Coordinating Military Deployments on Roads and Highways: a GUIDE for State and Local Agencies

May 2005

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David Keever and Julie Soutuyo	

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
	NOTE: volumes greater than 1000 L shall be shown in m^3			
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
ºF	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	ºC
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
ºC	Celsius	1.8C+32	Fahrenheit	ºF
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.

May 2005

Road and Highway Deployment Planners and Operators:

Recent world events have required a greater use of U. S. based military assets. The U.S. Department of Defense (DoD), other government agencies, and commercial vendors have responded to this challenge by moving materiel and personnel rapidly and safely to meet military needs, contributing significantly to the success of military operations worldwide.

This rapidly changing environment has created new and unanticipated challenges for effective military deployment, particularly in coordination between Federal, State, local, and military planners and operators during domestic military deployments. To meet these challenges, the Federal Highway Administration (FHWA) and, on behalf of the DoD, the Military Surface Deployment and Distribution Command (SDDC) worked together to create a primer on military deployment practices for State and local agencies. It is hoped these agencies will find this guide particularly informative. The guide offers useful checklists, guidance, and recommendations for coordination among agencies and organizations before, during, and after deployments.
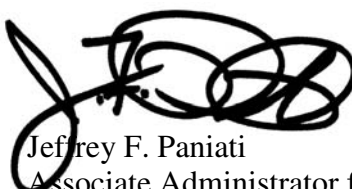
We realize there is no "one size fits all" solution to coordinating highway and road movements. This guide, based upon recent lessons learned, is meant to provide information for planners and operators at all levels, to assist those who are less familiar with this important aspect of supporting national defense, and to improve the planning and operations capabilities of those new to deploying forces on roads and highways.

The guide is being distributed in multi-media formats to each State; Puerto Rico; Washington, DC; and key military deployment agencies. It is also available electronically at the FHWA (http://www.ops.fhwa.dot.gov/opssecurity) and SDDCTEA (http://www.tea.army.mil) websites. As always, we welcome your comments, which can be directed to the FHWA Emergency Coordinator at 202-366-4628 or the SDDCTEA Highways for National Defense Coordinators at 757-599-1117.

Sincerely yours

William J. Cooper
Special Assistant for Transportation Engineering
Military Surface Deployment and Distribution
    Command Transportation Engineering Agency

Jeffrey F. Paniati
Associate Administrator for Operations
Federal Highway Administration

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INTRODUCTION AND PURPOSE OF THE GUIDE

For the past several years, the Federal Highway Administration (FHWA) has worked closely with the Military Surface Deployment and Distribution Command (SDDC) Transportation Engineering Agency (TEA) to improve support of military mobilization. The principal objective of this effort is to provide States with adequate coordination procedures to support military deployments while managing civilian traffic during national security emergencies. Successful coordination procedures and plans will ensure that the highway system operates effectively to meet military deployment and traffic emergencies.

PURPOSE OF THE GUIDE

The purpose of the guide is to assist States in developing and/or updating emergency operations plans or Emergency Highway Transportation Regulation (EHTR) Plans, where applicable. This guide provides useful information regarding military deployment concepts, State and local roles and responsibilities, recommended coordination procedures, and a number of special considerations such as communications capabilities, the use of intelligent transportation system (ITS) technologies, and an increased awareness of force protection measures. The guide offers generic procedures for States to adopt in whole or in part when revising existing operations plans in preparing for and coordinating requirements during any national security event or emergency situation.

TYPICAL USERS OF THIS GUIDE

This guide is written primarily for officials responsible for the development, coordination, implementation, and maintenance of State transportation emergency operations plans, including emergency response coordinators, traffic operations engineers or planners, and security specialists. The guide also contains information applicable to other functions and activities, such as commercial vehicle permitting, traffic engineering, incident management, ITS planning and operations, and law enforcement. Individuals involved in these processes should be consulted during the development of coordination procedures or plans.

The guide is generic and applicable to any State, but certain States have critical military installations and/or seaports that require a higher degree of coordination between State agencies and military installations. Consequently, the State Department of Transportation Emergency Response Coordinator (or the person responsible for developing procedures or plans) must coordinate with the appropriate military agencies, port organizations, and other State and local agencies, e.g., departments of public safety, offices of emergency management, and the National Guard to determine if current procedures differ from what is contained in this guide and make changes where necessary.

HOW TO USE THIS GUIDE

This guide will enable planners and operators to understand the basic facts and procedures associated with military convoy movements, to develop or update State procedures or plans, and to be aware of and address special circumstances or conditions. Development of procedures will require interaction and concurrence with other agencies and organizations. The final approval and dissemination of the coordination procedures or plans will necessarily follow State agency policies.

ORGANIZATION OF THIS GUIDE

The main body of the guide describes key agency responsibilities and relationships, essential convoy activities, and recommended coordination procedures to ensure successful updates to existing plans. A section on special considerations and the appendices offer extensive background information and references. This guide is designed to serve as a quick reference document for State and local agencies and to encourage these agencies to use the guide to improve their preparedness for major deployments or national security emergencies.

Chapter 1 provides a general overview of the changing global nature of the military mission and the increased requirement for rapid military deployments. Chapter 2 is an overview of the roles of the six key agencies and organizations that have a significant function or responsibility in military deployments. Chapter 3 offers typical activities and considerations to prepare for and implement a major deployment and convoy movement. Chapter 3 also discusses special situations that may require additional coordination and response efforts, including rerouting a convoy, incident management, equipment failure, and convoy security. Chapter 3 concludes with a series of questions that agencies should use to assess their procedures before the actual convoy movement. The self-assessment questions may not apply to every situation or every State, but they can assist State agencies in asking pertinent questions to refine their plan. Chapter 4 presents a five-step framework for developing or updating procedures or plans. Chapter 5 contains a detailed examination of circumstances that are more challenging and provides potential options for mitigation: current concepts of force protection, telecommunication interoperability issues, current and future technology enhancements, and ITS that could be used during military emergencies or similar events for traffic operations.

The appendices include key terms, acronyms, and references. A detailed section on convoys will give State agencies a better understanding of how the military typically organizes convoys and how convoys operate on the roadway. The appendices also include a matrix listing military installations that are the main sources of equipment, their locations, and the commercial seaports and aerial ports that may be used for deploying forces and equipment.

The contents of this guide were collected from literature reviews, interviews, and a series of multiagency exercises conducted between 2002 and 2004. Each exercise allowed for approximately 35 representatives to explore the full range of military deployment needs in the context of transportation and public safety operations. Representative States included Texas, Louisiana, Virginia, North Carolina, Georgia, and Washington.

CHAPTER 1. INTRODUCTION TO CURRENT MILITARY DEPLOYMENT CONCEPTS

The U.S. military has changed significantly to meet the challenges of our uncertain world. An understanding of the evolving international environment, the national security strategy, and the capabilities required for full-spectrum dominance have guided the military's transformation from a forward-deployed Cold War force to a capabilities-based, power-projection force located largely in the United States. The military has reduced its size, redistributed its forces, closed and realigned bases, reorganized its overseas equipment prepositioned, and improved active and reserve component integration to become leaner, more versatile, and more deployable.

Increased deployment activity has become the normal operational standard within the continental United States, which may regularly affect the planning and operations for State Departments of Transportation (SDOT). As a consequence, all States are experiencing increased cross-State movements of military assets with destinations beyond State borders. Within a State with major military installations, such as those with power projection platforms (PPP), current deployment strategies may require 24x7 operations with enhanced security for increased equipment and personnel movements.

This chapter provides a broad overview of current military doctrine and policies relevant to military deployments on public roads. The range of size and scope for deployments is discussed, including preferred travel modes and recent lessons learned. The major agencies and organizations are introduced, with greater definition of roles and responsibilities to be examined in chapter 2. Finally, the role of advisory systems and implications for military deployment are presented.[1]

CURRENT MILITARY DEPLOYMENT STRATEGY

Strategic mobility and readiness are keys to the military's ability to project power worldwide. Each of the military services—Army, Navy, Air Force, and Marine Corps, as well as their component Reserve, National Guard, and Coast Guard counterparts—has made great strides in implementing the specific recommendations of the congressionally mandated 2001 Mobility Requirements Study and more recent findings from Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) as well as the Global War on Terrorism (GWOT).

The ability to deploy equipment and personnel rapidly is an imperative of the national military strategy. That strategy expects the military to defend the homeland, deter aggression in four regions of the world, swiftly defeat adversaries in two other conflicts, and conduct a limited number of small operations. Implied in these missions is the requirement to deploy forces within the United States and from the United States to anywhere in the world.

To assist the military services in their planning and better prepare for future operations, the Department of Defense has established an objective of being able to deploy to a theater within 10 days sufficient combat power to defeat an enemy during the next 30 days and be ready for the next fight within another 30 days. Key to meeting these deployment goals is the capability of units to move rapidly from their installations to land, sea, and aerial ports of embarkation or to designated locations within the United States.

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[1] As is typical in military discussion, numerous abbreviations are employed. Appendix C provides a list of key terms and definitions relevant to military deployments on public roads. Appendix D provides a list of acronyms used in this document.

Military units use various methods to move equipment and personnel to seaports. Heavy equipment usually will be shipped by rail; however, some equipment must be deployed on public roads, either driven by military personnel or consigned to commercial carriers, to arrive at the seaport on specific dates and times for loading onto ships. When the military uses public roads, it organizes the equipment into convoys for control and protection. Appendix B provides detailed information about the military's organization of convoys and standard highway procedures for convoys.

Insights from OIF highlight the dynamic and changing nature of military deployment needs. During the spring of 2003, shipment volumes of military assets from military installations through the nation to strategic seaports increased 29 percent. This increase created a 15 percent increase in required truck capacity just for military needs.[2] For certain States with destination ports, the increase in truck volume was greater than 15 percent because vehicles were traveling from multiple States to a designated port within a State. Consequently, some States with PPPs became concerned about regional and local roadway congestion and extended hours of operation involving greater than average volumes.

Figure 1. DOD Uses Special Heavy Equipment Railcars Known as DODX Cars

Rail carriers experienced similar volume increases. While most rail carriers accommodated the increased demand for their services between military installations (with rail connections) and ports, logistical and operational issues in selected regions of the country prevented certain equipment from moving by rail. For example, some military installations did not have rail accessibility but needed to move assets. Also, the special rail cars used for transporting military assets ("X-cars") were not always available in convenient locations, creating additional shortfalls in rail capacity. Figure 1 illustrates a typical use of DoD X-cars. While rail operations were generally successful, operational and capacity shortfalls required truck carriers to complete the deployment mission, resulting in the addition of commercial carriers on the public roadways.

Industry, government, and military leaders have discussed and prioritized planning and operational lessons learned for all transportation modes. Their recommendations sometimes apply to

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[2] Transportation Research News, March–April 2004, pp. 6-10.

specific sectors, such as maritime, air, rail, or highway. Others recommendation call for appropriate and updated coordination among several agencies or sectors. This guide has been developed to help address one of these key coordination areas—military deployments—which require the use of public highways. As one State Department of Transportation chief engineer indicated, he wanted to make sure that he was doing everything possible to ensure safe and efficient military deployments—not cause any delays or unsafe travel on the public roadways.

DEPLOYMENT COORDINATION AND COMMUNICATION

A variety of Federal, State, regional, and local agencies as well as commercial firms are involved in moving military assets on public roads. Figure 2 depicts the Federal and State agencies that are normally involved in military deployments on public roads.

In general, the military defines its own deployment needs. The military coordinates these needs with local military installations, commercial carriers, and State and local agencies, as appropriate. The response by State and local agencies requires an understanding of military coordination and communication protocols. Subsequent chapters will provide greater detail on these roles, responsibilities, and interaction points.

The SDOT is primarily responsible for planning, operations, and maintenance of public roads; the State Department of Public Safety (SDPS) works with transportation agencies (State, city, and local) to maintain and enforce public safety on roadways. During certain military deployments, public safety agencies may assist through normal procedures and protocols; however, under special circumstances, the military may need enhanced assistance from the SDOT and SDPS. These special circumstances are discussed in greater detail in chapters 3 and 5.
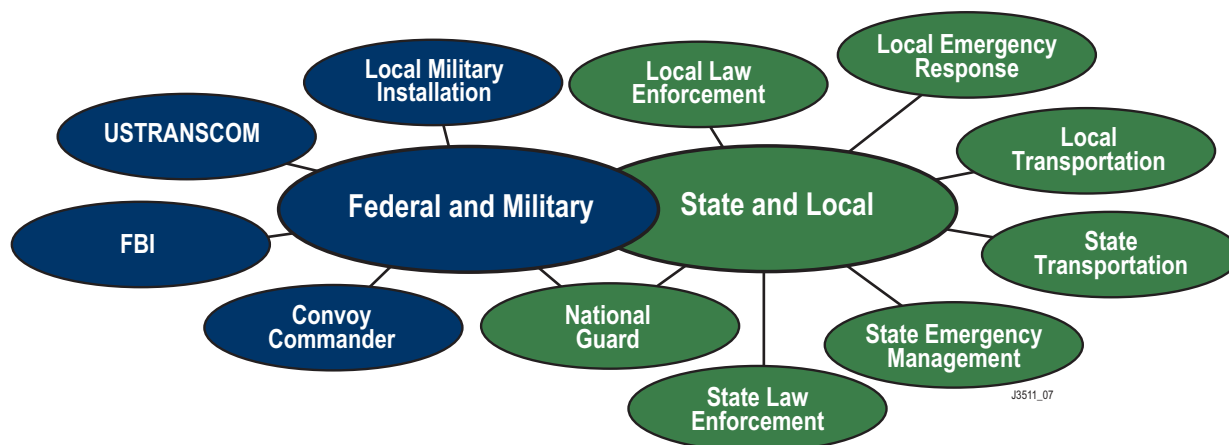
**Figure 2. A Variety of Organizations Are Essential to
Effective Military Deployment Operations**

FEDERAL AND MILITARY THREAT LEVELS AND ADVISORY SYSTEMS

Many agencies are building response plans around threat level and advisory systems. At the time of publication, the Department of Defense (DoD) and the Department of Homeland Security (DHS) use two separate but similar advisory systems that fulfill vital and specific requirements for a variety of situations. The Homeland Security Advisory System (HSAS) provides a national framework for these systems, allowing government officials and citizens to communicate the nature and degree of terrorist threats by characterizing appropriate levels of vigilance and readiness in a series of graduated threat levels. The protective measures that correspond to each

threat level will help the government and citizens decide what action to take to help counter and respond to terrorist activity. Figure 3 provides an illustration of the HSAS advisory system and compares it to the standard DoD advisory system. The two agencies are working to reconcile and confirm the consistency and response for each level.

This guide assumes that military deployments are activated during threat-level conditions of low (green) to elevated (yellow). More extreme national security situations or emergencies (orange or red) will require enhanced coordination and communications, which this guide does not address. State agency responses to such large-scale events may be found in State Emergency Response or Emergency Management Plans.

Increasing Severity

	Green	Blue	Yellow	Orange	Red
Federal Alert System	Refine and Exercise Preplanned Protective Measures (PM)	Check Communications with Designated Emergency Locations	Increase Surveillance of Critical Locations	Coordinate Necessary Security Efforts with Armed Forces or Law Enforcement Agencies	Assign Emergency Response personnel and Pre-Position Specially Trained Teams
	Ensure Personnel Receive Training on HSAS and Agency-Specific Protective Measures	Review and Update Emergency Response Procedures	Coordinate Emergency Plans with Nearby Jurisdictions	Take Additional Precaution at Public Events	Monitor, Redirect, or Constrain Transportation Systems
	Assess Facilities Regularly for Vulnerabilities and Take Measures to Reduce Them	Provide the Public with Necessary Information	Assess Protective Measures Within the Context of Current Threat Information	Prepare to Work at an Alternate Site or with a Dispersed Workforce	Close Public and Government Facilities
			Implement, as Appropriate, Contingency and Emergency Response Plans	Restrict Access to Essential Personnel Only	Increase or Redirect Personnel to Address Critical Emergency Needs
Military Threat Condition	Standard Military Facility Operations	Possible Danger to Facilities and Personnel	Increase Visibility of Security Personnel	Facility Security Force on a High State of Alert	Localized Area of Highest Security Where Attack Has Occurred or Is Extremely Probable
		Limited Noticeable Effect on Normal Operations		Access to Facilities May Be Restricted to Authorized Personnel	Avoid Such Areas Unless Absolutely Necessary
		May Be the Default Level of Facility Security		Close Inspection of Credentials Will Be Required	
	Normal	Alpha	Bravo	Charlie	Delta

Side labels (Federal Alert System): Low, Guarded, Elevated, High, Severe

Figure 3. A Comparison of the Current Federal Alert System and the Military's Threat Condition System

CHAPTER 2. ROLES AND RESPONSIBILITIES OF KEY STATE AND LOCAL AGENCIES DURING MILITARY DEPLOYMENTS

Many agencies outside of the formal military structure play a critical role in ensuring that the military deploys safely and efficiently with minimal impact to traditional highway traffic. This chapter describes the six major agencies directly involved in military deployments. For each major agency, individuals essential to effective deployments are identified along with their primary responsibilities. Opportunities for collaboration and coordination within and across agencies are discussed. The roles and responsibilities of the State agencies that assist in this mission (described in this section) span multiple agencies, require interagency coordination and partnering, and include activities such as:

◆ Supporting normal agency functions.
◆ Responding to special requests for traffic management and control.
◆ Augmenting traffic operations during special circumstances by providing additional agency resources and personnel.
◆ Increasing agency responsiveness and filling special roles during periods of heightened security or critical need.
◆ Contributing to maintenance and/or restoration of public order and services associated with military deployments during emergencies.

Figure 4 identifies the six key agencies involved in the overall process. In addition to primary roles and responsibilities of each agency, this section helps to delineate their major coordination or interaction points. As the figure indicates, each agency contributes to the effectiveness of military coordination plans and procedures. Roles vary and include multiple levels of support for coordination, planning, resource and asset preparedness, operational assistance, contingency response, and performance assessment.
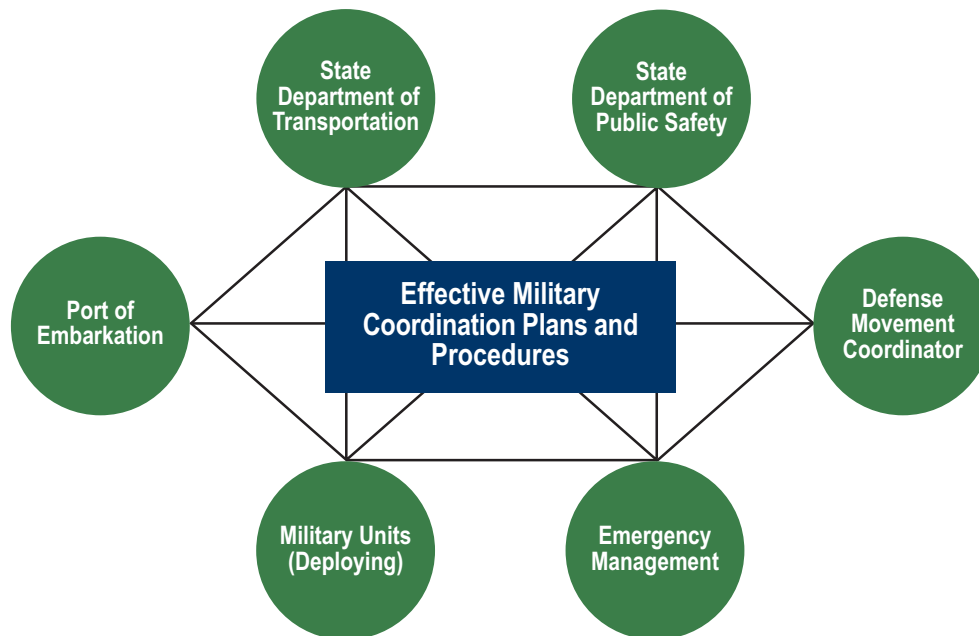
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**Figure 4. Effective Coordination Procedures or Plans Require
a Collaborative Effort Among Six Key Agencies**

STATE DEPARTMENT OF TRANSPORTATION (SDOT)

In general, the SDOT ensures that highway operations are available to meet public and military needs in the event of a national security emergency. To accomplish this, SDOT offices coordinate with both the Federal Highway Administration (FHWA) and military transportation organizations such as the SDDC TEA to receive guidance and policy to ensure that State transportation programs are addressing current civilian and military requirements. While the emphasis in this subsection is on SDOT, similar functions may need to be performed by city and local transportation agencies, depending on a region or State's jurisdictional responsibilities for the public road network. During a national security emergency involving a military deployment, the SDOT plays a primary role by ensuring the desired routes are passable for the types of equipment and volumes and by issuing permits to the military for vehicles using the State roadway system. Because some military vehicles are oversize and overweight by state/local limitations, it is critical that the SDOT assist in determining which routes (roads and bridges) will be able to support the equipment. The SDOT permit officer must coordinate closely with regional and district SDOT offices to ensure that height and weight clearance information is timely and accurate for every area through which a convoy may pass on both planned and contingency routes. Convoy permit requests are typically sent to SDOTs by the State Defense Movement Coordinator (DMC).

SDOT offices provide additional support for military convoy or Department of Defense (DoD) commercial movements. This support may include traffic advisories and information on construction work zone restrictions or closures, traffic-related weather advisories, conditions at public rest areas/rest stop/ refueling locations, incidents that may affect convoy timeliness, and the locations and times of recurring traffic congestion. The permit officer (or designee) must also be available throughout a convoy deployment in the event new or revised permits for oversize/overweight vehicles are needed as an approved route becomes impassable. Figure 5 shows an example of a special-use military transporter.

Figure 5. Example of a Heavy Equipment Transport (HET) System Vehicle in Action

SDOT traffic engineers assess and monitor traffic capacity and operations on designated or preferred deployment routes. Through traffic monitoring techniques and estimates of military or DoD commercial vehicular volumes, the traffic operation specialists are able to ensure military needs are met without disrupting general civilian traffic. Many Intelligent Transportation System (ITS) devices, including Traffic Management Centers (TMC), may be utilized to assist in monitoring traffic conditions and conveying critical and timely information to both military and civilian drivers. A more detailed discussion of ITS technologies is presented in chapter 5. Figure 6 illustrates one example of an ITS application.

Figure 6. State DOTs Have New ITS Options to Assist Highway Operations

STATE DEPARTMENT OF PUBLIC SAFETY AND LAW ENFORCEMENT AGENCIES

The objective of the State Department of Public Safety (SDPS) and law enforcement agencies is to ensure public safety. The SDPS would respond to a travel management incident involving a military convoy outside of a military installation in the same manner as it does for any situation. As the SDPS is often called upon to support routine military convoy movements, it also plays a critical supporting role during a national security emergency. Usually State and local law enforcement agencies are not manned or equipped to provide convoy protection against possible terrorist attacks. However, under the extreme circumstances of public safety, assistance from Federal agencies—FBI, Bureau of Alcohol Tobacco and Firearms (ATF), etc.—may be needed, and State and local law enforcement may also be called upon for assistance.

State Law Enforcement

The primary mission of State police during a military deployment is the same as their everyday mission: to enforce safe driving rules and traffic regulations on highways. Additional responsibilities for State police during military deployments include:

◆ Ensuring that convoys are not creating safety hazards to civilian traffic or themselves due to unsafe practices.

◆ Providing convoy movement control when requested by the military, such as convoy escort through congested areas or around hazards, as well as traffic signal controls for improved flow.

◆ Coordinating with State or regional SDOT Operations Centers (as necessary).

◆ Providing convoy accident or incident assistance.

◆ Assisting with public relations and public information.

◆ Providing reroute or detour recommendations.

◆ Relaying communication between the convoy commanders and their military movement control centers through local, State, or regional law enforcement dispatch centers.

Local Law Enforcement

Local law enforcement agencies provide support to convoys within their jurisdictions similar to that which State police provide. They may provide convoy movement control when requested by the military, such as convoy escort through congested areas. They may also assist in intersection clearance or synchronized traffic control and respond to accidents or incidents that involve convoys. Local law enforcement is often a critical communication link for information that needs to be relayed between the convoy commanders in the field and the installation Provost Marshal Office.

EMERGENCY MANAGEMENT

Local, State, and regional emergency management (EM) agencies are responsible for supporting activities of emergency responders. That support may be providing resources (equipment, supplies, and manpower), communications, or coordination. The same responsibilities exist during convoy operations. Depending on the laws of the State, the governor or designated agency representatives may activate local, State, or regional Emergency Operations Centers (EOC) to provide 24-hour support to the deployment process during a national security emergency. The EOCs have enhanced communication capabilities and interoperability and can be used to coordinate all facets of convoy support and response. It is recommended the EM community work closely with the traffic engineering and operations community in an overall response and supporting role for military deployments.

Emergency management agencies are responsible for:
◆ Monitoring general conditions affecting public safety.
◆ Coordinating emergency response actions involving the convoys.
◆ Providing communications support for law enforcement, fire, HAZMAT, and EMS operations in relation to convoy operations.
◆ Assisting with public relations and public information.
◆ Providing resources in support of emergency responses and recovery.

STATE DEFENSE MOVEMENT COORDINATOR

The State Defense Movement Coordinator (DMC), appointed by the State Adjutant General, is the key link between the military and SDOT. The DMC is a National Guard position and the office is considered part of the State Area Command (STARC). The DMC is the military's single point of contact for receiving approval from the SDOT for highway permits and convoy clearance requests. The primary responsibilities of the DMC are:
◆ Operating the State Movement Coordination Center (SMCC) for the purpose of receiving and approving convoy movements on public highways. Within the SMCC, requests for convoy movements will be scheduled and conflicting movement requests will be reconciled.
◆ Completing and monitoring cross-State coordination as required.
◆ Establishing a liaison position at the military installation for large-scale movements.
◆ Planning convoy movements through an automated system—the Mobilization Movement Control System (MOBCON).
◆ Providing a Convoy Movement Order (CMO) for all convoys that comply with civil laws and military regulations.

The DMC verifies the validity of the convoy request, ensures alternative means of movement are not available, and coordinates with State, local, and toll authorities (as appropriate) to obtain civil permits necessary for the requested move. The DMC receives requests for special hauling permits from the deploying installations. The Transportation Branch of STARC works directly with the SDOT to obtain special hauling permits for military oversize/overweight equipment.

The DMC requires that convoys have a Request for Special Hauling Permit for each oversize/overweight vehicle attached to the CMO.

MILITARY DEPLOYING INSTALLATION OFFICES

Four major offices at the deploying installation have a responsibility for convoy formation and successful, safe deployment to the destination. While State agencies have direct contact primarily

with the DMC, an understanding of these four offices will assist State agencies during abnormal or special circumstances.

Directorate of Logistics

At the installation, the Directorate of Logistics (DOL) plans and coordinates the military deployment resources for the pending deployment. Every military organization with a role in the deployment process coordinates information with the DOL, which is usually responsible for planning convoy routes in advance of convoy movements, establishing convoy support along those routes (resting areas, refueling, and lodging), staffing positions along the routes, and coordinating all physical movement of equipment during a deployment. The DOL coordinates unit convoy requests and submits the requests to the DMC for convoy clearance and special permits. In addition, the DOL procures commercial highway carriers for movement of supplies and equipment not carried on military vehicles. Therefore, coordination between the DMC and DOL is needed to properly identify and inform other State agencies of the full range, number, and types of vehicles that will be deployed.

Provost Marshal

The installation provost marshal (PM) is responsible primarily for coordinating civilian law enforcement support to convoy operations. The PM contacts State police, sheriff's departments, and local police departments along the convoy route to coordinate law enforcement assistance when the convoy crosses congested areas, as well as when threat conditions or intelligence data indicate that extra vigilance is warranted.

Convoy Commander

Each convoy will be organized under the control of a convoy commander. After the convoy is released by the DOL office, the convoy commander is in charge and should have contact with all subordinate commanders during the movement. The convoy commander would be in direct contact with State agency field personnel for local or regional information pertinent to the convoy movement. (See Appendix B–Convoy Facts.)

Public Affairs

The installation Public Affairs Office (PAO) coordinates all media actions and is the single point of contact for deployment information available for public release. State and local agency public information offices should maintain contact with the military installation PAO so that deployment facts given to the public remain accurate and consistent.

COMMERCIAL SEAPORTS OF EMBARKATION

Typically, the destination for military convoys is a commercial seaport for loading on Military Sealift Command (MSC) ships for overseas movement. When the destination is a commercial seaport, additional agencies have a primary role in supporting the moving convoys. These agencies, as described below, have the responsibility of ensuring the commercial seaport is able to absorb the volume and types of convoys so that the time spent on public roads or in port staging areas is minimized.

SDDC Transportation Battalions

SDDC Transportation Battalions (TBN) are responsible for assisting the military unit by ensuring the equipment to be convoyed to a seaport is best configured for loading onto the ship. The SDDC TBN sends personnel to assist at the military installation and the seaport. TBNs are

located across the United States, and each TBN is responsible for a certain number of seaports. In coordinating with the seaport to plan for large military deployments, port planning orders (PPO) are developed to ensure sufficient space and berths are available for arriving military equipment and ships. Five Army transportation battalions support the DoD port deployment process:

◆ 832nd Transportation Battalion, Jacksonville, Florida.
◆ 833d Transportation Battalion, Seattle, Washington.
◆ 834th Transportation Battalion, Military Ocean Terminal, Concord, California.
◆ 841st Transportation Battalion, Naval Weapons Station, Charleston, South Carolina.
◆ 842nd Transportation Battalion, Beaumont, Texas.

Port Support Activity

The Port Support Activity (PSA) is an office run by an onsite member of the DOL staff from the deploying installation. This operational and organizational configuration enables the DOL's direct involvement with the convoy from deployment notification until the material is loaded for transport. Within the port, the PSA representative reports to the SDDC TBN and is responsible for:

◆ Obtaining lodging and return transportation for convoy drivers and assistants.
◆ Ensuring the equipment is marked, labeled, and prepared for loading.
◆ Communicating changes in port status to TBNs.

Military Sealift Command

Military Sealift Command (MSC) has the primary responsibility of ensuring that ships (vessels) arrive to meet the deploying units at the port by the time specified in the port call order. If the correct ships are not able to reach the berths for loading, there will be a backlog of equipment at the port, creating a backlog of convoys on the roads and storage areas in or surrounding the port. It is imperative the correct ships are available at the correct time to match the arriving units.

The Commercial Port Owner/Operator

Commercial ports designated by the military as strategic ports have been issued a port planning order (PPO) by Maritime Administration (MARAD) at the request of SDDC. Consequently, these designated commercial ports will provide staging areas and berthing facilities for military operations, and assist in obtaining contracted labor for large-scale military deployments. Generally, there are no financial incentives in receiving a designation as a strategic port. The port negotiates military activities in the areas designated for the commercial operations. In this case, it is critical

Figure 7. After Arriving at the Seaport, Equipment Such As This Truck Is Loaded onto MSC Ships for Overseas Movement

that the commercial port receives an advance notification from SDDC of arriving military cargo. Figure 7 depicts a common port-side operation.

SPECIAL SITUATIONS

Commercial seaports deploy and redeploy the majority of military assets, and, as a result, they have formal organizational structures to support these complex operations. Occasionally, military assets are deployed to other locations such as:

◆ *Aerial Ports of Embarkation (APOE)*—used when cargo is time sensitive and is able to be transported by air. The military often uses organic (military) facilities to conduct airlift operations, so the impact on public roadways is often minimal.

◆ *Military Depot and Contractor Repair Facilities*—equipment that has been deployed often needs to be repaired back in the United States and prepared for redeployment as needed. This often creates an unexpected cycle of large military equipment moving in and out of remote depot repair or contractor service facilities via rail or commercial carriers. The effects on public roadways tend to be local/regional. Public roadway management is handled on a case-by-case basis between the depot repair manager and local authorities.

◆ *National Special Security Events (NSSE)*—under the National Response Plan (NRP), events within the United States may be designated as national security events and may require coordinated military deployments at the State or Federal level to provide additional security. These deployments are coordinated on an as-needed basis through emergency management agencies and the military in the region.

◆ *Temporary Military Staging Locations*—military installations may experience high-volume movements of military equipment and/or personnel to meet logistical schedules or training requirements. These movements are generally coordinated with the DMC.

CHAPTER 3. TYPICAL MILITARY DEPLOYMENT MOVEMENTS ON PUBLIC ROADS

National security strategy and, more recently, the global war on terrorism have increased the requirement for military deployments. Planning for national emergencies may require military forces to convoy to military seaports or aerial ports of embarkation for foreign deployment. Military national security missions may also require forces to convoy within the United States to protect borders, high-value targets, or critical infrastructure. This scenario requires every State to be prepared to facilitate and support the movement of military forces through their State to port locations or to DoD mission assignments.

Planning for military deployments requires an understanding of deployment concepts and processes. State and local agency planners will find this chapter useful for understanding convoy terminology and concepts. Detailed supplemental materials about convoys are provided in Appendix B. This chapter begins with an overview of military deployment concepts. Subsequent sections highlight which agencies are involved at different points of a typical military deployment and provide a set of actions for supporting agencies to consider when developing procedures or plans. Self-assessment questions are enclosed at the end of this chapter for State agency reference. These questions may help agencies better prepare for a national emergency involving military convoys.

National emergency military deployment plans and procedures should document the convoy support process and provide a basis for training and execution. To complete the planning process, plans and procedures must be tested and adjusted annually (even more frequently if the volume and expected demand for military deployment is higher than historical averages) through periodic drills and exercises. Moreover, as State agencies develop and respond to requirements for the National Incident Management System (NIMS), these procedures will likely be integrated with or annexed to local, State, and regional plans and programs. Figure 8 illustrates the key ingredients for well-coordinated and executed military deployments.

Desired Characteristics of Military Deployments	Military Deployment Plans and Procedures That Are:	Well Coordinated and Executed Military Deployments
◆ Safe ◆ Efficient ◆ Secure ◆ Reliable ◆ Minimal Impact on Civilian Traffic	**Depend upon** → ◆ Current and Documented ◆ Coordinated Across Agencies ◆ Tested	**Result in** →

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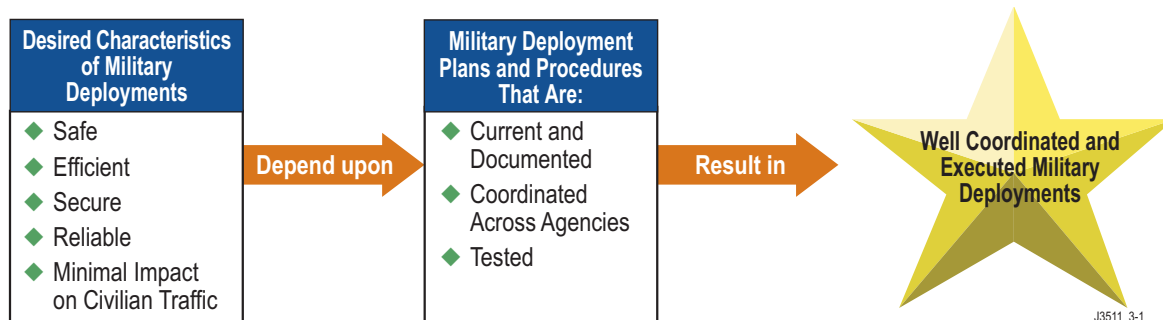
Figure 8. Factors Affecting Well Coordinated and Executed Military Deployments

MILITARY ROAD DEPLOYMENT CONCEPTS

State and local agencies involved in convoy support should be familiar with the many facts concerning convoys. This section covers some convoy-specific information.

In general, civil highway authorities set limits on vehicle weight, length, width, and height to ensure highway safety and to prevent infrastructure damage. Moreover, DoD policy states that they will not undertake vehicle movements that exceed legal limitations and regulations or that subject highway users to unusual hazards without permission from State, local, and/or toll authorities. Special provisions that apply during a national defense emergency and other critical defense movements follow:

◆ During emergencies, permit requests may be made by the most expeditious means of communication available.
◆ Oversize/overweight moves must be coordinated with civil authorities to ensure selected routes are passable.
◆ Because convoys typically cross State boundaries, these moves require multistate coordination across various agencies.
◆ If urgency dictates, these moves may be made without prior written permits from civil authorities. However, all requests should later be confirmed in writing.

Convoy Planning Factors

Mission, threat, troops, terrain, and time constraints set specific planning factors and influence how the convoy will be operated and controlled, but the process of planning and organizing convoys remains constant. Other information that may be requested by State support agencies for planning includes:

◆ *Destinations*—Are the convoys going to a single location or to multiple locations? There are seaports and aerial ports for overseas deployments, railheads for overseas and domestic deployments, and major interstate junctions for deployments to missions within the United States.
◆ *Mandated arrival times*—When must the convoys arrive at their destination? This information is required for "backward" planning to determine when convoys must leave their post and when they will arrive at rest stops and congestion points.
◆ *Rest/refuel stop locations*—Rest/refuel stops may become congested as convoys enter and leave the roadways into and from the rest/refuel stops. Rest/refuel locations also must be able to accommodate the volume of traffic without adversely affecting civilian services, if applicable. Some States restrict convoy stop points at public rest areas if convoys are estimated to consume more than 50 percent of rest area resources (space, parking facilities, etc.). State agencies may require additional support at specific locations to support convoy movements depending on the alternatives.
◆ *Number and types of vehicles in the convoys*—On average, military convoys move in groups of 15–20 vehicles and may be repeated several times to complete the deployment need. There is typically a gap of 30 minutes between groups. This information could be used in public information releases, as appropriate. The number and types of vehicles also help determine the need to place local law enforcement on notice or on duty for support through congested areas.
◆ *Length, width, and weight of largest or heaviest vehicles in each convoy*—This information is used to determine the need for special routing instructions for convoy vehicles and to ensure that vertical and horizontal clearance of potential obstacles and roadway weight limitations on the planned route are met.
◆ *Convoy vehicle driver training certification*—The military requires that all drivers must be certified to drive the vehicle they are assigned (military versions of Commercial Drivers License [CDL]).
◆ *Load types (hazardous materials [HAZMAT], ammunition, fuel, general cargo, personnel, etc.)*—This information is used to identify possible hazards to the public that may require alerting uniquely skilled emergency responders. Advanced planning may require additional or specialized training for emergency responders to deal with military hazards.
◆ *Possible routes to destination*—Primary and alternate routes for use by routine and oversized/overweight convoys should be identified in advance. Many SDOTs have a State highway network database or resident expertise that will identify:

> — Routes suitable for convoy use, with speed and route selection factors designated for each.
>
> — Route restrictions for weight, height, width, length, and cargo type.
>
> — Updated information on preferred route conditions such as work zones, incidents, abnormal delays, lane closures, toll facilities, etc.
>
> — Convoy rest areas, vehicle capacity, and use restrictions for each rest area.
>
> — Locations and access routes to and from DoD installations within the State, such as armories, reserve centers, active installations, training areas, etc.
>
> — Logistic support facilities for fuel, maintenance, subsistence, billeting, etc., necessary to support convoy operations.
>
> — Air and sea ports and major rail loading facilities.
>
> — Safe havens.
>
> — Special restrictions and/or regulations applicable to bridges, tunnels, and highways.
>
> — Field review or verification of planned and/or approved routes.

◆ *Real-Time Traffic Monitoring and Management*—A number of ITS technologies allow transportation operations to provide accurate and timely information about roadway conditions, estimated travel times, congestion conditions, and special events or unscheduled closures. This information may be consolidated at a TMC or Traffic Operations Center (TOC).

◆ *Traffic congestion areas and peak periods*—Pre-identifying high-traffic congestion areas and their peak periods will allow planners to effectively schedule or route convoys so they do not create more congestion. Short-range traffic congestion planning and management will identify where problem areas are and when conditions are likely to arise. Archived data may assist in developing traffic congestion profiles on preferred routes.

◆ *Weather conditions*—Pre-identifying areas where weather problems will severely impact convoy and traffic operations. These may be areas subject to heavy fog, high winds, severe flooding, heavy snow and ice, etc.

◆ *Quality of road networks (capacity, work zones, detours)*—Timely and accurate information on work zones, major incidents/events, or other network capacity restrictions will confirm the availability of designated routes for the types and volumes of vehicles. Figure 9 illustrates typical work-zone conditions, which may significantly affect military deployment operations.

Figure 9. Work-Zone Conditions Affect Military Deployments, Which May Inhibit General Traffic Operations

◆ *Communications*—Identifying capabilities, requirements, and protocols for communication among military commanders, defense movement coordinators, law enforcement officials, and convoy commanders on the move will smooth deployments. It is important to stay in contact with the military installation and DMC to identify changing military clearance requirements.

Many of these considerations can be addressed in overall State and local plans. Each convoy planning process also should address specifics such as types of loads, number and types of vehicles, oversized vehicle dimensions, and weather conditions.

Military convoys need to arrive at a particular location at a specified time. Time and distance factors are used to perform calculations for planning highway movements. Understanding time and distance factors is critical when planning a convoy; knowing the terms used in these calculations is critical to communicating with the military. (See Appendix B for additional information about the calculations.)

MAJOR PHASES OF A TYPICAL MILITARY DEPLOYMENT

Military deployments considered in this coordination procedures guide can be categorized into two major types: an orderly process based on a master plan involving time-phased events and highly coordinated activities or a rapid-response process to meet critical in-theater military needs. Most military deployments follow an orderly process in which sufficient time and coordination have occurred to allow State agencies to support—in the normal course of their business processes—these types of military deployments. The subsections below detail this orderly, phased process. Alternatively, rapid-response operations have less coordination time and fewer premovement details, resulting in after-hour and/or special-request coordination with State agencies. As a result of recent global deployments, such as Operation Iraqi Freedom (OIF), the accelerated deployment of military forces has become more frequent, requiring additional coordination and preparation among military- and State-agency representatives. In either case, military deployments can usually be viewed in three phases, with only the timeline being dramatically different.

The three major phases of a military deployment are warning order, notice to deploy, and convoy movements. A series of coordinated activities are triggered from the moment the military receives a warning order to the time that convoys arrive at their destination. This subsection describes which agencies are involved at which points of the process, what typically happens, and suggests guidance for supporting agencies if called upon to assist the military.

❶ Warning Order

A warning order for deployment is the formal mechanism the U.S. government—starting with the President and the Secretary of Defense—uses to alert the military that their assistance is required (or may be required) to defend the nation's interests. The order may be given to the military at any time. Warning orders are often given for situations that require military intervention. On occasion, warning orders are short-fused, meaning that everyone involved may have less time to prepare; this is often the case in the event of an unforeseen national security emergency. Other times, the warning order is part of a planned build-up of U.S. military forces in overseas locations to support extended military campaigns.

What Is Typically Happening at This Time

When the military receives a warning order to prepare for deployment, they perform a number of tasks: the military will begin to recall personnel to their duty stations; medical and personnel matters are updated and equipment is organized and checked for last-minute repairs; the commanding officer of the military installation will determine priorities and movement orders for the units assigned to that installation; and, finally, they will stand by until receiving a notice to deploy or the warning order is cancelled.

State Agency Guidance

Typically, there is little communication between State agencies and the military when the warning order is received. This is mainly because the military does not know precisely when—and if—convoys will be notified to deploy. Convoys may not deploy if world or national events

Key Agency Roles During Military Deployment	State DOT	State DPS	Emergency Management	State DMC	Military Installation	Commercial Seaport or Airport
Warning Order	S	S	S	S	P	S
P = Primary Role S = Support Role						

Figure 10. Key Agency Roles During the Warning Order Phase

change favorably. In other cases, the military may not reveal this information to outside agencies to keep the enemy unaware that the military is preparing to deploy. Figure 10 illustrates key State agencies' primary and secondary responsibilities during the warning order phase. All State agencies are in a secondary or supportive role during this phase.

During the warning order phase, there is little that outside agencies can do to assist the military aside from maintaining standard liaisons with the military and keeping their own transportation, public safety, emergency services operation plans and points of contact up to date.

Special Issues/Concerns for State Agencies During the Warning Order Phase

There are no special issues or concerns for State agencies during the warning order phase. A confirmation of contact lists and communication protocols should be made (if this has not been done in the past 3 months) as determined by agency procedure.

❷ Notice to Deploy

With a notice to deploy, the military receives a formal deployment notification through the same interagency communication channels as the warning order. The notification will State the types of unit required to deploy, the destination, and a specific time the units must be at this destination. The destination could be the final destination or a port of embarkation (POE), where the unit will be transported to a final destination. When the first destination is a POE, the notice to deploy is referred to as a "port call."

The notice to deploy creates a time sequence for the military known as N-hour (notification hour). Its designation comprises the letter "N" plus the elapsed number of hours since the notice was received. For example, N+4 is 4 hours after notification; if the military were notified to deploy at 7 a.m., then N+4 would be 11 a.m. The military uses this notation to plan and communicate deployment schedules.

What Is Typically Happening at This Time

When the notice to deploy is received, the military installation will establish operations centers based on the function of the military units supporting the deploying units. There may be separate military operation centers for convoy movement, military police, the installation as a whole, and the deploying unit. Others may be established as required and information is relayed among these operation centers. Final decisions are made about which pieces of equipment will move by air and rail and which will be formed into convoys.

The military installation's DOL will communicate with unit transportation officers to determine final unit equipment requirements. The DOL will then make final arrangements to receive additional railcars, schedule commercial highway transportation, and coordinate airlift requirements. The DOL will send requests for convoy movement to the DMC and formulate convoy schedules based on the results. Units will begin to form and be ready to deploy as soon as convoy movement orders are received. Once planned routes are determined to be feasible, the DOL will dis-

patch personnel to checkpoints along the designated routes, to rest/refuel areas, and to the SPOE or other final destination.

State Agency Guidance

The military will initiate any coordination required from State agencies when the notice to deploy is received. The SDOT has a primary role in processing special movement permit

requests for both military and commercial highway transport. Permits for military vehicles are submitted to the SDOT through the State DMC and permits for commercial transporters are initiated with the SDOT by the haulers. Therefore, the SDOT will have little (if any) direct interface with the military installation. SDOTs will work with the DMC to ensure the proposed routes are available and able to accommodate the type and volume of military equipment for the duration of the deployment. The SDOT will issue any special permits to the DMC, as appropriate.

Key Agency Roles During Military Deployment	State DOT	State DPS	Emergency Management	State DMC	Military Installation	Commercial Seaport or Airport
Warning Order	S	S	S	S	P	S
Notice to Deploy	P	S	S	P	P	S
P = Primary Role **S =** Support Role						

Figure 11. Key Agency Roles When the Notice to Deploy Is Received

The installation PMO will contact State and local law enforcement agencies for escort assistance through congested areas and for traffic signal device control to minimize delay, as needed. Depending on the nature of the deployment, the public affairs officer at the deploying installation may coordinate with State agency counterparts. A State agency's primary and secondary responsibilities during the notice-to-deploy phase are highlighted in Figure 11.

Special Issues and Concerns for State Agencies During the Notice-to-Deploy Phase

Most permit requests to SDOT involve oversize/overweight equipment; the SDOT may need to coordinate promptly with bridge and traffic engineers to determine appropriate routes for these types of vehicles. If the SDOT has a blanket permit for the military—based on planning and premovement coordination—and information is updated frequently (daily, for example), then all

parties may save time approving a primary route for the oversize/overweight vehicles. However, because a large number of vehicles may move through the State from other States and incidents could occur on blanket permitted routes, SDOT may need to quickly assess bridges and clearance data

Sample Steps Taken by TXDOT to Confirm Availability of Appropriate Routes

1) *EACH DISTRICT WILL DETERMINE HIGHWAY CAPACITY AND TONNAGE CAPACITY FOR THE AVAILABLE HIGHWAY AND PRIORITY ROUTES OR CORRIDORS WITHIN ITS JURISDICTION. FURNISH THIS INFORMATION TO THE STATE TRAFFIC REGULATION CENTER.*

2) *TXDOT PERSONNEL WILL PERFORM PERIODIC TRAFFIC COUNTS ON PRIORITY ROUTES TO DETERMINE WHETHER THE TRAFFIC VOLUME IS APPROACHING THE CAPACITY OF THE ROUTE. TRAFFIC MANAGEMENT CENTERS MAY BE ABLE TO USE ARCHIVED DATA AND REAL-TIME COUNTERS TO PROVIDE THIS INFORMATION. IF COUNTS SHOW THE NEED FOR CORRECTIVE ACTION, CORRECTIVE ACTIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE STATE AND DISTRICT TRAFFIC REGULATIONS CENTER*

(Abbreviated for Illustration Purposes)

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Figure 12. State DOTs Use Carefully Delineated Procedures to Ensure That the Highway Network Is Able to Support the Convoy Deployment Route

throughout any district that may have moving convoys. This assessment will allow efficient production of reroute permits. Figure 12 illustrates the procedures used by the Texas Department of Transportation to confirm the availability of high priority military deployment routes. SDOTs should conduct similar reviews of critical infrastructure and traffic operations. These reviews will require coordinated inquiries from headquarters/ centralized units with accurate and timely response from district and regional offices.

❸ Convoy Movements

Once the military convoy begins to move, it is subject to the same jurisdictional authorities as the general public. The main deployment goal is to move in the safest and most efficient manner to the destination; however, situations out of the convoy's control may occur: traffic incidents, severe weather conditions, and vehicles that break down. The military has procedures to follow when these situations occur (see Appendix B); however, the military may require assistance from different State and local agencies, too.

What Is Typically Happening at This Time

In the deployment phase, convoys move in orderly groups from the military installation onto public roads. The convoys generally will depart with 30 minutes between departures, but they may follow different routes depending on the size of the deployment, the vehicle types, the destination, and the convoy movement order received from the DMC. The agencies at the destination make final preparations to receive convoys and, if the destination is a SPOE, ships arrive or stand by to receive the equipment. Port managers clear sufficient port-side space or staging areas to support the military operations.

State Agency Guidance

The State DMC has a primary role of monitoring all convoy movements through the State and coordinating new information with the installation, the DOL, the destination, the SDOT, and the convoy commanders. If a multistate movement is required, the DMC at the originating State coordinates with the other State DMCs. The DMC does not directly interact with the SDPS or law enforcement, but circumstances that change the planned route should be communicated among all agencies involved. The commercial port also may modify port operations that could affect highway traffic with the SDPS or local law enforcement agencies. Figure 13 illustrates the key agency roles during deployments.

Key Agency Roles During Military Deployment	State DOT	State DPS	Emergency Management	State DMC	Military Installation	Commercial Seaport or Airport
Warning Order	S	S	S	S	P	S
Notice to Deploy	P	S	S	P	P	S
Deployment	S	S	S	P	P	P
P = Primary Role S = Support Role						

Figure 13. Key Agency Roles During Deployment

After planning and coordination during the notice-to-deploy phase, the SDOT Emergency Response Coordinator may determine that special traffic management is needed. During convoy movement, district personnel should be prepared to position manpower or equipment to assist with traffic control where needed. Guidelines for temporary traffic control and operations can be found in FHWA's Freeway Management Handbook and the Manual on Uniform Traffic Control Devices (MUTCD-2003). Depending on convoy volumes and general traffic conditions, traffic engineers may retime traffic signals or request DPS assistance in manu-

Figure 14. Special Traffic Control Devices May Be Needed During Convoy Movements

ally controlling traffic signals to maximize convoy flow in critical areas. Special signage or changes to dynamic message signs, as shown in Figure 14, may be needed. Coordination plans with State or local law enforcement should also be implemented. If public information announcements are appropriate, these broadcasts should be issued.

Special Issues and Concerns for State Agencies During the Deployment Phase

While convoys are moving, State agencies need to alert their 24x7 points of contact (TOCs, for example) that military deployments are underway. If services are needed from the SDOT or State and local law enforcement agencies, access to current contact lists for agency personnel will be essential to reach key individuals in a timely manner. For example, if a convoy is traveling on a Sunday morning and must change its route, SDOT must have access to information on roadway and bridge conditions for any proposed reroutes to confirm their availability and suitability for the convoy. SDOT may require access to special maps, files, computer-aided design systems, and databases, which may require special access authority and training for the planner or engineer on call. This is one example of several possible contingencies that must be examined and tested during the development and update of coordination procedures or plans.

STATE AGENCY CHECKLISTS FOR TYPICAL MILITARY DEPLOYMENTS

The following checklists are designed to assist State agency personnel. The checklists are a reference and an indicator of which agencies may have lead responsibilities during convoy movements. Figure 15 addresses preparation for convoy movement. Figure 16 addresses communications, coordination, technology, and public safety. Figure 17 addresses reroutes, incidents, equipment, and security.

State Agency Military Convoy Deployment Checklist **Agency Preparation for Convoy Movement**	State DOT	State DPS	Emergency Management	State DMC
General Questions				
On what dates will the convoy(s) depart the military installation?	●	●	●	◆
What is the origin and destination of the convoy(s)? Final destinations, interim locations, or highway junctions?	●	●	●	◆
Will the convoys be moving: 1. At night only? Daylight only? Around the clock? 2. During rush hour in or near major metropolitan areas? 3. Through other states?	◆	●	●	◆
What is the general threat condition level?	●	◆	◆	●
Are the convoys carrying hazardous material or ammunition?	◆	◆	●	◆
What is the weather forecast during the deployment period? (Clear, floods, heavy rains, fog)	●	●	●	●
Do I need to increase staff levels to assist these deployment operations?	◆	◆	◆	●
What is the impact of the increased workload of commercial transport units, SDOT permit offices, and DMC/DOL personnel when transporting military equipment?	◆	●	●	◆
Will the deployment require support from the State emergency operations center?	●	●	◆	●
Have plans and coordination procedures been updated and recently tested?	●	●	●	◆
Route and Roadway Conditions Questions				
Intrastate Convoy Travel Routes				
Which routes are being requested by the DMC?	◆	●	●	●
Which districts will the convoys pass through?	◆	◆	●	●
Have those district representatives been notified?	◆	◆	●	●
Are the bridge and roadway conditions current in each district?	◆	●	●	●
Has the bridge and roadway conditions information been shared/disseminated to those who need to know?	◆	●	●	●
Interstate Convoy Travel Routes				
Will the convoys be traveling to other States?	●	●	●	◆
Are there convoys originating from other States that are planning to travel here or through here?	●	●	●	◆
General Route and Roadway Factors				
Are there major construction sites or work zones on any of the routes?	◆	●	●	●
Are the bridge and road conditions on the selected routes acceptable based on the requests?	◆	●	●	●
Will DPS or local law enforcement be involved in escorting the convoy through towns or on the highways?	●	◆	●	●
Which rest and refuel locations are requested? Can the convoy volume and timing be accommodated at these locations?	◆	◆	●	◆
Convoy Size and Volume Questions				
How many convoy formations will be involved and over what deployment duration?	◆	◆	●	◆
How many vehicles in each of the formations?	◆	◆	●	◆
What is the estimated march volume (average number of vehicles per day)?	◆	◆	●	◆
What will be the separation time (gap) between convoys?	●	◆	●	◆
Are there oversize/overweight vehicles in the convoy?	◆	●	●	◆
What is the widest clearance required?	◆	●	●	◆
What is the tallest clearance required?	◆	●	●	◆
How much does the heaviest vehicle weigh?	◆	●	●	◆
Are permits required for these routes and types of vehicles (oversize/overweight or special cargo)?	◆	●	●	◆
● = Information Exchange ◆ = Primary Agency Responsibility to Address				

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Figure 15. State Agency Checklist Part One—Preparation for Convoy Movement

State Agency Military Convoy Deployment Checklist **Communications, Coordination, Technology, and Public Safety**	State DOT	State DPS	Emergency Management	State DMC
Communications and Interagency Coordination				
Is there a formal, up-to-date communication plan for interagency communications?	◆	◆	◆	◆
Which other agencies are involved or need to be involved?	●	●	◆	◆
Who are the military and civilian points of contact?	●	◆	●	◆
How do I communicate with my points of contact? Is interoperability of equipment a concern?	◆	◆	◆	◆
How should they contact your agency?	◆	◆	◆	◆
How do I contact the military installation main operations center? Are there others I should contact instead?	◆	◆	◆	◆
Who is my point of contact there?	◆	◆	◆	◆
How can I contact a convoy on the move? How can I communicate with the convoy commander?	●	◆	●	◆
What is the best means for the convoy commander to contact a Traffic Management System?	◆	●	●	◆
Do the vehicles have a system for tracking and communications with the military installation?	●	◆	●	◆
Does the general threat condition affect my communications plan (need for secure lines, ability to teleconference, etc.)?	●	●	●	◆
Intelligent Transportation System (ITS) and Technology Aids for Convoy Deployment				
Is there an Intelligent Transportation System that can assist with oversize/overweight processing (Commercial Vehicle Information System elements such as electronic filing and screening, etc.)?	◆	●	●	●
Is there an Intelligent Transportation System to help monitor the convoy movement (Closed-Circuit Television, Weigh-In-Motion Systems, roadway sensors, etc.)?	◆	●	●	●
Is there an Intelligent Transportation System to assist with traffic operations (Dynamic Message Sign, integrated incident management response, weather information systems, etc.)?	◆	●	●	●
Is there an Intelligent Transportation System for specialized traffic operations (electronic toll tags, grade-crossing warning devices, etc.)?	◆	●	●	●
Is there an Intelligent Transportation System for current roadway conditions (511 coverage, Highway Advisory Radio, specialized websites, etc.)?	◆	●	●	●
Do any convoy vehicles have a vehicle location device for tracking that can be utilized by civilian agencies?	●	●	●	◆
Will the convoys move through metropolitan areas with Traffic Management Centers?	◆	◆	●	●
Have the Traffic Management Centers been notified of the expected times, volumes, and any special conditions?	◆	◆	●	●
Has archived data been used to baseline conditions for convoy operations in critical areas?	◆	●	●	◆
Have traffic management practices been considered, such as Variable Message Sign, service patrols, Highway Advisory Radio, etc.?	◆	●	●	●
Is Intelligent Road/Rail Information server being used for deployment planning?	◆	●	●	◆
Public Safety and Civilian Road Use				
Should there be an announcement to the public about the convoy movement?	◆	◆	◆	◆
Should traffic speeds be reduced at any point on the route to ensure safe roadway operations?	◆	◆	●	●
Should any traffic warning/information devices be activated at any point of the convoy route?	◆	◆	●	●
Has the military installation released any specific information to the public about the convoys?	●	●	●	◆
Who is the contact at the military installation to clear the release of public information?	●	●	●	◆
● = Information Exchange ◆ = Primary Agency Responsibility to Address				

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Figure 16. State Agency Checklist Part Two—Communications, Coordination, Technology, and Public Safety

State Agency Military Convoy Deployment Checklist **Reroutes, Incidents, Equipment, and Security**	State DOT	State DPS	Emergency Management	State DMC
Convoy Reroute Situation				
What incident or event is causing the need to re-route? (Accident, hazmat spill, weather, etc.)	◆	◆	●	◆
Will the planned route reopen in a reasonable time period to support the deployment mission?	●	◆	●	◆
Will convoys currently in progress elsewhere need to be re-routed as well?	◆	◆	●	◆
Are any of the vehicles involved in this re-route oversized/overweight?	◆	●	●	◆
Which districts or offices need to be contacted to determine oversize/overweight clearance requirements for the re-route?	◆	●	●	◆
Is a public announcement required? Will public cooperation be required?	●	◆	◆	◆
Incident Management				
Is the incident located on a local, county, city, or State road?	◆	◆	●	●
Are the appropriate authorities on the scene?	◆	◆	●	●
Does the region or district have adequate response and recovery resources to gain control of the situation?	◆	◆	◆	●
Do responders require any additional supplies/personnel/equipment?	◆	◆	◆	◆
Is civilian traffic being significantly impeded by this situation?	◆	◆	●	●
Is positive traffic control of the incident required?	◆	◆	●	●
Is a recovery/repair operation needed to return transportation to a normal operational status?	◆	●	●	●
Are the appropriate post-incident reports being prepared and filed?	◆	◆	●	◆
Convoy Equipment Problems				
What type of equipment problem has occurred?	●	◆	●	◆
How many disabled convoy vehicles are there?	●	◆	●	◆
Are the disabled vehicles in a safe location; not impeding general traffic conditions?	◆	◆	●	●
Can the disabled vehicles be moved to a safe location without damage to bridge or road infrastructure?	◆	◆	●	●
Is there a requirement for any special equipment to assist? (Large tow trucks, cranes, etc.)	◆	●	◆	●
Is civilian traffic safety in jeopardy due to this situation?	◆	◆	●	●
How long until the current situation is resolved?	●	◆	●	◆
Security of the Convoy				
What is the current Homeland Security Advisory System Level?	◆	◆	◆	●
What is the military's threat condition?	●	◆	●	◆
Has a specific threat to the convoys been identified? What is it?	●	◆	◆	◆
Are there any other emergency events on the planned routes such as evacuations or restricted zones?	◆	◆	●	●
Has the State Emergency Management Service been activated?	●	●	◆	●
Are any of the local Emergency Management Services open?	●	●	◆	●
If so, which ones?	●	●	◆	●
If not, could their opening help resolve the situation?	●	●	◆	●
Does the military have security forces available to protect the convoys?	●	◆	●	◆
Will there be armed military personnel participating in the convoy operations?	●	◆	●	◆
Are State or local police involved in escorting these convoys? What is the role of State and local law enforcement?	●	◆	●	◆
● = Information Exchange　◆ = Primary Agency Responsibility to Address				

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Figure 17. State Agency Checklist Part Three—Reroutes, Incidents, Equipment, and Security

ADDITIONAL SPECIAL CIRCUMSTANCES AND CONSIDERATIONS FOR STATE AGENCIES

Not all States contain the final embarkation or debarkation destination of a military deployment activity. Some States support military deployments as units move from origin States to other destination States. This national defense connectivity need was one of the cornerstones of the interstate highway system.

Interstate military deployment coordination is handled among DMCs in the States through which a military deployment traverses. The convoy must obtain permits and other requirements for transporting military units on public roadways according to State rules and regulations. Individual State agency policies and practices determine the extent to which these approved permits and/or routes are shared within and across State agencies. In some states, the DMC notifies predesignated POCs (TOCs, law enforcement officials, emergency management agencies) on the planned routes and estimated time of military movement within the State. These notifications— while not required by regulations—are provided as a courtesy and to increase agency awareness of military activities within their jurisdictions. In turn, State agencies are able to monitor movements and better prepare to respond to unforeseen events such as major incidents, weather-related delays, and similar circumstances. The real-time visibility of roadway network conditions also enhances contingency planning and response operations.

CHAPTER 4. RECOMMENDED COORDINATION PROCEDURES

A series of coordinated activities is triggered the moment the military receives a warning order and ends when convoys arrive at their destination. Some of these activities require support from various State agencies to efficiently and safely assist the military move to its destination. This chapter describes a five-step process for developing or refining coordination procedures or plans. The elements of the procedures or plans are built on the roles and responsibilities of key agencies described in chapter 2 as well as a detailed understanding of military deployment planning and movements on public roads described in chapter 3. This process is in use as is but can be adjusted to meet local needs.

DEVELOPING COORDINATION PROCEDURES

Developing a plan or a set of coordination procedures requires combining the knowledge, expertise, and information of many agencies across several jurisdictions that support military deployments during national emergencies. Effective procedures will result in:

◆ Well-developed relationships among key agencies and jurisdictions.
◆ A shared vision among operators and service providers for military deployment activities.
◆ A means of testing and verifying performance.
◆ Confidence and trust among agencies necessary to support military missions during emergencies.

The focus for users of this guide is on developing procedures or plans that address operational issues or concerns associated with military convoy movements. Procedures are activities and the associated testing/updating steps that an agency performs to meet military deployment needs. A plan is a comprehensive description of activities, resources, roles, and responsibilities with additional detailed consideration for updates and testing. Both approaches are appropriate; they should be chosen based on the needs and requirements of each State or jurisdiction. In either case, the development of a plan or set of succinct procedures will require cross-agency and jurisdictional coordination and collaboration for military convoy movements to be effective. A final plan or set of procedures will address how multiple operators and service providers from different agencies and/or jurisdictions can work together to promote effective military convoy movements.

ACTION STEPS FOR DEVELOPING COORDINATION PROCEDURES OR PLANS

Developing a set of coordinated procedures or plans requires several steps. A five-step process is recommended (see Figure 18). First, the Emergency Response Coordinator at the SDOT should develop an inventory and an understanding of current procedures or plans, identify the organizational structure or format for developing the procedures, and identify key participants or agencies. The second step is to gather data and assess deployment needs and supporting services from State/local agencies; third, document an initial set of coordination procedures and actions based on the typical sequence of deployment activities, interactions, and coordination points; fourth, verify the plan through detailed reviews or exercises; fifth, finalize and approve the plan. The Emergency Response Coordinator should then distribute the coordination procedures or plan with a proposed approach for further testing and updates.

1 Getting Started

- ◆ Inventory past procedures and plans—develop a baseline
- ◆ Identify current or planned region/routes for deployments
- ◆ Identify existing forums or organizations that may have addressed deployment issues
- ◆ Identify participants from Federal, State, regional, and local agencies

2 Gather Data/Identify Needs and Support Services

- ◆ Define operational concepts and needs for military deployments
- ◆ Determine supporting services from agencies
- ◆ Define roles, responsibilities, and priorities
- ◆ Identify special needs (traffic management, special permits, etc.) and providers/resources (ITS, traffic control, appropriate agency, etc.)

3 Define Agency Interactions and Preliminary Coordination Procedures and Plan

- ◆ Identify sequence of activities and interaction points by phase of military deployment: warning order, notice to deploy, convoy movements
- ◆ Define information flow, agency coordination, resources, and decision making
- ◆ Document coordination procedures or plan

4 Verify Coordination Procedures and Plan

- ◆ Submit draft procedures or plan for participants' review
- ◆ Conduct tabletop or detailed review exercise for accuracy
- ◆ Confirm agency/organization "buy-in"
- ◆ Document revised procedures or plan

5 Finalize Coordination Procedures and Plan

- ◆ Receive appropriate agency review and approval of coordination procedures or plan
- ◆ Promulgate procedures or plan to appropriate agencies and organizations
- ◆ Establish procedures for periodic review and update

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Figure 18. A Recommended Five-Step Process for Developing Coordination Procedures or Plans

Step 1—Getting Started ◆

The Emergency Response Coordinator at the SDOT should verify the existence of current procedures and plans for supporting military deployments; this information will provide insight into the scope and scale of the update required or the creation of new procedures if necessary. The current procedures may be part of an existing EHTR or may be a set of independent coordination procedures and plans.

A review of documents will highlight the current and proposed routes on which military deployment coordination is needed. This information is usually available from the DMC. The magnitude of any discrepancies or differences between current procedures and needs should be noted for later review and consideration. Additional data may need to be collected from others to gather sufficient background information about military deployment routes, current permitting processes, contact lists, communication practices (technical and organizational), and recent validation of the current procedures or plan. This may include discussion and coordination between headquarters and district/regional offices of several State agencies.

Once this preliminary inventory and understanding has been developed, a process for developing or refining a plan or set of procedures can be selected using one of several approaches. One approach involves ad hoc work groups formed on a regular basis to define and address deployment procedures. At the other extreme, a formal planning body or group may address military deployment coordination and activities. Such formal bodies may exist in some States and reside in agencies with responsibility for statewide emergency management or homeland security functions. Figure 19 illustrates the range of organizational structures available. In any case, a determination must be made as to the type of planning approach and the use of formal or informal organizational structures.

LESS FORMAL		MORE FORMAL		
Ad hoc arrangements based on key issues and personal relationships and interests	Informal working groups that meet regularly to address topics of emergency response and coordination	Formally established joint working groups with assigned responsibilities for emergency operations, including military deployment	Funded entities with full-time staff and well defined responsibilities related to emergency operations and military deployment	Legal entities with dedicated resources, authorities, and governing boards that represent agencies and jurisdictions in emergency operations
Individual Coordination	Informal Working Group	Interagency Working Group	Department of Emergency Management	State "Homeland Security" Office or STARC

Figure 19. A Range of Organizational Structures May Be Used by States to Develop Coordination Procedures or Plan

In addition to determining the organizational structure and means for developing the procedures or plan, the appropriate participants must be identified, including, at a minimum, the six key agencies identified in chapter 2 (i.e., the SDOT, SDPS, State emergency management representative, State DMC, military installation representative, and commercial seaport representatives). Coordination between headquarters and district/regional offices should be handled by each agency and should include coordination with local agencies such as law enforcement, departments of public works, and emergency coordinators.

As a result of this first step, the SDOT Emergency Response Coordinator will have a baseline description of existing procedures, basic military deployment needs, organizational mechanisms for subsequent discussions and coordination across agencies, and identification of key individuals and/or agencies (Figure 20).
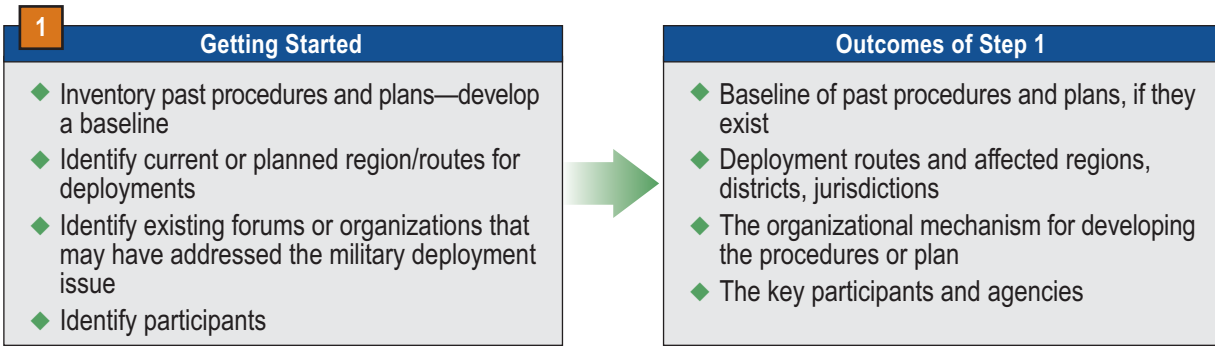
1 Getting Started	Outcomes of Step 1
◆ Inventory past procedures and plans—develop a baseline ◆ Identify current or planned region/routes for deployments ◆ Identify existing forums or organizations that may have addressed the military deployment issue ◆ Identify participants	◆ Baseline of past procedures and plans, if they exist ◆ Deployment routes and affected regions, districts, jurisdictions ◆ The organizational mechanism for developing the procedures or plan ◆ The key participants and agencies

Figure 20. Summary Checklist for Step 1—Getting Started

Step 2—Gather Data/Identify Needs and Support Services ◆

The DMC will be one of the best sources for identifying operational needs for a military deployment. This individual works closely with the deploying military installation to identify needs, establish and track the timing of major activities, coordinate with other DMCs as needed, and act as the primary interface with other State agencies. Because of the past working relationship among State agencies, military needs should be relatively routine and well defined. However, depending on the military mission, special needs may also be highlighted, such as unusual time-of-day movement needs, use of special vehicles, unconventional convoy operations or sizing, use of alternative or restricted routes different from the standard routes, and enhanced force protection and convoy monitoring. Special needs or the volume of convoy movements may require additional agency resources or other agencies/organization may need to be informed. For example, for substantial convoy movements planned through a metropolitan area, traffic operation centers may need to be alerted about the timing and volume on the convoy routes. These deployment needs and supporting agency services should be identified because they may affect staffing and workload assignments.

Supporting agencies also must reconfirm their roles and responsibilities. Chapter 2 highlighted the major functions and roles—these must be confirmed among the supporting agencies and participants to ensure proper allocation of responsibilities and resources. In step three, these roles and responsibilities will be further refined during detailed discussions of activities, information flow, agency coordination, and decision making.

Agency representatives should discuss their general preparedness to support military deployments. Such activities include:

◆ Updating point-of-contact lists with 24-hour accessibility to authorized decision makers.
◆ Establishing interagency communication systems.
◆ Providing for public safety and public information needs.
◆ Identifying points of contact at regional and/or district offices as well as emergency and transportation operations centers.
◆ Confirming the ability to access key information about approved convoy movements such as existing permits, current and accurate roadway conditions, special needs, and other information.

Consideration should also be given to incident management events, HAZMAT needs, rapid procurement procedures, and agency authorities/regulations. This can help on-site and supporting personnel become aware of their responsibilities and interagency agreements during convoy

movements. The intent is to build an understanding of major responsibilities and a trusting relationship among agencies prior to the need for any special multiagency response during convoy movements (Figure 21).
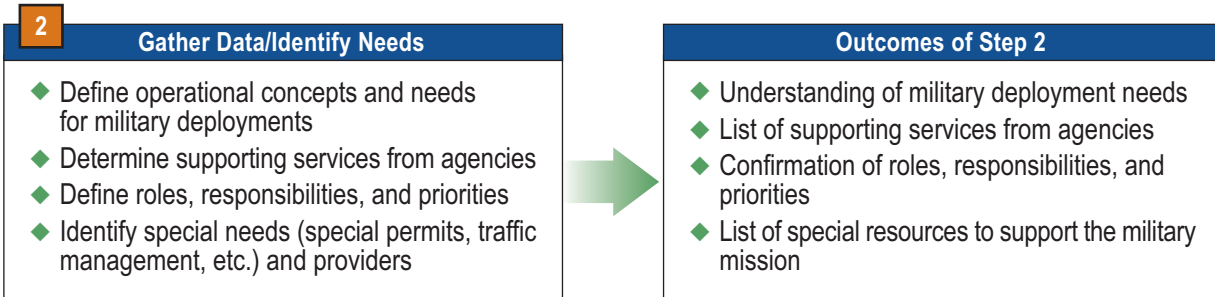
2 Gather Data/Identify Needs	Outcomes of Step 2
◆ Define operational concepts and needs for military deployments ◆ Determine supporting services from agencies ◆ Define roles, responsibilities, and priorities ◆ Identify special needs (special permits, traffic management, etc.) and providers	◆ Understanding of military deployment needs ◆ List of supporting services from agencies ◆ Confirmation of roles, responsibilities, and priorities ◆ List of special resources to support the military mission

Figure 21. Summary Checklist for Step 2—Identify Needs and Support Services

Step 3—Define Agency Interactions and Preliminary Coordination Procedures and Plan ◆

As a result of steps 1 and 2, background information and lists of military and support agency needs have been identified. These needs should be matched to the typical phases of a military deployment, namely the issuance of a warning order, followed by the notice to deploy, and the actual convoy movements. In certain States, some of these phases may be combined. This alignment of needs will provide the basis for identifying agency activities and documenting a plan or a set of coordination procedures.

Based on the needs, agency representatives should describe a concept of operations—those activities the supporting agency will perform to meet those needs. Sometimes the activities will require the identification of resources and/or actions only from a single agency (for example, SDOT will issue a permit). Other times, multiple agencies will need to coordinate their actions, indicating such attributes as primary or secondary roles, points of contact, resource/information needs, and others. In the case of the SDOT, the following set of steps is typically required:

◆ Inventory of existing highway conditions based on the proposed routes and military needs—work zones, construction locations, weight restrictions, operational chokepoints, etc.
◆ Confirmation of selected routes (and possibly alternative routes) for convoy movements.
◆ Assessment of traffic operations and/or traffic management needs to ensure effective convoy movements and minimal disruption to civilian traffic.
◆ Issuance of permits, priority permits, movement authorizations, and/or special permits for military and commercial haulers.
◆ Preparation for special needs or circumstances such as rest areas, time-of-day restrictions, etc.
◆ Monitoring of convoy movements and response to special needs of convoys-in-route (TOCs, road patrols, etc.).
◆ Assessment of interagency coordination and areas for improvement.
◆ Verification of communication protocols and interoperability.

Once the sequence of activities by the military and support agencies has been delineated, key interaction and interface points can be identified. These interaction points help to further define the required information flow between and among agencies. Some activities may involve multiple agencies. For example, once a notice to deploy has been received, public affairs officers in all supporting agencies should be made aware of the impending convoy movements. This information will usually be "For Information Only" types of exchanges, but will provide valuable con-

tact information if unusual circumstances or inquiries occur during the convoy movement phase. Similarly, interagency communications procedures and protocols during normal and emergency situations should be confirmed.

Once the entire sequence and key interaction points have been defined and confirmed, a comprehensive review of the plan or set of coordination procedures should be made. This review step will ensure all the detailed activities have been identified and properly sequenced, the appropriate supporting agencies are identified, and agency representatives are aware of their supporting roles and responsibilities. The following topical outline of a set of coordination procedures or plan is offered as a means of organizing and documenting the products from this step (Figure 22).

Proposed Topical Outline for a Set of Military Deployment Coordination Procedures or Plan

1. Cover Page with Approval Signatures and Effective Dates
2. Brief Introduction and Purpose
3. Reference Statement of Authority and Governing Regulations
4. Key Supporting Agencies and Primary Roles Supporting Military Deployment Needs
5. Major Activities and Multiagency Coordination Procedures
6. Activities for Updating and Verifying the Procedures
7. Appendices: Contact Lists, Permits, Checklists, Templates, etc.

Figure 22. Proposed Topical Outline for a set of Military Deployment Coordination Procedures

Section 5 (Major Activities and Multiagency Coordination Procedures) of the proposed outline should contain many of the detailed steps, definition of lead/support agency responsibility, and responses to the checklist items identified in chapter 3. The level of detail is best illustrated through the following example.

During a convoy movement on a preferred route, a regional Traffic Management Center (TMC) is aware of the convoy movement, types/volume of vehicles, and preferred route. The TMC operators monitor the traffic conditions within their traffic networks and provide periodic updates via telephone to the DMC, if required and requested by the DMC (subject to workload and availability at the TMC). If field sensors of the TMC indicate a change in traffic flow along a designated convoy route, the TMC operators may choose to observe the possible causes of the delay through closed circuit TV (CCTV). If the delay is increasing and is above a threshold value of importance to the DMC (for example, the delay is expected to be greater than 20 percent of the average travel time through the affected corridor), the TMC operator would contact the DMC via telephone to warn of potential convoy travel delays. The TMC operator would provide additional information (as available) about the cause of the delay (incident, estimated time-to-clear, identification of lane closures, and/or other causes). This information would allow the DMC to make a decision on the need to reroute the convoy to meet destination orders and requirements.

Similar levels of detail would be needed for other coordination and interaction points of the plan or set of coordination procedures. Coordination and interaction points for traffic management and operations include such items as:

◆ Interoperability of communication systems (800 MHz, 900 MHz, bridge circuits, common dispatch centers, etc.).
◆ Selected ramp metering controls to maintain desirable freeway speed and facilitate time convoy movements.
◆ Public information notice via highway advisory radio (HAR) broadcasts.
◆ Use of special event signal timing plans to coordinate convoy movement.
◆ Special use of service patrols to monitor convoy operations.

◆ Increased visibility of convoy movements from the DMC to assist traffic engineers/operators in monitoring and controlling traffic operations and military coordination (automatic vehicle location [AVL], in-transit visibility [ITV]) technologies that require interoperability).

◆ Use of variable message signs to maintain or improve traffic operations during deployments (e.g., "Convoys in Center Lanes").

◆ Prepositioning of critical assets (tow vehicles and service vehicles, for example) or service patrols in potentially vulnerable segments of the highway network.

◆ Coordination of citizen cellular phone traffic information among SDPS and SDOT operators.

◆ Hand-off procedures among local, State, and regional TMCs.

Ultimately, the coordinating agencies should assess the appropriate level of detail and document this detail in the plan or procedures (Figure 23).
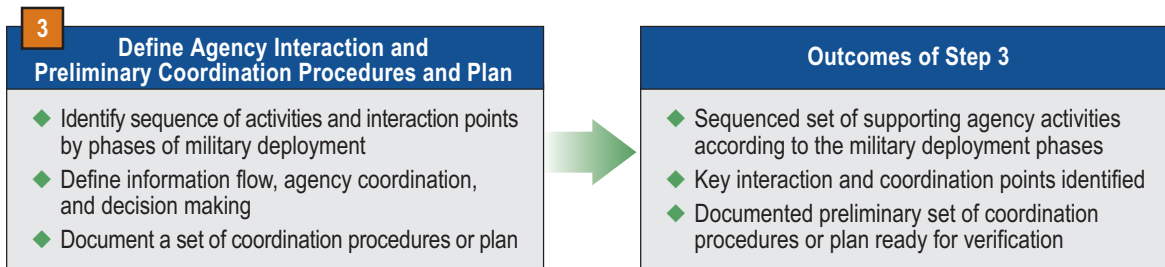
3 Define Agency Interaction and Preliminary Coordination Procedures and Plan	Outcomes of Step 3
◆ Identify sequence of activities and interaction points by phases of military deployment ◆ Define information flow, agency coordination, and decision making ◆ Document a set of coordination procedures or plan	◆ Sequenced set of supporting agency activities according to the military deployment phases ◆ Key interaction and coordination points identified ◆ Documented preliminary set of coordination procedures or plan ready for verification

Figure 23. Summary Checklist for Step 3—Define Agency Interaction and Preliminary Procedures or Plan

Step 4—Verify Coordination Procedures and Plan ◆

Once a plan or set of preliminary coordination procedures has been developed, it should be submitted for independent agency review and confirmation. This step will ensure the proposed procedures are complete and properly sequenced, and the key coordination and interaction points have been identified. This independent review will serve as a check for internal agency coordination procedures and that all of the key offices or departments have or can provide the necessary information or decisions to support the preparedness and actual convoy movements.

Several approaches exist for the independent review. One is to have an unbiased review team—composed of supporting agency representatives—review the document as if they were required to implement the action steps. This "role playing" approach allows for a limited group of individuals to simulate and highlight areas for improvement. Another approach is to conduct a tabletop exercise with several representatives from the military installation and supporting agencies. This format would simulate the deployment process, including the use of specialized scenarios to test the robustness and completeness of the coordination procedures. Still another approach might include one or two experts offering detailed review and comment.

The review procedures will vary from State to State, but the outcomes should be the same. Based on the independent review, a revised plan or set of coordination procedures should be developed and documented. These procedures should be sufficiently detailed and complete to allow all supporting agencies to "buy in" or formally endorse the approach, as evidenced through an interagency memorandum, cover page signatures from agency representatives, or similar method.

Step 5—Finalize Coordination Procedures and Plan ◆

Once the preliminary coordination procedures have been reviewed and revised, the final set of coordination procedures or plan should be documented. The documentation should include activities for keeping the plan current through reviews and updates at least annually. Specialized cross-agency training may be necessary using the coordination procedures as a guide. Once completed, the documented plan or procedures should be submitted for formal approval (signature) and distribution to the supporting agencies. Some agencies include the coordination procedures as part of statewide emergency transportation management procedures.

CHAPTER 5. TECHNOLOGIES SUPPORTING MILITARY DEPLOYMENTS

The previous chapters presented information that will help agencies plan and support a military deployment. This chapter describes available technologies and integrated technical systems which may assist in planning and operational support of military deployments. Individual technologies include such components as automated planning tools, basic communications devices, and advanced tracking and communications technologies. Integrated systems include the role of intelligent transportation system (ITS) technologies, Traffic Management Centers, and Emergency Operations Centers (EOC) in civilian, government, and military organizations.

AUTOMATED PLANNING TOOLS AND TECHNOLOGIES

Three planning tools offer the greatest utility in assisting agencies and the military planners in organizing military deployments. The first is the highway conditions reporting system, which is typically developed by State highway agencies to provide a timely public source of information about travel and roadway conditions. Complementing the highway conditions systems are two specialized tools developed by the military transportation commands. These automated tools focus on the specific planning needs for military deployments. The first military planning tool is the Mobilization Movement Control System (MOBCON), which provides a Continental United States (CONUS) perspective of the roadway network and the proposed military deployments movements on the network. This dynamic system enables DMCs across States to plan convoy movements efficiently and deconflict their route planning. The second military planning tool is the Intelligent Road/Railroad Information System (IRRIS), which provides a suite of web-based tools for planning and tracking of assets. A discussion of these three automated planning tools follows.

Highway Conditions Reporting System

This system provides a comprehensive daily view of road conditions on a State's major highways and arterials. The conditions report is typically assembled daily by the SDOT at the district level and includes reports on planned work zones, construction, detours, road closures, and other planned events that may affect capacity and the safety of roadway travelers. Toll authorities have developed similar systems for their roadways, bridges, etc.

Almost all condition reporting systems are now Web-based with unrestricted viewing and printing access. The Web sites offer listings of roadway conditions by type of roadway (e.g., interstate, State highway), geographic location (county or SDOT district), and condition. These Web sites have been enhanced with additional technologies including linkages to personal digital assistants (PDA), pagers, e-mail, and other alert devices. Mass media providers and third-party vendors are developing more sophisticated condition reporting and navigation aids, sometimes on a fee-for-service basis. These systems usually draw heavily from the data sources of the SDOTs.

Mobilization Movement Control System (MOBCON)

While the Defense Movement Coordinator (DMCs) coordinate their planned and actual military movements with State agency officials, coordination among State DMCs is necessary to prevent major deployment conflicts or delays. The MOBCON system deconflicts convoys moving throughout the United States, allowing the DMC to control the density of military traffic at any given time on all State roads, freeways, and interstates. The convoy clearance function essentially gives units permission to occupy a particular road space at a specific time. The

MOBCON system is not accessible outside of military transportation channels. Therefore, additional coordination between the DMC and State agencies is still required to ensure the system has the most accurate information about road closures, weather conditions, and other problems that may impede convoy route scheduling or affect convoys already in-transit.

Intelligent Road/Railroad Information Server (IRRIS)

The Intelligent Road and Rail Information Server (IRRIS) has been developed to enable rapid deployment of people, equipment, and munitions, and to improve the global deployability of U.S. armed forces. IRRIS is a Web-based system built on the concept of a portal, namely a means of viewing key data sources and information from other information providers in a consolidated location. Through a standard Web browser interface, IRRIS enables users to obtain detailed, timely, and relevant information about road conditions, construction, incidents, and weather conditions that might interfere with the movement of people and goods. It leverages the latest advances in information technology, Global Positioning Systems (GPS), Geographic Information Systems (GIS), and Location-Based Services (LBS) to provide decision makers with information necessary for efficient and rapid deployment of troops, equipment, and sustainment materiel between origins and destinations. This integrated system provides planners with a real-time tool for routing troops, equipment, and sustainment materials in the most efficient and effective manner and provides this information at any time, anywhere, on any Web-enabled device.

A detailed discussion of the components of the IRRIS system follows. The discussion contains a substantial amount of detail to illustrate the complexity of the military deployment planning requirements and the support gained from this automated tool.

IRRIS Components

IRRIS is the first software designed to combine highly detailed, local, and relevant information into one intuitive Web-based interface. IRRIS was developed in a modular fashion for greater flexibility. Figure 24 illustrates some of the IRRIS features. The following subsections briefly describe the major subsystems and functionality of IRRIS.

Detailed Mapping

IRRIS uses the latest GIS and mapping technology to provide users with comprehensive map drawing capabilities. GeoMedia WebMap is used to display high-quality mapping data as base maps and overlay numerous features on these base maps. IRRIS provides a method for selecting an area of study based on user-defined criteria, such as:

- PPP route map
- Strategic ports
- Power support platforms
- Critical depots
- Weather maps
- Fort-port area
- National Guard
- Continental United States (CONUS) overview map
- Installation area map
- Detailed installation map.
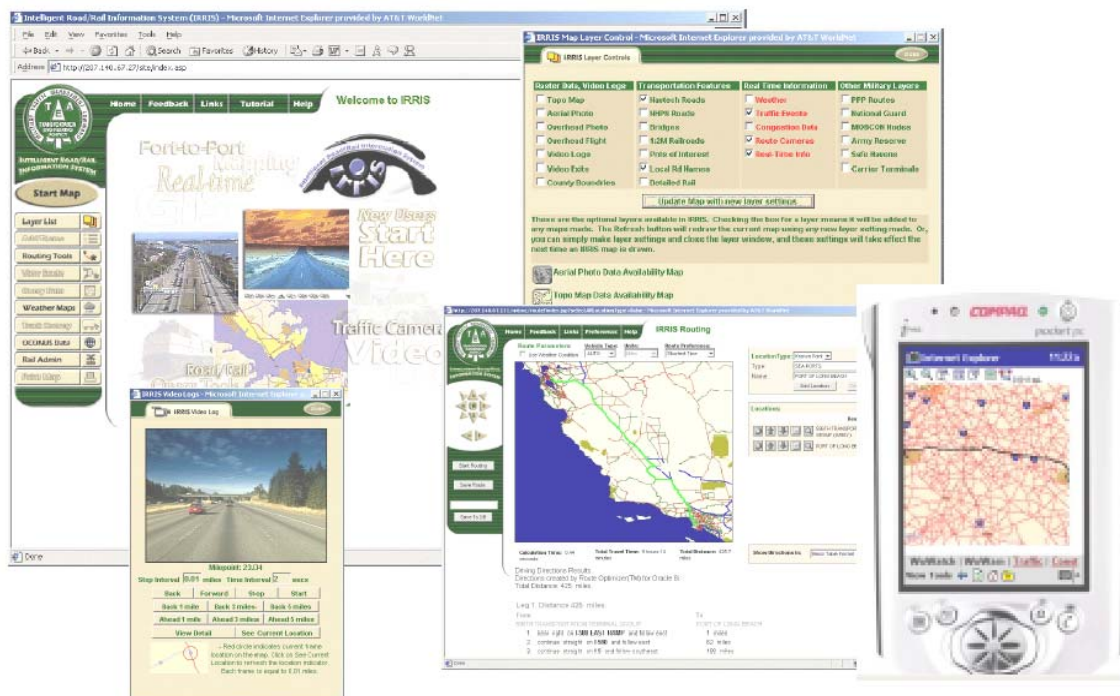
Figure 24. Detailed Mapping Features of IRRIS

One of IRRIS's strongest features is its ability to combine various sources of data (layers) and display them all in an easy-to-view, intuitive format. These layers may be toggled on or off at users' discretion. Most, if not all, of the layers also have their features identified and present attribute information for that feature either through "tool tips" or separate information screens. Map layers available to users include the following:

◆ Topography map
◆ Aerial photo
◆ NavTech roads
◆ National Highway Planning Network (NHPN) roads
◆ 1:2 M railroads
◆ Points of interest
◆ Local road names
◆ Detailed rail
◆ Bridges
◆ Weather

◆ Traffic events
◆ Overhead photo
◆ Overhead flight
◆ Route cameras
◆ National Guard
◆ MOBCON nodes
◆ Real-time information
◆ Video logs
◆ Video exits.

Vehicle GPS Tracking In-transit Visibility (ITV)

The IRRIS tracking subsystem allows users to:

◆ Accurately monitor and track the location of DoD freight traffic on a map in real time
◆ Cross-reference locational information with the Global Freight Management Systems (GFM) Bill of Lading (BoL) information
◆ Effectively and easily query both the raw locational and BoL data, and display the results in tabular and mapped formats.

At its simplest, the IRRIS tracking subsystem has two main sources of information about DoD tracked vehicles: locational information and BoL information from the GFM and/or the Defense Transportation Tracking System (DTTS). IRRIS enables its users to correlate these two sources of information, display the results, and query and report on these data sets.

Accurate Routing and Driving Direction

IRRIS provides its users with accurate and detailed turn-by-turn, address-to-address, or latitude/longitude driving directions with total driving time and mileage. It can also calculate routes to and from known points of interest, such as Army, Navy, and Air Force installations, airports, power projection platforms, etc. While considering real-time factors such as weather and road conditions, for example, the IRRIS routing subsystem is also capable of calculating the fastest or shortest route based on a variety of vehicle types such as E911, HAZMAT, auto, truck, and oversize/overweight (OSOW) vehicles.

Live Weather Maps

IRRIS provides accurate and highly local real-time weather information at the touch of a button. For highly timely data, the weather information is transmitted to the IRRIS weather subsystem through its own satellite receiver. The data are then organized and displayed on intuitive detailed maps. IRRIS weather data contains information not only on where a storm is but also where it is heading. By using Meteorlogix-enhanced NEXRAD (Next Generation Radar) radar information from the National Weather Service, IRRIS is able to provide forecasts of when a storm will arrive at a given site and how severe it will be.

Live Traffic and Incident Data

IRRIS provides access to the most extensive and complete real-time traffic information. IRRIS users are able to view live route cameras, fly-throughs, and video exits, as well as detailed traffic incidents, construction, and event data for 89 metropolitan areas within the CONUS. IRRIS will soon provide historic and predicted travel time and traffic data. These traffic data are intended to meet the long-term location-based needs of the military traffic management community by providing accurate and thorough transportability data and maximizing the use of modeling and simulation in deployment engineering.

Wireless and PDA Access

The IRRIS wireless and PDA components allow users to obtain information about road conditions, construction, incidents, and weather conditions while on the road. The wireless component of IRRIS is still in the development stages, but the goals are to enable its users to retrieve detailed information about the road and weather conditions from their current location, receive alerts about conditions ahead, and view maps and driving directions when they are needed the most. The wireless version of IRRIS will focus on allowing users to simply search, retrieve, operate on, and interact with the live interactive information available through IRRIS from handheld devices such as wireless access protocol (WAP) phones or wireless pocket PDAs. The IRRIS wireless subsystem has been designed to operate seamlessly and provide its users with maps, databases, and GIS data needed while on the road. It is designed to be easy to use and tightly integrated with other IRRIS components.

Database and Query Builder

IRRIS's Query Builder guides users through the process of building sophisticated database queries in order to view textual data in a tabular format. Managers, data analysts, and report builders are empowered with on-demand access to data in order to make better business decisions. IRRIS's Query Builder also enables users to display the results of the query on a map. This mapping functionality enables users to view results in different ways and provides a complete and accurate picture of the data without requiring users to write complex SQL statements.

Additional information is available by contacting the Surface Deployment and Distribution Command Transportation Engineering Agency (SDDC TEA) at https://www.irris.tea.army.mil/SelectWelcome.asp for password procedures.

BASIC COMMUNICATION DEVICES USED DURING CONVOY OPERATIONS

The primary means of communications with convoys during operations rely on proven land-based technologies, namely telephone systems, cellular systems, and radio systems. However, current deployment communication systems involving military and civilian communication systems have interoperability problems. Current communication systems essentially rely on telephone lines to move information from one area to another. The following communication challenges have been identified:

◆ Radio systems between military and civilian agencies supporting deployments are not compatible.
◆ A lack of signal repeaters along the routes limits the range of radios to communicate back to the installation or port.
◆ Users of cellular phones experience gaps in coverage and periods of nonavailability.
◆ Route change information would be difficult to pass to the convoy commanders on the move.
◆ Cellular phones are not issued to convoy commanders. They typically use their personal cellular phones.

Land Line Telephones

Telephones are the primary means of communication and coordination for deployment operations. Typically, these lines are only available at fixed facilities. Telephone contact lists are available in the military and civilian command centers and they must be updated at least every 3 months or more frequently based on the number of personnel changes and turnovers. Moreover, these lists must be promulgated to key State agencies, such as law enforcement, emergency management centers, SDOTs, and others.

Cellular Phones

Most convoy commanders use their own devices (phones, PDAs, etc.) to communicate unclassified information with the Installation Operations Center/Movement Coordination Center (IOC/MCC) and other support agencies along the route. Gaps in coverage, frequency or protocol incompatibility, and system overload may limit cellular phone capabilities.

Tactical Radios

Communications within the convoy are conducted using tactical radios. These radios have a limited range and are not compatible with civilian radio systems due to security concerns.

To address some of these technical interoperability issues, more advanced technologies have been developed and introduced. These newer components and systems utilize different technologies (such as satellite communications) or enhancements to the existing basic communications systems. The following sections discusses some of these advances.

ADVANCED COMMUNICATION DEVICES AND SYSTEMS USED DURING CONVOY OPERATIONS

The DoD is currently going through a transformational period. It is harnessing new capabilities to provide full spectrum information dominance of the battlefield through global communications and visibility tools. These advanced technologies are also useful during convoy operations. The following subsections describe individual components and integrated systems being developed and incorporated into the DoD's Global Combat Support System (GCSS).

Movement Tracking System (MTS)

MTS is a commercial off-the-shelf (COTS) vehicle tracking and communication system that allows two-way text messaging based on satellite technology. This system is ideal for sending text messages to and from the vehicle and identifying the location of vehicles without having to query the driver. The system provides highly efficient, fast, and secure communications over satellites specifically for mobile data communications. This messaging and communicating capability provides enhanced communication ranges—well beyond the traditional line-of-site mode with conventional military and civilian radios—which greatly enhances the military's capability over long distances (greater than 75 miles). Embedded within the system is an automatic GPS function that generates position reports, which can be captured in data processing systems and/or provided on screen displays.

Satellite Transponder · On-board vehicle display
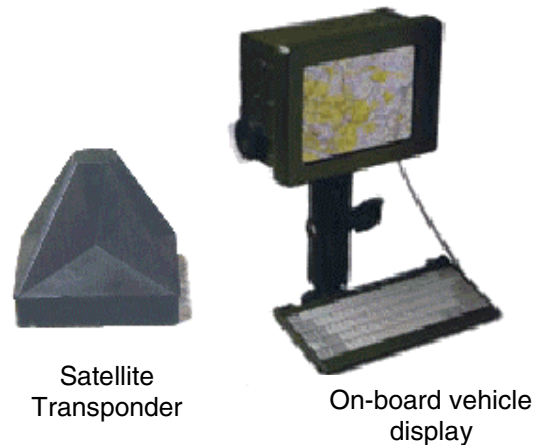
Figure 25. Key Components of a Typical MTS

Figure 25 illustrates the key components of MTS. Configurations are modified to meet military or civilian needs such as security and type of data to be exchanged. Greater interoperability of these systems will allow the SDOTs and other authorized State agencies to interact with military deployments to obtain more real-time tracking and location information.

Radio Frequency Identification Technologies (RFID)

Radio frequency identification (RFID) technologies are being used by the military to provide visibility of items moving across the Defense Transportation System (DTS), as well as for asset visibility. RFIDs are a type of automatic identification system that has been available in commercial systems for a number of years. An RFID system enables data to be transmitted by a portable device called a tag. A tag is activated by an RFID interrogator and then transmits data stored on it. That information is read (by RFID), processed, and stored according to the needs of a particular application or information system. Typically, applications are in the fields of logistics, inventory control, rail yard asset management, and vehicle tracking. Figure 26 shows a typical military application.

Figure 26. A Soldier Scanning an Active RFID Tag for Manifest Data

The tag transmits data that may provide identification, location information, or specifics about the tagged items, such as item-specific detail or shipping documentation. The tag might also point to a historical database where such information is stored and applications use the data for different purposes. RFID use in tracking and access applications first appeared during the 1980s. It quickly gained attention because of its ability to track moving objects and its non-line-of-sight data transfer capability. This enables tags to be read through various substances, such as snow, fog, ice, paint, dirt, grime, and other visually and environmentally challenging conditions, conditions in which barcodes or other optically read technologies would be useless. RFID tags can also be read at very high speeds, responding in less than 100 milliseconds, even in challenging environments. Because of its versatility and performance, RFID has become indispensable for a wide range of automated data collection and identification applications.

DoD has developed policy to support the implementation and use of both active and passive RFID tags to enhance visibility of items across the Department by the end of calendar year (CY) 2005. This policy primarily grew out of the military's need for enhanced asset visibility moving through the DTS, for logistics planning, and from operational requirements that emerged during Operation Desert Shield/Desert Storm, Operation Enduring Freedom, and Operation Iraqi Freedom (OIF).

Active RFID tags are battery powered and can store and transmit large quantities of data (up to 512 kB) when within range of either a fixed or a hand-held RFID reader. This read range is usually up to 100 meters but is limited by their battery-life. Active tags will primarily be used on aggregated and consolidated shipments of items on pallets, containers, and on major end items such as trucks. Figure 27 illustrates a variety of tag types, fixation points, and mobile interrogator subsystems.

All of the asset data are stored in DoD systems of record, which provide enhanced visibility of troops, equipment, and sustainment materiel moving through the DTS. Systems like IRRIS further synthesize these data to create a visualization and integration of authoritative and comprehensive information. Comprehensive sources provide a common operational picture for the military to support logistics planning activities and identify possible choke-points and bottlenecks in the transportation network. Currently, these logistics visualization and integration systems are undergoing further development and refinement, and will evolve into an authoritative source—GCSS. As these systems are fully developed and deployed, they will provide the military and their stakeholders

Figure 27. Variety of RFID Tags

Figure 28. Example of a Mobile Military Satellite Communications System

with more real-time, synthesized, and actionable data that can support military decision-making, deployment, and distribution processes.

Satellite Communications Systems

Enhanced satellite communication systems with receivers and transmitters in operations centers, command posts, and command vehicles greatly improve deployment communications. In the realm of the military combat service support function, the Army and Marine Corps are experimenting with Very Small Aperture Terminal (VSAT) satellite communications systems. Designed to be highly mobile, VSATs are easier to deploy and employ, not dependent on a large communications

backbone, and are able to operate in harsh environments. Figure 28 illustrates an example of a mobile military satellite communications system. These VSATs will be able to transmit logistics data from anywhere in the world via satellite. To maintain proficiency with the systems, the Army and Marine Corps plan to use them at home stations as well as when deployed. These systems are very similar to the satellite dishes used by many commercial entities to transmit data across their enterprise. However, these VSATs have an additional level of information security and encryption given the nature of the information they transmit and receive. VSATs are about 18 inches in diameter and have been in commercial use for years.

Using Existing Systems Alternatives

When conventional communication methods are ineffective or not available, passing information to a convoy on the move could be accomplished by involving a regional State police dispatch center. For instance, convoy reroute information could be called into a regional, 24-hour dispatch center, which could relay information concerning the convoy's approximate location and route change information via radio to a State police officer. The officer would then locate the convoy and verbally pass the information to the convoy commander. The effectiveness of this type of approach depends on the availability of proper call lists and training of the officers on duty.

INTEGRATED TECHNICAL SYSTEMS USED DURING CONVOY OPERATIONS

The previous sections discussed individual technologies which may assist in the planning and operations of military deployments movements. While these component technologies offer valuable capabilities, such as communications and asset tracking, they become even more valuable when assembled into a system of technologies. Substantial advances in technology which support the movement of people and goods has occurred in the area of intelligent transportation systems (ITS). ITS includes not only component technologies, but the integrated application of the components to assist with system-wide mobility and public safety, especially when consolidated into a traffic management center. Likewise, agencies have gained planning and operational efficiency through the development of emergency operations centers, in which multiagency representatives, coupled with advanced technologies, are able to respond to emergency situations.

Each of these systems can make a positive contribution to the coordination of military deployments.

Role of ITS Technologies

ITS technologies collect, store, process, and distribute information related to the movement of people and goods. Examples include systems for traffic management, public transportation, emergency management, traveler information, advanced vehicle control and safety, commercial vehicle operations, electronic payment, and railroad grade-crossing safety. Figure 29 illustrates one such portable device for use in work zones, which may minimize military convoy delays.

Figure 29. Portable Traffic Control Devices Can Assist with Work-Zone Activities

If gathered and distributed in a timely manner, some items of information can positively affect transportation system function and safety. Information collected and used in ITS can benefit a range of users, including military deployment planners and commanders. To be effective, a unified framework or architecture for integrating ITS components is needed and must be followed. ITS technology implementation will require multidisciplinary resources and expertise, including the military. Figure 30 demonstrates the relationship between ITS and military deployment requirements.

Additional information about ITS technologies can be found at www.its.dot.gov.

TRAFFIC MANAGEMENT AND EMERGENCY OPERATIONS CENTERS DURING CONVOY MOVEMENTS

Traffic Management Centers (TMC) are a consolidated and organized means of actively monitoring and managing roadway conditions in a specific geographic area, usually a major metropolitan area. TMCs provide the public with conditions and management reports through Web sites, partnerships with mass media, telephone reports, and other means. TMCs usually operate 24x7 and provide freeway condition reports, including incidents, congestion points, transit operations, and freeway operations. Much of this information is acquired through ITS technologies, which may include closed-circuit television (CCTV), roadway loop sensors, probe vehicles, Automatic Vehicle Location (AVL) systems, weather reports, emergency response reports, information from citizens, or commercial vehicle operations (CVO), and other sources. Figure 31 illustrates a TMC field camera view provided by TransStar. Because a TMC monitors, analyzes, synthesizes, reports, and manages (to a certain extent) the freeway system, it represents a desirable source of information and operational coordination during military deployments.

Military Deployment Technologies		
Applicable ITS Technology*	**Purpose**	**State-of-the-Practice**
Military Deployment Concern—Oversize/Overweight		
Weigh-In-Motion Systems (WIM)	Eliminate requirements for vehicle stops and weight checks.	Approximately 10 states have some form of WIM. Increasing use by other states.
Electronic Vehicle Screening	Provide pre-clearance for commercial vehicles for safety inspections and port-of-entry processing locations. Saves time by eliminating vehicle stops.	Approximately 15 states have some form of pre-clearance program.
Commercial Vehicle Information System Network (CVISN)	CVISN is an integration of information systems and networks designed to enhance motor carrier and roadway safety and improve the performance of commercial vehicle operations and state regulations.	Approximately 35 states have implemented some form of CVISN architecture or program area.
Military Deployment Concern—In Transit Visibility		
Automatic Vehicle Identification (AVI) and Automatic Vehicle Location (AVL)	Use of on-board transponders technology with remote receivers to automatically identify and locate vehicles.	Increasing usage, especially in the commercial vehicle industry and transit industry. Signals can be encrypted.
Archived Data Services	Use of archived data from the SDOTs or TMCs to understand nominal traffic patterns during in-transit movement.	Archived data is starting to be used to assist with baselining and planning activities.
Closed Circuit Television (CCTV)	Observe real-time road conditions.	Widely used in regional traffic centers resulting in high-quality color images with full Pan/Tilt/Zoom imaging and storage capabilities.
Military Deployment Concern—Safety		
Collision Avoidance Systems	Use of on-board sensors and other devices to warn drivers of impending collisions and erratic lane changes.	First generation devices available on some commercial and personal vehicles.
Biometric Safety Aids	Use of biometric technologies (retinal scans, facial recognition, fingerprint identification, etc.) to ensure safe and authorized operation of equipment.	Emerging technology with limited field-testing and implementation.
Grade-Crossing Collision Avoidance Systems	Use of advanced sensor technologies and warning devices to reduce the number of vehicle-train collisions at at-grade crossings.	Increased installation of the equipment, especially at sites with high accident records.
Military Deployment Concern—Assured Access to Roadways		
Traveler Information Systems (Including "511" telephone services)	Provide basic information about roadway conditions, work zones, incidents, recurring congestion, expected delays, and possible alternative routes.	Emerging national network on road closures and traveler information. 511 traveler information services available in 25 major metropolitan areas. See www.fhwa.dot.gov/trafficinfo.
Weather Advisory Systems	Provide current and forecasted weather information that may affect roadway conditions and/or travel.	Information usually coupled with roadway conditions reporting systems. Some commercial services available.
Emergency Response Systems	Provide quicker response in case of on-road emergencies, potentially saving lives and clearing incidents more quickly.	Developed in various forms, including integrated incident management teams, enhanced communications equipment, E911 services, and others.
Synchronized Traffic Control Systems	Improve time-of-day adaptive control of signal networks.	Limited, but growing, application in major metropolitan areas.
Signal Pre-Emption Systems	Allows emergency or special vehicles priority access through signalized intersections.	Limited, but growing, application in major metropolitan areas.
Dynamic Message Signs (DMS)	Provide information about roadway conditions and possible alternative routes, as needed.	Increasing use of DMS, especially in major metropolitan areas.
Highway Advisory Radios (HAR)	Provide localized traveler information on AM frequencies near areas of interest, work zones, or incidents.	Widely used by almost all states.
Ramp Metering Systems	Control the volume of traffic entering a freeway to help maintain a desired level of service on the freeway.	Systems installed and operating in several metropolitan areas.
Electronic Toll Tags and Tag Management (ETTM)	Use of short-range communications equipment and protocols to automatically debit an account for toll facility usage.	Used in many states. Increased usage expected. Saves time in processing at collection points, thereby minimizing congestion.
** For more information about ITS technologies, visit the USDoT at www.its.dot.gov		

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Figure 30. ITS Technologies That May Support Military Deployments

A TMC involves one or more agencies with varying levels of involvement based on State, local, and regional organizations and jurisdictional authorities. Participants include the DOT (State and/or local Department of Public Works [DPW]), transit authorities, police, fire, and/or emergency services providers. A TMC is usually owned and operated by the SDOT, although some TMCs are owned and/or operated by other agencies or authorities, such as a transit system or toll authority. Some TMCs can control high occupancy vehicle (HOV) or special access lanes that may be desirable or required during deployments. TMCs may also influence signal timing and ramp metering to improve freeway operations. Almost all TMCs coordinate freeway patrol units and incident management responders, all of which can affect the efficiency of deployment operations.

Figure 31. Traffic Management Centers Such as TranStar in Houston, Texas, Give a Live View of Current Weather and Traffic Conditions. These Views Can Be Accessed by All Agencies Through the Internet

Role of a TMC During Convoy Operations

A TMC's primary role during normal civilian operations is to monitor freeway conditions, report unusual conditions to the public, and coordinate rapid and safe incident management on freeways. As noted previously, it is desirable for the convoy to avoid major metropolitan areas during periods of rush-hour traffic, typically between 6 a.m.–9 a.m. and 4 p.m.–7 p.m. on weekdays, although these times may vary based on location and special-event conditions. If special events are planned in a TMC's coverage area, the TMC is likely to be aware of freeway traffic implications and can share them with the DMC and other convoy planners, who can then assess the desirability of a proposed route.

During a convoy deployment through a TMC coverage area, the DMC should alert the TMC as to the approximate time, size, and duration of the convoy movements. Moreover, the TMC should be notified if there are special materials or travel conditions associated with the convoy. This information will allow the TMC to prepare for any special contingencies that may arise.

During a military deployment in a TMC coverage area, the TMC typically makes no operational changes. However, the TMC's roadway condition information will be valuable to the convoy commanders. Convoys will normally stop outside of a major metropolitan area to check load straps, refuel, and confirm route information. During this planned stop, a well-coordinated discussion between the convoy commander and the TMC can ensure the convoy's safe and efficient passage through a metropolitan area based on the most recent freeway condition reports. For example, if there is a major incident along the planned and approved deployment route, the convoy commander would need sufficiently detailed information to determine if a change in convoy operations is needed—a change in route, temporary or extended rest stop to allow the incident to be cleared, or other possible courses of action, for example. Consequently, convoy planners will need to plan and implement communications systems that enable the DMC and convoy commanders to capture this type of real-time information.

If a specially designated route—as requested by the DMC—is through a TMC coverage area, the TMC would help State and local authorities prepare, manage, and restore roadway travel conditions necessitated by the special route. Such a situation may be necessary during other special events—a presidential visit, major sporting event, and other events for which event-driven protocols have usually been established. During these special events, the TMC is prepared to help the responsible agency in planning and operational requirements. The DMC would need to coordinate closely with the TMC to ensure this coordination and preparedness occurs.

Emergency Operations Centers (EOC)

Federal, military, and civilian agencies use EOCs to control aspects of an emergency, incident, or major operation. Typically, EOCs are command and control nerve centers equipped with enhanced communications where representatives from various departments and agencies can meet and work to control or react to emergencies or major operations. SDOT and emergency management (EM) agencies have a responsibility to communicate and exchange vital information during an emergency. This often requires that plans and contacts are established and maintained routinely. The following sections describe the responsibilities and capabilities of some of these military, government, and civilian EOCs.

Military EOCs

Military operations centers dealing with a deployment are usually at the deploying installation and ports of embarkation. Intermediate command posts may also be found along convoy routes.

Installation Operations Center (IOC)/Movement Coordination Center (MCC)

When an installation is issued a notice to deploy, it activates the MCC as part of the IOC. The IOC is the controlling activity to coordinate deployment operations and will be staffed to coordinate operations, intelligence, logistics, and administration functions. The key components of intelligence and logistics are highlighted below.

Intelligence. Installation intelligence personnel provide threat information to the commander and the convoy commanders; this information can be related to military facilities, equipment, information systems and personnel—both on and off the military installation.

Logistics. The Logistics MCC function of the IOC coordinates the following:

◆ Providing all necessary support services and transportation requirements of the deploying units.
◆ Establishing and operating a marshaling area to support the reception of the moving convoys at the port.
◆ Establishing, training, and equipping a PSA to support surface movement of forces traveling through the assigned SPOE.
◆ Directing the activities of the installation unit movement coordinator (UMC) and unit movement officers (UMO) during the deployment process.
◆ Coordinating convoy route approvals and alterations with the DMC.
◆ Communicating route changes or time adjustments to convoy commanders before departure or en route. En route changes are relayed to commanders at rest/refueling stops via cell phone, police escort, or law enforcement dispatchers.

Seaport of Embarkation Operations Center—Joint Military/Civilian Center

On notification of a deployment with established port calls, port officials and support agencies meet to establish priorities and, usually, establish a formal operations center on the arrival of port support activity (PSA) personnel from the deploying installation. This operations center is responsible for coordinating the following:

◆ Overall supervision and management of PSA and convoy operations.
◆ Lodging, meals, and return transportation for personnel supporting port and convoy operations.
◆ Port labor.
◆ Port security requirements.
◆ Convoy staging areas.
◆ Communication with the IOC and MCC.

Civilian EOCs

Although civilian EOCs are not specifically designed to control or facilitate convoy movements, they can be a useful central point of contact to help resolve problems involving convoy operations. Civilian agency representatives in these EOCs are accustomed to working together to respond to and recover from emergencies.

State EOCs

The State governor customarily activates the State EOC during times of disaster or emergency. This EOC brings together State agencies to coordinate and prioritize the use of critical resources. The following State agencies and organizations may have a role in deployment operations from the State EOC:

◆ Department of Transportation
◆ Department of Public Safety
◆ Office of Emergency Management
◆ State Attorney General
◆ National Guard
◆ Volunteer organizations active in disasters (American Red Cross, Salvation Army, and other disaster services organizations).

The State EOC can communicate directly with all county/parish emergency management offices, all State police troops or districts, and Federal agencies. In this way, the State EOC can provide an excellent communications backup for deployment operations.

Regional EOCs

Some states have regional EOCs that coordinate the disaster/emergency response of multiple communities within a geographic region. Like the State EOC, regional EOCs can communicate with regional agencies. A regional EOC can coordinate assistance to convoy operations moving through its region.

County/Local EOCs

Many counties and parishes in the country have EOCs and respective emergency managers. In these centers, county/parish agencies and volunteer organizations come together to deal with emergencies, disasters, or special events. These EOCs have direct communication with local law

enforcement, fire services, and EMSs within their jurisdiction. In addition, they are accustomed to working with the State EOC to resolve emergency-related problems.

State Department of Public Safety (SDPS)/State Police Dispatch Centers

These centers have the ability to become operations centers to handle emergencies. Primarily, they dispatch and control State police officers. All dispatch centers are linked by radio and can coordinate interregional police activities. These dispatch centers have direct links to local law enforcement dispatch centers, county/parish EOCs, and the State EOC. State police support to convoy operations should be coordinated through these dispatch centers, which are staffed 24x7 and can enable deployment controllers to communicate with convoys through State police officers on the road.

Local Law Enforcement Dispatch Centers

Sheriff office and local police dispatch centers can communicate and coordinate the activities of emergency responders throughout their community. They also have radio communication with State police and the county/parish, regional, and State EOCs. Local law enforcement support to convoy operations should be coordinated through this dispatch center.

CHAPTER 6. SPECIAL CONSIDERATIONS

The coordination of military deployments on roads and highways has been presented in the previous chapters through the discussion of concepts such as roles and responsibilities, typical military deployment movements, and the availability of technologies to assist in planning and operations. This chapter highlights special considerations which may need to be addressed, depending on the circumstances of the deployment. As such, the topics in this chapter are more typically cross-cutting and require greater deliberation and coordination among agencies. One such topic is force protection during military deployments.

FORCE PROTECTION

Force protection of military assets is a concept that military strategists and tacticians have long been concerned with. Doctrine, plans, and procedures relating to military asset protection have been formulated to cover the period of time when forces arrive in the operations area until they go into battle. Until recently, there has been little motivation to develop doctrine, plans, or procedures for protecting troops on the move in continental United Status (CONUS). The events of 9/11 have caused the military and national leaders to reconsider how and when critical military asset protection is needed.

Force protection doctrine for convoy operations within CONUS is currently being developed. Guidance for the development of CONUS force protection plans, procedures, and tactics will come from that doctrine. The following factors will require consideration when developing military deployment force protection plans, procedures, and tactics:

◆ Terrorist targets may include infrastructure (bridges, tunnels, highway overpasses), convoys, military equipment, trains, or soldiers.
◆ State and local law enforcement agencies may not be able to respond to serious domestic terrorist threats to convoys on the move.
◆ Available intelligence on threats to specific convoys will vary.
◆ The sharing of threat intelligence among military and civilian deployment support agencies will be critical to force protection planning and execution.
◆ Any military solutions to deployment force protection must be accompanied by CONUS-specific training for soldiers performing force protection missions.
◆ National Guard assets are an excellent source of military expertise, but they may not be available due to other commitments.
◆ Existing threat conditions must be considered and applied when developing actions for protecting convoys.

APPENDIX A. LIST OF POWER PROJECTION PLATFORMS

Each Army and Marine Corps power projection platform (PPP) has a designated seaport of embarkation (SPOE) and a designated aerial port of embarkation (APOE). In some cases, the SPOE is an extended distance from the PPP and for those installations rail may be the primary mode of transport.

Table A-1 lists the designated embarkation ports for military planning purposes; however, military assets may be sent to any port.

Table A-1. U.S. Military Power Projection Platforms and Their Designated Sea and Aerial Ports of Embarkation (SPOE and APOE)

PPP Installation	Designated SPOE	Designated APOE
Ft. Hood, TX	Port of Beaumont/Corpus Christi, TX	Robert Gray AAF
Ft. Bragg, NC	Port of Wilmington, NC	Pope AFB
Ft. Drum, NY	Port of New York/New Jersey	Wheeler-Sack AAF
Ft. Campbell, KY	Port of Jacksonville, FL	Campbell AAF
Ft. Stewart, GA	Port of Savannah, GA	Hunter AAF
Ft. Riley, KS	Port of Beaumont/Corpus Christi, TX	Forbes Field
Ft. Lewis, WA	Port of Tacoma, WA	McChord AFB
Ft. Carson, CO	Port of Beaumont/Corpus Christi, TX	Peterson AFB
Ft. McCoy, WI	Port of Hampton Roads, VA	Volk Field
Ft. Polk, LA	Port of Beaumont/Corpus Christi, TX	Alexandria International
Ft. Dix, NJ	Port of New York/New Jersey	McGuire AFB
Ft. Bliss, TX	Port of Beaumont/Corpus Christi, TX	Biggs AFB
Ft. Sill, OK	Port of Beaumont/Corpus Christi, TX	Lawton/Ft. Sill Regional Airport
Ft. Benning, GA	Port of Savannah, GA	Lawson AAF
Ft. Eustis, VA	Port of Hampton Roads, VA	Langley AFB
Camp Pendleton, CA	Port of San Diego, CA	March AFB
Camp Lejeune, NC	Port of Morehead City, NC	MCAS Cherry Point

Figure A-1 provides a nationwide view of the installations designated as power projection platforms and the Strategic Highway Network (STRAHNET).
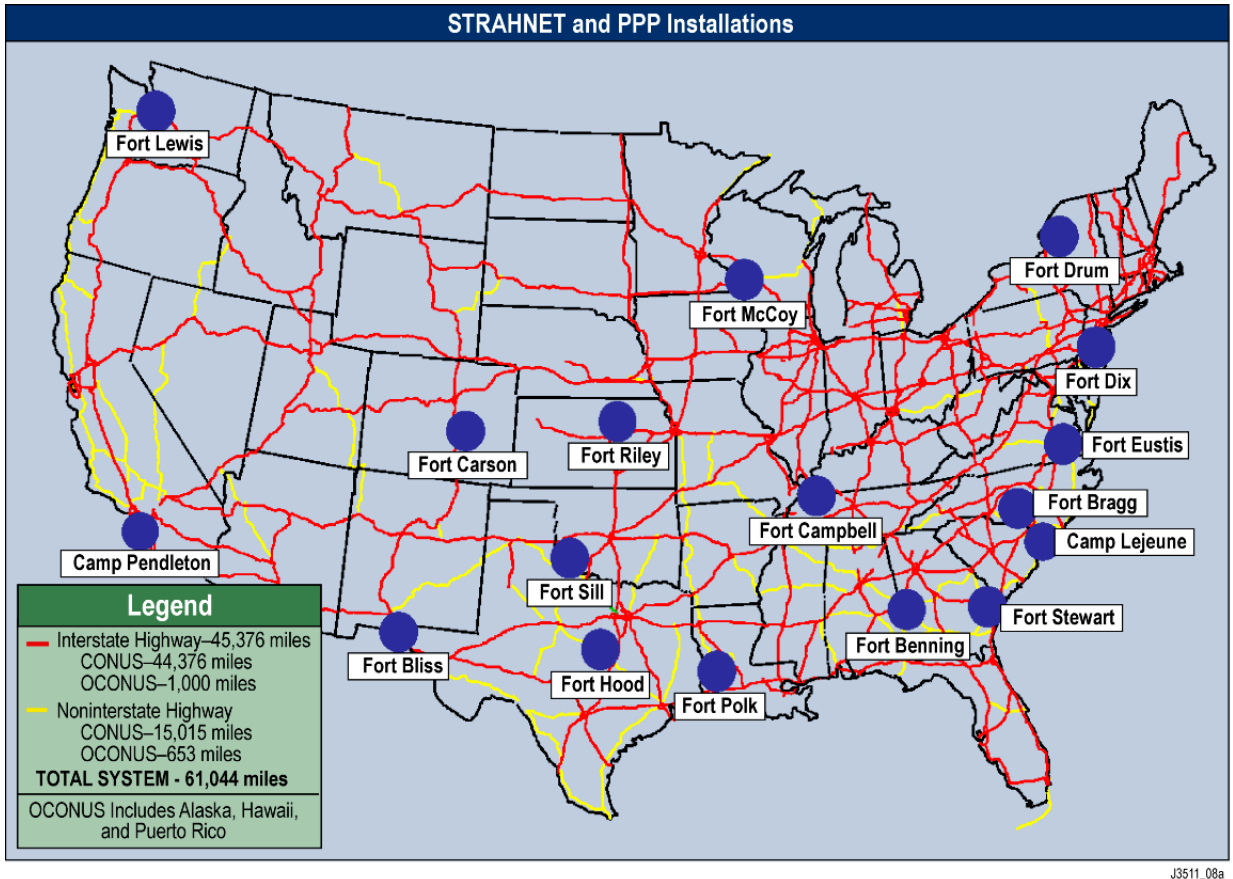

Figure A-1. U.S. Military Power Projection Platforms and the Strategic Highway Network

APPENDIX B. MILITARY CONVOY MOVEMENT FACTS

The following information and terminology will assist State and local agency representatives who support military convoy operations in understanding the movement of convoys.

Organizational Elements ◆

To facilitate command and control, vehicles in a convoy are organized into groups. A convoy may be as small as a six-vehicle march unit or as large as a 300-vehicle column. A convoy commander can better control a convoy if it is broken into smaller, more manageable groups. Whenever possible, convoys are grouped along organizational lines, such as platoon, company, and battalion.

The three organizational elements of a convoy are a march column, a serial, and a march unit (Figure B-1):

- ◆ A march column is approximately a battalion-to-brigade-size element. Each column has a commander. A march column consists of two to five serials.
- ◆ A serial consists of elements of a march column (convoy) moving from one area over the same route at the same time. All the elements move to the same area and are grouped under a serial commander. The serial commander is directly responsible to the convoy commander. A serial may be divided into two or more march units.
- ◆ A march unit is the smallest organized subgroup of the convoy; it usually does not exceed 20 vehicles. It falls under the direct control of the march unit commander.
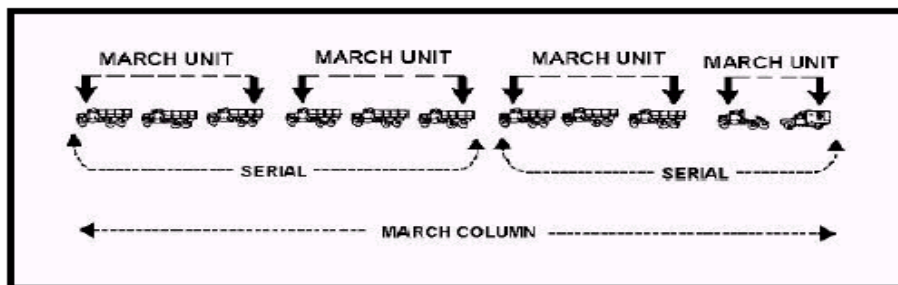

Figure B-1. Organizational Elements of a Convoy

All columns, serials, and march units, regardless of size, have three parts: a head, a main body, and a trail (Figure B-2). Each of these parts has a specific function.

The **head** is the first vehicle of each column, serial, or march unit. Each head should have its own pacesetter. The pacesetter rides in this vehicle and sets the pace needed to meet the scheduled itinerary. The officer or noncommissioned officer at the head ensures that the column follows the proper route.

The **main body** follows immediately after the head and consists of the majority of vehicles moving as part of the convoy.

The **trail** is the last sector of each march column, serial, or march unit. The trail officer is responsible for recovery, maintenance, and medical support. The recovery vehicle, maintenance vehicles, and medical support vehicles/teams are in the trail. The trail officer is responsible for march discipline, breakdowns, straggling vehicles, and control at the scene of any accident or incident involving his march unit until the arrival of civilian authorities.
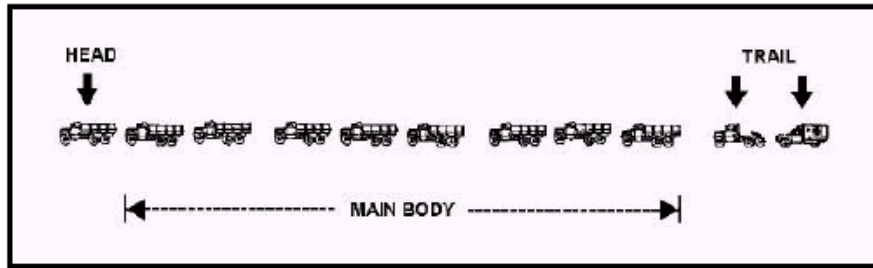
Figure B-2. Elements of a March Column

Convoy Formations ◆

The convoy must be organized to meet the deployment mission requirements and provide organizational control. The convoy commander decides how the convoy will be formed for movement, taking into consideration such factors as the planned route, distance to the destination, types of vehicles/equipment, and travel conditions (weather, time of day, etc.). The three basic types of formations are close column, open column, and infiltration. They are as follows:

◆ *Close column.* This formation provides the greatest degree of convoy control. It is characterized by vehicle intervals of 25 to 50 meters and speeds under 25 mph. Close column is normally used during limited visibility or on poorly marked or congested roads.
◆ *Open column.* This is the preferred formation during movement. It is characterized by vehicle intervals of 300 feet or more and speeds in excess of 25 mph. The open column formation is normally used on well-marked open roads with good visibility.
◆ *Infiltration.* This formation has no defined structure. Vehicle intervals and speeds vary. This type of formation is normally not used during movement. Infiltration should be used only as a last resort in extremely congested areas, when the convoy becomes unexpectedly dispersed or when the mission dictates.

Other Terms ◆

Distance. Distance factors, listed below, are expressed in kilometers or miles:

◆ *Length* is the length of the roadway the convoy occupies, measured from the front bumper of the lead vehicle to the rear bumper of the trail vehicle.
◆ *Road space* is the length of a convoy plus any additional space needed to avoid conflict with leading and following traffic.
◆ *Gap* is the space between vehicles (vehicle interval) or between elements of a convoy (column gap). It is measured from the rear of one element to the front of the following element.
◆ *Road clearance distance* is the distance that the head of a convoy must travel for the entire convoy to clear a given point along the route. It is the sum of the convoy's length and road distance.

Time. Time factors, listed below, are expressed in hours or minutes:

◆ *Pass time* is the time required for a convoy or a subgroup to pass a given point on the route.
◆ *Time space* is the time required for a convoy or one of its subgroups to pass any point along the route.

- ◆ **Time gap** is the time between vehicles or elements as they pass a given point. It is measured from the trail vehicle of one element to the lead vehicle of the following element.
- ◆ **Time lead** (headway) is the time between individual vehicles or elements of a convoy, measured from head to head, as they pass a given point.
- ◆ **Time distance** is the time required for the head of a convoy or any single vehicle to move from one point to another at a given rate of march.
- ◆ **Road clearance time** is the total time a convoy or an element needs to travel over and clear a section of road. Road clearance time equals the pass time plus the time distance.

Pacesetter. The convoy commander will designate a pacesetter for the convoy. The pacesetter is in the first vehicle in the march element, normally the slowest, heaviest vehicle, excluding oversize/overweight vehicles. The pacesetter will:

- ◆ Maintain the rate of march established by the convoy commander
- ◆ Meet all established times
- ◆ Inform the convoy commander of any obstacles or hazards, such as construction, detours, or other obstacles, that may cause a deviation from the established route
- ◆ Coordinate with DPS escort officers, as appropriate.

Trail Officer. The trail officer is positioned at the rear of a march element. He checks and observes vehicles and keeps the convoy commander informed on the status of vehicles that fall out of the convoy. He oversees all maintenance, recovery, accident investigation, medical aid, and disposition of disabled equipment.

Convoy Identification   ◆

Convoy Control Number. Each convoy is identified by its convoy control number (CCN), which is assigned by the ITO where the convoy originates. The CCN identifies the convoy during its entire movement. It is placed on both sides of each vehicle in the convoy. The CCN is also placed on the top of the hood of the first and last vehicles of each march element.

The CCN has 10 digits. The first two digits identify the location (post or State) from which the convoy originates. The next four digits represent the julian date (e.g., 5180 is the 180th day in 2005 or 30 June 2005). The next three digits are the sequence number, followed by a single digit designating the type of movement.

The movement designators are as follows:

- ◆ Outsize/overweight vehicles—S
- ◆ Explosives—E
- ◆ Hazardous cargo—H
- ◆ All other convoys—C.

Placarding. All convoy vehicles transporting hazardous materials must be appropriately placarded (Figure B-3). Placarded vehicles must also abide by Federal and State laws.

Vehicle Identification. The first vehicle (pacesetter) in each element of the convoy must have on its front a sign with 4-inch black letters on a yellow background reading CONVOY FOLLOWS. The last vehicle of each convoy element will have on the rear a sign reading CONVOY AHEAD. CONVOY AHEAD signs are not on maintenance or medical vehicles unless the vehicle's purpose is to represent the end of the convoy.

Each march element of a convoy must be marked with flags 12 inches high and 18 inches long. The lead vehicle is fitted with a blue flag and the rear vehicle with a green flag. The flag is mounted on the left front of the lead and trail vehicle so that it will not interfere with the driver's vision or with any functional component.
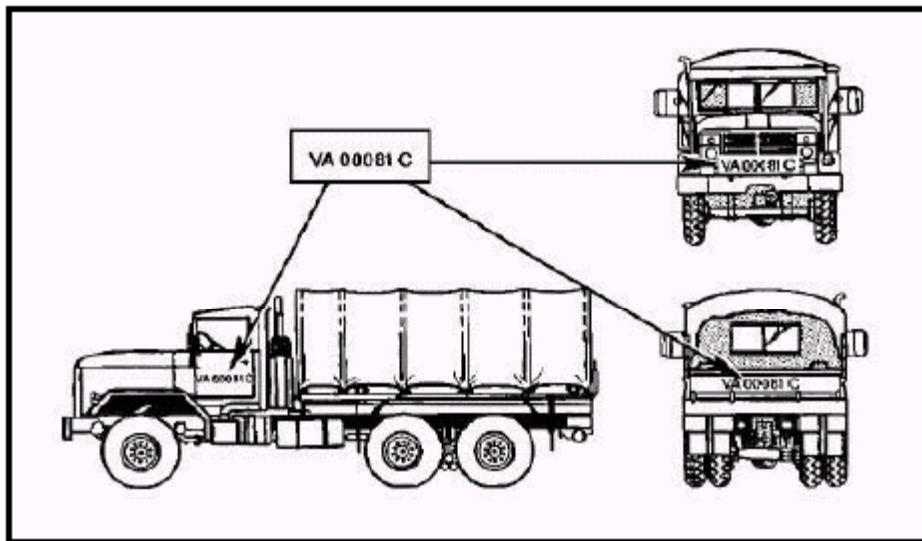
An example is FE 2234 039 C, a convoy leaving from Fort Eustis, VA, on 22 August 2002. It is the 39th convoy of the day and is a regular convoy without any special requirements.

Figure B-3. Placard Placement on Convoy Vehicles

The vehicles of the column, serial, and the march unit commanders must carry on the left front bumper a white and black flag. Trail party vehicles will carry an international orange safety flag. Local police or MP escort vehicles will not display convoy identification flags.

A rotating amber warning light is placed on cranes (wreckers), oversize or overweight vehicles, and the first and last vehicles in a convoy. The lights are on at all times when the convoy is operating outside a military installation.

Vehicle Placement. The placement of the vehicles in an organizational element of a convoy is determined by many factors. A major factor is the danger of rear-end collisions. To reduce the possibility of injury to personnel, vehicles transporting troops should be placed in the first march unit of the main body of the convoy. When empty trucks or trucks loaded with general cargo are available, they should be used as buffer vehicles between those transporting personnel and those loaded with hazardous cargo. Other factors to consider include the following:

◆ Vehicles that require the longest unloading time should be near the front of the main body of the convoy. This will shorten turnaround time.
◆ If the convoy consists of vehicle-trailer combinations, there should be one prime mover without trailer (bobtail) per 10 vehicle-trailer combinations to support recovery operations.
◆ Vehicles transporting hazardous cargo should be in the last serial of the convoy but not in the trail party.

Safety Equipment and Warning Devices. While moving at night or during periods of reduced visibility, lead, trail, and oversize/overweight vehicles will operate four-way flashers. Convoy vehicles will also display reflective L-shaped symbols 12 inches long and 2 inches wide at the lower corners of the vehicle's body.

(Headlights of all vehicles moving in convoy or halted on road shoulders must be on low beam at all times except where prohibited by local ordinances. While halted on shoulders, vehicles equipped with emergency flasher systems must also have these lights operating. The following safety equipment is needed in all vehicles:

◆ An approved fire extinguisher
◆ An approved first aid kit
◆ One set (pair) of tire chains when snow or ice conditions may be encountered
◆ An approved highway warning kit.

Road guides must wear high-visibility devices such as a reflective vest. Baton flashlights must also be provided when the convoy operates during darkness or when visibility is reduced to 500 feet or less.

Highway Convoy Operations ◆

Main convoy routes, such as major highways and expressways, are usually characterized by heavy, fast-moving traffic. Entering, driving, and halting on these routes are extremely critical operations that require prior planning and coordination with civilian authorities. Convoy commanders and drivers require special training and field practice to operate specialized equipment on major public highways.

Entering Convoy Routes. The convoy should depart the assembly area at the time given in the movement order. Police support will reduce interference with other traffic and ensure the integrity of the convoy. The "close column formation" should be used when moving from the assembly area to the main convoy route.

This same practice should be followed when the convoy is leaving any staging or assembly area.

Note: Risk can be significantly reduced when civilian police assist by controlling civilian traffic. If a civilian police escort is not available, MPs or other military personnel may need to fill this role. However, coordination with local law enforcement will be needed to confirm jurisdiction and authority on public highways.

Entering Expressways. Most expressways are equipped with entrance and exit ramps and acceleration and deceleration lanes that are designed to allow vehicles to enter and leave without interfering with other traffic. When used properly, these lanes greatly reduce the risk of traffic accidents and help in the movement of the convoy. The following instructions apply both to the initial point of entry to the expressway and the return to it from a rest/halt area:

◆ As mentioned previously, civilian police assistance should be obtained to direct convoy vehicles onto the expressway and to control civilian traffic. When civilian police are not present, MPs or other military personnel should be used to signal military vehicles when it is safe to enter the expressway. Military traffic should not interfere with civilian traffic.
◆ Before driving onto the entrance ramp, the distance between convoy vehicles should be reduced to a maximum of 20 yards. This reduces the time the entrance ramp is blocked to normal traffic.
◆ Upon reaching the acceleration lane, convoy speed should be increased to equal as closely as possible that of other traffic on the expressway. The maximum speed authorized for military vehicles on expressways is 50 mph.

◆ Military vehicles moving on controlled access highways should maintain the posted minimum speed or 40 mph if a minimum speed is not posted. Vehicles that cannot maintain the posted minimum speed will be routed over an alternate, noncontrolled access road.

◆ Under no circumstances should the posted maximum speed limit be exceeded.

◆ When moving into the traffic lane and before merging, the driver must ensure that lanes are clear of oncoming traffic. After entering the traffic lane, drivers should not immediately try to move to the prescribed distance for expressway convoy operations but continue for a distance equal to the road space of the column. Drivers should then gradually attain the distance between vehicles for expressway driving or as given by the operation order and final briefing.

Note: Vehicles must not slow down or close up while in a traffic lane of the expressway.

Driving on Expressways. All vehicles must remain in the right-hand lane once the convoy has entered the expressway. If the right lane is reserved for traffic exiting at the next exit ramp, the convoy should use the next adjacent lane. Drivers are trained to stay alert and to be prepared to slow down or take other evasive action to avoid vehicles entering the expressway from acceleration lanes.

Rest and Meal Halts on Conventional Highways. On conventional highways with adequate off-shoulder parking space, rest and meal halts normally do not present a problem. However, the following precautions should be taken:

◆ Do not select rest areas located in urban or heavily populated areas

◆ Avoid areas on curves or reverse sides of hills

◆ Leave enough room to allow the vehicles to park off the paved portion of the road and return to the road safely

◆ Maintain a minimum distance of 3 feet between parked vehicles

◆ Place warning kit devices at the head and tail of the column unless the vehicles are completely off the highway and shoulder

◆ Leave the flashing warning lights in operation and the headlights on

◆ Post a guard behind the trail party with proper warning devices to alert, but not direct, approaching traffic

◆ Do not permit convoy personnel, with the exception of guards at the head and tail of each halted march element, on the traffic side of vehicles except to perform prescribed maintenance

◆ Make sure drivers and assistant drivers perform prescribed at-halt maintenance and check the security of cargo and report deficiencies that cannot be corrected by the vehicle crew to the serial commander

◆ Post guards at least 50 yards behind the last vehicle to warn traffic when departing a rest area. When police support is provided, this step may not be required. Convoy vehicles should return to the highway as rapidly and safely as possible.

Refueling Halts. Most military vehicles can travel 300 miles without refueling. Vehicles with limited range should be refueled during the noon meal halt as well as during regular refueling halts.

Note: In determining when to refuel, the vehicle with the least operating range is used as the baseline. This prevents any vehicle in the convoy from running out of fuel.

Toll Roads, Bridges, and Tunnels. A convoy representative should be assigned to clear the convoy at the initial entrance to toll facilities and any intermediate points where tolls are collected.

When possible, toll tickets or electronic passes should be obtained before the convoy departs from its point of origin. When this is not feasible, the convoy representative should arrive at the toll facility entrance well ahead to coordinate passage and arrange for the uninterrupted movement of the convoy through the toll facility.

Certain toll authorities, especially at tunnels, may provide an escort through the toll facility. The DMC should coordinate with the toll authority to facilitate convoy movement, as appropriate.

Halts Due to Mechanical Failure. If a vehicle develops mechanical trouble, the driver should activate the appropriate turn signal to alert the vehicle behind him and move onto the shoulder or into a parking area and wait for the arrival of the trail party. Heavy Equipment Transport System (HETS) vehicles should not use the roadway shoulders due to their size and weight. The remaining convoy vehicles should continue past the halted vehicle, leaving maintenance to be done by the trail party.

A vehicle disabled because of mechanical failure should immediately be moved from the traffic lane to a location where it will not be a hazard to other traffic. If a breakdown occurs while driving on an expressway or highway, the driver should take immediate action appropriate to the time of day and degree of visibility in the area.

Sunset to Sunrise: During the time that lights are required (sunset to sunrise) and when forward visibility is reduced to 500 feet or less, a reflector should be placed either in the obstructed lane or on the shoulder of the road if the vehicle is on or over the shoulder. The reflector should be placed to face the traffic using that lane. This should be done before attempting to repair the vehicle.

Sunrise to Sunset: During the time lights are not required (normally sunrise to sunset), red flags or reflectors with mounted flags should be placed at the distances prescribed for night. Because most warning kits contain only two flags, the reflector placed 10 feet behind the vehicle will not have a flag.

Attention to Public Safety ◆

Commanders should locate disabled vehicles to minimize impact on the traveling public and damage to roadway infrastructure. Certain military vehicles can be safely halted on roadway shoulders; however, oversize/overweight vehicles should never be stopped on shoulders.

Commanders are instructed not to use military personnel to warn drivers by manual flagging except when emergency warning devices do not give adequate warning.

Accident Procedures. If an accident occurs, every effort must be made to reduce its effects and to keep the convoy moving. In the event of an accident, the following steps should be taken:

◆ *Keep moving*. Only the vehicle immediately behind the damaged vehicle should stop and render assistance.
◆ *The affected vehicle should wait for assistance*. The vehicle should not be moved until civilian police have completed an accident investigation. Any accident should be reported to civilian police.
◆ *Clear the traffic lane*. The crew of the affected vehicle should make every effort to clear the traffic lane as soon as possible. In case of injuries, the crew of the assisting vehicle may be required to move the damaged vehicle.

◆ *Prepare the accident reports* (for military and State or local law enforcement).

Vehicle Accidents Causing a Fire or Creating an Electrical or Fire Hazard. Motor convoys travel mostly over highways in rural areas. Fire departments in these areas are widely scattered, and firefighters may have to travel a long distance to respond to an emergency. This means that convoy control personnel will probably be the first to arrive at the scene of the accident and must be prepared to rescue endangered personnel, attempt to control a fire, or take steps to prevent one. If the accident results in a vehicle fire, convoy supervisory personnel should take the following actions:

◆ Halt the control vehicle a safe distance from the fire. Direct the driver or other convoy personnel to notify the nearest fire and police departments, using the most expeditious means; for example, roadside emergency, service station, or private residence telephone. If radio communication is available, notify the convoy commander.
◆ Remove injured personnel from burning vehicles as quickly as possible, even when it means subjecting a person to further injury. Follow established first aid procedures in caring for the injured before attempting to control fire in unoccupied vehicles.
◆ Keep spectators at a safe distance.
◆ Attempt to extinguish the fire with the control vehicle extinguisher, extinguishers from other vehicles, or with sand or mud.

Vehicle Accidents Involving a Truck Carrying Explosives or Hazardous Cargo. In the event of an accident involving a truck carrying either explosives or hazardous cargo, supervisory personnel are instructed to take the following actions:

◆ Approach cautiously. Resist the urge to rush in; people involved in the accident cannot be helped or rescued until the hazards are known.
◆ Use the Emergency Response Guidebook as a guide.
◆ Immediately notify all assisting agencies and personnel of the hazards involved.
◆ If the accident results in a fire hazard, supervisory personnel should:
  — Halt the control vehicle a safe distance from the accident. Direct the driver or other convoy personnel to notify police and fire departments by the fastest means. When radio communication is available, notify the convoy commander.
  — Turn off the ignition and lights of the vehicles involved. Because of the possibility of sparks, do not remove battery cables unless absolutely necessary.
  — Remove injured personnel as soon as possible.
  — Keep spectators away from areas where flammable liquids have been spilled or toxic fumes have accumulated.
  — Guard against smoking by spectators or cigarettes thrown from passing vehicles. If personnel are available, post guards to warn passing drivers of a fire hazard.
  — Notify nearby residents when spillage may place them in danger.

Vehicle Accidents Involving Power Lines. If the accident involves high-tension power lines, an extremely dangerous situation exists. The danger is even greater when the downed lines are touching a vehicle. Convoy supervisory personnel will take the following steps:

◆ Contact police immediately and explain the situation. The police will be able to contact power company personnel for emergency assistance more quickly than convoy personnel.
◆ Keep spectators at least 100 feet from downed wires.

◆ If wires are touching any of the vehicles involved, direct the occupants to remain in place until power company workers can cut off the electricity and remove the wires.

◆ In case of serious injury where death may be imminent unless rescue is effected, attempt to remove the wires, assist the injured from the vehicle, render first aid, and obtain medical assistance.

◆ The following procedures are NOT routine. Perform the following only when death may result:

— Remove the wires from the vehicle by looping a completely dry fiber or cotton rope around them and pulling them free.

— Lift the wires from the vehicle using a completely dry-seasoned wooden pole.

Reduce the risk of electrical shock by standing on a rubber vehicle floor mat, dry wooden planking, or other nonconductive material. Rescue personnel must be aware that the ground close to an area touched by a hot wire may be charged and should be avoided.

APPENDIX C. KEY TERMS

Access road—An existing or proposed public highway from a military reservation, defense industry, or activity to suitable transportation facilities. (This may include a public highway through military installations when it is dedicated to public use and, by fee simple or easement, is owned, operated, and maintained by civil authority.)

Brigade (BDE)—A unit usually smaller than a division to which are attached groups and/or battalions and smaller units tailored to meet anticipated requirements.

Cargo—Item(s) or freight to be moved, including items on or in a vehicle, towed by a vehicle; or a vehicle itself.

Commercial carrier—Common, contract, for-hire, or private carrier.

Convoy—Any group of six or more vehicles temporarily organized to operate as a column, with or without escort, proceeding together under a single commander; or a series of vehicles dispatched at the rate of 10 or more per hour to the same destination over the same route.

Column formation—A formation in which elements are placed one behind another.

Column gap—The space between two consecutive elements proceeding on the same route. The space can be calculated in units of length or units of time measured from the rear of one element to the front of the following element.

Column length—The length of the roadway occupied by a column or a convoy in movement.

Dimension limitation—The overall width, length, or height of a vehicle or combination of vehicles, or combination of a vehicle and lading.

Division—A major administrative and tactical unit/formation that combines the necessary arms and services required for sustained combat; larger than a regiment/brigade and smaller than a corps.

Dwight D. Eisenhower National System of Interstate and Defense Highways (NSIDH)—A limited highway system in the United States of 42,500 miles as established by law. Highways are to be located so as to connect by routes, as directly as practicable, the principal metropolitan areas, cities, and industrial centers to serve the national defense, and to connect, at suitable border points, with routes of continental importance in Canada and Mexico.

Earliest arrival date (EAD)—A date specified by the supported commander in chief (CINC) that is the earliest date when a unit, a resupply shipment, or replacement personnel can be accepted at a port of debarkation (POD) during a deployment. This date is used with the latest arrival date to define a delivery window for transportation planning.

Essential cargo—Cargo required for accomplishment of a military mission in accordance with the definition of mission, as well as "essential materiel" specified in the Uniform Materiel Movement and Issue Priority System (UMMIPS), DoD Directive 4410.6; also, cargo that is essential for prosecution of a war or for national survival during a survival period.

Emergency highway traffic regulation plan—A system of traffic management and control devised to regulate the use of highways and to expedite and facilitate urgent vehicle movement by highway just before, during, and just after a national security emergency.

Emergency highway traffic regulation (EHTR)—A regulation that contains plans, routes, and schedules for the use of highways to facilitate the orderly flow of traffic during a national emergency. The EHTR provides for evacuation, regulating movement through dangerous areas, and clearing priority traffic over routes of limited capacity.

Executive Order (EO) 12656—Assignment of emergency preparedness responsibilities; dated November 18, 1988, as amended.

Highway network—A total system of highways, roads, streets, bridges, tunnels, and related facilities, including all toll facilities, regardless of financing.

Highway movement essential to national defense—Use of highway(s) by essential cargo that cannot be reduced in size or weight or moved by another means and that has been determined to be eligible for highway movement.

Installation road—A road or street within a military reservation or in which DoD has real estate interest. Such a road is not dedicated to public use and is not eligible for improvement with defense access road funds.

Latest arrival date (LAD) at the APOD/SPOD—A date specified by the supported commander in chief (CINC) that is the latest date when a unit, a resupply shipment, or replacement personnel can be accepted at a port of debarkation (POD) and support the concept of operations. ANLAD is used with the earliest arrival date to define a delivery window for transportation planning.

Legal limitation—The statutory, administrative, or other regulations governing permissible length, width, height, loads, tire pressure, performance limits, or other characteristics for vehicles serving in a regular operation. Regular operation does not include the operation of vehicles or combinations of vehicles in excess of legal limitations; the latter operation must be authorized by a special permit issued by an appropriate civil authority.

Movement authorization—A legal form issued to authorize movement of a load or vehicle over regulated routes during lower traffic periods and/or other specific periods as determined by the traffic regulation agencies, to optimize traffic handling and road use.

N-day—The unnamed day on which an active duty unit is notified for deployment or redeployment.

N-hour—Notification hour (N+1, N+5, etc.).

National security emergency—Any occurrence, including military attack or technological or other emergency, that seriously degrades or threatens the national security of the United States.

Permit—A written authorization to move or operate on a highway a vehicle or vehicles having a size, weight, load, or other characteristic (such as a hazardous material cargo) exceeding the legal limitations for vehicles in regular operation and/or operating during restricted hours or on Saturdays, Sundays, or holidays.

Port of embarkation (POE)—The geographic point in a routing scheme from which cargo or personnel depart. This point may be a seaport or an aerial port from which personnel and equipment move to a port of debarkation.

Port of debarkation (POD)—The geographic point in a routing scheme at which cargo or personnel arrive.

Port operations group—A task-organized unit, located at a seaport of embarkation and/or debarkation under the control of the landing force support party and/or combat service support element, that assists and supports the loading and/or unloading and staging of personnel, supplies, and equipment for shipping.

Port planning order (PPO)—An agreement between a commercial port and the military to provide staging space and port support to meet military deployment needs.

Port security—The safeguarding of vessels, harbors, ports, waterfront facilities, and cargo from internal threats such as destruction, loss, or injury from sabotage or other subversive acts, accidents, thefts, or similar causes.

Port support activity (PSA)—A tailorable support organization composed of mobilization station assets that ensures the equipment of the deploying units is ready to load. The PSA operates unique equipment in conjunction with ship loading operations. It is operationally controlled by the military port commander or terminal transfer unit commander.

Power projection—The ability of a nation to apply all or some of its elements of national power—political, economic, informational, or military—to rapidly and effectively deploy and sustain forces in and from multiple dispersed locations to respond to crises, to contribute to deterrence, and to enhance regional stability.

Power projection platforms (PPP)—Military installations that strategically deploy one or more high-priority active component brigades (or larger). The military installation may also mobilize and deploy high-priority reserve component units.

Priority permit—A legal form issued to authorize movement of a load or vehicle between two or more points over regulated routes within specified time limits.

Ready-to-load date (RLD)—The date when a unit will be prepared to depart from its origin.

Replacement road—A public road that must be built to replace a public highway or street that has been or will be closed to public use because of construction, expansion, security, or safety requirements of a military installation or defense industry.

Required delivery date (RDD)—A date when a unit or material must arrive at its destination and complete offloading to properly support the military operation.

Regulated routes—Highways, roads, and streets, or portions thereof that must be subject to regulation because of hazardous conditions, special uses, or limited capacity in relation to demand.

Regulated routes—Class A—Highways, roads, and streets, or portions thereof that lie within an area contaminated by radioactivity or other material or affected by circumstances that are hazardous to the life and health of highway users. These roads may be used with special precautions and practices.

Regulated routes—Class B—Highways, roads, and streets, or portions thereof that are temporarily reserved for a special purpose, such as military or civil defense movements or use by other priority vehicles that may be allowed access to such routes by permit.

Regulated routes – Class C—Highways, roads and streets, or portions thereof that are determined to have, or are expected to develop, critical capacity restrictions and on which travel is generally limited to holders of road use permits.

Roads "open to public travel"—Roads within military installations to which dependents, visitors, and other members of the public are permitted access. To have identification to enter a road does not exclude it from being a road "open to public travel."

Single port manager (SPM)—The U.S. Transportation Command, through its component command the Military Traffic Management Command, is designated as the single port manager for all common-user seaports worldwide. The single port manager performs functions necessary to support the strategic flow of deploying forces' equipment and sustainment supply in the sealift port of embarkation (SPOE) and hand-off to the geographic commander in chief (CINC) in the sealift port of debarkation (SPOD). The single port manager is responsible for providing the strategic deployment status to the CINC and to operating the SPOD port operator base according to the CINC's priorities and guidance. The single port manager is responsible for all phases of theater port operations, from a bare beach deployment to a commercial contract-supported deployment.

Traffic engineering—The field of engineering that involves planning, geometric design, and traffic operations of roads, streets, and highways. It includes their networks, terminals, abutting land, and relationships with other modes of transportation for safe, efficient, and convenient movement of persons and goods.

Traffic regulation posts—Control points at either end of or along regulated routes for controlling the flow of traffic onto or on the route, checking road use permits, and advising vehicle occupants of any dangers.

Weight limitation—Applies to axle loads and spacing and to the gross load of a vehicle, or the combination thereof.

Warning order—A planning directive that describes a situation, allocates forces and resources, establishes command relationships, provides other initial planning guidance, and initiates subordinate unit mission planning.

Vehicle distance—The clearance between vehicles in a column that is measured from the rear of one vehicle to the front of the following vehicle.

APPENDIX D. ACRONYMS

AC	Active Component
AHA	Ammunition Holding Area
AIS	Automated Information System
AIT	Automatic Identification Technology
ALD	Available-to-Load Date
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
AR	Army Regulations
ARNG	Army National Guard
ASCC	Army Service Component Command
ATF	Bureau of Alcohol Tobacco and Firearms
AVI	Automatic Vehicle Identification
AVL	Automatic Vehicle Location
BOL	Bill of Lading
C2	Command and Control
CAP	Crisis Action Planning
CAV	Cavalry
CCN	Convoy Clearance Number
CCTV	Closed-Circuit Television
C-DAY	Day on which deployment operations commence
CDL	Commercial Drivers License
CINC	Commander in Chief
CJCS	Chairman of the Joint Chiefs of Staff
CMO	Convoy Movement Order
COCOM	Combatant Commander
COE	Common Operating Environment
COMPASS	Computerized Movement Planning and Status System
CONOPS	Concept of Operations
CONPLANS	Concept of Operation Plans
CONUS	Continental United States
COTS	Commercial-off-the-shelf
CP	Control Point
CVISN	Commercial Vehicle Information System
CVO	Commercial Vehicle Operations
CY	Calendar Year
DEL	Deployment Equipment List (to be replaced by UDL)
DMC	Defense Movement Coordinator
DoD	Department of Defense
DOL	Directorate of Logistics
DOT	Department of Transportation
DPS	Department of Public Safety
DPW	Department of Public Works
DRF	Division Ready Force
DSB	Deployment Support Brigade
DST	Deployment Support Team

DTR	Defense Transportation Regulation
DTS	Defense Transportation System
DTTS	Defense Transportation Tracking System
EAD	Earliest Arrival Date
EHTR	Emergency Highway Traffic Regulation
EM	Emergency Management
EMS	Emergency Management Services
EOC	Emergency Operations Center
ETTM	Electronic Toll Tags and Tag Management
FAS	Federation of American Scientists
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Army Field Manual
GBL	Government Bill of Lading
GCCS	Global Command and Control System
GCSS	Global Combat Support System
GFM	Global Flight Management System
GIS	Geographic Information System
GPS	Global Positioning System
GTN	Global Transportation Network
GWOT	Global War on Terrorism
HAR	Highway Advisory Radio
HAZMAT	Hazardous Material
HETS	Heavy Equipment Transport System
HSAS	Homeland Security Advisory System
IAW	In Accordance With
IBS	Integrated Booking System
IMDG	International Marine Dangerous Goods
IOC	Installation Operations Center
IRC	Initial Ready Company
IRRIS	Intelligent Road/Rail Information Server
IT	Information Technology
ITO	Installation Transportation Officer
ITS	Intelligent Transportation System
ITV	In-Transit Visibility
JOPES	Joint Operation Planning and Execution System
LAD	Latest Arrival Date
LBS	Location-Based Service
LNO	Unit Liaison Officer
MA	Marshalling Area
MACOMS	Major Commands
MARAD	Maritime Administration
MCC	Movement Coordination Center
MCS	Marine Cargo Specialist
MHE	Materials-Handling Equipment

MHz	Megahertz
MILVAN	Military-Owned Remountable/Demountable Container
MOBCON	Mobilization Movement Control
MP	Military Police
MSC	Military Sealift Command
MSL	Military Shipment/Shipping Label
MTMC	Military Traffic Management Command
MTS	Movement Tracking System
MUTCD	Manual Uniform Traffic Control Devices
NEXRAD	Next Generation Radar
N-hour	Notification Hour (N+1, N+5, etc.)
NIMS	National Incident Management System
NRP	National Response Plan
NSIDH	National System of Interstate and Defense Highways
OIF	Operation Iraqi Freedom
OPCON	Operational Control
OPLAN	Operation Plan
OPORD	Operation Order
OSOW	Oversize/Overweight
PAO	Public Affairs Office
PDA	Personal Digital Assistant
PM	Provost Marshall
PMO	Provost Marshal Office
POC	Point of Contact
POD	Port Of Debarkation
POE	Port Of Embarkation
PORTSIM	Port Simulation
PPCE	Personal Protective Clothing and Equipment
PPO	Port Planning Order
PPP	Power Projection Platform
PSA	Port Support Activity
RC	Reserve Component
RDD	Required Delivery Date
RDL	Ready-to-Load Date
RF	Radio Frequency
RFID	Radio Frequency Identification Technology
RORO	Roll-On Roll-Off
RP	Release Point
SDDC	Surface Deployment and Distribution Command
SDOT	State Department of Transportation
SDPS	State Department of Public Safety
SITREP	Situation Report
SMCC	State Movement Coordination Center
SP	Start Point
SPM	Single Port Management
SPOD	Seaport of Debarkation

SPOE	Seaport of Embarkation
STARC	State Area Command
STRAHNET	Strategic Highway Network
TBN	Transportation Battalion
TEA	Transportation Engineering Agency
THREATCON	Threat Condition
TISA	Troop Issue Subsistence Activity
TMC	Traffic Management Center
TMS	Traffic Management System
TOC	Traffic Operations Center
TPFDD	Time-Phased Force Deployment Data
TRADOC	U.S Army Training and Doctrine Command
TRANSCOM	U.S. Transportation Command
UDL	Unit Deployment List
UIC	Unit Identification Code
UMC	Unit Movement Coordinator
UMO	Unit Movement Officer
UMT	Unit Movement Team
USAR	U.S. Army Reserve
USCG	U.S. Coast Guard
USTRANSCOM	U.S. Transportation Command
VMS	Variable Message Sign
VSAT	Very-Small-Aperture Terminal
WAP	Wireless Access Protocol
WIMs	Weigh-In-Motion Systems
WPS	Worldwide Port System
WWW	World Wide Web

APPENDIX E. REFERENCES

The references identified in this section were utilized to create the this guide. Where possible, Internet links have been provided. The reference information is listed in the following order: United States Government, Department of Defense, states, and commercial sources.

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