ITS Field Operational Test Summary

Peace Bridge Intelligent Transportation Border Crossing System

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Introduction

The Peace Bridge International Transportation Border Crossing System ITS Field Operational Test (ITBCS) is located on the Peace Bridge between Buffalo, New York and Fort Erie, Ontario, Canada. The test demonstrates the use of ITS technologies as a means to reduce the delays incurred by users of the bridge. The project's goal is to enable commercial vehicles and daily commuters to cross a "transparent" international border. The main objective is to provide an accredited service to both the border officials and agencies and bridge users that allows pre-processed vehicles and drivers to more quickly pass through international border check points, and electronically pay for bridge tolls.

The test operations commenced in May 1997 and are scheduled to be completed in November 1998, with the final report expected in November 1998.

Project Description

The international trade community and government officials responsible for customs, immigration, and transportation, must execute a complex set of transactions and inspections in order for vehicles, drivers, and cargo to cross legally and safely from one country into another. Because many of these transactions are conducted manually, the time required to process an individual shipment can be significant. At land ports, such as the Peace Bridge, commercial vehicle traffic volume has grown to the point where lengthy processing delays are commonplace. These delays impact the trade community by increasing costs, and adversely affecting the efficiency of operations. The increasing volume of commercial vehicles also has potential safety implications. As part of the IBC (International Border Clearance) Program, the Federal Highway Administration has worked with representatives from the New York Department of Transportation, the Peace Bridge, the US Treasury's North American Trade Automation Prototype (NATAP) program, and Canadian transportation officials to cooperatively address these issues.

The result is an IBC system that aims to significantly reduce administrative delays incurred by vehicles at international points of entry. The system also facilitates the safety screening of commercial vehicles. The ITBCS will facilitate vehicle processing using dedicated short-range communications (DSRC) for trade and transport related commercial vehicle electronic screening, toll collection, and dedicated commuter lanes. The end goal is to supplant current paper-based processes with one supported by electronic data interchange (EDI). The system polls transponders installed in approaching vehicles. Based on the vehicle identification transmitted by the transponder, the system accesses stored information to debit toll accounts and allow pre-cleared commuter vehicles and pre-screened commercial vehicles to pass without stopping. The system supports the exchange of information between the trade community and regulatory agencies responsible for customs, immigration and transportation. Figure 1 shows the ITBCS overview for commercial vehicle screening and clearance.

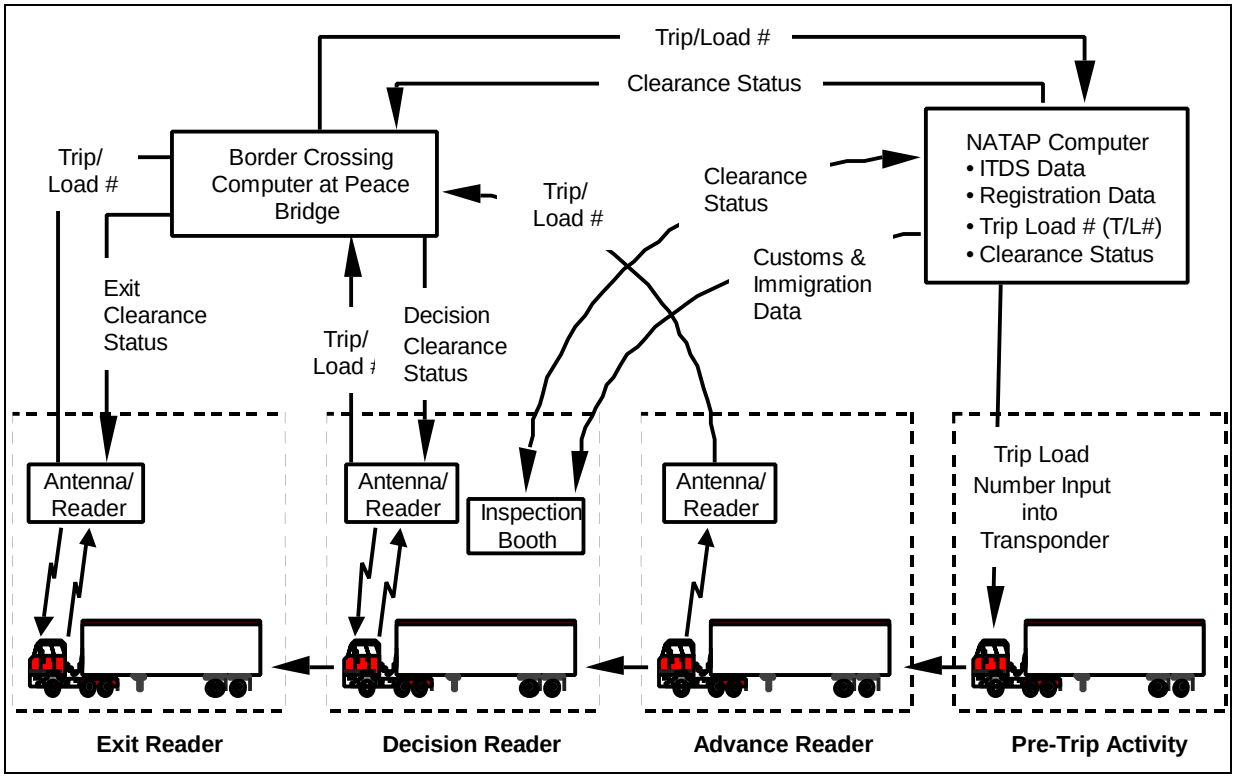
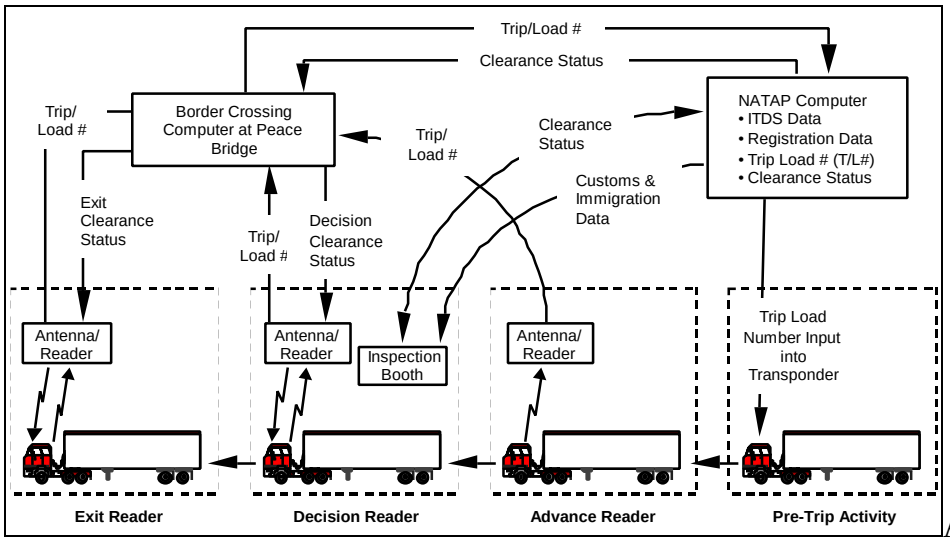


Figure 1: ITBCS Overview for Commercial Vehicles



As a commercial vehicle approaches the border facility, the system electronically screens enrolled vehicles at the advance reader location using DSRC. The reader reads carrier, vehicle and cargo identification data, in the form of a trip/load number, from a transponder installed in the vehicle cab. The reader forwards this information through the ITBCS Border Crossing Controller (BCC) computer to the NATAP system. Weigh-in-motion scales and automated vehicle classification devices gather vehicle weight and classification data and forward it to the BCC computer.

When the vehicle reaches the US Customs primary inspection point, the decision reader reads the transponder a second time. This action prompts the BCC computer to relay information, received from the NATAP system, to the display in the customs primary inspection booth. The NATAP

information consists of immigration and trade related documentation regarding the status of the carrier, driver and cargo. Based on this information, the customs inspector instructs the driver to proceed either to the compound exit or to secondary inspection. A red or green signal, displayed both on the transponder and on a traffic signal adjacent to the primary inspection booth, relays the inspector's instructions to the driver. As the vehicle leaves the compound, the exit reader reads the transponder a third and final time. If the vehicle has completed all inspections satisfactorily and all required documentation is in order, the system gives the driver a green light to proceed.

The primary evaluation tool to be used is a simulation model. This model will predict travel conditions on and around the bridge once the technology has been introduced and is in use by a reasonable set of commercial and passenger vehicles. Test personnel will collect measurable parameters such as transit time, inspector utilization, and congestion for different levels of technology market penetration. Analysis of these parameters will allow evaluators to make informed decisions regarding the impacts of full-scale deployment.

The evaluation focuses on assessing the:

- Potential improvements in the transit times
- Potential reduction in the burden of compliance to shippers and carriers
- Potential reduction in costs to the bridge authority and regulatory agencies.

The primary objectives of the test evaluation are:

- To quantify the potential benefits of the ITBCS, including those that accrue to the bridge authority, the regulatory agencies, and the vehicle operators
- To investigate the institutional barriers that must be overcome to realize the full benefits of such a system

The primary expected benefits are:

- Reduction in transit times to the commercial and passenger vehicles that cross the border at the Peace Bridge
- Greater accuracy in targeting inspection activities to minimize the resources that must be expended clearing low risk vehicles.

Test Status

System operations began in May 1997 and are presently ongoing. The evaluation is scheduled to conclude in November of 1998.

Test Partners

City of Buffalo, New York

Calspan SRL

Federal Highway Administration

Fort Erie Public Bridge Authority

TransCore

References

None published