



**ARC FORENSICS**  
"CERTIFIED"  
FORENSIC LOCKSMITHS - PHOTOGRAPHERS  
VEHICLE THEFT & FIRE - TRANSPONDER DIAGNOSTICS  
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December 10, 2010

Norma Senyard  
State Farm Insurance  
P.O. Box 3649  
Tulsa, OK 74101

Re: Joseph and Diana Dominick  
2002 Ford Thunderbird

**Claim Number: 18-1803-021**  
Case Number: ARC10-1122.1  
Date of Loss: October 14, 2010

Dear Ms. Senyard:

Received for forensic examination November 23, 2010 were two ignition keys with keyless remotes attached. The VIN number submitted was 1FAHP60A52Y122504.

**CONCLUSIONS**

1. Exhibit number one was an OEM normally used key.
2. There was evidence Exhibit 1 was recently used as a pattern to create duplicates.
3. Exhibit number two was an OEM minimal use key.
4. Is there was no evidence Exhibit 2, was recently used as a pattern to create duplicates.
5. The keys have encrypted PATS transponder chips.
6. It was verified that the mechanical cuts on the keys match the vehicle's identification number.
7. Two OEM working remotes were submitted.
8. The vehicle is shipped with two keys and two keyless remotes.
9. The duplicate aftermarket key created from exhibit number 1 was not submitted.
10. It is not possible to start and drive this vehicle without a properly programmed key.

**FORENSIC KEY ANALYSIS**

Marked for examination as Exhibit 1, and identified by wear pattern analysis was an OEM normally used key. There were normal wear patterns from the key being inserted and extracted from a keyway.

A microscopic examination of the blade and ramps revealed unusual tool markings from the tracer on a key duplicating machine. It was determined the key was recently used as a pattern to create duplicates. The key was interrogated and determined to contain an encrypted Texas Instruments transponder chip. A key code was obtained using the vehicle's identification number. The mechanical cuts are associated with this vehicle.

Marked for examination as Exhibit 2, and identified by wear pattern analysis was an OEM minimal use key. There were normal wear patterns from the key being inserted and extracted from a keyway.

A microscopic examination of the blade and ramps did not reveal any unusual tool markings related to recently being used as a pattern to create duplicates. The key was interrogated and determined to contain an encrypted Texas Instruments transponder chip. A key code was obtained using the vehicle's identification number. The mechanical cuts are associated with this vehicle.

The one key created by the duplication of exhibit number one, was not submitted. The vehicle is shipped with two keys and two keyless remotes. The two remotes were functional and had average battery power.

**ENCRYPTED PATS 2 TRANSPONDER IMMOBILIZER**

The components to this system are the ignition key, which contains the PATS transponder chip in the bow of the key. The PATS control module that is located behind the instrument cluster in the dash, the power control module located in the engine compartment and the induction coil that is mounted on the ignition lock cylinder housing behind the steering column shroud.

Only a person with the NGS Tester or comparable scan tool can program in keys when there are no keys available. Additionally, you will need at least two already programmed keys present to activate the PATS2 module to allow extra keys to be programmed on board in if you do not have the NGS or scan tool. As many as 8 keys can be programmed into the vehicle's P.A.T.S. Module.

The NGS diagnostic tool is an original equipment device that is available to locksmiths to program the transponder keys into this computer. It and other equipment are expensive and available only to locksmiths, dealers and some repair shops. Special training is also required.

Along with programming the transponder keys to match the vehicle's anti-theft system, the keys must also be mechanically cut to the proper depths and match the wafer configuration in the ignition lock cylinder. Relating to stealing this vehicle, on-board programming would not be possible, because two already programmed keys are required. That would mean that the individual in possession of the two keys would not need to make additional keys to take the vehicle. One would indicate that a person in possession of two previously programmed keys would be the owner of the vehicle.

The key is also required to be inserted into the ignition lock, because the capsule has to be within 3mm of the induction coil. The signal is not transmitted any further than this distance. It is not possible to start and drive this vehicle without a properly programmed key.

This concludes the scope of the examination that was requested. Included is pictorial evidence. If I can assist you further, pertaining to this or any other matter, please feel free to contact me.

Sincerely,  
ARC Forensics, Inc.



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Herbert T. Miller, Sr., CFEI, CPII, BCEP, CFL, CFV

Certified Fire and Explosion Investigator  
Board Certified Evidence Photographer  
Certified Professional Investigator  
Certified CDR Analyst (black box)  
Certified Evidence Videographer  
Certified Forensic Locksmith  
Forensic Mechanic

HTM

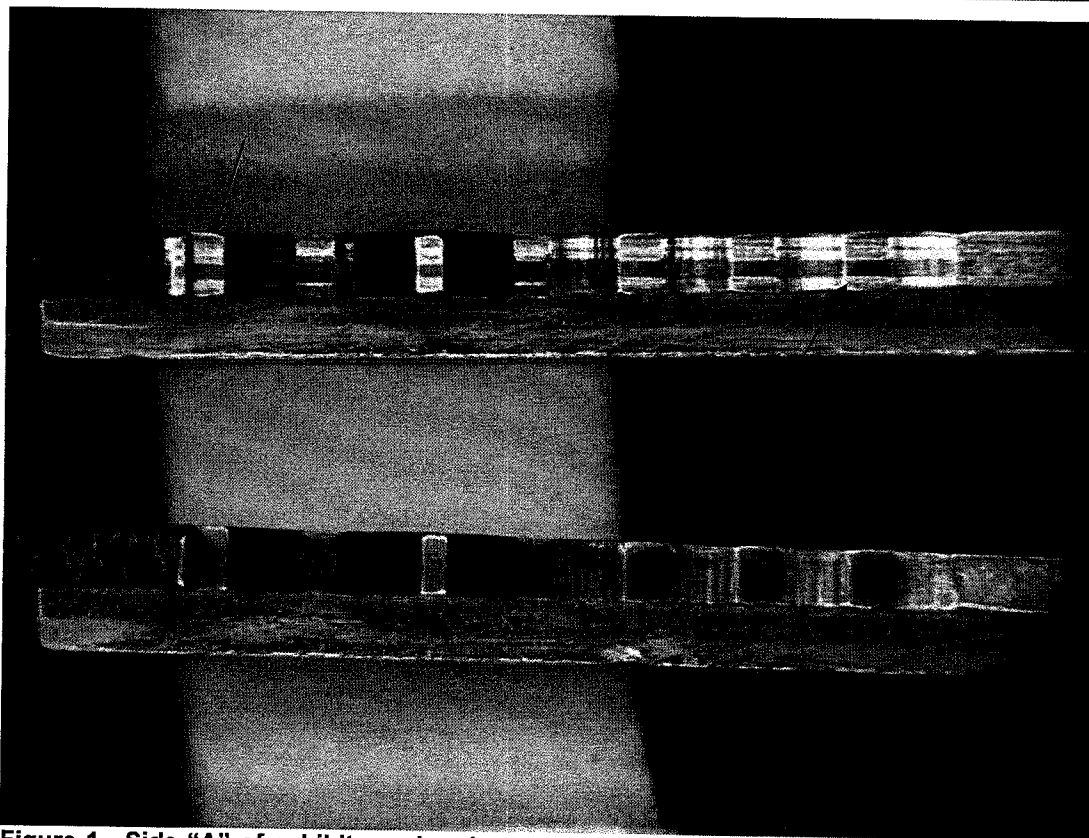


Figure 1. Side "A" of exhibit number 1 on top, indicating tool markings caused by a key duplicating machine

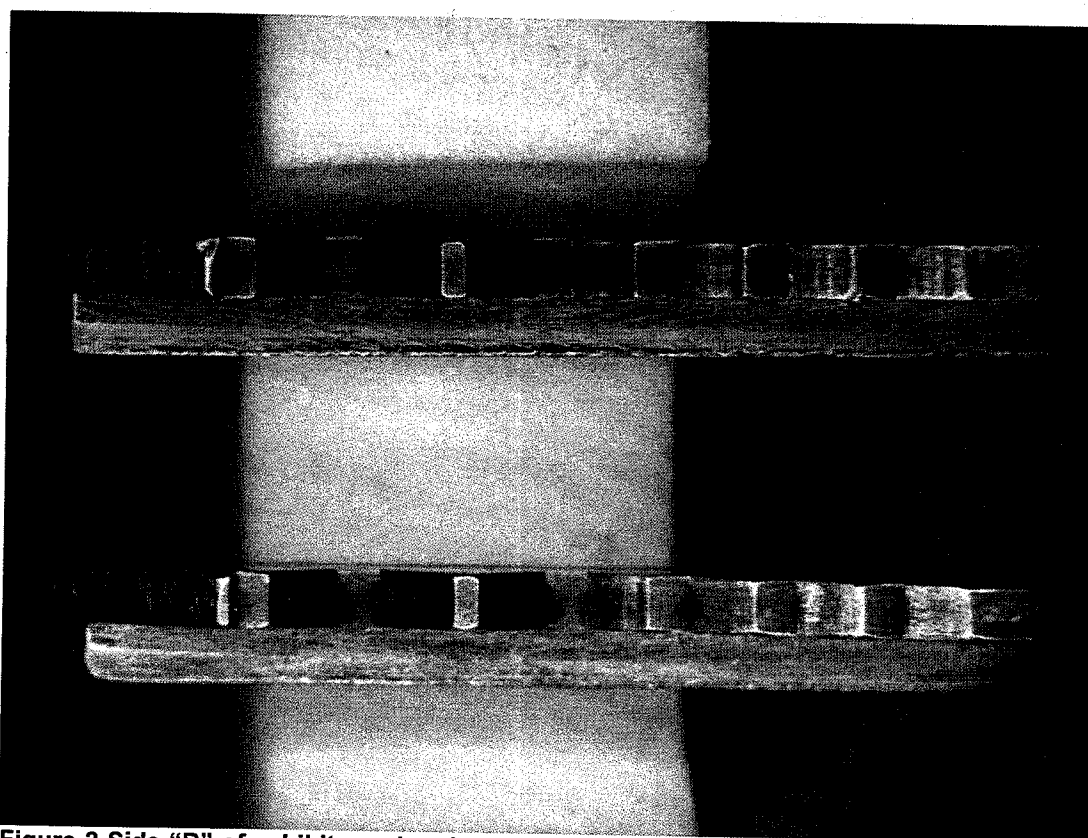


Figure 2 Side "B" of exhibit number 1 on the bottom indicating no unusual tool markings relating to recent duplication