scan protocol (**o.13.2**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

15. Click on **[Save Series]**, then **[Prepare to Scan]**.

16. **[Auto Prescan]**. After prescan, check the R_1 value. If R_1 does not equal 11, refer to step 11 for items to check. Record R_1, R_2, TG, and system frequency values in Data Sheet 1.

17. Click on **[Scan]**. After the first scan of series #2 is complete, click on **[Scan]** again (two back-to-back scans).

18. After the series #2 back-to-back scans are complete, click on **[New Series]**.

*The following two steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

19. In the Protocol field, type **o.13.3** (o=Other, 13=protocol number, 3=series number) and press **<Enter>**. For ***TwinSpeed***, select the same **GradMode**.

    or

    Click on "Other" and select protocol **13** and series **3** from the menu, then click on **[Accept]** to load the SNR Check (Body, Coronal) protocol. For ***TwinSpeed***, select the same **GradMode**.

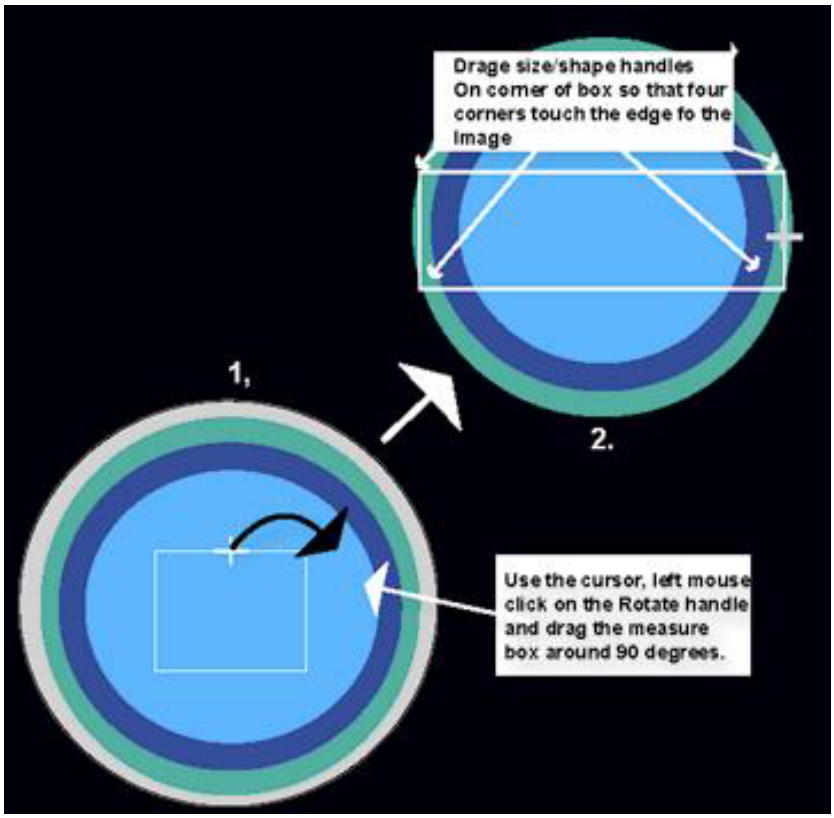
***Non-proprietary** procedure:*

At the operator workspace, prepare the system for an SNR Check (Body, Coronal) scan using the scan protocol (**o.13.3**) shown in the "Service Protocols" procedure on the service methods CD-ROM.

20. Enter the anterior offset for Scanning Range start/end location. Find the offset as follows:

a. Click the  (Image Browser) icon. When the browser is displayed, click **[Viewer]**. Display the image of the axial scan (Series 1).

b. Click **[Measure],** then select the rectangular cursor tool. Rotate the cursor box 90 degrees clockwise by dragging the rotation handle until the handle marker is placed on the display's right side. See Illustration 2-2.



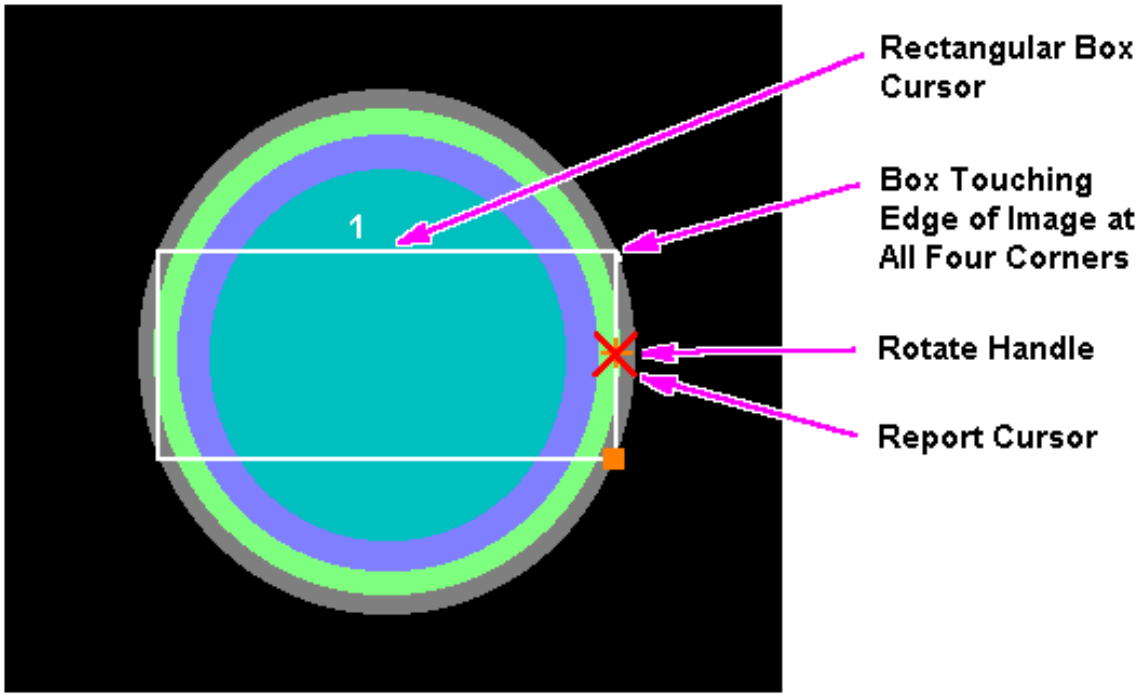
FINDING CENTER OF IMAGE - ROTATED BOX CURSOR
ILLUSTRATION 2-2

c. Adjust the rectangular cursor size, dragging the size/shape handle, so that all four corners touch the edge of the image.

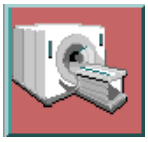
Note

A horizontal rectangle provides more accuracy in the horizontal direction.

d. Click **[Measure],** then select the (report cursor) tool. Click the rectangle created in step c, then place the report cursor on top of the rotation handle of the rectangular cursor box. Read the A/P location. See Illustration 2-3.



FINDING CENTER OF IMAGE - REPORT CURSOR
ILLUSTRATION 2-3

e. Click the  (scan) icon. In the *SCANNING RANGE* area, enter that value for the A/P Start and End values (anterior offset) of the coronal scan.

21. Click on **[Save Series]**, then **[Prepare to Scan]**.

22. Click on **[Auto Prescan]**. After prescan, check the R_1 value. If R_1 does not equal 11, refer to step 11 for items to check. Record R_1, R_2, TG, and system frequency values in Data Sheet 1.

23. Click on **[Scan]**. After the first scan of series #3 is complete, click on **[Scan]** again (two back-to-back scans).

24. For analysis, see Section 5- *SNR Image Analysis*.

3- HEAD SCANS

3-1 Tools Required

Note

The Head SNR Sphere Phantom, 46-265826G3, is no longer provided with the system. If the Head SNR sphere is needed, it must be ordered by the customer, using the 46# identifier. The Head Loader, 46-287899G1, is provided with the system.

- Head SNR Sphere, 46-265826G3
- Head Loader, 46-287899G1

3-2 Initial Conditions

- No Image Artifacts
- System Gain Calibration complete

3-3 Head Scans Procedure

1. At the operator workspace, select the scan icon in the desktop control panel.

2. If necessary, exit out of any previous exams by selecting **[End Exam]**.

3. Click on **[New Pt]** and enter the following:

   Id: **geservice**
   Name: **snr check**
   Weight (lb.): **111**

   Note

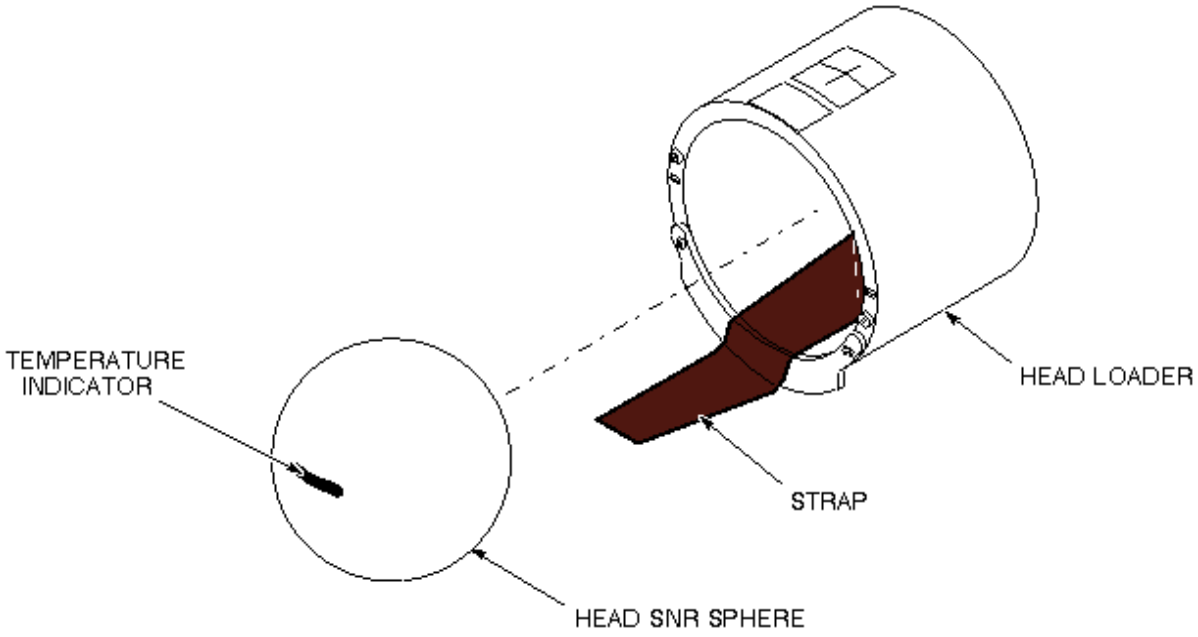
   On the *Patient Information* screen, up to 32 characters can be typed in the Exam Description field as comments. On the *Patient Position* screen, up to 29 characters can be typed in the Series Description field as comments. (The comments are displayed on the Report Header Info screen.)

   WARNING!

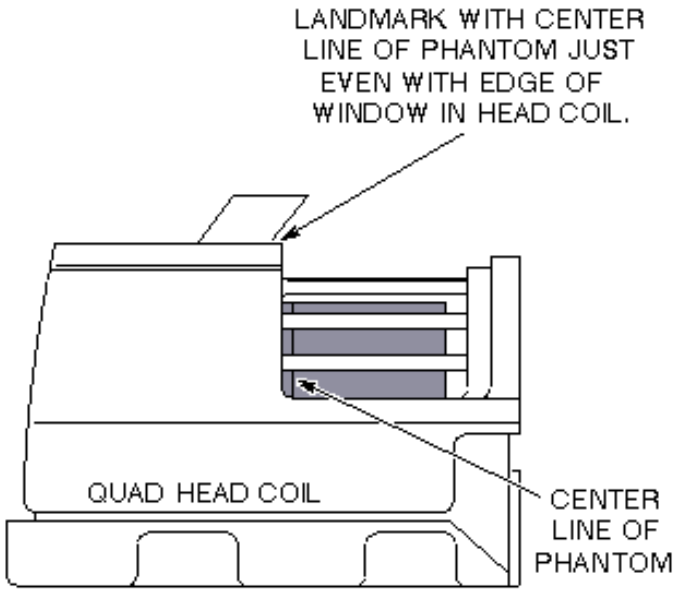
   POISON HAZARD! THE PHANTOM CONTAINS NICKEL CHLORIDE, A SUSPECT CARCINOGEN. DO NOT INGEST. DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO STATE AND FEDERAL REGULATIONS.

4. Check the temperature indicator on the head SNR sphere. Be sure that the temperature is 22° C ± 2° before starting the procedure.

5. Position SNR sphere in the Head Loader as shown in Illustration 3-1. Fasten the strap to the top of Head Loader to secure the SNR sphere inside the loader. Position the Head Loader within the Quad Head Coil so the loader is centered and the loader's axial mark is at the back edge of the Head Coil window (see Illustration 3-2 for landmarking phantom).



HEAD SNR SPHERE AND HEAD LOADER
ILLUSTRATION 3-1



LANDMARKING HEAD SNR SPHERE
ILLUSTRATION 3-2

6. LANDMARK, then MOVE TO SCAN. **Allow the phantom solution to settle for 20 minutes before starting the scan.**

Note

SNR scans are particularly susceptible to flow artifacts. Artifacts appear as ovals or swirls in phantom image on the subtracted image. They will cause excessively high noise measurements. If a problem exists, allow the phantom to settle an additional 15-20 minutes and rescan using the same settings.

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

7. At the operator workspace, set Patient Protocols to **Service**.

8. In the Protocol field, type **o.13.4** (o=Other, 13=protocol number, 4=series number) and press **<Enter>.** For ***TwinSpeed***, set the **GradMode** to the desired selection.

   or

   Click on "Other" and select protocol **13** and series **4** from the menu, then click on **[Accept]** to load the SNR Check (Head, Axial) protocol. For ***TwinSpeed***, set the **GradMode** to the desired selection.

***Non-proprietary** procedure:*

At the operator workspace, prepare the system for an SNR Check (Head, Axial) scan using the scan protocol (**o.13.4**) shown in the "Service Protocols" procedure on the service methods CD-ROM.

9. Click on **[Autoview]**, just below the Autoview image display screen, to automatically display your images.

10. Click on **[Save Series]**, then **[Prepare to Scan]**.

11. Click on **[Auto Prescan]**. After the prescan, check the R_1 value. If R_1 does not equal 11, refer to Section 2-3 Body Scan Procedure step 11 for items to check. Record R_1, R_2, TG, and system frequency values in Data Sheet 1.

12. Click on **[Scan]**. After the first scan is complete, click on **[Scan]** again (two back-to-back scans).

13. After the series #4 back-to-back scans are complete, click on **[New Series]**.

*The following two steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

14. In the Protocol field, type **o.13.5** (o=Other, 13=protocol number, 5=series number) and press **<Enter>**. For ***TwinSpeed***, select the same **GradMode**.

or

Click on "Other" and select protocol **13** and series **5** from the menu, then click on **[Accept]** to load the SNR Check (Head, Sagittal) protocol. For ***TwinSpeed***, select the same **GradMode**.

Non-proprietary *procedure:*

At the operator workspace, prepare the system for an SNR Check (Head, Sagittal) scan using the scan protocol (**o.13.5**) shown in the "Service Protocols" procedure on the service methods CD-ROM.

15. Click on **[Save Series]**, then **[Prepare to Scan]**.

16. **[Auto Prescan]**. After prescan, check R_1 value. If R_1 does not equal 11, refer to Section 2-3 Body Scans Procedure step 11 for items to check. Record R_1, R_2, TG, and system frequency values in Data Sheet 1.

17. Click on **[Scan]**. After the first scan of series #5 is complete, click on **[Scan]** again (two back-to-back scans).

18. After the series #5 back-to-back scans are complete, click on **[New Series]**.

*The following step is **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after this step.*

19. In the Protocol field, type **o.13.6** (o=Other, 13=protocol number, 6=series number) and press **<Enter>**. For ***TwinSpeed***, select the same **GradMode**.

    or

    Click on "Other" and select protocol **13** and series **6** from the menu, then click on **[Accept]** to load the SNR Check (Head, Coronal) protocol. For ***TwinSpeed***, select the same **GradMode**.

Non-proprietary *procedure:*

At the operator workspace, prepare the system for an SNR Check (Head, Coronal) scan using the scan protocol (**o.13.6**) shown in the "Service Protocols" procedure on the service methods CD-ROM.

20. Enter the anterior offset for the Scanning Range start/end location. Find offset as follows:

    a. Click the  (Image Browser) icon. When the browser is displayed, click **[Viewer]**. Display the image of the axial scan (Series 1).

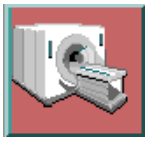
b. Select a rectangular cursor under **[Measure]**. Rotate the cursor box 90 degrees clockwise by dragging the rotational handle until the handle marker is placed on the display's right side. See Illustration 2-2 in Section 2-3.

c. Adjust the rectangular cursor size, dragging the size/shape handle, so that all four corners touch the edge of the image.

Note

A horizontal rectangle provides more accuracy in the horizontal direction.

d. Click **[Measure],** then select the (report cursor) tool. Click the rectangle created in step c, then place the report cursor on top of the rotation handle of the rectangular cursor box. Read the A/P location. See Illustration 2-3 in Section 2-3.

e. Click the  (scan) icon. In the *SCANNING RANGE* area, enter the value obtained in step d for the A/P Start and End values (anterior offset) of the coronal scan.

21. Click on **[Save Series]**, then **[Prepare to Scan]**.

22. Click on **[Auto Prescan]**. After prescan, check the R_1 value. If R_1 does not equal 11, refer to Section 2-3 *Body Scans Procedure*, step 11, for items to check. Record R_1, R_2, TG, and system frequency values in Data Sheet 1.

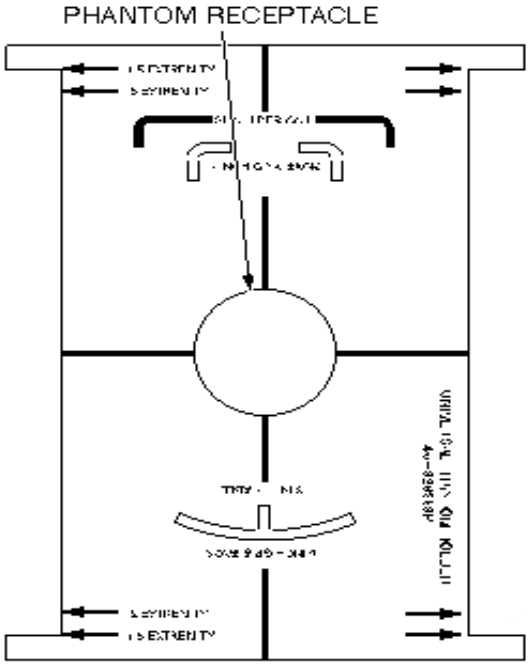
23. Click on **[Scan]**. After the first scan of Series #6 is complete, click on **[Scan]** again (two back-to-back scans).

24. For analysis, see Section 5- *SNR Image Analysis*.

4- SURFACE COIL SNR

4-1 Tools Required

- Universal Phantom Holder, 46-328383P1 (see Illustration 4-1)
- 100mm Sphere Phantom (filled with $NiCl_2$ solution), 46-317586G1
- TLT Head Sphere Phantom (filled with $NiCl_2$ solution), 46-265826G6 (for Flex Coil)
- Head Loader, 46-287899G1 (for Flex Coil)



UNIVERSAL PHANTOM HOLDER
ILLUSTRATION 4-1

WARNING!

POISON HAZARD! PHANTOM CONTAINS NICKEL CHLORIDE, A SUSPECT CARCINOGEN. DO NOT INGEST. DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO STATE AND FEDERAL REGULATIONS.

4-2 Procedure

1. At the operator workspace, select the scan icon in the desktop control panel.
2. If necessary, exit out of any previous exams by selecting **[End Exam]**.
3. Click on **[New Pt]** and enter the following:

   Id: **geservice**
   Name: **snr check**
   Weight (lb.): **111**

CAUTION

Possible equipment damage. Completely remove the Quad Head Coil from the cradle before performing any body scans. Failure to do so may damage the Head Coil T/R Network.

4. Remove the Quad Head Coil (if present) from the cradle.

5. Place the surface coil to be tested on the table.

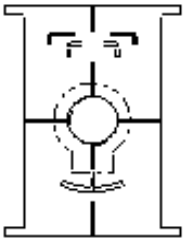
6. Connect the coil connector to its mating connector in the Carriage Assembly.

7. **Coils using the Universal Phantom:**

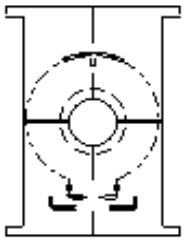
Note

The General Purpose (GP) Flex Coil uses the Head Coil TLT phantom and loader for its phantom (not the Universal Phantom). Refer to Step 8 for General Purpose (GP) Flex Coil setup details.

a. Position the Universal Phantom Holder on the coil. Refer to Illustration 4-2 for specific details for each coil type.



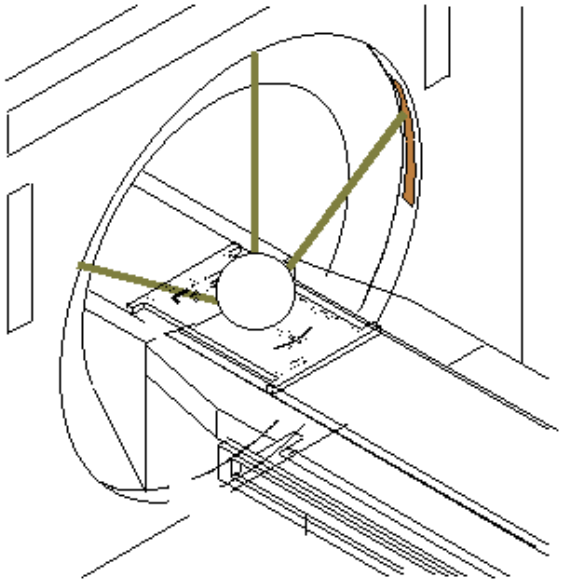
For the **3 inch** coil, position the coil on the cradle with the "This side toward patient" sign facing up. Place the Universal Phantom Holder over the coil and align the phantom receptacle in the Universal Phantom Holder with the inside diameter of the coil. Align the notch, labeled 3 INCH CABLE, with the coaxial cable of the coil. Turn ON the alignment lights and align the coil and holder using the alignment markings on the Universal Phantom Holder.



For the **5 inch GP and 5 inch Back** coils, position the coil on the cradle with the "This side toward patient" sign facing up. Place the Universal Phantom Holder over the coil and align the arc, labeled 5 INCH GP & BACK, with the outside contour of the coil. Align the corner cut – out, labeled 5 INCH GP & BACK with the housing of the coil. Turn ON the alignment lights and align the coil and positioner using the alignment markings on the Universal Phantom Holder.

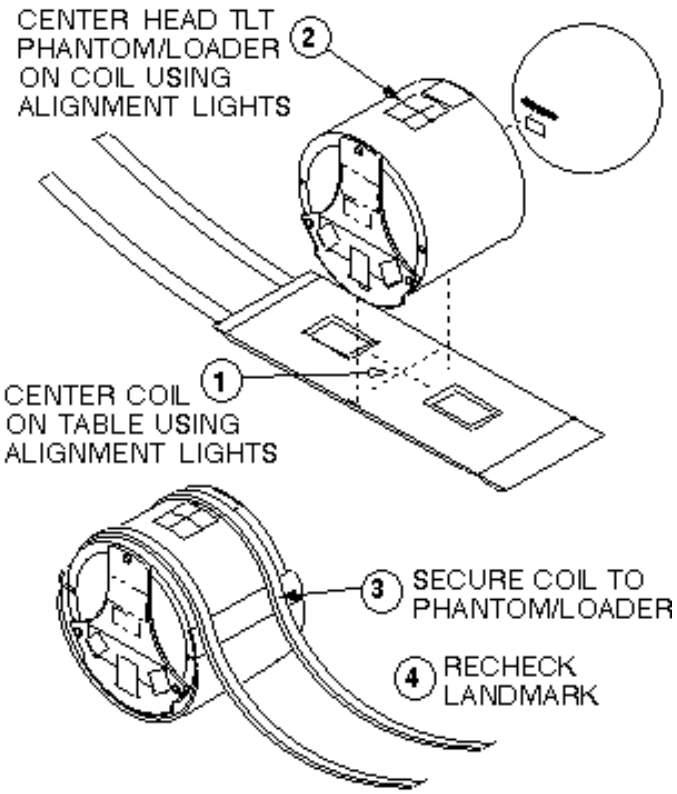
UNIVERSAL PHANTOM HOLDER SETUP
ILLUSTRATION 4-2

b. Place the 100-mm phantom in the phantom receptacle, LANDMARK, and MOVE TO SCAN. See Illustration 4-3. Proceed to step 9.



LANDMARKING UNIVERSAL PHANTOM
ILLUSTRATION 4-3

8. **GP Flex Coil Setup**: Set up *Flex Coil* per Illustration 4-4. LANDMARK, and MOVE TO SCAN.



GP FLEX COIL PHANTOM SETUP
ILLUSTRATION 4-4

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

9. At the operator workspace, set Patient Protocols to **Service**.

10. In the Protocol field, type **o.13.7** (o=Other, 13=protocol number, 7=series number). For ***TwinSpeed***, set the **GradMode** to the desired selection.

    or

    Click on "Other" and select protocol **13** and series **7** from the menu. For ***TwinSpeed***, set the **GradMode** to the desired selection.

11. Click on **[Accept]** to load the SNR Check (Surface Coils) protocol.

***Non-proprietary** procedure:*

At the operator workspace, prepare the system for an SNR Check (Surface Coils) scan using the scan protocol (**o.13.7**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

12. Click on **[Autoview]**, just below the Autoview image display screen, to automatically display your images.

13. Click on **[Save Series]**, then **[Prepare to Scan]**.

14. Click on **[Auto Prescan]** to properly calibrate the RF power level for the 90-degree and 180-degree pulses.

15. Click on **[Scan]**. Record the Exam number and Series number for SNR Calculations. After the first scan is complete, click on **[Scan]** again (two back-to-back scans).

16. For analysis, see Section 5- *SNR Image Analysis*.

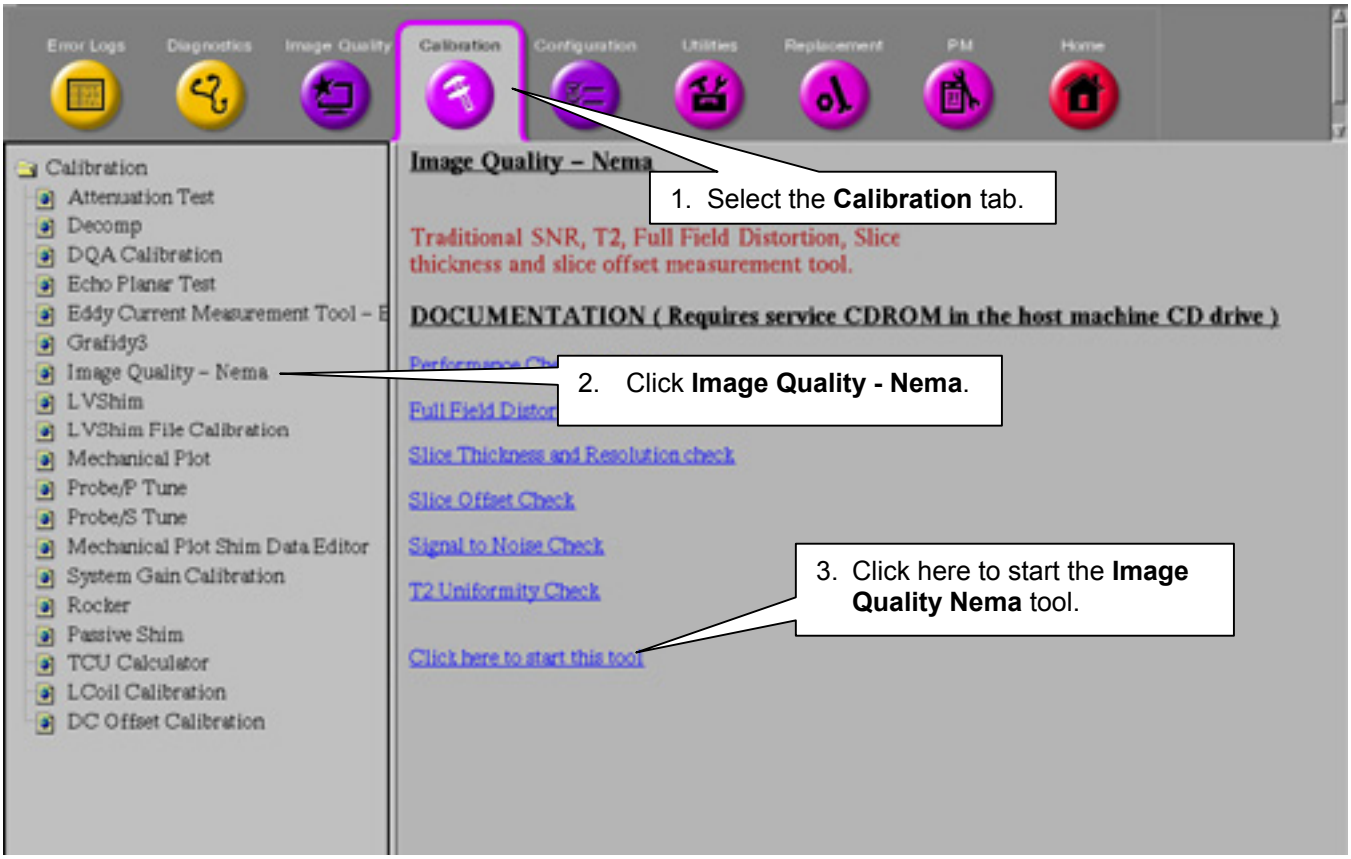
5- SNR IMAGE ANALYSIS

5-1 Introduction

The SNR tool retrieves two operator-selected images. Signal value is computed as the mean pixel value in an ROI covering 80% of the image. The image is analyzed to determine the center of the image for positioning the ROI. Subtracting the second image from the first creates a difference image and the same ROI is used to calculate noise from the subtracted image. The signal value, noise value, and signal-to-noise ratio are reported. There is an option to save the difference image with the results annotated.

5-2 Procedure

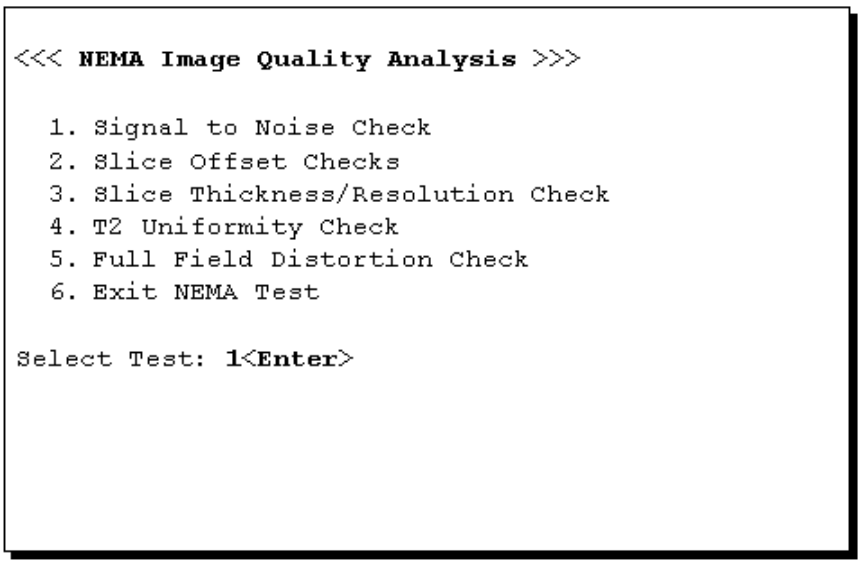
1. On the Service Desktop Manager, click the **Service Browser** button. Follow the instructions on Illustration 5-1, below.



OPENING THE IMAGE QUALITY NEMA TOOL FROM THE COMMON SERVICE DESKTOP
ILLUSTRATION 5-1

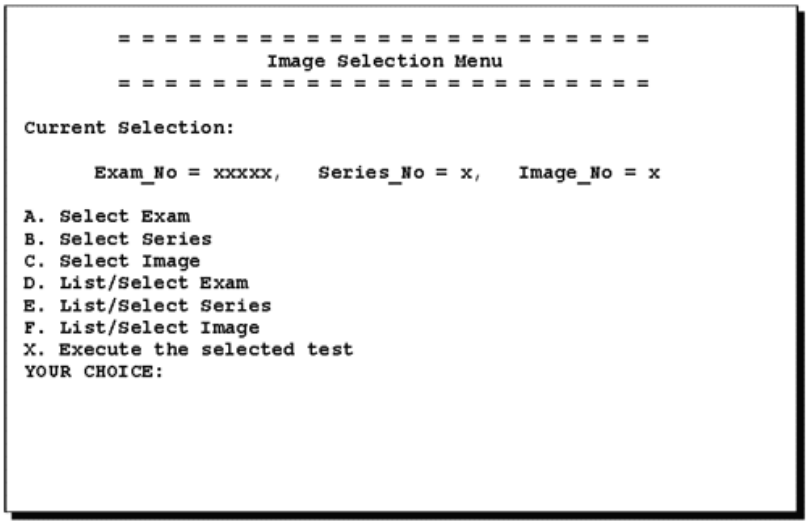
2. For ***TwinSpeed***, highlight the same **GradMode** as was used in section 2, 3 or 4 above, then click on **[OK]**.

3. A *NEMA Image Quality* window will appear on the desktop. Type **1** and press **<Enter>** for the Signal to Noise Check. See Illustration 5-2.



NEMA IMAGE QUALITY MENU
ILLUSTRATION 5-2

4. Refer to Illustration 5-3 for the next steps.



NEMA IMAGE SELECTION MENU
ILLUSTRATION 5-3

5. At the prompt, type **A (Select Exam)** and then enter the exam number.
6. At the prompt, type **B (Select Series)** and enter the series number.
7. Type **C (Select Image)** and enter the image number.
8. Type **X (Execute the selected test)** to run the procedure.

You'll be prompted "Choose Second Image." Continue by doing the following:

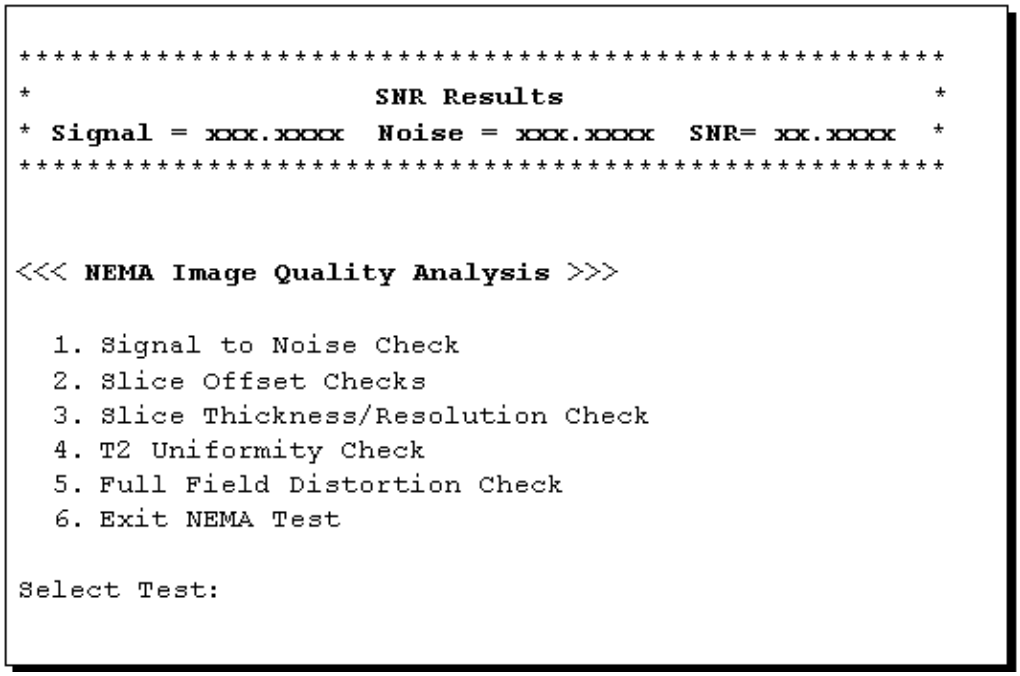
9. Type **A** and then enter the exam number.

10. Type **B** and enter the series number.

11. Type **C** and enter the image number.

12. Type **X** to run the procedure.

    The analysis then begins. The final values are displayed on the screen, as shown in Illustration 5-4.



SNR RESULTS SCREEN
ILLUSTRATION 5-4

14. Record Signal, Noise, and Signal-to-Noise in the Data Sheet at the end of this document. For ***TwinSpeed***, identify the GradMode used.

15. Repeat steps 5 through 12 above, selecting the next exam for the analysis of each remaining image pair.

16. Keep the completed data sheets with the system data sheets for future reference.

17. Type **6** and press **<Enter>** to exit the NEMA Image Quality Analysis Menu.

6 - DATA SHEETS

Use for BRM-based systems. For ***TwinSpeed*****,** complete the data sheet for the selected **GradMode:** WHOLE or ZOOM.

Body SNR Data

AXIAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	
___/___/___	11/___/___		SIGNAL	N/A	N/A	
			SNR	74-97	39-53	
SAGITTAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	
___/___/___	11/___/___		SIGNAL	N/A	N/A	
			SNR	74-97	39-53	
CORONAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	
___/___/___	11/___/___		SIGNAL	N/A	N/A	
			SNR	74-97	39-53	

Head SNR Data

AXIAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	0.5T SYSTEM
____/___/___	11/___/___	↳	SIGNAL	1050-1180	1000-1400	1045-1180
			SNR	76-102	57-65	23-31
SAGITTAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	0.5T SYSTEM
____/___/___	11/___/___	↳	SIGNAL	N/A	N/A	N/A
			SNR	76-102	57-65	23-31
CORONAL SCAN DATA						
EXAM/ SERIES/ IMAGES	R1/R2/TG	SYSTEM FREQUENCY	PARAMETER/ ANALYSIS	ACCEPTANCE SPECIFICATIONS		
				1.5T SYSTEM	1.0T SYSTEM	0.5T SYSTEM
____/___/___	11/___/___	↳	SIGNAL	N/A	N/A	N/A
			SNR	76-102	57-65	23-31

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	July 28, 1998	M. Whitlow	Initial conversion from Toolbook to Word.
1	Sept. 15, 1998	M. Keber	Removed obsolete Release 8.1 information, added missing Head SNR Data Sheet, updated per style guide.
2	Feb. 16, 1999	K. Keshena	Updated per engineering bay validation.
3	Sept. 27, 1999	G. Boerner	Added SPT body phantom info/illustration (per SPR MRIge55143). Also updated per 8.3 bay validation.
4	Jan 12, 2000	G. Boerner	Changed landmarking info per SPR MRIge56065.
5	Mar 8, 2000	G. Boerner	Fixed image analysis info per SPR MRIge56228. Added Illustration 5-2.
6	Oct 19, 2000	M. Jones	Deleted references to head coil tuning ring. Clarified/corrected procedure in numerous places; then had to renumber numerous steps and illustration numbers.
7	Jan 4, 2001	M. Jones	Changed R1 values from 6 to 11 on body and head SNR data sheets in Section 6-. Also made clarifications to Section 2-3, step 20, and Section 3-3, step 20.
8	August 28, 2001	J. Gerber	Updated for TwinSpeed scanners and release 9.0 software.
9	Sept. 11, 2001	J. Wolak	Added verbiage for BRM systems to data sheet
10	March 6, 2001	Hawthorne	Updated Illustration 2-2 to better show how to setup cursor box. Updated analysis tool steps in sec 5 to improve flow.
11	Jan. 27, 2003	C. MacDonald	Minor edits per Don Thomé