An Evaluation of Company XYZ's Use of Electronic On-Board Recorder System for Federal Motor Carrier Safety Administration (FMCSA) Regulatory Compliance

by

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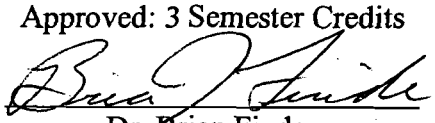

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ABSTRACT

The use of electronic on-board recorders (EOBR) for maintaining drivers' record of duty status (RODS) can be dated to the 1970's. To improve American roadway safety, the Federal Motor Carrier Safety Administration (FMCSA) started exploring the use of EOBR in the mid 1980'ss (RODS; Freund & Thomas, 1999). In 2004, Company XYZ initiated a project to use XATA Corporation's OpCenter® EOBR as a means of monitoring an estimated fleet size of 160 commercial motor vehicles. In the initial proposal, Company XYZ anticipated receiving some regulatory benefits of using XATA OpCenter® EOBR, but not as a system to meet compliance requirements set forth by the FMCSA. The purpose of this study was to evaluate Company XYZ's current on-board monitoring system as an integrated tool for complying with the FMCSA's regulations outlined in Code of Federal Regulation 49 for motor carriers. This research evaluated

FMCSA compliance reviews along with SafeStat. The study also explored the regulations for compatibility within the format available by XATA OpCenter, a final evaluation summarized the respective strengths and deficiencies for compliance management. The findings of the research indicated that the XATA OpCenter 6.4 EOBR platform provides limited application for the purpose of a stand-alone FMCSA compliance, but can be adapted to work within an established compliance programs.

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To my daughter Taylor and for the record, there has not a day that has gone by that I have not though about you. I hope that someday you will understand that the decisions that I have made were for you to have a better future, even though it seems those decision somehow drove us apart. I love you.

Finally I am honored to thank the most wonderful women my Princess, for the love and more importantly the understanding she has shown and given to me throughout this and the previous two stabs at a research project. I have not been the easiest person to deal with for the last year and a half, but now maybe we can take a bike ride and play some games like the tip one. I love you, your night in tarnished armor.

TABLE OF CONTENTS

Page

ABSTRACT ii

LIST OF TABLES vii

LIST OF FIGURES viii

CHAPTER I: INTRODUCTION 1

Purpose of the Study 3

Goals of the Study 3

Background and Significance 3

Limitations of the Study 4

Definition of Terms 5

CHAPTER II: LITERATURE REVIEW 6

XATA 6

Federal Motor Carrier Safety Administration (FMCSA) 10

Compliance Reviews 11

SafeStat 17

SafeStat: Accident Safety Evaluation Area 20

SafeStat: Driver Safety Evaluation Area 21

SafeStat: Vehicle Safety Evaluation Area 22

SafeStat: Management Safety Evaluation Area 22

§395: Hours of Service (HOS) 23

Recording Record of Duty Status (RODS) and EOBR 26

Summary 30

CHAPTER III: METHODOLOGY 32

Subject Selection and Description 32

Instrumentation 32

Data Collection Procedures 33

Data Analysis 34

Limitations of the Study 35

CHAPTER IV: RESULTS 36

Data Collected on Compliance Reviews 36

Data Collected on SafeStat 39

Regulation Analysis for EOBR system Capability 42

Evaluation of FMCSR Compliance Techniques: XATA OpCenter verses Company XYZ's Policies and Procedures 46

Discussion 48

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS 51

Conclusions 51

Recommendations 53

Areas of Further Research 54

References 55

Appendix A: SafeStat 58

Appendix B: SafeStat Period FMCSR Part and Violation Explanation 62

Appendix C: FMCSR Comparison Table 67

LIST OF TABLES

Table 1: Company XYZ Compliance Reviews (1999 through 2006) 37

Table 2: Company XYZ SafeStat Data 40

Table 3: Regulation Compatibility with EOBR System..... 44

Table 4: Compliance Review FMCSR Weighting 46

Table 5: Weighted scores Between XATA and Company XYZ's SOP 48

LIST OF FIGURES

Figure 1: OpCenter.....6

Figure 2: XATANET 7

Figure 3: Comparison of OpCenter and XATANET 8

Figure 4: SafeStat Score Computational Hierarchy 20

Figure 5: Paper Log.....27

Chapter I: Introduction

Commercial motor vehicles (CMVs) comprise 3% of all the vehicles in the nation and travel 7% of the annual miles for the nation, but they are involved in 9% of the crashes (Freund & Thomas, 1999). While the majority of the collisions involving CMVs have a primary cause resulting from non-CMVs (J.J. Keller and Associates, 2006), the CMV is involved in one out of every eight fatalities. This rate of fatalities is a major concern for the Federal Motor Carrier Safety Association (FMCSA) because driver error from CMVs is still a key contributing factor in the occurrence of traffic-related crashes (Misener, n. d.).

To improve the safety of the American roadways in the late 1980's, the FMCSA started exploring the use of electronic on-board recording (EOBR) devices, an equivalent to the airline industry's "black box" as a means of recording a driver's record of duty status (RODS; Freund & Thomas, 1999). The use of EOBRs for maintaining RODS originated in the European transportation industry in the 1970's. Since European implementation, the CMV collision involvement has dropped by 30% (Misener, n. d.). While the apparent use of EOBRs has been shown to have a positive effect on the safe operation of CMVs in Europe, the American transportation industry has been hesitant to adopt the technology because of privacy concerns, user-friendliness, and dependability of the monitoring device (Freund & Thomas, 1999).

In 2000, the FMCSA issued the Advance Notice of Proposed Rule Making for Code of Federal Regulation 49 parts385, 390, and 395, which amended CMV drivers' hours of service (HOS) effective since 1962 (FMCSA, 2004). The 2000 notice originally included the mandatory use of EOBRs for recording a driver's RODS. In the final rule

published September 30, 2003 the FMCSA removed the mandatory use of EOBRs which lead several highway safety advocacy groups to file a petition (FMCSA, 2005). In June of 2004, the District of Columbia Circuit Court of Appeals heard the case *Public Citizens et al. v. FMCSA 374 F.3d 1209, at 1216.* In June, the court released their ruling, which threw out the 2003 HOS requirements. According to the FMCSA (2005), "in dicta the court also stated that:...(3) failing to collect and analyze data on...[EOBRs] probably violated section 408 of the ICC Termination Act, which requires FMCSA to 'deal with' EOBR's" (FMCSA, 2005, p. 49979-49980). On September 30, 2004, the FMCSA released an Advanced Notice of Proposed Rule Making regarding the use of EOBR's (FMCSA, 2005), with a final ruling which was delayed to late 2006 (J.J. Keller associate, personal communication, October 11, 2006). This ruling by the Court of Appeals may suggest that the FMCSA must move past the motor carriers' continuing objections and develop the regulation for the benefit of the nations, as requested by the United States Congress on several occasions.

In 2004, Company XYZ initiated a pilot project to use XATA Corporation's OpCenter® version 6.4.0, a brand of EOBR, as a means to test the potential of monitoring an estimated fleet size of 160 power units and straight trucks, 260 drivers, and variously configured trailers at 21 locations. The original intent of the pilot project, to monitor fleet safety performance, came on the heels of several severe collisions, of which one resulted in a fatality. These collisions revolve around a unique operating environment, which involves all types of road surfaces as well as times of day. In the initial proposal, the company anticipated receiving some regulatory benefits of using XATA OpCenter® EOBR, under the assumption that their use would be based on the

voluntary use outlined in current regulation. The use of OpCenter® as the primary regulatory tool was not documented. Therefore, Company XYZ has never comprehensively evaluated their current EOBR system to determine if the device will be able to meet compliance requirements set forth by the FMCSA.

Purpose of the Study

The purpose of this study was to evaluate Company XYZ's current on-board monitoring system as an integrated tool for complying with the FMCSA's regulations outlined in Code of Federal Regulation 49 for motor carrier operations.

Goals of the Study

The first goal of this study was to evaluate how an EOBR system could assist in meeting FMCSA regulatory requirements through an evaluation of FMCSA property carrying motor carriers' regulations reviewed during a compliance case.

The second goal was to evaluate the effectiveness and efficiency of an integrated XATA Corporation's OpCenter® EOBR to meet regulatory requirements set forth by the FMCSA for Company XYZ.

Background and Significance

In 2001, Company XY and Company Z merged to form Company XYZ, including the merger of two fleets with different operating principles. Prior to the merger, one of the companies started exploring the application of EOBRs to evaluate and improve fleet management. Following the merger, there was an undertaking at the corporate level to implement the EOBR system throughout Company XYZ's fleet operation. At the time of this paper, the initial project plan was to place a data collection-base server at each location and eventually have all area servers connected to a host server at the corporate

headquarters. In the process of integrating the on-board monitoring system, the project suffered several setbacks including loss of commitment from project personnel, downgrading the project's priority, and position promotion/reassignment/separation. Other constraints to the implementation have been hardware/software stability issues and project layout. These constraints have left the implementation stage of the on-board monitoring system at a critical place.

The significance for implementing an EOBR system for Company XYZ may provide several benefits that would improve profitability through reducing labor costs in database and record management. A uniform tool would also allow for company standards to be developed and provide a uniform evaluation process and focus resources to areas that are below those standards.

Limitations of the Study

There are some limitations to the application of this study. The first limitation is that of changing regulations. At the time this research was conducted, the FMCSA was expected to release their Notice of Proposed Rule Making for EOBRs. The notice may eliminate the current optional use of EOBRs and the current guidance may be altered. Another limitation is company-specific data. The commodity which is transported (i.e. livestock and feed products) requires their equipment to be operated primarily on rural/ secondary roads that do not have uniform standards for speed limits and road design that may affect the functionality of the equipment in their specific operating environment. Another limitation is the EOBR version and configuration. XATA periodically releases versions to address changes that improve the functionality of the equipment or in response to changes in regulations. When these changes occur, limitations addressed in

this research may be incorporated into the revised release. This research will evaluate the configuration of OpCenter using an electronic key; a wireless configuration of the system may have strengths and weaknesses not accounted for by the research.

Definition of Terms

Commercial motor vehicle (CMV). "...a motor vehicle that is designed or regularly used to carry freight, merchandise, or more that ten passengers, whether loaded or empty, including busses, but not including vehicles used for vanpools, or vehicles built and operated as recreational vehicles." (FMCSA, n.d., §658.5)

Electronic on-board recorders (EOBR).

"an electric, electronic, electromagnetical, or mechanical device capable of recording driver's [sic] 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." (DOT, n. d., p. 53387)

Record of duty status (RODS). The form (also referred to as the logbook) used by all drivers, when required, to record all of their off-duty time, on-duty time and driving time (M. Kromrie, personal communication, 2004).

Chapter II: Literature Review

Introduction

The purpose of this study was to evaluate Company XYZ's current EOBR system as an integrated tool for complying with the FMCSA's regulations outlined in Code of Federal Regulation 49 for motor carrier operations. The purpose of this literature review was to examine XATA Corporation's products and services, Code of Federal Regulations 49 and the parts pertaining to the DOT compliance reviews, and the compliance review process, which includes the FMCSA's SafeStat.

XATA

XATA Corporation® (XATA) was founded in 1985 as a manufacturer and provider of EOBR technology and supporting products through merging truck based equipment, wireless communication, GPS technology and supporting software with a focus on private fleets (Wittey, 2004). In 1989, XATA released their first EOBR system, OpCenter, and the next generation for XATA's EOBR, XATANET, was released in 2003 (see Figures 1 and 2).

Figure 1. OpCenter

Source: XATA, 2005a

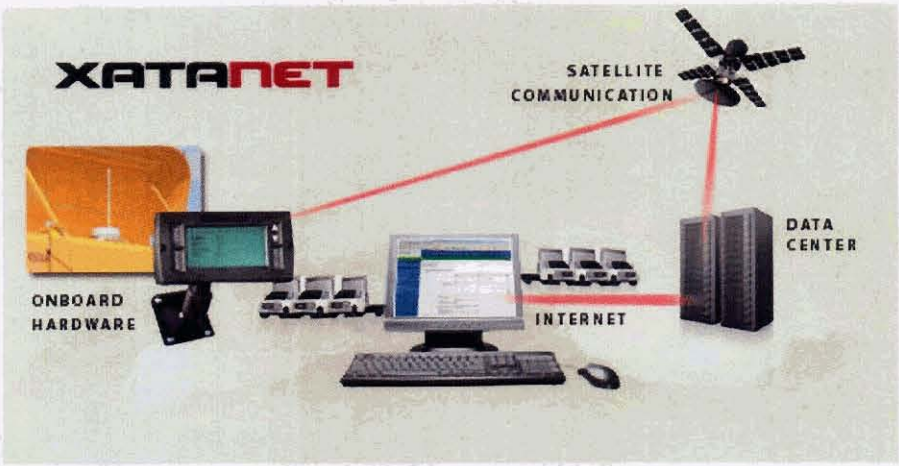

Figure 2. XATANET

Source: XATA, 2005b

> XATA perceives the differences between the two systems as follows:
>
> XATANET is ideal for organizations that seek to eliminate the startup costs and lengthy implementation times typically associated with fleet management solutions. XATANET brings fleet intelligence within easy, no-risk reach to even the most budget-constrained company. It is also ideal for customers who prefer to license software as a service and eliminate the one-time up-front charge of licensed software. (XATA, 2005c, para. 1)
>
> For customers who prefer to own, host, and administer their own software and data, XATA offers OpCenter. Customers supply their own server hardware, install software on-site and optionally connect to wireless communication providers. This provides them with a greater ability to integrate with other applications, complete control over software and hardware administration, and [ensure] compliance with corporate information technology standards. (XATA, 2005c, para. 2)

XATA (2005c) also provided a side-by-side comparison of the two platforms illustrated in Figure 3:

Model	OpCenter	XATANET
	Customer Hosted & Managed	XATA Hosted & Managed
Description	Advanced, comprehensive enterprise fleet management solution that delivers powerful intelligence and proven results	Flexible, expandable, online fleet management solution that is easy to use and delivers a rapid return on investment
Platform	Microsoft Windows based	Web-based
GPS & Wireless Communication	Optional with XATA Application Module (XAM)	Included
Cost	Initial in-vehicle equipment cost Initial software cost Purchase servers and necessary workstations Optional Wireless Communication Cost Software Maintenance Agreements	Initial in-vehicle equipment cost Monthly service fee
Support	Support & On-Site Training available for purchase Support from your IT department	Standard Support & On-line training included Premium Support available for purchase Managed 24x7 by XATA
Security	Your information is hosted on your servers within your IT environment Backups and disaster recovery is your responsibility	Protected environment to ensure safety and security Daily backups complete with offsite storage and disaster recovery
Software Upgrades	Requires software maintenance agreement after first year	Included for purchased service packages

Figure 3: Comparison of XATANET and OpCenter

Source: XATA, 2005c

One of the concerns raised during an open forum at the "2006 XATA User Conference" hosted by XATA Corporation regarding OpCenter®, centered around XATA's position on the life of the platform and XATA's effort to support OpCenter®

(XATA representative, personal communication, October 2, 2006). The 2006 conference suggested that OpCenter® was a valuable platform and would be around for the extended future, a reversal from the previous conference's position implying that OpCenter® had past maturity and in the near future, that its use may be discontinued. Customers of OpCenter were encouraged to prepare to move to XATANET. XATA's position reversal was based on the customer security requirement that allows the customer to use intranet security controls that cannot currently be reached with the internet based XATANET. An example would be a customer transporting pharmaceutical or hazardous materials that might prefer or be required to have stricter security of their intranet to manage transportation equipment, where a security breach may have substantial negative consequences for the motor carrier and the public.

Another concern raised during the open forum was response time to correct errors in the system that have been identified by customers. The example provided was "fuel smoothing" (XATA representative, personal communication, October 2, 2006) or the practice of notifying customers of corrective programs for identified programming problems (XATA representative, personal communication, September 21, 2006). A Company XYZ representative explained that because of fuel smoothing, they spend an estimated one hour per day correcting errors which is necessary for valid reports.
The tools of OpCenter® are based on several key areas (XATA, 2003). The system first requires the input of driver, equipment and location fields (i.e. company facilities, customers, etc.) that are uniquely identified and monitored. The OpCenter also has the function to set up either company or fleet standards for equipment operations (i.e. pre/post and equipment standards, diagnostics, speed, etc.), and driver-related options

(logging, GPS positioning, travel times, etc.). These standards are then evaluated against the actual performance, and entered into reports that can be accessed through Frontline. The responsible representative can evaluate the information and edit any discrepancies before reviewing reports and evaluating the performance of the equipment, individual drivers or fleet activities.

Federal Motor Carriers Safety Administration (FMCSA)

The Federal Motor Carrier Safety Administration (FMCSA), under the authority of the Department of Transportation (DOT), regulates motor carriers in the United States (J.J. Keller and Associates, 2006). The creation of the FMCSA can be dated to 1887 and the establishment of the Interstate Commerce Commission (ICC) to regulate pricing and competition among the railroad industry. This authority was extended to the operation of motor carriers in 1935 by President Roosevelt (United States DOT, 2005). Along with regulating competition among motor carriers, the ICC was also responsible for establishing driver qualifications, maximum work schedules, developing equipment standards and granting authority to a motor carrier to operate (Barrett, 2005). The ICC was the primary authority for the trucking industry until the ICC Termination Act of 1995, which involved restructuring the DOT and transferring the oversight from the Office of Motor Carriers to the Federal Highway Administration. In late 1999, President Clinton signed the Motor Carrier Safety Improvement Act of 1999 which removed the Office of Motor Carriers from the Federal Highway Administration jurisdiction. In March 2000, the new FMCSA launched with a "mission to reduce crashes, injuries, and fatalities involving large trucks and buses to significantly improve truck and bus safety on the nation's highways" (Barrett, 2005, p. 46). Though the FMCSA roots can be traced back

over a century, this relatively new body has been charged with improving roadway safety through a combination of education and updating outdated policies while balancing the delicate operating environment that has evolved between shippers, receivers, motor carriers and the gross domestic product.

Compliance Review

Compliance reviews are a means of evaluating a selected motor carrier's management effectiveness of operating safety by maintaining regulatory compliance. The incorporation of reviewing motor carriers was dated to 1967 when the Federal Highway Administration started conducting compliance reviews and reporting their findings to ICC (JJ Keller and Associates, 2006). In 2005, the FMCSA conducted 8,097 compliance reviews of over-the-road and short-haul motor carriers. The greatest concern with the compliance review process is not in the methodology of the review process, but rather the frequency in which they are conducted (Keane, 1993). The largest complaint from special interest groups is that the since the creation of the FMCSA, the number of annual compliance reviews has decreased as the selection emphasis from FMCSA shifts to SafeStat data for compliance review selections.

The selection of a motor carrier for a compliance review is initiated for several reasons (JJ Keller and Associates, 2006). The predominate selection tool is FMCSA's electronic statistical data base that collects information on all carriers with a DOT number called "SafeStat," which generates a federal or state compliance review if safety values for two or more areas reach a value of 75 or above. Another reason a compliance review may be performed is as a follow up to a previously performed compliance review that resulted in a "conditional" or "unsatisfactory" rating and a motor carrier receives

complaints that justify a review. There are two non-safety factors that would result in the FMCSA performing a compliance review; the carrier has just received operating authority and needs to receive a safety rating, or by the request of the motor carrier.

The compliance review requirements are found in 49 CFR part §385.5 (a) through (k) and part §382 outlining the areas covered during a compliance review (J.J. Keller and Associates, 2006). These regulations are divided into six factors: general, driver qualification, operating/driving, vehicle/maintenance, hazardous materials, and crash (recordable crash rate; Wisconsin DOT, 2003). Each of the six categories is given one of three ratings: satisfactory, conditional, or unsatisfactory. Carriers with two or more areas rated unsatisfactory or one unsatisfactory and more than two conditional areas are not allowed government contracts and can be stripped of operating privileges. Conditional ratings are given when one factor is unsatisfactory and two or less areas are conditional or more than two areas are rated conditional. Satisfactory marks are awarded only if two or less conditional factors are identified (JJ Keller and Associates, 2006).

The controlled substance and alcohol regulations (Part 382) require a motor carrier to provide supporting documentation that the motor carrier has a formal drug and alcohol policy that addresses when a DOT controlled substance and alcohol test is to be administered, procedures for a positive sample, what records are to be maintained and for how long, and what training has been provided to supervisors and drivers (Wisconsin DOT, 2003). The Wisconsin DOT (2003) outlined various areas as constituting a serious violation: failing to implement an alcohol and controlled substance program, using a driver having a blood alcohol concentration of 0.04 or greater, using a driver who refused to submit to an alcohol or controlled substance test, and using a driver known to have

tested positive for controlled substances. Though, on paper, all categories are weighted equality, a deficiency in the alcohol and controlled substance program may have the greatest severity to the motor carrier being reviewed.

The commercial driver's license (CDL) standards (Part 383) indicate that a driver of a CMV needs to have the proper class of license for the vehicle being operated (J.J. Keller and Associates, 2006). The license classes are "A" for gross vehicle weight (GVW) or gross vehicle weight rating (GVWR) over 26,000 pounds with trailers over 10,000 pounds; "B" for over 26,000 pounds with trailers 10,000 pounds or less; and "C" for vehicles below the GVWR or GVW of 26,000 and have trailers 10,000 or less, but haul passengers or hazardous materials. Serious violations in this category include "allowing, requiring, permitting, or authorizing a driver to operate a CMV, whose CDL has been suspended, revoked or canceled by a State or... is disqualified to operate and CMV," "allowing...an employee with more than one CDL to operate a CMV," and "allowing... a driver to drive who is disqualified to drive" (Wisconsin DOT, 2003, p. 7).

The minimum insurance coverage outlined in Part 387 is based on vehicle weight as well as cargo type. Vehicles weighing 10,000 pounds or less require $300,000 worth of insurance coverage; vehicles over 10,000 pounds that do not haul hazardous materials require $750,000 in coverage; vehicles hauling hazardous materials must posses at least one million dollars worth of coverage; and vehicles that transport passengers and haul class A and B explosives or more than 3,500 gallons of hazardous materials require a minimum of five million dollars in coverage (JJ Keller and Associates, 2006). The motor carrier must also have on file an MCM-90 or MCM-83 which are certification forms that are required by the FMCSA that are certified by the insurer that the motor carrier, among

other things, have a specified level of coverage for a given period of time, similar to the auto insurance cards. A serious violation is "operating a motor vehicle without... the required minimum levels of financial responsibility coverage" (Wisconsin DOT, 2003, p. 8).

Maintaining an accident register and copies of accident reports (Part 390) is required for accidents that result in a fatality, medical treatment away from the accident scene, and/or where at least one vehicle needing to be towed away from the scene (JJ Keller and Associates, 2006). At a minimum, the accident register must include the accident date, location, the driver's name, the number of fatalities and DOT injuries, and whether there was a release of hazardous material. The primary violation that is sited by Wisconsin DOT is "making or causing to make fraudulent or intentionally false statements of records and/or reproducing fraudulent records" (Wisconsin DOT, 2003, p. 10).

The qualification of drivers (Part 391) needs to be filed with the following information included:

- The driver's application for employment.
- The driver's medical examiner's certificate.
- The driver's medical waiver, if one has been granted.
- The driver's certificate of road test (a legible photocopy of a valid commercial driver's license is an acceptable substitute if the driver was road tested for the class of vehicle the driver will operate).
- A written record of investigation (preceding 3 years) of past employers contacted to verify applicant's previous employment.

- A response from a state agency about employee's driving record from the past 3 years (if a driver held a driver's license in multiple states, each state must be contacted).
- A response from each state agency to the annual driving record inquiry.
- An annual review of driving record showing date of review and who performed the review.
- An annual list or certificate relating to violations of motor vehicle laws. (Minnesota DOT, p. 37)

Concerning the operator driving commercial motor vehicles, Part 392 of the Federal Motor Carries Safety Regulation (FMCSRs) states that the drivers must operate their vehicles within the confines of local, state or federal laws (FMCSA, n. d.). Placing a CMV in to service, Part 393, addresses the minimum necessary equipment that is required to be installed and operational at all times while the vehicle is in service. Evaluation of these two regulations along with motor vehicle accidents is currently monitored on a 30 month rolling average through SafeStat. During the compliance review, these factors, along with motor vehicle accidents, are recalculated using the miles driven to determine the safety rating. Values exceeding the threshold are considered unsatisfactory and those under are considered satisfactory (Company XYZ representative, personal communication, 2001).

Another component of the compliance review is an evaluation of the HOS regulation Part 395 of the FMCSR's (JJ Keller and Associates, 2006). While the number of drivers reviewed may fluctuate, the standards that are evaluated remain the same. The selected drivers and the company are considered compliant if the selected driver has a

minimum of 10 hours off duty before a maximum of 11 hours of driving or working more than 14 hours in a single tour of duty period. The drivers workweek also cannot exceed 60 hours in seven days or 70 hours in eight days for seven day a week operations (JJ Keller and Associates, 2006), or compliance to any declared provision allowed in federal or state regulations (Wisconsin DOT, 2003). To verify the accuracy of the RODS, time and dated documents are compared to the written records. These include but are not limited to receipts for fuel, scale/weighting of vehicles, and shipping papers, payroll records, and on-board computer data (JJ Keller and Associates, 2003; Wisconsin DOT, 2003). Critical violations for this category center around either false or no records and physical qualifications where drivers are in violation of the substance abuse standards (JJ Keller and Associates, 2006).

The final area that would be reviewed is vehicle inspection, repair, as well as maintenance, and Part 396 of the FMCSR's, which states that all "parts and accessories shall be in safe and proper operating condition at all times" (FMCSA, n. d., §396.3(a)(1)). These include those specified in Part 393, "any additional parts and accessories which may affect safety of operation, including but not limited to, frame and frame assemblies, suspension systems, axles and attaching parts, wheels and rims, and steering systems (FMCSA, n. d., 396.3 et seq.).." "For vehicles [operated by motor carrier] for 30 consecutive days or more" needs to be marked and all maintenance records need to "indicate the nature and due date of the various inspection and maintenance operations performed; a record of inspections, repairs and maintenance [performed] that indicate their date and nature." These records need to be maintained at a minimum of one year or for six months after the vehicle is sold (FMCSA, n. d., 396.3 et seq.). Violations in this

category include either using equipment that has been marked out-of-service or failing to correct out-of-service defects (Wisconsin DOT, 2003).

The transportation of hazardous materials, driving, and parking rule violations (Part 397) along with violation of hazardous materials regulations (Parts 170 through 177), and hazardous materials incidents are outside the operating authority of Company XYZ. Therefore, a review of these regulations will not be addressed in this literature review.

SafeStat

One of the tools used to evaluate the operating safety of motor carriers is the Motor Carrier Safety Status Measurement System commonly referred to as "SafeStat" ("Caution Urged," 2006). Prior to implementation of SafeStat, the FMCSA's evaluation of safety fitness of an individual motor carrier's performance was based solely on the outcome of a DOT compliance review that had three ratings, satisfactory, conditional, or unsatisfactory, which would remain in effect until the next review. As part of the Intermodal Surface Transportation Efficiency Act of 1991, the United States Congress requested that this method be reviewed (John A. Volpe National Transportation System Center, 2004). The DOT responded by initiating a research project lead by the John A. Volpe Center in 1993 that laid the foundation for SafeStat. After two years of development, the first version of SafeStat was released, and by 1999, the DOT made the system available to the public.

The data available allows the FMCSA to evaluate individual motor carriers on a 30 month rolling average against all other carriers in their operational field, which the FMCSA views as an advancement from previous evaluation processes (John A. Volpe

National Transportation System Center, 2004). Though the FMCSA views SafeStat as a significant step forward the system it has critics, and the DOT agency itself raised a question about the data accuracy following an internal audit of the FMCSA (Schultz, 2004). The biggest criticism of the SafeStat methodology, as voiced by an unnamed official within the DOT agency, is the manner in which data is inputted. For the system to provide reliable data, it relies on three sources which includes: compliance review findings, motor carrier provided census data, and individual states' reporting. The data from carriers and state agencies is assumed to be accurate, but routinely they provided inaccurate or no data ("FMCSA Officials," 2004), which crippled the validity of the SafeStat model (Schultz, 2004). There are no uniform standards which allow states to potentially file different records to the same situation. Another concern from motor carriers is the exploitation of carrier and driver-specific information (e.g. corporate litigation and identity theft; "FMCSA Officials," 2004). The FMCSA has acknowledged these concerns and has requested that carriers review the information for accuracy. Another step taken by the FMCSA was to remove driver and several carrier information fields from public view and only be available to a specific carrier with a password (M. Kromrie, personal communication, September, 2004). Though it can be argued that SafeStat has several deficiencies, the FMCSA ultimately uses the SafeStat information as a means of evaluating a motor carrier's safety performance.

SafeStat serves several functions for the FMCSA in that it prioritizes carriers' compliance reviews, assists in identifying and monitoring poorly performing carriers, and provides a recommendation during roadside inspections for specific carriers ("Caution Urged," 2006). Additional roles for SafeStat include assisting government agencies in

performing contract selection for motor carriers, allowing the carrier to conduct self-evaluation of their safety performance, and also assisting private business to evaluate a third-party carrier's safety performance (John A. Volpe National Transportation Systems Center, 2004).

As part of its analysis function, SafeStat provides an overall safety-rating based on four categories: accidents, driver inspections, vehicle inspections, and management review (Figure 3; John A. Volpe National Transportation Systems Center, 2004, p. 2-1). Carriers that score a 75 or above in two areas are considered a higher compliance review priority on both a federal and state level ("Caution Urged," 2006). The data for the four areas comes from the states' reporting of commercial vehicle DOT recordable crashes, compliance reviews, enforcement cases, roadside inspections that include moving violations, and motor carrier census data. From this pool, the data collected on the motor carrier for categories of accidents, driver, and vehicle, are evaluated on a 30-month rolling average. The management category score is applicable for 18 months following a compliance review or two closed enforcement cases. An example would be an investigated DOT recordable accident within the past 72 months. Census data, number of drivers, power units and miles traveled are collected when a carrier applies for operating authority and then on a bi-annual basis where SafeStat then uses this data to standardize the motor carrier data across the industry. When the carrier's overall scores are calculated, very few have values assigned in the management category because of the relatively short period of time they are valid in the SafeStat model along with the small portion of annual compliance reviews to registered motor carriers.

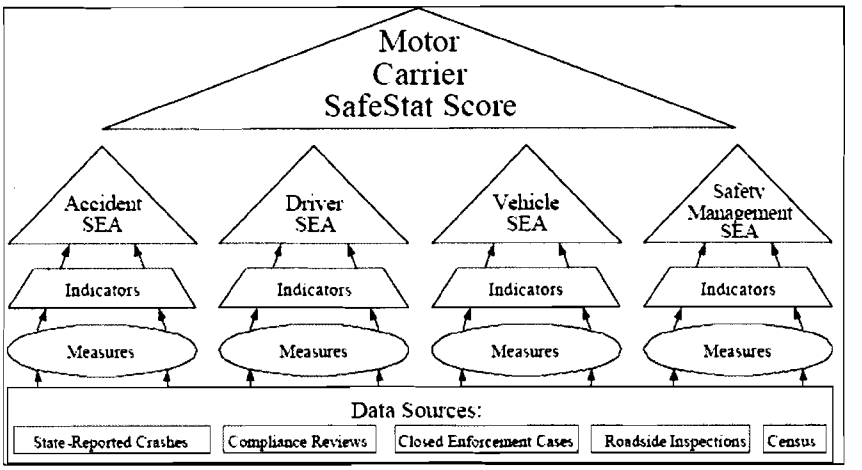

Figure 4. SafeStat Score Computational Hierarchy

Source: John A. Volpe National Transportation Systems Center, 2004, p. 2-1

SafeStat: Accident Safety Evaluation Area

As part of the SafeStat analysis process, the Accident Involvement Indicator (AII) calculates the accident score using the crash date, injury, fatality, and hazardous material release information (John A. Volpe National Transportation Systems Center, 2004). SafeStat uses the following formula: "Total Consequence/Time Weighted Crash Value (TCTWA) / (average number of power units)" (John A. Volpe National Transportation Systems Center, 2004, p. 3-2). Crashes resulting in an injury or fatality are given a factor of two, or collisions resulting in only a towed vehicle receive a weight of one. If a hazardous material was released, one point is added to the severity. The crashes are then broken into three time segments starting with the most recent month; accidents occurring in the previous zero to six months receive a weight of three, seven to 18 months would receive a weight of two, and those occurring within the previous 19 to 30 months would receive a weight of one. Collisions older than 30 months are not calculated. These three areas are then weighted together to provide the TCTWA. To determine the average number of power units, the total number of power units are separated into groups and

weighted similarly to the above TCTWA and added together and then divided by three. The AII is then categorized into six groups according to the number of accidents, where they are assigned a percentile ranking.

During a compliance review, a Recordable Accident Rate (RAR) can be calculated with the following formula: RAR = 1,000,000 x (# or recordable crashes) / vehicle miles traveled. At that point, depending on the number of recordable accidents, the carrier is assigned to one of four categories (John A. Volpe National Transportation Systems Center, 2004), and a score is assigned according to the SafeStat algorithm.

SafeStat: Driver Safety Evaluation Area

The Driver Inspection Measure (DIM) uses the total number of out of service violations (DOOSV), the number of drivers placed out of service (OOSD), and the number of inspections (DI), which are categorized and time weighted (TW) in the same manner addressed as the vehicle indicator(According to John A. Volpe National Transportation Systems Center, 2004),. An additional multiplier accounts for drivers violating an OOS ruling or jumping out of service (JOO) (John A. Volpe National Transportation Systems Center, 2004).This information is then calculated by ((TW DOOSV + TW OOSD) / DI) x jumping out of service multiplier (JOOM) = DIM. The DIM is then grouped according to the total number of inspections for the 30 months and assigned a percentile ranking in that group to determine the Driver Involvement Indicator (DII).

According to John A. Volpe National Transportation Systems Center (2004), the next calculation is the number of moving violations, which is weighted and categorized in

the same manner mentioned above, and provides the TW moving violation. The driver calculation is determine as follows (DII*2 + MVI) / 3 = SEA.

SafeStat: Vehicle Safety Evaluation Area

The vehicle indicator looks at the number of OOS vehicle violations and the number of inspected vehicles to calculate the vehicle involvement measure using the formula ([TWA # OOS Violations + TWA # of OOS Vehicles] / TWA of inspections) = VIM (John A. Volpe National Transportation Systems Center, 2004). The vehicle involvement indicators are then established by ranking the carrier among four categories according to the number of violations and then are assigned a percentile ranking accordingly the SafeStat algorithm.

SafeStat: Management Safety Evaluation Area

The safety management evaluation draws a score from one of the three following areas: enforcement history, hazardous material reviews, or safety management reviews (John A. Volpe National Transportation Systems Center, 2004). For these areas to be calculated, the company would need two have two closed enforcement cases, a focused compliance review of a specific factor or individual in the past 72 months, a hazardous material review in the past 18 months, or a safety management review in the past 18 months (John A. Volpe National Transportation Systems Center, 2004). If a carrier does not meet the above criteria, no score will be assigned for the management review category and the management category will be removed from the calculation of the overall SafeStat score.

§395: Hours of Service (HOS)

The origins of commercial motor vehicle drivers being required to maintain a RODS can be dated to the 1930's and the ICC (FMCSA, 2005). In the original HOS requirements, a driver could only work a 15-hour tour of duty in a 24-hour period, going from midnight to midnight or noon to noon. The first notable change came in 1962 when the 15-hour tour of duty in a 24-hour period was replaced with a driver being required to take eight hours off after accumulating a 15-hour tour of duty. The ability for a driver to accumulate hours meant they could suspend their daily tour of duty by either logging off duty or by resting in the sleeper berth. With the way the regulations were re-written in the 1960's, the industry adapted shipping and receiving practices that assumed the drivers would manipulate their hours to meet deadlines (D. Jerrell, personal communication, 2004). This led drivers to routinely choose between what today has been established as adequate sleep requirements, and meeting their established shipping deadline set by the shippers and receivers.

Because of the above concerns as well as additional government based concerns, the FMCSA released revised HOS regulations on September 30, 2003 that were in effect from January 4, 2004 until September 30, 2005 (FMCSA, 2005). Changes as a result of these revisions reduced the total daily tour of duty to 14 hours, the daily drive time was extended to 11 hours, off duty time was increased to 10 hours, the 72 hour restart was reduced to 34 hours, and the ability for drivers to stop his/her clocks to extend their tour of duty was condensed to the sleeper berth exemption. This exemption only allowed the driver to split the off duty time into two sleeper berth periods equaling a minimum of 10 hours with one of those periods not less than two hours.

In a response to the FMCSA's advanced notice of proposed rule making (FMCSA, 2004) for EOBR, the American Trucking Association (ATA) stated they saw a statistically significant decrease in accidents after the 2003 HOS were implemented (FMCSA, 2005). The Motor Freight Carriers Association, along with a statement by J.B Hunt, responded more conservatively in that while accidents did decrease, their data was inconclusive in establishing that the revised HOS requirements were the primary contributing factor (FMCSA, 2005).

While there were indications that the 2003 HOS requirements were reducing collisions, the comments received by the FMCSA regarding specific components to the HOS revealed a more subjective response based on the interests of the various positions of the respondents (DOT, n. d.). Safety advocacy respondents supported the reduction of daily tour time, eliminating the ability of a driver to extend indefinitely their tour, and increasing minimum off duty time. Respondents for highway safety refuted the extension of the daily drive time, reducing the restart provision from 72 hours to 34, and the sleeper-berth exemption, which allowed for daily tour of duty being extended. On the other side of the issue, trucking organizations, in general, supported the extension of the drive time by one hour, decreasing the restart provision, and the sleeper berth exemption. The trucking organizations opposed the elimination of the driver's ability to extend their workday and the decreases in daily tour of duty. The responses by drivers were mixed with regard to specifics of the regulation, though commenting drivers did have a fairly consistent concern that little attention was given to addressing the shipping and receiving practice of prolonged wait times between arrival time and loading/unloading (FMCSA, 2004).

As a result various concerns regarding the 2003 HOS regulations, the special interest groups sent a petition to the United States Court of Appeals for the District of Columbia Circuit Court on June 12, 2003 (FMCSA, 2005). The United States Court of Appeals for the District of Columbia Circuit Court set a court date, April 15, 2004, for oral arguments and they reached their final ruling on July 16, 2004. According to the FMCSA's HOS final ruling 2005, pages 49979 and 49980, they were vacated on the following grounds:

1) FMCSA's justification for increasing allowable driving time from 10 to 11 hours might be legally inadequate because the Agency failed to show how additional off-duty time compensated for more driving time, and especially because it failed to discuss the effects of the 34-hour recovery provision;

2) splitting off-duty time in a sleeper berth into periods of less than 10 hours was probably arbitrary and capricious, because FMCSA itself asserted that drivers need 8 hours of uninterrupted sleep;

3) failing to collect and analyze data on the costs and benefits of requiring electronic on-board recording devices (EOBRs) probably violated section 408 of the ICC Termination Act, which requires FMCSA to ''deal with'' EOBRs; and,

4) the Agency failed to address or justify the additional on-duty and driving hours allowed by the 34- hour recovery provision (FMCSA, 2005).

This ruling resulted in President George W. Bush signing the Surface Transportation Extension Act of 2004, Part V (Public Law 108-310, 118 Stat. 1144) which extended the 2003 HOS until September 30, 2005 (FMCSA, 2005). To comply with the court's ruling, the FMCSA released a revised HOS regulation on August 25,

2005, which became effective October 1, 2005. The 2005 HOS principle change was with regard to the sleeper-berth provision. The 2003 HOS allowed drivers to extend their 14 hour work day by staggering their sleeper birth time into two periods between the driving and duty time as long as no two periods violated the driving, duty, or off duty times, whereas the 2005 HOS sleeper birth provision required an eight hour and a two hour period with only the eight hour period extending the driver's 14 hour work day. When one compares the 1939 and the 2003 HOS requirements, this revision essentially eliminated the ability of the driver to use the sleeper-birth provision to extend the 14-hour workday and brought the driver to a circadian cycle. The final HOS rulings also created a separate project for the sole purpose of evaluating the required use of EOBR for maintaining the driver's RODS, which was addressed in point three of the circuit court's decision.

Recording Record of Duty Status (RODS) and EOBR

Since the 1940's, the standard for drivers to record their RODS has been to maintain paper logs until 1988, when the ICC amended the RODS format to include the option for companies to forego paper logs for electronic format (FMCSA, 2005). The data requirements for a driver recording the RODS share similarities between FMCSR §395.8 paper log requirements (Figure 5), and FMCSR §395.15 the electronic log equivalent. The variation between the two regulations becomes apparent in the format.

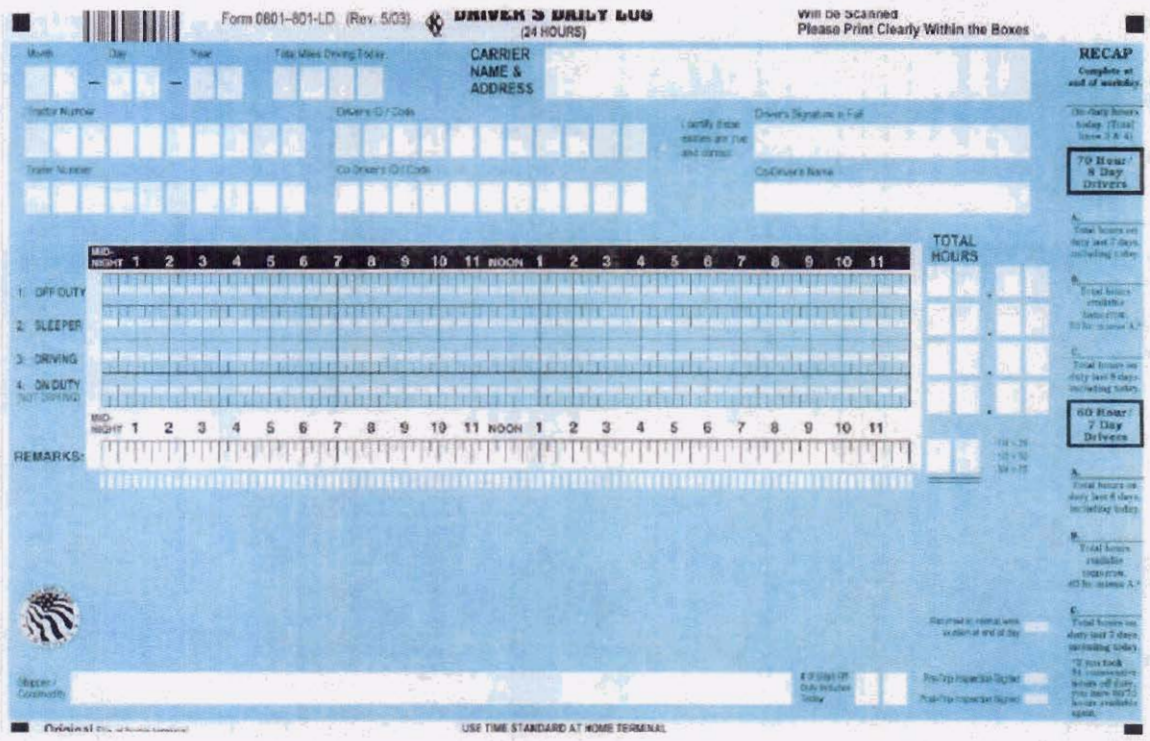

Figure 5. Paper log

Source: JJ Keller and Associates, 2003

According to the FMCSR §395 et seq., all drivers of commercial motor vehicles are required by law to maintain RODS in the paper or electronic format. The one exception to this is for motor carrier operations that meet the requirements for short haul operations (49 C.F.R. part §395.1 et seq.). To qualify for the provision, the driver must meet all the below requirements:

1) From the driver's normal work location, the driver can only operate within either a 100 air-mile radius for CMVs requiring a CDL, or up to a 150 air-mile radius for CMVs that do not require a CDL;
2) The driver returns to the reporting location and is released from work within 12 consecutive hours;
3) The driver has at least 10 consecutive hours off duty;

4) The driver does not exceed 11 hours maximum driving time;

5) The motor carrier maintains for 6 months accurate and true time records showing the time the driver started and ended his/her day, the number of hours worked, and the work schedule for the past seven days (Minnesota DOT, n. d., p. 52).

As soon as a driver knows that he/she will fail to meet any of the above requirements, then a log must be completed for that day.

The logging requirements can be found at the FMCSR's §395.8, §395.15 et seq. and require RODS to be accurate to last duty status change (i.e., off duty, sleeper birth, driving, on duty not driving) over a 24-hour period grid FMCSA, n. d.). The paper and electronic logs need to include the following information:

1) Date

2) Total miles driving today

3) Truck or tractor and trailer number;

4) Name of carrier

5) 24 hour period starting time (e.g., midnight, 9:00 a.m., noon, 3:00 p.m.)

6) Main office address;

7) Remarks;

8) Name of co-driver

9) Total hours (far right edge of grid)

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

One initial difference is the requirement of a driver's signature on paper logs, but not on the electronic logs. The paper logs are certified by a driver as being accurate only when

signed, where the electronic logs are interpreted to be signed as result of submittal with one exception; if an electronic log is printed for the purpose of an original, then that paper copy needs to be signed by the driver per 49 C.F.R. part §395.15(b)(5). Motor carriers choosing to use an EOBR log management system to replace the paper log management will have to meet the guidelines for electronic logs outlined in FMCSR §395.15.

The FMCSA (n. d.) also states that a motor carrier needs to take various factors into account in either the development of their own system or when purchasing services from a third party specific to 49 C.F.R. part §395.15. The EOBR will need to be able to retrieve the driver's current and the past 7/8 days RODS and either print, chart or display those records when requested by an authorized official present. Drivers will also need to have their individual RODS' distinguishable drive and duty time along with that days accumulated miles and the authorized official will have available to them an instruction sheet for the EOBR in the cab. The EOBR system will also need to uniquely identify each driver and retrieved data can only reflect that driver (JJ Keller and Associates, 2006). The system would also need to account for all locations and notify the driver visually or audibly of either sensor or system-based failures that may or have compromised the accuracy of the electronic RODS. The motor carrier will also need to follow the established calibration schedule for the EOBR system and, on a monthly basis, back the data up at a secondary location or format (e.g. computer disc or CD). The final factor that a motor carries must consider is that FMCSA has the authority to rescind the uses of on-board records by any motor carrier (FMCSA, n. d.).

Summary

The purpose of this literature review was to evaluate FMCSA's compliance review process, the selection of motor carrier and safety indicators through SafeStat, along with XATA Corporation's OpCenter® as a tool for Company XYZ's regulatory management. This literature reviewed suggested the key components in establishing a future compliance review's focus can be identified in two areas: previously performed compliance reviews and the motor carriers active SafeStat data. Future compliance reviews would evaluate what abatement procedures were implemented to correct previously identified deficiencies from past reviews. Another component is the SafeStat data, which may serve two purposes, establishing the compliance review need and ranking along with potential focuses for the compliance review. The combination of these two factors would provide a comprehensive overview of the motor carrier's safety management culture as well as a focal point for a motor carrier to establish self-improvement criteria and baselines.

The literature review also evaluated the FMCSA compliance review categories, which suggested that it is not feasible for a motor carrier to solely rely on any single tool to meet every regulatory factor (FMCSA, n. d.). At the time of this research, the regulations required information to be maintained in their original form, or at a specified motor carrier location, and/or in formats that may not meet the functional capabilities of an electronic on-board computer system or any other electronic systems. The research also identified that some FMCSRs require sensitive documents to be maintained on individual drivers requiring a specified level of security for the protection of the employee's rights and to prevent a motor carrier from unnecessary litigation. However,

the FMCSR did demonstrate potential opportunities for consolidation within the functionality of an electronic on-board computer system. Before a company adopts new methods for regulatory compliance, the organization needs to determine if a new process will either improve or decrease management's effectiveness.

Chapter III: Methodology

The purpose of this study was to evaluate Company XYZ's current EOBR system as an integrated tool for complying with the FMCSA's regulations outlined in Code of Federal Regulation 49 for property carrying motor carrier operations. The first goal of this study was to evaluate how an EOBR could assist in meeting FMCSA regulatory requirements through an evaluation of FMCSA property carrying motor carrier regulations reviewed during a compliance case. The second goal was to evaluate the effectiveness and efficiency of an integrated XATA Corporation's OpCenter® Electronic on Board Recorder (EOBR) to meet regulatory requirements set forth by the FMCSA.

Subject Selection and Description

Human subject selection and safety did not apply to this research because no personal information was acquired. The evaluation of the EOBR system to meet regulatory compliance and the use of human subject information would not impact the findings.

Instrumentation

Two surveys were developed for this research. The first survey's objective was to establish a weighted needs assessment for improvements to their regulatory management practices for the company. This needs assessment was based on historical indicators from DOT compliance reviews and active DOT data within the SafeStat model. The second survey was designed to evaluate the use of OpCenter versus current practices for areas from driver involvement, collection and transfer of data, and the managers' time investments to authenticate and validate data. The survey allowed for subjective analysis of process reliability, ease of use, the design of the system to meet regulation

requirements, the ability of the model to meet security needs for employee confidentiality (if applicable by regulations), each method's ability to provide reliable data, and data verification (if applicable by regulations). The values collected from the second survey would then be weighted with values established from the first survey to establish a weighted value for each compliance category.

Data Collection Procedures

Data was collected for regulations that are evaluated during a compliance review from FMCSA Code of Federal Regulations 49 parts 382, 383, 387, 390, 391, 395, 396, and 397, though the website http://www.fmcsa.dot.gov/rulesregulations/administration/fmcsr/fmcsrguide.asp?section_type=, with a focus on regulations related to property carrying motor carriers.

Data collected from Company XYZ was conducted in conjunction with a company representative to ensure anonymity with confidential data. The evaluation of closed compliance review documents was controlled though a company official to ensure that company policies were maintained. Sensitive documents were reviewed at the place of business and these documents were not removed from the premises. The company official also released coded information from SafeStat that is not available to the general public. Prior to document review, the company official and the researcher agreed upon the pertinences for providing an adequate evaluation of the company's safety performance.

Training and operating literature was reviewed on XATA's OpCenter for evaluating the application of the system to meet the above FMCSA motor carrier regulation for property carriers. Application screens and reports relating to equipment,

drivers, and locations was retrieved from OpCenter with information that may identify the company, locations, drivers, or equipment removed prior the release to the researcher.

Data Analysis

An empirical analysis was conducted on the FMCSA regulations evaluated during a compliance review to determine the applicability for monitoring with an EOBR. Sensitive information requiring security or regulation not meeting the operating environment were removed from further analysis for integration with the EOBR.

An empirical evaluation was conducted to assess cited deficiencies from closed compliance reviews and enforcement findings to access sustained management deficiencies and plausible concern for future compliance review for Company XYZ. A baseline was established through evaluating closed compliance audits. The baseline information was then compared against current regulatory compliance found on SafeStat. The current data came from the measurement and indicators regarding accidents, drivers, vehicles and management on Company XYZ through the information accessible on FMCSA's SafeStat database for the preceding 30 months.

Regulations compatible with monitoring through OpCenter were evaluated based on a Likert scale weighted 1 through 5 with categories including ease of use, regulation specific compatibility, data security, reliability, and data verification (if applicable). The data collected from the Likert scale sum was then assigned a weighted value of one (1) for non-cited categories in safety components in either previous compliance reviews or SafeStat, a weight of 1.5 for deficiency in one category, and two (2) when deficient in both categories. The information collected was then compared between the EOBR and current practices to meet regulatory requirements.

Limitations of the Study

There are some limitations to the application of this study. The first limitation is changing regulations. At the time this research was conducted, the FMCSA was expected to release their Notice of Proposed Rule Making for EOBRs. The notice may negate the current optional use of EOBRs and the current guidance may be altered. Another limitation is company-specific data. The commodity transported requires Company XYZ's equipment to be operated primarily on rural/secondary roads that do not have the uniform standards for speed limits and road designs that may affect the functionality of the equipment in their specific operating environment. Another limitation is the EOBR version and configuration. XATA periodically releases versions to address changes that improve the functionality of the equipment or in response to changes in regulations. When these changes occur, findings of this research may be incorporated into the revised release. This research will evaluate the configuration of OpCenter using an electronic key; a wireless configuration of the system may have strengths and weaknesses not accounted for by the research.

Chapter IV: Results

The purpose of this study was to evaluate Company XYZ's current on-board monitoring system as an integrated tool for complying with the FMCSA's regulations outlined in Code of Federal Regulation 49 for motor carrier operations. This study investigated Company XYZ's three previous compliance reviews and active data from SafeStat to establish past regulation deficiencies. This research also investigated each regulation's requirement for conformance to an EOBR system format. Finally, an analysis was conducted to compare the capabilities of XATA's OpCenter 6.4.0 functionality against Company XYZ's current practices for complying with the FMCSR's.

Data Collected on Compliance Reviews

An empirical evaluation was conducted of the closed compliance reviews (CR) to determine historical management deficiencies. Of the three compliance reviews conducted, two were conducted prior to the Company XYZ's merger and the most recent CR occurred at the onset the merger (see Table 1). Categories in Table 1 were adopted from Part B of the original CR's. There were two general categories; files and records. The files were the actual number of files reviewed and records were the number of documents in each file. Violations were established by the number of files and the number of records in each file found to be out of compliance with the FMCSR. Table 1 used the total number of files checked and the total number of violations, which would provide a better comparison to the information in Table 2. Factors that did not receive violations were grayed out in both tables.

Table 1

Company XYZ Compliance Reviews (1999 though 2006)

CR Factors	C.R. 1999 (1st) Files	C.R. 1999 (1st) Viol.	C.R. 1999 (2nd) Files	C.R. 1999 (2nd) Viol.	C.R. 2001 Files	C.R. 2001 Viol.
General						
387	--	--	--	--	--	--
390	--	--	--	--	--	--
Driver Qualification						
382	--	--	4	4	--	--
383	--	--	--	--	--	--
391	#13	25	13	6	20	^14
Operational/Driving						
392	-	-	-	-	-	-
395	11	56	11	15	11	18
Inspect/Maintenance						
393	--	--	--	--	--	--
396	--	--	11	16	--	--
Hazardous Material						
397, 171, 171, 180	N/A	N/A	N/A	N/A	N/A	N/A
CR OOS Rate	#40%		#40%		25%	
CR Crash Rate	0		1.042		1.137	

Note: (*At the date of the compliance reviews no information was available for this category, # One of more violations resulted in a conditional rating, ^ One violation was petitioned to be removed, no further information was available)

The findings for the compliance reviews showed that all three CRs received an overall satisfactory rating upon completion. CR 1999(1) resulted in two conditional ratings (Driver Qualification: FMCSR 391 and Vehicle Maintenance: OOS rating), CR 1999(2) received one conditional rating (Vehicle Maintenance: OOS rating), and CR 2001 yielding all factors as satisfactory. Of the compliance factors, driver qualification (FMCSR part 395) and operational/driving (FMCSR part 391) were cited with violations in each compliance review, vehicle/maintenance (OOS rating and FMCSR part 396) was found in violation for both 1999 CRs and a driver qualification (FMCSR part 382)

violation only in the second 1999 CR. The outliers in CR 1999(2) resulted from not conducting an inquiry or retaining past employer information on a driver's controlled substance and alcohol information. The deficient categories that were presented in all CRs were driver qualification and HOS. The driver qualification violations centered on the management practices of driver qualification files, with inadequate records of driver background information and poorly maintained files. HOS service violations were the result of exceeding the daily drive time, daily time limit, weekly time limit, log falsification, and no RODS filed. From communication with the Company XYZ representative, Company XY had one person responsible for DOT and Occupational Health and Safety Administration (OSHA) compliance throughout the entire company. With the close proximity of the CRs to the merger, the management procedures may not have been consistent with a comprehensive review of all files, polices and procedures. Another factor is that each location is responsible for day-to-day fleet management. The combination of these internal factors had a direct effect on the consistency of on-site policy interpretation as well as the execution for compliance of FMCSRs.

The violations found by the reviewing officers from the three audits amounted to two cited management deficiencies: record maintenance and day-to-day discipline to the FMCSR. The CRs suggest that future improvements need to address driver qualification requirements found in FMCSR 391 and HOS in FMCSR 395. Vehicle maintenance FMCSR parts 393 and 396, is also a concern with the conditional ratings of OOS identified in SafeStat data combined with the CR 1999(2). A special reference was made in the CR analysis transcript for Company XYZ in that only Company Z records were evaluated. The reference strongly suggested that were inconsistencies in the practices for

FMCSR compliance between Company XY and Z. Had Company XY's vehicle files and records been reviewed during the 2001 CR, the satisfactory rating for vehicle/maintenance may well have been downgraded.

Data Collected on SafeStat Review

The data from SafeStat was evaluated for trends from the past 30 months, current safety ratings and recommendations. The data in Table 2 was collected November 5, 2006 with a data range from March 2004 though September 2006 (Appendix A). Company XYZ's current inspection recommendation is at a value of 32, which equates to a 'pass' recommendation prior to roadside inspections. If the safety rating reaches '50' the rating would change to 'optional,' and 'inspect' at '75' or above. This score is currently based on safety performance with regard to the occurrence of accidents, drivers, and vehicle maintenance. The management score was excluded from calculations on the grounds that a compliance review had not been conducted in the past 18 months and Company XYZ does not have two or more enforcement cases in the past 72 months. Company XYZ has also maintained all active categories below a value of '75' for the past 30 months.

By maintaining low overall category values, Company XYZ has been able to prevent the SafeStat model from assigning a carrier score and the subsequent federal and state CR priority ranking. Company XYZ achieved the following weighted 30 month category values: Accident, 12.97; driver, 0.17; vehicles, 45.5. These values were based on the OOS findings and DOT recordable accidents. The data available on SafeStat was further broken down into CR factors and FMCSR parts that were evaluated during a CR.

The sample data was retrieved from reports on driver inspections, moving violations, and vehicle inspections. The data was divided into six month periods with period five being the oldest data and one the most recent. A list of violations by period is in Appendix B. Table 2, identified as Company XYZ Compliance Review and SafeStat Data, was expanded beyond the OOS values used by SafeStat to include all recorded violation to account for variations in state-to-state reporting practices. Categories that did not receive a violation for a time period were grayed out.

Table 2

Company XYZ SafeStat Data

	PERIOD 5		PERIOD 4		PERIOD 3		PERIOD 2		PERIOD 1	
	Viol.	OOS	Viol.	OOS	Viol.	OOS	Viol.	OOS	Viol.	OOS
General										
387	--	--	--	--	--	--	--	--	--	--
390	1	--	1	--	--	--	1	--	1	--
Driver Qualification										
382	--	--	--	--	--	--	--	--	--	--
397	--	--	--	--	--	--	--	--	--	--
391	--	--	1	--	1	--	1	--	--	--
Operational/Driving										
392	4	--	7	--	6	--	7	--	7	--
395	--	--	--	--	1	--	1	--	4	--
Vehicle/Maintenance										
393	11	1	12	5	3	3	14	5	10	1
396	10	1	2	--	1	--	6	--	2	--
Hazardous Materials										
397	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SafeStat Safety Evaluation Areas										
Accidents*	35.77		37.53		24.51		22.35		12.97	
Driver*	38.69		36.53		20.13		15.86		0.17	
Vehicle*	39.29		53.20		37.83		48.81		45.5	
Total Inspections	17		13		8		12		14	

NOTE: (* Sores collected from SafeStat 30 month rolling average using OOS calculation date; September 22, 2006)

Over the 30 months of active data which was found in SafeStat, Company XYZ received 62 vehicle-based inspections. These were broken down in to the total inspections per period: period 5, 17; period 4, 13; period 3, 8; period 2, 12; period 1, 14. No violations were under the CR factor of Hazardous Materials, which suggests that Company XYZ is staying within the confines of their operating authority for the past 30 months along with no violations under the FMCSR parts, 387, 382, and 383. At least one violation was found in FMCSR parts 390, 391, 392, 393, 395, and 396. The greatest number of violations were under FMCSR 393, parts and accessories necessary for safe operation, followed by FMCSR 396, inspection, repair and maintenance, and FMCSR 392, driving commercial motor vehicles. An investigation into the specific violations for these three FMCSRs revealed the root deficiency can be linked to vehicle inspection process prior to drivers placing the vehicle and equipment into service.

The scores generated from OOS violations available on driver, vehicle and accidents were placed under the categories of operating/driving, vehicle/maintenance, and DOT crash rates respectively. The data shows a consistent drop in driver OOS violations from period five at a score of 38.69 to 0.17 in period one. The significant drop specifics were inconclusive, but may be attributed to a combination of several factors. These include the change in the HOS effective January 4, 2004, the 100 air mile radius exception eliminating a majority of logging violation opportunities, and the location with the greatest number of CMV's exposed to fixed roadside inspection sites had incorporated XATA's OpCenter into their operations. DOT accident rates over the same time periods also declined. This decrease was most likely the result of data for four major accidents at Company XYZ surpassing the 30 month time frame. Of the three categories

evaluated, the vehicle score was that only one that did not decrease over the 30 month period and did not demonstrate a trend up or down. A correlation was drawn between the vehicle inspection measure and the violations and the CR vehicle/maintenance factor, strongly suggesting that Company XYZ's effort to abate this category's deficiencies were either not adequate or improperly implemented.

The findings during the evaluation of the CRs and SafeStat revealed consistent deficiencies within Company XYZ's fleet operation, along with trends that may be addressed throughout the implementation of an EOBR system. Management deficiencies found in at least one CR occurred in the area of driver qualifications (FMCSR parts 382 and 391), operational/driving (FMCSR 395), and vehicle/maintenance (FMCSR 396). SafeStat revealed deficiencies in at least one of the five time periods for general (FMCSR 390), driver qualifications (FMCSR 391), operational/driving (FMCSR parts 392 and 395), and vehicle/maintenance (FMCSR parts 393 and 396). Violations occurring in both the CRs and SafeStat were from driver qualifications (FMSCR 391) and vehicle/maintenance (FMCSR 396). This evaluation also suggested that the most attention is being paid to vehicle/maintenance, with particular attention focused on driver vehicle inspection reports.

Regulation Analysis for EOBR System Compatibility

An empirical analysis was conducted on the FMCSA regulations evaluated during a compliance review to determine the applicability for monitoring with an EOBR. The FMCSRs were determined as incompatible with the EOBR because of the regulation required specific data and file security requirements, exceeded the scope of the operating

authority of Company XYZ, or data and files in specific formats were removed from further analysis.

Table 3, outlines the FMCSRs within the CR factors. The categories of hazardous materials and crash rate indicators were factored as non-applicable and therefore did not require further investigation. Company XYZ has not completed the permitting process because the transport of hazardous materials falls outside the confines of the primary transported material of livestock and feed, opting to use outside motor carriers to transport materials falling under the hazardous materials FMCSRs. Crash rate indicators were deemed non-applicable due to the historic nature of the category and the calculation process that is conducted at the time of the CR.

The FMCSRs that that were deemed incompatible to integrating an EOBR system were FMCSR parts 387, 390, and 382. FMCSR 387 which addresses financial responsibility, was removed based on the insurance documentation format from the insurance company or the self-insurance authorization from FMCSA along with the record keeping requirements. The FMCSR-based documentation at the principle place of business or inside each vehicle needs to be an original or copies of the original. FMCSR 390 was removed based on the regulation's general overview of operating practices for the development of policies, procedures and day-to-day practices of fleet management and vehicle operation. FMCSR 382 (which addresses controlled substance and alcohol testing) was removed due to the requirements that all documentation on the regulation needs to maintained in a secured location with controlled access. FMCSRs that were found to have potential for integration to an EOBR system were FMCSRs 383, 391, 392,

393, and 396. Only one regulation, FMCSR 359.15, was written for the specific purpose of being implemented through the use of an EOBR system in lieu of FMCSR 395.8.

Table 3

Regulation Compatibility with EOBR Systems

	Regulations Compatible with EOBR system			
Compliance Review regulations	Yes	Potential	No	N/A
General				
§ 387: Financial Responsibility...			X	
§ 390: General (Transportation)			X	
Driver Qualification				
§ 382: Condoled Substances and Alcohol			X	
§ 383: C.D.L. Standards, requirements...		X		
§ 391:Qulaification of Drivers...		X		
Operating/Driving				
§ 392 Driving C.M.V.		X		
§ 395: Hours-of-Service	X			
Vehicle Maintenance				
§ 393: [CMV] Parts and Accessories...		X		
§ 396: Inspection Repair and Maintenance		X		
Hazardous Materials				
§ 397: Transporting Hazardous Materials...				X
§ 171: Transporting Hazardous Materials...				X
§ 177: Transporting Hazardous Materials...				X
§ 180: Transporting Hazardous Materials...				X
Crash				
Crash rate indicator				X

The FMCSRs found to have potential application with EOBRs were combined with the findings from the CR and SafeStat review in Table 4. FMCSRs and CR factors that were identified as non-applicable were identified as 'N/A'. Regulations that were

identified as not compatible with EOBR system were identified as 'Removed.' The remaining FMCSRs were assigned a value of 1 if they were identified during any of the three compliance reviews or in any period of SafeStat data. The compliance review scores were added together for a total score. A total from the CR and SafeStat were weighted with a value of 1 for no violation from data in either the CR or SafeStat, a value of 1.5 for ether a CR or SafeStat violation, and a value of 2 for any FMCSR that was found to be in violation in both the CR and SafeStat.

The results of the weighting the CR and SafeStat data provided a score of one for the driver qualification FMCSR 383 CDL standards and requirements. FMCSR 292 (driving commercial motor vehicles) was weighted as 1.5 for violations found in SafeStat. FMCSR's 391 (driver qualification), 395 (hour-of-service), 393 (parts and accessories for safe operation), and 396 (inspection repair and maintenance) received a weighting of 2 for violations found in both the CR and SafeStat investigations.

Table 4

Compliance Review FMCSR Weighting.

Compliance Review regulations	Compliance Review Regulation Weighting			
	C.R.	SafeStat	Total	Weight
General				
§ 387: Financial Responsibility...		Removed		
§ 390: General (Transportation)		Removed		
Driver Qualification				
§ 382: Controlled Substances and Alcohol		Removed		
§ 383: C.D.L. Standards, requirements...	0	0	0	1
§ 391:Qulaification of Drivers...	1	1	2	2
Operating/Driving				
§ 392 Driving C.M.V.	0	1	1	1.5
§ 395: Hours-of-Service	1	1	2	2
Vehicle Maintenance				
§ 393: [CMV] Parts and Accessories...	0	1	1	2
§ 396: Inspection Repair and Maintenance	1	1	2	2
Hazardous Materials				
§ 397: Transporting Hazardous Materials...		N/A		
§ 171: Transporting Hazardous Materials...		N/A		
§ 177: Transporting Hazardous Materials...		N/A		
§ 180: Transporting Hazardous Materials...		N/A		
Crash				
Crash rate indicator		N/A		

Evaluation of FMCSR Compliance Techniques; XATA OpCenter v. Company XYZ's Policies and Procedures

The third part of the evaluation was to analyze XATA's OpCenter to identify the system's ability to assist in regulatory compliance, which was then evaluated against

Company XYZ's current practices for complying with FMCSA's FMCSRs. XATA's OpCenter and Company XYZ's management practices was evaluated using a Likert scale weighted 1 through 5, with categories including procedure/system's ease of use/user friendliness, procedure/system's design to comply with FMCSR, procedure/system's data security (potential of data loss; see Appendix C), procedure/system's ability to provide accurate and authentic data, and there ability to provide multiple levels of oversight. The categories for each applicable regulation were totaled and weighted (1, no violation in CR or SafeStat; 1.5, violations in either CR or SafeStat; 2, violations in both CR and SafeStat) and were based on violation from history findings. The raw data was used as a comparison for inherent strengths and weaknesses for the respective methods, where the overall weighted values were used to amplify the unique characteristics for each evaluated FMCSR.

The overall scores (outlined in Table 5) between XATA and S.O.P. revealed that of the six categories (individual category findings are in Appendix C), Company XYZ's current methods were slightly more effective overall in meeting the regulatory compliance needs that would be provided by XATA's OpCenter 6.4 with one exception, that being XATA's overall score for FMCSR 395 HOS. These findings revealed that Company XYZ's weighted scores were superior to XATA OpCenter in their design to conform to FMCSRs. The second factor for a CR is driver qualification; FMCSR parts 383 and 391, resulted in the highest overall values in the comparison-based analysis. These findings can be attributed primarily because the document management system for this category is centrally located, with copies being available to the specific locations.

The lowest scores for Company XYZ's SOPs were in factor three, driving/operating, and factor four, inspection/maintenance, where primary document control is at the individual fleet level with limited centralized document management oversight. XATA's OpCenter 6.4 scores and percentages were directly affected by the EOBR system's programming framework. The analysis indicates that Company XYZ's greatest deficiency came from information flow, while XATA's most notable weakness was a result from programming parameters.

Table 5

FMCSR's Weighted Scores Between XATA and Company XYZ's SOP

Regulations	XATA's		SOPs	
FMCSR: § 383: C.D.L. Standards, requirements…	15	60%	21	84%
FMCSR: § 391: Qualifications of Drivers...	30	60%	44	88%
FMCSR: § 392: Driving CMV's	24	64%	24	64%
FMCSR: § 395: Hours-of-Service	46	92%	30	60%
FMCSR: § 393: Parts and Accessories…	26	52%	30	60%
FMCSR: § 396: Inspection Repair and Maintenance	30	60%	32	64%

Discussion

The findings of this research provided mixed results as to the specific regulations and their application into XATA OpCenter 6.4 to meet the regulatory needs of Company XYZ. The design of OpCenter as a platform was found to have potential data management capabilities for driver, truck and equipment information, but the scope for the specific areas were limited by the software application. Of the seven factors that are reviewed during a CR, only three were able to have at least a potential for application. Of the six FMCSRs in the three factors, only HOS was shown to have great impact on providing improvements over the current FMCSR management procedures. The

application of the other five FMCSRs only provides a means of checks and balances within the current management procedures so long as all data locations that require manual data entry receive the same level of management attention. A downgrading of attention in any one category might possibly have negative consequences for Company XYZ.

The findings for the regulatory management of the areas concerning driver qualification were anticipated to be in XATA OpCenter's drive management field. XATA OpCenter 6.4 is capable of retaining additional data in the custom fields, which could provide specific information regarding driver license number, expiration date, class, endorsements, and restrictions along with the expiration of DOT medical certification information. The benefit for Company XYZ to analyze this system would be to provide a single location for fleet management personal to go without having to request the information from human resources. The constraints with this are that several application screens would need to be accessed to retrieve this information.

At the onset of this analysis there was an expectation that XATA OpCenter would be able to meet the oversight needs of factor three, operating/driving. The strengths of the XATA OpCenter are its ability to provide information on driver's action for placing a vehicle into service, the drivers' operating practices and monitoring hours of service through a pre trip inspection, equipment inspection, and post trip inspection option, as well as logging capabilities that meet FMCSR 395.15. The system also provides GPS tracking and thus allows for time as well as location stamping of vehicles and drivers for log verification, the evaluation of driving habits, and providing a mechanism for reporting information throughout the entire fleet management structure. The limitations

discovered were in the accuracy and completeness of information collected, most notably that the driver inspection process did not require a driver to fill out a checklist. The system's design allows for the driver to either inadvertently or intentionally corrupt the data at the transfer points of the driver computer, the key, or the data station.

The analysis of the CR, SafeStat, and reviewing the SOPs of Company XYZ found that factor four, inspection/maintenance, has the greatest opportunity for improvement. The projected implementation opportunity for XATA OpCenter was from data that was reviewed throughout the management structure. OpCenter's strengths were its ability to disseminate information throughout the entire fleet management structure. OpCenter provides easily accessible information on equipment information with regards to electrical components and management based notifications for possible repairs. Another strength was for the system's ability to track information relating to annual inspections for trucks and trailers. One constraint of the system was regarding the access to DOT inspection information by users who need to access several screens in order to retrieve the relevant information. Another limitation is the manner in which OpCenter has designed the programming for pre/equipment change/post trip vehicle inspection process. The major limitation is that the vehicle inspection function is little more than a timer, which notifies the fleet management only when a driver did not take the minimum time to complete the vehicle inspection.

Chapter V: Conclusions and Recommendations

The purpose of this study was to evaluate Company XYZ's current on-board monitoring system as an integrated tool for complying with the FMCSA's regulations outlined in the Code of Federal Regulation 49 for motor carrier operations. The first goal of the study was to evaluate how an EOBR system could assist in meeting FMCSA regulatory requirements. This was an evaluation of FMCSA regulations for property carrying motor carriers during a FMCSA compliance review. The second goal was to evaluate the effectiveness and efficiency of an integrated XATA Corporation OpCenter® EOBR to meet regulatory requirements set forth by the FMCSA for Company XYZ.

The research evaluated three compliance reviews along with a recent run of SafeStat information to establish historical deficiencies, identify the effectiveness of abatement procedures, and reveal impediments to maintaining FMCSA compliance. The study also evaluated the regulation's language for compatibility within the format available by XATA OpCenter 6.4. Regulations not suitable for alternate formats were removed and the remaining regulations were weighted using values established during the CRs and SafeStat evaluation. The individual CR regulations were also evaluated on five factors to assess Company XYZ's practices for maintaining FMCSA compliance and then compare to the capabilities of XATA OpCenter. The final evaluation was to summarize the respective strengths and deficiencies for FMCSA compliance.

Conclusions

Following are conclusions that result from the analysis of data collected from this study:

- XATA OpCenter 6.4 EOBR platform provides limited application functions for the purpose of a stand-alone FMCSA compliance tool. It

appears that no device can exceed the confines of the intended application; XATA OpCenter 6.4 is no different. The platform was designed for assisting the private motor carrier in improved asset management and customer service, with the added feature of a FMCSA compliant paperless logging feature. A motor carrier intending to implement XATA OpCenter as a standalone tool for complying with all aspects of FMCSRs will fail to meet that objective. The only FMCSR that OpCenter can monitor as a stand alone tool would be for meeting the HOS requirements.

- XATA OpCenter has functions that can be adopted to assist in an established FMCSA compliance management system. As part of the asset management features for tracking equipment, trucks, and drivers, non-dedicated fields were included. Inputting key compliance information such as DOT inspections on trucks and equipment, and expiration dates for driver's licenses and medical certifications in the respective fields may provide the motor carrier an additional layer of information exchange that could improve the overall compliance efforts. Thus, information can more easily be disseminated through a larger body of the fleet management officials. Having multiple levels of access in tracking key indicators would assist in developing internal auditing procedures, and when warranted, assist with correcting location deficiencies without tying up excess resources. Although the format would be cumbersome, a motor carrier with a dispersed fleet situation and a limited oversight structure may be able to justify the use XATA's OpCenter system.

- Company XYZ's current fleet management polices and procedures may have exceeded their life expectancy. The investigation revealed policies that may not have been evaluated for extended durations with several polices effective date exceeding 10 years. It is questionable if the current polices accurately reflect the current industry, regulations, and the culture of the company or the communities in which Company XYZ operates.

Recommendations

Based on the above conclusions, following are recommendations which should be considered:

- Incorporate FMCSR time-sensitive data into XATA OpCenter for broader tracking. At a minimum, the data should include driver's license and medical card expiration dates as well as the last DOT inspection on trucks and equipment. Employee sensitive information should be coded or removed from data entered primarily due to the limited security settings that are currently in place.
- Conduct an analysis of the fleet management procedures between the XATA OpCenter equipped location and the traditionally managed fleet locations to determine the effect which may occur on operational practices. With the first phase of implementation having been completed, a predetermined time needs to elapse prior to the investigation.
- Evaluate the capabilities of various EOBR platform systems that compare the company's traditional management practices and XATA OpCenter-equipped locations. The analysis should consist of an evaluation of the

capabilities of XATA OpCenter along with other EOBR platforms for meeting the company's core objectives along with division fleet operations objectives.

- Company XYZ should reevaluate and correct their deficiencies with respect to the policies and procedures for fleet management. From the investigation, Company XYZ's only consistent deficiency was related to inspections and maintenance. The policies and procedures need to ensure that drivers do not place a truck or other DOT-regulated equipment into service that does not meet the requirements set forth by the FMCSA and state regulations. This includes incorporating mechanisms that ensure truck and DOT regulated equipment receive proper service in a timely manner prior to a driver placing such equipment back into service.

Areas of Further Research

- With the pending regulation ruling by the FMCSA regarding possible mandatory use of EOBR, an analysis should be conducted to evaluate any variation in the CR process. It is recommended this research evaluate changes in resource requirements, CR findings, and compare penalties between traditional fleet management operation to motor carriers using an EOBR system for fleet management.
- Further research should also be conducted to access the effects of using an EOBR system on a company's SafeStat safety fitness score.

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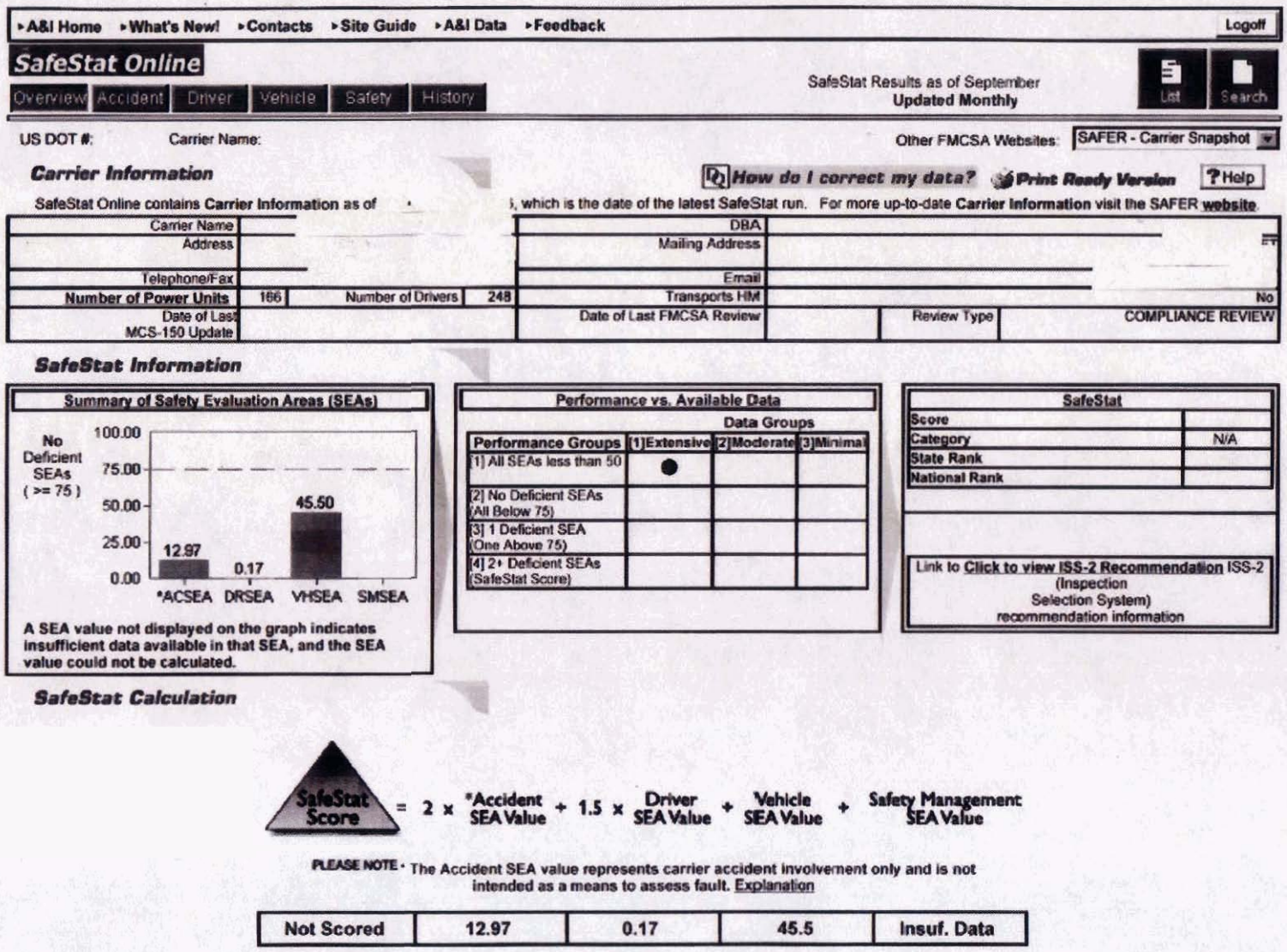

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SafeStat Online

Overview | Accident | Driver | Vehicle | Safety | History

SafeStat Results as of September
Updated Monthly

List Search

US DOT #: Carrier Name: Other FMCSA Websites: SAFER - Carrier Snapshot

Carrier Information

How do I correct my data? Print Ready Version Help

SafeStat Online contains Carrier Information as of , which is the date of the latest SafeStat run. For more up-to-date Carrier Information visit the SAFER website.

Carrier Name				DBA			
Address				Mailing Address			
Telephone/Fax				Email			
Number of Power Units	166	Number of Drivers	248	Transports HM			No
Date of Last MCS-150 Update				Date of Last FMCSA Review		Review Type	COMPLIANCE REVIEW

SafeStat Information

Summary of Safety Evaluation Areas (SEAs)

A SEA value not displayed on the graph indicates insufficient data available in that SEA, and the SEA value could not be calculated.

Performance vs. Available Data

Performance Groups	Data Groups [1]Extensive	[2]Moderate	[3]Minimal
[1] All SEAs less than 50	●		
[2] No Deficient SEAs (All Below 75)			
[3] 1 Deficient SEA (One Above 75)			
[4] 2+ Deficient SEAs (SafeStat Score)			

SafeStat

Score	
Category	N/A
State Rank	
National Rank	

Link to Click to view ISS-2 Recommendation ISS-2 (Inspection Selection System) recommendation information

SafeStat Calculation

$$\text{SafeStat Score} = 2 \times \text{*Accident SEA Value} + 1.5 \times \text{Driver SEA Value} + \text{Vehicle SEA Value} + \text{Safety Management SEA Value}$$

PLEASE NOTE: The Accident SEA value represents carrier accident involvement only and is not intended as a means to assess fault. Explanation

Not Scored	12.97	0.17	45.5	Insuf. Data

Inspection Selection System (ISS-2) Recommendation* (As of September 22, 2006)	
Carrier Name: US DOT	
ISS Inspection Value:	32
ISS Recommendation:	PASS
Basis for Recommendation:	Safety

* The ISS-2 monthly run evaluates carriers' recent inspections activity. The ISS results are generated along with SafeStat on a monthly basis and are posted on A&I Online.

The Inspection Selection System (ISS-2)

The Inspection Selection System (ISS-2) is a decision-aid for commercial vehicle roadside driver/vehicle safety inspections, which guides safety inspectors in selecting vehicles for inspection.

ISS Inspection Value: The ISS Inspection Value is based on the motor carrier's safety performance data. In the case when there is sufficient motor carrier safety performance data available, the value is assigned from information derived from SafeStat results, which reviews safety performance in areas of crash history, inspection history, driver history, and safety management experience. When a motor carrier has little information on file, the ISS Inspection Value is based on an 'Insufficient Data Algorithm', which determines the inspection value by weighting the carrier size and the number of past inspections. Refer to the Inspection Selection System description, for an explanation of the value's calculation.

ISS Recommendation: The ISS Inspection Value forms the basis for the ISS recommendation. The recommendation ranges from 'Inspect', for motor carriers with poor safety performance in one or more Safety Evaluation Areas (SEAs) and for carriers with little or no safety data, to 'Pass' for carriers with good safety performance data. The three recommendations listed are below.

Recommendation	ISS Inspection Value
Inspect *(inspection warranted)*	75-100
Optional *(may be worth a look)*	50-74
Pass *(no inspection required)*	1-49

Basis for Recommendation: The Basis for Recommendation describes the method that was used to calculate the ISS Inspection Value. There are two methods for calculating an ISS inspection value:

- The "Safety" method assigns this recommendation based on SafeStat results, which applies to carriers with sufficient safety performance data.
- The "Insufficient Data" method is based on an 'Insufficient Data Algorithm', which applies to carriers that have little or no safety performance data available.

Click here to access the Inspection Selection System description, a system designed to prioritize carriers for roadside inspection. This link defines "How ISS-2 works"

Accident SEA History						
	SafeStat Run Dates:					
ACSEA	12.97	22.35	24.51	37.53	35.77	28.28
Compliance Review Results (within 12 months)						
Date of Last Review	None	None	None	None	None	None
Recordable Accident Indicator	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Recordable Accident Rate	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
# of Recordable Crashes	N/A	N/A	N/A	N/A	N/A	N/A
Annual Vehicle Miles Traveled	N/A	N/A	N/A	N/A	N/A	N/A
State Reported Crashes (within 36 months)						
Accident Involvement Indicator(AII)	13.0	22.3	24.5	37.5	35.6	28.3
Accident Involvement Measure(AIM)	0.1	0.2	0.2	0.3	0.2	0.2
# of Vehicles Involved in Crashes	11	15	15	20	18	13
Average Number of Power Units	166	166	170.33	170.33	174.67	179

Go to Top of Page

Driver SEA History						
	SafeStat Run Dates:					
DRSEA	.17	15.86	20.13	36.53	38.69	53.30
Compliance Review Results (within 18 months)						
Date of Last Review	None	None	None	None	None	None
Driver Review Indicator (DRI)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Driver Review Measure (DRM)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
# of Acute Violations	N/A	N/A	N/A	N/A	N/A	N/A
# of Critical Violations	N/A	N/A	N/A	N/A	N/A	N/A
Driver Inspections (within 30 months)						
Driver Inspection Indicator (DII)	0.00	15.86	20.13	36.53	38.69	53.30
Driver Inspection Measure (DIM)	0	0.019	0.029	0.067	0.079	0.127
# of Driver Inspections	64	65	84	91	96	80
# of Driver OOS Inspections	0	1	2	4	5	5
# of Jumping OOS Orders	0	0	0	0	0	0
Driver OOS RATE (DOR)	0	0.015	0.024	0.044	0.052	0.063
Moving Violation Inspections (within 30 months)						
Moving Violation Indicator (MVI)	0.50	Insuf. data	0.82	0.20	0.78	1.21

Moving Violation Measure (MVM)	0.024	Insuf. data	0.028	0.012	0.032	0.041
# of Drivers	248	248	248	248	248	267
# of Moving Violations	3	2	3	3	7	8

Go to Top of Page

Vehicle SEA History						
	SafeStat Run Dates:					
	8					
VHSEA	45.50	48.81	37.83	53.20	39.29	30.76
Compliance Review Results (within 18 months)						
Date of Last Review	None	None	None	None	None	None
Vehicle Review Indicator (VRI)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Vehicle Review Measure (VRM)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
# of Acute Violations	N/A	N/A	N/A	N/A	N/A	N/A
# of Critical Violations	N/A	N/A	N/A	N/A	N/A	N/A
Vehicle Inspections (within 36 months)						
Vehicle Inspection Indicator (VII)	45.50	48.81	37.83	53.20	39.29	30.76
Vehicle Inspection Measure (VIM)	0.448	0.47	0.384	0.486	0.405	0.321
# of Vehicle Inspections	51	55	60	70	70	56
# of Vehicle OOS Inspections	9	10	11	12	11	7
Vehicle OOS RATE (VOR)	0.176	0.182	0.159	0.171	0.157	0.125

Go to Top of Page

Safety Management SEA History						
	SafeStat Run Dates:					
SMSEA	Insuf. Data	Insuf. Data	Insuf. Data	Insuf. Data	Insuf. Data	Insuf. Data
Compliance Review Results - Safety Management (within 18 months)						
Date of Last Review	None	None	None	None	None	None
Safety Management Review Indicator (SMRI)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Safety Management Review Measure (SMRM)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
# of SM Acute Violations	N/A	N/A	N/A	N/A	N/A	N/A
# of SM Critical Violations	N/A	N/A	N/A	N/A	N/A	N/A
Compliance Review Results - Hazmat (within 18 months)						
Hazmat Review Indicator (HMRI)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Hazmat Review Measure (HMRM)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data

# of HM Acute Violations	N/A	N/A	N/A	N/A	N/A	N/A
# of HM Critical Violations	N/A	N/A	N/A	N/A	N/A	N/A
Enforcements History (within 6 years)						
Date of Last Enforcement	None	None	None			
Enforcement History Indicator (EHI)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
Enforcement Severity Measure (ESM)	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data	Insuf. data
# of Enforcements	Insuf. data	Insuf. data	Insuf. data	1	1	1

Insuf. data - no data or insufficent data were available to calculate the measure/indicator or SEA

Go to Top of Page

Graphical View of SafeStat Results - History

PLEASE NOTE * The Accident SEA value represents carrier accident involvement only and is not intended as a means to assess fault. Explanation

To obtain a SafeStat Score, a carrier must be deficient in at least two different Safety Evaluation Areas (SEAs). A SEA with a value from 75 to 100 is defined as deficient. SEA Values that are less than 75 are not used in the calculation of a SafeStat Score.

Carrier SafeStat Score History

Appendix B: SafeStat Period FMCSR Part and Violation Explanation

CODE	DESCRIPTION	PERIOD	1
392.2	Local laws-general	**End**	**Sept**
392.2	Local laws general	**Start**	**April**
392.2W	Size and weight		
392.7	No pre-trip inspection		
390.21B	Carrier name not displayed		
393.25F	Stop Lamp		
393.26	Requirements for reflectors		
393.26	Requirements for reflectors		
393.45B2	Brake hose/tubing chaffing and/or kinking		
393.60C	Damaged or discolored windshield		
393.75C	Tire tread depth		
393.95A	No/discharged/unsecured fire extinguisher		
393.100A	Improper load securement		
393.209E	Power steering violations		
395.8	Log violation		
395.8K2	Failure to retain previous logs		
395.9F1	No log book		
396.17C	Operating w/o periodic inspection		
396.17C	Operating without periodic inspection		

CODE	DESCRIPTION	PERIOD	2
390.21A	Not regulation marked		
390.21E	Improper marking (rented CMV)	**End**	**May**
392.2	Local laws general	**Start**	**Sept**
392.2	Local laws-general		
392.2	Local laws		
392.2	Local laws		
392.2	Local laws		
392.2	Local laws		
392.2	Local laws-general		
392.7	No pretrip inspection		
393.9A	Inoperable lamp		
393.9A	Inoperable lamp		
393.9A	Inoperable required lamp		
393.19	Turn/Hazard lamp		
393.25F	Stop lamp violation		
393.45D	Brake connections		
393.47	Inadequate brake lining		
393.47	Inadequate brake lining		
393.47	Inadequate brake lining		
393.48A	Inoperative/defective brakes		
393.203B	Cab improperly secured to frame		
393.205C	Loose or missing wheel fasteners		
393.207A	Axle positioning parts		
393.207C	Leaf Spring Defective/missing		
396.3A1	Repair and maint. Parts		
396.3A1B	Brakes		
396.3A1B1	Brake out of adjustment		
396.3A1B1	Brakes		
396.3A1B1	Brake-reserve pressure loss		
396.3A1BA	Brakes out of adjustment		

CODE	DESCRIPTION	PERIOD	3
392.2	Local laws general		
392.2	Local laws-general	**End**	**Sept**
392.2	Local laws-general	**Start**	**April**
392.2	Local laws-general		
392.2S	Speeding		
393.11	Defective lighting		
393.11	Defective lighting		
393.7	Fifth Wheel coupling device		
395.8	Log violation		
396.3A1B1	Brakes out of adjustment		

CODE	DESCRIPTION	PERIOD	4
391.4A	No medical certificate		
392.2	Local laws-general	**End**	**May**
392.2	Local laws-general	**Start**	**Sept**
392.2	Local laws general		
393.11	No/defective lighting devices		
393.11	No/defective lighting devices		
393.25F	Stop lamp violation		
393.25F	Stop lamp violation		
393.25F	Stop lamp violation		
393.19	Defective/no turn/hazard lamp		
393.47	Inadequate brake lining		
393.75C	Tire tread depth		
393.75C	Tire tread depth		
393.75F2	Tire under-inflated		
393.75F2	Tire under-inflated		
396.3A1	Inspection/repair and maint parts		
396.3A1B	Inspection/repair and maint parts		
396.3A1BL	Brake-reserve system pressure loss		

CODE	DESCRIPTION	PERIOD	5
390.21B	Carrier name and/or USDOT not displayed		
392.2	Local laws-general	**End**	**Sept**
392.2	Local laws-general	**Start**	**April**
392.2	Local laws-general		
392.2	Local laws-general		
393.9	Inoperable required lamp		
393.26	Requirements for reflectors		
393.43D	No/defective automatic trailer brake		
393.45A4	Brake hose/tubing chaffing and/or kinking		
393.75B	Tire-front tread depth less than 4/32		
393.201A	Frame cracked/loose/sagging/broken		
393.205C	Wheel fasteners loose and/or missing		
393.207A	Axle positioning parts defective/missing		
396.1	Must have knowledge and comply with regs		
396.3A1	Inspection/repair and maint. Parts		
396.3A1	Inspection/repair and maint parts		
396.3A1B	Brakes-general		
396.3A1B	Brakes-general		
396.3A1BA	Brakes out of adjustment		
396.3A1BL	Brake-reserve system pressure loss		
396.5	Excessive oil leaks		
396.11	Driver vehicle inspection report		

Appendix C: FMCSR Comparison Table

FMCSR:	**§383**	**§391**	**§392**	**§393**	**§395**	**§396**	XATA / SOPs Regulation Rating
			Category/Explanation				1 2 3 4 5
						Ease of use (User friendliness)	

Will the operating procedure/system provide a consistent format that will be understandable to all users and what level of labor/effort to complete, store, retrieve, and analyze? (**1** = difficult/labor intensive to complete, store, retrieve, and analyze, **2** = *between 1 and 3*, **3** = Moderate levels of difficult/labor intensive to complete, store, retrieve, and analyze, **4** = *between 3 and 5*, **5** = simple and minimal labor to complete, store, retrieve, and analyze)

Regulation Specific (Management tool specificity to FMCSR's)

What Percentage of the FMCSR will be able to be met by the operating procedure/system? (**1** = 0-20, **2** = 21-40, **3** = 41-60,**4** = 61-80, **5** = 81-100)

Data Security (potential of data loss)

What is the exposure to the company for lost/missing/incomplete data from the operating procedure/system? (**1** = broad levels of opportunities for loss or corruption of data, **2** = *between 1 and 3*, **3** = minimal levels of opportunities for loss or corruption of data, **4** = *between 3 and 5*, **5** = catastrophic level only of risk for loss or corruption of data)

(_____ACCURACY_____) Reliability

What level of opportunity exists for fraudulent information to be documented? (**1** = broad opportunities fraudulent data, **2** = *between 1 and 3*, **3** = Moderate opportunities fraudulent data, **4** = *between 3 and 5*, **5** = minimal opportunities fraudulent data)

Data Verification (oversight)

What level of oversight is available in the operating procedure/system to ensure that FMCSR is in compliance? (**1** = not able to verify that there is verification of FMCSR oversight at any level, **2** = *between 1 and 3*, **3** = verification of FMCSR oversight on a single level, **4** = *between 3 and 5*, **5** = verification of FMCSR oversight on multiple levels)

0 0 0 0 0

Evaluation Score 0
(FMCSR weight):____
FMCSR weighted score: 0

Category/Explanation	XATA Regulation Rating					SOPs Regulation Rating				
FMCSR: § 383: C.D.L. Standards, requirements…	1	2	3	4	5	1	2	3	4	5
Procedure/System's Ease of use/User friendliness		1						1		
Procedure/System's Design to comply with FMCSR	1									1
Procedure/System's Data Security (potential of data loss)				1					1	
Procedure/System's ability to provide accurat and authentic data			1							1
Procedure/System's to provide multiple levels of oversight					1				1	
FMCSR: § 391: Qualifications of Drivers...										
Procedure/System's Ease of use/User friendliness		1							1	
Procedure/System's Design to comply with FMCSR	1									1
Procedure/System's Data Security (potential of data loss)				1					1	
Procedure/System's ability to provide accurat and authentic data			1							1
Procedure/System's to provide multiple levels of oversight					1				1	
FMCSR: § 392: Driving CMV's										
Procedure/System's Ease of use/User friendliness			1					1		
Procedure/System's Design to comply with FMCSR		1								1
Procedure/System's Data Security (potential of data loss)				1			1			
Procedure/System's ability to provide accurat and authentic data		1							1	
Procedure/System's to provide multiple levels of oversight					1		1			
FMCSR: § 395: Hours-of-Service										
Procedure/System's Ease of use/User friendliness				1				1		
Procedure/System's Design to comply with FMCSR					1					1
Procedure/System's Data Security (potential of data loss)				1				1		
Procedure/System's ability to provide accurat and authentic data					1		1			
Procedure/System's to provide multiple levels of oversight					1		1			
FMCSR: § 393: Parts and Accessories…										
Procedure/System's Ease of use/User friendliness		1						1		
Procedure/System's Design to comply with FMCSR	1									1
Procedure/System's Data Security (potential of data loss)				1			1			
Procedure/System's ability to provide accurat and authentic data	1							1		
Procedure/System's to provide multiple levels of oversight					1		1			
FMCSR: § 396: Inspection Repair and Maintenance										
Procedure/System's Ease of use/User friendliness		1							1	
Procedure/System's Design to comply with FMCSR		1								1
Procedure/System's Data Security (potential of data loss)				1				1		
Procedure/System's ability to provide accurat and authentic data		1					1			
Procedure/System's to provide multiple levels of oversight					1		1			