

National Motor Vehicle Title Information System (NMVTIS)

Pilot Evaluation Report

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National Motor Vehicle Title Information System (NMVTIS) Pilot Evaluation Report

Executive Summary

The National Motor Vehicle Title Information System (NMVTIS) is required by the Anti Car Theft Act of 1992. Participants include the state motor vehicle titling agencies, law enforcement, consumers, insurance carriers, junk yard operators, and salvage yard operators. The state titling agencies are to use NMVTIS to instantly and reliably verify information on a vehicle prior to issuing a new title. This is expected to decrease the ability of criminals to obtain titles fraudulently, and it is expected to reduce the titles issued on stolen vehicles.

The pilot of NMVTIS was run from July 1999 through December 1999. Participants included Virginia, Indiana, Kentucky, and Arizona, as well as central file operators National Insurance Crime Bureau (NICB) and The Polk Company. Data was gathered during the pilot to determine whether the system meets the requirements of the Anti Car Theft Act of 1992 in a manner that is technically feasible, and whether the system reduces title fraud and reduces titles issued on stolen vehicles.

The pilot shows that NMVTIS fulfills the requirements of the Anti Car Theft Act in a way that is technically feasible, and that it also reduces fraud and deters titling of stolen vehicles. In addition, the pilot shows that the system improves the states' titling processes.

The Anti Car Theft Act specifies five capabilities which must characterize NMVTIS at a minimum. The NMVTIS system design has incorporated all of these requirements in its system specifications and procedures. The Act also requires that the state use NMVTIS to instantly and reliably verify information on the previous state's title document, prior to issuing a new title. During the pilot, transactions responded within the performance requirement 97% of the time.

The pilot shows that NMVTIS reduces fraud by reducing the occurrence of title washing. Brands are washed from titles when the state that issues the new title does not carry forward a brand issued by some previous state. Since NMVTIS maintains brands on a central file, they are available to any inquirer, and are never washed from titles. Using data from the pilot, NMVTIS could prevent approximately 57,000 titles from being washed per year.

The pilot shows that NMVTIS reduces the issuance of titles to stolen vehicles. Although a theft check is not required by the Anti Car Theft Act prior to issuance of a title, the pilot of NMVTIS

included a theft check. The pilot data shows that NMVTIS could effect a cost avoidance of almost \$214 million per year in insurance payoffs on stolen vehicles.

The pilot states found that NMVTIS allows them to improve their titling processes. The ability of the states to be notified automatically by NMVTIS when a vehicle moves from their state and is titled in another state allows the old state to automatically inactivate its title record. This provides cost savings for the state as well as more accurate title files. Although not required by the Anti Car Theft Act, the pilot states found value in inquiring on NMVTIS for all vehicles they titled, not just the vehicles coming in from other states. They valued the brand information, as well as the theft check, which provided them with more accurate titles.

The pilot states and AAMVA believe that NMVTIS provides significant value to the titling agencies as well as to law enforcement and consumers. The biggest barrier to national implementation of the system is the dependence on the states for federal funding to develop the system. Although Congress has appropriated approximately \$3 million per year for NMVTIS beginning in FY98, distribution of the funding through DOJ has been slow, and has contributed to the delay in getting new states started. However, state motor vehicle administrators fully support the system, and plan to implement as soon as federal funding is available to them. To date, 24 states have contacted AAMVA to begin the process of developing NMVTIS. AAMVA has not actively sought out additional states to develop the system because of the limited amount and availability of federal funding.

Law enforcement agencies believe that NMVTIS provides significant value to them, too. The NMVTIS working group has developed a law enforcement committee which is developing a model protocol. This model will define how law enforcement agencies such as auto theft task forces can use NMVTIS to investigate thefts and recover vehicles. This model is expected to be drafted by the end of calendar year 2000. The law enforcement agencies are also analyzing possible enhancements to NMVTIS, such as inclusion of export data, which will provide even more assistance to the auto theft investigators in their investigations.

The AAMVA International Vehicle Registration and Title (VRT) Committee is also considering enhancements to NMVTIS. The VRT committee is currently developing a cost/feasibility study to determine whether to define an interaction between NMVTIS and Canada. The registration and titling agencies would be able to inquire on each others' systems prior to issuing titles on vehicles that had crossed the border.

The pilot of NMVTIS shows that the system meets the requirements of the Anti Car Theft Act in a manner that is technically feasible and that the system provides benefits to state titling agencies and law enforcement. Based on the findings of the pilot, the NMVTIS working group of the AAMVA Vehicle Registration and Titling (VRT) Committee recommends continued support of the system by AAMVA and the Department of Justice. Further, the NMVTIS working group recommends that AAMVA continue to assist states in obtaining federal funding for development of the system.

National Motor Vehicle Title Information System (NMVTIS) Pilot Evaluation Report

I. Introduction

The purpose of this document is to provide an evaluation of the effectiveness of the pilot of the National Motor Vehicle Title Information System (NMVTIS). The pilot included four titling jurisdictions, which interacted with the system in both an online and batch fashion. The pilot also included batch activity by law enforcement. This evaluation reports on whether the system meets the requirements of the Anti Car Theft Act of 1992 in a manner that is technically feasible, and whether the system reduces title fraud and reduces titles issued on stolen vehicles.

The audience for this report is intended to be the motor vehicle agency administrators, the Department of Transportation, and the Department of Justice. Other stakeholders that may read the report are members of Congress, law enforcement agencies, junk yard operators, salvage yard operators, insurance carriers, and service providers.

This document is organized in these sections:

- Section II - Background describes the legislation that formed NMVTIS and the development of the pilot system by AAMVA.
- Section III - Scope and Method describes the plan for the pilot evaluation and the gathering of data.
- Section IV - Pilot Structure describes the system stakeholders and their role in the pilot of NMVTIS.
- Section V – Results – System Requirements of the Anti Car Theft Act describes the requirements for the system as prescribed in the federal legislation, and whether the pilot system met the requirements.
- Section VI – Results – Stakeholder Expectations describes whether the pilot system delivered benefits expected by stakeholders. This section also contains information required by the Multi-Year Plan that exists between AAMVA and the Department of Transportation, National Highway Traffic Safety Administration.
- Section VII – Conclusions and Recommendations provides recommendations of the AAMVA International Vehicle Registration and Title Committee.
- Section VIII – Next Steps describes the post-pilot activities planned.
- Appendix A – Lessons Learned describes the changes made to the system during the pilot and changes planned for Version 2 of the system.

This report was created by AAMVAnet for the American Association of Motor Vehicle Administrators (AAMVA). AAMVA is a nonprofit organization striving to develop model

programs in disciplines related to motor vehicle administration, police traffic services and highway safety; serve as an information clearinghouse for these same disciplines; and act as the international spokesman for its members in these areas. AAMVA represents the state and provincial officials in the United States and Canada who are responsible for the administration and enforcement of laws pertaining to the motor vehicle and its use. AAMVAnet was established by AAMVA as a not-for-profit organization owned by the member jurisdictions. AAMVAnet strives to serve AAMVA's members by providing a high quality, cost-effective data communications network and developing information systems solutions. AAMVAnet developed the NMVTIS system design and specifications for AAMVA. For more information about AAMVA and AAMVAnet, see the AAMVA web site at www.aamva.org.

This project (i.e., NMVTIS) was supported by Grant No. 1999-DD-BX-0044 awarded by the Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice (USDOJ). The Bureau of Justice Assistance is a component of the Office of Justice Programs which also includes the Bureau of Justice Statistics, National Institute of Justice, Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime. Points of view or opinion in this document are those of the author and do not represent the official position or policies of USDOJ.

II. Background

Prior to NMVTIS, state titling agencies interacted sporadically. When a vehicle enters a state and the owner applies for title, the state requires proof of ownership with the title application. Usually the proof of ownership is the previous titling state's title document. The titling clerk reviews the application, notes any brands that exist, and types in the new title record. The level of automation of the titling function in the states varies widely. Some states have recently reengineered their systems, others are still working with decades-old legacy systems. The interaction between states also varies. Generally, the titling state notifies the previous state that it has issued a title on the vehicle. That way, the previous state can inactivate its title record. This process is manual and labor-intensive, in most cases. The titling state sometimes mails the old title to the previous state, and the previous state enters the surrendered title information into its database. Sometimes, the titling state sends a list of VINs instead of the surrendered title to the previous state, and the previous state inactivates its title record. Often the inactivation of the title in the previous state does not occur in a timely manner, due to the need for the state to use its limited resources for other higher priority functions. This provides an opportunity for title fraud, since the owner of the vehicle can obtain duplicate title documents in each state and use them to get valid titles in other states for stolen or salvage vehicles.

The interaction of state titling agencies prior to NMVTIS was entirely after-the-fact. The titling state created its title record and issued a title based on information on the previous state's title. If the document was forged or fraudulent, titling agencies were dependent on the training of their titling clerks to spot the bad documents and move the title application to an exception process. The titling clerks were also the ones to verify that the odometer reading on the title application was consistent with (i.e., greater than) the previous title's odometer

reading. The titling clerks were also the ones to identify and carry forward brands from the previous title.

Congress recognized the benefits that could result if the states had a means of exchanging title data electronically, prior to issuing a new title; this resulted in Title II of the Anti Car Theft Act of 1992.

A. The Anti Car Theft Act of 1992

The Anti Car Theft Act of 1992 was enacted with the intent of reducing vehicle theft and fraud. Title II of the Act provides for the creation of the National Motor Vehicle Title Information System, which is intended to effect a reduction in vehicle theft and fraud by providing a way for state titling agencies to exchange information electronically. The ability of the states to inquire on NMVTIS prior to issuing a title provides a way to compare the previous titling state's data (i.e., title record) with the paper title that the inquiring state received along with an application for a new title. The idea is that NMVTIS allows the titling state to instantly and reliably verify the information on the paper title with the electronic data from the state that allegedly had issued that title document. It is expected that this verification will reduce the incidence of title fraud such as odometer rollbacks or title washing, since the titling state is able to compare the paper title to the electronic record. Further, since car thieves often steal cars in one state and attempt to get valid titles in other states, the electronic check is expected to reduce the ability of anyone to get valid titles on stolen vehicles.

The Anti Car Theft Act also specifies that inquirers of NMVTIS be provided information on whether a vehicle has ever been determined to be "junk" or "salvage". "Junk", or nonrepairable, means that the vehicle is incapable of operation on roads or highways and has no value except as a source of parts or scrap. "Salvage" means that the vehicle has incurred damage to the extent that its fair salvage value plus the cost of repairs for legal operation on roads or highways would exceed the fair market value of the vehicle immediately prior to the occurrence of the damage. States issue "brands" on vehicles that incur damage – these are notations on the title document that show that the vehicle has incurred some damage that could affect its value or safety, or the validity of the odometer reading. Brands are printed on title documents to provide a measure of consumer protection. There currently is no federal standard for the definition of salvage or other brands, such as flood damage. Therefore, states differ in their use of codes and whether those codes are printed on the title document.

The Anti Car Theft Act intends that NMVTIS prevent the occurrence of title washing. Title washing occurs when a vehicle which is branded in one state moves to a different state and, in the process, the brand is not printed on the new title. This can happen for a variety of reasons. For example, states sometimes don't understand or can't interpret each others brand codes and can't create a corresponding new code. Or, if the new state doesn't have a code to match the one used in the old state, the old code is not printed on the new title. Sometimes the titling clerk just does not notice the brand on the

surrendered title, and so the new title is created without the brand. If the brand is washed from the title, the next buyer of the vehicle is dependent on the seller to disclose the fact that the vehicle had incurred some damage previously which might affect the safety of the vehicle, or the price that the buyer would pay for the car. The Act intends that NMVTIS prevent title washing by maintaining brands that have been applied to vehicles and making these available to inquirers – both titling agencies and consumers, as well as law enforcement.

NMVTIS was created by the Anti Car Theft Act as a tool for state titling agencies with the intention that if better information is available to states prior to titles being issued, then fewer titles are issued based on fraudulent information. The availability of better information is also expected to have an impact on vehicle theft by making it harder for thieves to get valid titles on stolen vehicles. It is expected to have a positive impact on consumer safety by providing information on junk and salvage brands to inquirers; this information will alert prospective purchasers to damage history and allow them to verify that adequate repairs had been made before buying the vehicle and putting it back on the road.

The Anti Car Theft Act does not require that state titling agencies determine whether the vehicle is considered a stolen vehicle by law enforcement prior to issuing the new title. However, many state titling agencies do theft checks prior to issuing new titles, and consider the theft check an important addition to the NMVTIS requirements. Annually, vehicles totalling approximately \$8 billion are stolen.¹ Many of these vehicles are dismantled and sold as parts, others are exported. Others get valid titles, then are reintroduced to the vehicle population. If NMVTIS could reduce or eliminate the ability of thieves to get valid titles on stolen vehicles, then this avenue for thieves to profit from their activities would be significantly reduced.

B. Development of the NMVTIS Pilot

Although the Anti Car Theft Act required the Department of Transportation (DOT) to implement NMVTIS and also specified funding for states' development of the system, no funds were appropriated. AAMVA and the motor vehicle community believed that NMVTIS would deliver significant benefits to the states and consumers, so AAMVA developed the NMVTIS pilot project to provide assistance to DOT in obtaining funding for the national implementation of the system.

The Act required DOT to review systems used by states to issue titles and determine the cost to the states of implementing NMVTIS. DOT contracted AAMVA to do this survey.² In order to ask states about their costs to develop NMVTIS, AAMVA first had to describe the system. AAMVA created three alternative designs for NMVTIS, which

¹ 1.6 million vehicle thefts in 1991 (American Automobile Manufacturers Association, Motor Vehicle Facts and Figures '93, p.93) * \$5,000 per vehicle = \$8,000,000,000

² "Anti Car Theft Act of 1992 Survey Report", AAMVAnet, Inc., January 31, 1994.

varied in the location of data (i.e., data maintained in central sites vs. maintained by states). The survey asked the states to estimate their costs to implement each variation, and asked the states which design they preferred.

Development of the pilot project began in the winter of 1993 using the design of NMVTIS preferred by the states responding to the survey distributed by AAMVA. States and private sector businesses were then asked for their input to the design. In December 1993, AAMVAnet conducted a meeting to canvass interest and possible participation in an NMVTIS pilot project from organizations in the private sector. States interested in participating in the NMVTIS pilot met with AAMVAnet in January 1994 to review the NMVTIS transactions, the responsibilities of each participant, and to identify state requirements to participate in the pilot project.

Between March and November of 1994, AAMVAnet completed seven NMVTIS state site visits (Florida, Maryland, New York, Virginia, Indiana, Michigan and Massachusetts). During these visits, AAMVAnet worked with key state staff to determine the data processing and title issuance procedure changes necessary for each state to participate in the pilot. These visits were instrumental in refining the state system requirements for NMVTIS and in helping to create the external central file requirements.

AAMVA issued RFPs for NMVTIS central file services in 1996. The RFPs invited organizations to submit proposals to AAMVA for the development, implementation, and operation of the two logical files comprising the pilot NMVTIS central file system: the VIN pointer file and brand file. The RFPs also included specifications for the theft central file and MCO (Manufacturer's Certificate of Origin) system - these were not required by the Anti Car Theft Act but included in the pilot, based on the AAMVA survey of the states. The Polk Company was awarded the contract to develop, implement, and operate the VIN pointer file and MCO system, and NICB-FACTA was awarded the contract to develop, implement, and operate the brand and theft files.

The Anti Car Theft Improvements Act was enacted in 1996. This act authorized funding for states' development of the system, and changed the responsibility for NMVTIS from the Department of Transportation to the Department of Justice.

The pilot project kick-off meeting was held in November, 1996. The pilot states were Virginia, Indiana, Florida, Massachusetts, New York, and Maryland. Polk attended as the VIN pointer and MCO system provider. A second kickoff meeting was held in August 1997, when the contract with NICB-FACTA to provide the brand and theft files was signed. Shortly afterward, Maryland and New York dropped out of the pilot, due to other priorities within their states. Arizona was added as a pilot state in September 1997. Kentucky and New Hampshire were added as pilot states in December 1997.

Development and testing of the central sites was completed in September 1998. Development and testing of the pilot states commenced in late 1997. To pilot NMVTIS, it was necessary that the central sites be operational and that more than one pilot state be

using the NMVTIS transactions in its branch operations. More than one state needed to be operational, to allow for the evaluation of the exchange of data between states to analyze whether the pilot was successful. The pilot of NMVTIS began in July 1999 and ran through December 1999, with Virginia, Indiana, Kentucky, and Arizona as participants.

III. Scope and Method

This evaluation of the pilot of NMVTIS addresses the questions of whether the system meets the requirements of the Anti Car Theft Act of 1992, and also addresses expectations of various stakeholders for the system. This evaluation is not a cost/benefit study. While some cost information and discussion of benefits is included in this evaluation, there is no attempt here to quantify or set monetary values on all benefits and compare them to the costs incurred by participants in the system. Further, the full extent of some of the benefits delivered by the system will not be achieved until all states participate.

To evaluate NMVTIS, we reviewed the requirements of the system and gathered data to show whether the requirements were met. We also reviewed the expectations of stakeholders for the system and benefits predicted to be delivered by the system and gathered data to show whether these were achieved.

To review the requirements of the system, we reviewed the Anti Car Theft Act of 1992 and the Anti Car Theft Improvements Act of 1996. Stakeholder expectations were compiled from the AAMVA Multi-Year Plan with the Department of Transportation, National Highway Traffic Safety Administration (NHTSA); and the grant between AAMVA and the Department of Justice, Bureau of Justice Assistance. Benefits predicted for the system were compiled from discussions with stakeholders, including state titling agencies, law enforcement, service providers, and prospective purchasers.

The plan for evaluating the pilot of NMVTIS was created by outlining the system requirements, expectations of stakeholders, and expected benefits, and creating a questionnaire to be completed by each pilot participant. Pilot states participated in the formulation of the evaluation plan. The pilot states provided information in July 1999 for a preliminary evaluation of NMVTIS, and provided additional information during and after the pilot to provide data for this evaluation.

The determination of whether the jurisdictions are sending and receiving transactions as defined in the NMVTIS System Design has been made via the use of a utility program called UTB28. This utility was created by AAMVAnet and provided to the states and the VIN pointer file operator. UTB28 uses the UNI (Unified Network Interface) logs to count the type and number of each transaction sent to/from each user as well as the time taken for the transaction to be processed.

The determination of the procedures established by the states when hits on the brand and theft files occur was made by surveys of the pilot states. Statistical data was gathered, where

possible, to show the effectiveness of the system in reducing the issuance of titles to active thefts and in enhancing the carrying-forward of significant vehicle brands. State title information was run in batch against the NMVTIS files, and the results were used by law enforcement agencies.

IV. Pilot Structure

A. Pilot Period and Participants.

The pilot period was July 1999 through December 1999. During this time, four states were in production with NMVTIS. Virginia, Indiana, and Kentucky had integrated NMVTIS into their titling systems and NMVTIS transactions were being sent and received by all branch offices within the states. Arizona had integrated the inquiry function into its title system while it continued to test the update functions. Three of the pilot states (New Hampshire, Florida, Massachusetts) were not implemented in production during this time. New Hampshire was testing its system, prior to implementation (expected in the third quarter of 2000). Florida and Massachusetts had begun testing of the system prior to the pilot period, but had put their projects on hold due to other priorities within the state. These states are expected to resume their NMVTIS participation in the second quarter of 2000.

B. Central File Operators.

The VIN pointer central file was operated by The Polk Company during the pilot period. The MCO system (not a requirement of the Anti Car Theft Act) was operated by The Polk Company during the pilot. The brand file was migrated from NICB-FACTA to AAMVAnet in October 1999 (note: NICB-FACTA discontinued its brand file service on August 2, 1999, and the service was implemented by AAMVAnet on October 4, 1999). NICB operated the theft file (not required by the Anti Car Theft Act) during the pilot.

C. Law Enforcement Users.

The Anti Car Theft Act provides for law enforcement to gather information on vehicles, salvage yards, or junk yards from NMVTIS. The Miami-Dade auto theft task force used batch comparisons of the Florida title file against the NMVTIS theft file in its Operation Cleansweep done during 1999. The NMVTIS design provides two online transactions specifically for law enforcement use. At the time of the pilot, no law enforcement agency had developed the ability to interact with NMVTIS in an online manner.

D. Junk Yard Operators, Salvage Yard Operators, and Insurance Carriers.

The Anti Car Theft Act of 1992 requires that junk yard operators, salvage yard operators, and insurance carriers report to NMVTIS vehicles they obtain that fall into the categories of junk and salvage. The pilot included information from some insurance

carriers, reported to the system by the National Insurance Crime Bureau (NICB). NICB's salvage file contains data from its member insurance companies on claims paid. There were no junk yard operators or salvage yard operators that reported to the system during the pilot. We expect that these entities will not report to the system until DOJ writes rules to address this requirement.

E. Prospective Purchasers.

The Anti Car Theft Act allows prospective purchasers to inquire on the system for information on vehicles they are considering purchasing. The NMVTIS system design includes an online transaction for prospective purchaser use. We expect that service providers will provide the bulk of this access to the system for the prospective purchaser, although states can provide this access to the system for their customers. There were no service providers that had developed this capability during the pilot.

F. MCO System and Theft File.

The Anti Car Theft Act of 1992 does not require NMVTIS to include data from manufacturers that will allow state titling agencies to instantly verify data on the MCO (Manufacturer's Certificate of Origin). The Act does not require state titling agencies to verify that the vehicle is not stolen prior to issuing a new title. When surveying states for NHTSA in 1993, we asked states whether it would make sense for the MCO and theft files to be created and interact with NMVTIS. The states supported the inclusion of this functionality in conjunction with NMVTIS, so they were included in the pilot.

G. Department of Transportation, National Highway Traffic Safety Administration.

The Anti Car Theft Act of 1992 established DOT as the agency responsible for NMVTIS, and DOT delegated the responsibility to NHTSA. NHTSA provided \$890,000 to AAMVA in 1996 to fund the pilot of NMVTIS. This funding was provided to AAMVA via the Multi-Year Plan that exists between AAMVA and NHTSA.

H. Department of Justice, Bureau of Justice Assistance.

The Anti Car Theft Improvements Act of 1996 transferred responsibility of the system to DOJ. DOJ delegated that responsibility to the FBI. Funding for the pilot was obtained in FY97 (\$1 million) and a portion of the FY98 appropriation (\$2.8 million) supported the pilot states. Funding is provided from DOJ to the states and to AAMVA via Bureau of Justice Assistance (BJA) grants between BJA and AAMVA.

V. Results - System Requirements of the Anti Car Theft Act

A. Minimum Functional Capabilities.

NMVTIS meets all requirements of the Anti Car Theft Act of 1992. The Act specifies five capabilities which must characterize NMVTIS at a minimum, enabling a user of the system instantly and reliably to determine:

- the validity and status of a document purporting to be a certificate of title,
- whether an automobile bearing a known vehicle identification number is titled in a particular state,
- whether an automobile known to be titled in a particular state is or has been a nonrepairable (formerly known as “junk”) vehicle or a salvage vehicle,
- for an automobile known to be titled in a particular state, the odometer reading information of such vehicle on the date its certificate of title was issued and any later odometer information if noted by the state, and
- whether an automobile bearing a known vehicle identification number has been reported as a nonrepairable (formerly known as “junk”) vehicle or a salvage vehicle.

The NMVTIS system design has incorporated all of these requirements in its system specifications and procedures³:

- The verification of the validity and status of the title is achieved via the used car inquiry, which the jurisdictions initiate when they process title applications. The information returned from NMVTIS is compared by the jurisdictions to the paper ownership documents received with the applications for title. Information returned to the inquirer includes the Title Status, Title Issue Date, and Odometer Reading. If any discrepancies exist, the application goes into an exception process for investigation.
- An NMVTIS inquiry can be initiated containing just a VIN. The response will show any and all vehicles that match on the VIN, along with the state that has issued the most current title for the vehicle.
- The NMVTIS brand inquiry returns all brands ever applied to a vehicle, including nonrepairable and salvage.
- The NMVTIS title verification inquiry returns information including the latest odometer reading.
- The NMVTIS brand inquiry returns all brands ever applied to a vehicle, including nonrepairable and salvage.

B. Availability of Information.

The Anti Car Theft Act specifies authorized users of the system. NMVTIS has the ability to provide information to each of these users, even though some users are not participating yet.

³ “NMVTIS – Complete System Design”, AAMVAnet, Inc., September 9, 1999.

1. States. The Act requires that any state inquiring on NMVTIS get data from the system.
 - a. The functions required by the Act and performed by the pilot jurisdictions were:
 - Used car inquiry - this inquiry is done by the jurisdiction when the proof of ownership supplied by the applicant is a title. The inquiry sends a message to the VIN pointer file and messages to the brand and theft files, and allows the jurisdiction to verify the title document data with the electronic VIN pointer file record prior to issuing a title. The theft inquiry is not required by the Act.
 - Used car update - two transactions are used to update the VIN pointer file when a title is issued to a vehicle that moved in from out-of-state, as well as when a title is issued to a vehicle within the same state.
 - Used car update undo - this transaction backs out the title data added to the VIN pointer file via the used car update. This transaction is used when the title update had been done in error.
 - Brand update - this transaction allows the state to add a brand to a VIN.
 - Brand update undo - this transaction allows the state to back out a brand that was added to the brand file by mistake.
 - b. The following functions were performed by the pilot jurisdictions, but are not functions required for NMVTIS by the Act:
 - (1) NMVTIS interacted with the MCO system to allow the states to get information from manufacturers to verify data on the MCO prior to issuing a title.
 - New car inquiry - this inquiry allows NMVTIS to inquire on the MCO system when the proof of ownership supplied by the applicant is the MCO (Manufacturer's Certificate of Origin). The inquiry sends a message from NMVTIS to the MCO system and sends messages to the brand and theft files. This allows the jurisdiction to verify the MCO document data with the electronic MCO record prior to issuing a title.
 - New car update - this transaction allows NMVTIS to interact with the MCO system when a state is issuing the first title on a vehicle. The state updates NMVTIS by adding a title record to the VIN pointer file. NMVTIS notifies the MCO system to show that a title has been issued; the MCO system is updated so that no other state can issue a title from that MCO.
 - New car update undo - this transaction allows NMVTIS to notify the MCO system when a state backs out its update (i.e., add) of a record to the VIN pointer file. This transaction is used when the initial add of the record to the VIN pointer file was done in error. When notified by NMVTIS, the MCO system backs out the notation that a state had issued a title document.

(2) The pilot system included registration data in the pointer file, and allowed an inquiry of the pointer file to obtain a vehicle title history.

- Registration update - this transaction is used to add registration data (e.g., plate number) to the VIN pointer file.
- Registration update undo - this transaction backs out the registration data added to the VIN pointer file via the registration update.
- VIN history inquiry - this transaction provides the historical data from the VIN pointer file.

2. Law enforcement. The Act requires that NMVTIS provide to law enforcement information pertaining to a particular automobile, salvage yard, or junk yard. NMVTIS contains two inquiries to provide this information to law enforcement:

- Used car inquiry - this inquiry is the same as the one done by the jurisdiction when the proof of ownership supplied by the applicant is a title. The inquiry sends the VIN to the VIN pointer file and to the brand and theft files. This allows the law enforcement agency to verify the title document data with the electronic VIN pointer file record, and to see whether any brands exist on that VIN. The data returned from the titling state's database includes information on the odometer reading and whether a lien exists on the vehicle. At the time of the pilot, no law enforcement agency had developed the ability to initiate this inquiry to NMVTIS.
- Law enforcement inquiry – NMVTIS includes this inquiry, which is initiated by a law enforcement agency to find out which vehicles were reported to the brand file by a particular junk yard, salvage yard, insurance carrier, or state. The inquirer provides a code for the particular junk yard, salvage yard, insurance carrier, or state, as well as a date range. The response shows all vehicles provided to the brand file in that timeframe by the particular junk yard, salvage yard, insurance carrier, or state. At the time of the pilot, no law enforcement agency had developed the ability to initiate this inquiry to NMVTIS.

3. Prospective purchasers. The Act requires that NMVTIS provide to any prospective purchaser information pertaining to a particular automobile. NMVTIS includes the Prospective Purchaser Inquiry for this purpose. This inquiry sends the VIN to the VIN pointer file and to the brand and theft files. The VIN pointer file matches the VIN and requests detailed data from the state that has the active title on the vehicle. The VIN pointer file, the state of title, and the brand file return information to the prospective purchaser. No theft data is returned to the inquirer. Prospective purchasers gain access to NMVTIS either via the state titling agency or a service provider. At the time of the pilot, no service providers had developed the ability to initiate this inquiry to NMVTIS. The pilot states are able to respond to PPI inquiries.

4. Insurance carriers. The Act specifies that NMVTIS provide to any prospective or current insurer information pertaining to a particular automobile. The insurance

carrier is an authorized user of the Prospective Purchaser Inquiry in NMVTIS. At the time of the pilot, no service providers had developed the ability to initiate this inquiry to NMVTIS for any insurance carriers.

5. Privacy. The Act specifies that the operator of NMVTIS can not collect SSN or enable users to use the system to obtain an individual's SSN or address. NMVTIS does not include SSN or Owner Address in any of its files or transactions.

C. State Participation in NMVTIS.

The Anti Car Theft Act specifies some requirements on how states interact with NMVTIS. NMVTIS meets these requirements.

1. Information sharing. The Act requires that states make their titling information available to NMVTIS. The pilot states have provided their VINs, title numbers, and brands to the NMVTIS central files. The states provide further details of the vehicle, including odometer reading, to NMVTIS in response to inquiries.
2. Title verification. The Act requires that states perform an instant title verification check before issuing a title on a vehicle coming in from another state. The pilot states have all integrated this inquiry into their titling processes prior to issuance of new titles. Overall, the states report that they process about 660,000 title applications per month, or 3,960,000 during the pilot. More than one message is sent by the state during the title application process. In general, the state will send two transactions per application: the title verification inquiry is followed by a pointer file update transaction (these transactions comprise more than one message). However, the state may also send a transaction to update the brand file, when brands are issued (see section V.B for a list of all transaction types).

A sample of the pilot states' transactions were captured and recorded during the pilot. Overall, the sample includes 5,334,235 messages. The average number of title verification inquiries per month in the sample during the pilot was 179,176. The average number of updates per month to the VIN pointer file was 129,923. The ratio of inquiries to updates is not 1:1, because the state may inquire on the VIN more than once during the title application process. The average number of transactions processed by the pilot states per month in the sample was 889,039.

To perform a title verification inquiry, the Act specifies that the state provide the VIN, the previous titling State, and the Name of the person to whom the previous title was issued. NMVTIS allows the state to inquire by VIN, or VIN+State of Title+Title Number, or State of Title+Title Number. In surveying the states prior to designing the system, we determined that Name was not a key data element that states could use to find specific titling records (this is because Name contains so many variations and typographical errors that it does not allow for reliable one-to-one matches). Also, when titling vehicles, all states require the application to include the

previous ownership document. In most cases, this is a title, which includes key data like Title Number, which is more efficient and leads to more accurate matches by the states.

The Act also requires that NMVTIS return information to the state in response to an inquiry. NMVTIS provides to the state inquirer information from the VIN pointer and brand central files, as well as data from the previous titling state's database. Although not required by the Act, information from the MCO system and the theft file is also provided to the inquirer.

D. Junk and Salvage Yard Reporting.

The Anti Car Theft Act requires operators of junk yards and salvage yards report to the system all junk or salvage vehicles that they obtain. This reporting is to be done monthly for all vehicles obtained in the previous month. The report is to contain the VIN, the date obtained, the name of the person or entity the vehicle was obtained from, and the disposition of the vehicle. NMVTIS is prepared to receive such reports to the brand file. However, at the time of the pilot, no junk yard or salvage yard operators were reporting to the system. We expect that rulemaking by DOJ will be required before these entities will report to the system.

E. Insurance Carrier Reporting.

The Anti Car Theft Act requires that insurance carriers report to the system all vehicles of the current model year or any of the four preceding models years which the carrier has obtained possession of and determined to be salvage or junk vehicles. The report is to contain the VIN, the date obtained, the name of the person or entity the vehicle was obtained from, and the owner of the vehicle at the time of the filing of the report. NICB provided some insurance carrier data to NMVTIS during the pilot, while NICB-FACTA was providing the brand central file service. However, NICB only provided this service to NMVTIS until August 1999, when it decided to provide just the theft file to NMVTIS. NMVTIS is prepared to receive such reports to the brand file. We expect that rulemaking by DOJ will be required before these entities will report to the system.

F. Response Time Requirements.

The Anti Car Theft Act requires that the system enable states and others to gain instant and reliable access to information maintained by the system. Further, the state is required to perform an instant title verification check prior to issuing a title on a vehicle coming from another state. In order to measure the ability of the system to provide “instant” responses to inquiries, we determined that the performance standard for systems of similar complexity of design was for a transaction to complete within seven seconds, 95% of the time.⁴ For the state title verification inquiry of NMVTIS, this transaction comprises up to ten messages: the inquiry is split into three messages, one sent to the pointer file, one sent to the brand file, and one sent to the theft file. The pointer file forwards a message requesting detailed vehicle data to the previous titling state, which responds with a message. The pointer file also provides information on two messages to the inquirer. The brand file provides data to the inquirer on one or two messages (depending on the volume of data). The theft file responds with one message. These ten messages within the single transaction are required to be completed within seven seconds, 95% of the time.

A sample of the pilot states’ transactions were captured and recorded via the UTB28 utility. This utility tracks the response times per message, per state. Overall, the states report that they process about 660,000 title applications per month, or 3,960,000 during the pilot. More than one message is sent by the state during the title application process. In general, the state will send two transactions per application: the title verification inquiry is followed by a pointer file update transaction (these transactions comprise more than one message). However, the state may also send a transaction to update the brand file, when brands are issued. Overall, the sample includes 5,334,235 messages. The volume of title verification inquiry messages in the sample is 1,075,057, which is about 27% of the title applications processed during the pilot.

This evaluation tracked overall response times of all types of transactions to determine whether the system performance requirement was achieved. This evaluation also used data from the state title verification inquiry and the two pointer file update transactions (Transfer Title from Out of State and Change Title Data) as detail views of the processing times for different types of transactions. The inquiry and update transactions are the most complex transactions in the system, involving all of the central files, the state databases, and the theft file. Both the inquiry and the update processes were tracked, to reflect the differing complexities of file lookups and updates that occur with each.

⁴ Systems of comparable complexity include the Commercial Driver License Information System (CDLIS) and the Problem Driver Pointer System (PDPS), which are operated by AAMVAnet. These systems also are distributed data systems that allow states to exchange information using online EDI transactions. The CDLIS pointer file contains approximately 9.5 million records. The PDPS pointer file contains approximately 28 million records.

NMVTIS performed within system performance requirements during the pilot period:

- Overall, transactions completed within 7 seconds 96.8% of the time. Further, the transactions completed within 3 seconds 87.3% of the time.
- The state title verification inquiry transaction completed within 7 seconds 96.5% of the time. This transaction completed within 3 seconds 86.7% of the time.
- The updates to the pointer file completed within 7 seconds 96.9% of the time. This transaction completed within 3 seconds 81.7% of the time.

VI. Results – Stakeholder Expectations

A. The system is technically feasible.

1. System design. The pilot system used a distributed data design, the AT&T Global Network Service (AGNS) SNA network, and the AAMVAnet standard format for messages. Some data is housed in central sites:
 - The VIN pointer file contains all VINs titled by the pilot states, and the state that has the active title. A history of the previous titles issued on the VIN is maintained on the pointer file.
 - The brand file contains all brands assigned to VINs in the pilot states.
 - The theft file maintained by NICB for NMVTIS is a mirror image of the law enforcement database maintained by the National Crime Information Center (NCIC) of the FBI.
 - The MCO system collects and maintains vehicle data from manufacturers as they produce vehicles.

The pilot states maintain the title records, including odometer readings, for all vehicles for which they have active titles.

The VIN pointer file and MCO system were maintained by The Polk Company during the pilot, and were housed in Southfield, Michigan. The system was developed using C/C++ and an Oracle database, on a UNIX platform.

The brand file from July 1, 1999 through August 2, 1999 was maintained by the National Insurance Crime Bureau (NICB-FACTA), and was housed in Pearl River, New York. The theft file was maintained by NICB for the entire pilot, in the same location as the brand file. The system was developed using COBOL and VSAM files, on an IBM DB2 mainframe.

The brand file after October 1, 1999 was maintained by AAMVAnet, and was housed in Fairfax, Virginia. The system was developed using COBOL/CICS and VSAM files, on an IBM MVS mainframe.

The state systems use differing platforms and software, including:

- IBM CICS/VSAM, COBOL, ADABAS, NATURAL
- IBM IMS/DL1, CICS, VSAM, GSAM, COBOL
- IBM IMS DB/DC, Telon COBOL, PL1
- IBM VSE/ESA, CICS, CA-IDMS, ADS/COBOL

Each participant maintained a leased line connection to the AGNS SNA network.

2. Response times. As seen in section V.F, the design of the system is feasible in terms of system response time. That is, users complete complex business functions within performance requirements.
3. Ability of the states to integrate the system into their titling systems. States all have title and registration databases on their existing systems. When they implement NMVTIS, it is integrated into the existing system and is largely transparent to the clerks that are processing the applications for title. The inquiries and updates are done as behind-the-scenes, computer-to-computer transactions, rather than standalone transactions that are initiated and monitored by any person. The pilot states report that NMVTIS was integrated into their titling systems with little or no time added to the overall titling process. That is, the NMVTIS transactions are sent and received as background processes while the clerk is processing the title application. Three of the four pilot states said that integrating NMVTIS added no time to the overall title process. One of the pilot states said that integrating NMVTIS added up to three seconds to the titling of new vehicles (i.e., vehicles that have never had a title before) and vehicles coming in from another state.

B. The system reduces fraud.

1. The system ensures the validity and status of titles. When a state receives an application for title, it sends a title verification inquiry to NMVTIS. Usually the state provides the VIN, State that issued the last title, and the Title Number from the title document that is surrendered with the application for new title. The inquiry goes to the pointer file, which finds a match and forwards a request for vehicle data to the state that issued the last title. The VIN also goes to the brand file, which returns any brands that the VIN has incurred. The VIN also goes to the theft file, which returns a hit or no-hit response. All of the responses are gathered together by the inquirer's system and analyzed. If there is a theft hit, the title is not printed and law enforcement is notified. If there are brands, the inquiring state analyzes the brands and decides, based on state laws and procedures, whether to carry forward any brands on the new title. Note that all brands are always available to any inquirer. However, states adhere to state laws and procedures when deciding which brands to print on the title. The inquiring state's system also compares the previous titling state's odometer reading and verifies that it is less than the odometer reading on the title application. If there is a discrepancy with the odometer reading, the title is not

printed until the discrepancy is investigated and resolved. The inquiring state gathers any other data from the inquiry response that it needs to create a new title record and finalize its title process.

The Anti Car Theft Act requires the states to verify the validity of the title surrendered with a title application on vehicles coming in from another state. Three of the four pilot states inquired on NMVTIS prior to issuing *any* title, while one pilot state inquired on NMVTIS only prior to issuing a title on a vehicle coming in from another state.⁵ Before NMVTIS, the states all had procedures for gathering information from the applicant on the vehicle, odometer, previous title, brands, etc. However, in the paper world, the states had to rely on clerks to visually inspect the previous title document for inconsistencies or forgeries, as well as for brand codes (and then correctly interpret the brands from the other states). Adding to the difficulties in this activity is the priority that most titling agencies put on serving the customer quickly – the clerks often misinterpreted brands or missed indications of fraud. With NMVTIS, the state has an additional means of validating the data on the application – it is compared directly to data from the state agency that issued the previous title. Further, the additional data is coming from the previous titling state in electronic format. This allows the states to remove some of the decision-making responsibility from the clerk and let the computer programs do the comparisons of data, then remove from the normal process any applications that show inconsistencies.

2. The system reduces title washing. Title washing occurs when a vehicle with a brand on its title moves to a new state and the new state does not carry forward the brand on the new title. Most states carry forward significant brands from other states; however, not all do. Further, a brand that exists in one state may not exist in another state, and therefore cannot be carried forward. For example, Virginia will brand a vehicle if it is an ex-taxi, but Indiana does not have that brand and will not carry it forward as an Indiana brand. In an attempt to avoid title washing, some states note on the title document when a previous state had issued a brand. According to a survey done by AAMVA in 1999, seven U.S. jurisdictions do not carry forward junk and salvage brands from other states.⁶

With NMVTIS, states update the central brand file whenever they issue a brand to a vehicle. These are all brands the states issue, even if the state does not print it on the title. The brands remain on the brand file even if the vehicle moves to another state and the new state does not carry forward the brand and print it on the paper title. However, the brands are provided to the new titling state when it does the verification inquiry; this provides the state the information it needs to create its new title. The brands are also provided to any prospective purchaser or law enforcement

⁵ Since the pilot, the remaining state has modified its system to perform the inquiry on all title applications.

⁶ The Fast Track to Vehicle Services Facts: A Motor Vehicle Regulations and Procedures Information Guide, pp. 54-56, 1999 Ed., American Association of Motor Vehicle Administrators.

inquirer. The existence of the brand file on NMVTIS means that the brands will never be lost, and title washing is reduced or eliminated.

To test this theory, we compared data from a state that was not using the brand file response and counted the number of brands that were washed because they were unknown to the state.

| | |
|-------------------------------------------|---------|
| Number of Titles Issued During the Pilot | 720,000 |
| Number of Titles Issued From Pilot States | 22,583 |
| Number of Brands Washed | 30 |

This data shows that 0.13% of titles issued from participating NMVTIS states had brands that were washed from the new state’s title, because the new state did not have the information from the NMVTIS brand file. The new state relied only on the previous state’s title document when carrying forward brands, and so missed some significant brands. The state reported that it would have carried forward all of the brands to the new title, had they been known by the state at the time of title issuance. The brands washed were:

| Brand | Number of Washed Titles |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Salvage - Any vehicle which has been wrecked, destroyed, or damaged, to the extent that the total estimated or actual cost of parts and labor to rebuild or reconstruct the vehicle to its pre-accident condition and for legal operation on roads or highways exceeds the fair market value of the vehicle immediately prior to the occurrence of the damage. | 2 |
| Rebuilt - The vehicle, previously branded “salvage”, has passed anti-theft and safety inspections, or other jurisdiction procedures, to ensure the vehicle was rebuilt to required standards. Also known as prior salvage (salvaged). | 2 |
| Not actual mileage - The odometer reading is known to be other than the true mileage for the vehicle. | 11 |
| Exceeds mechanical limits - The odometer reading is less than the true mileage of the vehicle because the odometer can not display the total number of true miles. | 14 |
| Warranty return - Vehicle returned to the manufacturer because of a breach in the warranty. | 1 |

If all states had been participating in NMVTIS, this one state would have washed approximately 1872 titles per year, because it was not using the NMVTIS brand file data.⁷ This calculation uses the following assumptions:

- Total titles issued by the state is 1,440,000 (720,000 titles issued during the six month pilot * 2).
- Title wash rate remains constant at 0.13%.

Assuming that the test state issues 3.3% of the titles in the U.S., and assuming that the rest of the states have the same wash rate, this shows that approximately 56,727 titles are washed per year in the U.S. if NMVTIS is not used.^{8, 9}

3. The system can reduce title fraud, including odometer. NMVTIS provides the titling state with the latest odometer reading from the previous titling state, as well as any odometer brands that exist. Some, but not all, states inspect the vehicle when it enters the state to be titled. In those states that do not inspect the vehicle, they rely on the applicant's statement for an odometer reading. Without NMVTIS, the states could record false readings. In other cases, someone could obtain a vehicle with high miles, roll back the odometer, and get a valid title in a new state. Without NMVTIS, the only way the titling state could obtain a previous title reading was from the title surrendered with the application. If the title document was altered from high miles to low miles, and the titling clerk could not detect it, then the titling state would issue a valid title with new, lower miles. With NMVTIS, the previous titling state's reading is sent electronically and is compared to the surrendered title and the new odometer reading to make sure they are consistent. Further, the information collected and compared can be done electronically, eliminating the need for a clerk to make a visual comparison and reducing the opportunity for human error. If the odometer readings are not consistent, the titling state investigates the discrepancy prior to issuing a new title.

One type of odometer fraud occurs when a vehicle has a title document with valid, low miles. After the vehicle has been driven for many miles, the odometer is rolled back to show lower miles. If the vehicle has not gotten another title document in the interim, the previous titling state's reading will show the reading at the time that it issued the title – these miles are correct, and low. When the applicant gets a new title using the rolled back odometer (i.e., rolled back to some value greater than the reading on the previous title), the new titling state has no way of knowing that a roll-back has occurred. Because the federal requirement to record odometer only applies to the time that the title is issued, the states and NMVTIS would have no idea if the rollback occurred in the interim between title issuance. The existence of an electronic system like NMVTIS can have no impact on this type of odometer fraud, since the

⁷ 1,440,000 titles issued per year * 0.0013 titles washed per titles issued = 1,872 titles washed per year.

⁸ The test state maintains 6 million vehicles, which is 3.3% of the total population of 180 million vehicles in the U.S.

⁹ 1872 brands washed in the test state/.033 = 56,727 brands washed in the country.

electronic system can only provide data that is captured by the states. Some states capture the odometer reading more frequently than is required by federal law. For example, if the state records the odometer reading every time the registration is renewed, then this type of odometer fraud has a higher chance of being caught. However, even with more frequent recordings, this type of odometer fraud can still exist.

4. The system protects consumers from hidden brands. Thieves or criminals know the states which carry forward title brands, and use this knowledge to get valid or clean titles on stolen or damaged vehicles. The result is that the crime is not detected and that vehicles are sold to unsuspecting consumers for more than they are worth. Further, if the vehicles had been salvaged, the vehicles may not be safe for driving. Without the vehicle brand, the consumer does not know to question the value or safety of the vehicle being purchased. NMVTIS provides all brands ever applied to the VIN to all inquirers. Using the data from section V.F, up to 56,727 vehicles per year could have some brand, unknown to the buyer, which could affect the price paid for the vehicle, or the safety of the vehicle.

C. The system deters titling of stolen vehicles.

1. Titling agencies inquire on the theft file prior to issuing titles. The Anti Car Theft Act requires that state titling agencies inquire on NMVTIS prior to issuing titles on vehicles coming in from other states. The Act does not require an inquiry to a theft file. Even prior to NMVTIS, many states performed some sort of theft check before issuing new titles. However, the interaction of law enforcement agencies with the titling agencies in the states varies. Some states have law enforcement units within the titling agencies. Other states have law enforcement agencies in the same department as the titling agencies, but not within the same agency. Other states' law enforcement and titling agencies reside in different departments and have little or no routine interaction.

Prior to NMVTIS, those states that performed theft checks did not do so in any standard way. Some titling agencies had connections to NCIC, and could do online inquiries during their title processing. Some titling agencies sent batches (generally nightly) of VINs to law enforcement for theft checks. Ideally, the theft checks would be done before the titles were sent out. Also, states that did theft checks usually did them only on vehicles that were coming in from other states, because of the time involved in processing the theft check.

Data gathered by NICB in 1995 shows the size of the problem of issuing valid titles on stolen vehicles. Since NMVTIS was not available in 1995, NICB compared the titles issued by five states over a three month period to the mirror image of the NCIC theft file maintained at NICB (note: this file eventually became the NMVTIS theft file). The five states used in the sample represent about 18.72% of the vehicles in the

U.S. The study shows that approximately 0.19% of titles issued annually in the U.S. are issued to vehicles on the NCIC active theft file.¹⁰

| | 5 States, 3 Months | Estimate for U. S., Annualized |
|-------------------------------------------|-----------------------|-----------------------------------|
| Total Number of Titles Issued | 2,463,972 | 52,652,706 |
| Titles Issued to Vehicles Reported Stolen | 4,693 | 98,800 |

The states report that not all of the theft hits on NCIC are on vehicles that are active thefts. Some of the theft hits are on vehicles that had been stolen but were subsequently recovered, and the reporting law enforcement agency had not yet removed the VIN from the active theft file. Even using a very conservative fraction of the theft hits, the cost avoidance achieved by NMVTIS could be almost \$250 million per year. Assuming that:

- only 50% of the vehicles are active thefts, and
- assuming a pay-off value of \$5,000 per vehicle (conservative payoff from an insurance company on a stolen vehicle),

this would be a cost avoidance of \$247 million per year, if NMVTIS were in operation, no titles were issued to the VINs, and subsequent investigation recovered the vehicles.¹¹ If only half of the VINs were recovered as a result of NMVTIS, the cost avoidance would be \$123.5 million per year.

With NMVTIS, the pilot states integrated the theft check into their existing title processes. Since the theft response was done as a background process, and since the response times did not affect the total application processing time, the pilot states sent the NMVTIS theft check on all vehicles being titled in the state, not just the vehicles coming in from another state.

| | |
|-----------------------------------------------------------|---------|
| Number of title applications per month, average | 175,000 |
| Number of theft hits per month, average | 340 |
| Percentage of theft hits per title applications per month | 0.19 |

This shows a cost avoidance of \$213,750,000 in theft payoffs if NMVTIS is used by all states in the U.S. This extrapolation assumes the following:

- 25% of the vehicle population, or 45 million vehicles, get titled per year in the U.S.

¹⁰ 98,800 titles issued to vehicles reported stolen / 52,652,706 titles issued = 0.0019, or 0.19%.

¹¹ 98,800 theft hits * 0.5 of theft hits are active * \$5,000 per vehicle = \$247,000,000 in insurance claims that could be avoided.

- the percentage of theft hits remains constant at 0.19%, or 85,500 theft hits per year.
 - very conservative estimate that 50% of the vehicles are active thefts, or 42,750 vehicles per year.
 - pay-off value of \$5,000 per vehicle (conservative payoff from an insurance company on a stolen vehicle), or \$213,750,000 per year.
2. NMVTIS states inquire on title transfers within the state as well as on vehicles coming in from other states. The Anti Car Theft Act requires that states inquire on NMVTIS when processing title applications on cars coming in from other states. The Act doesn't require the theft check, but the pilot states voted to include this functionality. Since the NMVTIS inquiries are done in the background during the titling process, and since the response time is not a critical factor in the turnaround time for title processing, three of the four pilot states inquired on NMVTIS for *all* title applications, not just those of vehicles coming in from other states.¹² This is a change for the pilot states, which had only checked NCIC on vehicles coming in from other states, due to constraints on processing ability and turnaround times. Assuming that 20% of vehicles are titled from other states, the number of theft hits could increase by 400% over the pre-NMVTIS theft checks, when all states inquire on *all* vehicles prior to titling. The theft hits are leads for law enforcement to investigate.

The NMVTIS law enforcement committee is drafting procedures for the education of law enforcement on the uses it can make of NMVTIS, and recommendations for how to handle theft hits when forwarded by the state titling agencies. This effort is expected to be drafted within calendar year 2000.

3. State auto theft task forces use NMVTIS to target thefts The Miami- Dade auto theft task force used the theft file as part of its Cleansweep/CyberSearch project. This project ran 6.5 million vehicles from the Florida titling database against the NMVTIS theft file, as well as the NICB export and salvage files, and the NICB VIN editor. The goal of the project was to detect and recover stolen, renumbered vehicles via offline searches of the NICB databases. The operation was created in response to increases in trends of counterfeit titles, cloned VINs, insurance fraud, and bank fraud. The operation included 1993-1999 car, truck and motorcycle VINs with current registrations and/or titles on the Florida database. As a result of CyberSearch activities in 1999, 122 vehicles have been recovered, with an estimated recovery value of \$1,704,610. The vehicles recovered were targeted by hits on the theft file as well as the export and salvage files and VIN edits.

The law enforcement committee of the NMVTIS working group is currently documenting the Miami- Dade activities and activities of the Arizona vehicle theft task force, and will create a protocol for use by auto theft task forces in other states. Preliminary analysis by the law enforcement committee supports a recommendation

¹² Since the pilot, the remaining state has modified its system to perform the inquiry on all title applications.

that all states run the reports prior to implementation of NMVTIS. Once NMVTIS is implemented, the auto theft task forces plan to use the online NMVTIS inquiries as part of their theft investigations.

4. Only one active title on any one vehicle at any one time. A vehicle owner can get a duplicate title document at any time. The more title documents that exist, the more opportunity there is to perpetuate fraud with the document. One way is to use the duplicate title document to get a valid title on a stolen car. If a car is stolen, the duplicate title document can be modified and used to get a new, valid title for the stolen vehicle in another state. This creates two active titles on a single VIN in two states.

With NMVTIS, the VIN pointer file keeps track of all VINs in the U.S. When a state decides to issue a title on a vehicle, the state updates the VIN pointer file. The previous titling state's record is made a history record, and the previous titling state is notified that another state has issued a title. In states where the titling process is several days or weeks, the state still updates the pointer file when it makes the decision to issue a new title. If another state had issued a title in the time between the application being accepted in the first state, then the pointer file would identify the discrepancy between the state of title on NMVTIS and the surrendered title document. The titling state would send the application to an exception process, since the surrendered title did not match the electronic data.

5. The system can prevent the reuse of VINs. One of the trends identified by the Miami-Dade auto theft task force was an increase in the cloning, or reuse of VINs. If a vehicle is junked, a thief could buy the junk, remove the VIN plate, and put it on a stolen vehicle. The renumbered vehicle would likely get a valid title, since the theft check on NCIC would return a no-hit (i.e., the theft check is done on the junked vehicle's VIN – since this vehicle was never stolen (just junked) the theft check would get a no-hit). With NMVTIS, though, the junk yards should be reporting to the brand file on a 30-day basis the vehicles obtained that fit the definition of junk or salvage. If the titling agency inquired on NMVTIS, and if the junk yards were reporting to the system, the brand would be returned to show the vehicle had been junked and can not be driven any more. The title would not be issued, and the application would be passed to law enforcement for investigation.

Another trend in the cloning of VINs is when a thief removes the VIN plate from a legally exported vehicle, then reuses it on one or more stolen vehicles to get valid titles. The NMVTIS law enforcement committee has recommended that NMVTIS be enhanced to include a check of the NICB export file – if the NMVTIS inquiry showed that the vehicle had been exported, the state would investigate the application further, before issuing a title. If VIN cloning were suspected, the application would be passed to law enforcement for investigation. Analysis has begun on this proposed enhancement to NMVTIS, which could be implemented within calendar year 2000.

6. Theft hits on NMVTIS result in recovered vehicles and cleans up the NCIC stolen vehicle file. When a vehicle is reported stolen, the law enforcement agency responsible for the report enters the information into NCIC. NCIC immediately sends an online update to the mirror image of the theft file that is maintained at NICB, which is used for the NMVTIS theft file. When the vehicle is recovered, the law enforcement agency that entered the vehicle into the theft file is responsible for removing it. Often, there is a time lag between the recovery of the vehicle and the removal of it from the theft file. The theft hits on inquiries to NMVTIS during the titling process are investigated by law enforcement; these are VINs that someone is inquiring on prior to purchase, or during the application for a new title. If the investigation shows that the vehicle had already been recovered, the law enforcement agent can immediately update NCIC. As more and more states participate, the NCIC file will eliminate more and more recovered records.

D. The system improves states' titling processes.

1. Duplicate VINs are reduced. To issue a title, the state titling agencies require applicants to fill out applications, and surrender the previous title. The clerk creates the new title record by typing the information into the state database. A duplicate VIN is created if the state issues a title using a VIN that another state has also issued a title on; each state believes that it has the active title on the VIN. The only way to unequivocally figure out which state has the VIN is to physically inspect the vehicles. Usually, duplicate VINs occur because someone has created a title record but has mistyped the VIN. Other times, manufacturers have issued the same VIN to two vehicles (this is rare, but does happen). This creates a problem for consumers when the states issue brands, or insurance carriers pay off on claims, or owners make claims on warranties, since these events are keyed to VIN.

The existence of the VIN pointer file in NMVTIS will eventually allow the states to virtually eliminate their duplicate VINs. The first step in the process of implementing a state is to load its title data to the VIN pointer file. Once that is done, the state can process its applications for title in an online manner with NMVTIS.

During the initial load of the state's title data, NMVTIS attempts to reconcile duplicates electronically. For any VIN on a state load file, NMVTIS checks to see whether that VIN already exists on the pointer file. If not, the record is added. If the VIN already exists on the pointer file, though, this indicates that the states may have active titles on their databases for the same vehicle. Usually this would result from a vehicle moving from one state to another; the notification from the new state that it had issued a title from the old state's title may not yet have been processed (see section VI.D.2 for a description of this process). Because this is usually the case, the next step in NMVTIS' load process is to check the Make and Model Year of the vehicle. If they are the same, this indicates that it is probably the same vehicle. In this case, the NMVTIS load process next checks the issue date of the title on both

states' records. The most recent record becomes the active record on the pointer file and the older record is a history record.

If the Make and Model Year of the vehicles are not the same, then the new record is added to the pointer file as a duplicate, active record, and this is reported to the states for resolution. The states' help desks investigate each duplicate and decide whether the vehicles are actually the same vehicle that has moved from one state to the next. NMVTIS has created procedures to allow the state help desks to modify the VIN pointer file data to create an accurate history of the vehicle's titles. In the initial load of NMVTIS, duplicate VINs were identified as follows:

| State | Number of Duplicates |
|--------------|-----------------------------|
| Arizona | 3,300 |
| Indiana | 1,130 |
| Kentucky | 17,000 |
| Virginia | 7,400 |

Resolution of duplicates can be a highly manual process. The pilot states first research the VIN history via their own databases and microfilm, and the NMVTIS VIN pointer file. The history records in the pointer file show the path of titling of the vehicle, which can show the state where the error was made.

Prior to NMVTIS, if the titling state had any suspicion that a duplicate VIN existed, the state would contact the other state(s) that thought they had the active title on the vehicle, to compare titling documentation. Sometimes the states would require an inspection of the VINs on the vehicle. Once it was determined which state had the real VIN, the states would update their databases.

With NMVTIS, the investigation begins with the research of the state database and the NMVTIS VIN pointer file. If the duplicate exists, this means that a state had added a record to the VIN pointer file, even though the VIN, Make, and Model Year of the vehicle were the same as a VIN, Make, and Model Year of a record that already existed on the file. If the review of the systems did not point out an obvious error, the state would contact the other state(s) that thought they had the active title on the vehicle, to review the results of their research. If the states determined that the two records actually referred to the same vehicle, then the state that issued the most recent title updates NMVTIS to remove the duplicate but add the new title data to the remaining pointer file record (i.e., the other state title data becomes a history record for the VIN).

The NMVTIS duplicate processing also works when the states process applications for title during their daily activities. That is, the NMVTIS checks to see whether the VIN already exists on the pointer file whenever an "add" is to be made to the pointer file. This process occurs during the initial load of the title data (described above), and it occurs during online processing of the states' title activity. Prior to issuing a title,

the state inquires on NMVTIS, which shows all matches on VIN. If more than one state has issued a title to the same VIN, NMVTIS presents both pointer file records and allows the inquiring state to verify the information from the surrendered title. NMVTIS automatically notifies each state when a duplicate is created and when a duplicate is resolved (e.g., a state corrects a VIN on the pointer file). If the states determine that the two records actually refer to two different vehicles, the states will try to correct the VINs on their databases and title documents. Sometimes, true duplicate VINs exist (e.g., when a vehicle manufacturer creates two vehicles with the same VIN). In this case, the duplicate will exist on the system until one of the vehicles is destroyed. If the duplicate is not a true duplicate (e.g., one of the titles was created using an incorrect VIN), the states will use NMVTIS to correct the VIN on the VIN pointer file and issue a new title document.

The states report that while resolution of duplicates post-NMVTIS can still be a manual process, the existence of NMVTIS allows them to reduce the incidence of creating duplicates in the first place. When the state does a title verification inquiry prior to issuing the title, the VIN pointer file will show the state all records for the VIN. If the state decides to issue a title, it can update the existing record or, if the state has reason to believe that the vehicle it is titling is not the same as the one on the pointer file, it can add a record to the pointer file (i.e., create a duplicate). NMVTIS gives the states the ability to doublecheck its VINs; sometimes typographical errors are corrected at that point, and the duplicate is not created. If NMVTIS was not used, the state would never get a notice that another state had a title on that VIN; the state would simply create a title with the same VIN and no one would know that a duplicate VIN existed. The establishment of NMVTIS help desks in the states also helps the states in their research and resolution of the duplicates.

2. Titling databases are more accurate. When a vehicle is titled in a new state, the titling agency notifies the old state that it has issued a new title. This allows the old state to inactivate its title record, and eventually archive or purge that data from its titling database. The notification from state to state is done by either sending the old title document back to the state that had issued it, or by sending the old titling state a list of all the VINs which were retitled in the new state. Some states send back both the old title and the list of VINs.¹³ The effort to notify states when new titles are issued is as follows:

| If title documents are received: | If VIN lists are received: |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Clerk opens mail. 2. In some states, clerk sorts the titles by state. 3. Clerk signs on to title system and changes title status of each | <ol style="list-style-type: none"> 1. Clerk opens mail. 2. In some states, clerk sorts the VINs by state. 3. Clerk signs on to title system and changes title status of each |

¹³ The Fast Track to Vehicle Services Facts: A Motor Vehicle Regulations and Procedures Information Guide, p. 56, 1999 Ed., American Association of Motor Vehicle Administrators.

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>If title documents are received:</p> <p>surrendered VIN. (This can be an online update, or online data entry for batch update that night.)</p> <p>4. Clerk shreds the old title document.</p> | <p>If VIN lists are received:</p> <p>surrendered VIN. (This can be an online update, or online data entry for batch update that night.)</p> <p>4. State relies on the sender of the VIN list to shred its old title document.</p> |
| <p>If title documents are sent:</p> <p>1. Clerks store surrendered titles in a secure place until they can be processed. (Surrendered titles are pulled out of the application package.)</p> <p>2. Clerk sorts titles by state.</p> <p>3. In some states, clerk stamps “canceled” on the old title.</p> <p>4. Clerk determines, for each state, whether that state receives surrendered titles or a VIN list of surrendered titles.</p> <p>5. Clerk bundles titles per state and mails them to the previous titling states.</p> | <p>If VIN lists are sent:</p> <p>1. Clerks store surrendered titles in a secure place until they can be shredded. (Surrendered titles are pulled out of the application package.)</p> <p>2. In some states, the old title document is microfilmed.</p> <p>3. Computer program is run to identify titles issued to vehicles coming in from other states, and to compile lists of VINs by states, for those states that receive VIN lists rather than title documents.</p> <p>4. Clerk packages the VIN listings per state and mails them to the previous titling states.</p> <p>5. Clerk shreds old titles.</p> |

The activity of states to notify states when new titles are issued is not a high priority task; the states report the notification can be done up to six months after the new title has been issued.¹⁴ Many states address this task during slow times in the branches, or use overtime or temporary staff. Many states have backlogs of cancellations or notifications to process, which provides an opportunity for the fraudulent use of the title document.

The cost to process cancellations in the pilot states ranges from \$40 to \$4582 per month. The cost to the states to notify other states ranges from \$40 to \$3100 per month. Variations in costs are due to the priority placed on the work (e.g., do the work with overtime labor vs. do the work if clerks have free time), whether the process was automated, and the cost of labor.

¹⁴ The Fast Track to Vehicle Services Facts: A Motor Vehicle Regulations and Procedures Information Guide, pp. 56-57, 1999 Ed., American Association of Motor Vehicle Administrators.

With NMVTIS, when the new state decides to issue its title, it sends the update transaction to the VIN pointer file. The VIN pointer file makes the previous state a history record, and automatically notifies the previous state that another state has issued a title on the VIN. The computer in the previous state receives the notification and can automatically inactivate the title on its database. This process has these results:

- No clerk interaction is needed.
 - No mailings are needed.
 - The transaction completes within the seven second requirement (note that the time required by the state to inactivate its title is outside the scope of NMVTIS and may take longer).
 - As soon as the VIN pointer file is updated by the new state, no duplicate title document can be obtained in the old state, because the old state will no longer have an active title on the VIN.
3. Brand and theft check on all vehicles, not just those from out of state. The Act specifies that the titling jurisdiction inquire on NMVTIS before issuing a title to a vehicle coming in from another state. The pilot activity shows that three of the four pilot states inquired on NMVTIS prior to issuing titles from in-state transfers *as well as* out-of-state transfers. Since the pilot has ended, the fourth state has modified its system to perform the inquiry on all titles. During the pilot, the average number of title verification inquiries in the sample per month was 179,176. The average number of updates in the sample per month to the VIN pointer file was 129,923 (the ratio of inquiries to updates is not 1:1, because the state may inquire on the VIN more than once during the title application process). The fact that the majority of the jurisdictions have implemented the inquiry for all in-state as well as all out-of-state transfers indicates that the jurisdictions have found value in the NMVTIS data in all titling activity. In particular, the jurisdictions have stated that the theft and brand checks are useful in ensuring that new titles are not issued to stolen vehicles, and that all brands are known prior to issuance of the new title document.
 4. More brands are being carried forward. The maintenance of all brands on the NMVTIS brand file allows states to more closely achieve their goals of carrying forward all brands according to their laws and procedures. The states no longer have to rely solely on human inspection and decision-making in order to carry forward brands. Data in section VI.B.2 shows that approximately 56,727 more brands will be carried forward per year when NMVTIS is implemented by all states.
 5. State titling agencies no longer add to NCIC traffic. An unexpected benefit of NMVTIS occurred when the states began running the theft checks via NMVTIS (which hits the NICB mirror image of the FBI's NCIC file) rather than inquiring directly on NCIC. This reduces the amount of transactions sent by the titling agency over NCIC. Reduction in traffic on the NCIC system could improve the performance of the NCIC system – lowered traffic on a system often results in better response

times. Law enforcement agencies in the NMVTIS states anticipate that the NCIC responses will be improved once the system is used for just the law enforcement transactions. This could be a reduction in NCIC transactions by 9 million per year for all states, assuming the following:

- 45 million titles issued per year within the U.S.
 - 20% of titles issued on vehicles coming in from other states
 - all states (pre-NMVTIS) inquire on NCIC on those VINs coming in from other states
6. Enhanced customer service. The electronic exchange of data among the states and the maintenance of data on the NMVTIS central files allows the states to maintain more accurate files and process titles more efficiently, which can translate into enhanced customer service by the titling agency. When the state receives a notification from NMVTIS that another state has issued a title on its VIN, the state can inactivate its title record. The state may then be able to avoid sending any automatic notifications to the owner regarding taxes due, etc. Also, the ability of states to gather title data from the previous state, verify data with the electronic record, and do the online theft check may contribute to shortening the overall title process within the state. Further, the maintenance of the brand file in NMVTIS may allow the states to provide additional information to their customers regarding brands applied by other states. Finally, the existence of the Prospective Purchaser Inquiry allows customers to find out about the vehicle before buying it, rather than find out after the fact, when they apply for titles, that there was some sort of adverse condition.

E. Barriers exist to state participation in a national system.

1. Funding for state development. Federal funding of NMVTIS has been in the amount of about \$3 million per year starting in FY98. This funding will support development of NMVTIS in about eight states per appropriation, with support from AAMVA. However, distribution of the funding through DOJ has been slow, and has contributed to the delay in getting new states implemented. The FY98 funding was made available to states in the Fall of 1999. The FY99 and FY00 funding will not be available to states until DOJ completes a cost/benefit study.
2. No penalties on states for non-participation. States are not penalized by federal law if they do not participate in NMVTIS. Without penalties for non-compliance, states will continue to focus on yearly priorities (such as Y2K). Although there is strong support of NMVTIS by the majority of motor vehicle administrators, the lack of federal penalties could constitute a barrier to implementation. However, we have found that as long as federal funding is available, the states are able to plan for and implement NMVTIS (note: each state must contribute some of its own funding to the project). To date, 24 states have requested that AAMVA help them begin the process of planning and development of NMVTIS. AAMVA has not actively sought

out additional states to develop the system because of the limited amount and availability of federal funding. It is only the lack of federal funding that prevents them from moving forward immediately. Further, AAMVA believes that eventually all states will participate in NMVTIS.

3. Lack of participation by all states. Some states may choose to delay implementation of NMVTIS until more of its neighbors implement. If a state has several competing priorities, the implementation of NMVTIS in a neighbor state may motivate the state to begin development. When vehicles move to other states, many move to neighboring states. It is most beneficial to implemented states when all its neighbors are also implemented – the system responses are entirely online. One activity that AAMVA is undertaking is to get monthly loads of data from all nonimplemented states, until they are fully implemented. The title information will be loaded to the VIN pointer file and the brand information will be loaded to the brand file. Although monthly batches are not online updates to NMVTIS, the data will be sufficient in most cases for the implemented states to do their title verification inquiries and update NMVTIS. The loads from the nonimplemented states will commence in June 2000 and will continue until all states are implemented.

F. Areas that would benefit from federal rulemaking.

1. Reporting of junk yard operators, salvage yard operators, and insurance carriers to the system. Junk yard operators and salvage yard operators did not report to the system during the pilot of NMVTIS. NICB reported some insurance carrier data to the system during the pilot. The Anti Car Theft Act requires these entities to report to the system, and NMVTIS is ready to accept reports. The Act further states that the Attorney General shall establish by rule procedures and practices to facilitate reporting in the least burdensome and least costly fashion.
2. Enforcement of penalties outlined in the Anti Car Theft Act. The Anti Car Theft Act specifies civil penalties on junk yard operators, salvage yard operators, and insurance carriers that do not report to NMVTIS. Rulemaking should address the agency responsible for enforcement of these penalties, and regulations that would apply.

G. The system can be successful without uniform definitions and procedures in the states.

When the responsibility for the system was delegated to DOT, NHTSA expressed concern that it would not be successful in the absence of federal standards for codes and procedures. In particular, there is no federal definition of “salvage”, and no federal standard for the uniform procedures for inspections of rebuilt salvage vehicles. Although no federal definitions or procedures exist, NMVTIS is successful because it provides the information needed by the states to meet their requirements. The information is provided to the states and other users in a standard format that allows the users to interpret the information and make decisions based on the data, using the rules, laws, and procedures

that affect the user. This means that each user can maintain its data in any format it chooses, while still being able to interpret the information from other users that it obtains via NMVTIS. It also means that each user can use the data, while the states retain the right to determine their own procedures.

1. The system was created using a standard code set and procedures. Development of a complex system like NMVTIS requires the use of standards. AAMVAnet uses a system development life cycle methodology based on the Yourdon methodology. AAMVAnet also maintains a data dictionary that contains data elements (including definitions and code sets). Many of the data elements are used by more than one application; the AAMVAnet CASE tool ensures that in such cases the data element is defined consistently among applications.

NMVTIS has created a standard set of data elements and codes that states use to exchange information on vehicles, titles, and brands. The existence of a standard code and message set within NMVTIS precludes the need for all states to use the same data elements and codes within their own state titling systems.

In order to exchange information electronically, it was necessary to create a standard for vehicle data elements and definitions as well as valid codes and their definitions. With the NMVTIS design, all transactions are defined in the AAMVAnet standard for electronic messaging. All AAMVAnet applications (e.g., the Commercial Driver License Information System, the Problem Driver Pointer System) use a common data dictionary and message formatting standards. The pilot states had implemented the CDLIS and PDPS systems, and had a familiarity with the AAMVAnet standard even before developing NMVTIS.

A state converts from its internal format to the network standard format when sending any message to NMVTIS. Similarly, when the state receives a message from NMVTIS, which is in the standard format, the state converts the information from the standard format to its internal format. This way, any state that interacts with NMVTIS is only concerned with converting to and from the network standard format for messages that it sends out of the state, and messages that it receives from NMVTIS. Without a network standard format, each state would have to convert to and from every other state's format. Converting to and from one standard format is much easier than converting to and from fifty formats. To create the NMVTIS data dictionary, we first surveyed the states to determine the vehicle and title data elements and codes used in the states. The NMVTIS data dictionary allows states to convert their data to the standard data elements and codes. The standard dictionary also allows states to interpret each others' codes.

2. The system works even without a federal definition of "salvage". One area of concern among the system stakeholders was the lack of a national standard definition for "salvage". The NMVTIS definition of the salvage brand is as follows:

Any vehicle which has been wrecked, destroyed, or damaged, to the extent that the total estimated or actual cost of parts and labor to rebuild or reconstruct the vehicle to its pre-accident condition and for legal operation on roads or highways exceeds a jurisdiction-defined percentage of the retail value of the vehicle. The retail value of the vehicle is determined by a current edition of a nationally recognized compilation (to include automated databases) of retail values.

Salvage vehicle also includes any vehicle which an insurance company acquires ownership to pursuant to a damage settlement, or any vehicle that the vehicle's owner may wish to designate as a salvage vehicle by obtaining a salvage title, without regard to extent of the vehicle's damage and repairs.

In the absence of a federal definition of salvage, the NMVTIS definition accounts for the different percent values that states use to define "salvage". NMVTIS includes a data element, "Salvage Percent", which is defined as follows:

The percentage of damage (in terms of the extent that the fair salvage value plus the cost of repairing the vehicle for legal operation exceeds the fair market value of the vehicle prior to the incident causing the damage) a vehicle must sustain to be branded as 'Salvage'.

This data element allows states to show the basis of their branding a vehicle salvage. Any inquirer will be able to judge from this information whether the brand should be carried forward (i.e., a titling state) or whether to purchase the vehicle (i.e., the prospective purchaser).

3. States retain the right to determine their own procedures. AAMVAnet is currently developing the NMVTIS State Procedures, based on the lessons learned from the pilot. Each state retains the responsibility and authority for establishing procedures based on federal and state laws for the issuance of titles. NMVTIS delivers to states the information needed to issue titles, regardless of whether the procedures used by each state are exactly the same.

Titling requirements are largely the same from state to state. However, the procedures used by each state in processing and issuing titles to meet the requirements vary. For example, some states require inspections prior to issuing titles on rebuilt salvage vehicles, but not all do.¹⁵ However, the maintenance of the brands on the NMVTIS central file provides information on all brands ever applied to the vehicle. This information is provided to each new titling state during the title verification inquiry, and allows each it to determine, based on its procedures, which brands to print on the new title, and what other of its procedures to follow. The NMVTIS State Procedures contains some requirements (e.g., the requirement to

¹⁵ The Fast Track to Vehicle Services Facts: A Motor Vehicle Regulations and Procedures Information Guide, pp. 204-205, 1999 Ed., American Association of Motor Vehicle Administrators.

inquire on NMVTIS prior to issuing a title on a vehicle coming in from another state), but most of the procedures are best practice recommendations to the states on procedures that may change as a result of implementation of NMVTIS.

H. The system can be successful even if states are not penalized for not participating.

The Anti Car Theft Act does not penalize states for not participating in NMVTIS. However, state motor vehicle administrators fully support the system, and plan to implement as soon as federal funding is available to them. To date, 24 states have contacted AAMVA to begin the process of developing NMVTIS (see section VI.J.1 for a description of the process). AAMVA has not actively sought out additional states to develop the system because of the limited amount and availability of federal funding.

As more states implement, NMVTIS is expected to have the effect of motivating their neighboring states to implement. People involved in vehicle theft and fraud quickly learn about changes to state procedures and systems that affect their ability to get valid titles. Our experience with other systems, such as CDLIS, shows that when one state implements a safety-based system, the offenders move to the nonimplemented states, which then allows the offenders to escape detection. Those nonimplemented states, and their motor vehicle administrators, usually respond quickly to implement the system that gets the offenders out of their states. And if federal funding is available, the motivation is even stronger.

I. Expected schedule of implementation by states.

The implementation of NMVTIS by states is dependent on the amount and availability of federal funding. Although state schedules can be affected by other priorities, availability of federal funding usually allows the state to move forward with a project, all other factors being equal. All states are expected to be fully implemented on NMVTIS by FY2005, based on continued federal appropriations.

Federal funding supports the development of the system in the states with support from AAMVA. The following estimated schedule of implementation of NMVTIS by the states makes these assumptions:

- 72% of the federal appropriations goes to states for their development of the system
- each state uses \$300,000 of the federal funding available
- federal appropriations in FY96, FY97, and FY98 funded development of the system in seven pilot and four post-pilot states
- funding appropriated in FY99 and FY00 (\$3.15 million each) is made available in October 2000
- federal appropriations continue to be about \$3.15 million per year
- funding in future appropriations is immediately available to the states
- development of the system in each state takes about 12 months

| Federal Appropriation Year | Federal Appropriation Amount | Number of States Supported by Appropriation | Total Number of States Supported | Date of Implementation |
|-----------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------------|-------------------------------|
| FY96 FY97 | \$890,000 \$1 million | 7 pilot states | 4 | 1999 |
| FY98 | \$2.8 million | 4 new states plus remainder of pilot states | 11 | 2001 |
| FY99 (not yet available) | \$3.15 million | 7.6 | 18.6 | 2002 |
| FY00 (not yet available) | \$3.15 million | 7.6 | 26.2 | 2002 |
| FY01 | \$3.15 million | 7.6 | 33.8 | 2003 |
| FY02 | \$3.15 million | 7.6 | 41.4 | 2003 |
| FY03 | \$3.15 million | 7.6 | 49 | 2004 |
| FY04 | \$835,000 | 2 | 51 | 2005 |

J. Steps involved in establishing a national system.

1. Activities, steps and sequence. The implementation of NMVTIS by a state involves planning, analysis, design, development, testing, and implementation of the system specifications and procedures. Project management is required throughout each of the activities described below.
 - a. Planning – When a state is ready to begin its NMVTIS project, it sends a letter to AAMVA requesting a site visit. The purpose of the site visit is to assist the state with its project planning. The visit takes about 3 ½ days, and requires participation from the business area personnel (e.g., project manager, titling manager, help desk manager, and representation of titling clerks) as well as technical personnel (e.g., technical lead, analysts, and programmers). The visit begins with an overview of the system and its benefits. Next the state personnel review their titling business processes and procedures. Then the state personnel review their technical processes and show how the technical system supports the business processes. Next the AAMVAnet personnel review the technical and procedural requirements of NMVTIS. Based on these reviews, the next step is the creation of a task list, which is the basis of the state’s project plan. The task list includes tasks such as analysis of the existing system, design of the NMVTIS requirements into the existing system, development of the programs and procedures to support NMVTIS, training of users and help desk personnel, testing of the system changes, and implementation of the system in all branches. The state business area and technical managers are responsible for adding resources and dependencies to each task. Once that is done, the project plan shows the in-house staff and contractors needed, hours of work per task, any

equipment or travel needed, etc. The project plan shows the time required for implementation of the system, as well as the cost to implement the system.

- b. Analysis. The state must analyze its existing system and the requirements of NMVTIS. The analysis will identify the need for any new data elements or modifications to existing data elements, and will identify the scope of training of users. System storage/archive requirements and existing network connectivity are analyzed to determine whether modifications are required. Testing scope is identified.
 - c. Design. The technical design will integrate NMVTIS into the existing titling system. Changes to the state database and network connectivity, if any, are identified. The training plan is created. The test plan is created. The help desk functions are identified. Some design steps can be begun concurrent with the analysis phase.
 - d. Development. The titling programs and environment are modified where necessary to integrate NMVTIS into the existing business processes. Training and educational materials are created. Test data are created. Help desk programs and utilities are programmed. Some development tasks can be begun concurrent with the design phase. However, most development tasks can not be begun until design is complete.
 - e. Testing. Program changes are tested at the unit, program, and application levels within the state. Once the state has completed its testing internally, then it must pass a structured test with AAMVAnet. The structured test verifies the state's ability to send and receive NMVTIS transactions as specified in the system design.
 - f. Implementation. Users (including titling clerks and help desk personnel) are educated about the changes to the titling system (programs and procedures) due to the integration of NMVTIS. Titling and brand data from the state are loaded into the NMVTIS central files. NMVTIS programs are migrated to production.
2. Burden placed on states to participate in a national system – providing and using data . The effort required by a state to fully implement NMVTIS includes the tasks outlined in section VI.J.1. Further, ongoing operation of the system requires that states:
- inquire on NMVTIS prior to issuing titles on vehicles coming in from other states
 - update NMVTIS when they decide to issue a title
 - update NMVTIS when they brand vehicles
 - respond to inquiries on VINs they have titled

The pilot states report that these activities add little or no time to the overall processing of an application for title, since the inquiries and updates are done in the

background, via computer-to-computer (EDI) transactions.¹⁶ Further, the inquiries from NMVTIS (e.g., other states inquiring on vehicles prior to issuing titles, prospective purchaser inquiries, or law enforcement inquiries) are done via computer-to-computer transactions, and are transparent to the system users.

3. Burden placed on states to participate in a national system – completing vehicle inspections. The Anti Car Theft Act of 1992 does not require that states implement any specific procedure for inspections of vehicles that had been rebuilt after having incurred damage severe enough to be defined as “salvage”. When the responsibility for the system was delegated to DOT, NHTSA expressed concern that the lack of uniformity among the states regarding inspections of rebuilt salvage vehicles, and the lack of a federal standard for inspections of rebuilt salvage vehicles would prevent NMVTIS from being successful. However, this evaluation report provides data to show that NMVTIS successfully meets the requirements of the Anti Car Theft Act, and that system users find significant benefits in the implementation of the system. AAMVA believes that the inspection of rebuilt salvage vehicles is a procedural issue for states to address, and that while uniformity of inspection procedures could be good for the community, it has no effect on the success of NMVTIS.

K. Estimated costs of establishing a national system.

1. Costs of establishing a national system. AAMVA estimates that the national implementation of NMVTIS will cost \$33.9 million:

| Developer | Cost | Federal Share | Non-Federal Share |
|------------------|-----------------------|-----------------------|--------------------------|
| States | \$24.2 million | \$16.5 million | \$7.7 million |
| AAMVA | \$7.1 million | \$5.7 million | \$1.4 million |
| Polk | \$1.4 million | \$0 | \$1.4 million |
| NICB-FACTA | \$1.2 million | \$0 | \$1.2 million |
| Total | \$33.9 million | \$22.2 million | \$11.7 million |

Since 1992, AAMVA has estimated that the federal government would spend about \$21,000,000 to assist the states and AAMVA in getting NMVTIS up and operational. Based on the most current calculations shown above, the estimate of the federal share is somewhat higher than the original estimate. The revised estimate is based on actual costs of the pilot states and factors such as inflation.

2. Cost drivers. The majority of the costs incurred by the states is for labor hours for system analysis, design, and development of the system. Labor in the pilot states was a mix of staff labor (in-house personnel) and contract labor. Costs from travel or acquisition of equipment were negligible.

¹⁶ Three of the four pilot states said that integrating NMVTIS added no time to the overall title process. One of the pilot states said that integrating NMVTIS added up to three seconds to the titling of new vehicles (i.e., vehicles that have never had a title before) and vehicles coming in from another state.

The size of the state has no significant bearing on the cost to implement the system. All states must perform the same analysis, design, development, testing, and implementation tasks, regardless of the number of vehicles on their databases. The hours of work to complete these tasks are comparable between states of different sizes, all other factors being equal. Often, all other factors are not equal, which results in variances in costs between states. Sources of the variances are discussed in the next section.

3. Costs vary between states. Costs for development of NMVTIS will differ from state to state, depending on the availability of people to do the work, the age of the titling system, the complexity of titling programs, the familiarity of staff or contract personnel with the programs, and the distribution of titling functions within the state.
 - a. Availability of labor to do the work. Contract labor is often more expensive than staff labor, and many states routinely outsource system development work. However, the state must be able to provide some staff support, for example, to assist contractors in their learning of how the state system is configured and maintained. State personnel also should provide management of the overall project. If the labor market for systems development skills remains tight, this is expected to drive the cost of development of systems higher.
 - b. Age and complexity of the titling system. The older a system is, the more likely it is that system documentation is inaccurate. Further, older systems use older hardware and software languages, which are not as flexible as new products. The learning curve for contractors (or new state staff) to understand what is going on in the current system prior to integrating a new system is longer than for a new system. Similarly, if the personnel doing the work had been intimately involved in the titling system (e.g., if the state had just completed a redesign of its titling system), they would be very familiar with the ins and outs of the programs and utilities. This would make their learning curve shorter, and would result in a lower overall cost of development. Further, the more complex a system design, the more time and effort it takes to modify it.
 - c. Distribution of titling functions within the state. Some states issue titles at the state level of government, and others issue titles at the county level. In states that issue titles at the county level, their ability to modify systems and procedures may be constrained by factors not affecting the other states. The interaction between the state and the counties must be reviewed, and the decision on when the state makes the decision to issue the title must be reviewed to ensure that it corresponds with the online update to the VIN pointer file. These considerations could have an affect on the overall cost of the project.

VII. Conclusions and Recommendations

The pilot of NMVTIS shows that the system meets the requirements of the Anti Car Theft Act in a manner that is technically feasible and that the system provides benefits to state titling agencies and law enforcement. Based on the findings of the pilot, the NMVTIS working group of the AAMVA International Vehicle Registration and Titling (VRT) Committee recommends continued support of the system by AAMVA and the Department of Justice. Further, the NMVTIS working group recommends that AAMVA continue to assist states in obtaining federal funding for development of the system.

VIII. Next Steps

The system is currently undergoing a post-pilot review. Once the system design modifications are complete, AAMVA will assist new states and service providers in their development of the system. In addition, the NMVTIS working group and VRT committee have recognized the benefits of NMVTIS to the law enforcement community and others, and have already identified several enhancements to NMVTIS to facilitate these interactions.

A. Post-Pilot Review.

The issues identified during the pilot are being resolved and the NMVTIS system design is being modified to take advantage of the lessons learned by the pilot states (see Appendix A for some of the issues). This phase of the system development lifecycle involves the typical stages of issue analysis, design of the change, and modification of the system design to incorporate the change. Version 2 of the NMVTIS system design will contain changes to respond to the issues encountered and resolved by the pilot states. At the end of the pilot, the operation of the VIN pointer central file was migrated from Polk to AAMVAnet. This will allow for some streamlining of messages within transactions, which will be incorporated into Version 2. Allowing time for pilot participants to analyze, design, code, and test the changes, Version 2 is expected to be in production in the second quarter of 2001. New, post-pilot states will begin their development of NMVTIS using the Version 2 system design.

B. Implementation of NMVTIS by New Users.

The federal FY98 appropriation for NMVTIS will support the development of the system in four new states. These states are expected to be Iowa, Tennessee, West Virginia, and New Mexico. The federal FY99 and FY00 appropriations will support development of the system in about 15 more states. This funding will not be available to states until DOJ completes its cost/benefit study. However, AAMVA has requests from 24 states to assist them with development of the system, so once the funding becomes available, those states can get started. AAMVAnet will provide the project planning and help desk assistance to the states during their development. Once the states complete their internal testing, AAMVAnet requires the states to successfully complete structured testing prior to implementation of the system in production.

Several service providers have also expressed interest in implementing systems that provide access to NMVTIS for their customers. Users of NMVTIS that could interact with NMVTIS via service providers are individual prospective purchasers, car dealers, auto auctions and insurance carriers. Service providers could also develop methods to assist junk yard operators, salvage yard operators, and insurance carriers to provide their data to NMVTIS. AAMVAnet will assist the service providers in implementation of NMVTIS.

C. Law Enforcement Committee Activities.

The NMVTIS working group has established a law enforcement committee to identify issues regarding the interaction of law enforcement agencies with NMVTIS. The Anti Car Theft Act specified law enforcement as a user of NMVTIS, but did not require the theft check that the states are doing prior to issuing titles, or the batch comparisons of titles to the theft file. The law enforcement committee sees the value of these and other activities, and has identified action plans to support the use of NMVTIS by law enforcement.

1. Batch comparisons of titles to the theft file. The law enforcement committee will use the Miami- Dade Cybersearch project (see section VI.C.3) and Arizona's Vehicle Theft Task Force activities as the basis of a protocol for other law enforcement agencies to follow. This protocol will be available to any state law enforcement agency that wants to use NMVTIS to investigate auto theft, even if the state has not yet implemented NMVTIS.
2. Interactive theft hits. When the state gets a hit on the theft file during its title application process, the state will send that theft hit to a law enforcement agency to investigate. The law enforcement committee will define the details of how the information is sent from one agency to the other, which law enforcement agency should receive the information, and the timing requirements of sending the information. The law enforcement committee will also create a best practice procedure for the law enforcement agency in using the information to investigate the theft hit.
3. Release of theft information on consumer inquiries. The Advisory Policy Board (APB) for the Criminal Justice Information System allowed NMVTIS to do the theft checks to the theft file during the pilot, for states that are processing applications for title.¹⁷ AAMVA has requested that the APB allow NMVTIS to provide the theft response to consumers that inquire on the system via the Prospective Purchaser Inquiry (PPI). AAMVA believes that the consumer will benefit from knowing, prior to purchase, whether there is any adverse condition regarding the vehicle. The APB has requested that AAMVA provide it with some statistical data on the number of

¹⁷ The source of the theft data in NMVTIS is the NICB mirror image of the NCIC stolen vehicle file, which is part of the Criminal Justice Information System of the FBI.

theft hits resulting from PPIs, before it will make its decision. Since no service providers had implemented during the pilot period, this data has not yet been established. We expect that service providers will implement in the summer of 2000 and that sufficient data could be gathered prior to the end of the year. The law enforcement committee will review the statistics when they are available, and will provide them to the APB for review and decision.

4. Additional data requirements for NMVTIS. The law enforcement committee will analyze whether to modify NMVTIS to include more information. In particular, the committee believes that addition of export information would be extremely useful in investigating thefts involving cloned VINs from vehicles that have been exported (see section VI.C.5). The committee also considers that indicators for rental and leased vehicles are helpful in investigating thefts. The committee will analyze the possible sources of this data and the impact on the system to make the modifications.
5. Interaction of NMVTIS with U.S. Customs. The law enforcement committee will investigate the feasibility of automating an interaction between NMVTIS and U.S. Customs for both imports and exports. DOT requests state titling agencies to not issue titles on imports unless the owner can provide proof that the vehicle meets DOT safety and emissions standards. If NMVTIS had import data from U.S. Customs, this task would be easier to do. For exports, the states could receive notice from NMVTIS if a title application was received for a vehicle that had recently been exported. Usually, vehicles are not imported soon after being exported, so this would be an indication that the VIN had been cloned.
6. Education of law enforcement agencies on the use of NMVTIS. The law enforcement committee is creating an action plan for making sure that law enforcement agencies know what kind of information is available to them from NMVTIS, and how that information can be used in their theft investigations. This information includes the ability of law enforcement agencies to do batch comparisons of titles to the theft file, what to do when a state gets a theft hit, and how to use the law enforcement inquiries in NMVTIS.

D. NMVTIS Interaction with Canada.

The VRT committee is analyzing the costs and benefits of creating a gateway between NMVTIS and the vehicle registration systems in Canada. This would allow the states and the Canadian jurisdictions to inquire on each others' systems prior to issuing titles on vehicles that have crossed the border. The inquiry would allow the titling or registration agency to verify the data on the title or registration, see any brands applied to the vehicle, and do a theft check on the vehicle. A cost/benefit and feasibility study has begun, and should be completed within calendar year 2000.

Appendix A – Lessons Learned from the Pilot

Developing and operating the NMVTIS pilot required AAMVA to coordinate activities of the central file operators, the states, and AAMVAnet. The AAMVA International Vehicle Registration and Title (VRT) Committee established the NMVTIS working group to perform these tasks. The NMVTIS working group comprises representatives from the central file operators, the pilot states, and AAMVAnet. The development of the pilot began with the creation of the NMVTIS system design and commitment to the project by the pilot states. After the pilot kick-off meetings in November 1996 and August 1997, the central file operators and the pilot states began their development of the system according to the NMVTIS system design created by AAMVAnet.

AAMVAnet acted as the project manager, providing a help desk for the pilot participants and coordinating regular conference calls to identify and resolve issues. AAMVAnet created acceptance test plans for the central file operators as well as structured test plans for the states, including the test cases and test data. Once the pilot participants completed their development and internal testing, AAMVAnet performed acceptance and structured tests. Once the tests were completed successfully, the pilot participants implemented their systems in production.

Operation of the system during the pilot allowed the pilot participants to identify and resolve issues that ultimately resulted in a better system. Some of these issues were resolved during the pilot. Others were resolved in the post-pilot review of the system. Version 2 of the NMVTIS system design will incorporate all of the modifications that resulted from these issues. The following list of issues is not inclusive, but identifies the major findings from the pilot. For an exhaustive list, see Version 2 of the NVMTIS system design. The issues described below include decisions by the working group on the inclusion of vehicle make and model year on the brand file, the removal of the registration data from the system, revision of criteria for loading vehicles on the pointer file, redefinition of the vehicle make standard, and ongoing refinement of the system performance criteria.

1. Vehicle Make and Model Year on the brand file . When originally designed, the brand file only described the vehicle by VIN; the Make and Model Year were not included. During operation of the system, though, the states realized that the existence of duplicate VINs makes it difficult to apply brands reliably without additional information (see section VI.D.1 for a description of why duplicates will exist on NMVTIS until all states implement). That is, if a state is titling a vehicle, the state will inquire on NMVTIS. If a duplicate exists on the pointer file, and a brand exists for the VIN on the brand file, the state needs to figure out which vehicle the brand belongs to. We added the vehicle Make and Model Year fields to the brand file to assist the state in making this determination. This change was made during the migration of the brand file from NICB-FACTA to AAMVAnet; the change was in production on October 2, 1999.

2. Removal of registration data from the system. NMVTIS was designed to facilitate the exchange of titling information. During the pilot kick-off meeting, the participants discussed whether to include registration data (e.g., plate number) on the pointer file. The group considered that the registration data could be useful to users in identifying vehicles. However, the group also acknowledged that in some states, the registration and title systems are not linked, and that this would make it difficult for some states to keep the registration data current on the pointer file. The group decided to include the registration data on the VIN pointer file, as optional elements, and to use the pilot to determine whether the states were able to keep the data current, and whether the data provided benefits to the users. The group determined from the pilot that including the data but making it optional had the effect of reducing the reliability of the information on the system. The group decided to remove the registration data from the system, effective with Version 2 of the NMVTIS system design.
3. Revision of load criteria. In 1981, vehicle manufacturers began using a standard format for VIN. When the pilot started, the VIN pointer file contained all VINs from the pilot states for vehicles for which the states had active titles. The pointer file included VINs from pre-1981 vehicles. The pilot states found that the non-standard format of the pre-1981 vehicles was responsible for the majority of the duplicates on the load files. Further, the pre-1981 VINs returned warning messages from the central files that showed that the VINs were non-standard; the state system had to deal with these prior to issuance of the title. Since the pre-1981 VINs were at least 18 years old during the pilot, the states saw little benefit in including the VINs in the system while they caused significant effort on the part of the states to handle. The working group decided to revise the load criteria for the central files to include data on vehicles with model years 1981 or greater, and to include any vehicle older than 1981 if the state had an active title and/or registration record. This is expected to weed out inactive non-standard VINs while still recording the vehicles that are operating on the roads. This change was effected in February 2000, when the migration of the VIN pointer file from Polk to AAMVAnet was completed.
4. Redefinition of the Vehicle Make standard. When NMVTIS was designed, the states and central files were required to use the NCIC codes for the Make data element. If the states did not use that code in their internal databases, they were to convert the values inbound and outbound when interacting with NMVTIS. During the pilot, the states found that the dissemination of NCIC codes to the states via vendor VIN edit programs was sometimes not timely – on new vehicles, the code entered would create a warning error from the system. Further, the states considered the impact on consumers if the paper title document showed the Make as coded by the state and the NMVTIS response showed a different (although standard) value. The working group decided to change the use of NCIC codes for Make from a requirement to a best practice. The states will use the Make as decoded from the VIN, whenever possible. If not possible, the state will update the pointer file with its internal database code for Make. This change will be effective as of Version 2 of the system.
5. Ongoing refinement of system performance criteria. With the completion of the pilot, operation of the VIN pointer central file and the MCO system transitioned to AAMVAnet. Having this information and the brand file in one physical location will allow us to streamline

some processes in Version 2. Further, AAMVAnet monitors system performance as a daily function of operating the system, and is currently analyzing alternatives for file structures to optimize system performance. These activities may allow us to refine the NMVTIS system performance criteria to complete transactions even faster than the current seven second requirement. If possible, improving response times to three seconds, 95% of the time would benefit all users, especially those states using a business model that requires over-the-counter titling and online, realtime updating of customer transaction data.