RepeaterNet™ *Craft for the*

PES800 NR

PENINSULA·ENGINEERING SOLUTIONS Inc

Contents

Chapter 1. Installing RepeaterNet

This chapter briefly describes the components of the RepeaterNet software, identifies minimum system requirements, and describes the installation procedure.

RepeaterNet Craft Software

The RepeaterNet **Craft** software (Craft) provides Windows-based configuration management and alarm monitoring for individual Peninsula Engineering Solutions repeaters and dynamically manages sessions in real time through one of these connections:

⇒   A *laptop* computer with a *direct* connection to the repeaters—a technician can visit repeater sites and connect to the repeaters directly using the serial port on the laptop.

⇒   A *laptop* or *desktop* computer with a *modem* connection to the repeater—with the modem connection, a technician need not visit the physical repeater sites to connect to the repeaters.

The Craft user interface varies, depending upon the model repeater being configured or monitored.

Minimum System Requirements

Craft system requirements include:

❑   Pentium 120 MHz running Windows 95 with 32 MB of memory

❑   Approximately 10 MB of free disk space

❑   Modem (if a modem connection is to be used).

Use "Hayes-compatible" modems only. "Connect with Rockwell" certified for 56K modems. US Robotics modems are not supported.

NOTES:

❑   You must have Administrator privilege to install Craft 2.7.1 software when running Windows NT, Windows 2000 or Windows XP

❑   The Craft system must be used with Windows 95 with Service Pack 1 Update (Version 4.00.950 A) or later releases, or with Windows NT, Service Pack 3 Update.

❑   If you use a fax program such as Microsoft Fax, make sure that the Auto Answer feature is disabled. See **Appendix D. Troubleshooting** on page 38**, Problem 7** for information about disabling the Auto Answer feature for Microsoft Fax.

Installation Procedure

The PES800 NR Craft 2.7.1 software is distributed on 11 HD floppy diskettes or in single file format on CD or other media.

The software is also available on www.peninsulaengineering.com website. Go to the **cellular / PCS repeaters** section and follow the links to the **Craft Software – 2.7.1,** FTP download.

To install from diskettes:

1. Insert **Disk 1** in your computer's **a:** drive.

2. From the Windows **Start** menu, select **Run**.

3. Type **a:\setup** and click on **OK**.

4. Follow the online instructions to install the Craft software.

To install from CD in single file format:

1. Insert **CD** in the computer's **d:** drive

2. From the Windows **Start** menu, select **Run**.

3. Type: **d:\craft_271.exe** and click **OK**.

4. Follow the online instructions to install the Craft software.

Any other single file format is installed by finding the file craft_271.exe and opening the file or double clicking on the file name. Follow the online instructions to install the Craft software.

The Craft software comes with default configuration files, which you can download to your repeater to avoid having to configure the properties manually. See **Download Properties** on page 22.

Configuration

The following table contains a list of tasks that are part of the PES800 NR Installation Checklist. This table guides you to the appropriate section of this manual.

Task	Section	Page
Connect the repeater through a COM port	Configuring the Repeater Connection	**4**
Check Power System alarms	Power System Status	**20**
Confirm Forward and Reverse PAs are OFF	PA Properties PA Control Tab	**10**
Select an operating channel or band	Channel Properties Channel # Tab	**8**
Set repeater gain	PA Properties Gain Tab	**9**
Activate Forward and Reverse PAs (ON)	PA Properties PA Control Tab	**10**
Monitor Forward RF output power and adjust position of donor antenna to maximize Relative Power Out	PA Status Measurements Tab	**19**
Configure Alarm Severity	Configuring PES800 NR Properties	**8**
Configure System Properties	System Menu—PES800 NR Craft System Tab	**8**

Configure Subsystem Properties	Configuring PES800 NR Properties
	    Channel
	    PA
	    ACU
	    Modem
	    Cell phone
	    Power System
		8
		9
		10
		12
		14
		16

Backup your configuration	File Menu—PES800 NR
	    Download Properties
	    Upload Properties
		22
		29

Chapter 2. RepeaterNet Craft

Configuring the Repeater Connection

You must use the **Admin** program to configure the connection to the repeater before you can access the RepeaterNet Craft software. Follow this path from the **Start** menu to invoke the RepeaterNet Administrator:

> **Start -> Programs -> RepeaterNet Craft 2.7.1 -> RepeaterNet Admin**

When you invoke the Administrator, a window such as the following is displayed:

You can save both **Direct** and **Dial-Out (Modem)** configurations, but remember to assign a unique **COM Port Number** to each.

Also, be sure to check **Use this connection** for only one of the configurations. The connection checked is the connection RepeaterNet Craft uses to connect to the repeater.

For example, you may assign the connection type as **Direct** through **COM Port 1**. You can check the **Use this connection** box to make this your default configuration. Click on **Save**.

Next, you can save a **Modem** configuration to another COM port, such as **COM Port 2**:

1. Assign a **COM Port Number** that is different from the COM Port Number used for **Direct** connection.

2. Click on **Save**, then click on **OK** to exit RepeaterNet Admin.
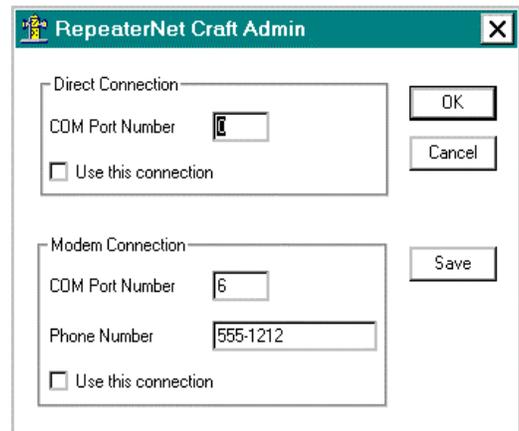
Starting Craft

Double-click the Craft icon to display this window.

RepeaterNet connects to the repeater and displays the Craft Main Control screen for the PES800 NR.
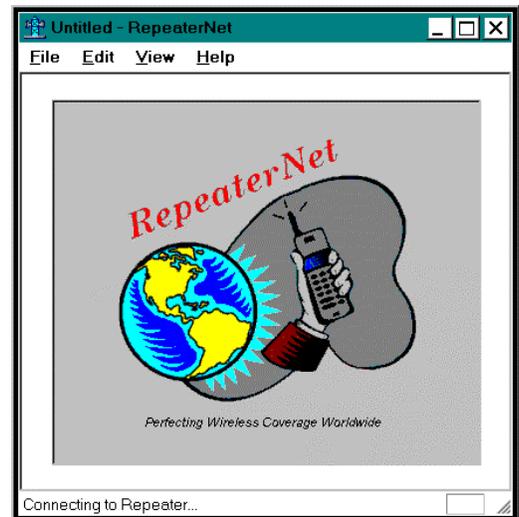
PES800 NR Craft Main Control Screen

The Craft Main Control screen provides access to all monitoring and control functions of the PES800 NR through subsystem icons and Craft menu commands. Main Control screen icons (labeled on the following screen) provide access to subsystem status screens and report alarms.
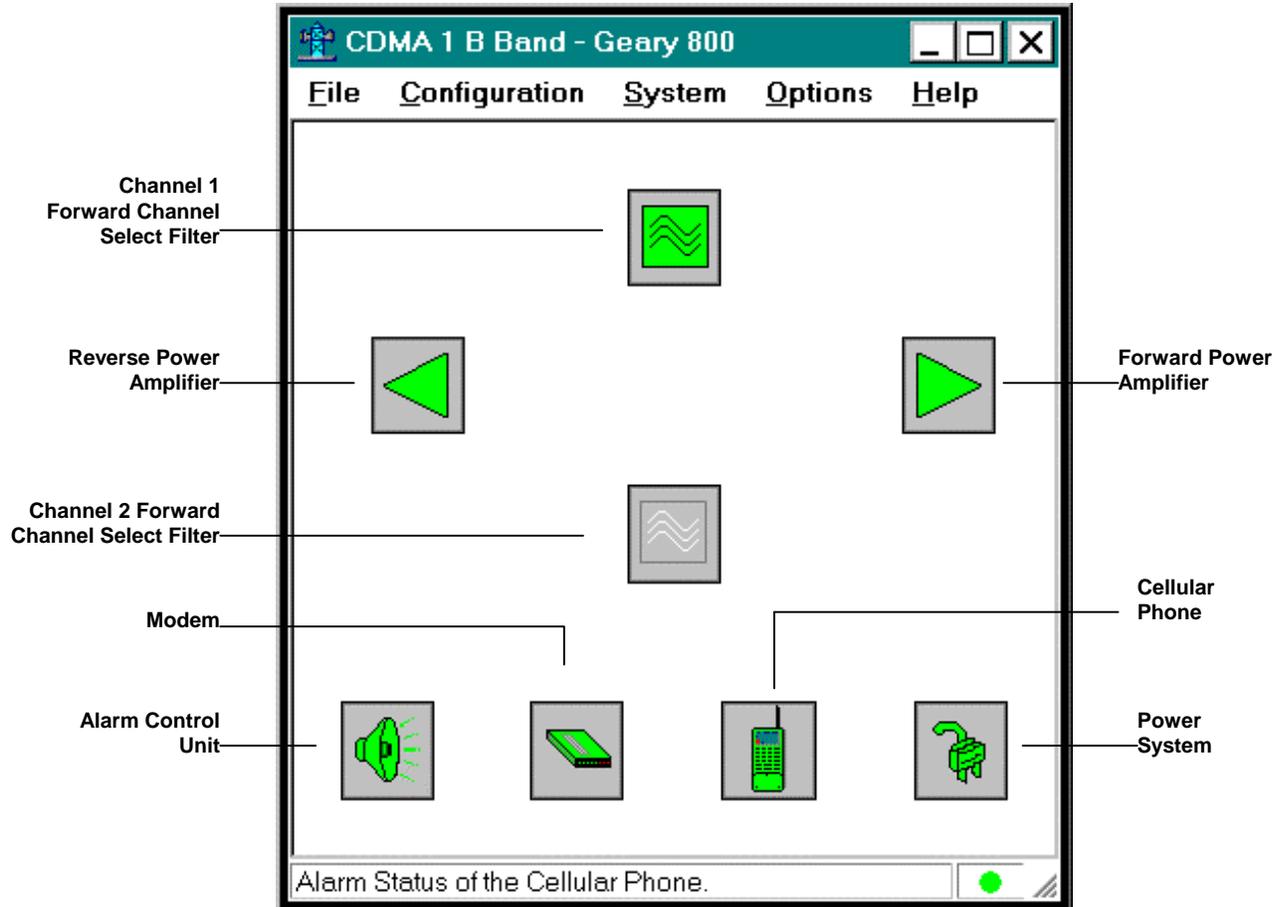
Craft **Configuration** menu commands let you access subsystem **Properties** screens, on which you can change subsystem configuration settings.

NOTES:

❑ *All units are shipped with PAs turned OFF as indicated by the PA OFF indicator (a circle with a slash through it) displaying over each PA subsystem icon (FPA and RPA). PAs should remain OFF until gain is adjusted.*

❑ *The Main Control screen displays differently depending on the hardware configuration of the unit. For example, Channel 2 icons are grayed-out (unavailable) for a single-channel repeater.*

Configuration

Configure the PES800 NR on subsystem **Properties** screens, which you can display from the Craft **Configuration** menu.

The **Configuration** menu contains the following:

Channel 1	Available on all units
Channel 2	Available on 2-channel units only
Forward PA	Power amplifier; available on all units
Reverse PA	Power amplifier; available on all units
Alarm Control Unit	ACU
Modem	Internal or external modem option
Cellular phone	Cellular option only
Power System	Input, battery, and internal

Status Reporting

Once you have configured the repeater, you can monitor and control PES800 NR system functions on subsystem **Status** screens. Click a subsystem icon to open its status screen. Subsystem icons are shown on the PES800 NR Main Control screen shown on the previous page.

When an alarm is triggered, the subsystem icon changes appearance, blinks, and activates an audible alarm (if you check **Alarm Sounds On** in the **Options** menu). Clicking on the icon and viewing the subsystem status screen stops the blinking and the audible alarm. The display of the icon does not revert to normal until the alarm condition is cleared.

The color of the Forward PA and Reverse PA icons also indicate the operational status of the PAs. If a PA is OFF, a circle with a slash is displayed over the associated icon.

When RepeaterNet displays a subsystem as disabled, the subsystem is unavailable to the repeater. For example, in repeaters without a cellular phone, the cellular icon is displayed in light gray.

Alarm Status Reporting on the Main Control Screen

RepeaterNet uses a color system to report subsystem alarm status on the Main Control screen. The meanings of the colors, and color independent icons, is shown in the following table.

Subsystem Alarm Status	Icon Color	Color-Independent Icon	Action
Normal—No Alarm	Green	N/A	N/A
Critical Alarm	Red	**X** through icon	Call Out
Major Alarm	Yellow	Back slash through icon	Call Out
Minor Alarm	Blue	Dashed back slash through icon	Call Out
Event	White	None	None
Disabled	Dark Gray*	N/A	None
System Not Available	Light Gray	N/A`	N/A
* When all alarms in individual subsystems are disabled, the icon color displays in dark gray.			

When an alarm is triggered, the icon color of the affected subsystem changes from green (normal) to the color of the alarm definition, and the icon blinks.

RepeaterNet also offers two optional alarm features:

❑ The **Color Independent Icons** feature is provided for operators unable to distinguish colors.

❑ The **Alarm Sounds** feature adds an audible alarm.

Should more than one alarm within an individual subsystem be triggered, the higher severity alarm is reported on the Main Control screen.

For example, if both a major and a minor Reverse PA alarm triggers, a yellow subsystem icon is reported. If the major alarm is cleared while the minor alarm remains active, a blue subsystem icon is reported. Color-independent icons also report the higher severity alarm, should more than one alarm on an individual subsystem be triggered.

NOTE: *When a subsystem alarm is triggered, click the icon (to open the status screen) to terminate the icon blinking feature and silence the audible alarm. Icon color continues to report and a color independent icon (if applicable) continues to display until the alarm is cleared. Color reporting does not apply to subsystems set to Event severity.*

Defining Alarm Severity

The PES800 NR is factory-configured with a standard set of alarm severity settings. Adjust alarm severity on the subsystem Properties screens. See **Configuring PES800 NR Properties** on page 8 for more information about alarm severity and the factory configuration.

The levels of alarm severity are:

❑ Critical
❑ Major
❑ Minor
❑ Event
❑ Disabled

To define alarm severity:

1. Login to a session with the repeater.

2. Select **Configuration** from the Main Control menu bar, then select a subsystem to open its **Properties** screen. For example, select **Configuration -> Channel 1**.

The **Alarms** tab is displayed, showing alarm fields.

3. Click the down-arrow next to an alarm field to select a new alarm severity.

4. Click **Apply** or **OK**.

Chapter 3. Configuring PES800 NR Properties

Use the subsystem Properties screens to perform configuration of the repeater. To open a Properties screen, select a subsystem from the **Configuration** menu:

- ❑ Channel 1
- ❑ Channel 2
- ❑ Forward PA
- ❑ Reverse PA
- ❑ Alarm Control Unit
- ❑ Modem
- ❑ Cellular Phone
- ❑ Power System

The Properties screens display tabs specific to each subsystem. Some subsystem Properties screens include tabs for redefining alarm severity and specifying operational settings; others have a single tab for redefining alarm severity.

Configuration includes:

- ❑ Redefining alarm severity
- ❑ Specifying operational settings for the repeater

Channel Properties

From the Main Control screen menu bar, select **Channel 1** *or* **Channel 2** (for 2-channel units only) from the **Configuration** menu to open a Channel Properties screen. This screen allows access to initial configuration settings for the Channel 1 and Channel 2 subsystems.

Channel Alarms Tab

Redefine alarm severity for the **Fwd Filter**, and **Rev Filter** subsystems on these tabs.

Channel # Tab

The Channel # tab lets you set the operating channel or band for Channel 1 or Channel 2. Once you select a channel, the corresponding frequencies are displayed. Consult your network administrator or the system site plan for the proper channel or band setting.

NOTE: *The S and SE versions of the PES800 NR do not required any channel setup. The channel displayed in the Properties screen reflects the factory configuration and is displayed for informational purposes.*
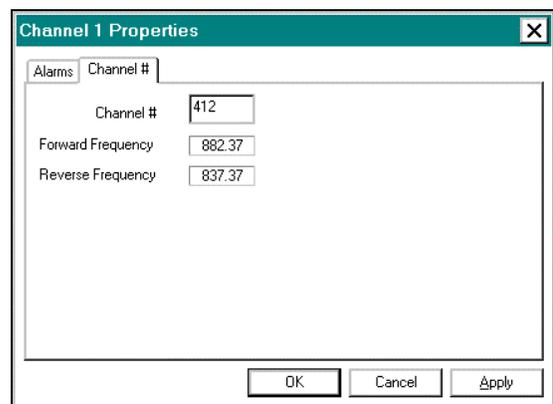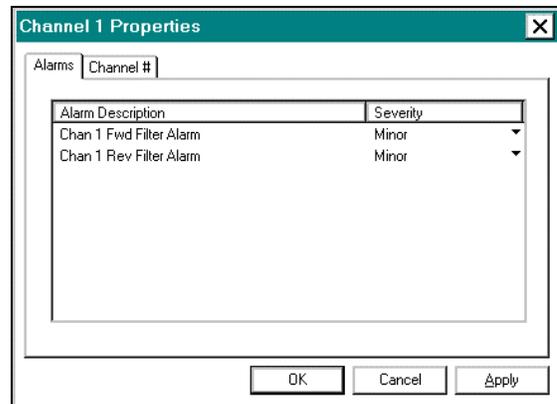
PA Properties

Select **Forward PA** or **Reverse PA** from the Main Control Screen **Configuration** menu to display the PA Properties screen.

PA Alarms Tab

Use this tab to define alarm severity for the FPA and RPA subsystems. Values can be Disabled, Event, Minor, Major, and Critical.

Subsystem alarms are:

PA Alarm
> Indicates a component failure in the Power Amplifier assembly. The channel is inoperative.

Thermal Shutdown Alarm
> Indicates the system temperature has exceeded the alarm threshold. The repeater has been shut down. When the temperature falls below subsystem tolerances, the repeater automatically reactivates the PA.

External Shutdown Alarm
> Indicates that the repeater has been shut down by a user.

Rev PA FEA Alarm
> (Reverse PA only.) Indicates the repeater shut down the PA because the ALC power limit was exceeded.

PA Gain Tab

RepeaterNet detects the power amplifier configuration of the repeater and displays the applicable gain range on the **Gain** tab. You must balance gain carefully in any application to ensure proper hand-off and system operation.

Consult the Site Plan or network engineering documentation when adjusting gain. If no such documentation is available, contact your network administrator.

You can adjust Forward PA and Reverse PA gain. There is one gain setting for forward and one gain setting for reverse on both one- and two-channel units. The adjustable gain range of the power amplifiers depends upon the type of repeater you are using and the power level of the power amplifiers.
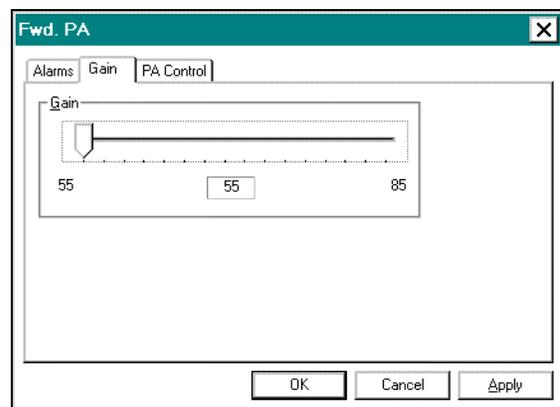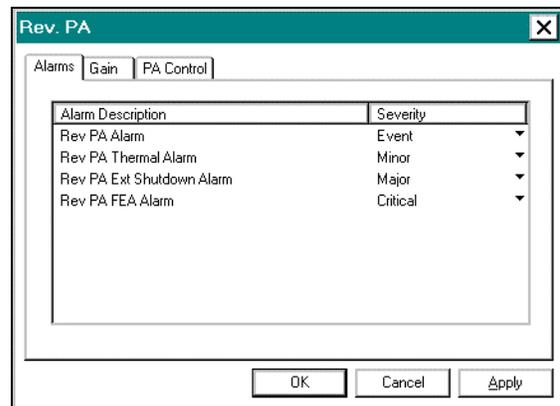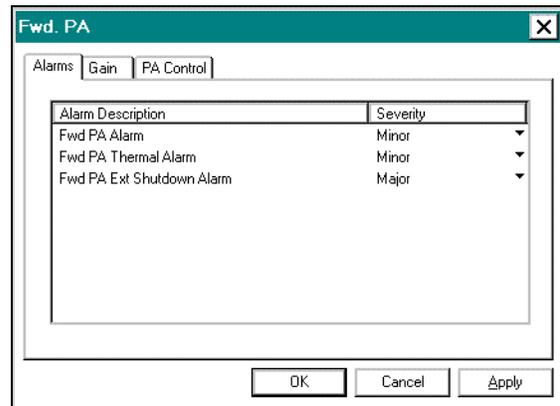
RepeaterNet limits gain adjustment to valid selections only.

> **NOTE:** *RepeaterNet detects the power amplifier configuration of the repeater and displays the applicable gain range on the **Gain** tab.*

To adjust Forward PA or Reverse PA gain:

1. Select **Forward PA** or **Reverse PA** from the Craft **Configuration** menu to display the **PA Properties** screen.

2. Click the **Gain** tab.

1. Click-drag the horizontal slider to the required position, noting that gain adjusts in 2 dB increments. The gain value box (centered under the slider) displays selected gain.

2. Click **Apply** or **OK**.

PA Control Tab

The **PA Control** tab provides a switch to turn PA Power **ON** or **OFF**.

1. Click on ON or OFF in the **PA Power** box to change the value,

2. Click **Apply** or **OK** for the setting to take effect.

ACU Properties

Select **Alarm Control Unit** from the Main Control screen **Configuration** menu to open the **ACU Properties** screen. The ACU Properties screen includes tabs for I/O Descriptions, I/O Controls, Alarms, and DC Voltage Alarm Threshold.

The ACU subsystem provides alarm and control functions for the repeater. The ACU monitors all the repeater subsystems and reports status to a connection device or to remote devices through a dial-up modem connection. In addition to monitoring the repeater system, the ACU contains a number of external inputs and outputs to monitor and control external devices.

Inputs and Outputs

RepeaterNet lets you monitor two digital alarm inputs and one DC voltage input from external devices. You also can activate up to four external devices with two relay outputs and two digital outputs.

> **NOTE**: *Alarm settings for digital input 1 and digital input 2 are initially set to Disabled.*

The inputs and outputs are as follows:

Relay Outputs 1 and 2
   The two relay outputs are configured with three leads in a Form C Contact Closure, with normally closed and common connectors closed with the switch in the OFF position and normally open and common connectors closed with the switch in the ON position.

Digital Outputs 1 and 2
   The two digital outputs each have two leads that provide an opto-isolated circuit that presents a low impedance connection when the switch is in the ON position and a high impedance connection when the switch is in the OFF position.
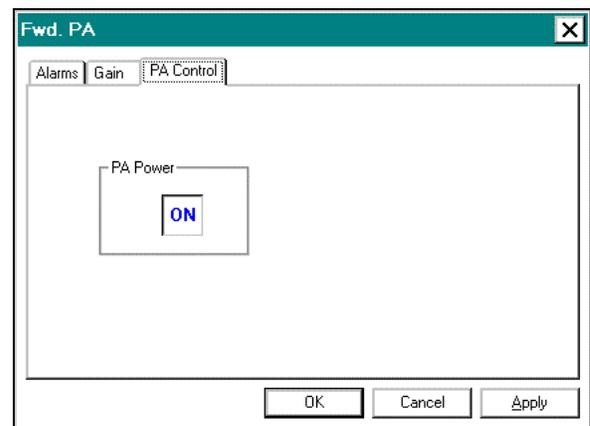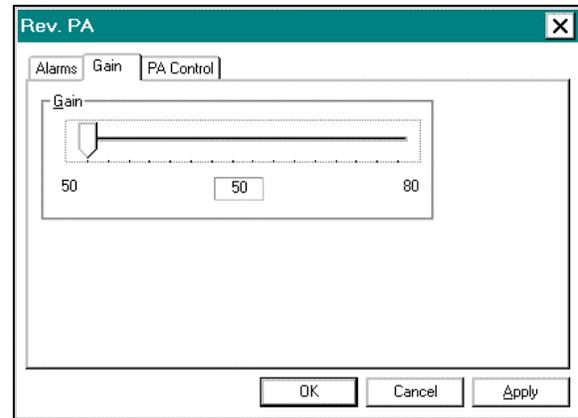
Digital Inputs 1 and 2
> The two digital inputs each have leads that generate an alarm condition if the leads form a low impedance circuit (a closed contact), and a clear condition if the leads form a high impedance circuit (an open circuit).

For information about connecting inputs and outputs to the repeater, see the *PES800 NR Operations Manual*.

ACU I/O Descriptions Tab

Label external equipment connected to the repeater's inputs and outputs using the **I/O Descriptions** tab.

External equipment could be a security light or any other site equipment.

To add I/O descriptions:

1. Select **Configuration -> Alarm Control Unit** to open the ACU Properties screen. The I/O Description tab is active.

2. Provide I/O descriptions in data fields.

3. Click **Apply** or **OK**.

ACU I/O Controls Tab

The I/O Controls tab contains switches to turn Relay Outputs and Digital Outputs ON or OFF. See **Inputs and Outputs** on page 10.

ACU Alarms Setting Tab

Redefine alarm severity for ACU subsystems on the **Alarms Setting** tab. Subsystem alarms are:

External Input Alarm (2 fields)
> An alarm generated from optional, external equipment.

Fan Alarm
> A fan failure. Replacement of the blower assembly is necessary. See the *Operations Manual*.

Temperature Alarm
> The system temperature threshold has been exceeded.

Tamper Alarm
The repeater door is open.

Analog Input Alarm
The upper or lower limits for the monitoring of the external DC voltage source have been exceeded.

External DC Voltage Alarm Threshold

RepeaterNet can monitor an external DC voltage power source (a battery) in a range of 0 to 60 volts in 250 mV increments. In addition to monitoring the voltage level, you can define upper and lower limits for the voltage that is to activate the DC Voltage alarm in the ACU subsystem.

To define an operating range for DC voltage:

1. Select **Alarm Control Unit** from the Configuration menu to open the ACU Properties screen.

2. Click the **DC Voltage Alarm Threshold** tab.

3. Define (type in or arrow-click) the normal operating range for the DC power source in the **Less Than** and **Greater Than** data fields.

4. Click **Apply** or **OK**.
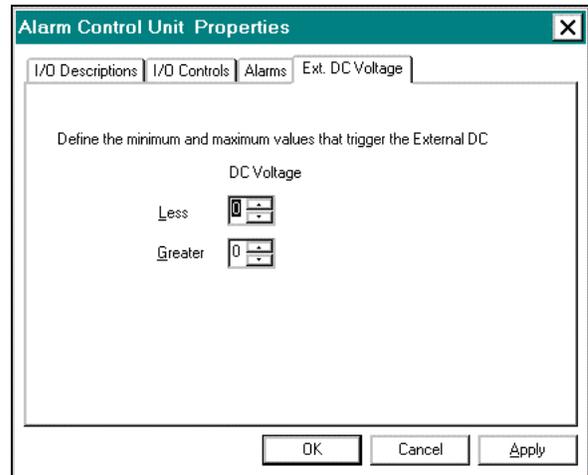
Modem Properties Screen

From the Main Control screen **Configuration** menu, select **Modem** to open the **Modem Properties** screen. This screen has three tabs:

Alarms Setting
Lets you set the alarm severity for the Modem alarm. This alarm indicates a failure of the internal modem.

Modem Properties
Lets you define the port settings for the modem.

Pager Setting
Lets you configure a pager to be notified when a certain severity level alarm occurs.

Alarms Setting

Use the **Alarms Setting** tab to redefine alarm severity for the repeater's modem.

1. Click the down-arrow next to an **Alarm** field to select a new alarm severity.

2. Click on **Apply** or **OK**.

Possible values are **Disabled**, **Event**, **Minor**, **Major**, and **Critical**.

This alarm indicates a failure of the internal modem.
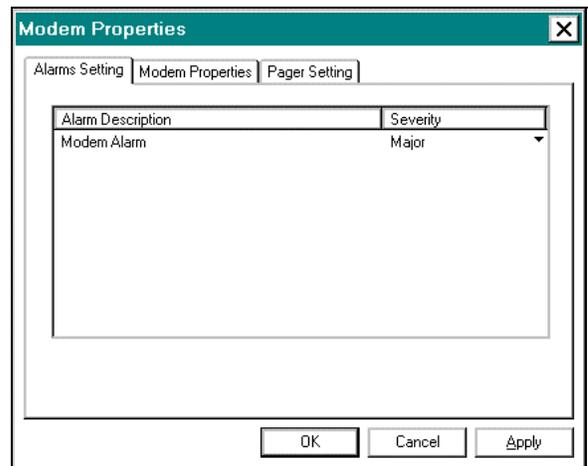
Modem Properties

Define modem settings for the repeater's modem using the **Modem Properties** tab.

To define modem settings:

1. Select **Modem** from the Main Control screen **Configuration** menu to open the Modem Properties screen.

2. Click the **Modem Settings** tab.

3. Define the **Setup String**, **Phone Number**, and **Call Attempts**.

4. Click **Apply** or **OK**.

Setup String is reserved for configuring a cell phone or modem. The cellular phone setup string is **S37=6**.

Phone Number is the phone number of a remote computer to be called. This value is **0** unless you are using RepeaterNet Network Management software or other network management software.

Call Attempts is the number of callout attempts before disconnecting; a zero (0) disables calling.

Baud Rate is the communication speed between the modem and cell phone (which must be greater than 2400). Baud Rate is adjusted automatically downwards by the modem when necessary.

Set **Parity** to **None.** Parity must be set the same as the computer's modem.

Set **Data Bits** to **8**. Data Bits must be set the same as the computer's modem.

Set **Dial Type** to **Tone**.

Over-the-Air Repeater Modem Setup

If an external wireless interface (such as the Telular) is connected to an Over-the-Air repeater, you must properly configure the repeater's modem. If the modem is not properly set up, few if any of the calls to the repeater will be successful.

To properly set up your modem for all Peninsula Engineering Solutions repeater products (including the PES800, PES850, and PES1900):

1. Connect to the repeater through the local Craft port.

2. Launch RepeaterNet.

3. Once the connection to the repeater has been established, select **Configuration** from menu bar at the top of the screen.

4. From the **Configuration** menu, select **Modem Properties**.

5. Click on the **Modem Setting** tab.

6. Enter **S37=6** in the **Modem Init String** field (the top field on the Modem tab).

7. Enter a **Phone Number**; for example **9, (222) 123-4567**. Each comma creates a 2-second delay in dialing. Parentheses ( ) and spaces are ignored.

8. Enter the number of times you want RepeaterNet to attempt to make the connection; for example, **3**; **0** (zero) in this field disables calling.

9. Click on **Apply** or **OK** at the bottom of the window.

This procedure forces the repeater to initialize the modem to 2400 baud, which improves the connection on analog wireless networks.

Changes made to the default settings on the Modem Properties screen take effect upon exiting RepeaterNet.

Notes:

⇒ If you configure a repeater to automatically call out and report alarm status, the repeater COM port settings **must match** the settings of the modem to be called.

⇒ For users to log in to the repeater with a modem, the port settings of their computer's modem (defined in the configuration file) **must match** the settings of the repeater modem.

⇒ If the repeater is equipped with an internal modem, the setup string is controlled automatically by the repeater's hardware. If the repeater is connected to an external modem, consult the modem's documentation for the setup string.

⇒ Changes you make to the default settings on the Modem Properties screen take effect upon exiting RepeaterNet.

Pager Setting

You can set RepeaterNet to send out a page when a certain severity level alarm occurs. Use the **Pager Setting** tab to configure.

A page is generated if the summary alarm severity is greater than or equal to the **Minimum Severity** you select. When a page request is detected, the repeater terminates any current modem connection and generates a page. The page format consists of the repeater number followed by the severity level; for example, 123456-2.

If a change in the current alarm severity is detected, note the following:

⇒ If the **Minimum Severity** is set to **Major** and a **Major** alarm comes in, a page with a severity of **2** is generated.

⇒ If a **Critical** alarm is detected, page is generated again with a severity of **3** (Critical plus Major).

⇒ If the **Major** alarm is cleared but the **Critical** alarm remains, a page is generated with a severity of **1** (Critical).

⇒ If the **Critical** alarm is cleared, a page is generated with a severity of **0**.

⇒ If a **Minor** alarm is detected, no page is generated because the **Minimum Severity** is set to **Major**.

⇒ **Events** do not generate a page.
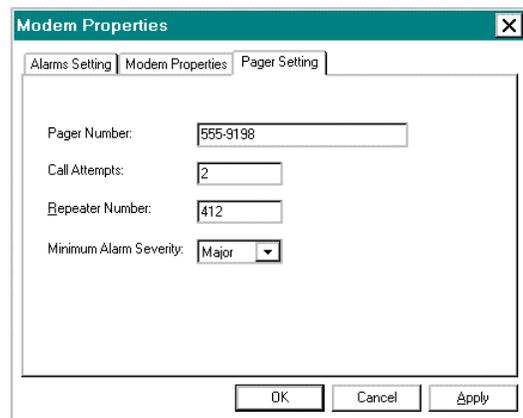
Severity numbers are:

No Alarms	0	Minor	4
Critical	1	Critical + Minor	5
Major	2	Major + Minor	6
Critical + Major	3	Critical + Major + Minor	7

To set a pager:

1. Click on the **Pager Setting** tab of the **Modem Properties** screen.

2. Enter the **Pager Number**, the number of times RepeaterNet should attempt to call the pager number (**Call Attempts**), and the number of the repeater (**Repeater Number**).

   The **Pager Number** is the phone number to be called. This reflects the pager phone number, including networking access number (9), 1, and area code (if needed). Access the network dial number and wait 5 seconds before sending the page sequence.

   Several commas must follow the phone number—each comma generates a delay of 1 second. Generally, it takes about 3 seconds for the pager company to pick up the line, and a maximum of 5 seconds before they drop the connection. A good delay would be 5 seconds, in which case you would add 5 commas; for example, **9 1 (408) 555-1212,,,,,** . Spaces, dashes, and parentheses are ignored.

3. Enter the **Call Attempts,** which are the number of retry calls to be attempted. A value of 0 in this field disables paging.

4. Enter the **Repeater Number** (a system identification number or description).

5. Select the minimum alarm severity for paging. Values can be **Critical**, **Major**, or **Minor**.

6. Click on **Apply** to set the values without exiting the properties screen; click on **OK** to set the values and exit.

Cell Phone Properties

From the Main Control screen **Configuration** menu, select **Cellular Phone** to open the **Cell Phone Properties** screen.

The **Alarms** tab lets you set the alarm severity for the Cellular Alarm. This alarm indicates a failure of a cellular phone.

To change alarm severity:

1. Click the down-arrow next to an **Alarm** field to select a new alarm severity.

2. Click **Apply** or **OK**.

Severity levels include **Disabled**, **Event**, **Minor**, **Major**, and **Critical**.
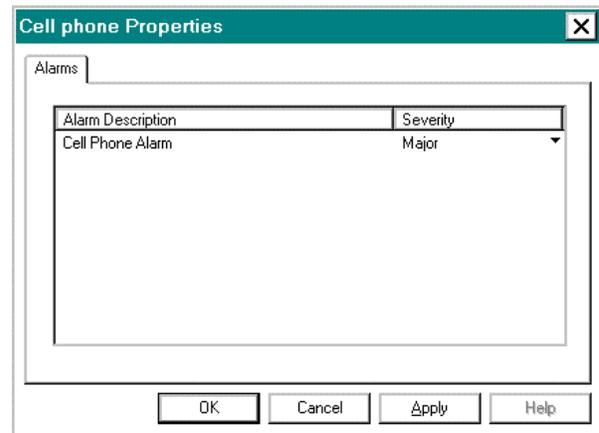
NOTE: *This severity should be minor. The Cell Phone alarm is generated when the cell phone fails to report an alarm after all retry attempts by either the modem or the pager. This alarm clears when the cell phone succeeds in reporting an alarm.*

When there is no cell phone, the Cell Properties selection is disabled.

Power System Properties

From the Main Control screen **Configuration** menu, select **Power System** to open the **Power System Properties** screen.   This screen lets you access initial configuration settings for the power subsystem.

Redefine alarm severity by:

1. Clicking the down-arrow next to an **Alarm** field to select a new alarm severity.

2. Clicking on **Apply** or **OK**.

Power subsystem alarms are:

Input Power Alarm
The input power to the repeater is out of system tolerances.

Power Supply Alarm
The internal system power of the repeater is out of tolerances.

Battery Alarm
The voltage of the internal battery is below tolerances. This battery supplies power to the ACU, modem, and cell phone in the event of a system power failure, letting the repeater call out and report its status. It also supplies power to the memory that stores the Alarm and Event Log.
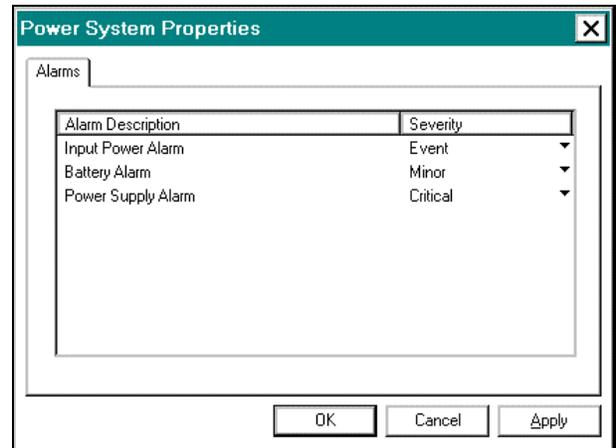
NOTE: *The internal battery does not provide power for RF components and the repeater will not be able to provide RF coverage during a power failure.*

End of Chapter…

Chapter 4. Monitoring PES800 NR Status

Monitor and control repeater system functions on subsystem **Status** screens. Click a subsystem icon to open its **Status** screen.

Each **Status** screen includes one or more of the following tabs:

Alarms
> Reports present subsystem alarm states, with date and time stamps.

Measurements
> Reports power and operational temperature measurements, including Low and High values. A Reset Low/High button resets values.

Voltages
> Reports present voltages for a subsystem.

Control
> Includes ON/OFF switches for internal and external subsystem hardware.

Status screens for the PES800 NR are:

❑ Channel Status
❑ PA Status
❑ ACU Status
❑ Modem Status
❑ Cell Phone Status
❑ Power System Status

Channel Filter Status

Click a Channel 1 or Channel 2 Forward Filter icon (sine waves) to open a filter status screen. This screen displays the alarm condition of the filter alarms. The Alarms tab displays the most recent alarm state with severity, date, and time for a single channel select filter alarm. A failure in the Forward or Reverse Filter assembly triggers an alarm and the filter becomes inoperative.
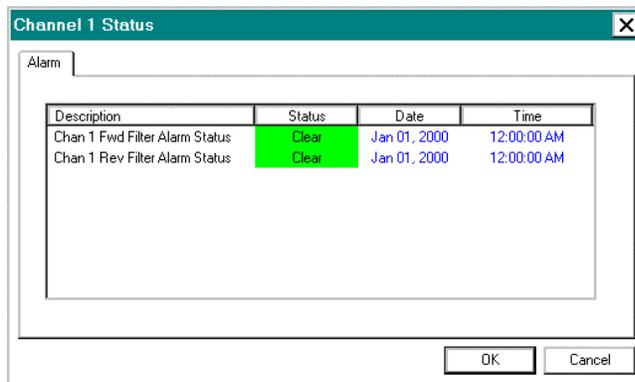
Channel 1 Status

Description	Status	Date	Time
Chan 1 Fwd Filter Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Chan 1 Rev Filter Alarm Status	Clear	Jan 01, 2000	12:00:00 AM

OK   Cancel

PA Status

Click an FPA ▶ or RPA ◀ icon to open a **Forward or Reverse PA Status** screen, which allows access to monitoring and operating tasks for the Power Amplifiers.

The PA Status screens include tabs for **Alarm** and **Measurement**.

PA Alarm

The **Alarm** tab reports subsystem alarms with date and time stamps—a failure in the PA assembly triggers an alarm.

PA Measurement

The **Measurement** tab reports the output power of the repeater, including low and high output values. To reset low and high output values, click **Reset Low/High**.

ACU Status

Click the ACU icon to display ACU status information. There are two tabs—**Alarm** and **Measurement**.

ACU Alarm

The Alarm tab reports subsystem alarms with date and time stamps. A failure in the ACU assembly triggers an alarm. The ACU alarms include:

External Input Alarms (1 and 2)
An alarm generated from optional, external equipment.

Fan Alarm
A fan failure. Replacement of the blower assembly is necessary—see the *Operations Manual.*

Temperature Alarm
The system temperature threshold has been exceeded.

Tamper Alarm
The repeater door is open.

Analog Input Alarm
The upper or lower limits for the external DC voltage source have been exceeded.

ACU Measurement

The **Measurements** tab reports current, low, and high system temperature and DC voltage source values. Click on the **Reset Low/High** button to reset the low and high values.

Reverse PA Status (Alarm tab)

Description	Status	Date	Time
Rev PA Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Rev PA Thermal Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Rev PA Ext Shutdown Alarm St...	Clear	Jan 01, 2000	12:00:00 AM
Rev PA FEA Alarm Status	Clear	Jan 01, 2000	12:00:00 AM

Reverse PA Status (Measurement tab)

Measurement Description (...	Current	Low	High
Rev PA Output Power	0.0	0.0	0.0

Reset Low/High

ACU Status (Alarm tab)

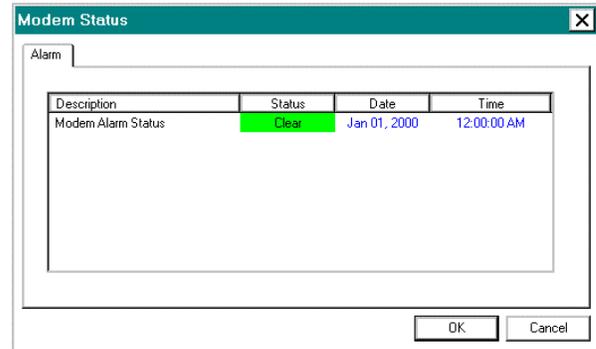| Description	Status	Date	Time
Ext Input 1 Alarm Status (dcax13)	Clear	Jan 01, 2000	12:00:00 AM
Ext Input 2 Alarm Status (dcax23)	Clear	Jan 01, 2000	12:00:00 AM
Fan Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Temp Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Tamper Alarm Status	Clear	Jan 01, 2000	12:00:00 AM
Analog Input Alarm Status (dca...	Clear	Jan 01, 2000	12:00:00 AM

ACU Status (Measurement tab)

| Measurement Description	Current	Low	High
Temp Value	0.0	0.0	0.0
Analog Input Value	0.0	0.0	0.0

Reset Low/High

Modem Status

Click the **Modem** icon to open the **Modem Status** screen, which reports a Modem Alarm with a date and time stamp. Internal modem component failure triggers an alarm.

Cellular Phone Status

Click the Cellular phone icon to open the **Cell Phone Status** screen, which reports a Cell Phone Alarm with a date and time stamp. This alarm indicates a failure of the cellular phone.
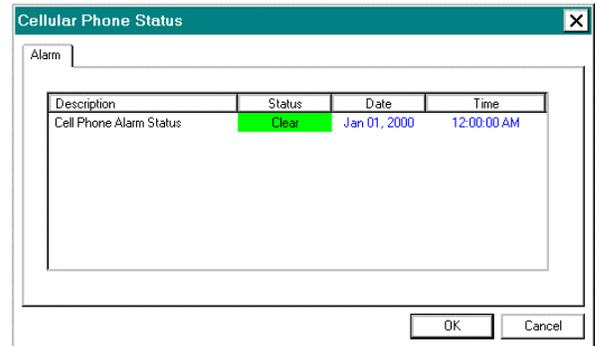
Power System Status

Click the Power icon to open the **Power System Status** screen. This screen allows access to monitoring and operating tasks for the repeater's power subsystem.

Alarm

The **Alarm** tab displays the status of the following alarms, with severity, date, and time information for each:.

Input Power Alarm
Indicates the input power to the repeater is out of tolerances.

Power Supply Alarm
Indicates system power of the repeater is out of tolerances.

Battery Alarm
Indicates the voltage of the internal battery is out of tolerances. This battery supplies power to the ACU, modem, and cell phone in the event of a system power failure, letting the repeater call out and report its status. It also supplies power to the memory that stores the Alarm and Event Log.
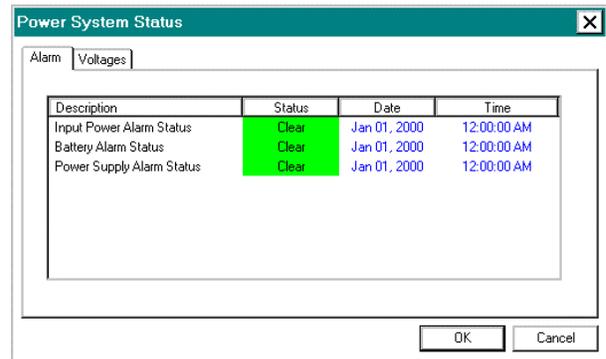
Battery Charger Alarm
Indicates that the internal battery charger is not charging the internal battery.

NOTE: *The internal battery does not provide power for RF components and the repeater will not be able to provide RF coverage during a power failure.*

Voltages

The Voltages tab shows the current power values for Battery Volts, Channel 1 PA Volts, and Channel 2 PA Volts.

NOTE: *The voltage shown refers only to trickle charge voltage. If the internal backup has been activated, the voltage shows as 7.5.*

Chapter 5. RepeaterNet Commands

Commands available from the PES800 NR Main Control screen's menu bar are described in this chapter.

File Menu—PES800 Craft

Open the Main Control screen **File** menu to display these RepeaterNet commands:

- ❑ Download Properties
- ❑ Upload Properties
- ❑ Update Firmware
- ❑ Exit

Download Properties

You can download all settings previously uploaded to a repeater with the **Download Properties** command. You can use **Download Properties** to:

- ❑ Download the default configuration file distributed with your Craft software to avoid having to manually configure each setting.

- ❑ If you have used the **Upload Properties** command to store repeater configuration settings.

The following preset configuration files are distributed with RepeaterNet Craft installation software and can be found by following this path:

Program Files -> Repeater Technologies -> RepeaterNet Craft 2.7.1 -> Default Configuration Files

Configuration File	Configuration
OA800 2CH.rcf	PES800 2-Channel repeater
OA800 1CH.rcf	PES800 1-Channel repeater

To download settings to a repeater using the standard repeater configuration file:

1. From the Craft Main Control **File** menu, select **Download Properties;** a confirmation box is displayed to give you an opportunity to change your mind about the download operation.

2. Click on **OK** to proceed; a **Select file to restore** box is displayed.

3. Select the repeater configuration file whose properties you want to download.

4. Click on **Open** to proceed with the download.
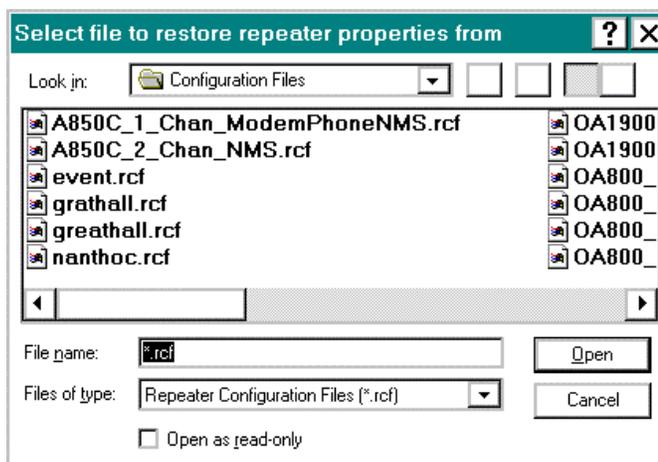
This message box is displayed when the download is complete.

RepeaterNet

Download properties complete.

OK
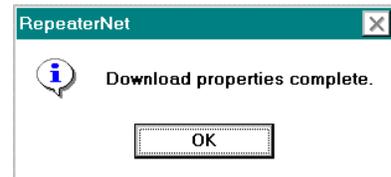
Upload Properties

System settings are stored in a repeater configuration (.rcf) file, which you can use to download all settings from one repeater to additional repeaters in a network, or to configure a replacement unit.

Once you have configured a repeater, you can upload the configuration from that repeater to your workstation with the **Upload Properties** command. You then can use the **Download Properties** command to copy the configuration to individual repeaters in your network.

Select a file to save repeater properties to

Save in: Configuration Files

A850C_1_Chan_ModemPhoneNMS.rcf   OA1900
A850C_2_Chan_NMS.rcf   OA1900
event.rcf   OA800_
grathall.rcf   OA800_
greathall.rcf   OA800_
nanthoc.rcf   OA800_

File name: *.rcf   Save

Save as type: Repeater Config Files (*.rcf)   Cancel

☐ Open as read-only

To upload system settings and create a repeater configuration file:

1. Select a repeater and open Craft.

2. Select **File->Upload Properties** to open the **Select a file to save repeater properties to** dialog box.

3. Enter a name for the file without a file extension. An .rcf extension is added automatically to the file name; for example, *filename.rcf*.

4. Click **Save** to initiate the upload.

   When the upload is complete, this message box is displayed.

5. Click **OK**.

   Save a copy of the repeater configuration file on a floppy disk for safekeeping.

RepeaterNet

Upload properties complete.

OK
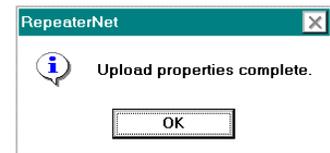
NOTES:

❑ *When you create a backup file, be aware that Repeater Configuration (.rcf) files created using a Network Monitor login include IDs and passwords.*
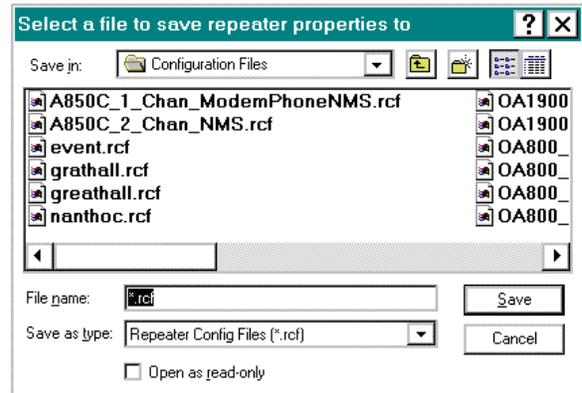❑ *The Repeater Configuration (.rcf) file is saved in the RepeaterNet program directory.*

Update Repeater Firmware

Install a firmware upgrade with the **Update Repeater Firmware** command. Note that firmware updates are sent automatically to the designated point of contact for every affected owner of the repeater. Update packages are sent using overnight delivery and include a detailed notice, a floppy disk, and installation instructions.

Direct any questions concerning the to the Peninsula Engineering Solutions Customer Service Department.

To install a firmware upgrade:

1. Read documentation provided with the firmware upgrade.

2. Login to a session with the repeater to be upgraded.

3. Insert the upgrade disk into the computer's floppy drive.

---

4. From the Main Control screen menu bar, select **File->Update Repeater Firmware.** This message box is displayed. Click on **OK**.
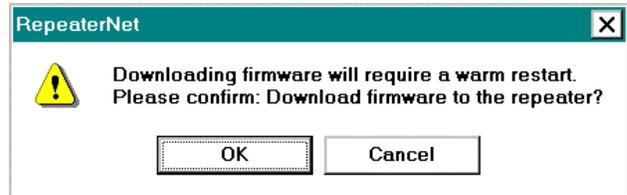
A screen is displayed that lets you save the repeater's configuration. You can choose to select a file into which the configuration should be saved, or click on **Cancel** to proceed with the firmware update.

-- To save the configuration and continue with the firmware update, select an .rcf file and click **Save.**

-- If you do not want to save the repeater configuration, click on **Cancel**.

-- Clicking **Save** or **Cancel** causes the upload operation to proceed; an **Uploading Repeater** window displays the progress of the upload.
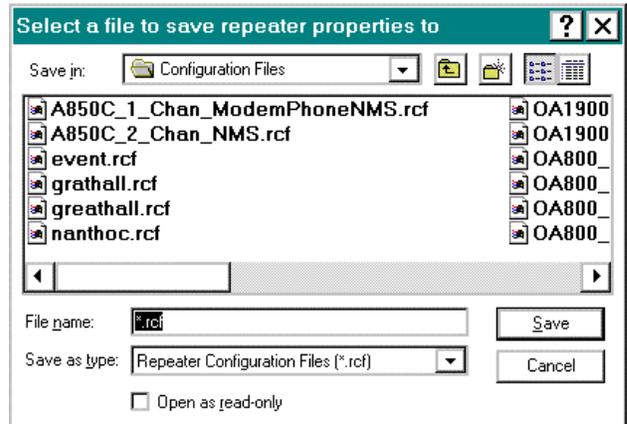
5. When the upload is complete, the **Select a firmware file to download to the repeater** box is displayed. In the **Look In** box, select the drive in which the upload disk is located.

6. Double-click the upgrade file. It is labeled with an **.s09** extension—for example, *filename.s09*. The previous firmware version is overwritten.

7. When the upgrade is complete, the repeater's configuration is restored automatically from the file you chose in the **Open** dialog.
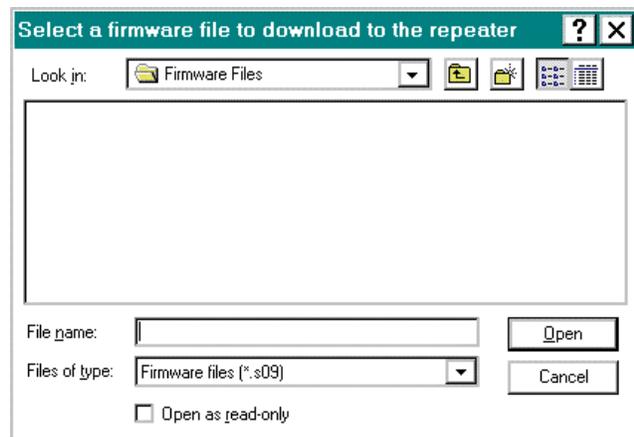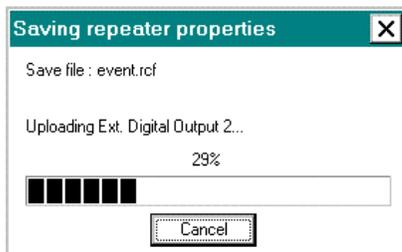
Exit

The **Exit** command ends an active session with RepeaterNet and returns to the Welcome screen.

Configuration Menu—PES800C NR Craft

```
Front End

Channel 1
Channel 2

Alarm Control Unit
Modem/Pager
Cellular Phone
Power System
UPS

Hardware Setting
```

Initial configuration of the repeater is done from the Configuration menu commands.   See
Chapter 3. Configuring PES800C NR Properties on page 7 for detailed information.

System Menu—PES800C NR Craft

Open the **System** menu to display the commands described in this section.

```
Properties...

Alarm and Event Log          ▶

Refresh Alarms

Test Alarm Dial Out Setup
```

Properties

Select **Properties** from the **System** menu to open the **System Properties** screen.

NOTE: *When the repeater is on a network, the system name must be entered to match that at the Network Management Station in order for unsolicited alarms to be recognized.*

System Tab

The **System** tab includes data fields for storing site-specific information—the system name (name of the repeater), brief site information (such as a network name or city location), and the repeater phone number for a repeater with a modem option.

Entering summary data on the System Tab, although optional, is recommended. As a minimum, type a name for the repeater in the **System Name** field: during automatic reporting, the repeater name is displayed in the title bar of the Main Control screen, identifying the selected repeater.

To record system data:

1. Type required information in the data fields.
2. Click **Apply** or **OK**.
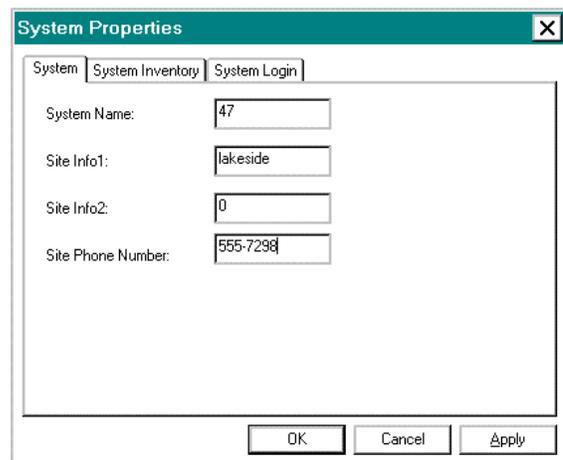
```
System Properties                                    ⊠
 ┌──────┐─────────────────┬────────────┐
 │System│ System Inventory │ System Login│
 │      └─────────────────┴────────────┘
 │
 │  System Name:        [47          ]
 │
 │  Site Info1:         [lakeside     ]
 │
 │  Site Info2:         [0            ]
 │
 │  Site Phone Number:  [555-7298     ]
 │
 │
 │
 │                    [  OK  ] [ Cancel ] [ Apply ]
 └──────────────────────────────────────────────┘
```

System Inventory Tab

The **System Inventory** tab includes data fields that provide information about the repeater to which you are connected. RepeaterNet reads this information directly from the repeater upon successful login.

These information-only fields are described as follows:

Assembly Part Number
The part number of the repeater
(for example, 090-1200-09).

Serial Number
The 9-digit serial number of the repeater.

Date Code
The date the repeater was built.

Hardware Revision
The repeater hardware revision (such as Rev. A).

Boot Code Version
The version of the boot code installed in the repeater.

Installed Options
Optional internal equipment in the repeater (such as a cell phone).

Firmware Version
The firmware version installed in the repeater.

System Login Tab

The **System Login** tab includes fields to type in login IDs and passwords and to configure the Auto-Logout function.

In the **Auto-Logout Inactivity Time** field, define how long RepeaterNet should wait, during a period of inactivity, before terminating a session. A time interval in minutes between 1 and 60 can be defined independently for each access level. If you enter a zero in a time field, this feature is disabled.

NOTE: *When the repeater is part of a network, the time field must be zero (0).*

To change a login ID or password:

1. Login to the repeater (as an administrator).
2. Select **Properties…** from the **System** menu.
3. Click the **Login** tab.
4. Type the new login ID or password (using six or fewer characters) into the appropriate fields.
5. Write down login IDs and passwords and secure in a safe place.
6. Click **Apply** or **OK** to set the new information.
7. Notify affected operators of ID and password changes.

NOTE: *When the repeater is networked, this information also must reside in the NMS Database.*

Alarm and Event Log

Open the **Alarm and Event Log** from the System menu to view the alarm and event history of the OA1900 NR. The log is dynamically updated during viewing.

Line entries in the Alarm and Event Log are organized as follows:

1. Subsystem affected by an alarm or event
2. Alarm severity
3. Date and time stamp

Saving, Printing, and Editing the Log

Alarm and Event Log entries can be printed, saved, or edited using Notepad. Click on **Run Notepad**; a copy of the Alarm and Event Log is displayed in a Notepad window, in which you can edit the log. To print or save the log, select **Print** or **Save as…** from the Notepad **File** menu.

Options Menu—PES800C NR Craft

Open the **Options** menu to display these RepeaterNet commands.

```
Color Independent Icons
Alarm Sounds
✓ Hold Connection
```

Color Independent Icons

Color Independent Icons are special graphic indicators designed to assist operators unable to distinguish colors. As part of the alarm reporting system, Color Independent Icons display on the Main Control screen for a Critical, Major, or Minor alarm. By default, the Color-Independent Icons feature is OFF.

From the Main Control screen menu bar, select **Options->Color Independent Icons** to turn ON this feature.

Alarm Type	Color Independent Icon
Critical	X through the subsystem icon
Major	Back slash (\) through the subsystem icon
Minor	Dotted-line back slash through subsystem icon

Alarm Sounds

The Alarm Sounds feature allows an intermittent alarm to activate when a subsystem triggers an alarm. By default, the Alarm Sounds feature is OFF.

From the Main Control screen menu bar, select **Alarm Sounds** from the **Options** menu to turn ON this feature.

NOTE: *During an alarm, either clicking a subsystem icon to open the Status screen or clearing the alarm silences an audible alarm.*

Hold Connection

The Hold Connection feature maintains the direct or dial-in connection to the repeater for monitoring until you terminate the connection.

Help Menu—PES800C NR Craft

RepeaterNet on-line help is designed to provide quick access to information related to the operation of the repeater.

❑ To open RepeaterNet Help, select **Help->Help Topics**.

❑ To learn about the version of RepeaterNet Craft, RepeaterNet NMS, or RepeaterNet Administrator installed, select **About…** from the **Help** menu of any program window.

Navigating Help

❑ From the **Contents** tab, double-click a book icon to open its contents, then double-click a topic icon to open its Help page. A help page provides detailed topic information. Help pages can contain links—identified by green, underlined text—to related topics.

❑ From the **Index** tab, type a topic name in the data field to automatically jump to a topic or use the scroll bar to locate a topic entry. Double-click an index entry to open its Help page.

❑ Click the **Index** tab to open the **Find Setup Wizard** utility, which searches for specific words and phrases instead of searching by category. Follow the prompts.

❑ To find out the version of RepeaterNet in use, select **About** from the Main Control screen **Help** menu.

Exiting RepeaterNet

To exit RepeaterNet, return to the Main Control screen **File** menu and select **Exit**.

End of Chapter…

Appendix A. Default Alarm Settings

NOTE: *Default values for gain are set to the minimum value—55 for Forward PA Gain and 50 for Reverse PA Gain.*

Subsystem	Alarm	Default Severity	Subsystem Problem	Effect on Service
Filters: Channel 1 and Channel 2	Forward Filter	Event	Loss of phase lock.*	Interrupted
	Reverse Filter	Event	Loss of phase lock.*	Interrupted
PAs: Forward and Reverse	Power Amplifier	Critical	PA power supply current out of range.*	Interrupted (turn OFF PA)
	Thermal Shutdown	Critical	PA temperature too high.*	Interrupted (turn OFF PA)
	External Shutdown	Critical	Local Wireless Technician has manually shut-down Power Amps.*	Interrupted (turn OFF PA)
	FE (Front End) Attenuation Active **(reverse only)**	Major	Fast acting/fast release Hot-Tone front-end protection activated. Protects RFE from mobile parking under subscriber antenna.	Degraded service. Repeater coverage area reduced until offending signal goes away.
ACU	External Input 1	Disabled[†]	External Input 1 Alarm initially is disabled.	None
	External Input 2	Disabled[†]	External Input 2 Alarm initially is disabled.	None
	Fan	Major	Fan stopped working.*	None, but eventual thermal shutdown probable.
	Temperature (system temp.)	Minor	Repeater heat sink temp too high.*	None, but eventual thermal shutdown possible.
	Tamper Alarm (door open)	Major	Someone has opened the repeater cabinet door.	None, but possible security breech.
	DC Voltage	Disabled[†]		n/a
Modem	Modem	Minor	Modem not working.*	None, but reporting disabled and remote connection impossible
Cellular Phone	Cellular Phone	Minor	Cellular phone not working.*	None, but reporting disabled and remote connection impossible
Power Supply	Input Power	Critical	Loss of AC or DC input power to repeater.*	Interrupted
	Battery	Minor	External battery voltage too high or too low.*	None, but repeater cannot call out in event of system power loss.
	Power System (internal)	Major	Loss of one or more internal power supply voltages.*	Interrupted

[†]*If external inputs or equipment are used, set alarm severity as appropriate.*
May require maintenance visit to the repeater.

End of Appendix…

Appendix B. RepeaterNet Executables

The installation program installs all necessary application executables and associated support drivers in a Windows folder you select or, by default, in `c:\Program Files\RepeaterNet\Craft.` The installation program also provides entries into the system registry.

The main RepeaterNet executable files are:

CraftAdmin   The Database Administrator program, used to configure and select the communications port used by RepeaterNet Craft.

RepeaterNet   The Craft graphical user interface for different repeater hardware types. Used in the setting and viewing of individual repeater items.

When any of these executable files are running, an icon is displayed on the Windows Task Bar.

End of Appendix…

Accessing the OKI Cellular Phone

The cellular phone is located on the inside door of the PES800 NR.
Open the repeater door and unscrew the four screws securing the metal box lid.
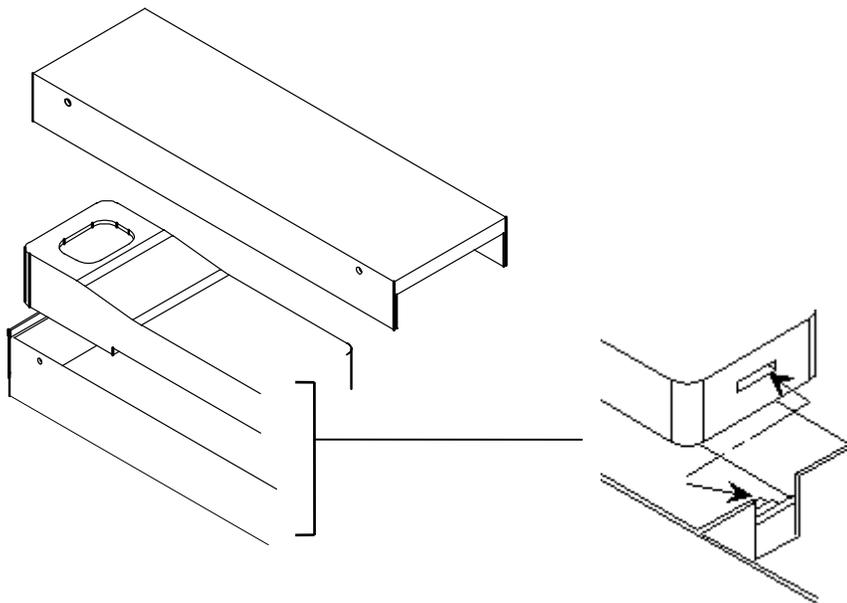
To remove the cellular phone for programming, disconnect plug at base of phone.

NOTE: *The AC charger and cell phone antenna are provided in the accessory kit.*

Programming the OKI Cellular Phone

An abbreviated set of instructions for NAM programming of your Oki Phone is provided
in this section. For more detailed information, see your OKI PHONES 1400 Series
documentation.

Programming Mode Access

1.   Turn the power on and press **Rcl + Func** keys at the same time.

2.   Enter your 5-digit special password within 30 seconds.

3.   After the special password is logged in successfully, **ESN/HEZ Number**
     and **Software Version Number** are displayed for two seconds each.

4.   Two seconds later the **Speed Dial Memory reset prompt** is displayed.

5.   Proceed to the next section, "Speed Dial Memory Clear**,"** or press
volume ▲▼ to scroll within the NAM Programming menu.

Speed Dial Memory Clear

Scroll the NAM Programming Menu until "**Spd dial"** appears n the display, followed by the reset prompt ("reset-0"). Press **0** to clear the Speed Dialing Memory.

Default Data Set

Scroll the NAM programming menu until "**def data"** appears on the display, followed by the reset prompt (""reset-0"). Press **0** to reset all user programmable functions to the Manufacturer's default.

Lock/Unlock Code Programming

1. Scroll the NAM Programming Menu until "**Uloc and (current code)"** appears on the display. The default is "1234."

2. Enter a new 1-to-4 digit unlock code and press **Sto** key.

Telephone Number Programming

1. In this menu, you can program information that is unique to Telephone #1. Follow the instructions or press **Clr** to skip to Telephone #2 or the next item on the main NAM Programming menu.

2. The display indicates "**tel.no 1**" followed by the last seven digits of the current phone number. Enter the new number (area code plus telephone number) and press **Sto**.

Authentication Key Programming

The display indicates "**Auth.no**." followed by "**Entr.no**." Enter the authentication key provided by the carrier (up to 26 digits) and press **Sto**. If an invalid number is entered, the display shows "**not good**" followed by "**Entr.no.**"

Home SID Programming

Enter a 5-digit SID number and press **Sto**. The IPCH Number Initial paging channel number is set automatically depending on the stored Home SID number.

ACCOLC Number

The current number is displayed. Enter a new number if required, then press **Sto**.

GID Number

1. The current number is displayed. Enter a new number if required, then press **Sto**.

2. Press **Clr** to return to the main NAM Programming menu.

Emergency Number

1. The display shows "**Help no.**" and the current setting. Enter a new number (up to 11 digits) if required.

2. Press **Sto**.

Preferred SID Programming

1. Scroll the Preferred NAM Programming menu. Press **Rcl** and enter the desired Preferred SID number (5 digits).

2. Press **Sto**. You can enter up to 50 SID locations.

3. Press **Clr** key to advance to the next programming option.

Language Option Set

Press **Rcl** and scroll through the available options.

When the desired language is displayed, press **Sto**.

System Options Programming

1. Scroll the NAM Programming menu and press **Rcl** to enter the **Option Programming** menu.

2. While in this menu, press **Rcl** to change settings and **Sto** to save and go on to the next setting. Press **Clr** at any time to return to the main NAM Programming menu.

Option bits are defined as follows: 0   0   0   1   1   0   1   0

0	=	Reserved for future use
0	=	Reserved for future use
0	=	Reserved for future use
1	=	MINMK = Mobile ID Number Mark (0=No, 1=Yes)
1	=	LUMK = Local Use Mark (0=No, 1=Yes)
0	=	AMMK = Audio Mute Mark (0=Call, 1=Always)
1	=	HFMK = Handsfree Mark (0=No, 1=Yes)
0	=	HAMK = Horn Alert Mark (0=No, 1=Yes)

End of Appendix…

Appendix D. Troubleshooting

The following attempts to identify the most common problems associated with the successful operation of the RepeaterNet system. The steps listed to resolve the problem may not include all of the possible reasons for non-operability, but may assist in identifying the actual difficulty. The problem attributes in the following paragraphs have been ordered with the most likely problem listed first.

If you continue to have problems, call Peninsula Engineering Solutions Customer Support for assistance. See inside the front cover of this document for current telephone numbers.

Problem 1:   *The RepeaterNet Server reports that it cannot open the NMS database.*

Either the DSN is configured improperly, does not point to the proper location, or the system did not find the DSN itself. Call Customer Support for assistance.

❑   The correct DSN or User ID is not identified.
❑   The Windows ODBC drivers are not installed.
❑   The database file pointed to by the DSN is corrupted or needs repair.

Problem 2:   *The Process Manager component of the RepeaterNet Server reports that it cannot read the database Ports table.*

No ports have been configured in the system database. The Ports table in the database may be corrupted. Repair the database and retry.

Problem 3:   *The System starts up without error but, when a repeater graphical user interface is launched, no detailed data is displayed..*

Wait for up to 4 minutes (cell modem connection) to see whether the program can connect to the repeater. If not, a warning message will pop-up indicating communications could not be established.

Problem 4:   *A specific port does not seem to be in use and an Alert exists, or the database log reports the error "Unable to initialized port COMn" where n is the designation of the non-functioning port.*

The port number has been configured incorrectly or the port does not exist.

The port is assigned to another program operating in the same PC. Windows does not permit the sharing of communications ports between active programs. Shut down the other program.

Problem 5:   *The system reports "Unable to connect to repeater..."*

This can be an indication of:

❑   The cellular carrier is not handling the call
❑   The phone number provided is incorrect or out of service
❑   A problem with the modem or phone line
❑   A problem with the repeater

Problem 6:   *The system reports the message "An unsupported operation was attempted."*

This message appears when the installation failed to register the OLE controls for alarm bitmaps.

Problem 7: **RepeaterNet conflicts with Microsoft Fax.**

To disable the auto answer mode:

1. Open the mail icon from the **Control Panel**.

2. Select **Microsoft Fax** from the **Services** tab.

3. Click on the **Properties** button.

4. Select either **Manual** or **Don't answer radio** button.

5. Click **OK** to save.

Problem 8: **NMS Client reports "Cannot find application RepeaterNet Server."**

This can occur when the Server is not running or a network failure prevents the NMS Client from connecting to the Server. Verify that the Server is running and that the Server's host is accessible.

Another possibility is a conflict with the port assigned to the Server. This problem has been known to occur with a port number that previously had no conflict. Run the program "RepNetConfig.exe" in the RepeaterNet directory and increase the value of "Server Port" by one. Restart the Server and NMS Client.