

# Tractor ECM Downloads - “The Good, the Bad and the Ugly”

As forensic engineers and accident reconstructionists in the trucking industry, we are frequently called upon to secure Electronic Control Module data from vehicles involved in over-the-road accidents. The ECM, or “black box” as it is often referred to, is mounted on the tractor's engine for the primary purpose of monitoring performance and maintenance while collecting data from a variety of sensors on the vehicle such as speed, engine RPM, oil pressure and level, fuel consumption, etc.

Special equipment and procedures are necessary to download any data in a secure fashion, so that the data can be made available for analysis and interpretation.

## “The Good”

- Information such as vehicle speed, braking status, clutch, etc. may or may not be recorded at the time of the accident and information may be recorded only if the settings are initialized properly.
- In some cases the data may be the definitive and pivotal evidence needed.

## “The Bad”

- If removed from the engine an ECM may need to be attached to an exemplar vehicle or connected to sensor emulators to collect any data.
- Driving the truck after an accident may overwrite or destroy the data. Wherever possible, have the truck towed and stored until the data can be downloaded.
- If the data is not collected in a timely fashion, or the vehicle is placed back into service, the data may be overwritten or lost.
- Commercial truck and engine dealers who may have the ability to download the ECM might not have the expertise to capture data in a form that is useful for accident reconstruction; and after that attempt at data collection, the unit may be altered and the raw data corrupted.

## “The Ugly”

- If done improperly, the data may be corrupted or lost.
- Raw data loss or corruption may lead to legal complications, such as evidentiary spoliation or weakening of the expert's testimony.
- Failure to implement the appropriate programming of the ECM when a vehicle enters the fleet, and to maintain it properly over the life of the vehicle, can cast a long shadow on safety and maintenance policies as they may pertain to operator liability. Furthermore, the poor quality or lack of data may become a point of documented liability for negligence.

## “Takeaways”

- Trucking firms should make a priority of programming and initializing their vehicles when they are new to the fleet.
- Properly programmed ECM's may provide the best quality data of interest, with the least uncertainty or error imbedded within it. Optimum fuel economy is an added benefit.
- Over time, engine performance may decrease and the ECM should be reprogrammed routinely to insure accuracy.
- Enhanced performance and better fuel mileage are not the only benefits.
- A poorly performing or maintained truck could raise questions about the safety of the vehicle or the veracity of its maintenance profile.
- Collect any available data properly and as soon as possible.

