

## **Security Technology Defeats Vehicle Theft and Driver License Fraud in Mexico**

By Don Sturgis

The State of Jalisco, Mexico, now recovers more than 80 percent of the cars stolen in its jurisdiction of 6 million people. It has also reduced mean vehicle recovery time from 10 months to less than 2 months, helping to minimize the damage sustained by stolen vehicles. Even more impressive is the complete elimination of internal corruption in the issuance of driver licenses and vehicle registrations.

These accomplishments were achieved by the Jalisco Department of Transportation's deployment of the Pegasus WPX Vehicle Theft Control System. This system combines optical coding, portable scanners and smart card technology to produce a turnkey, corruption-proof application that eliminates opportunities for department employees, law enforcement officials or others to circumvent the system for their own personal gain. The control system developed by WernerPegasus Corporation last year earned the Innovative Security Technology Award at Thomson Financial's CardTech/SecurTech 2001.

Jalisco was facing the same problems of auto theft and forgery of driver license and vehicle registration that other states in Mexico and the U.S. are trying to cope with. In order to combat this, Jalisco officials felt that four fundamental requirements were needed: 1) the creation of a broad and reliable database of all vehicles and drivers in the state, 2) the ability to have an issuance system that produces traceable and non-forgable vehicle registrations and driver licenses 3) the ability to make non-authorized documents impossible and 4) the ability to audit all document inspections, including those of law enforcement. All of these requirements were met by using the Pegasus WPX system in the creation and production of three documents.

### **Optical Coded Vehicle Sticker**

In the Pegasus system, special stickers containing non-forgable optical codes are placed on every registered vehicle for identification purposes. In the field, police officers scan those codes on vehicles in public areas using specialized handheld scanners with built-in smart card read/write technology. The optical code on the sticker contains basic identification information about the vehicle; make, year, style (2-door, 4-door), color, license plate and serial number. This information is displayed on the scanner screen. The officer can then ascertain that the vehicle and license plate fits this description.

The scanners contain a database of information on up to 96 million vehicles sought by law enforcement officials for reasons ranging from theft to hit-and-run involvement, unpaid vehicle fees and traffic tickets. The scanner indicates on the display if the scanned vehicle is wanted for any of 16 violations.

Figure 1 – Information on Scanner Display



The optical code also identifies the issuing site of the sticker, the operator who initiated the printing and the time and date of printing. The scanner's database contains a list of any issuing site or operator discovered creating false documents. If the scanned sticker has come from one of those sources the display will indicate this as well.

Every time a scanned vehicle matches the violations database, the match is recorded in the unit as well as on the smart card the officer must use to activate the scanner. Smart cards also secure the data in the scanner, tie the officer to the vehicles being scanned, and are used to download reports of the officer's activity when he or she returns to the office. Thus an officer cannot ignore a flagged vehicle without having that action exposed upon returning to the office.

Figure 2 - Close-up of scanner and vehicle sticker



In Jalisco some officers simply walk the streets and scan parked vehicles to check for violators. The battery-operated scanner is capable of reading vehicle stickers through thick and tinted glass. A single police officer equipped with the Pegasus WPX scanner can verify the legal status of up to 500 cars in an 8-hour shift.

Figure 3 - Officers scanning vehicle stickers



Carlos Tiscareno, statewide administrator of the Pegasus WPX system in Jalisco, was asked in a recent interview; “Has the implementation of the Pegasus system created any new cases of police corruption?” He indicated that initially there were a few cases, but “they were detected by the system itself. The procedures themselves impede any officer from failing to report a stolen vehicle he finds. Everything is stored in the verifying portable (Pegasus scanner) and the officer cannot change that information, once the scan is done.”

Mr. Tiscareno stated further that, “There has not been a single case of a forged vehicle document or driver license from day one, in 1999. Official results [indicate] that during the first 18 months, 3600 vehicles were detected for various reasons (stolen, changed serial numbers, lacking documentation, etc.) and recovered. Due to the Pegasus system, detection of stolen vehicles is much better than traditional police procedures.”

### **Optical Coded Driver License**

A secure optical code strip is laminated in the Jalisco driver license. The data on this optical code contains basic identification data about the individual; height, sex, date of birth, skin and eye color and the issuing site of the license; the operator initiated the printing and the time and date of printing.

Figure 4 - Preparing License for Lamination



The scanner displays the individual's characteristics and indicates if the license was produced by an issuing site or by an operator caught creating a false document.

The ability to issue non-forged documents has proven so successful that Jalisco has issued over 700,000 driver licenses with the Pegasus WPX system in the past 4½ years with not a single case of a forged or unaccounted document. This impressive feature has provided an unexpected benefit to the possessor of a Jalisco driver license, because it is the only driver license issued in Mexico accepted by the banks as a valid ID.

Figure 5 – Optical Strip at top of Driver License



### **Optical Coded Vehicle Registration Card**

A secure optical code is printed on each vehicle registration card. The data in this code strip is identical to that on the vehicle sticker, so the same validity checks can be made on this document as those done on the vehicle sticker.

Portable scanners placed in police cars can be used to scan the two documents and vehicle sticker. This provides the law enforcement officers with on the spot information that has never been available to them before.

### **The System**

The Jalisco Vehicle Theft Control Systems is comprised of two basic functions; controlled issuance and printing of documents and a systematic verification of these documents.

A central computer contains Pegasus code encryption software and a redundant database for vehicles and drivers. The Pegasus system engineers built accountability into the system to eliminate opportunities for corruption that would not be prevented by other systems. To combat illegal issuance of registrations and driver licenses, biometric technology is used. Before a document can be issued, the system operator must activate the system using a smart card and fingerprint.

Data in the smart card provides the authorization level for the operator indicating what types of documents the operator can produce and when they can be produced (days and times of day) along with an expiration date when card is no longer valid. The card must remain in the reader at all times for the system to operate. In turn the computer stores all operator logins and an issuance summary on the smart card. Each operator is fully responsible for his/her work. The operator ID information is encoded as part of the

optical code on each of the documents so that any illegally issued item can be instantly traced back to the issuing operator.

Driver licenses are usually printed online by an operator at a Department of Motor Vehicle facility. Registration cards and vehicle stickers are normally printed in a secure shop and mailed to the owner of the vehicle. This is because of the special process of applying the adhesive coating to the front of the label that can be done only after the label is printed. The printing and coating is accomplished in one continuous operation.

The heart of the system is the special high security level optical code that incorporates highly advanced logical and optical encryption techniques. WernerPegasus personnel state that the same data could be printed 16 millions times (with the optical code containing the exact same information) and each printed code would look different, but would decode to the same data. This code can only be printed with a secure Pegasus WPX system and can only be decoded with the special built Pegasus scanners.

The Pegasus portable scanner is designed for ruggedized use. WernerPegasus personnel state that the unit can be dropped on a concrete floor from a height of 6 feet without being damaged. It is sealed to avoid any tampering.

The database of violating vehicles and drivers and a list of sites and/or operators who have produced falsified documents are transmitted on to personal computers in the offices that distribute the portable scanners. A scanner is connected to one of these computers to receive the most recent violation database and at the same time have its previous transactions transferred for sending back to the central computer for evaluation and analysis.

This data transfer can only begin when the scanner operator has his/her smart card inserted in the scanner. The communications software in the computer ascertains that this scanner/operator combination is entitled to have the database.

## **Success**

Francisco Ramirez Acuña, Governor of the state of Jalisco, Mexico states: “I feel proud for the distinction received (talking about the Larry Linden Award that Jalisco received for the implementation of the Pegasus system) because this means we are at the forefront not only in Mexico, but worldwide in the application of technology to detect and recover stolen vehicles”

Because of the success of the Jalisco application, the state of Sonora, Mexico has just completed installing the Pegasus Driver License module of the Pegasus WPX system. The system, using standard color laser printers and regular laminators, was installed and operational in 13 days. Four other Mexican states are beginning to implement their own Pegasus systems and fourteen others are studying the possibilities of implementing the system.

Mario Crosswell, General Manager of the Mexican Association of Insurance Companies Recovery coordination office says: “Our research has found the Pegasus to be a complete,

proven system... we are willing to recommend the implementation of this system to federal and state governments.”

### **Benefits for Law Enforcement Officers**

Among the many benefits of the system are several in the vehicle inspection process. Because the vehicle registration document is a sticker that is applied to the window rather than a card or slip in a glove box or wallet, many more cars can be inspected in a brief period of time. Because inspection of unoccupied vehicles is possible, law enforcement inspections do not disturb holders of valid registrations. In his interview, Mr. Tiscareno was asked if he had any citizen complaints because their cars were being scanned regularly by the police. He responded, “Yes, a few cases, mainly from uninformed citizens. But after they realized what this was all about, the complaints disappeared.”

When a stolen vehicle is identified, officers can request reinforcement and wait for the driver to return to the vehicle, making a low risk apprehension possible. Jalisco’s high vehicle recovery rate and vehicle thief arrest record has been accomplished without officer injury.

### **Other Applications**

The same Pegasus system techniques were used in Mexico for two other high visibility events. One million passes and 40,000 badges printed with the optical security code were issued and produced in less than three weeks during the Pope’s visit to Mexico in 1999. Everyone attending any of the papal events had to have a pass or badge to gain admittance. Even the church’s high-ranking officials were not exempt. They were required to use their badges at all times. All passes and badges were verified by 350 portable scanning units at access points and randomly checked during actual events. Over 2.2 million scans were performed in three days.

The reunion of Presidents Clinton and Zedillo in Yucatan, Mexico in 1999 created a need for 45,000 optical coded badges to be created in less than three days. All U.S. and foreign security officers had their badges scanned and checked for access privileges at various locations during the three-day event.

The system eliminated the risk of badge counterfeiting and prevented unauthorized access to restricted areas for these applications. By their very nature, these applications required that the verification stations be temporary and portable. Checkpoints could not be fixed. They had to be moved from venue to venue and around inside a venue. The portable scanners offered this flexibility. They served as a powerful hand-held access control and badge validation device. A 10-to-20 minute orientation session on using the portable scanner was all that was required to familiarize the operators with its operation.

With every scan the operator received an immediate display regarding the status and access privileges of the document holder. All of the scans were stored in the unit’s non-volatile memory for subsequent downloading to a computer for evaluations by superiors and internal affairs. Since the scanner operator must have his smart card inserted in the

scanner for it to operate, his ID is recorded as part of each transaction. This provides a record of accountability for each scan the operator makes.

### **True Systems Integration**

The Jalisco application is a good example of true systems integration. One normally thinks of system integration as independent electronic or software systems working together. The Jalisco application has extended the integration into the administration processes of the Jalisco Department of Transportation and various law enforcement agencies. The administrative integration takes maximum advantage of the strength of the Pegasus WPX system. Mr. Tiscareno stated: "Department regulations were revised to require the use of the optical code vehicle sticker. The regulations are enforced in a manner similar to the license plate sticker." Law enforcement inspection, arrest and vehicle recovery procedures were modified to increase inspection volume and lower officer risk.

### **About the Author**

Don Sturgis is a senior consultant with Ray Bernard Consulting Services (RBCS). His 27 years of in-depth security experience centers around identifying specific facility needs and finding the right fit of security technology to fulfill those needs. For more information about Sturgis and RBCS go to [www.go-rbcs.com](http://www.go-rbcs.com).