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August 18, 2010

TO: Nathaniel Beuse

FR: Sean Kane

RE: FMVSS 114 / Smart Keys

We continue to see safety concerns associated with “Smart Keys” in several manufacturers’ vehicles. What follows is an overview of our concerns, the regulatory history and intent of FMVSS 114, and how non-compliant manufacturers are misleading consumers.

The Safety Problem

The introduction of electronic keys in combination with push-button ignition systems has introduced new scenarios under which a driver can exit the vehicle, key fob in hand with the motor running, or with the engine off but the vehicle in a gear other than park. With today’s quiet engines, drivers can leave a vehicle, travel great distances from the vehicle with the key in their pockets while the engine is running or the transmission in neutral – all without being aware that they have done so.

As we are seeing from owner complaints and litigation, the marriage of electronics with ignitions and locks have resulted in unintended consequences: carbon monoxide poisoning, rollaway crashes and easy thefts.

Here are four of the more serious examples. The first is from a Lexus owner who described his near-miss carbon monoxide poisoning in a letter to SRS and to the agency in VOQ 10326861:

I am writing in my capacity as the attorney for my father Sanford Pariser, M.D., who nearly died in his sleep last September from carbon monoxide exposure because of the faulty design of the keyless ignition system on his 2007 Lexus LS460 sedan.

On or about September 11, 2009, my father returned home from dinner to his residence in Somers, New York, parked his vehicle in his attached garage, and not realizing that the ignition of the Lexus was still running, he left his key fob in the

car, exited the vehicle, closed his electronic garage door, entered his house and eventually went to sleep for the evening.

He was awoken at about 2:15am by the sound of the carbon monoxide alarm located in the foyer inside his house, adjacent to the door leading into the garage. When he entered the garage, he discovered that the car's engine was still running, the garage was filled with noxious smoke, and the vehicle extremely hot to touch both inside and out. He opened the garage door to clear out the fumes and shut down the engine using the key fob which was inside the car.

This incident was not reported to the local police or fire department.”

“My father and I believe that the faulty design of the Lexus keyless ignition system contributed directly to this incident in two ways:

- (i) When he opened the door to exit his vehicle, no alarm or other warning sound alerted my father to the fact that the engine was still running, as would be the case with conventional ignition systems, where a warning sound alerts the driver upon opening the door that the key remains in the ignition whether or not the engine is still running. This is particularly problematic for the Lexus LS460, which was promoted by Lexus for having a nearly silent engine; and
- (ii) Even after my father unwittingly exited his vehicle with the engine still running, the engine kept running indefinitely. We believe that under such circumstances, the engine of an idling vehicle should cut off after some predetermined period of time.

My father tells me that he has experienced similar, albeit less potentially fatal problems with the Lexus keyless ignition and the failure of the vehicle to cause an alarm to sound when exiting the vehicle when the engine was still running. On several occasions, he has parked and exited the vehicle with the key fob in his possession, only to find that he is unable to lock the doors because the engine was left running. Apparently, the inability to lock the doors of the car with the key fob when the engine remains running is the only safeguard in this situation, and one that provides no safety when, as is the case with the Somers incident, the fob remains inside the car parked in a locked garage. My father has come to discover that this is a common problem among Lexus owners equipped with keyless ignition systems. “

Another situation involving a 2009 Nissan Altima that resulted in an injury was reported to NHTSA (see VOQ 10248971):

“A traffic officer and (sic) investigated an incident where a vehicle owner was run over by his vehicle. The vehicle does not have a physical key to operate the vehicle. There is an electronic 'key' and a push button start/shut off switch. The driver parked the vehicle in a driveway with a steep grade. The vehicle was left in

'drive' with the engine off. The driver exited and started to walk away from the vehicle. The vehicle started to roll backwards, down the driveway. The driver ran to the vehicle to try to stop it and was run over by the vehicle. It is possible to park the vehicle, shut the engine off and exit the vehicle with the transmission any gear selection (sic) and exit the vehicle. This is the second incident with this same model vehicle, but different years, that the engine was shut off, the transmission was left in drive and the vehicle ran over the driver. In both instances the vehicle was owned by the driver for a short time. *TR”

[Note: We are also aware of at least one serious injury rollaway case involving a Nissan.]

In addition we are aware of a third incident involving a 2008 Lexus ES350 in which the vehicle was inadvertently left running in his garage. He exited the vehicle with the key fob and was later found dead and his partner was severely brain injured as a result of carbon monoxide poisoning.

Finally, the owner of a Hyundai Genesis complained about a near-miss crash involving the Smart Key in his vehicle (VOQ 10296611). In correspondence to the dealership, which was submitted to NHTSA, the owner describes the incident:

“Attached is a rather bad copy of the Hyundai Genesis manual, page 5-11, paragraph 1 ‘With the Smart Key’ which states in part, ‘You can not turn the engine off without the transmission shift lever in the P (Park) position.’ This is contrary to what we have been told by Hyundai and contrary to how the gear shift system functions in our car. Regarding the problem we have been discussing how easy it is to become distracted, in a rush, or whatever and stop the engine while still in Drive, which we have done on several occasions. Further, it is impossible at that point to push the gear lever to Park once the engine has been turned off. It will only shift to N (Neutral), creating an even more dangerous situation. (REDACTED) may have explained to you what recently happened. We had parked in a sloped parking lot in a restaurant where he was to drop something off and was in a bit of a rush" He inadvertently (sic) neglected to put the car in Park before he turned off the engine" I was seated in the passenger seat, waiting for him to return when I felt the sensation of the car moving, backwards. Having experienced the problem before, I immediately knew what had happened. As a "conditioned response", I pushed the car into neutral with the intention of starting the engine before putting it into Park. Too late I realized I had to have my foot on the brake before it would start. I literally (sic) dove over the console to stop the car which by this time was picking up speed. Luckily, all was brought under control before anything got out of hand but it did cause a bit of a scare.

Some manufacturers have recognized that allowing the driver to exit the vehicle with the key fob, without turning off the engine or putting the vehicle in park is a problem. In September 2008, Chrysler recalled 6,636 MY 2008-2009 Dodge Challenger vehicles equipped with automatic transmissions and “Keyless Go” option, because they failed to

conform to the requirements of Federal Motor Vehicle Safety Standard No. 114 “Theft Prevention.”¹ According to Chrysler’s non-compliance and defect report, a driver could depress the stop/start button and turn off the engine when the vehicle was not in park, take the fob and exit the vehicle. Chrysler recognized this sequence of events as a clear violation of the standard, which “specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.” Under FMVSS 114, a driver cannot remove a vehicle key without the engine off and the vehicle’s automatic transmission in the Park position – or become automatically locked in the Park position.

Chrysler’s remedy included a reprogramming of the wireless ignition module so that the engine can only be turned off when the transmission and gear selector is in the Park position.

Other manufacturers and testing labs, however, appear to have relied on out-dated interpretations of FMVSS 114, rather than the rule itself, and these vehicles are being sold and incorporated into the U.S. fleet without a correction or the implementation of longstanding protections.

A Brief History of the Rule

The Federal Highway Administration first proposed adding a theft protection standard—FMVSS 114—in December 1967.² The proposal emanated from concerns that stolen vehicles constituted a major safety hazard because unauthorized drivers were more likely to initiate crashes.

The agency’s first proposal would have required cars to be equipped with devices to remind drivers to remove keys when leaving their vehicle and require manufactures to use a large number of locking system combinations to prevent use of master keys for theft. The rule was officially established on April 27, 1968, and became effective in January 1970. The rule remained substantially unchanged from the proposal and reiterated the safety concerns related to vehicle theft.³ By 1980, the anti-theft rule had been tweaked and expanded to include light trucks and multipurpose passenger vehicles (MPV’s) whose GVWR is 10,000 pounds or less.⁴

Eight years later, the agency proposed amending the rule to encompass the problem of rollaway vehicles. In 1988, the agency’s Notice of Proposed Rulemaking noted that it received complaints of accidents and injuries associated with steering wheel lock-up when a key is inadvertently removed as well as inadvertent actuation of the transmission gear shift lever in vehicles with automatic transmissions.⁵ The latter, the agency said, “often results from children inadvertently moving the gear shift level [sic] from ‘park’ to

¹ Recall 08V458; Chrysler; September 4, 2008

² December 28, 1967; 32 FR 20866; Docket 1-21

³ April 27, 1968; 33 FR 6471; Docket 1-21-No.1

⁴ December 29, 1980; 45 FR 85450; Docket 1-21-No. 5

⁵ April 5, 1988; 53 FR 11105; Docket 1-21-No. 7

‘neutral’ in a stationary vehicle with the ignition turned off. The vehicle then rolls away. Most inadvertent gear shift accidents involve property damage only. However, there have been several reports of recent cases resulting in serious or fatal injuries. In these cases, a child inside the vehicle inadvertently moved the gear shift level [sic], and the vehicle rolled out of control injuring or killing a child inside or outside the vehicle.”⁶

The proposed amendment would have required gear shift lever locks on automatic transmissions in place of the then-current requirement, which allowed for a steering column or gear shift lever lock, or both. The proposed requirement would have prevented shifting the transmission after the key was removed and locking the gearshift or steering column while the vehicle is in motion.⁷

Two years later, the agency issued a Final Rule.⁸ FMVSS 114 now required vehicles with automatic transmissions that have a Park position to have a key-locking system that prevented removal of the key unless the transmission was locked in Park or became locked in Park as the direct result of removing the key.⁹ This requirement became effective for vehicles manufactured after September 1, 1992. The proposal to prevent steering lock-up was not adopted in the final rule, but the agency noted that the amendment to prevent transmission lever shifting would also serve to prevent the removal of the key while the vehicle was in motion, because the amendment allowed key removal only when the transmission is in Park.

In the early 1990s, the agency began to field inquiries from manufacturers asking how FMVSS 114 would affect the development of keyless/electronic ignition systems.

In August 2005, NHTSA decided to address these new systems. It published a notice of proposed rulemaking to amend the theft protection standard to reflect technological advances since the standard was last amended.¹⁰ After receiving several petitions from manufacturers requesting confirmation that their new systems were in compliance, NHTSA acknowledged that the regulatory language had become outdated and incompatible with key locking systems that employ electronic codes to lock and unlock the vehicle and to turn on the engine. The agency proposed to reorganize the regulation to separate the text involving theft protection from those intended to prevent unintended rollaway. It also wanted to simplify the language, redefine the word “key” to better reflect electronic codes and other locking devices and remove provisions that unnecessarily restrict design – such as the provision allowing only override systems that prevent steering before the key can be released or the transmission lever can be shifted.

On April 7, 2006, NHTSA issued a final rule to address comments and amend the theft protection standard as proposed in the August 2005 NPRM.¹¹ NHTSA declined to drop

⁶ April 5, 1988; 53 FR 11105; Docket 1-21-No. 7

⁷ April 5, 1988; 53 FR 11105; Docket 1-21-No. 7

⁸ May 30, 1990; 55 FR 21868; Docket 1-21-No.-9

⁹ May 30, 1990; 55 FR 21868; Docket 1-21-No.-9

¹⁰ August 17, 2005; 70 FR 48362; Docket 2005-22093

¹¹ April 7, 2006; 91 FR 17755; Docket 2005-22093

the audible warning requirement, proposed by the Alliance of Automobile Manufacturers, because the current fleet uniformly already employed audible warnings, and the agency said, it was unaware of any vehicles in production using a non-audible notification method.

Intent of FMVSS 114

For two decades, FMVSS 114 has clearly served a two-fold purpose: to prevent auto theft and to prevent vehicle rollaways caused by the inadvertent actuation of the shift lever. The anti-theft purpose has been a part of the rule since 1970, and rollaway prevention became a feature of a 1988 Final Rule. The crux of those protections has been preventing drivers from leaving keys in their vehicles or in a state that rendered vehicles vulnerable to unintentional movement and theft.

Today the scope and purpose of the standard is codified thus: “This standard specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles. S2. *Purpose*. The purpose of this standard is to decrease the likelihood that a vehicle is stolen, or accidentally set in motion.”¹²

Both intentions were firmly rooted in safety concerns. From the rule’s inception, the agency argued that this rule would reduce injuries and deaths caused by auto theft. In establishing the standard, the agency cited a Department of Justice study that 94,000 stolen cars were in accidents in 1966 and more than 18,000 of these incidents resulted in injury to one or more people. According to the report, the crash rate for stolen cars was some 200 times greater than the normal crash rate for non-stolen vehicles.¹³ This standard would clearly benefit safety, by reducing the number of stolen vehicles, the agency argued.

Again, in 1988, when the agency sought to broaden the standard to include a countermeasure to vehicle rollaway, the agency produced statistical evidence that such incidents were compromising auto safety.

That final rule discussed the safety need for transmission shift locks and noted that the agency calculated that there are “roughly 400 to 800 relevant injury producing transmission lever shifting accidents each year (based on the Agran study).” NHTSA also noted that transmission lever inadvertent actuation presents a significant safety risk and the agency has a “special obligation to reduce injuries involving children.”¹⁴

In a subsequent 1994 FMVSS 114 rulemaking, in which NHTSA proposed to amend the regulation to prevent key removal only when the shift lever or other shifting mechanism is fully placed in any designated shift position other than "park." the agency explained:

¹² April 7, 2006; 91 FR 17755; Docket 2005-22093

¹³ April 27, 1968; 33 FR 6471; Docket 1-21-No.1

¹⁴ April 5, 1988; 53 FR 11105; Docket 1-21-No. 7

“In adopting the amendment, the agency explained that a study focusing on child-injuring rollaway accidents in Orange County, California demonstrated that injuries caused by rolling vehicles posed a significant safety problem. That study uncovered nine cases of children releasing the brake or moving the transmission shift lever, or both, causing a parked vehicle to roll and injure the child operating the controls or children near the vehicle.”¹⁵

The agency reiterated this intent in the June 1995 Final Rule: “The purpose of this requirement is to prevent rollaway crashes caused by unattended children pulling the transmission lever out of park.”¹⁶

In 2006, when the agency modified the rule again to accommodate the introduction of various electronic key systems, it again affirmed the rule’s intent: “Our safety standard on theft protection specifies vehicle performance requirements intended to reduce the incidence of crashes resulting from theft and accidental rollaway of motor vehicles.”¹⁷

Regardless of how the vehicle key is constructed – be it metal or digital – the operator must physically place the transmission into “Park” to remove the key – or the transmission must automatically lock the vehicle in “Park,” if the transmission is in any other position when the vehicle is turned off. As the agency noted in the 2005 Final Rule:

“Systems using an electronic code instead of conventional key would satisfy the rollaway prevention provisions if the code remained in the vehicle until the transmission gear is locked in the “park” position.”¹⁸

Explicit in those safety-based arguments was an acknowledgement of the human factors that helped to create those hazards. In promulgating FMVSS 114, the agency dismissed manufacturers’ suggestions that a device to warn the driver that the key was still in the vehicle was unnecessary thus:

“It is, of course, the operator's responsibility to remove the key when the car is left unattended, and drivers should continue to be exhorted to take this elementary precaution. Nevertheless, many do not, and the interest of safety would be promoted by the existence of a visible or audible warning device on the car, reminding the driver when he has neglected his responsibility. This is an instance in which engineering of vehicles is more likely to have an immediate beneficial impact than a long-range process of mass education.”¹⁹

In 2005, when the agency made the last round of amendments, it again rejected the Alliance of Automobile Manufacturers argument that an audible telltale was not necessary, based on human factors:

¹⁵ Docket 1-21, Notice 12; May 14, 1994

¹⁶ Docket 1-21-Notice 13; June 7, 1995

¹⁷ Docket 2005-22093; April 7, 2006

¹⁸ Docket 2005-22093; April 7, 2006

¹⁹ April 27, 1968; 33 FR 6471; Docket 1-21-No.1

“A warning must be sufficient to catch a driver’s attention before he or she exits the vehicle without the keys. For example, a visual dashboard telltale might be insufficient to accomplish this goal. We believe that it is necessary to carefully examine the alternatives to audible warnings in order to make sure that they are effective in reducing likelihood of drivers leaving their keys in the vehicle.”

For these reasons, the rule makes two demands on key systems. One, the vehicle must be locked in park before the key is removed or, must automatically lock in place when the key is removed. Two, once the key is removed, normal activation of the vehicle’s engine or motor; and either steering, or forward self-mobility, of the vehicle, or both must be prevented.

Definition of Key

Originally, the key was defined solely according to its security function: “‘Key’ includes any other device designed and constructed to provide a method for operating a locking system which is designed and constructed to be operated by that device.”²⁰

This definition remained in place until 2005, when the agency amended FMVSS 114 to reflect the new, electronic systems. In its Final Rule, the agency clearly defined the key simply, and, again only in relation to one function. Under the current FMVSS 114 S4 definition:

“*Key means a physical device or an electronic code which, when inserted into the starting system (by physical or electronic means), enables the vehicle operator to activate the engine or motor.*”

In other words, the key is what starts the vehicle.

Under the S4 definition, the fob – which is the physical manifestation of electronically-based ignition/locking systems – constitutes the key, because without it, you can not start the vehicle. The code may be the digital realization of indents on a metal key, but it is housed in that fob. And, to extend the comparison, you cannot start a vehicle with a metal key by the indents alone, you need the entire device to make the key work. The fob delivers the code that is specific to a particular vehicle. You can not use your fob to open or operate any vehicle other than your own. You can not start the vehicle by whispering the computer code into the ignition slot. You must deliver it via the fob. It is, therefore, the vehicle key.

In many real world instances, vehicles with electronically based systems have, in essence, two keys. One is the physical fob, which delivers the electronic code to the vehicle. You must use this key to start the vehicle. (And thus, by regulation, is the actual key.) Once the fob delivers the code to the vehicle, its role as the “key” ends. To “remove” the second “key” (the electronic code), you must put the vehicle in park, turn off the engine

²⁰ April 27, 1968; 33 FR 6471; Docket 1-21-No.1

and open the driver's door, or a similar sequence involving killing the engine and putting the vehicle in park. The fob, which must be used to start the vehicle, has no role in turning off the vehicle.

The plain meaning of the text does not allow a two-part key. The key is simply what starts the vehicle and you can not separate the code from its physical housing and start a vehicle.

Interpretation Letters

The interpretation letters sketch the evolution of electronic keys and FMVSS 114 compliance. From 1992 to 2005, the agency provided guidance on several occasions on electronic key systems.

General Motors appears to be the first manufacturer to seek the agency guidance in developing an electronic lock/ignition system. In 1992, it wrote to the agency describing its new system:²¹

“This electronic key locking system would be operated by a key (an electronic code) entered and removed by the operator. When the key is entered into the locking system by the operator, a match is made with an electronic code stored in the system's memory. This match is analogous to the tumblers of a conventional lock cylinder matching the cut of a conventional key.

When a correct key match occurs, the person could then move the locking system out of the lock position to other positions such as accessory, off, on, or start, in order to activate the vehicle's engine, motor, or accessories.

With the locking system out of the lock position, the transmission can be shifted out of the "PARK" position in order to operate the vehicle. The transmission shift lever must be returned to the "PARK" position in order to place the locking system back into the lock position.

Placement of the locking system back into the lock position by the operator would automatically cause removal of the key from the system. At that time, re-entry of the correct key (electronic code) would be necessary to operate the vehicle.”²²

In its reply to GM in May of that year, NHTSA opened the door to the two-part key. It agreed that “an electronic code which is entered into a locking ignition system by the vehicle operator to permit operation of the system comes within this definition.” The agency also affirmed that GM could engineer the backend of the system, as described (“Removal of the key would occur when the locking system is placed back into the

²¹ Re: General Motors Corporation; FMVSS 114; Request for Interpretation; Stephen E. Selander -- Attorney, GM Legal Staff; February 28, 1992

²² Letter to General Motors; Paul Jackson; NHTSA; May 22, 1992

"lock" position by the operator, since the electronic code is automatically removed from the system at that time and the vehicle will not operate unless the code is reentered.") – as long as the vehicle transmission was in the Park position or automatically locked in Park when the "key" was removed.

In 2002, in interpretation letter to unnamed automakers, the agency took its basic interpretation another step.²³ Chief Counsel Jacqueline Glassman affirmed that a similar system complied with FMVSS 114 – even though, "the removal of the "Smart Key" from the running vehicle would have no effect on the vehicle's operation until the engine is stopped."

Further, even as Glassman stated that the system as described was compliant, she acknowledged the human factors problem associated with such systems:

"We observe that if the 'Smart Key' device remained in the car. e.g. in the pocket of a jacket laying on the seat, a person would need only turn the ignition switch knob to start the engine. It appears to us that, with systems of this kind, there would be, in the absence of some kind of a warning, a greater likelihood of drivers inadvertently leaving a 'Smart Key' device in the car than with a traditional key. This is because the driver must physically touch a traditional key, unlike the "Smart Key" device, as part of turning off the engine. You and/or the vehicle manufacturer may wish to consider whether there are any practicable means of reducing the possibility of drivers inadvertently leaving their 'Smart Key' devices in the car."²⁴

When narrowly construed, these interpretations make some sense. After all, a driver cannot remove a conventional key without turning off the engine and placing the vehicle in park. However, these interpretations have also allowed automakers to create a virtual key for the purposes of compliance, while telling the consumer that the key was the physical fob.

These interpretations, however, were rendered moot after April 7, 2006, when NHTSA passed a Final Rule redefining the key as that which starts the vehicle.

Testing

At least five FMVSS 114 compliance tests have been conducted since 2000 in which the vehicle used an electronic key fob. Four were conducted by General Testing Labs (2009 Hyundai Genesis; a 2009 Cadillac CTS; 2009 Lexus ES 350; and the 2009 Nissan Altima). One was conducted by Calspan (2008 Toyota Hybrid Highlander). Using the interpretations, instead of the plain text of the regulation, all of the vehicles were judged as compliant. Some of the vehicles have an immobilizer that allegedly prevents the

²³ Case 4:09-cv-03660-SBA Document15-2; Letter to Unnamed Manufacturer; NHTSA; Jacqueline Glassman; August 15, 2002

²⁴ Case 4:09-cv-03660-SBA Document15-2; Letter to Unnamed Manufacturer; NHTSA; Jacqueline Glassman; August 15, 2002

vehicle from moving if the fob is removed from the interior of the vehicle or a short distance from the exterior of the vehicle (Hyundai and Cadillac). But two of the tested vehicles have “two-part” keys, in which the fob is used to start the vehicle, but plays no role in turning the vehicle off.

Of the five tests, the Altima is the only one to include the language: “The physical key device can be removed from vehicle, but the stored key code stays in memory until vehicle is in park, turned off, and the door is opened.”²⁵

As noted in the GTL report of the 2009 Altima:

“The physical key device can be removed from vehicle, but the stored key code stays in memory until vehicle is in park, turned off, and the door is opened.”²⁶

The Hyundai Genesis is said to have a similar system:

“The electronic key is inserted into the starting system when (1) The key device is inside the vehicle and (2) The operator pushes the start/stop button.²⁷ The key is removed from the starting system the transmission is in “park” position; the engine is shut off; and a door is opened (in that order). In fact, the testers took special note that the fob was not used to turn off the vehicle.: “If key device is removed from vehicle while engine is running, steering and driving are unaffected until the first time the engine is turned off, at which time the engine cannot be re-started and steering locks.”²⁸

We examined a 2006 Murano with a CVT, a 2009 Murano and a 2010 Lexus RX350. And we demonstrated to our satisfaction that one can put these vehicles in neutral, turn off the engine, exit the vehicle with the fob and move a significant distance without the vehicle’s automatically locking the transmission into Park. In some scenarios, the vehicle emitted an audio telltale to alert the driver when the key was not in the vehicle and the transmission was not in Park. Nonetheless, the driver was able to remove the key with the vehicle in neutral and it did not automatically lock in Park. The driver could start the vehicle, and hand the key to someone else, who could move a considerable distance from the vehicle, without it detecting the absence of the key.

We believe that these are clear violations of S5.2.1, which states:

“Except as specified in S5.2.3, the starting system required by S5.1 *must prevent key removal when tested according to the procedures in S6, unless the*

²⁵ Nissan Motor Co. Ltd. 2009 Nissan Altima, Passenger Car NHTSA No. C95202; FMVSS 114 Compliance Test; General Testing Laboratories; July 20, 2009

²⁶ Nissan Motor Co. Ltd. 2009 Nissan Altima, Passenger Car NHTSA No. C95202; FMVSS 114 Compliance Test; General Testing Laboratories; July 20, 2009

²⁷ Safety Compliance Testing For FMVSS No. 114 Theft Protection Hyundai Motor Company; 2009 Hyundai Genesis, General Testing Laboratories; July 7, 2009

²⁸ Safety Compliance Testing For FMVSS No. 114 Theft Protection Hyundai Motor Company; 2009 Hyundai Genesis, General Testing Laboratories; July 7, 2009

transmission or gear selection control is locked in “park” or becomes locked in “park” as a direct result of key removal.”

Similarly, an examination of the Lexus RX identified scenarios that appear to violate FMVSS 114. First, the engine can be shut off and the vehicle can be exited, the key removed, and the transmission can be left in a gear other than Park. This vehicle can also be driven without obstacle when the key is not in the vehicle. A dash warning – “Key Not Detected” – illuminates when the vehicle is being driven and the key is not present in the vehicle. It is also interesting to note that the key can be removed from the vehicle and the “Key Not Detected” telltale will NOT illuminate if the driver remains in the vehicle and the driver’s door is not opened. Thus, if the key were removed by a passenger or handed out through a window (intentionally or inadvertently) and the driver remains in place, the driver will have no indication that the key has been removed until he or she exits the vehicle. It appears that Toyota’s design for the electronic two-part key removes the “key” based on the driver’s door opening rather than the actual removal of the key.

Consumer Confusion

Under the current scenarios, consumers may inadvertently leave an unattended vehicle running – vulnerable to theft, rollaway crashes and carbon monoxide poisoning – because they regard the fob as the key. Why? Manufacturers refer to the devices in their owner’s manuals as keys and they do not appear to meet the intent of FMVSS 114 which is intended to prevent these hazards.

For example, throughout the 2009 Murano owner’s manual, the fob is called the “Intelligent Key,” and the manual does not distinguish or separate the code from the fob. Under the heading Key Reminder Chime, Nissan states: “A chime will sound if the driver side door is opened while the ignition switch is pushed to the ACC position or pushed to the OFF or LOCK position with the key left in the key port. Make sure the ignition switch is pushed to the OFF position, and take the Intelligent Key with you when leaving the vehicle.”²⁹

Toyota calls its fob a Smart Key throughout the 2009 Venza owner’s manual. It includes an illustration of the fob under the heading: “The following keys are provided with the vehicle.”³⁰ Also, as noted above, Toyota’s dash warning on the 2010 RX indicates that “Key Not Detected” when the key fob is removed from the vehicle and the vehicle is running. There is nothing to prevent the vehicle from being operated when the key is not detected – and the dash indicator tells the operator that the key isn’t in the vehicle (which they are associating with the fob).

In the Genesis owner’s manual, Hyundai shows a picture of its fob, also dubbed a Smart Key and says: “With a smart key, you can lock or unlock a door and even start the engine

²⁹ Murano Owner’s Manual, Nissan; 2009

³⁰ 2009 Venza Owners Manual, Toyota Motor Corporation

without inserting the key. The functions of the buttons on a smart key are similar to the remote keyless entry.”³¹

In plain language to consumers, automakers consistently call these fobs, keys. Consumers, in turn, regard the fob as the key.

This conjoining of the fob and the code, however, disappears at the time of compliance. If a fob, or some other electronic device, starts the vehicle, it follows that the fob must have a role in turning off the vehicle and ensuring that it is locked in park, as required by the regulation. Allowing manufacturers an erroneous – and as far as the consumer is aware – secret definition of the key that allows drivers to mistakenly believe that when they exit the vehicle with the fob, the engine is off and the vehicle transmission locked in the Park position – is antithetical to the spirit and letter of FMVSS 114.

³¹ Genesis Coupe Owner’s Manual; Hyundai; 2008