
A Combined Report for Freight Information Real-time System for Transport (FIRST)

Part A – Final Evaluation Plan

Part B – Detailed Test Plans



Submitted to: United States Department of Transportation

Submitted by: Science Applications International Corporation (SAIC)

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NOTICE

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Preface

This combined report contains two parts which comprise a Freight Information Real-time System for Transport (FIRST) evaluation document, which are identified as follows:

- Part A – Final Evaluation Plan
- Part B – Detailed Test Plans

In support of the US Department of Transportation's (USDOT's) intermodal freight intelligent transportation system (ITS) program and under the direction of the USDOT ITS Joint Program Office (JPO), an Evaluation Team lead by SAIC was selected to develop and implement an evaluation of the FIRST system. The ultimate goal of this evaluation is to identify any benefits in *operational efficiency, air quality, and customer satisfaction* with the implementation of the FIRST information technology system for the intermodal freight industry at the Port of New York/New Jersey.

The Part A – Final Evaluation Plan document was developed to serve as a planning and guidance document from which a successful evaluation effort will be implemented. The Evaluation Plan is typically the first major step in the evaluation life cycle.

This document is immediately followed by the Part B – Detailed Evaluation Test Plans document, which provides more detailed guidance for performing associated tests and measurements while conducting the three specific evaluation studies.

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A.1.0 Introduction

Industry and government are concerned about the capacity of existing ports and terminals – and the associated highways, rail lines, and waterways that serve them – to handle steadily increasing volumes of intermodal traffic, especially containerized freight. Over the last decade, the volume of intermodal containers moving through ports worldwide has doubled. Correspondingly, the volume of intermodal air freight, intermodal traffic on U.S. railroads, and intermodal freight moved by truck grew apace. These volumes are expected to double again over the next two decades.

Today's intermodal freight system is not equipped to handle this growth. Ineffective links among modes – particularly in terms of landside access to ports and terminals – degrade the reliability and performance of carriers, shippers, and terminal operators. Moreover, the lack of an effective information-sharing network among stakeholders creates deficiencies such as bottlenecks and unnecessary delays, which adversely impact efficient freight movement. These deficiencies result in increased operating costs and congestion, and decreased safety, economic competitiveness, and air quality.

Figure A.1-1 Four-Block Long Truck Line at a Port of NY/NJ Terminal



For the Port Authority of New York/New Jersey, the most acute problem occurs on landside access to terminals. With very little room for land and facility expansion, the private terminals at the Port Authority's Marine Terminals are struggling with the ever-increasing flow of trucks into their terminals to unload and load container ships. This problem is expected worsen in the coming decade as the number of containers entering the Port increases by 4.2 percent annually. To respond to this situation, the Port Authority, supported by a large set of public and private stakeholders, is looking to leverage information technologies and intelligent transportation systems (ITS) to improve the efficiencies of Port operations.

A.1.1 The FIRST Demonstration Project

In support of the Federal Highway Administration’s (FHWA’s) Office of Freight Management and Operations, the FHWA’s Congestion Mitigation and Air Quality Improvement Program (CMAQ), and the I-95 Corridor Coalition’s Intermodal Transfer of People and Goods Program, the Freight Information Real-time System for Transport (FIRST) Demonstration Project is being developed and funded in part as an attempt to develop some unique solutions to these problems. The FIRST system is focused on testing new concepts for the following elements:

- Improving landside transportation access to ports
- Enhancing information sharing among intermodal freight service providers
- Reducing air pollution caused by truck congestion at intermodal marine terminals

Deploying the FIRST system provides an excellent opportunity to evaluate new intermodal ITS technologies not addressed in the existing ITS intermodal freight field operational tests (FOT’s). Table A.1-1 provides a comparison of the technologies and functions between FIRST and the other five intermodal ITS operational tests currently deployed. By applying ITS at different segments of the freight logistics chain, FIRST will add valuable new information regarding freight terminal dispatch, drayage driver assignment, and container pickup functions, as well as provide access to freight arrival status on dock (i.e., ship arrival). In addition, the technologies being implemented in FIRST will complement the current technologies implemented in the other projects. .

The FIRST project has the potential to fill in a number of critical gaps in the USDOT’s and industry’s understanding of technology applied to the intermodal logistics chain. Once these technologies can demonstrate success in measuring improved freight mobility and logistics productivity, they have the potential to be deployed nationwide.

Table A.1-1. Comparison of the Six Intermodal ITS Operational Tests

IMTC FOT	WSDOT FOT	O’Hare FOT	ITFWG	Cargo*Mate	FIRST
DSRC Transponder Tractor Tracking	Container Electronic Seals with Periodic Monitoring	Biometric Fingerprint Identification	Wireless GPS Chassis Tracking	Container Electronic Seals with Continual Monitoring	Dray Trucking Dispatch and Driver Assignment
Trade Corridor Operating System (TCOS)	Wireless GPS Tractor Tracking	Smart Cards with Commercial Drivers License	In-transit Visibility between Modes	DSRC Transponder Tractor Tracking	Ship/Rail Arrival and Departure Information
Bi-national Electronic Customs Clearance	Terminal Gate Cameras	Electronic Shipment Manifest for Cargo Tracking	Communication through Software between Modal Carriers	Wireless GPS Chassis Tracking	Cargo Status
	MPO Truck Movement Data Collection	Air/Port/FAA Security Monitoring System		Logistics Management System	Real-Time Traffic and Incident Information

FIRST provides a potential ITS solution that provides real-time status information and a container assignment system which could increase freight movement productivity and mitigate Port congestion. Moreover, by significantly reducing truck congestion and idling times at the Port gate and unnecessary truck trips, FIRST is expected to produce measurable air quality improvements and contribute to the attainment of National Ambient Air Quality Standards (NAAQS).

FIRST is an Internet-based, real-time network that integrates numerous resources into a single, easy-to-use web site for access to cargo and Port information needs. This system was designed by members of the private sector intermodal industry, in cooperation with public sector partners, to meet the operational needs of regional intermodal freight service providers and their customers. Using a variety of standard data transmissions, including Electronic Data Interchange (EDI), FIRST will facilitate the safe, efficient, and seamless movement of freight through the Port of New York/New Jersey.

Using the Internet as a platform to access data in a variety of formats, FIRST facilitates the safe, efficient, and seamless movement of freight through the Port of New York/New Jersey. Information on the FIRST web site – www.firstnynj.com – has been drawn from various sources to provide real-time information on cargo status to ocean carriers, exporters, importers, foreign freight forwarders, customs brokers, terminal operators, and rail and truck providers. Figure A.1.2 provides an overview for the FIRST system and various data resources and information connectivity available to stakeholders and projected users.

Figure A.1-2. FIRST System Overview



For example, in a typical scenario, a trucking company can use the FIRST system to determine the status of a cargo container scheduled for pickup up at the Port. The assigned truck driver can reduce delay time, avoid numerous telephone calls to the terminal, and prevent unnecessary trips to the Port by verifying that the container is at the terminal and has been released for pickup. It is expected that FIRST will significantly reduce the number of trouble tickets and increase the container movement throughput. When this scenario is multiplied by multiple drivers and cargo containers per day, it is expected that a significant reduction in operating costs, time delays, and congestion can be realized, as well as increased safety, economic competitiveness, and enhanced air quality.

When fully developed and implemented, FIRST will enable Port users to post and receive information on the location and status of intermodal freight shipments, including export bookings, customs manifests, receipts and invoices, gate moves, carrier insurance/credit status, delivery confirmation, and truck identification.

With connectivity to public and private ATIS systems, information on travel conditions along access roads and major freight routes serving the Port of New York/New Jersey will also be provided. Shared cargo and traffic information will facilitate cargo movement by reducing time delays caused by incomplete cargo documentation, delayed release of cargo, and bypassing traffic congestion. Eventually, FIRST will also include a truck driver appointment system, which allows private terminals to assign appointment times to trucking companies for container pickup or delivery at a designated terminal. An overview of the information sources, types, and system users is presented in Figure A.1-3.

Figure A.1-3. FIRST Information Sources, Types, and Users



Figure courtesy of Americas Systems Inc.

A number of other key information and ITS systems will be integrated with FIRST. SEA LINK[®], which provides a central database of registered trucking companies and their associated truck drivers doing business at the Port, has already been integrated with FIRST. Other systems that are expected to be integrated into FIRST include the Coast Guard's Vessel Traffic Service, and the US Customs Automated Manifest System (AMS). A potential also exists for future information connectivity with systems being deployed under the Cargo*Mate Demonstration Project, which is testing an intermodal freight logistics system through the real-time tracking of intermodal chassis.

A.1.2 Benefits of FIRST

In terms of private sector benefits, terminal operators at the Port and ocean carriers can use need-specific information to monitor equipment usage and plan cargo arrivals and dispatches, thereby achieving cost savings in asset and resource management. Additionally, truck drivers, freight forwarders, and brokers can increase productivity and efficiency by determining the status of multiple container shipments at various locations from one single source - the FIRST system.

In terms of the public sector, state and regional transportation agencies could benefit from reduced traffic congestion, improvements to air quality, and an ability to further evaluate strategies for meeting regional transportation plans. Local transportation agencies could realize benefits in improved safety, utilization of highways, and increased participation and support from private sector stakeholders. There are numerous expected benefits to be realized from the FIRST implementation, some of which are listed in Table A.1-2 on the following page.

The succeeding portions of this document – *Part A – Final Evaluation Plan* – are organized as follows:

- **Section A.2.0 Review of Past and Existing Studies**. This section presents a review of past and existing studies regarding intermodal freight system operations.
- **Section A.3.0 FIRST Project Description**. This section presents a technical and institutional overview of the FIRST project.
- **Section A.4.0 Evaluation Plan**. This section presents the evaluation activities that will be undertaken to measure the three study elements relating to intermodal freight operations, air quality, and customer satisfaction.
- **Section A.5.0 Management Plan**. This section presents the proposed management activities for the defined evaluation activities.

Table A.1-2. Expected Benefits from the FIRST Implementation

Stakeholder	Expected Benefit
Shippers/Consignees	More efficient use of labor/equipment Pickup/delivery notification In-transit visibility Reduced overall transit time Enhanced customer service
Ocean Carriers	Savings in data transmission More efficient use of labor/equipment Ability to nominate trucker Enhanced customer service
Freight Forwarders/Brokers	Ability to nominate trucker Real-time truck driver status Pickup/delivery notification In-transit visibility Reduced overall transit time Enhanced customer service
Terminal Operators	More efficient use of labor/equipment Reduced overall transit time Reduced time delays and terminal congestion Increased gate moves/productivity throughput Quicker collection of fees Pre-notification of truck arrival Enhanced customer service
Truck Drivers	Efficient use of labor/equipment Real-time container status Advanced notice of fees due Real-time gate activity Real-time incident and traffic management reports Increased capacity for additional moves Pickup/delivery notification In-transit visibility Reduced time delays and terminal congestion Enhanced customer service
Regional Transportation Agencies	Reduced highway congestion and vehicle emissions Increased air quality
Port Authority	More cohesive terminal operations Reduced highway congestion and vehicle emissions Reduced time delays and terminal congestion Increase in commercial vehicle safety Increased air quality Comprehensible statistical database for future planning Greater competitiveness as the region's "Port of choice" Enhanced customer service

A.2.0 Review of Existing Studies

Over the past several years and in preparation for the FIRST project, several studies were conducted regarding gate operations at the Port of New York/New Jersey. This section provides a brief summary of those efforts.

A.2.1 Gate Operation Studies

The gate operation studies focused on land access to the Port and the terminal gates, the amount of time trucks spend in queues before entering the terminal, and the efficiency of information exchanges that take place during truck processing at the terminal gate. A study of the land access to the Port performed during the late summer of 1998 showed that gate operations monopolize a significant portion of the time a truck spends in the terminal facility.¹ Table A.2-1 summarizes several of the major findings from the study. Both of the terminals studied are 2-stage terminals (pre-gate and gate) with one (Terminal A) being semi-automated and the other (Terminal B) being fully automated.

Table A.2-1. Terminal Gate Analysis Findings for the Terminals

Performance Measure	Terminal A	Terminal B
Pre-gate/gate processing time	21 minutes	5 minutes
Probability truck will wait in a queue	94.9 %	83.3 %
Expected wait time in the queue	85 minutes	75 minutes

A.2.1.1 Recommendations

Based on gate operation study results, improvements recommended for the gate facility included using information technology to assign cargo container pick-ups and deliveries by appointment. It is expected this recommendation will be facilitated by the FIRST system.

A.2.2 Terminal Efficiency Studies

The FIRST Evaluation Subcommittee authorized a similar study performed by the New Jersey Institute of Technology in June 2000 that addressed observations on terminal efficiency. Two terminals were studied and data was collected on truck queue length for both entering and exiting the gate area and at the trouble window. The observations taken at the terminals indicated that the average time within both terminals was approximately 1.5 hours, not including the time spent in a queue, which can be significant (as demonstrated by the Yahalom study as cited in Table A.2-1).

Since the time spent at the terminal facility controls the number of trips that a truck can make in one day, it is important to identify a means of reducing incoming and outgoing traffic

¹ Yahalom, Shmuel, et.al, "Intermodal Productivity and Goods Movement. Phase II. Land Access to Port and Terminal Gate Operations." State University of New York, Maritime College, January 2001.

congestion. The study found that under current operating conditions, a truck making three trips per day could only deliver cargo within a 25-minute drive from the terminal. Since any delay would result in a missed third trip, warehouse owners can only depend on two trips a day. Under this scenario, there is little incentive to locate a warehouse near the Port where the land value is high and instead locate further away from the Port. This, in turn, requires longer travel times to and from warehousing facilities. The analysis team hypothesized that the inability to guarantee three round trips per day that would justify a warehouse being located nearer to the Port might explain the unused industrial land located near the Port.

A.2.2.1 Recommendations

The FIRST Evaluation Subcommittee study concluded that both terminals illustrated the need for better and more timely cargo status information at the terminal. Also recommended was the capability to transfer documents electronically to speed the flow of cargo, decrease the time trucks idled in queue, and increase the potential for more than two round trips per truck per day.

A.3.0 FIRST Project Description

FIRST is an Internet-based, real-time network that integrates resources into one web site for all cargo and Port information needs. The FIRST system was developed by Americas Systems, Inc. (ASI), from Murray Hill, New Jersey. The FIRST system operates from one primary server located at the ISP off-site location. A backup disaster recovery server is currently located at ASI's offices, and following full implementation, will be moved to a secure off-site location. Information such as in gates, out gates Customs clearance, demurrage, etc., is integrated into the FIRST system from several sources. These sources include SEA LINK[®], TRANSCOM's "Trips 1, 2, 3," the U.S. Coast Guard's Vessel Traffic Service, and U.S. Custom's Automated Manifest System (AMS). Video images from the Port and from TRANSCOM will be fed into the FIRST system via a real-time closed circuit video format.

A.3.1 Current Methodology for Truck Processing at Port Entry

The current method for truck processing at Port entry has trucks entering a terminal gate complex for check in or processing. During a "best case scenario", at most terminals, the trucks' first point of entry is through a pre-gate. At the pre-gate, truck drivers use SEA LINK[®], an identification card, to transmit information about the trucking company and driver to the terminal operator. Once trucks have cleared the pre-gate area, they proceed to the gate where the driver, cargo, equipment, and other relevant information are confirmed. Also at this time, truck drivers are provided information regarding cargo container location within the terminal. The trucker then picks up the container and leaves the Port and proceeds with the delivery.

However, truck drivers usually experience a less than best case scenario when arriving at the gate. It is not uncommon for a truck driver to be notified at the gate that the cargo is not yet approved for pickup. The truck driver is issued a "trouble ticket," which indicates there is a problem with incomplete or erroneous documentation, or that various fees were not paid. The truck driver then proceeds with the trouble ticket to the "Help Desk" or "Trouble Window". It is estimated that between 20 to 40 percent of the daily truck volume is required to visit the Help Desk/Trouble Window.

A.3.2 FIRST System Intervention and Information Integration

It is expected that use of the FIRST system can significantly reduce deficiencies relating to trouble tickets and provide more efficient truck and cargo processing. According to its design, FIRST will integrate information and user requirements in a web-based database and information clearinghouse to assist identified users according to needs. The FIRST system is beneficial both for terminal gate operations and for trip planning on the part of the trucking companies and truck drivers. The FIRST system will integrate and disseminate the following types of information consistent with the information connectivity shown in Figure A.1-3:

- Real-time cargo information – includes Customs status, hazardous cargo information, vessel or carrier identification, services required, demurrage, with date in/date completed time-stamp capabilities.
- Real-time booking status – includes types of containers booked, number of containers by type, and information on containers delivered full and empty.
- Container tracking – provides container history including all movement for the past 90 days, gate transactions, inspections, trucker SCAC, weights, destination, and proof of delivery, with a date and timestamp for relevant transactions.
- Container monitoring – alerts users when containers are available for pick-up.
- Trucking company status –interfaces with the SEA LINK[®] system to provide truck driver information such as name and trucking company
- Trucker nomination – provides individual lists of containers for nominated truck drivers.
- Driver assignment – transmits and confirms with terminal operator the container number, bill of lading, and SCAC code of authorized trucker.
- Delivery confirmation entry – provides information received from the truck driver including container number, date and time of delivery, and name of receiving party.

The FIRST system web site will enable truck drivers, terminal operators, and other authorized Port users to receive valuable real-time information on cargo to either be picked up or delivered prior to truck drivers arriving at a terminal. Once the FIRST system is fully implemented, trucking companies and independent truck drivers can receive information on travel conditions near the terminal and to determine whether or not the containers are available for pickup and/or delivery. It is expected that these capabilities will lead to reductions in time spent in a queue and at the gate, and should significantly reduce the number of trouble tickets and unnecessary trips to the terminal because the cargo was not available.

Additional information gathered primarily from the ocean carriers and terminal operators will be input into FIRST. This information includes documentation, container information, delivery confirmation, and other information previously described. The FIRST system will integrate this information and provide it to authorized FIRST subscribers through the web site.

Based on initial design, the FIRST system was developed to service six basic user groups as defined in Table A.3-1. All system users must be registered users – those personnel/representatives from companies who are participating in the FIRST system and test evaluation via web site access. Registered users will be given access to information not available to the general public, and which is specific to their company's business at the Port.

Table A.3-1. FIRST User Groups

User Group	Definition
Anonymous Users	Anyone accessing the FIRST web site who is allowed to view/query container/event, trip/leg, traffic, and schedule data.
Registered Users	Users from companies participating in FIRST who are allowed to view/query booking and bill of lading data, driver/SCAC relationships, driver assignments, trucker nominations, and trip/leg data.
Administrative Users	A participating company's designated system administrator, who can set up and authenticate other users for their company.
Super Users	Selected PANYNJ/ASI personnel who are allowed to perform all FIRST application functions and view data for all parties and sites.
Developers	ASI developers who will have all Super User access and site data view access, but not necessarily the ability to create/update data. ASI developers also have access to some FIRST system tables.
System Administrators	ASI personnel who have total access to all FIRST tables, application functions, party and site data, including the ability to create, update, and delete data.

A.3.2.1 Sample FIRST System Web Pages

The primary interface for the FIRST system is via the Internet located at www.firstnynj.com. A sample home page for the FIRST system is displayed in Figure A.3-1. Although the public can access the FIRST web site, only registered users with an authorized login and password can gain access to available and specific information via subsequent web pages. Other sample FIRST system web pages include information regarding "Nominations," "Booking Detail," "Container Information," and "Watchlists." These web pages are authorized for registered users only and are displayed as Figures A.3-2, A.3-3, A.3-4, and A.3-5, respectively.

Figure A.3-1. FIRST Web Site “Home” Web Page

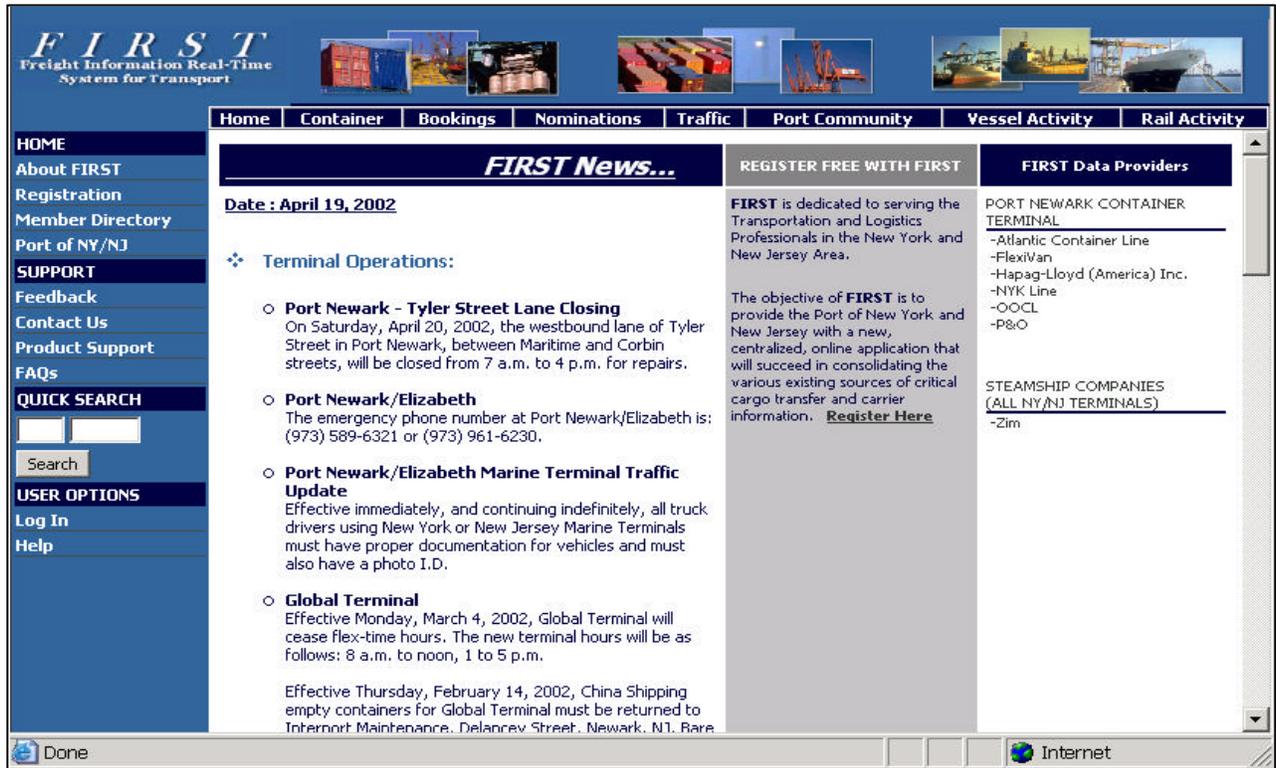


Figure A.3-2. Sample “Container Trace” Web Page

CONTAINER TRACE Please enter search criteria below and then click Submit. 

Container #: -

 = available  = available, with demurrage or exam hold  = not available  = off terminal or export

Container Trace Result

Container #	Size/Type	Carrier	L/E	Nomination Status	Last Event	Event Location
 MLCU - 2986483	20' DRY	ZIMU	Load	Not Nominated	Unloaded from	RED HOOK

8'6"N/VENT

Vessel

TERMINAL

Figure A.3-3. Sample "Booking Detail" Web Page

BOOKING DETAIL		
Booking Information		
Booking Date: 5/7/2001	Booking #: 13031681	
Ocean Carrier: Hapag-Lloyd America Inc.	Vessel: HAMBURG EXPRESS	
Voyage: 37W18	Terminal Location:	
POD: JPYON	POL: USNYC	
Final Dest. JPTYO	Hazardous Indicator: N	
Cut-Off Date:	Start Receiving Date:	
Special Instruction		
Containers Booked: 2		
Eq.Qty	Eq.Size/Type	Exp.Date
1	20' DRY 8'6"N/VENT	
1	22' DRY 8'6"P/VENT	

Figure A.3-4. Sample "View Nominations" Web Page

VIEW NOMINATIONS ?

This screen is available to **Registered Trucking Company Users Only**. Enter one or more search criteria below and then click Submit. If no Search Criteria is entered, the resultset will show all Nominated Containers for the Trucking Company, filtered by the SCAC Code which is provided during the Registration process.

Karen Tobia

Container #: - Watchlist: Sort By:

Status: Not Assigned Not Delivered Delivery Confirmed All Nominations |

● = available
 ● = available, with demurrage or exam hold
 ● = not available
 ● = off terminal or export

Nominated Containers: gtia												
Container #	BL#	Size/Type	Carrier	L/E	Line Release	Free Date	Dem	Last Event	Event Location	Nominated By	Driver	
● HLXU - 4014869	TLV010805717	40'DRY 8'6"P/VENT	HLCU	L	Y	9/12/2001	Due	Available for PkUp	PNCT	ASI (Demo)	LUCUIX	
● MLCU - 4023918	CGP10210	4200	ZIMU	L	Y			USCS & Carrier Rlse		ASI (Demo)	GRAVEL	
● CAXU - 2853217	548035523	20' DRY 8'6"N/VENT	NYKS	L	N			B/L Issued	PNCT	ASI (Demo)	PRUD HOMME	
● LXXU - 4523944	RGB9654	40'DRY 9'6"VENT	ZIMU	L	N			B/L Issued		ASI (Demo)	LATULIPPE	
● LXXU - 4523944	RGB9653	40'DRY 9'6"VENT	ZIMU	L	N			B/L Issued		ASI (Demo)		
● TTNU - 9881318	480254604	40'DRY 9'6"N/VENT	NYKS	L	N	10/15/2001		Not Avail for PkUp	PNCT	ASI (Demo)		
● HLCU - 4774193	TLV010805538	40' REEFER 9'6" C/A	HLCU	L	N	9/7/2001	Due	Not Avail for PkUp	PNCT	ASI (Demo)	RITI	
● HLCU - 2427940	IZM010801314	20'DRY 8'6"N/VENT	HLCU	L	N			USCS Released	PNCT	ASI (Demo)	LALONDE	
● HLCU - 4206974	IZM010801592	4210	HLCU	E				In-Gate	PNCT	ASI (Demo)	REMILLARD	
								Loaded				

Figure A.3-5. FIRST “View Watchlist Alerts” Web Page

VIEW WATCHLIST ALERTS ?

The purpose of this screen is to View Watchlist Alerts for a registered User's profile. These Watchlists will be reflected in the User's preferences. Please Select Watchlist. A GREEN icon next to the container number indicates a line release, while a RED icon indicates a container that has not been released.

Cliff Gray

Watchlist: NominationWL Sort By: Line Release

Status: Not Assigned Not Delivered Delivery Confirmed All Nominations All Containers Submit | Clear

Watchlist Container Information									
Container #	Vessel	Voyage	Location	Nomination Status	Line Release	Free Time	Demurrage	Size/Type	Acknowledgement
●	HLXU-2180285	UNKNOWN	20W14	Information Not Available	Information Not Available	4/23/2001	Information Not Available	22' DRY 8'6"P/VENT	Acknowledge
●	HLXU-2240717	HAMBURG EXPRESS	37W18	PNCT	Information Not Available	Information Not Available	5/11/2001	Information Not Available	20'DRY 8'6"P/VENT Acknowledge
●	POCU-4215328	UNKNOWN	32W13	Information Not Available	Delivery Confirmed	Information Not Available	Information Not Available	40'OPEN 8'6"RM/TM	Acknowledge
●	SCZU-8758299	UNKNOWN	32W13	Information Not Available	Information Not Available	4/16/2001	Information Not Available	20'TANK 8'6"DAN/L	Acknowledge

Acknowledged Container Information									
Container #	Vessel	Voyage	Location	Nomination Status	Line Release	Free Time	Demurrage	Size/Type	
●	HLXU-2119135	LEVERKUSEN EXPRESS	62W15	PNCT	Driver Assigned	Information Not Available	4/23/2001	Information Not Available	20'DRY 8'6"P/VENT

The following container(s) are on this watchlist, but data is not currently available within FIRST.

TMPU - 141151 No data available

A.4.0 Evaluation Plan

The following three evaluation studies will be conducted for the FIRST project:

- Intermodal Freight Operations Study
- Air Quality Study
- Customer Satisfaction Study

A detailed description and technical approach overview for each study is presented below.

A.4.1 Intermodal Freight Operations Study

The Intermodal Freight Operations study will focus on the effects the FIRST system will have on the operational efficiency of the terminal gate. Specifically, this study will analyze how information received from and exchanged through FIRST will increase the efficiency of trucks moving through the pre-gate, gate, and complete processing steps.

A.4.1.1 Intermodal Freight Operations Study Technical Approach

There following three goals of the FIRST project will be evaluated for the Intermodal Freight Operations Study:

- Reduce the amount of time that trucks spend in queues waiting to enter the terminal
- Reduce the number of trips taken to the help desk

- Reduce the number of unnecessary trips taken by truck drivers

It is expected that achieving these goals will significantly improve the efficiency of the Port of NY/NJ for the truck drivers and terminal operators. It is also anticipated that congestion surrounding the terminal entrances will be significantly reduced due to advance notification and booking. Table A.4-1 summarizes the evaluation technical approach for each study goal, providing the hypotheses, measures of effectiveness (MOE), and data requirements.

Table A.4-1. Intermodal Freight System Operations Evaluation Technical Approach

Goal	Hypothesis	MOE	Data Sources or Requirements
Reduce the amount of time trucks spend in queues at terminal gate approaches	Using the FIRST system will reduce truck wait times at the terminal gate	Change in queue length at the gate Change in wait time Change in processing time at the gate	Field measurements of queue length and time in queue (before and after FIRST) Terminal gate operational statistical data generated by terminal facility systems and provided to FIRST Survey of terminal operators regarding reductions in truck processing time due to FIRST system use Survey of trucking companies regarding perception of overall wait time reductions
Reduce the number of trips taken to the help desk	Using the FIRST system will assist in the exchange of more accurate information and payment of fees before a truck arrives at a gate	Reduction in the number of trouble tickets	Review help desk log or equivalent automated system data from before and after FIRST implementation
Reduce the number of unnecessary trips made by trucks	Using the FIRST system will reduce the number of unnecessary trips made by trucks when trucker verifies that cargo container(s) are available for pickup and delivery prior to trip to Port	Reduction in the number of unnecessary trips made by truck drivers The amount of trucks that schedule pickups/drop-offs through the FIRST system	Review help desk log or equivalent automated system data from before and after FIRST implementation Surveys and/or interviews with trucking companies

A.4.1.2 Data Collection

In order to conduct an effective evaluation of operational efficiency, the appropriate set of data and potential data sources must be identified and defined. Detailed data collection plans will be further developed to provide a specific scope of work for this evaluation. As the deployment activities progress, there may be variances in what is actually deployed versus what was planned. The Evaluation Team will monitor the progress of the deployment and be prepared to modify and adjust the data collection plan as necessary within the available resources.

Quantitative data will include observations and measurements of truck queue length, time in queue, time in terminal, and trips to the help desk. This data will be collected both from terminal system archived data and evaluation staff on-site field measurements. Additionally, time-series data, including number of web site user sessions (e.g, web trend statistics) to the FIRST web site and numbers of registered users of the FIRST system, will also be collected.

Qualitative information will be collected through interviews and surveys of FIRST users from the trucking and Port communities. These interviews will collect data on what the system was used for, how it worked, what the key issues were, how it could have been improved, did it meet expectations, etc. Based upon discussions with the Port Authority of New York/New Jersey, the Evaluation Team will focus their efforts on two terminals to be determined.

A.4.2 Air Quality Study

The air quality study is closely linked to the Intermodal Freight Operations Study since improvement in air quality is a direct benefit of reducing truck idling times and trips. The Air Quality Study will measure improvements in air quality through measuring current emissions from trucks entering the terminals and comparing the levels with trucks entering the terminals after implementing the FIRST system. As previously mentioned, it is expected that using the FIRST system will result in lower wait times for trucks trying to enter the terminal, and reduce unnecessary truck trips – all factors that are expected to result in reduced truck emissions at the Port.

A.4.2.1 Air Quality Study Technical Approach

The following goal of the FIRST project will be evaluated for the Air Quality Study:

- Reduce the amounts of emissions caused by the trucks that utilize the Port of NY/NJ

The degree to which the identified goal is realized depends on the operational efficiency improvements made on the part of truck drivers and terminal operators at the Port of NY/NJ. Table A.4-2 summarizes the evaluation technical approach for the study goal, providing the hypotheses, measures of effectiveness (MOE), and data requirements.

Table A.4-2. Improvements in Air Quality Evaluation Technical Approach

Goal	Hypothesis	MOE	Data Sources or Requirements
Reduce the amounts of emissions caused by the trucks that utilize the Port of NY/NJ	Using the FIRST system will lead to a more efficient use of the Port facilities by trucks which will result in measurable air quality improvements	Reductions in emissions (CO, PM-10, and NOx) Systems Operational Performance Study metrics of truck wait time reduction, and truck trip reductions Reduction in vehicle miles traveled (VMT)	System Performance Study results for truck wait time reduction, and truck trip reductions EPA air quality analysis approved tables and/or models for truck movements

A.4.2.2 Data Collection

The analysis of air quality will use some of the data collected for the Intermodal Freight Operational Study. Specifically, data collected will employ measurements of vehicle idling times (both at the terminal gate and trouble area) and trip reductions. These values will be processed through accepted mobile source emissions tables and models.

For the purpose of this study the emission standards will be limited to heavy-duty diesel vehicles. For example, a simple look-up table such as those presented in EPA publication EPA420-F-98-014 will be used to translate observed reductions in idling times into estimated reductions in Volatile Organic Compounds (VOC), Carbon Monoxide (CO), Oxides of Nitrogen (NO_x), and Particulate Matter (PM).

A slightly more complicated approach may be necessary to determine the impacts of trip reductions on emissions. One or more representative trip chains may be modeled using an analysis model such as the EPA MOBILE (5 or 6) analysis model, or derived from previous studies as appropriate.

A.4.3 Customer Satisfaction Study

The Customer Satisfaction Study will focus on the perceived level of satisfaction by trucking companies and terminal operators as a result of how the FIRST system meets their information needs. One of the expected outcomes of FIRST implementation and use is improved customer satisfaction with the Port of NY/NJ because of the anticipated increase in efficiency at the terminal gates. Trucking companies and terminal operators will have advanced knowledge of information that is important for them to do their jobs efficiently and will be able to exchange information and be aware of fees ahead of time. It is also expected that the level of market penetration to Port customers will increase as FIRST becomes better known in the region as a provider of useful and timely Port related information.

A.4.3.1 Customer Satisfaction Study Technical Approach

The following two goals of the FIRST project will be evaluated for the Customer Satisfaction Study:

- Improve customer satisfaction with the Port of NY/NJ by using the FIRST system
- Reach a significant level of market penetration for the FIRST system

Table A.4-3 summarizes the evaluation technical approach for each study goal, providing the hypotheses, measures of effectiveness (MOE), and data requirements.

Table A.4-3. Customer Satisfaction Evaluation Approach

Goal	Hypothesis	MOE	Data Sources or Requirements
To provide timely, useful, and accurate Port-related information to FIRST users	Users will find the FIRST system to be a valuable aid for logistics or transportation management and that it is worth the cost or time involved in using the system	User-perceived system benefits User-perceived system costs	User interviews, surveys, or focus groups
Realize a significant and increasing level of market penetration for FIRST	Over time a significant and increasing number of trucking companies will be using the FIRST system	Number of users of the FIRST system over time divided by number of users of the SEA LINK® system over time, and adjusted for market penetration conditions of FIRST users compared to SEA LINK users	FIRST Monthly membership statistics SEA LINK® Monthly membership statistics
Assess ability to use ITS data.	Customers will use the ITS data as part of their decision-making processes. Users will find the ITS data to be accessible, accurate, and secure.	User-stated integration of ITS data into operations. User perceptions regarding ease of use. User-perceived change in quality/ accuracy of data. User-perceptions regarding data security. User-stated priorities among system capabilities. User-stated ideas for system enhancements.	User interviews, surveys, or focus groups.

A.4.1.2 Data Collection

The major focus for the Customer Satisfaction Study is toward the trucking companies. Particular attention will be given to the subjective perception of benefits derived from the reception of integrated information, the ability to schedule pick-ups/drop-offs, and the ability to access information via the FIRST web site before trucks arrive at the gate.

Customer satisfaction will primarily be gauged through surveying the trucking companies and terminal operators on their perceived benefits in using the FIRST system and any increases in operational efficiency. Additionally, customer satisfaction will also be gauged through interviews with FIRST users among local brokers, freight-forwarders and shippers.

Another measure of customer satisfaction will be continued use of the FIRST system and the level of market penetration among Port customers. This can be assessed quantitatively over time by taking the number of registered users of the FIRST system and dividing this by the number of

users of the SEA LINK[®] System over time.² The resulting number here will provide a snapshot in time of the level of market penetration of FIRST at the Port, since all Port terminal trucks must be registered SEA LINK[®] users. This number will be assessed at regular intervals, so that market penetration can be tracked over time.

A.5.0 Management Plan

A.5.1 Evaluation Organization

Following is an organizational overview for team members involved in conducting this evaluation as presented in Table A.5-1. Note that the SAIC Project Manager, Mark Jensen, reports directly to both the Task Manager at USDOT for this effort, Mike Onder, as well as to the USDOT ITS Joint Program Office IPAS Contract COTR, Dr. Joseph Peters. Karen Tobia of the Port Authority of NY/NJ is the FIRST Project Manager, and will serve as the primary Deployment Point-of-Contact to the Evaluation Team on this effort.

Table A.5-1. FIRST Evaluation Project Organization

Role	Personnel
USDOT Evaluation Oversight	Mike Onder – FHWA Office of Freight Ops. (Task Mgr.) Joseph Peters – USDOT-JPO (IPAS Contract COTR)
FIRST Deployment POC	Karen Tobia – Port of NY-NJ (FIRST Project Manager)
Evaluation Team Management	Mark Jensen – SAIC (Project Manager) Mark Carter – SAIC (National Coordination Support)
Analysis & Support	Aaron Newton – SAIC (Primary Analyst) Andy Matuson – SAIC (Data Collection Technician) Mark Carter – SAIC (Air Quality Assessment)

A.5.2 Evaluation Deliverables

Following are the evaluation project deliverables:

- Draft Evaluation Detailed Test Plans – Following the completion of the Evaluation Plan, where appropriate, Detailed Test Plan(s) will be developed to support the evaluation study areas. This document will be the result of a draft review process with input from both the USDOT and the local project partners. This document is presented in Section B of this report.

² It should be noted that the number of users of SEA LINK has a significantly larger set of users than would be expected for estimation of the FIRST “market” for the market penetration calculations presented here. The SEA LINK figures will need to be adjusted by the Evaluation Team to develop the appropriate market for FIRST users.

- Interim Results Summary-Level Briefing Document – this document will provide a set of preliminary results-to-date for the evaluation (PowerPoint slide format)
- Evaluation Final Report – This will be the comprehensive final Report that will document both the methodology and the detailed results of the FIRST evaluation. This Report will consist of six major sections: an Executive Summary, an Introduction section, a Methodology section, a Results section, a Conclusions Section and a Recommendations section.
- End of Evaluation Briefing – The Evaluation Team will provide a presentation for interested parties of the USDOT, the FIRST Project Team, the I-95 Corridor Coalition, and others on the findings from the evaluation.

A.5.3 Evaluation Schedule

The Evaluation Schedule is provided in Table A.5-2. The major deliverables are discussed above in Section A.5.2. Please note that this evaluation schedule is still under review and may be modified in the future based on USDOT and FIRST Project Team inputs.

Table A.5-2. Evaluation Schedule

Date	Milestone or Deliverable
31 May 2001	Draft Evaluation Plan
May 2002	Individual Test Plans
August 2001 to December 2002	Evaluation Data Collection and Analysis Activities
August 2002	Interim Results Preliminary Briefing Document
November 2002	Draft Evaluation Report
January 2003	Final Evaluation Report
January 2003	End of Evaluation Briefing

B.1.0 Introduction

The purpose of the *Freight Information Real-time System for Transport (FIRST) Detailed Test Plans* document is to expand upon the three evaluation components presented in the *Freight Information Real-time System for Transport (FIRST) Final Evaluation Plan*. These components consist of Intermodal Freight Operations, Air Quality, and Customer Satisfaction. This document defines the objective, approach, and work steps for each of these three evaluation components, and describes the planned schedule for the completion of the evaluation.

This Detailed Test Plans document contains more detailed information than is presented in the Evaluation Plan document concerning the specific technical and data collection approaches that are being implemented for this evaluation. The Evaluation Plan document contains significant project background and system description information, as well as a discussion of the management approaches being utilized by SAIC in this effort, and should be reviewed alongside this Detailed Test Plan document.

The succeeding portions of this document are organized as follows:

- **Section B.2.0 Intermodal Freight Operations Test Plan**. This section presents the evaluation activities that will be undertaken to measure the impact of the system on intermodal freight operations of the participating stakeholders.
- **Section B.3.0 Air Quality Test Plan**. This section presents the evaluation activities that will be undertaken to document the effectiveness of the deployed system upon air quality.
- **Section B.4.0 Customer Satisfaction and Institutional Challenges Test Plan**. This section describes the evaluation activities undertaken to document the activities that will be undertaken to measure the customer satisfaction of the participating companies.
- **Section B.5.0 Project Schedule**. This section presents the proposed schedule for the above defined evaluation activities.

B.2.0 Intermodal Freight Operations Test Plan

B.2.1 Objective

The objective of this evaluation component is to measure the impact of FIRST on the operational efficiency of the terminal gate. This will include impacts on the time that trucks spend in queues waiting to enter the terminal, the number of trips taken to the help desk, and the number of unnecessary trips taken by truck drivers.

B.2.2 Approach

The overall freight system impacts will be evaluated by identifying the changes in operations and information flow between the pre-test and test conditions associated with the deploying the FIRST system. This will require extensive data collection activities to be performed by the evaluation team to ensure that pre- and post-data are collected at the appropriate time and in a consistent manner among participants and between time periods.

A major emphasis of this evaluation will be to measure queue lengths outside the Marine Terminal gates. This is critical because the changes to and/or impacts on the local intermodal truck driver (the “drayman”) wait time will evaluate the effects of the FIRST system. Understanding where the freight system is impacted and what those impacts translate into as far as reduced business costs and increased utilization is critical to this effort.

The three main objectives the FIRST project related to system performance that will be measured here are:

- Time trucks spend in queues waiting to enter the terminal.
- Number of trips taken to the help desk.
- Number of unnecessary trips taken by truck drivers.

Table B.2-1 summarizes technical approach proposed to address these objectives and presents the goals, hypotheses, measures of effectiveness (MOE), data requirements, and analysis approaches. There are multiple references to stakeholder interviews as key data sources for each of the study areas – in the practice of conducting this evaluation, these questions will be combined into three sets of stakeholder interview questionnaires (before, during, and after) which will be designed to respond to question sets across the three evaluation study areas.

The first set will be the pre-test interviews to collect data on existing operations. The second set will be conducted with selected participants over the course of the test to document experiences and reactions in real time. This will be combined with a select number of site visits to conduct studies to measure queue times and lengths. The third set of interviews will be conducted with each participant at the end of the evaluation period to collect data on overall performance of the system.

The intermodal freight operations are outlined to show the differences with and without FIRST in the following Figures B.2-1 and B.2-2, respectively. The **red** text and boxes in Figure B.2-1 indicates the processes a drayman would incur if a “trouble ticket” were issued. The **green** text and boxes in Figure B.2-1 indicate a successful trip without incident. The **green** boxes with **green** text in Figure B.2-2 indicate the steps taken with the FIRST system that will result in a successful trip and eliminate the potential for the drayman to receive a “trouble ticket.” The process charts are not all-inclusive, but are merely meant to provide an overview of how implementing the FIRST system could change the current intermodal operations of system users.

Table B.2-1. Intermodal Freight Operations Technical Approach

Goal	Hypothesis	MOE	Data Sources or Requirements	Analysis
Reduce the amount of time trucks spend in queues at terminal gate approaches	Using the FIRST system will reduce truck wait times at the terminal gate	Change in queue length at the gate Change in wait time Change in processing time at the gate	Field measurements of queue length and time in queue (before and after FIRST) Terminal gate operational statistical data generated by terminal facility systems and provided to FIRST Survey of terminal operators regarding reductions in truck processing time due to FIRST system use Survey of trucking companies regarding perception of overall wait time reductions	Compare queue data collected at Marine Terminals, with and without the FIRST system Comparison of survey/ interview findings
Reduce the number of trips taken to the help desk	Using the FIRST system will assist in the exchange of information and payment of fees before a truck arrives at a gate	Reduction in the number of trouble tickets	Review help desk log or equivalent automated system data from before and after FIRST implementation	Compare data provided by Marine Terminals regarding the number of trouble tickets, with and without FIRST Comparison of survey/ interview findings
Reduce the number of unnecessary trips made by trucks	Using the FIRST system will reduce the number of unnecessary trips made by trucks when trucker verifies that cargo container(s) are available for pickup and delivery prior to trip to Port	Reduction in the number of unnecessary trips made by truck drivers The amount of trucks that schedule pickups/ drop-offs through the FIRST system	Review help desk log or equivalent automated system data from before and after FIRST implementation Surveys and/or interviews with trucking companies	Compare data provided by Marine Terminals regarding the number of trouble tickets, with and without FIRST Comparison of survey/ interview findings

Figure B.2-1. Intermodal Freight Operations Evaluation Approach Process Chart of Drayage Operations without FIRST

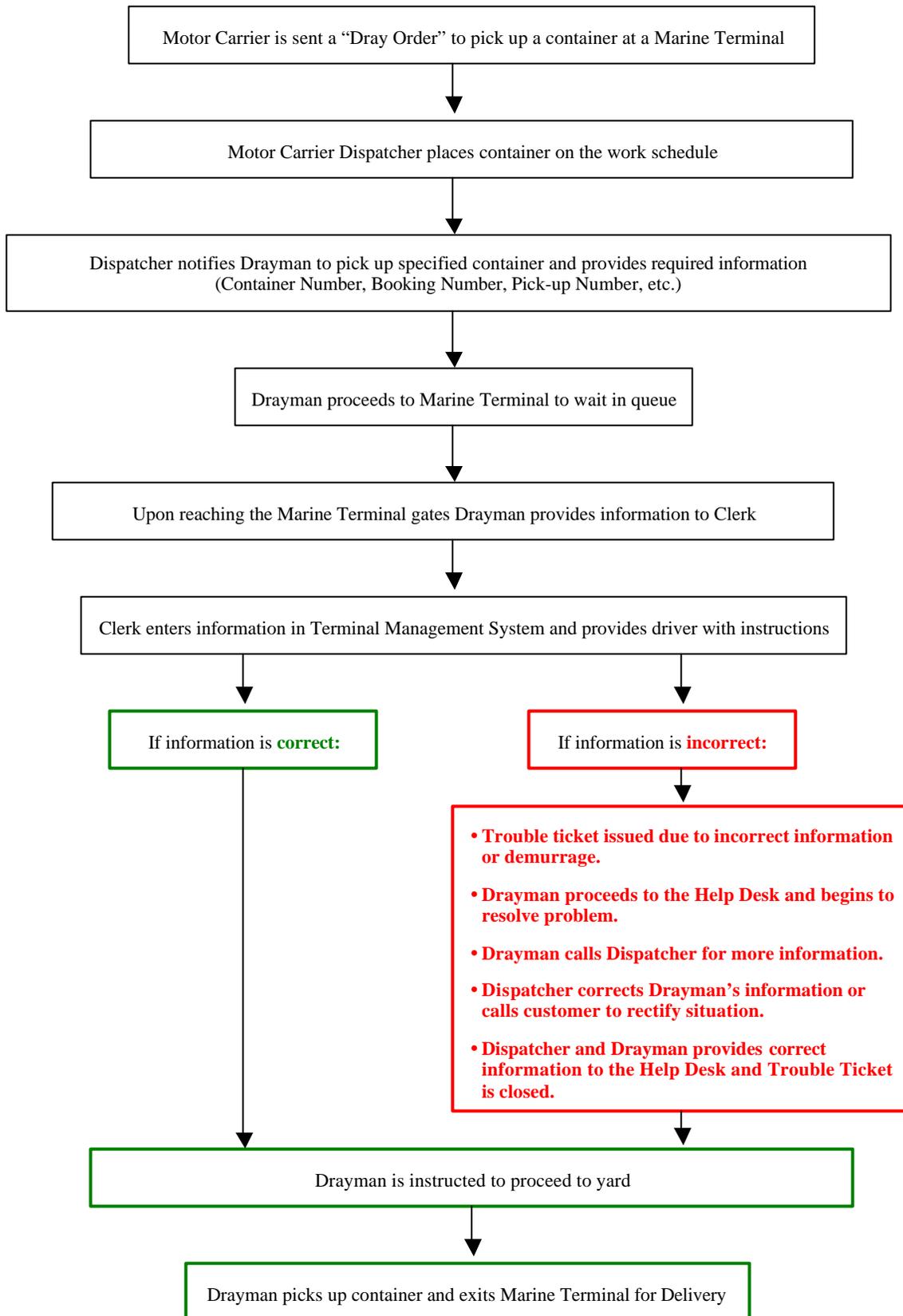
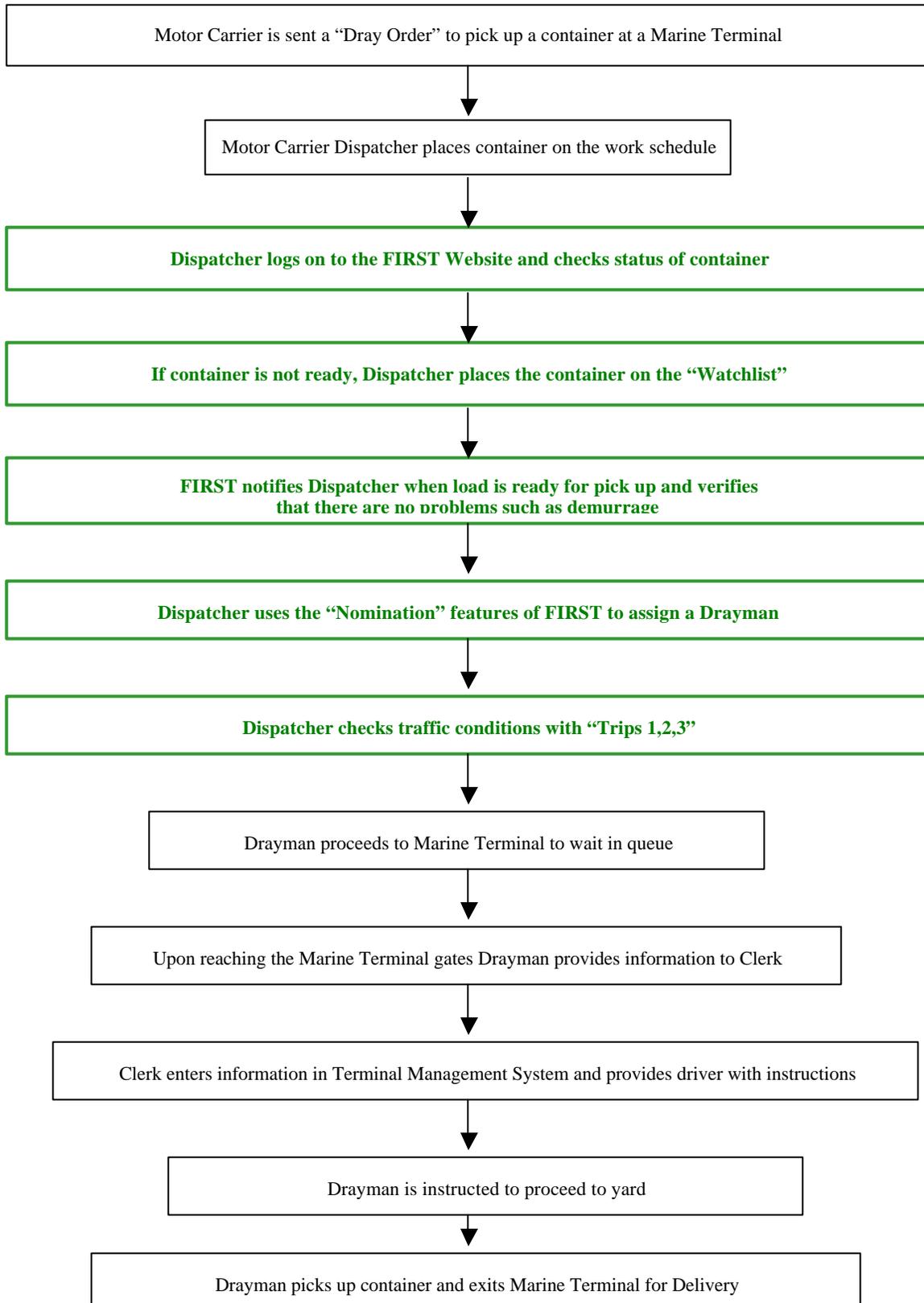


Figure B.2-2. Intermodal Freight Operations Evaluation Approach Process Chart of Drayage Operations with FIRST



B.2.3 Work Steps

The following work steps will be implemented to support this technical approach:

- **Establish a data collection methodology based upon interaction with the participating Marine Terminals.** The PANYNJ has recruited the private sector participants. The Evaluation Team will work and coordinate with the PANYNJ private sector participants on the pre- and during deployment data collection efforts. A protocol for communicating and coordinating will be an important first tool. This protocol will consist of pre- and during data collection activities representing a varied group of data collection tools.
- **Develop data collection tools.** The evaluation team will visit the Marine Terminals to develop a set of data collection tools. These tools will be developed to address the different components and time periods within this evaluation. These will consist of specific data logs to measure and record queue length and time, which will be developed to collect more quantitative data items. Relationships will be formed with the Marine Terminal operators to collect data from their private systems regarding trouble tickets and trips to the help desk. Focused interview guides and surveys for each group of participants will be used to collect information regarding the system from a larger group of users. Each of these tools will be appropriately modified for pre- and during data collection efforts. Data collection tools developed to date consists of pre- and during deployment queue measurement techniques and during deployment telephone interview guides and surveys. These interview guides and surveys are provided in Appendix A.
- **Marine Terminal pre-deployment interview process.** This is an important activity that will enable requests to be made of the participants regarding what data they may be capable and willing to collect during the operational test. At this time, the Evaluation Team will refine and/or develop new data collection tools based on the data items participants are willing and able to monitor.
- **Develop ongoing data collection mechanisms to periodically collect input from the participants.** Based on the types of data collection tools developed and distributed, the evaluation team will monitor the participants over the course of the operational test, collecting data on an established schedule. The specific tools for this set of activities consist of the phone interviews and site visits to conduct queue data collection data.
- **During the test period the participants will be contacted to discuss their successes and experiences with the FIRST system.** This will be a mixture of quantitative and qualitative data based on the data collected by the participant over the course of the test. This will consist of a mix of personal interviews and telephone interviews.
- **Collect field data for truck delays at terminal gates.** Collect data on-site for one-week at each terminal measuring truck delays in advance of the terminal gate. Data to be collected for both “before” and “after” periods.
- **Collect the data from the Marine Terminal management systems.** Collect terminal management system output data from the two selected private terminals to provide information such as time in terminal, number of trouble tickets, etc. Data to be collected for both “before” and “after” periods.

- **Summarize and analyze the data.** The qualitative and quantitative data will be summarized and analyzed to document the key findings. The data will be organized around the goals and objectives identified in the preceding Table B.2-1.

Figure B.2-3. Methods for Queue Length/ Trouble Ticket Study

- *Coordinate on-site data collection with Marine Terminals through initial interview process after becoming a FIRST data provider.*
- *Data collection team will conduct on-site queue measurement during operating hours of the participating marine terminals for the period of one-week.*
- *Interview Marine Terminal contacts daily to determine operating variables affecting the queue length on a give day so that these may be noted in the log book.*
- *Obtain system reports from Marine Terminals currently supplying information to the FIRST system, documenting data concerning Trouble Tickets.*
- *Questionnaire/ interview draymen about their perceptions of reduced port congestion during queue data collection.*
- *Randomly sample containers and measure distance and time from the end of the queue to the terminal interchange. One data collection technician will be located at the end of the queue and the other at the interchange, both with access to constant radio communication.*

B.3.0 Air Quality Test Plan

B.3.1 Objective

The objectives for the Air Quality Study are to estimate improved air quality through reduction in vehicle idling times and fewer wasted truck trips.

B.3.2 Approach

The Air Quality Study is closely linked to the Intermodal Freight Operations Study since improvement in air quality is a direct benefit of reducing truck idling times and trips. The Air Quality Study will estimate improvements in air quality through measuring queue data and terminals after implementing the FIRST system. As previously mentioned, it is expected that using the FIRST system will result in lower wait times for trucks trying to enter the terminal, and reduce unnecessary truck trips – all factors that are expected to result in reduced truck emissions at the Port.

The degree to which the identified goal is realized depends on the operational efficiency improvements made on the part of truck drivers and terminal operators at the Port of NY/NJ. Table B.3-1 summarizes the evaluation technical approach for the study goal, providing the hypotheses, measures of effectiveness (MOE), data requirements, and analysis.

Table B.3-1. Improvements in Air Quality Evaluation Technical Approach

Goal	Hypothesis	MOE	Data Sources or Requirements	Analysis
Reduce the amounts of emissions caused by the trucks that utilize the Port of NY/NJ	Using the FIRST system will lead to a more efficient use of the Port facilities by trucks, which will result in measurable air quality improvements	Reductions in emissions (CO, PM-10, and NOx) Systems Operational Performance Study metrics of truck wait time reduction, and truck trip reductions Reduction in VMT's	System Performance Study results for truck wait time reduction, and truck trip reductions EPA air quality analysis approved tables and/or models for truck movements	Comparing data collected in the Intermodal Freight Operations Test Plan regarding reduced wait time and trouble tickets, then applying the reduced wait times to an accepted EPA analysis methodology to estimate improved air quality through reduced idling times.

The analysis of air quality will use some of the data collected for the Intermodal Freight Operational Study. Specifically, data collected will employ measurements of vehicle idling times (both at the terminal gate and trouble area) and trip reductions. These values will be processed through accepted mobile source emissions tables and models.

For the purpose of this study the emission standards will be limited to heavy-duty diesel vehicles. For example, a simple look-up table such as those presented in EPA publication EPA420-F-98- will be used to translate observed reductions in idling times into estimated reductions in Volatile Organic Compounds (VOC), Carbon Monoxide (CO), Oxides of Nitrogen (NOx), and Particulate Matter (PM).

A slightly more complicated approach may be necessary to determine the impacts of trip reductions on emissions. One or more representative trip chains may be modeled using an analysis model such as the EPA MOBILE (5 or 6) analysis model, or derived from previous studies as appropriate

B.3.3 Work Steps

The following work steps will be implemented to support this technical approach:

- **Establish and use data collection protocol.** Identify and use data collection protocol for queue data collection under the test plan for the intermodal freight operations.
- **Review queue data collected as part of the intermodal freight operations test plan.** This data will be reviewed and used as appropriate for air quality modeling.
- **Conduct interviews.** In combination with the Customer Satisfaction Study, interview Dispatchers and Truckers for additional information regarding truck wait times and wasted truck trips.

- **Apply air quality analysis model.** This will allow truck idling and truck trip reduction data to be converted into air quality reduction estimates. Approved EPA models such as the EPA420-F-98-014 look-up table and/or the EPA Mobile (5 or 6) analysis model will be used.
- **Summarize and analyze data.** The quantitative data from the intermodal freight operations test plan, derived statistics, along with qualitative data from the Marine Terminals (Trouble Tickets) and the Customer Satisfaction Study, will be analyzed and summarized to document the key findings. The data will be organized around the assessments identified in Table B.3-1.
- **Prepare conclusions for a final report.** Provide conclusions based upon evaluation findings from the above.

B.4.0 Customer Satisfaction Test Plan

B.4.1 Objective

The objective of this evaluation test plan is to document the level of satisfaction of the participants with the performance of the FIRST system.

B.4.2 Approach

The approach for the Customer Satisfaction Test Plan will be to collect data from the participants and deployers to summarize their perceptions, experiences, level of satisfaction, and any issues that had to be overcome. The data collection activities will be coordinated with those defined for the intermodal operations test plan to maximize the time spent with the participants. Specifically, the interview guides and surveys will be designed to collect data on operational impacts and levels of customer satisfaction. In addition, data will be collected from the deployers of the system to document any issues associated with the deployment activities, including any ongoing troubleshooting required over the test period.

The data collection activities will consist of pre- and during interviews with the participants in the test. This will consist of the system users -- trucking companies, brokers, freight forwarders, shippers, as well as the terminal operators.

The customer satisfaction evaluation will have a major focus on the users (trucking companies, brokers, etc.). Particular attention will be given to the subjective perception of the benefits and performance of the systems to better coordinate daily activities and more timely dissemination of information. The customer satisfaction lessons learned evaluation will focus on the degree to which the transportation and information needs of “customers” are met by the FIRST system.

Table B.4-1 summarizes the evaluation approach for the customer satisfaction test plan. Figure B.4-1 illustrates the types of questions that will be answered by the data collection activities.

Table B.4-1. Customer Satisfaction Technical Approach

Objective	Hypothesis	MOE	Data Sources or Requirements	Analysis
To provide timely, useful, and accurate Port-related information to FIRST users.	Users will find the FIRST system to be a valuable aid for logistics or transportation management and that it is worth the cost or time involved in using the system.	User-perceived system benefits User-perceived system costs	User interviews, surveys, or focus groups	Assessment of survey/interview findings
Realize a significant and increasing level of market penetration for FIRST.	Over time a significant and increasing number of trucking companies will be using the FIRST system.	Number of users of the FIRST system over time divided by number of users of the SEA LINK® system over time, and adjusted for market penetration conditions of FIRST users compared to SEA LINK users	FIRST Monthly membership statistics SEA LINK® Monthly membership statistics	Assessment of survey/interview findings
Assess ability to use ITS data.	Customers will use the ITS data as part of their decision-making processes. Users will find the ITS data to be accessible, accurate, and secure.	User-stated integration of ITS data into operations. User perceptions regarding ease of use. User-perceived change in quality/ accuracy of data. User-perceptions regarding data security. User-stated priorities among system capabilities. User-stated ideas for system enhancements.	User interviews, surveys, or focus groups.	Assessment of survey/interview findings

The Customer Satisfaction Study will focus on the enhanced level of satisfaction perceived by the truck drivers and terminal operators as a result of how the FIRST system meets their information needs. One of the expected outcomes of FIRST implementation and use is improved customer satisfaction with the Port of NY/NJ because of the anticipated increase in efficiency at the terminal gates. Trucking companies and terminal operators will have advanced knowledge of information that is important for them to do their jobs efficiently and will be able to exchange information and be aware of fees ahead of time. It is also expected that the level of market

penetration to Port customers will increase as FIRST becomes better known in the region as a provider of useful and timely Port related information.

B.4.3 Work Steps

The following work steps will be implemented to support this technical approach:

- **Coordinate data collection activities.** Coordinate data collection activities with the intermodal freight system operations test plan. The data collection activities defined in the intermodal test plan described in Section 2.0 will support many of the data needs of this test. As such, some of the work steps defined below duplicate those defined above.
- **Identify contacts to be interviewed and/or surveyed in support of this test plan.** The test participants will provide inputs to this evaluation effort
- **Develop data collection tools.** Interview guides and survey forms will be developed to collect the necessary data from participants and deployers. The data collection instruments already developed (provided in Appendix A) addresses many of the data items that will be required.
- **Develop data collection mechanisms to periodically collect input from the participants.** Based on the types of data collection tools developed and distributed, the evaluation team will monitor the participants over the course of the operational test, collecting data on an established schedule. The specific tools for this set of activities consist of the survey forms already developed and a limited number of site visits to collect data on perceptions of improved intermodal operations by users.
- **Contact participants during the test period to discuss their successes and experiences with the FIRST system.** This will be a mixture of quantitative and qualitative data based on the data collected by the participant over the course of the test. This will consist of a mix of personal interviews and telephone interviews.
- **Compare market saturation.** With data provided by PANYNJ, compare the number of registered users using FIRST to the number of registered users using the SEA LINK system over time.
- **Summarize and analyze the data.** The qualitative and quantitative (where available) data will be summarized and analyzed to document the key findings. The data will be organized around the goals and objectives identified in Table B. 4-1.
- **Combine all data into one Final Report.** The Final Report will document the findings and opinions of users and stakeholders in regards to the FIRST system.

B.5.0 Summary of the Project Schedule

This evaluation will proceed based on the deployment schedule. The individual test plans will be undertaken simultaneously, making use of each data collection activity to collect information for the complete set of measures defined in the preceding sections. Table B.5-1 summarizes the evaluation activities, schedule, and status for these test plans.

Table B.5-1. Evaluation Activities, Schedule, and Status

Activity	Timeframe	Status
Develop overall data collection protocol	September 2001	Complete
Develop pre-deployment data collection tools	September 2001	Complete
Develop data collection tools for ongoing activities throughout the test	September 2001 – May 2002	Ongoing
Conduct pre-deployment data collection through personal interviews with selected participants	September 2001	Complete
Prepare Detailed Test Plans	May 2002	Complete
Conduct one-week pre-deployment queue data collection with select Marine Terminal	June 2002	Not Started
Conduct during-deployment data collection through telephone interviews/surveys	June 2002	Not Started
Conduct during-deployment queue data collection via week-long site visits with select Marine Terminals	June - July 2002	Not started
Conduct periodic site visits with select participants to monitor progress and experiences	September 2001 - October 2002	Ongoing
Conduct post-deployment data collection through personal and telephone interviews/surveys	September 2002 – October 2002	Not started
Conduct one-week post-deployment queue data collection with select Marine Terminal	October 2002	Not Started
Analyze and summarize all data collected	September 2002	Not started
Prepare draft final report for evaluation	November 2002	Not started
Final Evaluation Report and End of Evaluation Briefing	January 2003	Not started

Appendix A. Survey Data Collection Tools Developed to Date

SAIC Evaluation Team FIRST Questionnaire for Registered Users

Name: _____

Company: _____

Job Title: _____

Brief description of your responsibilities:

Do you use the FIRST system? If no, why not?

Has the FIRST web site changed how you perform the duties related to your job? If so, how?

Have these changes in your daily routine been value added? (For example, has FIRST saved you, your co-workers, or your customer's time?)

How many times per day or week do you access the FIRST web site?

What features of FIRST do you use the most and why?

Do you find the information provided by FIRST to be timely?

Have you experienced any problems with the accuracy of the information provided by FIRST?

What features of FIRST do you not find helpful?

DISPATCHER:

If your job duties relate to dispatching, what is the average number of trips per day that your drivers perform and has this number changed as a result of FIRST?

What percentage of your drivers experience delays as a result of “trouble tickets?”

Has there been a reduction in “trouble tickets” as a result of FIRST?

Do you use the “watch list” feature of FIRST?

Do you use the “nominations” feature FIRST?

Has reduced congestion or better information facilitation allowed your drivers to perform more trips per day than before FIRST implementation?

Has your job satisfaction improved as a result of FIRST?

ALL:

Does FIRST increase the visibility of your cargo?

What are the most beneficial features of the system to your organization?

What could be added, removed, or changed to make the system more useful?

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