Black Box (ECM) and ELD Evidence in Tractor-Trailer Crash Claims

After a serious semi-truck crash, the most precise record of the last seconds before impact often sits inside the truck itself. Most people call it the black box, but that label covers several different systems. For an 18-wheeler accident lawyer, knowing which device holds which record 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 runs the engine. Depending on the make and configuration, 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 applies to 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

The electronic logging device (ELD) has a different job. 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. The ELD also records location, engine hours and vehicle miles at set intervals and at each change in duty local truck accident attorney 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 was not built to capture braking or speed in the final seconds before a collision, so a truck crash attorney will usually request both.

Other electronic sources

Many trucking companies also use telematics platforms that report GPS position and speed, along with hard-braking alerts, to dispatchers almost as they happen. Road-facing and driver-facing dash cameras can record the moments before impact, and some systems save a clip automatically after a sudden stop. Collision mitigation systems and speed limiters can keep separate event logs. Cell phone records can matter too, since 49 CFR 392.80 and 392.82 prohibit texting and hand-held phone use by commercial drivers.

Why the data can disappear

Electronic records are easy to lose. Some ECM systems store a limited number of events and can overwrite older entries once the truck goes back into service. 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 does not answer what must be kept once a claim is foreseeable.

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

both sides present. If evidence is destroyed after notice, courts in many states can impose spoliation sanctions, including an instruction allowing the jury to draw an inference from the missing data.

Reading the data in context

Raw data seldom explains a crash on its own. An accident reconstructionist compares ECM speed and braking records with 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 can also signal that a reading is unreliable. A truck crash lawyer will usually want the full download rather than a summary printout, so the other side's reading of the data can be checked.

A note on these general rules

Data practices differ by manufacturer, model year and fleet settings, so no article can say what a specific truck recorded. A truck accident lawyer handling 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.