

# ENTERING THE MEXICO MARKET

## A Transportation Assessment

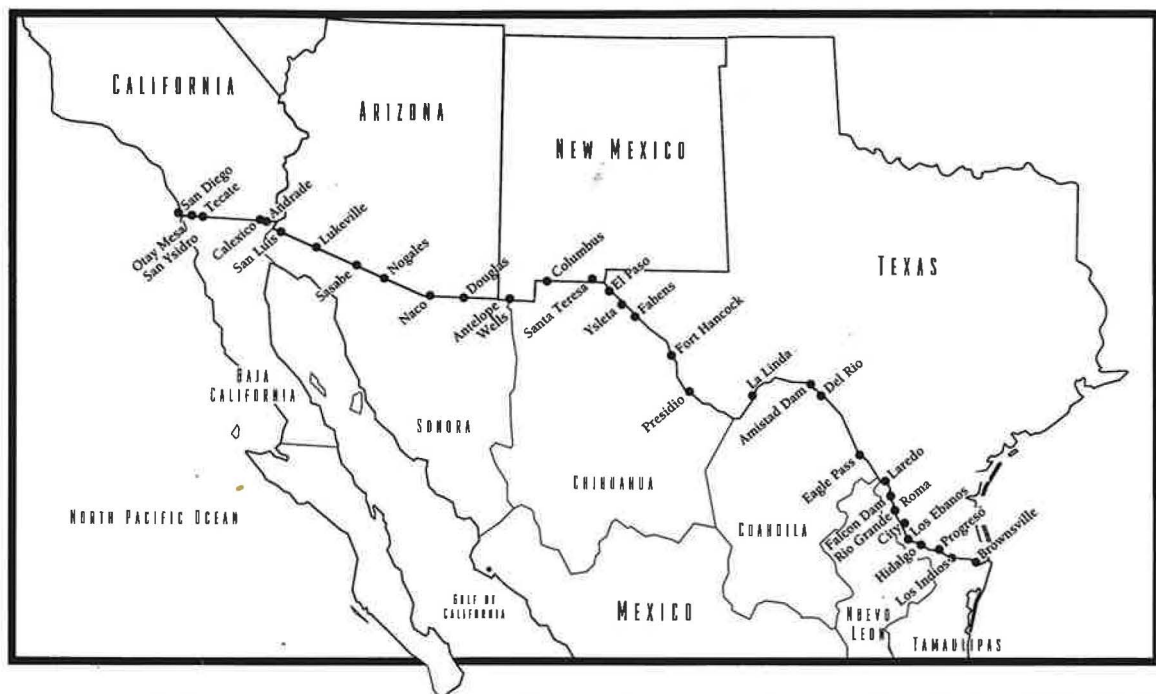


FIGURE 1 Goal of NAFTA is to create "transparent border" for commerce between United States and Mexico (1).

### ALAN C. COURTNEY

Until the dramatic devaluation of the peso last December, Mexico's economic landscape had been steadily improving since the late 1980s. Once characterized by nationalized industry, wage and price controls, low productivity, and crippling debt, the Mexican market is an emerging force in the global economy despite the recent turbulence. The continuing implementation of the North American Free Trade Agreement will not only help Mexico overcome its current economic crisis, but ultimately

will result in vastly expanded business opportunities for U.S. firms in the Mexico market, including the following:

- Procuring products and components made in Mexico for finished products to be sold in the United States and throughout the world,
- Exporting U.S.-made goods and services to a consumer market that will exceed 100 million people by the year 2000, and
- Building plants and investing in partnerships to manufacture and sell locally in Mexico.

NAFTA's most important ultimate

objective is the near-complete integration of the U.S. and Mexican economies across a 3219-kilometer (2,000-mile) border that is "transparent" because duty-collection policies, tax and investment codes, legal standing, and business customs encourage free trade (Figure 1). But does it make sense for U.S. firms to jump into new trade arrangements now? Will the Mexican economy recover? Do sufficient transportation and communications infrastructures exist? Are the partners and suppliers reliable? Is a common set of business practices in place? Are the paperwork, inspections, and congestion at the border manageable? All businesses must ask themselves these questions. The

Alan C. Courtney is Director of Marketing, American President Lines, Ltd., Oakland, California.

answer in each case is at least a qualified yes for these reasons:

- **Mexico's economy will weather the storm.** Its massive debt burden has been restructured; the gross national product was growing at 3.5 percent a year in the immediate pre-NAFTA period; although inflation is a problem, it can be controlled with political discipline; and privatization of banking, telecommunications, and agriculture has lured badly needed investment capital. Per capita income and two-way trade have nearly doubled since 1987 in a consumer market of 85 million people who favor U.S. products.
- **NAFTA is accelerating the process of free trade between Mexico and the United States.** NAFTA wiped out tariffs on 50 percent of imports into Mexico when it took effect January 1, 1994, with another 15 percent to follow within 5 years (Figure 2). Nontariff barriers such as quotas and technical standards are being phased out. Foreign investment rules have been eased, paving the way for new partnerships in a range of business sectors. New tariffs, which the government claims are temporary, will be directed only at imports from countries with which Mexico does not maintain trade agreements.
- **Infrastructure is improving.** U.S. federal and state highway funds are already committed to expanding roadway approaches to the border. Mexico has embarked on a \$7 billion program to widen highways and to build toll roads and bridges. Differences in the treatment of trucking lines, brokers, and forwarders on either side of the border that have caused delays and added costs are gradually being overcome through partnerships. Automation is improving the speed and reliability of trade across the border. Intermodal transportation facilities are being upgraded.
- **Customs rules and practices are becoming harmonized.** Mexican customs rules will soon be consistent with the General Agreement on Tariffs and Trade. Customs staff are being trained; duty

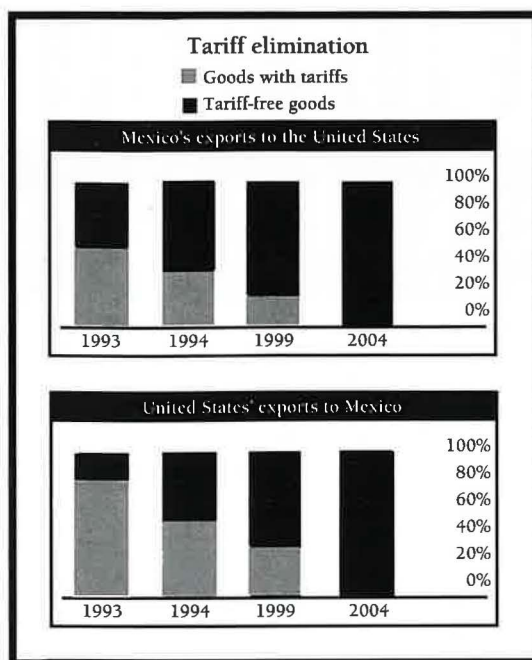


Figure 2 Tariff barriers are being brought down under NAFTA.

waivers have increased; and in-bond movements,<sup>1</sup> especially by stacktrain,<sup>2</sup> have expedited cross-border commerce while minimizing the risk of damage or theft. Transportation providers are collaborating. Integration of the U.S.-Mexico cross-border transportation system and continued further extension of its reach into the Mexican interior are critical to true integration of the two countries' economies. Governments will undoubtedly play a major role in developing the transparent border. It has also become clear that cooperation among the private-sector transportation industries in both countries will be a driving force in the design and implementation of the future transportation infrastructure. This cooperation is already under way, and the results are positive.

<sup>1</sup> Imports may pass through the port of entry and be cleared in the interior of a country if the shipment is bonded.

<sup>2</sup> Stacktrains are specially designed to carry containers one on top of another, which increases their carrying capacity over conventional freight railcars.

## Market Growth Potential

On his election in 1988 Mexican President Carlos Salinas de Gortari embarked on a broad strategy for stabilizing his country's economy by restructuring debt, freeing wages and prices, modernizing key industry sectors through privatization, and rehabilitating Mexico's infrastructure. Although successful in many respects, the strategy has been costly. Faced with dwindling reserves and a huge current account deficit, newly elected President Ernesto Zedillo devalued the peso on December 20, 1994. This action caused a panic-driven flight of investors and resulted in a free-floating currency.

Between 1989 and 1992 the Mexican economy grew by an average of 3.5 percent annually after years of stagnation (Figure 3). Per capita income rose steadily from below \$2,000 in 1986 to more than \$3,600 in 1992. Before the peso's plunge the 1995 per capita income had been expected to reach \$4,000 (Figure 4). Growth slowed in 1993 because of the temporarily high cost of capital and the uncertainty about NAFTA's passage in the United States. Current interest rates, now as high as 50 percent, have limited domestic firms' access to the capital needed to compete in the post-NAFTA environment. These rates are considered short term and endurable if the Mexican government can exercise the political will to stick with its program of market reforms and fiscal conservatism. Mexico is experienced in dealing with hyperinflation, having successfully lowered inflation to 8 percent in 1993 from 159 percent in 1987.

Mexico has relaxed its price controls to allow prices to move to market equilibrium. The government has also sent clear signals to private employers that productivity gains should accompany any future pay-raise or bonus programs. New investment rules passed in December 1993 permit, for the first time, up to 49 percent foreign ownership in railroad and port service firms; warehousing; insurance, leasing, and financial service companies; and other sectors, along with



ownership of coastal properties for tourism development.

Offshore capital once flooding into Mexico through both direct and portfolio fund investment had temporarily retreated after the peso fell. Some \$25 billion in new capital has flowed in since 1989, most from the privatization of some 390 companies; \$20 billion of this capital came in 1991 and 1992. The trend toward privatization is expected to continue, although at a much more measured pace. President Zedillo recently reversed his opposition and announced the pending privatization of the Mexican national railway, Ferrocarriles Nacionales de Mexico (FNM). Much of the money from earlier privatization has been used to pay down the national debt and toward investment in industrial modernization. Imports of manufacturing inputs such as raw materials and sub-assemblies into Mexico had been growing by an average of 18 percent a year since 1989. Mexico has accounted for 25 percent of total capital spending in North America during the 1990s. Industrial output was expected to grow by as much as 6 percent annually, at least in the near term. All of these expectations are now being reexamined. The lower value of the peso has already resulted in a significant increase in exports. Manufacturing productivity continues its upward trend, rising 19 percent from 1990 to 1992, although some of that increase was at the expense of jobs.

Two-way U.S.-Mexico trade had already more than doubled from \$35 billion in 1987 to \$75.8 billion in 1992 without NAFTA. Mexico's joining GATT in 1986 lowered the average duty on U.S. exports to Mexico from 45 percent to 9 percent; U.S. tariffs for Mexican goods average about 4 percent. U.S. exports to Mexico almost tripled during that period, and Mexico has emerged as the United States' third largest trading partner behind Canada and Japan.

Nontariff barriers are also disappearing. In December 1993, Mexico became the first Latin American country named to the board of the International Standards Organization. As a result Mexico has made a commitment to bringing its safety, quality, and other standards in line with those of other nations and eliminat-

ing numerous standards that serve as barriers to imports.

It is hoped that NAFTA ultimately will provide the business expansion needed to meet Mexico's target of 5 to 6 percent economic growth and at least 1 million new jobs annually. At the end of 1994 70 percent of Mexican exports to the United States and 50 percent of U.S. exports to Mexico cross the border without the application of tariffs. Almost 60 percent of tariff and nontariff trade barriers are expected to disappear during 1995. Tariffs on textiles, apparel, cars, and automotive parts are to be phased out entirely over 10 years. Foreign banks and securities brokers will have full access to the Mexico market by 2000. Ownership of strategic industries such as airlines, local telephones, oil, railroads, and ports will still be restricted, although related service industries will be opened to foreign competition. Earlier estimates of increased trade and investment attributable to NAFTA, if realized, would add \$15 billion a year to the combined U.S.-Mexico gross domestic product. With the cost and logistics related to cross-border business

getting easier, a number of key industry sectors should see benefits from entering the Mexican market. Combined with the tariff reductions and elimination of nontariff trade and investment barriers already implemented between the United States and Canada since 1988, these changes will accelerate the emergence of a single market of some 370 million people with opportunities for the following:

- Lower-cost, higher-quality products made in Mexico and shipped north;
- New markets for U.S. and Canadian exports;
- Seamless cross-border traffic in components and finished products, adding jobs and value; and
- Opportunities to use Mexico as a global manufacturing platform from which to serve North America, the rest of Latin America, and Asia.

## Getting Goods to Market

A country's potential for trade growth is only as great as the capacity of its infra-

Growth Rates (percent)	1989	1990	1991	1992	1995	2000
				Estimated	Projected	Projected
GDP	3.3	4.4	3.6	3.0	4.0	6.0
Investment	6.5	13.2	8.5	9.2	10.3	8.0
Consumption	5.7	5.7	5.0	4.0	5.0	5.0
Imports	19.0	22.9	16.6	14.0	10.0	15.0

APL

Figure 3 Indicators of current and projected economic growth in Mexico (3-6).

	1989	1990	1991	1992	1995	2000
				estimated	projected	projected
Population (Millions)	80.5	81.2	82.6	84.7	91.5	102.5
Income Per Capita	\$2,442	\$2,802	\$3,216	\$3,605	\$4,000	\$4,700

APL

Figure 4 Mexican per capita income continues to grow (3-6).



structure. It is a lesson well understood in many parts of Asia today, where double-digit growth has been limited by the ability of roads, rail networks, and ports to keep pace. How does the U.S.-Mexico transportation system measure up? Before reviewing the issues that will affect the ability of shippers to get their goods to markets, an overview of shipping patterns across the border is in order.

Two-way trade transported overland between the United States and Mexico in 1992 totaled almost \$62 billion, representing approximately 86 percent of the total value of bilateral trade. Eighty percent of that amount was moved by truck and 20 percent was moved by rail. Those percentages translate into 1.7 million truckloads and 129.8 kilograms (14.3 million tons) of rail cargo annually.

Surface trade crosses the border via 38 vehicle crossings and 8 rail lines, some of which operate in conjunction with double-stack transportation providers. Southbound shipments historically outnumber northbound by factors of 3:1 for rail and 2:1 for truck, according to U.S. Department of Transportation and industry estimates. In recent months this balance has dramatically shifted to almost 1:1 as imports into Mexico have virtually dried up. Most intermodal traffic is currently trailer-on-flat-car—in which a semitrailer is put on a flat railcar—although containerization and the doublestack mode are growing in popularity as the number of inland intermodal terminals increases in Mexico.

Waterborne commerce accounts for 66 percent of the northbound tonnage moving between Mexico and the United States, primarily because of the Mexican exports of petroleum products to the United States. Southbound maritime tonnage is approximately 25 percent of the total, moving mostly by barge between ports located on the Gulf of Mexico. A growing interest in waterborne intermodal opportunities has given rise to scheduled rail-barge services from a number of East Coast and Gulf ports. As an example the Burlington Northern Railroad has entered into a joint venture with Mexico's Grupo Protexa SA de CV to operate a rail-barge service between the port of Galveston, Texas, and Mexico's Port of Coatzacoalcos. Barge ser-

vice provides a low-cost, energy-efficient option, although it is slower and somewhat less reliable than surface modes; thus it tends to be used predominantly for the transport of bulk commodities in which timely delivery is less crucial. Some of these services have been discontinued as a result of the economic dislocation caused by the fall of the peso. For example CSX announced in early March that it was abandoning its Gato Marino rail/barge/vessel service between the U.S. Eastern Seaboard and Mexico ports.

### Infrastructure Development

Traffic is unevenly distributed among the various border-crossing points. Lesser-traveled points remain underused, often because they are not in population centers that generate sufficient cargo on their own and highway access from the larger urban areas is inadequate.

In the meantime major border crossings in urban areas—Laredo, El Paso, Nogales, and San Diego—face congestion. Population in the border region grew from 6 million people in 1980 to 9.5 million in 1990. Freight passing through these crossing points competes with local commercial and commuter traffic, tourists, and other non-trade movements. The expansion capability of access routes is limited by the proximity of commercial and residential growth.

Mexico's efforts to expand and improve access routes have met with mixed success. The government has chosen the toll-road approach to funding new highway construction. Overall this strategy has been effective, but in some instances projects have stalled, with builders pressing for longer operating concession periods to amortize costs without setting exorbitant tolls. Where such road projects have been completed, truckers unaccustomed to tolls continue to use familiar, highly congested, and poorly maintained free routes.

### Customs Issues

Although some facilities have been expanded at major border crossings on the U.S. side, understaffing and high turnover continue to pose problems. Mexican customs staff began a program in 1991 to improve professionalism and eliminate corruption. Thus far this has resulted in the

replacement of 90 percent of customs personnel. Unfortunately Mexico is only in the early stages of automating the customs clearance process and linking gateways, offices, and brokers.

Mexican customs procedures are straightforward but stringent and can result in delays and added costs related to prior verification, inspection, and transloading. Documentation must be complete and arrive with the shipment. Missing paperwork or discrepancies trigger a "red light" requiring a full inspection. It is vital to use transportation systems that can avoid or minimize these problems.

Mexican law currently requires that a licensed Mexican broker present cargo and related documentation to Mexican customs agents at the border. On southbound crossings that often means transferring control of the shipment from a U.S. broker to a Mexican broker (1). With a customs inspection rate of 1 in 10 shipments, Mexican brokers and forwarders—who typically assume greater liability for shipments than their U.S. counterparts—often insist on performing their own inspections of the goods and paperwork, and this work is charged to the shipper's account. An additional short-haul shuttle dray<sup>3</sup> is frequently required within the border zone to complete the transfer, also at shipper's cost.

When a red-light inspection turns up a discrepancy, penalties and fines are assessed to the Mexican broker and the shipper. Brokers frequently allow a shipment to be held until payment of duties and penalties is made by the consignee. A problem-free truck interchange across the border will cost an average \$100 per trailer and take two to three hours. A red light can delay a shipment for as long as three days and add considerable expense.

Mexican brokers have free access to the U.S. market under NAFTA, but U.S. brokers will not have the same privilege or function in Mexico before 1999 at the earliest. That disparity has not only given Mexican brokers a competitive edge against U.S. firms but has also signifi-

<sup>3</sup> A shuttle dray refers to the local movement of a container or trailer by truck, usually to or from a rail terminal.



cantly expanded their control of freight-related services at the border.

#### **Commercial Issues: Use of In-Bond Services**

The current Mexican broker system encourages shippers and consignees on either side of the border to ship under free on board-border (F.O.B.) terms of sale, assuming responsibility for the cargo, documentation, and related costs on their side of the border only. That in turn may require additional transfers, or even transloading of cargo from one piece of equipment to another. Mexican customs now has the capability and a willingness in certain instances to permit in-bond shipments to interior points in Mexico for large, repeat shippers who do not ship mixed loads. Shipping in-bond, with clearance at a container yard or warehouse facility close to the recipient's place of business, bypasses border congestion while speeding the inspection process and reducing the risk of damage or pilferage.

#### **Equipment Access and Control**

NAFTA guarantees U.S. and Mexican trucking firms access to each other's border states for pickup and delivery of international shipments by 1997 and full access to each other's markets by 2000. Cargo or equipment must currently be transferred at the border under arrangement by a broker, with additional cost and delay.

Poor road conditions and communications within Mexico have tended to discourage U.S. firms from allowing trailers or containers to move under interchange agreements into the country's interior, where the risk of loss, damage, or theft is still a concern. Popular 16-meter (53-foot) trailers are not permitted in Mexico beyond the border zone. Hijacking remains a problem on the long rural stretches of road between cities in Mexico, with newer tractors and trailers as much in demand as the cargo they carry. High-speed stacktrains, however, have been shown to be effective at deterring in-transit losses.

On northbound shipments, equipment has typically been moved empty, resulting in poor use and low revenue per box, although the peso devaluation appears to have temporarily mitigated this condition

by stimulating exports and curtailing imports. Inadequate east-west and intercity networks limit the options for picking up potential backhaul shipments. Imbalances also arise because major manufacturing centers in Mexico's interior are not necessarily located in or close to major consumer markets.

Loaded trailers moving within Mexico are not subject to the same weight limits as in the United States and are frequently overloaded to achieve cost savings. More than a third of all Mexican trucks are typically 30 to 50 percent overloaded, with illegal weights reported of up to 54 431 kilograms (120,000 pounds) for a five-axle semi-trailer and 70 307 kilograms (155,000 pounds) for a six-axle vehicle (2). Apart from the potential safety and equipment damage problems inherent with these shipments, there are further cost and delay factors involved. Overloading may necessitate delaying the trailer or container on the U.S. side of the border, transloading the excess cargo or shifting to a specially designed chassis if one is available, and paying a fine.

#### **System Is Improving**

It is widely recognized by the private and public sectors that U.S.-Mexico trade opportunities in the post-NAFTA market are closely linked to transportation reliability and choice. Even without NAFTA the likely annual growth in truck and rail traffic across the border would have encouraged the development of infrastructural improvements, faster customs clearance, and automated cargo and equipment tracing.

With NAFTA, and once the Mexican economy stabilizes, transportation companies project 10 to 15 percent annual growth, including new prospects for Canada-Mexico trade and cross-border sourcing, manufacturing, and assembly operations involving all three NAFTA trading partners. That makes change imperative.

Several broad elements are essential to the development of a seamless, cross-border transportation infrastructure for the integrated North American market of the 21st century:

- Adequate, modern highway and trunk access and road capacity. These must be supported by gate facilities and customs staffing levels in the United States and Mexico that are sufficient to handle the volumes and different types of border traffic.

- Container terminals and lift equipment that can handle north- and south-bound intermodal traffic and adequate access to those terminals.

- Automated customs entry and clearance, along with simplified, uniform documentation and inspection procedures that minimize the need for transfers or inspections.

- Free access to, and competition for, cross-border carriage and freight brokerage business, under a common set of regulations for all three NAFTA partners.

- Ready availability of well-maintained, interchangeable equipment, with cargo-control systems in place that sharply reduce risk of damage, loss, or theft.

Some of these elements are scheduled to be phased in under NAFTA. Timing for others will be subject to the industry's ability to overcome certain economic or political obstacles. Many are already under way, such as the current program to raise tunnel clearances to accommodate stacktrains between the Mexican west coast and the interior consumer markets and the upgrading of the Pantaco terminal in Mexico City.

#### **Infrastructure**

The four U.S. border states, in conjunction with the U.S. Department of Transportation under 1991 legislation, are at varying stages in developing a comprehensive needs assessment for highway and trunk access systems connecting with the U.S.-Mexico border. The work is to be funded from combined federal and state sources. The six-year Southern Border Capital Improvement Program, begun in 1988 by the U.S. Customs Service, will have spent \$357 million on new bridges at Ysleta and Los Indios, as well as new facilities at Brownsville and Laredo, among other projects. Mexico has committed \$300 million in direct public spending for roadway con-



struction, expansion, and repair. Another \$6.7 billion program—10 percent of it covered by public funding—grants operating concessions for some 50 toll road and bridge projects.

Pantaco in Mexico City is Mexico's key rail terminal, serving approximately 25 percent of the intermodal market. Phase 1 of its renovation, completed in February 1995, involved improving the existing physical plant. Phase 2 would further expand capacity, but is unlikely to be undertaken under current economic conditions; prospects will depend in part on the pace of railroad privatization.

### Customs

U.S. Customs has made paperless entry by 1998 a priority. Recent legislation is expected to provide the funding for increased staff, facilities, and automation. Customs' Automated Commercial System, up and running since 1984, permits automated shipment tracking and clearance as well as two-way on-line communication between brokers and the Customs Service. Its line-release program uses bar-code scanners to trace and pre-clear low-risk, repetitive shipments.

The Mexican SAAI automated system for customs permits on-line filing of entries and uses bar coding to track and clear cargo. The system is currently limited to the Mexico City airport and the customs office in Nuevo Laredo, but Mexico plans to expand the on-line network to include all of its customs stations. NAFTA can be expected to streamline the customs process on both sides of the border by reducing tariffs and some nontariff barriers. Provisions in the agreement concerning rules of origin, however, will impose additional documentation and, to a lesser extent, inspection requirements.

### Partnerships

Private and state-run transportation companies are using strategic partnerships to position themselves early for the highly competitive market that will develop as a result of NAFTA. Deregulation of Mexico's trucking industry in 1989 introduced significant competition into that market, and lower tariffs are helping to encourage expansion of short-haul intracity routes

and long-haul service between Mexico City and the border. The Mexican motor carrier vehicle fleet increased by 85 percent between 1989 and 1992, although trailer equipment remains in short supply. This trend will ultimately contribute to solving equipment-use problems by opening up new backhaul opportunities.

Cost pressures to modernize fleets, coupled with higher tax rates and lower freight rates, are pushing Mexican motor carriers to seek partnerships with U.S. trucking firms as an alternative to post-NAFTA competition. U.S. motor carriers, deregulated since 1982, want short-term access to markets and terminal facilities while waiting for NAFTA operating and investment provisions to be phased in. In return, they have offered Mexican partners extensive trailer fleets and access to financing and service expertise. Some joint ventures have improved the quality of service and equipment and have introduced new technologies such as door-to-door automated tracing and billing and voice-activated rate-and-shipment status information by phone.

U.S. railroads have formed a partnership with FNM and stacktrain operators to develop through-services into Mexico. Examples include daily stacktrain service from Mexico to the U.S. Midwest—a combination of APL Stacktrain Services, FNM, and the Union Pacific (UP) that provides highly expedited, seamless container transportation—and a dedicated service for Ford Motor Company by the same partners. Other examples include the APL service with Canadian National, UP, and FNM linking Mexico and Canada; and the APL partnership with Southern Pacific and FNM to provide a dedicated transborder service for General Motors. FNM, meanwhile, has upgraded facilities, modernized systems, and expanded service through its partnerships. For example, FNM uses an automated cargo-tracing system developed by UP, in addition to leasing UP locomotives. These partnerships have produced express services, through-rates (the provision of a single bill at a single rate for a shipment traveling through several points), and single-party billing; special routing and handling geared to particular

commodities; and customs preclearance for high-volume repeat shippers.

### Controlling Cargo and Equipment

Advances have been made in the rail and truck sectors with respect to tracking shipments and preventing loss or theft. Here rail enjoys an advantage because the Mexican rail partner is a single, state-run company whose trains move on a single, uniform system with a greater measure of accountability.

Southbound in-bond rail moves are still in their infancy and are limited to single-commodity container or trailer loads; low-risk commodities; and high-volume, repeat customers. The potential is greater for northbound rail shipments, given U.S. Customs' previous experience with such shipments. In either case, shipping in-bond has several important benefits in the current environment:

- Expedited clearance at the border for later inspection, if necessary, at a less congested facility closer to the customer;
- Avoidance of duplicative broker fees, inspections, and shuttle-dray charges;
- Simplified shipment tracing;
- Reduced risk of damage, considering roadway conditions in Mexico; and
- Virtual elimination of hijacking risk in transit.

Rail and intermodal service providers have identified potential for northbound shipments of chemicals, plastics, forest products, and agricultural goods and related by-products, among other commodities. These movements would serve as backhauls for automobile parts and general merchandise moving south.

### Conclusion

Mexico's transportation system is rapidly changing, a process set in motion by deregulation and changing trade patterns well before the passage of NAFTA. Strategic alliances are forming in advance of any NAFTA timetables as carriers, consolidators, and government agencies brace themselves for the new competitive environment that was already developing before the peso

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### Driving Simulators *continued from page 27*

generation and presentation in driving simulators, another key component in some driving simulators is a mechanism to provide cues of motion to the driver. From simple subwoofers mounted under the driver's seat to convey a perceived vibration, to elaborate platforms that occupy large hangar-like buildings and physically move the simulator in roll, pitch, and yaw rotation as well as lateral, longitudinal, and vertical translation, motion systems are intended to further heighten the illusion of reality. Simulator researchers and developers are divided on whether motion capability is necessary or even important for all applications, and significant concerns about the contribution of motion (or lack thereof) to cue conflict and perceptual distortion that may lead to simulator sickness continue to be debated. Nearly every recent presentation about research results using driving simulation has reported that a significant percentage of subjects experienced symptoms of sickness that might have affected the results of the research. Hein (8) believes that simulator sickness will be the single greatest impediment to the widespread application of simulator technology for driver research, training, and evaluation unless the problem can be solved. Recent evidence indicates that older subjects,

particularly women, appear to be more prone to simulator sickness than others. This could have great consequences for the growing interest in simulator-based research and screening of the older driver.

Although the trend in driving simulator visual systems is toward CGI, traditional photographic image systems nonetheless have a place. When the level of detail, brightness, and color contrast of the roadside environment is of importance to the experimenter's purpose, imagery of the quality created by sophisticated, large format motion picture cameras cannot yet be approached by even the most sophisticated computer systems.

Finally, any simulator is merely a tool; driving simulators are a means of studying driver performance and behavior under the specific conditions of interest to researchers. The pull of sophisticated technology is great, but valuable contributions to the understanding of traffic safety have been made over many years using experimental setups that owe more to ingenuity than to power and sophistication. It is advisable that anyone contemplating using driving simulators perform a comprehensive needs analysis to determine the simulator requirements and technology appropriate to meeting the research needs.

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### Mexico Market *continued from page 14*

was devalued and that is expected to resume soon. Much work is still needed to clear away bureaucratic obstacles and outmoded business practices, but it would be a mistake to underestimate the progress that has been made and the importance of the cooperation that has taken place at all levels of business and government on both sides of the border.

Opportunities already exist for building a reliable, efficient logistics chain linking the United States and Mexico—indeed, linking all three North American markets and incorporating them into global strategies. Achieving this goal involves developing long-term relationships with service providers and thorough initial communication about the

unique needs and capabilities of the service provider and the customer.

The economic uncertainties resulting from the devaluation of the peso represent a serious impediment to rapid, large-scale investment in infrastructure and process improvements, but there is clear evidence of progress. The environment is turbulent, but opportunities exist for those who act quickly to gain a sustainable competitive advantage in this new and potentially vibrant market.

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