

ELSAGNorthAmerica

A Finmeccanica Company

Mobile Plate Hunter-900

Car System User's Guide

Publication Number MPH-900-CSUG • June 2011

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Chapter 1 — Preface and General Information

About This User's Guide/Purpose

This user's guide contains information about the ELSAG North America Mobile Plate Hunter-900 (MPH-900) Car System. It covers the various parameters of the system including instructions for daily operation of the system. The intended audiences for this user's guide include ELSAG North America's customers' general operating personnel, system administrators, authorized ELSAG North America clients and business partners, and Software Product Evaluators. It is particularly intended for personnel who are responsible for day-to-day use of the system. In addition and as is appropriate, this user's guide may be used in customer training.

This user's guide is the reference manual for the Car System, which is the MPH-900 user interface. It is intended to provide the user with basic information on system operations for successful use in the field. Additional information on Hot List Data Conversion, System Administration, and Vehicle Installation are available in separate documents.

The system user interface is actually a computer software program, called the Car System, which runs on a Mobile Data Terminal, a laptop, or any other onboard computer. The computer must be connected to the MPH-900 processor or to the MPH-900 junction box if AD3M cameras are used (as explained in the Installation Manual).

Information in this user's guide includes the following:

- An introduction to the ELSAG North America Mobile Plate Hunter-900 (MPH-900) Car System and how it relates to the ELSAG North America Operations Center System
- General framework of the Car System including the Main Menu Screen
- License Plate Reading (LPR) applications
- The GPS Localization Control Screen
- Hot List information
- The Virtual Fence function
- The Wireless Communication function
- Login and user management functionality, and
- Profile Permissions information associated to users' profiles.

Disclaimer



IMPORTANT: This user's guide contains information about the ELSAG Mobile Plate Hunter-900 Car System manufactured by ELSAG North America. The manner and scope of the material presented is reasonable and customary for this type of system. No representations or warranties are made as to the accuracy or completeness of the information contained herein.

Revision Information

If it becomes necessary to revise this user's guide, ELSAG North America will give the reasons for the revision in this section.

Table A — User's Guide Revision Information (English Version)

Revision	Description	Revised Date	Revised By	Approved By
A	Original internal document release with new software revisions.	5/18/2005	TC, SM	TC, SM
B	Updated for 9-9 release and NYSP.	10/07/2005	TC	TC, SM
C	Update for release 1.2.0; Car System 2.9.0.	2/28/2006	SM	TC, SM
D	Car System 4.7.1.	3/31/2009	SM	TC, SM
5.0	Extensive document formatting, graphics, and text revisions to comply with current ELSAG documentation standards.	2/15/2010	CW	NM, SM
6.0	Update for Car System 5.06	6/C:\Car System 5.6.0	RJC	

Software and User's Guide Versions and Revisions

It is important to note that there is no direct correlation between the versions of both the software and the user's guide. For example, the current version of the *ELSAG Mobile Plate Hunter-900 Car System User's Guide* was Version 6.0 and the current software version was Car System 5.06. ELSAG Customer Service and Support Personnel have the necessary information needed to establish whether your version of the user's guide is appropriate for the software version you are using.

Change Management

In the future ELSAG North America may offer future enhancements and changes to the system by releasing new software versions. If this occurs, existing users will be offered the opportunity to update their software.

ELSAG North America Terminology, Acronyms, and Terms

The following terms include acronyms that may appear throughout this and other ELSAG North America publications; however, they are terms with which a beginning user may not be familiar.

Term	Explanation/Definition/Description
AMC	Account Manager Control or Account Management Control
ALPR / ANPR	Automatic License Plate Reader / Automatic Number Plate Reader
DDS	Data Download Station
EHL	External Hot List
GPS	Geo Positioning System
GUI	Graphical User Interface

HL	Hot List
HLPN	Hot License Plate Number
IIS	Internet Information Services
LAN	Local Area Network
LPR	License Plate Reader or License Plate Reading
MDT	Mobile Data Terminal
MPH	Mobile Plate Hunter
MWP	ELSAG Middleware
OCD	Operation Center Database
OCRS	Operation Center for Reading Systems
OCW	Operation Center Web Application
ODM	Operations Center Data Manager
OPC / OP-Center	OPerations Center / OPerations Center
OWA	Operations Center Web Application
PC	Personal Computer
PS_DB	Peripheral Station Data Base
THL	Temporary Hot List
USB	Universal Serial Bus



Chapter 2 — MPH-900 Mobile Plate Hunter System Overview

About ELSAG North America

ELSAG North America is dedicated to providing proprietary advanced Automatic License Plate Recognition Systems and other innovative imaging technology to North American Law Enforcement Agencies. Using this technology, our goal is to support law enforcement in their missions of public safety and homeland security by advancing and expanding those missions.

Leading the license plate reader technology industry, the MPH-900 is deployed in hundreds of agencies across the United States, with nearly 4500 deployments worldwide, all of which are supported by our 24/7 commitment to customer service. ELSAG North America is a Finmeccanica company, which is a global leader in defense and security solutions. We are headquartered in Brewster, New York.

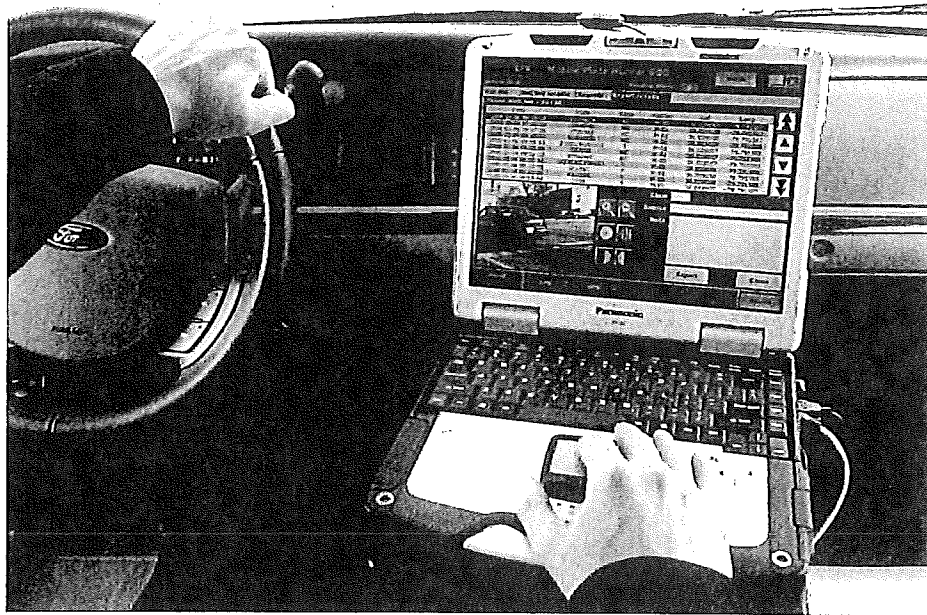


Figure 1 — MPH-900 Car System Typical Installation

Mission Statement

To help Law Enforcement Agencies fight crime and secure the homeland by bringing the benefits of innovative information technologies right to the point of operation. We are dedicated to achieving this mission through the use of experienced consulting professionals, dedicated support staff, and through working with law enforcement agencies and other organizations who share our commitment to defend homeland security. ELSAG North America is also dedicated to encouraging and supporting the development of secure technologies, and best practice methodologies.

Introduction to the MPH-900 System

ELSAG's MPH-900 Automatic License Plate Recognition (ALPR) System can be mounted to patrol cars capturing license plate strings during entire shifts. If a suspect license plate string is read, audible and visual alarms alert the law enforcement personnel within milliseconds of license plate capture.

Regardless of lighting conditions cameras, a processing unit and proprietary software, allow the user to capture images of license plates and instantaneously compare them with millions of Hot List records to identify vehicles of interest, while minimizing the guesswork and safety risks that challenge law enforcement personnel.

Operating automatically on the in-car computer allows personnel to keep their hands on the wheel and eyes on the scene. When the system reads a license plate string that matches a Hot List file, personnel are alerted immediately. The alert communicates the nature of the crime or infraction associated with the license plate so personnel understand the risks associated with the situation before exiting the car. This promotes safe interdiction.

The real-time technology of the MPH-900 greatly increases the odds of resolving issues and in severe situations, can be the difference between life and death. The MPH-900 License Plate Reader System offers the following:

- Captures up to 3600 license plate reads per minute, day or night
- Accurately recognizes license plates from all 50 states, Canada, and Mexico
- Processes parked and moving vehicles across up to four lanes of traffic
- Manages differential speeds in excess of 120 mph and transit speeds up to 75 mph (exceeding the normal speed of vehicles through the pathway)
- Allows personnel to update Hot Lists manually at any time and also query the system for new entries that may match a recently captured vehicle
- Translates the license plate data into a digital image, cross-references it to an onboard Hot List, and then returns an alarm back to the user within milliseconds
- Allows for Hot Lists to be updated manually or wirelessly, and
- Enables personnel to search the system for previous reads at any time in reaction to notification of a suspect vehicle.

The MPH-900 System captures thousands of license plates during a shift. The data recorded for each includes date and time stamp, a photograph of the vehicle and its immediate area, and the GPS coordinates. Post-action analysis of the data from relevant time periods can lead to subsequent witness identification, Watch List development, placing suspect at a scene, terrorist interdiction, and pattern recognition.

MPH-900 System Applications

Although not limited to the descriptions that follow, the MPH-900 System as well as our Fixed License Plate Reader System have found many varied applications nationwide. ELSAG continues its research and development efforts to expand the role of our proprietary technologies to aid law enforcement efforts in this country and throughout the world.

The MPH-900 System arms law enforcement with real time knowledge and post-action criminal intelligence increasing the day-to-day productivity and safety. With 70 percent of all crime connected to a motor vehicle, the system assists law enforcement agencies in a wide range of missions and positively impacts the safety and security of communities. It ensures safer streets, a safer nation and safer law enforcement personnel. The system helps law enforcement in the following ways:

- Removing suspended and revoked drivers off the road before they cause an accident
- Recovery of stolen vehicles and rental cars
- Assistance with AMBER Alerts and missions related to missing and exploited children
- Safe school initiatives such as perimeter security and school bus safety
- Development and maintenance of Sexual Predators Hot Lists
- Drug interdiction
- Highway Safety
- Homeland Security initiatives
- Gang and racketeering interdiction, and
- Collection of unpaid taxes and fees.

□ Criminal Intelligence

The data collection capabilities of the MPH-900 System have proven invaluable to investigative and criminal intelligence efforts. In addition to the color photograph showing the license plate, the car and its immediate surroundings, the license plate reader also records the date and time of each capture, along with the GPS coordinates of each vehicle's location when the photo is taken. Careful review of this information for relevant time periods can lead to:

- Pattern recognition
- Placing a suspect at a scene
- Watch List development
- Identifying witnesses, and
- Possible visual clues revealed within the image of a car's immediate environment.

□ AMBER Alert Generator

Another feature of the system is its ability to help identify vehicles believed to be associated with an AMBER Alert (or Child Abduction Emergency) when only a partial license plate string is all that law enforcement personnel have to work with. Advanced algorithms work quickly to fill in the missing characters. This can make all the difference in situations when every second counts.

□ Geo Fencing

The system allows users to protect sensitive areas with a virtual fence created by mapping the perimeter of the area through GPS coordinates. If the license plate of an unauthorized vehicle crosses into the restricted area, a law enforcement command center is notified instantaneously and local units can respond to the incident.

□ Suspended or Revoked Licenses

The system is probably most commonly used for identifying drivers with suspended or revoked licenses. Working independently of law enforcement personnel during each shift, the system is making communities much safer than is possible with manpower alone. The system alerts law enforcement personnel instantaneously when a read indicates drivers with suspended or revoked licenses and allows action to be taken before the drivers cause a crash.

□ Recovered License Plates and Vehicles

In the same manner as mentioned above, agencies are more quickly recovering stolen license plates and vehicles as they go about their normal duties each shift. Recovery of license plates and vehicles, as well

as removing drivers with suspended or revoked licenses from the streets, not only have a tremendous impact on safety, but on the insurance industry as well, because fewer claims are being paid.

❑ **Homeland Security**

Homeland Security applications of the system are increasing rapidly. It enables a Command Center to organize and strategize efforts in reaction to the information captured. A combination of mobile patrol car-mounted systems as well as fixed systems (which can be mounted to bridges, gates and other high traffic areas) can help with surveillance of entire cities, ports, borders and other vulnerable areas. Even cargo container identifications can be read from cameras on aircraft 1500 feet in the air. The system captures critical data such as color photos, date and time stamps, as well as GPS coordinates on every vehicle that passes or is passed by a camera.

❑ **Tax Collection**

The system can be used to help collect taxes, parking ticket fees, and other revenues. With "Hot Lists" of license plates related to individuals with these types of violations, law enforcement personnel can find offenders anywhere and at any time and respond accordingly.

❑ **School Bus Safety**

As a unique application for the system, one of the most recent missions has been that of school bus safety. The MPH-900 is being installed on buses with cameras and is aimed at identifying cars that illegally pass the buses when they are stopped. With a clear photo of a license plate and the associated data, dangerous drivers can be located and appropriate action can be taken.

Automatic License Plate Recognition Overview

Automatic License Plate Recognition is an image-processing technology used to identify vehicles by their license plates. It is a form of Optical Character Recognition (OCR) where algorithms are employed to transform the pixels of the digital image into the text of the license plate. The system uses infrared lighting to allow the camera to take the picture at any time of day regardless of lighting conditions.

There are many applications for license plate readers, such as traffic and parking management, tollbooth operations, and area-access control. One of the fastest growing applications is the deployment of these systems by law enforcement agencies to identify persons or vehicles whose license plates are connected to a crime or infraction.

Cameras mounted to police vehicles or stationary structures such as gates or bridges, automatically take photos of license plates at the rate of hundreds per minute. The characters in the photo of the license plate are then translated into letters and numbers and are compared to law enforcement databases of registered vehicles known to be or suspected of being involved with crimes or infractions. If a license plate that was read matches an entry on a database, the License Plate Reader System will alert patrol personnel (if the system is mounted to a law enforcement vehicle) or a command center (if the data is transferred to a remote management facility), that a suspect vehicle is in the immediate area of that system input camera.

License plate recognition systems utilize algorithms in order to identify a license plate, take a clear image of the license plate, translate its characters, and identify the state that issued the license plate. The better the algorithms, the more accurate the information.

ELSAG Operations Center

The purpose of the ELSAG Operations Center is to manage a fleet of MPH-900 mobile LPR units and/or a network of Fixed LPR cameras. The purpose of the Central Server is to upload and archive read and alarm data coming from all the vehicles and fixed cameras. The Operation Center software includes a

Website allowing remote access to the data via a friendly user interface. The ELSAG Operations Center (EOC) is also in charge of the distribution of the wanted license plates database or "Hot List" to the LPR units.

System Architecture

Figure 2 shows the general system architecture. The ELSAG Operations Center Server keeps data on a central database and is connected to the wireless MPH-900 LPR Systems mounted on vehicles, through an access point. A secondary Network Interface Card of the server is connected to the existing building LAN allowing multiple access points to the OPC functionality.

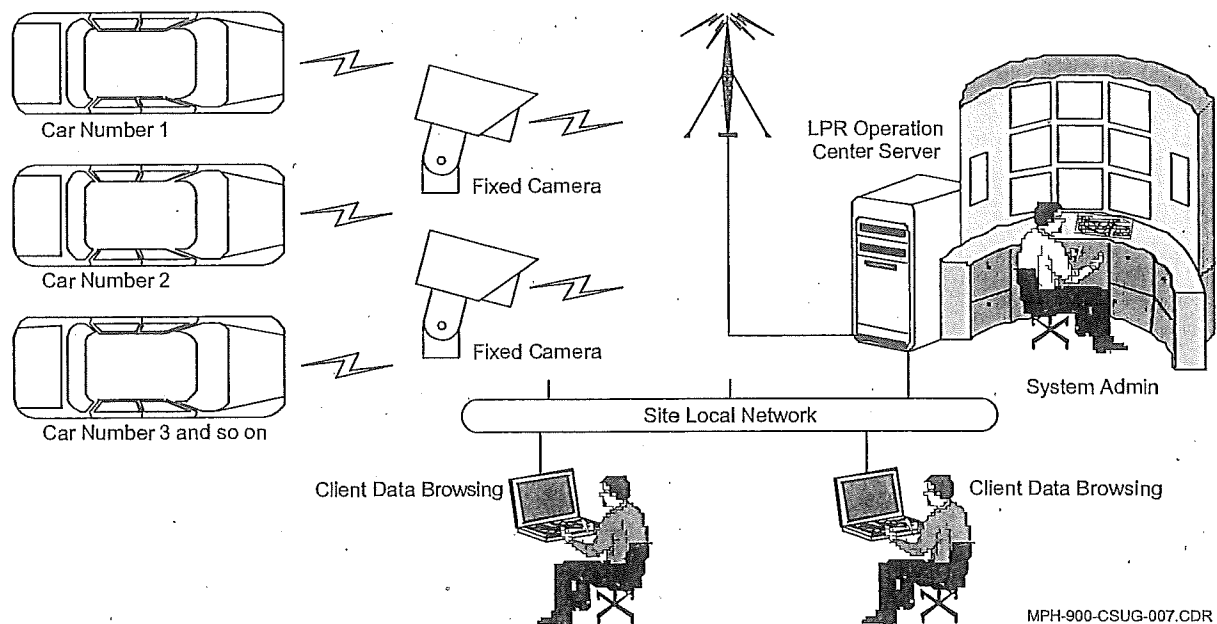
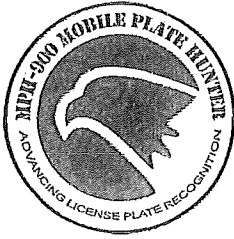


Figure 2 — System Architecture (Shown Using Wi-Fi Connectivity)

An alternative configuration is called Long Range Communication. This refers to cellular connectivity via cellular AirCards¹ between the Mobile Data Terminal (MDT) and the Server. The EOC also supports the Manual Data Download Mode. That means that read data can be exported manually by means of a USB Flash Drive and imported into the EOC Server.

¹ AirCard ® is a registered trademark of Sierra Wireless, Inc.



Chapter 3 — Beginning to Use the MPH-900 System

Introduction

The MPH-900 Car System consists on the following components:

- A set of LPR cameras
- A processor or a junction box, and
- A Mobile Data Terminal (MDT) hosting the onboard user interface.

Refer to the *MPH-900 Installation Guide* for instructions on how to set up the hardware components in the car and power up the system: The system is a framework for the execution of different applications onboard a car. The functions currently available on the Graphical User Interface (GUI) are:

- License Plate Reader (LPR),
- GPS Position, and
- Account Management Control.

ELSAG developed the GUI to be viewed on a display at 800 x 600 pixels, 1024 x 768 resolution. At 1024 x 768 resolution, the GUI displays the license plate images at the best possible quality, while providing a good view of interface icons. At any other display resolution, the application will measure 800 x 600 pixels.

The Car System is fully touch-screen enabled and optimized, meaning that if the vehicle MDT/PC/laptop has a touch screen, the icons and buttons are touch screen sensitive. Button and icon sizes have been chosen to maximize touch screen ergonomics.

The LPR application monitors the activity of the LPR cameras connected to the onboard Personal Computer (PC). It gives the user a view of the license plates being read and of the status of the system, as well as important Hot List and alarm management functions.

The GPS Localization function allows the user to monitor and manage GPS data being received from an NMEA² compatible GPS receiver attached to a USB or Serial Com Port. The GPS drivers must be installed and the receiver connected before you can use this function.

Login and Main Menu Screens

The sections that follow are designed to help the user better understand the features of the initial screens that appear when the system is first started. These include the Car System Login Screen (shown below) and the Main Car System Screen (see Figure 5 on Page 21). Launch the system from the computer's desktop by double-clicking the Car System's shortcut icon.

² NMEA® is a registered trademark of the National Marine Electronics Association.



Figure 3 — Car System Shortcut Icon

Car System Login Screen

NOTE: The Car System Login Screen is optional. You can disable use of this screen during the initial Car System installation.

Figure 4 shows the Car System Login Screen. From this screen and in order to access the system, the user must insert a User Name and Password. (The screen's User Field will display the name of the most recently logged-in user.)

NOTE: The User Name must be no fewer than six characters. The Password must be no fewer than eight characters. Neither can be longer than 20 characters. The User Name and Password cannot contain the following characters: " \ / [] ; : , | = + * ? < > ".

The application verifies the validity of the information and displays the Main Car System Screen (see Figure 5).

Car System Login									
User		lastuser							
Password									
1	2	3	4	5	6	7	8	9	0
q	w	e	r	t	y	u	i	o	p
a	s	d	f	g	h	j	k	l	▲
z	x	c	v	b	n	m	◀	▼	▶
Caps						#@...		Canc	
					OK		Cancel		MPH-900-CSUG-002.CDR

Figure 4 — Car System Login Screen

There are three possible profiles for a user:

- *Administrator* — system administrator with unrestricted privileges
- *Operator* — expert users, and
- *User* — standard users.

NOTE: On the screen keyboard, the **Caps** key toggles lower- and upper-case letters; the **Canc** key allows you to backspace over your typed characters, and the **#@...** key gives you access to punctuation and special characters.

Main Car System Screen

After a successful login, the main screen appears and the user can select the desired application (i.e., LPR Mobile Plate Hunter 900, GPS Position, or AMC Account Management Control). The components and controls featured in this screen are described in the subsections that follow.

Depending on what plug-ins are installed in your system, your Main Car System Screen may appear different than the one shown below.

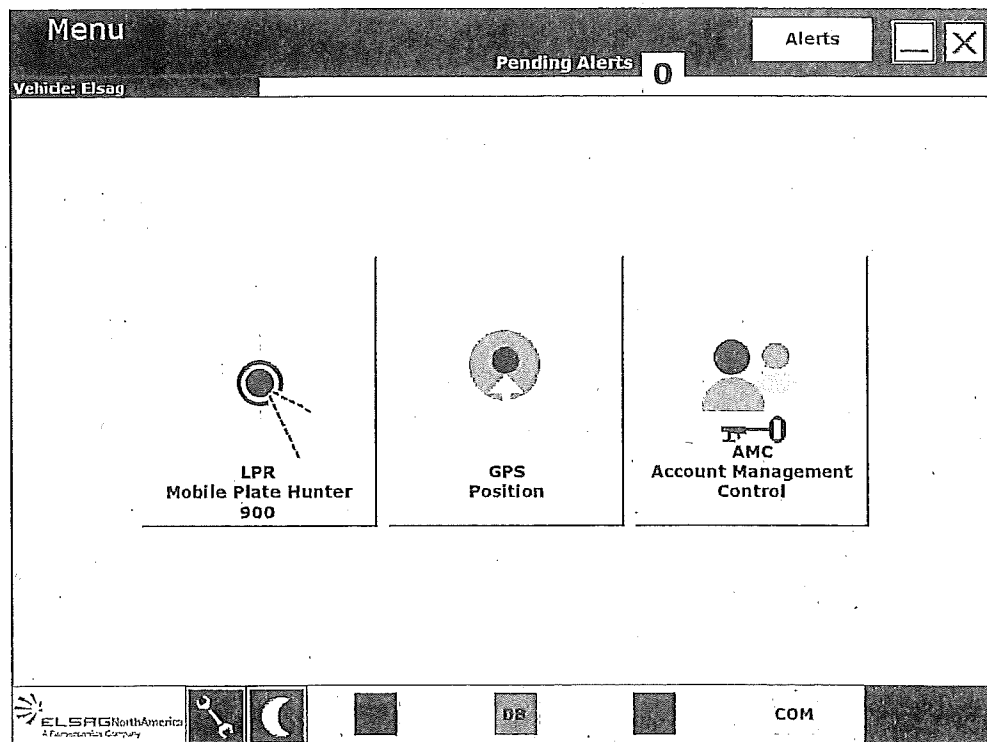


Figure 5 — Main Car System Screen

□ Main Car System Screen Features (Top Section)

The top section of the Main Car System Screen contains the following information:

- Application Title, which is the name of the active application (for example: Menu if there is no active application)
- Alerts (this button blinks when there are alerts to be managed (e.g., a pending alarm))
- Minimize Button, which minimizes the application as an icon on the taskbar

- Close Button, which closes the Graphical User Interface
- Vehicle Description or Vehicle ID, which is a vehicle identifier that is a number or an alias, and
- Pending Alerts Counter, which indicates the number of non-managed alerts.

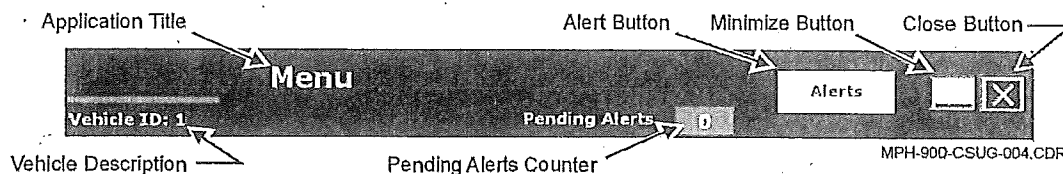


Figure 6 — Main Car System Screen Features (Top Section)

□ Main Car System Screen Features (Center Section)

The central section of the Main Car System Screen contains buttons to start the applications. In the figure below, the plug-ins for following applications are installed in this particular system:

- LPR Mobile Plate Hunter 900 License Plate Reader
- GPS Position (GPS Localization), and
- AMC Account Management Control.

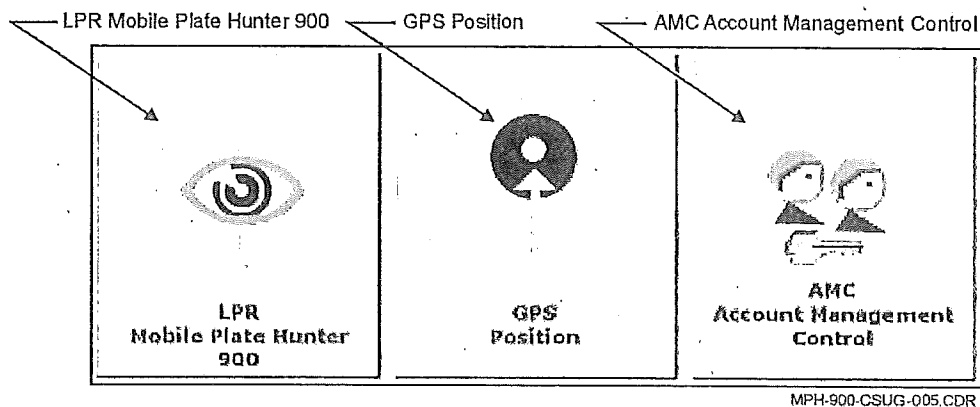


Figure 7 — Main Car System Screen Features (Center Section)

□ Main Car System Screen Features (Bottom Section)

The bottom section of the Main Car System Screen the following:

- Settings Button – opens Settings panel
- Night Mode Button – toggles display illumination mode, and
- Diagnostic Area, which displays the diagnostics of the system components.

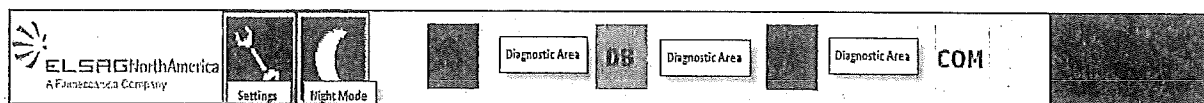


Figure 8 — Main Car System Screen Features (Bottom Section)

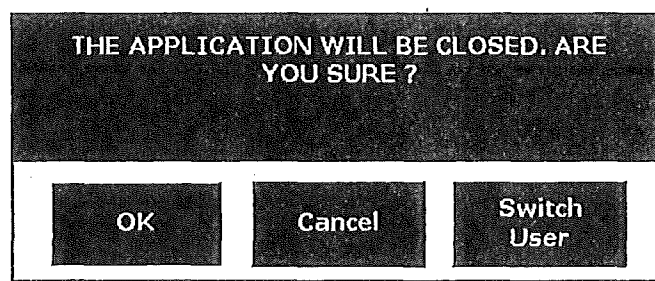
The Diagnostic Area is for all configured services/devices. It shows the three basic statuses to help users in the event that troubleshooting is required. Explanations of the four color-coded Status Indicators appear below in Table B.

Table B — Color-coded Status Indications

Color	Sample	Description
Gray		The device/process is disabled.
Green		The device/process is active and working normally.
Yellow		The device is connected but paused.
		NOTE: This status may also mean that the device is starting up.
Red		The device is not connected or is in fault.

NOTE: While the system starts up all the status icons appear gray in color.

To close the Car-System application, press the "Close Button." When the user pushes the Close Button, the message shown in Figure 9 appears to ask the user for confirmation to close the Car System application.



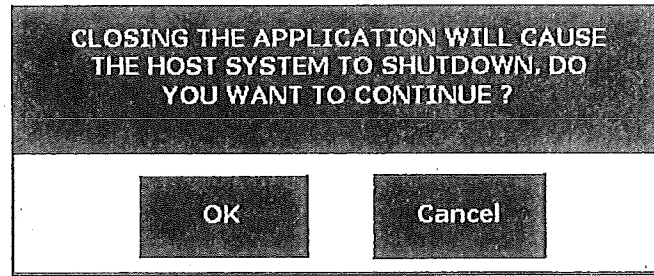
MPH-900-CSUG-009.CDR

Figure 9 — Closing Application Confirmation Message

Pressing the Cancel Button will return the application to the previous screen. Pressing the Switch User Button returns the application to the Car System Login Screen (see Figure 4 on Page 20).

If the user presses the OK Button, the application will proceed to shut down.

If the application was configured at installation time to shut down the PC hosting the services, the warning message shown in Figure 10 appears. Pressing the OK Button will shut the PC's Operating System down. Pressing the Cancel Button will cause only the application to close.



MPH-900-CSUG-01Q.CDR

Figure 10 — Closing Application Warning Message

Pressing the Minimize Button (see Figure 4 on Page 20) will minimize the application, leaving an icon on the taskbar. You can restore the application by selecting the icon on the taskbar (or by pressing <Alt> + <Tab>).

☐ **Show Windows Taskbar**

The **Show Taskbar** setting makes the Car System GUI slightly smaller so that the Windows taskbar is always visible, so a use can switch between applications more easily. It is set to **True (On)** by default at installation. You can change it:

1. Press the **Settings** icon (the wrench).
2. Select **Advanced**.
3. Enter the PIN (1234, by default).
4. Use the up and down arrows to select **Show Windows taskbar**.
5. Select **False** in the drop down in the upper right.
6. Press **Save**.
7. You'll be prompted to updated the configuration and reboot your system for the change to take effect.



Chapter 4 — License Plate Reader Functions and Features

Introduction

This chapter explains the License Plate Reader Function. The main sections of this chapter are:

- Main LPR Screen Features
- Alarm Management
- Last Events Screen
- Camera Management
- Camera Diagnostics
- Other Controls
- Operations — Hot List Management
- Operations — Reports and Queries
- Operations — Cartography

Main LPR Screen Features

The Main License Plate Reader (LPR) Screen provides a number of different controls, features, and indicators, which are described in detail in the sections that follow.

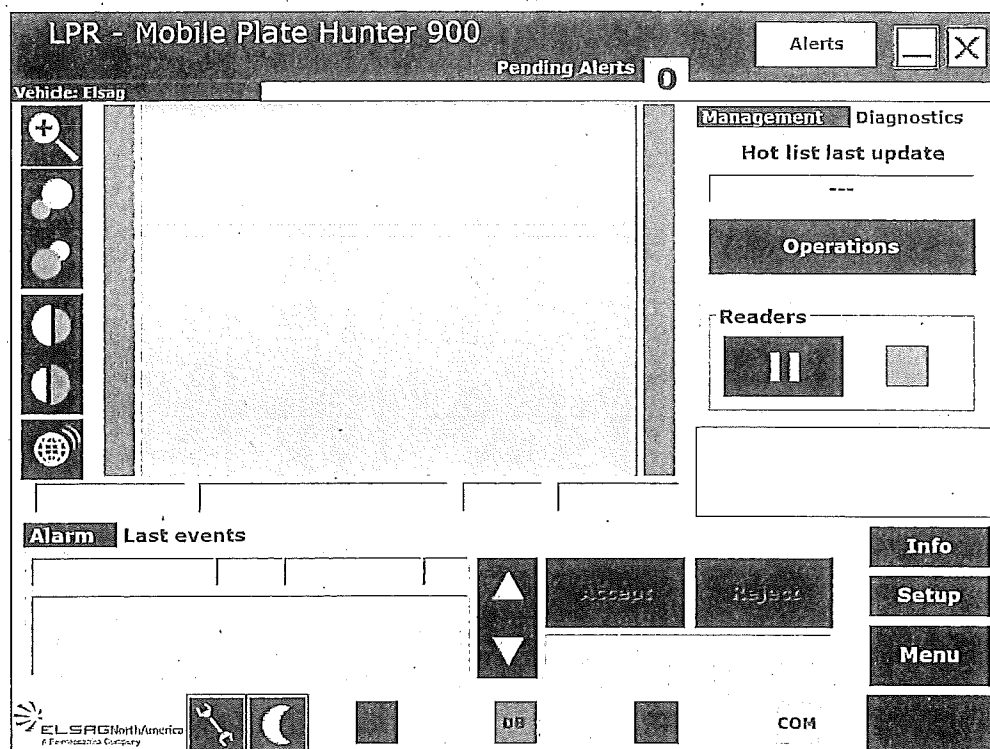


Figure 11 — Main License Plate Reader (LPR) Screen

Reads/Alarms View Area

When a plate is read or an alarm sounds, the image of the vehicle and plate read is displayed in the Reads/Alarms View Area. If the AD3 dual sensor camera is connected, the panoramic color image is presented when you click on the main image

Below the main image, you'll see the following information:

Camera Code – The code or alias of the camera that has detected the read or the alarm. The background color is yellow (for normal reads) or red (for alarms).

License Plate – The license plate as read, including any ambiguous characters (in brackets).

State/Country – The state or country of the plate. A question mark (?) indicates that no state or country has been detected or that the state/country recognition function is not enabled.

Read/Alarm Time – The time stamp of the read or alarm (shown as Hours : Minutes : Seconds).

Colored Sidebars

Colored Sidebars are also present at the sides of the displayed image. Their colors change to distinguish among reads, alarms, or live images. Note that the color samples shown in the table may not be exactly the same as they appear on your screen.

Table C — Guide to Colored Sidebars

Color	Sample	Description
Green		This represents a Normal Read. If the displayed license plate is NOT present in the Hot List, it remains green until the next read.
Red		This represents an Alarm. The displayed license plate is present in the Hot List.
Blue		This represents Live. The live function of the camera is enabled.

□ Arrow Indicators

When the system is configured with only two cameras (M-00 and M-01 in association with elaboration unit ID = 00000 and ID = 00001), a direction arrow will be present in the colored sidebar. The arrow identifies which camera (Right = M-00 or Left = M-01) has read the license plate. A Right Pointing Arrow indicates a Right M-00 Camera Transit/Alarm and a Left Pointing Arrow indicates a Left M-01 Camera Transit/Alarm.

NOTE: In addition to the direction that an arrow points, be aware that the color in the bars changes as described above in Table C.

Overview Camera

The overview camera function is an optional feature of the system that provides a color image for each read or alarm. It consists of an additional color image coupled with the black and white image. The color image presents a wider-angle image (panoramic view) than the black and white image and allows the user to see more details in the scene (e.g., car type, color, etc.).

License Plate Ambiguities

The presence of characters in square brackets "[]" means that there are ambiguities in the string interpretation. "CD37[0D]BF" means that the fifth character position may be either a "0" or a "D". Usually both the possible strings CD370BF and CD37DBF are matched against the Hot List.

Alarm Management

When the MPH-900 detects a license plate that is in the Hot List, an audible sound occurs and a visual alarm shows the presence and location of the alarm. This alarm can be accepted by the user by pressing the Accept Button whenever the actual license plate matches the Hot List information, including the applicable state.

NOTE: When a user **Accepts** an alarm, the plate number is automatically copied to the clipboard. This means the user can paste the plate number into another application, such as computer-aided dispatch software, without having to enter it manually.

Otherwise, the user can reject the alarm by pressing the Reject Button. Rejected alarms are still stored, but are marked differently for after-action reporting. Typical reasons for rejecting an alarm are state mismatch or a bad license plate read. The reject function could also be used to avoid duplicated alarm entries in cases where the same alarm is hit more than once.

NOTE: The user can zoom and adjust the image to view details. However, the Alarm Image Controls (Zoom, Contrast and Brightness) is only active when an alarm is active.

Any message from the Hot List is displayed in the Alarm Note Box. This note is created when the Hot List extraction is performed and can be general ("STOLEN VEHICLE!") or specific ("Warrant for registered

Owner – John Q. Public, 6' 0" White male", etc.) based on the available information. The state displayed during an alarm represents the particular state that applies to that alarm/license plate record.

When an alarm is active, the user can verify the license plate and manipulate the image to gather information about the target vehicle. The Alarm Section of the screen shows details of the detected license plate string.

Alarm Image Controls

The Alarm Image Controls allow the user to improve the image brightness, zoom and contrast when an alarm occurs.

Table D — Alarm Image Controls

Function	Icon	Description
Zoom		Zoom + (Used to magnify the license plate area or increase map details.)
Brightness		Brightness + (Used to increase the image's brightness.)
		Brightness – (Used to decrease the image's brightness.)
Contrast		Contrast + (Used to increase the image's contrast.)
		Contrast – (Used to decrease the image's contrast.)

Enlarged License Plate Area

The license plate read is automatically enlarged and displayed for better viewing. This automatic enlargement feature is useful for checking the license plate at a glimpse, without having to search for it in the image.



Figure 12 — Example of an Enlarged License Plate Area

Alarm Section

The Alarm section of the screen reports details of the license plate in alarm.

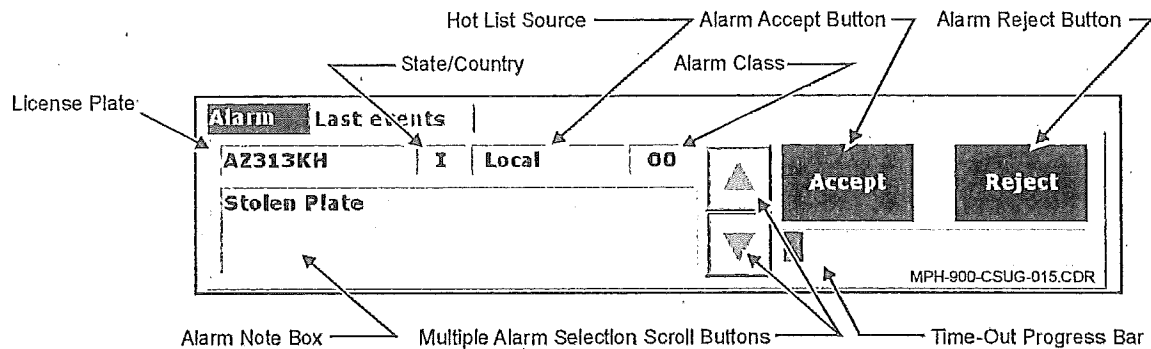


Figure 13 — Alarm Section Features

Table E — Alarm Section Features

Field /Function	Description
License Plate	The license plate of the current alarm.
State/Country	The state or country of the current alarm detected. A question mark (?) indicates that no state or country has been detected or that the state/country recognition function is not enabled.
Hot List Source	The Hot List that has generated the alarm. A name indicates that the alarm has been generated by a match with a record in the specified Hot List. "Local" indicates that the alarm has been generated by a match with a record in the local user defined Hot List. "External" indicates that the alarm has been generated by a match with a record in the External Hot List (loaded manually from a flash drive or automatically from a wirelessly connected Operations Center).
Alarm Class	Specifies the class of alarm associated with the license plate (00 - 10).
Alarm Accept Button	Button to accept the displaying alarm.
Alarm Reject Button	Button to reject the displaying alarm.
Alarm Note Box	Note associated with the license plate coming from the Hot List.
Multiple Alarm Selection Scroll Buttons	Buttons to select among multiple alarms.
Time-out Progress Bar	Progress bar time-out for the user to accept the alarm.

If the License Plate, Hot List Source, or Alarm Note Box exceeds the visualized characters, the string is truncated and three dots (...) are present. A "Tool Tip" containing the entire string can be displayed by putting the pointer over the License Plate, Hot List Source, or Alarm Note Box.

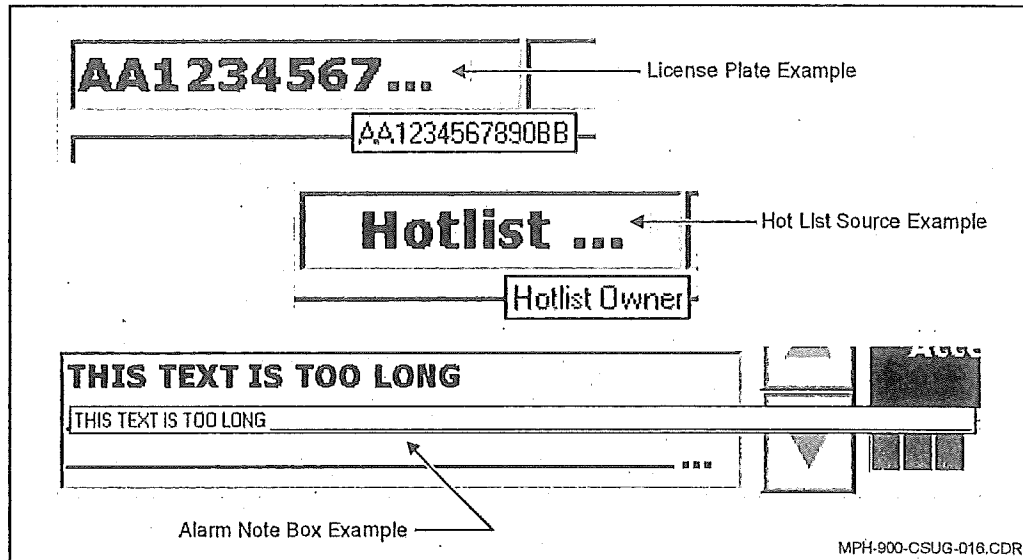
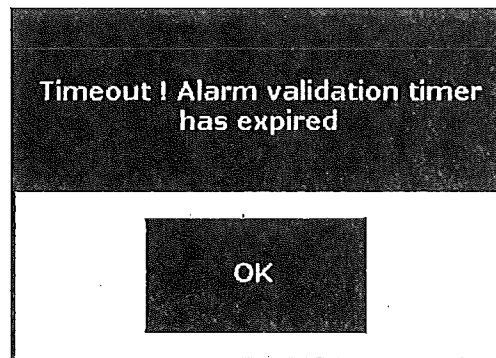


Figure 14 — Tool Tip Examples for Truncated Text

Alarm Time-out

The Acceptance Timer allows the user to identify a valid alarm or to reject the alarm for reasons such as state mismatch or incorrect license plate reading. Both the accepted and rejected alarms are stored, but marked appropriately for after-action reporting. If the user fails to respond within the Acceptance Period (about three minutes), the system times out and saves the alarm for processing at the Operations Center.

A Time-out Progress Bar at the bottom right of the display area (see Figure 13 on Page 29) shows the elapsed time. If the user fails to respond within the Acceptance Period a Time-out Message appears.



MPH-900-CSUG-017 CDR

Figure 15 — Time-out Message

Alarm with Multiple Choice

The system can read license plates but is not always able to associate the state. If the Hot List contains the same license plate (e.g., the same sequence of letters and numbers), but from different states (e.g., [ABC123, CO], [ABC123, AZ], [ABC123, NV]), the system generates an alarm and presents the various license plate/state alternatives.

The user can examine the different choices by means of the up and down Scroll Buttons in order to select the correct one.

Zoom Button

Each time an alarm goes off, the Alarm Image Controls become active. The Zoom button allows the user to enlarge the image in order to focus on the area of interest and enhance the image quality.

Alarm Class

The system is able to manage up to 11 different alarm classes including the standard default alarm (Class 00). Each alarm class is associated with a customizable sound (.wav file) making it possible for the user to differentiate the alarm's severity level. The Alarm Class Default Specifications are shown in Table F.

Note that you can change the Alarm ID or description associated with an alarm and have it display on the Car System screen. To do this:

1. Edit the file C:\Program File (x86)\Car System\GUI\Config\AlarmClassLabels so that the labels say what you want them to.

Table F — Alarm Class Default Specifications

Class	Alarm ID	Alarm Sound File	NYSPIN ID
00	Alarm (Default Alarm)	—	—
01	Stolen Vehicle	Stolen2A.wav	V
02	Wanted Person	Wanted2A.wav	W, M
03	Stolen License Plate	stolen_plate.wav	P
04	Suspended or Revoked License Plates	SUSPENDED2A.wav	X (S)
05	Scofflaw	Scof2a.wav	—
06	Stolen Out (of) State	—	V
07	Violent Gang (Member)	—	T
08	Sexual Offender	—	S
09	Other	—	C, H, N
10	Tax Scofflaw	—	—

Delayed Alarm

If an alarm goes off while the LPR Main Screen is closed (for example while the user is viewing GPS status or running another program), an alert dialog box appears.

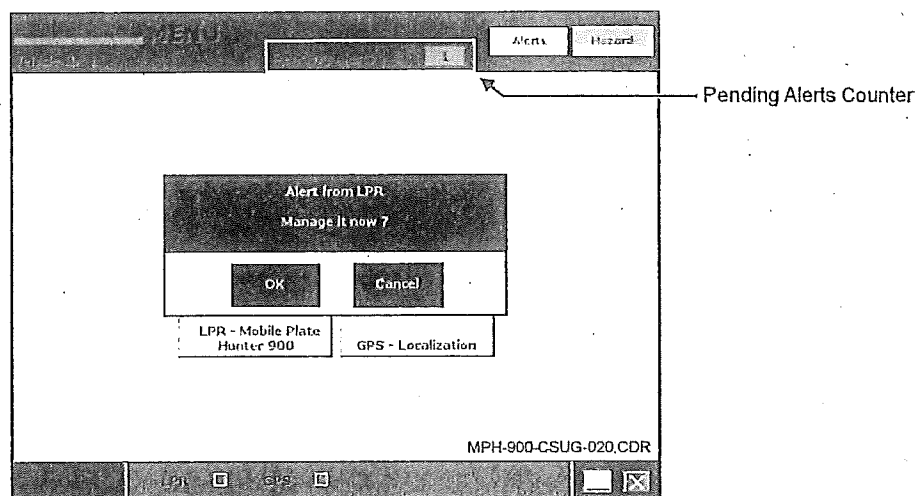


Figure 16 — Alert from LPR

If the user selects OK, they return to the LPR Main Screen and can accept or reject the alarm. If the user selects Cancel, the current screen remains displayed and the alarm management is postponed. The Pending Alerts Counter is incremented upward as shown above. If the user wants to manage the pending alarm, it is also possible to press the Alerts Button and the Alerts Screen appears as shown in Figure 17. By selecting the alarm row, it is possible to open the LPR Main Screen and manage the pending alarm.

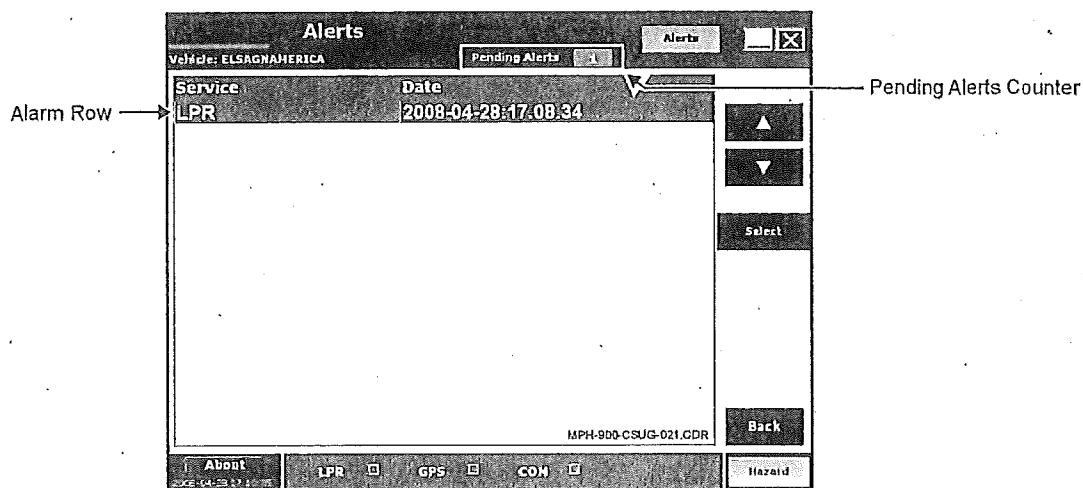


Figure 17 — Alerts Screen

Geofencing Alarm

A Geofencing alarm is a special kind of alarm occurs when two conditions are met at the same time:

- There is a match in a specific class of the Hot List associated to Geofencing-related license plates, and

- The match occurs within a specified area (called a Virtual Fence) according to the GPS read.

The typical application is the protection of school areas from registered sexual offenders. The function can also be used to enforce restriction orders related to a specific house or location. When an alarm is generated on a virtual-fence violation, and the map feature is installed, the Virtual Fence Map Button becomes active.



Figure 18 — Virtual Fence Map Button/Geofencing Alarm

Before accepting the alarm, press this Virtual Fence Map Button to switch to cartography and check the position of the alerted license plate inside the forbidden area. The Virtual Fence is enclosed in a red rectangle in the figure.

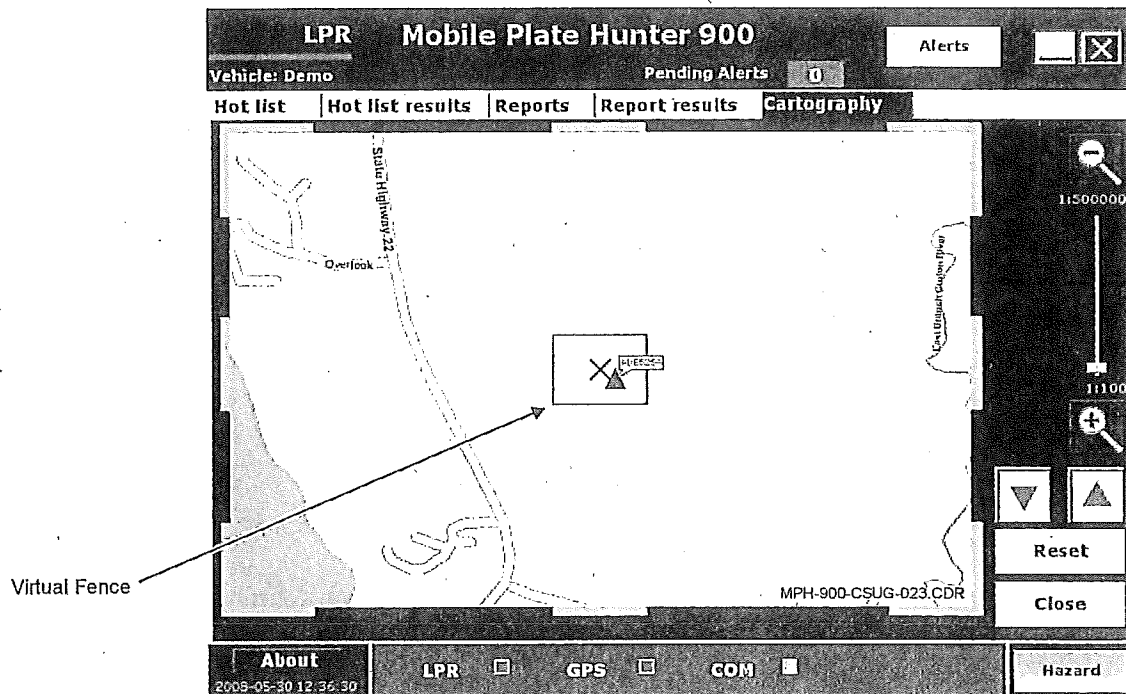


Figure 19 — Geofencing Alarm Display

Last Events Screen

The Last Events Screen is divided in two sections: Transits (Reads) and Alarms. The section on the left displays the last six transits and the right displays the alarms (if any).

NOTE: If the user closes the LPR Screen and returns to the Main Menu, the last Transits (Reads) Table is reset and begins to fill again as new license plates are read.

For each Alarm/Transit (Read) the information of Reader Code/Alias, License Plate, State/Country, and the timestamp are shown. The screen is continuously updated even during alarm handling.

The LPR activity is also associated with an audible "Read Beeping Sound" which, if enabled, occurs after each completed read. Double-clicking on an alarm present in the Alarms Section allows the user to switch to the Report Alarm Screen of the Car System.

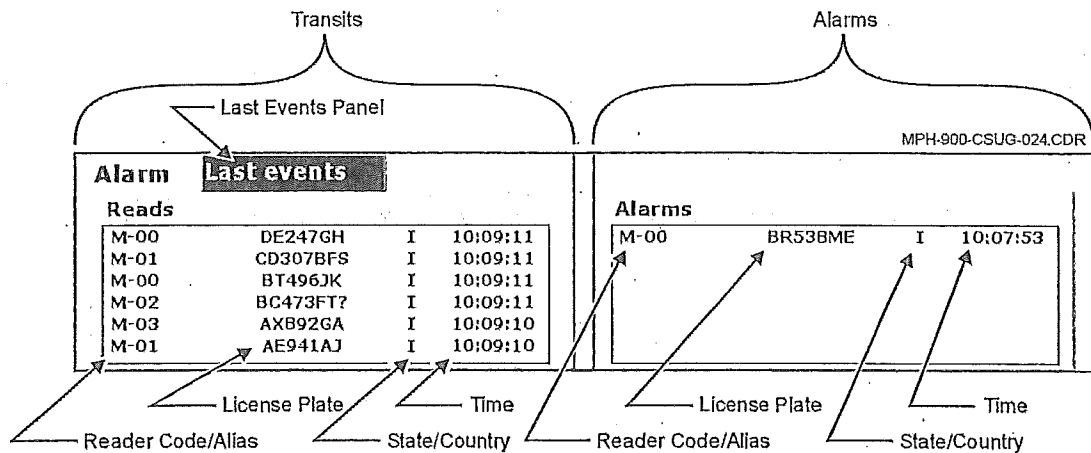


Figure 20 — Last Events Screen

Camera Management

The Camera Management feature allows the user to enter the Operations Menu and turn the license plate reader ON and OFF. The Operations Menu allows the user to look up the read and alarm database and to manage the External Hot List and the Local Hot List. This menu is described in the *Operations — Hot List Management* section that begins on Page 44.

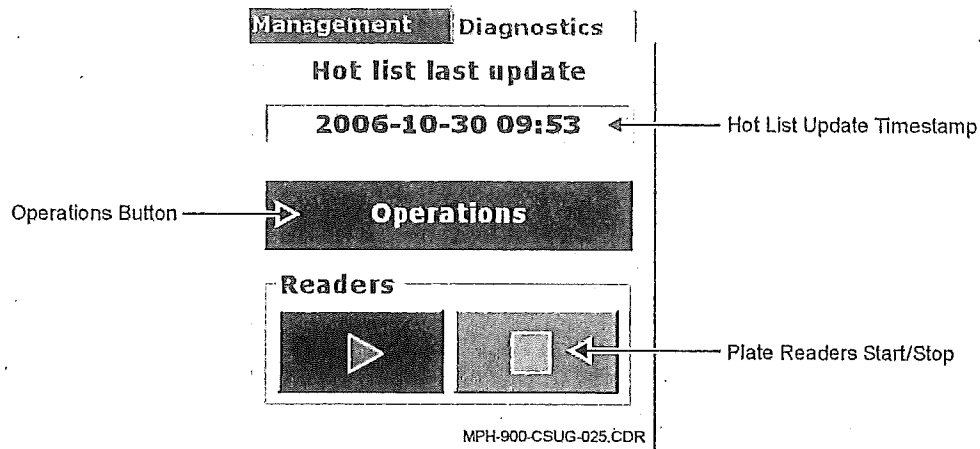


Figure 21 — Camera Management Area

Hot List Update Information

Refer to Figure 22. The date below Hot List "Last Update" shows the latest External Hot List Update. If the Hot List is not available or empty, the field displays "--/-- --:--". Clicking on the Hot List "Last Update" field displays the message shown in Figure 22, showing all the available information about the Hot List.

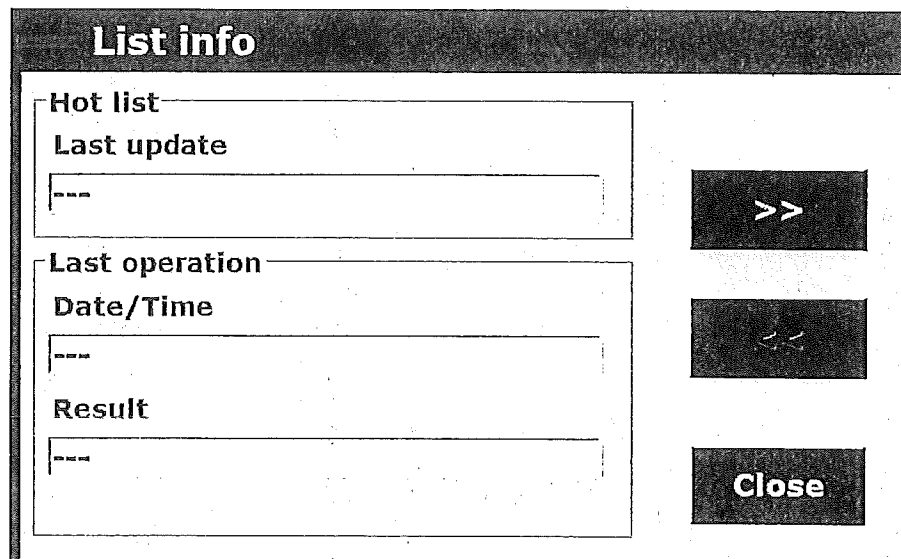


Figure 22 — Hot List Update Information Screen

Table G — Hot List Update Information Fields and Functions

Field/Function	Description
Last Update	The date and time when the last update occurred.
Last Operation	The date and time when the last operation occurred (this may coincide with Last Update). This indicates the last time when the system checked with the Operations Center for a new Hot List.
Result	The result of the last operation (Success/Replace/Update/Skip/Failed). Skip means that the currently loaded Hot List is up-to-date.
Toggle Button (>> OR <<)	Toggle among the Information Boxes for the various hot lists.
Close Button	Closes the Hot List Update Information Screen.

Use the **>>** and **<<** buttons to toggle from a similar information panel for one type of list to the next. The available lists are:

- Hot list
- Hot list local
- Fence list
- White list

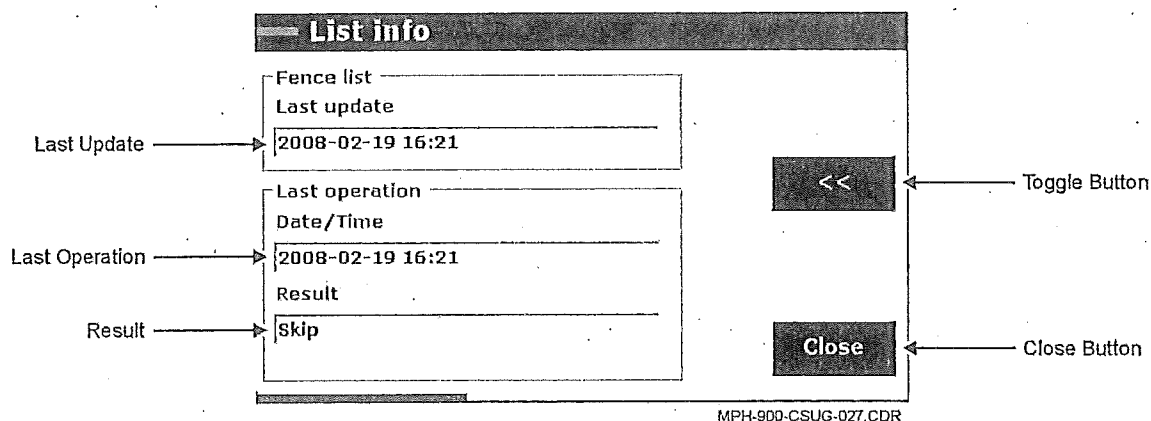


Figure 23 — List Info Message

The Long Range Communication feature is enabled and a Hot List update is in progress, the "In progress..." string appears in the date field as in Figure 24.

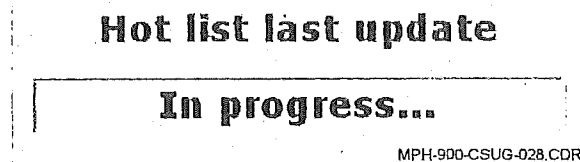


Figure 24 — Long Range Communication Updating Message

Cameras Control

The license plate readers can be controlled through the START/STOP Buttons shown in Figure 25. By pressing the "Readers START Button", all the configured cameras are set to reading mode. By pressing the "Readers STOP Button", all the cameras are stopped.

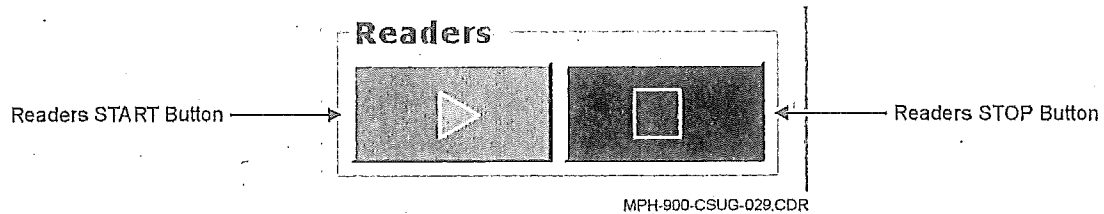


Figure 25 — Start/Stop Readers

The pressed button (START or STOP), becomes disabled (gray). In Figure 25, the reader is in the "START" condition. When all the LPR cameras are stopped, the color of the LPR status indicator changes from green to yellow.

Camera Diagnostics

The Diagnostics Tab on the upper right of the interface brings the user to the Camera Diagnostics function.

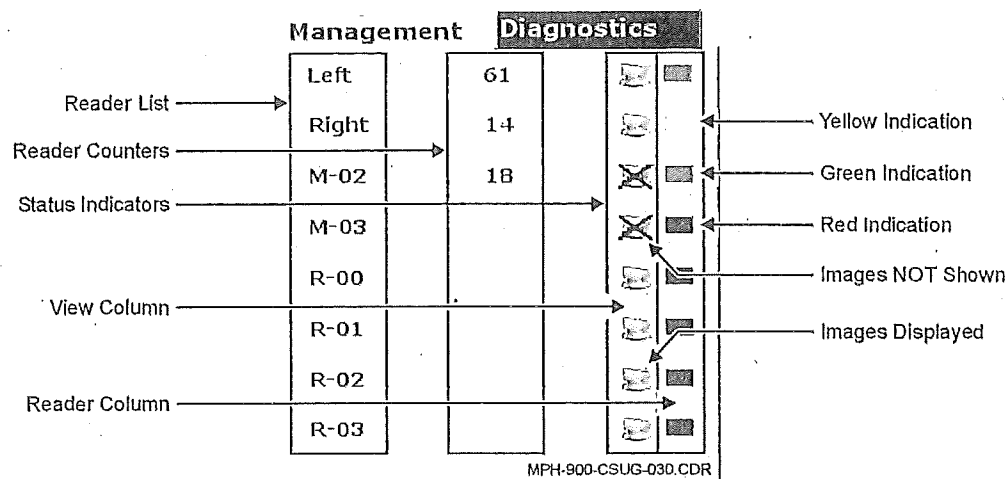


Figure 26 — Camera Diagnostics Screen

Table H — Camera Diagnostics Parameters and Indicators

Field/Function		Description
Reader List		This section contains the list of all readers configured in the system; up to eight readers can be present. Each reader is identified by a user-defined name.
Reads Counters		This section shows the reads counted per LPR camera.
Status	View Column	Images Displayed Icon — The Transit/Alarm images coming from the corresponding reader are displayed.
		Images NOT Shown Icon — The images of transit coming from the corresponding reader are not shown. Alarms are always active and displayed.
	Reader Column	Green Indication — The reader is present and active (running).
		Yellow Indication — The reader is present, but stopped or in live mode.
		Red Indication — The reader is not present, not functioning or disconnected.

Live Mode Function

The Live Mode Function allows the user to see live images coming from the selected reader. This feature can be useful during calibration or to check the image quality of each camera.

NOTE: When a camera is set to "Live Mode," active recognition and Hot List checking *stop* on both cameras until the Stop Button is pressed, returning the camera to active license plate reading mode.

The user can activate the live function by clicking on the name of the selected reader; the background color of the activated live camera and sidebars changes to the color blue and the status display areas appear yellow). To stop "Live Mode", press the selected name again or click on the "Management" tab.

When the color camera is present, by clicking on the displayed image the user can switch between the B/W and the color image.

Other considerations concerning the Live Mode Function are as follows:

- Only one camera can be "live" at a time
- Only active readers can be selected, and
- When a reader is set to "Live Mode", license plate recognition and Hot List checking on all readers are suspended until the reader is set back to normal mode.

Reader Information

When you move the cursor over the status color, a "Tool Tip" box containing relevant information about the selected reader is shown.

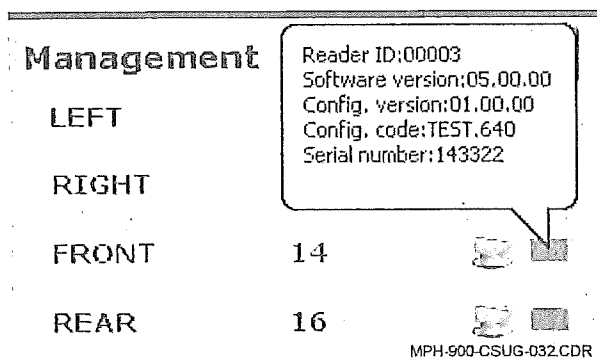


Figure 27 — Reader Information Tool Tip

By double-clicking on the colored status indicator, a message as shown in Figure 28 appears and displays information about the selected reader. In addition, refer to Table I that follows for more detailed information.

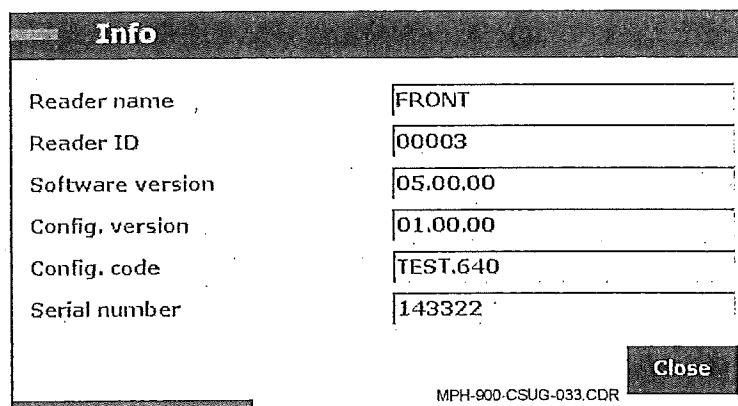


Figure 28 — Reader Information

Table I — Reader Information Parameters and Indicators

Field/Function	Description
Reader Name	The default camera name or user defined alias of the reader.
Reader ID	The identification number of the reader.
Software Version	The version of the software installed onto the reader.
Config. Version	The version of the configuration installed onto the reader.
Config. Code	The name of the Optical Character Recognition (OCR) protocol.
Serial Number	The serial number of the reader.

Camera Snapshot Function

The purpose of the Camera Snapshot Function is to use the LPR cameras as normal digital cameras and to take snapshots of the scene in the camera field of view.

Select the "Live Mode" by clicking on a Status Indicator under the Diagnostics Tab. Then select either the color or the black and white image by clicking directly on the Live Image Feed Area. When ready, click the Camera Icon on the top left to freeze the frame.

The user can then retrieve their pictures in JPG format from the Data Export folder defined in the setup phase. The installation setup default is **C:\DataExport**.

Other Controls

To better understand the three sections that follow, refer to the Menu Application Buttons shown below. Each button is described in the sections that immediately follow.

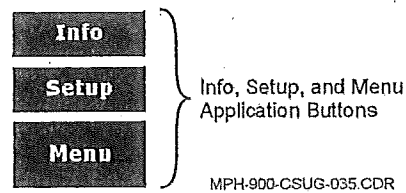
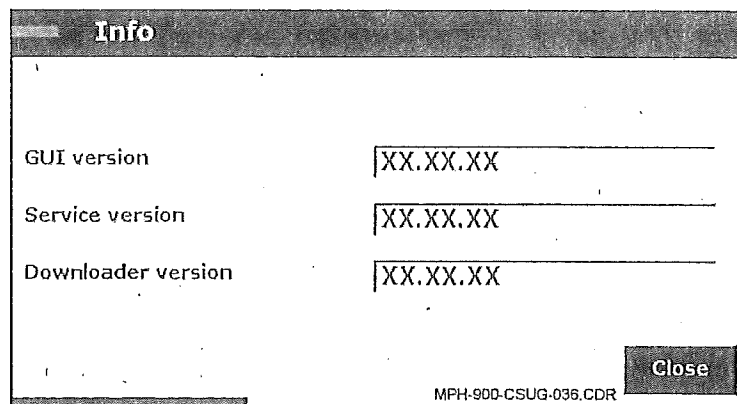


Figure 29 — Application Buttons

Info (Information) Button

Use the Info (Information) Button to show details about the software and configuration version installed. When it is selected, a screen similar to the one shown in Figure 30 appears. Refer to

Table J to better understand the screen parameters.



The screenshot shows a window titled "Info". Inside the window, there are three rows of text, each with a label on the left and a text field on the right. The first row is "GUI version" followed by a text field containing "XX.XX.XX". The second row is "Service version" followed by a text field containing "XX.XX.XX". The third row is "Downloader version" followed by a text field containing "XX.XX.XX". In the bottom right corner of the window, there is a "Close" button. At the bottom center of the window, the text "MPH-900-CSUG-036.CDR" is displayed.

Info	
GUI version	XX.XX.XX
Service version	XX.XX.XX
Downloader version	XX.XX.XX
MPH-900-CSUG-036.CDR	
Close	

Figure 30 — Info (Information) Screen

Table J — Info (Information) Screen Parameters

Field	Description
GUI Version	Software version of the Car System GUI.
Service Version	Service software version.
Downloader Version	Downloader software version.

Setup Button

Clicking on the Setup Button opens the Setup Configuration Screen.

Figure 31 — Setup Configuration Screen

Table K — Setup Configuration Screen Parameters

Function	Description
Reader View Enable	Used to enable/disable the view of transits of the corresponding reader, check the appropriate box to enable. A grayed reader entry means that it is configured but disabled. To enable it, enter Setup Advanced Menu by clicking the Advanced Button. Refer to the <i>Setup Advanced Menu</i> section that follows on Page 43.
Alarm Class Enable	Used to enable/disable the alarm class sound, check the appropriate box to enable. If the alarm is disabled, all the alarms of that class will be silent. They will still be sent to the Operations Center, but no real-time notification will occur onboard. The default start condition is Enabled for all classes. Click on the button to preview the configured sound for that level.

Virtual Fence	The Globe Icon in the Virtual Fence column (see Figure 31) indicates that the class is associated with a virtual fence. See the <i>Geofencing Alarm</i> section on Page 32 for more details.
Transit Beep	Used to enable/disable the sound generated at each read, check the appropriate box to enable. The default start condition is sound enabled. NOTE: This setting now persists across a user's logins to Car System.
White List	Check to enable an alarm if there's a successful comparison against a White List.
Advanced Button	Used to enter the Setup Advanced Menu to change configuration settings. See the <i>Setup Advanced Menu</i> section on Page 43 for more details.
Cancel Button	Used to close the screen without changing the previous settings.
OK Button	Used to close the screen acquiring the new settings (if any).

❑ Setup Advanced Menu

Clicking on the Advanced Button shown in Figure 31 makes the Advanced Menu Screen shown in Figure 32 appear. The various parameters are explained below in Table L.

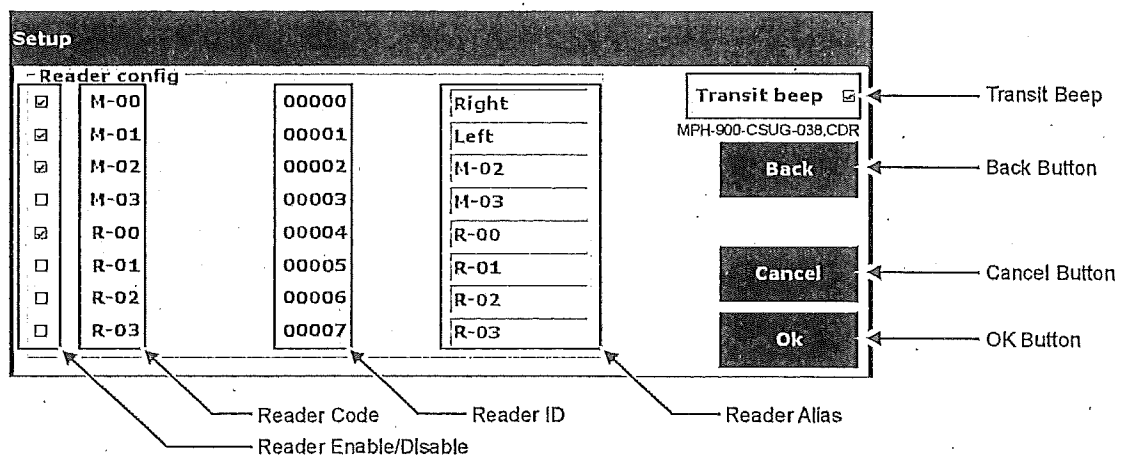


Figure 32 — Setup Advanced Menu Screen

Table L — Setup Advanced Menu Screen Parameters

Function	Description
Reader Enable/Disable	Used to enable/disable reader. Check the appropriate box to enable. The disabled reader will be unavailable and no longer in the reader list in the Camera Diagnostics Screen (see Page 37).
Reader Code	The internal code of the reader.

Reader ID	The identification number of the reader. This is embedded in the LPR camera and cannot be changed.
Reader Alias	A mnemonic name of the reader. The user can change the default name with a new one (up to six characters). This will be the alias referring to the reader shown for transits and alarms.
Transit Beep	Used to enable/disable the sound generated at each read, check the appropriate box to enable. The default start condition is sound enabled. NOTE: This setting now persists across a user's logins to Car System.
Back Button	Used to return to Setup Screen.
Cancel Button	Used to close the screen without changing the previous settings.
OK Button	Used to close the screen acquiring the new settings (if any).

Menu Button

Use the Menu button to close the LPR application and return to the Main License Plate Reader (LPR) Screen.

Operations — Hot List Management

This screen allows the user to manage the Hot List and manually check a license plate against the list. When the Main License Plate Reader (LPR) Screen's "Operations Button" is pressed (see Figure 11 on Page 26), the screen shown below in Figure 33 appears. The following control buttons are available:

- Search Button — Search for a specified license plate string in the Hot Lists
- Insert Button — Insert a specified license plate into the Hot List
- Delete Button — Delete a specified license plate from the Hot List
- Delete Local Hot List Button — Delete the entire Temporary Local Hot List*, and
- Close — Close the Hot List Management Screen and return the user to the Main License Plate Reader (LPR) Screen.

***NOTE:** The Temporary Local Hot List is the set of license plates entered manually since the last External Hot List update (it is composed of all the license plates inserted from the Car System interface through the Insert Button). A user may choose to delete the Temporary Local Hot List at the end of a shift, thereby removing all the temporary license plates.

NOTE: The External Hot List is the one downloaded at the beginning of the mission. The External Hot List cannot be deleted from the Car System User Interface.

Figure 33 — Hot List Management Screen, View “A”

Continue to Table M to better understand the additional fields, functions, and buttons that are included in the Hot List Management Screen.

Table M — Hot List Management Screen, View “B” Fields and Functions

Field/Function	Description
Function Tabs	To select one of the following tabs: Hot List, Hot List Results, Reports (if enabled), Report Results (if enabled), and Cartography (if enabled).
License Plate Field	Field used to input the license plate string; see Table N on Page 46 for allowable characters.
Note Field	Field for the insertion of a note to be associated with the wanted license plate (not mandatory) and set the alarm level.
State/Country Selection	To select a State/Country from the list using the drop-down menu or by using the Up and Down Arrow Buttons.
Caps Lock Key	To toggle the alphabetic keys between upper and lower case letters.
Cancel Key	The Cancel Key can be used to clear any information that has been added during an operation.

Space Bar Key	To insert a blank space.
Special Characters Key	To toggle between alphabetic letters and the symbols (returns to alphabetic letters after each symbol selection).
Backspace Key	Although there is no Backspace Key on the, the Backspace Key on the user's computer keyboard can be used instead.
Cursor Control Keys	To move the cursor in the direction of the arrows.

Refer to Table N for specifications about the allowable characters that can be entered in the License Plate Field.

Table N — Hot List Management Screen Allowable Character Guide

Character	Description
A through Z	Alphabetic characters.
0 through 9	Numeric characters.
?	Special character that suggests any alphanumeric characters (A - Z and 0 - 9). Only one "?" can be included in the string and it can be in any position (e.g., AB?23CD).

If an invalid character is inserted the following message-box is displayed.

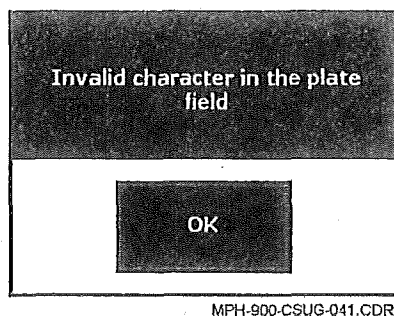


Figure 34 — Invalid Character Message

Search — License Plate Search

This command performs a search for the specified license plate in both the Local Hot List and External Hot List. Perform the following steps to search for a specific license plate:

- (1) Insert the string of the license plate to be searched in the License Plate Field.
- (2) Select the Country/State using the drop-down list or the Up and Down Arrow Buttons.
- (3) Press the Search Button.

NOTE: By using the "?- ALL STATES" option in State/Country, all license plates that match the license plate string are included in the result.

To increase the speed of the search operation, following the insertion of the license plate, the user can press the <Enter> Key on the user's computer keyboard while the focus is on the "License Plate" or "State" field. The <Enter> Key is equivalent to the Search Button in this context.

When the command is executed, one of two messages appears.

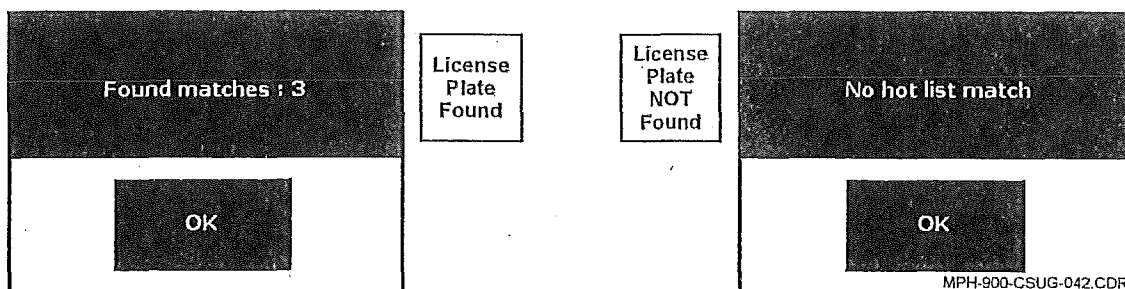


Figure 35 — License Plate Search Messages

□ License Plate Found

This message appears if one or more license plates are found. The message also includes the number of hits. By clicking the OK Button, the system presents the "Hot List Screen Results."

❑ License Plate NOT Found

This message appears if the searched license plate is not present in the Hot Lists. By clicking the OK Button, the system returns to the Hot List Management Screen.

Hot List Search Results

After a successful search with at least one license plate having been found (refer to the preceding section), clicking on the Report Results Button will result in the display of a Hot List Results Screen similar to the one shown in Figure 36. Refer to Table O on Page 48 to better understand Hot List Search Results.

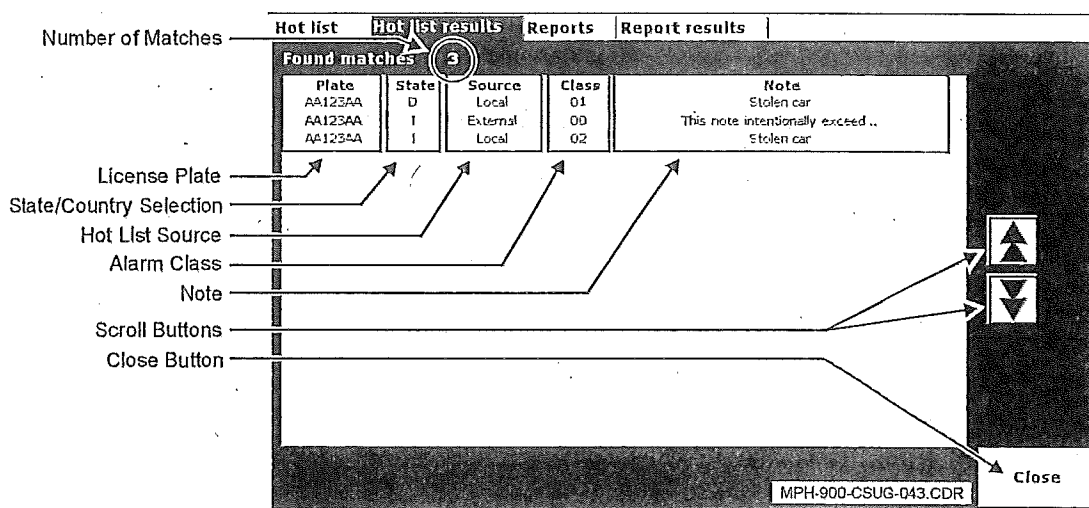
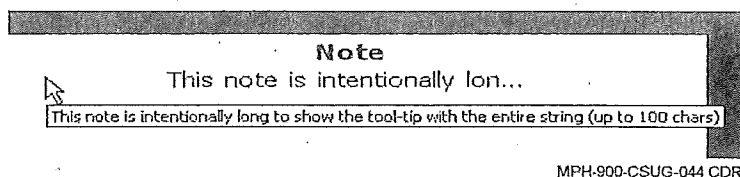


Figure 36 — Hot List Search Results Screen

Table O — Hot List Search Results Screen Fields and Functions

Field/Function	Description
License Plate	The license plate for which the search was made. It is possible to find the same license plate twice, one in the Local Hot List and the other in the External Hot List.
State/Country Selection	The originating States or Countries of the searched license plate.
Hot List Source	This indicates in which list the license plate is present. The name of the Hot List Owner (e.g., "NYPD"), "External" if the list has no name, or "Local" for the onboard list.
Alarm Class	This specifies the class of alarm associated with the license plate (00 - 10).
Scroll Buttons	Used to scroll up or down the list.

Note	The note linked to the license plate. When the note is too long, the field cannot show the entire string and it will be truncated. When this happens, three dots will be present and a Tool Tip containing the entire string will be displayed (see Figure 37). However, the string cannot exceed 100 characters in length.
Close Button	Used to close the Hot List Search Results Screen.



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Figure 37 — Hot List Note Tool Tip

Insert — License Plate Insertion

This action inserts the specified license plate into the Local Hot List. Perform the following steps to insert a license plate:

- (1) Insert the string of the license plate to be inserted in the License Plate Field.
- (2) Select the Country/State using the drop-down list or the Up and Down Arrow Buttons.
- (3) Insert a note (optional) in the Note Field.
- (4) Press the Insert Button.

□ Alarm Class Choice

During the license plate insertion procedure the system requires that the user select the Alarm Class by pressing one button in the Alarm Class Choice Screen (see Figure 38 that follows). Up to 11 different alarm classes can be chosen. If the user does not want to select a class (standard alarm), the user should select the Default Button.

Each alarm class is associated with a customizable sound message (.wav) making it possible to specify the exact meaning of the alarm (Stolen Car, Wanted or Missing Person, etc.). When selecting a class with an associated Virtual Fence, the alarm occurs only if the license plate is inside the fence area.

Please, select alarm class		
Stolen vehicle	Wanted person	Stolen plate
Suspended revoked	Scofflaw	Stolen out state
Violent gang	Sexual offender	Other
Tax scofflaw	default	

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Figure 38 — Alarm Class Choice Screen

If insertion succeeds, the License Plate Insertion Succeeded Message shown in Figure 39 appears.

Plate insertion succeeded
OK

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Figure 39 — License Plate Insertion Succeeded Message

If the license plate has been previously inserted a message will appear notifying the user that the license plate is already in the Hot List. If the command fails, the image shown on the right side of Figure 40 will appear. Click OK to escape from the message. By clicking the OK Button, the Retroactive Alarms Search Box (Search in Previous Reads) will appear (refer to Figure 41).

<table border="1"> <tr> <td>This Plate is already in the Hot List</td> </tr> <tr> <td>OK</td> </tr> </table>	This Plate is already in the Hot List	OK	<table border="1"> <tr> <td>Already in Hot List</td> </tr> </table>	Already in Hot List	<table border="1"> <tr> <td>Command Fail</td> </tr> <tr> <td>OK</td> </tr> </table>	Command Fail	OK
This Plate is already in the Hot List							
OK							
Already in Hot List							
Command Fail							
OK							

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Figure 40 — License Plate Insertion Unsuccessful Message

Whenever a license plate is inserted into the current Local Hot List an optional query on all the past reads in the database can be carried out. A dialog box is presented for confirmation by the user (see Figure 41). In the event of a positive match, a table with all the previous reads of the new wanted license plates is presented. See the *Operations — Reports and Queries* section on Page 52 for more details about results.

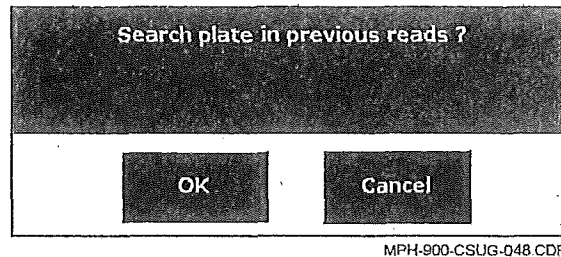


Figure 41 — Retroactive Alarms Search Box (Search in Previous Reads)

Delete — License Plate Deletion

This command deletes the specified license plate from the Local Hot List. Perform the following steps to delete a specific license plate:

- (1) Insert the license plate string in the License Plate Field.
- (2) Select the Country/State using the drop-down list or the Up and Down Arrow Buttons.
- (3) Press the Delete Button.

Failures occur in the following conditions:

- Trying to delete a license plate not present in the Local Hot List (e.g., incorrect State/Country)
- Trying to delete a license plate already deleted, and
- Trying to delete a license plate from the External Hot List.

Delete Local Hot List

This command deletes the complete Local Hot List. Perform the following steps to delete the entire Local Hot List:

- (1) Press the Delete Local Hot List Button. As shown in Figure 42, a confirmation message appears.

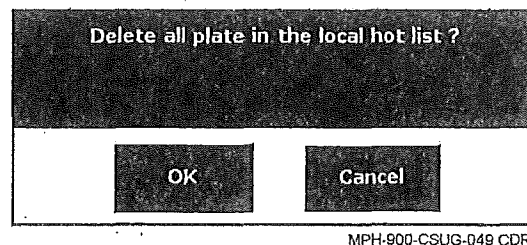
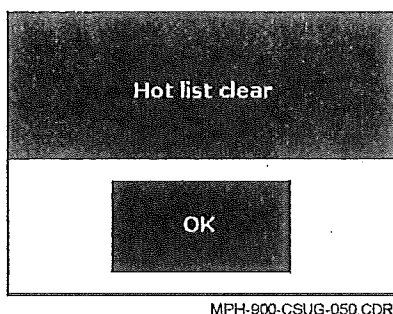


Figure 42 — Local Hot List Delete Message

- (2) To confirm the deletion of the entire Local Hot List, press the OK Button (otherwise press the Cancel Button to cancel the deletion).

When the command has been successfully executed, the Local Hot List Clear Message appears.



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Figure 43 — Local Hot List Clear Message

The Local Hot List is the set of license plates entered manually since the last external update. The user may choose to delete the Local Hot List at the end of a shift, thereby removing the license plates that have been of interest during the patrol mission.

The lifetime of Local Hot List entries is a configurable value. The default value is usually set to five days. After this period, the Car System will automatically delete the expired entries.

NOTE: The External Hot List cannot be deleted by the user.

Retroactive Alarms

Whenever a new license plate is inserted into the current Local Hot List an optional query on all the past reads in the database is presented to the user. The Retroactive Alarms Search Box (Search in Previous Reads) message asks for confirmation by the user. In the case of a positive match, a table with all the previous reads of the new wanted license plates is presented to the user.

Operations — Reports and Queries

The Operations Button on the Main License Plate Reader (LPR) Screen opens the Hot List Management Functions and the onboard reporting functions. The reporting functions include the following:

- **Shift Report** — This report contains the total reads, alarms and rejected alarms of the current day. Data is presented as a table with each row containing the total number of reads and alarms for each one-hour time interval of the day, from 00:00 to 11 p.m. The last row refers to 23:00 – 23:59:59.
- **General Report** — This report contains the total daily reads and alarms for every previous operations day. This is a multi-page table where each row corresponds to a day. The total number of recorded days is an installation parameter and can be set according to the user's needs.

All the previous reads and alarms are stored in the system. The user interface provides the means to query and retrieve data and images.

NOTE: The reporting and query operations can be used even if the MDT/laptop is not connected to the MPH-900 Processor.

□ Reports and Queries Definitions

The following are definitions for the terms associated with related functions:

- Shift — A Shift coincides with a solar day from 00:00:00 to 23:59:59.
- Statistics Definitions — Each statistic record shall include:
 - Reads — Any actual license plate read including alarms
 - Alarms — Accepted Alarms (i.e., confirmed by the user) by means of the Accept Button on the user interface plus Time-out Alarms (neither confirmed nor rejected), and
 - Rejected Alarms — Rejected Alarms (false or repeated) by means of the Reject Button in the user interface.

Shift Report

The Shift Report contains the total reads, alarms and rejected alarms of the current day. Data is presented as a table with each row containing the total number of reads and alarms for each one-hour time interval of the day, from 00 to 23 (11 p.m.). The last row refers to 23:00 – 23:59:59.

Hour	Reads	Alarms	Rejected alarms	2005-05-26
00-01	2276	0	0	
01-02	2073	0	0	
02-03	2279	0	0	
03-04	2276	0	0	
04-05	2274	0	0	
05-06	2270	0	0	
06-07	2269	0	0	
07-08	2273	0	0	
08-09	1244	5	7	
09-10	0	0	0	
10-11	0	0	0	
11-12	0	0	0	
12-13	0	0	0	
13-14	0	0	0	
14-15	0	0	0	
15-16	0	0	0	
16-17	0	0	0	
17-18	0	0	0	
18-19	0	0	0	
19-20	0	0	0	
20-21	0	0	0	
21-22	0	0	0	
22-23	0	0	0	
23-00	0	0	0	

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Figure 44 — Shift Report Screen

Table P — Shift Report Screen Fields and Functions

Field/Function	Description
Hour	The one-hour time period in which it occurred.
Reads	The number of reads (including Alarms and Rejected Alarms) for the specified hour interval.
Alarms	The number of Alarms for the specified hour interval.
Rejected Alarms	The number of Rejected Alarms for the specified hour interval.
Export Button	Use this button to save the query results into a file for exporting.

Back Button	Use this button to close this screen and return to the Main License Plate Reader (LPR) Screen (see Figure 11 on Page 26).
-------------	---

General Report

The General Report contains the total daily reads and alarms for every previous operations day. This is a multi-page table where each row corresponds to a day.

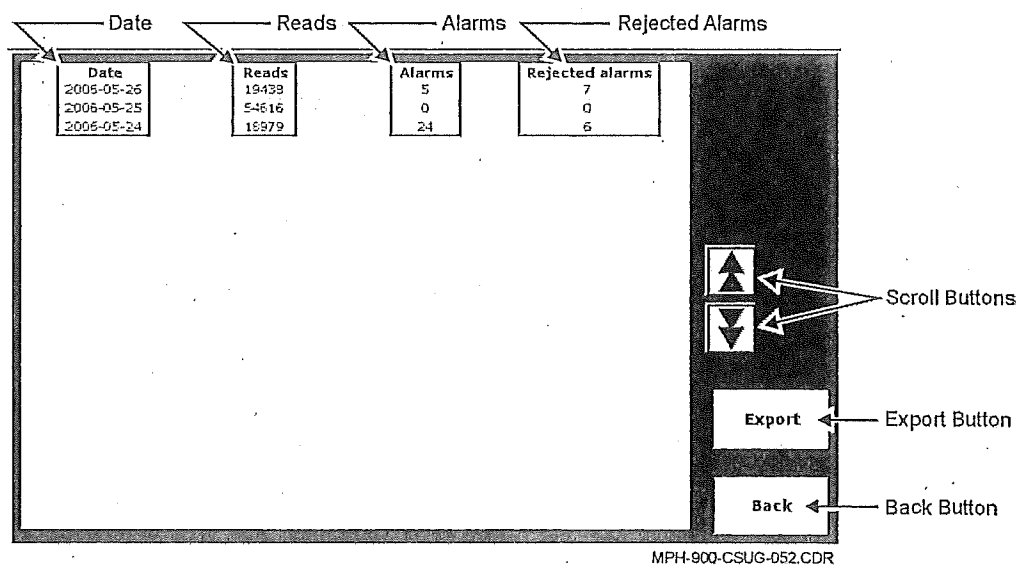


Figure 45 — General Report Screen

Table Q — General Report Screen Fields and Functions

Field/Function	Description
Date	Year-Month-Day, one day per row.
Reads	Number of reads (including Alarms and Rejected Alarms) for the specified day.
Alarms	Number of Alarms for the specified day.
Rejected Alarms	Number of Rejected Alarms for the specified day.
Scroll Buttons	To scroll page up or down to see more pages.
Export Button	Use this button to save the query results into a file for exporting.
Back Button	To close this screen and return to Main License Plate Reader (LPR) Screen (see Figure 11 on Page 26).

Queries

It is possible to query the database of Reads/Alarms. The search input fields are:

- Reads, alarms, rejected alarms (default = Alarms)
- State (default = All States)
- License Plates
- Date Range (default = today). The Year default is the current year. A button allows changing it to the previous Year, and
- Time Range (default = last hour).

Table R — Queries Input Keys (Date, Time, and License Plate) Fields and Functions

Field/Function	Description
Start Date/Time	Fields with Day-Month-Year-Hour-Minute of start for searches of Alarms/Reads stored in the database; if an invalid date is entered, an error message appears.
End Date/Time	Fields with Day-Month-Year-Hour-Minute of end for searches of Alarms/Reads stored in the database; if an invalid date is entered, an error message appears.
License Plate String	The license plate that is the subject of the search.
Input Keys	Keys used to enter the string (license plate) and Date/Time values (Start and Stop). Keys are context sensitive and change in accordance with the highlighted field. Unique screens, keys, and fields allow you to input Date, Time, and License Plate. As soon as the focus is on one of the input fields, the corresponding keyboard is activated.
State/Country	Used to select a State/Country from the list using the drop-down menu or using the Up and Down Arrow Buttons.
Search Button	Used to search the database with the inserted constraints.
Type Selection	Selection among Alarms/Rejected Alarms/Reads for queries: ■ Alarms — Accepted Alarms (confirmed by the user) and Time-out Alarms (neither confirmed nor rejected) ■ Rejected Alarms — Rejected (false or repeated) alarms by means of the Reject Button on the user interface, and ■ Reads — Any actual license plate read, including alarms.
Data Download Button	Used to run a Data Download, which is a back-up of all the Reads/Alarms to be manually exported to the Operations Center. (This feature is only available when communication is NOT installed and may not be part of some systems.)
General Report Button	Used to generate a report that lists the total number of Reads, Alarms and Rejected Alarms present in the database, one row per day.
Shift Report Button	Used to generate a report that lists the total number of Reads, Alarms and Rejected Alarms present in the database, one row per hour. A Shift coincides with a solar day from 00:00 to 23:59:59 (11:59:59 p.m.) of the current day.
Close Button	Used to close this screen.

**Input Keys
for Date**

Hot list		Hot list results		Reports		Report results			
Start	18	09	2008	15	45	Alarms	Search		
	Day	Month	Year	Hour		Rejected alarms			
End	18	09	2008	16	00	Reads			
Plate			State	? - ALL STATES					

Day						Month		Year
1	2	3	4	5	6	January	February	2007
7	8	9	10	11	12	March	April	2008
13	14	15	16	17	18	May	June	
19	20	21	22	23	24	July	August	
25	26	27	28	29	30	September	October	
31						November	December	

Data download	
General report	
Shift report	
Close	

**Input Keys
for Time**

Hot list		Hot list results		Reports		Report results			
Start	18	09	2008	15	45	Alarms	Search		
	Day	Month	Year	Hour		Rejected alarms			
End	18	09	2008	16	00	Reads			
Plate			State	? - ALL STATES					

Hour						Month		Year
1	2	3	4	5	6	January	February	2007
7	8	9	10	11	12	March	April	2008
13	14	15	16	17	18	May	June	
19	20	21	22	23	00	July	August	
Minute						September	October	
						November	December	

Data download	
General report	
Shift report	
Close	

**Input Keys
for Plate**

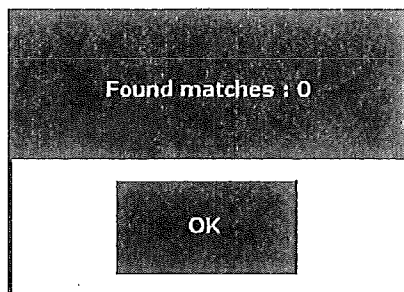
Hot list		Hot list results		Reports		Report results			
Start	18	09	2008	16	15	Alarms	Search		
	Day	Month	Year	Hour		Rejected alarms			
End	18	09	2008	16	30	Reads			
Plate			State	? - ALL STATES					

1	2	3	4	5	6	7	8	9	0
Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	▲
Z	X	C	V	B	N	M	◀	▼	▶
Caps		MPH-900-CSUG-053.CDR				#@...		Canc	

Data download
General report
Shift report
Close

Figure 46 — Queries Input Keys (Date, Time, and License Plate)

If the search succeeds, a screen with the results appears. Otherwise, the No Matches Found Message shown in Figure 47 appears.



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Figure 47 — No Matches Found Message

The search field values are kept after the end of the query to be used as the automatic starting point for the next query. The search values return to the default values when the Search Screen is closed.

As mentioned, as soon as the focus is on one of the input fields, the corresponding keyboard is activated. For example, if the user clicks (or touches) the "Day" field, the Date Keyboard is activated.

If the focus is on the "Hour" fields, a Unique Time Keyboard appears, replacing the Date Keyboard.

The search field values are kept after the end of the query to be used as the automatic starting point for the next query. The search values return to the default values when the Search Screen is closed.

❑ Search for Partial License Plates.

- It is possible to perform "wildcard" searches to find license plates compatible with partial information. The wildcard characters are as follows:
- % corresponds to * (every substring of any length)
- _ means any single character, and
- [ab] means either a or b.

Examples of "wildcard" searches are as follows:

- XYZ% will search for every license plate starting with XYZ of any length
- X_Z will search for partial three-letter license plate strings with any character in the middle position between the "X" and the "Z", and
- X[WY]Z will search for either XWZ or XYZ.

Report Results Screen

In the Report Results Screen, each record is a row in the scroll-down table on the upper section of the screen. The record is made up of the following fields:

- Date and Time — This is the timestamp of the read.
- License Plate — The read license plate string. The presence of characters in brackets means that there are ambiguities in the string interpretation. For example, "96[0O]AG" means that the third character may be either a 0 (zero) or an O (the letter capital O). Usually, both the possible strings "960AG" and "96OAG" are matched against the Hot List.

- **State** — Normally the reader cannot determine the state, so the field is filled with a "?". If there is a match in the Hot List (Alarm), the state in the Hot List associated with the license plate is placed in the state field.
- **Reader** — This field indicates which camera provided the Read. M-00 refers to the Right Side Camera and M-01 refers to the Left Side Camera, and
- **Lat and Long** — The latitude and longitude of the GPS coordinates.

NOTE: An entry shown in RED means that the GPS coordinates are unreliable (that is the number of satellites contributing to the position fix was lower than the threshold). Entries shown in italics mean that the entry is an Alarm.

□ **Export Function**

Every result screen contains an Export Button, including the Shift Report and General Report Screens. The buttons allow the user to save the result of the queries in a selectable folder. The Export Function's "Browse for Folder" Window allows the user to browse for the desired folder.

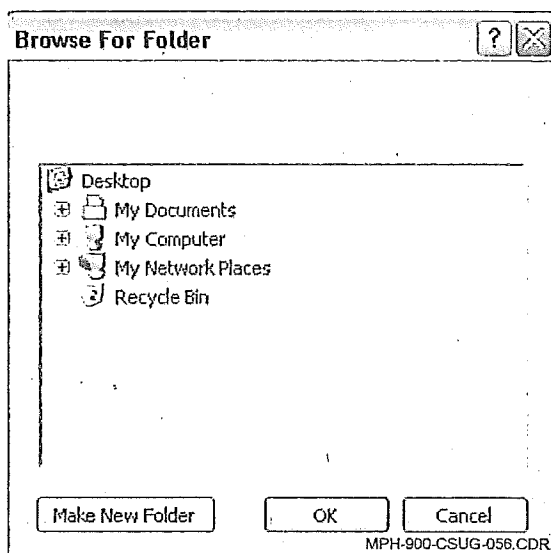


Figure 48 — Export Function "Browse for Folder" Window

The output files have the following naming conventions:

Car_<CarId>_GeneralReport_<date><time>.txt is the output of the General Report Export.

Car_<CarId>_ShiftReport_<date><time>.txt is the output of the Shift Report Export.

Car_<CarId>_Query_Reads_<date><time>.txt is the output file for any Search Operation on the Read database.

Car_<CarId>_Query_Alarms_<date><time>.txt is the output file for any Search Operation on the Read database.

<CarId> is the Car Identifier, which is a five-character numeric string from 00001 to 99999.

<date><time> is the date and time of the export operation.

The output files are "Tab Delimited" text files, which are easily importable into any commercial spreadsheet-type program. Basically, the Shift and General Reports contain the same information as the respective reports. The result of any query contains a list of records and each record has the following

fields: Date of the read, Time of the read, License Plate, State, Note (that is the Hot List description for alarms only), and Latitude and Longitude.

The record can also be directly imported into many commercially available mapping programs in order to visualize the read position on a geographical map. In addition, if the ZIP format has been selected during the setup phase, data and images will be exported as a ZIP file including an HTML file with links to both black and white and color images.

Operations — Cartography

Cartography is the plug-in feature that allows the user to localize each detected Transits/Alarm on a map. The user must set first the search criteria in the Reports Tab. Then, clicking on the Cartography Tab will result in displaying a map with the resulting transits and alarms.

The scale factor can vary to include all transits and alarms. Multiple blocks (maps) are generated if they exceed the configuration limit. Each read is represented as a green circle with a label with read information shown in black. An alarm is shown as a red triangle with a label with alarm information shown in red.

Table S — Cartography Screen Fields and Functions

Field/Function	Description
Scale Controls and Scale Indicator	This is used to change the scale factor of the map. Click on the "+" Magnifier Icon to shrink the area and see a more detailed map (maximum 1:100 as displayed by the Scale Indicator). Click on the "-" Magnifier Icon for a wider area view (minimum 1:2000000 as displayed by the Scale Indicator). Move the slider cursor to change magnification in a similar same manner. The zoom factor increment/decrement is logarithmic allowing more accuracy when it operates in detail or faster panning in large area view. The number of steps from minimum to maximum is a configurable value.
Map Panning Indicator	Click inside the map near the eight light-blue zones for map panning and the user will notice that the shape of the cursor changes and enables panning. To re-center the map, point the cursor (as a small crosshair) on the desired map center point and then click.
Map Area	This is the map display area. A flag pushpin with a label containing the license plate string indicates the place where the Transits/Alarms were captured. Green circles represent transits (with a label with read information shown in black) and red triangles indicate alarms (with a label with alarm information shown in red). If an alarm was generated by a virtual fence violation, the limits of the fence are also depicted.
Points Out of Map	It notifies the user that there are points not included in the displayed map (e.g., with invalid/missing coordinates) for the current block.
Block Scroll	Used to move to the next block (Down Arrow) or the previous block (Up Arrow). There is a limit of transits/alarms visualized in the map. If Reads/Alarms exceed the limit, they will split in multiple blocks (maps). Use this control to switch among the blocks. The maximum number of Transits/Alarms in a map is a configurable value.

Display Summary	This feature indicates the range conditions of the displayed map. Reads/Alarms are the number of Transits/Alarms in the map Start/End Date-Time (temporal ranges).
Reset Button	Used to reset to first block visualization.
Close Button	Used to close this screen and return to the previous screen.



Chapter 5 — GPS Position/Localization Feature

Introduction

The application's GPS Position/Localization Feature was developed in order to allow the user to receive and monitor the localization data in NMEA (National Marine Electronics Association) format coming from a GPS receiver connected to the onboard PC through a USB or Serial Com Port.

NOTE: Car System 5.6 supports the Garmin GPS receiver. This is the default for a "fresh" (i.e., not upgraded from a previous version) installation of Car System.

While in the GPS Position/Localization Mode, the LPR system still reads license plates and actively compares each to the Hot List. To access to the GPS application, the user selects the application button from the main screen (see Figure 5 on Page 21). After the application has started, the system displays the screen shown in Figure 49. Each of the fields shown in the figure is explained in the Table T that follows.

The screenshot shows a software interface titled "GPS - Position". At the top, it displays "Vehicle: Elsan" and "Pending Alerts 0". There is an "Alerts" button with a close icon. Below this is a "GPS Position" header. The main area is divided into two columns under the heading "GPS RAW DATA".

Left Column:

- Current Location:** Latitude [0:], Longitude [0:], UTC Time [], Altitude [].
- Navigation Info:** Speed (Kph) [], Speed (Mph) [], Direction [].

Right Column:

- Current Quality:** Quality [] (with a small bar graph), Age [], Station ID [], Geoseparation [].
- Satellite Data:** Number of Satellites [0], Dilution of Precision [], Horizontal DOP [], Vertical DOP [].

At the bottom right, there are "Info" and "Menu" buttons. A "Satellites" button is located below the satellite data fields. The bottom status bar includes the "ELSA North America" logo, a moon icon, a "DB" button, and a "COM" label.

Figure 49 — GPS Localization Screen

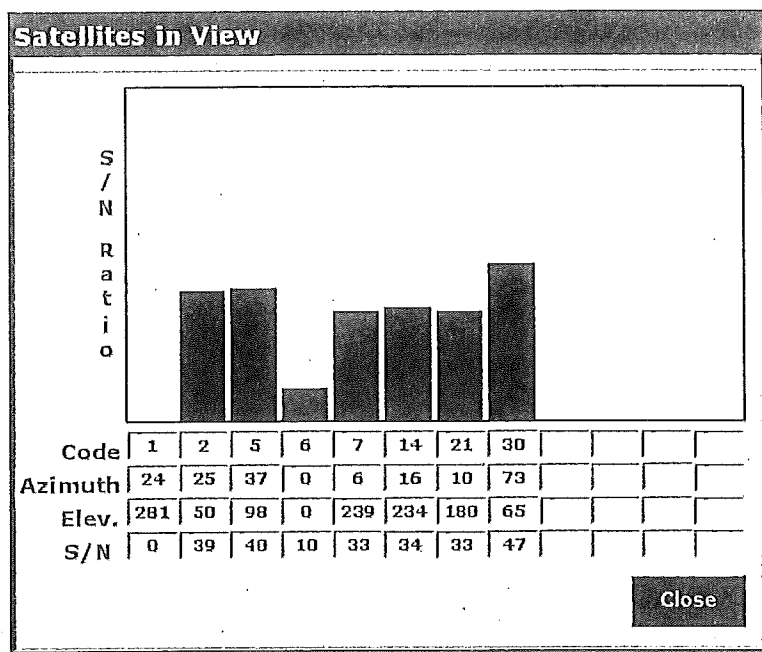
Table T — GPS Localization Screen Fields and Functions

Field/Function	Description
----------------	-------------

Current Location	Latitude	Latitudinal value (with the hemisphere N = North and S = South).
	Longitude	Longitudinal value (with E = East and W = West).
	UTC Time	Coordinated Universal Time (shown as Hours : Minutes : Seconds).
	Altitude	Mean sea level altitude (regarding the Geode, M = meters).
Current Precision	Speed (Kph)	Speed in Kilometers per hour.
	Speed (Mph)	Speed in Miles per hour.
	Direction	Direction in degrees North = 0.
Current Quality	Quality	GPS Quality: 0 = not valid, 1 = GPS, 2 = DGPS. To the right of this field a diagnostic status indicator that shows the quality the GPS signal (green = good, yellow = insufficient number of satellites, red = the receiver does not work or is not connected). It represents the same code shown in the diagnostic section.
	Age	Time in seconds from last DGPS update.
	Station ID	DGPS station Identification (0000 - 1023).
	Geoseparation	Separation from geode.
	Number of Satellites	Number of satellites in view from the GPS sensor.
	Dilution of Precision	A low DOP value represents a better GPS positional accuracy.
	Horizontal DOP	Horizontal Dilution of Precision — A low HDOP value represents a better GPS positional accuracy.
	Vertical DOP	Vertical Dilution of Precision — A low VDOP value represents a better GPS positional accuracy.
	Satellites Button	Use this button to open a screen showing the information about the satellites in view. Refer to the <i>Satellites (Satellites in View)</i> section that immediately follows.

Satellites (Satellites in View)

Press the Satellites Button and the Satellites in View Screen shown in Figure 50 appears. The information presented on the screen details the satellites in view. In the upper section of the screen, a vertical bar indicates the Signal to Noise Ratio of each satellite in view. In the lower section of the screen, information is given about each satellite's Code Number, Azimuth, Elevation, and a numeric value for the Signal to Noise Ratio.



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Figure 50 — Satellites in View Screen

Satellites in View Screen Fields and Functions

Field/Function	Description
Code	The code number of the satellite.
Azimuth	The azimuth value of the satellite.
Elev.	The elevation value of the satellite.
S/N	The Signal to Noise Ratio numeric value of the satellite.
Close	The Close Button used to close the current view and return to the GPS Localization Screen (Figure 49 on Page 61).

Diagnostic

This indicator allows the user to realize if there is any problem with the service and the GPS sensor.

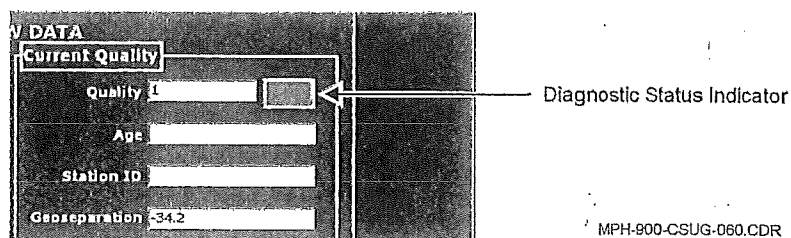


Figure 51 — Diagnostic Status Indicator

The Diagnostic Status Indicator can assume the following statuses (note that the color samples shown in the table may not be exactly the same as they appear on your screen.):

Table U — Diagnostic Status Indicator Color Guide

Color	Sample	Description
Gray		The service has not sent any information about the status.
Green		The service and the GPS sensor are working.
Yellow		The sensor is connected but it is not receiving information from enough satellites in order to give accurate information.
Red		The device is not connected or is not working.



Chapter 6 — Hot List Manual Import

Introduction

A prerequisite for the MPH-900 Alarm Mode function is the availability of a list of wanted license plates or Hot List. Without a correctly loaded Hot List, the system can only work in Data Collection Mode, meaning it just reads and stores every license plate that crosses the camera's field of view.

The MPH-900 uses a very simple format for Hot List entry. Records consist of a maximum 8-character license plate string, a 2-character state and a note or comment field that can be up to 100 characters long. The note field is displayed to the user on an alarm and can be unique to the record.

Once a properly formatted Hot List is prepared and placed in a ".txt file", copy the file to the MDT folder (<path>\hotlist) where <path> is the installation drive (for example C:\). The Hot List file name can have the format <AnyName>.<ext> where <AnyName> is a generic or mnemonic alphanumeric name and <ext> is a file extension (for example ".TXT") as defined in the configuration file. The default file extension is "TXT".

When a Hot List with a generic filename is imported, the GUI shows the load time (see Figure 52). If the Hot List file name is in the format: YYYYMMDDhhmmss.TXT, the information in Table V applies to the naming conventions and the GUI shows the date and time as specified in the filename. However, when the GUI displays the information about the Hot List Last Update, the seconds values are not displayed.

Table V — Hot List File Name Parameters

Field	Description	Value
YYYY	Year	1900 or greater
MM	Month	01-12
DD	Day	00-31
hh	Hours	00-23
mm	Minutes	00-59
ss	Seconds	00-59

Hot list last update
2005-06-14 09:06

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Figure 52 — Hot List Last Update Example

After the Hot List file has been copied into the specified directory, the system starts transferring the data and the message shown on the left-side image in Figure 53 appears. As the transfer ends, the Hot List update process begins (refer to the right-side image in Figure 53).

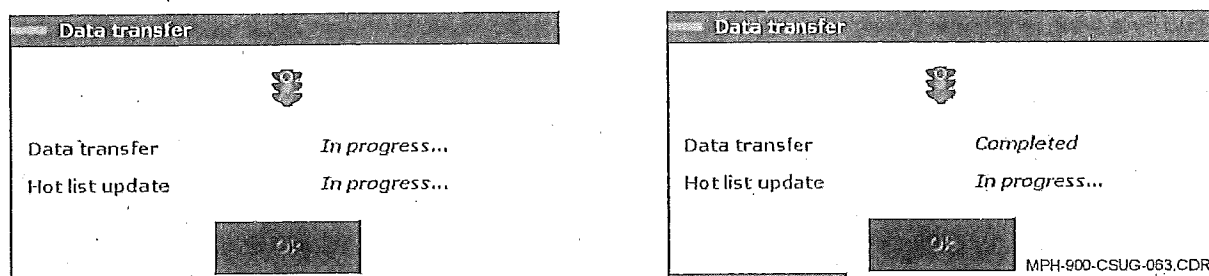


Figure 53 — Hot List Importation Messages

At the end of update process, the message shown in the left-side image of Figure 54 appears if the operation succeeded. If the operation did NOT succeed, the message shown on the right-side image of Figure 54 will appear.

NOTE: If the "Failed" message appears, contact the system administrator or technical support in order to correct the problem.

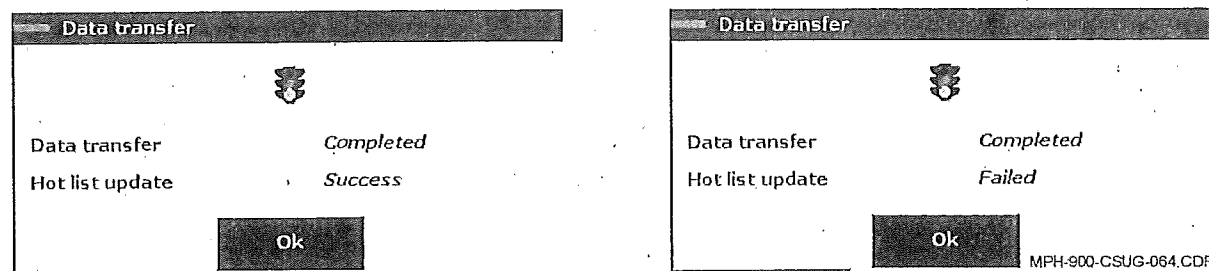


Figure 54 — Hot List Importation Results

Click on the OK Button to close the screen.

NOTE: When the traffic signal is green, the user clicks the OK Button and the Hot List is loaded. It is advisable to perform a search for several license plates from the Operations Area of the Main License Plate Reader (LPR) Screen (see Figure 11 on Page 26) to ensure that the list is correctly formatted and loaded before the start of the shift.

Import Hot List from a USB Drive

The ability to import a Hot List from an USB drive can be enabled by setting the proper parameter in the configuration file or it can be specified during the setup procedure. After the insertion of the USB drive, data importations begins and the Hot List is downloaded. When the importation is successfully completed, the message shown in the figure appears.

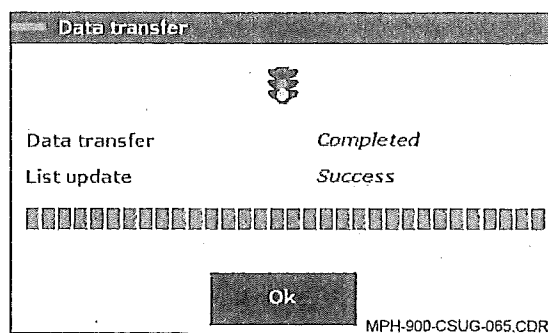


Figure 55 — Hot List Import Success Message

The Hot List is detected in any drive associated to the thumb drive. The Hot List file must be placed in the drive root and shall not be deleted so that the same thumb drive could be used many times.



IMPORTANT: The event that triggers the Hot List download is the insertion of the thumb drive. Therefore, if the drive is already inserted at the PC startup, the Hot List is NOT loaded.



Chapter 7 — Virtual Fence

Introduction

The Virtual fence is a feature that allows the system to generate an alarm when two conditions are met:

- A match on a record of the Hot List when the license plate belongs to a specific class (normally class 8, Sexual Offenders), and
- The read GPS location is inside the Virtual Fence area.

The typical application is the protection of school areas from registered sexual offenders. The function can also be used to enforce restriction orders related to a specific house or location. The virtual fence is defined and attached to one of the alarm classes through a fence configuration file (.fc).

The map (generated by a Virtual Fence Violation) shows the license plate detected, the area-limits, and the area's center.

Geofencing Setup Check-list

The following are guidelines and items to check and consider when preparing geofencing:

- (1) Decide which alarm class to use for Geofencing. Using Class 8 is recommended or a class that is not in use, then prepare the Hot List accordingly.
- (2) Establish the addresses to be included within the fence and then research the coordinates of those areas (like schools, parks, etc.). The user can find coordinates of those places at various Websites on the Internet. For example, the following site can be used:

<http://www.batchgeocode.com/lookup/>

- (3) In the folder <Kit\KIT_AD3M_2.3.1\Utility open the file with the name "20071101134525fr.fc". The file can be opened using Notepad³ or any text editor.
- (4) Inside that file the user will see an entry: "6 41,4202 -73,5720 100". This format must be followed for the fencing to work. The entry format is as follows:

6 — represents the alarm class to use
41.4202 -73.5720 — are the coordinates of the center of the area to fence
100 — is the radius (in yards) of the area.

NOTE: Referring to the example above, in the actual creation of a Virtual Fence, the user should change the alarm class value "6" to alarm class value "8". It is presented as a "6" due to it being part of the existing example file that is included in the system installation disk.

- (5) Enter one line for every area to fence.
- (6) The file then must be renamed in a timestamp format yyyyymmddhhmmssfr.fc where:

<yyyy> 4-digit year

³Notepad® is a registered trademark of Microsoft Corporation.

<mm> 2-digit month
 <dd> 2-digit day
 <hh> 2-digit hour
 <mm> 2-digit minute
 <ss> 2-digit second
 <fr> leave as it is
 <.fc> this is the extension that must be ".fc".

(7) After entering the information to the file, save and then copy it to the **C:\hotlist** folder.

If the user needs to update the Geofence, they must append to the last file created and rename it to the current timestamp. The new file will replace the previous file; so the user would need to update the file as needed by adding or removing coordinates.

If the Geofence file has been loaded, the Geofence alarm class is shown in the Setup Menu as shown in Figure 56 that follows.

Setup

Reader view enable

Right	☒ Left	☒ M-02	☒ M-03	☒
R-00	☒ R-01	☒ R-02	☒ R-03	☒

Alarm class enable

	Stolen vehicle	☒		Stolen out state	☒
	Wanted person	☒		Violent gang	☒
	Stolen plate	☒		Sexual offender	☒
	Suspended revoked	☒		Other	☒
	Scofflaw	☒		Tax scofflaw	☒

White list

☐

Transit beep ☒

Advanced

Cancel

Ok

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Figure 56 — Setup Menu for Geofence Alarm Class



Chapter 8 — Wireless Communication Function

Introduction

This section describes the connection to the ELSAG Operations Center (EOC) via a wireless network. This function is optional and the following pre-requisites are required:

- A central server must be installed with the EOC software, and
- A TCP/IP wireless network must connect the Car System MDT to the central server.

Short-range Communication (Wi-Fi)

The short-range connection is usually achieved via a system such as WiFi IEEE802.11b-g. The connection to the EOC is started automatically when the LPR car is in the Wi-Fi Access Point Coverage Area.

During this phase the EOC establishes a connection with the system to carry out the following short-range tasks and operations:

Table W — Short-range Communication WiFi Tasks

Task	Direction
Hot List Replace/Update	EOC to Car
Fence List Replace	EOC to Car
Locally Stored Reads Upload	Car to EOC
Locally Stored Alarms Upload	Car to EOC

Hot List and Data Transfer

The user is informed of the operations status by the messages presented on the Data Transfer Status Dialog Box (refer to Figure 57). At the beginning of operations, the dialog box shown on the left side of Figure 57 appears. Note that the traffic signal icon is red, which means that the user must wait until the end of the operations without moving the patrol car outside the Access Point Range.

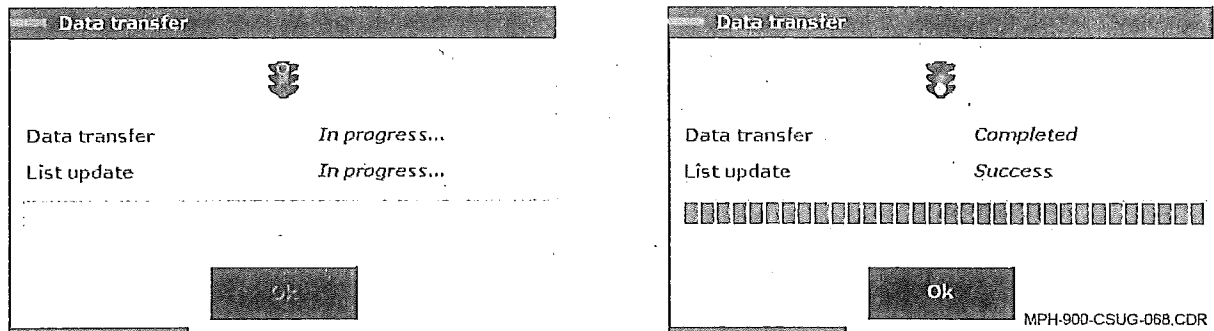


Figure 57 — Data Transfer Status Dialog Box

When data transfer and Hot List/Fence List updating operations are successfully completed, the dialog box shown in the right side of Figure 57 appears. The traffic signal icon is green and the OK Button is enabled. The user must close the dialog box by clicking on the OK Button to terminate the procedure.

During data transfer, the communication between the patrol car and Operations Center might be broken. In this case, if the Hot List Update File has been transferred and processed correctly by the system, the left-side image shown in Figure 58 appears. Otherwise, the image shown on the right side of Figure 58 appears. In both situations, the user must close the dialog box by clicking the OK Button.

To start the connection over, the user can drive away from the Access Point Range and then return back to the inside. Otherwise, the user can close and open the Wi-Fi link (for example to Disable and then Enable the Wi-Fi network connection).

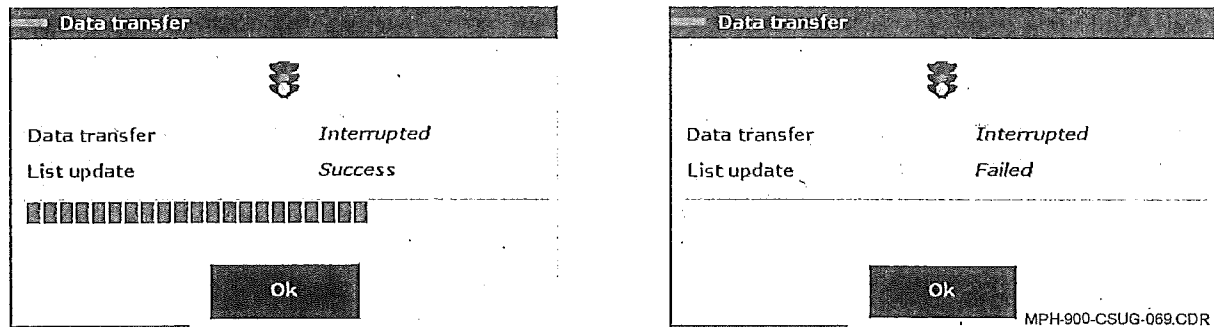


Figure 58 — Data Transfer Interrupted

The Hot List update process might fail even if the data transfer process was correctly completed (e.g., bad file format). In this case, the dialog box shown in Figure 59 appears. The user must close the dialog box by clicking the OK Button and can then start patrolling.

NOTE: It is recommended that the user report this event to the system administrator.

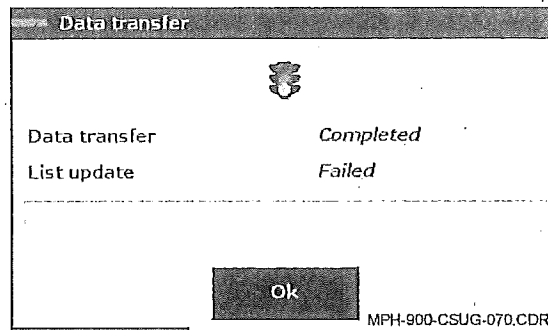


Figure 59 — Data Transfer Completed

Long-range Communication (AirCards)

The long-range connection is usually achieved via systems such as high bandwidth cellular modems (EV-DO). The Operations Center establishes a connection with the Car System to carry out the following operations:

Table X — Long-range Communication (AirCards) Tasks

Task	Direction
Hot List Replace/Update	EOC to Car
Fence List Replace	EOC to Car
Single License Plate in Hot List	EOC to Car
Single Alarm Upload (During Patrolling)	Car to EOC
Locally Stored Reads Upload	Car to EOC
Locally Stored Alarms Upload	Car to EOC
Messages Send/Receive (if Enabled)	Car to EOC AND EOC to Car
GPS Coordinates (Future Function)	Car to Center

Hot List Update and Data Transfer

When the Operation Center performs a Hot List updating procedure the user is informed by the string "In progress..." in the Date Field. The user can control the result of the operation by clicking on the Date Field.

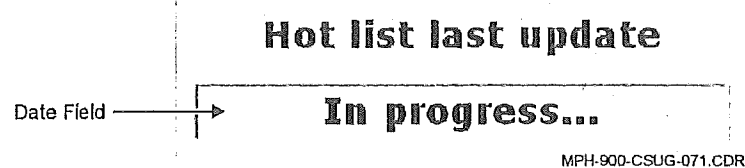


Figure 60 — Long Range Updating Message

Short- and Long-range Communication

The Short- and Long-range connections can coexist in the same Car System. When both channels are active at the same time, the tasks are assigned as described in Table Y.

Table Y — Short- and Long-range Communication Tasks

Task	Direction	Connection
Hot List Replace/Update	EOC to Car	Short Range
Fence List Replace	EOC to Car	Short Range
Single License Plate in Hot List	EOC to Car	Long Range
Single Alarm Upload (During Patrolling)	Car to EOC	Long Range
Locally Stored Reads Upload	Car to EOC	Short Range
Locally Stored Alarms Upload	Car to EOC	Short Range
Messages Send/Receive (Optional)	Car to EOC AND EOC to Car	Long Range
GPS Coordinates (Future Function)	Car to EOC	Long Range

The short-range tasks take place only within the Wi-Fi range. When the Wi-Fi connection is not available, the long-range mode takes over all communications, including Read Uploads.

NOTE: The double channel means that the Central Server must be accessible through two separate TCP/IP networks (different IP addresses).



Chapter 9 — AMC Account Management Control

Introduction

The AMC (Account Management Control) plug-in has been developed in order to manage users' accounts and their profiles in the Car System. In order to access the AMC application, the user clicks the AMC (Account Management Control) Button that appears in the Main Menu.

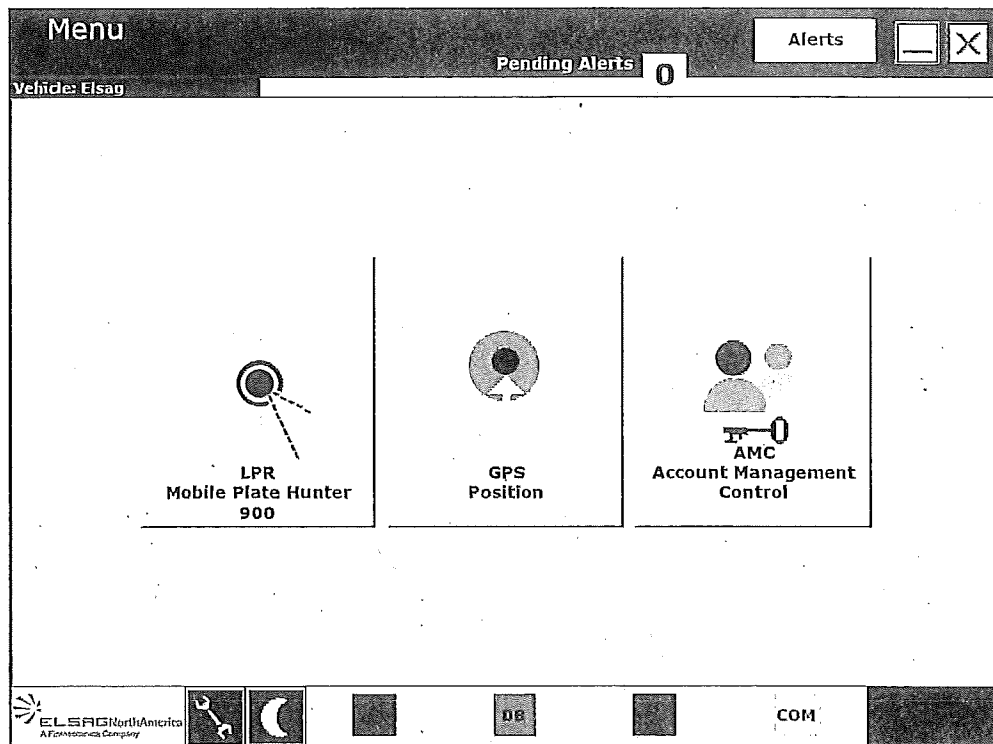


Figure 61 — Main Menu

Using Account Management Control

After the application has started, the Graphical User Interface displays the screen shown in Figure 62.

Figure 62 — AMC Main Screen

The application allows the user to manage Car System users' accounts and their passwords. The three available profiles for a new user are as follows:

- *Administrator* — Role for system administrator with unrestricted privileges
- *Operator* — Role for expert users, and
- *User* — Role for standard users.

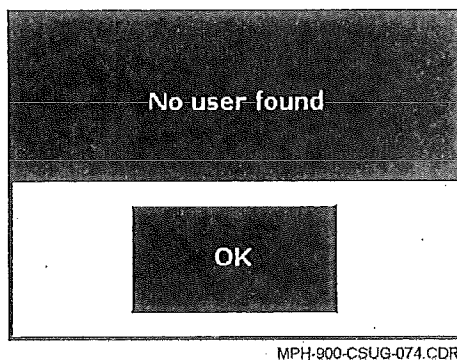
Refer to the *Profile Permissions* chapter that begins on Page 84 for a description of the privileges for each profile.

NOTE: In addition, an *Installer User Service Profile*, with a known password also exists. This profile is only used at the very first access to the application after setup. It allows the user to add a new administrator-level user. The Installer User is deleted immediately afterward.

As shown in Figure 62, when the user enters the plug-in, the following commands are available, depending on the role: Search, Insert, Modify, Modify Password, Delete, Reset, Export Log, Info, and Menu. In order to be used on a touch screen monitor, every screen in the plug-in has an embedded keyboard component that allows the user to edit the required fields.

Search Function

The Search Function allows the current user to look up any user in the database in order to check the consistency of the data and perform updates (using the username field as a search key). If the user does not exist, the following message will appear:



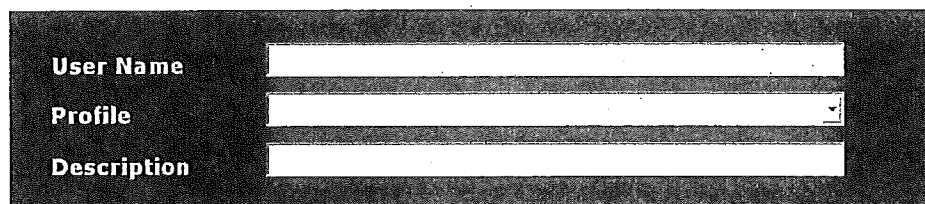
MPH-900-CSUG-074.CDR

Figure 63 — No User Found Message

If the user data is found, every field in the screen will be populated with the data retrieved from the database and the current user can perform administrative tasks with the data, as explained in the sections that follow.

Insert Function

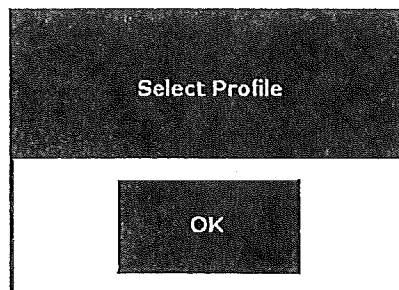
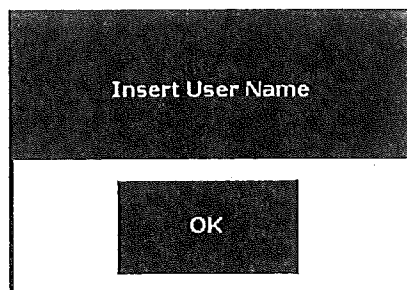
This function is accessible only to a user with an administrative profile and allows the insertion of a new user account into the database (refer to Figure 64).



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Figure 64 — New User Insertion Fields

Username and profiles are mandatory fields, therefore when one of them is missing; one of the two messages shown in Figure 65 will appear to warn the user.

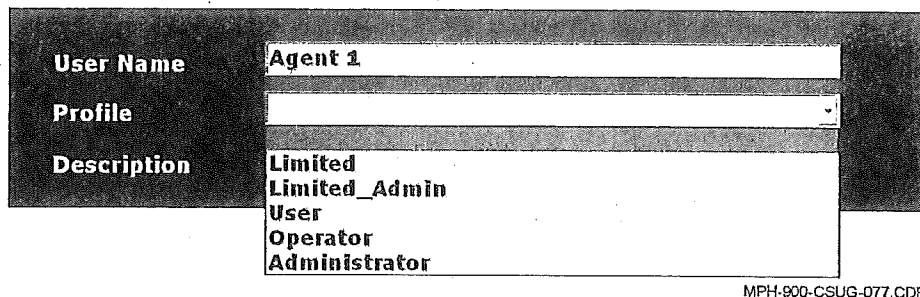


MPH-900-CSUG-076.CDR

Figure 65 — Fields Missing Messages

A User Name must be a string of anywhere between six and 20 characters; the username cannot contain the following characters: “ \ / [] : ; , | = + * ? < > ”.

The profile can be chosen among one of those available on the profile dropdown menu.



User Name Agent 1

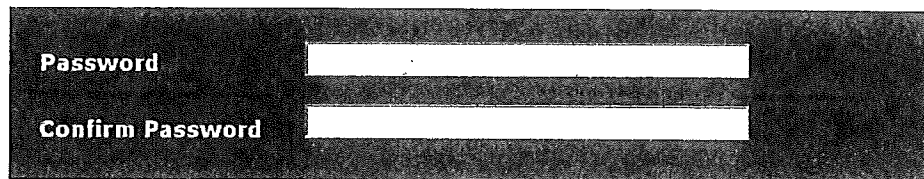
Profile

Description Limited
Limited_Admin
User
Operator
Administrator

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Figure 66 — Profile Selection Dropdown Menu

After the mandatory information is inserted, the user must insert the password twice in the following screen.



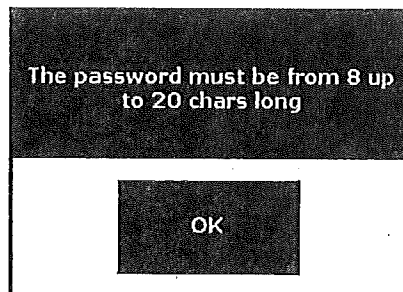
Password

Confirm Password

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Figure 67 — Password Setting

By pressing the Cancel Button the user returns to the previous screen and no user is inserted. The password may contain any character and must be a string anywhere between eight and 20 characters. If fewer than the required characters are inserted, the message shown in Figure 68 will appear.



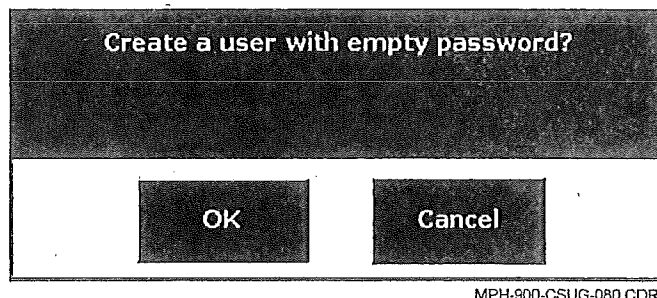
The password must be from 8 up to 20 chars long

OK

MPH-900-CSUG-079.CDR

Figure 68 — Password Too Short Message

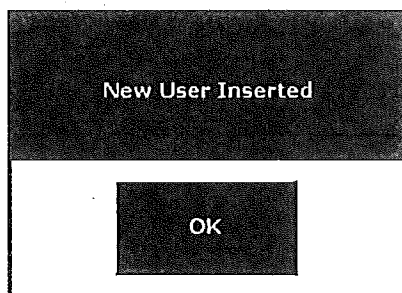
The user can also create an account with an empty password. In this case, by pressing the OK Button the message below will appear. The user can select the OK Button or the Cancel Button as desired.



MPH-900-CSUG-080.CDR

Figure 69 — Empty Password Confirmation Message

After successful creation of the new account, the following message will appear:



MPH-900-CSUG-081.CDR

Figure 70 — New User Inserted Message

The accounts created have different password expiration policies, depending upon the passwords:

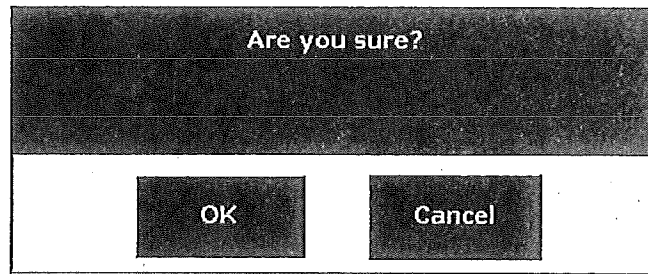
- Users with empty password never expire, and
- Users with "non empty" passwords expire 90 days after the date of creation.

When a user expires, they will be warned at the next logon to the system and then be redirected to the AMC Main Screen (see Figure 62 on Page 75) where the user will be asked to modify the password in order to renew their credentials. If they fail to do so, they will be denied access to the system.

Modify Function

This function is accessible by users of any profile and allows the user to modify any existing user account. The administrator profile can modify the description and the profile of any other user in the database, but cannot modify its own profile. The operator and user profiles may only modify their own description field.

Press the Modify Button and a message appears asking the user whether they are sure they wish to proceed or not. By pressing the OK Button, the updates will take place on the user database.



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Figure 71 — Modify Confirmation

Modify Password Function

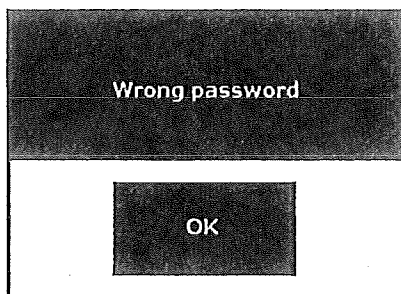
This function is accessible by users of any profile and allows the user to modify their password. The administrator profile user can modify the password of any other user in the database, while operator and user profiles may only modify their own passwords. Press the Modify Password Button and the screen shown below appears:

Old password										OK
Password										Cancel
Confirm Password										
1	2	3	4	5	6	7	8	9	0	
q	w	e	r	t	y	u	i	o	p	
a	s	d	f	g	h	j	k	l	▲	
z	x	c	v	b	n	m	◀	▼	▶	
Caps						#@...		Canc		

MPH-900-CSUG-083.CDR

Figure 72 — Modify Password Screen

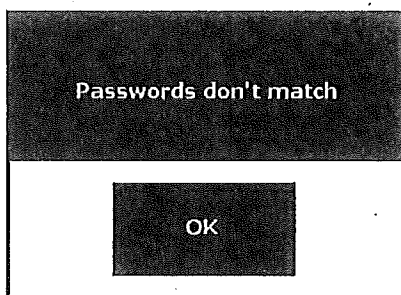
The user is required to enter the old password as well as the new one and a new password confirmation. The password must be between eight and 20 characters, and may contain any character available through the screen. The system checks the correctness of the old password and warns the user in the case of an incorrect password.



MPH-900-CSUG-084.CDR

Figure 73 — Wrong Old Password

If the new passwords inserted do not match, the user is warned with the following message-box:



MPH-900-CSUG-085.CDR

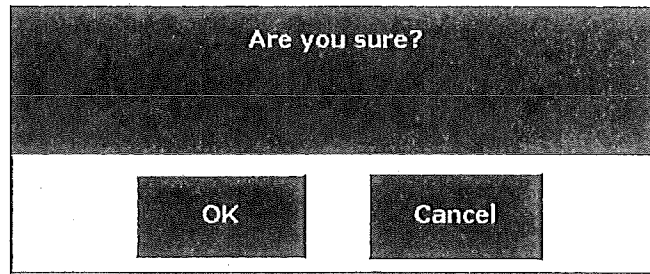
Figure 74 — New Passwords Mismatch

When all data is correct, the update of the password takes place in the database. By pressing the Cancel Button, the user returns to the previous screen.

NOTE: A user's "non empty" password cannot be replaced with an "empty" password.

Delete Function

This function is accessible only by a user with an administrative profile and allows the deletion of a user account. Press the Delete Button and a message will appear asking the user whether they are sure they wish to proceed:



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Figure 75 — Delete Confirmation Message

Press the OK Button and the deletion will take place in the database and display the following message:



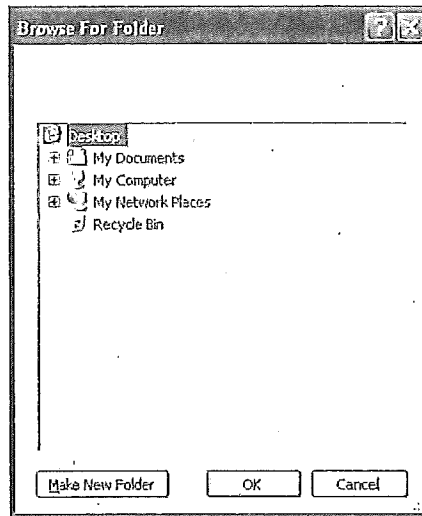
MPH-900-CSUG-087.CDR

Figure 76 — User Deleted Confirmation**Reset Function**

This function simply clears the form, prompting the current user for a new database search.

Export Log Function

Pressing the Export Log Button results in the "Browse For Folder" dialog box opening.



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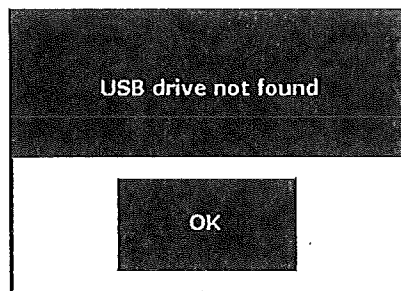
Figure 77 — Export Dialog Box

Select the folder in which to save the exported file named "Car_<CarId>_User_Log_<date><time>.txt" where the following must be adhered to:

- <CarId> is the Car Identifier (a 5-character numeric string from 00001 to 99999).
- <date> is the date of the export operation in the YYYYMMDD format, and
- <time> is the time of the export operation in the hhmmss format.

An example is as follows: Car_00001_User_Log_20080131134522.txt

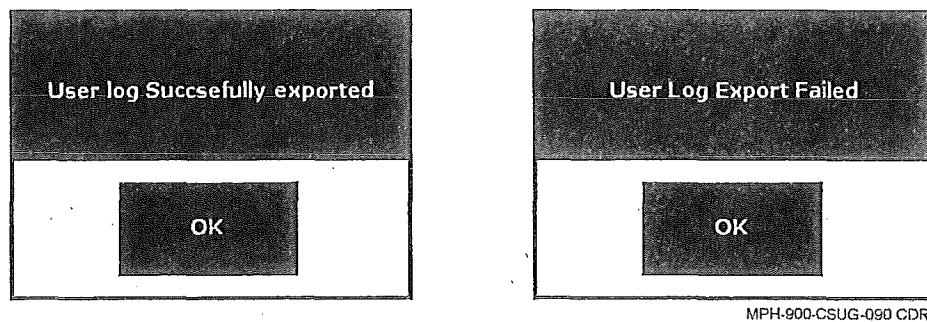
NOTE: When "USB" is specified in the configuration file, the dialog box above (refer to Figure 77) is not shown and the exported file is sent directly to the USB drive. If the USB drive is not present, the message shown in Figure 78 appears. Click the OK Button, connect a USB drive, and try again.



MPH-900-CSUG-089.CDR

Figure 78 — USB Drive Not Found

If the export succeeded, the message shown on the left side of the figure will appear. Otherwise, a failure message as shown on the right side of the figure will be displayed.



MPH-900-CSUG-090 CDR

Figure 79 — Export Results

Info (Information) Button

Clicking the Info (Information) Button on the AMC application will result in a message similar to that shown below. The information shown relates to the Graphical User Interface (GUI) Version on the installed software.

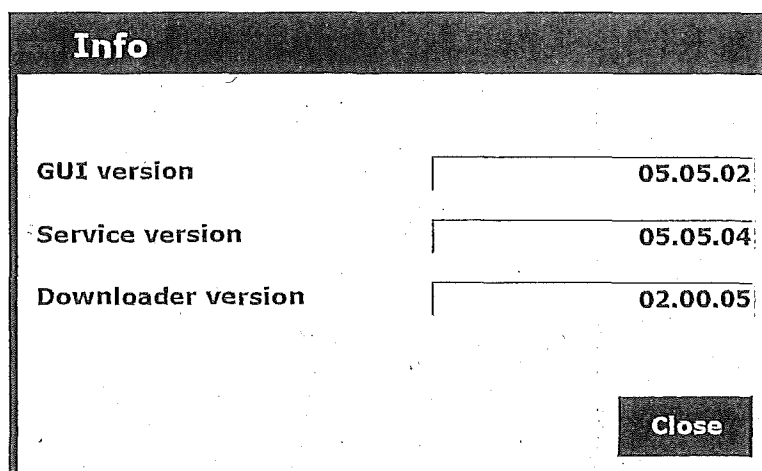


Figure 80 — GUI Version Info (Information) Window

Menu Button

The Menu Button closes the application taking the user back to the Car System's main screen.



Chapter 10 — Profile Permissions

Introduction

This chapter consists of two tables. Table Z is for User Profile Permissions (shows the permitted functions for each profile relative to the User Management Function) and Table AA is for Profile Permissions for LPR Related Functions.

The three profiles addressed in the tables are the following:

- *Administrator* — Role for system administrator with unrestricted privileges
- *Operator* — Role for expert users, and
- *User* — Role for standard users.

Table Z — User Profile Permissions

Function	Profile		
	Administrator	Operator	User
User Search	YES	NO	NO
User Insert	YES	NO	NO
User Modify	YES	YES*	YES*
Password Modify	YES	YES*	YES*
User Deletion	YES	NO	NO
User's Activity Log Export	YES	YES	NO

* For own user only.

Table AA — Profile Permissions for LPR Related Functions

Function	Profile		
	Administrator	Operator	User
Transits and Alarms Displaying	YES	YES	YES
Alarms Management	YES	YES	YES
Start/Stop Readers	YES	YES	YES
Cameras Live	YES	YES	YES
Enable/Disable Images Displaying	YES	NO	NO
Enable/Disable Alarm Classes	YES	NO	NO
Readers Configuration	YES	NO	NO

Query for License Plates in Local Hot List	YES	YES	NO
Local Hot List License Plates Insertion	YES	YES	NO
Local Hot List License Plates Removing	YES	YES	NO
Query for License Plates in Local and External Hot List	YES	YES	NO
Local Hot List Deletion	YES	NO	NO
Query for Alarms in Database	YES	YES	YES
Query for Rejected Alarms in Database	YES	YES	YES
Query for Reads in Database	YES	YES	YES
Drill Down (Images and Data Displaying for Latest Alarms)	YES	YES	YES
Shift Report	YES	YES	YES
General Report	YES	YES	YES
Query Result Data Export	YES	YES	NO
Data Download	YES	YES	NO