Black Box (ECM) and ELD Evidence in Semi-Truck Crash Cases

When a tractor-trailer crash causes serious injuries, the most detailed account of the final seconds before impact is often stored inside the truck itself. People call it the black box, but that label covers several different systems. For a truck accident lawyer, knowing which device keeps which data shapes the first evidence requests in a case.

Which systems make up the black box on a commercial truck

Most heavy trucks have an engine control module (ECM), a computer that manages the engine. Depending on the manufacturer and its settings, the ECM may store data such as vehicle speed, brake application, throttle position and cruise control status around a sudden deceleration or a hard stop. NHTSA describes an event data recorder (EDR) as a device that records technical vehicle and occupant information for a brief period, measured in seconds rather than minutes, surrounding a crash. NHTSA's EDR rule in 49 CFR Part 563 covers specified light vehicles, not heavy tractor-trailers, so what a big rig records depends on the equipment installed in that particular truck.

Why the ELD tells a different story

An electronic logging device (ELD) serves a different purpose. Under the ELD rule, which Congress mandated through MAP-21, the device synchronizes with the engine to record driving time for the hours-of-service rules in 49 CFR Part 395. An ELD also logs location, engine hours and vehicle miles at set intervals and at each change in duty status. This makes it valuable for rebuilding the timeline of the trip, from the moment the driver went on duty to how long the driver had been behind the wheel. It is not designed to capture braking or speed in the seconds before a collision, which is why a truck accident attorney usually asks for both.

Other electronic records

Many trucking companies also use telematics platforms that report GPS position and speed, along with hard-braking alerts, to dispatchers in near real time. Road-facing and driver-facing dash cameras can record the moments before impact, and some save a clip on their own when they detect a sudden stop. Collision mitigation systems and speed limiters may keep their own event records. Cell phone records can matter too, because 49 CFR 392.80 and 392.82 restrict texting and hand-held phone use by commercial drivers.

The risk of losing electronic evidence

Electronic evidence is fragile. Some ECM systems store a limited number of events and can overwrite older entries after the truck returns to the road. Video may be kept for only days or weeks under the company's own retention settings. Federal rules require records of duty status and supporting documents to be kept for six months under 49 CFR 395.8, but that is a floor for routine recordkeeping and it does not answer what must be kept once a claim is foreseeable.

That is why a truck accident lawyer often sends a preservation letter within days, asking the trucking company to hold the ECM, the ELD **truck accident claim** records, camera footage, telematics data and the truck itself. A proper download uses manufacturer software and a documented chain of custody, ideally with

both sides present. If evidence is destroyed after notice, courts in many states can impose spoliation sanctions, such as a jury instruction about the missing data.

Reading the data in context

Raw data seldom explains a crash on its own. A reconstruction engineer lines up ECM speed and braking records against scene measurements, vehicle damage, tire marks and the crash report. Sensor clocks can drift, and wheel speed can differ from road speed during a skid. A stored fault code may also mean a reading is unreliable. A commercial truck accident lawyer will usually ask for the full download, not a summary printout, so the other side's reading of the data can be checked.

General information only

Data practices differ by manufacturer, model year and fleet settings, so no article can say what a specific truck recorded. A truck accident lawyer reviewing a specific claim has to look at the actual equipment and the actual records. This page is general legal information, not legal advice, and it does not predict the outcome of any claim.