Datascope® is a U.S. registered trademark of Datascope Corp.

Microsoft® is a U.S. trademark of the Microsoft Corporation.

fantastik® is a U.S. trademark of the SC Johnson Corporation

Foreword

The **NetGuard** Operating Instructions are intended to provide information for proper operation.

General knowledge of monitoring and an understanding of the features and the functions of the Datascope **NetGuard** Monitor are prerequisites for proper use.

Do not operate this system before reading these instructions.

Information for servicing this instrument is contained in the **NetGuard** Auto Clinician Alert System Service Manual, (P/N 0070-00-0685). For additional information or assistance, contact an authorized Datascope representative in your area.

NOTE: **Some aspects of the NetGuard Operating Instructions may differ in certain countries. Refer to the language specific NetGuard Operating Instructions to ensure the accuracy of the text.**

CAUTION: **U.S. Federal Law restricts this device to sale by or on the order of a physician or other practitioner licensed by U.S. state law to use or order the use of this device.**

Warnings, Precautions and Notes

Please read and adhere to all of the warnings and precautions listed throughout this manual.

A **WARNING** is provided to alert the user to potentially serious outcomes (death, injury or serious adverse events) to the patient or the user.

A **CAUTION** is provided to alert the user that special care should be taken for the safe and effective use of the device. They will include actions to be taken to avoid effects on patient's or users that will not be potentially life threatening or result in serious injury, but about which the user should be aware.

A **NOTE** is provided when additional general information is available.

Warnings

WARNING: Only qualified and trained personnel or Datascope Service personnel should attempt to service Datascope equipment. Service is defined as any activity requiring the cover to be removed for internal adjustments, parts replacements, repairs or software upgrades of any kind to insure compatibility.

WARNING: To insure compatibility with the operating system and applications software, use only Datascope Corp. supplied and/or approved components to repair any part of the NetGuard System™. Use of unauthorized software, devices, accessories, or cables other than those approved by Datascope may render the application unsuitable for medical patient monitoring. It may also result in increased electromagnetic emissions or decreased Immunity of the system.

WARNING: Patient's with fragile skin, dermal allergies, or a history of skin reactions to adhesive tapes may show a dermatitis reaction to the adhesive tape.

WARNING: To adequately display the software application, it is important to maintain a minimum screen resolution of 1024x768.

WARNING: If any application terminal performance is degraded or unresponsive, contact a Datascope Service Representative immediately.

WARNING: Place the NetGuard device on the patient after admitting the patient to the system. If the device is not placed on the patient within 30 minutes of admission, the terminal will display a technical message that the patient is not being monitored.

WARNING: To avoid a possible choking hazard, do not place the NetGuard device in the mouth.

WARNING: When a NetGuard device is in a Lost Communication state, and a lethal System level alarm occurs, the device will sound an audible notification but the terminal will not provide any visual or audio notification.

WARNING: Some of the equipment on the NetGuard Network must utilize the hospital emergency power system. Failure to do so will result in loss of monitoring during extended periods of power failure. The back-up power time period, for the NetGuard Network, is limited.

WARNING: Changes to the NetGuard server configuration and terminal software should not be performed without the guidance of a qualified Datascope Service Representative.

WARNING: To ensure continuous patient monitoring, discard the reusable section of the NetGuard device when the Low Battery message is displayed at the terminal.

WARNING: Do not use the NetGuard device in an explosive atmosphere or in the presence of flammable anesthetics or gases.

Cautions

CAUTION: **For proper operation use only with UL agency approved ethernet cables.**

CAUTION: **For proper operation, do not use the equipment with a frayed or damaged power cord or ethernet cable.**

CAUTION: **Do not use a damaged or broken unit or accessory.**

CAUTION: **For proper operation never place fluids on top of the server. In case of accidental spillage, wipe clean immediately and have the system serviced to ensure no hazard exists.**

CAUTION: **The LEDs on the device may not be clearly visible under brightly lit conditions. The lighting should be adjusted to ensure that all LED indicators are clearly visible.**

CAUTION: **The server and terminal for this device must only be setup by qualified Datascope personnel.**

CAUTION: **Do not block the terminal speakers. Set the volume levels to ensure that alarms can be heard at all times.**

CAUTION: **Speaker volume should be set high enough to hear an alarm above ambient noises.**

CAUTION: **The NetGuard device may not function properly, if it was subjected to extreme mechanical forces.**

CAUTION: **To prevent the possible overlap of Trend data, a patient should be discharged before another patient is admitted to the same bed.**

CAUTION: **Discharging a patient should occur in the following order: Discharge the patient from the bed, connect the device to the new patient, and then assign the patient to a new bed.**

CAUTION: **The NetGuard device should not be used when the Electro Surgical Unit (ESU) is active.**

CAUTION: **The NetGuard device may not function if the batteries installed in the device are corroded.**

CAUTION: **Do not incinerate the NetGuard device. Possible explosion may occur because of the internal battery.**

CAUTION: **To avoid possible interference with other facility devices, use the correct AC cord for all equipment installed on the NetGuard network.**

CAUTION: **It is recommended that password protected screen savers be disabled after the NetGuard terminal software installation. Use of screen savers may degrade the performance of NetGuard software application.**

Indications for Use

The NetGuard Automated Clinician Alert System is intended for use by licensed clinicians, within a health care facility, to provide notification of life threatening cardiac events in ambulatory adult patients including:

- Asystole
- Ventricular-Fibrillation

NetGuard monitors a patient's ECG and issues an alert whenever these arrhythmias are detected. The NetGuard system also provides notification for high and low heart rates.

Unpacking Information

The NetGuard Device must be installed by a certified Datascope Service Representative or authorized distributor. Contact your authorized Datascope Service Representative for additional information.

Symbols and Descriptions

SYMBOL	DESCRIPTION
	Attention, Consult Accompanying Documents / Refer to Manual
IPX 4	Protection against splashing water
	Do not dispose of this product as unsorted municipal waste.
	Mark of compliance with U.S. and Canadian safety standards requirement.
FCC ID: XXXXXXXXX-XXXXX	Federal Communication Commission Registration Identification Number
	Non-Ionizing Electromagnetic Radiation
	Defibrillator Proof Type CF Equipment
	A symbol designating compliance of the NetGuard system with the Medical Device Directive (MDD) 93/42/EEC, as a Class IIb device.

Technical Support

For technical assistance, contact your area or regional Datascope Patient Monitoring Representative.

Additional information relating to the installation, servicing and repair of the NetGuard Device is provided in the following documents:

- Instructions for installing the NetGuard system in clinical environments are provided in the NetGuard System Installation Guide (P/N 0070-00-0687 and P/N 0070-00-0686).
- NetGuard system administration is addressed in the NetGuard Service Manual (P/N 0070-00-0687).
- Detailed troubleshooting and repair instructions are provided in the NetGuard Service Manual (P/N 0070-00-0685).

1.0 *Overview*

The NetGuard Network is an ambulatory monitoring system that issues alerts automatically to clinicians when it recognizes potentially life-threatening cardiac rhythms in monitored patient's. The system monitors patient ECG and heart rate and issues alerts whenever specific arrhythmias are detected or the measured values deviate from acceptable ranges.

The NetGuard Network (shown in FIGURE 1-1) consists of the NetGuard devices, a wireless infrastructure, a central server, one or more terminals, and proprietary software running on the server and terminals.

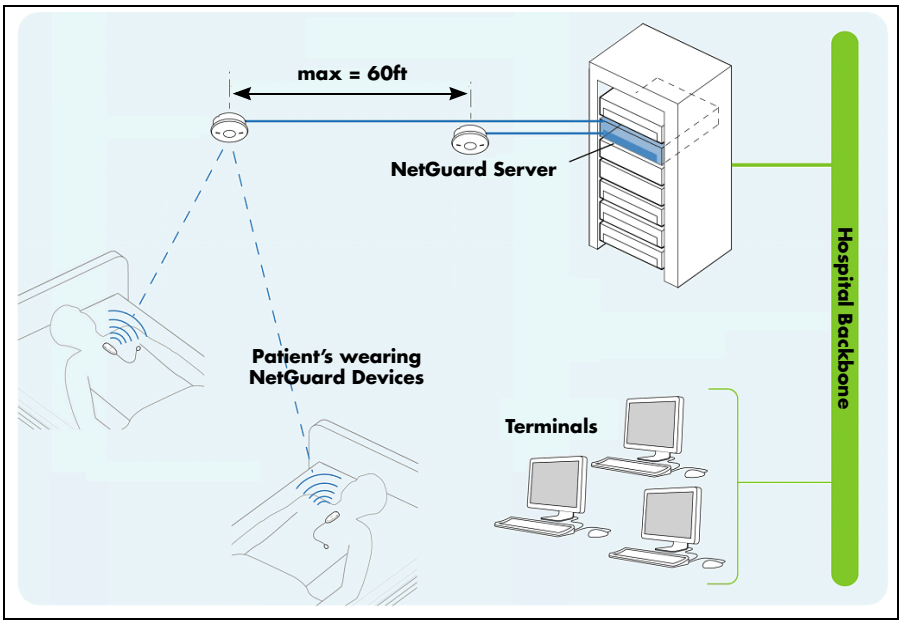

FIGURE 1-1 NetGuard Network Overview

This Overview briefly describes each of the NetGuard Network components and provides references to the detailed discussions that follow later in this manual.

1.1 Components of the NetGuard Network

This section provides an overview of the principal NetGuard system components including the:

- NetGuard Devices
- Telemetry Infrastructure
- NetGuard Central Server
- Terminals

1.1.1 NetGuard Devices

The NetGuard device (shown in FIGURE 1-2) is attached to the patient using an adhesive patch on the back of the device.

FIGURE 1-2 NetGuard Device

Each NetGuard device consists of a:

- Reusable transmitter pack
- Disposable leadwire set, battery, and electrodes

The components and functions of the NetGuard device are discussed in Chapter 2.

1.1.2 Telemetry Infrastructure

The NetGuard telemetry infrastructure consists of a network of ceiling-mounted access point devices (shown in FIGURE 1-3).

FIGURE 1-3 Access Point Device

Each access point is connected via wireless subnet to the NetGuard devices in its sector. For proper coverage, the access points should be spaced in contiguous sectors, each having a maximum 30-foot radius.

NOTE: Subnets operate in accordance with the 802.15.4 wireless standard.

The individual access points are hard-wired to the NetGuard server and communicate using the Ethernet (POE) standard.

1.1.3 NetGuard Central Server

The NetGuard central server hosts the patient database and distributes patient data to client applications running on the hospital terminals. The server is medical grade and internationally compliant. The web server application runs over Microsoft® Windows Server 2003 Standard and communicates with the NetGuard devices (through the access points) using Datascope's WELAN protocol. Each NetGuard central server can support up to 300 patient's.

1.1.4 Terminals

Clinicians gain access to the NetGuard system through the Monitor Application that runs on terminals located in hospital nursing stations and at specific remote locations. The Monitor Application controls the display of alarms and patient heart rate data. It also supports management functions including patient admission to and discharge from the NetGuard system. System users can print reports and related patient information through the Monitor Application reporting functions.

This page intentionally left blank.

2.0 *NetGuard Device*

The NetGuard patient-worn device (shown in FIGURE 2-2) consists of a wireless, reusable patient monitor that is attached to the patient, by a disposable adhesive patch, at the sternum. In the event of a low or high heart rate, ventricular fibrillation, or asystole, the device transmits a radio alarm signal to alert clinicians that the patient may be experiencing a significant event. Along with each transmitted alarm, the device transmits 20 seconds of the patient's ECG waveform.

2.1 Electrode Placement

The NetGuard device uses 3-electrodes to capture ECG data. The two active and one reference electrode provide a single, fixed ECG vector.

2.1.1 Placement Instructions

FIGURE 2-1 illustrates the proper positioning of the NetGuard device electrodes. Site preparation, proper electrode connection, and ECG electrode placement directly impact the quality of an ECG signal. Optimizing an ECG signal is imperative for accurate monitoring.

This section provides instructions for attaching the elongated adhesive patch just below the inter-clavicle notch, and a second patch below the left nipple.

2.1.2 Skin Preparation

Proper skin preparation is essential to obtain accurate ECG data. Electrode sites should be clean, dry and should provide a smooth flat surface. Incidental electrical activity and inaccurate readings may occur due to incorrect skin preparation.

The following skin preparation is recommended for secure patch application:

1. Shave the chest hair in a 2-4 inch diameter of the electrode site.
2. Use a dry gauze pad to remove excess skin oils, skin cells and residue from the electrode sites. Never rub the skin until it is raw or bleeding.

NOTE: Prepare the electrode site with alcohol only if the skin is extremely greasy. If alcohol is used as a drying agent, always allow the skin to dry before placing the electrode patch on the skin.

2.1.3 CM5 Vector

The CM5 lead provides the best overall view of myocardial activity among the single vectors available from such an electrode system. Unlike the conventional V-leads obtained with a 5 or 12-lead system, the CM5 vector does not require placement of limb electrodes over the patient's upper chest or arm muscles, thereby avoiding the chance introduction of artifact due to arm motion.

The CM5 lead uses one active electrode over the sternum and another at the V4 location. The active electrode over the sternum is a dual electrode, consisting of an active element and a reference element.

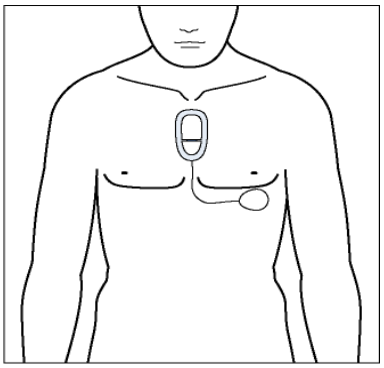

FIGURE 2-1 Electrode Placement

A second electrode is attached below the patient's left nipple (shown in FIGURE 2-1), between the conventional V4 and V5 positions. Therefore the resulting vector is intermediate between CM4 and CM5.

NOTE: NetGuard uses standard solid-gel monitoring electrodes.

2.2 NetGuard Device Components

The principal components of the device are identified in FIGURE 2-2 and described in Table 2-1.

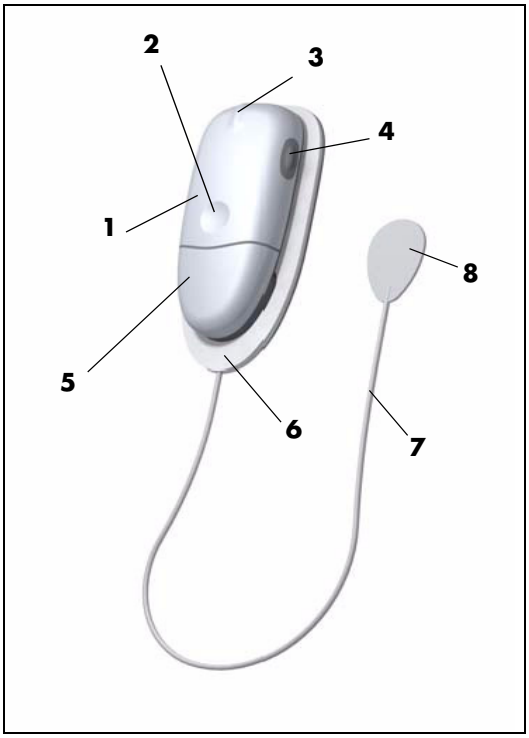

FIGURE 2-2 NetGuard Device

TABLE 2-1

NO.	PART NAME	DESCRIPTION
1.	Reusable Radio Transmitter	The reusable radio transmitter pack continuously monitors the patient's ECG and heart rate and transmits the heart rate together with the device status once every second. The radio transmitter includes an audible alarm that can be triggered by pre-defined conditions and events.
2.	Status LED	The status LED indicates: • The status of the connection between the Disposable and Reusable sections of the device • The completion of the automatic self-test • The adequacy of available battery power to operate the device
3.	Acknowledge Buttons	Pressing the two buttons located on both sides of the Reusable silences any active lethal System level alarms, turns off the patient LED, and transmits an alarm acknowledgement notification to the NetGuard server.

TABLE 2-1 (Continued)

NO.	PART NAME	DESCRIPTION
4.	Patient LED	The patient LED turns green to indicate that the patient's heartbeat has been detected. When a lethal physiological alarm condition is detected, the patient LED flashes red.
5.	Battery Pack*	The battery pack attaches to the transmitter pack and powers the unit.
6.	Adhesive Patch*	An elongated adhesive patch under the transmitter pack contains two electrodes.
7.	Leadwire*	A leadwire that interconnects the two adhesive patches
8.	V4 Patch*	A second adhesive patch which should be positioned at V4

* *These four components make up the Disposable portion of the device*

2.3 Operating Instructions

In addition to clinicians, the hospital personnel that routinely interact with the NetGuard system include installers, IT specialists, administrative staff, and Datascope Field Service technicians.

This section provides instructions for the hospital clinicians that apply the NetGuard device to patient's, monitor NetGuard display terminals, respond to alarms and perform first-line troubleshooting.

2.3.1 Connecting the Device

To activate the device, insert the Reusable into the Disposable, as shown in FIGURE 2-3.

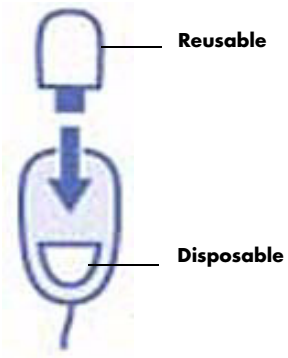

FIGURE 2-3 Connecting the Device

2.3.2 Power-Up Sequence

Each time the Reusable and Disposable sections are connected together, the assembled device goes through the power-up sequence. The LED indications that occur during the power up sequence follow and are summarized in Table 2-2.

NOTE: For information regarding the location of the device LED's, refer to "NetGuard Device Components" on page 2-3.

- The device status LED flashes green one time and an audible one time beep indicates that the power-up self-test was successful The device status LED illuminates yellow continuously indicating that the power-up self-test failed
- The device performs an automatic self-test and pauses for 2 seconds
- Following a successful power-up self-test and a pause of two (2) seconds, the patient LED flashes green in sync with the patient heart rate while it is detected
- Following a successful power-up self-test and a pause of two (2) seconds, the patient LED flashes yellow if the heart rate is not detected
- Following the first successful heart rate detection, the device patient LED flashes green while the device is successfully communicating wirelessly with the server
- Following the first successful heart rate detection and a delay of 10 seconds, the device status LED flashes yellow when wireless communication with the server is not detected
- After 20 seconds of a valid heart rate and established wireless communication, the patient and status LED's will be turned off

TABLE 2-2

LED	COLOR	INDICATION
Patient LED	Flashing yellow	Self-test successful and device attempting to acquire a patient heartbeat
	Flashing green for 30 seconds in sync with patient heartbeat	Self-test successful and patient's heartbeat detected
	Off	Power-up self-test successful, initial patient's heart beat detected, and device has communicated wirelessly with the server for more than 20 seconds
Status LED	Single green flash when Disposable and Reusable sections are initially mated	Power-up self-test was successful
	Steady yellow	Power-up self-test failed
	Steady green	Power-up self-test successful, initial patient's heart beat detected, and device is communicating wirelessly with the server
	Flashing yellow	Wireless communication with server not established
	Off	Power-up self-test successful, initial patient's heart beat detected, and device has communicated wirelessly with the server for more than 20 seconds

2.3.3 Communication Range

The device communicates with the access point using an IEEE 802.15.4 wireless interface. This link is used for remote patient monitoring, device configuration, and device diagnostics. The access point's maximum transmit and receive radius (the maximum distance to any device) is 30 feet. If the communication quality of the link between the device and its associated access point falls below the threshold level, the device attempts to locate and associate with a new access point. Each access point can support a minimum of 20 devices simultaneously.

2.4 Cleaning and Disinfecting the Device

Cleaning and disinfecting the Reusable section of the NetGuard device is strongly recommended before and after each patient's use. The approved device cleaning solutions are:

- Ultra Clorox germicidal bleach with sodium hypochlorite 6.15% in a mix of 1:10 ratio
- LpHSE germicidal detergent in a mix of 1/2 fl oz. solution per 1 gallon of water, or 1:256 ratio
- fantastik® all purpose cleaner
- 99% Isopropyl Alcohol

Guidelines for Cleaning the Device

To clean the Reusable section:

1. Remove device from the patient.
2. Separate the Reusable from the Disposable section by gently pulling the pieces apart.
3. Clean the outside of the Reusable using a cloth moistened with cleaning solution.

NOTE: Do not immerse the Reusable in the cleaning solution.

NOTE: Any excess cleaning solution should be wiped away with a cloth moistened with distilled water.

NOTE: A lint free cloth should be used to thoroughly dry the Reusable. The Reusable should not be used until it is thoroughly dried.

2.5 Device Water Resistance

The patient may shower or sponge bath with the device attached but must ensure that it is not submerged. Verify proper operation of the device after completion of showering or sponge bathing.

2.6 Storing the Device

Proper storage of the NetGuard device is imperative to ensure its functionality. A few specifications related to device storage follow:

- The shelf life for the Disposable electrodes is 6 months, provided they are stored according to the specifications.
- Do no immerse the patient-worn device in liquid

2.7 Disposal and Reuse of the NetGuard Device

The Disposable section of the NetGuard device is intended for use on one patient and should not be reused for multiple patient's. The Reusable section of the device may be reused until the battery is depleted. There are no special instructions for discarding the NetGuard Disposable. The NetGuard Reusable may be subject to local regulations regarding disposal. At the end of the battery life, do not dispose the NetGuard Reusable in a fire.

2.8 Approved Accessories

Use the following part numbers to reorder the components of the NetGuard device:

DESCRIPTION	PART NUMBER
NetGuard Disposables (box of 25)	0998-00-1200-XX
NetGuard Reusable device	0998-00-1300-XX

This page intentionally left blank.

3.0 *NetGuard Alarms*

3.1 General Alarm Behavior

The NetGuard system uses alarms to send notification when a patient's physiological status changes or a device has a specific technical issue. When a patient is first admitted, the alarm settings configured by the NetGuard System Administrator are in effect. Individual patient heart rate settings can be configured by an individual NetGuard user if the NetGuard System Administrator has enabled this functionality.

NetGuard uses two alarm types: System level and Patient level. Alarm notification for each alarm type may include visual indicators, audible indicators, or both.

3.1.1 Alarm Behaviors

The indicators associated with a physiological alarm are:

Visual Indicators

Visual indicators provide visual notification when an alarm threshold is violated.

Audio Indicators

Audio indicators provide audible notification when an alarm threshold is violated. Audio alarms are triggered by the onset of an alarm condition.

NOTE: Audio indicators will differ based on the alarm type.

3.1.2 Alarm Latching

Alarm **latching** denotes that the audio and visual indicators, associated with an alarm condition, will not automatically stop even when the patient alarm condition is resolved. By default, System level alarms are automatically latched and Patient level alarms are unlatched.

3.2 System Level Alarms

System level alarms indicate that a monitored patient's alarm thresholds have been violated. By default, System level alarms are latched and use factory installed threshold settings. These settings cannot be disabled or changed, even by the NetGuard System Administrator.

NOTE: Alarm configuration settings are retained when the NetGuard system is reset or restarts.

An ECG waveform is produced whenever a System level alarm is triggered. If configured by the NetGuard System Administrator, the system will automatically print an ECG waveform when a System level alarm is called.

System level alarms are categorized as lethal and non-lethal.

3.2.1 Lethal System Level Alarm Types

Life-threatening, lethal arrhythmia alarms such as Asystole and V-Fib are considered lethal System level alarms.

Asystole

The NetGuard device transmits an **Asystole** status under the following conditions:

- If after determining that electrode continuity is sufficient; and the device does not detect an R-wave signal for a time-out period of 4 seconds; then the device forces another continuity test and transmits an Asystole alarm message provided continuity is still sufficient

Ventricular-Fibrillation (V-Fib) Alarm

The NetGuard device transmits a **V-Fib** status if the ECG signal is generated by ventricular fibrillation.

3.2.2 Lethal Alarm Behavior

The visual and audio indicators associated with a latched lethal System level alarm are:

Visual Indicators

When a lethal System level alarm occurs, the device patient LED flashes continuously in red, and a red alarm message window pops-up and flashes at the terminal. This window occupies the entire screen (covering the taskbar and any open software applications).

NOTE: For information regarding the location of the patient LED, refer to "NetGuard Device Components" on page 2-3.

Audio Indicators

Lethal alarm audio indicators provide audible notification when an alarm threshold is violated. During a lethal System level alarm, the device **and** the terminal release audible tones.

3.2.3 System Level Alarm Types

Non-lethal System level alarm types are generally not life threatening and include:

HR Above

Heart rate value exceeds the system high heart rate threshold. The System high heart rate threshold is between 130-200 bpm. The factory default is value is 130 bpm.

HR Below

Heart rate value drops below the system low heart rate threshold. The System low heart rate threshold is between 30-45 bpm. The factory default is value is 45 bpm.

Non-lethal System level heart rate alarm thresholds may be changed by the NetGuard System Administrator.

NOTE: Alarm configuration settings are retained when the NetGuard system is reset or restarts.

Visual Indicators

When a non-lethal System level alarm occurs, a red alarm message window pops-up and flashes at the terminal. This window will occupy the entire screen (covering the taskbar and any open software applications).

Audio Indicators

During a System level alarm, the terminal releases a single audible tone.

3.3 Patient Level Alarms

Patient level alarms use configured heart rate alarm thresholds but only affect low and high heart rate alarms. Depending on the system configuration settings, Patient level alarm thresholds can be configured globally for all patient's or may be defined on an individual patient basis. Patient level alarms are unlatched.

Patient level alarms are detected at the NetGuard server using the transmitted heart rate.

3.3.1 Patient Level Alarm Types

Patient level alarm types include:

NOTE: Patient Level HR Above and HR Below alarms are not determined by the NetGuard device. If a HR Above or HR Below alarm is triggered, the NetGuard terminal will alarm but the device will not.

HR Above

Heart rate value for the individual patient exceeds the high heart rate threshold. The Patient high heart rate threshold is between 100 and the System level high value plus (+) 1 bpm. The HR Above Patient level threshold can also be turned Off. The factory default value is 100 bpm.

HR Below

Heart rate value for the individual patient drops below the low heart rate threshold. The Patient low heart rate threshold is between the System level low value minus (-) 1 bpm and 60 bpm. The HR Below Patient level threshold can also be turned Off. The factory default value is 60 bpm.

3.3.2 Patient Level Alarm Behaviors

The visual and audio indicators associated with an unlatched Patient level alarm are:

Visual Indicators

Patient level visual indicators provide visual notification when an alarm threshold is violated. When an unlatched Patient level alarm occurs, a red (or yellow depending on the system configuration settings) message window pops-up and flashes at the terminal indicating that there is a potential alarm violation. This window occupies the entire screen (covering any open software applications).

Audio Indicators

During a Patient level alarm, the terminal releases audible tones.

3.4 Technical Alarms

Technical alarms are patient specific and are related to technical issues that occur with cables, leads, battery status, and device status.

3.4.1 Alarm Behaviors

The visual and audio indicators associated with a Technical level alarm are:

Visual Indicators

Technical alarms are automatically displayed in the Deferred Application Bar beside the NetGuard Monitor view.

Audio Indicators

During a Technical alarm, the terminal releases audible tones, provided a physiological alarm is not already in progress.

3.4.2 Technical Alarm Types

Technical alarm types include the following:

Lost Communication

A Lost Communication alarm indicates that the NetGuard device is not communicating with the server. A Not Active alarm may also transition to a Lost Communication alarm after 30 minutes has elapsed.

NOTE: When a NetGuard device is in a Lost Communication state, and a lethal System level alarm occurs, the device will sound an audible notification but the terminal will not provide any visual or audio notification until communication with the server is restored.

Low Battery

A Low Battery alarm indicates that less than the minimum operating threshold of battery life is remaining in the NetGuard Disposable. Typical battery life is three (3) days.

NOTE: To ensure continuous patient monitoring, discard and then replace the reusable section of the NetGuard device when the Low Battery message is displayed at the terminal.

Leads Inoperable

A **Leads Inoperable** alarm indicates that the device is unable to restore the ECG baseline within 1000 msec. This could be caused by a defect in the electrodes, or failure of the device.

Leads Off

A **Leads Off** alarm indicates that an ECG electrode is either detached or loose.

Disposable Expired

A **Disposable Expired** alarm indicates that the Disposable needs to be replaced. The NetGuard Server tracks the time a device has been connected to a battery and raises the technical alarm when the time exceeds the 70 hour limit.

Not Active

The NetGuard device is not sending status messages to the server. The server removes the **Not Active** condition once message are received from the device. A **Not Active** alarm transitions to a **Lost Communication** alarm after 30 minutes.

3.5 Acknowledging Alarms

The steps to acknowledge or stop a System or Patient alarm are different.

3.5.1 Lethal System Level Alarm

Acknowledge a latched lethal System level alarm at the device by pressing the two buttons located on both sides of the reusable device. This will silence the alarm at the device, turn off the device patient LED, and transmit an alarm acknowledgement notification to the NetGuard server, which will close the pop-up window and silence the terminal alarm.

3.5.2 System Level Alarms

Acknowledge a latched lethal System level alarm by overriding the alarm at the terminal. The alarm will not be silenced at the terminal until it is overridden.

3.5.3 Patient Level Alarms

Acknowledge a lethal System level alarm by overriding the alarm at the terminal. If the patient's heart rate thresholds return to an acceptable range, the alarm will be silenced at the terminal.

3.6 Alarm Types Summary

The different alarm types are summarized in Table 3-1.

TABLE 3-1

ALARM TYPE	LEVEL	TYPE	DEFERRED APPLICATION BAR MESSAGE TEXT
Asystole	System	Physiological	N/A*
V-Fib	System	Physiological	N/A*
HR Above (System)	System	Physiological	N/A*
HR Below (System)	System	Physiological	N/A*
HR Above (Patient)	Patient	Physiological	HR above XXX bpm
HR Below (Patient)	Patient	Physiological	HR below XXX bpm
Lost Communication	N/A*	Technical	Lost Comm
Low Battery	N/A*	Technical	Low Bat
Leads Inoperable	N/A*	Technical	Leads Inop
Leads Off	N/A*	Technical	Leads Off
Disposable Expired	N/A*	Technical	Disp Expired
Not Active	N/A*	Technical	N/A*

* *N/A indicates not applicable*

4.0 *Getting Started*

4.1 Introduction

This chapter describes the Monitor Application and its components.

4.2 Starting the Monitor Application

The Monitor Application automatically starts after a successful Microsoft® Windows login.

When the application is running, the Monitor Application icon appears in the Windows System tray (shown in FIGURE 4-1).

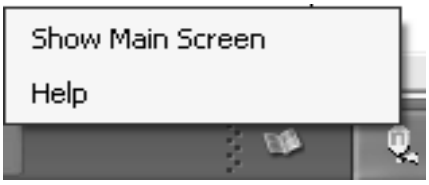

FIGURE 4-1 Windows System Tray

Right-click the Monitor Application icon in the Windows System Tray to view the menu. This menu offers access to the following menu items:

MENU ITEM	FUNCTION
Show Main Screen	Selecting this menu item maximizes the Monitor Application **NOTE: Double-clicking the Monitor Application icon also maximizes the application**
Help	Launches the application help file

4.3 Monitor Application

The Monitor Application consists of the NetGuard Monitor view and an Alarm Alert view. The NetGuard Monitor view organizes patient's into groups and displays their current alarm status. The Alarm Alert view displays system level and patient level alarm notifications. For additional information regarding alarm notification, refer to the **NetGuard Alarms** chapter.

WARNING: To adequately display the software application, it is important to maintain a minimum screen resolution of 1024x768.

4.3.1 NetGuard Monitor View

The NetGuard Monitor view (shown in FIGURE 4-2) is the main application screen and will be shown when there are no active physiological alarms. The standard Microsoft® Windows Minimize, Restore, and Close buttons are displayed in the upper right corner of the screen.

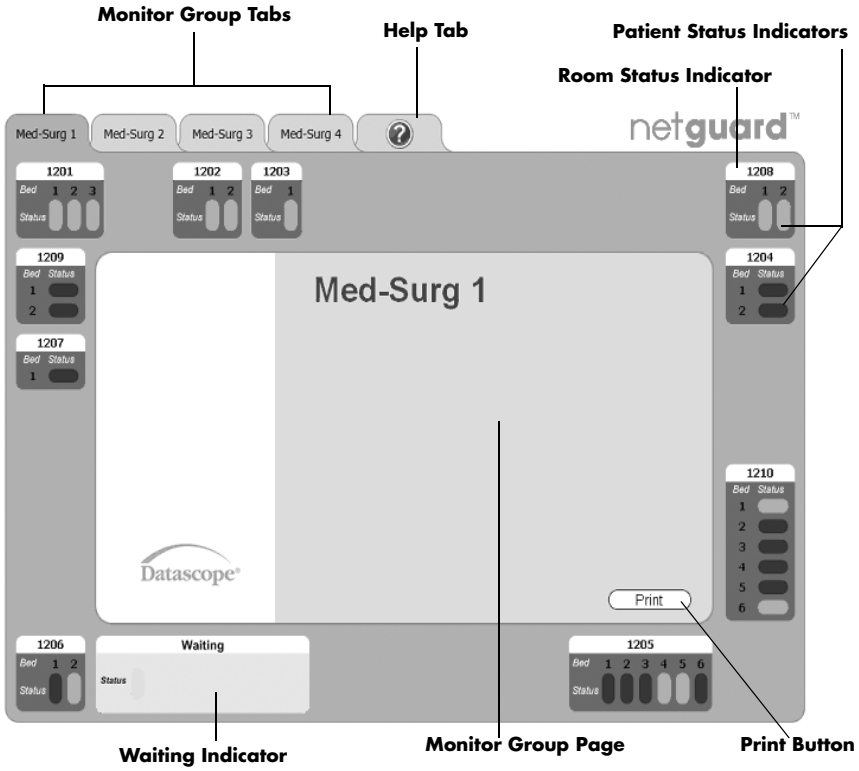

FIGURE 4-2 NetGuard Monitor View

The NetGuard Monitor view provides an overview and status for all the rooms configured at a NetGuard terminal. This view can display from one (1) to five (5) tabs (referred to as Monitor Groups) and can contain a total of 50 patient beds per terminal.

Use the NetGuard Monitor view to admit patient's, edit patient information, transfer patient's, discharge patient's, and print reports. Unless one of the previously mentioned patient maintenance functions in use, the NetGuard Monitor view is minimized and only visible in the Windows System tray.

The NetGuard Monitor view consists of the following components:

- Monitor Groups
- Room Status Indicator
- Waiting Indicator
- Print Button
- Help Tab

4.3.1.1 Monitor Groups

The patient rooms shown at the NetGuard terminal are organized by groups or departments, referred to as Monitor Groups. Monitor Groups may contain from one (1) to five (5) departments or other patient areas of a hospital. Monitor Groups are represented by a labeled tab (shown in FIGURE 4-2). Monitor Group names are established by the NetGuard System Administrator during system setup.

4.3.1.2 Room Status Indicator

The Room Status Indicator represents each patient room or area. Each Room Status Indicator provides a visual representation and status for each patient bed.

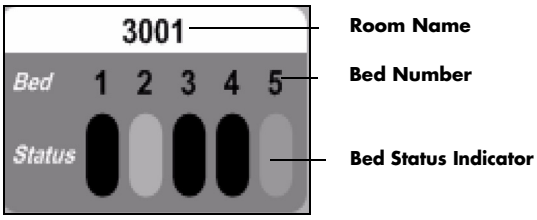

FIGURE 4-3 Room Status Indicator

Room Name

Room names are setup during initial system installation and can only be changed by the NetGuard System Administrator or a Datascope Service Representative.

Bed Number

Bed numbers are assigned to a room and are configured by the NetGuard System Administrator during system setup. Each Room Status Indicator may display from one (1) to 10 beds per room.

Bed Status Indicator

Each bed contains a Bed Status Indicator, which is represented by a colored oval ▮. The Bed Status Indicator uses color coding to represent patient status, as follows:

COLOR	INDICATES
Red	System or Patient level physiological alarm **NOTE: Patient level alarms may also display in yellow if configured by the NetGuard System Administrator.**
Yellow	NetGuard System Administrator has configured Patient Level alarms to display in yellow
Black	Unmonitored or empty bed
Gray	Patient is in the Standby mode
Green	Patient is active, is not in an alarm state, and not in Standby mode
Blue	A technical alarm is in progress or the device is not active

4.3.1.3 Waiting Indicator

The Waiting Indicator group displays bed status indicator symbols for admitted patient's who are being transferred and are awaiting a bed assignment. During a patient transfer, the patient is removed from its Room Status Indicator and temporarily placed in the Waiting Indicator group (shown in FIGURE 4-2). The Waiting Indicator is only displayed when the selected Monitor Group has patient's awaiting a bed assignment. The title of the Waiting Indicator may be customized and is established by the NetGuard System Administrator during system setup.

For additional information regarding patient transfers, refer to ''Transferring Patient's within a Monitor Group'' on page 5-10.

4.3.1.4 Print Button

The **Print** button can be used to generate patient reports. For additional information, refer to Chapter 6.

4.3.1.5 Help Tab

The Help tab contains a **Help** and an **About** button. Selecting the **Help** tab launches an Adobe Reader file (using a .pdf format) of the NetGuard Operating Instructions. Selecting the **About** button opens a dialog box which contains the application name and version.

4.3.2 Alarm Alert View

The Alarm Alert view displays physiological and technical alarm events. This view is only seen when an alarm is triggered or when the mute duration for an alarm has expired. The Alarm Alert view consists of the Primary Alarm window and the Deferred Alarm Application Bar.

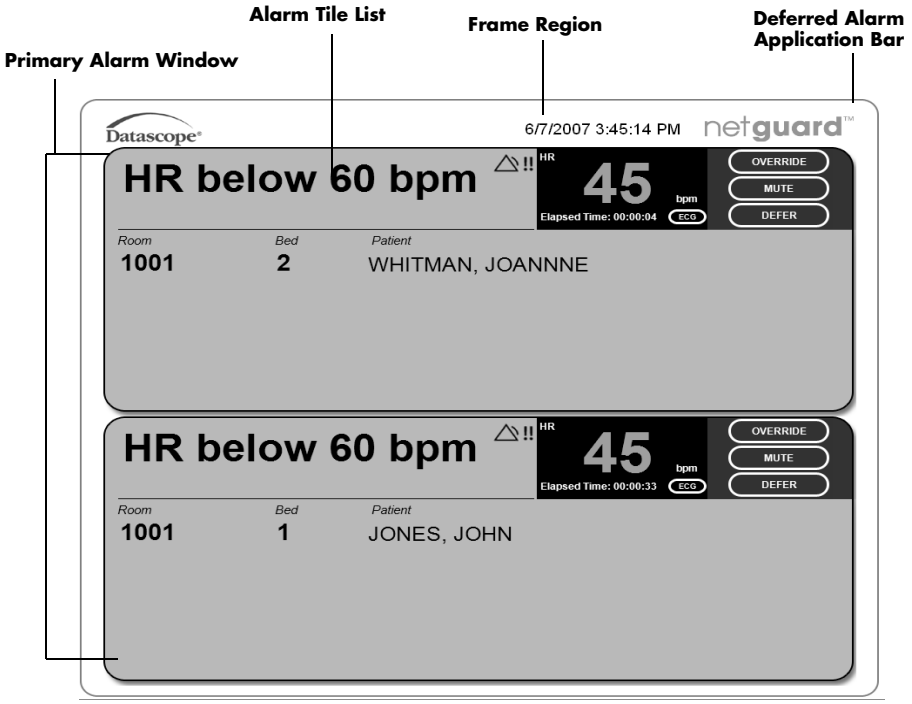

FIGURE 4-4 Alarm Alert View - System Alarms (multiple alarm tiles)

4.3.2.1 Primary Alarm Window

The Primary Alarm window displays System level and Patient level alarm events.

NOTE: Under certain circumstances, the Primary Alarm Window may also display technical events.

In the event of a System level alarm, a window will pop-up covering all open applications, and the Microsoft® Windows taskbar and navigation buttons. The system displays System level alarms in red, and displays a  icon beside the heart rate to indicate that the alarm is high priority. The Primary Alarm window cannot be closed until the alarm is either acknowledged or overridden.

The Primary Alarm window will also pop-up for Patient level alarms but will not entirely cover the screen. The standard Microsoft® Windows taskbar and navigation buttons will still be available. Patient level alarms may be red or yellow depending on system configuration settings. Patient level alarms that are configured to display in red will display an  icon. Patient level alarms configured to display in yellow will display an  icon indicating a lower alarm priority. Patient level alarms may be deferred, overridden, or muted.

Frame Region

The Frame Region surrounds the Primary Alarm window and displays the Datascope logo, the current date and time, and the product logo.

Alarm Tile List

The Alarm Tile list displays the alarms in highest to lowest priority. For example, if there was a Patient level heart rate alarm in progress and the system calls a V-Fib for another patient, the alarm tile list would display the V-Fib first followed by the Patient level heart rate alarm because the V-Fib alarm is a higher priority alarm.The Alarm Tile list scales the alarm tile to fit in the application window. In the event that there are more than six (6) alarms in the Primary Alarm window, a vertical scroll bar is displayed.

4.3.2.2 Primary Alarm Window Tile Components

The components of the Primary Alarm window are shown in FIGURE 4-2. Each tile displays the following information:

- event name
- patient name (optional)
- alarm priority indicator
- room name
- heart rate indicator
- bed number
- window buttons

NOTE: The Patient ID (which is not shown in FIGURE 4-5) replaces the patient name if it was not entered in the Admit form.

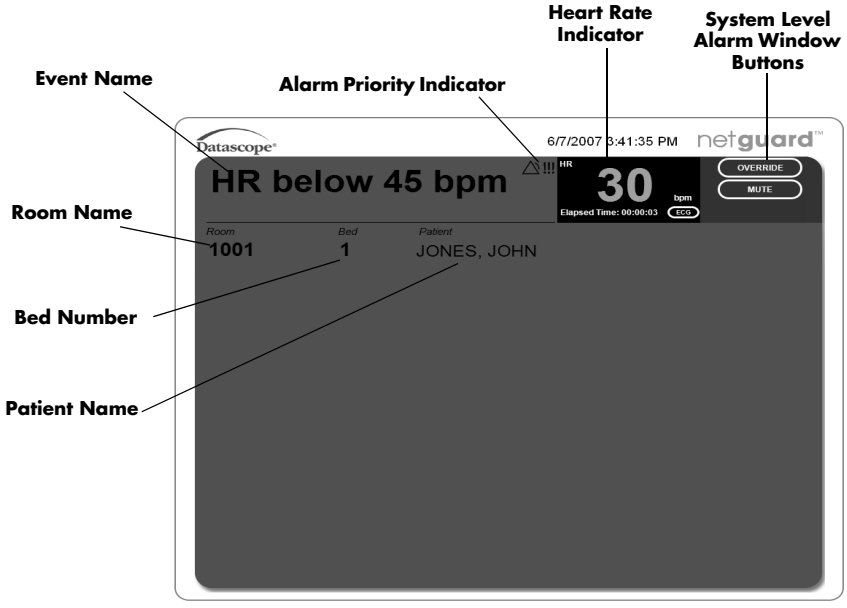

FIGURE 4-5 System Level Alarm Tile Components

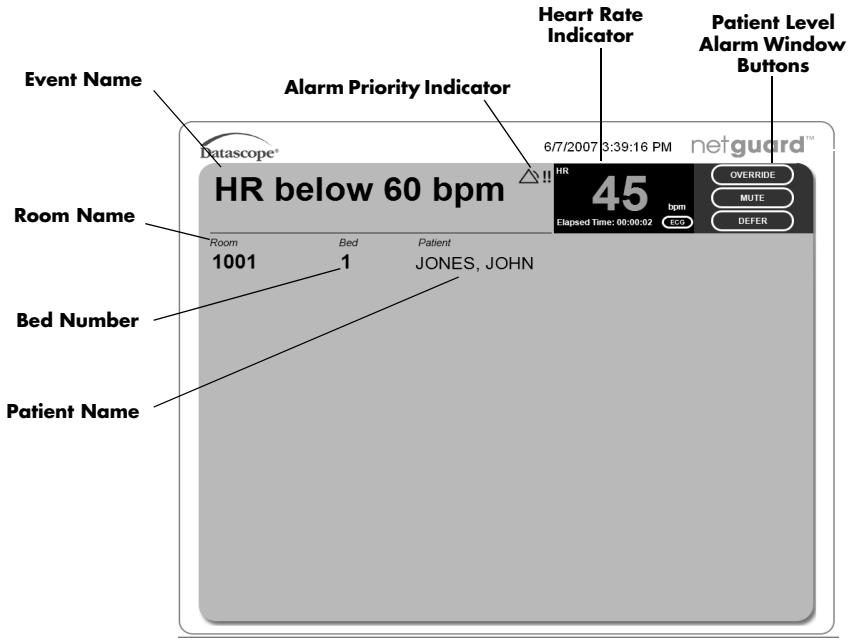

FIGURE 4-6 Patient Level Alarm Tile Components

NOTE: **The primary difference between FIGURE 4-5 and FIGURE 4-6 is that the Patient Level alarm window contains a DEFER button and the System Level alarm window does not.**

Heart Rate Indicator

The Heart Rate Indicator (shown in FIGURE 4-7) displays a current heart rate value (if it is available) for the patient and an elapsed time since the alarm was triggered. It also contains an Elapsed Time indicator, an ECG button, and may include a Mute Indicator if the alarm **MUTE** button was selected.

NOTE: **If no heart rate is detected, is unavailable, or is out of range, the Heart Rate Indicator will display two dashed (--) lines instead of showing a heart rate value.**

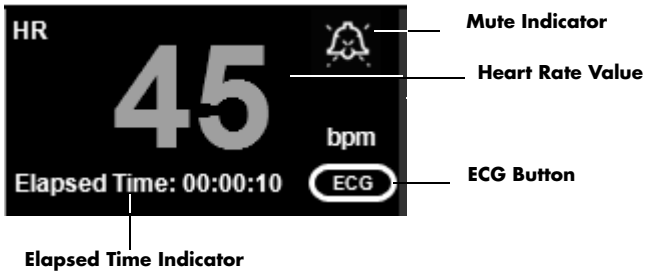

FIGURE 4-7 Heart Rate Indicator

- The  icon indicates that the alarm tone was muted.
- The **Elapsed Time** indicates the amount time that has passed since the alarm was called. HH:MM:SS is the time format displayed.
- The **ECG** button indicates that there is an ECG waveform associated with the selected alarm tile. Selecting the **ECG** button opens the ECG Waveform window (shown in FIGURE 4-8). The ECG Waveform window contains 20 seconds of waveform data. The blue line in the window indicates when the server received the alarm notification.

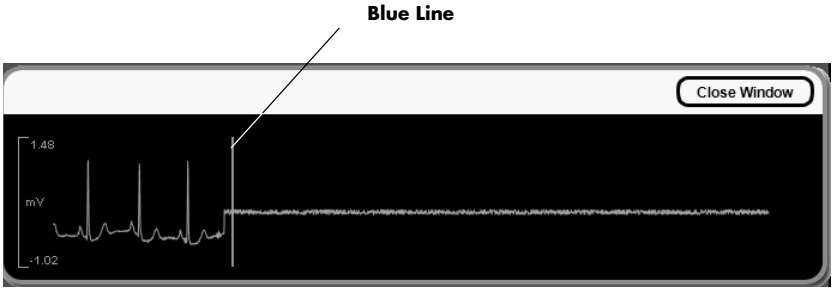

FIGURE 4-8 ECG Waveform Window

Primary Alarm Window Buttons

The Primary Alarm window will display two (2) or three (3) buttons depending on the alarm type. System level alarms will display a **MUTE** and **OVERRIDE** button. Patient level alarms will display a **MUTE**, **OVERRIDE**, and **DEFER** button. The buttons are described in Table 4-1:

TABLE 4-1

BUTTON	DESCRIPTION
MUTE	Silences an active alarm's audio alerting tone for 30 seconds.Once MUTE is selected, the countdown time is displayed inside the button.
OVERRIDE	After authentication, closes the currently active alarm window. Selecting this button is equivalent to acknowledging the alarm at the device.
DEFER	Moves the alarm to the Deferred Application Bar. **NOTE: The DEFER button is only displayed for Patient level alarms. Due to their severity, System level alarms cannot be deferred.**

4.3.2.3 Deferred Alarm Application Bar

The Deferred Alarm Application Bar (shown in FIGURE 4-9) displays active technical and deferred Patient level alarms. If there are no active technical or deferred Patient level alarms, the Deferred Alarm Application Bar will not be displayed.

NOTE: Deferred alarms are terminal specific. Alarms deferred at one terminal are not deferred at other terminals.

Mini-Alarm Tiles

Alarms in the Deferred Alarm Application Bar are represented by mini-alarm tiles (shown in FIGURE 4-9). Patient level alarms appear in red or yellow depending on system configuration settings. Technical alarms appear in blue. The mini-alarm tiles are sorted from highest to lowest priority and each alarm priority is sorted by the most recently alarmed. Up to three (3) columns of alarms may be displayed in the Deferred Alarm Application Bar. If more than three columns are needed, the alarms will be opened in the Primary Alert view window. If an alarm status is updated or a new alarm occurs, the mini-alarm tile flashes for five seconds.

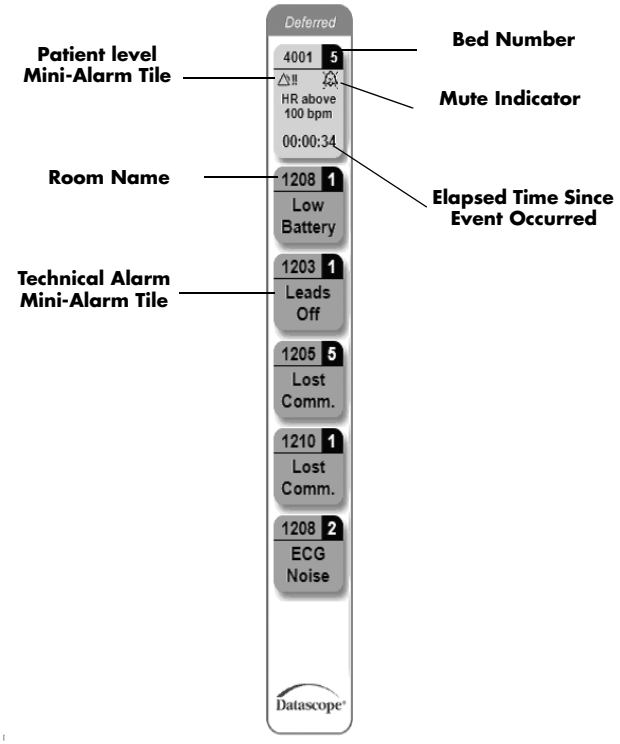

FIGURE 4-9 Deferred Alarm Application Bar

Patient Level Mini-Alarm Tiles

Patient level mini-alarm tiles display the room name and bed number, event name abbreviation, and the elapsed time since the event occurred. Patient level alarms initially appear in the Alarm Alert view (FIGURE 4-4 on page 4-5) and can be transferred to the Deferred Alarm Application Bar by selecting the **DEFER** button in the Alarm Alert view window. When a Patient level alarm is deferred the alarm is automatically muted, which is indicated by the  icon (shown in FIGURE 4-9).

Technical Mini-Alarm Tiles

Technical mini-alarm tiles display the room name, bed number, and the event name abbreviation. Typically, technical mini-alarm tiles are displayed in the Deferred Application Bar unless the display resolution is less than 1024 x 768
(i.e, 800 x 600). If the display resolution is less than the minimum requirement, an error message displays and the technical alarms opens in the Primary Alert view window.

4.3.2.4 Accessing the Deferred Alarm Application Bar Menu

Right-clicking any of the mini-alarm tiles provides a means to override the alarm and view patient information.

- Select **View Details** to access the Patient Detail form
- Select **Override** to cancel the alarm

4.3.3 Authentication

The NetGuard system provides an Authentication form (shown in FIGURE 4-10) to execute operations that require a higher level of permission. For example, overriding an alarm or changing alarm level thresholds. This form requires that a valid User Name and Password is entered to complete and continue with the request. The system notifies the clinician when invalid information is entered and allows re-entry. This manual specifies the functions that require authentication.

NOTE: When entering the Password in the Authentication form, asterisks are displayed in place of the password for security purposes.

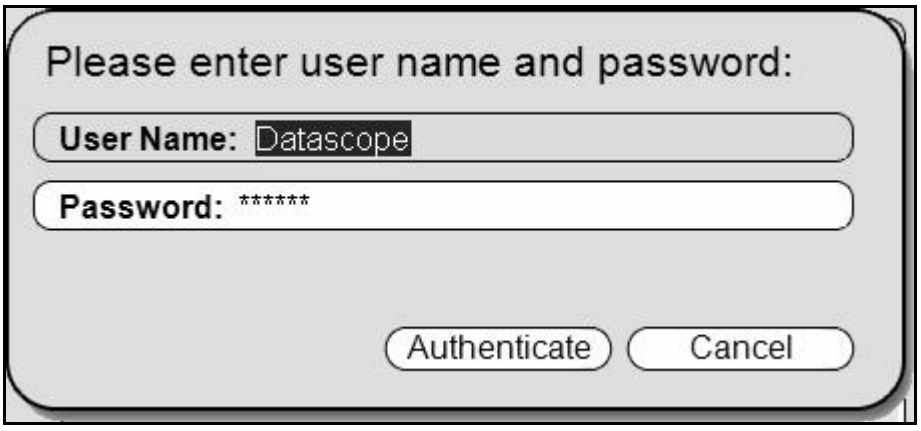

FIGURE 4-10 Authentication Form

4.4 Troubleshooting

This section lists some of the potential messages and issues that may occur while using the Monitor Application.

MESSAGE/ISSUE *	REASON	SOLUTION
Datascope Patient Monitor cannot communicate with the server. Contact the administrator.	The NetGuard devices are not communicating with the server.	Contact the system administrator.
	The application is not communicating with the server.	Contact the system administrator.
Are you sure you want to exit the NetGuard Monitor application?	Application is confirming that you wish to terminate the application.	No solution required.
Cannot authenticate user. Please try again.	An invalid authentication User Name and Password was entered.	Enter a valid authentication User Name and Password.
The volume control is below acceptable range. Please increase the volume using the Windows volume control.	The Microsoft® Windows volume level is set to 0.	Change the volume level.
The volume control is muted. Please change the state using the Windows volume control.	The Microsoft® Windows volume level is muted.	Change the volume level.
The screen resolution is less than the minimum required. Note: All the alarms will be displayed on the Primary Alarm window and the Monitor View may not display properly.	Less than the minimum screen resolution is selected.	Change the screen resolution to a minimum of 1024x768.
Overriding this alarm will remove it from the system. Are you sure you want to override this alarm?	The OVERRIDE button was selected during a Patient Level alarm.	Enter the correct User Name and Password in the Authentication dialog.

* *Messages are shown in all bold text.*

This page intentionally left blank.

5.0 *Operations*

5.1 Introduction

The NetGuard Monitor application is a collection of views that enable the clinician to monitor a patient's heart rate from a terminal. The functions described in this chapter support the tasks associated with the following functions:

- Admitting a Patient
- Readmitting Patient's
- Discharging a Patient
- Transferring Patient's
- Editing Patient Information
- Placing a Patient in Standby
- Changing Patient Alarms

5.1.1 Admitting a Patient

Patient's are admitted to the NetGuard system by accessing the Admit Patient form (shown in FIGURE 5-1). Admitted patient's are continuously monitored, provided they wear an active NetGuard device and are within range of an access point.

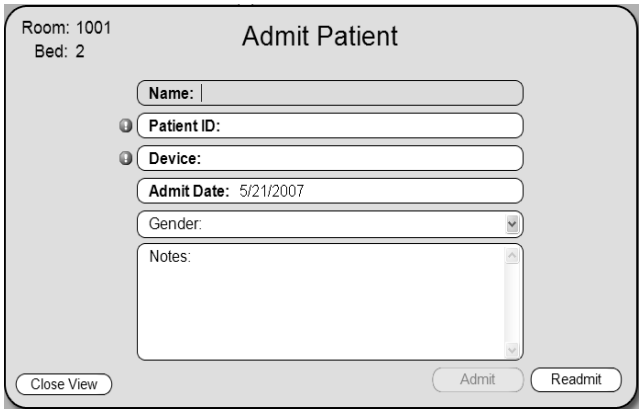

FIGURE 5-1 Admit Patient Form

WARNING: Place the NetGuard device on the patient after admitting the patient to the system. If the device is not placed on the patient within 30 minutes of admission, the terminal will display a technical message that the patient is not being monitored.

To admit a patient:

1. Maximize the NetGuard Monitor view (if necessary), and then select a Monitor Group.
2. Select an available bed in the Monitor Group (indicated by a black bed symbol).
3. Enter the patient information in the **Admit Patient** form.

   The exclamation icon located beside the Patient ID and Device indicates that these fields are required. If the data entered is valid, the exclamation icon disappears and the **Admit** button is enabled.

NOTE: The Device text box may be configured to use a specific naming convention. Contact your NetGuard System Administrator to determine this.

NOTE: The Admit Date field automatically populates with the current date and cannot be changed.

4. Select the **Admit** button.
5. Place the NetGuard device on the patient and activate it as described in ''Electrode Placement'' on page 2-1.

NOTE: The patient will remain in the Not Active state until the NetGuard device is placed on the patient and activated.

5.1.2 Readmitting Patient's

Patient's may be readmitted to the NetGuard system once they have been discharged by accessing the Discharged Patient list (shown in FIGURE 5-2). The Discharged Patient list includes all the discharged patient's currently saved at the NetGuard server. The list is sorted by most recent discharge date and time.

NOTE: The number of days a discharged patient remains in the system is determined by the NetGuard System Administrator.

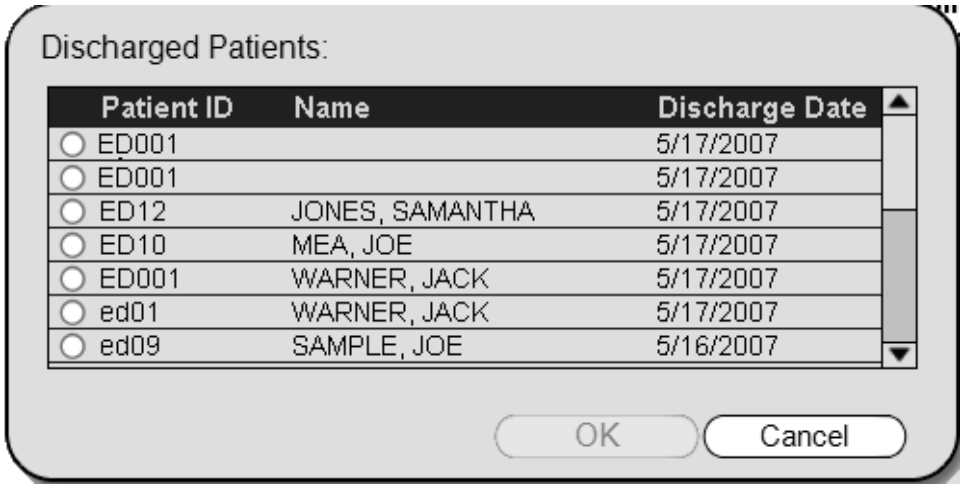

FIGURE 5-2 Discharged Patient's List

To readmit a patient:

1. In the NetGuard Monitor view, left-click an available bed (indicated by a black bed symbol).
2. In the **Admit Patient** form (shown in FIGURE 5-1 on page 5-2), select the **Readmit** button.
3. Enter a valid User Name and Password in the Authentication dialog, and then select the **Authenticate** button.
4. In the Discharged Patient's list (shown in FIGURE 5-2), select a radio button beside a Patient ID, and then select the **OK** button.
5. In the **Admit Patient** form, enter a valid Device ID for the patient, add optional notes, and then select the **Admit** button. The patient is readmitted to the NetGuard system.

5.1.3 Patient Detail Form

Detailed patient data can be viewed by accessing the **Patient Details** form (shown in FIGURE 5-3). This form provides access to a patient's heart rate trends, events data, ECG waveforms, and patient reports. It also provides access to the **Patient Menu** form where patient functions are available.

The Form Tile Header displays the patient's room and bed number, name (if it was previously entered), current heart rate, the patient's communication status (for example, Not Active, Standby), and the event name for the alarm, if applicable. The Patient Detail form can also be viewed for patient's in a Not Active or Lost Communication state. The Form Tile Header background color matches the color of the current alarm or state of the bed. For example, if the background color is blue, this indicates that the patient is either in a Lost Communication state, Not Active, or currently is experiencing a technical alarm.

Waveforms and Detail Tabs

The Waveform area and the Detail tabs are described in the following section.

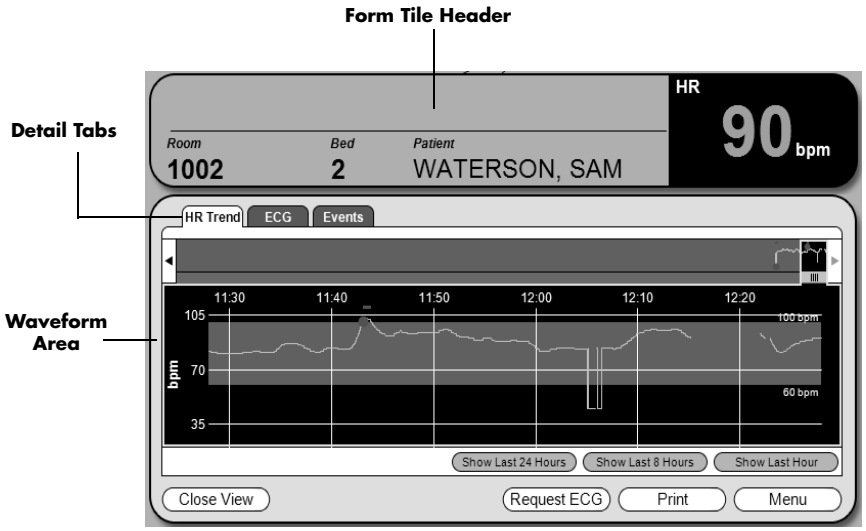

FIGURE 5-3 Patient Detail Form

To access the **Patient Detail** form from the NetGuard Monitor view:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select an active patient or a patient in a Not Active or Lost Communication state. The **Patient Detail** form is displayed.

To access the Patient Detail form from the Deferred Alarm Application Bar:

1. Right-click on any of the mini-alarm tiles contained in the Deferred Alarm Application Bar.
2. Select **View Details** from the menu. The **Patient Detail** form is displayed.

NOTE: **For alternative steps to accessing the Patient Detail form, refer to "Accessing Monitor View Quick Menus" on page 5-15.**

5.1.3.1 HR Trend Tab

Select the **HR Trend** tab in the **Patient Detail** form to display a patient's heart rate activity over time. Trends can be viewed at different time periods by selecting one of the time interval buttons below the trend graph. The choices are 24 hours, 8 hours, and the last hour. The **HR Trend** tab is divided into two parts. The Summary Trend Graph and the Detailed Trend Graph (both shown in FIGURE 5-4). Both are described in the following sections.

NOTE: **Unless the patient is currently experiencing a Patient level alarm, the HR Trend tab will automatically be selected when the Patient Detail form is opened.**

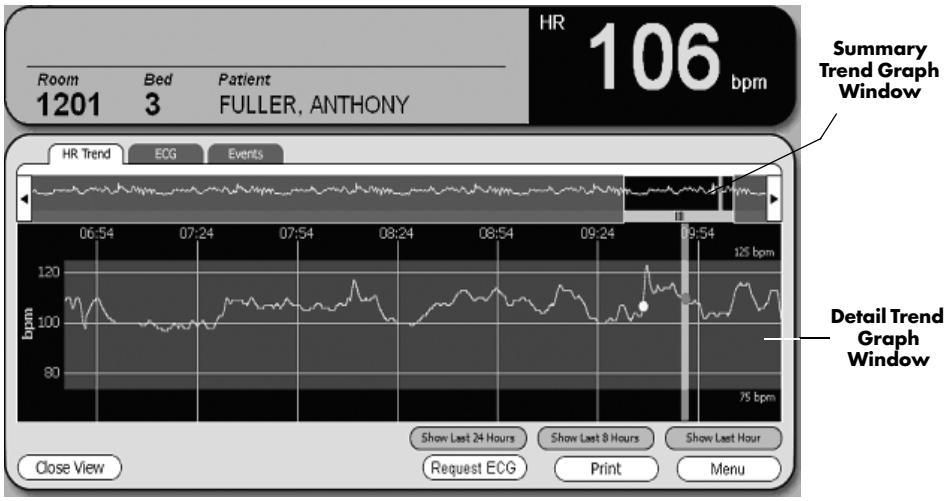

FIGURE 5-4 HR Trend Tab (30 minute trend interval)

Summary Trend Graph Window

The Summary Trend Graph window (shown in FIGURE 5-5) displays a compressed view of the trend data over a 24 hour period. Use the trend slider to view the waveform at a different time period and trend time interval (for example, 10 minutes, 20 minutes, or 30 minutes).

Dragging the slider to the left scrolls to an earlier time, and dragging the slider to the right scrolls to a more current time. Moving the trend slider handle to the left increases the trend interval period, and moving the slider handle to the right decreases the trend interval period. The navigation arrows may also be used to move the trend slider.

FIGURE 5-5 Summary Trend Graph Window

Detailed Trend Graph Window

The Detailed Trend Graph window (shown in FIGURE 5-6) displays a graph of the heart rate trend data in the range specified in the Summary Trend Graph window. The Detail Trend Graph window shows beats per minute (bpm) beside the trend graph and shows the trend time (displayed in a 12 hour format) horizontally above the trend graph.

The red and yellow (if system configured) solid colored circles in the trend graph indicate that a System or Patient level alarm event occurred. Selecting the solid colored circle in the trend graph will open the associated event waveform in the **ECG** tab. If Patient level heart rate thresholds enabled by the NetGuard System Administrator, and they were configured, the high and low threshold rates will be displayed to the far right of the waveform.

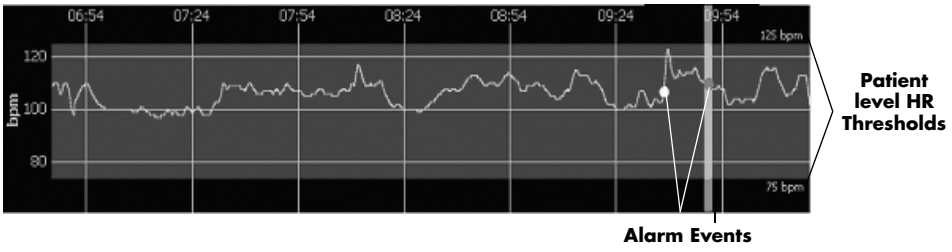

FIGURE 5-6 Detailed Trend Waveform Window

5.1.3.2 ECG Tab

The **ECG** tab (shown in FIGURE 5-7) displays a 20 second ECG waveform for the selected physiological alarm event and a ECG Event Waveform window. Above the ECG Waveform window is the Summary Trend Graph window. The ECG Waveform window includes the event name, event date, event time, and event duration. The waveform scale is displayed beside the waveform and the event time (displayed in a 24 hour format) is displayed above the waveform. The Summary Trend Graph window displays a compressed view of the ECG trend data over a 24 hour period. The blue vertical line displayed in the waveform indicates the time the server received the alarm event.

NOTE: When viewing the Patient Details form for an active Patient level alarm, the ECG tab is automatically selected when the Patient Detail form is opened.

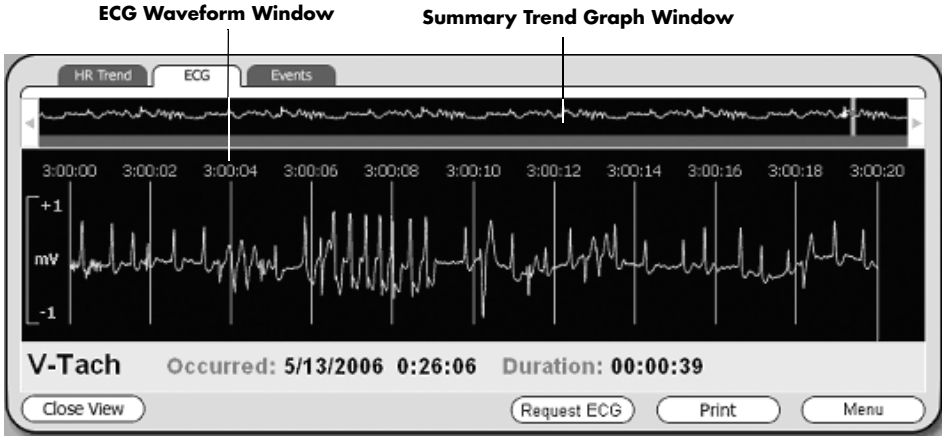

FIGURE 5-7 ECG Tab

5.1.3.3 Events Tab

The **Events** tab (shown in FIGURE 5-8) displays a list of all patient events. The list includes the event name, event date, event time, and event duration. The **View** button is displayed beside all the physiological alarm events in the list. Selecting the **View** button displays the waveform associated with the selected physiological event in the **ECG** tab.

NOTE: The Events tab list posts the most recent event at the top of the list.

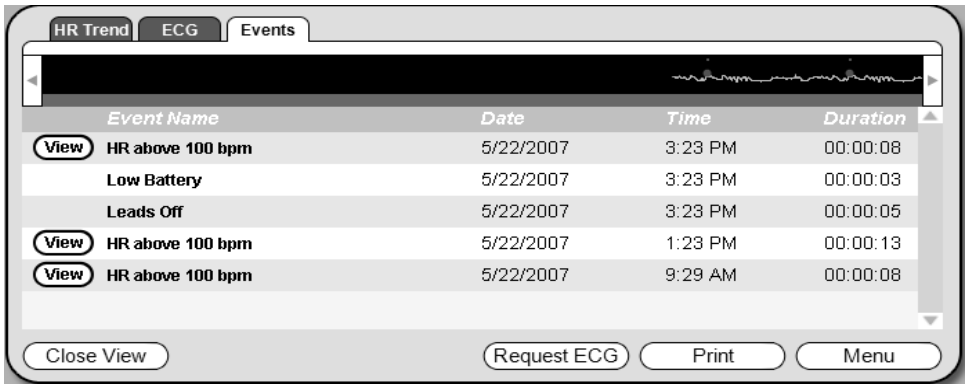

FIGURE 5-8 Events Tab

5.1.3.4 Patient Detail Form Buttons

The **Patient Detail** form contains four (4) buttons. Each button is described in Table 5-1:

TABLE 5-1

BUTTON	DESCRIPTION
Close View	Closes the **Patient Detail** form and returns to the NetGuard Monitor view
Request ECG	Retrieves a current ECG strip for the selected patient
Print	Generates a Patient Detail Report for the selected patient
Menu	Accesses the **Patient Menu** form for the selected patient

NOTE: These buttons are available from all the Patient Detail form tabs.

5.1.4 Patient Menu Form

The **Patient Menu** form (shown in FIGURE 5-9) may be used to modify an admitted patient's information.

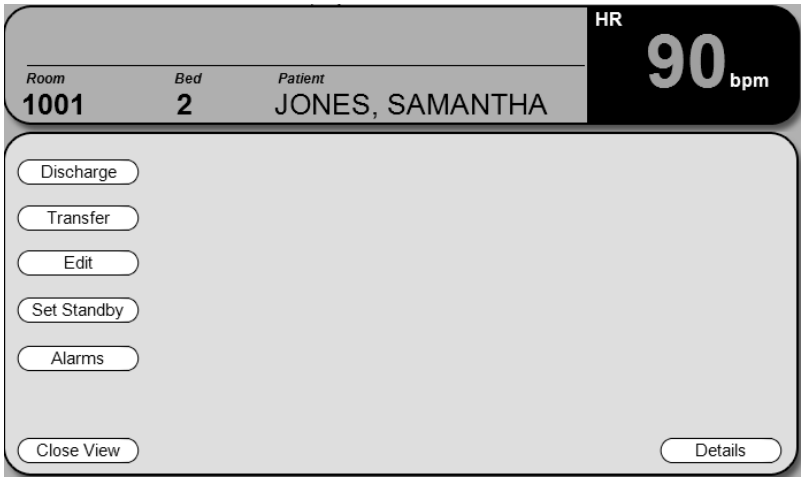

FIGURE 5-9 Patient Menu Form (Patient Level Alarms Enabled)

5.1.4.1 Accessing the Patient Menu Form

1. Select an active patient (indicated by a green oval) in the NetGuard Monitor view.
2. Select the **Menu** button in the **Patient Details** form.
3. In the **Patient Menu** form, select one of the buttons described in Table 5-2.

TABLE 5-2

BUTTON	DESCRIPTION
Discharge	Opens the Discharge message box
Transfer	Opens the **Transfer Patient** form
Edit	Opens the **Patient Edit** form
Set Standby	Opens the Set Standby message box
Alarms	After authentication, opens the **Patient Alarms** form
Close View	Closes the **Patient Menu** form and returns to the NetGuard Monitor view
Details	Opens the **Patient Detail** form

5.1.5 Discharging a Patient

Discharge a patient from the NetGuard System when it is no longer necessary to monitor the patient's condition.

To discharge a patient from a Monitor Group:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Discharge** button.
5. Select the **Yes** button in the confirmation dialog box. The patient bed symbol changes to black indicating that the patient has been successfully discharged.

NOTE: **For alternative steps to discharging a patient, refer to "Accessing Monitor View Quick Menus" on page 5-15.**

5.1.6 Transferring Patient's

Patient's can be transferred to a room within the same Monitor Group or to new room in a different Monitor Group by accessing the **Transfer Patient** form (shown in FIGURE 5-10). The following gives instructions for performing both transfer types.

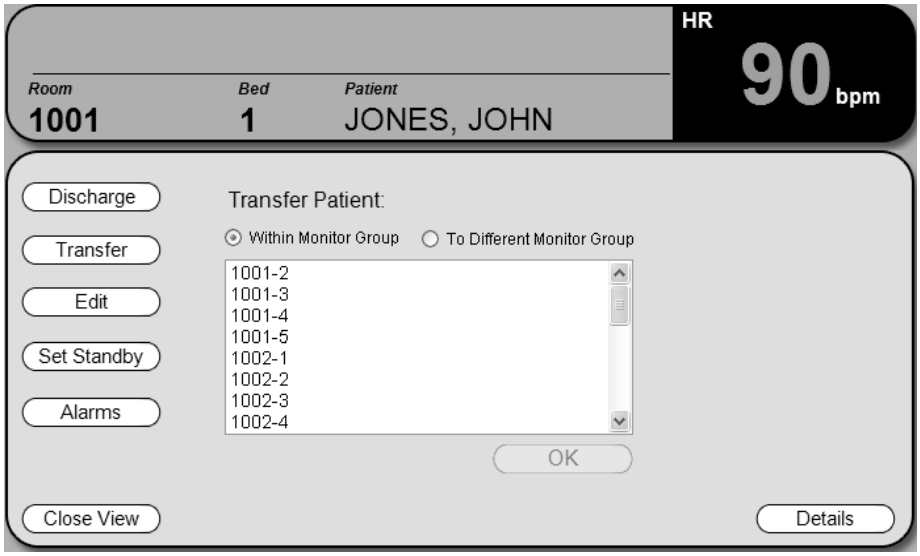

FIGURE 5-10 Transfer Patient Form (Patient Level Alarms Enabled)

5.1.6.1 Transferring Patient's within a Monitor Group

Transferring a patient within a Monitor Group may be done by dragging and dropping or by using the **Transfer Patient** form. Both methods are described in the following section.

To transfer an admitted patient within the same Monitor Group using drag and drop:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Left-click the patient bed to be transferred, and then drag it to another room in the Monitor Group.
3. Select the **Yes** button in the confirmation dialog box.
   The patient is now assigned to the new room.

To transfer an admitted patient within the same Monitor Group using the **Transfer** form:

1. In the **NetGuard Monitor** view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Transfer** button.
5. In the **Transfer Patient** form, select the radio button labeled **Within Monitor Group**, if necessary.
6. Select a destination bed from the list.
7. Select the **OK** button.

8. Select the **Yes** button in the confirmation dialog box.
   The patient is now assigned to the new room.
9. Optional - select the **Close View** button to close the form and return to the NetGuard Monitor view.

NOTE: For alternative steps to transferring a patient, refer to "Accessing Monitor View Quick Menus" on page 5-15.

5.1.6.2 Transferring Patient's to a New Monitor Group

To transfer a patient to a new Monitor Group:

NOTE: Patient's can be transferred to any Monitor Group in the NetGuard system, even if the NetGuard terminal initiating the transfer does not have access to the new Monitor Group.

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Transfer** button.
5. In the **Transfer Patient** form, select the radio button labeled **To Different Monitor Group**.
6. Select the patient's destination Monitor Group tab.
7. Select the **OK** button.
8. Select the **Yes** button in the confirmation dialog box.
   The patient is transferred to the Waiting Patient's tile in the new Monitor Group.
9. If the patient has been transferred to a Monitor Group that is accessible at the NetGuard terminal, follow the steps in the ''Transferring Patient's within a Monitor Group'' on page 5-10 to transfer the patient to an available bed in the new Monitor Group.

   If the patient has been transferred to a Monitor Group that is not accessible from the NetGuard terminal, the transfer process must be completed at a terminal that can access the new Monitor Group.

NOTE: For alternative steps to transferring a patient, refer to "Accessing Monitor View Quick Menus" on page 5-15.

5.1.7 Editing Patient Information

Patient information can be changed after admission by accessing the **Patient Edit** form (shown in FIGURE 5-11).

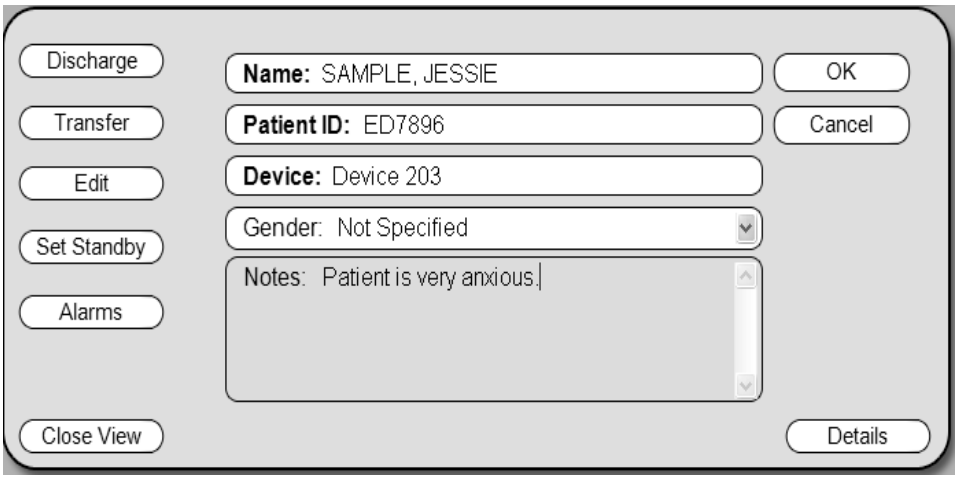

FIGURE 5-11 Patient Edit Form (Patient Level Alarms Enabled)

To edit an admitted patient's information:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Edit** button.
5. Make the necessary changes in the **Patient Edit** form, and then select the **OK** button.

NOTE: The OK button is not enabled until a change is made in the form.

6. Select the **Yes** button in the confirmation dialog box.
7. Optional - select the **Close View** button to close the form and return to the NetGuard Monitor view.

NOTE: For alternative steps to accessing the Patient Edit form, refer to "Accessing Monitor View Quick Menus" on page 5-15.

5.1.8 Placing a Patient in Standby

Patient's can be placed in the Standby mode to temporarily suspend remote patient monitoring while maintaining the patient's historical data. When a patient is in the Standby mode, the device continues to monitor the patient without raising remote on-screen alerts. If a lethal alarm occurs while a patient is in the Standby mode, the NetGuard device will still alarm.

To place a patient into Standby mode:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Set Standby** button.
5. Select the **Yes** button in the confirmation dialog box.
   The patient is placed in the Standby mode.
6. Optional - select the **Close View** button to close the form and return to the NetGuard Monitor view.

To remove a patient from the Standby mode:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Clear Standby** button.
5. Select the **Yes** button in the confirmation dialog box.
   The patient is removed from the Standby mode.
6. Optional - select the **Close View** button to close the form and return to the NetGuard Monitor view.

NOTE: **For alternative steps to placing a patient in Standby, refer to "Accessing Monitor View Quick Menus" on page 5-15.**

5.1.9 Changing Patient Alarms

If configured by the NetGuard System Administrator, Patient level heart rate alarm thresholds may be configured on an individual patient basis by accessing the **Patient Alarms** form (shown in FIGURE 5-12). This form allows heart rate thresholds for an individual patient to be different from the System level and Patient level alarm thresholds, which are both configured by the NetGuard System Administrator. If individual Patient level alarms have been enabled, the **Patient Detail** form will display an **Alarms** button. If the **Alarms** button is not displayed, this indicates that Patient level alarms were not enabled by the administrator. When a patient's alarm thresholds are changed, the configured Patient level heart rate alarm thresholds will be overridden.

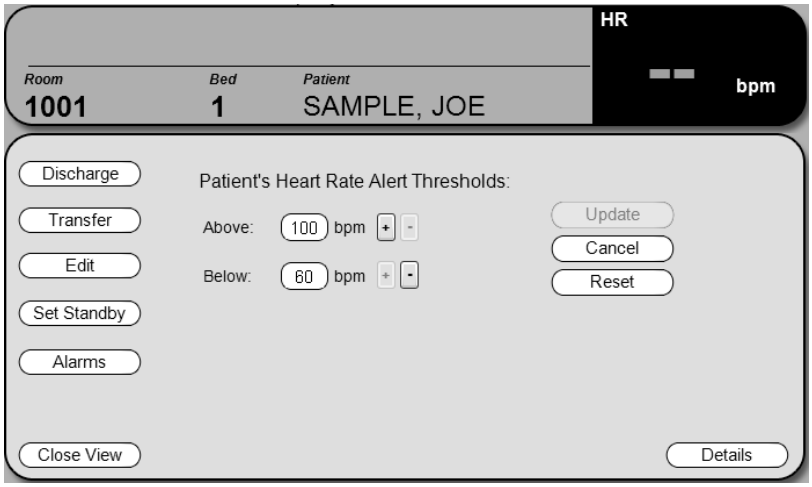

FIGURE 5-12 Patient Alarms Form

To change Patient level alarm thresholds:

1. In the NetGuard Monitor view, select the applicable Monitor Group tab.
2. Select the patient's bed.
3. In the **Patient Detail** form, select the **Menu** button.
4. In the **Patient Menu** form, select the **Alarms** button.
5. Enter a valid User Name and Password in the Authentication dialog, and then select the **Authenticate** button.
6. Select the [+] [-] buttons to increase or decrease the high and low heart rate thresholds.
   - The high heart rate threshold is between 100 and the System level high value plus (+) 1 bpm. The default is value is 100 bpm.
   - The low heart rate threshold is between the System level low value minus (-) 1 bpm and 60 bpm. The default is value is 60 bpm.
7. Optional - select the **Reset** button to revert back to the original threshold settings.
8. Once the edits are complete, select the **Update** button.

NOTE: The Update button will not become enabled until a change has been made in the form.

9. Select the **Yes** button in the confirmation dialog box. The alarm thresholds are reset.

10. Optional - select the **Close View** button to close the form and return to the NetGuard Monitor view.

NOTE: **For alternative steps to accessing the Patient Alarms Form, refer to Accessing Monitor View Quick Menus.**

5.2 Accessing Monitor View Quick Menus

Right-clicking on an active bed in the Monitor view opens a quick menu. Making a selection from the quick menu provides access to the following:

QUICK MENU CHOICE	DESCRIPTION
Details	Opens the **Patient Details** form
Discharge	Opens the Discharge message box
Transfer	Opens the **Transfer Patient** form
Edit	Opens the **Patient Edit** form
Set Standby	Opens the Set Standby message box
Alarms	After authentication, opens the **Patient Alarms** form

5.3 Troubleshooting

This section lists some of the potential messages and issues that may occur while using the NetGuard Monitor view.

MESSAGE/ISSUE *	REASON	SOLUTION
The patient ID is already in use in the system. If the patient was previously discharged, select the patient using the Readmit button.	The patient ID entered is already in use by another patient.	Verify the patient ID.
The device ID is currently in use by another patient.	The device ID entered is already in use by another patient.	Enter an unused device ID.
The Discharged Patient list is empty	The NetGuard System Administrator has configured the system to not save patient information after the patient is discharged.	Contact the NetGuard System Administrator.
	No patient's have been discharged from the system.	No solution required.
Cannot access the **Patient Detail** form after left-clicking a bed symbol	No patient has been admitted to the selected bed.	Admit a patient to the bed or select an active bed symbol.
Cannot change patient alarm levels	The NetGuard System Administrator has not enabled Patient level alarms.	Contact the NetGuard System Administrator.
All the beds in the transfer room are occupied.	An attempt was made to add more than 20 patient's to the Waiting patient area.	Transfer a patient out of the Waiting patient area and try again.

* *Messages are shown in all bold text.*

6.0 *Patient Reports*

6.1 Introduction

This chapter describes how to view and print patient reports from a NetGuard terminal. The two reports available are the Patient Detail Report and the Patient Report. Each report prints in portrait orientation on and is formatted to use 8.5 x 11 size paper unless otherwise specified.

6.1.1 Report Layout

The Patient Detail Report and the Patient Report both contain the following sections:

- Report Header
- Heart Rate Trend
- Patient History
- Event History
- Patient Notes

6.1.1.1 Report Header

The report header includes the Patient ID, Name, Room, Bed, Monitor Group name, the report page number, and the date and time the report was printed. If the report was printed from the NetGuard Monitor view, and the Current Monitor Group or Selected Monitor Group was selected, the report header will restart for each new patient. If more than one report page is needed, the subsequent pages will display a modified page header containing the Patient ID, bed, and page number (shown in FIGURE 6-2).

6.1.1.2 Heart Rate Trend

The HR Rate Trend graph section displays a a compressed view of a patient's heart rate activity during the time they were active at the NetGuard terminal.

6.1.1.3 Patient History

The Patient History section displays the patient's admit, transfer, discharge, and readmit dates.

6.1.1.4 Event History

The Event History section displays the selected patient events. A 20 second waveform is displayed for each physiological event. If the **Include Technical Alarms** checkbox was selected in the **Print Options** form, the alarm event description, date, time and duration of the technical alarm is also shown.

6.1.1.5 Patient Notes

The Patient Notes section displays the comments entered in the **Notes** section of the **Patient Admit** form.

6.1.2 Patient Detail Report

The Patient Detail Report (shown in FIGURE 6-1 and FIGURE 6-2) includes a patient's history since their admission date. The report can be printed for any patient that's been admitted to the NetGuard system. Use the available report parameters such as patient's most recent transfer date, a specified number of monitored hours, or a specified date range to refine the report output. The Patient Detail Report is generated from the **Patient Detail** form.

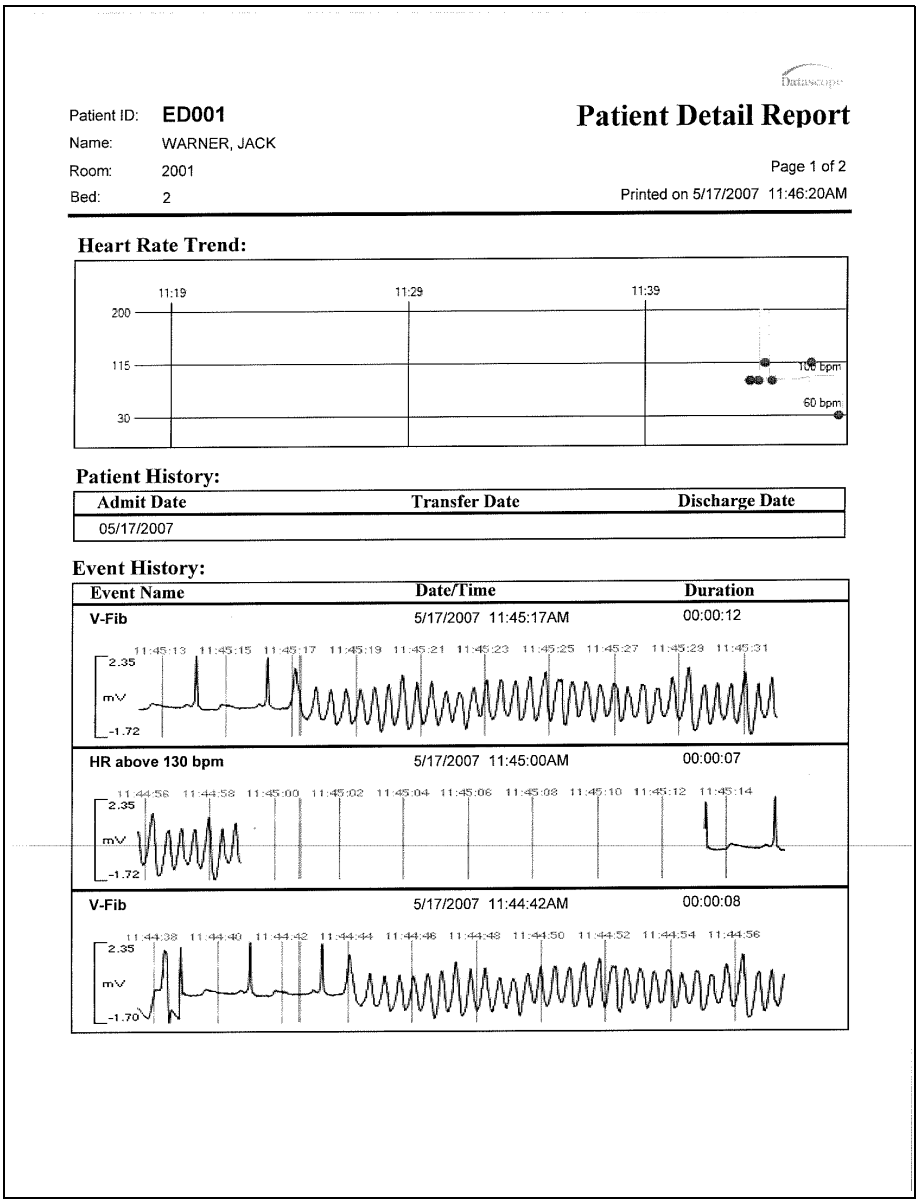

FIGURE 6-1 Patient Detail Report (Page 1)

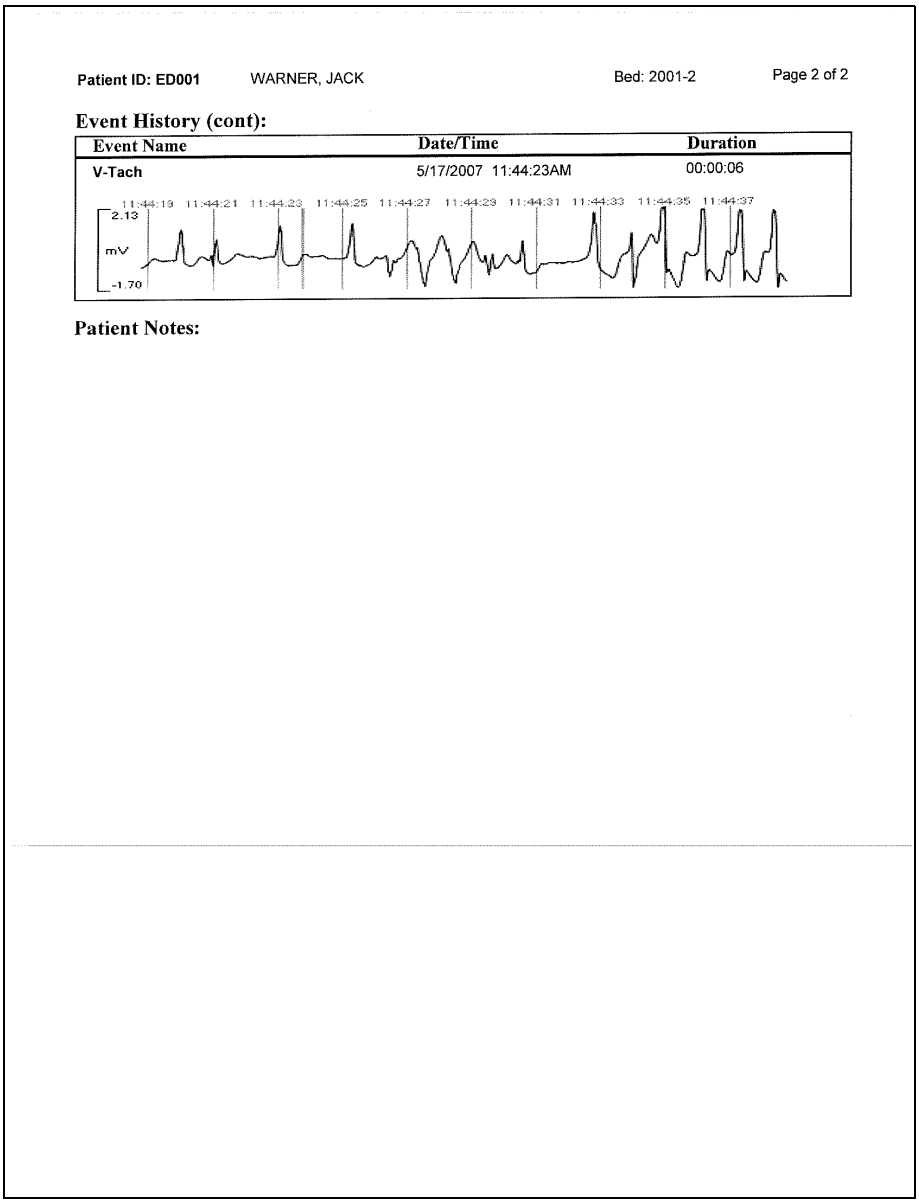

FIGURE 6-2 Patient Detail Report (Page 2)

6.1.3 Printing the Patient Detail Report

To print a Patient Detail Report from the **Patient Detail** form, access the **Patient Print Options** form (shown in FIGURE 6-3).

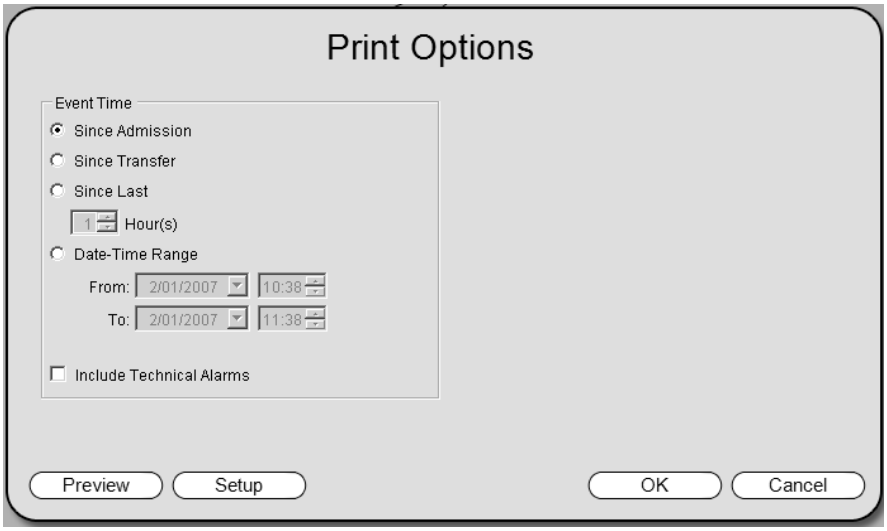

FIGURE 6-3 Patient Print Options Form

1. In the **Patient Detail** form, click the **Print** button.
2. Follow steps 3-7 in the Patient Report section on page 6-5.

For instructions to access the Patient Detail form, refer to ''Patient Detail Form'' on page 5-4.

6.1.4 Patient Report

The Patient Report can be generated for a single registered patient, a single Monitor Group, or multiple Monitor Groups on the NetGuard system. The format of this report is identical to the Patient Detail Report except that it can contain historical information for multiple patient's. The Patient Report is generated from the NetGuard Monitor view.

Use the available report parameters such as patient's history since their admission date, most recent transfer date, a configured number of monitored hours, or a specified date range to refine the report output. If the report is being generated for a Monitor Group or groups, the same Date-Time range will be used for all the patient's in the group.

6.1.5 Printing the Patient Report

To print a Patient Report from the NetGuard Monitor view, access the System Print Options form (shown in FIGURE 6-4).

1. In the NetGuard Monitor view, click the **Print** button.

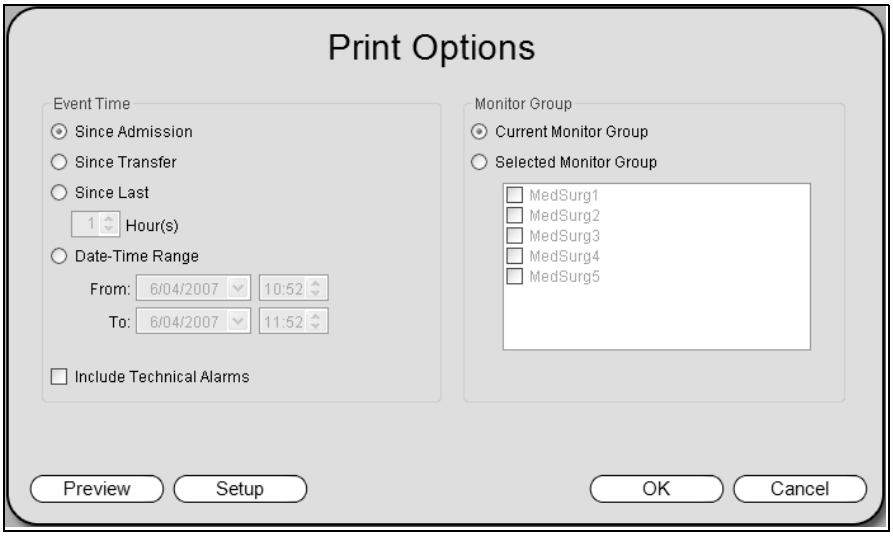

FIGURE 6-4 System Print Options Form

2. In the **System Print Options** form, select either Current Monitor Group or Selected Monitor Group.

3. Select an event time. The choices are:

EVENT TIME OPTIONS	DESCRIPTION
Since Admission	Based on the most recent admit date. This is the default Event Time selected.
Since Transfer	If there were multiple transfers, the system generates the report based on the most recent transfer date.
Since Last	Use the up and down arrows to select a time or enter a maximum of 24 hours.
Date-Time Range	The date and time selected must be within the date/time range the patient was active at the NetGuard terminal.

4. Optional - select the **Include Technical Alarms** checkbox to have the technical alarms included in the Event History section of the report.

5. Optional - select the **Preview** button to view the report before it is printed.

6. Optional - select the **Setup** button to change the printer settings (for example, number of copies or page orientation).

7. Click the **OK** button to print the report to the default terminal printer.

For instructions to access the NetGuard Monitor view, refer to ''NetGuard Monitor View'' on page 4-2.

6.2 Troubleshooting

This section lists some of the potential messages and issues that may occur while trying to print a NetGuard report.

MESSAGE/ISSUE *	REASON	SOLUTION
Report does not print	No printer available.	Configure a printer for the workstation and try again.
OK button disabled	Invalid date-time entered in the From/To text box of the Date-Time Range	Reenter date-time based on the patient's admit date-time.
The From date/time should be before the To date/time	The To Date-Time entered in the **Print Options** form occurred before the From Date-Time.	Enter a valid date.

* *Messages are shown in all bold text.*

This page intentionally left blank.

7.0 *Technical Description*

7.1 Basic Technical Specifications

CLASSIFICATION

Protection Class	Internally powered equipment
Type of protection against electric shock	Type CF applied part 
Ambient temperature	36° C or 97° F
Mode of operation	Continuous operation
Degree of protection against ingress of water	IPX4
For use in environments where no flammable anesthetics are present	

7.2 FCC Rules

The following FCC statements apply to the NetGuard device:

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation
- Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- Any changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

7.3 FCC Labels

7.3.1 Access Point

- Access Point FCC ID:DXXNG1400AP

7.3.2 Reusable

- Reusable FCC ID:DXXNG1300

This page intentionally left blank.

Printed in U.S.A. *0070-10-0678-01* *Revision A* *June 20 2007*