

Collecting and Exporting System Statistics

EOC allows you to run reports and export statistical information on the data gathered by individual cars.

Multiple EOC Implementations Link Transparently

EOC 4.1 provides seamless integration between multiple EOC implementations. All authentication, authorization, and operations work the same way whether you're connecting two EOC servers or twenty. Searches across multiple linked servers perform at high levels.

Third-Party Integration at Any Point through SDK

EOC is based on the LPR Core System plug-in architecture. This architecture enables third party developers to develop code for the LPR Core System to process data or to perform other custom operations.

Software development kits (SDKs) thus allow third-party application access to any part of the Elsag system – camera, EOC – for data input or extraction. This functionality makes the EOC even more flexible and extensible than previous versions.

Scalability

Because the system pages on the database directly and does not load all data from a query into memory, the system can perform nimbly, even with large amounts of data. More to the point, as the number of users and the amount of data grows, the system remains responsive.

Real-time Data Transfer using State-of-the-Art Data Protocols

The EOC transfers data from LPR cameras and Car System using state-of-the-art data protocols.

Low Total Cost of Ownership (TCO)

EOC 4.1 was developed using newer technology, including `asp.net` and `Entity Framework`. These tools allow faster development and reduce bugs, meaning the system is more robust and can be updated easily and automatically.

EOC works in all major browsers and requires no additional browser plug-in, which means you do not have to deploy EOC differently in different browser environments.

EOC also allows authentication using Active Directory, as well as using SQL Server authentication, which gives you flexibility in how you integrate EOC 4.1 into your network.



Chapter 2 — EOC 4.1 Suite Data Flow

Introduction

This chapter describes the data flow for the various components and processes the EOC 4.1 Suite manages.

Data Flow

The following diagram illustrates the data flow inside the EOC 4.1 Suite.

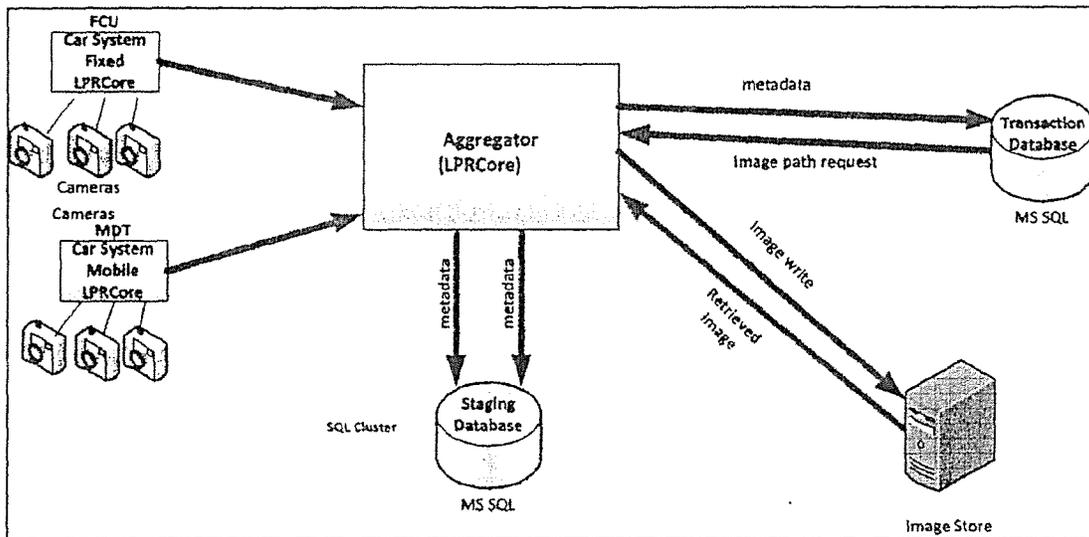


Figure 3 – EOC 4.1 Suite Data Flow

Data Flow for LPR Reads

- LPR data collected by fixed and mobile cameras and routed to Car System through LPRCore.
- Car System stores and forwards data to Staging Database through the LPRCore instance at the Aggregator Node. Read data is available to processing applications.
- Staging Database forwards data to Transaction Database for long-term storage. Historical read data is available for ex post facto Data Mining.

Data Flow for Alarms

- LPR data collected by fixed and mobile cameras and routed to Car System instances through LPRCore.
- Car System compares incoming read data to hot list(s) and raises alarms.
- Alarm data forwarded to Staging Database through the LPRCore instance at the Aggregator Node. Alarm data is available to processing applications.
- Staging Database forwards alarm data to Transaction Database for long-term storage. Historical alarm data is available for Data Mining.

Data Flow for Hot List Updates

- Hot List data is pushed down from Transaction Database to Staging Database through the LPRCore instance at the Aggregator Node.
- Staging Database pushes hot list data down to Car System instances.

Data Flow for Web Applications – Administration and Data Mining

- User initiates a query from the EOC GUI for an administrative or a data mining task.
- Query moves through the LPRCore instance at the EOC Node to the Transaction Database.
- Data (or administrative command) result returns through the LPRCore instance at the Aggregator Node to the EOC GUI.

Diagnostics Logging, Auditing, and Alerting

Diagnostics information and log messages are replicated in the same manner as LPR read data. Information about data collected, connectivity, hardware status, and performance are collected and sent to all subscribers to notifications. All messages are reliable, and notifications generated during network outages or flow control will be sent as soon as the communication channel is open.

This allows for logging and auditing to be done at a central location, such as in the EOC Web interface. All received information is indexed and cataloged for easy searching.

This notification scheme also allows for heuristics that can raise alerts when certain scenarios arise. Hardware and software failures determined from certain patterns of notifications will generate an alert and system-configurable actions can be taken, such as sending an email with relevant data.

ELSAG North America - SERVER PLANNING

Medium Type 11 to 50 Camera Systems or 12500 vehicles/hr rate

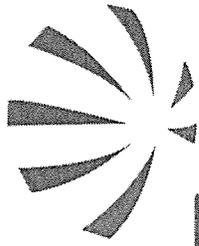
Number of Servers 3

SERVER 1	
Functions	Aggregator, Web Service
Processor	
Minimum	Intel i7 Quad Core
Recommended	Intel Xeon Dual Core
RAM	
Minimum	8GB
Recommended	16GB
Hard Drive	
OS	RAID 1, 7.5k RPM, 100GB (pagesys located here)
IMAGES	n/a
SQL	n/a
Software	
OS	
Minimum	Windows Server 2005 64bit version, Windows 7 Professional 64bit
Recommended	Windows Server 2008R2 64bit version
SQL	Microsoft SQL Server 2008R2 or 2012 64bit versions
.NET	4 Full

SERVER 2	
Functions	Trans DB, Staging DB
Processor	
Minimum	Intel i7 Quad Core
Recommended	2 X Intel Xeon Dual Core
RAM	
Minimum	16GB
Recommended	32GB
Hard Drive	
OS	RAID 1, 7.5k RPM, 100GB (pagesys located here)
IMAGES	n/a
SQL	RAID 1, 10k RPM, *See Capacity Planning Worksheet (meta data storage - no images)
Software	
OS	
Minimum	Windows Server 2005 64bit version, Windows 7 Professional 64bit
Recommended	Windows Server 2008R2 64bit version
SQL	Microsoft SQL Server 2008R2 or 2012 64bit versions
.NET	4 Full

SERVER 3	
Functions	Image Storage
SAN	*See Capacity Planning Worksheet
Note	*Consider NTFS limits such as max files per volume when considering a storage system Elsag supports multiple logical drives

EXHIBIT "A-6"
HARDWARE INSTALLATION GUIDE



ELSAGNorthAmerica

A Finmeccanica Company

Mobile Plate Hunter-900

Hardware Installation Guide

Publication Number MPH-900-HWIG • October 2011

© 2011 ELSAG North America, LLC — All Rights Reserved.

The copyright laws of the United States and other countries specifically protect this material in its entirety. It may not be reproduced, distributed, or altered in any way without the expressed written consent of ELSAG North America.

Under copyright laws, neither the documentation, nor any associated software may be copied, photocopied, reproduced, translated, or reduced to any electronic medium of machine readable form, in whole or in part, without the written consent of ELSAG North America.

Notice

Every effort was made to ensure that the information in this document was accurate at the time of printing. However, all information is subject to change without notice.

Trademark Information

EOC™ is a trademark of ELSAG North America, LLC

FPH™900 is a trademark of ELSAG North America, LLC

MPH™900 is a trademark of ELSAG North America, LLC

ELSAG North America Contact Information

To contact us, please refer to the information below:

Corporate Headquarters — U.S.A.

7 Sutton Place
Brewster, NY 10509
Telephone: 866-9-MPH-900 (866-967-4900)
OR
Telephone: 845-278-5425
Facsimile: 845-278-5428

Technology and Manufacturing

205 H Creek Ridge Road
Greensboro, NC 27406
Telephone: 336-379-7135
Facsimile: 336-379-7164

Technical Support Department

Technical Support Department email: techsupport@elsagna.com

Visit us on the Internet

www.elsagnorthamerica.com

OR

www.elsagna.com

Ordering Information

The ordering number for this publication is Publication Number MPH-900-HWIG. To order this document, contact ELSAG North America.



IMPORTANT: If you are in possession of a printed or electronic version of this installation guide, be aware that it may not be the current version. To ensure that you are using the most up-to-date version of this guide, please contact ELSAG North America.

Table of Contents

Chapter 1 — General Information	6
■Overview.....	6
■Prerequisites.....	6
■Installation Kit Components.....	6
■Tools and Supplies Required for Installation.....	7
■Safety Precautions.....	7
Chapter 2 – Component Placement.....	8
■Preliminary.....	8
■Trunk Box Installation.....	8
■Camera Placement and Installation.....	8
Chapter 3 – Connecting the Equipment.....	11
■Overview.....	11
Chapter 4 – Calibration Procedure	13
■Overview.....	13
■Calibrate Cameras Using LPR Discovery	13

List of Figures

Figure 1 – Reference Points for Camera Mounting.....	9
Figure 2 – Camera Installation.....	9
Figure 3 – Camera Tether (Installed).....	10
Figure 4 – Cable Installation Path.....	11
Figure 5 – System Electrical Connections.....	12
Figure 6 – LPR Discovery: Opening Screen.....	13
Figure 7 – LPR Discovery: Camera Selected.....	14
Figure 8 – Camera Authentication Screen.....	14
Figure 9 – Camera Authentication Screen: filled in.....	15
Figure 10 – Select Console.....	15
Figure 11 – Java Security Screen.....	16
Figure 12 – Unaligned Camera Image.....	16
Figure 13 – Aligned Camera Image.....	17

List of Tables

Table 1 – Installation Kit Components..... 6



Chapter 1 — General Information

Overview

This manual describes the installation procedure for the AutoDetector3 – Split Unit (AD3-S with 2 binocular sensors), both for the system as a whole and for the individual components. It includes:

- Placement instructions for the components
- Steps required to connect the system devices to the vehicle's power supply
- Instructions for calibration of the sensors

NOTE: This procedure describes installation of a two-camera system with one trunk box, using a power cable wired directly into the vehicle's ignition.

Prerequisites

You will need a PC installed in the vehicle to connect the trunk box and the GPS system, as well as to host the Car System software. (For hardware requirements and software prerequisites for the machine on which you'll install Car System, see the *Car System 5.6.0 Installation Guide*.)

Installation Kit Components

The installation kit components are listed below:

Part Number	Item Description	Quantity
421579	AD3-S CAMERA HEAD (25/880)	1
421580	AD3-S CAMERA HEAD (16/880)	1
421578	PROCESSOR BOX	1
410052	SHIELDED ETHERNET CABLE	1
411959	PROCESSOR BOX POWER CABLE	1
412031	AD3-S CAMERA CABLES	2
410917	GARMIN GPS ANTENNA	1

Table 1 – Installation Kit Components

Tools and Supplies Required for Installation

You'll need the following tools and supplies for installation:

- TORX wrenches
- Adjustable wrenches

Safety Precautions

Follow all safety regulations when you install the system. During installation and calibration of the AD3-S components, use the following items:

- Protective gloves
- Safety shoes (preferably steel-toed)
- Lighting rated for outdoor use
- Sufficient workspace around the vehicle
- Work environment equipped with fire sensors and emergency call keypad
- Fire extinguishers
- Wheel chocks to prevent the vehicle from moving

If you install the system outside, do so in good weather conditions, if possible, or under cover.

WARNING

Carry out the installation with the:

- Vehicle stationary and parking brake applied
- Engine switched off
- Ignition key removed from ignition

Avoid using water jets or corrosive, toxic, or flammable substances to remove any dust or grit, as these can interfere with camera operation.



Chapter 2 – Component Placement

Preliminary

1. Unpack the system's shipping boxes and the hard case that holds system components.
2. Check that you have all the necessary components against the parts list packed inside.
3. Open the plastic bags that contain the cables.
4. The system package contains a plasticized Quick Reference Guide to Car System operation. Place this on the car's visor or somewhere inside the car where the operator will be able to locate it.
5. Unpack the cameras and record the serial numbers.

Trunk Box Installation

1. Unpack the trunk box from its packaging and remove any protective coverings on the connectors.
2. There is an additional paper label with the trunk box serial number. Place this somewhere on the trunk box that it will be visible once the box is installed.
3. Mount the trunk box in the vehicle trunk in an appropriate location using the Velcro strips supplied. Be careful to ensure that the box will not interfere with the operation of other trunk-mounted equipment such as racks.
4. Connect the camera cables to the trunk box. Do not connect the cables to the cameras yet.

Camera Placement and Installation

1. Position each magnetic mount at the intersection of the longitudinal axis and transversal axis shown below. The center of the magnet mount should align with the dimensions shown.

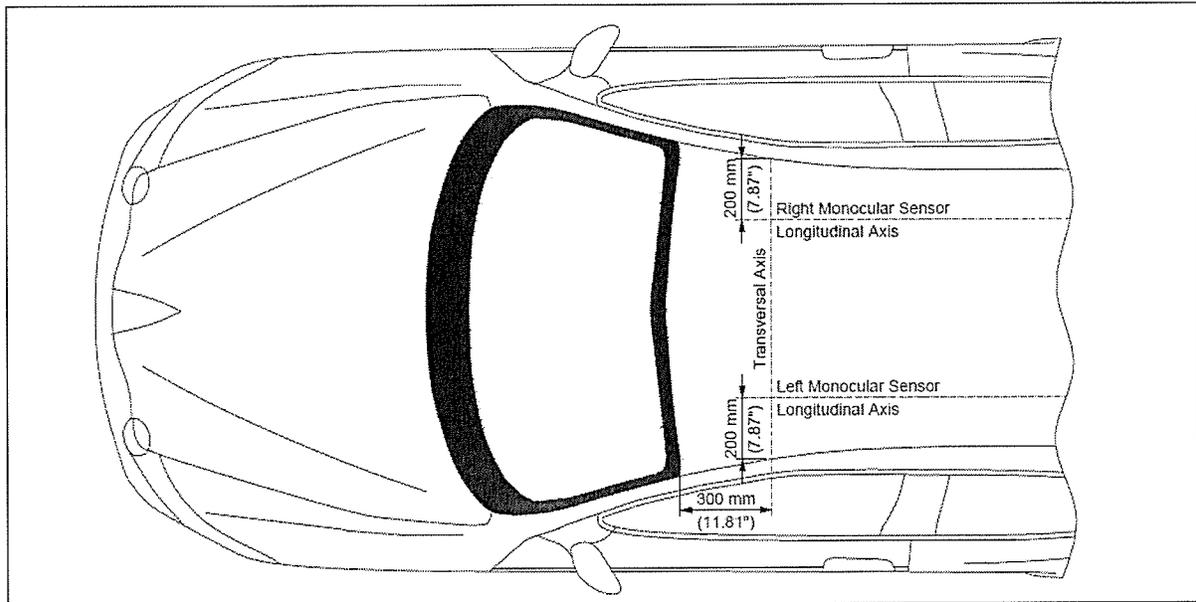


Figure 1 – Reference Points for Camera Mounting

Note: If you are mounting the cameras on the vehicle trunk, use the same relative measurements, as nearly as possible.

2. Install camera sensor and support components as shown:

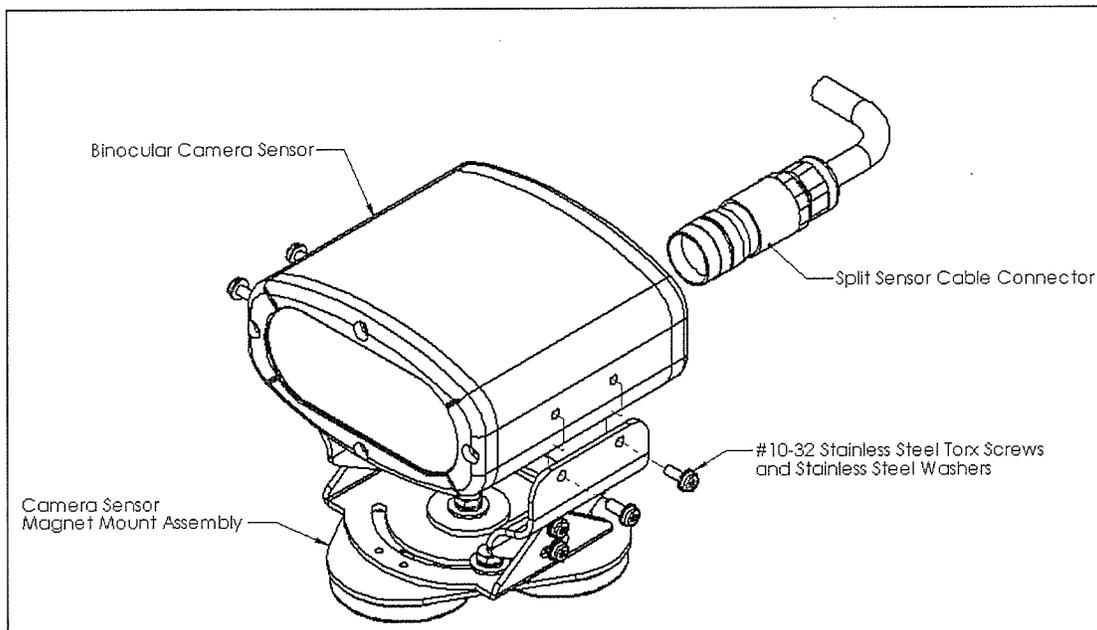


Figure 2 – Camera Installation

3. Loosen the 1/4"-20 bolts that hold the camera to the magnetic base. The camera should be secure, but free to rotate.

Note: The right Camera should be Model AD3-S/16/74 or AD3-S/16/88. The left camera should be Model AD3-S/25/74 or AD3-S/25/88.

4. Install the camera tether as shown in the instructions that come with the camera tether kit. Below is a picture of the installed camera tether, the free end of which is secured around the vehicle's door frame.



Figure 3 – Camera Tether (Installed)



Chapter 3 – Connecting the Equipment

Overview

Once you've installed the MPH-900 components, you need to install the cables and connect the components of the system.

1. Before installing the cables, carefully remove panels and padding inside the car along the planned cable paths:

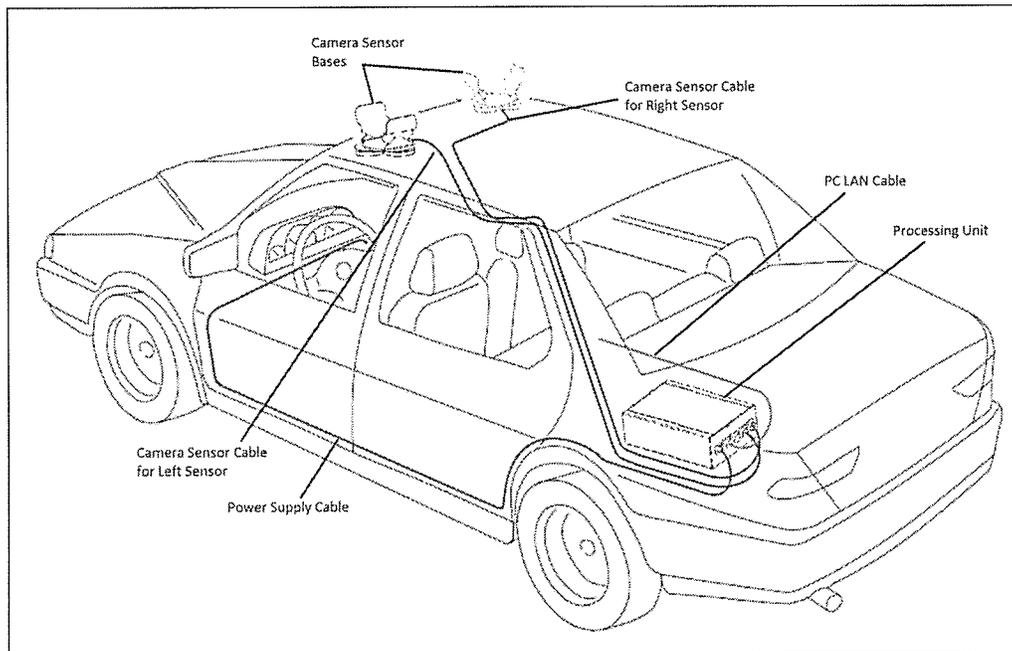


Figure 4 – Cable Installation Path

2. Run the camera cables (blue in diagram) from the trunk box to the cameras and connect them.
3. Run the transportable power cable (red in diagram) and Ethernet connection cable (green in diagram) from the trunk box to the front compartment.
4. Connect the other end of the transportable power cable to the vehicle's cigarette lighter receptacle in the front compartment.
5. Connect the trunk end of the Ethernet cable to the trunk box.
6. Connect the Ethernet cable to the network connector on the laptop mounted in the vehicle.

7. Install the Garmin GPS antenna by connecting it through one of the USB ports on the laptop.
8. Adjust the wires between the car's front compartment and the trunk so that there is minimal slack, tying up excess if necessary.
9. Replace the passenger-side trunk panels and those inside the vehicle to conceal the wires.

The following figure illustrates the final connections required for correct operation of the AD3-S system:

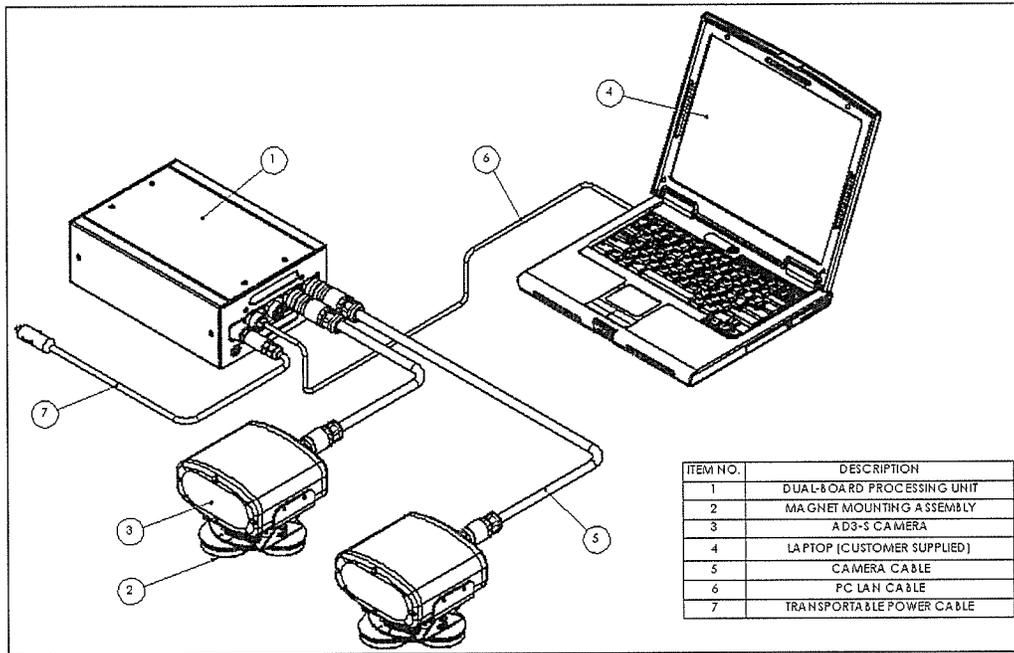


Figure 5 – System Electrical Connections



Chapter 4 – Calibration Procedure

Overview

Once you've installed the MPH-900 components and connected them to the PC in the vehicle, you need to verify the correct operation of the cameras and calibrate the cameras.

Calibrate Cameras Using LPR Discovery

To calibrate the cameras using the LPR Discovery tool, use the following procedure:

1. Place a reflective cone (or have an assistant hold a license plate) at the following distance from the camera:
 - a. For 16 mm cameras, measure 12 feet out and 12 feet in the direction the camera faces.
 - b. For 25 mm cameras, measure 12 feet out and 24 feet in the direction the camera faces.
2. On the vehicle laptop, start the **LPR Discovery** application, the icon for which should be on your desktop. (If you need to install it, it's in the **Utility\Discovery** folder of the Car System Release kit.)

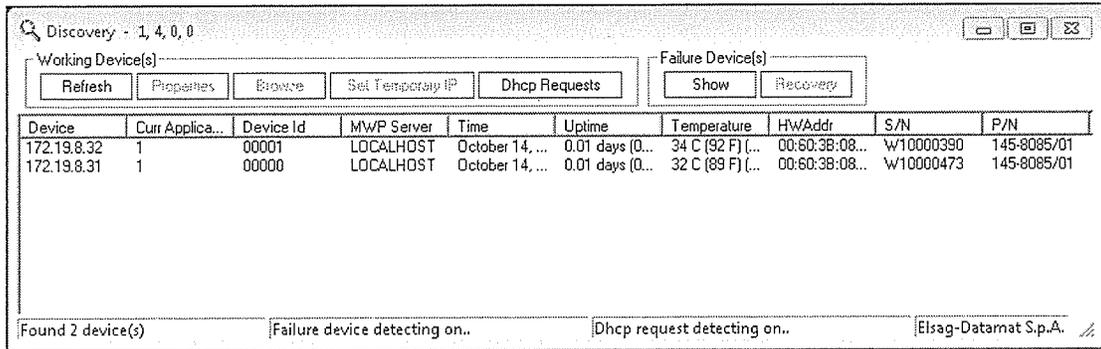


Figure 6 – LPR Discovery: Opening Screen

3. Select a camera from the Discovery display:

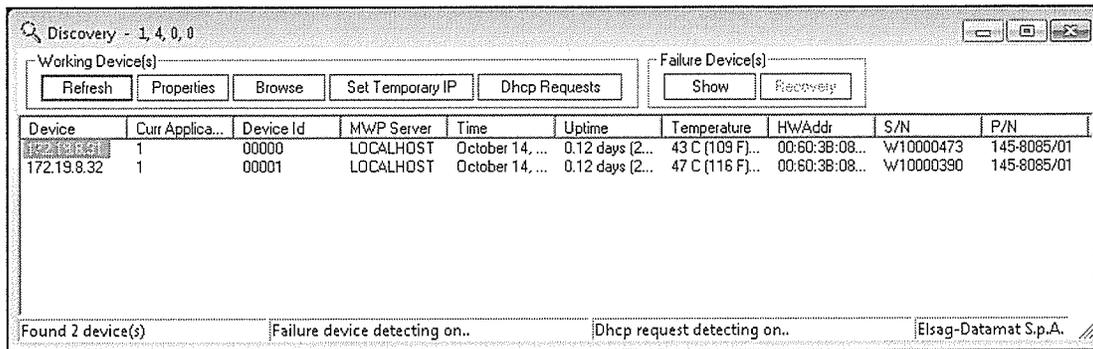


Figure 7 – LPR Discovery: Camera Selected

4. Press the **Browse** button to log into that camera. You'll see the following authentication screen.

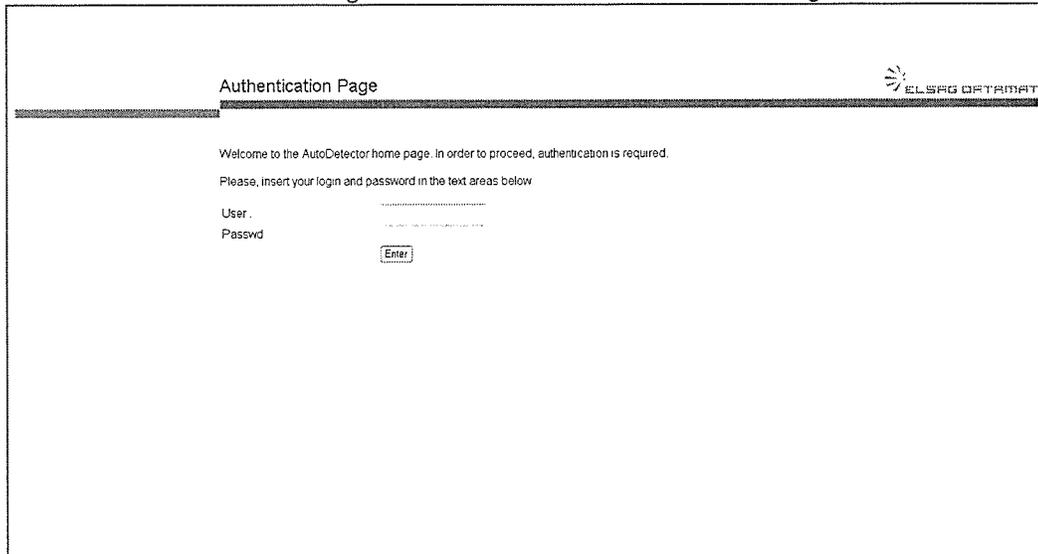


Figure 8 – Camera Authentication Screen

5. Log in to the camera, using **administrator** as the user name and **elsag** as the password.

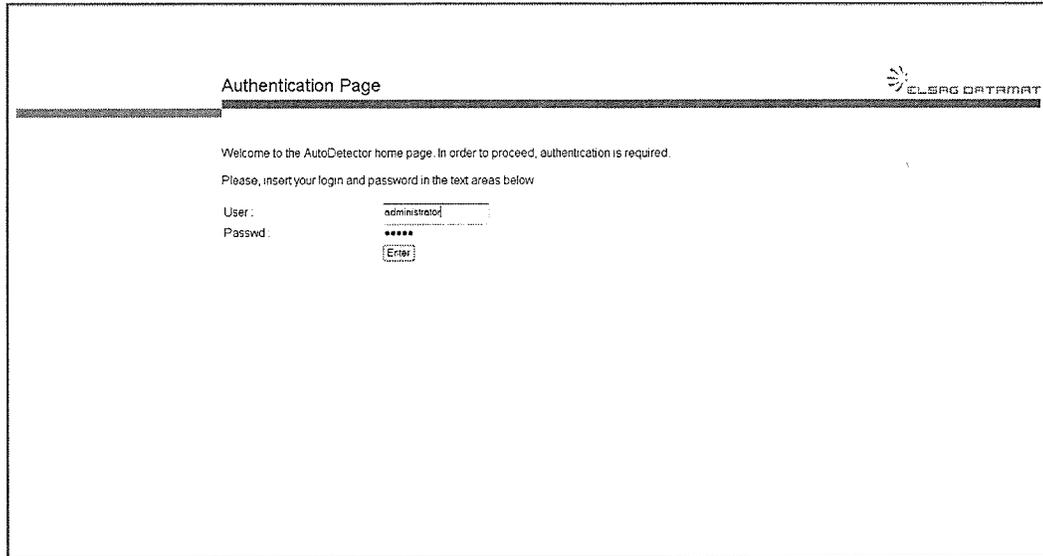


Figure 9 – Camera Authentication Screen: filled in

6. Select Console.

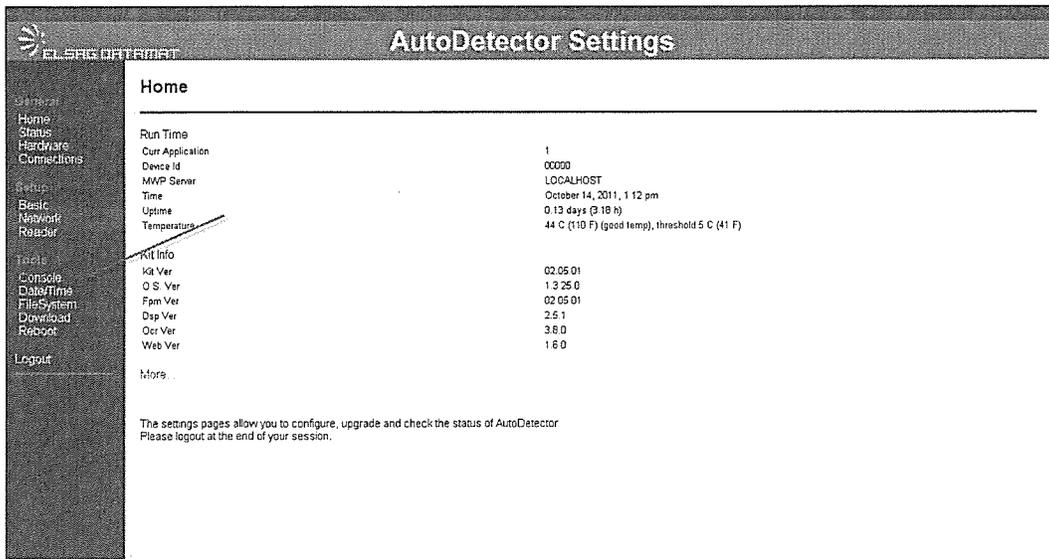


Figure 10 – Select Console

7. Selecting **Console** starts a Java application. If you see the following screen, press **No**.

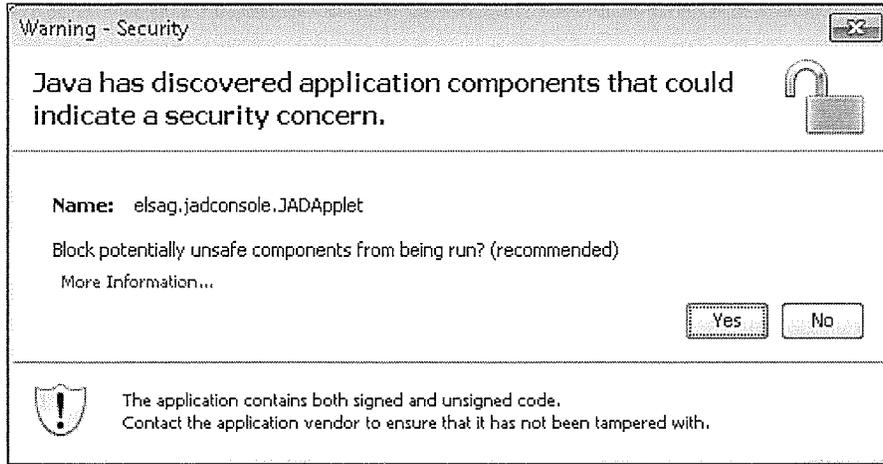


Figure 11 – Java Security Screen

8. Select the **Center Image** check box and press **Start Live**. You'll see the camera's view with a large red + which represents the center of the camera's image.

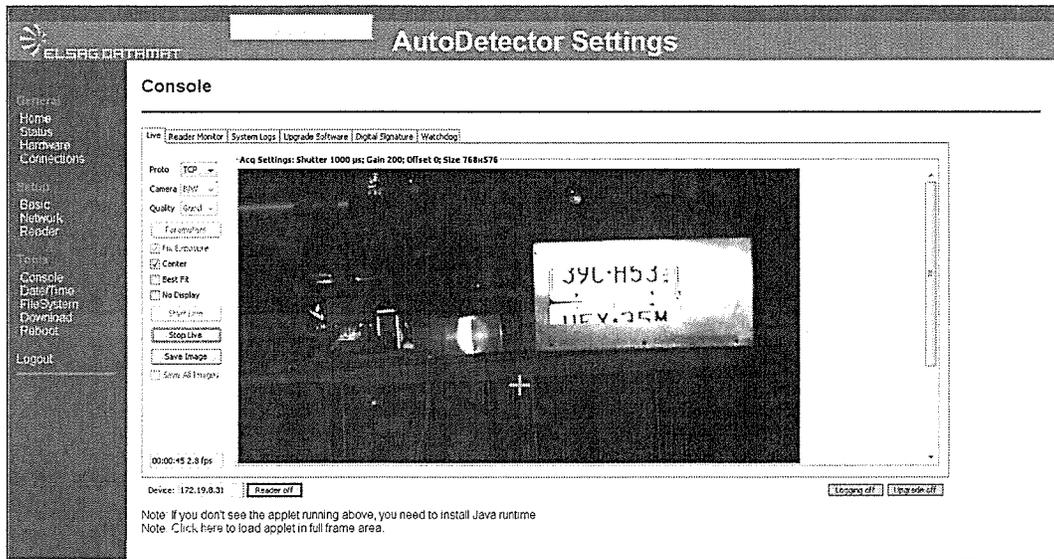


Figure 12 – Unaligned Camera Image

9. Physically adjust the camera so that the + rests in the center of the reflector or license plate you're using to aim the camera.

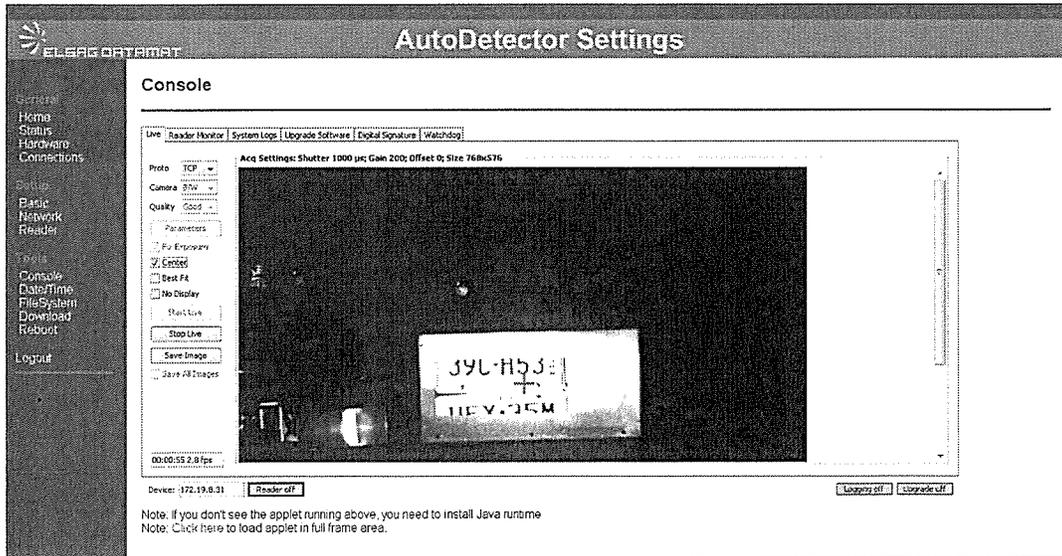
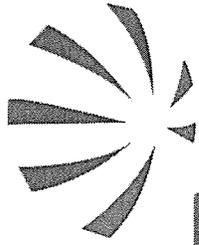


Figure 13 – Aligned Camera Image

10. Tighten the bolts to secure the camera in place.
11. Press the **Stop Live** button.
12. Repeat the process for other camera(s) by returning to Step 3 and selecting another camera.

EXHIBIT "A-7"
CAR SYSTEM INSTALLATION GUIDE



ELSAGNorthAmerica

A Finmeccanica Company

Mobile Plate Hunter-900

Car System

Installation Guide

Publication Number MPH-900-CSIG V1.1 • September 2012

© 2012 ELSAG North America, LLC — All Rights Reserved.

The copyright laws of the United States and other countries specifically protect this material in its entirety. It may not be reproduced, distributed, or altered in any way without the expressed written consent of ELSAG North America.

Under copyright laws, neither the documentation, nor any associated software may be copied, photo-copied, reproduced, translated, or reduced to any electronic medium of machine readable form, in whole or in part, without the written consent of ELSAG North America.

Notice

Every effort was made to ensure that the information in this document was accurate at the time of printing or electronic distribution. However, all information is subject to change without notice.

Trademark Information

EOC™ is a trademark of ELSAG North America, LLC

FPH™900 is a trademark of ELSAG North America, LLC

MPH-900 is a trademark of ELSAG North America, LLC

ELSAG North America Contact Information

To contact us, please refer to the information below:

Corporate Headquarters — U.S.A.

7 Sutton Place
Brewster, NY 10509
Telephone: 866-9-MPH-900 (866-967-4900)

OR

Telephone: 845-278-5425
Facsimile: 845-278-5428

Technology and Manufacturing

205 H Creek Ridge Road
Greensboro, NC 27406
Telephone: 336-379-7135
Facsimile: 336-379-7164

Technical Support Department

Technical Support Department email: techsupport@elsagna.com

Visit us on the Internet

www.elsagna.com

Ordering Information

The ordering number for this publication is Publication Number MPH-900-CSIG. To order this document, contact ELSAG North America.



IMPORTANT: If you are in possession of a printed or electronic version of this user's guide, be aware that it may not be the current version. To ensure that you are using the most up-to-date version of this user's guide, please contact ELSAG North America.

Table of Contents

Chapter 1 — Preface and General Information	6
■ Purpose	6
■ ELSAG North America Terminology, Acronyms, and Terms	7
Chapter 2 — MPH-900 System Overview	8
■ System Architecture	8
■ Communication Port Information	8
■ MPH-900 System Components	10
AD3M	10
Chapter 3 — Installation Prerequisites	11
■ Computer System Requirements for the Mobile Data Terminal (MDT)	11
■ GPS Receiver Installation	11
Chapter 3 — Installing and Configuring the MPH-900 Car System	12
■ New Installation Overview	12
■ Install Software Prerequisites	12
Install .NET 4.0	12
■ Install Car System	12
Installation Prerequisites	12
<input type="checkbox"/> Car System and EOC Permissions	12
<input type="checkbox"/> Install Car System Mobile with an EOC	13
Installation Troubleshooting	21
<input type="checkbox"/> Install Car System Mobile as a Standalone Application	21
<input type="checkbox"/> Install Car System Fixed	22
■ Install Maps	22
Chapter 5 — Configuring the MPH-900 Camera Systems	29
■ Configuring AD3M	29
The Discovery Tool	29
Installing Discovery	29
Starting Discovery	31
■ AD3M Configuration – Upgrade Camera Firmware	32
■ AD3M Configuration – Upgrade Camera Protocols	34
■ AD3M Configuration – Change Default IP Address of Cameras	35

List of Figures

Figure 1 — System Architecture (Shown Using Wi-Fi Connectivity)	8
Figure 2 — Components, Ports, and Communications Direction	9
Figure 3 – Car System Installation Welcome Screen	14
Figure 4 – Car System License Agreement Screen	15
Figure 5 – Car System Setup Screen	16
Figure 6 – Car System Configuration File Screen	17
Figure 7 – EOC Manage Devices	18
Figure 8 – EOC Export Node Configuration.....	18
Figure 9 – EOC Export File Save.....	19
Figure 10 – Car System Ready to Install Screen.....	19
Figure 11 – Car System Installation Progress Screen.....	20
Figure 12 – Car System Installation Complete Screen.....	21
Figure 13 – Car System Database Error Message	21
Figure 14 – Maps Installation Welcome.....	22
Figure 15 – Maps Installation License Agreement.....	23
Figure 16 – Maps Installation Setup	24
Figure 17 – Maps Installation Start	25
Figure 18 – Maps Installation Progress(1).....	26
Figure 19 – Maps Installation Progress(2).....	27
Figure 20 – Maps Installation Finish	28
Figure 21 — Discovery Setup – Welcome Screen	29
Figure 22 — Discovery Setup – License Agreement Screen	30
Figure 23 — Discovery Setup – Ready to Install Screen.....	30
Figure 24 — Discovery Setup – Completion Screen	31
Figure 25 — Discovery Desktop Icon	31
Figure 26 — Discovery Display Screen	32
Figure 27 — Discovery Login Screen	32
Figure 28 — Discovery Console	33
Figure 29 — Discovery Console	34
Figure 30 — Discovery AutoDetector Settings	35
Figure 31 — Discovery AutoDetector Settings (Updated)	36
Figure 32 — Discovery Reboot Confirmation	36
Figure 33 — Discovery Reboot Progress Screen	37

List of Tables

Table A — Installation Guide Revision Information (English Version).....	7
Table B – Components, Ports, and Communications Direction.....	9



Chapter 1 — Preface and General Information

Purpose

This guide contains information about installing the ELSAG North America Mobile Plate Hunter-900 (MPH-900) Car System. For instructions about daily operation of the system, see the *Car System User's Guide*.

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

Information in this guide includes the following:

- MPH-900 System Overview
- Installation Prerequisites
- Car System Installation and Configuration
- Camera Configuration

Table A — Installation Guide Revision Information (English Version)

Revision	Description	Revised Date	Revised By	Approved By
1	Initial Release	June, 2012		
1.1	Updated	July, 2012		
1.2	Updated	September, 2012		

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 (pronounced GOO-ee)
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 System Overview

System Architecture

Figure 1 shows the general ELSAG system architecture. The ELSAG Operations Center (EOC) Server keeps data on a central database and is connected to the wireless MPH-900 LPR Systems mounted on vehicles, through an access point.

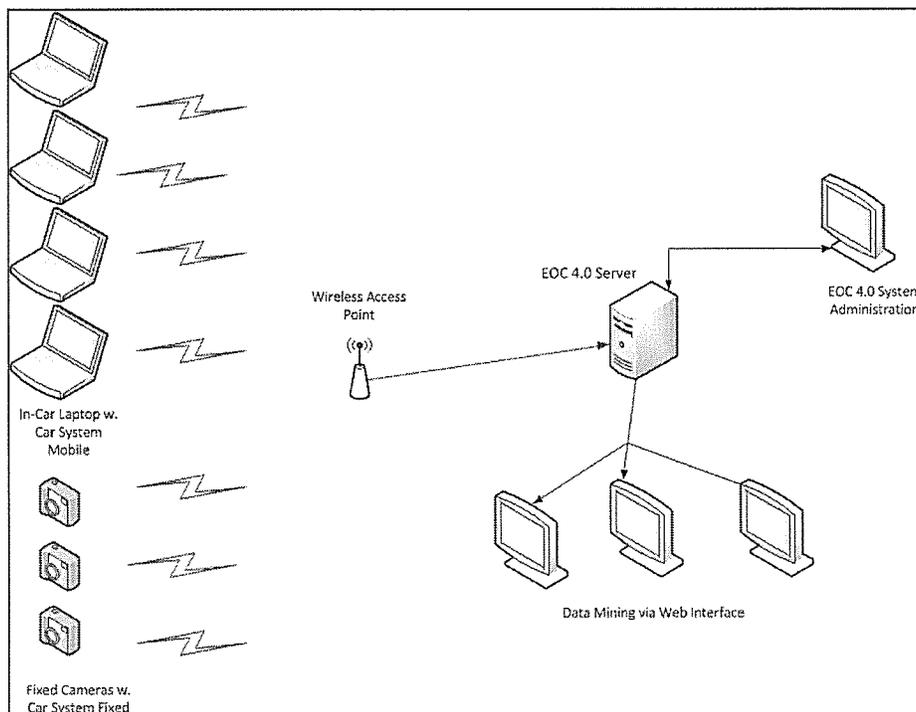


Figure 1 — System Architecture (Shown Using Wi-Fi Connectivity)

Car System also supports importing and exporting data manually by means of a USB Flash Drive.

Communication Port Information

EOC and Car System components use certain default ports to communicate. The following figure illustrates the components, the ports they use by default, and the direction in which communication is initiated.

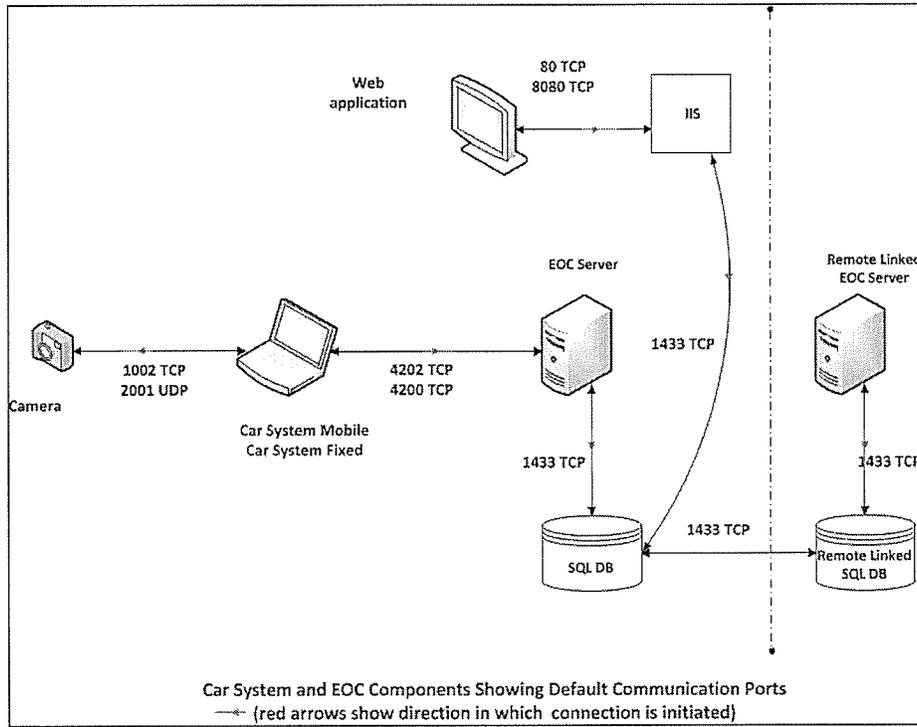


Figure 2 — Components, Ports, and Communications Direction

The same information is summarized in the table below:

Component and Path	Default Port(s)	Connection Direction
Camera to Car System	1002 TCP for data 2001 UDP for diagnostics	From Car System to Camera
Car System to/from EOC Server	4202 TCP for data 4200 TCP for diagnostics	From Car System to EOC Server
EOC Server to/from SQL DB	1433 TCP	From EOC Server to SQL DB
EOC Web application to/from IIS	80 TCP for data 8080 TCP for maps	From Web application to IIS
IIS to/from SQL DB	1433 TCP	From IIS to SQL DB
SQL DB to/from Remote Linked SQL DB	1433 TCP	Either direction

Table B – Components, Ports, and Communications Direction

MPH-900 System Components

The MPH-900 portion of the ELSAG system comprises LPR reader systems (cameras) and a Mobile Data Terminal (MDT) or laptop computer that manages the on-board user interface, called Car System.

There is currently one camera suite supported by the MPH-900 product:

- AD3M

AD3M

The AD3M product has the following components:

- A set of up to 4 dual-sensor (color and IR) cameras
- A power and junction box
- A Mobile Data Terminal (MDT) that hosts the Car System interface.

Each ADM3M camera is an IP device with an OCR processor included. Cameras are accessible through their Static IP addresses.

The cameras are connected to a junction and power supply box by cables. The box includes a LAN switch that can connect all the cameras to the MDT computer, the power supply and a wireless access point. The wireless access point can be used to connect the Car System to an ELSAG Operations Center (EOC) server and/or to connect other cameras to the MDT.



Chapter 3 — Installation Prerequisites

Computer System Requirements for the Mobile Data Terminal (MDT)

The computer on which you install Car System must meet the following requirements:

- Pentium 4 1Ghz with at least 512 Mb RAM
- Minimum 800x600 display resolution
- Minimum 5 Gb hard disk space available
- LAN data port for connecting to the junction and power box
- At least 2 USB ports

GPS Receiver Installation

The MPH-900 system comes with the Garmin 18x USB GPS receiver standard. This GPS receiver is plug and play and requires no installation or configuration.

The MPH-900 system also supports any NMEA-compliant receiver. If you are using a GPS receiver other than the default Garmin receiver, you may need to install the driver that comes with that receiver. Install the driver first, then connect the GPS receiver to the on-board computer through the USB port.

See the section on GPS in the *Car System User's Guide* for information on how to configure the settings for a non-Garmin GPS. These settings include the COM port through which the GPS will communicate with Car System.



Chapter 3 — Installing and Configuring the MPH-900 Car System

New Installation Overview

This chapter describes a completely new installation of the Car System. It assumes no existing MPH-900 components exist on your system. Before installing any base software or Car System components, disable firewall, anti-virus and pop-up blocking software temporarily.

Install Software Prerequisites

Install .NET 4.0

You only need to install this component if it is not already present on the machine. If an earlier version of .NET is installed, install .NET 4.0.

To install the .NET component:

1. Navigate to the **Prereq** folder in the Car System CD software directory.
2. Open the **.Net 4.0** folder.
3. Double-click on **dotNetFx40_Full_x86_x64.exe**.

Install Car System

Installation Prerequisites

Before installing the Car System, you must have:

- An EOC instance installed on another computer and a wireless network connection to it available. For information on installing and configuring the EOC, see the *Operations Center Install Guide*.
- An XML **site** file you exported from the **System Config** procedures in the EOC. See the *Operations Center Administrators' Guide* for details on how to generate this file.

Car System and EOC Permissions

You should be aware of how Car System permissions interact with the EOC, depending on whether you require Car System users to log in or not.

Login Not Required

If you operate Car System in the mode where no login is required, the permissions and domain under which the Car System instance will operate will be whatever are associated with the **CarSystem** user in the EOC. (The **CarSystem** user is created by default when you install the EOC.)

For example, if the **CarSystem** user does not have **System Config** permissions in the domain to which it is assigned in the EOC, that instance of Car System will not have access to the **Advanced** settings.

Login Required

If you operate Car System in the mode where login is required, the user name and password are created in the EOC and the user who logs in has whatever permissions and domain are associated with the user name in the EOC.

For example, for the user to have access to the **Advanced** settings in Car System:

- The user must belong to a group in the domain of the Car System site in EOC (the element from which you exported the XML configuration file), and
- The group must have **System Config** permissions checked.

By default, though, Car System installs with the login-required flag turned off. To turn it on, the **CarSystem** user must have **System Config** permissions in the domain to which it is assigned in the EOC so that it can access the **Advanced** settings. Once the **CarSystem** user has done this and logged out, the only users who can log into Car System are those created in the EOC. You can no longer log in as the **CarSystem** user, since that is a special user created only for the login not-required scenario.

Install Car System Mobile with an EOC

This procedure explains how to install Car System Mobile in conjunction with an EOC installation.

To install the Car System:

1. Double-click on the installer file. (The screen below is a sample; the release number may be different on yours.)

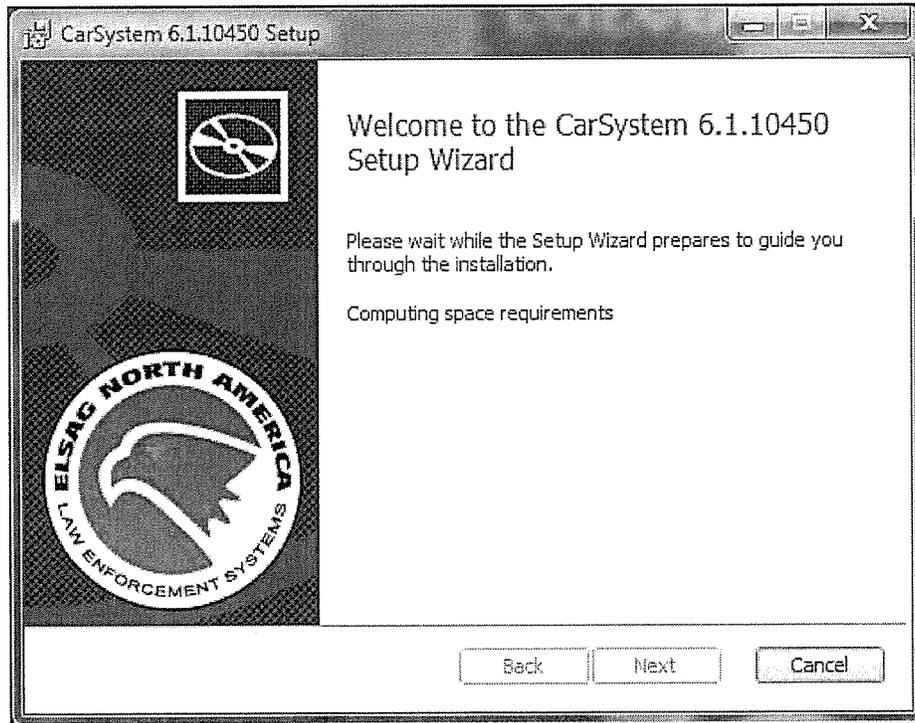


Figure 3 – Car System Installation Welcome Screen

The installer will calculate your disk space requirements and whether you have the necessary prerequisite software installed.

Once the **Next** button is active, press it to continue. You'll see the following:

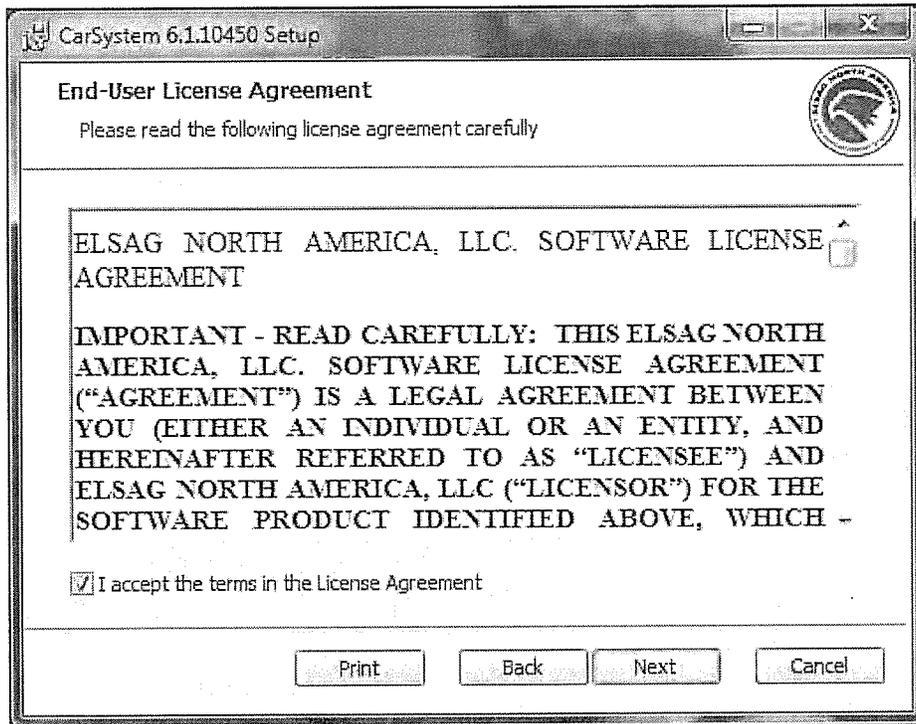


Figure 4 – Car System License Agreement Screen

2. Check the “I accept” box and press Next to continue.

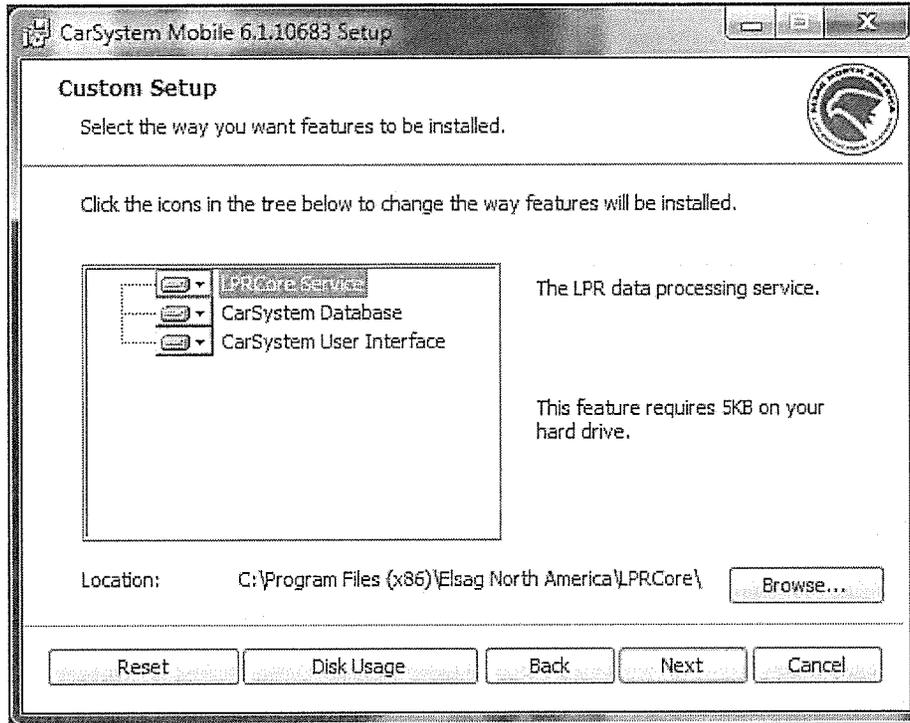


Figure 5 – Car System Setup Screen

You can change the location where the Car System components will be installed, but it isn't necessary. You can also check the disk usage of various components if required. When you are through, press **Next** to continue.

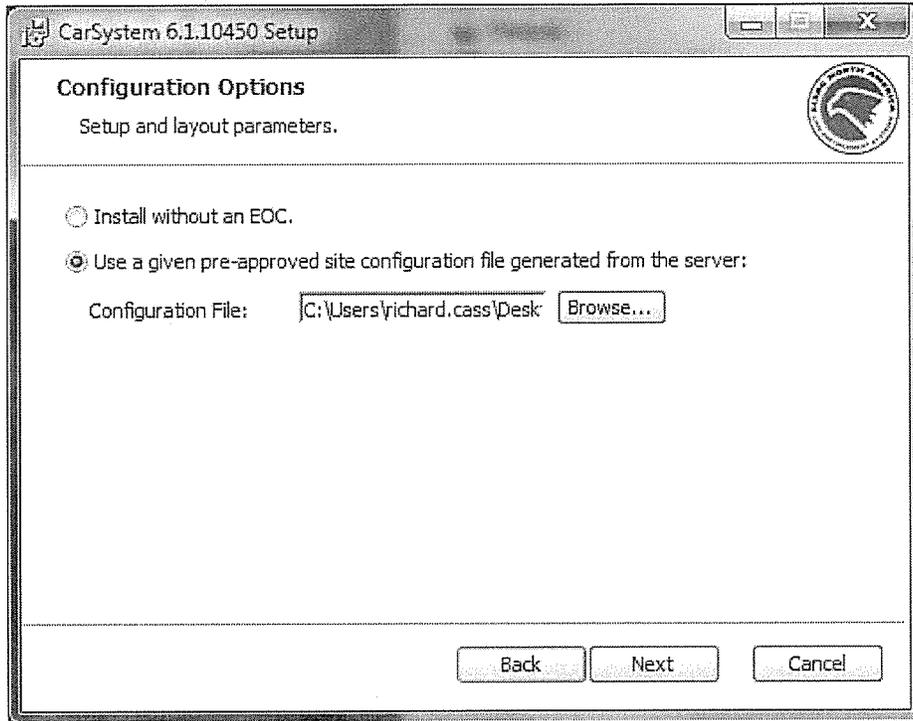


Figure 6 – Car System Configuration File Screen

This screen also allows you to install Car System without an EOC, if you wish. When you run the Car System as a standalone application, the onboard computer will not be connected wirelessly to an EOC installation. You can, however, transfer data to and from the EOC manually via USB flash drive.

In most cases, however, you will install with an EOC and a Site file.

3. Use the Browse key to find the Site file you exported from the EOC and specify the pathname in the **Configuration File:** text box. If you do not have the site file, create one now. (This assumes you've already created the Car System instance in the EOC.)

To create a site file:

- a. Navigate to the URL for the EOC installation that this Car System will connect to.
- b. Go to **System Config > Manage Devices:**

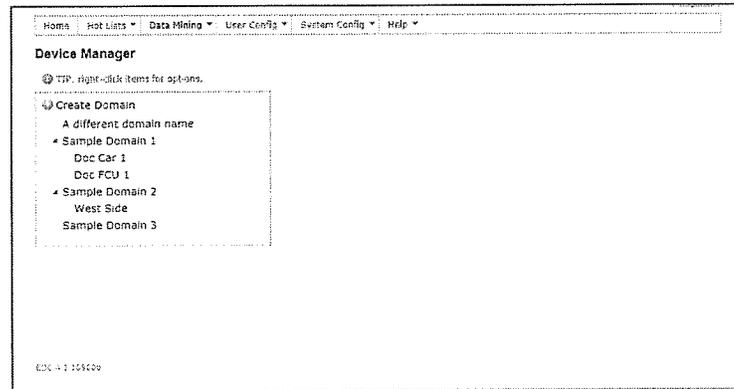


Figure 7 – EOC Manage Devices

- c. Right-click on the node that represents the car you want associated with this Car System implementation and select **Export**.

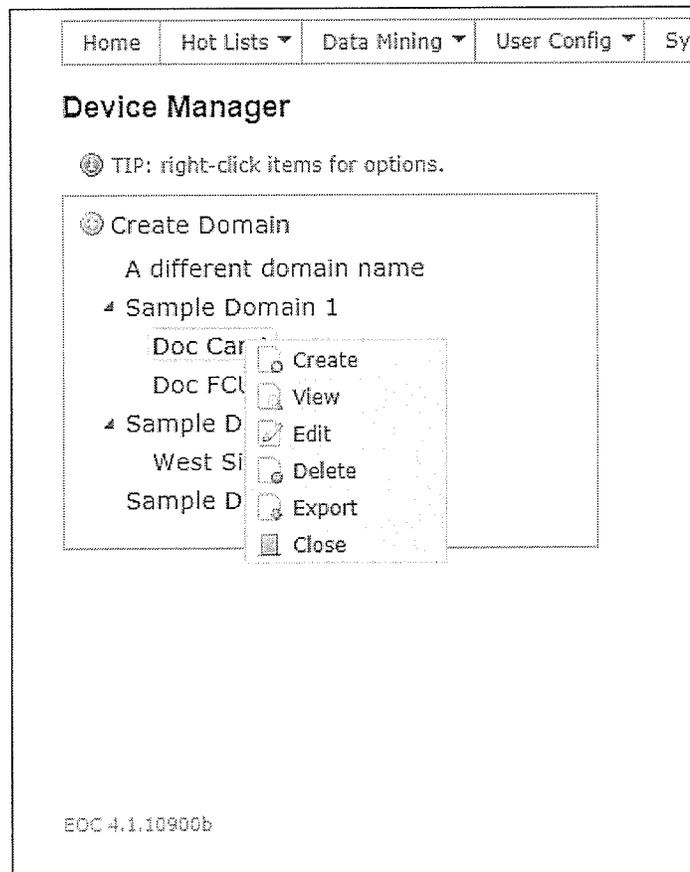


Figure 8 – EOC Export Node Configuration

- d. You'll be prompted to save the file:



Figure 9 – EOC Export File Save

- e. Press **Save** and the system will save the file to your **Downloads** directory (in Windows 7).
 - f. Enter the location of the file in the **Configuration File:** text box of the Car System installer or use the **Browse** key to find it.
4. Press **Next** to continue.

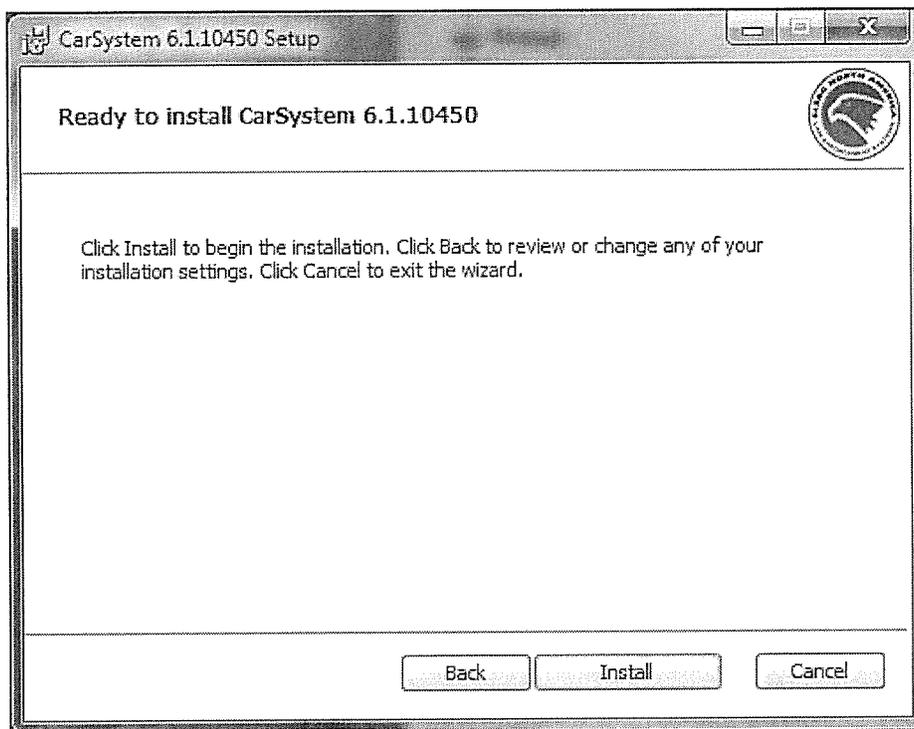


Figure 10 – Car System Ready to Install Screen

- 5. Now you're ready to install Car System. Press **Install** to continue. You'll see progress indicators:

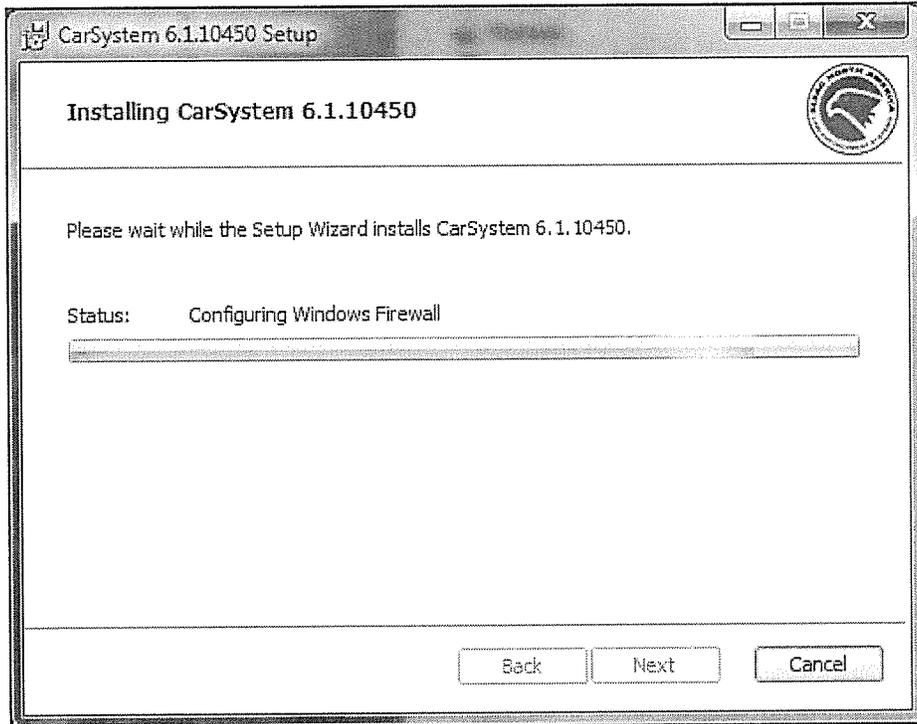


Figure 11 – Car System Installation Progress Screen

6. Press Finish to complete the installation.

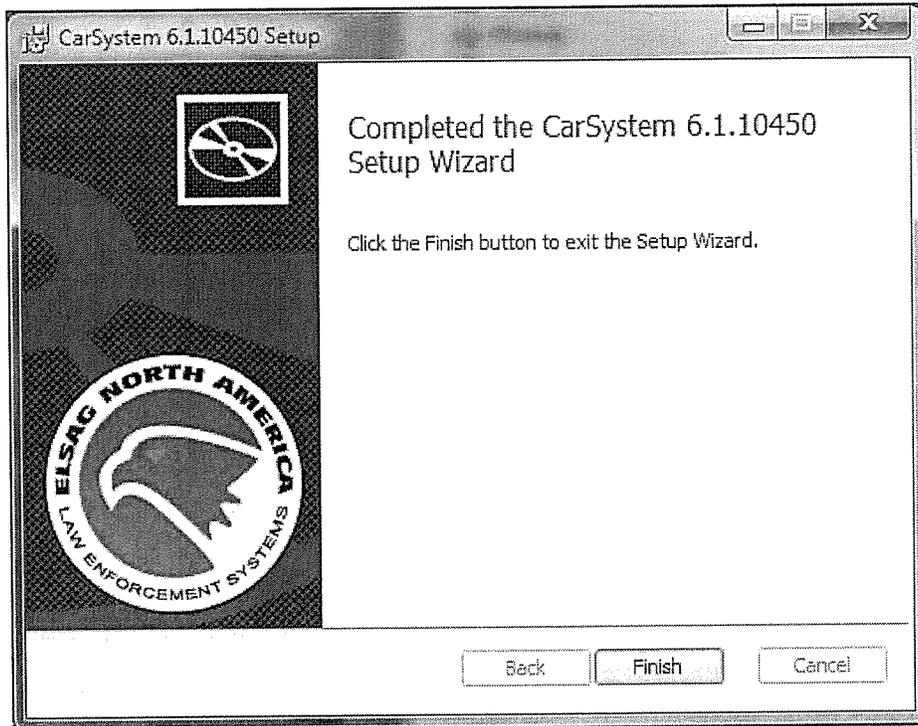


Figure 12 – Car System Installation Complete Screen

Installation Troubleshooting

Once you've installed the Car System application with an EOC, you can start the application by double-clicking on the Car System desktop icon.

The first time you start up Car System, you may receive the following message:

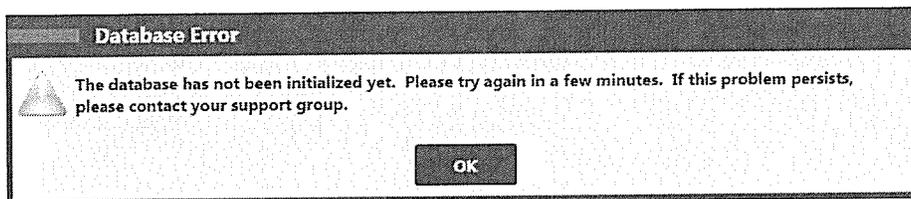


Figure 13 – Car System Database Error Message

This means that the local Car System database is still downloading site information from the EOC database. Press OK and Car System will close. Then wait a few minutes before starting the application again.

□ Install Car System Mobile as a Standalone Application

You can install Car System as a standalone application, which means you will have no connection to an EOC, but can upload and download data via USB drive.

To do this, follow the procedure above, but at Step 3, select the **Install without an EOC** button. You will not be prompted for an EOC configuration file.

❑ **Install Car System Fixed**

A separate version of Car System, without a user interface, is installed in a similar fashion to Car System Mobile. The only difference is that when you reach the Custom Setup Screen (see **Figure 5 – Car System Setup Screen**), you will not see an icon for the UI. However, the rest of the installation proceeds just as the Car System Mobile one does.

Install Maps

Although the Car System installation procedure installs the map engine automatically, you must install the files containing map data separately. To do this:

1. Locate the installer executable in the Install directory. For 32-bit machines, the filename is **Maps USA (x86)**; For 64-bit machines, the filename is **Maps USA (x64)**.
2. Double-click on the appropriate installer executable. You'll see this screen:

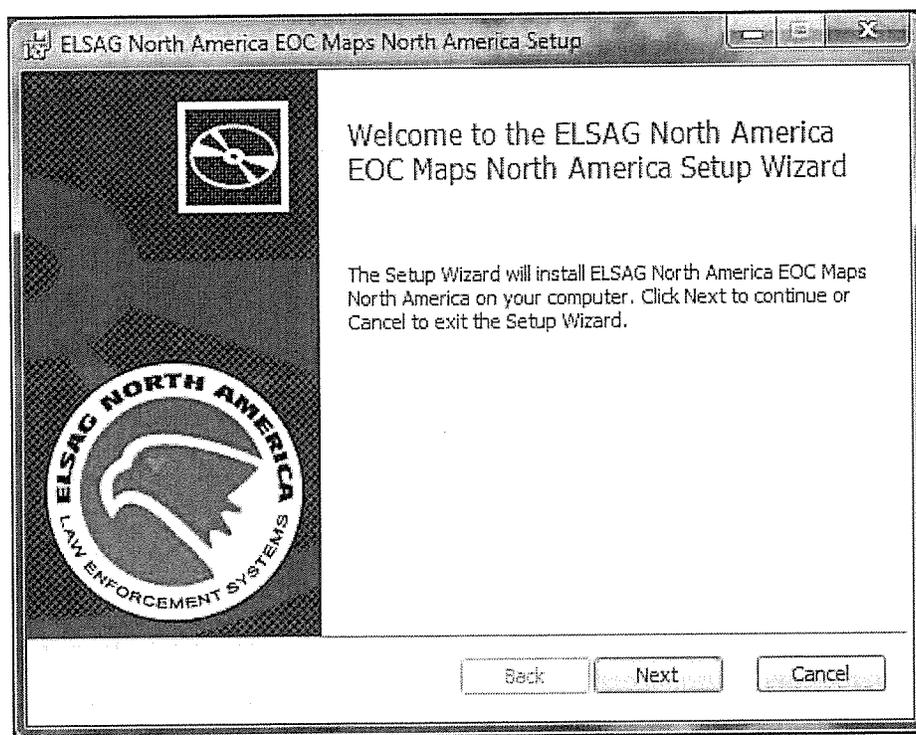


Figure 14 – Maps Installation Welcome

3. Press **Next** to go to the License Agreement Screen.

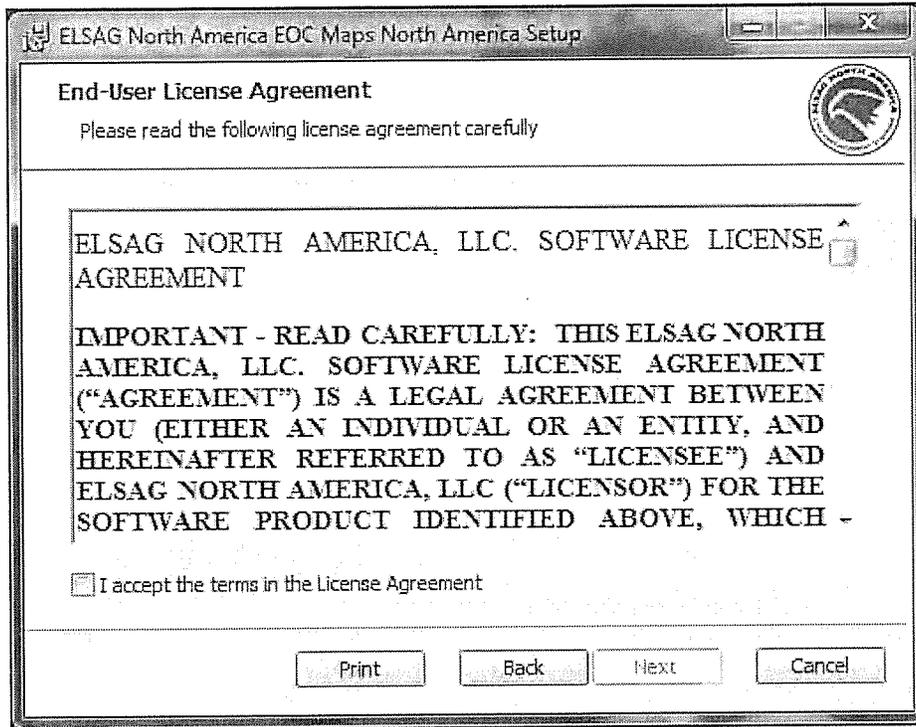


Figure 15 – Maps Installation License Agreement

4. Select the check box and press **Next** to see the Setup screen.

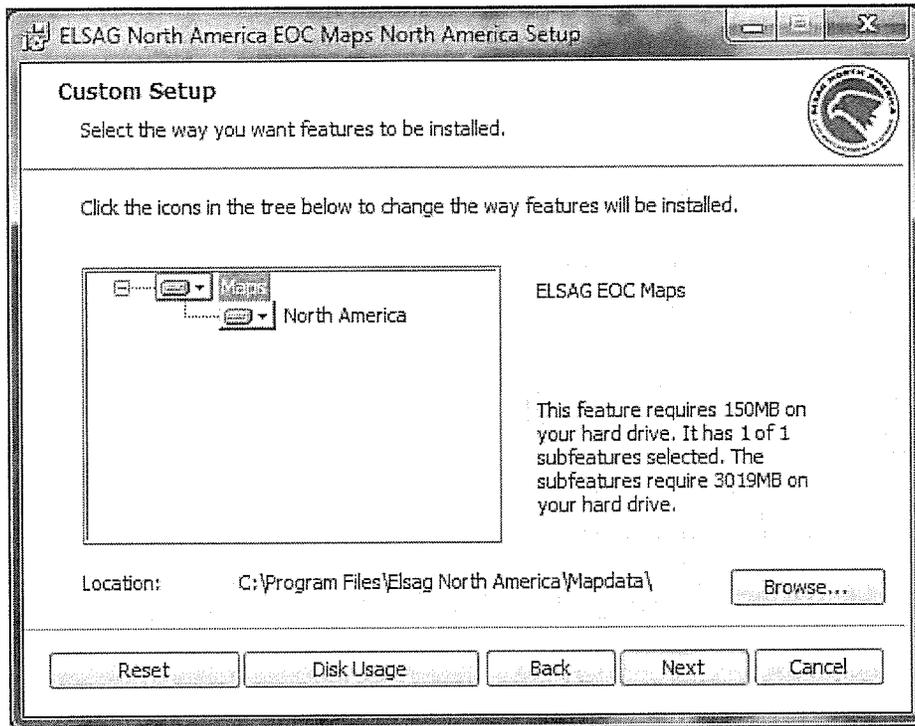


Figure 16 – Maps Installation Setup

5. You can change the location where the maps files will be installed, but it isn't required. You can also check the disk usage. Press **Next** to continue.

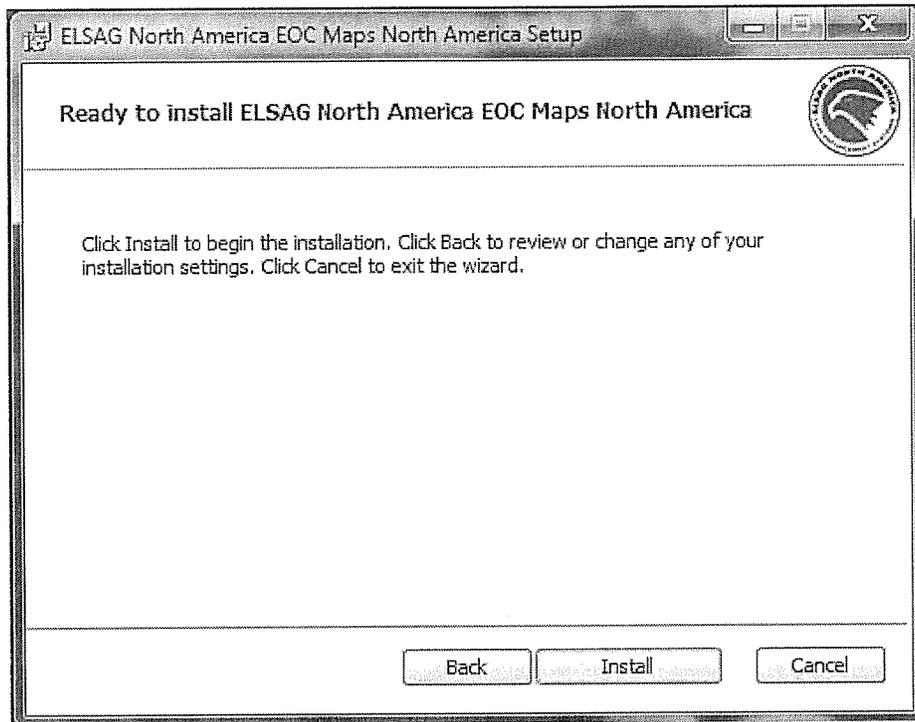


Figure 17 – Maps Installation Start

6. Press **Install** to start the installation. You will see various screens reporting progress as the installation moves on.

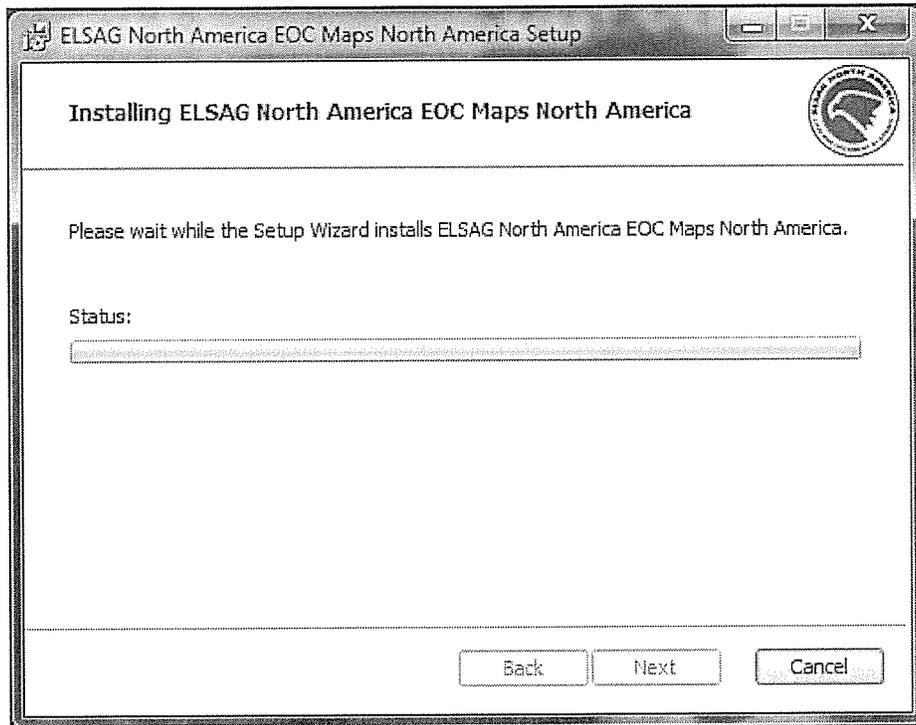


Figure 18 – Maps Installation Progress(1)

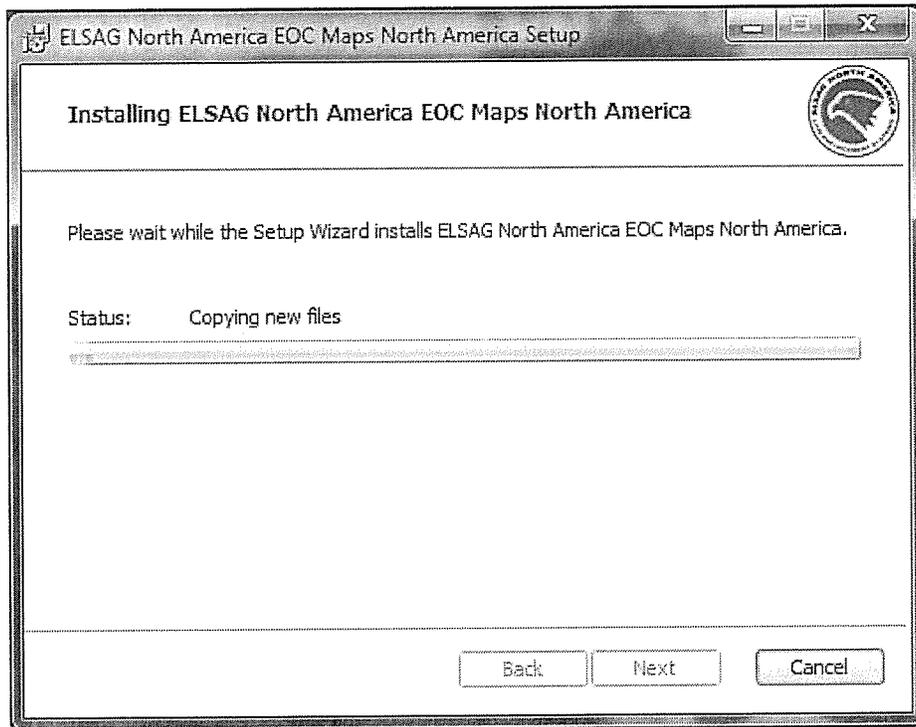


Figure 19 – Maps Installation Progress(2)

7. When the installation completes, you will see this screen:

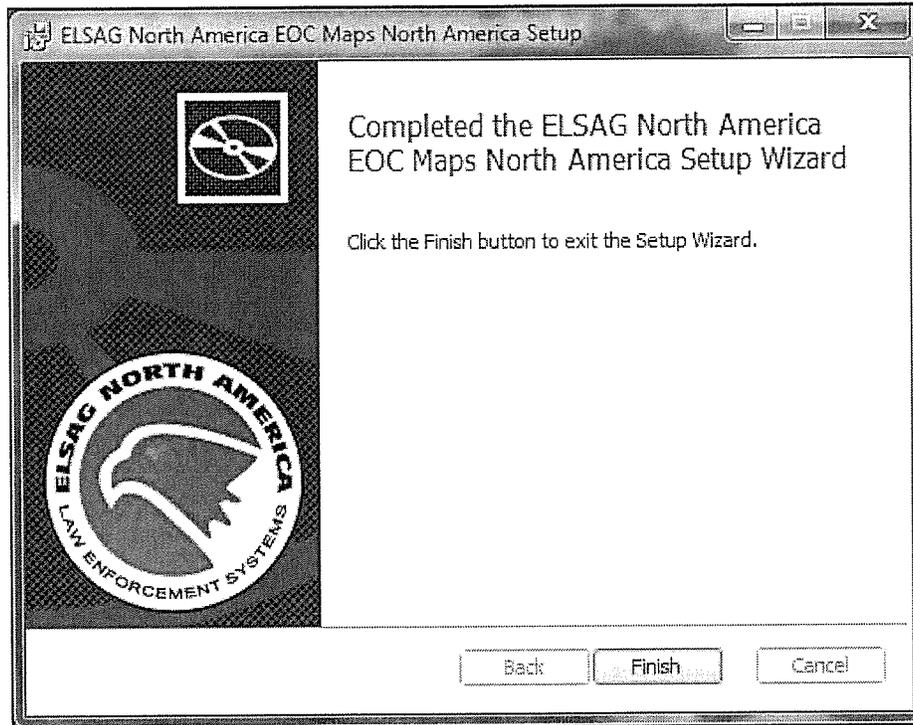


Figure 20 – Maps Installation Finish

8. Press **Finish** to complete the installation of the maps files.



Chapter 5 — Configuring the MPH-900 Camera Systems

Configuring AD3M

You use the Discovery tool to configure the AD3M cameras. Configuring the connections between the cameras and the Car System software is explained in the *Car System Users' Guide*.

The Discovery Tool

The Discovery tool is used to load firmware and regionalization protocols to the cameras. The tool is located in the **Discovery** subfolder in the **Utility** folder of the Car System installation CD.

Installing Discovery

To install Discovery, do the following:

1. Double-click the **Discovery_SetUp** file in the **Discovery** folder.

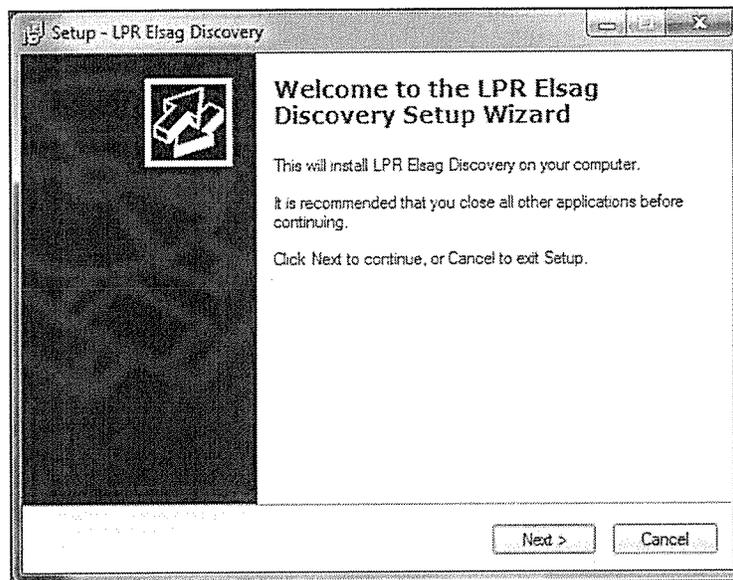


Figure 21 — Discovery Setup – Welcome Screen

2. Click **Next** to continue.

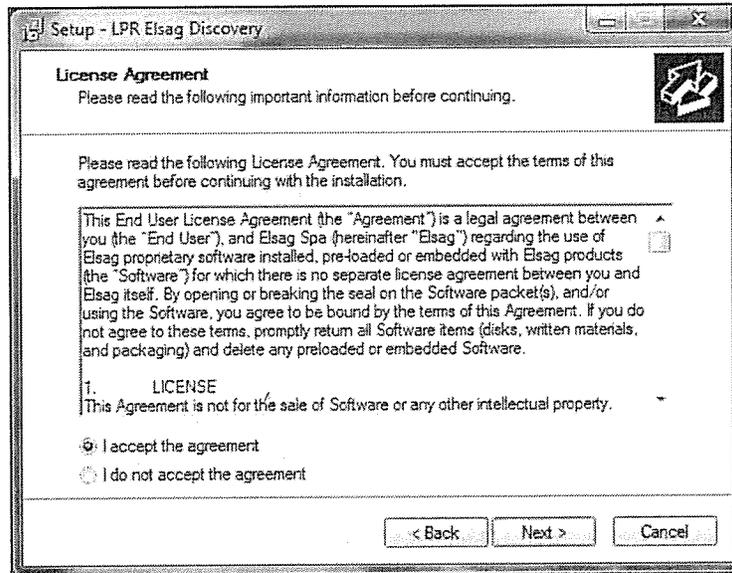


Figure 22 — Discovery Setup – License Agreement Screen

3. Accept the License Agreement and click **Next**.

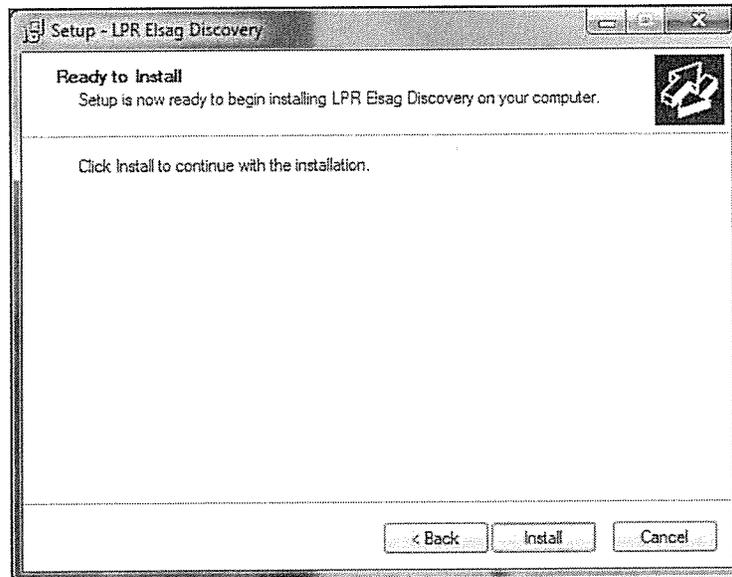


Figure 23 — Discovery Setup – Ready to Install Screen

4. Click **Install** to begin the installation process. You'll see a progress screen, then the completion screen shown below.

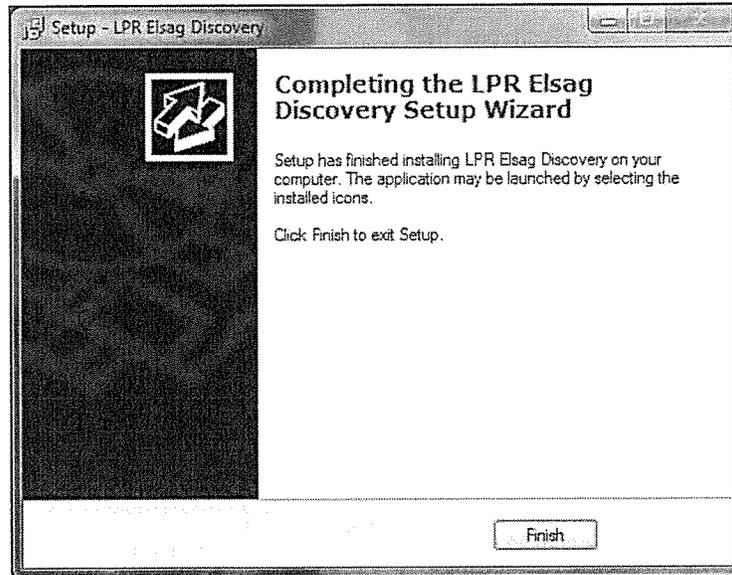


Figure 24 — Discovery Setup – Completion Screen

5. Press **Finish** to complete the installation.

Starting Discovery

1. To begin using **Discovery**, double-click on the desktop icon.

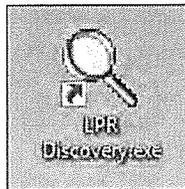


Figure 25 — Discovery Desktop Icon

You'll see the following:

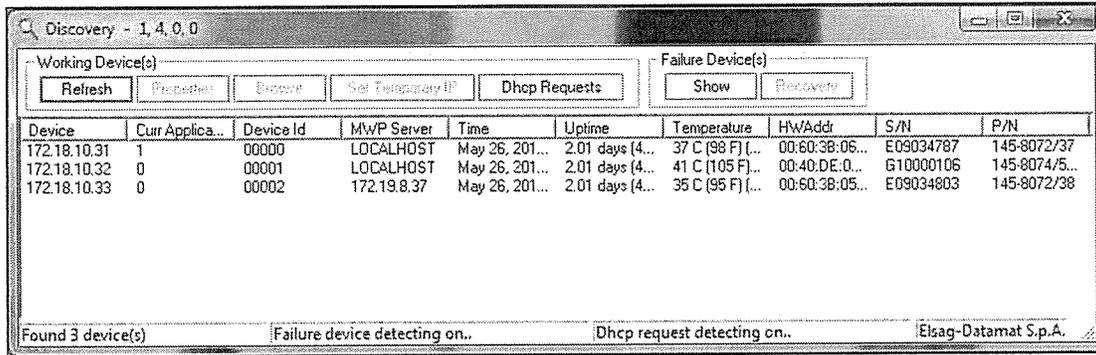


Figure 26 — Discovery Display Screen

AD3M Configuration – Upgrade Camera Firmware

You open up the camera-embedded Web Site through a standard Internet Browser. The camera Web Site can be found at <http://<camera IP address>>.

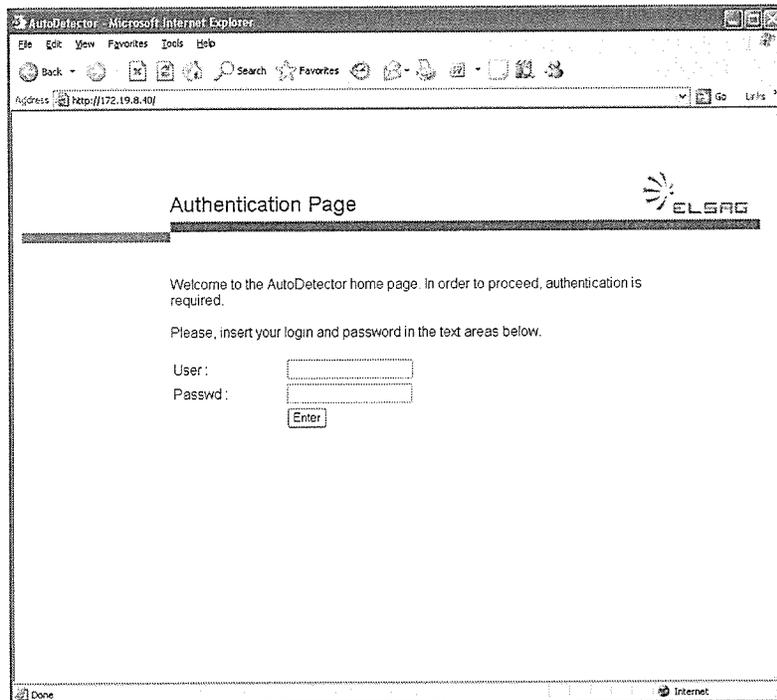


Figure 27 — Discovery Login Screen

1. You must log in as an administrator to perform a Firmware upgrade. The default username and password are **administrator** with password **elsag**.

2. Launch the Console Page. (The Java Runtime v.1.5.0_08 or later must be installed on the computer.)
3. Select the Upgrade Software Tab.

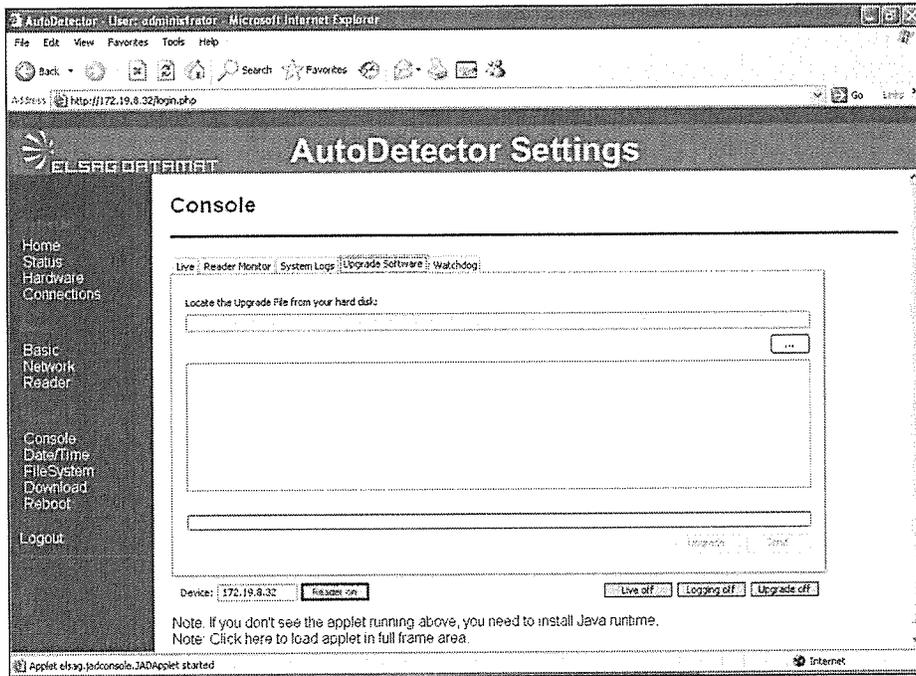


Figure 28 — Discovery Console

4. At this point, you select the new firmware. This is a file included in the CD folder under **AutoDetector3_v<version>\Firmware:**
 - **Ad3_sw_app_v.<version>.kit:** Select this if you want to update firmware keeping the current camera configuration. The camera configuration includes IP address, camera ID.
 - **Ad3_sw_sys_v.<version>.kit:** Select this if you want to update firmware and reset the camera configuration to the factory default.
5. After choosing the package to be uploaded, click the **Send** button to upload the package on the reader. A progress bar on the bottom of the Console Applet will show the transfer status.
6. After the transfer has completed, click the **Upgrade** button to perform the software upgrade. The camera will send the upgrade logs which will be displayed on the text box console. The bottom right box will show the Upgrade On signal on a red background.
7. After the upgrade operation, the reader will reboot with the new software/configuration.
8. Close the browser window while the camera is rebooting. Then open a new session to verify that the new firmware has been correctly loaded.
9. Repeat the procedure for all LPR cameras in the system that need upgrading.

AD3M Configuration – Upgrade Camera Protocols

The camera Protocols are configuration files that include models of the license plates that must be recognized. For improved performances, localized state-specific protocols are available.

The set of protocols can be found on a separate CD issued by ElsagNA.

The protocol upgrade is done using the same Discovery tool as the Firmware upgrade.

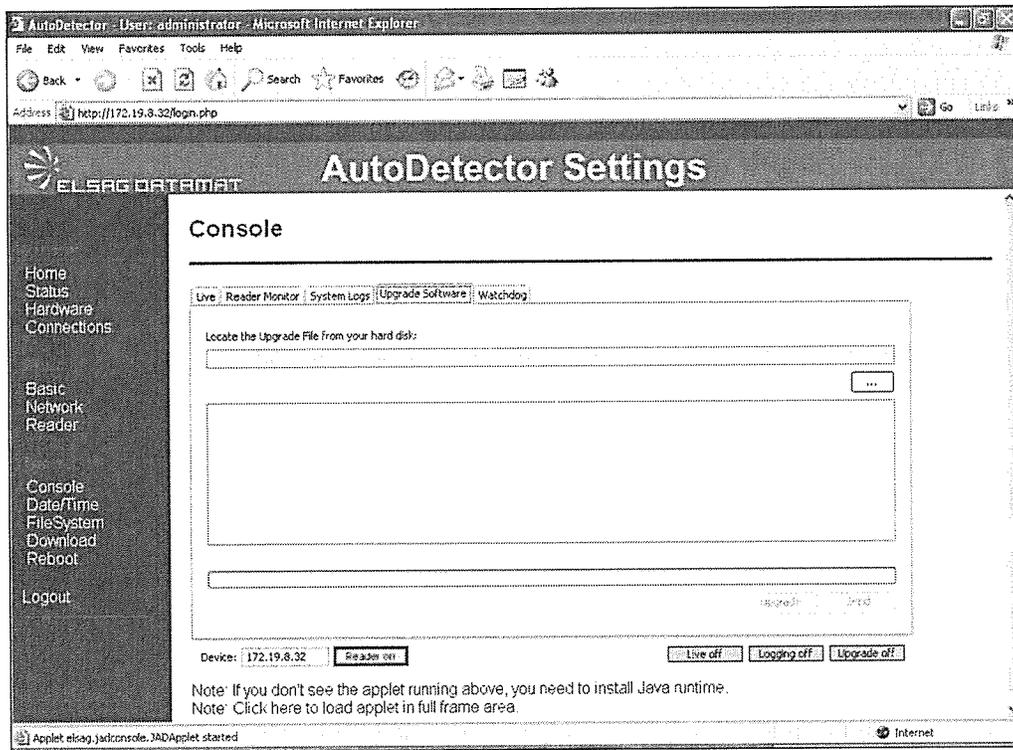


Figure 29 — Discovery Console

Follow the same procedure, except navigate to the different folder: **PROTOCOLS_AD3_<version>**. Under the root folder, each available state-specific configuration can be found under the state abbreviation.

At the final level you can find a file for each possible camera optical configuration such as:

- AD3_<state>_<focal length>_v.<version>.kit

For example, a valid protocol file is **AD3_AZ_16mm_v.02.00.00.kit**, meaning that this is an Arizona configuration for a 16 mm (Right hand) camera and the protocol version is 2.0.0.

Typically 25 mm cameras are used for the left side and 16 mm for the right side.

After choosing the package to be uploaded, click the **Send** button to upload the package on the reader. The progress bar on the bottom of the Console Applet will show the transfer status.

After the transfer has completed, click the **Upgrade** button to perform the software Protocol upgrade. The camera will send the upgrade logs which will be displayed on the text box console. The bottom right box will show the Upgrade On signal on a red background.

After the upgrade operation, the reader will reboot with the new protocol

Close the browser window while the camera is rebooting. Then open a new session to verify that the new Protocol has been correctly loaded.

AD3M Configuration – Change Default IP Address of Cameras

It might become necessary to change the IP address of the cameras. If so, you need to open up the camera’s embedded Web Site through a standard Internet Browser with the discovery tool as done in the previous steps.

1. Once logged in, click on Network on the right side of browser, which will bring you to the site below.

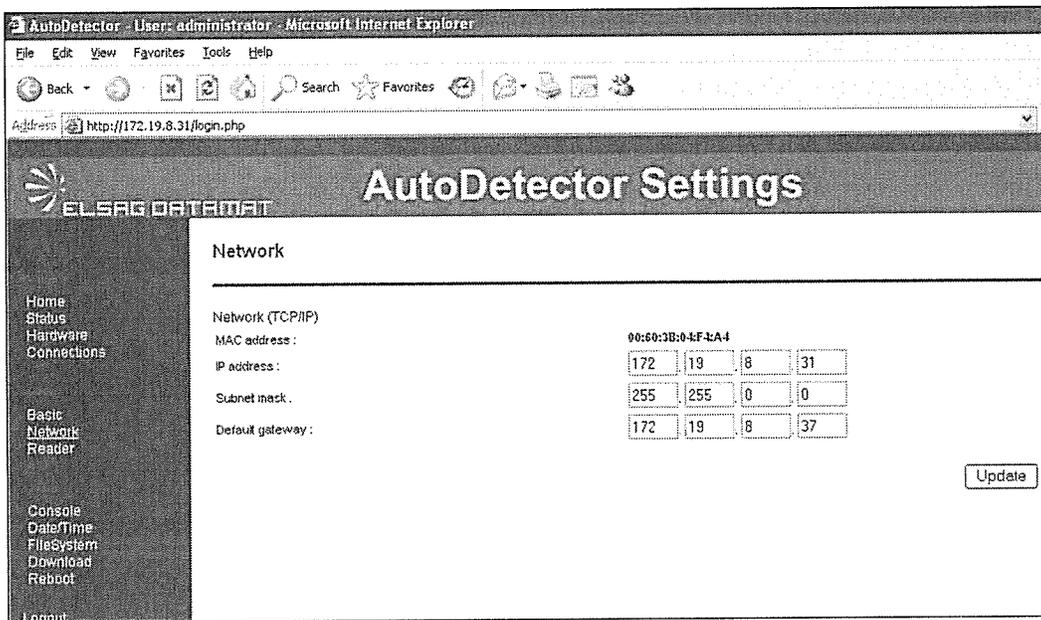


Figure 30 — Discovery AutoDetector Settings

2. Change the IP address to the address suitable for your network. Make sure that the subnet mask and gateway are correct for your network. Normally the gateway corresponds to the host PC connected to the cameras.
3. Click **Update**. You will get a flashing prompt to **Reboot** for applying changes.

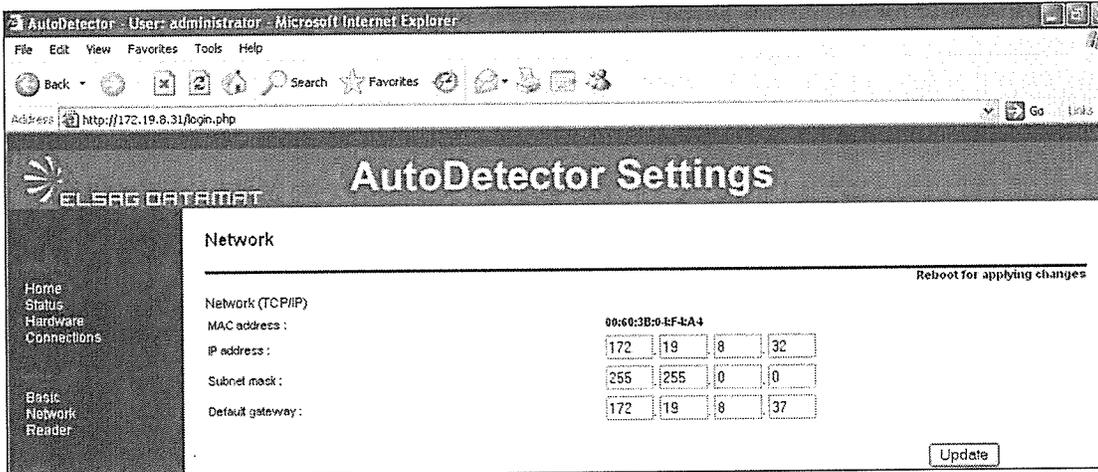


Figure 31 — Discovery AutoDetector Settings (Updated)

4. Click **Reboot** on the left side and you will be presented with the following window:

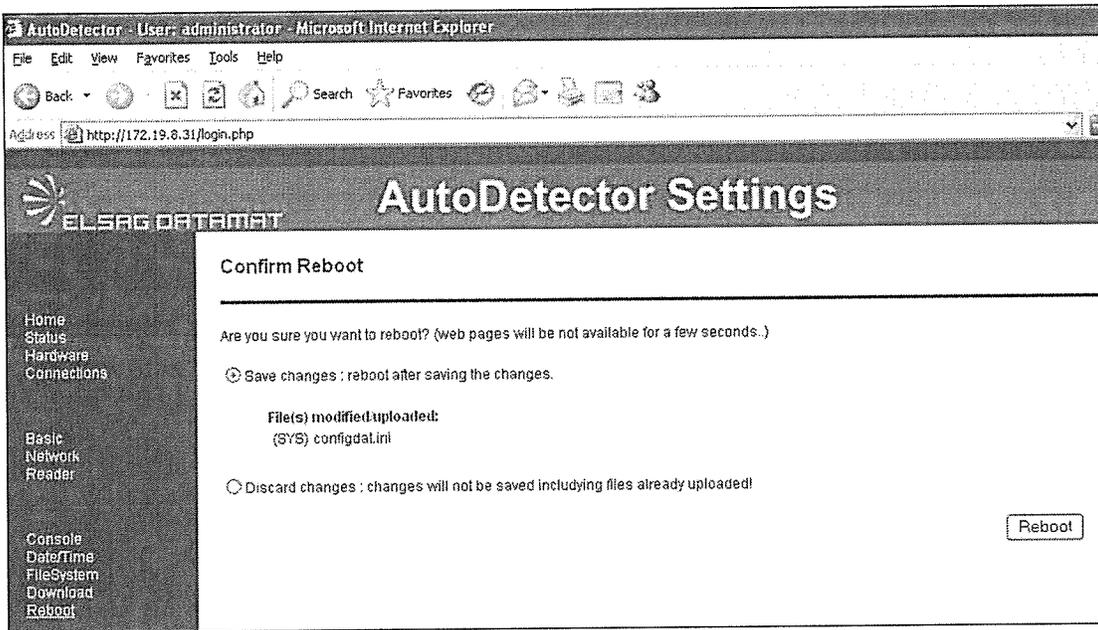


Figure 32 — Discovery Reboot Confirmation

5. Click **Reboot**. Once the changes have been applied, the browser will return the following and the camera will reboot. Do the same to the other camera if necessary.

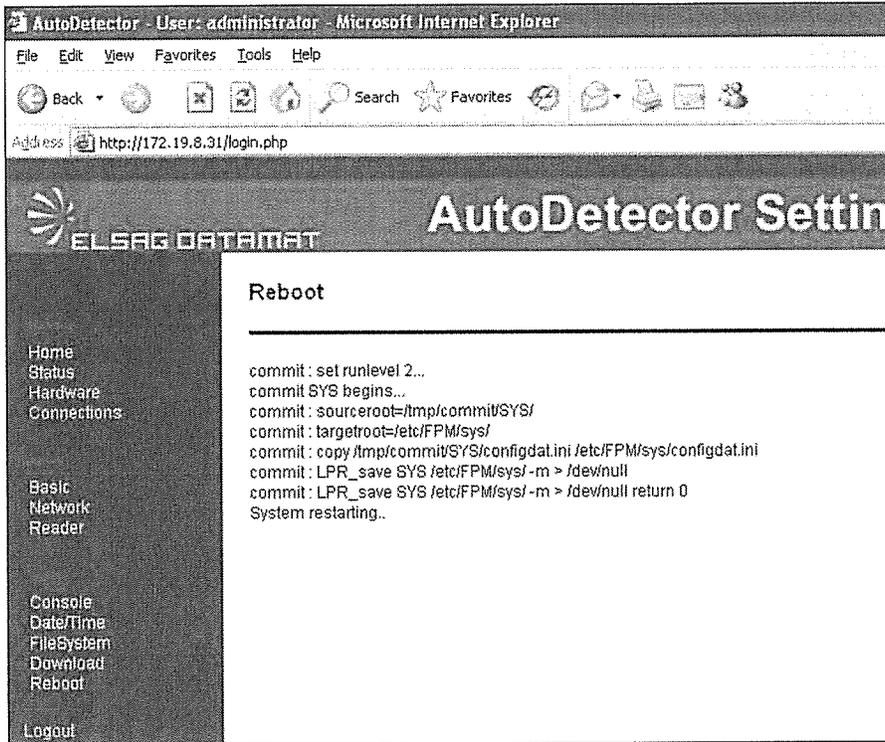


Figure 33 — Discovery Reboot Progress Screen

EXHIBIT "B"
EQUAL EMPLOYMENT OPPORTUNITY

1. The contractor, subcontractor, vendor, supplier, or lessee will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age. The contractor, subcontractor, vendor, supplier, or lessee will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, or age. Such action will include, but not be limited to, the following: employment; upgrading; demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation and selection for training, including apprenticeship. The contractor, subcontractor, vendor, supplier or lessee agrees to post in conspicuous places available to employees, and applicants for employment, notices to be provided by the City setting forth the provisions of this Equal Employment Opportunity Clause.

2. The contractor, subcontractor, vendor, supplier, or lessee states that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age.

3. The contractor, subcontractor, vendor, supplier, or lessee will send to each labor union or representatives of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer advising the said labor union or worker's representative of the contractor's and subcontractor's commitments under Section 202 of Executive Order No. 11246, as amended and superseded, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor, subcontractor, vendor, supplier, or lessee will comply with all provisions of Executive Order No. 11246, as amended and superseded, and the rules, regulations, and relevant orders of the Secretary of Labor or other Federal Agency responsible for enforcement of the equal employment opportunity and affirmative action provisions applicable and will likewise furnish all information and reports required by the Mayor and/or Contract Administrator(s) for purposes of investigation to ascertain and effect compliance with this program.

5. The contractor, subcontractor, vendor, supplier, or lessee will furnish all information and reports required by Executive Order No. 11246, as amended and superseded, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to all books, records, and accounts by the appropriate City and Federal Officials for purposes of investigations to ascertain compliance with such rules, regulations, and orders. Compliance reports filed at such times as directed shall contain information as to the employment practice policies, program, and work force statistics of the contractor, subcontractor, vendor, supplier, or lessee.

6. In the event of the contractor's, subcontractor's, vendor's, supplier's, or lessee's non-compliance with the non-discrimination clause of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the contractor, subcontractor, vendor, supplier, or lessee may be declared ineligible for further City contracts in accordance with procedures provided in Executive Order No. 11246, as amended and superseded, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as may otherwise be provided by law.

7. The contractor shall include the provisions of paragraphs 1-8 of this Equal Employment Opportunity Clause in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended and superseded, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontractor or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance; provided, however, that in the event the contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

8. The contractor shall file and shall cause his or her subcontractors, if any, to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor. Compliance reports filed at such times as directed shall contain information as to the practices, policies, programs, and employment policies and employment statistics of the contractor and each subcontractor.

EXHIBIT "C"
DRUG POLICY COMPLIANCE AGREEMENT

I, _____, as an owner or officer of
(Name) (Print/Type) (Title)

(Name of Company) (Contractor)

have authority to bind Contractor with respect to its bid, offer or performance of any and all contracts it may enter into with the City of Houston; and that by making this Agreement, I affirm that the Contractor is aware of and by the time the contract is awarded will be bound by and agree to designate appropriate safety impact positions for company employee positions, and to comply with the following requirements before the City issues a notice to proceed:

1. Develop and implement a written Drug Free Workplace Policy and related drug testing procedures for the Contractor that meet the criteria and requirements established by the Mayor's Amended Policy on Drug Detection and Deterrence (Mayor's Drug Policy) and the Mayor's Drug Detection and Deterrence Procedures for Contractors (Executive Order No. 1-31).
2. Obtain a facility to collect urine samples consistent with Health and Human Services (HHS) guidelines and a HHS certified drug testing laboratory to perform the drug tests.
3. Monitor and keep records of drug tests given and the results; and upon request from the City of Houston, provide confirmation of such testing and results.
4. Submit semi-annual Drug Policy Compliance Declarations.

I affirm on behalf of the Contractor that full compliance with the Mayor's Drug Policy and Executive Order No. 1-31 is a material condition of the contract with the City of Houston.

I further acknowledge that falsification, failure to comply with or failure to timely submit declarations and/or documentation in compliance with the Mayor's Drug Policy and/or Executive Order No. 1-31 will be considered a breach of the contract with the City and may result in non-award or termination of the contract by the City of Houston.

(Date)

(Typed or Printed Name)

(Signature)

(Title)

EXHIBIT "D"
DRUG POLICY COMPLIANCE DECLARATION

I, _____, as an owner or officer of
 _____,
 _____ (Contractor)
 _____ (Name of Company)

have personal knowledge and full authority to make the following declarations:

This reporting period covers the preceding 6 months from _____ to _____, 20____.

 Initials A written Drug Free Workplace Policy has been implemented and employees notified.
 The policy meets the criteria established by the Mayor's Amended Policy on Drug Detection and Deterrence
 (Mayor's Policy).

 Initials Written drug testing procedures have been implemented in conformity with the Mayor's
 Drug Detection and Deterrence Procedures for Contractors, Executive Order No. 1-31. Employees have been
 notified of such procedures.

 Initials Collection/testing has been conducted in compliance with federal Health and Human
 Services (HHS) guidelines.

 Initials Appropriate safety impact positions have been designated for employee positions
 performing on the City of Houston contract. The number of employees in safety impact positions during this
 reporting period is _____.

From _____ to _____ the following testing has occurred
 (Start date) (End date)

	<u>Random</u>	<u>Reasonable Suspicion</u>	<u>Post Accident</u>	<u>Total</u>
Number Employees Tested	_____	_____	_____	_____
Number Employees Positive	_____	_____	_____	_____
Percent Employees Positive	_____	_____	_____	_____

 Initials Any employee who tested positive was immediately removed from the City worksite
 consistent with the Mayor's Policy and Executive Order No. 1-31.

 Initials I affirm that falsification or failure to submit this declaration timely in accordance
 with established guidelines will be considered a breach of contract.

I declare under penalty of perjury that the affirmations made herein and all information contained in this declaration are within
 my personal knowledge and are true and correct.

 (Date)

 (Typed or Printed Name)

 (Signature)

 (Title)

EXHIBIT "E"
CONTRACTOR'S CERTIFICATION
OF NO SAFETY IMPACT POSITIONS
IN PERFORMANCE OF A CITY CONTRACT

I, _____, as an owner or officer of
(Name) (Print/Type) (Title)

(Name of Company) (Contractor)

have authority to bind the Contractor with respect to its bid, and hereby certify that Contractor has no employee safety impact positions, as defined in §5.18 of Executive Order No. 1-31, that will be involved

in performing _____
(Project)

Contractor agrees and covenants that it shall immediately notify the City of Houston Director of Personnel if any safety impact positions are established to provide services in performing this City Contract.

(Date)

(Typed or Printed Name)

(Signature)

(Title)