

GE Medical Systems *Information Technologies*

HL7 Interface
Test Plan and Integration
Instructions

Software Version 005E



GE Medical Systems
Information Technologies

gemedicalsystems.com

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1 Introduction

For your notes

Manual Information

Revision History

Each page of the document has the document part number and revision letter at the bottom of the page. The revision letter identifies the document's update level.

The revision history of this document is summarized in the table below

Table 1. Revision History PN 2020285-028		
Revision	Date	Comments
A	1 April 2004	Initial release of document, corresponds with MUSE software version 005E.

Manual Purpose

These instructions will help you connect, configure, and test your HL7 interface.

Where necessary the manual identifies additional sources of relevant information and/or technical assistance.

Chapter Contents

This manual is organized into the following chapters:

1 Introduction

Contains general information and guidelines for using this manual, and provides common procedures referenced throughout the manual.

2 Configure the HL7 Test Environment

Provides instructions for configuring a test environment in which to test the HL7 interface before integrating it into the production MUSE CV system network.

3 Testing the HL7 Interface

Provides instructions and sample data for testing the HL7 interface.

4 Configure the HL7 Production Environment

Provides instructions for integrating the HL7 interface into the production MUSE CV system network.

Appendix A—Troubleshooting

Contains troubleshooting information and instructions for accessing the various event log files needed to evaluate operation of the system.

Appendix B—Test Data Samples

Contains samples of each type of test result.

Related Manuals

See these documents for additional information

- Functional Description of HIS Interface
- HIS XFER Communications Mapped Configuration
- HIS XFER Communications FTP Configuration
- HIS Interface and MUSE CV Information System Product Information
- GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide
- GE Medical Systems *Information Technologies* HL7 Interface Reference Manual

Conventions

These are the conventions used in this manual.

Safety Messages

DANGER safety messages indicate an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

WARNING safety messages indicate a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

CAUTION safety messages indicate a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

NOTE messages provide additional user information.

Definitions

- Items shown in **Bold** text are keys on the keyboard, text to be entered, or hardware items such as buttons or switches on the equipment.
- Items shown in *Italicized* text are software terms which identify menu items, buttons, or options in various windows.
- To perform an operation which appears with a plus (+) sign between the names of two keys, you press and hold the first key while pressing the second key once. This is called a keystroke combination.

For example, “Press **Ctrl+Esc**” means to press and hold down the **Ctrl** key while pressing the **Esc** key.

- When instructions are given for typing a precise text string with one or more spaces, the point where the spacebar must be pressed is indicated as: <Space>. The purpose of the < > brackets is to ensure you press the spacebar when required.
- **Enter** means to press the “Enter” or “Return” key on the keyboard. Do not type “enter”.

Safety Information

Responsibility of the Manufacturer

GE Medical Systems *Information Technologies* is responsible for the effects of safety, reliability, and performance only if:

- Assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorized by *Information Technologies*.
- The electrical installation of the relevant room complies with the requirements of the appropriate regulations.
- The equipment is used in accordance with the instructions for use.

General

This device is intended for use under the direct supervision of a licensed health care practitioner.

To ensure patient safety, use only parts and accessories manufactured or recommended by GE Medical Systems *Information Technologies*.

Contact GE Medical Systems *Information Technologies* for information before connecting any devices to this equipment that are not recommended in this manual.



If the installation of this equipment, in the USA, will use 240 V rather than 120 V, the source must be a center-tapped, 240 V, single-phase circuit.



Parts and accessories used must meet the requirements of the applicable IEC 601 series safety standards, and/or the system configuration must meet the requirements of the IEC 601-1-1 medical electrical systems standard.


The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:


- use of the accessory in the PATIENT VICINITY; and
- evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate IEC 601-1 and/or IEC 601-1-1 harmonized national standard.

Warnings and Cautions

 DANGER	
	<p>Do NOT use in the presence of flammable anesthetics.</p> <p>M15287-1B</p>

 WARNING	
	<p>This is Class I equipment. The mains plug must be connected to an appropriate power supply.</p> <p>M15287-5C</p>

 CAUTION	
<p>To reduce the risk of electric shock, do NOT remove cover (or back). Refer servicing to qualified personnel.</p> <p>M15287-16A</p>	

 CAUTION	
<p>Federal law restricts this device to sale by or on the order of a physician.</p> <p>M15287-17A</p>	

Service Information

Service Requirements

Equipment Provided by GE

Refer equipment servicing to GE Medical Systems *Information Technologies*' authorized service personnel only. Any unauthorized attempt to repair equipment under warranty voids that warranty.

It is the user's responsibility to report the need for service to *Information Technologies* or to one of their authorized agents.

Failure on the part of the responsible individual, hospital, or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.

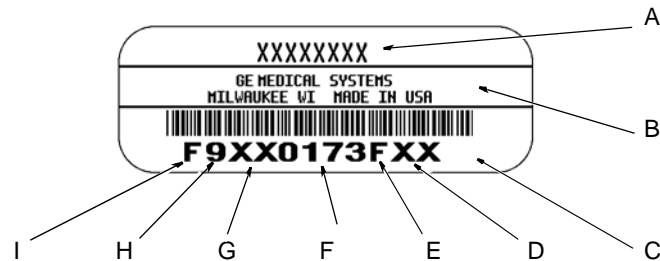
Regular maintenance, irrespective of usage, is essential to ensure that the HL7 interface will always be functional when required.

Equipment Provided by the Customer

The customer is responsible for servicing their own hardware with the software-only option of the HL7 Interface Professional Toolkit.

Equipment Identification

Every *Information Technologies* device has a unique serial number for identification. The serial number appears on the product label on the base of each unit



MD1113-022D

Table 2. Equipment Identifications		
Item	Name	Description
A	name of device	HL7 Interface Workstation
B	manufacturer	GE Medical Systems, Inc.
C	serial number	Unique identifier
D	device characteristics	One or two letters that further describe the unit, for example: P = prototype not conforming to marketing specification; R = refurbished equipment; S = special product documented under Specials part numbers; U = upgraded unit
E	division	F = Cardiology G = Monitoring J = GW Labs
F	product sequence number	Manufacturing number (of total units manufactured)
G	product code	Two-character product descriptor TD = HIS
H	year manufactured	6 = 1996, 7 = 1997, 8 = 1998, (and so on)
I	month manufactured	A = January, B = February, C = March, D = April, E = May, F = June, G = July, H = August, J = September, K = October, L = November, M = December

Requirements

In order to implement your HL7 interface, you'll need the following items:

- An interface workstation with the HL7 and MUSE CV system software already installed.
- A diskette (p/n 421128-001) supplied with your interface workstation that contains sample patient test data (ECG, stress, holter, etc.), or a similar collection of patient tests that can be used to verify the processing of Results transactions.

Summary

In order to successfully connect and test your HL7 interface, you'll need to perform the following steps.

- Connect the HL7 interface workstation to the hospital's network.
- Configure the MUSE CV system software on the interface workstation to run as a stand-alone test environment.
- Test the HL7 interface while it is running in the test environment.
- Add the interface workstation to the hospital's MUSE CV system network.
- Configure the interface workstation as a MUSE CV system workstation.
- Integrate the HL7 interface into the production MUSE CV system.
- Verify the HL7 interface is running properly in the production MUSE CV system environment.

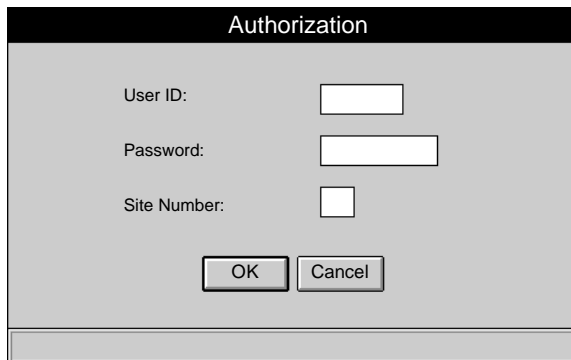
Common MUSE CV System Operations

There are certain operations that you may need to perform repeatedly throughout these instructions. These operations are explained in detail below and should be referenced as needed throughout your interface implementation.

Logging Into the MUSE CV System

1. When you turn on or reboot the interface workstation, or the MUSE CV information system, the monitor displays a series of power up self-test messages as the major assemblies and system configuration are being tested.

After the power up self-test is completed, the MUSE CV system *Authorization* window appears.



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2. Log on to the MUSE CV system from the *Authorization* window as follows:

User ID:1
Password:MACLINK
Site Number:1

NOTE: As you type the password, it does not appear in the box. Instead, an asterisk (*) appears as you type each character in the password.

- ◆ Click the *OK* button.
- ◆ The *Authorization* window closes and the MUSE CV system application starts with the *Edit List* as the opening screen.

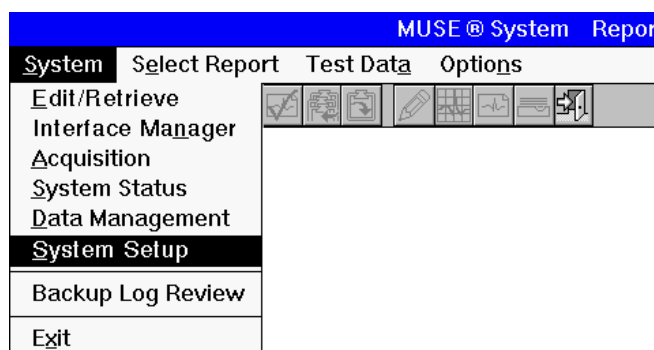
Logging Out of the MUSE CV System

Whenever you are done using the MUSE CV system, you should *Exit* the system. Note that this will NOT completely shut the computer down, it will simply log you out of the MUSE CV system environment.

Log out of the MUSE CV system as follows:

1. Select *System* from the menu bar.

The *System* menu will be displayed.



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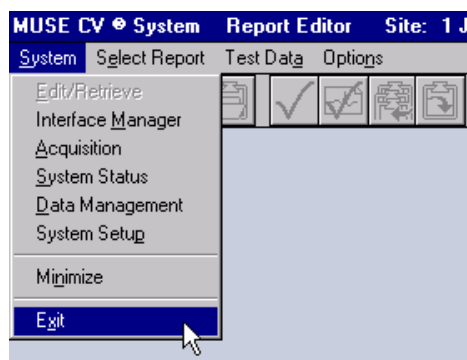
NOTE: This menu may differ depending on what area of the MUSE CV system you are using when you select the *System* menu.

2. Select *Exit*. When the *Authorization* window appears, you are logged out and the next user can log into the system.

Exit to Windows from the MUSE CV System

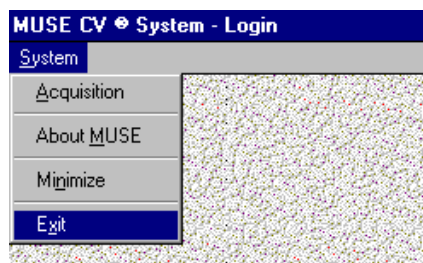
You can exit the MUSE CV system application and move directly to the Windows environment as follows:

1. From the *MUSE CV System Report Editor*, choose the *System* menu and select *Exit*.



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2. From MUSE CV System Setup, choose the *System* menu and select *Exit*.



MD1334-154A

3. The MUSE CV system is closed and you are put directly into the Windows environment.

Enter the MUSE CV System from Windows

To enter the MUSE CV system from the Windows environment, double click on the *Start MUSE CV* icon found on your desktop.

For your notes

2 Configure the HL7 Test Environment

For your notes

Pre-Configuration Survey

To most accurately test the HL7 interface in a test environment, the MUSE CV system software on the interface workstation must be configured to match the configuration of your production MUSE CV system. This will help to identify and resolve any problems with the interface during testing, and should ensure a smooth transition to the production network.

Before you can configure the MUSE CV system software on the interface workstation, you must survey the production MUSE CV system for certain information that must be duplicated on the interface workstation. This section outlines the steps to gather this information.

The information that must be gathered from the MUSE CV system includes locations, site setup information, and users.

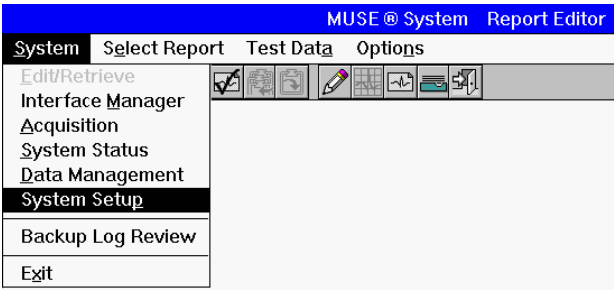
Locations

Determine the locations from the production MUSE CV system to be configured on the interface workstation

The MUSE CV system software is capable of storing up to 600 definable “locations” on the MUSE CV system file server. You must survey these locations to determine which of these locations will be utilized in your test data, and then duplicate these locations on the interface workstation.

The easiest way to identify the *Locations* on the MUSE CV system file server is to print a list of these locations. The following are instructions to print this list. You may need the assistance of the MUSE CV system administrator.

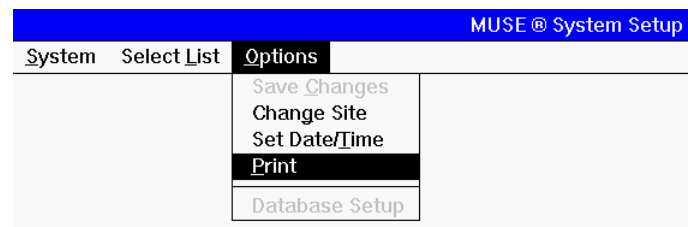
1. Log into the production MUSE CV system’s file server.
2. From the *System* menu, select *System Setup*.



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- From the *Select List* menu, select *Locations* to display the *Location* window similar to the one below.

- With the *Locations* window open, select *Print* from the *Options* menu.

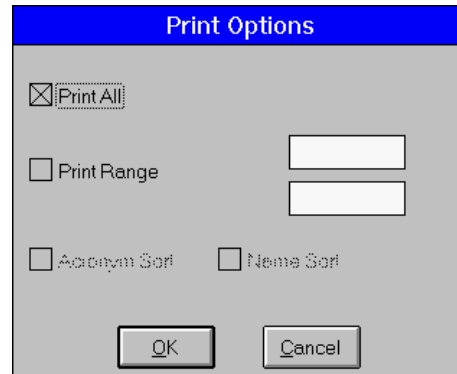


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- In the *Send Report To ...* window, select the desired printer from the *Devices Defined in System Setup* pull-down list and click *OK*.

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6. In the *Print Options* window, you can either select *Print All* to print a list of all locations on your MUSE CV system's file server, or selectively print only the locations utilized in your test data. Click *OK* when you have made your selection.



The image shows a dialog box titled "Print Options". It has a blue header bar with the title. Below the header, there are three main options:

- ☒ Print All: This option is selected, indicated by a checkmark in the checkbox.
- ☐ Print Range: This option is not selected. To its right are two empty text input fields, one above the other.
- ☐ Acronym Sort and ☐ Name Sort: These two options are not selected and are positioned side-by-side.

 At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

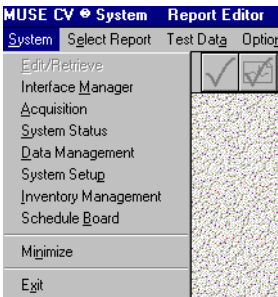
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When printed, this list will be used to determine which locations are needed for testing. The interface workstation must be configured for all locations utilized by your test data. You will need to enter the *Location Name* and the *Location Name Abbreviation* when configuring locations on the interface workstation.

Site Setup Information

While logged into the production MUSE CV system, the configured sites must be surveyed. Access the *Site Information* window as follows:

1. From the *System* menu, select *System Setup*.



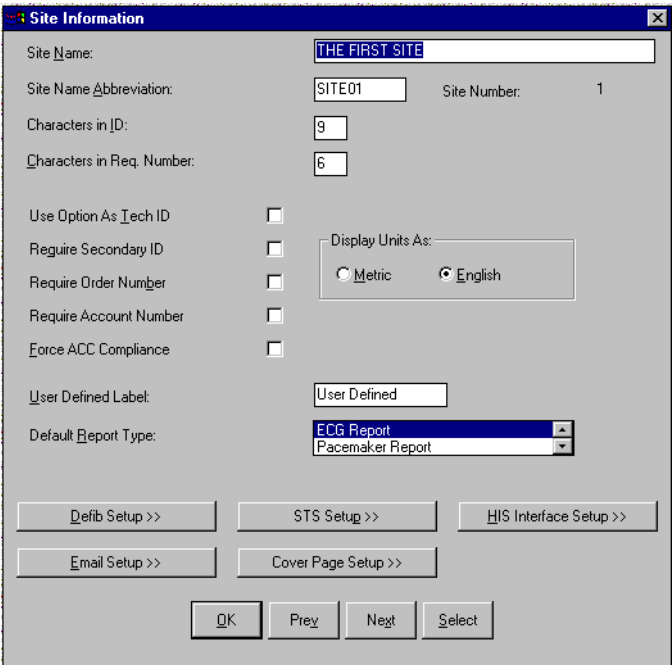
B

2. From the *Select List* menu, select *Sites*.



17B

3. The *Site Information* window is shown below.



18B

4. Click the *Select* button to display a list of all sites configured on the production MUSE CV system.

NOTE: In most circumstances there will be only one site configured on a MUSE CV system.

The interface workstation must be configured for all sites that will be supporting the HL7 interface. Highlight a site on the selection list and click *OK* to display the *Site Information* for that site.

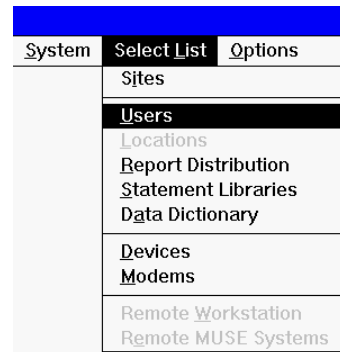
5. For each site required for testing, record ALL of the information from this window so that an identical site configuration can be entered on the interface workstation.

It is NOT necessary to configure the *Defib Setup* information on the interface workstation.

Users

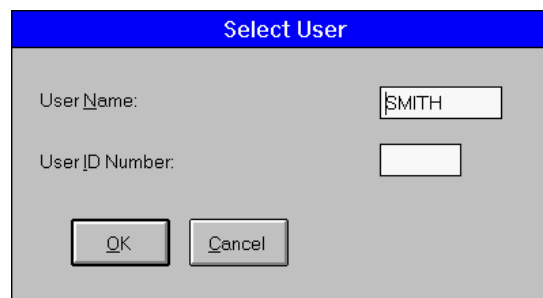
For testing purposes, if a Results/Financial interface option has been purchased, it will be necessary to set up at least one User as an Overreading Physician for the purpose of confirming reports.

1. From the *Select List* menu, select *Users*.



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2. In the *User* window, click the *Select* button to display the *Select User* dialog box.



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- Enter the *User Name* or *User ID Number* for a physician with overreading privileges in the Cardiology department. Click *OK* to display the setup information for that User.

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- Record the *Last Name*, *First Name*, *Job Title* and *Medicare Provider ID* for any users desired for testing purposes. Only one valid User is required for confirming reports.

If the *Medicare Provider ID* is not displayed in the User window on the production MUSE CV system, this information can be obtained from the HIS. The *Medicare Provider ID* is the same as the Physician ID or the Universal Provider ID on the HIS.

This concludes the Pre-Configuration Survey on the production MUSE CV system. To exit the *System Setup* mode, select *Exit* from the *System* menu.

The next step is to configure the interface workstation with the information gathered here.

Before configuration of the interface workstation can begin, you should record the TCP/IP configuration information for the following:

- The IP address and listening port of the Hospital Information System server to be utilized for testing results
- The network location for the HL7 interface workstation
- For interfaces receiving inbound messages to the MUSE CV system, the desired listening port value necessary for the HL7 interface to receive messages

Configure Interface Workstation in a Stand-Alone Test Mode

We'll begin the implementation of your HL7 interface by connecting the interface workstation to your hospital network in a stand-alone test mode. We will not be connecting the interface workstation to the MUSE CV system at this time. This will allow you to configure and test the HL7 interface in a safe environment without impacting the actual MUSE CV system. Once the interface is working successfully, we'll then connect it to the production MUSE CV system.

Network Connections

In order for the interface workstation to operate as a stand-alone server on your hospital's network, we'll need to configure the node name and TCP/IP address of the interface workstation.

Summary of Steps

The following steps provide a summary of the tasks involved in moving the interface workstation onto the hospital network. Detailed instructions follow this summary.

- Configure the TCP/IP address.
- Edit the Windows WIN.INI file.
- Connect the interface workstation to the hospital network.
- Verify the interface workstation is successfully communicating on the hospital network.

Configure TCP/IP Address

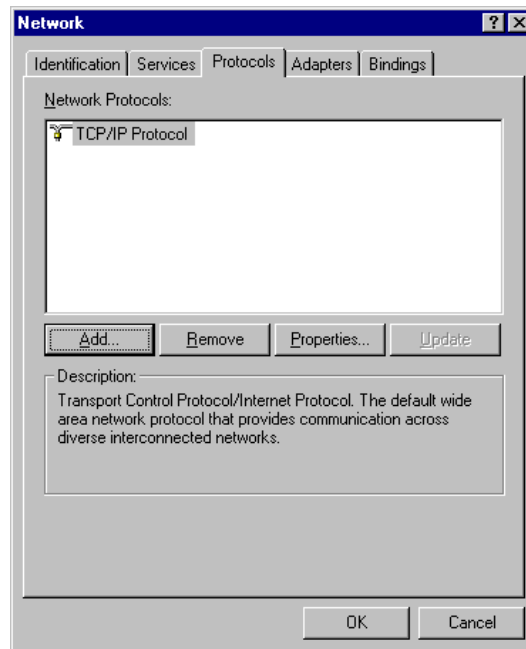
Note that depending on how the MUSE CV system and/or hospital networks are configured, one or two network cards may be required in the interface workstation.

If the MUSE CV system is running on a hospital enterprise network, the interface workstation will contain one network card for communicating with both the HIS and the MUSE CV system's file server through the hospital network.

If the MUSE CV system runs on its own network, two network cards are required in the interface workstation; one to communicate with the MUSE CV system, and one to communicate with the HIS. If this is the case, we will only configure one of these network cards at this time. For testing purposes, we only need to communicate with the HIS. We will configure the second network card to communicate with the MUSE CV system after the testing has been completed and we are ready to "go live" on the production MUSE CV system.

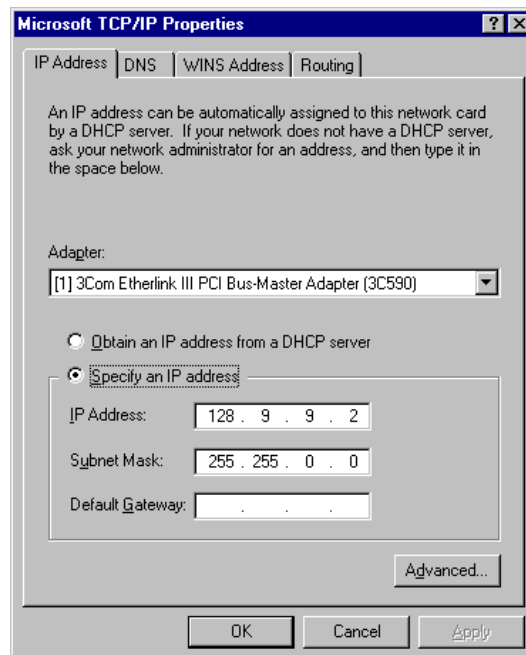
Configure the TCP/IP address as follows:

1. Access the networking properties for the LAN connection.
2. Select *Protocols*.



MD1334-141A

3. Highlight *TCP/IP Protocol* and select *Properties*.



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4. You have two choices in this window:
 - ◆ *Obtain an IP address from a DHCP server*
 - ◆ *Specify an IP address*
5. Make the appropriate selection. If you choose *Specify an IP Address*, enter the *IP Address*, *Subnet Mask* and *Default Gateway*.
6. Click *OK* to save your changes and close the *Network* window.

Physical Connection

The interface workstation is now ready to be physically connected to your hospital network. Make the necessary connections now.

NOTE: We do not want to communicate with the MUSE CV system's file server at this time. If your system contains two network cards, DO NOT connect the system to the MUSE CV system production network at this time.

After the interface workstation has been connected, shutdown and restart the interface workstation.

Verify Network Communications

After configuring the system, you must verify that the interface workstation and the HIS system are communicating on the network.

1. Access the Windows desktop.
2. Open a *Command Prompt* window.
3. At the prompt, type:

ping xxx.xxx.xxx.xxx <Enter>

where **xxx.xxx.xxx.xxx** is the TCP/IP address of the HIS system server.

4. The system will display a message to inform you if the HIS server has responded.

If you receive a message indicating that the ping attempt has timed out, refer to the Troubleshooting information at the back of this manual.

5. Close the *Command Prompt* window.
6. Repeat this same procedure from the HIS system to verify that it can communicate with the interface workstation.

Configure the HL7 Interface on the Interface Workstation

Install using the installation instructions (pn 2006660-055).

Use the Professional Toolkit manual to configure your HL7 interface components.

Configure MUSE CV System on the Interface Workstation

After the pre-configuration survey is completed and the interface workstation is connected on the network, log into the interface workstation and configure the MUSE CV system software using the information gathered in the pre-configuration survey.

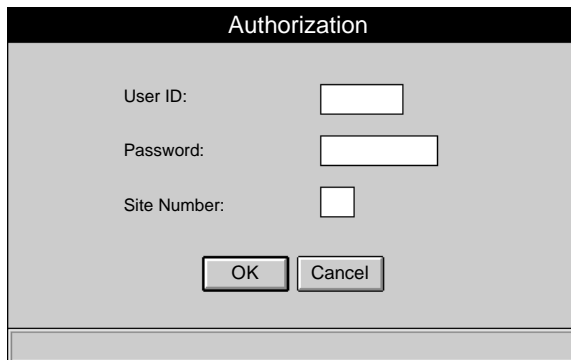
These configuration procedures will include the following:

- Site Setup
- Locations
- Devices
- Users
- Report Distribution.

Configure Sites for Testing

Before testing can begin, site configuration must be completed on the interface workstation. To accurately test the interface, a site configuration must be set up on the interface workstation to match each site on the production MUSE CV system required for testing. Site configuration is accomplished using the information gathered in the Pre-Configuration Survey earlier in this manual.

1. Restart the interface workstation. After the power up self-test is completed, the MUSE CV system *Authorization* window appears.



MD1267-046A

2. Log on to the MUSE CV system from the *Authorization* window as follows:

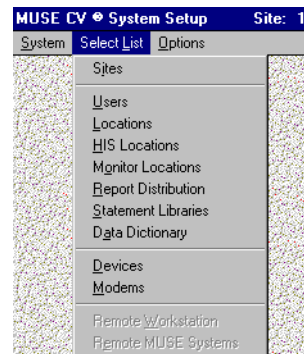
User ID: 1
Password: MACLINK
Site Number: 1

3. From the *System* menu, select *System Setup*.



1B

4. From the *Select List* menu, select *Sites*.



17B

5. The *Site Information* window for *Site Number 1* is displayed.

Using the information gathered during the Pre-Configuration Survey, enter the *Site Name*, *Site Name Abbreviation*, and *Characters in ID* for the site to be configured for testing. Click *OK* to save this *Site Information*.

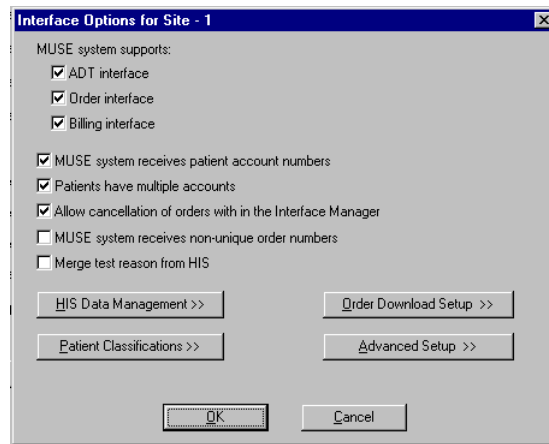
The screenshot shows the 'Site Information' window for Site Number 1. The fields are filled with the following information:

- Site Name: THE FIRST SITE
- Site Name Abbreviation: SITE01
- Characters in ID: 9
- Characters in Req. Number: 6
- Use Option As Tech ID: ☐
- Require Secondary ID: ☐
- Require Order Number: ☐
- Require Account Number: ☐
- Force ACC Compliance: ☐
- Display Units As: ☒ English
- User Defined Label: User Defined
- Default Report Type: ECG Report

Buttons at the bottom include: Defib Setup >>, STS Setup >>, HIS Interface Setup >>, Email Setup >>, Cover Page Setup >>, OK, Prev, Next, and Select.

161C

If the ADT, Orders and/or Financial options have been purchased, these options must be configured for each site. Click the *HIS Interface Setup* button. The *Interface Options* window is displayed as shown below. Note that display of some items on this screen is dependent on options purchased. All items shown below may not appear on your screen.



MD1334-019B

Completion of this screen is a three-step process:

1. Under the *MUSE system supports:* heading, ensure that a check box is selected for each interface option purchased for the particular site being configured.
2. Located below the interface option selections are the following four check boxes:

NOTE: To configure these items, refer to the completed “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.” See “ADT” in the Information Systems Department portion of the survey.

3. When the check box selections are complete, the following options must be configured as explained on the pages that follow:
 - ◆ *HIS Data Management*
 - ◆ *Patient Classifications*
 - ◆ *Order Download Setup*

HIS Data Management Setup

HIS Data Management for Site -1

Time of day to run
HIS Database Management: 16:00

Number of days to retain (0-255):

Open Accounts 25

Open Orders 50

Completed Orders 75

OK Cancel

MD1334-020A

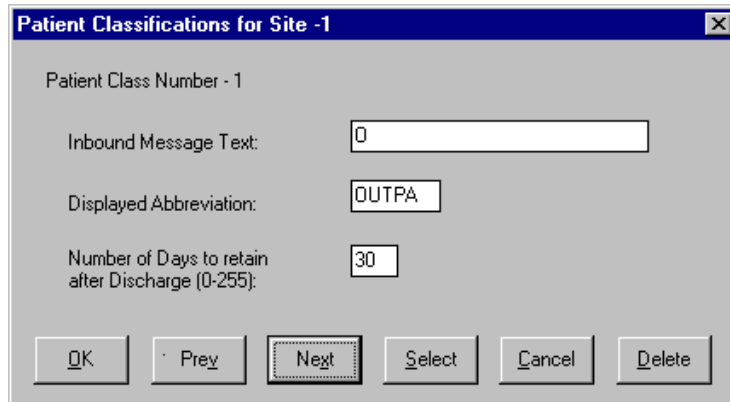
NOTE: This option is not used when the interface is configured to process only result or financial transactions.

When the HIS Database Management option is installed, a HIS database management task is run daily on the MUSE CV system. This program checks the status of each ADT record in the database against the current patient status. The MUSE CV system site must be configured to indicate how long patient ADT or Order records will be maintained in the MUSE CV system following patient discharge. The site must also be configured to schedule execution of this HIS database management task.

This information was gathered in the “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.” See “Retaining Records” in the Cardiology Department portion of the guide.

Click *OK* to save your changes and return to the *HIS Interface Options* setup screen.

Patient Classifications Setup



MD1334-021A

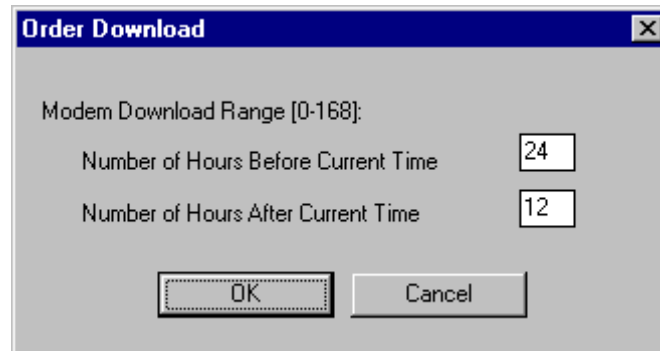
If the Patient Classification field is to be used for ADT transactions, or ADT with Orders, the Patient Classifications setup window is used to configure the *Inbound Message Text*, *Displayed Abbreviation* and *Number of Days to retain [records] after Discharge* for each classification.

This information was gathered in the “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.” See “ADT” in the Information Systems Department portion of the guide.

Click *OK* to save your changes and return to the *HIS Interface Options* setup screen.

Order Download Setup

If you have purchased the Order Download option, the *Order Download* window is used to set the range (in hours) for display of open orders in the *List of Open Orders* on the MUSE CV system.



MD1334-022A

This information was gathered in the "GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide." See "Displaying and Using Information" in the Cardiology Department portion of the guide.

Click *OK* to save your changes and return to the *Interface Options* setup screen.

Click *OK* to exit the *Interface Options* setup screen and return to the *Site Information* window.

Configure Locations for Testing

During the Pre-Configuration Survey (earlier in this manual) you determined which locations must be configured for testing. Those locations will now be configured on the interface workstation.

1. From the main menu bar, select *System Setup*. If the *Locations* window does not appear in *System Setup*, select *Locations* from the *Select List* menu.

Location

Location Name: EMERGENCY DEPT

Location Name Abbreviation: ED Location Number: 0

Lab System IP Address: 255 255 255 255

Serial Comparison Setup

Serial Comparison? ☐ Patient ID Mask: NO PID

Use Edited Rhythm Strims? ☐ State Unconfirmed? ☐

No Unconfirmed ECGs? ☐ Only State Existence? ☐

No PID/Name Mismatch? ☐ Summary Diagnosis Only? ☐

Data Reduction Setup

Normal ECG's? ☐

Abnormal ECG's? ☐

OK Prev Next Last Select Delete Modified: 217B

2. From the printed list of locations, configure the matching locations by entering the same *Location Name* and *Location Name Abbreviation* in the *Locations* window on the interface workstation. Remember, you only need to set up the locations you'll be testing. Click *OK* after each entry.

IMPORTANT: DO NOT enter or change any information in the *Serial Comparison Setup* or *Data Reduction Setup* areas of the *Locations* window. These fields are not applicable for testing.

Mapping of MUSE CV System Locations

In the Interface Manager application, the system default is to display HIS locations in lists such as *List of Orders* and *List of Accounts*. This is often preferred since there are frequently many more HIS locations than MUSE CV system locations. However, the interface can be configured to display MUSE CV system locations in these lists instead, if desired.

NOTE: This option is not used when the interface is configured to process only result or financial transactions.

This option is **REQUIRED** for ADT to Monitoring and Orders Interface application.

This information was gathered and recorded in the “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.” See “Displaying and Using Information” in the Cardiology Department portion of the guide.

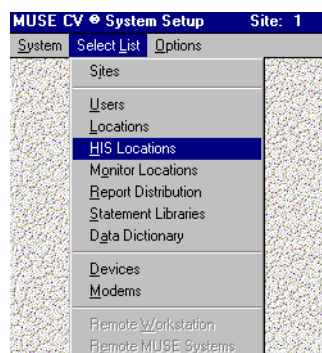
To configure MUSE CV system locations, proceed as follows:

1. From the *System* menu, select *System Setup*.



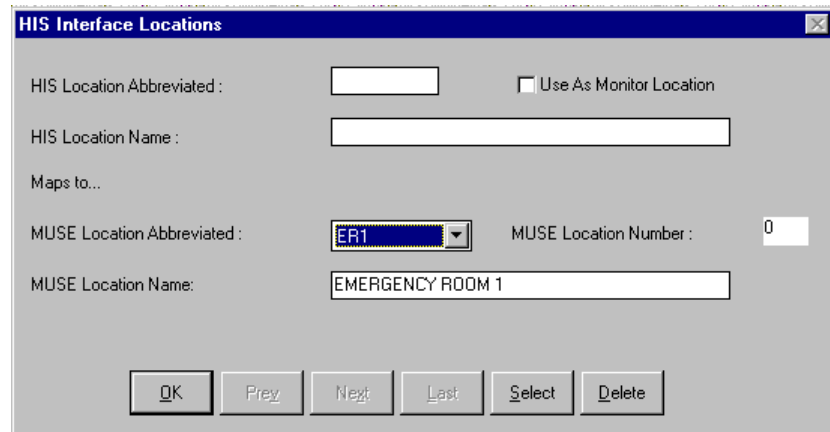
1B

2. From the *Select List* menu, select *HIS Locations*.



7B

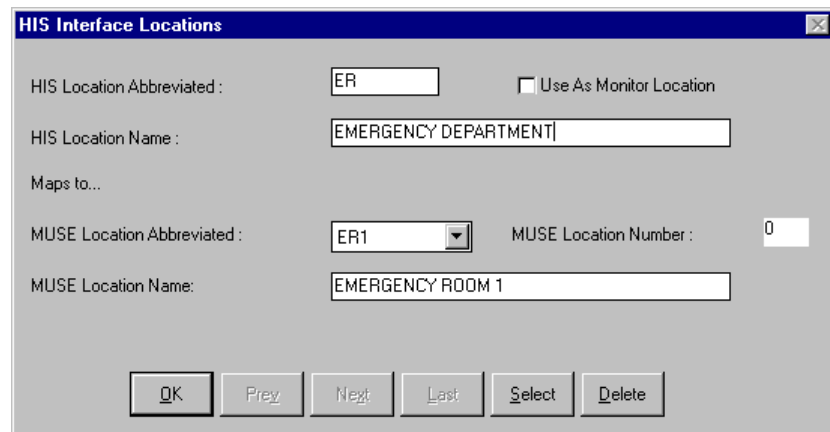
- When *HIS Locations* is selected, the *HIS Interface Locations* screen is displayed as shown below:



MD1334-008B

- To map a HIS location to a MUSE CV system location, enter the *HIS Location Abbreviated* name and the full *HIS Location Name* in the appropriate boxes at the top of the window.

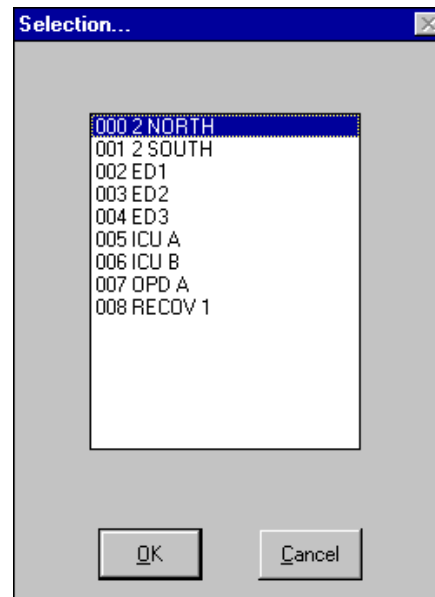
Choose the desired MUSE CV system location from the *MUSE Location Abbreviated* pull-down list. The *MUSE Location Name* will be filled in automatically as shown in the example below.



MD1334-009B

- Click *OK* to save your selection.
- Click *Next* or *Previous* to map another location.

7. Click *Select* to see a list of locations already mapped as shown below.



MD1334-010A

Mapping Monitor Locations

After you have set up the HIS locations, you will need to complete the *MUSE Monitor Location Setup* for the ADT to monitor interface.

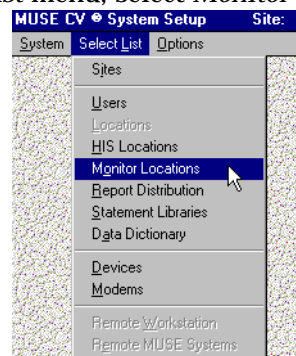
To configure MUSE CV system locations, proceed as follows:

1. From the *System* menu, select *System Setup*.



1B

2. From the *Select List* menu, select *Monitor Locations*.



214A

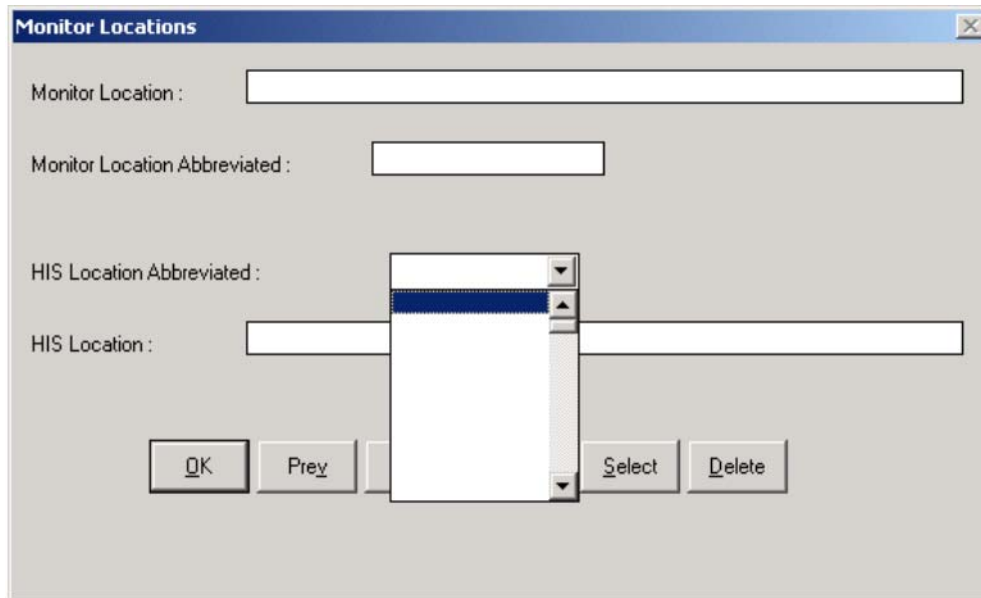
When *Monitor Locations* is selected, the *Monitor Locations* screen is displayed.

NOTE:

The first time you select *Monitor Location*, the screen will appear blank as shown below. Once information has been populated, the *Monitor Locations* will display data during future use.

The *ADT Monitor Communications* option can only retrieve data from the MUSE Site 1 ADT database.

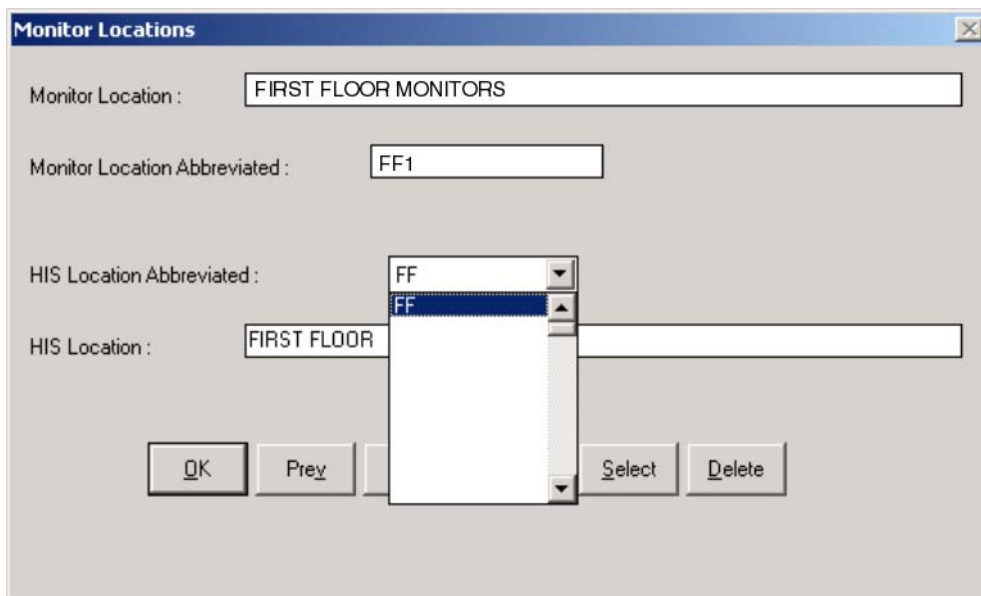
3. Select the *HIS Location Abbreviated* pull down menu, which will appear blank as follows.



The screenshot shows the 'Monitor Locations' dialog box. It contains four input fields: 'Monitor Location', 'Monitor Location Abbreviated', 'HIS Location Abbreviated', and 'HIS Location'. The 'HIS Location Abbreviated' field is currently blank and has a pull-down menu open, showing a list of options. The 'Monitor Location' field is also blank. The 'Monitor Location Abbreviated' field is blank. The 'HIS Location' field is blank. At the bottom, there are buttons for 'OK', 'Prev', 'Select', and 'Delete'.

220A

4. Use the up arrow button on the list to select an existing HIS location for mapping to the monitor location.



The screenshot shows the 'Monitor Locations' dialog box after the selection. The 'Monitor Location' field now contains 'FIRST FLOOR MONITORS'. The 'Monitor Location Abbreviated' field contains 'FF1'. The 'HIS Location Abbreviated' field now contains 'FF'. The 'HIS Location' field now contains 'FIRST FLOOR'. The pull-down menu for 'HIS Location Abbreviated' is still open, showing 'FF' as the selected item. The buttons at the bottom are 'OK', 'Prev', 'Select', and 'Delete'.

221A

The *Monitor Location Abbreviated* is the exact value that is configured on the monitor for care unit name.

NOTE:

A separate entry is required for each care unit name existing on the monitoring network. When a monitoring request for patient data is made, the monitor location abbreviation is translated to the corresponding HIS location using this table. The lookup key consists of the translated HIS location along with the room and bed, which is used to search for the patient data in the MUSE ADT database.

This populates the *HIS Location* field.

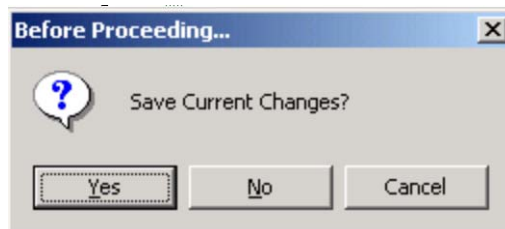
5. Enter the corresponding *Monitor Location* and *Abbreviation* in the table.
6. Select *OK* to save your changes.

NOTE:

It is not possible to have more than one monitor location abbreviation map to a single HIS location abbreviation.

Continue Configuring All Monitor Locations

7. Select *Next* for a new mapping.
8. Use the *HIS Location Abbreviated* field to select the HIS location and enter the corresponding *Monitor Location* and *Abbreviation*.
9. Select *OK* to save each addition.
10. When monitor location mapping is complete, exit *Setup*.
11. The *Before Proceeding...* window is displayed. Select *Yes* to *Save Current Changes?*



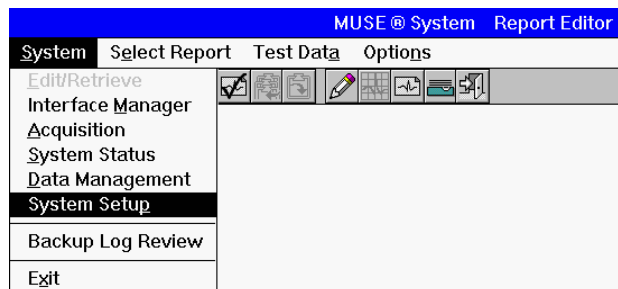
225A

Configure Devices for Testing

The MUSE CV system allows for configuration of additional “devices”. Normally a device on the MUSE CV system is either a printer or fax machine. However, for MUSE CV system test results to be formatted in the HL7 format and sent to the HIS, we treat the HIS as a “device.”

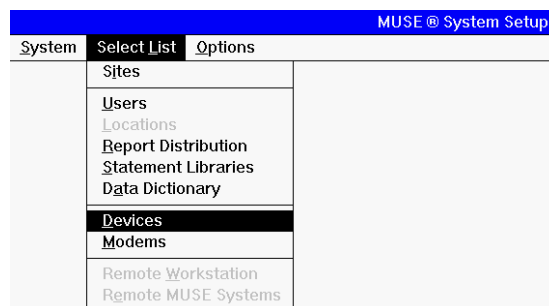
Configure the HIS as device type HL7 in MUSE CV system setup:

1. On the interface workstation, log into the MUSE CV system and select *System Setup* from the *System* menu.



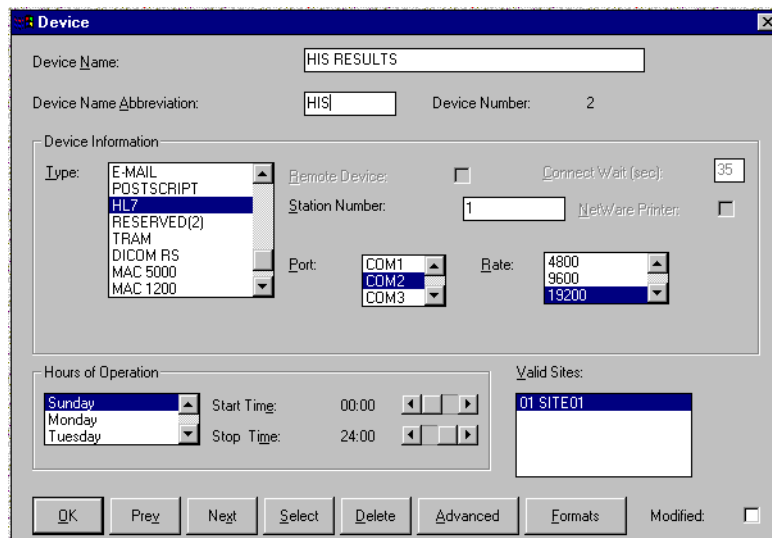
MD1334-001A

2. From the *Select List* menu, select *Devices*.



MD1334-011A

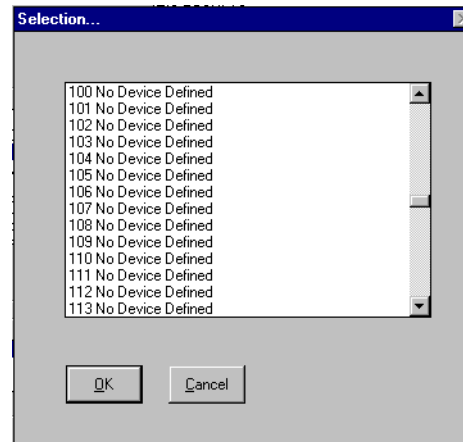
3. The *Device* setup window is displayed:



12B

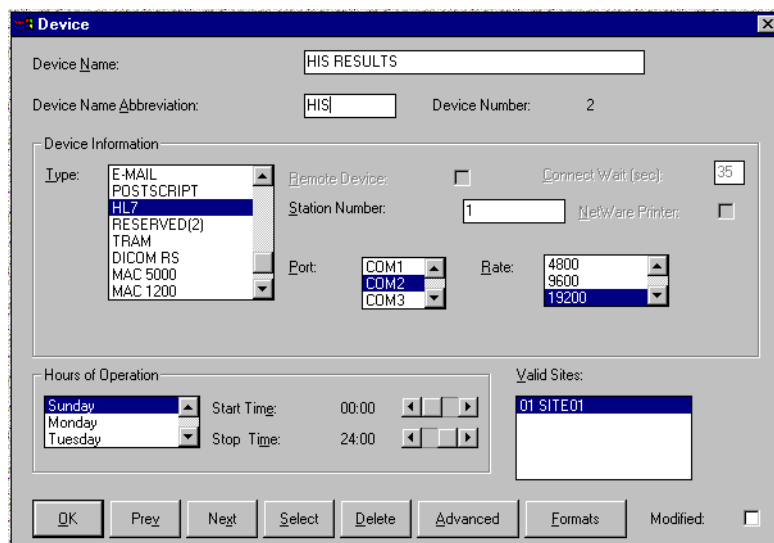
4. Before a device can be configured, a device number must be selected. In the *Device* setup window, click the *Select* button to display the *Device* selection list.

NOTE: It is a common practice to configure device number 100 for interface devices. Select device 100 (if unassigned), or choose any available device number.



33B

5. Select a *Device* number to be configured and click *OK* to return to the *Device* setup window.



12B

6. After the device number has been selected, enter the following parameters in the *Device* setup window
 - ◆ *Device Name:* HIS Results
 - ◆ *Device Abbreviation:* HIS
 - ◆ *Type:* HL7
 - ◆ *Station:* 1
 - ◆ *Port:* COM7
 - ◆ All other values: Use the default values*
7. Click on *Advanced*. In the *Additional Device Settings* window, enter the following parameters.

TCP/IP Device

- ◆ *Transport Layer:* Sockets
- ◆ *Function:* Output
- ◆ All other values: Use the default values**

File Copy

- ◆ *Transport Layer:* Filecopy
- ◆ *Function:* Output
- ◆ All other values: Use the default values*

Drive Mapping

- ◆ *Transport Layer:* Net File Transfer
- ◆ *Function:* Output
- ◆ *Xfer Option:* Mapped Drive
- ◆ All other values: Use the default values*

FTP Device

- ◆ *Transport Layer:* Net File Transfer
- ◆ *Function:* Output
- ◆ *Xfer Option:* FTP Client
- ◆ All other values: Use the default values*

8. When finished, click *OK* to close the *Additional Device Settings* window. Click *OK* to save the settings in the *Device* setup window.
9. Repeat steps 4 – 8 for a billing device, if applicable.

* These values do not apply to testing the interface workstation.

** These values do not apply to testing the interface workstation.

Configure Users for Testing

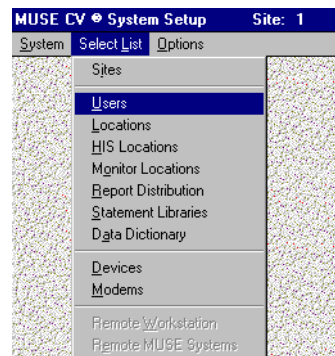
For testing results, it will be necessary to set up at least one user as an Overreading Physician for the purpose of confirming reports.

1. From the *System* menu, select *System Setup*.



1B

2. From the *Select List* menu, select *Users*.



31B

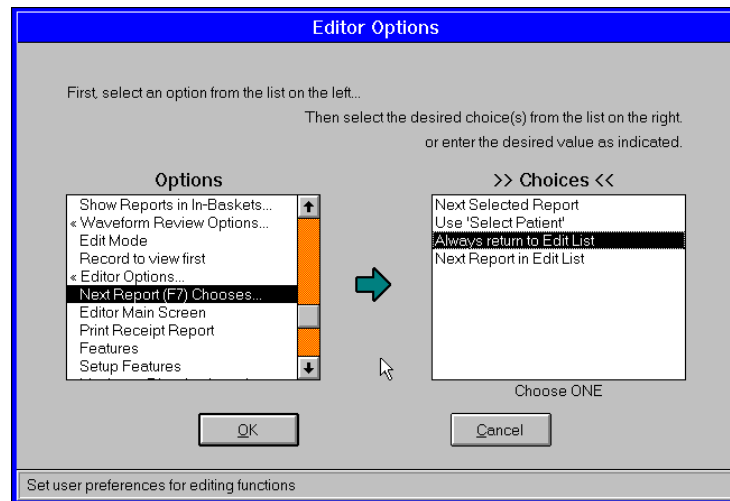
3. The window for *User: 1* appears:

32C

4. Click on the *Next* button to display the screen for *User: 2*.
5. Enter the *Last Name*, *First Name*, and *Medicare Provider ID* for the overreading physician to be used for testing.

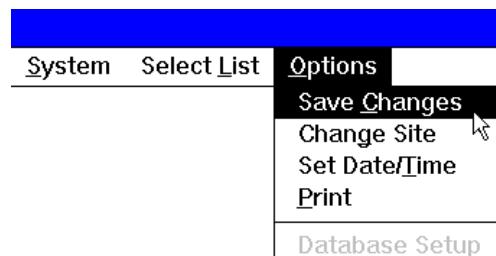
This information was gathered during the “Pre-Configuration Survey” earlier in this manual.

6. Click the *Advanced* button. The *Editor Options* screen will be displayed:



MD1334-054A

7. In the *Options* list, select *Next Report (F7) Chooses ...*
In the *Choices* list, select *Always return to Edit List*.
Click *OK* when finished.
8. When returned to the *User* setup window, click *OK*, then select *Save Changes* from the *Options* menu on the menu bar:



MD1334-055A

9. Click *OK* to save your changes. Click *Next* to configure another user, if desired. Repeat steps 6 through 8 for all users configured for testing.

Configure Report Distribution for Testing

The Report Distribution feature allows you to set up automatic printing of reports when they are acquired by the system and when they are confirmed. This system can be used to route the results and financial transactions through the HL7 interface to the HIS, provided that the HL7 interface is defined as a device in the MUSE CV system, and this device is added to the routing configuration for each report type.

Each location separates report distribution activities into four cases:

- Normal Unconfirmed
- Abnormal Unconfirmed
- Normal Confirmed
- Abnormal Confirmed

Normal Unconfirmed and Abnormal Unconfirmed reports

Under normal circumstances, unconfirmed reports can be sent to the HIS automatically with Report Distribution entries. However, for testing purposes, these preliminary result messages will be manually generated through the manual “print” function. Automatic distribution of preliminary result messages will not be configured at this time.

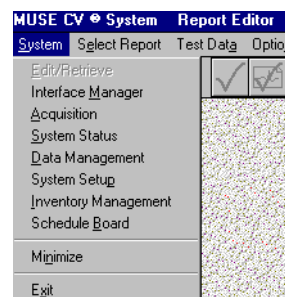
Normal Confirmed and Abnormal Confirmed reports

Confirmed reports can be sent to the HIS automatically with Report Distribution entries. The following procedures provide instructions for configuring confirmed reports.

Also, for testing purposes we will only configure Report Distribution for printing from the system’s *Default* location. Additional locations will be configured when the interface is integrated into the production MUSE CV system after the testing is completed.

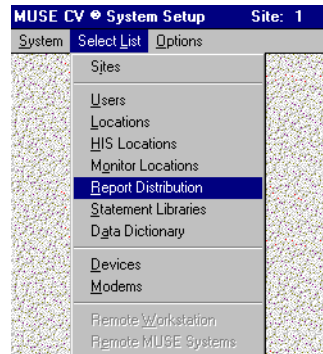
Each case contains its own set of actions which determines where reports are sent.

1. From the *System* menu, select *System Setup*.



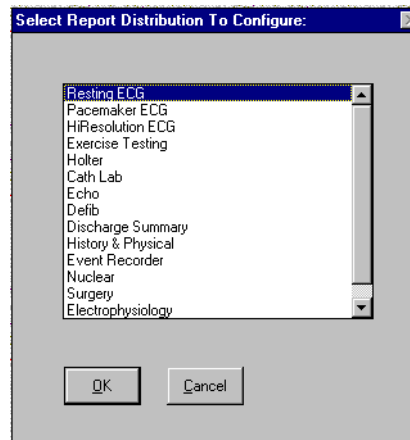
1B

2. From the *Select List* menu, select *Report Distribution*.



14B

3. In the window titled *Select Report Distribution to Configure*, select *Resting ECG* and click *OK*.

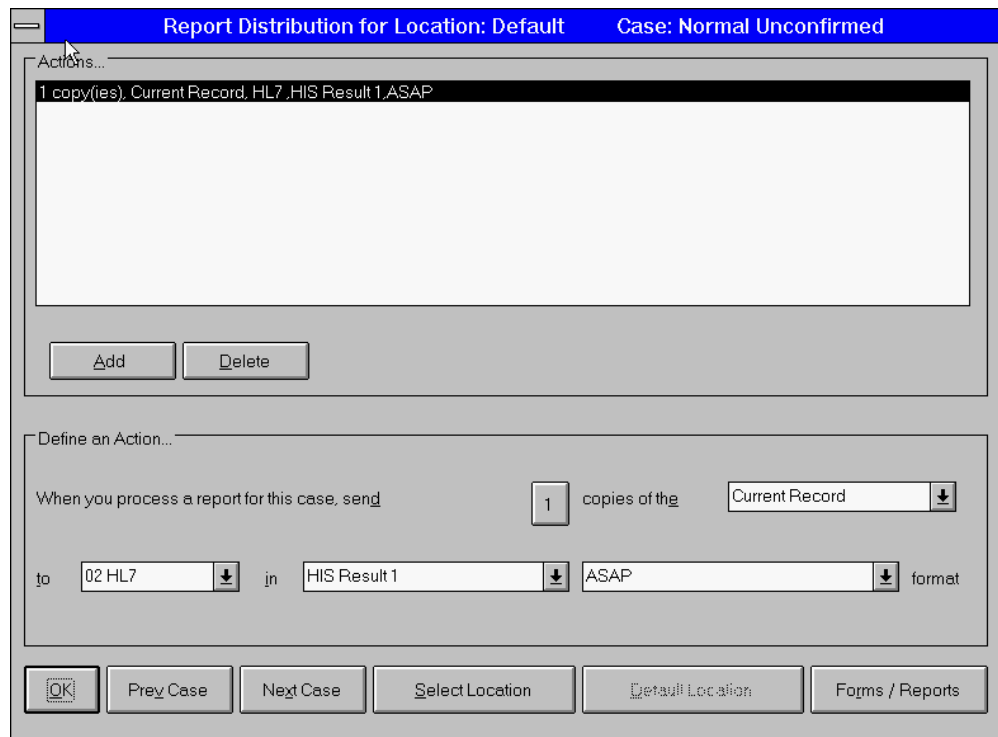


15B

4. The window titled: *Report Distribution for Location: Default Case: Normal Unconfirmed* will be displayed.

Click the *Next Case* button twice to bypass the windows for the unconfirmed cases and display the window for *Case: Normal Confirmed*.

5. Click the *Add* button to add a new statement to the *Actions* portion of the window.



MD1334-016A

6. In the *Define an Action...* portion of the window, modify the new statement by selecting the following variables from the pull-down lists:

- ◆ 1 copy
- ◆ Current Record
- ◆ HL7
- ◆ HIS Result 1
- ◆ ASAP

When complete, the new statement should read:

“When you process a report for this case, send 1 copy of the Current Record to HL7 in HIS Result 1, ASAP.”

7. Click *OK* when complete.
8. Click the *Next Case* button. The title at the top of the window should change to *Case: Abnormal Confirmed*.
9. Repeat steps 5 through 8 for the *Abnormal Confirmed* case type.

If the system is configured for batch formatting, which is usually used for financial transactions of normal/abnormal confirmed reports, click the *Previous Case* button to display the *Normal Confirmed* window.

10. Click the *Add* button to add a new statement to the *Actions* portion of the window.

MD1334-211A

11. In the *Define an Action...* portion of the window, modify the new statement by selecting the following variables from the pull-down lists:

- ◆ 1 copy
- ◆ Current Record
- ◆ HISBIL
- ◆ HIS Billing 1
- ◆ Batch

When complete, the new statement should read:

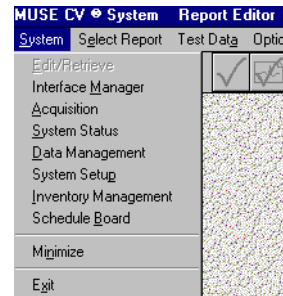
“When you process a report for this case, send 1 copy of the Current Record to HISBIL in HIS Billing 1, to the Batch file.”

12. Click *OK* when complete.
13. Click the *Next Case* button. The title at the top of the window should change to *Case: Abnormal Confirmed*. Repeat step 11.
14. Repeat steps 11 and 12 for all other test types that will be supported by the HL7 financial interface.

Configuring Additional Sites for Testing

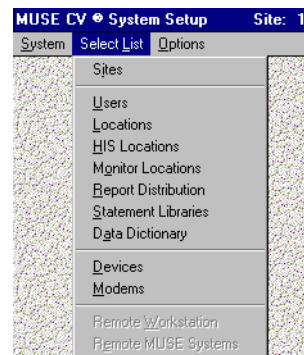
If it has been determined that more than one site must be configured for testing purposes, configure any additional sites as follows:

1. From the *System* menu, select *System Setup*.



1B

2. From the *Select List* menu, select *Sites*.



17B

3. The *Site Information* window for *Site Number 1* is displayed.

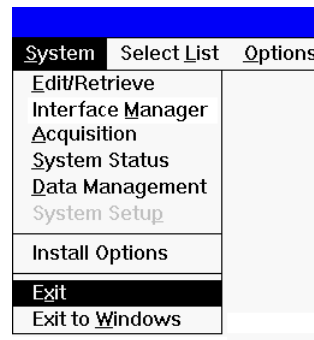
161C

4. Click on the *Next* button. The *Site Number* changes to *Site Number 2*, and the *Site Name* and *Site Name Abbreviation* fields are emptied.

4-C

5. Enter the new *Site Name* and *Site Name Abbreviation*, and click *OK*.

6. From the *System* menu, select *Exit*.



MD1334-039A

7. When the *Authorization* screen appears, log in with the new *Site Number*, then proceed to step 8.

Authorization	
User ID:	<input type="text"/>
Password:	<input type="password"/>
Site Number:	<input type="text"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

MD1267-046A

8. It will now be necessary to configure locations, users and report distribution for the new site.

NOTE: It is not necessary to re-configure devices for additional sites. Each device configuration is applicable to all sites.

3 Testing the HL7 Interface

For your notes

Introduction

Now that we have configured the MUSE CV system application on the interface workstation as a duplicate of your production MUSE CV system, we can use the interface workstation as a “stand-alone” test environment. This will allow you to test all aspects of the HL7 software in a simulated production environment without affecting or compromising the existing MUSE CV system.

After verifying the HL7 interface is operating correctly in this test environment, we'll then connect it to the MUSE CV system production network.

Test Goals

To completely exercise your system in the test environment you should test all of the interface options and features purchased for your institution, such as ADT, Orders, Results, and Financial.

In addition, you should test your system under two different conditions: single transaction (functional) tests, and a multiple transaction (load) tests.

Single Transaction Tests

Under the single transaction condition, you will initiate individual transactions and follow them through the test environment to ensure that all functions of the system are working properly. These tests should include all transaction types and all available sites and options. All outcomes should arrive in the expected content, format and time frame.

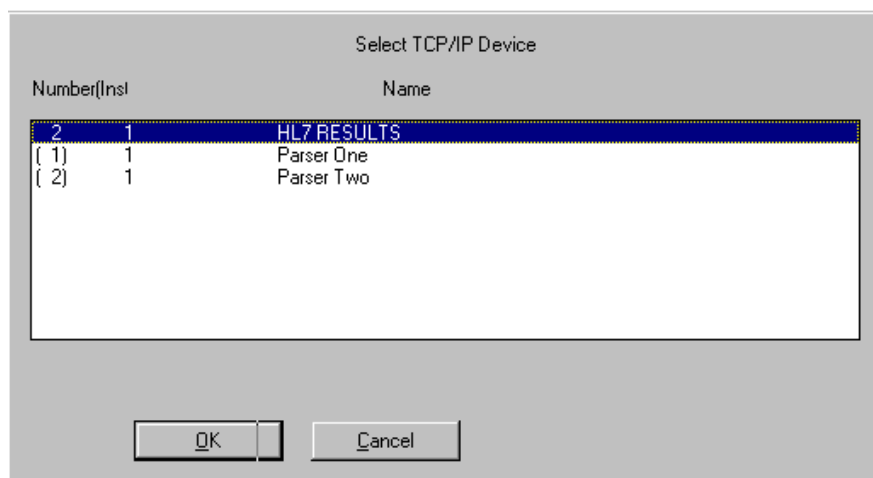
Load Tests

After the functional test is completed, you'll then perform a load test in which a large volume of transactions will be sent at one time to verify that the HL7 interface is functioning properly in a simulated production environment. The outcomes should be the same as the functional tests, and there should be no significant delays in the processing or transmission of the data.

TCP/IP Monitor

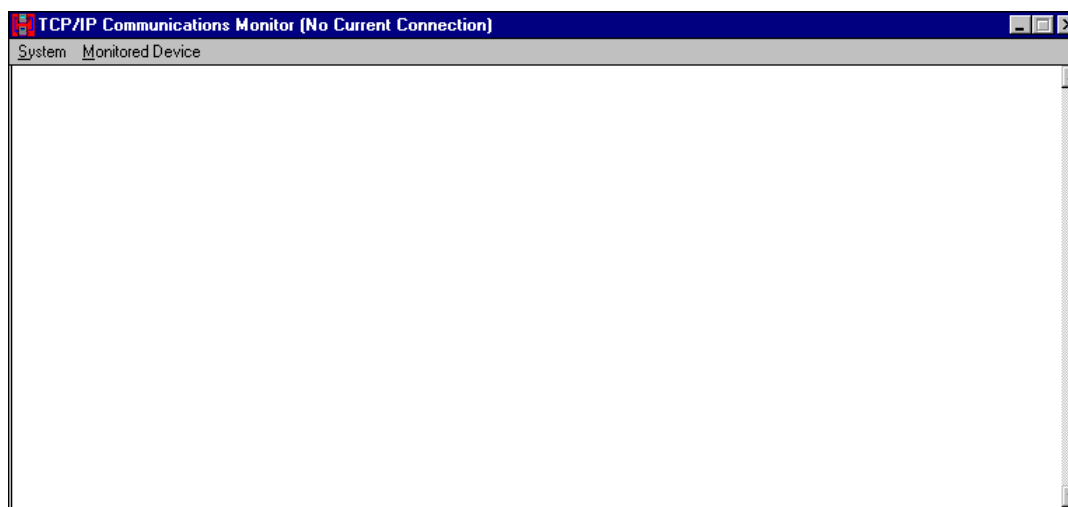
TCP/IP Monitor is an application included in the HL7 Interface program group. This application allows you to view the TCP/IP message activity between the MUSE CV system and your HIS in “real time.” You can monitor one TCP/IP connection at a time. Either an outbound device or a specific inbound parser can be selected. If you wish to monitor multiple devices, this application may be run multiple times.

1. From the Windows *Start* menu. Select *Programs==>HL7 Interface ==>TCP/IP Monitor*. The application requests the device as shown below.



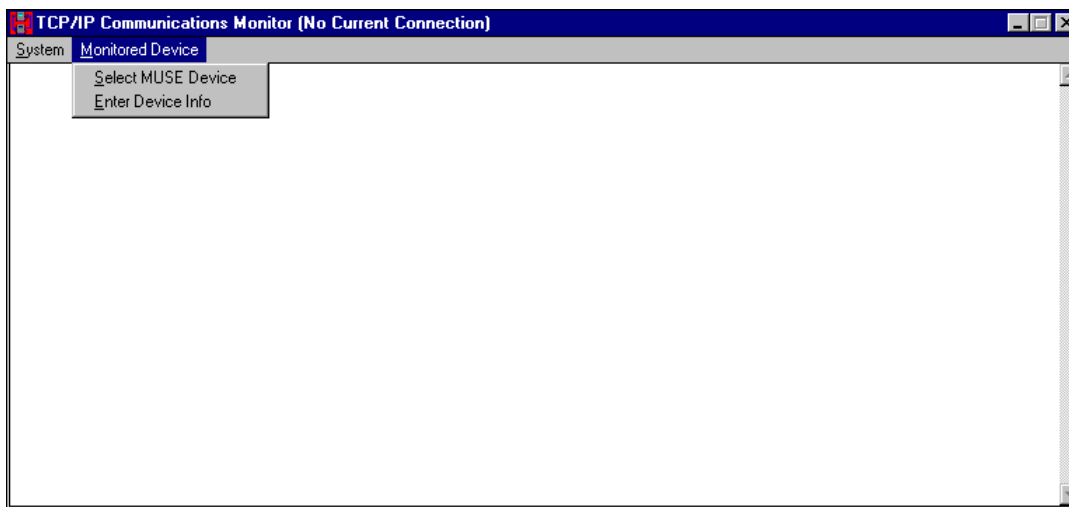
MD1334-158A

2. Once a device or parser has been identified, the *TCP/IP Communications Monitor* window is displayed. The current connect status for your selection is displayed in the title bar. The window will present all messages and acknowledgments in “real time.”



MD1334-151A

3. To change to a different device or parser, select the *Monitored Device* menu. Then choose *Select MUSE Device*.



MD1334-152A

NOTE: For troubleshooting purposes, it is recommended that a shortcut to this application be added to the desktop.

Troubleshooting

If errors or problems are encountered during testing, refer to Appendix A-Troubleshooting.

Test Procedures

The following is a suggested test plan. It is important to test all aspects of your HL7 interface software. Be sure to create examples of each transaction and event type, and provide data that will test all of the options and features you have purchased.

These tests should be performed for each site configured on the interface workstation.

Test Sequence

The recommended sequence for the test procedures is:

- Test all ADT transactions that will be supported for each site.
- Test all Order transactions that will be supported for each site.
- Test all Results transactions that will be supported for each site.
- Test the ability of the system to successfully recover from any shutdown that may occur during transaction processing.

Testing ADT Transactions

The GE Medical Systems *Information Technologies* HL7 interface accepts unsolicited messages for ADT transactions from the HIS. These messages must include data for only one patient. When processing ADT transactions, the HL7 interface will respond with an application level acknowledgment. This acknowledgment indicates that the message was received and processed. Once the transaction messages are processed on the MUSE CV system, the entries are stored in the MUSE CV system databases and MUSE CV system users can access the data.

NOTE: The *Information Technologies* HL7 interface does not support batch processing of ADT transaction messages.

To simplify testing and verification of the ADT transaction processing, we will separate the tests into four groups:

- Transactions that add patient data
- Transactions that change patient data
- Transactions that merge patient data
- Transactions that delete patient data

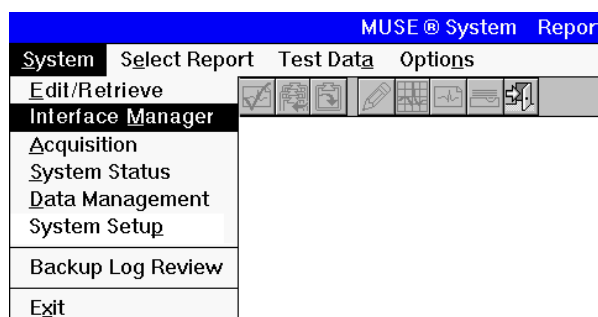
Test Transactions that Add Patient Data

The transactions that add patient data are described in the following table. Refer to the “Functional Description of HIS Interface” (P/N 408542-007) for further explanations of these transactions and their affects on the various patient databases.

Table 3. ADT Transactions that Add Patient Data		
Types	Transaction	Results
A01	Admit a Patient	A new record is added to the MUSE CV system database
A04	Register a Patient	A new record is added to the MUSE CV system database
A05	Pre-admit a Patient	A new record is added to the MUSE CV system database
A13	Cancel Discharge	A deleted record is reinstated in the MUSE CV system database

These transactions primarily affect patient identification data, and can be verified on the *List of Patients* and the *Patient Information* screens.

1. Using the test data, begin by sending a single Admit transaction from the HIS to the interface workstation.
2. To verify successful processing of this transaction, log into the MUSE CV system on the interface workstation.
3. From the *System* menu, select *Interface Manager*.



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4. The *List of Patients* should be displayed as shown below.

Name	Patient ID
Barber, Thelma 000	609533000
Barksdale, Joseph Ern	984086000
Basking, George Fra	001036632
Baugner, Charles	001174190
Bawkins, Matthew Jo	002168877
Beans, Junior War	001079419
Bear, Baby Boy	001177524
Beck, Treva Mari	848785000
Billings, Octavia Ja	687777000
Bilton, Ella Lynn	001168626
Binter, Zachary	001177583
Black, Carolyn	001159693
Blackburn, Donald Ray	198811000
Blue, Tina	001174328

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- ◆ If the *List of Patients* screen is currently displayed, proceed to step 6 .
 - ◆ If the *List of open orders* screen is displayed, perform step 5 to display the *List of Patients* screen.
5. To display the *List of Patients*, select *Show Patients* from the *Options* menu.

System	Select List	Options	Help
		Show Patients	
		Sort Accounts	▶
		Sort Order List By	▶

MD1334-31A

6. Verify that the patient from your test transaction appears in the *List of Patients*.
7. To view detailed patient information, choose *Show Open Accounts* from the *Select List* menu.

System	Select List	Options	Help
		Show Open Accounts	
		Show Closed Accounts	
		✓ Show Open Orders	
		Show Pending Orders	
		Show Unconfirmed Orders	
		Show Orders Completed Today	
		Show Completed Orders	
		Show Canceled Orders	

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8. The *List of Open Accounts* is displayed, showing the account number and classification for this patient..

List of open accounts

List of orders 15 through 28

Acct. No.	Name	Patient ID	Class	Loc.
001628129	Bossinger, M	001628129	OUTPA	9RT
001202131	Gilson, D	001202131	INPAT	CPCR
001908133	Williamson, E	001908133	OUTPA	
001667138	Adams, R	001667138	INPAT	CPCR
001162146	Huntley, K	001162146	OUTPA	9BMT
001900156	Osler, J	001900156	OUTPA	6PI
001112158	Buck, D	001112158	OUTPA	5A
001693159	Black, C	001693159	OUTPA	9RT
001131167	Willins, J	001131167	INPAT	WFUP
001626168	Bilton, E	001626168	OUTPA	10RT
001083170	Poorton, T	001083170	INPAT	ED
001242171	Medford, C	001242171	INPAT	5W
001656172	Edmonds, B	001656172	OUTPA	5RT
001662172	Drupert, D	001662172	INPAT	WFUP

First Page Prior Page Next Page View... Search

Selected records: 2 Clear all Send Close Acct

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NOTE: If Accounts are not supported on your system, the Patient ID number will be used for the account number

9. From the *List of Open Accounts* screen highlight the desired entry and then click on the *View* button. The *Patient Information* and *Account Information* windows will be displayed as shown below:

Patient Information

Patient ID: 419000117 Name: Baugner, Charles

Secondary ID: Height: in

Prior Pat. ID: Weight: lb

Prior Sec. ID: Age: 22 Years

SSN: Gender: Male

Danger Code: Race: Caucasian

Other Name:

Address:

City:

State:

ZIP code:

Country:

Phone:

Alt. Phone:

Additional information:

Close

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Account Information			
Patient ID:	M300000033	Name:	Fernandez, Rossanna
Account Number:	300856617252	Admit date/time:	12-AUG-1997 10:02
Prior Acct Number:		Discharge date/time:	00-Unk-0000 00:00
Account Status:	OPEN	Closure date/time:	27-JUL-2002 07:39
HIS Disposition:	I	Patient Class:	INPAT
Discharge Disp:		Service Facility:	ALS
Admit Source:	PHY	Ambulatory Status:	
Alt. Visit Number:		MUSE Location:	
Hospital Service:	M.MED	HIS Location:	M.CCU
Admission Type:	EL	Room:	1403
Monitor Loc:	CCU11403	Bed:	
Referred by:	00		
Attended by:	Korenman, Michael (KORMI) 0		
Admitted by:	Korenman, Michael (KORMI) 0		
Consulted by:	00		
Admitting Diagnosis	TEST FOR MARQUETTE=PRE IP-8/12-PRE TO IP ADMIT		
Current Diagnosis			
<input type="button" value="Close"/>			

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10. Verify that all information from your test transaction is properly displayed in the applicable windows.
11. After verifying that all data for the Admit transaction has been processed correctly, send another transaction that adds patient data and check the *List of Patients* and the other applicable information screens for successful processing.
12. Continue testing until all the transactions that add patient data supported on this particular site have been tested and verified.

Test Transactions that Change Patient Data

The transactions that change patient data are described in the following table.

Table 4. ADT Transactions that Change Patient Data		
Type	Transaction	Results
A02	Transfer a Patient	The patient record is changed to reflect the new location information.
A06	Transfer Outpatient to Inpatient	The patient record is changed to reflect the new patient classification.
A07	Transfer Inpatient to Outpatient	The patient record is changed to reflect the new patient classification.
A08	Update Patient Information	The patient record is changed to reflect the new information.
A12	Cancel Transfer	A patient transfer is canceled. The patient record is changed to show the location prior to the transfer.
A17	Swap Patients	Used when two patients will exchange beds. Both patient records are changed to reflect the location changes.

Test these transactions as follows:

1. If a patient does not exist in the database, begin by admitting a patient.
2. Send a Patient Transfer transaction from the HIS to the interface workstation.
3. Verify that the patient appears on the *List of Patients* screen.
4. Select *Show Open Accounts* from the *Select List* menu. The *List of Open Accounts* is displayed.
NOTE: If Accounts are not supported on your system, the Patient ID number will be used for the account number.
5. From the *List of Open Accounts* screen highlight the desired entry and then click on the *View* button. The *Patient Information* and *Account Information* windows will be displayed.
6. Verify that all information from your test transaction is properly changed in these windows.
7. After verifying that all data for the Transfer Patient transaction has been processed correctly, send another of the Transfer or Swap transactions and check the appropriate screens for successful processing.
8. Continue testing until all the “change” transactions supported on this particular site have been tested and verified.

Test Transactions that Merge Patient Data

The transactions that merge patient data are described in the following table.

Table 5. ADT Transactions that Merge Patient Data		
Type	Transaction	Results
A18	Merge Patient Information	Moves all information in the system to a different Patient ID
A34	Merge Patient Information (Patient ID only)	Moves all information in the system to a different Patient ID (same as A18)
A35 *	Merge Patient Information (Account number only)	Changes all prior patient Account data to new patient Account number
A36 *	Merge Patient Information (Patient ID & Account number)	Changes all information for prior Patient ID and Account number to new Patient ID and Account number
* Only on systems that support account information		

Test these transactions as follows:

1. Be sure there are at least two patients in your patient database.
2. Begin by sending a Patient Merge transaction from the HIS to the interface workstation.
3. Verify successful processing of the transaction as outlined in the previous tests.
4. Continue testing until all the transactions that merge patient data supported on this particular site have been tested and verified.

Test Transactions that Delete Patient Data

The transactions that delete patient data are described in the following table.

Table 6. ADT Transactions that Delete Patient Data		
Type	Transaction	Results
A03	Discharge a Patient	Patient record (account) status changes from Open to Closed.
A11	Cancel Admit	Patient record (account) status changes from Open to Closed.
A23	Delete a Patient Record	Deletes specific patient information.

Test these transactions as follows:

1. If a patient does not exist in the database, begin by admitting a patient.
2. Send a patient discharge transaction from the HIS to the interface workstation for one of the patients that was previously admitted.
3. Verify successful processing of the transaction as outlined in the previous tests.
4. Continue testing until all the transactions that delete patient data have been tested and verified. It may be necessary to re-admit deleted patient records.

Testing Order Transactions

The *Information Technologies* HL7 interface accepts unsolicited messages for Order transactions from the HIS. These messages must include data for only one patient. When processing Order transactions, the HL7 interface will respond with an application level acknowledgment. This acknowledgment indicates that the message was received and processed. Once the transaction messages are processed on the MUSE CV system, the entries are stored in the MUSE CV system databases and MUSE CV system users can access the data.

NOTE: The *Information Technologies* HL7 interface does not support batch processing of Order transaction messages.

The following order transactions are supported by the HL7 interface:

Table 7. Order Transactions		
Type	Transaction	Results
NW	New Order	Adds an new order to the database.
CA	Cancel Order Request	An existing order is cancelled.
DC	Discontinue Order Request	An existing order is discontinued.
XO	Change Order Request	An existing order is changed.

NOTE: Be sure to test order transactions for every test type supported by your system. These are identified in the “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.”

Test the Order transactions as follows:

1. Using the test data, send a single new order transaction from the HIS to the interface workstation.
2. Verify successful processing of this transaction at the HIS and the MUSE CV system.
3. Log into MUSE CV system on the interface workstation.
4. From the *System* menu, select *Interface Manager*. The first window to appear is the *List of open orders* for the site you entered at the *Authorization* window.

The *List of open orders* is a list of all orders which have been requested but have not yet been processed by the MUSE CV system. A sample *List of open orders* is shown below.

List of open orders						
List of orders 29 through 42						
Date & time		Name	Patient ID	Req. No.	Loc.	Type
23-JUL-94 20:00	Y	Barber, T	330006095	3075607	ED	ECG
23-JUL-94 20:45	N	Bright, C	190006205	4515607	10NT	ECG
24-JUL-94 03:00	N	Osler, J	569000011	2085610	6PI	UNK
24-JUL-94 06:00	Y	James, M	500006304	4445610	ED	ECG
24-JUL-94 06:00	Y	Prince, S	780007187	4395610		ECG
24-JUL-94 09:00	N	Beck, T	850008487	0075598	11NT	ECG
24-JUL-94 09:00	N	Alley, S	530003984	1975587	10RT	ECG
24-JUL-94 10:45	N	Gardner, H	300007224	3075611	7RT	ECG
24-JUL-94 15:15	N	Yount, S	300007895	4175612	10RT	ECG
24-JUL-94 16:30	N	Fletcher, A	530005324	7395612	4A	ECG
24-JUL-94 17:30	Y	Wrighter, H	286370010	0005613	10RT	ECG
24-JUL-94 19:15	Y	Thomason, M	130009966	0815619	10CC	ECG
24-JUL-94 19:30	N	Baltus, A	752880011	5665613	EDP	ECG
24-JUL-94 19:30	N	Mumford, A	180005912	5685613	8NT	ECG

Selected records

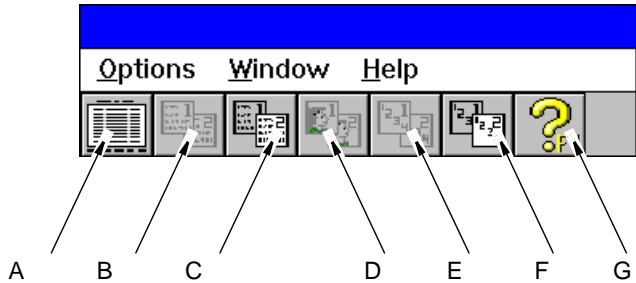
MD1334-081A

At this time, we will be mainly concerned with the *View* button, and the various screens that it provides access to.

The *View* button on the *List of open orders* allows you to look at all the order information and all the patient information for a particular requisition number. Because there may be a large amount of data associated with a given order, the information is presented in five windows:

- *Order Information*
- *Supplemental Order Information*
- *Patient Information*
- *Account Information*
- *Supplemental Account Information*

When you first choose *View*, the order information, account information and patient information windows are presented. The supplemental information windows may be opened by selecting from the *Window* menu or by using the buttons along the top of the screen.



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Table 8. <i>View</i> Button Bar	
Item	Description
A	Select to return to the list of orders.
B	Select to view <i>Order Information</i> window*
C	Select to view <i>Supplemental order information</i> window*
D	Select to view <i>Patient Information</i> window*
E	Select to view <i>Account Information</i> window*
F	Select to view <i>Supplemental account information</i> window*
G	Select for on-line Help.

* All five windows may be opened and closed independently, and may be positioned anywhere on the screen by clicking and dragging on the title bar of the window.

Examples of these windows are shown on the following pages.

Order Information Window

A typical *Order Information* window is shown in the figure below.

The **Order Information** window displays the following fields:

Patient ID:	000039682	Name:	Johnson, Stanley
Test Type:	12 Lead ECG	Order Status:	OPEN
Start date/time:	12-FEB-98 09:20	Priority:	ASAP
Requisition No.:	209811	Order Number:	
Alt. Requisition No.:		System ID:	
Account Number:	000036594	Order Placed date/time:	12-JAN-98 09:20
Episode:		Order Expiration date/time:	22-FEB-98 09:20
Ordered by:	Mitchell, M.D., Robert (34001928) ()		
Order Placed by:	()		
Test Reason	ROUTINE POST-OP		
Medications:	NONE		
Comments:			

Close

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Supplemental Order Information Window

A typical *Supplemental Order Information* window is shown in the figure below.

The **Supplemental order information** window displays two sections:

User-defined questions	Additional information
(Undefined)	
(Undefined)	
(Undefined)	
(Undefined)	

Close

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Patient Information Window

A typical *Patient Information* window is shown in the figure below.

The screenshot shows a 'Patient Information' window with the following fields and values:

Patient ID:	419000117	Name:	Baugner, Charles
Secondary ID:		Height:	in
Prior Pat. ID:		Weight:	lb
Prior Sec. ID:		Age:	22 Years
SSN:		Gender:	Male
Danger Code:		Race:	Caucasian
Other Name:			
Address:			
City:			
State:			
ZIP code:			
Country:			
Phone:			
Alt. Phone:			
Close			

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Account Information Window

A typical *Account Information* window is shown in the figure below.

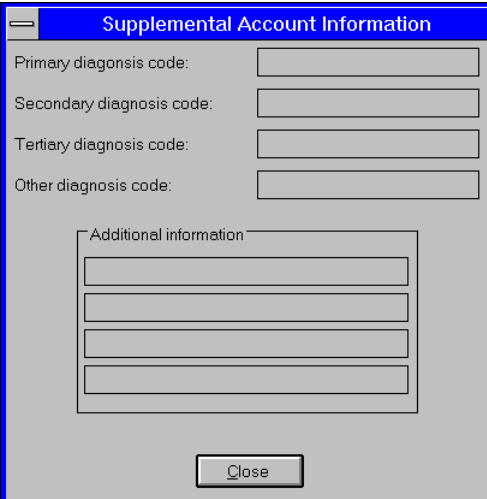
The screenshot shows an 'Account Information' window with the following fields and values:

Patient ID:	M300000033	Name:	Fernandez, Rossanna
Account Number:	300856617252	Admit date/time:	12-AUG-1997 10:02
Prior Acct Number:		Discharge date/time:	00-Unk-0000 00:00
Account Status:	OPEN	Closure date/time:	27-JUL-2002 07:39
HIS Disposition:	I	Patient Class:	INPAT
Discharge Disp:		Service Facility:	ALS
Admit Source:	PHY	Ambulatory Status:	
Alt. Visit Number:		MUSE Location:	
Hospital Service:	M.MED	HIS Location:	M.CCU
Admission Type:	EL	Room:	1403
Monitor Loc:	CCU1403	Bed:	
Referred by:	()		
Attended by:	Korenman, Michael (KORMI) ()		
Admitted by:	Korenman, Michael (KORMI) ()		
Consulted by:	()		
Admitting Diagnosis:	TEST FOR MARQUETTE=PRE IP-8/12-PRE TO IP ADMIT		
Current Diagnosis:			
Close			

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Supplemental Account Information Window

A typical *Supplemental Account Information* window is shown in the figure below.

The image shows a software window titled "Supplemental Account Information" with a blue header bar. Inside the window, there are four text input fields labeled "Primary diagnosis code:", "Secondary diagnosis code:", "Tertiary diagnosis code:", and "Other diagnosis code:". Below these fields is a section titled "Additional information" which contains four stacked text input fields. At the bottom center of the window is a button labeled "Close".

Supplemental Account Information

Primary diagnosis code:

Secondary diagnosis code:

Tertiary diagnosis code:

Other diagnosis code:

Additional information

Close

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5. Verify that all information from your test transaction is properly displayed in these windows.
6. After verifying that all data for the New Order transaction has been processed correctly, send a Change Order transaction for the same requisition and check the various screens to verify that the appropriate data has changed.
7. Follow the same procedures to test the Discontinue Order Request and the Cancel Order Request. Verify that the order has been discontinued or canceled.
8. Continue testing until Order transactions for all test types supported on this particular site have been tested and verified.

Testing Results Transactions

The purpose of this section is to test the ability of the *Information Technologies* HL7 interface to successfully process and send preliminary, final and corrected result messages from the MUSE CV system to the HIS.

Test Data

The system must be tested using input data of known content that will allow for proper evaluation of the expected outcomes. We have supplied the following data for use in this testing:

- A diskette (p/n 421128-001) containing a collection of patient test data has been supplied with the interface workstation. This data includes a variety of tests such as ECG, Stress, Holter and Hi-Res. Each patient test on the diskette is identified with a patient name and a sequential patient ID number (1, 2, 3, etc.).
- The *Sample ADT Test Plan* provided in this document provides a sample list of patient demographics. The patient names in this list are the same names used for the tests supplied on the diskette. You can enter this information into your test environment, or you can use your own existing patient demographics (real or fictitious).

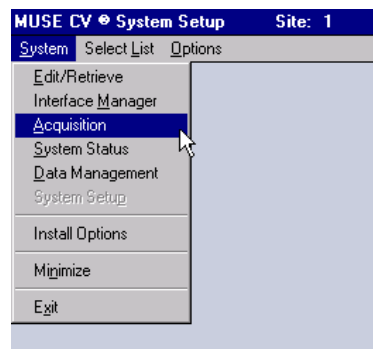
If you use your own existing patient demographics, the *Patient Names* and *Patient ID Numbers* on the *Information Technologies*-supplied patient tests must be modified to match your demographic choices.

Acquisition of Patient Test Data

Before the testing can begin, the patient test data must be acquired into the interface workstation.

The following procedures outline how to acquire data from diskettes using the *Data Acquisition* window.

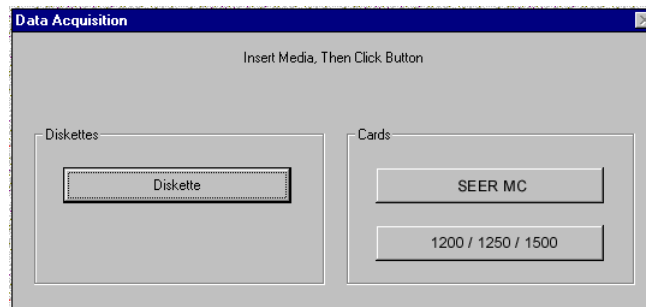
1. Choose *Acquisition* from the *System* menu.



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NOTE: You don't need to log into the MUSE CV system application to access the *System* menu. The *System* menu is accessible from the MUSE CV system *Authorization* window.

2. When you select the *Acquisition* command in any of the MUSE CV system applications, the *Data Acquisition* window opens, allowing you to acquire files from a 3-1/2" diskette.

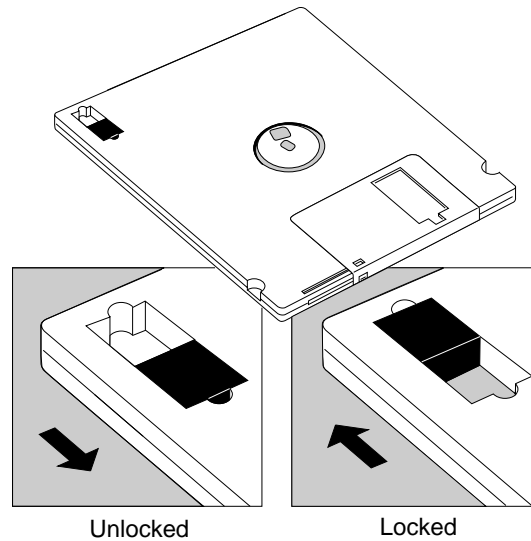


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To prevent deletion of the records from the diskette as they are acquired by the system, be sure you lock the diskette.

This is recommended for the test data diskette, since you may need to acquire this data several times during these test procedures.

To lock the diskette, slide the write-protect tab so that the small hole through the diskette is exposed as shown below:



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If the diskette is not locked before acquisition, all records on the diskette will be deleted from the diskette as they are acquired by the MUSE CV system.

3. Insert the diskette and select *Diskette* in the *Data Acquisition* window. The *Records Transferred* message starts counting to indicate how many records are being transferred to the MUSE CV system.
4. Select *OK* to close the window. Once acquired, the files will appear in the MUSE CV system *Edit List*.

Test Procedures

The test procedures for result transactions are divided into five separate sets of instructions:

- Systems with no inbound-to-MUSE CV system interface (such as ADT or orders)
- Systems with an inbound-to-MUSE CV system interface supporting ADT transactions only
- Systems supporting ADT and order transactions only
- Systems supporting ADT transactions with account information only
- Systems supporting ADT transactions with account information and orders

Proceed to the instructions applicable to your system.

Testing Result Transactions on Systems With No Inbound Message Interface

These procedures are for testing result messages on systems that have no inbound-to-MUSE CV system interface. On these systems the HIS does not send ADT or Order messages to the MUSE CV system.

We will begin testing Result Messages by sending preliminary (unconfirmed) result messages to the HIS. This will be followed by sending final (confirmed) result messages to the HIS. If you will not be sending preliminary result messages, proceed to the section for sending final (confirmed) result messages.

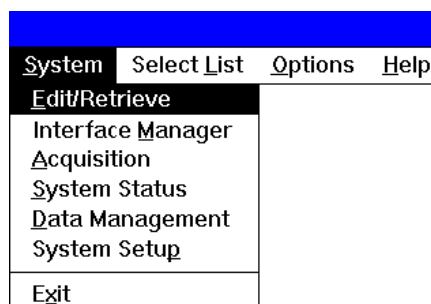
Sending Preliminary Result Messages

Preliminary (unconfirmed) result messages are normally generated automatically when the patient tests are acquired into the MUSE CV system. For the purposes of testing, this automatic process will be simulated by manually “printing” the unconfirmed report to the HL7 device. To manually print a report to the HL7 device, proceed as follows:

Display the *Edit List*

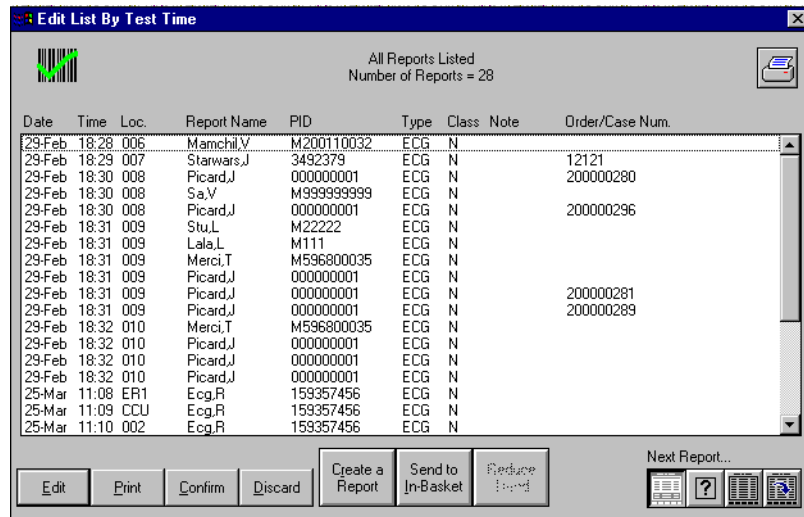
After the appropriate patient tests have been acquired, the tests will appear in the *Edit List*. This will be the starting point for all message generation procedures. Display the *Edit List* as follows:

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.



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A typical *Edit List* screen is shown below.



All Reports Listed
Number of Reports = 28

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M1111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

Buttons: Edit, Print, Confirm, Discard, Create a Report, Send to In-Basket, Reduce, Next Report...

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Since there is no ADT interface, it is not required that the *Patient Names* and *Patient ID Numbers* for the sample tests in the *Edit List* match the patient demographics on the HIS for successful result testing. However, for consistency, it may be desired that the names on these tests match your test data.

- ◆ If the *Patient Names* and *Patient ID Numbers* in the *Edit List* already match the test demographics on the HIS, or if there is no requirement for these names to match, proceed to step 8 .
- ◆ If the *Patient Names* and *Patient ID Numbers* in the *Edit List* DO NOT match the test demographics on the HIS, and you would like to change *Patient Names* and *Patient ID Numbers* in the *Edit List* proceed as follows:

Update Patient Demographics (optional)

- Highlight a test in the *Edit List* and click on the *Edit* button at the lower left corner of the *Edit List* window.

The screenshot shows the 'ECG Report' window. At the top, the patient's name 'Mitchell, Robert' is displayed. Below this, there are fields for 'Order Number' (123135), 'User Defined' (empty), 'Test Reason' (empty), 'Location' (037), and 'Acquiring Tech' (empty). To the right, there are fields for 'Patient ID' (987654321), 'Age' (42 Years), 'Test Time/Date' (09:54, 19-Jul-1990), 'Referring MD' (empty), and 'Ordering MD' (empty). A green status bar indicates 'No Mismatch Detected'. Below the status bar, there is a table with columns 'Acronym', 'Line', and 'Column'. The first row shows 'Sinus bradycardia' in the 'Acronym' column, '2' in the 'Line' column, and '1' in the 'Column' column.

MD1334-042A

- The *ECG Report* window is displayed, along with the *Select Overreader* window.

The screenshot shows the 'Edit List By Test Time' window. It has a title bar with a red 'X' icon. The main area contains a table with columns 'Date', 'Time', and 'Loc.'. The table lists several reports, including '29-Jun 10:00 000', '29-Jun 10:02 002', '29-Jun 10:04 004', '23-Nov 09:48 000', '23-Nov 10:46 000', '30-Nov 11:36 000', '14-Feb 08:27 088', '10-Jun 14:20 000', '19-Sep 14:00 000', '29-Feb 18:12 001', '29-Feb 18:13 002', '29-Feb 18:14 003', '29-Feb 18:14 003', '29-Feb 18:15 004', '29-Feb 18:16 005', '29-Feb 18:17 006', '29-Feb 18:18 007', and '29-Feb 18:19 008'. A 'Select Overreader' dialog box is open in the center, with fields for 'Number' and 'Name', and buttons for 'OK', 'Name Search', and 'Cancel'. The 'All Reports Listed' and 'Number of Reports = 72' are displayed at the top right. At the bottom, there are buttons for 'Edit', 'Print', 'Confirm', 'Discard', 'Create a Report', and 'Send to In-Basket'. A 'Next Report...' button is also present.

MD1334-212A

The name displayed in the window is the currently selected overreader. This name must match the name of the physician that was set up on the interface workstation as a user with overreading privileges.

Enter the *Number* or *Name* of an appropriate overreader. You can also *Search* for an available Overreader on the system. Click *OK* when finished. The *Select Overreader* window closes.

- When you are returned to the *ECG Report* window, click on the *Patient ID* box. A dialog box will be displayed. Enter the appropriate patient ID number in the box and click *OK*.

6. When returned to the *ECG Report* window, click on the box displaying the *Patient Name*. A dialog box will be displayed. Enter the appropriate patient name in the *Entered Name* box.

Select or Enter The Correct Name:

Mitchell, Robert

Mitchell, Robert

MD1334-045A

7. When the *Patient Name* and *Patient ID Number* have been updated in the *ECG Report* window, select *Update in Edit List* from the *Options* menu in the menu bar:

MUSE @ System Report Editor

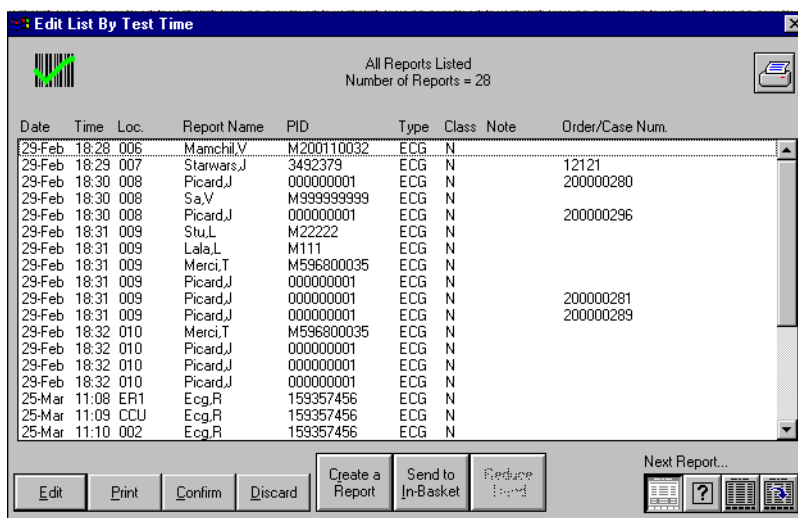
System Select Report Test Data Options

- Select Overreader
- Select In-Basket
- Confirm F5
- Confirm and Print F6
- Update in Edit List F8
- Next Report F7
- Change Site
- Manual Patient Info
- Edit List Options

MD1334-056A

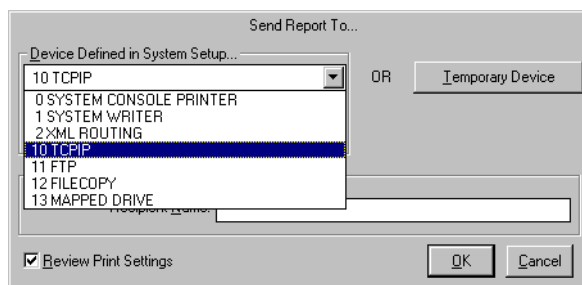
Generate the Preliminary Report

8. When the *Edit List* is displayed, highlight the appropriate test and click on the *Print* button at the lower left corner of the *Edit List* window.



23B

9. When the *Send Report To...* window is displayed, select the HL7 device from the pull-down list of *Devices Defined in System Setup* and click *OK*. The report will be sent through the HL7 interface to the HIS.



94B

10. Verify that all data has arrived at the HIS in the expected format.

Sending Final Result Messages

When sending final (confirmed) results to the HIS, there are two possible scenarios:

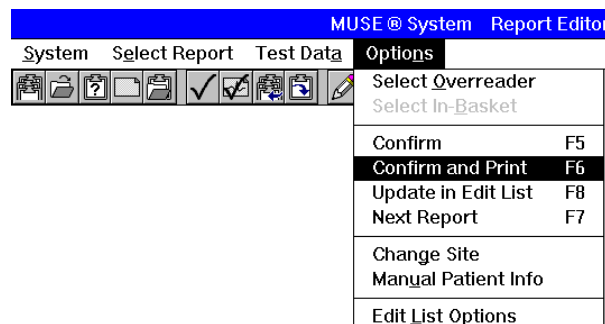
- A preliminary (unconfirmed) result message has already been generated for this test
- No preliminary (unconfirmed) result message was generated for this test

If a preliminary (unconfirmed) result message has already been generated for this test, proceed as follows:

- Select the test in the *Edit List* and click on the *Confirm* button at the bottom of the *Edit List* screen. Then “*Print*” the test to the HL7 device defined in *System Setup*.
- Verify that all data has arrived at the HIS in the expected format.

If no preliminary (unconfirmed) result message was generated for this test, and no change of *Patient Name* or *Patient ID Number* is required, proceed as follows:

1. Perform steps 1 through 7 in the procedures for sending preliminary (unconfirmed) result messages.
2. When the *Patient Names* and *Patient ID Number* have been updated in the *ECG Report* window, select *Confirm and Print* from the *Options* menu in the menu bar:



MD1334-057A

3. Verify that all data has arrived at the HIS in the expected format.

Sending Corrected Result Messages

This procedure tests the ability of the system to successfully process and send the corrected version of a previously-confirmed report.

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when the MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.

The *Edit List* screen is shown below.

The screenshot shows the 'Edit List By Test Time' window. At the top, it says 'All Reports Listed' and 'Number of Reports = 28'. Below this is a table with columns: Date, Time, Loc., Report Name, PID, Type, Class, Note, and Order/Case Num. The table contains 28 rows of data, mostly from February 29th and March 25th. At the bottom, there are buttons: Edit, Print, Confirm, Discard, Create a Report, Send to In-Basket, and Reduce. There is also a 'Next Report...' button with a magnifying glass icon.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

MD1334-023A

3. Select *Retrieval* from the *Select Report* menu on the menu bar.

The screenshot shows the 'MUSE @ System' menu bar. The 'Select Report' menu is open, showing options: Edit List, Retrieval (highlighted), Select Patient, Create Report, and Test Directory. The 'Test Directory' option is disabled.

MD1334-058A

4. The *Retrieval* window is displayed:

The screenshot shows the 'Retrieval - Select Patient by ID, or by Name and/or Test Date' window. It has a title bar and a menu bar with 'Name', 'Date', 'List', and 'Floppy'. Below the menu bar is a search area with fields for Patient ID, Last Name, First Name, and Test Date. There is a 'Check Main System? (Remote System Option)' checkbox and 'OK' and 'Cancel' buttons at the bottom.

MD1334-059A

5. You can retrieve a test by *Patient ID*, *Patient Name* or *Test Date* (in day, month, year format). Enter the appropriate information and click *OK*. The *Test Directory* window is displayed:

The **Test Directory** window displays patient information and a list of tests. The patient's name is Mitchell, Robert. The tests listed are ECG, dated 21-Apr-1990, with times 09:20, 07:19, and 06:48, and locations 035, 028, and 026. The window also includes buttons for Edit, Print, Discard, Key, View, Floppy, and Print List.

Report Name	Type	Date	Time	Loc.	Note	Diagnostics
Mitchell, R	ECG	21-Apr	08:11	038		

Stored Information for Mitchell, Robert												
PID:	Age:	Gender:	Race:	Height:	Weight:	Type	Date	Time	Loc.	Note	Vol.	Diagnostics
987654321	47 Years	Female	Caucasian	63 in	125 lb	ECG	21-Apr-1990	09:20	035		000	R
						ECG	21-Apr-1990	07:19	028		000	SR
						ECG	21-Apr-1990	06:48	026		000	SIR

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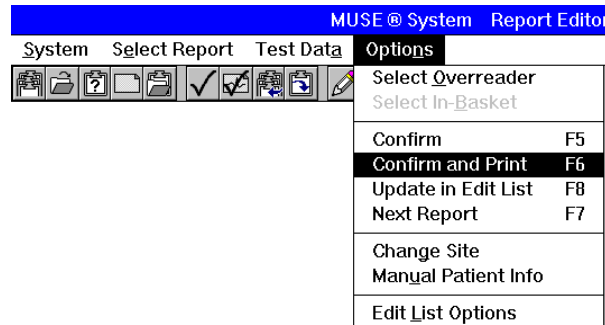
6. In the box titled *Stored Information for <Patient Name>* is a list of all tests for that patient. Highlight the appropriate test and click on the *Edit* button. The *ECG Report* window will be displayed:

The **ECG Report** window displays patient information and test results. The patient's name is Mitchell, Robert. The test results are Sinus bradycardia. The window also includes buttons for Edit, Print, Discard, Key, View, Floppy, and Print List.

ECG Report	
Mitchell, Robert	Patient ID: 987654321
Order Number: 123135	Age: 42 Years
User Defined:	Test Time/Date: 09:54 19-Jul-1990
Test Reason:	No Mismatch Detected
Location: 037 -	Referring MD: (-)
Acquiring Tech: (-)	Ordering MD: (-)
Acronym Line: 2 Column: 1	
Sinus bradycardia	

MD1334-042A

7. Edit the test information as necessary. When finished editing, select *Confirm and Print* from the *Options* menu on the menu bar.



MD1334-057A

8. Verify that all data from the corrected report appears at the HIS in the expected format.

Testing Result Transactions on Systems Supporting ADT Only

These procedures are for testing result messages on systems that have an inbound-to-MUSE CV system interface supporting ADT transactions only. The HIS does not support Account information or send Orders to the MUSE CV system.

We will begin testing Result Messages by sending preliminary (unconfirmed) result messages to the HIS. This will be followed by sending final (confirmed) result messages to the HIS. If you will not be sending preliminary result messages, proceed to the section for sending final (confirmed) result messages.

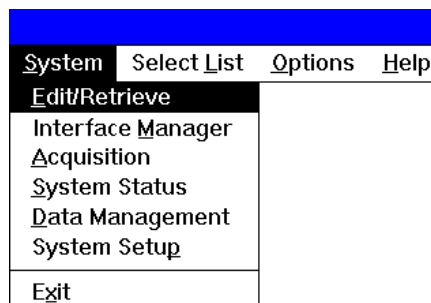
Sending Preliminary Result Messages

Preliminary (unconfirmed) result messages are normally generated automatically when the patient tests are acquired into the MUSE CV system. For the purposes of testing, this automatic process will be simulated by manually “printing” the unconfirmed report to the HL7 device. To manually print a report to the HL7 device, proceed as follows:

Display the *Edit List*

After the appropriate patient tests have been acquired, the tests will appear in the *Edit List*. This will be the starting point for all message generation procedures. Display the *Edit List* as follows:

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when the MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.



MD1334-093A

A typical *Edit List* screen is shown below.

The screenshot shows the 'Edit List By Test Time' window. At the top, it says 'All Reports Listed' and 'Number of Reports = 28'. Below this is a table with the following columns: Date, Time, Loc., Report Name, PID, Type, Class, Note, and Order/Case Num. The table contains 28 rows of data, including reports from February 29th and March 25th. At the bottom of the window, there are buttons for 'Edit', 'Print', 'Confirm', 'Discard', 'Create a Report', 'Send to In-Basket', and 'Reduce'. There is also a 'Next Report...' button with a magnifying glass icon.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

023B

3. Before sending the result transaction to the HIS, the *Patient Names* and *Patient ID Numbers* on the sample tests in the *Edit List* must match the test demographics on the HIS.
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests already match the test demographics on the HIS, proceed to step 10.
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests DO NOT match the test demographics on the HIS, proceed as follows:
4. Highlight a test in the *Edit List* and click on the *Edit* button at the lower left corner of the *Edit List* window.
5. The *ECG Report* window is displayed, along with the *Select Overreader* window.

The screenshot shows the 'Edit List By Test Time' window with the 'Select Overreader' dialog box open. The dialog box has fields for 'Number' and 'Name', and buttons for 'OK', 'Name Search', and 'Cancel'. The background window shows a list of reports, with the last few rows highlighted. The 'Edit' button is visible at the bottom left of the window.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Jun	10:00	000						
29-Jun	10:02	002						
29-Jun	10:04	004						
23-Nov	09:48	000						
23-Nov	10:46	000						
30-Nov	11:36	000						
14-Feb	08:27	088						
10-Jun	14:20	000						
19-Sep	14:00	000						
29-Feb	18:12	001						
29-Feb	18:13	002						
29-Feb	18:14	003						
29-Feb	18:14	003						
29-Feb	18:15	004						
29-Feb	18:16	005	Picard,J	000000001	ECG	A		
29-Feb	18:17	006	Picard,J	000000001	ECG	A		
29-Feb	18:18	007	Picard,J	000000001	ECG	A		
29-Feb	18:19	008	Picard,J	000000001	ECG	A		

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The name displayed in the window is the currently selected overreader. This name must match the name of the physician that

was set up on the interface workstation as a user with overreading privileges.

Enter the *Number* or *Name* of an appropriate overreader. You can also *Search* for an available Overreader on the system. Click *OK* when finished. The *Select Overreader* window closes.

6. When you are returned to the *ECG Report* window, click on the *Patient ID* box. A dialog box will be displayed. Enter the appropriate patient ID number in the box and click *OK*.

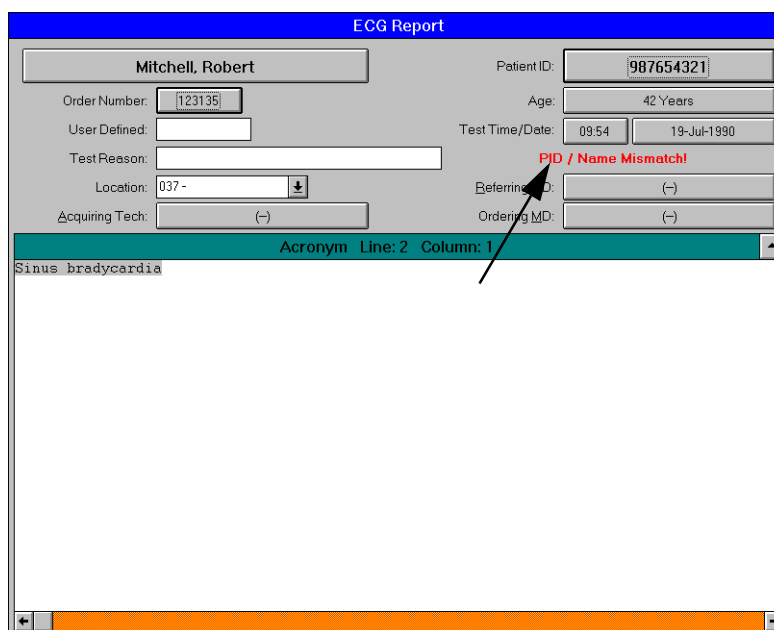
An error message may be displayed indicating that a name mismatch exists due to the ID number change.



MD1334-051A

Click *OK* and proceed to the next step.

7. When returned to the *ECG Report* window, note the *PID/Name Mismatch* indication.

The "ECG Report" window displays patient data for "Mitchell, Robert" with Patient ID "987654321". Fields include Order Number "1123135", Age "42 Years", Test Time/Date "09:54 19-Jul-1990", and Location "037 -". A red warning "PID / Name Mismatch!" is shown with an arrow pointing to the "Referring MD" field. The "Acronym" field shows "Sinus bradycardia". The window has a status bar at the bottom with "Acronym Line: 2 Column: 1".

MD1334-052A

8. Click on the box displaying the patient name. A dialog box will be displayed as shown:

Select or Enter The Correct Name:

Mitchell, Robert

Mitchell, Robert

Mitchell, Robert

MD1334-046A

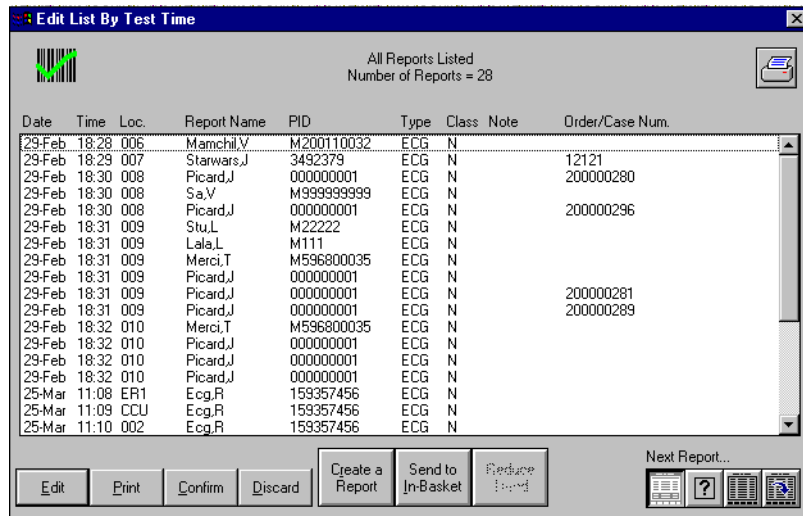
9. Click on the *Admitting Name* button. You will be returned to the *ECG Report* window. Note that the *PID/Name Mismatch* indication has cleared.
10. When the *Patient Names* and *Patient ID Number* have been updated in the *ECG Report* window, select *Update in Edit List* from the *Options* menu:

MUSE @ System Report Editor	
System	Select Report Test Data Options
	Select Overreader
	Select In-Basket
	Confirm F5
	Confirm and Print F6
	Update in Edit List F8
	Next Report F7
	Change Site
	Manual Patient Info
	Edit List Options

MD1334-056A

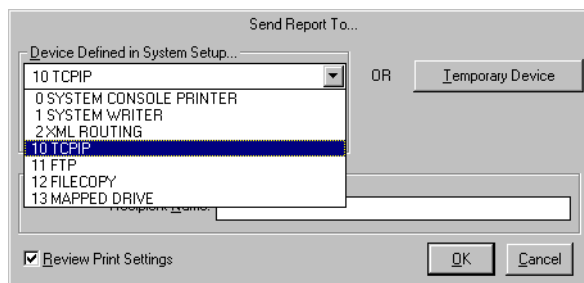
11. Send the report to the HIS as follows:

When the *Edit List* is displayed, highlight the appropriate test and click on the *Print* button at the lower left corner of the *Edit List* window.



23B

12. When the *Send Report To...* window is displayed, select the HL7 device from the pull-down list of *Devices Defined in System Setup* and click *OK*. The report will be sent through the HL7 interface to the HIS.



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13. Verify that all data has arrived at the HIS in the expected format.

Sending Final Result Messages

When sending final (confirmed) results to the HIS, there are two possible scenarios:

- A preliminary (unconfirmed) result message has already been generated for this test
- No preliminary (unconfirmed) result message was generated for this test

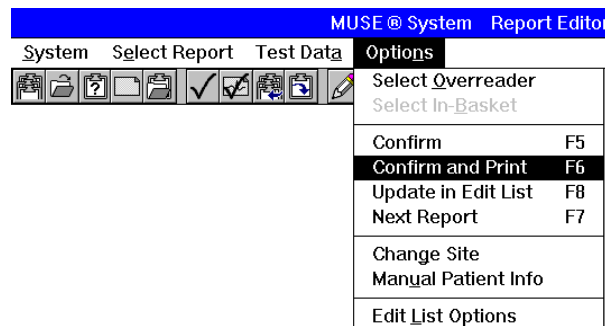
If a preliminary (unconfirmed) result message has already been generated for this test, proceed as follows:

- Select the test in the *Edit List* and click on the *Confirm* button at the bottom of the *Edit List* screen. Then “*Print*” the test to the HL7 device defined in *System Setup*.
- Verify that all data has arrived at the HIS in the expected format.

If no preliminary (unconfirmed) result message was generated for this test, proceed as follows:

1. Perform steps 1 through 9 in the procedures for sending preliminary (unconfirmed) result messages.

- After the appropriate account number or order number has been matched to the patient test in the *ECG Report* window, select *Confirm and Print* from the *Options* menu in the menu bar:



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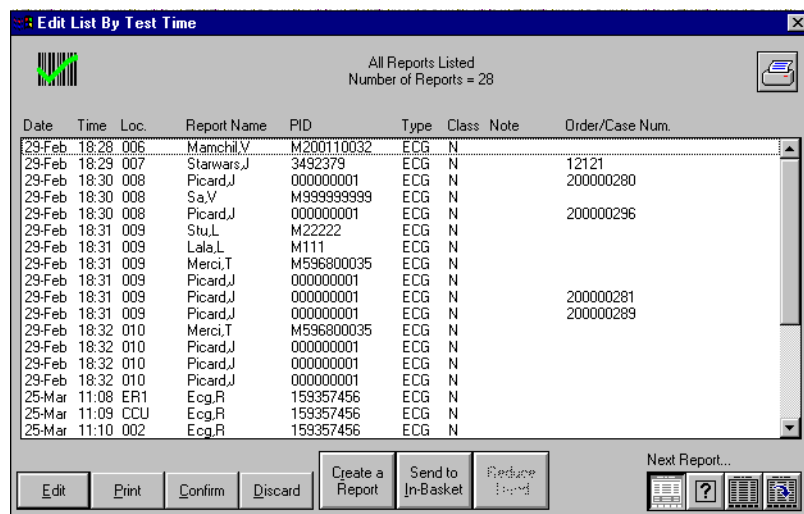
- Verify that all data has arrived at the HIS in the expected format.

Sending Corrected Result Messages

This procedure tests the ability of the system to successfully process and send the corrected version of a previously-confirmed report.

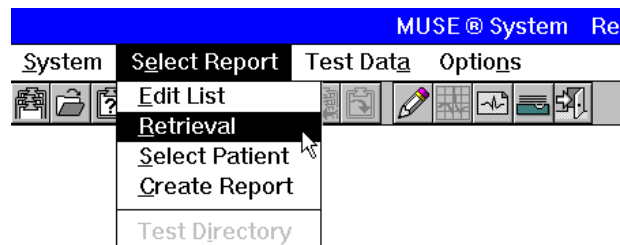
- Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
- The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.

The *Edit List* screen is shown below.



23B

3. Select *Retrieval* from the *Select Report* menu on the menu bar.



MD1334-058A

4. The *Retrieval* window is displayed:

The screenshot shows the 'Retrieval - Select Patient by ID, or by Name and/or Test Date' window. It contains the following fields and controls:

- Name** (with sub-headers Date, List, Floppy)
- Patient ID:** [Text Field]
- Last Name:** [Text Field] **First Name:** [Text Field]
- Test Date:** [Text Field] [Dropdown Arrow] [Text Field]
- Check Main System? (Remote System Option):** [Checkbox]
- Buttons:** OK, Cancel

MD1334-059A

5. You can retrieve a test by *Patient ID*, *Patient Name* or *Test Date* (in day, month, year format). Enter the appropriate information and click *OK*. The *Test Directory* window is displayed:

The screenshot shows the 'Test Directory' window. It contains the following information:

- Report Name:** Mitchell, R
- Type:** ECG
- Date:** 21-Apr
- Time:** 08:11
- Loc.:** 038
- Diagnosis:**
- Stored Information for Mitchell, Robert:**
 - PID:** 987654321
 - Age:** 47 Years
 - Gender:** Female
 - Race:** Caucasian
 - Height:** 63 in
 - Weight:** 125 lb
- Test Results Table:**

Type	Date	Time	Loc.	Note	Vol.	Diagnostics
ECG	21-Apr-1990	09:20	035		000	R
ECG	21-Apr-1990	07:19	028		000	SR
ECG	21-Apr-1990	06:48	026		000	SIR
- Buttons:** Edit List, Previous Page, Next Page, Edit, Print, Discard, Key, View, Floppy, Print List

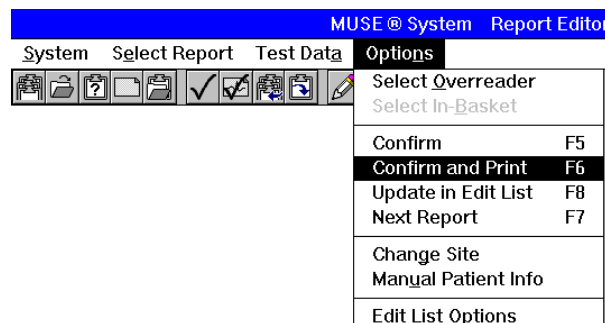
MD1334-060A

6. In the box titled *Stored Information for <Patient Name>* is a list of all tests for that patient. Highlight the appropriate test and click on the *Edit* button. The *ECG Report* window will be displayed:

The ECG Report window displays patient information for Robert Mitchell. The Patient ID is 987654321, Age is 42 Years, and the Test Time/Date is 09:54 on 19-Jul-1990. The location is 037. The test reason is Sinus bradycardia. The window also shows a status message: No Mismatch Detected. The bottom of the window has a status bar with the text: Acronym Line: 2 Column: 1.

MD1334-042A

7. Edit the test information as necessary. When finished editing, select *Confirm and Print* from the *Options* menu on the menu bar.



MD1334-057A

8. Verify that all data from the corrected report appears at the HIS in the expected format.

Testing Result Transactions on Systems Supporting ADT with Accounts

These procedures are for testing result messages on systems that have an inbound-to-MUSE CV system interface supporting ADT with Accounts only (no Order support).

We will begin testing Result Messages by sending preliminary (unconfirmed) result messages to the HIS. This will be followed by sending final (confirmed) result messages to the HIS. If you will not be sending preliminary result messages, proceed to the section for sending final (confirmed) result messages.

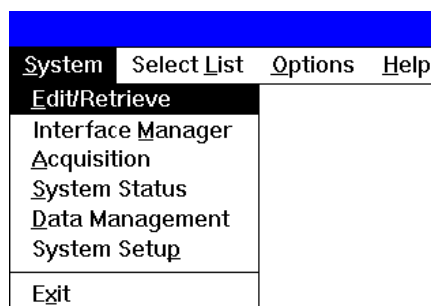
Sending Preliminary Result Messages

Preliminary (unconfirmed) result messages are normally generated automatically when the patient tests are acquired into the MUSE CV system. For the purposes of testing, this automatic process will be simulated by manually “printing” the unconfirmed report to the HL7 device. To manually print a report to the HL7 device, proceed as follows:

Display the *Edit List*

After the appropriate patient tests have been acquired, the tests will appear in the *Edit List*. This will be the starting point for all message generation procedures. Display the *Edit List* as follows:

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.



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A typical *Edit List* screen is shown below.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchil,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M1111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

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Update Patient Demographics

3. Before sending the result transaction to the HIS, the *Patient Names* and *Patient ID Numbers* on the sample tests in the *Edit List* must match the test demographics on the HIS.
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests already match the test demographics on the HIS, proceed to step 13 .
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests DO NOT match the test demographics on the HIS, proceed as follows:
4. Highlight a test in the *Edit List* and click on the *Edit* button at the lower left corner of the *Edit List* window.

ECG Report

Mitchell, Robert Patient ID: **987654321**

Order & Account: [394587661] Age: **79 Years**

User Defined: [] Test Time/Date: **08:44** **19-Jul-1990**

Test Reason: [] **No Mismatch Detected**

Location: **037 -** Referring MD: []

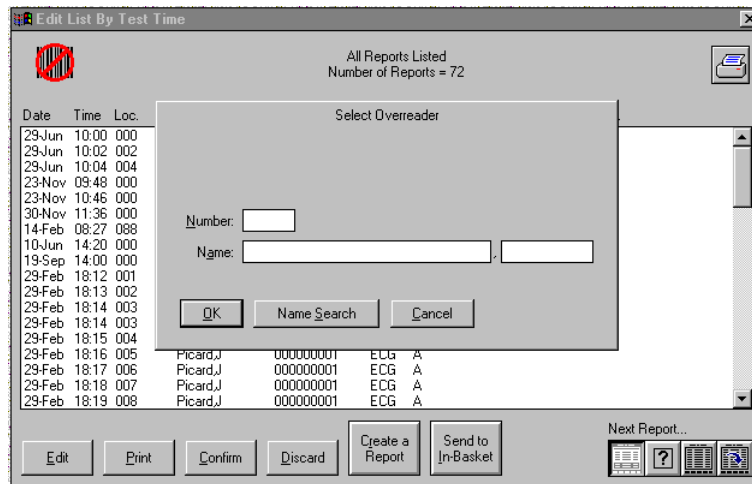
Acquiring Tech: [] Ordering MD: []

Acronym Line: 4 Column: 1

Marked sinus bradycardia with 1st degree A-V block
Non-specific intra-ventricular conduction block
Cannot rule out Septal infarct, age undetermined

MD1334-044A

5. The *ECG Report* window is displayed, along with the *Select Overreader* window.



MD1334-212A

The name displayed in the window is the currently selected overreader. This name must match the name of the physician that was set up on the interface workstation as a user with overreading privileges.

Enter the *Number* or *Name* of an appropriate overreader. You can also *Search* for an available Overreader on the system. Click *OK* when finished. The *Select Overreader* window closes.

6. When you are returned to the *ECG Report* window, click on the *Patient ID* box. A dialog box will be displayed. Enter the appropriate patient ID number in the box and click *OK*.

An error message will be displayed indicating that a name mismatch exists due to the ID number change.



MD1334-051A

Click *OK* and proceed to the next step.

- When returned to the *ECG Report* window, note the *PID/Name Mismatch* indication.

The screenshot shows the 'ECG Report' window for patient Robert Mitchell. The Patient ID is 987654321 and the age is 79 Years. A red warning message 'PID / Name Mismatch!' is displayed in the center of the window. An arrow points to this warning. The ECG text area shows: 'Marked sinus bradycardia with 1st degree A-V block', 'Non-specific intra-ventricular conduction block', and 'Cannot rule out Septal infarct , age undetermined'.

MD1334-165A

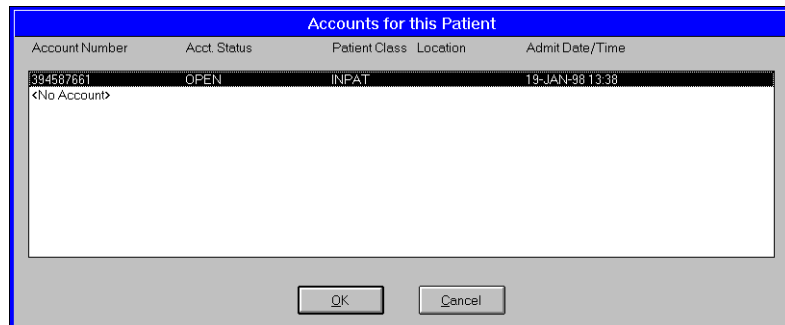
- Click on the box displaying the patient name. A dialog box will be displayed as shown:

The dialog box is titled 'Select or Enter The Correct Name:'. It contains four buttons: 'System Name', 'Admitting Name', 'Report Name', and 'Entered Name'. Each button has the name 'Mitchell, Robert' next to it. The 'Entered Name' button has two empty text input fields next to it. A 'Cancel' button is at the bottom.

MD1334-046A

- Click on the *Admitting Name* button. You will be returned to the *ECG Report* window. Note that the *PID/Name Mismatch* indication has cleared.

10. When the *ECG Report* window is displayed, click on the Account number box to display the *Accounts for this Patient* window:



The screenshot shows a window titled "Accounts for this Patient". It contains a table with the following columns: Account Number, Acct. Status, Patient Class, Location, and Admit Date/Time. The first row of data shows "394507661", "OPEN", "INPAT", and "19-JAN-98 13:38". Below the table is a text area containing "<No Account>". At the bottom of the window are "OK" and "Cancel" buttons.

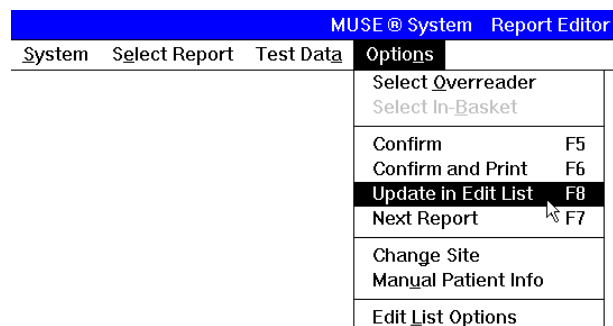
Account Number	Acct. Status	Patient Class	Location	Admit Date/Time
394507661	OPEN	INPAT		19-JAN-98 13:38

<No Account>

OK Cancel

MD1334-047A

11. Select the appropriate account number and click *OK*.
12. After the appropriate account number has been matched to the patient test in the *ECG Report* window, select *Update in Edit List* from the *Options* menu:



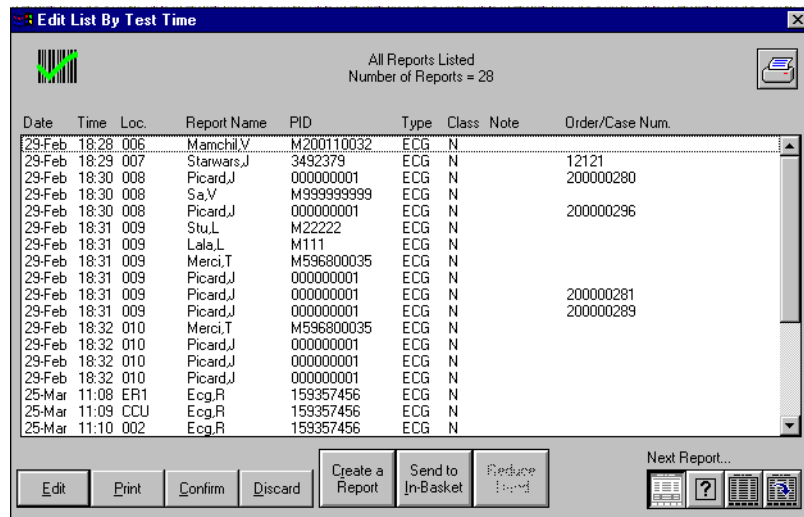
The screenshot shows the "MUSE @ System Report Editor" window. The "Options" menu is open, displaying the following items: "Select Overreader", "Select In-Basket", "Confirm F5", "Confirm and Print F6", "Update in Edit List F8" (highlighted), "Next Report F7", "Change Site", "Manual Patient Info", and "Edit List Options".

MUSE @ System Report Editor			
System	Select Report	Test Data	Options
Select Overreader			
Select In-Basket			
Confirm			F5
Confirm and Print			F6
Update in Edit List			F8
Next Report			F7
Change Site			
Manual Patient Info			
Edit List Options			

MD1334-056A

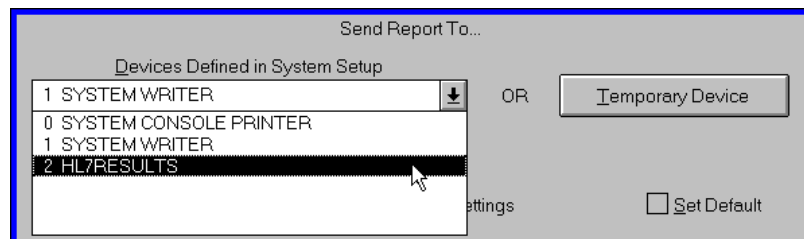
Send the Preliminary Report to the HIS

13. When the *Edit List* is displayed, highlight the appropriate test and click on the *Print* button at the lower left corner of the *Edit List* window.



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14. When the *Send Report To...* window is displayed, select the HL7 device from the pull-down list of *Devices Defined in System Setup* and click *OK*. The report will be sent through the HL7 interface to the HIS.



MD1334-094A

15. Verify that all data has arrived at the HIS in the expected format.

Sending Final Result Messages

When sending final (confirmed) results to the HIS, there are two possible scenarios:

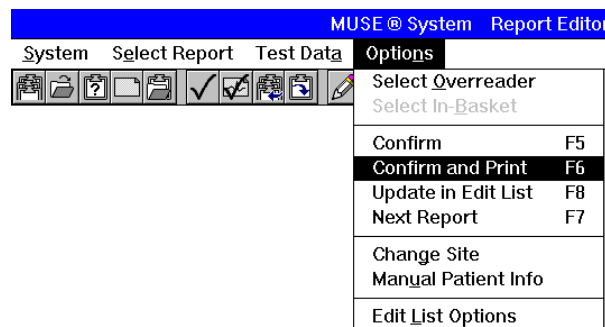
- A preliminary (unconfirmed) result message has already been generated for this test
- No preliminary (unconfirmed) result message was generated for this test

If a preliminary (unconfirmed) result message has already been generated for this test, proceed as follows:

- Select the test in the *Edit List* and click on the *Confirm* button at the bottom of the *Edit List* screen.
- Verify that all data has arrived at the HIS in the expected format.

If no preliminary (unconfirmed) result message was generated for this test, proceed as follows:

1. Perform steps 1 through 11 in the procedures for sending preliminary (unconfirmed) result messages.
2. After the appropriate account number has been matched to the patient test in the *ECG Report* window, select *Confirm and Print* from the *Options* menu in the menu bar:



MD1334-057A

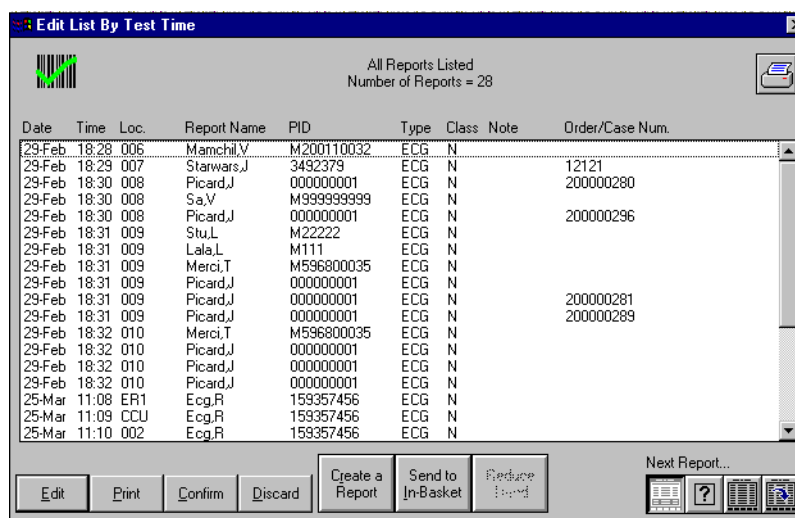
3. Verify that all data has arrived at the HIS in the expected format.

Sending Corrected Result Messages

This procedure tests the ability of the system to successfully process and send the corrected version of a previously-confirmed report.

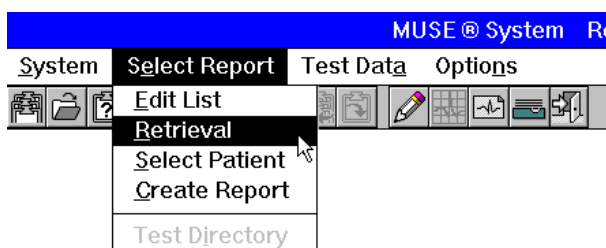
1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.

The *Edit List* screen is shown below.

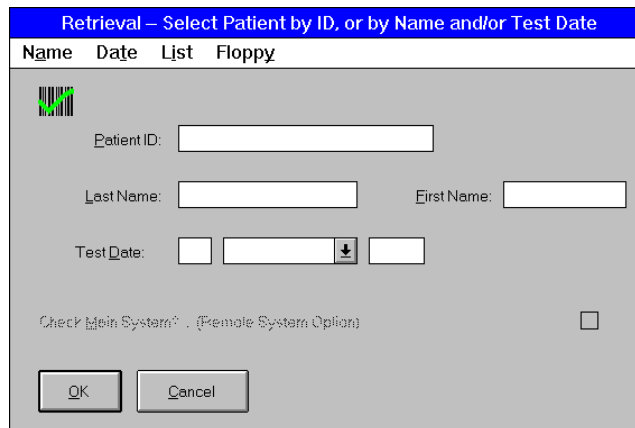


23B

3. Select *Retrieval* from the *Select Report* menu on the menu bar.

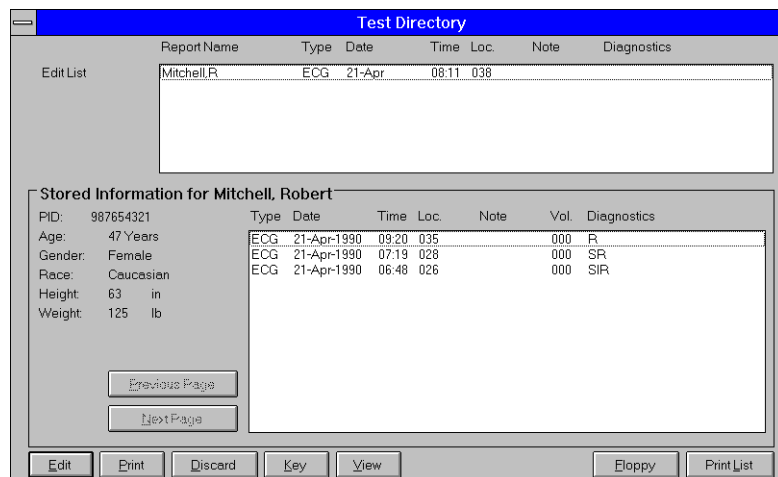


MD1334-058A

4. The *Retrieval* window is displayed:

The **Retrieval** window has a blue title bar with the text "Retrieval – Select Patient by ID, or by Name and/or Test Date". Below the title bar is a menu bar with "Name", "Date", "List", and "Floppy". The main area contains a barcode icon, a "Patient ID:" text box, a "Last Name:" text box, a "First Name:" text box, and a "Test Date:" section with two text boxes and a dropdown arrow. At the bottom, there is a checkbox labeled "Check Main System? (Remote System Option)" and two buttons: "OK" and "Cancel".

MD1334-059A

5. You can retrieve a test by *Patient ID*, *Patient Name* or *Test Date* (in day, month, year format). Enter the appropriate information and click *OK*. The *Test Directory* window is displayed:

The **Test Directory** window has a blue title bar with the text "Test Directory". It features a menu bar with "Report Name", "Type", "Date", "Time", "Loc.", "Note", and "Diagnostics". The main area is divided into two sections. The top section, labeled "Edit List", contains a table with one row: "Mitchell, R", "ECG", "21-Apr", "08:11", "038". The bottom section, labeled "Stored Information for Mitchell, Robert", contains a table with three rows: "ECG", "21-Apr-1990", "09:20", "035", "000", "R"; "ECG", "21-Apr-1990", "07:19", "028", "000", "SR"; and "ECG", "21-Apr-1990", "06:48", "026", "000", "SIR". To the left of this table are fields for "PID: 987654321", "Age: 47 Years", "Gender: Female", "Race: Caucasian", "Height: 63 in", and "Weight: 125 lb". Below these fields are "Previous Page" and "Next Page" buttons. At the bottom of the window are buttons for "Edit", "Print", "Discard", "Key", "View", "Floppy", and "Print List".

MD1334-060A

6. In the box titled *Stored Information for <Patient Name>* is a list of all tests for that patient. Highlight the appropriate test and click on the *Edit* button. The *ECG Report* window will be displayed:

ECG Report

Mitchell, Robert

Patient ID: 987654321

Order & Account: 394587661

Age: 79 Years

User Defined:

Test Time/Date: 08:44 19-Jul-1990

Test Reason:

Location: 037 -

Referring MD: (-)

Ordering MD: (-)

No Mismatch Detected

Acronym Line: 4 Column: 1

Marked sinus bradycardia with 1st degree A-V block
Non-specific intra-ventricular conduction block
Cannot rule out Septal infarct , age undetermined

MD1334-044A

7. Edit the test information as necessary. When finished editing, select *Confirm and Print* from the *Options* menu on the menu bar.

MUSE @ System Report Editor

System Select Report Test Data Options

Select Overreader
Select In-Basket

Confirm F5
Confirm and Print F6
Update in Edit List F8
Next Report F7

Change Site
Manual Patient Info
Edit List Options

MD1334-057A

8. Verify that all data from the corrected report appears at the HIS in the expected format.

Testing Result Transactions on Systems Supporting ADT with Orders

These procedures are for testing result messages on systems that have an inbound-to-MUSE CV system interface supporting ADT and Order transactions only (without Account support).

We will begin testing Result Messages by sending preliminary (unconfirmed) result messages to the HIS. This will be followed by sending final (confirmed) result messages to the HIS. If you will not be sending preliminary result messages, proceed to the section for sending final (confirmed) result messages.

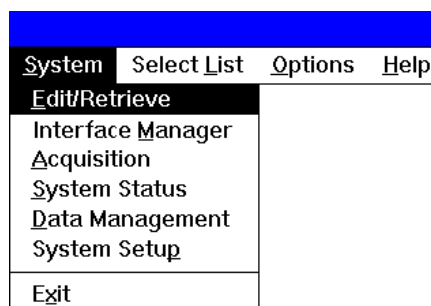
Sending Preliminary Result Messages

Preliminary (unconfirmed) result messages are normally generated automatically when the patient tests are acquired into the MUSE CV system. For the purposes of testing, this automatic process will be simulated by manually “printing” the unconfirmed report to the HL7 device. To manually print a report to the HL7 device, proceed as follows:

Display the *Edit List*

After the appropriate patient tests have been acquired, the tests will appear in the *Edit List*. This will be the starting point for all message generation procedures. Display the *Edit List* as follows:

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when the MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.



MD1334-093A

A typical *Edit List* screen is shown below.

The screenshot shows a window titled "Edit List By Test Time". At the top, it says "All Reports Listed" and "Number of Reports = 28". Below this is a table with the following columns: Date, Time, Loc., Report Name, PID, Type, Class, Note, and Order/Case Num. The table contains 28 rows of data, mostly from February 29th and March 25th. At the bottom of the window are buttons: Edit, Print, Confirm, Discard, Create a Report, Send to In-Basket, and Reduce. There is also a "Next Report..." button and a small icon of a report.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M1111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

23B

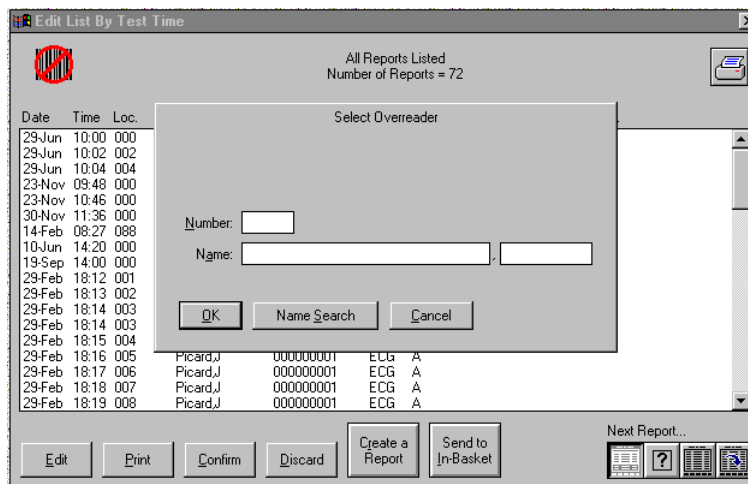
Update Patient Demographics

3. Before sending the result transaction to the HIS, the *Patient Names* and *Patient ID Numbers* on the sample tests in the *Edit List* must match the test demographics on the HIS.
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests already match the test demographics on the HIS, proceed to step 13 .
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests DO NOT match the test demographics on the HIS, proceed as follows:
4. Highlight a test in the *Edit List* and click on the *Edit* button at the lower left corner of the *Edit List* window.

The screenshot shows a window titled "ECG Report". At the top, it says "ECG Report". Below this are fields for Patient ID (987654321), Age (79 Years), Test Time/Date (08:44, 19-Jul-1990), and a status "No Mismatch Detected". There are also fields for Location (037), Acquiring Tech, and Ordering MD. At the bottom, there is a section for "Acronym Line: 4 Column: 1" with the text: "Marked sinus bradycardia with 1st degree A-V block", "Non-specific intra-ventricular conduction block", and "Cannot rule out Septal infarct, age undetermined".

MD1334-044A

5. The *ECG Report* window is displayed, along with the *Select Overreader* window.



MD1334-212A

The name displayed in the window is the currently selected overreader. This name must match the name of the physician that was set up on the interface workstation as a user with overreading privileges.

Enter the *Number* or *Name* of an appropriate overreader. You can also *Search* for an available Overreader on the system. Click *OK* when finished. The *Select Overreader* window closes.

6. When you are returned to the *ECG Report* window, click on the *Patient ID* box. A dialog box will be displayed. Enter the appropriate patient ID number in the box and click *OK*.

An error message will be displayed indicating that a name mismatch exists due to the ID number change.



MD1334-051A

Click *OK* and proceed to the next step.

- When returned to the *ECG Report* window, note the *PID/Name Mismatch* indication.

The screenshot shows the 'ECG Report' window. At the top, the patient name 'Mitchell, Robert' is displayed. Below this, various fields are populated: Order Number (123135), User Defined (empty), Test Reason (empty), Location (037 -), Acquiring Tech (empty), Patient ID (987654321), Age (42 Years), Test Time/Date (09:54, 19-Jul-1990), Referring MD (empty), and Ordering MD (empty). A red text label 'PID / Name Mismatch!' is positioned near the Patient ID field, with an arrow pointing to it. Below the form fields, a green bar indicates 'Acronym Line: 2 Column: 1'. The main text area displays 'Sinus bradycardia'.

MD1334-052A

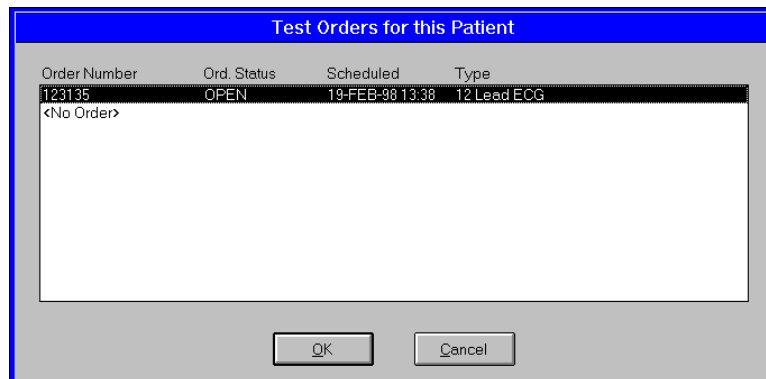
- Click on the box displaying the patient name. A dialog box will be displayed as shown:

The dialog box is titled 'Select or Enter The Correct Name:'. It contains five buttons, each followed by the text 'Mitchell, Robert': 'System Name', 'Admitting Name', 'Report Name', and 'Entered Name'. The 'Entered Name' button is followed by two empty text input fields. At the bottom of the dialog is a 'Cancel' button.

MD1334-046A

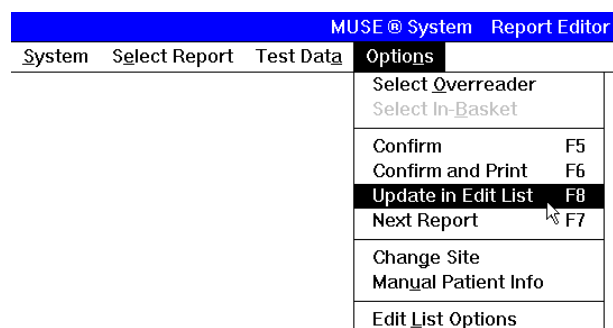
- Click on the *Admitting Name* button. You will be returned to the *ECG Report* window. Note that the *PID/Name Mismatch* indication has cleared.

10. When the *ECG Report* window is displayed, click on the *Order* number box to display the *Test Orders for this Patient* window:



MD1334-049A

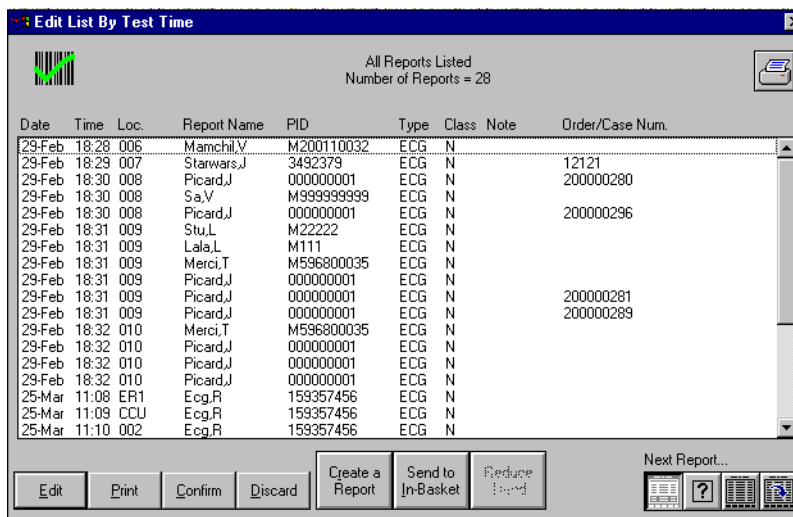
11. Select the appropriate order and click *OK*.
12. After the appropriate order number has been matched to the patient test in the *ECG Report* window, select *Update in Edit List* from the *Options* menu:



MD1334-056A

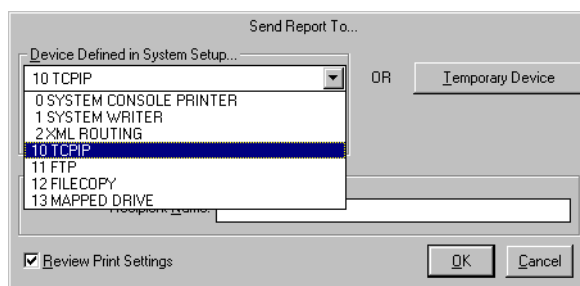
Send the Preliminary Report to the HIS

13. When the *Edit List* is displayed, highlight the appropriate test and click on the *Print* button at the lower left corner of the *Edit List* window.



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14. When the *Send Report To...* window is displayed, select the HL7 device from the pull-down list of *Devices Defined in System Setup* and click *OK*. The report will be sent through the HL7 interface to the HIS.



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15. Verify that all data has arrived at the HIS in the expected format.

Sending Final Result Messages

When sending final (confirmed) results to the HIS, there are two possible scenarios:

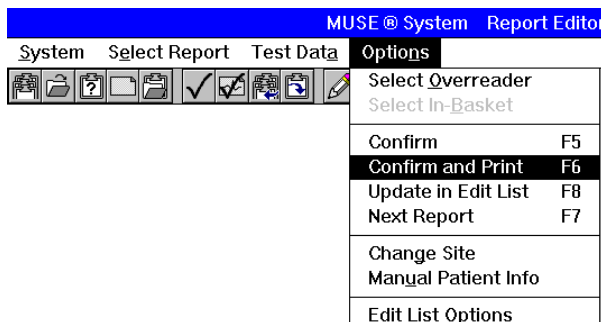
- A preliminary (unconfirmed) result message has already been generated for this test
- No preliminary (unconfirmed) result message was generated for this test

If a preliminary (unconfirmed) result message has already been generated for this test, proceed as follows:

- Select the test in the *Edit List* and click on the *Confirm* button at the bottom of the *Edit List* screen.
- Verify that all data has arrived at the HIS in the expected format.

If no preliminary (unconfirmed) result message was generated for this test, proceed as follows:

1. Perform steps 1 through 11 in the procedures for sending preliminary (unconfirmed) result messages.
2. After the appropriate order number has been matched to the patient test in the *ECG Report* window, select *Confirm and Print* from the *Options* menu in the menu bar:



MD1334-057A

3. Verify that all data has arrived at the HIS in the expected format.

Sending Corrected Result Messages

This procedure tests the ability of the system to successfully process and send the corrected version of a previously-confirmed report.

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.

The *Edit List* screen is shown below.

Edit List By Test Time

All Reports Listed
Number of Reports = 28

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M1111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecg,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecg,R	159357456	ECG	N		
25-Mar	11:10	002	Ecg,R	159357456	ECG	N		

Buttons: Edit, Print, Confirm, Discard, Create a Report, Send to In-Basket, Reduce, Next Report...

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3. Select *Retrieval* from the *Select Report* menu on the menu bar.

MUSE @ System Re

System | **Select Report** | Test Data | Options

Under **Select Report**: Edit List, **Retrieval**, Select Patient, Create Report, Test Directory

MD1334-058A

4. The *Retrieval* window is displayed. You can retrieve a test by *Patient ID*, *Patient Name* or *Test Date* (in day, month, year format).

Retrieval - Select Patient by ID, or by Name and/or Test Date

Name | Date | List | Floppy

Patient ID:

Last Name: First Name:

Test Date:

Check Main System? (Remote System Option) ☐

Buttons: OK, Cancel

MD1334-059A

5. Enter the appropriate information in the *Retrieval* window and click *OK*. The *Test Directory* window is displayed:

The **Test Directory** window displays patient information for Mitchell, Robert (PID: 987654321) and a list of tests. The patient's age is 47 Years, gender is Female, race is Caucasian, height is 63 in, and weight is 125 lb. The test list includes three ECG tests performed on 21-Apr-1990.

Report Name	Type	Date	Time	Loc.	Note	Diagnostics
Mitchell, R	ECG	21-Apr	08:11	038		

Type	Date	Time	Loc.	Note	Vol.	Diagnostics
ECG	21-Apr-1990	09:20	035		000	R
ECG	21-Apr-1990	07:19	028		000	SR
ECG	21-Apr-1990	06:48	026		000	SIR

Buttons at the bottom: Edit, Print, Discard, Key, View, Floppy, Print List.

MD1334-060A

6. In the box titled *Stored Information for <Patient Name>* is a list of all tests for that patient. Highlight the appropriate test and click on the *Edit* button. The *ECG Report* window will be displayed:

The **ECG Report** window displays patient information for Mitchell, Robert (Patient ID: 987654321) and test results. The patient's age is 42 Years. The test time/date is 09:54 on 19-Jul-1990. The test reason is Sinus bradycardia.

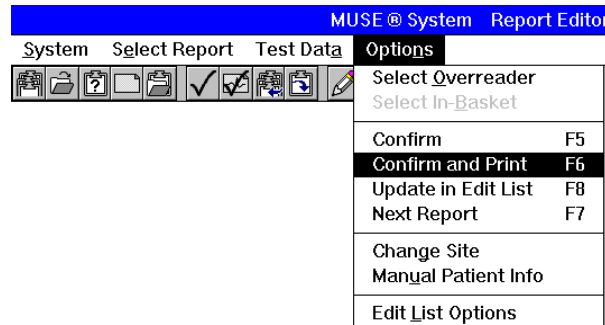
Order Number: 123135
User Defined: [Empty]
Test Reason: Sinus bradycardia
Location: 037 - [Dropdown]
Acquiring Tech: [Empty]

Patient ID: 987654321
Age: 42 Years
Test Time/Date: 09:54 19-Jul-1990
Referring MD: (-)
Ordering MD: (-)

Acronym Line: 2 Column: 1
Sinus bradycardia

MD1334-042A

7. Edit the test information as necessary. When finished editing, select *Confirm and Print* from the *Options* menu on the menu bar.



MD1334-057A

8. Verify that all data from the corrected report appears at the HIS in the expected format.

Testing Result Transactions on Systems Supporting ADT with Accounts and Orders

These procedures are for testing result messages on systems that have an inbound-to-MUSE CV system interface supporting ADT with Accounts and Order transactions.

We will begin testing Result Messages by sending preliminary (unconfirmed) result messages to the HIS. This will be followed by Sending final (confirmed) result messages to the HIS. If you will not be sending preliminary result messages, proceed to the section for Sending final (confirmed) result messages.

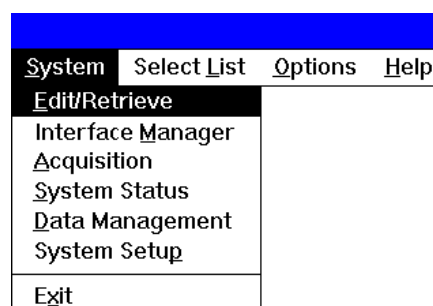
Sending Preliminary Result Messages

Preliminary (unconfirmed) result messages are normally generated automatically when the patient tests are acquired into the MUSE CV system. For the purposes of testing, this automatic process will be simulated by manually “printing” the unconfirmed report to the HL7 device. To manually print a report to the HL7 device, proceed as follows:

Display the *Edit List*

After the appropriate patient tests have been acquired, the tests will appear in the *Edit List*. This will be the starting point for all message generation procedures. Display the *Edit List* as follows:

1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.



MD1334-093A

A typical *Edit List* screen is shown below.

The screenshot shows a window titled "Edit List By Test Time". At the top, it says "All Reports Listed" and "Number of Reports = 28". Below this is a table with the following columns: Date, Time, Loc., Report Name, PID, Type, Class, Note, and Order/Case Num. The table contains 28 rows of data, mostly from February 29th and March 25th. At the bottom of the window are buttons: Edit, Print, Confirm, Discard, Create a Report, Send to In-Basket, and Reduce. There is also a "Next Report..." button and a small icon of a printer.

Date	Time	Loc.	Report Name	PID	Type	Class	Note	Order/Case Num.
29-Feb	18:28	006	Mamchi,V	M200110032	ECG	N		
29-Feb	18:29	007	Starwars,J	3492379	ECG	N		12121
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000280
29-Feb	18:30	008	Sa,V	M999999999	ECG	N		
29-Feb	18:30	008	Picard,J	000000001	ECG	N		200000296
29-Feb	18:31	009	Stu,L	M22222	ECG	N		
29-Feb	18:31	009	Lala,L	M1111	ECG	N		
29-Feb	18:31	009	Merci,T	M596800035	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000281
29-Feb	18:31	009	Picard,J	000000001	ECG	N		200000289
29-Feb	18:32	010	Merci,T	M596800035	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
29-Feb	18:32	010	Picard,J	000000001	ECG	N		
25-Mar	11:08	ER1	Ecq,R	159357456	ECG	N		
25-Mar	11:09	CCU	Ecq,R	159357456	ECG	N		
25-Mar	11:10	002	Ecq,R	159357456	ECG	N		

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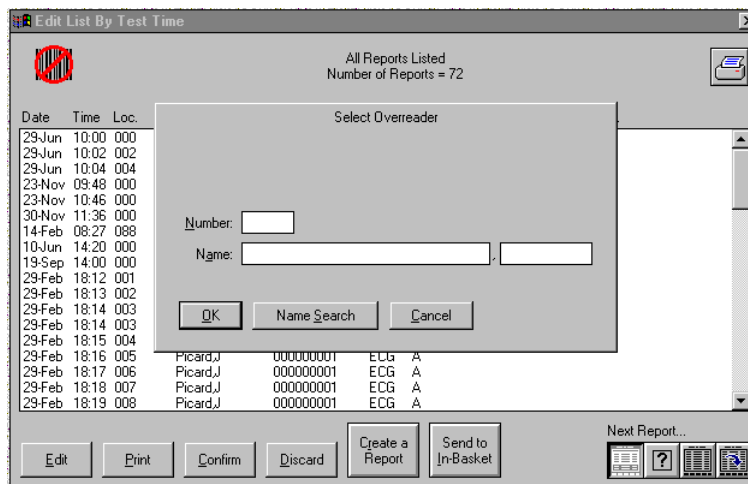
Update Patient Demographics

3. Before sending the result transaction to the HIS, the *Patient Names* and *Patient ID Numbers* on the sample tests in the *Edit List* must match the test demographics on the HIS.
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests already match the test demographics on the HIS, proceed to step 13 .
 - ◆ If the *Patient Names* and *Patient ID Numbers* on the sample tests DO NOT match the test demographics on the HIS, proceed as follows:
4. Highlight a test in the *Edit List* and click on the *Edit* button at the lower left corner of the *Edit List* window.

The screenshot shows a window titled "ECG Report". At the top, it displays the patient name "Mitchell, Robert" and Patient ID "987654321". Below this are fields for Order & Account, User Defined, Test Reason, Location, and Acquiring Tech. To the right, there are fields for Age (79 Years), Test Time/Date (08:44, 19-Jul-1990), Referring MD, and Ordering MD. A green message "No Mismatch Detected" is displayed. At the bottom, there is a section for "Acronym Line: 4 Column: 1" containing the text: "Marked sinus bradycardia with 1st degree A-V block", "Non-specific intra-ventricular conduction block", and "Cannot rule out Septal infarct, age undetermined".

MD1334-044A

5. The *ECG Report* window is displayed, along with the *Select Overreader* window.



MD1334-212A

The name displayed in the window is the currently selected overreader. This name must match the name of the physician that was set up on the interface workstation as a user with overreading privileges.

Enter the *Number* or *Name* of an appropriate overreader. You can also *Search* for an available Overreader on the system. Click *OK* when finished. The *Select Overreader* window closes.

6. When you are returned to the *ECG Report* window, click on the *Patient ID* box. A dialog box will be displayed. Enter the appropriate patient ID number in the box and click *OK*.

An error message will be displayed indicating that a name mismatch exists due to the ID number change.



MD1334-051A

Click *OK* and proceed to the next step.

- When returned to the *ECG Report* window, note the *PID/Name Mismatch* indication.

The screenshot shows the 'ECG Report' window for patient Robert Mitchell. The patient ID is 987654321 and the age is 79 years. A red warning message 'PID / Name Mismatch!' is displayed. An arrow points to this warning. The ECG text area shows: 'Marked sinus bradycardia with 1st degree A-V block', 'Non-specific intra-ventricular conduction block', and 'Cannot rule out Septal infarct , age undetermined'.

MD1334-165A

- Click on the box displaying the patient name. A dialog box will be displayed as shown:

The dialog box titled 'Select or Enter The Correct Name:' contains four buttons: 'System Name', 'Admitting Name', 'Report Name', and 'Entered Name'. Each button is followed by the text 'Mitchell, Robert'. The 'Entered Name' button is followed by two empty text input fields. A 'Cancel' button is at the bottom.

MD1334-046A

- Click on the *Admitting Name* button. You will be returned to the *ECG Report* window. Note that the *PID/Name Mismatch* indication has cleared.

10. When the *ECG Report* window is displayed, click on the *Order* number box to display the *Test Orders for this Patient* window:

Order Number	Ord. Status	Acct. Number	Acct. Status	Scheduled	Type
123414	OPEN	132314143	OPEN	12-DEC-97 09:41 12	Lead ECG
888464	OPEN	3445234	OPEN	12-DEC-97 09:42 12	Lead ECG
<No Order>					

MD1334-050A

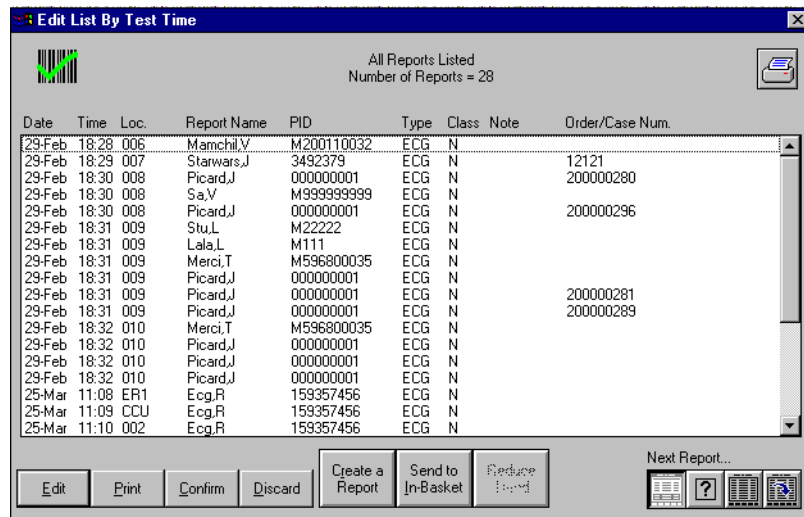
11. Select the appropriate order and corresponding account number, then click *OK*.
12. After the appropriate account number and order number have been matched to the patient test in the *ECG Report* window, select *Update in Edit List* from the *Options* menu:

MUSE @ System Report Editor			
System	Select Report	Test Data	Options
Select Overreader			
Select In-Basket			
Confirm F5			
Confirm and Print F6			
Update in Edit List F8			
Next Report F7			
Change Site			
Manual Patient Info			
Edit List Options			

MD1334-056A

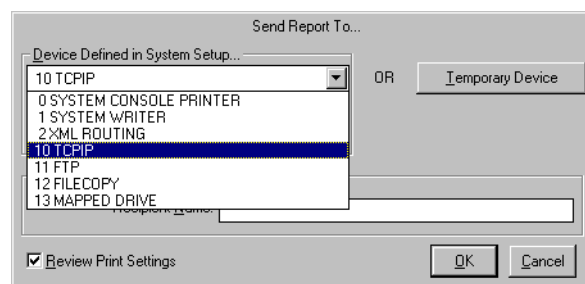
Send the Preliminary Report to the HIS

13. When the *Edit List* is displayed, highlight the appropriate test and click on the *Print* button at the lower left corner of the *Edit List* window.



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14. When the *Send Report To...* window is displayed, select the HL7 device from the pull-down list of *Devices Defined in System Setup* and click *OK*. The report will be sent through the HL7 interface to the HIS.



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15. Verify that all data has arrived at the HIS in the expected format.

Sending Final Result Messages

When sending final (confirmed) results to the HIS, there are two possible scenarios:

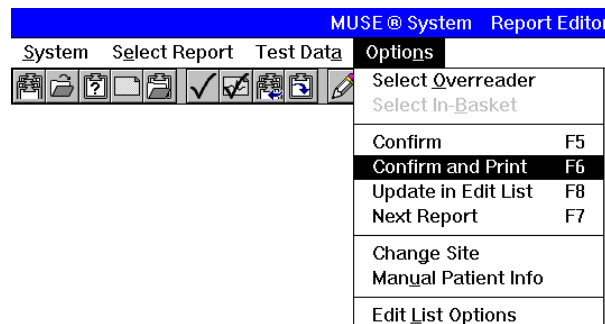
- A preliminary (unconfirmed) result message has already been generated for this test
- No preliminary (unconfirmed) result message was generated for this test

If a preliminary (unconfirmed) result message has already been generated for this test, proceed as follows:

- Select the test in the *Edit List* and click on the *Confirm* button at the bottom of the *Edit List* screen.
- Verify that all data has arrived at the HIS in the expected format.

If no preliminary (unconfirmed) result message was generated for this test, proceed as follows:

1. Perform steps 1 through 11 in the procedures for sending preliminary (unconfirmed) result messages.
2. After the appropriate account number or order number has been matched to the patient test in the *ECG Report* window, select *Confirm and Print* from the *Options* menu in the menu bar:



MD1334-057A

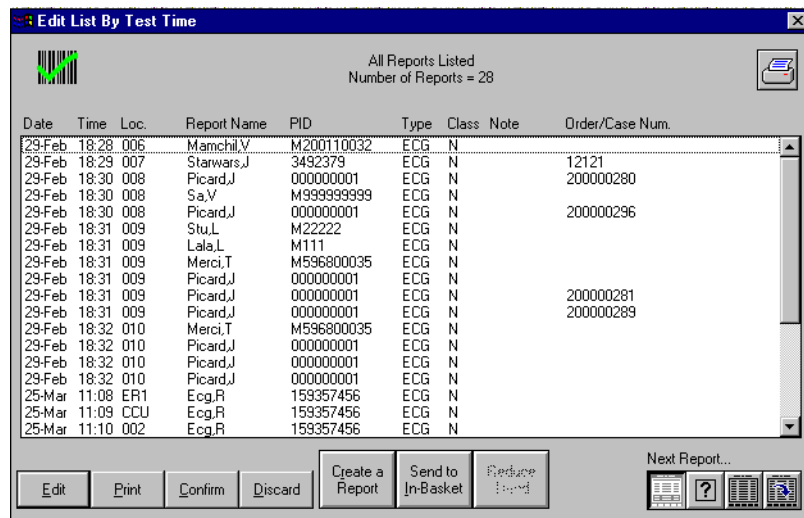
3. Verify that all data has arrived at the HIS in the expected format.

Sending Corrected Result Messages

This procedure tests the ability of the system to successfully process and send the corrected version of a previously-confirmed report.

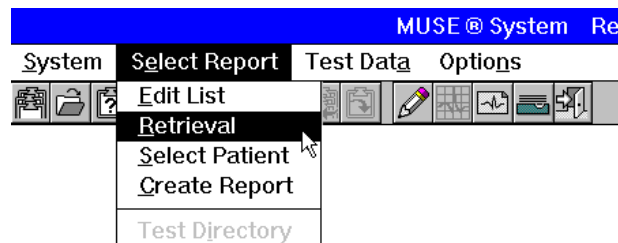
1. Log into the MUSE CV system on the interface workstation. See “Logging Into the MUSE CV System” on page 1-11 in Chapter 1.
2. The *Edit List* should be displayed when MUSE CV system starts. If the *Edit List* is not displayed, select *Edit/Retrieve* from the *System* menu.

The *Edit List* screen is shown below.

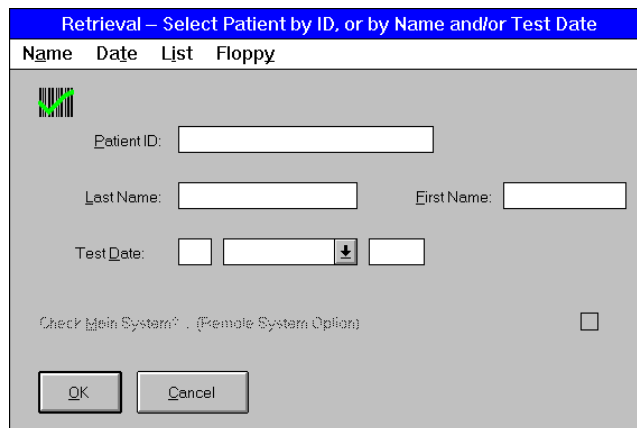


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3. Select *Retrieval* from the *Select Report* menu on the menu bar.

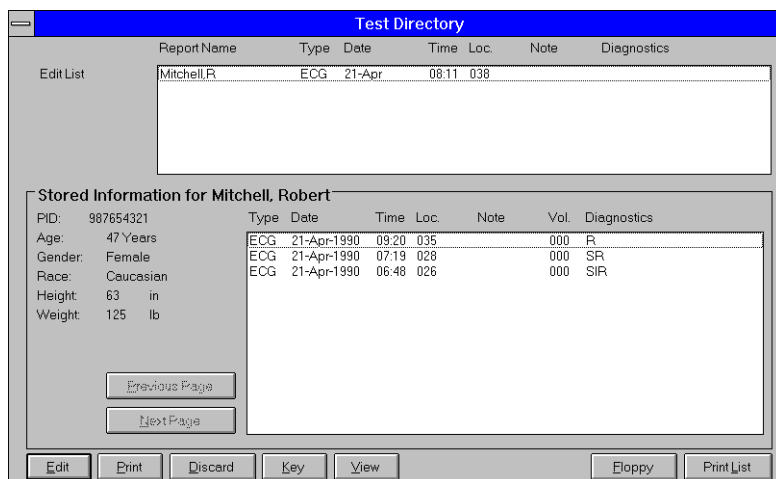


MD1334-058A

4. The *Retrieval* window is displayed:

The screenshot shows a window titled "Retrieval – Select Patient by ID, or by Name and/or Test Date". It has a menu bar with "Name", "Date", "List", and "Floppy". Below the menu bar is a toolbar with a barcode icon. The main area contains input fields for "Patient ID:", "Last Name:", "First Name:", and "Test Date:". The "Test Date:" field has a dropdown arrow. At the bottom, there is a checkbox labeled "Check Main System? (Female System Option)" and two buttons: "OK" and "Cancel".

MD1334-059A

5. You can retrieve a test by *Patient ID*, *Patient Name* or *Test Date* (in day, month, year format). Enter the appropriate information and click *OK*. The *Test Directory* window is displayed:

The screenshot shows a window titled "Test Directory". It has a menu bar with "Edit List". Below the menu bar is a table with columns: "Report Name", "Type", "Date", "Time", "Loc.", "Note", and "Diagnostics". The table contains one row: "Mitchell, R", "ECG", "21-Apr", "08:11", "038". Below the table is a section titled "Stored Information for Mitchell, Robert". It contains fields for "PID: 987654321", "Age: 47 Years", "Gender: Female", "Race: Caucasian", "Height: 63 in", and "Weight: 125 lb". To the right of these fields is another table with columns: "Type", "Date", "Time", "Loc.", "Note", "Vol.", and "Diagnostics". This table contains three rows: "ECG", "21-Apr-1990", "09:20", "035", "000", "R"; "ECG", "21-Apr-1990", "07:19", "028", "000", "SR"; and "ECG", "21-Apr-1990", "06:48", "026", "000", "SIR". Below the "Stored Information" section are two buttons: "Previous Page" and "Next Page". At the bottom of the window are buttons: "Edit", "Print", "Discard", "Key", "View", "Floppy", and "Print List".

MD1334-060A

6. In the box titled *Stored Information for <Patient Name>* is a list of all tests for that patient. Highlight the appropriate test and click on the *Edit* button. The *ECG Report* window will be displayed:

Acronym	Line	Column
Marked sinus bradycardia with 1st degree A-V block		
Non-specific intra-ventricular conduction block		
Cannot rule out Septal infarct, age undetermined		

MD1334-044A

7. Edit the test information as necessary. When finished editing, select *Confirm and Print* from the *Options* menu on the menu bar.

Options
Select Overreader
Select In-Basket
Confirm F5
Confirm and Print F6
Update in Edit List F8
Next Report F7
Change Site
Manual Patient Info
Edit List Options

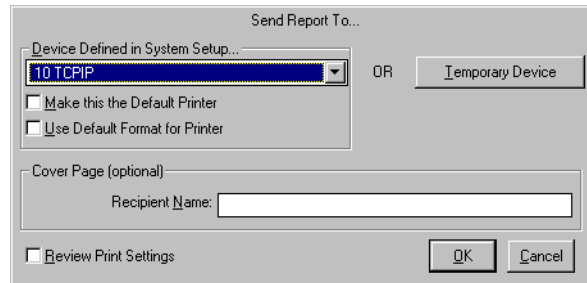
MD1334-057A

8. Verify that all data from the corrected report appears at the HIS in the expected format.

Testing Financial Transactions

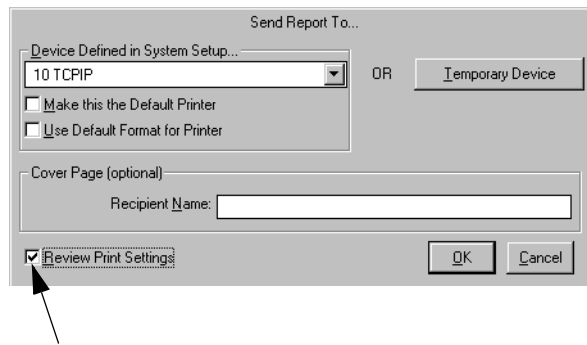
If the system is configured for the purpose of sending patient charges into a batch queue to be transferred to the HIS on a daily basis, proceed as follows to test financial transactions — batch format:

1. Refer to the preceding section of this chapter for testing results transactions on your particular system. Perform the procedure for sending preliminary results. When you select *Print* from the *Edit List*, the *Send Report To...* window is displayed.



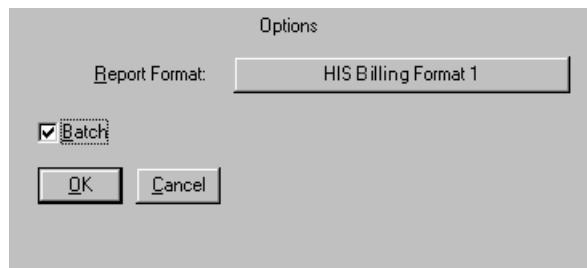
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2. In the *Send Report To...* window, click on the *Review Print Settings* check box to place an X in the box.



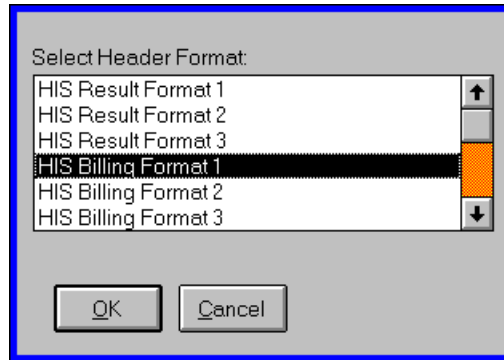
105B

3. Click *OK*. The *Options* window opens.
4. When the *Options* window is displayed, click on the *Report Format:* button to open the *Select Header Format* window. (The currently selected report format is displayed on the *Report Format:* button itself.)



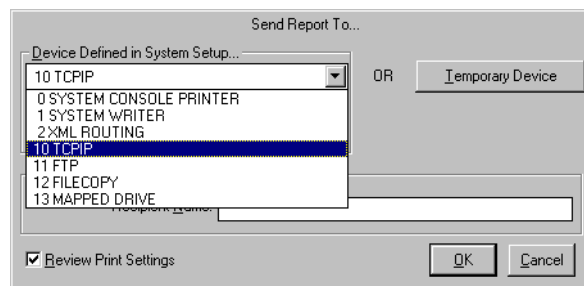
MD1334-103B

5. When the *Select Header Format* window is displayed, select the desired financial format and click *OK*.



MD1334-101A

6. Click *OK* in the *Options* window. The financial transaction will be sent to the batch queue.
7. Click on the arrow to open the pull-down list of *Devices Defined in System Setup*. Select *HIS Results*, then replace the selection with *HIS Billing*. Select *OK*.



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8. In the *Batch Queue for Site* window, verify that the data is logged in the batch queue by selecting *System > System Status*

Then select *List > Batch Status*

The *Batch Queue for Site* window opens.

Patient Name	Patient ID	Req. Num.	Acquired Date/Time	Date/Time entered
Picard	000000001		29-Feb-1996 18:20	22-Feb-2000 09:15
Picard	000000001		29-Feb-1996 18:28	22-Feb-2000 09:16
Picard	000000001		29-Feb-1996 18:16	10-Mar-2000 11:56
Picard	000000001		29-Feb-1996 18:19	09-May-2000 14:33
Chaser	004253009	200000496	29-Feb-1996 18:14	22-Feb-2000 09:15

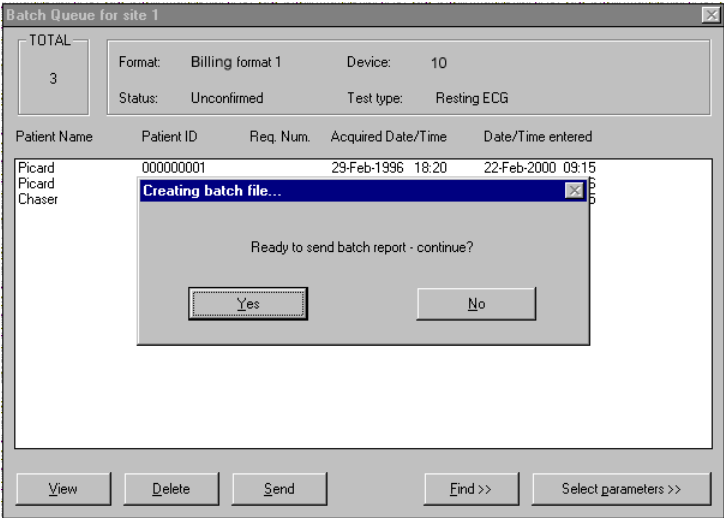
MD1334-213A

9. Highlight the reports to be transferred. Click *Send*. In the resulting message window, click *Yes*.

Patient Name	Patient ID	Req. Num.	Acquired Date/Time	Date/Time entered
Picard	000000001		29-Feb-1996 18:20	22-Feb-2000 09:15
Picard	000000001		29-Feb-1996 18:28	22-Feb-2000 09:16
Chaser	004253009		29-Feb-1996 18:14	22-Feb-2000 09:15

MD1334-214A

10. A second message appears. Click *Yes* to send the selected reports to the HIS. Verify that all of the data arrives at the HIS in the expected format.



MD1334-214A

Recovery Testing

These procedures test the ability of the HL7 interface to recover from an unexpected shutdown with no loss of data at the interface, the HIS or the MUSE CV system.

While sending a large number of transactions from the HIS, shut down the interface workstation and then bring it back on line. See “Logging Into the MUSE CV System” on page 1-11.

Verify that the ADT and Results links reconnect and that the ADT transactions are received at the MUSE CV system. Verify that results can also be sent to the HIS.

Repeat these processes while shutting down the HIS, to verify that the HL7 interface can recover from the loss of this connection.

Sample Test Plans

Three sample test plans are included in this document: an ADT test plan, an Orders test plan and a Results test plan. They are designed as a guidelines for testing the HL7 interface, and can be used if the hospital does not already have a test plan.

ADT Test Plan

The ADT test plan provides a sample list of patient demographics. Additional information can be added to the messages to create a more custom test environment. Certain fields in the test plan are intentionally left blank to be completed by hospital personnel (i.e. PID - Patient Identification Number).

These messages should be completed and entered prior to testing of the MUSE CV system interface.

A collection of patient test data has been included on a diskette (p/n 421128-001) supplied with the interface workstation. This data includes a variety of tests such as ECG, Stress, Holter and Hi-Res. Each patient test in the collection is identified with a patient name and a sequential patient ID number (1, 2, 3, etc.).

The patient names in the ADT test plan are the same names used for the collection of patient tests supplied on the diskette. If you use your own existing patient demographics, the patient names and ID numbers must be modified to match those in the patient test data (unless the hospital's test data already contains patient test data).

Unless otherwise noted, all admit messages and pre-admit messages are to be entered as the current date.

Once processed by the MUSE CV system, all messages are to be verified on a field by field basis to ensure proper function of the *Information Technologies* HL7 interface.

Inpatient

Message Type	Message Information	Pass/Fail	Comments
Admit			
Adult	PID: Robert Smith Caucasian, Male DOB - 12/8/43 Admit Date = Current Date - 2 Days		
	PID: Jennifer Gund Black, Female DOB - 3/21/29 Ht: 68in. Wt: 142lb Admitting Diagnosis: Malignant Lymphoma		
	PID: Timothy Hernandez Hispanic, Male DOB - 7/22/57 Room:		
	PID: June Dawson Oriental, Female DOB - 1/30/72 Admitting Diagnosis: Chest Pain		
	PID: Margaret Quinn-Sunders Native American, Female DOB - 9/2/62		
	PID: Dr. Melvin Halloran Caucasian, Male DOB - 4/12/67 Ht: 72in Wt: 231lb Location:		
	PID: Yvonne Young Black, Female DOB - 8/17/64 Admitting Diagnosis: Shortness of Breath		

Inpatient (Continued)

Message Type	Message Information	Pass/Fail	Comments
	PID: Terry Schueller Black, Female DOB - 6/10/48		
	PID: John Cutter Native American, Male DOB - 5/5/1894 Ht: 66in Wt: 150lb		
	PID: Monica Rewald Caucasian, Female DOB - 11/13/74		
Infant	PID: Jessica Baum Black, Female 2 days old		
Pre-Admit			
	PID: Wilson Trawl Caucasian, Male DOB - 10/18/33 Admit Date = Current Date + 1 Day		
	PID: Melissa Smith Caucasian, Female DOB - 12/2/52 Admit Date = Current Date + 3 Days		
	PID: Richard Scheller Black, Male DOB - 2/7/24 Admit Date = Current Date		
Update			
Admit Date	PID: Robert Smith Admit Date = Current Date		
DOB	PID: Jennifer Gund DOB - 8/21/29		

Inpatient (Continued)

Message Type	Message Information	Pass/Fail	Comments
Admitting Physician	PID: Margaret Quinn-Sunders Admitting Physician:		
Race	PID: Jennifer Gund OLD RACE: Black NEW RACE: Caucasian		
Gender	PID: Terry Schueller OLD GENDER: Female NEW GENDER: Male		
Non-Existing Patient	PID: David Mader Black, Male DOB - 8/21/50		
Patient Name	PID: OLD NAME:Jessica Baum NEW NAME:Jessica Baunn		
Transfer			
Inpatient to Outpatient	PID: June Dawson		
Location	PID: Dr. Melvin Halloran OLD LOCATION: NEW LOCATION:		
Room A to Room C	PID: Timothy Hernandez		
Cancel Admit			
	PID: Melvin Halloran		
	PID: Yvonne Young		
Merge			
	OLD PID: NEW PID: Monica Rewald		
	Adt Database		
	Edit List Tests		
	Database Tests		
	Patient Name/ID Database		

Inpatient (Continued)

Message Type	Message Information	Pass/Fail	Comments
Discharge			
	PID: John Cutter		
	PID: Timothy Hernandez		
Cancel Discharge			
	PID: Timothy Hernandez		

Outpatient

Message Type	Message Information	Pass/Fail	Comments
Admit			
Adult	PID: Mark Griffin Caucasian, Male DOB - 12/20/60 Admit Date = Current Date - 2 Days		
	PID: Barbara Roeming Black, Female DOB - 6/4/44		
	PID: Lawrence Strelecki Causation, Male DOB - 10/19/71		
Infant	PID: Arman Gonzalez Hispanic, Male 1 week old		
Pre-Admit			
	PID: Doug Goll Caucasian, Male DOB - 6/8/19 Admit Date = Current Date + 1 Day		

Outpatient (Continued)

Message Type	Message Information	Pass/Fail	Comments
Update			
Admit Date	PID: Mark Griffin Admit Date = Current Date		
DOB	PID: Lawrence Strelecki Causation, Male DOB - 10/9/71		
Admitting Physician	PID: Barbara Roeming Black, Female DOB - 6/4/44		
Patient Name	PID: OLD NAME: Arman Gonzalez NEW NAME: Armand Gonzalez		
Transfer			
Outpatient to Inpatient	PID: Barbara Roeming		
Cancel Admit			
	PID: Barbara Roeming		
Merge			
	OLD PID: NEW PID: Lawrence Strelecki		
Discharge			
	PID: Doug Goll		
	PID: Mark Griffin		
Cancel Discharge			
	PID: Doug Goll		

Orders Test Plan

The following Orders test plan provides a guideline for sending orders for patient tests. Additional information can be added to the messages to create a more custom test environment. Certain fields in the test plan are intentionally left blank to be completed by hospital personnel (i.e. PID - Patient Identification Number). Be certain to include order processing for all of the test types your interface will be supporting (i.e. 12-lead ECG, Holter, Stress).

Message Type	Message Information	Pass/Fail	Comments
New Order			
	PID: Robert Smith Caucasian, Male Req # Test Type: Order Comment		
	PID: Jennifer Gund Black, Female Req # Test Type:		
	PID: Timothy Hernandez Hispanic, Male Req # Test Type:		
	PID: June Dawson Oriental, Female Req # Test Type:		
	PID: Margaret Quinn-Sunders Native American, Female Req # Test Type: Ordering Physician:		
	PID: Melvin Halloran Caucasian, Male Req # Test Type: Order Comment		

Message Type	Message Information	Pass/Fail	Comments
	PID: Barry Leggner Hispanic, Male Req # Test Type:		
	PID: Diane Roeder Oriental, Female Req # Test Type:		
Change Order			
Test Type	PID: Melvin Halloran Caucasian, Male Req # OLD TEST TYPE: NEW TEST TYPE:		
Scheduled Time	PID: Diane Roeder Oriental, Female Req # OLD TEST TYPE: NEW TEST TYPE:		
Ordering Physician	PID: Margaret Quinn-Sunders Native American, Female Req # Test Type: New Ordering Physician:		
Cancel Order			
	PID: Margaret Quinn-Sunders Native American, Female Req #		
	PID: Barry Leggner Hispanic, Male Req #		

Message Type	Message Information	Pass/Fail	Comments
Delete Order			
	PID: Timothy Hernandez Hispanic, Male Req #		

Results Test Plan

The Results test plan provides a list of the patient tests included on the diskette (p/n 421128-001) supplied with the interface workstation. They are sorted by test type.

Each test is provided as an *Unconfirmed* test only. The testing procedures provide instructions for sending preliminary, final and corrected results from these unconfirmed tests.

The demographic information for these tests matches that of the preceding ADT test plan. If you plan to use your own patient data for testing the interface, the Patient Names on these tests must be modified to match your test data.

Test Plan for Preliminary Results

Test Type	Message Information	Pass/Fail	Comments
Resting ECG			
Adult	PID: 1 Robert Smith Caucasian, Male DOB - 12/8/43 Req No.: Test Date/Time		
	PID: 2 Jennifer Gund Black, Female DOB - 3/21/29 Req No.: Test Date/Time Ht: 68in. Wt: 142lb		
	PID: 3 Timothy Hernandez Hispanic, Male Req No.: Test Date/Time DOB - 7/22/57 Loc.: Room:		
	PID: 4 Dr. Melvin Halloran Caucasian, Male DOB - 4/12/67 Ht: 72in Wt: 231lb. Req No.:None Test Date/Time		

Test Plan for Preliminary Results

Test Type	Message Information	Pass/Fail	Comments
	PID: 5 Yvonne Young Black, Female DOB - 8/17/64 Req No.: None Test Date/Time		
	PID: 6 John Cutter Native American, Male DOB - 5/5/39 Ht: 66in Wt: 150lb Req No.: Test Date/Time		
Infant	PID: 7 Jessica Baum Black, Female 2 days old Req No.: Test Date/Time		
Exercise			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		

Test Plan for Preliminary Results

Test Type	Message Information	Pass/Fail	Comments
Holter			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		
Signal Averaged			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		

Test Plan for Final Results

Test Type	Message Information	Pass/Fail	Comments
Resting ECG			
Adult	PID: 1 Robert Smith Caucasian, Male DOB - 12/8/43 Req No.: Test Date/Time		
	PID: 2 Jennifer Gund Black, Female DOB - 3/21/29 Req No.: Test Date/Time Ht: 68in. Wt: 142lb		
	PID: 3 Timothy Hernandez Hispanic, Male Req No.: Test Date/Time DOB - 7/22/57 Loc.: Room:		
	PID: 4 Dr. Melvin Halloran Caucasian, Male DOB - 4/12/67 Ht: 72in Wt: 231lb. Req No.:None Test Date/Time		
	PID: 5 Yvonne Young Black, Female DOB - 8/17/64 Req No.: None Test Date/Time		
	PID: 6 John Cutter Native American, Male DOB - 5/5/39 Ht: 66in Wt: 150lb Req No.: Test Date/Time		

Test Plan for Final Results

Test Type	Message Information	Pass/Fail	Comments
Infant	PID: 7 Jessica Baum Black, Female 2 days old Req No.: Test Date/Time		
Exercise			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		
Holter			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		

Test Plan for Final Results

Test Type	Message Information	Pass/Fail	Comments
Signal Averaged			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		

Test Plan for Corrected Results

Test Type	Message Information	Pass/Fail	Comments
Resting ECG			
Adult	PID: 1 Robert Smith Caucasian, Male DOB - 12/8/43 Req No.: Test Date/Time		
	PID: 4 Yvonne Young Black, Female DOB - 8/17/64 Req No.: None Test Date/Time		
	PID: 6 John Cutter Native American, Male DOB - 5/5/39 Ht: 66in Wt: 150lb Req No.: Test Date/Time		

Test Plan for Corrected Results

Test Type	Message Information	Pass/Fail	Comments
Infant	PID: 7 Jessica Baum Black, Female 2 days old Req No.: Test Date/Time		
Exercise			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		
Holter			
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		
	PID: 10 Richard Scheller Black, Male Req No.:None Test Date/Time		

Test Plan for Corrected Results

Test Type	Message Information	Pass/Fail	Comments
Signal Averaged			
	PID: 8 Wilson Trawl Caucasian, Male DOB - 10/18/33 Req No.: Test Date/Time		
	PID: 9 Melissa Smith Caucasian, Female DOB - 12/2/52 Req No.: Test Date/Time		

For your notes

4 Configure Interface for Production

For your notes

Introduction

This section provides instructions to connect the interface workstation to the production MUSE CV system network and verify its operation.

NOTE: These procedures should only be performed by experienced personnel. Serious system problems can result if these configuration procedures are not completed accurately.

Summary of Steps

The following steps summarize the tasks involved in moving the interface workstation onto the production MUSE CV system network. Detailed instructions follow this summary.

1. Configure devices, users and report distribution on the production MUSE CV system for sending the outbound data to the HIS.
2. Configure the interface workstation to communicate with the production MUSE CV system on the hospital network.
3. Configure the interface workstation to operate as a workstation on the MUSE CV system and verify proper operation.
4. Complete the pre-integration procedure, then execute the integration steps to integrate the HIS interface into the production MUSE CV system.
5. Configure MUSE CV system locations in the *System Setup* (if required).
6. Verify the GE Medical Systems *Information Technologies* HL7 Interface is operating correctly.

Configure MUSE CV System for Outbound-to-HIS Messages

If the HL7 interface will support outbound messages from the MUSE CV system to the HIS, the following configuration procedures must be performed on the production MUSE CV system before the interface workstation can be integrated into the production environment:

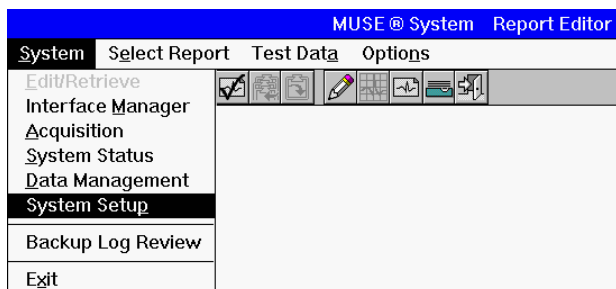
- Define the HIS as a *Device* that the MUSE CV system sends reports to.
- Configure *Report Distribution* to send all report types to the HIS
- Configure all *Users* on the MUSE CV system with the an identification number that will be recognized by the HIS.
- Configure *Locations* (Optional).

NOTE: It is recommended that you work with the MUSE CV system operator to complete these configuration procedures.

Define the HIS as a Device in System Setup

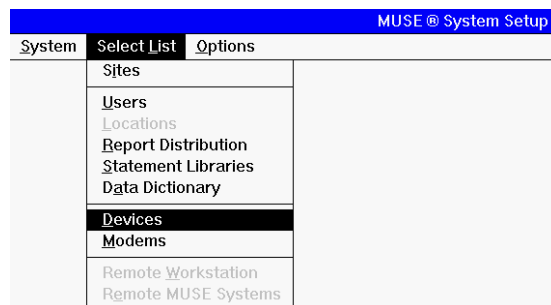
Before the MUSE CV system can send reports to the HIS, the HIS must be defined as a device on the MUSE CV system.

1. Log into the production MUSE CV system.
2. Select *System Setup* from the *System* menu.



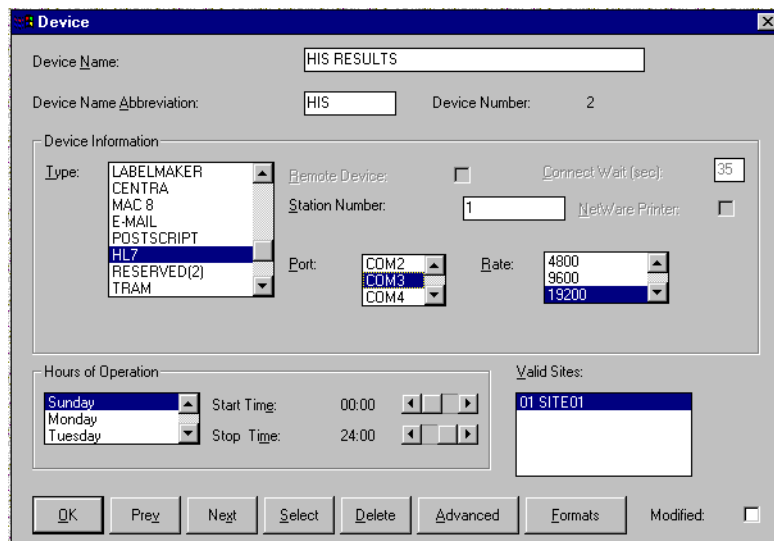
MD1334-001A

3. From the *Select List* menu, select *Devices*.



MD1334-011A

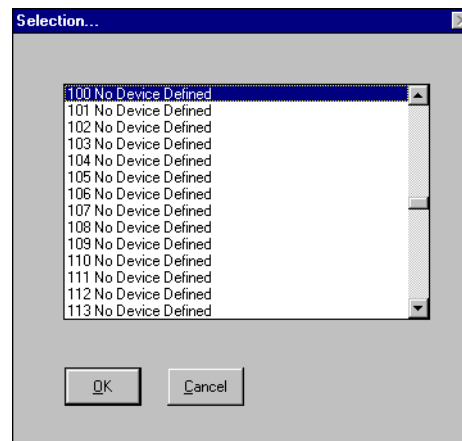
4. The *Device* setup window is displayed:



12B

5. Before a device can be configured, a device number must be selected. In the *Device* setup window, click the *Select* button to display the *Device* selection list.

NOTE: It is a common practice to configure device number 100 for interface devices. Select device 100 (if unassigned), or choose the available device number nearest to 100.



33B

6. Select a *Device* number to be configured and click *OK* to return to the *Device* setup window.

128

7. After the device number has been selected, enter the following parameters in the *Device* setup window

- ◆ *Device Name:* HIS Results
- ◆ *Device Abbreviation:* HIS
- ◆ *Type:* HL7
- ◆ *Station:* (between 124 and 128)
- ◆ *Port:* COM7
- ◆ *Baud Rate:* Use the default values*
- ◆ *Hours of operation:* Use the default values*

* These values are the desired value for this application, or they are not applicable to the HL7 device setup.

8. Click on *Advanced*. In the *Additional Device Settings* window, enter the following parameters.

TCP/IP Device

- | | |
|---------------------------|-------------------------|
| ◆ <i>Transport Layer:</i> | Sockets |
| ◆ <i>Function:</i> | Output |
| ◆ All other values: | Use the default values* |

File Copy

- | | |
|---------------------------|-------------------------|
| ◆ <i>Transport Layer:</i> | Filecopy |
| ◆ <i>Function:</i> | Output |
| ◆ All other values: | Use the default values* |

Drive Mapping

- | | |
|---------------------------|-------------------------|
| ◆ <i>Transport Layer:</i> | Net File Transfer |
| ◆ <i>Function:</i> | Output |
| ◆ Xfer Option: | Mapped Drive |
| ◆ All other values: | Use the default values* |

FTP Device

- | | |
|---------------------------|-------------------------|
| ◆ <i>Transport Layer:</i> | Net File Transfer |
| ◆ <i>Function:</i> | Output |
| ◆ Xfer Option: | FTP Client |
| ◆ All other values: | Use the default values* |

9. When finished, click *OK* to close the *Additional Device Settings* window.
10. Click *OK* to save the settings in the *Device* setup window.

* These values do not apply to testing the interface workstation.

Configure Report Distribution

The report distribution feature allows you to set up automatic printing of reports when they are acquired by the system and when they are confirmed.

For the MUSE CV system to send these reports to the HIS (through the HL7 interface), you must define a distribution statement for each report type and for each location on the MUSE CV system.

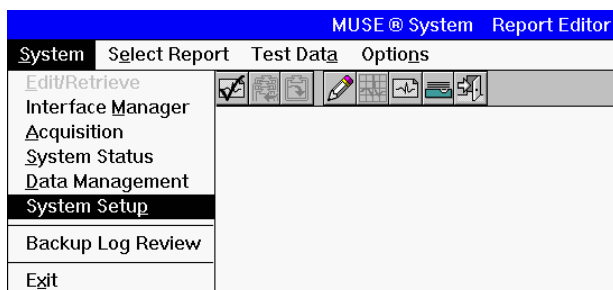
NOTE: This process can be very time consuming

Each MUSE CV system location separates report distribution activities into four cases:

- Normal Unconfirmed
- Normal Confirmed
- Abnormal Unconfirmed
- Abnormal Confirmed

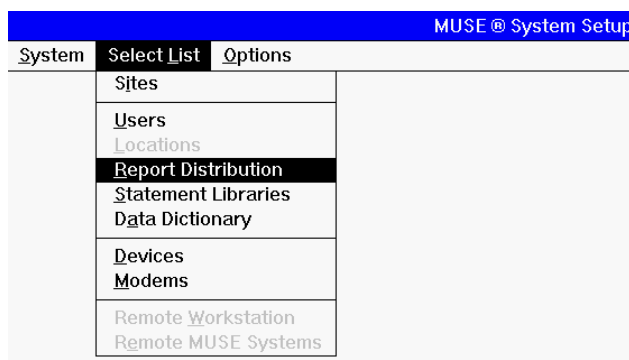
Depending on whether the hospital wants unconfirmed results, change the routing for UNCONFIRMED and CONFIRMED tests as required.

1. Log into the production MUSE CV system.
2. From the *System* menu, select *System Setup*.



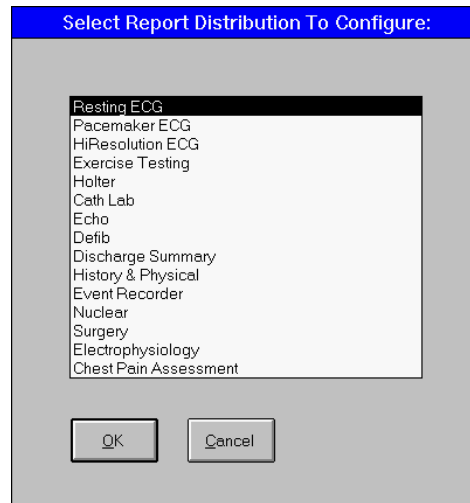
MD1334-001A

3. From the *Select List* menu, select *Report Distribution*.



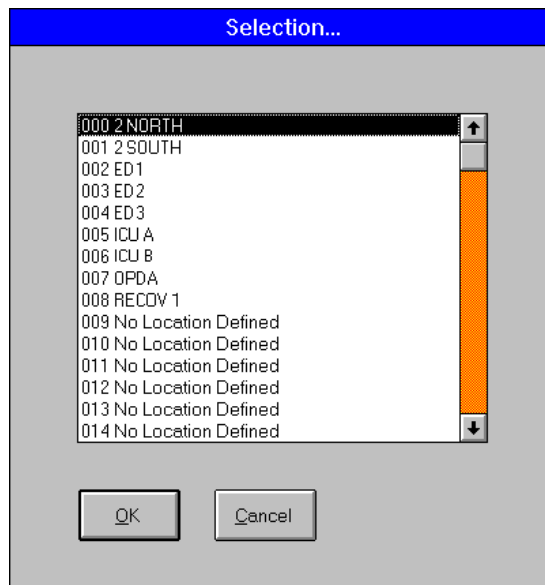
MD1334-014A

4. In the window titled *Select Report Distribution to Configure*, select the desired report type and click *OK*.



MD1334-015A

5. The window titled: *Report Distribution for Location: Default Case: Normal Unconfirmed* should be displayed.
6. In the *Report Distribution* window, click on *Select Location*. The *Selection* window appears as shown below. Select the location to configure and click OK to return to the *Report Distribution* window.



MD1334-010A

7. Click the *Add* button to add a new statement to the *Actions* portion of the window.

MD1334-016A

NOTE: Do not delete any existing action statements from the *Actions...* window without the approval of the MUSE CV system administrator.

8. In the *Define an Action...* portion of the window, modify the new statement by selecting the following variables from the pull-down lists:

- ◆ 1 copy
- ◆ Current Record
- ◆ HL7
- ◆ HIS Result 1
- ◆ ASAP

When complete, the new statement should read:

"When you process a report for this case, send 1 copy of the Current Record to HL7 in HIS Result 1, ASAP."

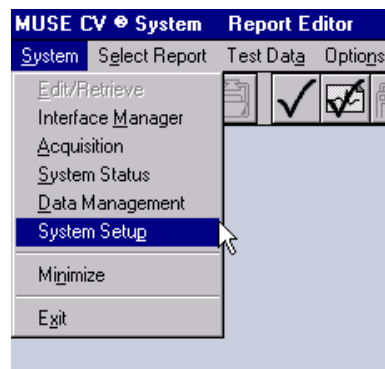
9. Click *OK* when complete.
10. Click the *Next Case* button. The title at the top of the window should change to *Case: Abnormal Unconfirmed*.

11. Repeat steps 5 through 8 for the remaining case types:
 - ◆ *Abnormal Unconfirmed*
 - ◆ *Normal Confirmed*
 - ◆ *Abnormal Unconfirmed.*
12. Repeat steps 3 through 10 to configure the selected location for all other patient test types that will be supported by the HL7 Result/Financial interface.
13. Repeat the above configuration procedures for each location on the MUSE CV system, and for each case type.

Configure Users

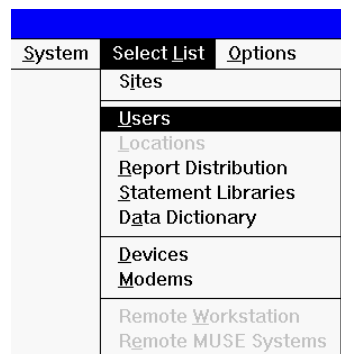
For the HIS to recognize physicians in the MUSE CV system, the HIS physician identification number (i.e. the Medicare Provider ID or Universal Provider ID) must be added to each user configuration in the MUSE CV system.

1. Log into the production MUSE CV system.
2. From the *System* menu, select *System Setup*.



MD1334-204A

3. From the *Select List* menu, select *Users*.



MD1334-031A

4. The window for *User: 1* appears.

MD1334-032B

5. Enter the HIS physician identification number (i.e. the Medicare Provider ID or Universal Provider ID) in the *Medicare Provider ID:* field for the Physician identified in the User window.
- Click *OK* to save your changes. Click *Next* to configure another user.

Configure Interface PC as a MUSE CV System Workstation

After all testing is completed and successful operation has been verified, the interface workstation must be configured to communicate with both the HIS and the production MUSE CV system.

NOTE: You will need the TCP/IP address and associated network information for the interface workstation network connection, and the addresses of the HIS and the MUSE CV system server.

Depending on your system, there may be one or two network cards in the interface workstation to be configured.

Introduction

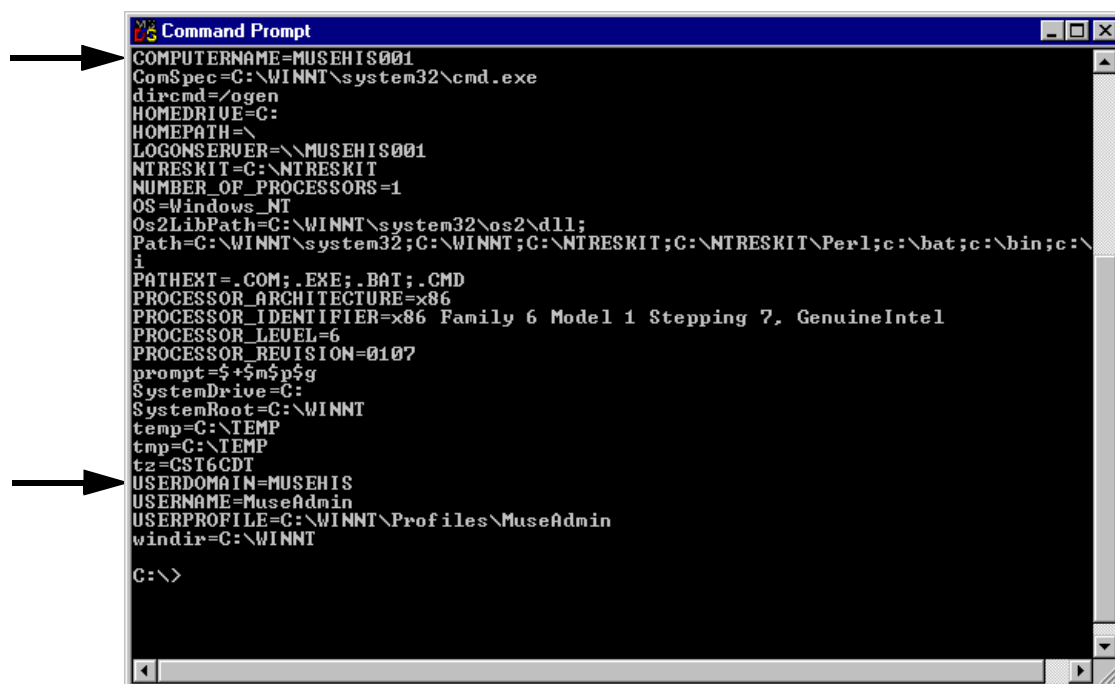
The interface workstation must be configured to operate as a MUSE CV system workstation. This includes network configuration, local group manipulation, and configuring the MUSE CV system application to automatically start at login.

Determine Identity of MUSE CV System File Server

You must determine the Computer name and the Domain Name of the MUSE CV system file server.

1. Log into the MUSE file server with the MuseAdmin account.
2. Open a Command Prompt window.

3. At the prompt, type **set** <Enter>
An example of the resulting display is shown below.
4. Locate and record the entries for *COMPUTERNAME* and *USERDOMAIN*. This information will be used later.



```
Command Prompt
COMPUTERNAME=MUSEHIS001
ComSpec=C:\WINNT\system32\cmd.exe
dircmd=/ogen
HOMEDRIVE=C:
HOMEPATH=\
LOGONSERVER=\\MUSEHIS001
NTRESKIT=C:\NTRESKIT
NUMBER_OF_PROCESSORS=1
OS=Windows_NT
Os2LibPath=C:\WINNT\system32\os2\dll;
Path=C:\WINNT\system32;C:\WINNT;C:\NTRESKIT;C:\NTRESKIT\Perl;c:\bat;c:\bin;c:\i
PATHEXT=.COM;.EXE;.BAT;.CMD
PROCESSOR_ARCHITECTURE=x86
PROCESSOR_IDENTIFIER=x86 Family 6 Model 1 Stepping 7, GenuineIntel
PROCESSOR_LEVEL=6
PROCESSOR_REVISION=0107
prompt=$*%$p$g
SystemDrive=C:
SystemRoot=C:\WINNT
temp=C:\TEMP
tmp=C:\TEMP
tz=CST6CDT
USERDOMAIN=MUSEHIS
USERNAME=MuseAdmin
USERPROFILE=C:\WINNT\Profiles\MuseAdmin
windir=C:\WINNT

C:\>
```

MD1334-135A

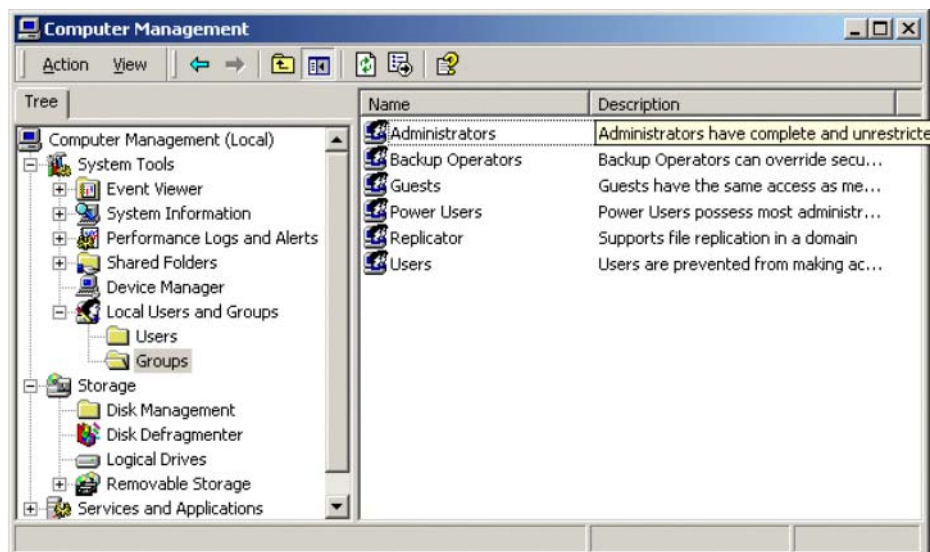
5. Close the *Command Prompt* window.

Edit the Windows WIN.INI File

1. Log into the interface workstation with the Administrator account.
NOTE: Before editing the WIN.INI file, it is recommended that you make a backup copy of the original file.
2. Edit the *win.ini* file:
 - ◆ Select *Start ==> Run*.
 - ◆ Type **win.ini**. The file will automatically open in the *Notepad* application.
3. In the section titled [MUSE] make the following changes:
 - ◆ Change the *Main Server Name* to the Computer Name of the MUSE file server determined earlier.
 - ◆ Change the *MEI Node ID* to a value for the interface that is between 124 and 128.
 - ◆ Change the *Computer Name* to match the Node ID and naming convention on the file server.
 Example:
 file server name = MUSEHIS001
 interface name = MUSEHIS124
 - ◆ Save these changes and exit *Notepad*.

Verify Administrators Group

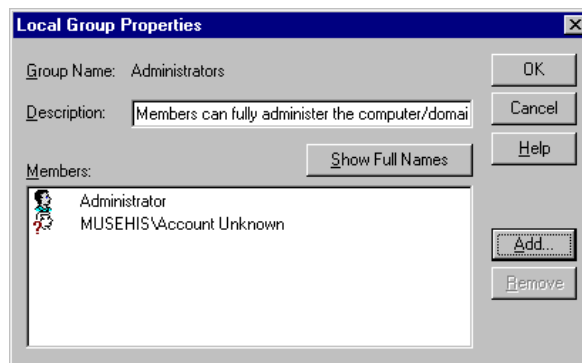
1. Select *Groups*.
2. Open the *Administrator* group.



MD1334-143B

3. Bring the *Properties* page to the front.
4. At the *User Manager* window, double-click on *Administrators* in the Groups section to display the *Local Group Properties* window.

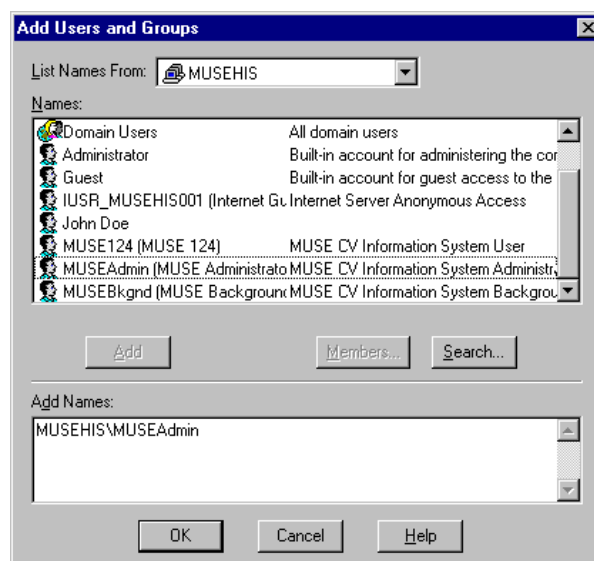
5. Verify the *Administrators Group* as follows:



MD1334-145A

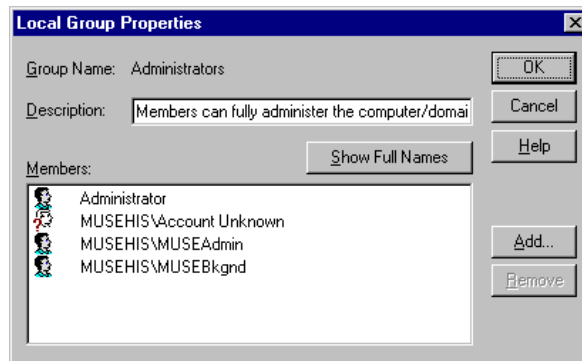
6. To add the MUSEAdmin and/or the MUSE Bkgnd users:

- ◆ Click *Add* in the *Local Group Properties* window to display the *Add Users and Groups* window.



MD1334-146A

- ◆ Select your domain name from the *List Names From:* pull-down list in the *Add Users and Groups* window.
- ◆ Highlight *MUSEAdmin* and click *Add*. Repeat for *MUSEBkgnd*.
- ◆ Select *OK*. You should now see these names in the *Administrators* group.



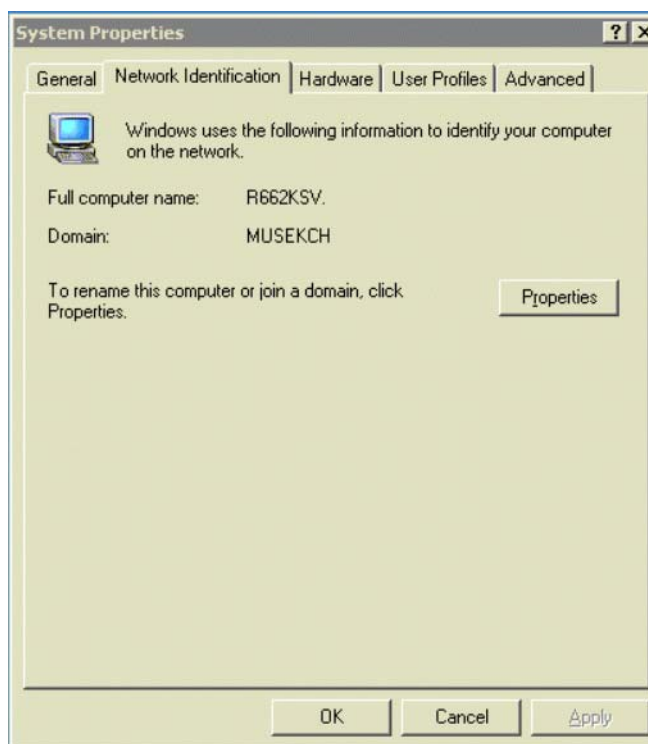
MD1334-147A

- ◆ Click *OK* to close the *Local Group Properties* window.
- 7. Exit *Computer Management*.

Configure Workstation Network Identity

Verify/Change Computer Name

1. On 2000/2003 system, go to the *My Computer* icon on the desktop, right-click and select *Properties*.
2. In the *System Properties* window, select the *Network Identification* tab.



MD1334-138B

3. Click the *Properties* button.

4. In the *Identification Changes* screen, change the computer name or domain if necessary.



MD1334-1139B

5. Verify that the *Computer Name* matches the name you set in the win.ini file. If the *Computer Name* is correct, click *OK*.

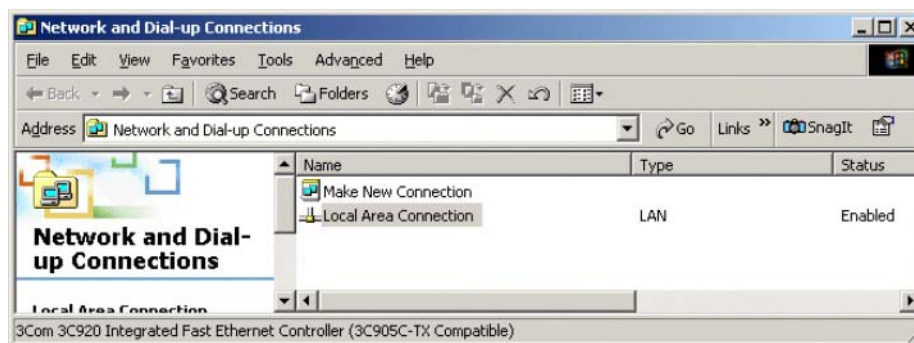
If the Computer Name is not correct:

- ◆ Select *Change*.
- ◆ Change the *Computer Name*.
- ◆ Select *OK* and save your changes, but do not restart the computer.

Configure TCP/IP Address of the Interface Workstation

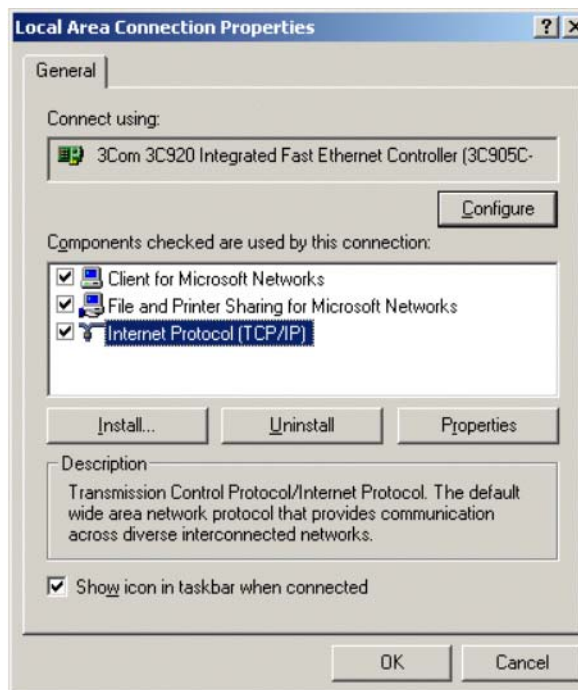
If you have difficulty with this section, please contact your network administrator.

1. In Windows 2000/2003, right-click on the *My Network Places* icon on the desktop.
2. Select *Properties*.
3. In the *Network and Dialup Connections* window, right-click on *Local Area Connection*.



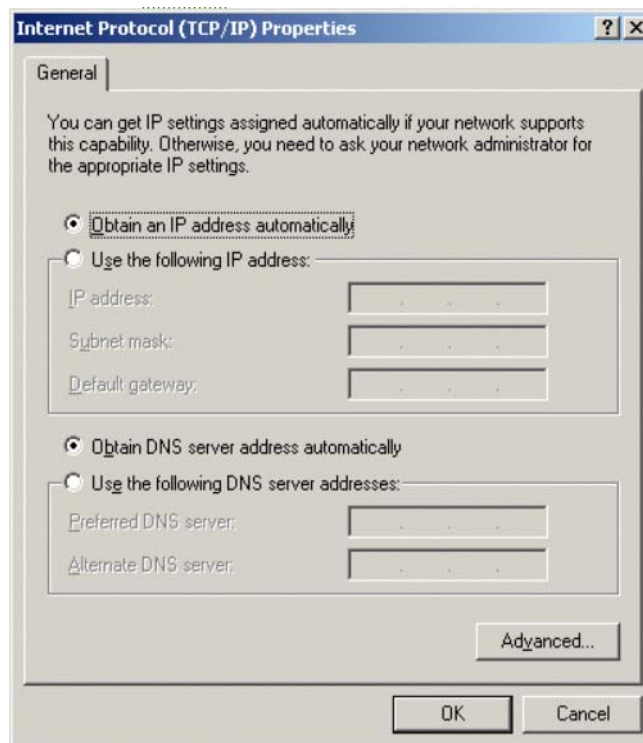
MD1334-226A

4. Select *Properties*.
5. In the *Local Area Connection Properties* window, highlight the *Internet Protocol (TCP/IP)* and click *Properties*.



MD1334-142B

6. Setup the IP address.



MD1334-141B

7. You have two choices regarding the IP address:
 - ◆ *Obtain an IP address automatically*
 - ◆ *Use the following IP address*
8. Make the appropriate selection. If you choose *Use the following IP address*, enter the *IP Address*, *Subnet Mask* and *Default Gateway*.
9. Click *OK* to save your changes, and then click *OK* again to close the *Network* window.
10. From the Windows *Start* menu select *Shutdown==>Restart the Computer*.

Prepare Auto Update File

On the MUSE file server, save *vol000\update\update.asc* to *update.sav*.

Verify Network Communications with HIS

After verifying that the interface workstation is functioning as MUSE CV system workstation, you must also verify that the interface workstation and the HIS are communicating on the network.

1. Log into the interface workstation with the MuseAdmin account.
2. Select the USERDOMAIN of the MUSE file server.

NOTE: If your MUSE CV system is a Member server, you may need to select the domain from a pulldown list.

3. Open a Command Prompt window.
4. At the prompt, type:

ping xxx.xxx.xxx.xxx <Enter>

where **xxx.xxx.xxx.xxx** is the TCP/IP address of the HIS system server.

5. The system will display a message to inform you if the HIS has responded.

If you receive a message indicating that the ping attempt has timed out, refer to the troubleshooting information at the back of this manual.

6. Close the *Command Prompt* window.
7. Repeat this same procedure from the HIS system to verify that the HIS can communicate with the interface workstation.

Execute Interface Integration Program

Pre-integration Procedure

Before integrating the HIS interface into the production MUSE CV system, you make the following changes on the interface PC.
CV_SCM and MSSQL Server (automatically stops SQL Server Agent) must change to manual startup.

Change MSSQL Server to Manual Startup

1. Change the MSSQL Server, CV_SCM, and SQLServer Agent from automatic startup to manual:
 - ◆ Open the *Services* control window.
 - ◆ Set *MSSQLServer*, *CV_SCM*, and *SQLServer Agent* to *Manual*.
2. Stop *MSSQLServer* and *CV_SCM* services.

Execute the Interface Integration Program

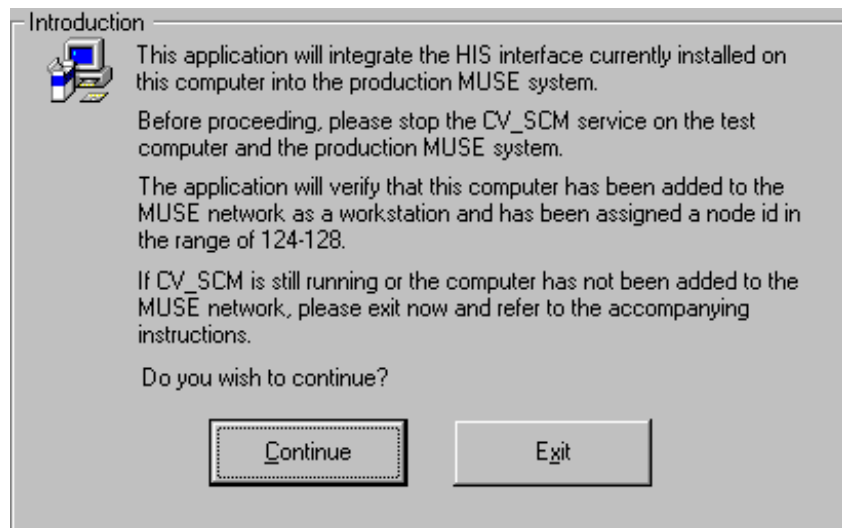
The *Interface Integration* program will copy the HL7 interface software configurations from the test environment into the production MUSE CV system network. When completed, the production MUSE CV system will be configured for an HL7 interface.

Before You Start the *Interface Integration* Program

1. Be sure you are logged in as the Administrator.
2. Ensure that the CV_SCM service is stopped on the MUSE CV system file server AND the interface PC.

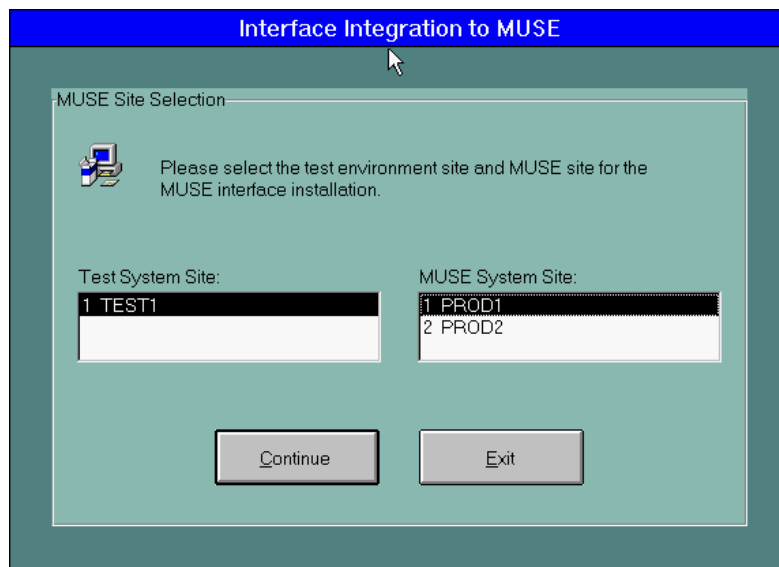
Start the *Interface Integration* Program

1. You should already be logged into your interface workstation as MuseAdmin.
2. From the *Start* menu, select:
Programs==>HL7 Interface==>HL7 Interface Integration.
The *Interface Integration to MUSE* opening screen appears as shown.



MD1334-209A

3. The application begins by reminding you that if you haven't already done so, you need to stop the CV_SCM service on the interface PC AND on the MUSE CV system file server before continuing. If you have been following these instructions, you will have just performed this step.
4. Next the application asks whether the Node ID of the interface workstation has been changed to Node 124-128.
 - ◆ If it hasn't, select *Exit* and refer to *"Define the HIS as a Device in System Setup"* on page 4-4 earlier in this chapter.
 - ◆ If the Node ID is correct, select *Continue*.
5. The *MUSE Site Selection* screen appears and requires you to select the site name of the test environment and the site name of the production MUSE CV system. Make your selections and then click *Continue*.



MD1334-067A

Check for Outbound and Inbound Interfaces

Once you select the appropriate test and production environment site names, the Interface Integration program begins by checking for an existing outbound-from-MUSE CV system interface device. If an outbound interface is detected, the program will process all information regarding the outbound interface first. The next section, “Outbound Interface Processing” on page 4-24 describes this process.

If no outbound interface exists, or after processing the outbound interface information, the program will check for and process information regarding the inbound interface, if installed. This process is described in the “Inbound Interface Processing” on page 4-28 section following the outbound interface section.

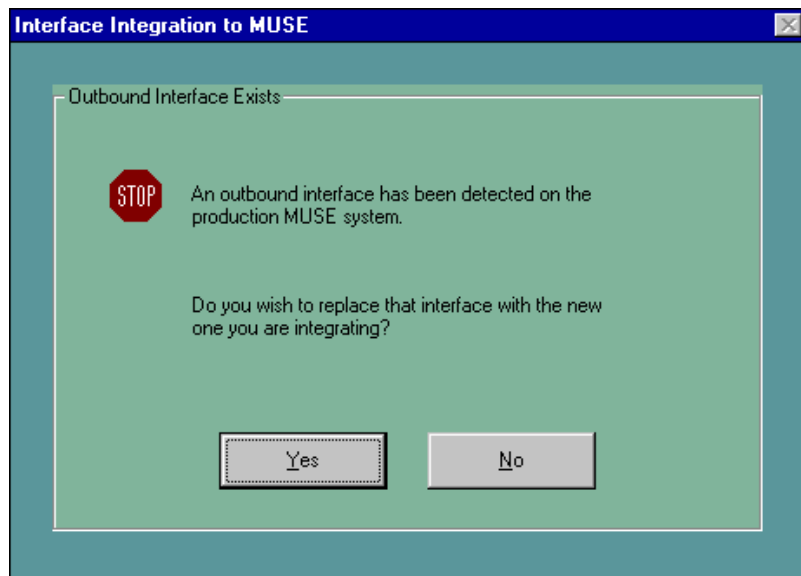
If neither an outbound or inbound interface is installed, the program will exit at this point.

Outbound Interface Processing

If the integration program detects an outbound interface already installed on the production MUSE CV system, it asks if you want to replace the existing outbound interface with the HL7 interface.

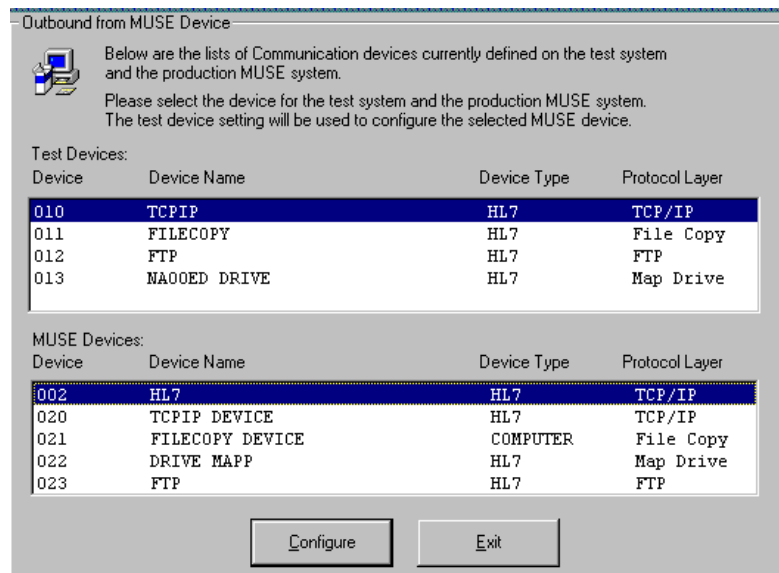
- If you desire to replace the current interface with the one you are integrating, select *Yes*.

- If you want to maintain the existing interface, select *No*.



MD1334-068A

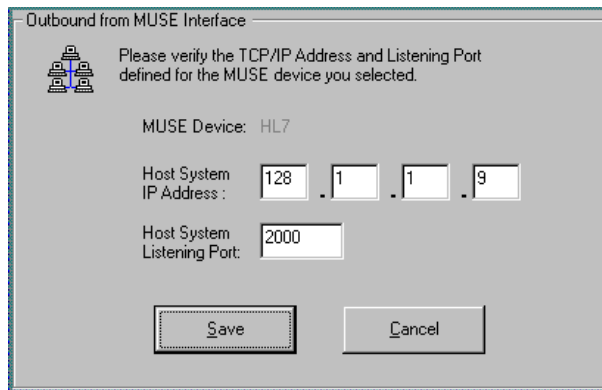
The *Outbound from MUSE Device* screen maps the communication device on the interface workstation to the production MUSE CV system.



MD1334-069B

The next screen to appear depends on the communication device selected (TCP/IP, FTP, File Copy, or Drive Mapping). The configuration screens for the TCP/IP, FTP, File Copy, and Drive Mapping applications are shown below and on the next page.

TCP/IP



Outbound from MUSE Interface

Please verify the TCP/IP Address and Listening Port defined for the MUSE device you selected.

MUSE Device: HL7

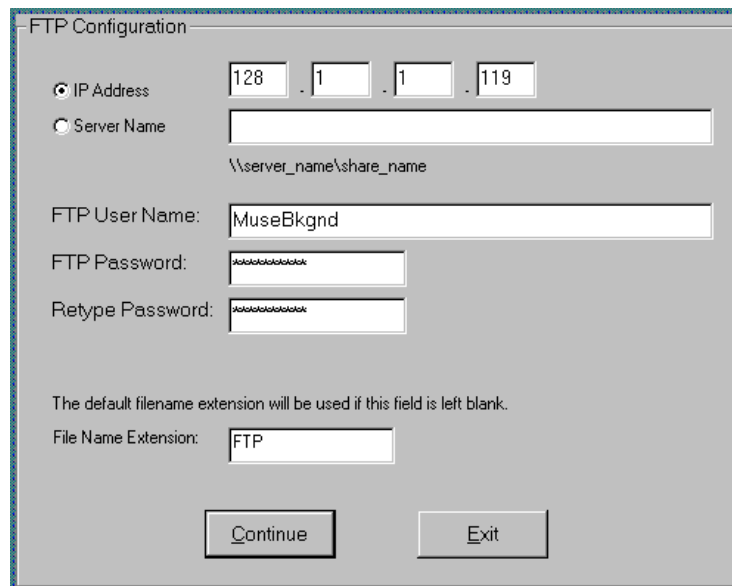
Host System IP Address : 128 . 1 . 1 . 9

Host System Listening Port: 2000

Save Cancel

MD1334-070B

FTP



FTP Configuration

☒ IP Address 128 . 1 . 1 . 119

☐ Server Name

\\server_name\share_name

FTP User Name: MuseBkgnd

FTP Password: *

Retype Password: *

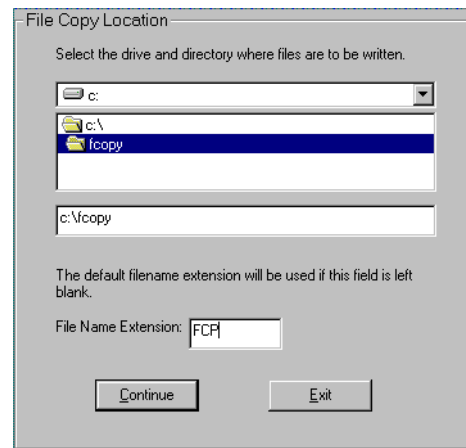
The default filename extension will be used if this field is left blank.

File Name Extension: FTP

Continue Exit

MD1334-216A

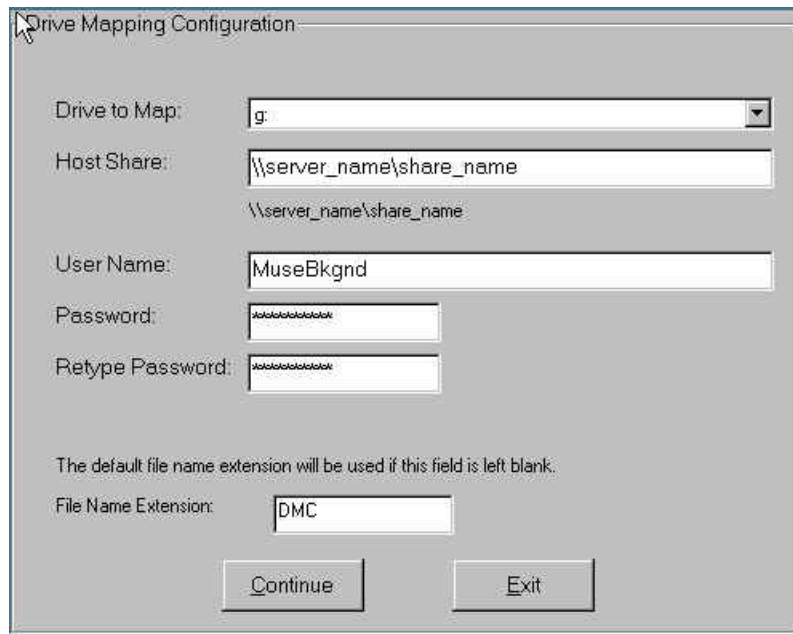
File Copy



The dialog box is titled "File Copy Location". It contains the instruction "Select the drive and directory where files are to be written." Below this, there is a drive selection dropdown menu showing "c:". Underneath, a file explorer view shows the "c:\\" directory with a subdirectory "fcopy" selected. Below the explorer, a text field displays "c:\fcopy". A note states: "The default filename extension will be used if this field is left blank." Below the note, a text field for "File Name Extension" contains "FCP". At the bottom are "Continue" and "Exit" buttons.

MD1334-221A

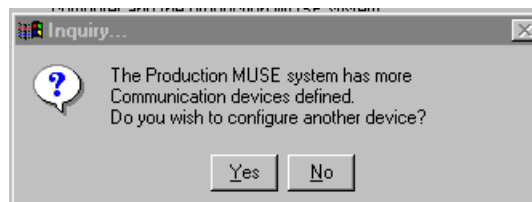
Drive Mapping



The dialog box is titled "Drive Mapping Configuration". It contains the following fields: "Drive to Map:" with a dropdown menu showing "g:"; "Host Share:" with a text field containing "\\server_name\share_name" and a hint "\\server_name\share_name" below it; "User Name:" with a text field containing "MuseBkgnd"; "Password:" and "Retype Password:" with masked text fields; and "File Name Extension:" with a text field containing "DMC". A note states: "The default file name extension will be used if this field is left blank." At the bottom are "Continue" and "Exit" buttons.

Modify the configuration window for each appropriate application. Select *Continue* to save your modifications.

After the outbound device is saved, the integration program checks for additional outbound devices and displays the following screen if additional devices are detected.



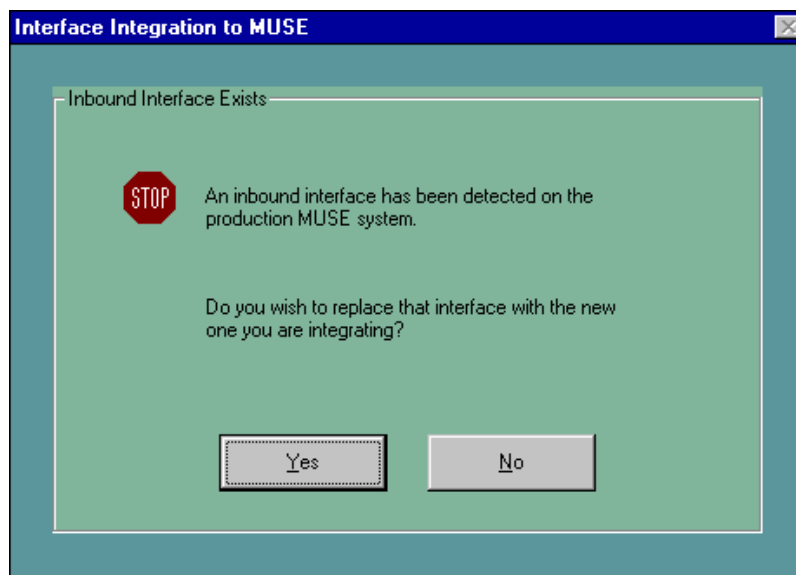
MD1334-071B

- If you select *Yes*, you will be returned to the *Outbound from MUSE Device* selection screen which enables you to map another device to the production MUSE CV system.
- If you select *No*, the integration program then checks for inbound devices. See “Inbound Interface Processing” on the following pages.

Inbound Interface Processing

After all desired outbound devices are configured, the integration program checks for the presence of an inbound interface on the production MUSE CV system.

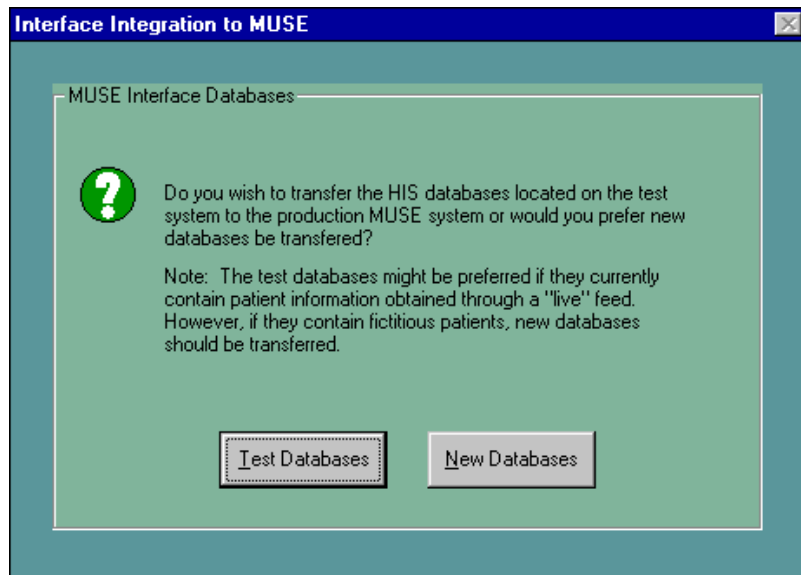
- If no inbound interface is detected, the integration program skips to the *Begin Integration* screen.
- If an inbound interface is detected, the following *Inbound Interface Exists* screen is displayed.



MD1334-072A

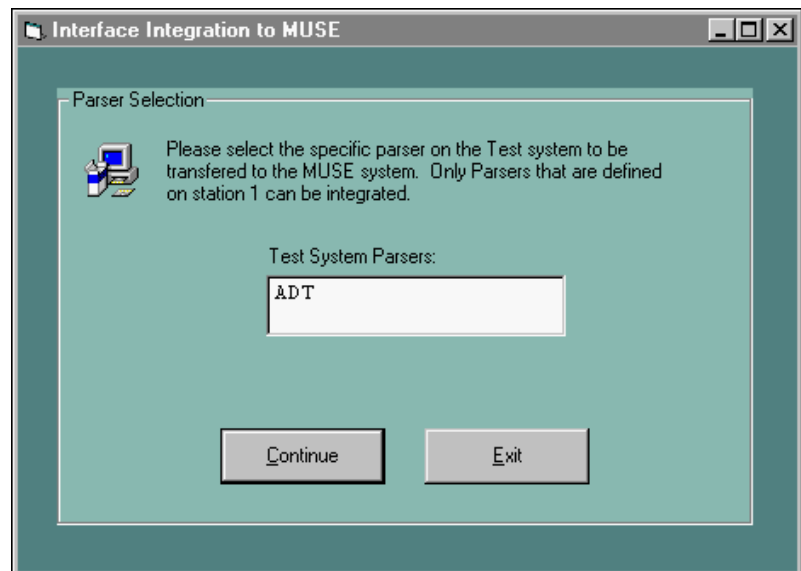
- If *Yes* is selected, the integration program verifies your request to overwrite the existing interface.
- If *No* is selected, the integration program confirms your decision not to overwrite the existing interface.

The following screen allows you to select which patient database to be transferred to the MUSE CV system. Be sure to read this screen carefully before making a decision.



MD1334-073A

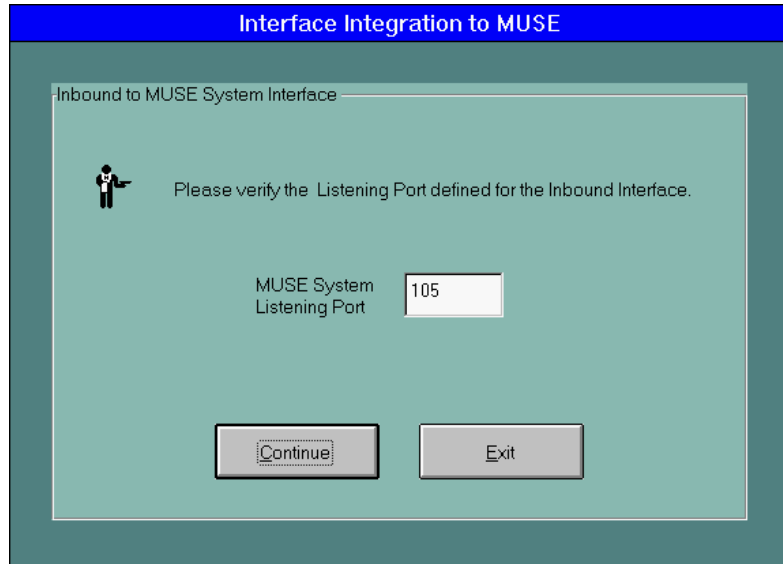
The *Parser Selection* screen appears. The *Test System Parsers* list displays a list of all parsers defined on the selected site. Select the correct parser to be transferred to the MUSE CV system. Only parsers defined on Station 1 of the test system can be transferred.



MD1334-134A

NOTE: Only ONE parser may be moved to the MUSE CV system.

The *Inbound to MUSE System Interface* screen requires verification of the listening port for the inbound interface.



Interface Integration to MUSE

Inbound to MUSE System Interface

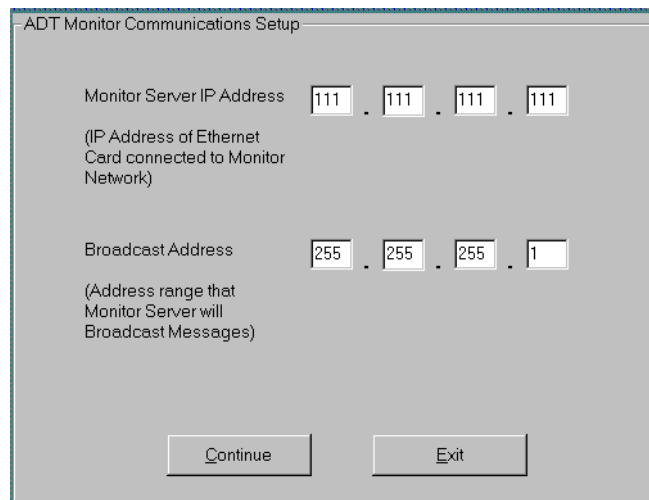
Please verify the Listening Port defined for the Inbound Interface.

MUSE System Listening Port 105

Continue Exit

MD1334-074A

If Site 1 is set up, and the ADT Monitor application is enabled, the following screen will be displayed.



ADT Monitor Communications Setup

Monitor Server IP Address 111 . 111 . 111 . 111

(IP Address of Ethernet Card connected to Monitor Network)

Broadcast Address 255 . 255 . 255 . 1

(Address range that Monitor Server will Broadcast Messages)

Continue Exit

MD1334-221A

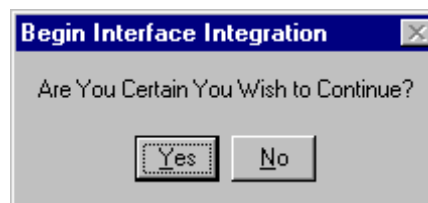
NOTE: The screen above is displayed only if the ADT Monitor application is enabled. It will be followed by the *Begin Integration* screen. If the ADT Monitor application is not enabled, the *Begin Integration* screen will be displayed first.

When finished, the *Begin Integration* screen is displayed.



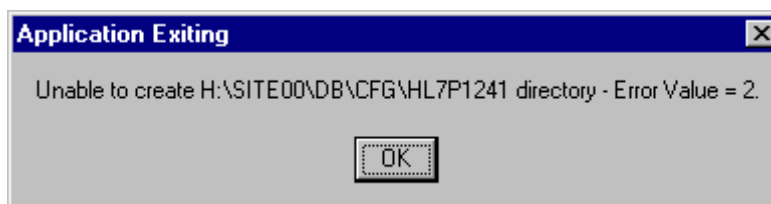
MD1334-075A

A confirmation screen is displayed:



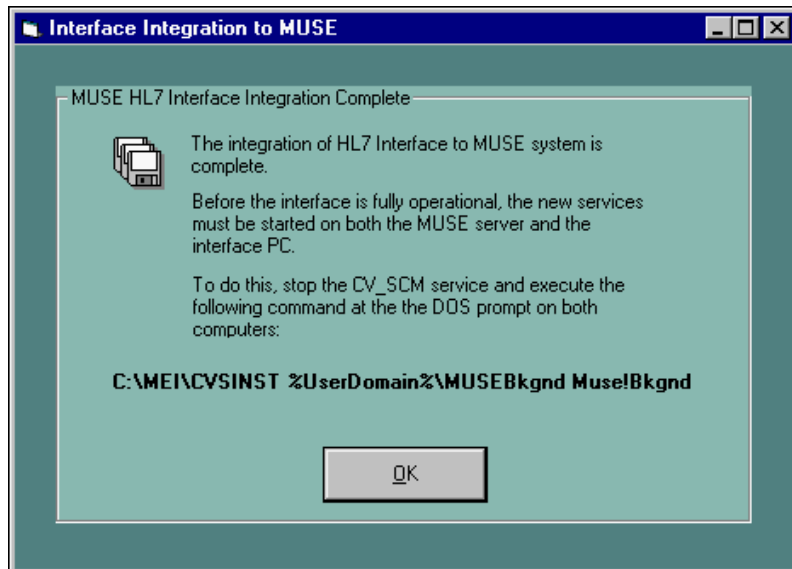
MD1334-076A

If any problems or errors are encountered, the Interface Integration will exit and a message will be displayed informing you of the error. (See the example below.) Refer to the troubleshooting information in Appendix A.



MD1334-077A

If no problems are encountered, the integration program then informs you that the integration is complete, and instructs you to install the new services on BOTH the interface PC and the MUSE file server before resetting the system. Click *OK* and proceed to the next section, “Install MUSE CV System Services” on page 4-33 to install the new services.



MD1334-077B

Install MUSE CV System Services

Before the interface can be fully operational you MUST install the MUSE CV system “services” into the Windows environment on BOTH the interface PC and the MUSE CV system file server as follows:

Install Services on the Interface PC

On the interface PC:

1. From the Windows *Start* menu, select *Settings==>Control Panel*. The *Control Panel* window will be displayed. Select the *Services* icon.
2. When the *Services* window displays, ensure that the *CV_SCM* service in your *Services* window, like the one below, is stopped. (A service is stopped when the *Status* column is empty.)

If necessary, stop the *CV_SCM* service by selecting the service. When it highlights, click the *Stop* button.

Verify that *CV_SCM* is set to *Automatic* startup.

3. Close the *Control Panel* window.
4. Open a Command Prompt window.

At the prompt, type:

```
c:\mei\cvsinst <space> %<local computer name>%\MUSEBkgnd <space> Muse!Bkgnd <Enter>
```

5. Close the *Command Prompt* window.
6. Restart the interface workstation. Verify that all of the appropriate services have started.

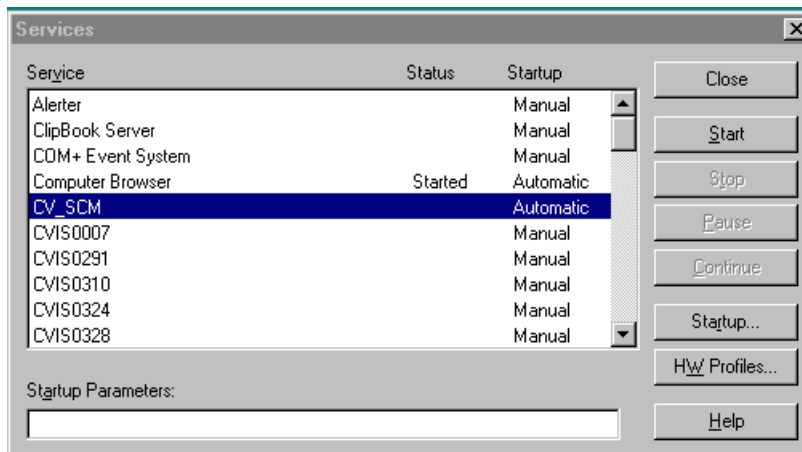
Install Services on the MUSE CV System File Server

On the MUSE CV system file server:

1. From the *Start* menu, select *Settings==>Control Panel*. The *Control Panel* window will be displayed. Select the *Services* icon.
2. When the *Services* window displays, ensure that the *CV_SCM* service in your *Services* window, like the one below, is stopped. (A service is stopped when the *Status* column is empty.)

If necessary, stop the *CV_SCM* service by selecting the service. When it highlights, click the *Stop* button.

Configure CV_SCM to *Automatic* startup.



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3. Close the *Control Panel* window.
4. Open a Command Prompt window.
Start ==> Programs ==> Command Prompt

At the prompt, type:

c:\mei\cvsinst <space> %<MUSE file server name>%\MUSEBkgnd <space> Muse!Bkgnd <Enter>

5. Close the *Command Prompt* window.
6. Restart the interface workstation. Verify that all of the appropriate services have started.

Update *update.asc* on the MUSE CV System File Server

1. Using notepad open d:\vol000\update\update.asc and update.sav on the MUSE file server.
2. Copy all contents of *update.sav* to the end of the *update.asc* file.

NOTE:

Make sure there are no empty lines in the middle or end of *update.asc*

3. Save the change to *update.asc*.

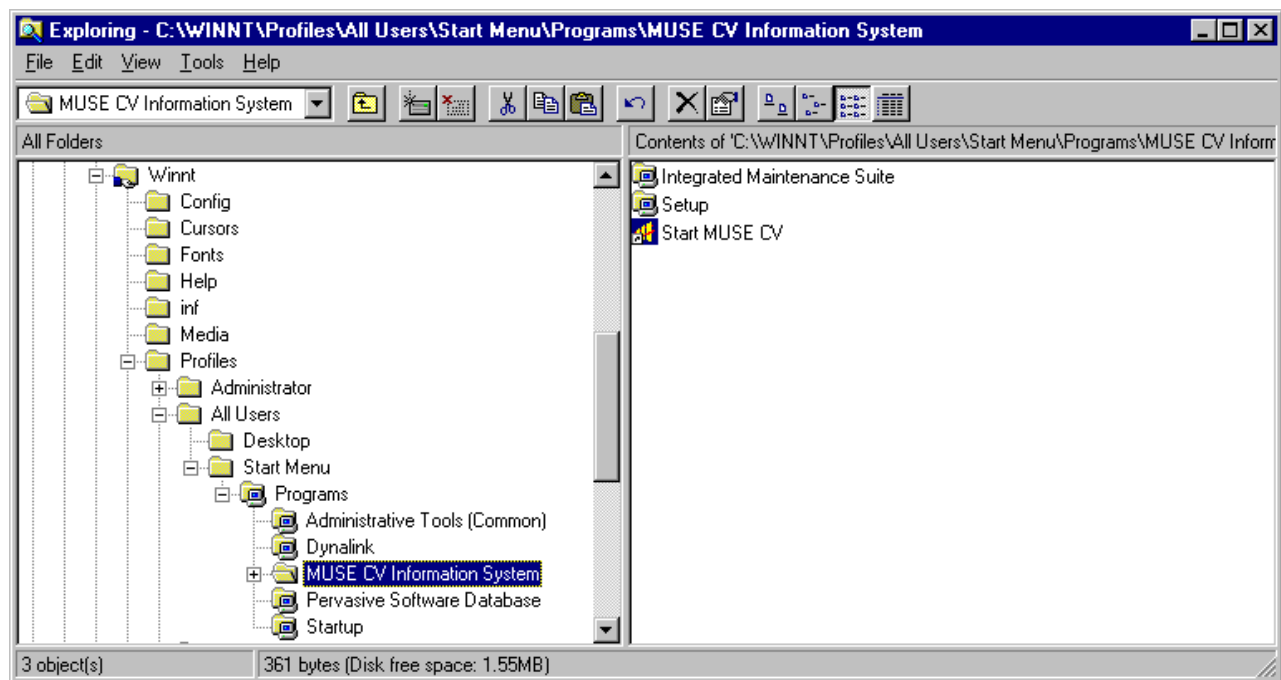
Configure Workstation to Automatically Start MUSE Software

This procedure will start the MUSE CV system software automatically after login.

1. From *Start* menu, select *Programs==>Windows Explorer*.
2. Move through the directory structure to locate the following file:

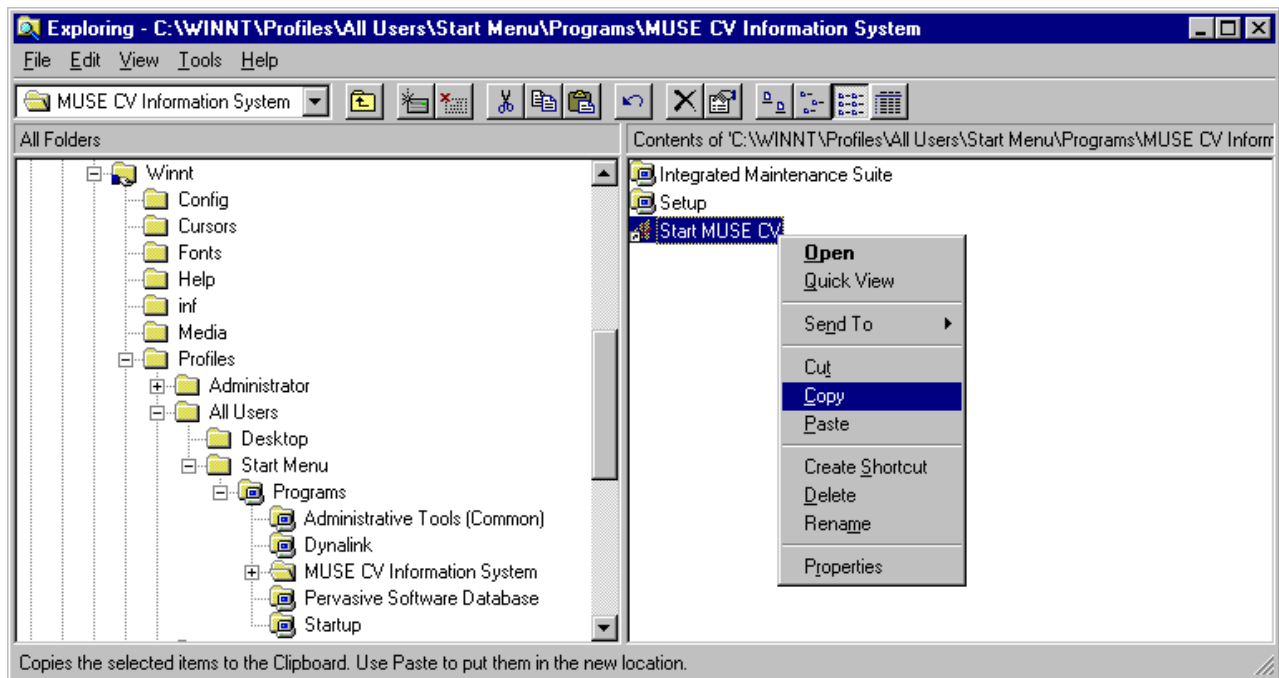
c:\<windows root directory>\profiles\all users\start menu\programs\MUSE CV Information System

3. Highlight the *MUSE CV Information System* folder in the left window. You will see *Start MUSE CV* in the right window.



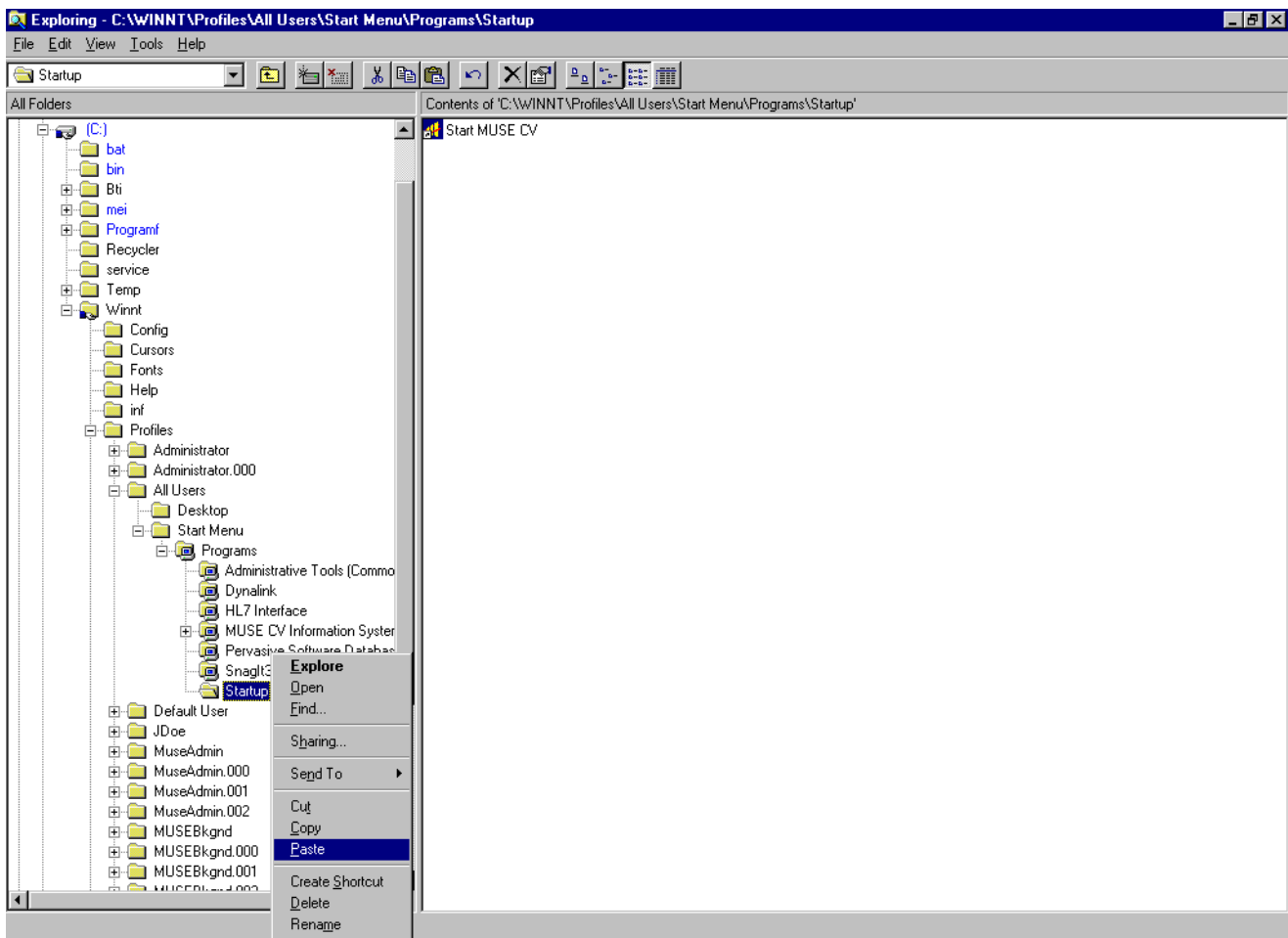
MD1334-148A

4. Highlight *Start MUSE CV* and right-click with the mouse. When the options menu is displayed, select *Copy*.



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5. In the left *Explorer* window locate the *Startup* folder within *Programs*. Point to the *Startup* folder and right-click with the mouse. When the options menu is displayed, select *Paste*.



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6. *Start MUSE CV* should now appear in the *Startup* folder. This will start the MUSE CV system application whenever a user logs in.
7. Close *Windows Explorer*.
8. Restart the computer. From the *Start* menu select: *Shut Down=>Restart the Computer*

Verify Interface is Operating Correctly

At this point, the interface workstation should be up on the production MUSE CV system and the interface should be live. Check the error log, interface reject log, and report reject log. Make sure no errors are being logged.

Verify that the system is operating correctly in the MUSE CV system environment. Using actual data, ensure that you can

- see ADT messages coming to the system, and
- send result messages to the HIS.

If the system is not operating as expected, refer to Appendix A for troubleshooting procedures.

Configure MUSE CV System for Inbound-from-HIS Messages

Mapping of MUSE CV System Locations to Interface Manager (Optional)

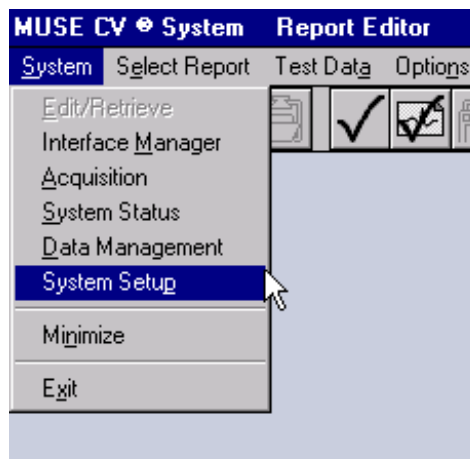
In the *Interface Manager* application, the system default is to display HIS locations in lists such as *List of Orders* and *List of Accounts*. This is often preferred since there are frequently many more HIS locations than MUSE CV system locations. However, the interface can be configured to display MUSE CV system locations in these lists instead, if desired.

NOTE: These procedures are only applicable if the HL7 interface will support inbound messages from the HIS, such as ADT or Order transactions.

This information was gathered and recorded in the “GE Medical Systems *Information Technologies* HL7 Interface Pre-Installation Guide.” See “Displaying and Using Information” in the Cardiology Department portion of the guide.

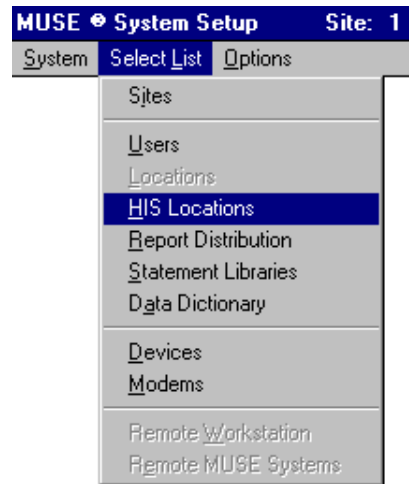
To configure MUSE CV system locations, proceed as follows:

1. Be sure the HL7 interface has been fully integrated into the production MUSE CV system.
2. From the *System* menu, select *System Setup*.



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3. From the *Select List* menu, select *HIS Locations*.



MD1334-007A

4. When *HIS Locations* is selected, the *HIS Interface Locations* screen is displayed as shown below:

The screenshot shows a window titled 'HIS Interface Locations'. It contains several input fields and buttons. The fields are: 'HIS Location Abbreviated' (empty), 'HIS Location Name' (empty), 'Maps to...' (empty), 'MUSE Location Abbreviated' (dropdown menu showing 'TEST'), 'MUSE Location Number' (text box showing '0'), and 'MUSE Location Name' (text box showing 'TEST LOCATION'). At the bottom, there are six buttons: 'OK', 'Prev', 'Next', 'Last', 'Select', and 'Delete'.

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5. To map a HIS Location to a MUSE CV system location, enter the *HIS Location Abbreviated* name and the full *HIS Location Name* in the appropriate boxes at the top of the window.

Choose the desired MUSE CV system location from the *MUSE Location Abbreviated* pull-down list. The *MUSE Location Name* will be filled in automatically as shown in the example below.

HIS Interface Locations

HIS Location Abbreviated :

HIS Location Name :

Maps to...

MUSE Location Abbreviated :

MUSE Location Number :

MUSE Location Name:

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6. Click *OK* to save your selection.
7. Click *Next* or *Previous* to map another location.
8. Click *Select* to see a list of locations already mapped as shown below.

Selection...

000 2 NORTH
001 2 SOUTH
002 ED1
003 ED2
004 ED3
005 ICU A
006 ICU B
007 OPD A
008 RECOV 1

MD1334-010A

For your notes

Appendix A – Troubleshooting

For your notes

Introduction

When attempting to determine the source of a problem with the HL7 interface, a general path for gathering information about the status of the interface should be followed. The path is outlined in the following sections, provided to assist you with troubleshooting:

- Troubleshooting tools, including various log files and the Interface Manager search feature, help you track the interface activity and should be used to determine the source of the problem. Each of the log files is described in this appendix.
- Troubleshooting recommendations for various aspects of the HL7 interface are provided.
- A list of error codes and their descriptions are provided.

Troubleshooting Tools

Introduction

This section provides information on the troubleshooting tools available with the HL7 interface.

Log Files

HIS Multi-Log Viewer

The HIS Multi-Log Viewer provides access to three log files:

- HIS Event Log
- Communication Transaction Log
- Connection Log

Additional Log Files

Additional log files that are available for troubleshooting are:

- Inbound Interface Log
- Outbound Interface Log
- MUSE Error Log
- Batch Status

Interface Manager Search Feature

The Interface Manager Search Feature is useful when attempting to locate and summarize information associated with a particular patient. Many times, a missing order or patient can be easily located by performing a search in the Interface Manager.

HIS Event Log

The HIS Event Log is a record of all interface transactions, both inbound and outbound for the past seven days. This log can be filtered on Success/Failure, Inbound/Outbound and can be sorted a variety of ways. In addition, a search feature provides a display of all transactions associated with a particular patient identification number (PID).

The *Type* column indicates the GE Medical Systems *Information Technologies* event that occurred. For example, an *HL7 A04 - Register a Patient* transaction causes a patient to be added to the interface databases. Therefore, an A04 transaction would appear as a Patient Admit in the HIS Event Log. It is also possible that one HL7 transaction can trigger multiple *Information Technologies* events. For example, an *A11 - Cancel Admit* transaction can trigger Delete Order, Delete Account and Delete Patient events depending on the circumstances. A complete listing of the *Information Technologies* transactions and events can be located in the “Functional Description of HIS Interface.”

Event Log List					
Records 1 through 19 of 1270 Total Records					
Date/Time	Patient ID	Patient Name	Req. Num	Account Num	Type
28-JAN-97 23:53:06	005992307	Storm,J			Transfer P
28-JAN-97 23:52:43	005617414	Gonzales,T	J028-0184		New Order
28-JAN-97 23:52:43	005617414	Gonzales,T	J028-0184		Patient Adr
28-JAN-97 23:51:16	005965362	Jones,R	J028-0183		New Order
28-JAN-97 23:51:15	005965362	Jones,R	J028-0183		Patient Adr
28-JAN-97 23:50:48	005703339	Jurewicz,S			Patient Adr
28-JAN-97 23:49:54	005539414	Adams,A	J028-0182		New Order
28-JAN-97 23:49:54	005539414	Adams,A	J028-0182		Patient Adr
28-JAN-97 23:48:36	005556414	Price,R	J028-0181		New Order
28-JAN-97 23:48:35	005556414	Price,R	J028-0181		Patient Adr
28-JAN-97 23:47:35	005582140	Walker,B	J028-0180		New Order
28-JAN-97 23:47:34	005582140	Walker,B	J028-0180		Patient Adr
28-JAN-97 23:46:24	005442033	Cheke,A	J028-0179		New Order
28-JAN-97 23:46:23	005442033	Cheke,A	J028-0179		Patient Adr
28-JAN-97 23:39:38	005513199	Rosenberg,E			Patient Adr
28-JAN-97 23:36:01	005703339	Jurewicz,S	J028-0178		New Order
28-JAN-97 23:36:00	005703339	Jurewicz,S	J028-0178		Patient Adr
28-JAN-97 23:18:42	005545414	Ayala,G			Transfer P
28-JAN-97 23:11:25	005604067	Myers,C	J028-0163		Cancel Ord

Sort By:
☐ Patient ID
☒ Date & Time
☐ Event Status
☐ Requisition No.
☐ Event Type

Display:
☒ InBound Transactions
☒ OutBound Transactions
☐ Only Failure Transactions

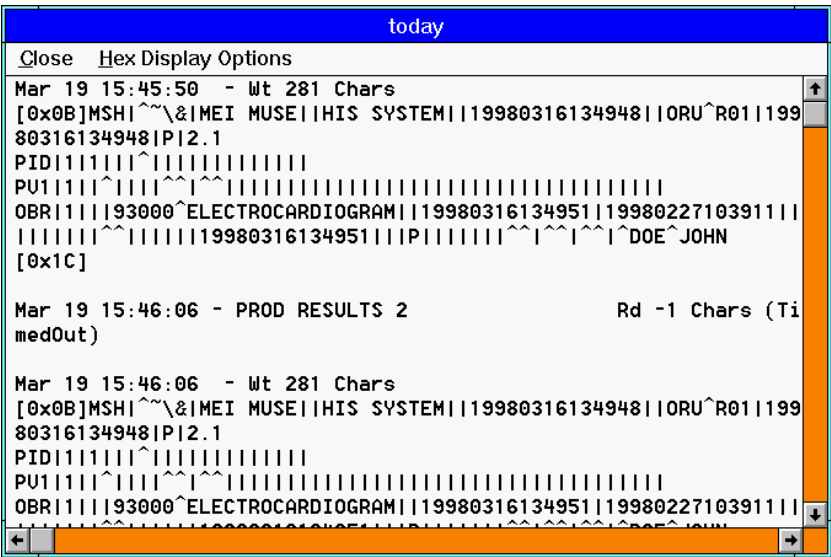
Select day of the week:
☐ Sun
☐ Mon
☒ Tue
☐ Wed
☐ Thu
☐ Fri
☐ Sat

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Communication Transaction Log

The Communication Transaction Log is a record of the actual message content, both inbound and outbound, for the past seven days. This log can be used to troubleshoot HL7 segment errors.



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Connection Log

The Connection Log is a record of the changes in the TCP/IP communication states for both the inbound and outbound interfaces for the past seven days. This log can be used to track trends in connection states associated with communications problems.

Connection Log List				
Records 1 through 19 of 130 Total Records				
Date/Time	Task, Node	Connection State	Function Type	Status
19-MAR-98 10:43:34	9550, 124	Connected	In Bound	Success
19-MAR-98 10:42:04	9550, 124	Listening	In Bound	Success
19-MAR-98 10:37:22	33, 124	Not Connected	Out Bound	Success
19-MAR-98 10:35:10	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 10:27:18	33, 124	Not Connected	Out Bound	Success
19-MAR-98 10:25:07	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 10:17:18	33, 124	Not Connected	Out Bound	Success
19-MAR-98 10:15:07	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 10:07:13	33, 124	Not Connected	Out Bound	Success
19-MAR-98 10:05:07	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 09:57:08	33, 124	Not Connected	Out Bound	Success
19-MAR-98 09:55:02	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 09:47:03	33, 124	Not Connected	Out Bound	Success
19-MAR-98 09:44:58	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 09:36:57	33, 124	Not Connected	Out Bound	Success
19-MAR-98 09:34:53	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 09:26:52	33, 124	Not Connected	Out Bound	Success
19-MAR-98 09:24:48	1033, 124	Not Connected	Out Bound	Success
19-MAR-98 09:16:52	33, 124	Not Connected	Out Bound	Success

Sort By:
☒ Date & Time
☐ Task ID & Node ID

Select day of the week:
☐ Sun ☐ Mon ☐ Tue ☐ Wed
☒ Thu ☐ Fri ☐ Sat

Detailed View

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Last Page

Print to File

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Inbound Interface Log

If a problem is encountered when processing a message transaction for an inbound interface, the details of the problem are logged in the Inbound Interface Log. This record contains both fatal and non-fatal messages. If the status of a transaction is noted as a failure in the HIS Event Log, a message is also entered in the Inbound Interface Log that may provide more details about the failure. However, the Inbound Interface Log is also used to log non-fatal errors associated with the interface as well. Incomplete race, gender or patient classifications do not prevent the message from being processed and stored by the MUSE CV system HL7 interface; but, these types of errors do prevent the associated data field from being stored on the system and these errors should be addressed.

Inbound Interface List				
Total Number of Records :				8
Date/Time	Patient ID	Req. No.	Site	Message Text
Mar 17 14:40	00889772	8504375	01	Duplicate Order Record
Mar 17 14:40	03682732	8504386	01	The Order Contains an Invalid Test Type
Mar 17 14:40	03682732	8504386	01	Error During Standard .DLL Function, TES
Mar 17 14:40	03682732	8504386	01	Error During Standard .DLL Function, PAT
Mar 17 14:39	05582246	8504390	01	The Order Contains an Invalid Test Type
Mar 17 14:39	05582246	8504390	01	Error During Standard .DLL Function, TES
Mar 16 13:48	Unknown	Unknown	01	Missing PID, Type: ADT@A01, Control ID:
Mar 16 13:48			01	Error Reading Table RACE(1) for W

View Delete

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Transaction Information			
Patient ID:	05582524	Site:	1
Account Number:	055825245312	Date/Time:	Tue Mar 17 14:39:29 1998
Order Number:	8504390		
Message:	Error During Standard .DLL Function, TESTTEXTMAP(EKG (RESP CARE))		
OK			

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Outbound Interface Log

If a problem is encountered when processing a message transaction for an outbound interface, the details of the problem are logged in the Outbound Interface Log. This record contains both fatal and non-fatal messages. If the status of a transaction is noted as a failure in the HIS Event Log, a message is also entered in the Outbound Interface Log that may provide more details about the failure. However, the Outbound Log is also used to log non-fatal errors associated with the interface as well.

Outbound Interface List					
Total Number of Records :			3		
Date/Time	Patient Name	Patient ID	Req. No.	Site	Test Status
Mar 20 15:13	ALEXANDER	000019144		01	Unconfirmed
Mar 20 15:12	ALEXANDER	000019144		01	Unconfirmed
Mar 20 15:09	SNYDER	000977303		01	Unconfirmed

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Transaction Information			
Patient ID:	000019144	Site:	1
Patient Name:	ALEXANDER	Date/Time:	Fri Mar 20 15:13:48 ----
Order Number:		Test Date/Time:	Thu Jul 19 11:36:00 ----
Test Type:	12-Lead ECG,1,0	Test Status:	Unconfirmed
Message:	Required data not in test. Secondary Id Rslt Fmt 1		
<input type="button" value="OK"/>			

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MUSE Error Log

The MUSE Error Log is a record of all tasks operating on the MUSE CV system. An entry made by a task to this file contains the date and time that the event occurred, the MUSE CV system workstation number, the task's ID number, the error location followed by the error status, and a textual message about the error.

The task IDs associated with an interface are:

Task	Description
9550	Inbound HL7 Interface Parser Engine
9570	Outbound HL7 Interface Formatter Engine
9240	HIS Multi-Log Viewer Application
740	Interface Manager Application
770	Interface Data Management Utility
X033	TCP/IP Communications

Since more than one device can be defined to run on a MUSE CV system station, a method of distinguishing between the devices logging messages is necessary. The 'X' in the TCP/IP communications task ID indicates which one of the devices is logging the error. The first device defined on the station is 0033, the second is 1033, the third is 2033 and so on.

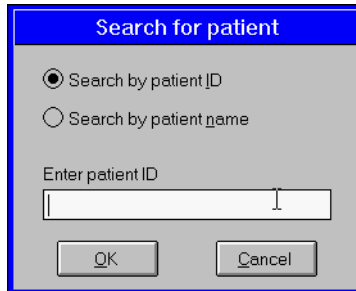
An example of an entry is shown below:

Thu Mar 12 16:52:12 124 9550 3601 :22 The Order Contains an Invalid Test Type

This entry was made on March 12, at station 124 by task 9550 - HL7 Parser. The error location is 3601 and an error code of 22 was returned. (See the Error Codes section for further information). The message text verifies that the Inbound HL7 Parser Engine received a request for an order. The status of "22 - invalid argument" indicates the parser was unable to map the provided test type to a valid entry in the Test Type mapping table. The Inbound Interface Log would contain additional information about the entry that was received in the message and lacking in the MUSE CV system HL7 Interface configuration.

Interface Manager Search Feature

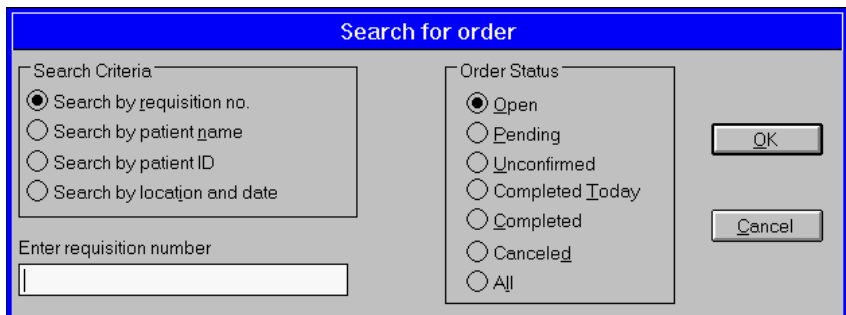
Although not an interface log file, the Interface Manager application stores and maintains the ADT and order information that was successfully processed by the HL7 Interface. The search feature is especially useful when attempting to locate and summarize information associated with a particular patient. Many times, a missing order or patient can be easily located by performing a search in the Interface Manager.



The "Search for patient" dialog box has a blue title bar. It contains two radio buttons: "Search by patient ID" (selected) and "Search by patient name". Below them is a text field labeled "Enter patient ID". At the bottom are "OK" and "Cancel" buttons.



The "Search for account" dialog box has a blue title bar. It features two sections: "Search Criteria" with radio buttons for "Search by account no." (selected), "Search by patient ID", and "Search by location"; and "Account Status" with radio buttons for "Open" (selected), "Closed", and "All". There is an "Enter account number" text field. "OK" and "Cancel" buttons are on the right.



The "Search for order" dialog box has a blue title bar. It features two sections: "Search Criteria" with radio buttons for "Search by requisition no." (selected), "Search by patient name", "Search by patient ID", and "Search by location and date"; and "Order Status" with radio buttons for "Open" (selected), "Pending", "Unconfirmed", "Completed Today", "Completed", "Canceled", and "All". There is an "Enter requisition number" text field. "OK" and "Cancel" buttons are on the right.

MD1334-131A, 132A, 133A

Troubleshooting Recommendations

Introduction

This section provides recommendations for troubleshooting problems in the following areas:

- Inbound Message Processing
- Outbound Message Processing
- Communications
- Miscellaneous

Inbound Message Processing

Problem:

Inbound Message sent from the HIS system, but patient/order not appearing on MUSE CV system.

Recommended Actions:

AA - If the MUSE CV system responded with an AA for the message, it passed the preliminary checks for data integrity.

- Locate the message in the HIS Event Log.
- If the status of the event is failure, check the Inbound Interface and MUSE Error Logs for further information on the failure.
- If the status of the event is success, perform a search for the patient in the Interface Manager.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

AE or AR - If the MUSE CV system responded with an AE or AR, the transaction failed the preliminary checks for data integrity.

- Check the Inbound Interface and MUSE Error Logs for further information on the failure.
- Examine the actual message content in the Communication Transaction Log for the source of the problem. More than likely, the problem is data related.
- Verify the field mappings for the interface are correct.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Information processed by MUSE CV system HL7 interface successfully, but displayed information in Interface Manager is incorrect or missing.

In this case, the HIS Event Log would have logged the transaction successfully, but was unable to populate a particular field from the message.

Recommended Actions:

- Check the Inbound Interface Log for possible error messages associated with the transaction.
- Check the message content in the Communication Transaction Log.
- In the message, locate the data field that was missing in the Interface Manager display. Note the HL7 segment, field and sub-field. Verify the source for this field is correct in the interface configuration tables. If the field is mapped to a translation table, verify this particular value has been defined in the translation table.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Information processed by MUSE CV system HL7 interface successfully, but HL7 Interface did not perform anticipated action based on message type.

This is usually due to an invalid setup or a misunderstanding of the *Information Technologies* interface operation.

Recommended Actions:

- Check the message content in the Communication Transaction Log.
- Verify the type of transaction sent to the MUSE CV system interface.
- Verify this HL7 transaction message type has been associated to the appropriate *Information Technologies* action in the MUSE CV system HL7 Parser configuration tables.
- Verify all the appropriate configuration features have been set. For example, “Admit a Patient from Update Transactions” must be enabled if the interface is to add patients to the MUSE interface databases when any patient update messages (including transfers) are sent.
- Review the transaction summaries located in the “Functional Description of HIS Interface” to clarify *Information Technologies* interface operation.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Outbound Message Processing

Problem:

Outbound messages are not being formatted. Nothing appears in the Print Queues for the device.

Recommended Actions:

Locate the message in the HIS Event Log. If the status of the report is failure, a configuration item is preventing the formatting of the test.

- Check the Outbound Interface Log and the MUSE Error Log for additional information on the failure.
- If the logs indicate a failure due to a required field not being filled, verify the patient test has all required fields populated.
- If the logs indicate a failure to map the type of test being generated (maptypes.asc file is referenced in the message), verify the interface supports this type of test and the Test Type configuration for the HL7 Formatting Engine is correct.
- If the logs indicate an invalid format request, verify that the message format being generated (Result 1, Result 2, Billing 1, etc.) is configured on the system, or that the Report Distribution has been configured to generate the appropriate format.
- If the logs indicate a problem opening or locating a file, note the file name and error code. Locate the value in the Error Codes section.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

If the message is not found in the HIS Event Log, the request is not being received by the HL7 Formatting Engine.

- Check the Outbound Interface Log and the MUSE Error Log for additional information on the failure.
- Check the Outbound device definition in the MUSE CV system device setup. Verify it is defined as an HL7 type device.
- Manually print the report to the device, bypassing the MUSE CV system normal report distribution process. If the message now appears in the HIS Event Log, verify the configuration for report distribution for this data type and MUSE CV system location.
- If the message is still not being formatted, the HL7 Formatter application may not be properly installed. This could be due to an error during installation or integration, or a new MUSE CV system software update over-writing the application.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Outbound message is being generated, but is missing expected information fields.

Recommended Actions:

- Check the message content in the Communication Transaction Log. In the message, locate the data field that was missing at the HIS. Note the HL7 segment, field and sub-field.
- Verify the source for this field is correct in the interface configuration tables.
- If the field was related to information from a patient account or order, edit the patient test on the MUSE CV system and re-match the test to the appropriate account or order information. Re-generate the outbound message.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Communications

Problem:

Unable to “PING” HIS system.

Recommended Actions:

- Verify the Interface workstation is connected to the hospital network.
- Verify the IP information for the Interface workstation, including any routers.
- Verify the HIS system IP address is correct.
- Verify the HIS system is active.
- Verify the network card is functioning properly.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Unable to “PING” MUSE CV system server.

Recommended Actions:

- Verify the Interface workstation is connected to the MUSE CV system network (either through the shared hospital network or the isolated LAN).
- Verify the IP information for the Interface workstation, including any routers.
- Verify the MUSE CV system IP address is correct.
- Verify the MUSE CV system is active.
- Verify the network card is functioning properly.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

HIS PC does not initialize as MUSE CV system Client/Workstation.

Recommended Actions:

- Verify the HIS PC can “PING” the MUSE CV system server.
- Verify the entries in the MUSE section of the WIN.INI file are correct. Refer to Chapter 4 - Configure Interface for Production.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Inbound interface not receiving transactions.

Recommended Actions:

- Check the MUSE Error Log for any information on the failure.
- Check the Connection Log in the Multi-Log Viewer for the current status of the interface. If no entry is located in the Connection Log, the application did not initialize.
- Verify the Inbound HL7 Parser Engine has been configured for the appropriate IP address and listening port with respect to the HIS system.
- Verify the Interface workstation can “PING” the HIS.
- Check the *Services* window on the interface PC.
 - ◆ Does the CVIS 9550 service appear in the list of services in the *Services* window? If not, install the service by clicking the *Windows Start* button and selecting *Programs*, then *Command Prompt* to open an *MS-DOS Command Prompt* window. At the DOS prompt, type:

**c:\mei\cvsinst <space> %User Domain%\MUSEBkgnd
<space> Muse!Bkgnd <Enter>**

Close the *MS-DOS Command Prompt* window and restart the interface PC.

- ◆ If the CVIS 9550 service is listed in the *Services* window, is the service started? If not, start the service.
 - ◆ If the CVIS 9550 service appears in the *Services* window and the service is started, click the *Startup...* button and verify that the appropriate parameters are supplied.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Outbound interface not sending messages.

Recommended Actions:

Check the MUSE Error Log for any information on the failure.

- Check the Connection Log in the Multi-Log Viewer for the current status of the interface. If no entry is located in the Connection Log, the application did not initialize.
- Verify the Outbound HL7 Formatter Engine has been configured for the appropriate IP address and listening port with respect to the HIS system.
- Verify the Interface workstation can “PING” the HIS.
- Check the *Services* window on the interface PC.
 - ◆ Does the CVISDEV_[device name] (for example, CVISDEV_RESULT) service appear in the list of services in the *Services* window? If not, install the service by clicking the *Windows Start* button and selecting *Programs*, then *Command Prompt* to open an *MS-DOS Command Prompt* window. At the DOS prompt, type:

```
c:\mei\cvsinst <space> %User Domain%\MUSEBkgnd  
<space> Muse!Bkgnd <Enter>
```

Close the *MS-DOS Command Prompt* window and restart the interface PC.

- ◆ If the CVISDEV_[device name] service is listed in the *Services* window, is the service started? If not, start the service.
 - ◆ If the CVISDEV_[device name] service appears in the *Services* window and the service is started, click the *Startup...* button and verify that the appropriate parameters are supplied.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Miscellaneous

Problem:

Interface Manager does not appear in *System* menu.

Recommended Actions:

- Verify the Interface Manager application *ICIS0740.EXE* is located in the C:\MEI directory on the workstation.
- Verify the Interface Setup in the MUSE CV system Site Setup is configured for an ADT interface.
- Verify the current site number has an ADT database. (\SITEXX\DB\DEM\ADTPATS.BTR)
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Interface Setup control does not appear in MUSE CV system Site Setup

- Using a MUSE CV system owner password, check the Installed Options list to be certain ADT interface is listed.
- Verify the current site number has an ADT database. (\SITEXX\DB\DEM\ADTPATS.BTR)
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Inbound Log does not appear in *Select List* in MUSE CV system status.

Recommended Actions:

- Using a MUSE CV system owner password, check the Installed Options list to be certain ADT interface is listed.
- Verify the current site number has an ADT database. (\SITEXX\DB\DEM\ADTPATS.BTR)
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

Outbound Log does not appear in *Select List* in MUSE CV system status.

Recommended Actions:

- Using a MUSE CV system owner password, check the Installed Options list to be certain either a Result or Financial interface is listed.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Problem:

HIS Multi-Log Viewer does not appear in *Select List* in MUSE CV system status.

Recommended Actions:

- Verify the Multi-Log Viewer application, ICIS9240.EXE , is located in the C:\MEI directory on the workstation.
- Using a MUSE CV system owner password, check the Installed Options list to be certain ADT, Result or Financial interface is listed.
- If unable to resolve the problem, collect all information (including all error messages and status values) and contact *Information Technologies* Technical Support.

Error Codes

InstallShield Errors

The installation of the HL7 Interface is controlled by InstallShield. Below is a list of error codes associated with the installation

Table 1. InstallShield Error Codes		
Error #	Error	Description
-115	Sharing Violation	The installation was unable to copy the specified file. Verify that the CV_SCM service is not started on the system.

Btrieve Database Files

Most of the configuration files associated with the HL7 Interface are Btrieve Files. Any errors associated with the access of these types of files will generate an error status that matches one of the following codes:

Table 2. Btrieve Database Error Codes		
Error #	Error	Description
1002	I/O Error	Usually indicates a loss of network connection to the MUSE CV system file server. Can be due to heavy network traffic or other communication problems. Can also indicate a damaged file that must be regenerated, however this occurrence is rare. Contact <i>Information Technologies</i> Technical Support.
1003	File Not Open	A successful Open operation must be performed before file can be accessed. Check for another Btrieve error in the log file indicating a failure to open the file. Can also be due to an invalid position block. Also seen as a benign error when a Btrieve Close is performed on an already closed file. If the error is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
1004	Key Value Not Found	The value used to look-up a record in the Btrieve file, referred to as the database key, was not found. Generally seen on inbound interfaces when a transaction is sent requesting modification to an existing ADT or Order file on the MUSE CV system and the ADT or Order file is not located in the MUSE CV system Interface databases. Very common during start-up of an interface. Message should describe what value was not found. Error can also indicate a configuration error. Again, common during start-up of an interface and the message will indicate what was not found. If the error is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
1005	Duplicate Key Value	The value used to look-up a record in the Btrieve file, referred to as the database key, was found in the file and duplication is not allowed. Generally seen on inbound interfaces when a transaction is sent requesting to make an addition to the MUSE CV system ADT or Order databases. In conjunction with an order request, the message indicates the particular requisition already exists or in the case of an ADT message, the particular patient already has an account and duplicate accounts is not configured.

Table 2. Btrieve Database Error Codes (Continued)

Error #	Error	Description
1009	End of File	This code indicates an attempt to read the Btrieve file past the file boundaries. Can indicate that a search of the entire file for a particular value did not yield any result, in which case, it is a benign error. If the error repeats and is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
1012	File Not Found	Occurs when an attempt to open a Btrieve file was made and the file was not found in the expected directory path. The message will indicate which file was not found. This can occur if a file was not transferred (either during installation or integration), if the file was manually deleted, or most commonly, it indicates a loss in network connection to the MUSE CV system file server. In the case that the file is legitimately missing, the file can be restored from the backup directory on the system or from the installation disk. The backup directory is located on the server D drive as \SERVICE\HIS\BACKUP. Remember that configuration changes to the file may be required to match the latest setup of the interface. If the file is located on the MUSE CV system file server in the expected path, the error was more than likely due to a loss of connection between the PC running the interface applications and the MUSE CV system file server. Check the network load and operation. If the error repeats and is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
1018	Disk Full	Indicates the disk (drive) is full and the file could not be added or expanded to accommodate the Btrieve action. Contact <i>Information Technologies</i> Technical Support.

DOS Files

Although most of the configuration files associated with the HL7 interface are Btrieve, there are a few files that are DOS. Below is a list of some of the more common DOS error codes:

Table 3. Error Codes		
Error #	Error	Description
2	No Such File or Directory	Occurs when an attempt to open a DOS file was made and the file was not found in the expected directory path. The message will indicate which file was not found. This can occur if a file was not transferred (either during installation or integration), if the file was manually deleted, or most commonly, it indicates a loss in network connection to the MUSE CV system file server. In the case that the file is legitimately missing, the file can be restored from the backup directory on the system or from the installation disk. The backup directory is located on the server D drive as \SERVICE\HIS\BACKUP. Remember that configuration changes to the file may be required to match the latest setup of the interface. If the file is located on the MUSE CV system file server in the expected path, the error was more than likely due to a loss of connection between the PC running the interface applications and the MUSE CV system file server. Check the network load and operation. If the error repeats and is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
13	Permission Denied	Indicates an attempt to read, write or delete a file that is either currently being accessed and is not “shared” or has “read only” privilege. The message will indicate which file is not accessible. Verify the file attributes are not “read only”. If the error occurs during an installation or integration, verify a MUSE CV system shutdown has been performed. If the error repeats and is interfering with interface operation, Contact <i>Information Technologies</i> Technical Support.
22	Invalid Argument	If this status is logged in conjunction with a mapping of a test type value, the specific value was not found in the <i>Information Technologies</i> mapping tables. Verify the entries in the Test Type mapping setup to verify the value has been configured. If the status is not related to the mapping of a test type, contact <i>Information Technologies</i> Technical Support.
24	Too Many Open Files	Indicates the application has exhausted all available file handles for opening files. Usually the result of a software problem referred to as a “file handle” leak. Closing all applications and restarting the hardware usually returns the application to normal operation. Contact <i>Information Technologies</i> Technical Support.
28	No Space Left on Device	Indicates the disk (drive) is full and the file could not be added or expanded to accommodate the Btrieve action. Contact <i>Information Technologies</i> Technical Support.

TCP/IP (Socket) Communications

The communication between the MUSE CV system and the HIS is performed using TCP/IP. Below is a list of error codes associated with socket level communication.

Table 4. TCP/IP Error Codes		
Error #	Error	Description
0009	Bad File Number	The specified file handle is not a valid file handle or does not refer to an open file; or an attempt was made to write to a file or device opened for read-only access.
110013	Permission Denied	The device's permission setting does not allow the specified access.
10022	Invalid Argument	During an accept - listen not invoked prior to the accept(). During a bind - the socket is already bound to an address. During a receive or send - the socket has not been bound with bind().
10024	Too Many Open Files	Indicates the application has exhausted all available file handles for opening files.
10035	Block	No connections are present to be accepted.
10038	Not a Socket	The descriptor is not a socket.
10041	Bad Protocol Type	The specified protocol is the wrong type for this socket.
10043	Bad Protocol Option	The specified protocol is not supported.
10044	Socket Not Supported	The specified socket type is not supported in this address family.
10045	Not Connection Oriented	The referenced socket is not a type that supports connection-oriented service.
10048	Address in Use	The specified address is already in use.
10049	Address Not Available	The specified address is not available from the local machine.
10050	Net Down	The network subsystem has failed.
10051	Net Unreachable	The network can't be reached from this host at this time.
10052	Reset Connection	Connection must be reset due to a drop by Windows Socket implementation.
10053	Connection Aborted	The virtual circuit was aborted due to time-out or other failure.
10054	Connection Reset	The virtual circuit was reset by the remote side.
10055	No Buffers	No buffer space is available or too many connections.
10056	Is Connected	The socket is already connected.
10057	Not Connected	The socket is not connected
10058	Shutdown	The socket has been shutdown.
10060	Time out	Attempt to connect timed out without establishing a connection.
10061	Connection Refused	The attempt to connect was forcefully rejected.
10091	Not Ready	The network subsystem is not ready for network communication.

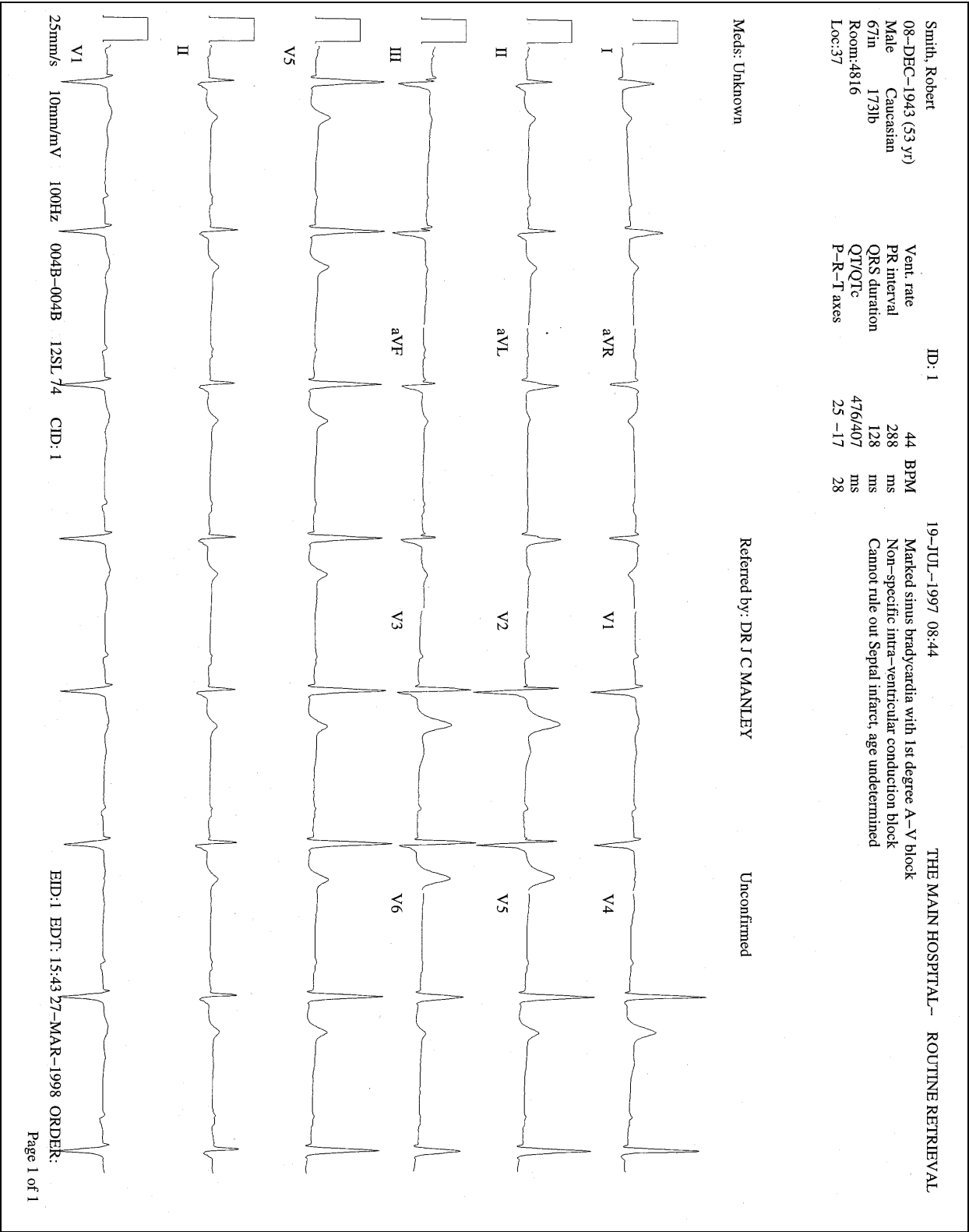
Appendix B – Test Data Samples

For your notes

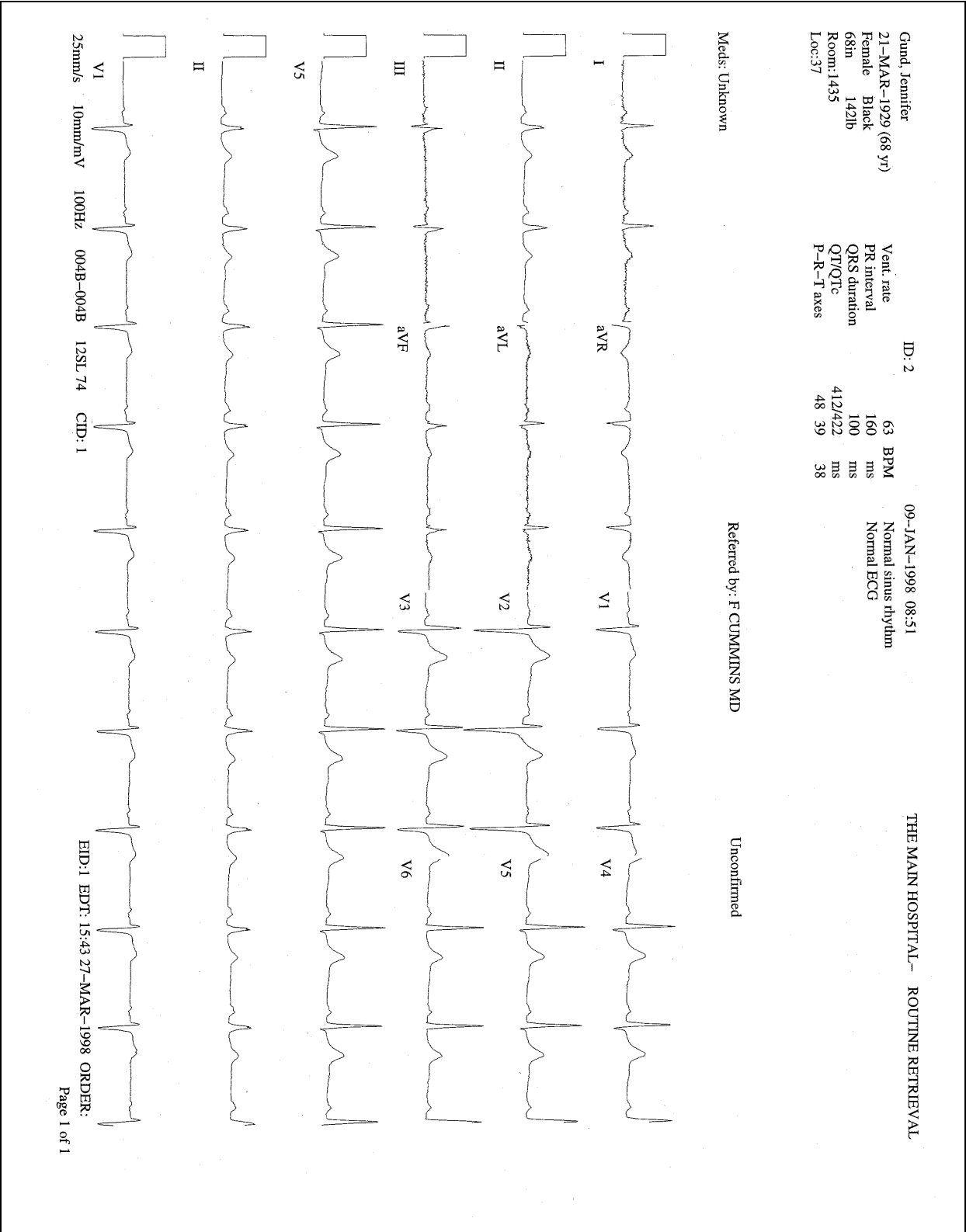
Introduction

This appendix provides samples of the various test results included on the diskette of GE Medical Systems *Information Technologies*-supplied results data (p/n 421128-001). One sample of each result type is included. These include a resting ECG, a signal-averaged ECG, a stress report and a Holter report.

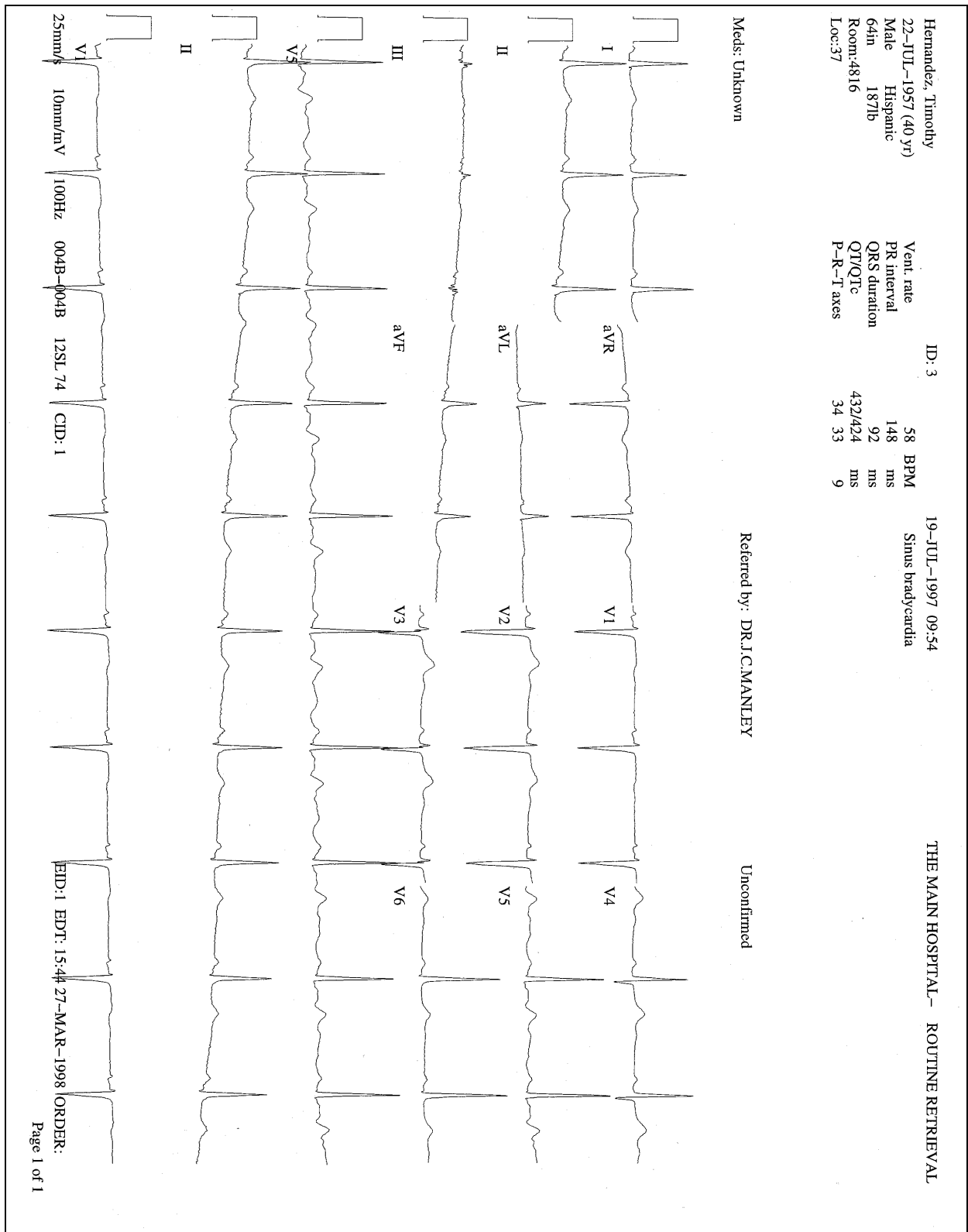
Resting ECG Report



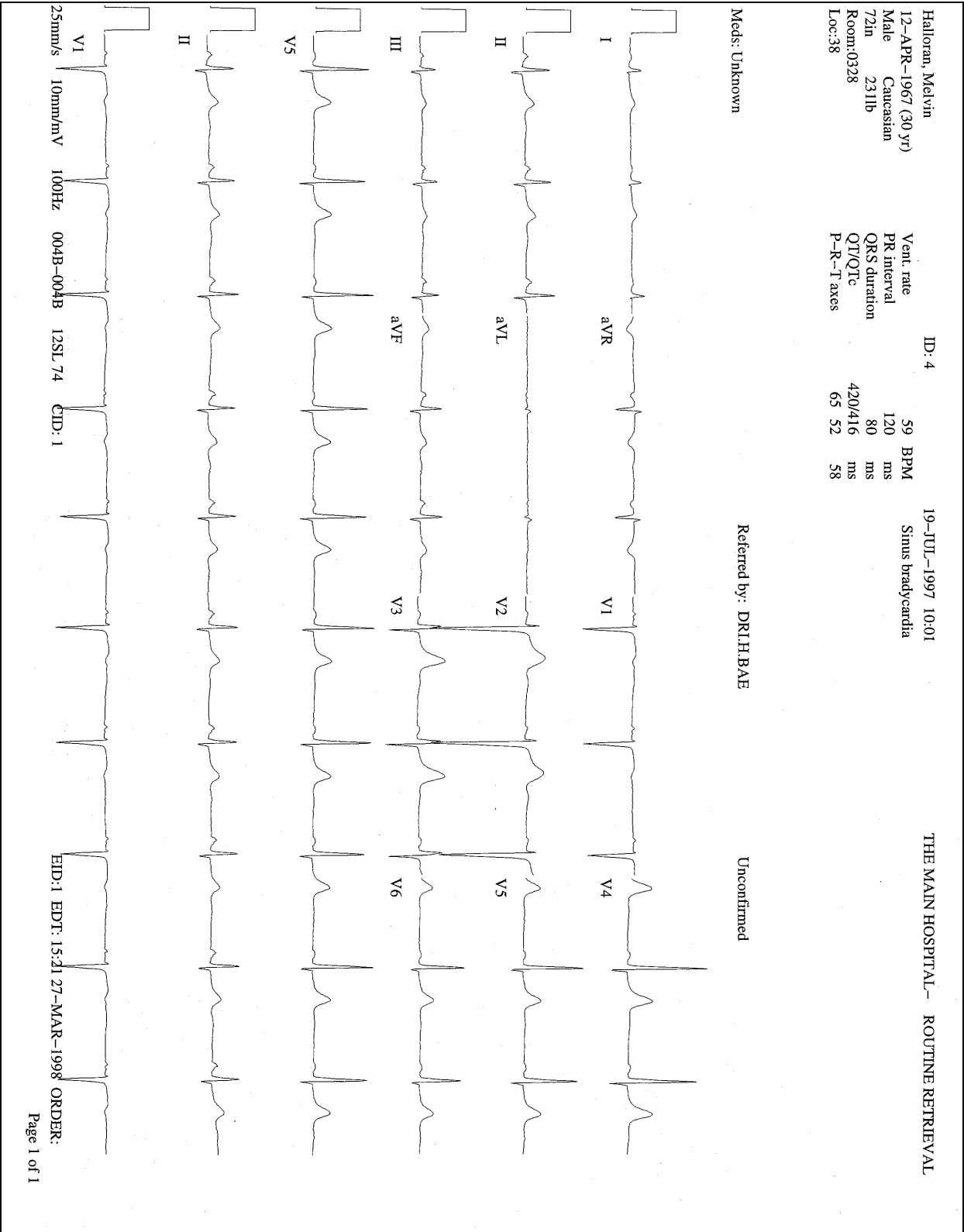
MD1334-107A



MD1334-108A



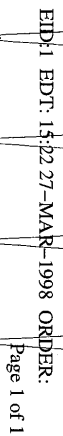
MD1334-109A

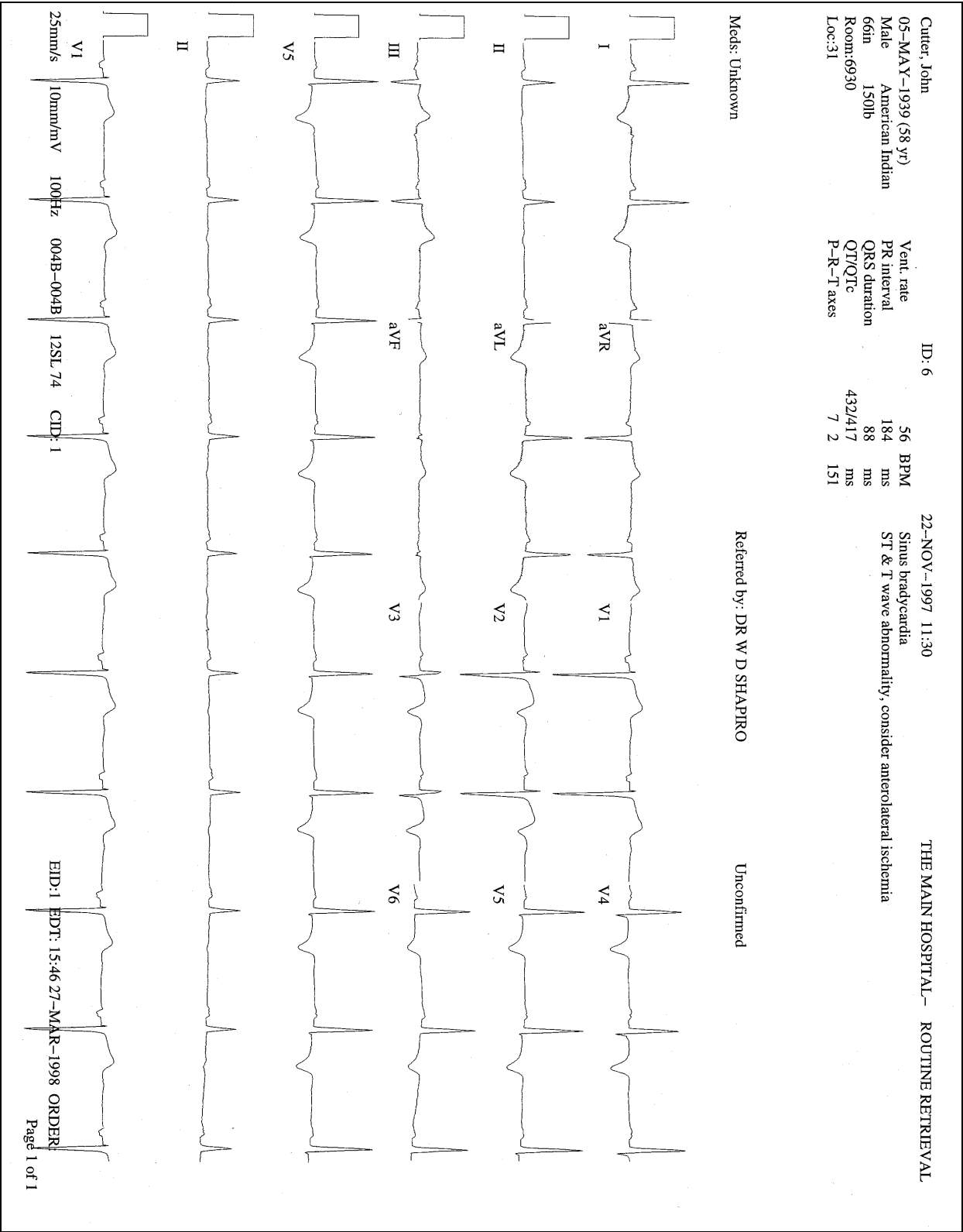


MD1334-110A

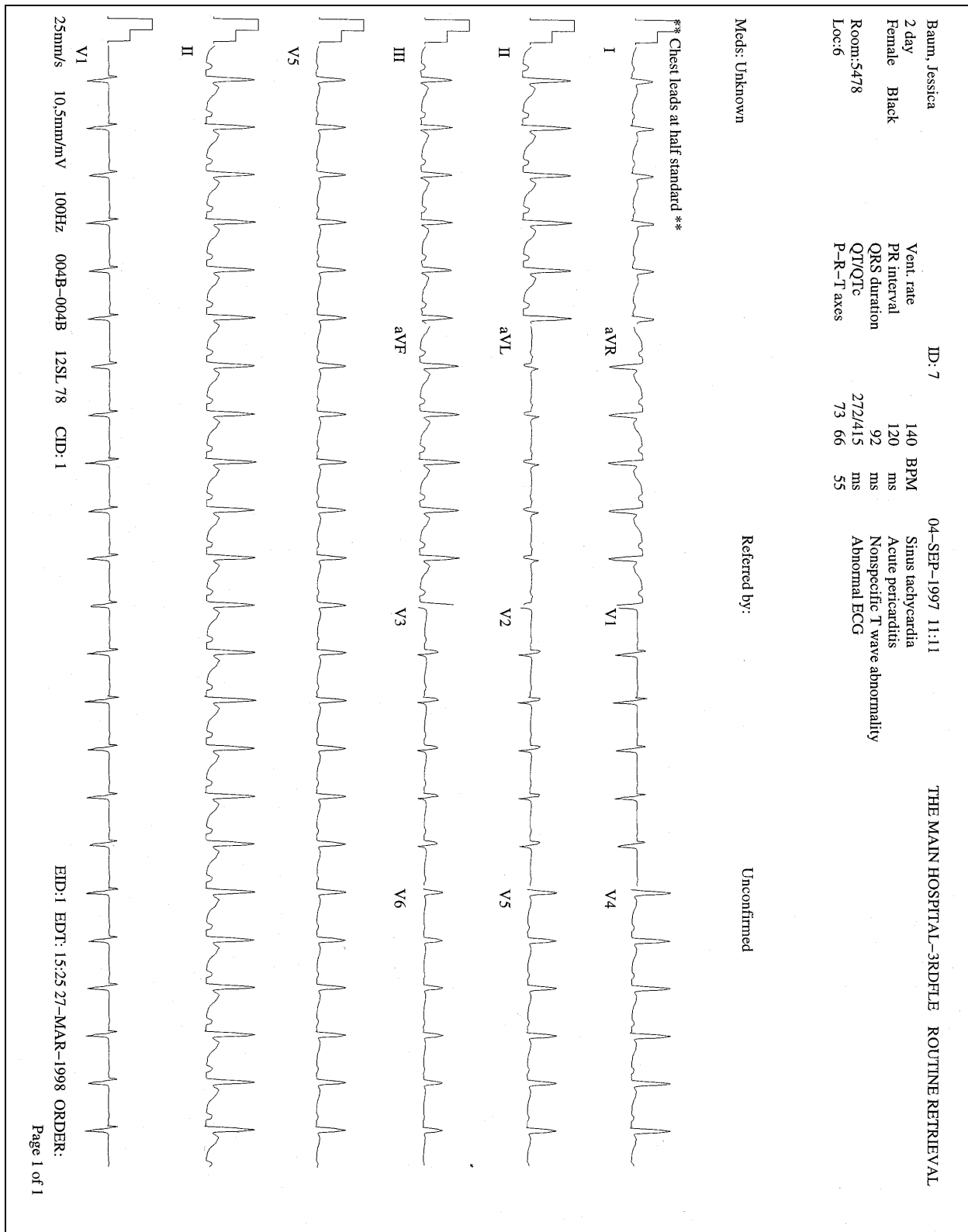
THE MAIN HOSPITAL-ROUTINE RETRIEVAL

Unconfirmed

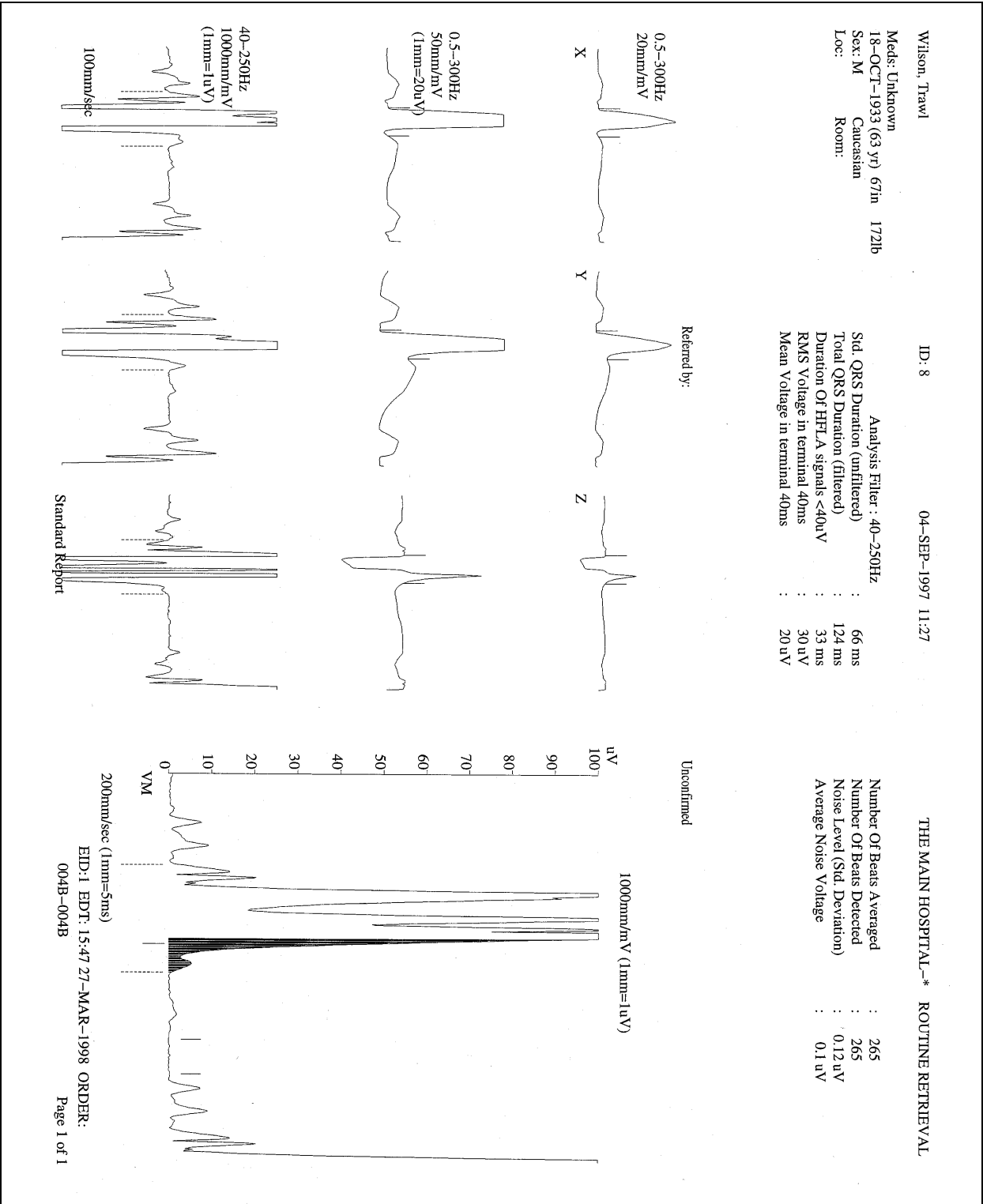


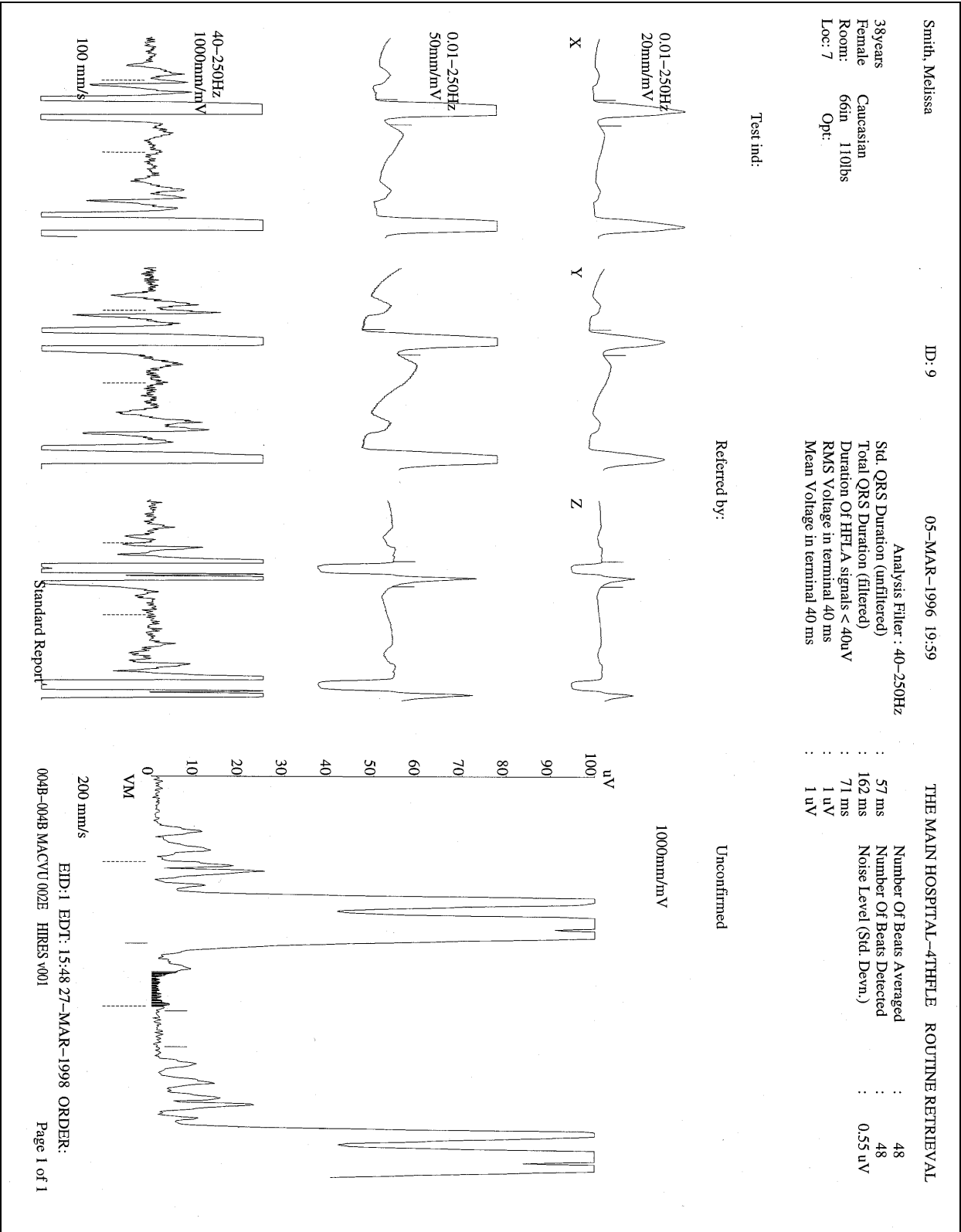


MD1334-112A

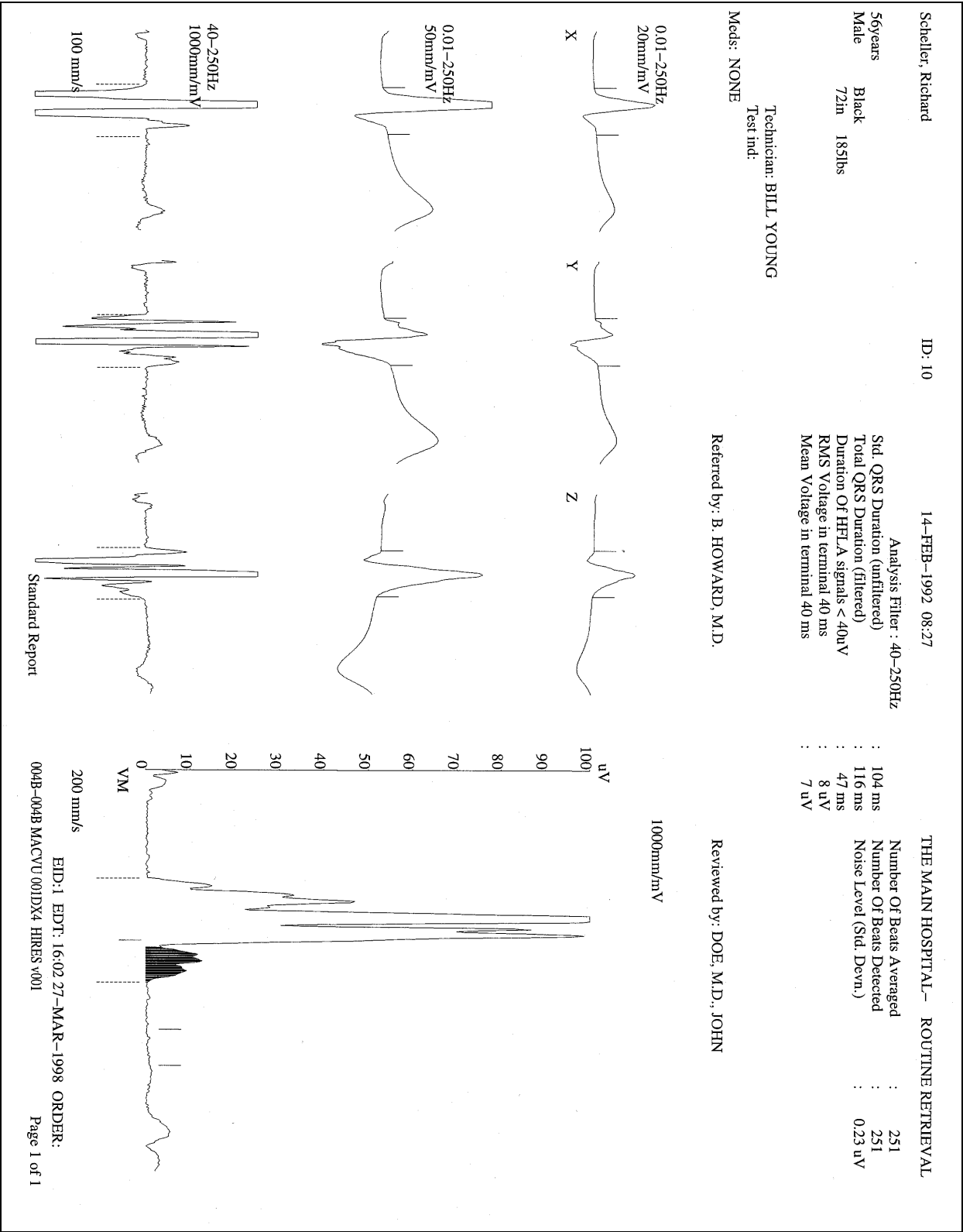


Signal-Averaged ECG Report





MD1334-115A



MD1334-116A

MD1334-117A

Holter Report from Holter SXP System

<u>HOLTER REPORT</u>		Patient name: Trawl Wilson	
		Patient ID: 8	
<u>PATIENT and STUDY INFORMATION</u>			
Patient name: Trawl Wilson		Study date: 19-Sep-1995	
Patient ID: 8		Referring MD: DR. RHODES	
DoB/Age: 18-Oct-1933 (61 Years)		Gender: Male	
		Technician:	
<u>REASON for STUDY</u>			
<u>BEAT COUNTS</u>		<u>HEART RATES</u>	
QRS complexes: 130955		Minimum: 75 at: 11:06:12 20-Sep-1995	
Paced: 0		Maximum: 111 at: 03:51:22 20-Sep-1995	
Ventricular ectopics:		Average: 91	
Supraventricular ectopics: 16			
<u>VENTRICULAR ECTOPY</u>			
Isolated:	0	beats LONGEST at:	0 bpm 14:00:00
Couplets:	0	beats FASTEST at:	0 bpm 14:00:00
Runs:	0		
Beats in runs:			
Bigeminal:			
<u>SUPRAVENTRICULAR ECTOPY</u>			
Isolated:	16	beats LONGEST at:	0 bpm 14:00:00
Couplets:	0	beats FASTEST at:	0 bpm 14:00:00
Runs:	0		
Beats in runs:	0		
Longest RR: 0.945		S. at: 02:38:27 20-Sep-1995	
		Acq duration: 24:00	
<u>INTERPRETATION</u>			
ANALYST COMMENTS :			
THIS HOLTER WAS REMOVED EARLY DUE TO THE FACT THE PATIENT WAS DISCHARGED.			
THE PATIENT DID NOT REPORT ANY SYMPTOMS IN THE DIARY.			
SMSKMKFMKDMLKMKLSADMFLKMF;LKSDF;LSMK			
SLFKMDKLMKLSMLKMSFLM'SLFM;DS			
INTERPRETATION :			
THIS TWENTY FOUR HOUR HOLTER MONITOR DEMONSTRATES A NORMAL SINUS RHYTHM WITH RATES RANGING FROM 50 TO 110 BPM.			
RECOMMENDATIONS:			
NO TREATMENT INDICATED AT THIS TIME. NORMAL HOLTER STUDY.			
<u>READING MD:</u>			
PPPPNNSSMDKDKDLFLFLFLFLFLFKKSDKSKSKSKSKSKDLDLLGFOGOGOGOGOGG			
SLSLSLKDKDKDKKFOFOFOFOFODLLSLSLLSLSLSL			

MD1334-120A

<u>HOLTER REPORT</u>		Patient name: Melissa Smith Patient ID: 9	
<u>PATIENT and STUDY INFORMATION</u>			
Patient name: Melissa Smith		Study date: 03-Mar-1996	
Patient ID: 9		Referring MD: Dr. Motritsi	
DoB/Age: 02-Dec-1952 (43 Years)		Gender: Female	
		Technician: Basha	
<u>REASON for STUDY</u>			
<u>BEAT COUNTS</u>		<u>HEART RATES</u>	
QRS complexes: 116198		Minimum: 51 at: 00:59:53 04-Mar-1996	
Paced: 0		Maximum: 125 at: 11:03:00 03-Mar-1996	
Ventricular ectopics: 379		Average: 80	
Supraventricular ectopics: 281			
<u>VENTRICULAR ECTOPY</u>			
Isolated: 292	7	beats LONGEST at: 47	bpm 02:32:24 04-Mar-1996
Couplets: 35	3	beats FASTEST at: 49	bpm 00:59:55 04-Mar-1996
Runs: 4			
Beats in runs: 17			
Bigeminal: 6			
<u>SUPRAVENTRICULAR ECTOPY</u>			
Isolated: 243	3	beats LONGEST at: 121	bpm 08:36:51 03-Mar-1996
Couplets: 13	3	beats FASTEST at: 170	bpm 11:04:48 03-Mar-1996
Runs: 4			
Beats in runs: 12			
Longest RR: 0.000		S. at: 07:05:00	
		Acq duration: 24:00	
<u>INTERPRETATION</u>			
ANALYST COMMENTS :			
first line of analyst comments goes to			
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MD1334-121A

Page 1 Continued

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.....here
INTERPRETATION :
First line of interpretation goes to
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<p><u>HOLTER REPORT</u></p>	<p>Patient name: Richard Scheller Patient ID: 10</p>										
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Longest RR:	S. at:										
	Acq duration: 23:11										
<p><u>INTERPRETATION</u></p> <p>INTERPRETATION</p>											
<p>READING MD:</p>											

MD1334-123A



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