

# Next-Generation EOBRs

## The Issues Ahead

By

DAVID KRAFT

Chairman – TMC EOBR Task Force

Senior Manager – Industry Standards Initiatives

QUALCOMM Wireless Business Solutions

[dkraft@qualcomm.com](mailto:dkraft@qualcomm.com)

## Table of Contents

Introduction.....	2
Background – Current EOBR Requirements and Adoption.....	3
TMC Recommended Practice Process for EOBR Guidelines.....	4
Some Key Issues for EOBR Requirements .....	5
<i>EOBRs vs. Paper Logs</i> .....	5
<i>EOBR Technology: Approach to Assuring Accuracy</i> .....	6
<i>Information for Inspections – What and how?</i> .....	7
Proactive Compliance Management Considerations.....	8
Next Steps in EOBR RP Developments .....	9

## Introduction

In response to industry concerns about the challenges of using automated hours of service tracking systems, the Technology and Maintenance Council (TMC) formed a task force in April 2005 to address performance requirements for electronic on-board recorders (EOBRs). While a regulatory update is expected on this matter, the TMC leadership recognized a need for a voluntary, industry consensus standard that would reflect the input from interested stakeholders.

As chairman of the TMC Task Force for EOBR Guidelines, I can report that the task force has learned a great deal about the issues and potential options for next generation EOBRs. The issues ahead represent significant challenges in achieving acceptability of EOBRs. It will be the intent of the forthcoming EOBR regulation update to address many of these issues, but I expect that more will be needed to provide workable guidelines for EOBRs. The task force to-date has not reached consensus on what the guidelines should be. There are currently many divergent views about EOBRs. There is also a need to develop a better understanding about the issues and alternative considerations in addressing the issues ahead.

The purpose of this document is to provide a perspective on the issues with EOBRs. It is based on the experience of the TMC Task Force in addressing EOBR guidelines and what has been learned from discussions with key stakeholders. This document does not provide recommendations for EOBR requirements. Rather, it is intended as background reading and an invitation to encourage broader participation in the TMC process for gaining a collective view on the future approach to using EOBRs in the U.S. transportation industry.

As background, this document covers the state of EOBRs today, the TMC process for recommended practice (RP) development, and a status of the EOBR RP task force. Among the issues explored:

- EOBRs vs. Paper Logs – *What do we expect from EOBRs? Should there be different standards?*
- EOBR technology and approach to assuring data integrity and accuracy – *What measures are needed to ensure reliability of EOBRs? Should we continue the trend with a flexible technology approach based on performance requirements – or should we follow the European approach with a design specification to optimize EOBR performance for its intended purpose?*
- What are the requirements for EOBRs in supporting compliance inspections? – *What information is really needed and how should it be made available?*

Although the issues represent significant challenges, there are effective uses of EOBRs today. This is particularly true for some carriers that apply proactive management programs to assure effective use of EOBRs as part of their business processes. Are there important “lessons learned” here that should be considered in defining the requirements for future EOBRs?

Finally, what will the TMC Task Force on EOBR Guidelines do going forward? While the regulation update will further delineate EOBR requirements, it is likely that gray areas and some issues will still exist. The EOBR task force can address these in a recommended practice, but only to the extent that carriers (as stakeholders) work collaboratively on what should be done in their industry. TMC provides the process for continued actions by the EOBR task force in addressing the issues and requirements for EOBRs. An invitation is made for your involvement.

## Background – Current EOBR Requirements and Adoption

The Federal Motor Carrier Safety Administration (FMCSA) has allowed the use of automatic on-board recording devices to track drivers' hours of service since 1988. The requirements of such automatic on-board recording devices are contained in the Code of Federal Regulations (CFR) title 49 section 395, with specifics for devices outlined in 395.15. Some noteworthy aspects of current requirements for EOBRs can be summarized as the following:

- Voluntary use – Carriers decide whether their drivers are to use EOBRs or paper records of duty service (RODS). (Note: There has been discussion about the regulatory update including a mandate for EOBR use.)
- Technology requirements (per the definition given in 395.2): *“Automatic on-board recording device means an electric, electronic, electromechanical, or mechanical device capable of recording driver's duty status information accurately and automatically as required by §395.15. The device must be integrally synchronized with specific operations of the commercial motor vehicle in which it is installed. At a minimum, the device must record engine use, road speed, miles driven, the date, and time of day.”* (Note: The requirement for “road speed” is only to detect vehicle movement in tracking driving time.)
- Information and display requirements – EOBR information and data recording requirements are generally consistent with RODS, however 395.8 requires a specific grid format for RODS while 395.15 requires that: *“Automatic on-board recording devices shall produce, upon demand, a driver's hours of service chart, electronic display, or printout showing the time and sequence of duty status changes including the drivers' starting time at the beginning of each day.”* (The exact format is not specified.)
- Performance and other requirements – Guidelines are also defined for driver records submission, identification of and actions for EOBR failures, use of support system for records retention, EOBR maintenance and calibration, driver training, and manufacturer certification.

It is also noteworthy that FMCSA may grant an exemption to regulation when an alternative approach demonstrates equivalent safety performance. Werner Enterprises, Inc. (working with FMCSA) pioneered the use of GPS technology and related safety management computer systems to record and monitor drivers' hours of service in lieu of complying with the handwritten RODS requirement. In granting the exemption, FMCSA noted that the Werner system demonstrated that it would achieve the requisite level of safety that is equivalent or exceeding the requirements of driver RODS as specified in 395.8.

Since that time, vendors have developed and marketed many types of automatic on-board recording devices. These generally have been newer, onboard systems that provide EOBR capabilities while primarily designed for other fleet management and safety applications. These systems are manufacturer certified to meet the 395.15 requirements.

The adoption of EOBRs today is estimated to be approximately 100,000 units in use in the U.S. While that is not significant penetration of the total driver population subject to the hours of service regulations, the adoption of EOBRs is accelerating.

## TMC Recommended Practice Process for EOBR Guidelines

TMC provides education and develops recommend practices (RP) for industry issues where there are needs for uniformity, interoperability, and/or better commonly applied practices that will be beneficial to the industry. TMC is a council of the ATA that is chartered to:

*Provide transportation efficiencies to the industry, through . . . “Delineating equipment, technology, and management practices through voluntary development; and promoting the fullest voluntary cooperation between designers and manufacturers of transportation equipment, and those who specify, purchase, and manage such equipment.”*

The exploratory meeting for EOBRs (conducted at the TMC Annual Meeting in February 2005) confirmed the interest and need to develop a RP for EOBR guidelines based on:

- Lack of uniformity. This is particularly problematic for compliance inspections, but also a concern as drivers need to re-learn different systems they may encounter.
- Lack of interoperability. As the number of EOBR offerings has increased (each with a different device, display, and other features), and as systems use proprietary data formats and transfer protocols, there are issues in support systems interoperating with different manufacturer EOBR units, drivers transferring their logs among vehicles with different units, etc.
- Several guidelines and performance requirements are vague. System certification, record amendments, driver training, EOBR calibration and accuracy, and other requirements are somewhat vague in the context of regulatory guidelines. An industry guideline, not an expanded regulation, is considered more practical in addressing these requirements.

It is important to note that a TMC RP does not impose requirements – use of a RP is purely voluntary. However, if a RP is highly effective in serving its purpose, then industry adoption of the RP makes it *the standard*.

The TMC process for creating a RP is an open, voluntary, and consensus approach for a collaboration of all interested parties in delineating a RP. The biggest challenge in defining a RP that will be widely accepted is getting enough input in the process. The EOBR Task Force started in April 2005 to draft the EOBR RP on a fast track schedule. While there were many participants on the task force knowledgeable about EOBRs and the related issues, there were challenges in gaining input from some key stakeholders. Areas where the task force sought additional input included:

- Carriers – Active involvement in task force discussions by a few – *but much more is needed*.
- Law Enforcement (CVSA) – Emphasized the issues and problems that law enforcement faces in conducting inspections where EOBRs are used.
- FMCSA – General collaboration on requirements – but FMCSA is restricted from making specific recommendations outside of the rule making process.

The task force has made progress, but clearly there is much yet to do. The active participants have learned a great deal along the way – but more input and well informed participants are still needed. With the prospect of an updated EOBR regulation, there is an urgency to broaden involvement in the process to establish generally acceptable guidelines by the industry for EOBR use.

## **Some Key Issues for EOBR Requirements**

### ***EOBRs vs. Paper Logs***

The expectations for EOBR use are often described in relation to commonality and differences with paper driver logs. A common view is that EOBRs are expected to perform better than paper based systems. EOBRs improvements (vs. paper logs) include:

- Efficiency. Record creation, submission of records, records retention, and carrier self-monitoring programs should be much more efficient with electronic systems than with paper records.
- Accuracy. Automated determination of driving time, automated entry of recurring data (e.g., driver name, carrier name, etc.) should simplify record creation and make it more accurate.
- Improved driver awareness of available hours. EOBRs could apply algorithms to continuously monitor driver available time and alert the driver before compliance is an issue.
- Improved carrier awareness of drivers' available hours and compliance performance. EOBR systems could provide timely information (beyond any regulatory requirements) that enable carriers to better plan load assignments and manage driver work schedules that yield better compliance performance.

There is another point of view, however, that is often expressed by the law enforcement community. In conducting compliance inspections, it is often assumed that EOBRs have limitations similar to paper logs. Consider the following:

- EOBRs do not completely solve the problem of log falsification. Inspectors are wary of drivers using multiple identities or system IDs, and situations where drivers simply do not log-on the EOBR to avoid recording driving time. There is also close scrutiny of the accuracy in recording off-duty and sleeper berth time, and of any record amendments.
- Lack of uniformity among EOBR systems can make it difficult for inspections. System differences exist for the display, data conventions, and how the driver makes the information available. The displays can be difficult to read, and can be awkward to use when trying to match log records with supporting documents.
- EOBR security is another area of law enforcement concern. Again due to lack of uniformity in EOBR systems, it can be difficult to determine whether the data has been compromised, whether sensor failures have occurred, and whether the system is effectively calibrated.
- EOBRs without a printer make it difficult to capture evidence of violation at the inspection site.

Should EOBRs be held to a higher standard? Is it fair to impose greater requirements on EOBRs in terms of record accuracy, data requirements, security, and other performance requirements in comparison to paper records?

It is important to determine the differences and advantages of EOBRs versus paper records. This may be addressed partly by the regulation update, but do not expect this to be completely resolved. The development of the RP for EOBR guidelines will address expectations for EOBR performance as well as the other issues as they are used.

## Next-Generation EOBRs

### *The Issues Ahead*

#### **EOBR Technology: Approach to Assuring Accuracy**

In the U.S., the current EOBR regulation supports the idea of performance requirements with a flexible technology approach. A key question for this approach, though, is how much data integrity, accuracy, and security is enough? More features to assure accuracy may add cost – would it be worth it? What is needed for sensor integration, sensor accuracy, calibration, certification, and security to assure performance requirements are consistently met for the many different EOBR systems?

In Europe, the approach and regulation are much different. There is an exact specification for a digital tachograph device and for the smart cards used to identify drivers and maintain their records. The devices do one thing with the intent of doing it exceptionally well – provide a consistent, highly effective, and very secure system to record driver logs per the regulation.

A summary of the pros and cons of the different technology approaches is the following:

<b>Electronic On-Board Recorders – Flexible Technology Approach</b>	<b>Digital Tachograph and Smartcards – Technical Specification Approach</b>
<p><b><i>The case for:</i></b></p> <ul style="list-style-type: none"> <li>▪ Performance requirements are the standard – let the market determine innovations that will cost-effectively evolve the technology approach.</li> <li>▪ Leverage new and existing technologies that provide business value and safety improvements.</li> <li>▪ Some EOBR systems significantly exceed requirements, using GPS, wireless communications, self-monitoring programs, etc. – not possible with a specified device approach.</li> <li>▪ EOBR-only minimally compliant devices provide a low cost option for drivers where other systems and technology are not needed.</li> </ul>	<p><b><i>The case for:</i></b></p> <ul style="list-style-type: none"> <li>▪ Complete consistency among all EOBRs.</li> <li>▪ Advanced security and tamper prevention measures are specified and assured in every system.</li> <li>▪ Driver identity is effectively managed.</li> <li>▪ Driver records are secure, portable, and conveniently available for compliance inspections.</li> <li>▪ Single specification enables mass scale for EOBR components – driving down costs.</li> </ul>
<p><b><i>The case against:</i></b></p> <ul style="list-style-type: none"> <li>▪ EOBR inconsistencies can be problematic in terms of interoperability, roadside inspections, and driver training.</li> <li>▪ Security and tamper-resistant performance requirements may not assure the same effectiveness as exact technical specifications.</li> <li>▪ Driver identity management remains problematic.</li> <li>▪ EOBR support for compliance inspections and providing evidence of violations is problematic.</li> <li>▪ The system does not prevent incorrect entries for off-duty or sleeper berth, nor does it prevent drivers from not logging on to the system.</li> </ul>	<p><b><i>The case against:</i></b></p> <ul style="list-style-type: none"> <li>▪ The specification requires longevity – technology innovations would be disruptive.</li> <li>▪ Complete deployment of digital tachographs is expected to take 10 years – technology obsolescence may make this a perpetual process.</li> <li>▪ Control of driver and maintenance smartcards requires another layer of requirements.</li> <li>▪ There are no options for GPS, wireless, and proactive management systems.</li> <li>▪ EOBRs are added cost – existing technology cannot be leveraged.</li> <li>▪ Device failures and loss/failure of smartcards temporarily limit the security and integrity design features – paper records are the backup.</li> <li>▪ The system does not prevent incorrect entries for off-duty or sleeper berth, nor does it prevent drivers from not logging on to the system.</li> </ul>

## Next-Generation EOBRs

### *The Issues Ahead*

#### **Information for Inspections – What and how?**

The issue of how information is provided for inspections is based partly in the current regulation. Consider the current requirement: “*Automatic on-board recording devices shall produce, upon demand, a driver’s hours of service chart, electronic display, or printout . . . .*” The problems with electronic displays are that they can be difficult to read in a roadside inspection and there are significant inconsistencies in information formats among the available products. Also, electronic displays do not provide output that can be used as evidence of the violation. Printed output is optional and generally preferred by law enforcement, but is it realistic to think that every truck should have a printer? Another issue with EOBRs in compliance inspections is a “trust factor” by law enforcement and therefore more information is considered better. This is largely due to the limitations of EOBRs in completely preventing falsification as outlined above for the issue of EOBRs vs. Paper Logs. It is also due to device and system inconsistencies – roadside inspectors are suspicious of driver entries prior to accessing the EOBR display of the log. There is also concern about detection of EOBR tampering – challenging for law enforcement due to EOBR system inconsistencies.

While EOBRs are not intended to provide an enforcement tool, the requirements for compliance inspection are important for the acceptability of EOBRs. While such requirements are subject to regulation, the practicality (and issues) of balancing the needs of carriers, drivers, and inspectors should also be considered. To further understand law enforcement views for future EOBR acceptability, the task force met with members of CVSA to discuss some alternative approaches for EOBRs providing information for compliance inspections, including:

- Summary log displays, making it easy to quickly assess compliance status – which was resoundingly rejected directly related to the trust factor (i.e., law enforcement is looking for potential falsification as well as compliance status.)
- Comprehensive, standardized data displays, providing all required log data plus details of any amendments or sensor failures – considered important but challenging due to volume of data even with consistent formats.
- Electronic data transfer of EOBR data to law enforcement systems using available technology options and standardized record formats – considered interesting but with several questions to be addressed.

While the concept of electronic or wireless data transfer of detailed records appears to have the greatest potential for meeting law enforcement needs for compliance inspections, there are some significant issues with this approach. Among the issues:

- Technology specification for data transfers – what is the initial specification and how is this maintained over time as technology changes?
- Data format specification?
- Options for data transfer – are multiple approaches acceptable, including transfer of data from a host system where data is continuously updated?
- Data integrity, privacy, and security – what are the requirements for EOBR data record sets and how are these protected on law enforcement systems?
- Law enforcement system capabilities – hardware requirements, standardized software for inspection review, communications capabilities, technology change management, etc?
- Backup procedure when data transfer fails?
- Evidence of violations – what are the rules with electronic records?

While the task force made an attempt to address some of the issues for the *what* and *how* of compliance inspections, the issues are not likely to be easily resolved.

## **Proactive Compliance Management Considerations**

Despite the potential limitations with EOBRs, there are many instances where the technology is effectively applied and proven to achieve excellent compliance results. Some would even suggest that EOBR systems are a quantum leap better than paper logs. This is particularly true with carriers that have adopted proactive management programs with EOBRs and other safety related systems. The characteristics of proactive management programs are continuous monitoring and exceptions based actions to improve results related to productivity, safety, fuel use, and regulatory compliance. The programs generally leverage on-board devices and with wireless communications and GPS features – much more than what is required in EOBR devices but offering value to the carriers and drivers with the capabilities where hours of service (HOS) tracking is an added subsystem.

Based on timely HOS data being used with other business information, proactive compliance management processes generally include:

- Monitoring driver available hours to assure load assignments do not cause HOS issues.
- Automatic detection of data integrity issues, sensor failures, and other on-board device or data transfer problems, with timely actions to resolve issues assure data integrity/accuracy.
- Driver training in system use – including EOBR functions and HOS recording requirements.
- Training of back office personnel in support systems - including EOBRs and driver HOS requirements.

It is not suggested that EOBR performance requirements need to be detailed for proactive compliance management. For many businesses, particularly owner-operators and small fleets, system capabilities for proactive management simply are not applicable or not practical. It would seem unfair to require wireless communications, GPS, and robust support systems for small scale carrier operations where these capabilities simply could not be used. On the other hand, where carriers have made substantial technology investments to obtain quality information and assure compliance performance, it would also seem unfair to require that they additionally invest in on-board device features that do not improve performance or add value.

Can there be different approaches to automating HOS recording and tracking – provided that end results meet the test of “acceptability” – whatever that may mean? Does this imply that there should be different sets of requirements or different compliance risk profiles for different categories of carriers and EOBR systems? If so, what does it mean from a regulatory, enforcement, or RP perspective?

## Next-Generation EOBRs

### *The Issues Ahead*

## Next Steps in EOBR RP Developments

Since the EOBR task force was formed in April 2005, it has worked to create a draft RP for EOBR Guidelines. A document now exists that represents a work-in-progress in defining generally acceptable guidelines that address (to some degree) the issues as discussed in this document. Of course, the document could hardly be viewed as a consensus on EOBR guidelines – involvement was too limited to achieve a consensus. It is also likely that regulatory changes have not been fully anticipated, and that changes will be required to reflect new requirements per the updated regulation. In short, the task force has some work left to do.

A general timeline for developments in EOBR requirements is outlined below:

### **2006 Timeline:**

- Feb. 14 TMC 2006 Annual Meeting – Special Session on EOBR Issues and Directions
- March 2006 EOBR Task Force resumes meetings to discuss RP developments
- May 2006 FMCSA expected to issue a NPRM for 395.15 update
- Late May – Early July Responses due to FMCSA for NPRM comments
- Date - *tbid* FMCSA issues final rule for EOBRs
- Date - *tbid* EOBR Task Force to finalize recommended draft RP for EOBR guidelines

There are opportunities for industry stakeholders to provide their points of view on EOBR guidelines. The options include:

- Participation in TMC meetings and/or the TMC EOBR Task Force – this is open and voluntary, and welcomes TMC Fleet member input.
- Response directly to the FMCSA NPRM for 395.15 – also an open and voluntary action.
- Communications with ATA to discuss or recommend to ATA an industry-based response for the FMCSA NPRM – as well as for ATA's involvement in the EOBR Task Force.

The next five to six months will determine the future requirements of EOBRs. The regulation update, to be sure, will be a key factor in this. But a consensus of industry views may strongly influence some very important questions:

- What is expected of EOBRs over and above paper RODS?
- What are the specific requirements to assure that EOBRs provide acceptable data integrity, accuracy, and security?
- Can performance requirements work with a flexible approach for technology and innovations, or are technology specifications needed?
- How will EOBRs better support the needs of roadside inspections, and are electronic inspections workable?
- Can support system proactive management capabilities be effectively factored into the performance requirements for EOBRs?

It is possible (even likely) that requirements for next generation EOBRs will not completely satisfy anyone nor solve all the issues for EOBR use. We do, however, have an opportunity to make progress, and your involvement and input is invited.