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NAFTA, MOTOR CARRIERS AND HIGHWAY SAFETY

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The signing of the NAFTA agreement signaled the beginning of increased efforts to harmonize trade between the U.S., Canada, and Mexico. Unfortunately the harmonization of transportation links is lagging far behind proposed implementation dates. This narrative describes the highway safety, and concerns expressed by highway safety advocates and Teamsters union representatives, and documented by the GAO. The authors propose a market based alternative to restricting transborder traffic to the narrow commercial zone presently in place.

INTRODUCTION

The signing of the NAFTA agreement in December 1993 marked the beginning of a new era in North American trade relations. However, the benefits of these new trade relationships hinge on free access to markets. While the intent of the NAFTA agreement was to lower and in time to virtually eliminate political and legal barriers to trade, the physical barriers to the cross-border flow of goods remain problematic. One physical barrier to the free flow of goods is the lack of adequate infrastructure. It will take a commitment and considerable financial investment to alleviate this problem. The second barrier is the unwillingness and/or inability of many Mexican transportation providers, specifically motor carriers, to meet U.S. safety and operating standards. Expressing concerns that the planned December 1995 opening of the four U.S. and six Mexican border states to the free flow of traffic would compromise the safety of American highways, Teamsters Union representatives and highway safety groups advocated that the border states not be opened until the safety issue was rectified. As a result President Clinton opted not to open the border states to the free flow of traffic as had been scheduled under the NAFTA agreement.

The purpose of this article is twofold. First, the safety concerns which have precipitated the present conflict over the advisability of opening the border states to unrestricted transportation movement or of continuing to restrict movement to the narrow commercial zone currently in place will be presented. Secondly, the short and long term economic implications of opening the border for the free movement of motor carriers for both Mexican and U.S. shippers and carriers will be discussed.

Following an overview of the progress toward opening the border, the factors which have been identified as contributing to the accident rate of motor carriers will be examined. Data regarding out-of-service violations for Mexican motor carriers will then be compared to the identified accident contribution factors. This will provide the necessary background for extending the discussion to the specific economic impact of motor carrier safety and the implementation of NAFTA provisions for the free access of motor carriers to markets in all areas of North America.

SITUATIONAL OVERVIEW

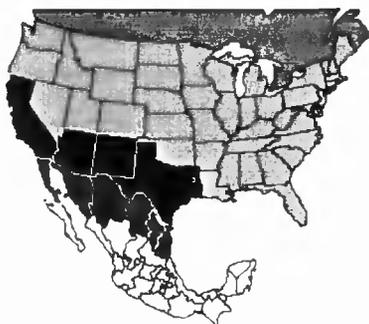
The Government Accounting Office has conducted two studies examining the state of safety inspections and safety inspection procedures at the U.S./Mexican

border crossings in California, Arizona, New Mexico, and Texas. The first report, issued February 29, 1996, focused on providing an update on the status of harmonizing safety regulations, operating and enforcement practices, and the readiness of state and federal agencies to enforce compliance with U.S. trucking regulations ("Commercial Trucking..." 1996). It was felt that these represented the greatest impediment to implementing the first phase of the NAFTA agreement which expands the free access trade zone of the U.S./Mexican border (Exhibit 1) to the total area of the ten border states (Exhibit 2). The data for this report was collected between June 1995 and Jan. 1996.

**EXHIBIT 1
CURRENT COMMERCIAL ZONE**



**EXHIBIT 2
TEN STATE ACCESS—DECEMBER 18, 1995**



At the time that this report was issued, it was determined that enough progress had not been made to justify expanding cross border traffic beyond the existing commercial zone. Specific concerns which were highlighted included the incompatibility of trucking regulations between the U.S. and Mexico (Exhibit 3), the lack of uniform enforcement practices between the U.S. and Mexico (Exhibit 4), the lack of inspection facilities on the U.S. side of the border (Exhibit 5), and the lack of inspection on the Mexican side of the border. The numbers of Mexican truckers whose vehicles have been restricted from highway service until safety violations have been remedied has ranged from 50 to 63 percent. This high rate of safety violations has been cited by political, union, and consumer groups as a major cause for concern.

**EXHIBIT 3
INCOMPATIBILITY OF TRUCKING
REGULATIONS**

Regulation	U.S.	Mexico
Driver Hours of Service	10 per day	None
Log Books	Required	Not Required
Computerized Driver Records	Required	Not Required
Vehicle		
Front Brakes	Required	Not Required
Gross Vehicle Weight	80,000 lbs.	97,000 lbs.
Single Axle Weight	20,000 lbs.	22,000 lbs.
Tandem Axle Weight	34,000 lbs.	39,600 lbs.

*GAO/RCED 96-61 Commercial Trucking Under NAFTA, p. 20.

**EXHIBIT 4
DIFFERENCES IN ENFORCEMENT
PRACTICES**

U.S.	Mexico
Federal Motor Carrier Safety Regulations	Commercial Vehicle Safety Alliance (1991)
Motor Carrier Safety Assistance Program	Educational Inspection Activity (1993)
Commercial Vehicle Safety Alliance	Little to no Enforcement
Fines for Violations	Fines for Violations Virtually Non-existent

In April 1997, the GAO issued a second report concerning the progress made toward satisfying the safety and inspection standards necessary to implement the opening of

**EXHIBIT 5
U.S. INSPECTION FACILITIES**

- California (24% of traffic)
Permanent Inspection Facilities at Otay Mesa and Calexico
- Texas (66% of traffic)
No Permanent Inspection Facilities
- Arizona (10% of traffic)
No Permanent Inspection Facilities

the border states to the free movement of truck traffic ("Commercial Trucking..." 1997). By this time, the original target date for implementation, December 18, 1995, had already been postponed for over a year. The focus was on inspection procedures and safety enforcement along the border areas and federal strategies to ensure the compliance with U.S. safety standards by Mexican truckers. The intent

was to take a more detailed look at border inspection facilities and practices in an effort to determine if progress had been made toward the goal of harmonizing and enforcing safety standards between the U.S. and Mexico. The results of the study indicated that California, with 24% of the truck traffic from Mexico, was by far the most proactive of the states in implementing inspection procedures. The inspection facilities in Texas, with 66% of the total truck traffic, and Arizona, with 10% of the total truck traffic, were woefully inadequate and in some border areas non-existent. In addition, DOT programs to train inspectors on the Mexican side of the border had not produced any measurable results.

MOTOR CARRIER SAFETY

Attention to the issue of motor carrier safety is not a new phenomenon. The public, state highway administrators, DOT officials, shippers, and motor carriers alike have been concerned about safety issues for various reasons. Concerns have revolved around such issues as actual physical safety, the possibility of infrastructure damage, costs of operation, and the importance of the exchange of undamaged goods between shipper and customer (Brandt, 1997; "Mexico's NAFTA,..." 1997; "NAFTA Inspires NAIL,..." 1996). These same issues were raised following enactment of the Motor Carrier Act of 1980. At that time public interest advocates focused on the possibility that safety performance had changed due to the new operating environment and the number of new entrants in the industry. There was public criticism of the rate of highway accidents involving poorly maintained trucks (O'Neill, 1987). This was blamed on the lack of fines and other penalties being imposed on safety violators by the Federal Highway Administration's Office of Motor Carriers. Even with the shortage of inspectors, 30-40% of trucks that were inspected were cited for serious safety violations involving brakes, tires, and the size and weight of the load (Loos and Labich, 1987).

Academic researchers who studied this problem found that newer carriers with little experience in the motor carrier industry had significantly higher accident rates (Corsi, Fanara and Jarrell, 1988; Corsi and Grimm, 1987). They also reported a higher incidence of reported accidents involving owner-operators. This was attributed to a general lack of experience and inadequate maintenance.

While these studies identified populations in the motor carrier industry who might be more prone to accidents, they did not identify the factors which were most likely to contribute to the incidence of motor carrier accidents. Bruning specifically attempted to identify those factors most often associated with motor carrier accidents (Bruning, 1989). The factors which had the greatest positive correlation with motor carrier accidents were driver longevity and experience (.01 level of significance), equipment defects (.05 level of significance), age of the equipment (.10 level of significance), and the size and financial stability of the carrier (.01 level of significance). From this study, it could be concluded that the profile of the carrier least likely to pose a safety hazard would be larger, financially sound, with newer, well maintained equipment and experienced drivers. Interestingly, this study did not find a significant relationship between accident rates and whether or not the driver was self employed, e.g. an owner-operator.

A similar effort investigated the role that excessive speed and driver training played in the incidence of accidents (Beilock and Capelle, 1989). Two contributors to excessive speed identified in this study were thrill seeking and the over estimation of personal abilities or vehicle capabilities. Thrill seeking and the underestimation of personal abilities may be conceivably linked to the lack of experience identified by Bruning. The likelihood of overestimating vehicle performance capabilities may be linked to both driver inexperience and the condition and age of the vehicle. While these studies have focused on different factors it is plain that those factors are not mutually exclusive.

The preceding studies, conducted in an effort to determine the factors affecting highway accident rates for U.S. carriers, are as applicable as they were when they were conducted. Factors contributing to higher numbers of safety violations, e.g. driver inexperience, equipment safety violations, equipment age and the financial status of the company, apply to Mexican carriers as well as the U.S. carriers that were originally surveyed. A survey of the out-of-service data collected during the GAO investigation of border area safety violations illustrates this point.

EXAMINATION OF OUT-OF-SERVICE DATA

The average monthly out-of-service rate for U.S. trucks inspected during fiscal year 1995 was 28% while the average out-of-service rate for Mexican

trucks entering the U.S. was 45%. The difference in the rate of trucks being restricted from highway service until safety violations are corrected serves to underscore the concerns that opening the border states might lead to an increase in safety related accidents. However, these figures may overstate the difference between the numbers of U.S. carriers sidelined for safety violations and the numbers of Mexican carriers sidelined for safety violations. The Mexican sample consisted of over 25,000 inspections out of about 3 million trucks. This sample was primarily selected according to how likely the truck was to be in violation. In addition, since Mexican trucks are only allowed to travel within the narrow commercial zone, they are most likely to be drayage vehicles which make several trips across the border in a single day. In contrast, the 1.8 million trucks inspected in the U.S. sample represent a more general cross section of the motor carrier population. Safety violation data for drayage operations is not available separately from inspection data for the motor carrier population as a whole.

The GAO categorized the violations that were commonly observed during the inspection of trucks entering the U.S. from Mexico into four areas. (See Exhibit 6)

Two of these categories, equipment deficiencies and lack of driver qualifications were specifically identified in Bruning's study as being significant contributors to accidents. The third category, cargo, could conceivably affect the handling quality and performance of the vehicle. In addition, weight factors have a detrimental effect on roads and bridges which may indirectly contribute to accidents. The final category is of importance in terms of financial responsibility, but does not directly affect truck safety.

DISCUSSION

It is important for transportation managers to consider the consequences of opening the U.S./Mexican border to the free flow of motor carrier traffic. Safety is an issue that cannot be over emphasized. From the information presented by the GAO, it appears that due to inadequate inspection facilities and the continuing high rate of safety standard violations, the limited commercial zone rules should not be expanded. Using GAO figures, the Teamsters and highway safety advocates have actively lobbied for the status quo.

**EXHIBIT 6
COMMON SAFETY VIOLATIONS**

Equipment	Structural Cracks Poor Suspension Faulty Tires Non-Working Brakes Non-Working Lights Steering Problems Faulty Exhaust Systems Leaky Fuel Tanks Non-Functioning Emergency Equipment
Driver	Invalid Licenses Under Age Logbook Language Drug Testing
Cargo	Overweight Not Secured Properly Hazardous Material Not Secured Properly
Other	Insurance

However, The Commercial Vehicle Safety Alliance, an association of federal, state and province officials and industry representatives who are responsible for motor carrier safety laws in the U.S., Canada and Mexico, maintain that the truck safety enforcement community is prepared to handle the levels of cross-border traffic which would result when the commercial trade zone is increased to include the border states.

The most obvious way to deal with truck safety appears to be through inspection programs. With its aggressive enforcement program, California seems to have achieved a high degree of compliance. Thus, one could conclude that the same results could be achieved in Texas and Arizona if the same level of effort was expended. The situation on the Mexican side of the border appears to be as inadequate as that on much of the U.S. border area. Presently Mexican officials have taken the stance that any inspection activity will be directed toward carriers entering Mexico, not leaving. This would seem to be a

short-sighted view since cooperation in enforcing safety standards for motor carriers on both sides of the border should result in safer highways for both Mexico and the U.S..

On the surface, it would appear that increased inspection levels would lead to greater numbers of trucks being detained in inspection facilities. These delays translate into additional costs to carriers and shippers. However, the certainty of inspection and resulting penalties for safety violations inherent in increased inspection levels should encourage carriers and operators to conform to safety regulations. The present situation where traffic is restricted to a narrow commercial zone disrupts U.S. and Mexican firms who are unable to efficiently transport goods, and motor carriers who are unable to compete in new and potentially profitable markets. The question that must be answered is what are the probable consequences if the long-delayed opening of the ten U.S. and Mexican border states is implemented.

Immediate Consequences of Expanding the U.S./Mexican Commercial Zone

In the short term, the decision to open the U.S./Mexican border to the free flow of transportation will not necessarily change the way things are being done. Several factors support this argument. First, U.S. motor carriers have already formed alliances with those Mexican carriers who provide the best opportunities for mutually beneficial relationships. These alliances would be adversely affected if the U.S. carrier were to begin to compete directly in the same freight lanes. In addition, drivers for these U.S. carriers are ill-prepared to operate in the Mexican environment with its unique language, cultural, physical, and legal characteristics. U.S. motor carriers are already struggling with the task of maintaining a qualified driver force to meet their present service needs and might find it difficult to field the driver force necessary to expand their service areas.

A second factor which would inhibit short-term changes in cross-border transportation operations is the nature of existing truck traffic. The preponderance of trucks originating in Mexico engage in drayage operations. They are not poised to capitalize on longer distance market opportunities due to the nature of their business emphasis, the inadequacy of their equipment, and the lack of trained drivers capable of meeting U.S. licensing standards.

There are fears that if the next phase in the NAFTA agreement were to be implemented that U.S. carriers would hire large numbers of Mexican drivers to take advantage of lower wage rates. In the short term this does not seem to be feasible. Considering the differences in driver education, training, and licensing requirements, unfamiliarity with the language, conventions, and safety regulations of the U.S., and green card restrictions, it is unlikely that U.S. motor carriers will be able to hire Mexican drivers in any numbers. In fact, given the long term nature of the driver shortage in the U.S., if hiring Mexican drivers had been an acceptable option for alleviating this situation, Mexican drivers would already constitute a visible contingent of the U.S. driver force.

Looking Toward the Future

In the long term, the element which seems to have been overlooked by government officials and various proponents and opponents to opening the border for a free flow of motor carriers is the impact that the market has on carrier performance. U.S. motor carriers have found that safety plays an important part in their bottom line performance (Siegel, 1992; "Safety and Service," 1990). This is due to direct savings in driver turnover costs, insurance costs, down-time costs, and fines. In addition there are indirect benefits such as improved reputation and the ability to meet shipper price and service requirements. These same direct and indirect costs and benefits apply to Mexican carriers. As existing agreements between U.S. and Mexican carriers expire, the possibility exists that U.S. carriers will seize the opportunity for increased business if there is a shortage of Mexican carriers that meet required safety standards. Perhaps there has been insufficient effort made to emphasize the importance of safety to the bottom line performance of the carrier.

Viewing the market from the side of the shipper also illustrates the impact that market forces have on a carrier's motivation to maintain high safety standards. As Mexican shippers become more sophisticated and aware of what it takes to compete on a NAFTA-wide basis, the importance of transportation in the total logistics effort will become apparent. Shippers can not, and will not, accept the level of service that is provided by carriers that are unable to maintain the prerequisite levels of safety

performance. Trucks which are placed out-of-service are less likely to provide the damage-free, reliable, on-time service that shippers operating in time sensitive environments require. Using unreliable carriers would result in increased shipper costs due to the need to carry higher inventory levels, stock-outs and/or manufacturing interruptions. In addition, as part of an integrated logistics program, core carriers must be able to serve all of a shipper's transportation needs, including cross-border movements. In order to provide that service, the carrier must meet the most stringent reliability standards.

The realities of the market are that a carrier must be competitive and capable of meeting shipper needs. The market values high safety standards because of the effect on operating efficiencies, e.g. time and profits. The government values high safety standards because of the effect on public safety and the integrity of the national infrastructure. Carriers that do not meet these requirements will not be able to operate profitably and thus will not remain in business.

SUMMARY

The combination of stringent government enforcement of safety standards and demand from the market for damage-free shipments delivered on an on-time basis provides the most effective means of promoting carrier attention to safety. The drop in the out-of-service rate for U.S. trucks from an average of 40% to an average of 28% in the past ten years can be attributed to this effect. It may be time for motor carriers and shippers from both sides of the border to take a leadership initiative, promoting the free flow of goods throughout North America. The market can serve to enforce safety requirements in conjunction with governmental efforts. As high safety standards provide a vital component of profitable operations, carriers will be motivated to maintain those standards to satisfy both governmental regulations and shipper demands. Those carriers who cannot remain competitive, meeting shipper demands at a profit, will not be tolerated in the marketplace. An understanding of this linkage between the efforts of the government and the market may provide a new perspective on the decision of whether or not to extend the free flow of truck operations to the ten border states and eventually all of North America and beyond.

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