



National Motor Vehicle
Theft Reduction Council

Towards Effective Vehicle Identification

**The NMVTRC's Strategic Framework
for Improving the Identification of
Vehicles and Components**

Revised April 2005

(This document has been revised to align it with changes made to the NMVTRC's Technical Specification for Secure Compliance Labels and Vehicle Security Labels (April 2005))

INTRODUCTION

General

This document outlines the National Motor Vehicle Theft Reduction Council's (NMVTRC) overarching strategy for improving the standard of vehicle identification for new vehicles sold in Australia.

While the document makes observations about the anticipated effectiveness of a range of candidate technologies, its conclusions:

- are based on the NMVTRC's understanding of the dynamics of vehicle theft and an assessment of the practicality of potential countermeasures; and
- have been informed by extensive consultation with the NMVTRC's member organisations including state and territory police services, transport agencies and vehicle manufacturers.

This document does not purport to constitute a detailed technical evaluation of any particular system. Where a specific form of technology has been endorsed by the NMVTRC readers should also refer to the relevant *Technical Specification* for that technology published by the NMVTRC. The Specification provides a more detailed consideration of implementation issues associated with the particular technology and includes minimum in-service performance standards.

What is the NMVTRC's role in vehicle identification technology?

Improving the standard of vehicle identification at the point of manufacture is a central element of the NMVTRC's integrated theft reduction strategy. The traditionally poor standard of vehicle identification has:

- greatly contributed to the ease with which criminals have been able to convert stolen vehicle into cash; and
- a significant "downstream" impact on the ability of transport agencies and police to detect suspect vehicles.

Criminals attempt to convert a stolen vehicle into cash by:

- attempting to disguise its true identity by portraying the stolen vehicle as a legitimately registered vehicle from another part of Australia—a practice referred to as cloning;
- re-identifying the stolen vehicle using the identity of a wrecked or written-off vehicle of the same make, model and age—a practice called re-birthing;
- stripping the stolen vehicle of its major components and selling the separated parts on the black market, or constructing a "new" vehicle from the separated parts of several vehicles; or
- shipping and selling the vehicle overseas.

The NMVTRC estimates that the cloning or re-identification of whole stolen vehicles returns criminals more than \$100 million annually, with the trade in illicit parts at least twice that.

The NMVTRC's objective is to facilitate the development of world-leading vehicle marking systems that will impede the activities of criminals attempting to convert stolen vehicles or components into cash. The NMVTRC is seeking to achieve this progressively by:

1. Identifying the most effective and pragmatic technological solutions available. (There is general consensus that of available technologies

secure (compliance¹) labelling and/or VIN-based microdots² offer the best current technological platforms for improving the standard of vehicle identification.)

2. Pursuing a scalable approach, which can both raise the immediate baseline in vehicle identification and deliver incremental or fundamental improvements over time.
3. Creating market-driven competition for improved identification in the vehicle industry.
4. Creating the necessary awareness and support infrastructure to ensure the technologies are used to their maximum advantage by transport agencies and police.
5. Ensuring the integrity and security of systems via voluntary compliance with “best practice” distribution protocols.
6. Conducting and publicising comprehensive evaluations of the effectiveness of complying systems.
7. Using the real world experience of voluntary marking to inform recommendations to government on the feasibility of mandating improved vehicle and component marking.

The key to the success of vehicle marking is to maintain integrity in any system and the confidence of the motor and insurance industries, government agencies and the motoring public. This involves protecting the production and distribution of the product to prevent criminal manipulation.

NMVTRC ENDORSEMENT POLICY

In order to be optimally effective it is essential that the *marked status* of a vehicle be unambiguous. For this reason the NMVTRC’s interest in vehicle marking systems is limited to those applied as original equipment (OE). This will ensure that all vehicles of a particular make and model have been marked.

The NMVTRC’s primary interest is to ensure appropriate standards and protocols are maintained. The NMVTRC:

- has no commercial interest in supporting any particular supplier or product;
- acknowledges it has no legal authority to direct (or attempt to direct) activities in the marketplace or to interfere with fair competition.

A supplier’s decision to seek NMVTRC endorsement is completely voluntary. The NMVTRC may at its own discretion endorse a particular supplier of a vehicle identification system if it is satisfied that:

- at a minimum—the supplier’s product meets the NMVTRC’s specified criteria (as amended from time to time); and
- the supplier will take all reasonable steps to ensure the security and integrity of the distribution and application system.

Before endorsing a supplier or product the NMVTRC may require the supplier to provide samples of their product to it for testing by an appropriately qualified,

¹ A compliance plate or label is a unique Australian requirement which means vehicle manufacturers must by law certify that a vehicle complies with relevant design rules at the time of its manufacture.

² VIN-based microdots enable the vehicle’s unique identification number to be replicated thousands of times throughout the vehicle making it impossible to economically remove them.

independent testing laboratory nominated by the NMVTRC. All test costs will be borne by the supplier.

This document may be amended at any time at the NMVTRC's absolute discretion.

Basic Principles

There are five basic principles or performance criteria that a vehicle identification system must meet to be considered by the NMVTRC as effective. These are:

- (i) A would-be thief must be aware of its presence.

This would generally be achieved by making public the fact that particular makes (or models) have such a system applied as standard. External labelling may also be used as an added warning or for promotional purposes.

- (ii) It must be very difficult to remove all evidence of its application or if removed immediately render the vehicle as suspicious to inspection personnel.

It is therefore critical that a vehicle's marked status is unambiguous—ie all models of a vehicle produced from a specific date carry the system—so that registration authority or police inspection personnel routinely check those vehicles to verify the system's presence and if it is not present the vehicle is treated as suspicious.

- (iii) It must be very difficult to tamper with or duplicate the system.

It should always be possible to find at least some of the original identifiers somewhere on the vehicle and it should not be possible to replace (or alter) the identifiers in the more obvious places on the stolen vehicle to make it appear as a legitimate vehicle.

- (iv) The system must allow easy detection and provide a simple, low cost, means of identification by inspection personnel.

It must be possible to detect the presence of the application of the system using a quick and low cost method and, once detected, the means of reading the identifying information must not involve expensive equipment or be time consuming.

- (v) It must be relatively low cost and easy to apply.

The cost of the materials needed, the application methods used and the time taken to apply the system must be commensurate with the commercial realities of the vehicle industry.

SUPPORTED TECHNOLOGIES

Secure compliance (or vehicle security) labels

Secure compliance (or vehicle security) labels represent the baseline in improved vehicle identification technology. A secure compliance (or vehicle security label) is one that bears the vehicle's unique VIN and:

- cannot be transferred between vehicles, or alter the information on it without detection;
- cannot be copied, and is easy to authenticate in the field by non-scientific, non-destructive and practicable means; and
- long lasting and damage resistant under typical environmental conditions.

The NMVTRC'S Technical Specification: Secure Compliance Labels and Vehicle Security Labels (Revised April 2005):

- articulates the minimum design characteristics for secure labels; and
- calls up certain durability tests to demonstrate a label's fitness for purpose.

VIN-based microdots

VIN-based microdots represent the current gold standard in vehicle identification technologies. They enable:

- the vehicle's VIN to be replicated thousands of times throughout the vehicle making it virtually impossible to remove them all and providing authorities with conclusive evidence of a vehicle's identity; and
- can be identified and read using an ultraviolet (black) light (to confirm the presence of the dots) and a 30X magnifier to view the number on a dot.

The NMVTRC'S Technical Specification: Secure Micro-dot Vehicle Marking Systems (Revised March 2004):

- articulates the minimum design and application characteristics for secure VIN-based microdots; and
- calls up certain durability tests to demonstrate their fitness for purpose.

TECHNOLOGIES NOT CURRENTLY SUPPORTED

Paper component labelling—the “United States (US) mandated” system

Since 1987 US vehicle standards have required vehicle manufacturers to label 14 prescribed vehicle components as OE. These paper labels must be rendered unusable (and leave a residue trace on the host vehicle) if removed.

The small number of components labelled and the relative ease with which counterfeit labels can be produced limits their deterrent value as stand-alone vehicle identification.

They may however, have a role as a supplementary, highly visible identifier, to more pervasive forms of vehicle identification technology. An evaluation by the US National Highway and Traffic Safety Administration in 1999 was inconclusive as to whether the system had deterred criminal activity.

Smart Water Security System (United Kingdom)

The Smart Water Security System (SWSS) uses a chemical solution containing laser etched particles bearing a unique SWSS serial number that is matched to a vehicle record on a separate database maintained by the company.

The chemical solution, which becomes visible under ultra-violet light, is applied manually by brush. The limited coverage achievable by manual application, use of a serial number (rather than the vehicle's VIN) and reliance on a separate database severely limit its application to vehicle crime compared to other vehicle identification technologies.

There has been no authoritative evaluation of the system's deterrent effect.

Etching of automotive glass

There are several systems which use acid etching or sandblasting to mark automotive glass. While some systems use the VIN (or sub-set) as the identifier, glass etching only offers limited component coverage and can be subject to grinding or buffing.

In addition, the cost of replacing automotive glass is unlikely to be sufficient to deter criminal activity. There has been no authoritative evaluation of the system's deterrent effect.

Radio Frequency Identification (RFID)

RFID technology uses a transponder (or microchip) encrypted with an electronic signature and/or other data to communicate with an electronic reading device. In a vehicle application a number of transponders may be embedded in body work or placed throughout the vehicle.

While RFID technology will continue to develop, its current deficiencies in a vehicle theft context include:

- constraints in the number of vehicle components that can accommodate a transponder—necessarily leading to a concentration of data in relatively few locations;
- the extent to which the application of multiple transponders is compatible with high volume, just-in-time manufacturing environments; and
- the extent to which reading technology can be integrated with existing police and registration authority infrastructure.

There have also been unsubstantiated suggestions that RFID signals may be overwritten or "jammed" using other electronic devices.

Despite these current shortcomings, the development of RFID and other forms of electronic vehicle identification—particularly in Europe—should continue to be monitored.