

## Black box on board

### New standards for automotive big brother take effect in 2012

Until a few weeks ago, Florida attorney Scott Weires was eagerly awaiting delivery of his new Nissan GT-R. But in late August, Weires canceled his order--not because he doesn't want the \$82,000 Super Silver supercar he has lusted for since it was first unveiled as a concept seven years ago. Weires says he's uncomfortable with the fact that every GT-R has a recording device strapped to its chassis, an electronic black box that monitors how each owner drives his or her GT-R.



Similar so-called black boxes, or electronic data recorders (EDRs), are now standard equipment in a majority of passenger cars and light-duty trucks sold in the United States. Wired into airbag sensors, yaw and stability sensors, antilock brake and traction controllers, electronic throttle controls and engine monitors, EDRs soon will collect a bewildering amount of data in keeping with pending federal regulations aimed at standardizing information available from the devices. Those regulations, finalized earlier this year and set to go into effect Sept. 1, 2012 (on 2013-model-year vehicles), specify exactly how much and what types of information must be collected and saved electronically in the event of a crash or airbag deployment.

Though the U.S. Department of Transportation requirements don't mandate installation of EDRs on every car, truck and sport-utility vehicle in America, the rules do require compliance with the guidelines if the vehicle is fitted with an EDR by the manufacturer. In 2006, the National Highway Traffic Safety Administration reported that 64 percent of manufacturers were equipping vehicles with EDRs, a number the agency says hasn't radically changed. But an informal survey indicates that most automakers--with some notable exceptions--are embracing the devices. And that number seems to have grown in the four years since *AutoWeek* last investigated the state of automotive black boxes ("Under the Hood, with Big Brother," Nov. 8, 2004).

As a result, most of today's late-model vehicles are equipped with EDRs, ostensibly to help manufacturers engineer better safety equipment in vehicles by analyzing data collected in crashes. In reality, what started as a simple tool for safety engineers is now a key component that provides data to protect companies from safety-related lawsuits and to assist law-enforcement officials investigating car accidents.

While an EDR may seem onerous enough to those who love a spirited drive in a sports car, it was another kind of black box, a vehicle status data recorder (VSDR), that put Weires at odds with Nissan and his GT-R.

Unlike an EDR, which activates only when sensors indicate that a crash is imminent or has occurred, Nissan's VSDR runs constantly, collecting information such as wheel and engine speed. The device, thought to be a first in the automotive industry, stores more than a few days' but less than a week's worth of data on the vehicle's operation, Nissan says. The VSDR cannot be deactivated.

In technical information provided to buyers, Nissan says the VSDR does not record sounds or images but "always records and stores vehicle-operating data between periodic inspections, which can assist and be used for servicing, diagnosing and performing warranty repairs."

"It's always running," said Ed Hibma, senior manager for technical support with Nissan North America.

Nissan says the VSDR isn't intended to spy on unsuspecting GT-R drivers but is needed to help mechanics and engineers monitor the performance of various onboard systems in the highly advanced car.

It's that part about "warranty repairs" that has Weires worried. He says data collected by the VSDR could allow Nissan arbitrarily to invalidate all or part of the car's warranty. For instance, Nissan specifically warns owners that they could void warranty protection by running a car with its vehicle dynamic control (VDC), governing traction and stability, turned off. (In fairness to Nissan, the owner's manual does allow owners to defeat VDC when wheelspin is needed to rock a car that's stuck in snow or mud.)

"These warranty issues are a little unsettling," said Weires. "That was a huge part of my decision."

Nissan officials are quick to clarify that VSDR data would be used only as a secondary way to verify that a car had been abused or raced. And only the damaged part might not be covered by warranty; a record of hard use wouldn't invalidate the warranty for the entire car.

"We don't say you can't drive your car in high-performance situations," said Hibma. "We do realize that some customers will take their car to the track for all-out driving. But racing is different."

Ironically, Nissan and other Japanese automakers now rapidly implementing EDR technology had been cautious and slow to adopt the devices a few years ago. Four years ago, Nissan expressed no interest in EDRs or other recording devices, using sensors merely to deploy airbags and to record airbag and seatbelt status in a crash. At that time, no speed or g-force detail was preserved by any recording device on any Nissan vehicle.

Today, every 2009 Nissan sold in the United States is fitted with an EDR, and along with nearly every automaker selling EDR-equipped vehicles, Nissan re-cords or will be able to record the 30 data points that the federal government will require of all EDR-equipped vehicles by 2012.

U.S. automakers remain at the forefront of EDR proliferation, which isn't surprising given that General Motors pioneered EDRs in race cars in the 1970s and '80s and installed the first rudimentary black-box recorders in passenger cars in its 2000-model-year vehicles. GM vehicles equipped with OnStar tap into onboard black boxes to diagnose operating systems. With the owner's permission, OnStar will use that data to notify the owner of pending service needs.

German makers tend to avoid EDRs, partly because strict German privacy laws limit the use of such recording devices and partly because the companies tend to view EDRs as having questionable value for customers.

"We have not viewed that feature as necessary or beneficial for the brand or our customers," explained Rob Moran, a spokesman for the U.S. arm of German automaker Mercedes-Benz.

Cost-conscious Korean companies such as Kia and Hyundai haven't installed EDRs, instead using sensors to deploy airbags but skipping the added cost and complexity of EDRs.

What's the state of the art? EDRs in today's cars begin recording data as early as five seconds before a crash, and they save information such as vehicle speed, throttle position, engine speed, brake action, whether stability control was on or off, steering input and whether antilock brakes worked. At the time of a crash and immediately after, other data are added, including change in vehicle velocity, seatbelt use, airbag status and how the airbags performed in the accident. Some data also are recorded for as long as five seconds after an initial crash, including secondary impacts and vehicle roll angle.

All data recorded by the EDR technically are owned by the vehicle owner or lessee, but every manufacturer has adopted a variation of a policy spelled out in most owner's manuals that says data will be released only with the permission of the owner or under court order to third parties and law-enforcement officers. Safety agencies also may have access to the data with vehicle owners' permission.

Although NHTSA's policymaking led to an industry standard for EDR data collection, which will allow far wider use of the gathered information, the agency did nothing to place additional restraints on the use of the information. Instead, the agency cited federal privacy statutes that it says will guide its use of the data, preventing NHTSA from releasing

information that could identify specific individuals involved in a crash.

But Jim Baxter, president of the watchdog National Motorists Association, noted that this does nothing to constrain law-enforcement accident investigators, private eyes and other interested parties-such as manufacturers and insurance companies-from getting a court order to download the information.

"NHTSA did issue a rule that the units must generate specific information," Baxter said, "but that doesn't prevent them from collecting more information. There's pretty much no limit on what they can collect."

Baxter said his group's efforts to push federal legislation to protect motorists against EDRs fell on deaf ears, especially now, with Americans more than willing to give up privacy in favor of safety after Sept. 11, 2001. "The general mentality is, 'If I get some benefit, here's my information,'" Baxter said. "Obviously, some quarters object, but I don't see widespread resistance to it."

Baxter said he believes objections won't grow until tiny RFIDs--radio frequency identification devices--are more prevalent and are used by private or public entities to monitor individual travel. RFIDs could theoretically allow a parent to track a teen, an insurer to watch for high-risk driving or law-enforcement officials to track a person driving from point A to point B, compute the speed and issue a speeding ticket without so much as starting a patrol car or turning on a radar gun.

"When people can't go down to the grocery store without getting a citation, then we'll see a reaction," Baxter predicted.

Before that brave new world arrives, auto companies will have to quell the immediate fears of customers such as Weires, who would love to be driving a new GT-R right now.

Weires says he'll wait and see how Nissan handles the data recorded by the GT-R black box, and then maybe he'll get back in line for his dream car. Maybe.