

**MCSAC Task 11-04: Electronic On-Board Recorders (EOBR) Communications  
Protocols, Security, Interfaces, and Display of Hours-of-Service Data During  
Driver/Vehicle Inspections and Safety Investigations**

**Discussion Notes from August 2, 2011 Subcommittee Meeting**

**Hours of service of drivers**

§ 395.16 Electronic on-board recording devices.

(a) **Applicability and authority to use.** This section applies to electronic on-board recording devices (EOBRs) used to record the driver's hours of service as specified by part 395. Motor carriers subject to a remedial directive to install, use and maintain EOBRs, issued in accordance with 49 CFR part 385, subpart J, must comply with this section.

(1) A motor carrier may require a driver to use an EOBR to record the driver's hours of service in lieu of complying with the requirements of §395.8 of this part. For commercial motor vehicles manufactured after June 4, 2012, any electronic device installed in a CMV by a manufacturer or motor carrier to record hours of service must meet the requirements of this section.

**Comment [21]:** EOBR implementation subcommittee recommends that FMCSA provide further clarification.

(2) Every driver required by a motor carrier to use an EOBR shall use such device to record the driver's hours of service.

(b) **Information to be recorded.** An EOBR must record the following information:

(1) Name of driver and any co-driver(s), and corresponding driver identification information (such as a user ID and password). However, the name of the driver and any co-driver is not required to be transmitted as part of the downloaded file during a roadside inspection.

**Comment [22]:** Law enforcement needs to have name identifying information for roadside inspection, to connect EOBR to the driver. Verify regulatory requirements for protection of personal identifying information. See NIST.

(2) Duty status.

(3) Date and time.

(4) Location of CMV.

(5) Distance traveled.

(6) Name and USDOT Number of motor carrier.

(7) 24-hour period starting time ( e.g., midnight, 9 a.m., noon, 3 p.m.).

(8) The multiday basis (7 or 8 days) used by the motor carrier to compute cumulative duty hours and driving time.

(9) Hours in each duty status for the 24-hour period, and total hours.

(10) Truck or tractor and trailer number.

(11) Shipping document number(s), or name of shipper and commodity.

(c) **Duty status categories.** An EOBR must use the following duty statuses:

(1) “Off duty” or “OFF”.

(a) Personal conveyance.

(2) “ Sleeper berth” or “SB”, to be used only if sleeper berth is used.

(3) “Driving” or “D”.

(4) “On-duty not driving” or “ON”.

(d) **Duty status defaults.** (1) An EOBR must automatically record driving time. ~~If the CMV is being used as a personal conveyance, the driver must affirmatively enter an annotation before the CMV begins to move.~~

(2) When the CMV is stationary for 5 minutes or more, the EOBR must default to on-duty not driving, and the driver must enter the proper duty status.

(3) An EOBR must record the results of power-on self-tests and diagnostic error codes.

(e) **Date and time.** (1) The date and time must be recorded on the EOBR output record as specified under paragraph (i) of this section at each change of duty status, and at intervals of no greater than 60 minutes when the CMV is in motion. The date and time must be displayed on the EOBR's visual output device.

(2) The date and time must be obtained, transmitted, and recorded in such a way that it cannot be altered by a motor carrier, driver, or third party.

(3) The driver's duty status record must be prepared, maintained, and submitted using the time standard in effect at the driver's home terminal, for a 24-hour period beginning with the time specified by the motor carrier for that driver's home terminal.

(4) The time must be coordinated to UTC and the absolute deviation shall not exceed 10 minutes at any time.

**Comment [23]:** Definition needed.

**Comment [24]:** Other duty statuses may exist (e.g., Oil field well site).

**Comment [25]:** Technical specification for consistency: Not its own line - Within line 1 include notation with start and end for personal conveyance event along with odometer.

**Comment [26]:** Allow yard movement mileage tolerance.

Use 2 miles based upon prior precedent and coverage for most yards.

Remain in current duty status (typically on-duty not driving) when the movement begins for time accrued during yard moves.

Miles don't count towards drive miles; must have 5 minute stop time without the interruption before eligible for another 2 mile exception.

If you go beyond the 2 miles or the 5 minutes, the movement period starts at the very beginning of the two miles or the 5 minutes, not the end. You do not get 2 free miles.

**Comment [27]:** Apply same rule for other incidental movement.

**Comment [28]:** FMCSA should clarify guidance.

(f) **Location.** (1) Information used to determine the location of the CMV must be derived from a source not subject to alteration by the motor carrier or driver.

(2) The location description for the duty status change, and for intervening intervals while the CMV is in motion, must be sufficiently precise to enable Federal, State, and local enforcement personnel to quickly determine the vehicle's geographic location on a standard map or road atlas. The term “sufficiently precise,” for purposes of this paragraph means the nearest city, town or village.

(3) When the CMV is in motion, location and time must be recorded at intervals no greater than 60 minutes. This recorded information must be capable of being made available in an output file format as specified in appendix A to this part, but does not need to be displayed on the EOBR's visual output device.

(4) For each change of duty status ( e.g., the place and time of reporting for work, starting to drive, on-duty not driving, and where released from work), the name of the nearest city, town, or village, with State abbreviation, must be recorded.

(5) The EOBR must record location names using codes derived from satellite or terrestrial sources, or a combination of these. The location codes must correspond, at a minimum, to ANSI INCITS 446–2008, “American National Standard for Information Technology—Identifying Attributes for Named Physical and Cultural Geographic Features (Except Roads and Highways) of the United States, Its Territories, Outlying Areas, and Freely Associated Areas and the Waters of the Same to the Limit of the Twelve-Mile Statutory Zone (10/28/2008),” where “GNIS Feature Class” = “Populated Place” (incorporated by reference, see §395.18). (For further information, see also the Geographic Names Information System (GNIS) at <http://geonames.usgs.gov/domestic/index.html> ).

(g) **Distance traveled.** (1) Distance traveled must use units of miles or kilometers driving during each on-duty driving period and total for each 24-hour period for each driver operating the CMV.

(2) If the EOBR records units of distance in kilometers, it must provide a means to display the equivalent distance in miles.

(3) Distance traveled information obtained from a source internal to the CMV must be accurate to the distance traveled as measured by the CMV's odometer or other electronic device for recording mileage.

(h) **Review of information by driver.** (1) The EOBR must allow for the driver's review of each day's record before the driver submits the record to the motor carrier.

(2) The driver must review the information contained in the EOBR record and affirmatively note the review before submitting the record to the motor carrier.

**Comment [29]:**

The subcommittee recommends:

1. Location position should be derived from GPS or other location determination method with similar accuracy.
2. Location should be noted with each duty status change and on an hourly basis when the vehicle is moving in accordance with FMCSA 395.16.
3. EOBR should display location to driver on driver display or print-out format in text description format. Location should be derived from a database that contains all cities, towns and villages with a population of 5,000 or greater based on combined GNIS database with census data added.
  - a. Census data overlaid onto GNIS database.
  - b. Should further clarify location description to driver on display (distance, direction to nearest 5,000 pop. city).
4. EOBR should pass Lat/Long coordinate location to roadside enforcement via export methods defined.

*Additional, subcommittee comment:*

*GNIS database version/year should be noted, and timeframe for update/refresh of GNIS database version. Regulation should require periodic GNIS database update, either via wireless connection or locally.*

(3) The driver may annotate only non-driving-status periods and the use of a CMV as a personal conveyance as described in paragraph (d)(1) of this section. The driver must electronically confirm his or her intention to make any annotations. The annotation must not overwrite the original record.

(4) If the driver makes a written entry on a hardcopy output of an EOBR relating to his or her duty status, the entries must be legible and in the driver's own handwriting.

(i) **Information reporting requirements.** (1) An EOBR must make it possible for authorized Federal, State, or local officials to immediately check the status of a driver's hours of service.

(2) An EOBR must produce, upon demand, a driver's hours-of-service record in either electronic or printed form. It must also produce a digital file in the format described in appendix A to this part. The record must show the time and sequence of duty status changes including the driver's starting time at the beginning of each day. As an alternative, the EOBR must be able to provide a driver's hours-of-service record as described in paragraph (i)(6) of this section.

(3) This information may be used in conjunction with handwritten or printed records of duty status for the previous 7 days.

(4) Hours-of-service information must be made accessible to authorized Federal, State, or local safety assurance officials for their review without requiring the official to enter in ~~or upon~~ the CMV. The output record must conform to the file format specified in appendix A to this part.

(5) The driver must have in his or her possession records of duty status for the previous 7 consecutive days available for inspection while on duty. These records must consist of information stored in and retrievable from the EOBR, handwritten records, records available from motor carriers' support systems, other printed records, or any combination of these. Electronic records must be capable of one-way transfer through wired and wireless methods to portable computers used by roadside safety assurance officials and must provide files in the format specified in Appendix A to this part. Wired communication information interchange methods must comply with the "Universal Serial Bus Specification (Revision 2.0) incorporated by reference, see §395.18) and additional specifications in appendix A, paragraph 2.2 to this part. Wireless communication information interchange methods must comply with the requirements of the 802.11g–2003 standard as defined in the 802.11–2007 base standard "IEEE Standard for Information Technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements: Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications" (IEEE Std. 802.11–2007) (incorporated by reference, see §395.18), or CMRS.

**Comment [210]:**

The subcommittee recommends:

- (1) Defining the limit of personal conveyance to 50 actual miles.
- (2) Changing the definition of personal conveyance to allow for operation of laden or unladen vehicles.

**Comment [211]:**

Recommendations:

- (1) Third party development of security protocols with consideration of appropriate NIST standards, for telematics and peer to peer data exchange involving EOBRs. Expediently resolving the security concerns with a peer to peer transmission of the data via USB download, wireless data transmission, and/or barcode scanner while accepting the telematic application solutions as an alternative when enforcement and carriers have these capabilities.
- (2) Enforcement resources need to be defined, quantified, funded and incentivized through MCSAP funding so that enforcement's deployment and adoption of the necessary technology parallels the industries deployment of EOBRs.

Short term options (3 - 4 years):

Long term options:

(6) Support systems used in conjunction with EOBRs at a driver's home terminal or the motor carrier's principal place of business must be capable of providing authorized Federal, State, or local officials with summaries of an individual driver's hours of service records, including the information specified in §395.8(d). The support systems must also provide information concerning on-board system sensor failures and identification of amended and edited data. Support systems must provide a file in the format specified in appendix A to this part. The system must also be able to produce a copy of files on portable storage media (CD–RW, USB 2.0 drive) upon request of authorized safety assurance officials. The support system may be maintained by a third-party service provider on behalf of the motor carrier.

(j) **Driver identification.** For the driver to log into the EOBR, the EOBR must require the driver to enter information (such as a user ID and password) that identifies the driver or to provide other information (such as smart cards, biometrics) that identifies the driver.

(k) **Availability of records of duty status.** (1) An EOBR must be capable of producing duty status records for the current day and the previous 7 days from either the information stored in and retrievable from the EOBR or motor carrier support system records, or any combination of these.

(2) When a driver is able to produce an electronic record upon demand of an authorized officer, but the enforcement officer is not able to receive an electronic file, view the electronic display or system printout, or receive an e-mail or fax, a driver must produce the record of duty status that completely and accurately reflects the original electronic record.

(3) If an EOBR fails, the driver must do the following:

(i) Note the failure of the EOBR and inform the motor carrier as early as practicable but within 2 days.

(ii) Reconstruct the record of duty status for the current day and the previous 7 days, less any days for which the driver has records.

(iii) Continue to prepare a handwritten record of all subsequent duty status until the device is again operational.

(iv) A brief (less than 5 minute) loss of connectivity between the EOBR and a location-tracking system or the motor carriers' support system is not considered an EOBR failure for the purpose of this section.

(l) **On-board information.** Each commercial motor vehicle must have onboard the commercial motor vehicle an information packet containing the following items:

(1) An instruction sheet describing how data may be stored and retrieved from the EOBR.

**Comment [212]:** Look to revised appendix A for changes to EOBR failure matrix.

(2) A supply of blank driver's records of duty status graph-grids sufficient to record the driver's duty status and other related information for the duration of the current trip.

(m) **Submission of driver's record of duty status.** (1) The driver must submit electronically, to the employing motor carrier, each record of the driver's duty status.

(2) For motor carriers not subject to the remedies provisions of part 385 subpart J of this chapter, each record must be submitted within 13 days of its completion.

(3) For motor carriers subject to the remedies provisions of part 385 subpart J of this chapter, each record must be submitted within 3 days of its completion.

(4) The driver must review and verify that all entries are accurate prior to submission to the employing motor carrier.

(5) The submission of the record of duty status certifies that all entries made by the driver are true and correct.

(n) **EOBR display requirements.** An EOBR must have the capability of displaying all of the following information:

(1) The driver's name and EOBR login ID number on all EOBR records associated with that driver, including records in which the driver serves as a co-driver.

(2) The driver's total hours of driving during each driving period and the current duty day.

(3) The total hours on duty for the current duty day.

(4) Total miles or kilometers of driving during each driving period and the current duty day.

(5) Total hours on duty and driving time for the prior 7-consecutive-day period, including the current duty day.

(6) Total hours on duty and driving time for the prior 8-consecutive-day period, including the current duty day.

(7) The sequence of duty status for each day, and the time of day and location for each change of duty status, for each driver using the device.

(8) EOBR serial number or other identification, and identification number(s) of vehicle(s) operated that day.

(9) Remarks, including fueling, waypoints, loading and unloading times, unusual situations, or violations.

**Comment [213]:** Consider standard display screen format, including different colored screens. This should be considered in coordination with the certification and security issues.

(10) Driver's override of an automated duty status change to driving if using the vehicle for personal conveyance ~~or for yard movement.~~

~~(11) The EOBR may record other data as the motor carrier deems appropriate, including the date and time of crossing a State line for purposes of fuel tax reporting.~~

(o) **Performance of recorders.** A motor carrier that uses an EOBR for recording a driver's records of duty status instead of the handwritten record must ensure the EOBR meets the following requirements:

**Comment [214]:** Insert reference to sensor failure matrix in Appendix A.

(1) The EOBR must permit the driver to enter information into the EOBR only when the commercial motor vehicle is at rest.

(2) The EOBR and associated support systems must not permit alteration or erasure of the original information collected concerning the driver's hours of service, or alteration of the source data streams used to provide that information.

(3) The EOBR must be able to perform a power-on self-test, as well as a self-test at any point upon request of an authorized safety assurance official. The EOBR must provide an audible and visible signal as to its functional status. It must record the outcome of the self-test and its functional status as a diagnostic event record in conformance with appendix A to this part.

(4) The EOBR must, to the extent the information is available, provide an **brief** audible and **continuous** visible signal to the driver at least 30 minutes in advance of reaching the driving time limit and the on-duty limit for the 24-hour period.

(5) The EOBR must be able to track total weekly on-duty and driving hours over a 7- or 8-day consecutive period. The EOBR must be able to warn a driver at least 30 minutes in advance of reaching the weekly duty-/driving-hour limitation.

~~(6) The EOBR must warn the driver via an audible and visible signal that the device has ceased to function. "Ceasing to function" for the purpose of this paragraph does not include brief losses of communications signals during such time as, but not limited to, when the vehicle is traveling through a tunnel.~~

(7) The EOBR must record a code corresponding to the reason it has ceased to function and the date and time of that event.

(8) The audible signal must be capable of being heard and discerned by the driver when seated in the normal driving position, whether the CMV is in motion or parked with the engine operating. The visual signal must be visible to the driver when the driver is seated in the normal driving position.

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(9) The EOBR must be capable of recording separately each driver's duty status when there is a multiple-driver operation.

(10) The EOBR device/system must identify sensor failures and edited and annotated data when downloaded or reproduced in printed form.

(11) The EOBR device/system must identify annotations made to all records, the date and time the annotations were made, and the identity of the person making them.

(12) If a driver or any other person annotates a record in an EOBR or an EOBR support system, the annotation must not overwrite the original contents of the record.

(13) The EOBR must fulfill the security requirements described in the Standard(s) XXX and/or specification(s).

(p) **Motor carrier requirements.** (1) The motor carrier must not alter or erase, or permit or require alteration or erasure of, the original information collected concerning the driver's hours of service, the source data streams used to provide that information, or information contained in its EOBR support systems that use the original information and source data streams.

(2) The motor carrier must ensure the EOBR is calibrated, ~~and maintained, and~~ recalibrated in accordance with the manufacturer's specifications and/or support plan; the motor carrier must retain records of these activities.

(3) The motor carrier's drivers and other personnel reviewing and using EOBRs and the information derived from them must be adequately trained regarding the proper operation of the device.

(4) The motor carrier must maintain a second copy (back-up copy) of the electronic hours-of-service files, by month, on a physical device different from that on which the original data are stored.

(5) The motor carrier must review the EOBR records of its drivers for compliance with part 395.

(6) If the motor carrier receives or discovers information concerning the failures that require the driver to complete a paper log of an EOBR, the carrier must obtain and retain a copy of that paper log in accordance with the hours-of-service regulations, document the failure in the hours of service record for that driver.

(q) **Manufacturer's self-certification.** (1) The EOBR and EOBR support systems must be certified by the manufacturer as evidence that they have been sufficiently tested to meet the requirements of §395.16 and appendix A to this part under the conditions in which they would be used.

**Comment [215]:** The subcommittee made a recommendation to immediately seek out a third party consultant to prepare detailed certification criteria, describing specific standards and a proposed process. TBD based on the third-party review.



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(2) The ~~exterior faceplate of the~~ EOBR must display the text “USDOT-EOBR” on the inspection display or print out ~~be marked by the manufacturer with the text “USDOT-EOBR”~~ as evidence that the device has been tested and certified as meeting the performance requirements of §395.16 and appendix A to this part.

**Comment [216]:** Some members of the subcommittee recommend adding:

(r) Retention of EOBR Hours of Service(HOS) data / records by Enforcement

(1)If no violations are detected during a roadside inspection, HOS data/records will be deleted no later than 36 hours after completion of the roadside inspection.

(2)If HOS violations are detected as the result of a roadside inspection, the data/records will be deleted no later than 36 hours after final disposition of any enforcement action taken or within 2 years of completion of the roadside inspection; whichever occurs last.