DEFENSE TRANSPORTATION TRACKING SYSTEM AND INTELLIGENT ROAD/RAIL INFORMATION SERVER ASSESSMENT

REPORT LG401T1

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Executive Summary

The Department of Defense faces a significant challenge in the current security environment. It must track, protect, and safely transport its arms, ammunition and explosives (AA&E) while it effectively meets the warfighters' requirements for timely worldwide delivery of AA&E. To meet this challenge, DoD uses two automated tools for the specific purpose of monitoring and ensuring the safety and security of AA&E while in-transit: the Defense Transportation Tracking System (DTTS) and the Intelligent Road/Rail Information Server (IRRIS). Although both tools have similarities, their purpose, features, and oversight are different:

- The Department of the Navy established DTTS in 1986 following the investigation into an August 1, 1984, accident in Denver, Colorado, involving a commercial motor carrier transporting Navy torpedoes. DTTS was developed specifically to monitor the movement of the Navy's (and later expanded to include all DoD) sensitive AA&E traveling in the public domain and to initiate rapid emergency response to an in-transit accident or incident. The DTTS program consists of a satellite-enabled computerized tracking system and a program management office (PMO) with a staff that manages and operates the system and uses information from the system to provide emergency response assistance. The DTTS PMO's primary mission is to report and facilitate immediate emergency response to en route incidents or accidents involving AA&E and other sensitive materiel (OSM) moving via commercial motor carrier, barge, or towboat within the continental United States, Alaska, and Canada.

- IRRIS is a web-based geospatial transportation information intelligent server developed in 1999 for use by the Transportation Engineering Agency (TEA), a major subordinate command of the Military Surface Deployment and Distribution Command (SDDC, formerly the Military Traffic Management Command). IRRIS was designed to assist TEA in their analysis of infrastructure readiness within CONUS. IRRIS has since evolved to provide worldwide infrastructure and near-real-time data for decision makers. IRRIS taps multiple data sources (including an hourly feed from DTTS), and integrates the data to provide information in support of a broad range of transportation information requirements.

One of its capabilities is tracking AA&E movements (using DTTS data feeds) to allow SDDC operational staff to monitor and enforce commercial carrier compliance with DoD safety, security and performance requirements.

Since 1986, both SDDC and the DTTS PMO have shared similar but distinct missions involving the oversight of AA&E movements. DTTS is responsible for satellite monitoring of AA&E and OSM for the express purpose of facilitating real-time emergency response to the scene of an accident or incident.[1] SDDC is responsible for overseeing commercial carrier compliance with DoD safety and security requirements.[2] Because of their closely aligned missions, both the DTTS PMO and SDDC must have access to similar information and interface with the same commercial carriers and organizations. Both the DTTS PMO and SDDC support the Army Operations Center (AOC) in its mission to serve as the DoD coordination center for emergency response to in-CONUS transportation accidents that involve munitions and explosives.[3]

Because of their need for similar information, both the DTTS PMO and SDDC have shared a joint DTTS and IRRIS cooperative relationship, with an agreement to partner in future DTTS support and technological development. Organizational mission responsibilities have evolved since the events of September 11, 2001, and in response to several Government Accountability Office audit reports that were critical of SDDC oversight of commercial carrier and DoD shipper compliance with AA&E safety and security requirements. SDDC enhanced IRRIS and the Navy (along with the other military departments) took the initiative to enhance DTTS to make them more effective in the performance of their respective carrier and emergency response missions in the new security environment. SDDC enhanced IRRIS to provide more timely and robust AA&E movement visibility to help SDDC staff monitor carrier safety and security compliance and aggressively mitigate actual or potential violations. As a result, system redundancies have evolved and SDDC's carrier performance mission now appears redundant to DTTS' emergency response mission. Furthermore, the scope of operations for both SDDC and DTTS continue to transform as a result of U.S. Transportation Command's (USTRANSCOM's) designation as the distribution process owner (DPO) and due to evolving shipper service ordnance requirements and guidance, respectively.

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[1] Per DoD Directive 6055.9, *DoD Explosives Safety Board (DDESB) and DoD Component Explosive Responsibilities*, DTTS is the DoD focal point for initial notification of accidents involving ammunition and explosives.

[2] DoDD 6055.9 assigns USTRANSCOM or its designee, SDDC, responsibility for evaluating the safety of commercial carriers of DoD ammunition and explosives. In addition, DoD Manual 5100.76-M, *Physical Security of Arms, Ammunition and Explosives*, assigns SDDC responsibility to (1) develop, administer, and maintain joint transportation security procedures for the commercial movement of AA&E; (2) serve as the DoD focal point for security and performance monitoring and oversight relative to the security of AA&E in transit and for monitoring the performance of such carriers in providing requisite security services to AA&E shipments; and (3) develop, administer, and maintain policy and procedures for the protection of DoD AA&E awaiting transportation in commercial terminals.

[3] Army Regulation 385-14, *Transportation Accident Prevention and Emergency Response Involving Conventional Ammunition and Explosives*.

To mitigate potential conflicts and to preclude the future proliferation of redundant functionality between DTTS and IRRIS, the Assistant Deputy Under Secretary of Defense (Transportation Policy) (ADUSD[TP]) tasked LMI to conduct an assessment of the "missions and functionality of both systems." In addition, ADUSD(TP) asked LMI to examine the interrelationships between the DTTS PMO and SDDC, and make recommendations for improvement. However, early in our assessment, it became evident that both DTTS and IRRIS system functionality have merely transformed to keep pace with the changing operational missions performed by the DTTS PMO and SDDC staff. Accordingly, this report focuses on roles and missions as well as assessing the DTTS and IRRIS systems.

APPROACH

In reframing the task, our approach was not to determine if either the DTTS or IRRIS "system" is the better solution for DoD. Rather, we conducted the assessment to determine:

- What is the best DoD solution for optimizing the oversight of in-transit AA&E?
- Are roles and missions effectively aligned to perform this mission?

To conduct this assessment, we reviewed the DTTS PMO and SDDC roles and responsibilities, operational requirements and resources, and policy guidance. We also examined the DTTS and IRRIS architecture and interfaces, and interviewed stakeholders to gain their insights. We conducted this assessment based on the current DTTS and IRRIS operating environment, recognizing that the USTRANSCOM recently decided it would roll IRRIS into the Global Transportation Network-21 (GTN-21). USTRANSCOM has not indicated to what extent this decision will affect IRRIS' current or future operations, functionality, and interfaces with DTTS. Accordingly, while our findings and recommendations target current missions and systems capabilities, IRRIS' future end-state must be factored into DoD's final plan for transferring and centralizing AA&E in-transit oversight missions and supporting systems.

FINDINGS

While both the DTTS PMO and SDDC have enhanced their systems and operations, a resulting overlap in perceived responsibilities has produced a less-than-optimal AA&E and OSM tracking and emergency response process for DoD. We observed the following:

- There is duplication of effort. For example, both DTTS and IRRIS provide "initial" response notifications, track vehicle location, and can provide reports of shipment.
- Current initiatives are not fully coordinated. Oversight responsibilities for emergency response to incidents and accidents have become blurred and

appear redundant, which results in less-than-optimal handling of emergencies and the potential for disseminating conflicting information and increased response times.

- There are functional voids in tracking and providing emergency response for all in-transit AA&E. Process and technology improvements are needed to expand AA&E and OSM safety and security oversight.

RECOMMENDATIONS

In view of our findings, we recommend DoD consider the following actions related to organization, systems and technology, and staffing and funding:

- Organization
  - Consolidate the emergency response and carrier compliance missions under SDDC to achieve a single DoD accountable component for oversight of in-transit AA&E.
  - Transfer the DTTS mission, system, and PMO responsibilities to SDDC (capitalize DTTS in place and consider relocating the system and personnel to SDDC at a later, operationally feasible date).
  - Establish DTTS as a separate SDDC operational element. In the near term, retain DTTS's "emergency" response organizational identity and oversight structure.
  - Before transferring DTTS to SDDC, determine how best to structure and integrate the DTTS/SDDC AA&E and OSM oversight mission. This includes determining resource requirements, identifying process and system enhancements, and working with customers.
- Systems and technology
  - Based on user requirements, develop a roadmap and time frame for reconciling AA&E-related functionality between DTTS and IRRIS/GTN-21.
  - Pursue and coordinate technologies and business processes to enhance tracking, emergency response, oversight, and carrier/DoD shipper compliance with DoD safety and security requirements.
- Staffing and funding
  - Ensure the DTTS PMO is sufficiently staffed and adequately trained to meet its current and future tracking and emergency response mission requirements.
  - Continue direct user funding of DTTS in the short term and assess the feasibility of capitalizing DTTS in the Transportation Working Capital Fund (TWCF) for the longer term.

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Chapter 1
Introduction

In this chapter, we present the background, objectives, approach, and organization for this report.

BACKGROUND

The Department of Defense faces a significant challenge in the current security environment. It must track, protect, and safely transport its arms, ammunition and explosives (AA&E) while it effectively meets the warfighters' requirements for timely worldwide delivery of AA&E. Moreover, it the must be effective and efficient in the face of an ever-changing and growing threat environment.

The Assistant Deputy Under Secretary of Defense (Transportation Policy) (ADUSD[TP]) is responsible for DoD policy that affects the efficient, effective, safe, and secure movement of defense materiel and personnel worldwide. There are two DoD organizations that are responsible for monitoring and ensuring the safe and secure movement of AA&E while it is in the commercial transportation system:

- The Navy's Defense Transportation Tracking System (DTTS) Program Management Office (PMO)
- The Military Surface Deployment and Distribution Command (SDDC), the U.S. Transportation Command's (USTRANSCOM's) surface component command.

The DTTS PMO developed DTTS in 1986 to track the movement of AA&E via motor carrier using satellite monitoring technology.[1] DTTS initially was developed to provide timely notification of AA&E accidents to facilitate an immediate and coordinated emergency response. In more recent years, notification of, and reaction to, security-related incidents have taken on an equal mission priority.

SDDC's Transportation Engineering Agency (TEA) developed a separate automated tool, Intelligent Road/Rail Information Server (IRRIS), which uses data from DTTS and numerous other source systems to provide geospatial tracking and reporting capabilities. SDDC operations personnel use IRRIS data to identify commercial carrier non-compliance with DoD safety and security requirements and distribute incident information reports to DoD components following an accident or incident. A key distinction between the missions of DTTS and SDDC is

[1] DTTS capability was later expanded to track other sensitive materiel (OSM) and movements via barge and towboat.

one of real-time emergency response versus oversight of commercial carrier in-transit compliance with safety and security requirements. In the course of performing their respective missions, DTTS and SDDC staff must use the same information and often interact with the same DoD and commercial entities.

To mitigate any potential conflict between DTTS and IRRIS, the ADUSD(TP) asked LMI to assess the missions and functionality of both systems. In addition, LMI was asked to examine the interrelationship between the DTTS PMO and SDDC, and make recommendations for improvement.

How Did We Get Here?

Leading up to and following the events of September 11, 2001, the Government Accountability Office (GAO) published reports that cited the need for greater DoD enforcement of and compliance by AA&E commercial carriers and DoD shippers.[2] In response, SDDC enhanced its IRRIS capability to help SDDC staff monitor carrier performance and compliance and to enforce AA&E safety and security policies in a more aggressive and timely manner.

While SDDC was improving IRRIS, the military services were approving new enhancements to DTTS in response to the GAO findings. As a result, redundancies between the systems emerged, including the development of reports of shipment (REPSHIP) and route adherence capabilities. With more aggressive oversight and new and timelier automated capabilities, the distinction between DTTS' emergency response and SDDC's carrier performance enforcement roles began to narrow and now appear to overlap. In addition, the military services fund both DTTS (directly) and IRRIS (indirectly through USTRANSCOM's transportation working capital fund [TWCF] rates). The services are concerned they are paying for duplicate capabilities.

Reframing the Issue

When LMI began this assessment, the issue was viewed as principally a "systems" problem (that is, DTTS and IRRIS are pursuing duplicate functionality). However, it became evident that the real issue is one of roles and missions and the DTTS' and IRRIS systems have merely transformed to keep pace with and support the DTTS PMO's and SDDC's operational staff's information requirements in a post–September 11 environment.

The DTTS PMO uses the DTTS system to support its mission and to track AA&E and OSM movements. The PMO also uses the DTTS system to initiate real-time emergency response to an incident or accident.

[2] GAO-01-936, *Ammunition and Explosives Shipment Practices Present Substantial Security and Safety Risks*, July 2001; and GAO-03-800, *Defense Inventory: Compliance with Regulations Needed to Improve Security of Munitions Shipments* (FOUO), July 2003.

SDDC uses IRRIS to ensure carrier performance and compliance; enforce AA&E safety and security policies and regulations; and distribute incident information reports to DoD components. Beyond the support of AA&E safety and security compliance, IRRIS provides a host of other infrastructure, transportation, and traffic management capabilities in support of SDDC, USTRANSCOM, other DoD components and federal agencies. These capabilities are addressed further in Chapter 3.

As the DTTS PMO and SDDC day-to-day missions to oversee the safety and security of in-transit AA&E have blurred in the new security environment, the more appropriate question becomes, What is the best solution for optimizing the oversight of in-transit AA&E into the future? Therefore, we addressed system issues, but we also focused on opportunities for mission and organizational improvement. We conducted the assessment to answer two fundamental questions:

- What is the best DoD solution for optimizing the oversight of in-transit AA&E?
- Are the roles and missions effectively aligned to perform this mission?

OBJECTIVES

We had three task objectives:

- Assess the mission and functionality of DTTS and IRRIS.
- Assess their interrelationships.
- Recommend improvements.

APPROACH

We developed the following five-step approach to meet our three objectives:

- Review DTTS and SDDC roles and responsibilities, operational requirements and resources, identify redundancies and voids, and assess options for mission improvement.
- Review policy guidance.
- Identify the DTTS tracking system and IRRIS architecture and interfaces.
- Interview stakeholders to gain their insights.
- Consider solutions for eliminating redundancies and correcting gaps; improving AA&E transportation-related missions through realignment of roles and responsibilities; and enhancing emergency response and visibility through technology and process improvements.

REPORT ORGANIZATION

In *Chapter 2*, we provide an overview of the DTTS PMO and a description of the DTTS operating system. In *Chapter 3*, we provide an overview of SDDC and a description of IRRIS. In *Chapter 4*, we present our findings. In *Chapter 5*, we present our recommendations.

In the appendices, we provide additional technical information about DTTS and IRRIS, list the organizations we interviewed, and list the regulations we reviewed:

- Appendix A, DTTS System Information
- Appendix B, IRRIS System Information
- Appendix C, Organizations Interviewed
- Appendix D, Policies Reviewed
- Appendix E, Abbreviations.

Chapter 2
DTTS PMO and System Overview

DTTS comprises an automated tracking system and a PMO with operational staff who use the DTTS system to track in-transit AA&E and act upon emergency alerts using information processed through the system to provide near-real-time emergency response assistance. In this chapter, we present an overview of the DTTS PMO and a description of the DTTS tracking system.

THE DTTS PMO

The DTTS PMO is a joint-focused program office under the management of the Naval Supply Systems Command. The Navy developed DTTS in 1986 following an investigation into an August 1, 1984, accident in Denver, Colorado, that involved a commercial truck carrying Navy MK-48 torpedoes. The investigation pointed to the need for more aggressive DoD tracking of its munitions and prompt and coordinated emergency response.[1]

While DTTS was initially developed to track Navy ordnance, it has evolved to track joint service munitions and OSM. The DTTS charter is outlined in a joint services memorandum of understanding (MOU). The military services provide direct oversight and are included in all aspects of the program, including expansion in scope, technology enhancements, and funding. DTTS supports more than 400 continental United States (CONUS) DoD and commercial AA&E shipping and receiving activities.

Mission and Functions

The mission of the DTTS PMO is to monitor the movement of DoD AA&E and OSM and report and facilitate immediate emergency response to en route incidents or accidents involving materiel moving via commercial motor carrier, towboat, or barge within the continental United States, Alaska, and Canada. DTTS plans to expand its capability to track rail movements.

The DTTS PMO provides 24-hour in-transit monitoring by way of satellite monitoring technology provided through a contract with QUALCOMM. The DTTS staff tracks all reported shipments, from the time of pickup at the shipping activity through delivery at final destination. The DTTS operations center staff and en route motor carrier drivers communicate via cab-mounted satellite

[1] National Transportation Safety Board Report HZM-85/02, *Hazardous Materials Accident Report—Overturn of a Tractor-Semitrailer Transporting Torpedoes, Denver, Colorado, August 1, 1984*, October 1985.

transponders, in-cab keypad communications devices, and, in emergencies, "panic" buttons.

In the event of a panic button alert, the DTTS PMO reports and facilitates near-real-time emergency response. This includes validating the emergency, determining the hazard class and security risk category of the shipment, compiling shipment information and notifying the appropriate authorities to remedy the situation on the ground. Ready access to preloaded shipment data allows the DTTS PMO staff to coordinate with local emergency response personnel and inform them of the type of ordnance on board, its hazard class, and total net explosive weight. In response to a hijacking or a terrorist threat to a commercial carrier hauling a DoD AA&E or OSM shipment, the DTTS staff implements emergency procedures to attain real-time in-transit visibility (ITV) of the threatened shipment and coordinates with appropriate emergency response personnel to mitigate the situation.

Depending on the severity of the incident, the DTTS PMO notifies local police authorities, the Army Operations Center (AOC), and interested DoD organizations (e.g., USTRANSCOM, SDDC, and the military services). The AOC is designated as DoD's single point of contact for all emergencies involving AA&E while in transit, and it initiates all requests for Explosives Ordnance Disposal (EOD) Team support. On average, the DTTS staff contacts the AOC with situational and shipment information within 13 minutes after a panic button alert.

In the first three quarters of FY04 (October through June), DTTS reported 57 validated emergency alerts. This compares to a total of 42,242 AA&E shipments tracked by DTTS during the same time frame.

Governing Regulations

There are several documents that govern DTTS responsibilities:

- DoD Regulation 4500.9-R, *Defense Transportation Regulation* (DTR), *Part II, Cargo Movement*, Chapters 204 and 205.
- DoD Directive 6055.9, *DoD Explosives Safety Board and DoD Component Explosives Safety Responsibilities*.[2]
- DTTS MOU Charter.[3]
- Army Regulation 385-14, *Transportation Accident Prevention and Emergency Response Involving Conventional Munitions and Explosives.*

[2] This directive designates DTTS as "the DoD focal point for initial notification of accidents involving ammunition and explosives."

[3] The DTTS charter is incorporated in a memorandum of understanding (MOU) between the military services, DLA, and SDDC. The MOU was signed at the flag officer level and was last updated in December 2000.

- MFTRP, No. 1C, Item 47 (Motor), *SDDC Freight Rules Publication*.
- MFTRP, No. 30, Item 44 (Barge), *SDDC Freight Traffic Rules Publication.*

DTTS

The DTTS tracking system uses QUALCOMM satellite technology to monitor the movement (or non-movement) of AA&E and OSM on commercial motor carriers, barges, and towboats. The tracking system senses and validates en route incidents, and helps PMO staff initiate emergency response and event resolution. DTTS generates position and exception reports to assist DTTS PMO staff in detecting potential safety or security problems. Exception reports identify when shipments do not move within 1 hour, or when the shipment moves when it is supposed to be in a "delayed" status (e.g., the driver reports he/she has stopped for fuel, but DTTS shows the shipment is moving before the driver reports a departure). In the latter case, DTTS flags the shipment after it travels greater than 10 miles.

DTTS tracks shipments within the 48 contiguous states, Alaska, the western Canadian motor corridor between Washington and Alaska, and the eastern and southern populated regions within Canada. DTTS also tracks shipments in the western coastal waters of the United States and Canada. Additional information on the DTTS tracking system is provided in Appendix A.

DTTS Users

The primary users of DTTS data are the DTTS PMO operations staff, who monitor the current status of each in-transit conveyance. Additional users of DTTS tracking system data include

- the military services' headquarters staffs and major commands such as the Joint Munitions Command (JMC);
- the military services' transportation officers; and
- external systems, such as the Global Transportation Network (GTN), USTRANSCOM's Single Mobility System (SMS), and IRRIS.

In addition to the DoD users, DTTS supports emergency response for several foreign military and special purpose customers. Most of these customers are covered by a separate DTTS user memorandum of agreement (MOA). Funding is provided on a fixed-cost basis, but not necessarily on a prorated share of the DTTS operating costs.[4] Several special purpose users are funded by the military services.

[4] MOAs covering these DTTS users provide for a fixed cost of $5,000 for up to 100 shipments tracked plus $50 for each additional shipment. The MOA with the Canadian Department of National Defense is being revised because DTTS only tracked 12 shipments for them in FY04. White House Communications Agency costs are funded by the Air Force.

These other DTTS users include

- White House Communications Agency,
- United States Postal Service (USPS),[5]
- Center for Disease Control and Prevention,
- Canadian Department of National Defense, and
- German Armed Forces.

Program Management

The DTTS program is governed by a joint service MOU and representatives from each of the military services, USTRANSCOM, SDDC, Defense Logistics Agency (DLA), and the Defense Contract Management Agency (DCMA) are engaged to provide DTTS oversight at three levels of authority: Senior Leader Group, Council of Colonels and Captains (COCC), and DTTS Joint-Service Working Group. Membership in these groups is being expanded to include the Office of the ADUSD(TP). The DTTS Joint-Service Working Group considers and approves new requirements and enhancements to the system.

The military departments also exercise budget oversight by approving DTTS tracking system and PMO's operational staff funding. DTTS costs are allocated to each service based on a prorated share of forecasted shipments, and funding is provided directly to the Navy through a Military Interdepartmental Purchase Request (MIPR). Additional DTTS funding information is addressed in Chapter 4.

[5] USPS uses DTTS to monitor truckload movements of stamps.

Chapter 3
SDDC and IRRIS Overview

In this chapter, we present an overview of SDDC and a description of the Intelligent Road/Rail Information Server.

SDDC

As USTRANSCOM's surface component, SDDC provides global surface deployment command and control and distribution operations to meet National Security objectives in peace and war.[1] In 2000, discussions were held between the Navy and SDDC (then the Military Traffic Management Command) to explore the closer alignment of the DTTS organization with SDDC to leverage their respective AA&E oversight missions and capabilities. While agreement was reached for SDDC to partner in future DTTS support and technological development, the effort to align DTTS and SDDC did not move forward. Accordingly, SDDC continued independently to develop and enhance IRRIS to support its AA&E commercial carrier oversight mission.

In 2001, GAO issued two reports that raised significant concern regarding the visibility and security of in-transit munitions. The reports called for more stringent SDDC oversight of commercial carrier and DoD shipper compliance with AA&E safety and security requirements. These reports and the events of September 11 resulted in efforts by SDDC to address these concerns. SDDC took action to

- strengthen and reinforce the requirements contained in the Defense Transportation Regulation (DTR) regarding in-transit visibility and security; and
- improve the timeliness, tracking, and monitoring capability of in-transit AA&E shipments through enhancements to IRRIS.

[1] *Military Surface Deployment and Distribution Command Strategic Plan*, 2004.

Mission and Functions

The SDDC establishes and enforces transportation service agreements and performance requirements for commercial carriers engaged in the movement of DoD cargo. SDDC's responsibilities include oversight for the safety and security of in-transit DoD cargo, including AA&E and other hazardous material.[2] To fulfill its AA&E shipment role, the SDDC monitors the commercial movement of DoD AA&E shipments using data provided by IRRIS (which, in turn, uses a data feed from DTTS) and through direct contact with DTTS staff, DoD shippers, and the carrier industry. To accomplish its AA&E in-transit oversight mission, the SDDC undertakes the following responsibilities:

- Conducts carrier performance analysis; ensures shipments are released in a manner that will facilitate the acceptance of the shipment at destination; monitors in-transit stops to ensure adherence to appropriate in-transit rules; and provides managerial reports that reflect the current status of AA&E shipments and the AA&E distribution network.

- Ensures DoD shippers assign proper accessorial protective services to AA&E shipments (satellite monitoring, security escort vehicle, etc.). For security risk Category I and II shipments, the most sensitive levels of AA&E, SDDC contacts both the shipper and receiver to attain and validate contact information and to document any special instructions.

- Monitors carrier performance through the satellite tracking of Category I and Category II AA&E shipments. For example, SDDC monitors IRRIS data to ensure carriers have input the correct DTTS status codes and whether carriers correctly report on-time arrival at destination. When SDDC detects a discrepancy, they contact the carrier to resolve the matter. If necessary, carrier performance action is taken against the carrier.

- Provides en route weather advisories to AA&E carriers.

- Arranges for en route secure holding areas for motor carriers transporting AA&E shipments. For example, a motor carrier may request SDDC help in seeking a secure holding area during emergencies (such as adverse weather conditions). During emergencies, or in situations beyond the motor carrier's control, SDDC is responsible for arranging secure holding with the nearest available DoD installation that meets the security requirements commensurate with the load.[3]

[2] SDDC's security and safety oversight responsibilities are outlined in DoD Manual 5100.76-M, *Physical Security of Arms, Ammunition and Security*; DoD Directive 6055.9, *DoD Explosives Safety Board and DoD Component Explosive Safety Responsibilities*; and Army Regulation 385-14, *Transportation Accident Prevention and Emergency Response Involving Conventional Munitions and Explosives.*

[3] DoD Regulation 4500.9-R, Defense Transportation Regulation (DTR).

- Provides "informational" incident report notices to DoD components. These notifications report both major and minor AA&E-related incidents and accidents en route, and are distributed for *information* purposes only. They are not part of the emergency response process. Notifications go to such organizations as the Army Materiel Command, USTRANSCOM, JMC, ADUSD(TP), and the Navy.

- Manages all applicable OSM-related rules and regulations, and has performance oversight for commercial carriers hauling DoD cargo of this nature. While SDDC does not actively monitor the movement of OSM, it does become involved in en route security for individual moves on an "as needed" basis for high visibility or special interest materiel.

These specific responsibilities are not codified in existing DoD or military service regulations, but they are internal operating procedures that SDDC has implemented to accomplish its overarching mission to oversee carrier and shipper compliance with DoD in-transit safety and security requirements. Absent from the list of AA&E mission responsibilities is the responsibility to receive near-real-time emergency alerts and facilitate on-scene emergency response resolution. This mission resides with DTTS in conjunction with the AOC.

Governing Regulations

There are several documents that govern SDDC responsibilities for oversight of AA&E and other hazardous commodities being transported within the Defense Transportation System (DTS):

- DoD Manual 5100.76-M, *Physical Security of Arms, Ammunition, and Security*.

- DoD Directive 6055.9, *DoD Explosives Safety Board and DoD Component Explosive Safety Responsibilities*.

- Army Regulation 385-14, *Transportation Accident Prevention and Emergency Response Involving Conventional Munitions and Explosives.*

- DoD Regulation 4500.9-R, *Defense Transportation Regulation* (DTR), *Part II, Cargo Movement*, Chapters 204 and 205.

IRRIS

IRRIS is a web-based, geo-spatial transportation information tool developed, owned and operated by TEA, a major subordinate command of SDDC.[4] IRRIS development began in 1999. Originally intended for use by TEA to assist in the analysis of infrastructure readiness within CONUS, IRRIS has evolved to provide worldwide infrastructure and near-real-time data for decision makers.

IRRIS leverages information from federal, state, local, and commercial transportation source systems. It provides detailed road and rail information that includes route and infrastructure characteristics. IRRIS also depicts real-time information from cameras, speed sensors, construction and accident reporting systems, and geographic information system–based weather sources. IRRIS provides its users the ability to immediately deliver spatial surface movement control for sensitive surface shipments on a spatial data background.

As noted earlier, SDDC uses IRRIS data to fulfill its AA&E operational oversight mission. Specifically, SDDC uses IRRIS data to support functions that require satellite monitoring of shipments en route, including on-time arrival at destination and en route stop time adherence.

IRRIS receives an hourly satellite feed from the DTTS PMO Operations Center. IRRIS uses the DTTS data to graphically display shipment location information on maps. This display allows SDDC operations staff to visually locate in-transit shipments. The SDDC can cross reference each displayed shipment to its bill of lading number and other information within IRRIS.

IRRIS Users

IRRIS principally supports internal SDDC operations requirements. Its primary users are the SDDC Global Operations Directorate and the Customer Services Branch.

SDDC has begun discussions with other DoD and non-DoD organizations to use IRRIS, such as the Defense Threat Reduction Agency (DTRA) and the Transportation Security Administration. However, to date, the military departments have not used IRRIS for their recurring AA&E information needs.

[4] Phone interview with Mr. Marc Barthello, IRRIS Project Manager, SDDC Transportation Engineering Agency, August 16, 2004.

Program Management

Program oversight is internal to SDDC. There is not formal mechanism for the military departments to communicate their requirements or influence future system development or capabilities. Nor does SDDC have a formal configuration control board to assess new requirements and enhancements for IRRIS. Milestone approval authority is exercised through an SDDC System Review Committee.

USTRANSCOM provides budgetary oversight of IRRIS through its CIO Program Review Process (CPRP) Board. To obtain funding under the CPRP structure, IRRIS must successfully undergo a series of USTRANSCOM functional, financial, and technical assessments. Additional IRRIS funding information is addressed in Chapter 4. Further program oversight will likely be exercised by USTRANSCOM once IRRIS is rolled into GTN-21.

Chapter 4
Findings

In this chapter, we present our findings, to include system considerations; functional redundancies and voids; funding and staffing; and our conclusions.

As stated in Chapter 1, the focus of our assessment was not to determine if either the DTTS or IRRIS system is the better solution for DoD. Rather, we focused on opportunities for mission improvement. However, to address mission, systems and organizational issues, we gathered information, conducted interviews, and compiled the findings presented in this chapter.

DTTS AND IRRIS CONSIDERATIONS

DTTS is a stand-alone DoD-developed and -owned system. It is governed by an MOU with Senior Leader, COCC, and DTTS Joint-Service Working Group oversight. These organizations budget for and directly fund DTTS, oversee the program, and communicate military service requirements. They also review and approve proposed system enhancements and business processes. DTTS is fully accredited through the Defense Information Technology Security Certification and Accreditation Process (DITSCAP).

GeoDecisions developed IRRIS for SDDC (TEA) and continues to serve TEA as a support contractor, providing follow-on IRRIS development and maintenance services. IRRIS relies on a data feed from DTTS to obtain AA&E satellite movement information. There is no formal process for receiving military service requirements or for providing "joint" oversight. IRRIS has interim DITSCAP authority, and expects to start the full approval process in the first quarter of FY05. USTRANSCOM plans to roll IRRIS into GTN-21 within the next year.

FUNCTIONAL REDUNDANCIES

During our assessment, we found both DTTS and IRRIS "systems" map vehicle location, provide geo-fencing, provide exception reporting, and generate REPSHIPs. In addition to these redundancies, IRRIS is pursuing direct QUALCOMM data feeds, which DTTS receives every 15 minutes.

Moreover, we also found the staffs of both the DTTS PMO and SDDC monitor carrier correct usage of DTTS status codes, monitor shipment excessive time in-terminal, contact carriers to resolve problems, notify multiple organizations to provide incident notices and reports, and are pursuing a carrier route adherence monitoring capability. Each organization is separately exploring and testing

evolving technologies to further enhance the safety and security of AA&E movements. Again, current regulations and policies only address broad DTTS and SDDC safety and security mission responsibilities and do not specify the operating procedures that each organization must use to accomplish their respective missions.

FUNCTIONAL VOIDS

During our assessment, we found neither the DTTS PMO nor SDDC track the actual cargo—they track only the conveyance.[1] Moreover, neither track rail, air, or sea movements; track overseas; nor have viable Continuity of Operations Plan (COOP) sites for their DTTS and IRRIS systems.

FUNDING AND STAFFING

Below, we present the DTTS and IRRIS funding and staffing requirements.

DTTS

In FY04, the DTTS annual budget was $2,553,596, which is used to fund system development and maintenance as well as personnel costs.[2] DTTS is funded directly by the military services and several other users, as reflected in Chapter 2. The military services and other users pay for the DTTS program based on historical and projected shipments. The Army and Air Force send an annual MIPR to DTTS, and the Navy provides quarterly funding installments based on the DTTS Spending Plan. Other users[3] pay a fixed amount based on the number of shipments tracked through DTTS.

Table 4-1 presents the military services' contributions to the DTTS annual budget in FY04.

Table 4-1. Military Services Contributions to the DTTS Annual Budget in FY04

Military service	Amount	Percentage of the annual requirement
Army	$1,481,086	58
Navy and Marine Corps	$ 638,399	25
Air Force	$ 434,111	17
Total	$2,553,596	100

[1] Conveyance includes the power unit for truck movements and towboats and barges for shipments moving via coastal or inland waterways. There is no current capability to track the actual cargo loaded on trailers or barges being transported by these conveyances.

[2] Personnel costs represent approximately 80 percent of the DTTS operating budget.

[3] Other users represent less than 1 percent of DTTS operating revenues.

The DTTS PMO currently has a staff of 16 personnel and two vacant billets. Since 1995, staffing for DTTS has declined from 28 billets to 18 billets. Table 4-2 depicts the number of billets, position title, and a brief description of duties.

Table 4-2. DTTS Staffing

Billets	Position title	Description of duties
1	Operations branch head	Oversees the DTTS Operations Center, including shift scheduling, analysis, process review and improvement, operating procedures, and training.
6	Duty officers	Responsible for the execution of the DTTS standard operating procedures (SOPs). Allocate and monitor workload to the various operational shifts.
10	Operations analysts	Responsible for updating shipment records, monitoring driver messages, confirming receipt of sensitive shipments, and obtaining and entering load data when not provided by the shipping activity.
1	Program analyst	Responsible for the continual monitoring of DTTS data and recommends changes in policy or procedures to enhance DTTS or DoD intransit security. Assists in the testing of technologies. Responsible for the execution of the DTTS budget.

Although the number of billets has decreased since 1995, increasingly complex operations and new "special customer" requirements have risen. Therefore, the DTTS PMO has had to allow overtime to cover shift requirements—as many as 300 overtime hours per month.

In addition to the 18 billets described above, the Naval Supply Information Systems Activity (NAVSISA) manages the information technology for DTTS. NAVSISA dedicates two civil service personnel and two contractors to DTTS. This technical support staff is neither controlled nor managed by the DTTS PMO.

IRRIS

In its early stages of development and until FY04, IRRIS was directly funded by SDDC and the Department of Army.

Today, USTRANSCOM provides IRRIS funding from the TWCF through the CPRP. IRRIS has a budget of approximately $2.1 million per year for the next 7 years. SDDC uses approximately $400,000 annually each year to support third-party leased services.

Funding and staffing apply to IRRIS development and maintenance only. The staff consists of 3 full-time civil service personnel and 20 full-time contract employees. IRRIS does not have an operational staff similar to DTTS; rather, operational elements within SDDC are the primary users of IRRIS data. The cost of SDDC operational staff is not included in the IRRIS funding reflected above.

CONCLUSIONS

Based on our findings and assessment, we developed the following conclusions.

- There is no single DoD component accountable for transportation oversight of in-transit AA&E and OSM (that is, the AA&E in-transit tracking and the emergency response missions are separate from other AA&E transportation operations and oversight). In addition, both DTTS and SDDC access the same AA&E movement information and contact the same DoD and industry entities in the conduct of their respective missions. Existing policies and regulations differentiate DTTS and SDDC missions at a high level, but they do not entirely reflect the enhanced real-time safety and security oversight capabilities that now exist in the post–September 11 security environment. As a result, mission responsibilities are perceived to be redundant because internal procedures were independently developed and executed.

- The current DTTS staffing and technology are not optimal. Several DTTS billets remain vacant and overtime is being used to meet operational requirements. In addition, DTTS hardware will soon need to be refreshed, system functionality must be expanded to track other modes of transportation, and a viable COOP site should be established.

- The SDDC staff wishes to assume the DTTS mission. They believe it is consistent with their AA&E in-transit oversight responsibilities and the expanded DPO mission of USTRANSCOM.

- The current AA&E emergency response process needs to be improved to ensure procedures are streamlined and clear roles and responsibilities are specified in appropriate regulations.

- Duplicative functionality exists within the DTTS and IRRIS systems, and functional voids exist in tracking the actual cargo and other modes of transportation (i.e., rail and ocean carrier).

Chapter 5
Recommendations

In this chapter, we present options, recommendations, and next steps based on the findings discussed in Chapter 4.

OPTIONS

Based on the findings discussed in Chapter 4, we sought to determine the best DoD solution for optimizing oversight of in-transit AA&E and how to effectively align roles of the DTTS PMO and SDDC to perform their AA&E missions.

In Table 5-1, we present four viable options. The table includes a summary of the pros and cons for each option.

Table 5-1. DTTS Mission Alignment Options

Option	Pros	Cons
1. Status quo: DTTS mission remains with the Navy	• Staffing, billets, and funding are in place. • The DTTS system is working and is responsive to customers.	• AA&E emergency response mission would remain separate from other AA&E transportation operations and oversight. Requires separate or redundant management oversight and funding for both missions and supporting systems. • System redundancies will likely continue.
2. Transfer DTTS mission to SDDC	• Centralizes AA&E emergency response and other transportation operations and oversight. A designated single focal point (along with appropriate regulation changes) would eliminate mission redundancies. • Eliminates duplicate management oversight and funding for redundant system functionality.	• Potential loss of DTTS experienced personnel if they do not transfer with the mission. • Potential loss of DTTS customer focus.
3. Transfer DTTS mission to USTRANSCOM	• Conducive to expanding AA&E operations and oversight across the entire distribution chain, including all modes, globally. • Viewed as consistent with USTRANSCOM's new DPO and distribution system portfolio management missions.	• DTTS experienced personnel will not likely move to Scott Air Force Base, IL. • Redundancies would persist unless SDDC's AA&E operations and oversight mission also transfer to Scott AFB.

Table 5-1. DTTS Mission Alignment Options (Continued)

Option	Pros	Cons
4. Transfer DTTS mission to Joint Munitions Command (JMC)	• The JMC has resident "explosives/ ordnance" expertise.	• The JMC is primarily materiel oriented versus transportation oriented. • The JMC is not involved in "other hazardous material," "OSM," or "arms." • DTTS experienced personnel would not likely move to Rock Island, IL. • Redundancies would persist unless SDDC's AA&E operations and oversight mission also transfer to JMC.

Note: the pros and cons were derived from and based on interviews with the stakeholders.

RECOMMENDATIONS

After assessing the options presented above, we formed several organization, systems and technology, and staffing and funding recommendations.

Organization

We developed four recommendations that relate to organization.

- The Navy should transfer the DTTS mission, system, and PMO to SDDC (with SDDC initially capitalizing DTTS in place, and then consider physically moving the system and personnel to SDDC at a later, operationally feasible date).
- DTTS should be established as a separate operational element within SDDC, retaining its "emergency response" organizational identity and mission. This avoids potential diversion and dilution of emergency response resources to other operations, and recognizes the unique skill set required for hands-on, real-time accident and incident resolution.
- SDDC should retain a DTTS-like oversight structure, such as the existing working group, COCC, and Senior Leader Group. This will provide a formal forum for the submission and evaluation of military service and customer requirements. SDDC should formalize the new organization and mission alignment and specify its roles and responsibilities in a joint MOU.
- SDDC should establish a viable DTTS and IRRIS COOP site.

Systems and Technology

We developed three recommendations that relate to the DTTS and IRRIS systems and supporting technology.

- USTRANSCOM and SDDC should assess the implications of IRRIS "rolling into" GTN-21 and factor this decision into their final approach for reconciling redundancies and voids between the DTTS and IRRIS systems. The approach should include developing a roadmap, time frame, and overall user requirements for integrating DTTS- and IRRIS-related functionality.

- The SDDC should retain DTTS as a distinct operating system in the near term and maintain DTTS system support to meet operational requirements.

- DoD should assess (from a cost-benefit perspective) and coordinate promising technologies that enhance tracking and emergency response. Potential technology enhancements include

  - linkage of radio frequency identification (RFID) tags to a satellite transponder for ITV of actual cargo rather than limiting it to the conveyance;

  - satellite activated trailer locking devices and electronic security seals;

  - covert satellite antenna mounting and tamper resistant wiring harness;

  - satellite and driver activated remote vehicle shutdown feature;

  - driver biometrics keyed to a satellite system for vehicle activation and driver verification;

  - fifth wheel sensor activation when trailer is detached; and

  - impact and attitude sensors for severe accidents in which the driver activation of panic button is not possible.

Staffing and Funding

We developed four recommendations that relate to staffing and funding.

- The Navy and SDDC should jointly validate DTTS staffing requirements and the Navy should transfer all billets required to perform the DTTS mission to SDDC.

- SDDC should ensure the DTTS PMO is sufficiently staffed and adequately trained to meet its current and future tracking and emergency response mission requirements.

- SDDC should continue direct user funding of DTTS in the short term.
- USTRANSCOM and SDDC should assess capitalizing DTTS in the TWCF for the longer term.

NEXT STEPS

We recommend DoD identify, clarify, and document seven items (listed below) prior to transferring DTTS to SDDC. These items are critical to determining the best way to structure and integrate the DTTS and SDDC missions, systems, and personnel.

- Mission scope, roles, responsibilities, and authorities, ensuring they are reflected in updated policies, regulations, and MOUs
- Resource requirements, including manpower and funding
- Tracking and emergency response procedures
- Required process and system enhancements, including expansion opportunities to other modes of transportation
- Internal organizational and staff relationships
- Training requirements
- External and “special customer” requirements and interfaces.

Appendix A
DTTS System Information

This appendix provides information about the DTTS system, including current functionality, interfaces, system uptime, archives, system backup, IT support, and planned enhancements.

CURRENT FUNCTIONALITY

DTTS functionality allows the DTTS PMO to

- continuously monitor the intransit movement of DoD AA&E moving via commercial carriers (motor and barge);
- prepare emergency responses for accidents, incidents and mechanical breakdowns of monitored shipments;
- prepare exception reports highlighting a shipment's status;
- "geo-fence" designated cities and areas; and
- change the self-positioning rate to as frequent as every minute of a monitored conveyance that breached a geo- fenced zone or was hi-jacked.

The DTTS web-accessed modules allow the military service's shipping sites and commercial contractors to accomplish the following:

- Manage reports of shipment (REPSHIPs) by automatically sending a report to the consignee once DTTS detects a shipment has moved more than 10 miles from origin. Similarly, consignees can access the website to post confirmations of delivery for automatic notification to the shipper.
- Monitor truck arrival times and expedite receipt into the destination facility via the website.
- Prepare performance and metrics reports.

THE SYSTEM

DTTS comprises a series of dedicated servers, each handling various aspects of the system and other peripheral equipment.

- DTTS Primary Applications Server (HP D-390)
- DTTS Primary ED/GTN Server (HP-9000/750)
- DTTS Backup Applications Server (HP D-390)
- DTTS Backup ED/GTN Server (HP-9000/750)
- DTTS Contingency Applications Server (HP D-390)
- DTTS Contingency ED/GTN Server (HP-9000/750)
- DTTS Research & Development Server (HP D-390)
- Qtracs Primary Comm Server (Dell Optiplex GX150)
- Qtracs Primary Web Server (Dell Power Edge 2500)
- Qtracs Backup Comm Server (Dell Optiplex GX150)
- Qtracs Backup Web Server (Dell Power Edge 2500)
- Qtracs Contingency Comm Server (Dell Optiplex GX150)
- Qtracs Contingency Web Server (Dell Power Edge 2500)
- DOGITS Primary Database Server (Dell Power Edge 2650)
- DOGITS Primary Web Server (Dell Power Edge 2650)
- DOGITS Backup Database Server (Dell Power Edge 2650)
- DOGITS Backup Web Server (Dell Power Edge 2650)
- DOGITS Contingency Database Server (Dell Power Edge 2650)
- DOGITS Contingency Web Server (Dell Power Edge 2650)
- DTTS ITO Primary Web Server (Sun Enterprise 420E with Storage A1000)
- DTTS ITO Research & Development Server (Sun Enterprise 420E with Storage A1000)

The DTTS Application Server is accessible by external activities via a dialup modem. The DTTS ITO website is accessible by external activities via its web server by logging on through a PC with a web browser and Internet access.

INTERFACES

The primary system that interfaces with DTTS is QUALCOMM. QUALCOMM transmits the vast majority of DTTS messaging and positioning data for AA&E motor, barge, and towboat movements.

DTTS also has interfaces with the following:

- *CANCOMM*. DTTS receives satellite data from Canadian munitions carriers authorized to move AA&E within CONUS.
- *ORBCOMM*. DTTS is testing with ORBCOMM to track DoD AA&E barge movements.
- *Global Freight Management* (GFM) *System*. GFM provides load data to DTTS.
- *GTN, GTN-21, SMS, and IRRIS*. DTTS transmits data hourly to these DoD systems. They rely on DTTS as the single source for satellite-tracked CONUS commercial AA&E movements.

SYSTEM UPTIME

The DTTS uptime is virtually 100 percent. DTTS systems and technology staff brought the system down for routine periodic maintenance reboots three times in the last 12 months. Reboots take 15 minutes. In addition, DTTS experienced one unscheduled outage (power failure), which lasted 80 minutes before the staff was able to resolve the problem and bring the system back online.

ARCHIVES

DTTS maintains more than 10 years of archived data (such as shipment load and transit data). DTTS uses archived data to generate numerous reports, such as daily statistics, carrier performance, consignee and consignor, and special reports for GAO.

SYSTEM BACKUP

The DTTS Contingency Plan was developed in December 2000. The plan describes the necessary steps to switch to a backup facility. The plan defines various risks and presents alternative actions to minimize losses. The DTTS PMO exercises contingency operations semi-annually, once announced for practice and coordination, and once unannounced for contingency plan validation.

At the primary DTTS site, computers, servers, and printers are backed-up by an uninterrupted power source (UPS) and generators. Additional communication lines are in place as part of the backup facility to support inbound and outbound traffic.

The DTTS backup or COOP site is located at the Naval Weapons Station, in Yorktown, Virginia, where the Internet, NIPRNet, and SIPRNet are available. It takes approximately 4 hours to transition minimum operations from the primary DTTS site to the COOP site. Interface with systems other than QUALCOMM (e.g., GFM) must be reestablished at the COOP site. This systems interface process could take as long 5–7 days for a full-up capability.

IT SUPPORT

DTTS has hardware support and annual maintenance agreements in place for their HPs, Dell workstations and servers, line printers, modem, UPS, and generator. Technical support for hardware maintenance is based on a "no single point of failure" philosophy. DTTS has established a 2-hour turnaround time for problem resolution and preventive maintenance.

DTTS has software support and annual maintenance agreements for all their Informix products. DTTS operates 7 days a week, 24 hours a day. Therefore, both in-house staff and contractors provide software maintenance and programming support through call back procedures during off hours.

In-house DTTS staff support the DTTS applications residing on the HP and SUN.

Planned Enhancements

The DTTS PMO is considering several enhancements to improve in-transit security while minimizing manpower requirements. The following are among the enhancements being considered:

- Expand DTTS capabilities to include the AA&E barge and towboat movements between Port Canaveral, Florida, and Andros Island, Bahamas.
- Incorporate an electronic route adherence tool. This capability could create electronic notifications if a munitions carrier's truck deviates more than 15 miles from a pre-planned route.
- Implement vehicle interruption devices that can restrict fuel to a hijacked munitions truck.
- Monitor the trailer and shipment.

- Adopt a terrestrial based capability that can self-position a detached trailer over a period of time. This capability could provide independent multiple-driver sensors that enhance DTTS in-transit security tools.

- Utilize a satellite-based electronic seal to increase the security of in-transit shipments.

Figure A-1 depicts the DTTS system architecture.

Figure A-1. DTTS System Architecture

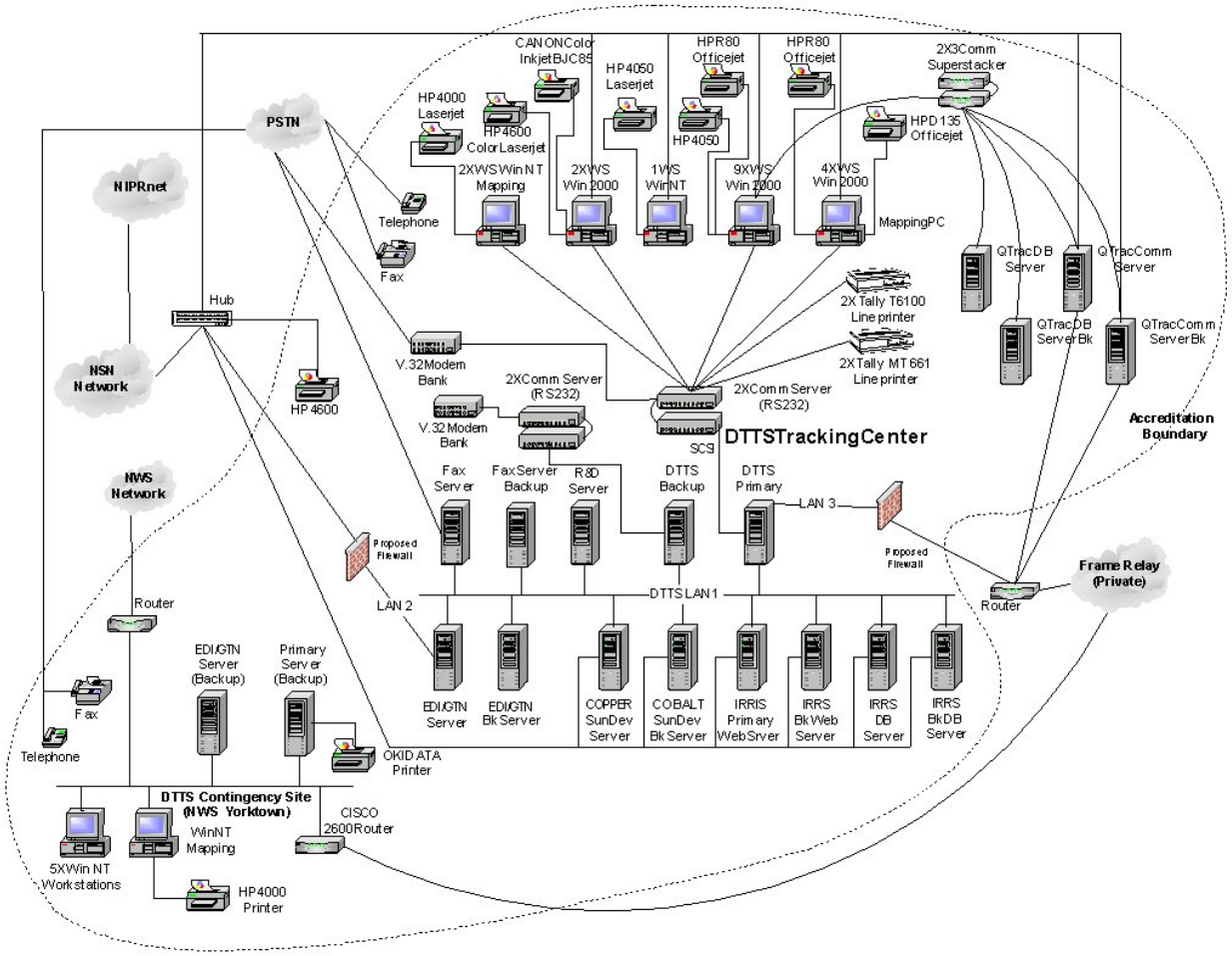
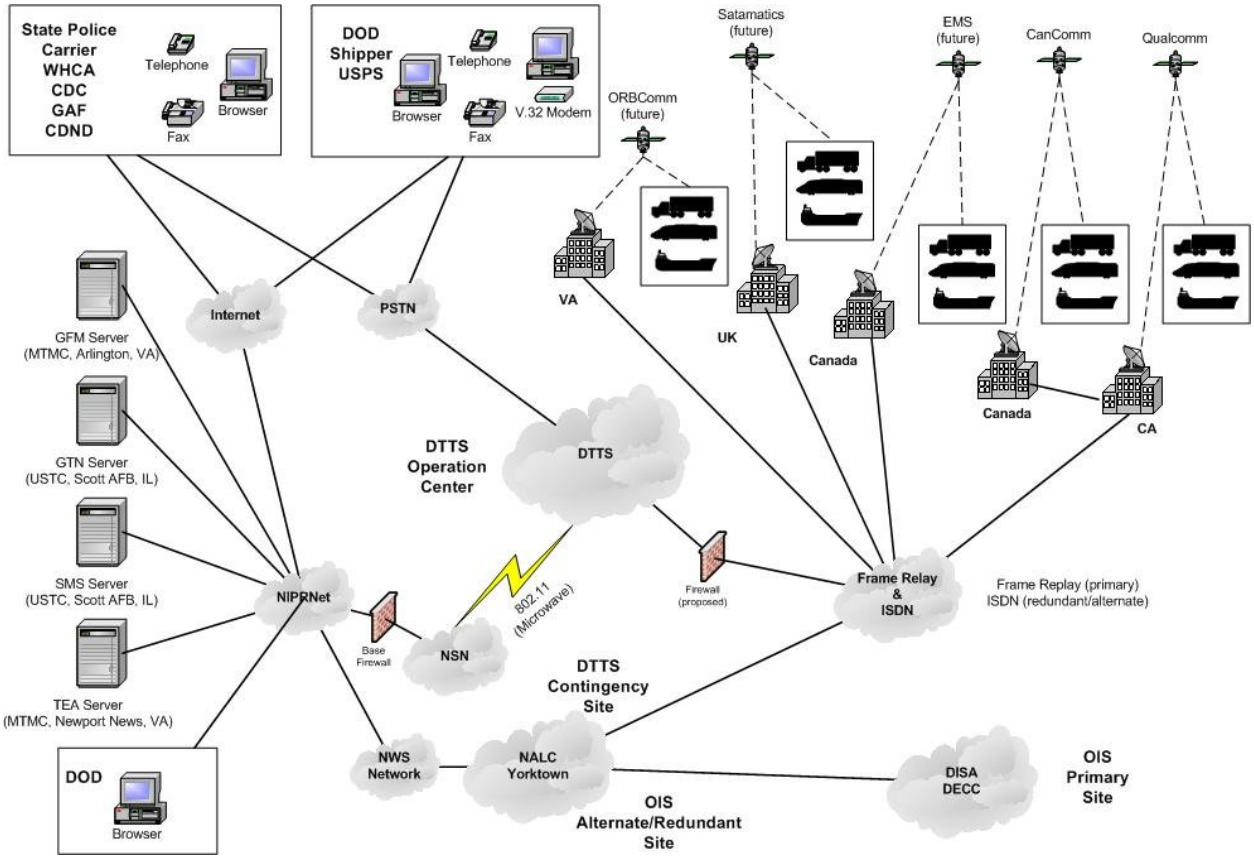


Figure A-2 depicts the DTTS network flow process.

Figure A-2. DTTS Network Flow Process



Appendix B
IRRIS System Information

This appendix provides information about IRRIS, including current functionality, interfaces, system uptime, archives, system backup, IT support, and planned enhancements.

CURRENT FUNCTIONALITY

IRRIS capabilities are broader than tracking AA&E. IRRIS functionality allows SDDC to

- track cargo from a variety of data feeds, including DTTS satellite tracking;
- capture and display new data feeds in structured modules;
- locate and manage assets in near-real time;
- view multiple-modal in-transit visibility (ITV) data;
- archive historical tracking data; and
- conduct analysis to support carrier performance, in-transit vehicle visibility, and designated cargo movements.

THE SYSTEM

IRRIS comprises a series of dedicated servers each handling various aspects of the system. The overall server stack is supported by a mass storage subsystem with 2.056 Tbytes of available storage. A total of seven dedicated servers handle the following tasks:

- Weather (Dell Optiplex GX200)
- Applications (Compaq DL380 G3)
- Tracking (Compaq DL380 G3)
- Oracle Replication (Compaq DL380 G3)

- Web (Compaq DL580 G2)
- Routing (Compaq DL580 G2)
- Oracle Database (Compaq DL760 G2)

External activities can access the system via its web server by logging on through a PC with web browser, PDA, or wireless application protocol (WAP) telephone.

INTERFACES

IRRIS has interfaces with the following systems:

- *TrafficCast.* TrafficCast provides real-time and historical traffic congestion, incidents, and construction data.
- *Meteorlogix.* Meteorlogix provides real-time GIS formatted weather information.
- *RWIS.* RWIS provides real-time road weather information for Alaska.
- *NavTeq.* NavTeq provides a spatially accurate, routable road database.
- *DTTS.* DTTS provides a data feed once an hour with AA&E shipment position data.
- *Global Freight Management System* (GFM). GFM provides a data feed to link to DTTS position data.
- *Worldwide Port System* (*WPS).* WPS provides data on surface cargo movements.
- *Integrated Booking System (IBS).* IBS provides data on ocean cargo movements.
- *Radio Frequency Identification* (RFID) *Database.* RFID Database provides DoD cargo content and location information worldwide.
- *Intellitrans.* Intellitrans provides position data of CONUS cargo movements by rail.

In addition to these system interfaces and data feeds, IRRIS maintains approximately 130 static data sets that include imagery, infrastructure, road, rail, bridges, emergency response, plume modeling tools, hospitals, and force protection. SDDC typically updates these data sets annually.

SYSTEM UPTIME

For the most recent 12-month period (June 2003–June 2004), IRRIS was up 99.47 percent of the time. Factoring in external circumstances, such as local power outages, communication outages, and hurricane Isabel, the uptime was 97.37 percent.

ARCHIVES

IRRIS maintains some archived data for 6 months and other data indefinitely. SDDC uses archived data for analysis and to generate numerous reports.

SYSTEM BACKUP

The SDDC has provided UPS and generator support for IRRIS; however, current UPS support is only for a 15-minute duration. The SDDC has purchased a 250KVA generator that provides a longer backup capability.

IRRIS does not have an exercise contingency plan or a backup or Continuity of Operations Plan (COOP) site.

IT SUPPORT

The IRRIS hardware is mostly HP or Compaq equipment. The equipment was initially purchased with a 24-hour, 7-days per week, 4-hour response warrantee. The warrantee was rolled into an annual maintenance contract with HP after the initial 3-year period expired.

The primary development contractor for IRRIS, GeoDecisions, Inc, provides the software development and maintenance. An in-house systems administrator and a computer engineer provide first-line maintenance for IRRIS. This approach requires highly skilled in-house personnel, but yields quick problem resolution and minimal downtime. In the event an in-house expert cannot resolve a problem, SDDC will call a support contractor.

The in-house systems administrator and the database administrator also support the IRRIS operating system and Oracle database engine.

Planned Enhancements

The IRRIS program has a number of areas targeted for system expansion and development, as well as planned enhancements to current capabilities. The following are among some of these enhancements:

- Continue development with DTRA of its plume dispersion analysis capability.
- Expand real-time information to provide worldwide weather and traffic information.
- Enhance detailed infrastructure information to include worldwide coverage.
- Attain requisition information to provide end-to-end view of in-transit cargo.
- Assign vehicles and shipments to predetermined routes and provide exception reporting for out-of-route vehicles.
- Add the capability to track barges and air cargo.
- Develop a version of IRRIS for use in austere areas where communications bandwidth is limited.

Figure B-1 depicts the IRRIS system architecture.

Figure B-1. IRRIS System Architecture

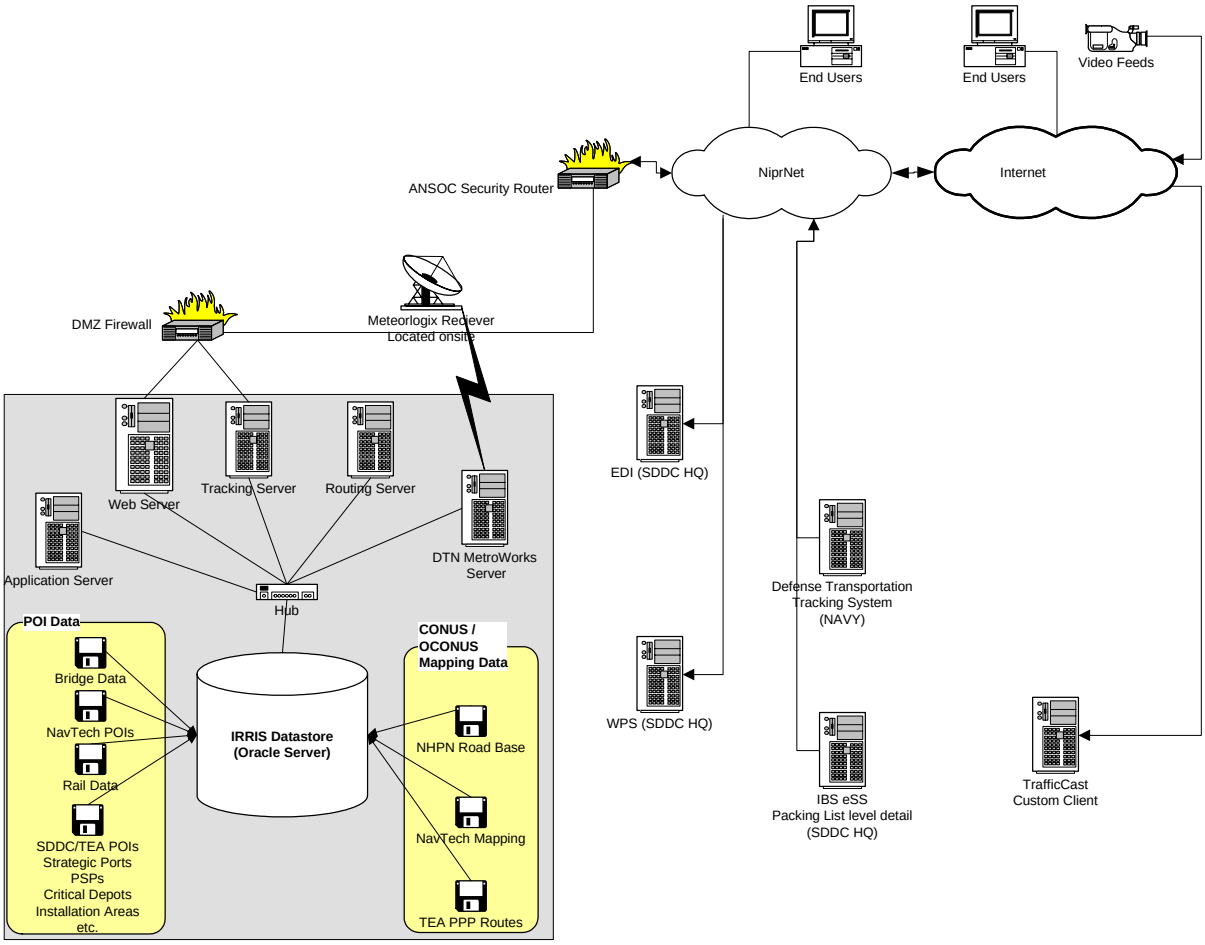


Figure B-2 is a sample screen shot of the IRRIS infrastructure data. The screen shot shows the types of available data and the system's graphical user interface.

Figure B-3 and Figure B-4 are sample screen shots of IRRIS mapping information and the en route AA&E tracking module, respectively. The screens show the types of mapping capability available and the system's graphical user interface.

Figure B-2. Sample Screen Shot of the IRRIS Infrastructure Data

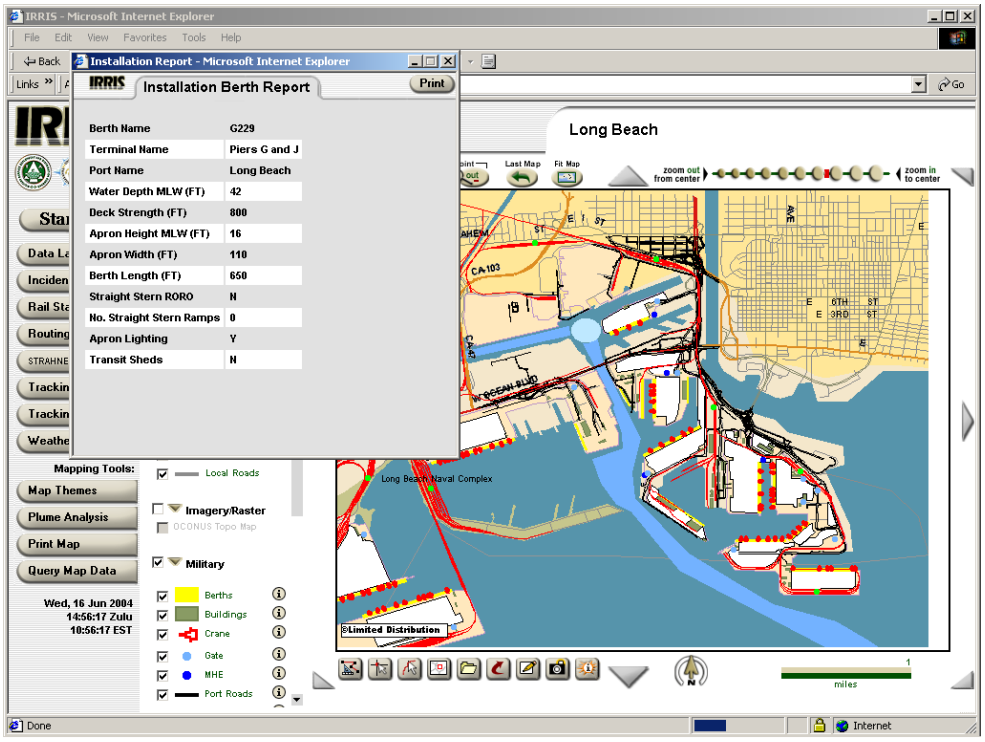


Figure B-3. IRRIS Mapping Information

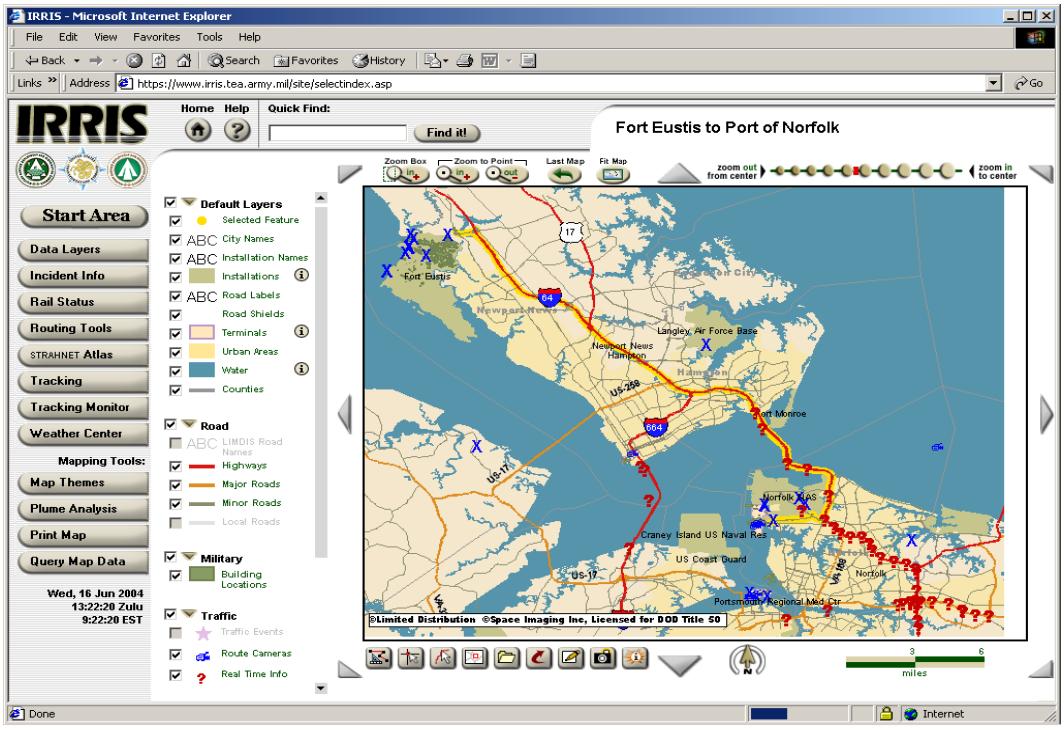
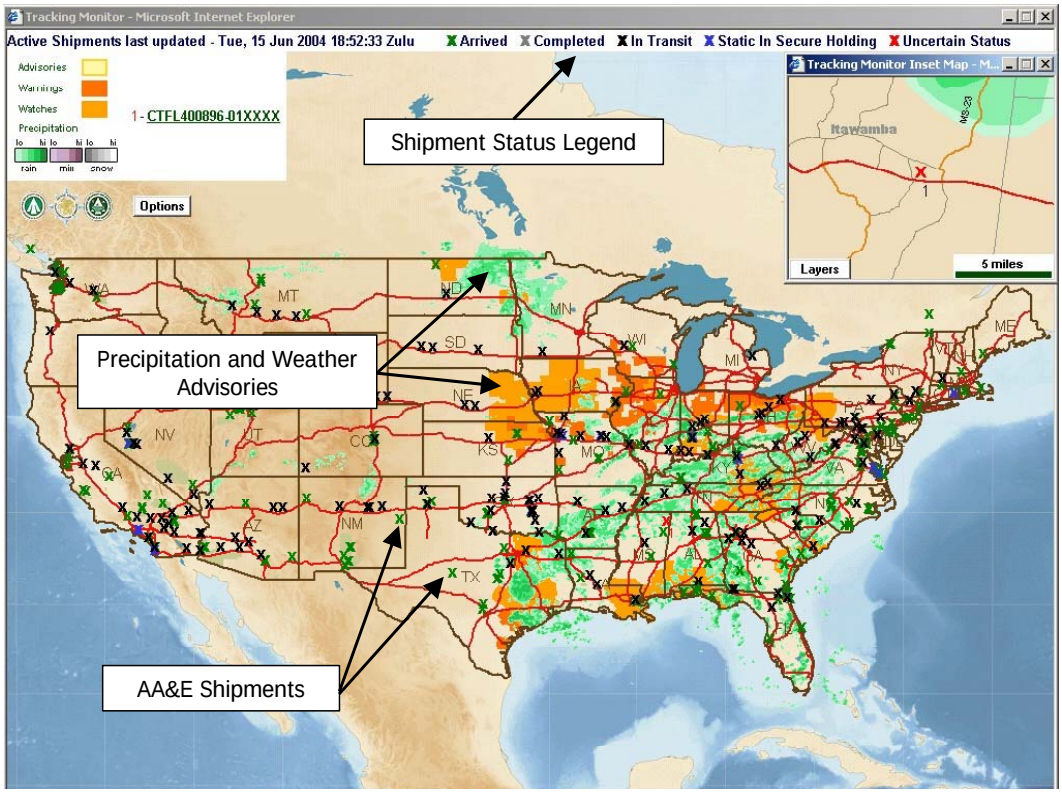


Figure B-4. En Route AA&E Tracking Module



Appendix C
Organizations Interviewed

Below is a list of organizations that we interviewed during our assessment.

- Defense Transportation and Tracking System
- Defense Logistics Agency
- Government Accountability Office (GAO)
- Military Surface Deployment and Distribution Command
  - Operations Directorate
  - Transportation Engineering Agency, Intelligent Road/Rail Information Server
- United States Air Force
- United States Army
  - G-4
  - Army Operations Center (AOC)
  - Joint Munitions Command
- United States Marine Corps
- United States Navy, specifically:
  - NAVSEA—Naval Ordnance Safety and Security Activity (NOSSA)
  - Naval Supply Systems Command (NAVSUP)—Naval Operational Logistics Support Center (NOLSC)
- United States Transportation Command

Appendix D
Policies Reviewed

Below is a list of policies that we reviewed for the assessment.

- AR 55-80, *DoD Transportation Engineering Program*, 18 January 2002
- AR 190-11, *Physical Security of Arms, Ammunition and Explosives*
- AR 385-14, *Transportation Accident Prevention and Emergency Response Involving Conventional Munitions and Explosives*
- *Army Operations Center Standard Operating Procedures*
- DoD Directive 4500.9, *Transportation and Traffic Management*
- DoD 4500.9-R, *Defense Transportation Regulation*
- DoD 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*
- DoD Directive 4510.11, *DoD Transportation Engineering*, 12 April 2004
- DoD Directive 6055.9, *DoD Explosives Safety Board and DoD Component Explosives Safety Responsibilities*
- D*TTS Emergency Response Standard Operating Procedures*
- *DTTS Joint Services Memorandum of Understanding and Charter*, December 2000
- GAO-01-936, *Ammunition and Explosives Shipment Practices Present Substantial Security and Safety Risks*, July 2001
- GAO-03-800, *Defense Inventory: Compliance with Regulations Needed to Improve Security of Munitions Shipments* (FOUO), July 2003
- MFTRP, No. 1C, Item 47 (Motor), *SDDC Freight Rules Publication*
- MFTRP, No. 30, Item 44 (Barge), *SDDC Freight Traffic Rules Publication*
- *Military Surface Deployment and Distribution Command Strategic Plan*, 2004
- SDDCTEA Regulation 10-1, *Organization and Functions*, February 2000.

Appendix E
Abbreviations

AA&E	arms, ammunition, and explosives
ADUSD(TP)	Assistant Deputy Under Secretary of Defense (Transportation Policy)
AOC	Army Operations Center
COCC	Council of Colonels and Captains
CONUS	continental United States
COOP	Continuity of Operations Plan
CPRP	CIO Program Review Process
DITSCAP	Defense Information Technology Security Certification and Accreditation Process
DPO	distribution process owner
DTR	Defense Transportation Regulation
DTRA	Defense Threat Reduction Agency
DTTS	Defense Transportation Tracking System
GAO	Government Accountability Office
GFM	Global Freight Management System
GIS	Geographic Information System
GTN	Global Transportation Network
IBS	Integrated Booking System
IRRIS	Intelligent Road/Rail Information Server
ITV	in-transit visibility
JMC	Joint Munitions Command

MOU	memorandum of understanding
NAVSEA	Naval Sea Systems Command
NAVSISA	Naval Supply Information Systems Activity
NAVSUP	Naval Supply Systems Command
NOLSC	Naval Operational Logistics Support Center
NOSSA	Naval Ordnance Safety and Security Activity
OSM	other sensitive materiel
PMO	Program Management Office
REPSHIP	report of shipment
SDDC	Military Surface Deployment and Distribution Command
SMS	Single Mobility System
SOP	standard operating procedure
TEA	Transportation Engineering Agency
TWCF	Transportation Working Capital Fund
UPS	uninterrupted power source
USPS	U.S. Postal Service
USTRANSCOM	U.S. Transportation Command
WPS	Worldwide Port System