

MOTOR CARRIER SAFETY ADVISORY COMMITTEE

1

C/O: Federal Motor Carrier Safety Administration

1200 New Jersey Avenue, SE

Room W64-232

Washington, DC 20590

December 16, 2011

The Honorable Anne S. Ferro

Administrator

Federal Motor Carrier Safety Administration

1200 New Jersey Avenue, SE

Washington, DC 20590

Dear Administrator Ferro:

The Motor Carrier Safety Advisory Committee (MCSAC) commenced work on Task 11-04 at its June 2011 meeting. The Federal Motor Carrier Safety Administration (FMCSA) tasked the Committee with clarifying the functionality of Part 395 communications standards relating to Electronic On-Board Recorder (EOBR) data files. MCSAC created the EOBR Implementation Subcommittee (subcommittee) and tasked it with making recommendations on technical questions to improve the functionality of the information reporting requirements described in the April 5, 2010, EOBR Compliance Final Rule (2010 EOBR Final Rule).

The subcommittee met publicly to discuss the Task on July 11-12, August 1-2, and October 26-27, 2011. The MCSAC met in public meetings on August 30-31 and December 5-6, 2011, to discuss the subcommittee recommendations. At the December meeting, the MCSAC approved by consensus the comments and recommended changes to the 2010 EOBR Final Rule regulatory text in the enclosed Task 11‑04 report. Given the court ruling referenced below, that text was used as a drafting format for a new regulation, not to portray amendments to an existing regulation.[[1]](#footnote-1)

As noted in FMCSA’s October 7, 2011, Federal Register notice announcing the third meeting of the MCSAC Task 11-04 subcommittee, FMCSA and MCSAC recognize the legal impact of the 7th Circuit Court of Appeals’ August 26, 2011, decision vacating the 2010 EOBR Final Rule on this task.[[2]](#footnote-2) Specifically, the Federal Register notice stated: “The Agency will consider the MCSAC report in any future rulemaking to reestablish functional specifications for EOBRs.”[[3]](#footnote-3)

The MCSAC recognizes the issues that have been raised in the 7th Circuit’s August 26, 2011, vacatur of the 2010 EOBR Final Rule and recommends that FMCSA consider those issues in developing a new EOBR rule.

I submit this report to FMCSA for its consideration.

Sincerely,

//signed//

David R. Parker

Chairman, Motor Carrier Safety Advisory Committee

Enclosure

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**Motor Carrier Safety Advisory Committee (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**

Introduction:

This Task 11-04 Report consists of the MCSAC’s recommended changes and comments to the April 5, 2010, EOBR Compliance Final Rule (2010 EOBR Final Rule). The EOBR regulatory text, 49 CFR § 395.16, as amended by the 2010 EOBR Final Rule, is reprinted below to provide context for the MCSAC’s recommended changes. The MCSAC’s recommendations and comments are presented below in *italicized* font to differentiate them from the text of the regulation, which is printed in regular font. Suggested changes to regulatory text are presented by redlined changes to the regulatory text. Unless otherwise indicated, changes made to the regulatory language are consensus recommendations.

In several instances, the EOBR Implementation Subcommittee’s (subcommittee’s) recommendation was not accepted unanimously by the MCSAC. Where the majority of MCSAC members supported a recommended change but some members either opposed or abstained from the vote that recommendation is presented in this report as a motion passed by the MCSAC, with the recorded vote displayed. Those subcommittee recommendations that were opposed by a majority of MCSAC members are presented in Appendix A to this report with a recorded vote of MCSAC members who voted, for, against, or abstained from voting. These non-consensus recommendations are presented to illustrate the relevant issues and concerns with certain regulatory provisions. Although the Committee could not reach consensus on recommendations regarding the resolution of these issues, the MCSAC believes the concerns demonstrated by the failed recommendations are nonetheless important for the Federal Motor Carrier Safety Administration’s (FMCSA’s) consideration as it works to develop a new EOBR final rule consistent with the 7th Circuit’s August 26, 2011, opinion.

Additionally, there are some issues relating to EOBRs that all MCSAC and subcommittee members agreed the Agency should address in the next EOBR rule but for which no consensus was reached among the MCSAC. Both the MCSAC and the subcommittee discussed at length the concerns surrounding each of these key issues. Since these concerns did not result in consensus recommendations, the MCSAC’s comments relating to these particular issues are presented in Appendix B. The Committee recommends that FMCSA take the MCSAC’s comments and issues articulated in Appendix B into consideration with respect to those key issues.

Appendix C is a record of notes from a Technical Workgroup that consisted of some subcommittee members as well as some FMCSA officials. The Technical Workgroup Notes are referenced in various portions of the MCSAC’s comments and recommendations throughout this report. Appendix D is a manual inspection flowchart that the Committee believes illustrates the appropriate sequence of procedures that should be used during an enforcement check of a driver’s compliance with hours-of-service requirements when the driver is recording his Record of Duty Status (RODs) using an EOBR. This flowchart is referenced in the Appendix B discussion of when a driver must produce a written record.

While the main body of this report details the MCSAC’s ultimate recommendations, the chronology of comments from the subcommittee and the MCSAC with respect to certain issues can be found in this Appendix E. The Committee believes that FMCSA may find this history of comments and tentative recommendations to provide additional understanding of the issues or concerns that the subcommittee and the MCSAC were considering during their meetings. Finally, at the end of the main body of this report (page 31), the MCSAC offers some general comments on EOBRs and the EOBR regulatory process for FMCSA’s consideration.

**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.~~ As of the effective date of this rule, any EOBR device installed in a CMV by a manufacturer or motor carrier to record hours of service must meet the requirements of this section.

*MCSAC Recommendation:*

1. *Revise (a)(1) as indicated, while allowing flexibility for fleets that use 49 CFR § 395.15 (395.15) compliant devices already.*
2. *While allowing for some flexibility, the new EOBR regulation should establish a firm cutoff date whereby all newly installed devices, regardless of date of vehicle manufacture, must comply with the new regulation.*
3. *FMCSA should consider exemptions (Part 381) for early adopters of 395.15 automatic on-board recording device (AOBRD) technology for carriers that use existing AOBRDs to track hours of service and that have an exceptional safety record to install in vehicles manufactured after the implementation date of the final rule.*

*MCSAC Comments:*

1. *A clear definition is needed regarding which devices are grandfathered and which devices must meet 395.16.*
2. *FMCSA should reconcile the current 395.15 with the coexistence of a new 395.16 in establishing the cutoff date for use of 395.15 compliant devices to record hours of service (HOS). FMCSA must ensure interoperability among devices before the cutoff date.*
3. *For example, interoperability would be necessary for a fleet in transition (between old and new devices) because a driver may have to record HOS with both types of devices.*
4. *The cutoff date should not be tied to date of vehicle manufacture.*
5. *One way to reconcile the coexistence of 395.15 devices and EOBRs under the new regulation would be the following:*
6. *For motor carriers with safety measurement system scores (e.g., fatigue driving BASIC) significantly better than the threshold, existing 395.15 devices should be considered compliant past the implementation date based on the service life of the commercial motor vehicle (CMV).*
7. *The subcommittee could not come to a consensus regarding how much better than the threshold a carrier’s score should be to obtain an exemption. The subcommittee agreed that this choice should be left to FMCSA’s discretion.*
8. *Vehicles added to the fleet after the implementation date must comply with the new rule.*

(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.

*MCSAC Recommendation:*

1. *Users (drivers and carriers) must be uniquely identified for EOBR access.*
2. *Driver identification number in the flat file[[4]](#footnote-4) should be associated with the last four digits (or some portion) of the operator’s license number for verification by an enforcement official that the license matches the driver in question.*
3. *Rationale: Combining first and last name and last four or five digits of the license number would be considered personally identifiable information (PII) (transfer of such data would require encryption, which would increase costs).*
4. *The last four digits of the license number are sufficient because roadside inspection officials would have other documents against which to verify driver identification.*

(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”.

(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”.

*MCSAC Comments: See Appendix B, Discussion of Key Non-Consensus Issues, for discussion of personal conveyance.*

(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.~~

*MCSAC Recommendation: Revise (d)(1) as indicated. Personal conveyance should be entered as a separate line in the EOBR rather than an annotation. See Appendix B, Discussion of Key Non-Consensus Issues, for discussion of personal conveyance.*

(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.

*MCSAC Recommendation (Motion Passed 12 – 1, with 2 abstentions):*

1. *Allow yard movement mileage tolerance.*
   1. *Use two miles based upon precedent and coverage for most yards.*
   2. *Remain in current duty status (typically on-duty not driving) when the movement begins to account for time accrued during yard moves.*
   3. *Miles do not count towards drive miles; there must be a five minute stop time without interruption before becoming eligible for another two mile exception.*
   4. *If a driver goes beyond the two miles or the five minutes, the movement period starts retroactively at the beginning of the two miles or the five minutes.*
      1. *That is, if the EOBR determines that the movement is beyond two miles or five minutes, it will calculate drive time from the beginning of the movement. However, if a vehicle movement is less than two miles or less than five minutes followed by a five minute period of no movement, the EOBR will record such time as whatever the original duty status was (likely on-duty not driving), which would allow yard movements not to count against drive time.*
2. *Apply the same rule for other incidental movement.*
3. *FMCSA should clarify guidance.*

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

*MCSAC Recommendation: Given the self-test requirements in subparagraph (o)(3), this provision is redundant. Delete (d)(3) and expand the (o)(3) requirement for self-test to define what must be recorded [see (o)(3) MCSAC recommendation].*

(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.

(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.

*MCSAC Recommendations (Motion Passed 11 – 0, with 4 abstentions):*

1. *Location position should be derived from GPS or other location determination method with similar accuracy.*
   1. *Requirement to identify “nearest” city, town, or village implies an algorithm based on a map straight line, truck routing distance, any route distance, nearest along planned route, or other method, which may not be consistent unless a standard algorithm is defined. Revise to “identify city, town, or village as the location or relative proximity of distance and direction to an identifiable location.”*
2. *Location should be noted with each duty status change and on an hourly basis when the vehicle is moving in accordance with 395.16.*
3. *EOBRs should display location to the driver on a driver display or printed 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 Geographic Names Information System (GNIS) database with census data added.*
   1. *FMCSA should specify the location description that appears to the driver on a display (e.g., distance, direction to nearest 5,000 population city).*
4. *EOBR should pass the Lat/Long coordinate location to roadside enforcement via the export methods defined.*
5. *GNIS database version/year should be noted. The regulation should specify a timeframe for update/refresh of GNIS database version.*
   1. *The regulation should require periodic GNIS database updates, either via wireless connection or locally.*
6. *Rationale: These recommendations are clarifications of the regulatory language (technical specifications) which were necessary because “nearest” city, town, or village was not specific enough for uniform technical implementation.*

(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. Location data to be recorded includes event latitude, event longitude, place name, and place distance miles and direction, as specified in Appendix A, Table 2.

*MCSAC Recommendation: Revise (f)(3) as indicated above. The requirement does not specifically define location data to be recorded.*

(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. Identify city, town, or village as the location or relative proximity of distance and direction to an identifiable location. Location data to be recorded includes event latitude, event longitude, place name, and place distance miles and direction, as specified in Appendix A, Table 2.

*MCSAC Recommendation: Revise (f)(4) as indicated above. The requirement does not specifically define location data to be recorded. The requirement to identify “nearest” city, town, or village implies an algorithm that may not be consistent among systems.*

(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, ECM, or other electronic device.

*MCSAC Recommendation:*

1. *Revise (g)(3) as indicated above.*
2. *Rationale: It is possible for the odometer reading of the truck to display differently than the odometer reading on the device. The requirement is to be connected to the engine control module (ECM) of the CMV.*

(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.

(3) The driver may ~~annotate~~ select the use of personal conveyance of the CMV after selecting off duty ~~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~~.

*MCSAC Recommendation: Revise (h)(3) as indicated above. See Appendix B, Discussion of Key Non-Consensus Issues, for discussion of personal conveyance.*

(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. If the inspector feels that further investigation is warranted, upon the inspector’s request, a driver shall provide the inspector with a hard copy (hand-written or printed) of the hours-of-service information from the EOBR. The driver must certify that the information in the hard copy accurately reflects the requested EOBR hours-of-service record.

*MCSAC Recommendation: Revise (i)(4) as indicated above. (Motion Passed: 9 – 4, with 1 abstention)*

(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~~ Federal, State, or local 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.

*MCSAC Recommendations:*

1. *Revise “safety assurance officials” language as indicated above.*
2. *See Appendix B, Discussion of Key Non-Consensus Issues for discussion of security of HOS record transmission.*

(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 for electronic file transfer via the methods described in Appendix A, Section 2 or via ~~on~~ portable storage media (e.g., CD–RW, USB external storage device~~2.0 drive~~) upon request of authorized Federal, State, or local ~~safety assurance~~ officials. The support system may be maintained by a third-party service provider on behalf of the motor carrier.

*MCSAC Recommendation: Revise (i)(6) as indicated above. Reference is made to data transfer via portable storage media such as CD-ROM or Universal Serial Bus (USB). The Committee suggests that the regulation permit other forms of electronic data transfer because EOBR support systems may apply a computing model with other data transfer capabilities.*

(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.

*MCSAC Comments: See Appendix B, Discussion of Key Non-Consensus Issues for discussion of when a driver must produce a written record.*

~~(2) If an EOBR fails, the driver must do the following:~~

~~(i) Note the failure of the EOBR and inform the motor carrier 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.~~

*MCSAC Recommendation:*

1. *Add paragraph (k)(3) as indicated below.*
2. *Rationale: This section deals with sensor failures but needs more specificity including definition of failures and corresponding actions and information recording requirements.*
3. *The sensor failure matrix identified as a recommendation in Appendix A Table 3 should be referenced. Delete (k)(3)(iv) and revise (k)(3)(i), (ii), and (iii) to:*

(3) If there is a failure with an EOBR system, component, or vehicle sensor (to which the driver would be alerted as specified in Appendix A, Table 3), there are actions required for the driver, carrier, and EOBR system. Specific failures and action requirements are specified in Appendix A, Table 3.

(i) For failures that result in the inoperability of the EOBR, the driver is required to prepare paper logs for the current day and continue to do so until the EOBR is returned to normal service. A driver may need to prepare paper logs for previous days subject to records availability as specified in (i)(5).

(ii) For failures that result in limited system or sensor input, the driver is required to enter additional data at each change of duty status. The additional data requirements per sensor failure are specified in Appendix A, Table 3.

(iii) Drivers are required to report any EOBR system, component, or vehicle sensor failure to the carrier as early as is practicable but not longer than 2 days following the failure’s occurrence.

(iv) Carriers are required to repair the failure and return the EOBR to normal service as early as is practicable but not longer than 14 days following the failure’s occurrence.

(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.

(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:

*MCSAC Recommendations: See Appendix B, Discussion of Key Non-Consensus Issues, for discussion of uniformity of display.*

(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. Remarks may include a description of or reason for an annotation.

*MCSAC Recommendation: Revise (n)(9) as indicated above. The “Remarks” data field is a useful place to describe record annotations. Expand requirement for remarks.*

(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.~~

*MCSAC Recommendation: Revise (n)(10) and delete (n)(11) as noted above.*

(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:

*MCSAC Recommendation: 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) (i) 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~~ Federal, State, or local 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. If any EOBR component or sensor is determined to be in a failed or below acceptable performance status, the self-test will trigger recording of such failures consistent with the requirements of Appendix A, Table 3.

(ii) In addition to the power-on self-test for sensor failure, the EOBR must perform a data diagnostics self-test when a driver logs on to the system or there is a data transfer from the support system to EOBR via wireless or digital media. This self-test shall also be initiated on demand at the request of an authorized Federal, State, or local official. Should the data diagnostics test identify any data exceptions, the EOBR must provide an audible signal and display of duty status records or diagnostic event records associated with the exceptions. Data exception criteria are defined in Appendix A, Table 4. Records of data exceptions shall include the event diagnostic code with each EOBR record associated with the exception as defined in Appendix A, Table 4.

*MCSAC Recommendations:*

1. *Revise (o)(3) as indicated above.*
2. *Rationale:*
   1. *The requirement records only that a self-test was done with pass-fail indicator to be recorded. The self-test, if failures are found, should trigger sensor failure actions. Therefore, the self-test recording regulatory language should be expanded to reference Appendix A, Table 3 sensor failure actions.*
   2. *Issues other than sensor failures can result in incorrect or unrecorded data. Some system type failures or tampering attempts may be virtually impossible to detect as they occur. However, such events are likely to result in data irregularities that are readily detectable.*
   3. *The use of a data diagnostics self-test, while not completely fail-safe, will add a level of data integrity assurance. This self-test would alert the driver of any data irregularities and provide timely information to ensure that complete and accurate logs are available, even if they need to be manually reconstructed.*
3. *The MCSAC recommends adding the following Table 4 to Appendix A (there may be additional data exceptions that are appropriate to add to this list):*

***Appendix A – Table 4:***

***Table 4 – Data Diagnostic Events***

|  |  |
| --- | --- |
| ***Diagnostic Event Code*** | ***Data Exception Criteria*** |
| *D1* | *Changes in GPS position per Driver ID indicate recording gaps or error* |
| *D2* | *Changes in odometer per Driver ID indicate recording gaps or error* |
| *D3* | *Date/Time stamps of duty status records indicate recording gaps or error* |
| *D4* | *Duty status record missing required data fields* |
| *D5* | *Diagnostic event record missing required data fields* |

(4) The EOBR must provide an audible and 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.

*MCSAC Recommendation: Revise (o)(4) as indicated above.*

1. *The Committee recommends removing paragraph (o)(4) from the EOBR regulation.*
2. *Rationale: It is not necessary for the regulation to require that an EOBR provide a warning. EOBR suppliers will provide what the customers/drivers want. Additionally, there are so many exceptions for various drivers that the warning would be irrelevant for many.*

(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.~~

*MCSAC Recommendation: Delete (o)(6) as indicated above.*

(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.

(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 and support ~~/~~system must identify annotations made to all records, the date and time the annotations were made, and the identity of the person making them.

*MCSAC Recommendation: Revise paragraph (o)(11) as indicated above.*

(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) EOBR service providers and carriers in managing EOBR systems use must apply security measures consistent with those promulgated by recognized international standards bodies. EOBR systems and EOBR devices must provide technical features to enable applicable minimum security requirements and security controls.

*MCSAC Recommendation:*

1. *Add subparagraph (o)(13) to require EOBR devices to meet security requirements.*
2. *Security comments from Technical Workgroup Notes (Appendix C), Section I, should be applied to (o)(13).*

(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.~~;~~ T~~t~~he motor carrier must retain records of these activities.

*MCSAC Recommendation: Revise (p)(2) as indicated.*

(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.~~

*MCSAC Recommendation: Revise (p)(6) as indicated.*

(q) **Manufacturer's ~~self-~~certification**. (1) The EOBR and EOBR support systems must be certified ~~by the manufacturer~~ to an established standard 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.

(2) The ~~exterior faceplate of the~~ EOBR must display the text “USDOT-EOBR” on the inspection display or printed record ~~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.

*MCSAC Recommendations:*

1. *Revise paragraph (q) as indicated.*
2. *There must be a pre-sale product certification process prior to mandating EOBR devices in all vehicles so that carriers know that the device upon which they are relying to track hours of service conforms to 395.16 requirements.*
3. *Third-party certification is necessary because under a self-certification system, FMCSA would not be able to enforce the EOBR regulations against an EOBR manufacturer for providing a non-conforming product that resulted in a carrier’s violation of hours of service.*
4. *When and if EOBRs become mandatory, the original equipment manufacturer (OEM) will likely build the ECM into the new vehicle. An OEM that is installing an EOBR needs to verify that it is compatible with all the vehicle subsystems.*
5. *FMCSA should seek out a third-party consultant to develop and provide FMCSA with detailed certification criteria that describe specific standards and a certification process.*
6. *See Technical Workgroup Notes (Appendix C), Section VI (Third-party Certification of EOBR Providers).*

**Hours of service of drivers**   
  
Pt. 395, App. A

Appendix A to Part 395—Electronic On-Board Recorder Performance Specifications

*MCSAC General Recommendation for all Appendices: The information identified in the appendices should not be part of the EOBR regulation, but should be an evolving technical document maintained by FMCSA that is referenced in the regulation. This would allow the Agency to update the technical recommendations without having to go through the rulemaking process.*

1. Data Elements Dictionary for Electronic On-Board Recorders (EOBRs)

1.1 To facilitate the electronic transfer of records to roadside inspection personnel and compliance review personnel, and provide the ability of various third-party and proprietary EOBR devices to be interoperable, a consistent electronic file format and record layout for the electronic RODS data to be recorded are necessary. This EOBR data elements dictionary provides a standardized and consistent format for EOBR output data.

EOBR Data File Format

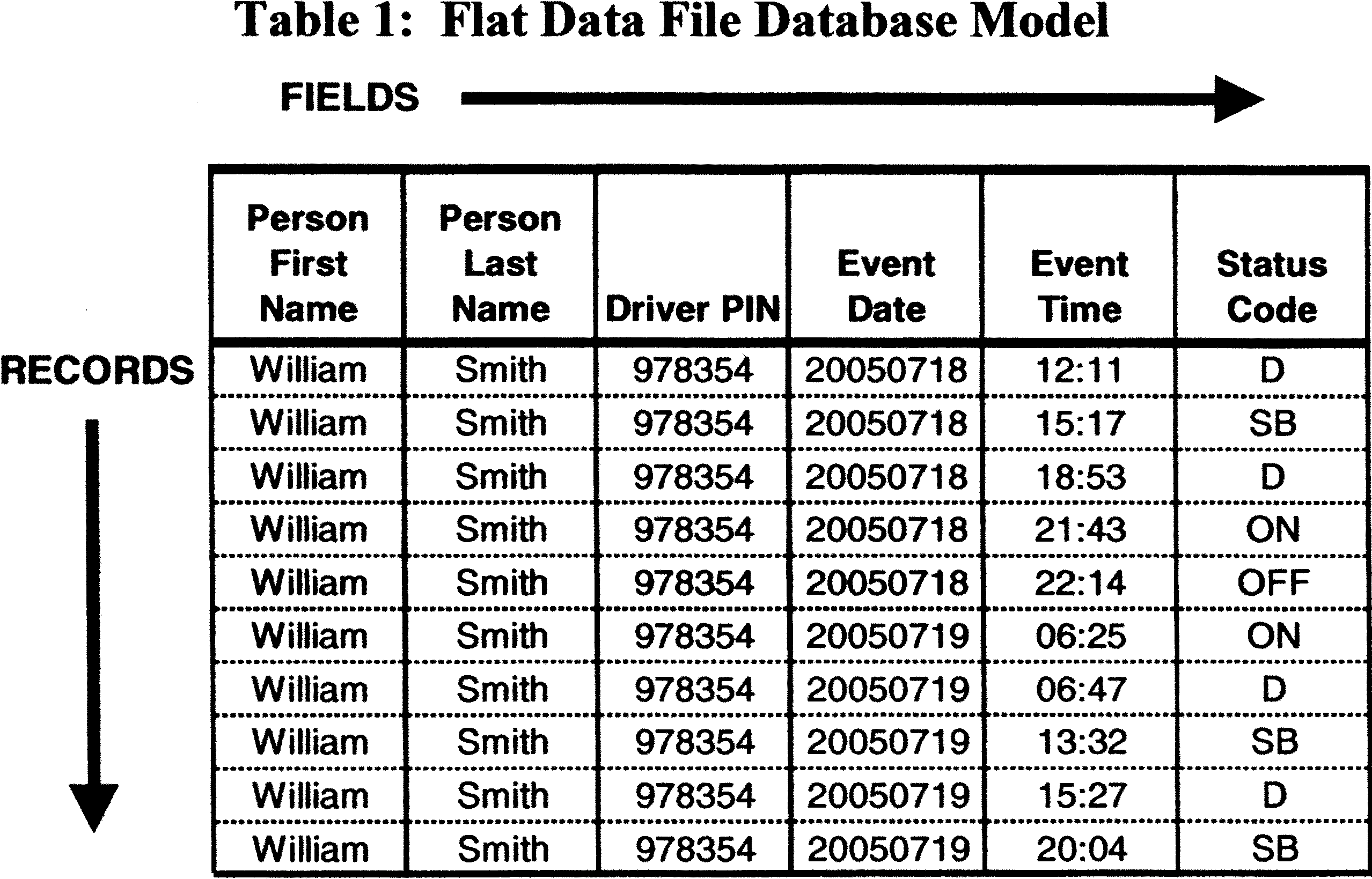
1.2 Regardless of the particular electronic file type (such as ASCII or XML) ultimately used for recording the electronic RODS produced by an EOBR, RODS data must be recorded according to a “flat file” database model format. A flat file is a simple database in which all information is stored in a plain text format with one database “record” per line. Each of these data records is divided into “fields” using delimiters (as in a comma-separate-values data file) or based on fixed column positions. Table 1 below presents the general concept of a flat data file consisting of data “fields” (columns) and data “records” (rows).

*MCSAC Recommendations:*

1. *Depending on vendor and method of transfer, there could be different and inconsistent file name conventions. Therefore, file name methodology should not preclude the use of different data transfer options.*
2. *File name should be standardized across various data transfer methods.*
3. *File name should contain the last four numbers of the commercial drivers license (CDL) or the last name of the driver so that enforcement officer can recognize the file during an inspection.*
4. *File name should be fairly transparent and simple for ease of use by law enforcement.*

*MCSAC Comments:*

1. *Note that the flat file in Table 1 contains PII and would need to be encrypted for transfer.*
2. *The use of Comma Separated Values (CSV) is both lightweight and human readable. It serves as a sound text based standard for data interchange and should be allowed for use in formatting log download files if peer-to-peer methods for data transfer are accommodated. The use of XML should be used for Commercial Mobile Radio Service (CMRS)-based approaches.*
3. *The standard for CSV has been defined by the Internet Engineering Task Force (IETF) as: ― “RFC 4180 – Common Format and MIME Type for Comma-Separated Values (CSV) Files.”*



*MCSAC Recommendations:*

1. *Revise Table 2 as indicated below.*
2. *Rationale for data source additional columns: Per the recommendation for (i)(5), identification of record/data source would be useful. Therefore, the subcommittee recommends adding the data source columns to Table 2, which indicates for which data elements a record of data source is required or not required.*

Table 2—EOBR Data Elements Dictionary

A = Alpha-Numeric

N = Numeric

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data element** | **Data element definition** | | **Type** | **Length** | **Valid values and notes** | | **Data Source** | | |
| **EOBR** | **AOBRD** | **Manual Record** |
| Driver Identification Data | | | | | | | | | |
| Driver First Name | First name of the driver | | A | 35 | See Note 1. | | Required | Required | Required |
| Driver Last Name | Last name, family name, or surname of the driver | | A | 35 | See Note 1. | | Required | Required | Required |
| Driver PIN/ID | Numeric identification number assigned to a driver by the motor carrier | | A | 40 |  | | Required | Required | Required |
| License Information | Last four digits of driver’s license | | A | 4 |  | | Required | Required | Required |
| Vehicle Identification Data | | | | | | | | | |
| Tractor Number | Motor carrier assigned identification number for tractor unit | | A | 10 |  | | Required for Driving | Required for Driving | Required for Driving |
| Trailer Number | Motor carrier assigned identification number for trailer | | A | 10 |  | | If available | If available | If available |
| Tractor VIN Number | Unique vehicle ID number assigned by manufacturer according to US DOT regulations | | A | 17 |  | | Required for Driving | Required for Driving | Required for Driving |
| Co-Driver Data | | | | | | | | | |
| Co-Driver First Name | First name of the co-driver | | A | 35 | See Note 1. | | If available | If available | If available |
| Co-Driver Last Name | Last name, family name or surname of the co-driver | | A | 35 | See Note 1. | | If available | If available | If available |
| Co-Driver ID | Numeric identification number assigned to a driver by the motor carrier | | A | 40 |  | | If available | If available | If available |
| Company Identification Data | | | | | | | | | |
| Carrier USDOT Number | USDOT Number of the motor carrier assigned by FMCSA | | N | 8 |  | | Required | Required | Required |
| Carrier Name | Name or trade name of the motor carrier company appearing on the Form MCS–150 | | A | 120 |  | | Required | Required | Required |
| Shipment Data | | | | | | | | | |
| Shipping Document Number | Shipping document number | | A | 40 |  | | If available | If available | If available |
| Event Data | | | | | | | | | |
| Event Sequence ID | A serial identifier for an event that is unique to a particular vehicle and a particular day | | N | 4 | 0001 through 9999. | | Required | NA | NA |
| Event Status Code | Character codes for the four driver duty status change events, State border crossing event, and diagnostic events | | A | 3 | OFF = Off DutySB = Sleeper BerthD = On Duty DrivingON = On Duty Not DrivingDG = Diagnostic  PC Off Duty = Personal Conveyance. | | Required | Required | Required |
| ***MCSAC Comment: Personal Conveyance was added to measure on and off personal conveyance, this was done to allow the facility to capture and the regulation measurement could determine compliance*** | | | | | | | | | |
| Event Date | The date when an event occurred | N (Date) | | 8 | UTC (universal time) recommended. Format: YYYYMMDD. | | Required | Required | Required |
| Event Time | The time when an event occurred | N (Time) | | 6 | UTC (universal time) recommended. Format: HHMMSS (hours, minutes, seconds). | | Required | Required | Required |
| Event Latitude  ***MCSAC Recommendation: Must include a sign numerical field (to indicate hemisphere).*** | Latitude of a location where an event occurred | N | | 2,6 | Decimal format: XX.XXXXXX. | | Required | If available | NA |
| Event Longitude  ***MCSAC Recommendation: Must include a sign numerical field (to indicate hemisphere).*** | Longitude of a location where an event occurred | N | | 3,6 | Decimal format: XXX.XXXXXX. | | Required | If available | NA |
| Place Name | 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 | N | | 6~~5~~ | Unique within a FIPS state code. Lookup list derived from GNIS. | | Required | NA | NA |
| ***MCSAC Recommendation: If entered by a driver or an annotation entered by the back office, location name and description should be preserved and not translated to a code.***  ***MCSAC Comment: 5 in length column should be a 6 (error in 395.16).***  ***MCSAC Recommendation: Place Name field description does not reflect recommendation of 395.16(f)(2) to use locations with population greater than 5,000. Update description of Place Name to be consistent with requirement of 395.16(f)(2).***  ***MCSAC Recommendation: Place Name field as a 5-character code does not necessarily translate for integration of records from AOBRD systems, entries of paper RODS, and driver entry of location description if GPS unavailable at change of duty status. Also, AOBRD systems may use a different set of codes for location place identification. Recommend location description may be recorded in the remarks field or another field may be added to Table 2 as “Location Description that would be used in records when the Place Name code is not applicable. We would also need a design review for this and other related elements that require actions when GPS not available for proper location being reported when GPS or locations unavailable.*** | | | | | | | If available | If available | Required (NOTE: Need to establish field length) |
| NA | Required | Required |
|  |  |  |
|  |  |  |
| Place Distance Miles | Distance in miles to nearest populated place from the location where an event occurred | | N | 4 |  | | Required | If available | NA |
| ***MCSAC Recommendation: Description of Place Distance Miles includes reference to “nearest” location that should be revised per comments and recommendations related to 395.16(f). Delete the word “nearest” from the description.***  ***MCSAC Recommendation: Location information of Table 2 does not include a direction to enable a relative position to a location name. Add a new data field to Table 2 as Place Direction with 3 alpha characters to indicate direction to place name, e.g., S, SE, SSE.*** | | | | | |  | |  |  |
| Required | | If available | NA |
| Total Vehicle Miles | Total vehicle miles (as noted on vehicle odometer or as measured by any other compliant means such as vehicle location system, etc. ) | N | | 7 | With total vehicle mileage recorded at the time of each event, vehicle miles traveled while driving, etc., can be computed. | | Required | Required | Required |
| Event Update Status Code | A status of an event, either Current (the most up-to-date update or edit) or Historical (the original record if the record has subsequently been updated or edited) | A | | 1 | C = Current, H = Historical. | | Required | If available | If available |
| Sensor Diagnostic Event Code | Identification of sensor failure events~~For diagnostic events (events where the “Event Status Code” is noted as “DG”), records the type of diagnostic performed ( e.g., power-on, self test, power-off, etc.)~~ | A | | 2 | (See Table 3). | | If available | NA | NA |
| ~~Event Error~~Data Diagnostic Event Code | Identification of data diagnostic events~~Error code associated with an event~~ | A | | 2 | (See Table 4~~3~~). | | If available | NA | NA |
| Event Update Date | The date when an event record was last updated or edited | N (Date) | | 8 | UTC (universal time) recommended. Format: YYYYMMDD. | | If available | If available | If available |
| Event Update Time | Then time when an event record was last updated or edited | N (Time) | | 6 | UTC (universal time) recommended. Format: HHMMSS (hours, minutes, seconds). | | If available | If available | If available |
| Event Update Person ID | An identifier of the person who last updated or edited a record | A | | 40 |  | | If available | If available | If available |
| Event Update Text | A textual note related to the most recent record update or edit  ***MCSAC Recommendation: The description for the field Event Update Text should reflect that this also includes driver remarks and other remarks relating to duty status. Note in description that this includes driver remarks and remarks relating to annotations.*** | A | | 60 | Brief narrative regarding reason for record update or edit. | | If available | If available | If available |

Note 1: This element must not be included in the records downloaded from an EOBR or support system at roadside.

Table 3—EOBR Diagnostic Event Codes

|  |  |  |  |
| --- | --- | --- | --- |
| **Code class** | **Code** | **Brief description** | **Full description** |
| General System Diagnostic | PWR\_ON | Power on | EOBR initial power-on. |
| General System Diagnostic | PWROFF | Power off | EOBR power-off. |
| General System Diagnostic | TESTOK | test okay | EOBR self test successful. |
| General System Diagnostic | SERVIC | Service | EOBR Malfunction (return unit to factory for servicing). |
| General System Diagnostic | MEMERR | memory error | System memory error. |
| General System Diagnostic | LOWVLT | Low voltage | Low system supply voltage. |
| General System Diagnostic | BATLOW | battery low | Internal system battery backup low. |
| General System Diagnostic | CLKERR | clock error | EOBR system clock error (clock not set or defective). |
| General System Diagnostic | BYPASS | Bypass | EOBR system bypassed (RODS data not collected). |
| Data Storage Diagnostic | INTFUL | internal memory full | Internal storage memory full (requires download or transfer to external storage). |
| Data Storage Diagnostic | DATACC | Data accepted | System accepted driver data entry. |
| Data Storage Diagnostic | EXTFUL | external memory full | External memory full (smartcard or other external data storage device full). |
| Data Storage Diagnostic | EXTERR | external data access error | Access external storage device failed. |
| Data Storage Diagnostic | DLOADY | download yes | EOBR data download successful. |
| Data Storage Diagnostic | DLOADN | download no | Data download rejected (unauthorized request/wrong Password). |
| Driver Identification Issue | NODRID | no driver ID | No driver information in system and vehicle is in motion. |
| Driver Identification Issue | PINERR | PIN error | Driver PIN/identification number invalid. |
| Driver Identification Issue | DRIDRD | Driver ID read | Driver information successfully read from external storage device (transferred to EOBR). |
| Peripheral Device Issue | DPYERR | display error | EOBR display malfunction. |
| Peripheral Device Issue | KEYERR | keyboard error | EOBR keyboard/input device malfunction. |
| External Sensor Issue | NOLTLN | no latitude longitude | No latitude and longitude from positioning sensor. |
| External Sensor Issue | NOTSYC | no time synchronization | Unable to synchronize with external time reference input. |
| External Sensor Issue | COMERR | communications error | Unable to communicate with external data link (to home office or wireless service provider). |
| External Sensor Issue | NO\_ECM | no ECM data | No sensory information received from vehicle's Engine Control Module (ECM). |
| External Sensor Issue | ECM\_ID | ECM ID number mismatch | ECM identification/serial number mismatch (with preprogrammed information). |

*MCSAC Recommendation: The information defined in current Table 3 is not generally related to the requirements of 395.16.* *Delete Table 3 and replace it with the following table:*

| ***Event Code*** | ***Failure Event*** | ***Event Trigger*** | ***Driver Alert*** | ***Driver Requirements*** |
| --- | --- | --- | --- | --- |
| *AE* | *EOBR central processor or memory failure* | *EOBR is inoperable* | *Blank screen following power on or EOBR is unresponsive to any driver entry* | *Driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *PN* | *Power supply comes on* | *Power is on* | *Visual and audible alert following power on* | *Driver must review what was recorded and manually update RODS and prepare paper logs if necessary.* |
| *PF* | *Power supply comes off* | *Power is off* | *Blank screen* | *If during movement, driver is required to prepare paper logs. If at rest, no driver action is necessary.* |
| *AB* | *EOBR display unit fails* | *EOBR is inoperable* | *Blank screen following power on* | *Driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *DC* | *EOBR printer unit fails* | *EOBR failure of print operation* | *Audio and visual alert when vehicle at rest* | *Display unit may be used in lieu of printer. If printer is alternative to not having a display unit, then driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *AH* | *EOBR clock fails* | *EOBR self test and failure in EOBR time recording function* | *Audio and visual alert when vehicle at rest* | *Driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *AE* | *EOBR clock out of calibration threshold. This assumes means and constant to calibrate against – GPS time.* | *EOBR self test* | *Audio and visual alert when vehicle at rest* | *Driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *AC* | *EOBR software error* | *EOBR self test and failure of a program operation* | *Audio and visual alert when vehicle at rest or EOBR is unresponsive to any driver entry* | *Driver to restart EOBR system with power off/on to clear error. If cleared, then driver enters annotation for prior duty status. If error persists, driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *AG* | *EOBR keyboard failure* | *Keyboard inoperable for driver log-on or when manual entry is needed at change of duty status* | *EOBR does not respond to driver’s attempt to make an entry* | *Driver is required to prepare paper logs for the current day and continuing to do so until the EOBR is returned to normal service. A driver may also need to prepare paper logs for prior days subject to records availability as specified in 395.16(i)(5).* |
| *AH* | *EOBR GPS unavailable for stopped vehicle* | *No GPS signal at stop/record last valid position within 2 minutes prior to CMV stopping* | *Audio and visual alert when vehicle at rest* | *Driver prompted to verify location name after vehicle stops if automatically applied with prior position, or prompted to enter an acceptable location description if GPS signal lost more than 2 minutes prior to stopping.* |
| *AJ* | *EOBR GPS unavailable for start of driving* | *No GPS signal at start of driving/record location based on prior stop* | *Audio and visual alert when vehicle at rest* | *Driver prompted to verify an acceptable location description after vehicle comes to next stop.* |
| *AK* | *EOBR GPS failure* | *No GPS signal for 60 or more minutes for a CMV in motion* | *Audio and visual alert when vehicle stops* | *Driver prompted to verify location name at vehicle stop or prompted to enter an acceptable location description if GPS signal lost more than 2 minutes prior to stopping.* |
| *ED* | *ECM odometer sensor failure* | *Loss of ECM odometer signal for more than 5 minutes* | *Audio and visual alert when vehicle at rest* | *Driver prompted to enter mileage at each change in duty status.* |
| *GP* | *System Self-Test Pass* | *System startup and driver initiated self test* | *Audio and visual alert when vehicle at rest* | *No action required.* |
| *GF* | *System Self-Test Fail* | *System startup and driver initiated self test* | *Audio and visual alert when vehicle is at rest* | *Driver to respond to sensor failure alerts.* |

*MCSAC Recommendation: Consistent with the recommendation to add paragraph (o)(3)(ii), as discussed above, the Committee recommends adding the following Table 4 to Appendix A (there may be additional data exceptions that are appropriate to add to this list):*

***Appendix A – Table 4:***

***Table 4 – Data Diagnostic Events***

|  |  |
| --- | --- |
| ***Diagnostic Event Code*** | ***Data Exception Criteria*** |
| *D1* | *Changes in GPS position per Driver ID indicate recording gaps or error* |
| *D2* | *Changes in odometer per Driver ID indicate recording gaps or error* |
| *D3* | *Date/Time stamps of duty status records indicate recording gaps or error* |
| *D4* | *Duty status record missing required data fields* |
| *D5* | *Diagnostic event record missing required data fields* |

2. Communications Standards for the Transmittal of Data Files From Electronic On-Board Recorders (EOBRs)

*MCSAC Recommendations:*

1. *FMCSA should refer to the Technical Workgroup Notes (Appendix C) sections on Telematics (Section III) and Peer-to-Peer (Section II) in the Agency’s development of a technical working document (or Appendix to a regulation) on Telematics and Peer-to-Peer.*
2. *Delete remainder of Section 2 below.*

~~2.1 EOBRs must produce and store RODS in accordance with the file format specified in this Appendix and must be capable of a one-way transfer of these records through wired and wireless methods to authorized safety officials upon request.~~

~~2.2 Wired. EOBRs must be capable of transferring RODS using the “Universal Serial Bus Specification (Revision 2.0)” (incorporated by reference, see §395.18). Each EOBR device must implement a single USB compliant interface featuring a Type A connector. The USB interface must implement the Mass Storage class (08h) for driverless operation.~~

~~2.3 Wireless. EOBRs must be capable of transferring RODS using one of the following wireless standards:~~

~~2.3.1 802.11g–2003 standard as defined in the 802.11–2007 base standard for wireless communication “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).~~

~~2.3.2 Commercial Mobile Radio Services ( e.g., cellular).~~

3. Certification of EOBRs To Assess Conformity With FMCSA Standards

*MCSAC Recommendation: FMCSA should develop a more detailed certification approach, as outlined in the Technical Workgroup Notes (Appendix C) Section VI on Third-party Certification Criteria.*

~~3.1 The following outcome-based performance requirements must be included in the self-certification testing conducted by EOBR manufacturers:~~

~~3.1.1 Location~~

~~3.1.1.1 The location description for the duty status change must be sufficiently precise to enable enforcement personnel to quickly determine the vehicle's geographic location at each change of duty status on a standard map or road atlas.~~

~~3.1.1.2 When the CMV is in motion, location and time must be recorded at intervals of no greater than 60 minutes. This recorded information must be available for an audit of EOBR data, but is not required to be displayed on the EOBR's visual output device.3.1.1.3 Location codes derived from satellite or terrestrial sources, or a combination thereof must be used. The location codes must correspond, at minimum, to the GNIS maintained by the United States Geological Survey.~~

~~3.1.2 Distance traveled~~

~~3.1.2.1 Distance traveled may 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.~~

~~3.1.2.2 If the EOBR records units of distance in kilometers, it must provide a means to display the equivalent distance in English units.~~

~~3.1.2.3 If the EOBR obtains distance-traveled information from a source internal to the CMV, the information must be accurate to the CMV's odometer.~~

~~3.1.3 Date and time~~

~~3.1.3.1 The date and time must be reported on the EOBR output record and display for each change of duty status and at such additional entries as specified under “Location.”~~

~~3.1.3.2 The date and time must be obtained, transmitted, and recorded in such a way that it cannot be altered by a motor carrier or driver.~~

~~3.1.3.3 The time must be coordinated to the Universal Time Clock (UTC) and must not drift more than 60 seconds per month.~~

~~3.1.4 File format and communication protocols: The EOBR must produce and transfer a RODS file in the format and communication methods specified in sections 1.0 and 2.0 of this Appendix.~~

~~3.1.5 Environment~~

~~3.1.5.1 [Reserved]~~

~~3.1.5.2 Vibration and shock—The EOBR must meet industry standards for vibration stability and for preventing electrical shocks to device operators.~~

~~3.2 The EOBR and EOBR support systems must be certified by the manufacturer as evidence that their design has been sufficiently tested to meet the requirements of §395.16 under the conditions in which they would be used.~~

~~3.3 The exterior faceplate of EOBRs must 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.~~

*MCSAC General EOBR Comments:*

1. *When FMCSA rewrites the EOBR rule, it should format the regulation clearly and logically such that a provider, carrier, driver, or law enforcement personnel could read a particular part of the rule to obtain information necessary for that particular stakeholder without becoming confused by information necessary only for other stakeholders.*
2. *New Agency guidance should be issued to clarify the details of the new EOBR rule.*
3. *EOBR suppliers and law enforcement should participate in annual gatherings to share information garnered through implementation.*
4. *FMCSA should consider pilot testing requirements proposed in any new EOBR regulation.*
5. *Pilot testing should consist of testing of devices conforming to any newly proposed requirements.*
6. *Permissible electronic file transfers should be thoroughly tested.*
7. *Rationale: Because new technologies are developed quickly, it may be beneficial to conduct testing prior to beginning the rulemaking process.*
8. *Implementation date: After establishment of new requirements, EOBR manufacturers/suppliers will need time to conform products to new regulations.*
9. *For drivers working for multiple carriers, there is concern about the transfer and sharing of electronic records.*
   1. *Subcommittee Recommendation: Interoperability is nice, but is not essential for compliance with the Federal Motor Carrier Safety Regulations (FMCSRs).*
   2. *Discussion notes:*
      1. *One option: In the regulation, the driver should be required to have in his possession his last 7 days of logs. It is the driver’s and carrier’s responsibility to track the driver’s RODS.*
      2. *On the one hand, an EOBR system should be designed to allow reversion to paper as little as possible. Therefore, all EOBRs should provide data with a signature to allow data transfer between different EOBR providers’ devices.*
      3. *On the other hand, carriers may be concerned about records from other carriers existing on their systems.*
      4. *Other scenario: Carriers that employ owner/operators, who may work for several different carriers, should have a way to track and manage the RODs of those owner/operators.*
      5. *What is the probability of needing to transfer data from one system to another? FMCSA should attempt to understand how common these different scenarios are.*
      6. *There is no way to avoid paper logs completely as devices sometimes malfunction.*
10. *Canada is working on an EOBR standard. Continue to share development of U.S. EOBR rule with Canada to encourage harmonization.*
11. *When specific peer-to-peer options are authorized, FMCSA should conduct due diligence with states and the enforcement communities to understand their capabilities.*
12. *Tamper-proof concerns: If a driver turns the EOBR device off when the CMV is not in motion and then drives, then turns it on again when the CMV stops, was the driver off the grid during that time? These tamper concerns should be addressed in the certification criteria (i.e., a service provider’s device should not be certified if it permits the above situation).*
13. *Definition of EOBR (added to 395.2 in vacated 2010 EOBR Final Rule): Definition of EOBR must include a requirement that the device is synchronized to the vehicle engine control module.*
14. *Corrupted Data/Device*
    1. *How large of a problem is this?*
    2. *If data is corrupted, correction could be as simple as logging off/on. Some situations would require device repair.*
    3. *There is a standard process handled by most devices that have a wireless component. All data is synchronized with back office (“Back office synchronization process”).*
15. *Is GPS a critical tracking element for EOBRs?*
    1. *GPS itself is a one-time hardware cost. The remaining cost is for wireless communication.*
    2. *Some MCSAC members questioned if GPS is a necessary component of an EOBR.*
16. *Some MCSAC members recommend that FMCSA explore either requiring all EOBRs to have printing capabilities, or requiring all Federal, State, or local inspection officials to have access to printers in their vehicles.*
    1. *Printer Options:*
       1. *Allow printers, but do not require (e.g., screen display with a graph, screen display plus a printout, or text display).* 
          1. *Pros: flexibility for carrier, EOBR manufacturer.*
          2. *Cons: text display (without printout) is more difficult to read, may have to climb into vehicle.*
       2. *Require printer for all CMVs with EOBR systems.*
          1. *Pros: continuity for law enforcement.*
          2. *Cons: additional layers of cost (e.g., initial printer cost, ongoing paper, maintenance), security issues (e.g., Is the printout valid? Does law enforcement have to watch being printed out?).*
             1. *It is not clear whether devices that are already out there be retrofitted with a printer.*
             2. *Mobile display devices – potential complexity involved in connecting to printer.*
       3. *Require a single graphical display:*
          1. *Pros: Simpler than requiring a printer.*
          2. *Cons: Law enforcement would have to climb into the cab of the truck.*
       4. *Provide printers to law enforcement.*

**Appendix A: Items Considered by the MCSAC That Failed to Pass by Majority Vote**

1. **Proposed Definition for “Personal Conveyance”:** *Personal conveyance should be defined as allowing 25 miles during the 10 hour break and 50 miles during the 34-hour restart. (Motion Failed 9[Oppose] – 6 [Support])*
2. **Additional recommended paragraph for 49 CFR § 395.16:**

*Subcommittee Recommendation: Some MCSAC members recommend adding the following paragraph “(r)” to 49 CFR § 395.16 (Motion Failed 7 [Oppose] – 4 [Support]):*

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

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

*(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.”*

**Appendix B: Discussion of Key Non-Consensus Issues**

Introduction:

The EOBR issues discussed below are subjects that the MCSAC and Task 11-04 subcommittee members agreed FMCSA should address in the next EOBR rule. While the MCSAC and the subcommittee discussed at length the concerns surrounding each of these issues, no consensus was reached regarding the resolution of these issues. The MCSAC, however, does recommend that FMCSA take into consideration the comments and concerns articulated below when it addresses these issues in the next EOBR rule.

|  |  |
| --- | --- |
| **Personal Conveyance:**   * The regulation should specify how EOBR devices account for personal conveyance. * Personal conveyance should be entered as a separate line of duty status on the EOBR rather than an annotation (e.g., “Off Duty PC”).   + Rationale: Establishing personal conveyance as a separate event would clarify the entry in the flat data file. Additionally, separating personal conveyance in the flat file would establish its own duty status item with time/date stamp and location information. * Display:   + For the graphical display, personal conveyance should be shown on the first line with a remark (PC Start and PC End).   + The enforcement screen display should show total hours used for personal conveyance. * The MCSAC did not reach consensus on a recommended definition for personal conveyance. | |
| Potential Definitions:   * Define the limit of personal conveyance as 50 actual miles. Change the definition to allow for the operation of laden or unladen vehicles. (Motion Passed: 9 – 4, with 2 abstentions)   + There is some concern regarding the allowance of personal conveyance for a laden vehicle because the vehicle would be heavier.   + Some MCSAC members believe the mileage allowance should be minimal because a specific mileage limit would encourage abuse (i.e., use of an extra hour).   + However, a specific mileage limit would minimize inconsistent enforcement of personal conveyance. | Comments:   * The only ambiguity in the current personal conveyance guidance is “short distance.” Presently, the enforcement community handles the interpretation of “short distance” at its discretion.   + Some enforcement community MCSAC members note that this current definition has not been much of an issue (in terms of encountering drivers that attempt to abuse the personal conveyance concept).   + Leaving the determination to officers’ discretion allows officers to determine an appropriate “short distance” based on location/State. * The requirement to record personal conveyance as separate duty status resulting in a “yellow” display screen to enforcement official (see Technical Workgroup Notes document, Attachment A, Option for Uniformity of Display) would be sufficient to alert enforcement and motor carrier management to inquire about the use of personal conveyance. |
| **Security of HOS record transmission:**   * While the MCSAC discussed at length the need for security of HOS record transmission, the MCSAC did not define the necessary level of security.   + Should the new EOBR regulation require or allow the electronic transmission of RODS data, these comments would be relevant. * FMCSA should develop or identify security protocols, with consideration of appropriate standards, including but not limited to National Institute of Standards and Technology (NIST), for telematics and peer to peer data exchange involving EOBRs. The Agency should resolve expeditiously whether the security concerns with a peer to peer transmission of the data via USB download, wireless data transmission, infrared technologies, and/or barcode scanner, telematics application solutions, or other data transmission solutions are surmountable.   + Concerns have been raised regarding the security of wireless transmission of hours-of-service data. * FMCSA should refer to the Technical Workgroup Notes (Appendix C), Sections I, II, and III. * Regarding peer-to-peer transmission of data, the MCSAC did not reach consensus regarding allowable risks for various peer-to-peer data transmission methods. FMCSA/U.S. DOT should conduct risk analyses to determine the appropriate levels of data security and their related cost. | |
| Potential Approaches:   * Separate the requirements for information storage, which RODS display or data formats are acceptable for roadside, and the allowable methods for data transfer. Revise (i)(5) to replace current text with the following (Motion Passed 10 – 1, with 2 abstentions):   “Drivers must have in their possession a record of duty status for the current day and immediate access to records of duty status for the previous 7 days.  (i) Information for roadside inspection of current day and previous 7 days provided may include the following: EOBR display or printouts; printed records from the EOBR support system or other driver logging system; paper logs; report of driver’s current and prior work days via fax or email from the EOBR support system; electronic file transfer of the driver’s current and prior work days from the EOBR support system; or any combination thereof to provide a complete accounting of current day and previous 7 days.  (ii) The EOBR support system may include records from sources other than the EOBR such as AOBRD records and entries of paper logs and log corrections into the support system. Such records must reflect the data accurately as recorded by the other source. Those records from non-EOBR sources must be identified by record type as defined in Appendix A.  (iii) Drivers may initiate a facsimile or e-mail of a report from the EOBR support system to the inspection site or to a remote inspection support site for current and previous days’ records of duty service to the extent that such information is available on the support system. The fax report must provide the information as identified in paragraph (n). If the driver is found to be in violation, the driver is required to reproduce paper records for the entire work period if the fax report or other displays or printouts are not available at the inspection site.  (iv) Drivers may initiate an electronic file transfer of current and previous 7 days’ records of duty status to the extent that such information is available on the support system. Such a file transfer will be accomplished by the methods described in paragraph (r) and technical requirements as specified in Appendix A, Section 2. If the inspection site is not able to process an electronic file transfer, the driver will provide information as defined above.” | Comments:   * FMCSA should define, quantify, and incentivize use of enforcement resources through the Motor Carrier Safety Assistance Program (MCSAP) so that enforcement’s deployment and adoption of the necessary technology parallels the industry’s deployment of EOBRs. |
| **When a driver must produce a written record:**   * The MCSAC recommended adding a paragraph (k)(2) to specify that if the enforcement officer is unable to observe a driver’s HOS record data via electronic record, electronic display, or system printout, that the driver must produce the record (handwritten, if necessary):   “(2) During a roadside inspection, when a driver is unable to produce and transfer an electronic record (as defined in Appendix A, Table 1) upon demand of an authorized officer, or when 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, the driver must produce a printed or handwritten record of duty status that completely and accurately reflects the original electronic record.”   * This recommended language articulates that the regulation should specify that requiring a driver to produce a handwritten HOS record should be a last resort, as indicated in the manual inspection flowchart (Appendix D). | |
| Potential Approaches:   * Some Committee members suggested providing an expiration date (i.e., “sunset”) for the provision allowing enforcement officials to require written production of hours of service records. * On the other hand, there are times when the technology may not work, in which case the driver would need to produce written RODS to prove HOS compliance. | Comments:   * Concerns were expressed that enforcement officials would require written production of the last 7 days of logs for some reason other than a last resort. Therefore, arguably, the regulation should require officers to view the EOBR display or an electronic file before the officer requests that the driver produce a written record of his/her HOS for the last seven days. * The regulation should specify the acceptable time period within which a driver must produce the HOS record electronically. Depending on the type of inspection, that time could be specified as the average time to complete a Level X inspection.   + If the driver/carrier cannot produce the driver HOS record within that time, the driver must produce a printed or handwritten record. |
| **Uniformity of Display:**   * The MCSAC recommends that FMCSA work with all key stakeholders to develop a standard display screen format. * The MCSAC recommends the following as a potential approach to requiring a standard display screen format (based on Appendix C, Technical Workgroup Notes, Section V): * The Committee recommends uniformity of display (e.g., red/yellow/green screen) for use at the roadside. Some data transfer will still be necessary.   + Enables the enforcement official to see driver’s current available driving hours from outside of the cab;   + Standardizes listing of exceptions relative to yellow or red status to simplify training;   + Displays the driver’s name;   + Roadside inspection button displays exceptions and any other requirements. * FMCSA should consider requiring EOBR service providers to list a phone number where the service provider could verify the device (i.e., an enforcement request number). List phone number separately on the cab card (i.e., instruction card for EOBR device) rather than on the screen.   + FMCSA should consider the potential cost of this option. * Training for enforcement officers should be minimal. * FMCSA should implement requirements for minimum display screen size – should be large enough for officer to see over driver’s shoulder (concerns about officers approaching from right side).   + 6-inch (diagonal) minimum screen size if permanently mounted.     - Alternatively, for devices equipped with a printer, a smaller screen should be permissible.   + If the screen is smaller than 6 inches, it should not be permitted to be less than 2.5 inches, and the screen should be detachable, removable, or tethered (or have the ability to relocate to right-side view).     - Alternatively, for devices equipped with a printer, a smaller screen should be permissible.   + Devices that do not meet these minimum screen size criteria (i.e., 395.15 devices) should be grandfathered. * Graph grids   + The default screen should be a simple display, signaling whether the driver is in compliance (i.e., “go/no go”), and the driver’s number of available hours.   + Screen with full compilation of compliance with HOS requirements.   + Details in a graph     - Standardization of graph grid display is not necessary. Standardization of basic elements.   + The device should be capable of exporting this information to an enforcement official via an authorized data transfer mode. | |
| Comments:   * A standardized menu display is desirable for law enforcement officials as well as carriers/drivers.   + The key objective for a standardized menu display is to make available all usual data. * Note: The Technical Workgroup Notes (Appendix C) and the full MCSAC report differ in terms of display requirements (6-inch vs. 7-inch screen). | |

**Appendix C: MCSAC Task 11-04 Technical Workgroup Notes**

**October 24 – 25, 2011**

1. **Security** (data protection, encryption, access control, confirmation of successful file transaction)
   1. When establishing security requirements, FMCSA should use NIST Special Publication (SP) 800-53, Revision 3, *Recommended Security Controls for Federal Information Systems and Organizations*, as a general guideline.
      1. Agency could consider incorporating specific sections by reference.
      2. References International Organization for Standardization (ISO) 27001, *Information technology – Security techniques – Information security management systems – Requirements.*
      3. Federal Information Processing Standards (FIPS) Publication 140-2, *Security Requirements for Cryptographic Modules*, for encryption.
   2. Recommendations for Access Control Requirements
      1. Each EOBR must be uniquely identified.
         1. Government-issued 2 digit alpha vendor identifier.
         2. 6-12 digit device unique identifier managed by vendor.
         3. Allowance to use existing serial number with 2-digit vendor identifier.
      2. Users must be uniquely identified for EOBR access (drivers and carriers).
         1. Driver ID number in flat file should be associated with last 4 digits of driver’s operator’s license number (or portion) for verification by enforcement that the license he holds relates to the information he has received.
      3. The EOBR system shall implement, manage, and maintain an access control system that authorizes user access levels.
      4. All subsystems that transmit, receive, or store data on behalf of the EOBR system shall maintain data access controls.
      5. All EOBR system users (drivers and other motor carrier personnel) shall be registered and authorized by the access control system.
      6. The EOBR system shall control access to data based on access rules and the assignment of user roles.
      7. The EOBR shall restrict access to those parts of the system for which a user is not authorized.
      8. The EOBR shall detect and alert attempts to access parts of the EOBR system by unauthorized users.
      9. Authorized Motor Carrier/Service Provider users shall be granted access to EOBR information pertaining to their operations.
      10. Authorized Commercial Motor Vehicle Driver users shall be granted access to EOBR application and support systems information pertaining to their operations.
      11. The EOBR application and support systems shall allow access to EOBR data with or without the unique identification data elements intact, depending on the user access privileges.
      12. The EOBR application and support systems shall include time and date stamp and source for all data events.
          1. Note: Use similar language to the vacated regulation.
   3. Recommendations for Data Protection Requirements
      1. Encryption of PII data at rest and in transit (if PII is determined).
         1. NIST SP 800-122, *Guide to Protecting the Confidentiality of Personally Identifiable Information*.
         2. Driver ID number in flat file should be associated with last 4 digits of driver’s operator’s license number (or portion) for verification by enforcement that the license he holds relates to the information he has received.
      2. The EOBR shall implement measures to protect data privacy and maintain system security:
         1. Data at rest and in transit must be protected from unauthorized access, use, modification (including corruption), and destruction and denial of service attack.
         2. The EOBR shall protect EOBR data collected, stored, disseminated, or transmitted from inadvertent alteration, spoofing, tampering, and other deliberate corruption.
         3. All subsystems which transmit, receive or store EOBR data shall also handle the data in accordance with federal statutes and regulations, including the Drivers Privacy Protection Act.
         4. The EOBR and application support systems shall implement methods for system disaster recovery and rebuild.
         5. The EOBR and application support systems shall provide auditing capability.
         6. The EOBR shall provide a self check to ensure accuracy of data.
         7. The EOBR shall use industry best practices for the formats of files transmitted to safety and law enforcement officials.
         8. The EOBR device must allow only one-way wired or wireless transfer of data to data terminals used by safety enforcement officials.
         9. The EOBR device and support system shall be tamper resistant to address moderate and high risk as described in the certification and accreditation process.
2. **Peer-to-Peer** (USB, barcoding, alternative electronic solutions)
   1. Peer to peer (e.g., USB, Bluetooth) is a potential electronic data transmission option that could work with other data transmission solutions. All peer-to-peer technologies will have different costs and advantages/disadvantages.
   2. An alternative to telematics, such as peer to peer, may or may not be desirable.
   3. Refer to the technical document prepared by EOBR service provider subcommittee members, “MCSAC EOBR Sub-Committee Technical Requirement/Performance Specification Document,” available on the MCSAC website for discussion of the various advantages and risks posed by some of the peer-to-peer technology approaches.
   4. 2D Barcodes (e.g., Quick Response Code [QRC])
      1. Pros
         1. Built for file transfer without database connection
         2. Compatible with electronic RODs flat-file analysis
         3. High reliability of error detection
      2. Cons
         1. Smudging
         2. Scanning
         3. Character limit
         4. Screen clarity/resolution
         5. Glare
         6. Significant cost to enforcement and industry to implement
         7. Power usage
         8. Unproven technology in EOBR usage
   5. USB (mass storage device, not cable)
      1. Pros
         1. Many states allow
         2. Reliable
         3. Immediate
         4. Cost-effective
         5. Universally available and off the shelf hardware
         6. [Note: See Zonar document, “Evaluation of Qualcomm’s ‘Risk Analysis of USB Communication for EOBRs, Rev. 1.4’” on the MCSAC website.]
      2. Cons
         1. See Qualcomm document, “Risk Analysis of USB Communication for EOBRs, Rev. 1.4” on MCSAC website.
         2. Inconsistent usage among states (e.g., not allowed by some states)
         3. USB may become obsolete technology
         4. Security threat (e.g., malware)
         5. Older legacy systems use USB low-speed interfaces. New USB devices authenticate at high-speed and negotiate down to lower speed, so the cable length may not work. Some older devices will not work under a mandate for USB peer to peer.
      3. Limiting the format the data files could take (e.g., text file) would minimize potential for abuse.
   6. Secure Digital (SD) Card[[5]](#footnote-5)
      1. Pros
         1. Reliable
         2. Immediate
         3. Cost-effective
         4. Universally available and off the shelf hardware
      2. Cons
         1. Inconsistent usage among states
         2. Security threat (e.g., malware)
         3. SD is not a widely used or accepted field device and would require engineering change and additional cost
         4. Limited lifecycle
   7. Bluetooth[[6]](#footnote-6)
      1. Pros
         1. Authentication is possible in specific instances
         2. Addressed by a NIST document (NIST SP 800-121, *Guide to Bluetooth Security*)
         3. Cost-effective
         4. Communication can be secured and encrypted
         5. Universally available and off the shelf hardware
         6. Either work with or without integrated Bluetooth in EOBR
            1. Requires device drivers for USB. Note: this entails additional cost.
         7. Distance limited – security feature that prevents eavesdropping, etc.
      2. Cons
         1. Difficult to get a connection
         2. Lack of authentication.
            1. Note: no consensus on this point
         3. Malware risk
         4. Pairing with display screens
         5. Law enforcement may not have availability
   8. Institute of Electrical and Electronics Engineers (IEEE) Standards Association, 802.11 (WiFi)[[7]](#footnote-7)
      1. Pros
         1. Standard protocols for encryption
         2. Addressed in a NIST document, NIST 800-48 Revision 1, *Guide to Securing Legacy IEEE 802.11 Wireless Networks*
      2. Cons
         1. Management of Service Set Identifiers (SSIDs) (time and effort)
         2. Not easily used
         3. No common usage for peer to peer environment
         4. Scored lowest for usability in Commercial Vehicle Safety Alliance (CVSA) survey
      3. Refer to comments from Larry Steinbecker and Eclipse Software System for the October 24-27 subcommittee meeting, “Comments for Wi-Fi,” on the MCSAC website.
         1. Higher cost for Wifi hardware than for other means of communication. Need technical resources in addition to hardware.
   9. Dedicated short-range communication (DSRC) using transponders (5.9 GHz)[[8]](#footnote-8)
      1. Pros
         1. Multiple uses, valuable
         2. May be proven to have robust security model
         3. Agency has set aside bandwidth for this type of communication
         4. Relatively secure data (security would have to be perfect)
      2. Cons
         1. Cost
         2. Not being used for HOS applications now; not ready now
         3. Not universal
      3. Connected Vehicle Safety Pilot Program: U.S. DOT is currently conducting a large safety pilot to determine the effectiveness of vehicle safety applications based on DSRC technology at reducing crashes, and to show how real-world drivers will respond to these safety applications in their vehicles.
         1. NHTSA will use the research data collected through the Safety Pilot to support a major decision milestone in 2013 on the future of connected vehicle technology.
         2. NHTSA’s decision could include several options, such as mandatory deployment of the technology, voluntary installation of wireless devices in new cars, or additional research and development.
      4. FMCSA acknowledges other efforts in this area and should place the CMV industry on notice that may be moving toward requirement related to DSRC (NHTSA has already moved in this direction).
      5. Recommend pilot testing; proof of concept.
3. **Telematics** (web services, credentialing, interface to transmit files, portability of electronic data, streamlining driver data, system response)
   1. See “Framework for Telematics Application Services Approach” document on the MCSAC website for discussion on Telematics.
      1. This document was prepared and submitted by a working group of the EOBR subcommittee that consisted of representatives from the following EOBR service providers: Qualcomm, Xata, and PeopleNet.
   2. Need to consider data security throughout process
      1. But this may not be a security issue, just a method for data transfer
      2. Look at NIST SP 800-95, *Guide to Secure Web Services*, Representational State Transfer (REST)
   3. Roadside Compliance Request (RCRs) number
      1. Reason for RCR: keep it simple for the enforcement officer
      2. RCR could just be for a particular roadside instance
      3. When using RCRs, exclude 1s, Is, Ls, 0s, and Os
         1. Make first 2 digits alphas
   4. Might only be needed 10 percent of roadside instances, so need to keep it simple or officers will not use it.
   5. Driver request for file indicates certification
   6. Consider not putting this in rule due to technical content –put it in an Appendix or technical bulletin that is referenced in rule?
      1. The Agency will need to update the technical content as necessary.
      2. FMCSA needs to discuss this. An Appendix is part of a regulation. This may be a likely solution.
4. **File Data** (authentication, certification of files, digital signatures, ownership of data)
   1. Refer to “Framework for Telematics Application Services Approach” document on the MCSAC website for basics/definitions for encryption, authentication.
      1. Data at rest addressed by data protection requirements
      2. In the use of REST web services, the data format should be JavaScript Object Notation (JSON)
   2. Examine feasibility of three possible methods of authentication: (1) token-based, (2) telematic, and (3) username/password provision on every device
5. **Uniformity of Display**
   1. Committee recommends uniformity of display (e.g., red/yellow/green screen) that may be useful at the roadside. Some data transfer will still be necessary. See Appendix C, Attachment 1 for details.
      1. Enable enforcement official to see driver’s current available driving hours from outside of the cab;
      2. Standardize listing of exceptions relative to yellow or red status to simplify training;
      3. Display driver’s name;
      4. Roadside inspection button to display exceptions and any other requirements.
   2. FMCSA should consider requiring EOBR service provides to provide a phone number at which the service provider could verify the device (i.e., an enforcement request number). List phone number separately on the cab card (i.e., instruction card for EOBR device) rather than on screen.
      1. FMCSA should consider the potential cost of this option.
   3. Training for enforcement officers should be minimal.
   4. FMCSA should implement requirements for minimum display screen size – should be large enough for officer to see over driver’s shoulder
      1. 7-inch (diagonal) minimum if permanently mounted
      2. If smaller, but not less than 2.5 inches, screen should be detachable, removable, or tethered
      3. Devices (i.e., 395.15 devices) that do not meet this criteria should be grandfathered
   5. Requirements for minimum text size
   6. Graph grids
      1. The default screen should be a simple display, signaling whether the driver is in compliance (i.e., “go/no go”), and the driver’s number of available hours.
      2. Screen with full compilation of compliance with HOS requirements
      3. Details in a graph
         1. Standardization of graph grid display is not necessary. Standardization of basic elements.
      4. The device should be capable of exporting this information to an enforcement official via an authorized data transfer mode.
6. **Third-party Certification of EOBR Providers**
   1. Third-party certification is necessary.
   2. Certification process is only about HOS application; it does not encompass the entire operating device. It is not appropriate to build certification process beyond HOS.
      1. Consensus not reached on this point. See “Electronic On-Board Recorders Guiding Principles” presentation available on the MCSAC website.
   3. Certification should be based on an established set of certification criteria that are based in regulation.
   4. FMCSA should promulgate regulations that establish parameters and performance standards for industry manufacturers. Entities who want to enter into the business enter in to Memorandum of Understanding (MOU) with FMSCA stating that they will commit to follow those parameters. Every provider would need to go through the process. Agency should authorize a third party to do the certifying. Auditing process should consist of determining whether manufacturer is complying with MOU. Third party certification body should make periodic visits to carriers on site. Also could use law enforcement as a check on the certification process – would trigger additional on-site visits. Cost relationship is between manufacturer and third-party so Agency is not involved with funding.
      1. Needs to be iterative process to comply with changing standards
      2. This option could be cost-prohibitive. Any change in regulation or equipment updates may require re-certification.
         1. Certification should allow for partial re-certification based on new regulations or equipment upgrades. Full certification test should not be required for equipment upgrade.
      3. Suppliers would go to one of independent labs as qualified by FMCSA in order to become certified. Which lab does the testing depends on FMCSA’s qualification of that lab. This would be most economical for suppliers and customers.
   5. Testing criteria would be developed based on regulation and nothing more.
   6. The whole process would be multi-step and would include a long lead time.
   7. Need to recognize that EOBR is an application that is overlaid on a large existing system.
   8. FMCSA should consider setting funding aside to get the certification process up and running.
   9. EOBR vendors/suppliers discussed previous experiences. Certification could be estimated, based on experience with OEMs, to last from 60-180 days.
7. **Other**
   1. If a driver is working for multiple carriers, there is concern about transfer/sharing of records
   2. Interchangeability of devices between 395.15 and 395.16

**Appendix C, Attachment 1: Option for Uniformity of Display**

***Green status means the following:***

**Green**

GREEN

No HOS violations

All driver time fully accounted for

All vehicle movement fully accounted for

No record annotations (last 8 days)

No sensor failures (last 8 days)

No other data abnormalities

***Green status display:***

“Diagnostics GREEN” and remaining driving time today: HH:MM

YELLOW

***Yellow status means the following:***

**Yellow**

Data exceptions to be reviewed / explained

***Yellow status display:***

“Review Exceptions” and remaining driving time available today: HH:MM

Gaps in driver log records – (data rules to be specified – e.g., 2 days not accounted for in

electronic records)

Gaps in vehicle movement records (data rules to be specified, e.g., unassigned driving or unexplained vehicle miles without associated driver’s driving duty status record)

Any record annotations in last 8 days (show current record and original version with explanation remarks and who made change)

Sensor failures (list of sensor failures and time/duration of failure)

Other data abnormalities (data rules to be specified)

* Daily duty status (graphs and other available displays) and recap of total hours

RED

***Red status means the following:***

**Red**

Suspected violations

***Red status display:***

“Suspected Violations” and HOS summary data suspected in violation

Daily duty status records (e.g., grid graph)

Data issues that indicate suspected tampering (data rules to be specified – e.g., data indicates

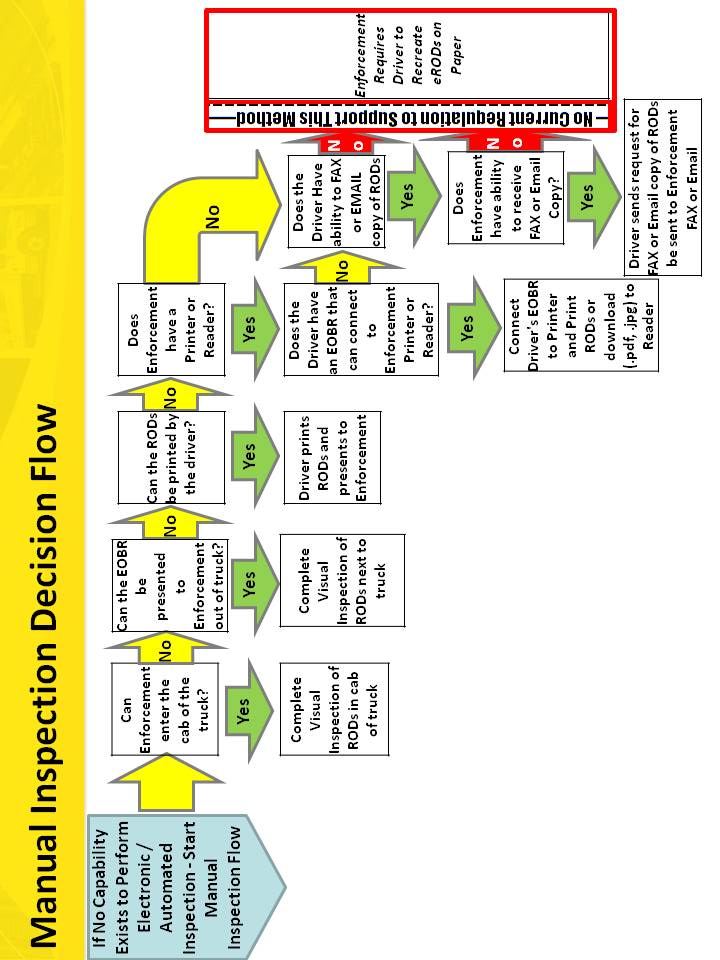
significant change in location for driver and vehicle without driving record or co-driver)

Excessive personal conveyance or yard moves (rules to be specified)

**Appendix C, Attachment 2: MCSAC Task 11-04 Technical Workgroup Members**

* MCSAC Subcommittee Members
  + R.C. Powell, Virginia State Policy (Subcommittee Chairman)
  + Dave Parker, Great West Casualty (MCSAC Chairman), *ex officio*
* Non-MCSAC Subcommittee Members
  + Bill Bland, Rand McNally
  + Alex Capelle, Continental Corporation
  + Tom Cuthbertson, Xata Corp.
  + Amy Daley, J.J. Keller and Associates, Inc.
  + Chinpai Jong, Daimler Trucks North America
    - Surrogate: Fred Gneuchtel, Daimler FleetBoard
  + Dave Kraft, Qualcomm Enterprise Services
  + Jim Angel, PeopleNet
  + Robin Doherty, Verigo, Inc.
  + Carleton Watkins, inthinc Technology Solutions, Inc.
  + Shaun Kildare, Advocates for Highway and Auto Safety
* U.S. DOT/FMCSA Members
  + Debbie Freund, FMCSA
  + Toccaro Young, FMCSA
  + Stephen Parker, FMCSA
  + Bunmi Ogunlade, FMCSA
  + Andrew Orndorff, U.S. DOT, Office of the Secretary
  + Elizabeth Vargas, FMCSA
  + Larry Minor, FMCSA
  + Shannon Watson, FMCSA

**Appendix D: Manual Inspection Flowchart**



**Appendix E: Record of Chronology of Subcommittee**

**and MCSAC Comments for Certain Issues**

Introduction:

With respect to certain issues, the Task 11-04 subcommittee made initial comments or recommendations followed by the MCSAC either adopting the subcommittee comments/recommendations or making different comments/recommendations. Sometimes this process was followed by the subcommittee making further comments or clarifications. While the main body of this report details the MCSAC’s ultimate recommendations, the chronology of comments from both the subcommittee and the MCSAC with respect to certain issues can be found in this appendix. The Committee believes that FMCSA may find that this history of comments and tentative recommendations provides additional understanding of the issues or concerns that the subcommittee and the MCSAC were considering during its meetings with respect to these issues.

1. **Relating to EOBR identifying unique user (49 CFR § 395.16(b)(1)):**

(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.

*Subcommittee Comment (8/2): Law enforcement needs to have name identifying information for roadside inspection to connect the EOBR device to the driver. Verify requirements for protection of personally identifiable information (PII). See National Institute of Standards and Technology (NIST).*

*MCSAC Recommendation (8/31): A unique driver identifier must be made available to the authorized Federal, State, or local officials to connect the EOBR device to the driver.*

1. **Relating to the identification of annotations (49 CFR § 395.16(o)(11)):**

(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.~~The EOBR device display or printout must provide the remarks that describe an annotation made to records to the extent that such information is available. The EOBR support system must identify annotations made to all records, the date and time the annotations were made, the remarks that describe the reason for the annotation, and the identity of the person making them.

*MCSAC Recommendation (8/31): The requirement suggests that the details of all annotations are provided on the EOBR display. This is problematic due to the amount of detail possible as well as due to many annotations being made on the EOBR support system. The phrase “to the extent that such information is available” is still under discussion by the MCSAC.*

1. Todd Spencer, of the Owner-Operator Independent Drivers Association, noted his objection to FMCSA and MCSAC moving forward with a new EOBR rule before the referenced court issues are resolved. [↑](#footnote-ref-1)
2. *See* *Owner-Operator Indep. Drivers Ass’n v. FMCSA*, 656 F.3d 580 (7th Cir. 2011) (vacating the 2010 EOBR Final Rule and remanding the rule to FMCSA for proceedings consistent with the court’s opinion). [↑](#footnote-ref-2)
3. 76 Fed. Reg. 62496, 62497 (Oct. 7, 2011). [↑](#footnote-ref-3)
4. *A flat file is the file type that the vacated 395.16 regulation specified is how Record of Duty Status (RODS) data must be electronically transferred. According to 395.16 Appendix A: “A flat file is a simple database in which all information is stored in a plain text format with one database ‘record’ per line. Each of these data records is divided into ‘fields’ using delimiters (as in a comma-separated values data file) or based on fixed column positions.” 49 CFR § 395.16, Appendix A, 1.2.* [↑](#footnote-ref-4)
5. SD is a memory card data transfer format developed for use in portable devices. [↑](#footnote-ref-5)
6. Bluetooth is a proprietary open wireless technology standard for exchanging data over short distances using short wavelength radio transmissions from fixed and mobile devices. [↑](#footnote-ref-6)
7. IEEE 802.11 is a set of standards for implementing wireless local area network computer communication in the 2.4, 3.6, and 5 Giga hertz (GHz) frequency bands. These standards provide the basis for wireless network products using the Wi-Fi brand name. [↑](#footnote-ref-7)
8. DSRCs are one-way or two-way short- to medium-range wireless communication channels specifically designed for automotive use and a corresponding set of protocols and standards. In October 1999, the Federal Communications Commission allocated in the United States a range of spectrum in the 5.9 GHz band for DSRC to be used by Intelligent Transportation Systems (ITS). [↑](#footnote-ref-8)