

# *Servicing the GE Senographe Digital Mammo Family: 2000D, DS, Essential*



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## **Introduction**

Mammography may be the most dynamic of all of today's imaging modalities. With the new regulatory and accreditation procedures, and advancements in technology, the service professional is becoming more involved in maintaining the quality and reliability of the mammographic system. This course is designed to teach the service professional how to safely and efficiently maintain the entire family of GE Senographe Digital Mammography products. Given today's regulatory environment maintaining the system at peak performance is of the utmost importance.

## **Prerequisites**

To attend this course, the service professional must possess fundamental knowledge and understanding of the principles of X-ray and basic electronics.

## **Objectives**

- Describe the current digital mammographic imaging regulatory environment
- Describe the factors that affect digital mammographic image quality
- Describe how those factors are optimized to produce the highest

quality digital mammographic images

- Describe the function of the basic components of each GE Senographe Digital mammographic unit
- Demonstrate an understanding of the digital accreditation process
- Demonstrate an understanding of the Mammographic Quality Standards Act
- Demonstrate an understanding of the installation procedures associated with each GE Senographe Digital Mammography unit.
- Perform the necessary mammographic performance monitoring and quality assurance procedures utilizing each GE Senographe Digital Mammography unit.
- Perform the necessary tests to reproduce the results of the physicist's report to confirm corrective action
- Perform all system calibrations and adjustments to maintain the highest quality images and compliance with MQSA requirements
- Evaluate circuit functions to facilitate Troubleshooting

## **Course Outline**

### **DAY 1**

- Digital mammography process overview
- Basic terminology

- Digital Senographe system overview
  - o 2000d
  - o DS
  - o Essential
- Digital Senographe systems: Compare & contrast:
  - o 2000d
  - o DS
  - o Essential
- GE System Documentation Overview
- Digital Senographe system operation
- System specifications
- Lab Activities
- Basic system operation
  - o AWS acquisition software
  - o Image acquisition
  - o Image viewer
  - o Screen considerations
  - o Technologist digital QC

### **DAY 2**

- System documentation overview
- Installation
- Operations
- Service
- Schematics
- Lab Activities
- Annual physicist checks
  - o Image quality
  - o Signal to Noise (SNR)
  - o Resolution
  - o Contrast Ratio
  - o MTF
  - o Flatfield/phantom IQ
  - o AOP

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## **DAY 3**

- System service
- Required tools, test equipment, and software
- 1999 Mammography Quality Standards Act (MQSA)
- Current Digital MQSA regulations
- Lab Activities
  - o Remove and replace covers and system panels
  - o AWS
  - o Gantry
  - o Operators console
  - o Generator

## **DAY 4**

- UNIX basics
- AWS configuration
- Site planning and installation
- Network configuration
- System calibration
- Functional checks
- Lab Activities
  - o Component location
  - o Schematic location
  - o Physical location
  - o Connector locations
  - o Fuse location/identification
  - o UPS Battery check/replacement procedures
  - o UNIX Telnet session

## **DAY 5**

- Preventive maintenance
- Lab Activities
  - o PM
  - o Conditioner Maintenance:
    - conditioner fluid flush
    - conditioner fluid refill

## **DAY 6**

- Image Chain - Image Detection
  - o IDC
    - Bad Pixel correction
    - Flatfield correction
  - o Detector
    - Conditioner/Chiller
- Lab Activities
  - o Remote login to IDC
  - o Turning On/Off Bad Pixel correction
  - o Turning On/Off Detector calibration corrections

## **DAY 7**

- Upgrades
- Troubleshooting
- Options
- Networking
- Output devices
  - o Laser printer
  - o PACS
  - o RWS
  - o CAD
  - o Media
- Input devices
  - o Modality worklist
- Lab Activities
  - o Configure and test output devices
  - o Configure and test input devices

## **DAY 8**

- DMR generator changes in the Senographe Digital from the DMR
- Generator calibration changes in the Senographe
- Digital from the DMR

- Lab Activities
  - o AEC calibration
  - o AOP calibration
  - o Beam alignment
  - o Collimator format
  - o Bad pixel
  - o Detector gain

## **DAY 9**

- Error codes
- System diagnostics
- TSG's - Troubleshooting Guides
- CAD
- System schematics
  - o AWS
  - o Gantry
  - o Generator
  - o RWS
- Lab Activities
  - o Review Error Codes
  - o System Diagnostics
  - o Configure and test CAD
  - o Review system diagrams and communication

## **DAY 10**

- Course review
- Course evaluation
- Final exam