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In 1995, TRADOC initiated the analytical process described in the March 1995 draft Joint Venture (JV) Campaign Plan. The resulting analyses provide the basis for redesigning today's Warfighting Army for the 21st century. The combat unit elements, combat service elements, and the combat service support elements needed to be analyzed individually to determine whether or not each of these sections would be able to effectively perform under the given scenario conditions. TRAC-Lee was tasked to analyze the CSS capabilities of the three (3) division designs (Conservative Heavy, Strike, Brigadist) for DDA Phase III. The three division designs were dynamically gamed using the Vector-in-Commander model in the LANTICA III, Northeast Asia 2.0, and Southwest Asia 4.2 scenarios. The CSS elements represented in VIC were analyzed by TRAC-Lee with the primary focus of the analysis was on the maintenance and supply operations and how the CSS units functioned for the given scenario.

This analysis concluded that the CSS structure in the Conservative Heavy Division can support the division during a 60-hour battle such as the one portrayed in Northeast Asia 2.0. There were a few problem areas in the CSS elements that were focused on in this analysis. Some of the artillery units used all of their ammunition reserves and were not resupplied in a timely manner due in part by the lack of ammunition transporters available.

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STUDY TITLE: Combat Service Support (CSS) Vector-in-Commander (VIC) Analysis in Support of Force XXI Analyses Division Design Analysis – Phase III CSS Analysis of VIC Dynamic Gaming Conservative Heavy Division Interim Design (North East Asia 2.0)

PURPOSE: The purpose of this analysis was to produce quantitative analysis of the Conservative Heavy Division Interim Design's combat service support (CSS) structure which was dynamically gamed in the North East Asia 2.0 scenario with the VIC model. The focus of the analysis was on the maintenance and supply operations and how the CSS units functioned for the given scenario.

MAIN ASSUMPTIONS: The principal assumptions of this study include: (a) all repair parts were available upon request, (b) Echelons-Above-Division (EAD) were fully resourced, and (c) CSS enablers and other technological equipment are present.

PRINCIPAL FINDINGS: The CSS structure in the Conservative Heavy Division could support the division during the 60-hour battle in the NEA 2.0 scenario with one exception. Several artillery units expended all of their ammunition resources at some time during the scenario and could not be resupplied in a timely manner.

IMPACT: This report suggests that the CSS structure in the Conservative Heavy Division is sufficient to sustain the division in a scenario such as the one portrayed in NEA 2.0.

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Combat Service Support (CSS) Vector-in-Commander (VIC) Analysis in Support of Force XXI Analyses

Division Design Analysis -- Phase III CSS Analysis of VIC Dynamic Gaming Conservative Heavy Division Interim Design (North East Asia 2.0).

Technical Report

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Combat Service Support (CSS)
Vector-in-Commander (VIC) Analysis
in Support of Force XXI Analyses

Division Design Analysis -- Phase III
CSS Analysis of VIC Dynamic Gaming
Conservative Heavy Interim Design (Northeast Asia 2.0)
08Jul97 VIC Analysis Data

1. General.

a. The Commanding General (CG) Training and Doctrine Command (TRADOC) tasked the TRADOC Analysis Center (TRAC) to conduct an analysis of the Combat Service Support (CSS) Division redesign concept. TRAC at Fort Lee, Virginia (TRAC-LEE) used Vector-in-Commander (VIC) analysis to provide quantitative analysis of that concept.

b. The dynamic gaming with the VIC model is based on the Northeast Asia 2.0 scenario with a total duration of 60 hours incremented in four hour time periods (TP) and a four (4) hour reorder cycle time between CSS units. The modeled force, the Conservative Heavy Interim Division, consists of three brigades with corps support. Specific descriptions and details for both the scenario and modeled force are provided in the main report.

c. The analysis focuses first on those key maneuver unit resources necessary for a unit to perform its designated mission. The specific resources addressed are weapon system availability and the timely availability of supplies. Secondly, various aspects of the CSS system are examined to isolate bottlenecks or shortages which limit the provision of needed services. And conversely, excesses or under-utilized CSS resources are identified for this scenario.

d. The analysis entails two major areas: maintenance support and supply support. Since the medical support system for the treatment of personnel is very similar in function to that of the maintenance system, medical support is addressed along with maintenance.

e. VIC unit name designators are used in this report for brevity. Appendix A shows the cross reference between actual unit names and VIC unit names.

2. Model Description.

a. The Vector-in-Commander (VIC) model is a two-sided, deterministic simulation of integrated land and air combat. The level of resolution is the maneuver battalion. As a deterministic model, VIC relies upon expected values; weapon systems, transporters, inventories/stockage levels, and consumption can be fractional values. VIC is event stepped for maneuver elements and both time stepped and event stepped for calculation of combat service support (CSS) effects. The combat and combat support (CS) functions in VIC produce a workload for the CSS system. Two key modules within VIC are used to represent the CSS system: Return to Duty (RD - maintenance) and Logistics (LO - supply).

b. The return-to-duty (RD) module operates on equipment and noncrew personnel, both of which are referred to as systems, as well as crews for key combat vehicles.

(1) Workloads. The attrition modules generate combat casualty workload in the form of combat-damaged systems. These quantities are adjusted to factor out catastrophic damage/killed in action (KIA) and abandonments (equipment only) before becoming a workload on the RD system. Reliability failures to equipment and disease and nonbattle injury (DNBI) to personnel are also generated, resulting in their removal from units and their introduction as workload upon the RD system.

(2) Processes. The RD module contains representations of the recovery, evacuation, and repair functions.

(a) Recovery is constrained by the availability of operational recovery vehicles. Recovery operations are represented as a delay time of 57 to 96 minutes which includes round trip travel, hook-up, and drop-off. The recovery time varies from vehicle to vehicle and the primary location of that vehicle.

(b) Evacuation is constrained by the availability of operational evacuation vehicles and dynamic evacuation times that are a function of distance and time on the main supply route (MSR) network.

(c) Repair is constrained by the available strength and type of assigned mechanics or medical personnel. Of course repair throughput is impacted by the 'time to repair' but repair time is determined by design factors and not CSS. A maintenance unit's maintenance man-hours (MMH) is degraded by fifty percent when that unit has to relocate on the battlefield. This degradation is calculated to the nearest quarter of an hour; therefore, a maintenance unit's MMH during a portion of a TP could be degraded while the remaining MMH are unaffected. The degradation of MMH availability is based on the premise that a maintenance facility will have only 50 percent of it assets (to include personnel) fully functioning at any time during a battlefield relocation.

(3) Products. The final product of the RD module is the return of crewed systems to owning units. Intermediate products of the various RD processes include recovered systems, evacuated systems, and repaired systems.

(4) Combat impacts on RD processes. Impacts include attrition of RD assets, productivity degradation due to unit movement, changes in evacuation distances due to unit movements, and changes in evacuation speeds due to congestion of MSR links.

c. The logistics (LO) module provides the support structure to facilitate the resupply of ammunition, fuel, and other supplies to maneuver units and the restocking of these supplies at supply units.

(1) Workloads. The attrition modules dynamically generate the workload for ammunition as units engage in conflict. As units move and change posture they create a workload for fuel. A workload for other supplies is generated by a daily consumption rate, depending upon unit types. When maneuver units deplete their basic loads to specified reorder levels, a requirement for resupply is levied on the CSS system.

(2) Processes. The LO module contains representation of the resupply and move functions. Resupply to maneuver units is constrained by the availability of resupply vehicles, availability of supplies at supply units, load times, and travel time between the unit and its supplier. The availability of supplies at supply points is constrained by transportation, availability of load facilities, and load/unload times. The move function is constrained by the availability of CSS trucks, congestion of the MSRs, and travel times between supply units.

(3) Products. The final product for the resupply and distribution system is the replenishment of expended ammunition, fuel, and other supplies to maneuver units. Intermediate products include the restocking of resupply units and the movement of supplies along the MSRs from higher echelon supply units.

(4) Combat impacts on LO processes. Attrition and movement of supply units as a result of combat effects degrade the ability of these units to perform their resupply function. Resources which can be lost at the supply units include resupply vehicles, stocks, and materiel-handling equipment (MHE). The relocation of supply units results in degradation of their receipt/issue capability during the move. In addition,

attrition of resupply vehicles, both at the maneuver unit and along the MSRs, degrades the ability of the CSS system to deliver supplies.

3. Assumptions.

a. Maintenance characteristics and parameters of all systems remain constant across the scenario.

b. When damaged weapon systems reach a maintenance facility, the correct tools, parts, and equipment are present at the facility. If the number of mechanics necessary to work on the damaged weapon system is available, they will begin working on the damaged weapon system immediately (i.e., prep time and time spent for damage assessment are not played in the model).

c. The DNBI rate remains constant across the scenario.

d. Resupply of all stockage items is available from echelons above corps (EAC).

4. Sufficiency Criteria.

a. Equipment. Maintain 80 percent availability of systems that have not been destroyed or abandoned. Rationale: Army Regulation (AR) 220-1, Unit Readiness Reporting, defines an equipment availability status of 80-90 percent as category C2 which is fully combat ready with minor risk.

b. Personnel.

(1) Have no weapon systems in awaiting-reissue queue due to nonavailability of crews. Rationale: The availability of weapon systems crews affects the availability criterion for combat systems.

(2) Maintain 80 percent personnel strength level for all modeled personnel. Rationale: AR 200-1 defines a personnel strength level of 80-90 percent as category C2 which is combat ready with minor risk.

c. Supply. Have no zero balance of any supply-class subitem (e.g., 155mm, 120mm, POL). Rationale: The lack of a specific type could adversely affect tactical options.

5. Maintenance Analysis.

a. The six weapon system categories covered in this analysis are shown in table M-1. The Fixed Wing category was not represented in the CSS system. In addition, medical treatment of personnel and weapon system crews are presented as a separate category.

Category	Weapon System
TANK	M1A2/120
AFV	M2A3/TOW FSCS/45 BSFV-E M3A3/TOW
ADA	AVENGER
MLRS	MLRS_D
CANNON	CRUSADER-D
HELICOPTERS	AH64D RAH66 RAH66D

Key Weapon Categories
Table M-1

b. The primary maintenance performance measure at the maneuver unit level is availability of unit weapon systems. Availability of unit weapon systems is determined by the current strength of weapon systems at a maneuver unit versus the initial strength less the number of catastrophically killed weapon systems at the same maneuver unit. The number of weapon systems available is a function of many dependent and interdependent factors. These factors can be partitioned into two groups: (1) those factors which render weapon systems inoperable: combat damage and reliability and (2) factors that contribute to the return of repaired systems to combat. When more weapon systems are returned to combat, a larger population is available for combat and reliability failure, which in turn workloads the Return-to-Combat (RTC) support system.

(1) Factors which cause weapon systems to become inoperable are combat damage and reliability failures. Combat damage is a function of the interaction of opposing forces resulting in catastrophic kills and repairable battle damage. The percentage of catastrophic kills versus the percentage of repairables varies by weapon system due to threat weapons and survivability characteristics. Table M-2 shows the percent repairable for each system once combat damaged. The percentages are not measures of overall survivability but are conditional results based on a weapon system first being combat damaged. Overall survivability also involves the likelihood of a weapon system being acquired and then being hit by the enemy. The percentages in table M-2 are, therefore, predicated on the occurrence of these two events.

Category	Weapon System
M1A2/120	93
M2A3/TOW	83
FSCS/45	83
BSFV-E	83
M3A3/TOW	83
AVENGER	69
MLRS-D	71
CRUSADER-D	49
AH64D	41
RAH66	41
RAH66D	41

Percent Repairable by Weapon System
Table M-2

(2) Permanent losses of operational systems can occur in several ways. The most frequent is usually due to catastrophic combat damage. In addition, both types of candidate repairables (combat and reliability) are subject to weapon system abandonment at the maneuver unit or maintenance unit level. Maneuver and maintenance unit abandonments of weapon systems occur due to immediate war-fight conditions, thus becoming permanent losses like catastrophic kills. Weapon systems can be traveling on an MSR when the scenario ends; thus these weapon systems are not considered part of a combat unit's arsenal. Another key factor which affects availability is the nonavailability of an owning unit. This occurs when a maintenance unit has repaired systems but does not have a maneuver unit in its area of influence with authorization to accept the system. In some cases, such weapons are never reissued during the scenario. Crewed weapon systems' RTC may be delayed because the appropriate number of crew members is not available to operate the weapon system. All six of these factors (catastrophic damage, abandonments, currently being reissued, unit non-availability, and weapon systems waiting crews) are independent of the CSS system performance. Table M-3 shows the number of systems for each of these categories at the end of the scenario.

Weapon	# Weapons Waiting Units	# Weapons Waiting Crews	# Weapons Being Reissued	Maint Unit Aband's	Man Unit Aband's	K-Kills	Total
M1A2/120	0.0	0.0	1.1	1.9	6.3	1.7	11.0
M2A3/TOW	0.0	0.0	0.1	0.0	6.7	4.7	11.5
FSCS/45	0.0	0.0	0.2	0.6	4.1	2.3	7.2
BSFV-E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M3A3/TOW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVENGER	0.0	Not crewed	0.0	0.0	0.0	0.0	0.0
MLRS-D	0.0	0.6	0.8	0.0	0.0	0.0	1.4
CRUSADER-D	0.0	1.2	2.6	0.0	0.0	0.3	4.1
AH64D	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAH66D	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAH66	0.0	0.0	1.1	0.0	0.0	0.0	1.1
Total	0.0	1.8	5.9	2.5	17.1	9.0	

Weapon System Losses
Table M-3

(3) Reliability failures are based on mean hours between failures (MHBF) for the major subsystems of each weapon. The major subsystems for this study are Automotive, Armament, Helicopter, and Medical. Of course, the subsystems that fail or are damaged vary by weapon systems (e.g., the M1A2/120 is composed of both subsystems, automotive and armament, while only automotive is represented for the heavy equipment transporter (HET)). Each subsystem is serviced by a different mechanic type. In addition, the MHBF can vary by subsystem for each weapon. Helicopters, for this analysis, are serviced by a single type master mechanic although both automotive and armament failures occur for helicopters. In addition, all wounded/DNBI personnel are treated by a single medical type. The availability and performance of trucks used for resupply is addressed in the supply section of the report.

(4) Factors which influence the RTC of weapon systems are recovery, evacuation, and repair (to include medical treatment of personnel and crews) resources. Each of the CSS resources which performs these services is subject to both combat damage and reliability failure, which determine their availability for weapon system processing and treatment of personnel. Recovery and evacuation are performed on a designated priority basis, while repair and treatment are based on a more complex priority system. Further complicating the impact of repair on weapon system RTC are the repair characteristics of individual weapon systems. These characteristics vary by level of repair (i.e., unit (ORG), direct support (DS), general support (GS)), and mean time to repair for each type repair (combat, reliability). These characteristics represent a very complex interrelated system which determines the number of operational weapon systems.

c. Analysis. The maintenance analysis is divided into three sections (Support Services Sufficiency, Key Weapon Availability, and CSS Workloads):

(1) Support Services Sufficiency.

(a) Recovery - Weapons.

1 Recovery operations serviced the recovery workload in a timely manner. "Timely manner" is defined as servicing the recovery workload within two TPs for a given maintenance unit. To meet this criterion the recovery workload at the end of one TP must be serviced in the next time period. The reason for this explanation of "timely manner" is to account for the maximum time of 96 minutes it takes for a recovery vehicle to assist in the recovery of a damaged weapon system or vehicle. If a vehicle requires an assisted recovery during the last half of the current TP, that vehicle would not reach the designated maintenance area until the next TP. The two recovery vehicles modeled are the improved recovery vehicle (M88) and a generic recovery vehicle

(HMTWRECKER) which represent all other recovery vehicles which are not M88s. Table M-4 provides an overview of both recovery vehicle's status for the scenario where:

Initial Strength (stgn) is the assigned density at the start of the scenario.

End Strength (stgn) is the number operational at the end of the scenario.

End Availability is the percentage of initial strength available less the number destroyed or abandoned at the end of the scenario.

M88				HMTWRECKER			
Unit ID	Initial Stgn	End Stgn	End Availability	Unit ID	Initial Stgn	End Stgn	End Availability
B3000DC	2	1.9	95	B3000DC	1	1.0	100
B3000MX	3	2.6	87	B3000LH	1	1.0	100
B3001DC	1	0.7	70	B3000M2	1	1.0	100
B3001H2	4	3.5	88	B3000MX	3	3.0	100
B3002H2	4	2.6	65	B3001H2	1	1.0	100
B3003DC	1	0.8	80	B3002H2	1	0.7	70
B3003H2	4	3.6	90	B3003H2	1	1.0	100
B3010MX	3	2.6	87	B30100H	2	2.0	100
B3011MX	7	0.8	11	B3010MX	4	3.9	98
B3012MX	7	6.0	86	B3011MX	2	0.6	30
B3013AR	6	5.1	85	B3012MX	2	1.9	95
B3020MX	3	2.7	90	B3020MX	4	3.8	95
B3021MX	7	5.6	80	B3021MX	2	1.9	95
B3022MX	7	5.2	74	B3022MX	2	1.9	95
B3023AR	6	4.9	82	B3030AR	4	3.8	95
B3030AR	3	2.6	87	B3033MX	2	1.9	95
B3031AR	6	4.7	78	B30A00H	1	1.0	100
B3032AR	6	5.0	83	B30C00H	1	1.0	100
B3033MX	7	5.7	82				

M88 and HMTWRECKER Ending Availabilities
Table M-4

The "end availability" is a reliable indicator of availability and recovery support throughout the scenario. Table M-5 provides the combined recovery operations for all divisional maintenance units by TP.

TP	1	2	3	4	5	6	7	8
# RECOV.	16.9	20.3	19.5	18.5	17.7	17	16.4	15.8
WAITING RECOV.	4.3	4.3	4.1	3.9	3.8	3.7	3.5	3.4
TP	9	10	11	12	13	14	15	
# RECOV.	15.1	14.6	13.9	17.4	19	13.5	18.9	
WAITING RECOV.	3.3	3.1	3	6.3	3.6	4.3	6.3	

Recovery Operations for All Divisional Maintenance Units
Table M-5

2 All maintenance facilities recovered their recovery workload in a timely manner. Table M-6 lists the recovery workload for all maintenance units by recovery vehicle type.

Maintenance	Recovered by			Maintenance	Recovered by		
Unit	HMTWRECKER	M88	TOTAL	Unit	HMTWRECKER	M88	TOTAL
B3000DC	1	1	2	B3012MX	1	11	12
B3000LH	0	0	0	B3013AR	0	11	11
B3000M2	1	0	1	B3020MX	21	33	54
B3000MX	80	32	112	B3021MX	1	13	14
B3001DC	0	3	3	B3022MX	1	14	15
B3001H2	7	4	11	B3023AR	0	12	12
B3002DC	0	3	3	B3030AR	20	3	23
B3002H2	8	6	14	B3031AR	0	16	16
B3003DC	0	5	5	B3032AR	0	12	12
B3003H2	9	4	13	B3033MX	1	14	15
B30100H	53	0	53	B30A00H	0	0	0
B3010MX	22	35	57	B30C00H	0	0	0
B3011MX	3	23	26				

Recovery Workload (by M88 and HMTWRECKER)
Table M-6

3 Conclusion:

No recovery shortfalls existed at any unit for the M88 or HMTWRECKER.

(b) Recovery - Personnel.

The recovery of injured personnel is implied; therefore, injured personnel do not require a recovery vehicle for transport from the battlefield to a medical facility. This phenomenon negates the possibility of a backlog of injured personnel needing recovery. Hence, personnel RTC will never be impeded by recovery assets.

(c) Evacuation - Weapons.

1 Evacuation support is performed in the scenario by HETs and a generic evacuation vehicle. The purpose of the generic evacuation vehicle is to represent the backhaul capability of other transporters. The analysis focuses on the HETs because they are considered potential constraints on evacuation. All but five of the key weapon systems utilize HETs for evacuation. The exceptions are AH64D, RAH66, RAH66D, AVENGER, and the PATRIOT. Only the performance of HETs is addressed. Weapon system evacuations are performed in a "timely manner" if damaged weapon systems are evacuated to the designated area (corps or division) within two TPs of the sustained damage.

2 Evacuation in this scenario is supported at the division area (unit B3000MX) and at the corps area (unit B000000) with 24 and 30 HETs assigned, respectively. Evacuations occur for two reasons:

- designation of maintenance support at higher support levels.

- lengthy clockhour repair times (any vehicle or weapon system that requires more than seven clockhours to repair will be sent to the corps support area (forward) so it will not 'tie up' mechanics at the ORG level with maintenance work that requires a considerable amount of time).

- maintenance overflow (maintenance overflow occurs when the number of hours needed to repair awaiting weapon systems exceeds a maintenance man hour threshold set for a maintenance unit).

3 Across the scenario, a maximum of ten percent of the corps area's HETs and twenty percent of the division area's HETs were not available at any given TP, all due to RAM damage.

4 There were 173 vehicle and weapon system evacuations to the corps area which required a HET (refer to table M-7). These vehicles and weapon systems included 138 AVLBs, 20 M1A2/120s, 7 M3A2s, 3 M2A2/TOWs, and 3 M577. All of these vehicles and weapon systems were evacuated to the corps area in a "timely manner."

TP	1	2	3	4	5	6	7	8
# RECOV.	6.9	17.4	17.8	16.7	14.0	12.5	14.1	12.7
WAITING RECOV.	6.0	9.5	10.0	10.1	9.4	9.9	11.5	9.2
TP	9	10	11	12	13	14	15	
# RECOV.	11.1	10.3	9.1	7.9	8.2	7.5	6.8	
WAITING RECOV.	8.4	8.4	7.3	7.6	8.0	7.0	6.7	

Evacuation Workload - Corps Area
Table M-7

5 There were 54 vehicle and weapon system evacuations to the division area which required a HET (refer to table M-8). These 54 vehicles and weapon systems were 35 AVLBs, 10 M1A2s, 7 M2A2/TOWs, and 1 M577. All 54 of these weapon systems were evacuated to the division area in a "timely manner."

TP	1	2	3	4	5	6	7	8
# RECOV.	3.2	4.9	4.4	3.9	3.9	3.4	3.0	3.2
WAITING RECOV.	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.6
TP	9	10	11	12	13	14	15	
# RECOV.	2.9	2.4	2.5	4.5	5.3	4.3	2.2	
WAITING RECOV.	0.6	0.7	0.9	2.0	0.8	0.3	0.4	

Evacuation Workload - Division Area
Table M-8

6 Conclusion:

Evacuation is not a constraint on weapon system RTC.

(d) Evacuation - Personnel.

This function was not represented in the VIC model, therefore, no personnel evacuation output data was available for analysis.

(e) Repair - ground based weapons.

1 Sufficient repair support is determined by the availability of required mechanic types at the supporting maintenance facility for ORG/DS and GS levels. For the most part, FORCE XXI mechanics in the DISCOM are modular in that they can repair both ORG and DS level damaged vehicles. Table M-9 shows, for assigned ORG/DS level mechanics, the maximum MMH percentage utilized for each of the 29 maintenance facilities across the scenario. When this percentage is 100 sufficient mechanics were not available to service the workload (note shaded cells) at some point during the scenario.

2 There was never an instance of armament or automotive mechanics becoming 100 percent utilized within the Conservative Heavy Division (any unit label B3*****).

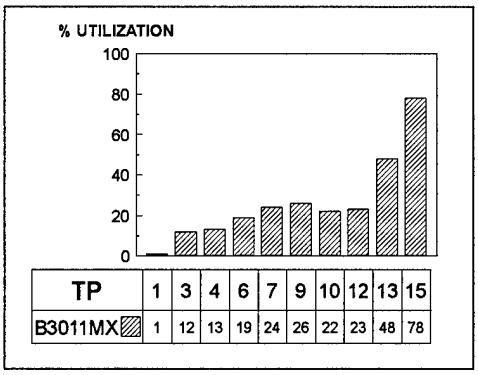
Unit Name	Armament		Automotive		Helicopter		Medical	
	Util. %	Str.	Util. %	Str.	Util. %	Str.	Util. %	Str.
B000000	10	78	100	100			42	65
B000CFC	0	185	3	658			2	875
B300002	0	27	10	12			37	5
B3000AD	21	5	29	10			100	2
B3000DC	49	10	78	14			7	18
B3000LH	1	2	1	21	8	85	61	3
B3000M2	2	15	6	40			26	11
B3000MX	6	116	19	241			18	130
B3001DC	30	5	15	9			21	2
B3001H2	0	8	26	17			27	12
B3002DC	28	5	13	9			21	2
B3002H2	0	8	27	17			28	12
B3003DC	69	5	10	9			21	2
B3003H2	0	8	32	17			27	12
B30100H	0	22	5	184	0	228	15	22
B3010MX	5	29	40	96			21	57
B3011MX	71	32	78	38			13	51
B3012MX	5	32	28	38			8	51
B3013AR	6	39	28	35			9	42
B3020MX	2	29	26	96			11	57
B3021MX	11	32	28	38			9	51
B3022MX	12	32	28	38			8	51
B3023AR	15	39	28	35			9	42
B3030AR	1	29	8	96			9	57
B3031AR	6	39	28	35			9	42
B3032AR	6	39	28	35			9	42
B3033MX	6	32	28	38			8	51
B30A00H	2	2	11	17	4	120	100	3
B30C00H	1	2	6	15	1	98	51	3

Utilization and Initial Strength by ORG/DS Level Mechanics
Table M-9

3 In general, for those facilities with less than 100% utilization at the end of a TP, sufficient maintenance resources were always available. There were only minor exceptions when very small fractional workloads were evacuated due to backlog status and the MMH utilization was not 100%. Any under-utilized resources are not necessarily "excesses" but are indicators of the magnitude of the workload for this scenario. Force structure implications are not addressed in this report.

4 Figure M-1 shows the ORG/DS automotive mechanic utilization for the FSC supporting the 1st mechanized infantry battalion of the 1st brigade (unit B3011MX). This was the only unit within the DISCOM that had any maintenance problems.

- For this FSC (unit B3011MX) the highest automotive mechanic utilization (78 percent) occurred during TP 15 (see Figure M-1). Maintenance overflow occurred at this maintenance facility with the following list of vehicles had to be recovered to the 1st brigade's BSC twelve one-ton cargo trucks, six LMTVs, four MTVs, three ambulances, two M88s, one BCMDVEH, one HMTWRECKER, and one M113. The largest buildup of unserviced weapon systems occurred during TP 13 with three M1A2/120s and two M2A3/TOWs waiting for automotive mechanics to become available. By the end of the scenario the number of weapons systems waiting for automotive repair was negligible.



Automotive Mechanic Utilization the FSC supporting
the 1st battalion of the 1st brigade (unit B3011MX)
Figure M-1

- Table M-10 shows the GS level mechanic utilization at the CORPS level.

Unit Name	Armament		**Automotive**		**Helicopter**		**Medical**	
	Util. %	Str.	Util. %	Str.	Util. %	Str.	Util. %	Str.
CSB(DS)	71	50	100	90	1	271	31	63
CORPS(R)	0	5	25	18				

Utilization and Initial Strength by GS Level Mechanics
Table M-10

- The automotive mechanics at the CSB(DS) were 100 percent utilized from TP 4 on. The largest buildup of unserviced weapon systems occurred during TP 14 with 28 M88s, 18 M2A3/TOWs, 10 M1A2s, 9 MLRS, 8 FSCS/45s, and 2 CRUSADERs. So with 90 automotive mechanics, the CSB(DS) had difficulties with the workload produce during this scenario.

- Table M-11 shows the GS level mechanic utilization at the CORPS level. Only the medical team was fully utilized during the scenario.

Unit Name	Armament		**Automotive**		**Helicopter**		**Medical**	
	Util. %	Str.	Util. %	Str.	Util. %	Str.	Util. %	Str.
CORPS(R)	7	60	9	200	0	130	100	875

Utilization and Initial Strength by GS Level Mechanics
Table M-11

5 Conclusion:

No maintenance units within the DISCOM constrained key weapon system RTC.

(f) Repair - helicopters.

Note: The AH64D (Apache) and the RAH66D & RAH66 (Comanche) are the systems represented by the helicopter weapon system category.

1 Sufficient helicopter repair support is determined by the availability of required helicopter mechanics at the supporting maintenance facility. The number of helicopter mechanics assigned to the helicopter battalions, the corps area, and division area can be found in tables M-9 through M-11. Note from these tables that none of the helicopter maintenance facilities had their mechanics 100% utilized during any TP of the scenario.

2 Recovery - The AH64D, RAH66, and the RAH66D do not require assisted recovery. If one of these helicopters receives non-catastrophic damage, that helicopter is assumed to self-recover. Helicopter RTC will never be impeded by recovery assets.

3 Evacuation - The AH64D, RAH66, and the RAH66D do not require a HET for evacuation. Instead, a generic evacuation vehicle is used to evacuate AH64Ds and RAH66Ds. The availability of HETs does not hamper the process of helicopter evacuation.

4 Conclusion:

None of the three CSS assets (recovery, evacuation, and repair) restricted helicopter RTC during the scenario.

(g) Medical treatment.

1 Personnel can be in one of the following three categories: combat ready, medical treatment process, or KIA. When injured personnel arrive at a medical facility, they receive treatment immediately, have to wait for the next available medic, or have to be evacuated to a higher echelon because of the severity of the wound. After treatment, injured personnel are returned to their respective unit. At TP 15, the theater's Blue troop force was at 90%, its lowest availability during any TP of the scenario (refer to table M-12).

TP	Combat Ready	Being Treated	KIA	% AVAIL
0	15,772	0	0	100
1	15,697	75	0	100
2	15,617	155	0	99
3	15,540	232	0	99
4	15,461	311	0	98
5	15,382	390	0	98
6	15,305	467	0	97
7	15,229	543	0	97
8	15,151	621	0	96
9	15,076	696	0	96
10	15,000	772	0	95
11	14,920	851	1	95
12	14,776	972	24	94
13	14,688	1,055	29	93
14	14,422	1,292	58	92
15	14,163	1,493	116	90

Theater Personnel Profile
Table M-12

2 During the course of the scenario, the majority of personnel that are not combat ready are being treated or awaiting treatment at the corps area. When injured personnel have to be evacuated to corps, their severe injuries take approximately six days to treat; therefore, those persons will not return to duty for the remaining part of the scenario.

3 While the combined totals of the theater's Blue troop forces always remained above the 80% availability sufficiency criterion, a single unit (unit B3011MX) fell below this criterion for two or more consecutive TPs. This unit is listed in table M-13 along with their troop combat availability percentage. The increase of combat intensity in the later part of the scenario and the treatment time of injured

troops evacuated to the corps area are the two factors that contribute to the low troop availability at this unit.

TP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B3011MX	100	99	99	98	98	97	97	96	96	95	95	84	81	64	51

Percentage of Personnel Available
Table M-13

4 Conclusion:

Medical repair teams organic to echelons lower than division did not constrain personnel RTC.

(2) Key Weapon Availability.

(a) Up to this point the analysis has addressed individual CSS support services (recovery, evacuation, repair, medical treatment) and their impact on RTC. With the exceptions noted, for the most part each of these support services was sufficient for the available workloads.

(b) The following section of the report, in effect, examines the cumulative effects of CSS services by looking at the availability of key weapons. Tables M-16 through M-26 provide unit level overviews for each key weapon system.

1 Each table (M-16 through M-26) contains the following information:

-Initial Strength (stgn) - weapon system density at the start of the scenario.

-End Strength (stgn) - weapon system density at the end of the scenario.

-Permanent Losses (K-kills) - catastrophic kills and abandonments.

-End % availability - weapon system availability at the end of the scenario. This availability calculation excludes permanent losses in conformance with the earlier described sufficiency criteria. Permanent losses are excluded because their occurrence is independent of how well (or poorly) CSS performs.

2 Two phenomena appearing in the following tables warrant discussion:

a A "dead unit" is indicated when the "end strength" and "availability" are zero. A "dead unit" occurs when significant unit resources are decimated and that unit can no longer effectively function. Its surviving resources, damaged and undamaged, are distributed to repair or other units requiring weapons, respectively. The row in each table for dead units is shaded.

b One would expect the "end strength" to always be smaller than initial strength if there were permanent losses. This is not always the case because of the need based reissue of repaired (and crewed) weapons. Depending on the current available strength of a weapon, reissues are distributed proportionally higher to those units with the greatest need (lowest current strength) and not to the unit which originally "owned" the weapon.

(c) Results:

1 All weapon systems meet the availability sufficiency criteria (80%) except for the following cases listed in table M-14.

Weapon System	Unit	End % Avail	Weapon System	Unit	End % Avail
M1A2/120	B3001DC	46	FSCS/45	B3001DC	62
M1A2/120	B3003DC	21	FSCS/45	B3002DC	0
M1A2/120	B3011MX	0	FSCS/45	B3003DC	32
M1A2/120	B3012MX	63	FSCS/45	B3010RE	65
M1A2/120	B3013AR	63	FSCS/45	B3011MX	0
M1A2/120	B3021MX	59	FSCS/45	B3012MX	68
M1A2/120	B3022MX	50	FSCS/45	B3013AR	68
M1A2/120	B3023AR	62	FSCS/45	B3020RE	74
M1A2/120	B3031AR	42	FSCS/45	B3021MX	62
M1A2/120	B3032AR	63	FSCS/45	B3022MX	22
M2A3/TOW	B3010MX	67	FSCS/45	B3023AR	67
M2A3/TOW	B3011MX	0	FSCS/45	B3030RE	86
M2A3/TOW	B3012MX	68	FSCS/45	B3031AR	68
M2A3/TOW	B3013AR	68	FSCS/45	B3032AR	66
M2A3/TOW	B3021MX	53	FSCS/45	B3033MX	75
M2A3/TOW	B3022MX	59	CRUSADER-D	B3001H2	68
M2A3/TOW	B3023AR	67	CRUSADER-D	B3002H2	70
M2A3/TOW	B3030AR	74	CRUSADER-D	B3003H2	78
M2A3/TOW	B3031AR	45	AH64D	B30A00H	29
M2A3/TOW	B3032AR	66	RAH66	B3000LH	35
FSCS/45	B3000DC	92	RAH66D	B30A00H	33

Units with Below 80 Percent of any Key Weapon System
Table M-14

2 The following table lists the only unit that was rendered combat ineffective ("dead") during the scenario, the time that the unit became ineffective, and the major weapon system(s) organic to that unit.

Ineffective "Dead" Unit	Time	Major Weapon Systems
B3002DC	52.24	M1A2/120, FSCS/45

Unit Rendered Combat Ineffective During the Scenario
Table M-15

3 Conclusion:

The CSS system did not constrain weapon system availability.

Reference (b).1). of Section (2), Key Weapon Availability -- end % availability is the weapon system availability at the end of the scenario. This availability calculation excludes permanent losses in conformance with the earlier described sufficiency criteria. Permanent losses are excluded because their occurrence is independent of how well (or poorly) CSS performs.

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3001DC	9	4.0	0.2	46
B3002DC	9	0.0	0.7	0
B3003DC	9	1.6	1.1	21
B3011MX	14	0.0	2.4	0
B3012MX	14	8.6	0.3	63
B3013AR	30	18.5	0.7	63
B3021MX	14	8.3	0.1	59
B3022MX	14	6.7	0.7	50
B3023AR	30	18.5	0.1	62
B3031AR	30	12.1	1.5	42
B3032AR	30	18.8	0.0	63
B3033MX	14	11.1	0.1	80
Total Permanent Losses			8.0	

M1A2/120 Status
Table M-16

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3010MX	3	2.0	0.0	67
B3011MX	30	0.0	7.1	0
B3012MX	30	20.1	0.4	68
B3013AR	14	9.4	0.2	68
B3020MX	3	2.4	0.1	82
B3021MX	30	15.0	1.4	53
B3022MX	30	17.0	1.1	59
B3023AR	14	9.3	0.0	67
B3030AR	3	2.2	0.0	74
B3031AR	14	5.9	1.0	45
B3032AR	14	9.2	0.0	66
B3033MX	30	25.9	0.0	86
Total Permanent Losses			11.4	

M2A3/TOW Status
Table M-17

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B300AAD	2	1.9	0.0	93
B300BAD	2	2.0	0.0	98
B300CAD	2	2.0	0.0	99
Total Permanent Losses			0.0	

M3A3/TOW Status
Table M-18

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B300AAD	8	7.1	0.0	89
B300BAD	8	7.2	0.0	91
B300CAD	8	7.3	0.0	92
Total Permanent Losses			0.0	

BSFV-E Status
Table M-19

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3000DC	2	1.8	0.1	92
B3001DC	9	5.4	0.3	62
B3002DC	9	0.0	0.7	0
B3003DC	9	2.5	1.4	32
B3010RE	7	4.2	0.5	65
B3011MX	6	0.0	1.7	0
B3012MX	6	4.0	0.1	68
B3013AR	6	4.0	0.1	68
B3020RE	7	5.2	0.0	74
B3021MX	6	3.6	0.2	62
B3022MX	6	1.1	1.2	22
B3023AR	6	4.0	0.0	67
B3030RE	7	6.0	0.0	86
B3031AR	6	4.1	0.0	68
B3032AR	6	4.0	0.0	66
B3033MX	6	4.4	0.1	75
Total Permanent Losses			6.4	

*FSCS/45 Status
Table M-20

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3000LH	2	1.9	0.0	95
B3000MX	3	2.8	0.0	94
B3004EN	4	3.7	0.0	93
B300AAD	6	5.6	0.0	93
B300BAD	6	5.7	0.0	94
B300CAD	6	5.7	0.0	95
B300DSB	3	2.8	0.0	94
B301FSB	2	1.9	0.0	95
B302FSB	2	1.9	0.0	95
B303FSB	2	1.9	0.0	95
B30A00H	2	1.9	0.0	95
B30C00H	2	1.9	0.0	95
Total Permanent Losses			0.0	

AVENGER Status
Table M-21

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B300AM2	9	8.7	0.0	96
B300BM2	9	8.8	0.0	98
Total Permanent Losses			0.0	

MLRS-D Status
Table M-22

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3001H2	18	12.1	0.3	68
B3002H2	18	12.6	0.0	70
B3003H2	18	14.1	0.0	78
Total Permanent Losses			0.3	

CRUSADER-D Status
Table M-23

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B30A00H	15	4.3	0.0	29
Total Permanent Losses			0.0	

AH64D Status
Table M-24

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B3000LH	24	8.48	0	35
Total Permanent Losses			0.0	

RAH66 Status
Table M-25

Unit ID	Initial Stgn	End Stgn	K-Kills	End % Avail
B30A00H	9	3.0	0.0	33
Total Permanent Losses			0.0	

RAH66D Status
Table M-26

(3) CSS Workloads. The following CSS workloads are provided to show the type and magnitude of workload serviced by each unit.

(a) Recovery and evacuation vehicle workload. The second and third columns in table M-27 indicate the number of vehicles that required assisted recovery from their owning unit. The fourth through seventh columns show the number of vehicles that required evacuation 'in' and 'out' of a higher echelon maintenance unit; also indicated is whether or not the vehicle required a HET for evacuation.

	Total # of assisted recoveries		# EVAC'D IN		# EVAC'D OUT	
Maint Unit	HMTWRECKER	M88	TOTAL	w/ HET	TOTAL	w/ HET
B3000DC	0.8	1.4	43.8	39.8	8.4	1.9
B3000LH	0.3				0.0	
B3000M2	1.3				0.0	0.0
B3000MX	79.6	31.8			50.4	50.4
B3001DC		3.2			4.4	2.5
B3001H2	6.5	4.2			0.0	0.0
B3002DC		2.6			3.3	1.8
B3002H2	7.6	5.6			1.5	0.3
B3003DC		5.3			6.8	4.4
B3003H2	9.2	4.5			0.0	0.0
B30100H	52.6				0.0	0.0
B3010MX	21.9	42.3			17.1	17.1
B3011MX	2.6	23.3			44.5	3.2
B3012MX	1.4	11.4			0.0	0.0
B3013AR		11.1			0.0	0.0
B3020MX	21.1	33.0			18.3	18.3
B3021MX	1.4	13.0			0.0	0.0
B3022MX	1.4	13.6			0.0	0.0
B3023AR		11.6			0.0	0.0
B3030AR	20.0	2.7			0.0	0.0
B3031AR		15.5			0.0	0.0
B3032AR		12.1			0.0	0.0
B3033MX	1.5	14.4			0.0	0.0
B30A00H	0.5				0.0	
B30C00H	0.4				0.0	

Recovery and Evacuation Workload
Table M-27

(b) Medical team workload. Table M-28 shows the number of personnel that arrived at a medical facility during the scenario due to combat and non-combat (DNBI) actions. The last column displays the number of treatment man hours expended by all medical teams.

MEDICAL UNIT	CBT MEDICAL RECOVERED	DNBI MEDICAL RECOVERED	MMH EXPENDED	MEDICAL UNIT	CBT MEDICAL RECOVERED	DNBI MEDICAL RECOVERED	MMH EXPENDED
B000000	379	309	958.6	B3010MX	0	67	149.3
B000CFC	1,913	1,586	18,833.2	B3011MX	6	23	58.8
B300002	0	10	22.7	B3012MX	0	24	54.0
B3000AD	0	17	29.6	B3013AR	0	22	48.9
B3000DC	0	9	20.8	B3020MX	0	33	72.6
B3000LH	0	15	33.9	B3021MX	1	24	54.4
B3000M2	0	16	35.0	B3022MX	0	24	54.1
B3000MX	0	131	289.7	B3023AR	0	22	49.0
B3001DC	0	2	5.1	B3030AR	0	29	64.0
B3001H2	0	18	40.5	B3031AR	2	22	49.0
B3002DC	0	2	4.5	B3032AR	0	22	48.9
B3002H2	0	18	40.5	B3033MX	0	25	54.1
B3003DC	0	2	5.6	B30A00H	0	16	34.3
B3003H2	0	18	40.4	B30C00H	0	12	27.8
B30100H	0	34	76.2				

Medical Unit Workload
Table M-28

(c) Maintenance team workload. Table M-29 shows the number of vehicles (both ground and air) that were recovered to a maintenance facility during the scenario. The last four columns display the number of maintenance man hours expended on ground and air vehicles and the estimated number of maintenance man hours required at TP 10 to repair all vehicles at the maintenance facilities.

	# VEHICLES RECOVERED		GROUND VEHICLES		HELICOPTERS	
MAINT UNIT	CBT DAMAGE	RAM DAMAGE	MMH EXPENDED	MMH NEEDED	MMH EXPENDED	MMH NEEDED
CSB(DS)	442.6	1,038.6	4,249.4	4,357.9	79.4	4.1
CORPS(R)	1,945.9	1,892.6	830.3	147.1		
B300002	0.0	17.3	10.4	0.1		
B3000AD	0.0	34.7	29.5	0.5		
B3000DC	0.0	20.2	83.0	1.0		
B3000LH	0.0	34.4	6.6	0.1	71.4	0.3
B3000M2	0.0	31.6	23.2	0.3		
B3000MX	0.0	350.4	436.0	54.9		
B3001DC	2.7	8.8	21.8	0.6		
B3001H2	0.1	38.0	38.7	0.9		
B3002DC	2.4	8.2	16.9			
B3002H2	27.5	37.9	38.9	40.4		
B3003DC	7.0	9.0	26.7	2.9		
B3003H2	0.0	41.0	43.1	1.0		
B30100H	0.0	109.8	109.1	0.4		
B3010MX	2.6	169.8	292.6	99.0		
B3011MX	82.0	52.7	197.8	0.0		
B3012MX	0.0	56.7	106.9	3.3		
B3013AR	0.0	54.3	115.1	4.2		
B3020MX	0.0	122.7	225.0	53.5		
B3021MX	4.6	57.1	109.0	16.2		
B3022MX	5.1	57.2	109.1	12.9		
B3023AR	3.8	54.9	117.9	10.5		
B3030AR	0.0	78.7	79.8	1.7		
B3031AR	9.2	54.9	116.7	8.1		
B3032AR	0.0	54.9	116.2	6.2		
B3033MX	1.5	59.8	119.3	7.2		
B30A00H	0.0	40.7	15.7	0.1	44.4	0.4
B30C00H	0.0	25.0	14.6	0.1	17.4	0.3

Maintenance Unit Workload
Table M-29

(4) Observations.

1) No recovery shortfalls existed at any unit for the M88 or HMTWRECKER.

2) Evacuation is not a constraint on weapon system RTC.

3) No maintenance units within the DISCOM constrained key weapon system RTC.

4) None of the three CSS assets (recovery, evacuation, and repair) restricted helicopter RTC during the scenario.

5) Medical repair teams organic to echelons lower than division did not constrain personnel RTC.

6) The CSS system did not constrain weapon system availability.

6. Supply Analysis.

a. This analysis assesses the CSS system's capability to support combat and combat support units for the defined scenario. The CSS units must fill requests for replenishment stockages in a "timely fashion;" failure to do so can be attributed to lack of transporters, lack of stockages, long order-to-delivery times, or a combination of the three.

b. Analysis. This analysis is structured into two parts: supply class III and supply class V.

(1) Supply Class III.

(a) Requirement. For the scenario, the requirement for class III (petroleum) was found by summing the consumption (quantities "used" plus quantities "lost") of all maneuver units (CSS units were excluded from this computation) during each TP. Calculated in "gallons (gals)," the requirement for class III for the length of the scenario is presented in table L-1.

The consumption of supplies generates a requirement for stocks of supply types as well as transportation assets to deliver the replenishments to maneuver unit stockages. Consumption is translated into an order for materiel. Each order levies upon the CSS system a requirement for existing stocks and transportation assets. The authorized amount declines with time due to the attrition of weapon systems. Each weapon system has an authorized amount of specific supply types, and the authorized stockage is reduced as systems are killed. Table L-1 identifies the area of operation (AO) stockage levels and activities for class III: 1) amounts used; 2) amounts lost; and 3) amounts consumed (the requirement).

TP	*USED GALS*	*LOST GALS*	*REQUIREMENT CONSUMED*
0	0	0	0
1	47,407	896	48,303
2	25,277	1,389	26,666
3	19,402	305	19,707
4	19,191	178	19,369
5	19,530	208	19,738
6	23,769	140	23,909
7	27,581	659	28,240
8	21,719	119	21,838
9	25,822	14	25,836
10	20,974	4	20,978
11	81,130	364	81,494
12	38,070	1,170	39,240
13	31,626	1,942	33,568
14	31,534	543	32,077
15	28,026	2,594	30,620
TOTAL	461,058	10,525	471,583

Consumption of Class III, GALS
Table L-1

(b) Discussion. The resupply options for maneuver units are: 1) resupply is unnecessary (Balance on Hand >=75% of Authorized); 2) standard resupply (Balance on Hand >=50% & <75% of Authorized); or 3) emergency resupply (Balance on Hand <50% of Authorized); reference Appendix B for definitions of "standard" and "emergency"

resupply. Table L-2 indicates during which TP(s) any maneuver unit(s) may have a BOH so low as to warrant the use of either standard or emergency resupply.

	TP															
RESUPPLY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RESUPPLY UNNEC	87	87	87	87	84	85	85	84	84	83	84	82	80	81	76	80
STANDARD RESUPPLY	0	0	0	0	3	2	2	2	2	3	2	4	5	4	8	4
EMERGENCY RESUPPLY	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2
ALL UNITS[1]	87	87	87	87	87	87	87	87	87	87	87	87	87	87	86	86
[1] COMBAT INEFFECTIVE (DEAD) UNITS ARE NOT INCLUDED.																

Number of Maneuver Units Needing Resupply, Class III
Table L-2

For more detail on individual units requiring resupply see table L-3 below. These units wait an average of 3.6 TPs (median of 2 TPs) before their BOH returns to a level no longer requiring resupply of class III.

			TP														
Unit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	#TPs
B3001H2												72					1
B3002H2													74	68	65		3
B300AM2													74	72			2
B300BM2														75	70	65	3
B3010RE													73				1
B3013AR															73		1
B3021MX															74		1
B3023AR															70	69	2
B3031AR															74		1
B3032AR															74	59	2
B3033MX														73	58		2
B000000					68	62	56	48	42	37	31	21	15	10	4	2	12
B000CFC					70	68	65	63	60	58	55	52	50	48	45	43	12
B00A00H					75					73	69	67	66			74	6
B00E00H								50	59	54		59	56				5
TOTAL					3	2	2	3	3	4	3	5	7	6	10	6	54

Percentage of Balance On-Hand (%) for Maneuver Units
Requiring Resupply, Class III
Table L-3

For example, at the end of TP 11, B3001H2 had a class III BOH of 72%. This was the only TP in which B3001H2 could have asked for resupply. During TP 11, B3001H2 was one of 5 units capable of requesting resupply.

(c) Problems. Table L-3 shows BOH percentage for individual maneuver units requiring resupply. However, a review of individual orders revealed a problem with the availability of transporters (reference Table L-4).

TP	REQUESTING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED GALS	AMOUNT SHIPPED GALS	AMOUNT SHORTED (%)	TRUCKS AVAIL	AVAIL STOCKS GALS
4	B000CFC	B00RCSB	POL-BACFT	9,306.48	1,124.71	87.9	0.0	114,754
4	B000000	B02RCSB	POL-BACFT	9,231.16	1,124.71	87.8	0.0	115,875.3
4	B000CFC	B00RCSB	POL-BACFT	9,672.93	1,121.84	88.4	0.0	114,754
4	B00A00H	B001CSA	POL-BACFT	80,459.08	42,063.66	47.7	0.0	1,157,936.4
5	B000CFC	B00RCSB	POL-BACFT	9,977.57	1,118.98	88.8	0.0	112,518.4
5	B000000	B02RCSB	POL-BACFT	11,628.5	1,120.41	90.4	0.0	114,754.9
5	B000CFC	B00RCSB	POL-BACFT	10,307.82	1,116.13	89.2	0.0	112,518.4
5	B000000	B02RCSB	POL-BACFT	11,266.5	0	100.0	0.0	114,754.9
5	B000CFC	B00RCSB	POL-BACFT	9,948.57	0	100.0	0.0	112,518.4
6	B000CFC	B00RCSB	POL-BACFT	10,674.11	1,113.28	89.6	0.0	110,293.2
6	B000000	B02RCSB	POL-BACFT	13,478	22.96	99.8	0.0	113,615.8
6	B000CFC	B00RCSB	POL-BACFT	11,013.31	1,111.86	89.9	0.0	110,293.2
6	B000000	B02RCSB	POL-BACFT	14,178.45	1,116.13	92.1	0.0	113,615.8
6	B000000	B02RCSB	POL-BACFT	13,779.2	0	100.0	0.0	113,615.8
7	B000CFC	B00RCSB	POL-BACFT	11,352.19	1,110.44	90.2	0.0	108,073.7
7	B000CFC	B00RCSB	POL-BACFT	10,980.64	0	100.0	0.0	108,073.7
7	B000CFC	B00RCSB	POL-BACFT	11,716.57	1,109.03	90.5	0.0	108,073.7
7	B000000	B02RCSB	POL-BACFT	16,347.68	22.91	99.9	0.0	113,592.9
8	B000CFC	B00RCSB	POL-BACFT	12,057.62	1,107.61	90.8	0.0	105,859.9
8	B000000	B02RCSB	POL-BACFT	16,990.36	1,113.28	93.4	0.0	112,479.6
8	B000CFC	B00RCSB	POL-BACFT	11,677.15	0	100.0	0.0	105,859.9
8	B000CFC	B00RCSB	POL-BACFT	12,401.38	1,106.2	91.1	0.0	105,859.9
8	B000CFC	B00RCSB	POL-BACFT	12,016.51	0	100.0	0.0	105,859.9
9	B000CFC	B00RCSB	POL-BACFT	12,734.96	1,104.79	91.3	0.0	103,653.2
9	B000CFC	B00RCSB	POL-BACFT	12,345.74	0	100.0	0.0	103,653.2
9	B000000	B02RCSB	POL-BACFT	19,282.59	22.85	99.9	0.0	111,346.3
9	B000CFC	B00RCSB	POL-BACFT	13,058.45	1,101.97	91.6	0.0	103,653.2
9	B000000	B02RCSB	POL-BACFT	19,900.34	1,110.44	94.4	0.0	111,346.3
9	B00A00H	B001CSA	POL-BACFT	71,949.36	41,739.51	42.0	0.0	1,099,546
9	B000CFC	B00RCSB	POL-BACFT	12,666.34	0	100.0	0.0	103,653.2
9	B000000	B02RCSB	POL-BACFT	19,484.31	0	100.0	0.0	111,346.3
10	B000CFC	B00RCSB	POL-BACFT	13,373.35	1,097.76	91.8	0.0	101,461.9
10	B000000	B02RCSB	POL-BACFT	20,167.1	0	100.0	0.0	110,217.4
10	B000CFC	B00RCSB	POL-BACFT	12,979.79	0	100.0	0.0	101,461.9
10	B000000	B02RCSB	POL-BACFT	20,871.3	0	100.0	0.0	110,217.4
10	B000CFC	B00RCSB	POL-BACFT	13,681.16	1,093.56	92.0	0.0	101,461.9
10	B000000	B02RCSB	POL-BACFT	21,559.25	22.76	99.9	0.0	110,217.4
10	B000CFC	B00RCSB	POL-BACFT	13,286.16	0	100.0	0.0	101,461.9
10	B000000	B02RCSB	POL-BACFT	22,229.31	1,106.2	95.0	0.0	110,217.4
11	B000CFC	B00RCSB	POL-BACFT	13,981.93	1,089.39	92.2	0.0	99,287.3
11	B000000	B02RCSB	POL-BACFT	21,793	0	100.0	0.0	110,194.7
11	B00A00H	B001CSA	POL-BACFT	91,940.84	0	100.0	0.0	1,042,499.4
11	B000CFC	B00RCSB	POL-BACFT	13,585.54	0	100.0	0.0	99,287.3
11	B000000	B02RCSB	POL-BACFT	22,442.36	0	100.0	0.0	110,194.7
11	B00A00H	B001CSA	POL-BACFT	90,445.83	0	100.0	0.0	1,042,499.4
11	B000CFC	B00RCSB	POL-BACFT	14,267.56	1,085.22	92.4	0.0	99,287.3
11	B000000	B02RCSB	POL-BACFT	23,109.79	0	100.0	0.0	110,194.7

TP	REQUESTING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED GALS	AMOUNT SHIPPED GALS	AMOUNT SHORTED (%)	TRUCKS AVAIL	AVAIL STOCKS GALS
11	B00A00H	B001CSA	POL-BACFT	88,968.25	41,739.51	53.1	0.0	1,042,499.4
11	B000CFC	B00RCSB	POL-BACFT	13,869.79	0	100.0	0.0	99,287.3
11	B000000	B02RCSB	POL-BACFT	23,763.25	22.67	99.9	0.0	110,194.7
11	B000000	B02RCSB	POL-BACFT	23,931.75	0	100.0	0.0	110,194.7
12	B000000	B02RCSB	POL-BACFT	24,098.92	1,106.2	95.4	0.0	109,088.5
12	B000CFC	B00RCSB	POL-BACFT	14,554.5	1,081.07	92.6	0.0	97,126.5
12	B000000	B02RCSB	POL-BACFT	23,473.57	0	100.0	0.0	109,088.5
12	B000CFC	B00RCSB	POL-BACFT	14,155.39	0	100.0	0.0	97,126.5
12	B000000	B02RCSB	POL-BACFT	24,324.33	0	100.0	0.0	109,088.5
12	B000CFC	B00RCSB	POL-BACFT	14,834.63	1,079.7	92.7	0.0	97,126.5
12	B000000	B02RCSB	POL-BACFT	24,988.23	0	100.0	0.0	109,088.5
12	B000CFC	B00RCSB	POL-BACFT	14,431.46	0	100.0	0.0	97,126.5
13	B000000	B02RCSB	POL-BACFT	25,595.17	22.67	99.9	0.0	107,959.6
13	B000000	B02RCSB	POL-BACFT	25,701.11	1,106.2	95.7	0.0	107,959.6
13	B000CFC	B00RCSB	POL-BACFT	15,105.27	1,078.32	92.9	0.0	94,971.2
13	B000CFC	B00RCSB	POL-BACFT	14,698.08	0	100.0	0.0	94,971.2
13	B000000	B02RCSB	POL-BACFT	25,917.6	0	100.0	0.0	107,959.6
13	B000CFC	B00RCSB	POL-BACFT	15,366.51	1,076.94	93.0	0.0	94,971.2
13	B000000	B02RCSB	POL-BACFT	26,522.02	0	100.0	0.0	107,959.6
13	B000CFC	B00RCSB	POL-BACFT	14,955.33	0	100.0	0.0	94,971.2
14	B000000	B02RCSB	POL-BACFT	27,120.69	0	100.0	0.0	106,830.8
14	B000CFC	B00RCSB	POL-BACFT	15,605.51	1,075.57	93.1	0.0	92,821.5
14	B000000	B02RCSB	POL-BACFT	27,761.87	22.67	99.9	0.0	106,830.8
14	B000CFC	B00RCSB	POL-BACFT	15,190.39	0	100.0	0.0	92,821.5
14	B000000	B02RCSB	POL-BACFT	27,901.48	1,106.2	96.0	0.0	106,830.8
14	B000CFC	B00RCSB	POL-BACFT	15,848.19	1,074.2	93.2	0.0	92,821.5
14	B000CFC	B00RCSB	POL-BACFT	15,429.17	0	100.0	0.0	92,821.5
15	B000000	B02RCSB	POL-BACFT	28,069.75	0	100.0	0.0	105,701.9
15	B000CFC	B00RCSB	POL-BACFT	16,081.72	1,072.83	93.3	0.0	90,679.9
15	B000000	B02RCSB	POL-BACFT	28,615.26	0	100.0	0.0	105,701.9
15	B000CFC	B00RCSB	POL-BACFT	15,658.83	0	100.0	0.0	90,679.9
15	B000000	B02RCSB	POL-BACFT	28,996.32	0	100.0	0.0	105,701.9
15	B000CFC	B00RCSB	POL-BACFT	16,306.17	1,068.73	93.4	0.0	90,679.9
15	B00A00H	B001CSA	POL-BACFT	61,767.36	41,520.24	32.8	0.0	1,000,979.1
15	B000000	B02RCSB	POL-BACFT	28,875.81	22.67	99.9	0.0	105,701.9
15	B000000	B02RCSB	POL-BACFT	29,036.88	1,106.2	96.2	0.0	105,701.9
15	B000CFC	B00RCSB	POL-BACFT	15,882.2	0	100.0	0.0	90,679.9
	TOTAL			371,421.4	204,681.18	44.89		

Problems Filling Maneuver Unit Orders, Class III
Table L-4

To quantify a measure of risk, the maximum consumption of class III by a unit for any TP is compared with the current BOH for each TP; if the value is less than one, the unit would exhaust its supplies prior to repeating the activities of this "maximum" TP. Where "at risk" is less than one TP of supply, class III was generally provided to maneuver units without placing them "at risk". Only one maneuver unit was "at risk". See Table L-5.

	TP																
MANEUVER UNIT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	# of TPs
B000000	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3

"At Risk" Units, Class III Risk
Table L-5

(d) Observation.

Class III CSS support was adequate and all maneuver units were supported in a "timely fashion"; however, there was a problem with the delivery of aircraft fuel due to the lack of available transporters.

(2) Supply Class V.

(a) Requirement. For the scenario, the requirement for class V (ammunition) was found by summing the consumption (quantities "used" plus quantities "lost") of all maneuver units (CSS units were excluded from this computation) during each of the 4-hour TPs. Calculated in "short tons (stons)," the requirement for class V for the length of the scenario is presented in table L-6.

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED
0	0	0	0
1	2,816	20	2,836
2	2,150	30	2,180
3	720	2	722
4	346	4	350
5	115	2	117
6	291	1	292
7	626	5	631
8	131	2	133
9	413	0	413
10	301	0	301
11	687	9	696
12	259	10	269
13	752	15	767
14	696	1	697
15	746	13	759
TOTAL	11,050	115	11,165

Consumption of Class V, STONS
Table L-6

(b) Discussion.

1) This analysis focuses on thirteen munition types {155MM, ATACMS, MLRS, Hellfire, Longbow, 2.75RKT, Patriot, Stinger, 120MM, 25MM, Javelin, LAW, and TOWII} using five indices {Amount Authorized, Amount On-Hand, Amount Used, Amount Lost, and Ratio of Amount On-Hand to Amount Authorized}. A list of all corps and division assets listing VIC unit name designators and their actual unit names is contained in Appendix A. A list of all supply analysis definitions is contained in Appendix B.

a) The thirteen aforementioned munition types were grouped into six functional categories (Field Artillery, Aviation, Air Defense Artillery, Armor & Mechanized Infantry, Anti-Armor, and Anti-Tank). Each of the functional categories was divided into subcategories displayed in table L-7:

Category	*Member Munition Type*
Field Artillery	155MM - {M107(CB),M116B1,M121A1,M449A1,M483A1, M549A1,M692/M731,M795,M825,M864, M864/AR,M864/GM,XM898,XM898/AR, XM898/GM,XM982,XM982/GM} ATACMS - {ATACMS-I,ATACMS-IA,ATACMS-II,ATACMS-IIA} MLRS - {ER-MLRS,ER-MLRS/GUIDED,M26,MSTAR}
Aviation	HELLFIRE,LONGBOW,2.75RKT
Air Defense Artillery (ADA)	PATRIOT,STINGER
Armor & Mechanized Infantry	120MM - {120MM,PGMM,M929,M933}
Anti-Armor	25MM - {25MM,40MM,45MM}
Anti-Tank	JAVELIN,LAW,TOWII

Key Functional Categories
Table L-7

b) Table L-8 displays the key munition types with the five aforementioned indices for each key munition at the end of the scenario. **The scenario end states shown are reliable indicators of individual unit supply status over the course of the scenario:**

c) Table L-8 represents an aggregation by munition type for all units in the modeled force. However, supply performance at some individual units for specific munitions varied significantly from these general indicators.

- The first column, key munition type, lists each of the munition types included for analysis in this report.

- The second column, amount authorized indicates quantities at initial state (TP 0) of the scenario.

- The total amount used of a key munition type (column three) can exceed the endstate BOH because during a particular TP a unit can receive a key munition type.

- Munitions lost due to combat activity (column four) did not cause any significant inventory imbalances resulting in availability shortfalls.

- The fifth and sixth columns, amount authorized and balance on hand (BOH) respectively, indicate quantities at endstate (TP 15) of the scenario.

- The seventh column, percentage of balance on hand of amount authorized, indicates that at endstate (TP 15) of the scenario, the quantity of munitions available for mission support was large and more than sufficient to meet requirements. **The Balance on Hand was at least one hundred percent of authorized for each munition type except (ATACMS and MLRS).**

	Initial State	Consumption		Endstate		
Key Munition Type	Amt Authorized {Rounds} @ TP0	Total Amount Used {Rounds}	Total Amount Lost {Rounds}	Amt Authorized {Rounds} @ TP15	BOH @ TP15 {Rounds}	Percentage BOH of Authorized
155MM	61,146	42,469	834	41,063	42,779	104%
ATACMS	432	83	0	363	351	97%
MLRS	12,960	17,205	67	9,252	6,974	75%
HELLFIRE	5,400	0	0	3,231	5,400	167%

	Initial State	Consumption		Endstate		
Key Munition Type	Amt Authorized {Rounds} @ TP0	Total Amount Used {Rounds}	Total Amount Lost {Rounds}	Amt Authorized {Rounds} @ TP15	BOH @ TP15 {Rounds}	Percentage BOH of Authorized
LONGBOW	5,400	1	0	3,454	5,417	157%
2.75RKT	27,360	8	0	16,274	27,345	168%
PATRIOT	128	0	0	8	128	1,600%
STINGER	2,024	0	5	1,548	2,901	187%
120MM	13,240	2,267	235	7,515	23,230	309%
25MM	362,340	194	17,819	221,047	590,313	267%
JAVELIN	1,170	28	16	977	1,109	114%
LAW	1,527	7	22	1,376	3,025	220%
TOWII	2,652	9	63	1,492	5,160	346%

Key Munition Status
Table L-8

d) Table L-9 provides an overall summary of the additional supply indicators which help assess the sufficiency of munition availability. Although the indicators are shown by munition type, the individual indicators represent the presence (Yes) or absence (No) of that indicator for some specific unit(s) in the force at the end of a specific TP. Tables L-10 thru L-19 provide more detailed analyses of the aforementioned munition availability criteria.

Key Munition Type	*BOH(>=75%)*	*Standard Replenishment BOH(50%-74%)*	*Emergency Replenishment BOH(1%-49%)*	*BOH(=0)*
155MM	Yes	Yes	Yes	Yes
ATACMS	Yes	Yes	No	No
MLRS	Yes	Yes	Yes	Yes
HELLFIRE	Yes	No	No	No
LONGBOW	Yes	Yes	No	No
2.75RKT	Yes	No	No	No
PATRIOT	Yes	No	No	No
STINGER	Yes	Yes	No	No
120MM	Yes	No	Yes	No
25MM	Yes	No	No	No
JAVELIN	Yes	No	No	No
LAW	Yes	No	No	No
TOWII	Yes	No	No	No

Balance on Hand Status
Table L-9

- Balance on Hand (>=75%) of Authorized: Initially all units start in this range since the amount authorized is equal to the balance on hand. BOHs which remain in this range maintain a sufficient quantity of authorized munitions and at no time throughout the scenario require supply replenishment.

- Balance on Hand (50%-74%) of Authorized: This column indicates whether or not the BOH by munition type at any unit fell to the indicated percentage range of the authorized amount. BOH in this range triggers "standard supply replenishment" requests.

-- For eight of the munition types (HELLFIRE, 2.75RKT, PATRIOT, 120MM, 25MM, JAVELIN, LAW, and TOWII) no standard supply replenishment was required at any time during the scenario. No HELLFIRE, PATRIOT, or STINGER munition type was expended during

this scenario. Also, no ATACMS, HELLFIRE, LONGBOW, 2.75RKT or PATRIOT munition type was lost due to attrition of systems.

-- The other five munition types (155MM, ATACMS, MLRS, LONGBOW, and STINGER) triggered standard resupply orders at some specific unit. Tables L-10 through L-14 identify the unit, the time period, and the sub-munition(s) which triggered a standard resupply order.

Unit Name	*BOH(50%-74%)*	*Time Period(TP)*	*Sub-munition*
3RD BN 63TH FA BDE (155 SP)	72%	TP 0	M107(CB)
	57%	TP 2	M107(CB)
	59%	TP 3	M107(CB)
	68%	TP 5	M549A1
	62%	TP 7 & 8	M795
	63%	TP 9	M107(CB)
	64%	TP 10	M107(CB)
	55%	TP 10	XM898
	65%	TP 11	M107(CB)
	66%	TP 12	M107(CB)
	50%	TP 12	M549A1
	61%	TP 15	M107(CB)
4TH BN 63TH FA BDE (155 SP)	72%	TP 0 & 11	M107(CB)
	74%	TP 1	M107(CB)
	53%	TP 2 & 3	M107(CB)
	51%	TP 6	M549A1
	56%	TP 7	M107(CB)
	59%	TP 8	M107(CB)
	60%	TP 9	M107(CB)
	61%	TP 10	M107(CB)
	73%	TP 12	M107(CB)
3RD BN 65TH FA BDE (MLRS)	72%	TP 0	M107(CB)
	53%	TP 13	M107(CB)
	54%	TP 14	M107(CB)
	55%	TP 15	M107(CB)
	54%	TP 15	M107(CB)
A BTRY 1ST BN 67TH FA BDE (155 T)	53%	TP 2	M795
	74%	TP 9	M795
B BTRY 1ST BN 67TH FA BDE (155 T)	51%	TP 1 & 2	M795
A BTRY 2ND BN 67TH FA BDE (155 T)	50%	TP 2	M795
B BTRY 2ND BN 67TH FA BDE (155 T)	50%	TP 2	M795
	62%	TP 3	M795
	65%	TP 4	M795
	69%	TP 5	M795
	74%	TP 6	M795
C BTRY 2ND BN 67TH FA BDE (155 T)	50%	TP 2	M795
	53%	TP 3	M795
A BTRY 3RD BN 67TH FA BDE (155 T)	50%	TP 2	M795
	53%	TP 3	M795
B BTRY 3RD BN 67TH FA BDE (155 T)	50%	TP 2	M795
	53%	TP 3	M795
C BTRY 3RD BN 67TH FA BDE (155 T)	50%	TP 2	M795
	53%	TP 3	M795
1ST BN 3D FA (155 SP)	72%	TP 0	M107(CB)
	55%	TP 13	M864
	56%	TP 14	M864
	57%	TP 15	M864
2ND BN 3D FA (155 SP)	72%	TP 0	M107(CB)
3RD BN 3D FA (155 SP)	72%	TP 0	M107(CB)

155MM Standard Replenishment
Table L-10

Unit Name	*BOH(50%-74%)*	*Time Period(TP)*	*Sub-munition*

1ST BN 69TH FA BDE (MLRS)	71% 66% 67% 68% 69% 61% 62% 63%	TP 3 TP 4 TP 5,6,7 TP 8 & 10 TP 9 TP 11 & 12 TP 13 TP 14 & 15	ATACMS_I ATACMS_I ATACMS_I ATACMS_I ATACMS_I ATACMS_I ATACMS_I ATACMS_I

ATACMS Standard Replenishment
Table-11

Unit Name	*BOH(50%-74%)*	*Time Period(TP)*	*Sub-munition*
1ST BN 63TH FA BDE (MLRS)	70% 53%	TP 2 TP 13	ER-MLRS M26
2ND BN 63TH FA BDE (MLRS)	70% 52% 50% 63%	TP 2 TP 2 TP 2 TP 12	ER-MLRS M26 MSTAR MSTAR
1ST BN 65TH FA BDE (MLRS)	51% 53% 61% 54% 56% 55%	TP 1 TP 7 TP 7 TP 8 TP 8 TP 9	ER-MLRS ER-MLRS M26 ER-MLRS M26 ER-MLRS
2ND BN 65TH FA BDE (MLRS)	66% 59% 66% 60%	TP 1 TP 6 TP 8 TP 9	ER-MLRS MSTAR MSTAR M26
2ND BN 69TH FA BDE (MLRS)	73% 69%	TP 5 TP 11	M26 MSTAR
3RD BN 69TH FA BDE (MLRS)	67% 65%	TP 1 TP 8 & 9	MSTAR M26
A BTRY 3D FA (MLRS)	58% 68% 62%	TP 13 TP 13 TP 14 & 15	MSTAR M26 ER-MLRS/GUIDE
B BTRY 3D FA (MLRS)	50%	TP 13	ER-MLRS/GUIDE

MLRS Standard Replenishment
Table L-12

Unit Name	*BOH(50%-74%)*	*Time Period(TP)*	*Sub-munition*
1ST BN 102ND ATK HEL RGT	57%	TP 8	LONGBOW

LONGBOW Standard Replenishment
Table-13

Unit Name	*BOH(50%-74%)*	*Time Period(TP)*	*Sub-munition*
1ST BN 102ND ATK HEL RGT	72%	TP 8	STINGER

STINGER Standard Replenishment
Table-14

- Balance on Hand (1%-49%) of Authorized: This column indicates whether or not the BOH by munition type at any unit fell to the indicated percentage range of the authorized amount. BOH in this range triggers "emergency supply replenishment" requests. Three of the munition types (155MM, MLRS, and 120MM) required emergency resupply. Tables L-15 through L-17 depict specific unit, time period, and sub-munition type which generate an emergency resupply request.

Unit Name	*BOH(1%-49%)*	*Time Period(TP)*	*Sub-munition*

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
3RD BN 63TH FA BDE (155 SP)	20%	TP 1	M549A1
	35%	TP 1	M864
	16%	TP 1	XM982
	23%	TP 2 & 3	M549A1
	37%	TP 2 & 3	M795
	46%	TP 4	M549A1
	38%	TP 4	M795
	3%	TP 4 - 8	XM898
	39%	TP 6	M795
	4%	TP 7	XM982
	41%	TP 9	XM898
	30%	TP 9	M795
	31%	TP 10 & 11	M795
	5%	TP 10,11,12	XM982
	30%	TP 11	XM898
	50%	TP 11	M549A1
	30%	TP 11	M483A1
	31%	TP 12 & 13	M483A1
	31%	TP 12 & 13	XM898
	32%	TP 12	M795
	6%	TP 13	M795
	24%	TP 14	M107(CB)
	32%	TP 14	XM898
	5%	TP 14	XM982
4TH BN 63TH FA BDE (155 SP)	20%	TP 1	M549A1
	22%	TP 2,3,4,5	M549A1
	35%	TP 2 & 3	M795
	36%	TP 4 & 5	M795
	37%	TP 6	M795
	2%	TP 7 & 8	M795
	3%	TP 9 - 15	M864
	28%	TP 10	M483A1
	29%	TP 10	XM982
	32%	TP 11 & 12	XM982
	42%	TP 11	M795
	43%	TP 12 & 13	M795
	25%	TP 13	M107(CB)
	33%	TP 13 & 14	XM982
	26%	TP 14	M107(CB)
	39%	TP 14	M483A1
	34%	TP 15	XM982
1ST BN 65TH FA BDE (MLRS)	48%	TP 1	M107(CB)
	32%	TP 1	M795
	21%	TP 1	M549A1
	22%	TP 2 & 3	M549A1
	33%	TP 2	M795
	49%	TP 2	M107(CB)
	34%	TP 3	M795
	23%	TP 4	M549A1
	35%	TP 4	M795
	36%	TP 5 & 6	M795
	10%	TP 5	XM898
	45%	TP 7	M549A1
	3%	TP 7,8,9,11,13	M795
	31%	TP 8	M549A1
	4%	TP 8,9,11	XM898
	24%	TP 9,10,11,12	M549A1
	1%	TP 13 & 14	M549A1
	24%	TP 13	M483A1
A BTRY 1ST BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	49%	TP 1	M795
	36%	TP 1	M864/AR
	36%	TP 1	M864/GM
	23%	TP 2	M116B1
	39%	TP 2	M864/AR
	39%	TP 2	M864/GM
	34%	TP 14	M795

Unit Name	BQH(18-49%)	Time Period(TP)	Sub-munition
B BTRY 1ST BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	22%	TP 1 & 2	M116B1
	37%	TP 1 & 2	M864/AR
	37%	TP 1 & 2	M864/GM
	33%	TP 13	M107(CB)
	38%	TP 13	M795
C BTRY 1ST BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	48%	TP 1	M795
	35%	TP 1	M864/AR
	35%	TP 1	M864/GM
	22%	TP 2	M116B1
	50%	TP 2	M795
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	37%	TP 13	M795
A BTRY 2ND 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
B BTRY 2ND 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	13%	TP 13	M107(CB)
	14%	TP 14	M107(CB)
	15%	TP 15	M107(CB)
C BTRY 2ND BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	23%	TP 3	M116B1
	39%	TP 3	M864/AR
	39%	TP 3	M864/GM

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
A BTRY 3RD BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	23%	TP 3	M116B1
	39%	TP 3	M864/AR
	39%	TP 3	M864/GM
B BTRY 3RD BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	23%	TP 3	M116B1
	39%	TP 3	M864/AR
	39%	TP 3	M864/GM
C BTRY 3RD BN 67TH FA BDE (155 T)	20%	TP 0	M116B1
	46%	TP 0	M795
	33%	TP 0	M864/AR
	33%	TP 0	M864/GM
	21%	TP 1	M116B1
	47%	TP 1	M795
	34%	TP 1	M864/AR
	34%	TP 1	M864/GM
	22%	TP 2	M116B1
	36%	TP 2	M864/AR
	36%	TP 2	M864/GM
	23%	TP 3	M116B1
	39%	TP 3	M864/AR
	39%	TP 3	M864/GM
1ST BN 3D FA (155 SP)	40%	TP 11	M864
	41%	TP 12	M864
2ND BN 3RD FA (155 SP)	39%	TP 11 & 12	M795
	29%	TP 12	M483A1
3RD BN 3RD FA (155 SP)	36%	TP 12	M795
	22%	TP 12	M549A1

155MM Emergency Replenishment
Table L-15

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
1ST BN 63TH FA BDE (MLRS)	17%	TP 2	M26
	42%	TP 2	MSTAR
	19%	TP 9	MSTAR
	20%	TP 10	MSTAR
	22%	TP 11	MSTAR
	13%	TP 14	M26
2ND BN 63TH FA BDE (MLRS)	4%	TP 3	MSTAR
	31%	TP 10	ER-MLRS
	24%	TP 10	M26
	43%	TP 10	MSTAR
	22%	TP 11	MSTAR
1ST BN 65TH FA BDE (MLRS)	6%	TP 1	M26
	22%	TP 1	MSTAR
	24%	TP 6	MSTAR
	19%	TP 9	M26

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
2ND BN 65TH FA BDE (MLRS)	26%	TP 1	MSTAR
	31%	TP 5	M26
	38%	TP 5	MSTAR
	38%	TP 6	M26
	40%	TP 7	MSTAR
	36%	TP 8	ER-MLRS
	10%	TP 9	ER-MLRS
	43%	TP 10	M26
2ND BN 69TH FA BDE (MLRS)	29%	TP 1	M26
	7%	TP 2	ER-MLRS
	45%	TP 2	MSTAR
	22%	TP 3	MSTAR
	20%	TP 6	M26
	31%	TP 8	MSTAR
	32%	TP 9	MSTAR
3RD BN 69TH FA BDE (MLRS)	26%	TP 1	M26
	27%	TP 2	ER-MLRS
	13%	TP 2	M26
	9%	TP 2	MSTAR
	10%	TP 3	MSTAR
	33%	TP 6 & 8	MSTAR
	32%	TP 7	MSTAR
	26%	TP 9	MSTAR
A BTRY 3D FA (MLRS)	22%	TP 12	ER-MLRS
	46%	TP 13	ER-MLRS
	39%	TP 14	M26
B BTRY 3D FA (MLRS)	39%	TP 14	ER-MLRS
	17%	TP 14	M26

MLRS Emergency Replenishment
Table L-16

Unit Name	BOH(1%-49%)	Time Period(TP)	Sub-munition
B TRP 3D CAV SQDN	37%	TP 13	M933
C TRP 3D CAV SQDN	35%	TP 12	M933
	36%	TP 13	M933
TF 1-78 MECH	29%	TP 14	M933
	30%	TP 15	M933
TF 1-79 MECH	29%	TP 14	M933
	31%	TP 15	M933
TF 1-3 AR	30%	TP 15	M933

120MM Emergency Replenishment
Table L-17

- Zero Balance on Hand: This column indicates whether or not the BOH by munition type at any unit fell to zero. Two of the munition types (155MM and MLRS) experience a zero balance on hand. Tables L-18 and L-19 depict specific unit, time period, and sub-munition type which experience a zero balance on hand.

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
3RD BN 63TH FA BDE (155 SP)	0%	TP 2 - 15	M449A1
	0%	TP 2 - 10	M483A1
	0%	TP 2 - 15	M864
	0%	TP 2 & 3	XM898
	0%	TP 2 - 6,8,9,13,15	XM982
	0%	TP 7,8,14	M795
	0%	TP 13,14,15	M549A1
4TH BN 63TH FA BDE (155 SP)	0%	TP 2 -15	M449A1
	0%	TP 2 - 6,8,9	M483A1
	0%	TP 11,12,13	M483A1
	0%	TP 2 - 8	M864
	0%	TP 2 - 9	XM898
	0%	TP 2 - 9	XM982
	0%	TP 9,14,15	M795

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
1ST BN 65TH FA BDE (MLRS)	0% 0% 0% 0% 0% 0% 0% 0%	TP 1 - 15 TP 1 - 7,12 TP 1,2,4 - 15 TP 1 - 4,5,6 TP 10,11 - 15 TP 1 - 15 TP 10,12,14,15 TP 15	M449A1 M483A1 M864 XM898 XM898 XM892 M795 M549A12
A BTRY 1ST BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0% 0% 0%	TP 1,2,3,5 - 15 TP 1,2,14,15 TP 4 - 11,14,15 TP 12 - 15 TP 12 - 15 TP 13,14,15 TP 13 & 15 TP 14 & 15	M864 M483A1 XM982 M549A1 XM898 M107(CB) M795 M449A1
B BTRY 1ST BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0% 0% 0%	TP 1 & 2 TP 4 - 11,13,14,15 TP 5 - 15 TP 12 - 15 TP 14 & 15 TP 14 & 15 TP 15	M483A1 XM982 M864 M549A1 M107(CB) M795 M449A1
C BTRY 1ST BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0% 0% 0%	TP 1 & 2 TP 4 - 11,13,14,15 TP 5 - 15 TP 12 - 15 TP 14 & 15 TP 14 & 15 TP 15	M483A1 XM982 M864 M549A1 M107(CB) M795 M449A1
A BTRY 2ND BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0% 0%	TP 4 - 11,14,15 TP 11 - 15 TP 12 - 15 TP 12 - 15 TP 13,14,15 TP 15	XM982 M864 M549A1 M795 M107(CB) M449A1
B BTRY 2ND BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0%	TP 4 - 11,15 TP 11 - 15 TP 12 - 15 TP 12 - 15 TP 15	XM982 M795 M864 M549A1 M449A1
C BTRY 2ND BN 67TH FA BDE (155 T)	0% 0% 0% 0% 0% 0%	TP 4 - 11,14,15 TP 11 - 15 TP 12 - 15 TP 12 - 15 TP 14,15	XM982 M549A1 M795 M864 M449A1
A BTRY 3RD BN 67TH FA BDE (155 T)	0%	TP 4 - 12	XM982
B BTRY 3RD BN 67TH FA BDE (155 T)	0%	TP 4 - 12	XM982
C BTRY 3RD BN 67TH FA BDE (155 T)	0%	TP 4 - 12	XM982
2ND BN 3D FA (155 SP)	0%	TP 14 & 15	M449A1
3RD BN 3D FA (155 SP)	0% 0%	TP 15 TP 15	M864 XM982

155MM Zero Balance
Table L-18

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
1ST BN 63TH FA BDE (MLRS)	0% 0% 0%	TP 3 - 15 TP 3 - 12 TP 3 - 8	ER-MLRS M26 MSTAR
2ND BN 63TH FA BDE (MLRS)	0% 0% 0%	TP 3 - 9,11 - 15 TP 3 - 9,11 TP 4 - 9	ER-MLRS M26 MSTAR
1ST BN 65TH FA BDE (MLRS)	0% 0% 0%	TP 4 - 6,12 - 15 TP 4 - 12,10 - 14 TP 5 - 10	ER-MLRS M26 MSTAR

Unit Name	BOH(=0)	Time Period(TP)	Sub-munition
2ND BN 65TH FA BDE (MLRS)	0% 0% 0%	TP 1 - 4,7,10 - 14 TP 2 - 8,12 - 15 TP 2,3,4	M26 ER-MLRS MSTAR
2ND BN 69TH FA BDE (MLRS)	0% 0% 0%	TP 2,3,4,7 - 10 TP 3 - 8,10 - 15 TP 4 - 7	M26 ER-MLRS MSTAR
3RD BN 69TH FA BDE (MLRS)	0% 0% 0%	TP 3 - 9,13,14,15 TP 3,4,5 TP 4 & 5	ER-MLRS M26 MSTAR
A BTRY 3D FA (MLRS)	0%	TP 15	M26
B BTRY 3D FA (MLRS)	0%	TP 15	M26

MLRS Zero Balance
Table L-19

(c) Problems. Of the 10,244 stons ordered, via standard resupply, 8,262 stons were shipped (approximately 80.65 percent). Problems in unfilled orders are associated with unavailable transporters or replenishments (reference table L-20).

TP	REQUESTING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED (Rounds)	AMOUNT SHIPPED (Rounds)	AMOUNT SHORTED (%)	TRUCKS AVAIL	AVAIL STOCKS (Rounds)
1	B3001H2	B301ATP	M107(CB)	481.59	430	10.7	17.6	0
1	B3003H2	B303ATP	M107(CB)	481.59	30	93.8	17.8	0
1	B00C3H2	B001ASP	M483A1	864.43	144.43	83.3	0.0	152,882.6
1	B00C3H2	B001ASP	M795	335.59	0	100.0	0.0	6,802.3
1	B00C3H2	B001ASP	M449A1	171.47	0	100.0	0.0	17,136
2	B00C3H2	B001ASP	M483A1	2,193.01	0.12	100.0	0.0	151,910
2	B00A4H2	B001ASP	XM982	216.59	52.94	75.6	0.0	700.8
2	B00E00H	B001ASP	LONGBOW	962.83	100	89.6	2.0	0
2	B00A3H2	B001ASP	M483A1	1,096.15	498.29	54.5	0.0	151,910
2	B00A3H2	B001ASP	XM898	85.18	0	100.0	0.0	1,701.2
3	B00G3M2	B001ASP	ER-MLRS	435.17	286.03	34.3	14.8	0
3	B00C3H2	B001ASP	M483A1	2,130.77	736.84	65.4	0.0	151,173.2
3	B00C3H2	B001ASP	M795	314.29	0	100.0	0.0	6,090.6
3	B00C3H2	B001ASP	M449A1	216.33	0	100.0	0.0	17,136
4	B00A4H2	B001ASP	M483A1	1,734.45	480.83		0.0	149,352.5
4	B00A3H2	B001ASP	M483A1	1,530.58	882.66	42.3	0.0	149,352.5
4	B00C3H2	B001ASP	M483A1	1,811.08	457.2	74.8	0.0	149,352.5
5	B00C3H2	B001ASP	M795	283.68	3.16	98.9	0.0	6,087.5
5	B00A3H2	B001ASP	M483A1	1,520.26	176.65	88.4	0.0	147,316.4
5	B00A3H2	B001ASP	XM898	257.08	0	100.0	0.0	1,367.7
5	B00A4H2	B001ASP	M483A1	1,711.1	57.51	96.6	0.0	147,316.4
5	B00A4H2	B001ASP	XM898	301.1	0	100.0	0.0	1,367.7
5	B00A4H2	B001ASP	XM982	182.1	0	100.0	0.0	580.4
6	B00C3H2	B001ASP	M795	273.71	143.75	47.5	0.0	5,943.7
6	B00A4H2	B001ASP	M483A1	1,682.52	251.03	85.1	0.0	147,065.4
7	B00A4H2	B001ASP	M483A1	1,669.84	96.19	94.2	0.0	146,969.2
7	B00A3H2	B001ASP	XM982	174.84	69.51	60.2	0.0	289
8	B00A4H2	B001ASP	M483A1	1,638.13	322.7	80.3	0.0	146,646.5
8	B00A4H2	B001ASP	M864	184.25	0	100.0	0.0	3,113.1
8	B00C3H2	B001ASP	M549A1	568.61	0.12	100.0	0.0	24,285.1
8	B00C3H2	B001ASP	M795	268.29	0	100.0	0.0	5,943.7
10	B00C2M2	B001ASP	M26	345.83	136.09	60.6	45.6	0

TP	REQUESTING UNIT	SUPPLY UNIT	SUPPLY TYPE	AMOUNT REQUESTED (Rounds)	AMOUNT SHIPPED (Rounds)	AMOUNT SHORTED (%)	TRUCKS AVAIL	AVAIL STOCKS (Rounds)
11	B00A4H2	B001ASP	M483A1	1,241.76	651.19	47.6	0.0	145,995.3
11	B00A4H2	B001ASP	M795	175.13	0	100.0	0.0	5,650.1
11	B00A3H2	B001ASP	M549A1	140.6	0	100.0	0.0	23,899.6
11	B3001H2	B301ATP	M864	126.72	25	80.3	13.6	0
11	B00A3H2	B001ASP	M549A1	378.54	0	100.0	0.0	23,899.6
13	B00C3H2	B001ASP	M549A1	588.03	249.63	57.5	0.0	23,609.9
13	B00C3H2	B001ASP	M795	249.71	0	100.0	0.0	5,500.9
13	B00A3H2	B001ASP	M107(CB)	389.81	117.29	69.9	0.0	13,403.2
14	B00C3H2	B001ASP	M549A1	645.56	457.2	29.2	0.0	22,782.3
14	B00A3H2	B001ASP	M549A1	617.34	194.62	68.5	0.0	22,782.3
14	B00A3H2	B001ASP	M549A1	614.02	175.82	71.4	0.0	22,782.3
15	B3001H2	B301ATP	M864	81.58	24.69	69.7	11.7	0
	TOTAL			31,371.2	7,251.49	76.9		

Problems Filling Maneuver Unit Orders, Class V
Table L-20

- The problems of unfilled orders have rippled into maneuver units. In the table below, supply type-maneuver unit combinations that have a zero BOH are presented. The table has been coded: 0 - time and distance problems; 1 - unsupported materiel; 2 - insufficient replenishment stockages; and 3 - unavailable transporters. Generally, once a unit experienced a zero BOH, the zero BOH continued to the end of the scenario.

- From table L-21 below, zero BOH are attributed to shortages of transporters, shortages of replenishments, and large time-distances between maneuver units and their supporting CSS unit. The reader is cautioned regarding the "0"; some maneuver units consume everything on-hand, and cannot be provided a supply type fast enough regardless of the speed of the CSS system.

Supply Type	Maneuver Unit	TP																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	# of TPs
ER-MLRS	B00A1M2				0	0	0	0	0	0	0	0	0	0	0	0	0	13
ER-MLRS	B00A2M2				0	0	0	0	0	0	0		0	0	0	0	0	12
ER-MLRS	B00C1M2			0	0	0	0	0						0	0	0	0	9
ER-MLRS	B00C2M2			0	0	0	0	0	0	0				0	0	0	0	11
ER-MLRS	B00G2M2				0	0	0	0	0	0		0	0	0	0	0	0	12
ER-MLRS	B00G3M2				2	0	0	0	0	0	0				0	0	0	10
M107(CB)	B00E1T2														0	0	0	3
M107(CB)	B00E2T2															0	0	2
M107(CB)	B00E3T2															0	0	2
M107(CB)	B00E4T2														0	0	0	3
M26	B00A1M2				0	0	0	0	0	0	0	0	0	0				10
M26	B00A2M2				0	0	0	0	0	0	0		0					8
M26	B00C1M2			0	0	0	0	0				0	0	0	0	0		10
M26	B00C2M2		0	0	0	0			0			2	0	0	0	0		10
M26	B00G2M2			0	0	0			0	0	0	0						7
M26	B00G3M2				0	0	0											3
M26	B300AM2																0	1

Supply Type	Maneuver Unit	TP																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	# of TPs
M26	B300BM2																0	1
M449A1	B00A3H2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
M449A1	B00A4H2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
M449A1	B00C3H2		3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	15
M449A1	B00E1T2															0	0	2
M449A1	B00E2T2																0	1
M449A1	B00E3T2																0	1
M449A1	B00E4T2																0	1
M449A1	B00E5T2															0	0	2
M449A1	B00E6T2															0	0	2
M449A1	B3002H2															0	0	2
M483A1	B00A3H2			3	0	3	3	3	3	0	0	0						9
M483A1	B00A4H2			0	0	3		3		3	3		0	0	0			9
M483A1	B00C3H2		3	3	3	3	0	0	0					0				8
M483A1	B00E1T2		0	0												0	0	4
M483A1	B00E2T2		0	0														2
M483A1	B00E3T2		0	0														2
M549A1	B00A3H2														0	3	0	3
M549A1	B00C3H2																0	1
M549A1	B00E1T2													0	0	0	0	4
M549A1	B00E2T2													0	0	0	0	4
M549A1	B00E3T2														0	0	0	3
M549A1	B00E4T2													0	0	0	0	4
M549A1	B00E5T2													0	0	0	0	4
M549A1	B00E6T2												0	0	0	0	0	5
M795	B00A3H2								0	0						0		3
M795	B00A4H2										0					0	0	3
M795	B00C3H2											0		0		0	0	4
M795	B00E1T2														0		0	2
M795	B00E2T2															0	0	2
M795	B00E3T2															0	0	2
M795	B00E4T2													0	0	0	0	4
M795	B00E5T2												0	0	0	0	0	5
M795	B00E6T2													0	0	0	0	4
M864	B00A3H2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
M864	B00A4H2			0	0	0	0	0	0	3								7
M864	B00C3H2		0	0		0	0	0	0	0	0	0	0	0	0	0	0	14
M864	B00E1T2		0	0	0		0	0	0	0	0	0	0	0	0	0	0	14
M864	B00E2T2						0	0	0	0	0	0	0	0	0	0	0	11
M864	B00E3T2													0	0	0	0	4
M864	B00E4T2												0	0	0	0	0	5

Supply Type	Maneuver Unit	TP																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	# of TPs
M864	B00E5T2													0	0	0	0	4
M864	B00E6T2													0	0	0	0	4
M864	B3003H2																0	1
MSTAR	B00A1M2				0	0	0	0	0	0								6
MSTAR	B00A2M2					0	0	0	0	0	0							6
MSTAR	B00C1M2			0	0	0	0											4
MSTAR	B00C2M2			0	0	0												3
MSTAR	B00G2M2					0	0	0	0									4
MSTAR	B00G3M2					0	0											2
XM898	B00A3H2			3	0													2
XM898	B00A4H2			0	0	0	3	0	0	0	0							8
XM898	B00C3H2		0	0	0	0		0	0			0		0	0	0	0	11
XM898	B00E1T2													0	0	0	0	4
XM982	B00A3H2			0	0	0	0	0		0	0				0		0	9
XM982	B00A4H2			3	0	0	3	0	0	0	0							8
XM982	B00C3H2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
XM982	B00E1T2					0	0	0	0	0	0	0	0		0	0	0	10
XM982	B00E2T2					0	0	0	0	0	0	0	0		0	0	0	11
XM982	B00E3T2					0	0	0	0	0	0	0	0		0	0	0	11
XM982	B00E4T2					0	0	0	0	0	0	0	0			0	0	10
XM982	B00E5T2					0	0	0	0	0	0	0	0				0	9
XM982	B00E6T2					0	0	0	0	0	0	0	0			0	0	10
XM982	B00E7T2					0	0	0	0	0	0	0	0	0				9
XM982	B00E8T2					0	0	0	0	0	0	0	0	0				9
XM982	B00E9T2					0	0	0	0	0	0	0	0	0				9
XM982	B3003H2																0	1

Causes for Zero BOH
Table L-21

To quantify a measure of risk, the maximum consumption of class V by a unit for any TP is compared with the current BOH for each TP; if the value is less than one, the unit would exhaust its supplies prior to repeating the activities of this "maximum" TP. Where "at risk" is less than one TP of supply, class V was generally provided to maneuver units without placing them "at risk". Twenty-eight maneuver units were "at risk." See Table L-22.

	TP																
MANEUVER UNIT	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*# of TPs*
B00A1M2			1	3	3	3	3	3	3	3	3	3	2	2	2	2	14
B00A2M2			1	3	3	3	3	3	3	3	3	3	1	1	1	1	14
B00A3H2		3	7	7	7	7	6	6	6	6	6	7	7	8	8	7	15
B00A4H2		2	7	7	7	7	7	6	6	6	5	6	6	7	7	6	15
B00C1M2		3	3	3	3	3	3	2	2	2	1	1	2	3	3	3	15
B00C2M2		3	3	3	3	3	3	3	3	2	2	1	2	2	2	2	15
B00C3H2		7	7	6	7	6	6	7	7	7	7	7	7	7	7	7	15
B00E1T2	1	3	3	2	3	3	3	3	3	4	4	6	7	7	8	8	16
B00E2T2	1	3	3	2	2	3	3	3	3	3	3	4	5	6	6	7	16
B00E3T2	1	2	2	1	2	2	2	2	2	2	2	3	3	5	6	7	16
B00E4T2	1	1	1		1	1	1	1	1	1	1	2	4	6	7	8	15
B00E5T2	1	1	1	1	2	2	2	2	2	2	2	3	4	5	6	6	16
B00E6T2	1	1	1	1	1	1	1	1	1	1	1	2	4	5	6	6	16
B00E7T2					1	1	1	1	1	1	1	1	1	1	1	1	12
B00E8T2					2	2	2	2	2	2	2	2	2	2	2	2	12
B00E9T2					1	1	1	1	1	1	1	1	1	1	1	1	12
B00G2M2		1	3	3	3	3	3	3	3	3	3	3	3	2	2	2	15
B00G3M2		1	3	3	3	3	3	3	3	3		1	1	1	1	1	14
B3001H2												1	1	1	1	1	5
B3002DC														1			1
B3002H2															2	3	2
B3003DC													1	1	1	1	4
B3003H2																4	1
B300AM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	16
B300BM2														1	2	2	3
B3021MX															1	1	2
B3022MX															1	1	2
B3031AR																1	1

"At Risk" Units, Class V Risk
Table L-22

(d) Observations.

1) **There were several occurrences of zero balance on hand for the 155MM munition type; however, at no time were all 155MM sub-munition categories at zero balance.**

2) **For the MLRS munition type, the ER-MLRS sub-munition had a few occurrences of zero balance; however, at no time were all MLRS sub-munition categories at zero balance.**

3) **Most problems** filling maneuver units orders for Class V were due to **nonavailability of transporters;** the **primary cause** for zero balance on hand for Class V was **time and distance problems.**

APPENDIX A

DDA VIC Name to Unit Name Cross Reference

VIC Name	Unit Name
B000CFC	CFC HQ
B00RCSB	CORPS REAR SPT BN
B02RCSB	CORPS REAR SPT BN
B000000	III CORPS
B000PAT	1ST PATRIOT BN HQ
B001PAT	A BTRY 1ST PATRIOT BN
B002PAT	B BTRY 1ST PATRIOT BN
B003PAT	C BTRY 1ST PATRIOT BN
B004PAT	D BTRY 1ST PATRIOT BN
B00FCSB	CORPS FWD SPT BN
B02FCSB	CORPS FWD SPT BN
B001CSA	III CORPS SUPPORT AREA
B001ASP	501ST FASP-1
B002ASP	501ST FASP-2
B003ASP	501ST FASP-3
B004ASP	503RD FASP-1
B005ASP	503RD FASP-2
B00A002	63TH FA BDE HQ III CORPS ARTY
B00A1M2	1ST BN 63TH FA BDE (MLRS)
B00A2M2	2ND BN 63TH FA BDE (MLRS)
B00A3H2	3RD BN 63TH FA BDE (155 SP)
B00A4H2	4th BN 63TH FA BDE (155 SP)
B00C002	65TH FA BDE HQ III CORPS ARTY
B00C1M2	1ST BN 65TH FA BDE (MLRS)
B00C2M2	2ND BN 65TH FA BDE (MLRS)
B00C3H2	3RD BN 65TH FA BDE (155 SP)
B00E002	67TH FA BDE HQ III CORPS ARTY
B00E1T2	A BTRY 1ST BN 67TH FA BDE (155 T)
B00E2T2	B BTRY 1ST BN 67TH FA BDE (155 T)
B00E3T2	C BTRY 1ST BN 67TH FA BDE (155 T)
B00E4T2	A BTRY 2ND BN 67TH FA BDE (155 T)
B00E5T2	B BTRY 2ND BN 67TH FA BDE (155 T)
B00E6T2	C BTRY 2ND BN 67TH FA BDE (155 T)
B00E7T2	A BTRY 3RD BN 67TH FA BDE (155 T)
B00E8T2	B BTRY 3RD BN 67TH FA BDE (155 T)
B00E9T2	C BTRY 3RD BN 67TH FA BDE (155 T)
B00G002	69TH FA BDE HQ III CORPS ARTY
B00G1M2	1ST BN 69TH FA BDE (MLRS)
B00G2M2	2ND BN 69TH FA BDE (MLRS)
B00G3M2	3RD BN 69TH FA BDE (MLRS)
B00AVNB	10TH AVN BDE III CORPS
B000GRP	103RD AVN GROUP 10TH AVN BDE
B00A00H	1ST BN 103RD AVN GRP
B00B00H	2ND BN 103RD AVN GRP
B000RGT	102ND ATK HEL RGT 10TH AVN BDE
B00E00H	1ST BN 102ND ATK HEL RGT
B00F00H	2ND BN 102ND ATK HEL RGT

VIC Name	Unit Name
B00G00H	3RD BN 102ND ATK HEL RGT
B3000MX	3D INFANTRY DIVISION (MECH)
B300DSB	3D DIVISION SUPPORT AREA
B3000DC	3D CAV SQDN 3D ID
B3001DC	A TRP 3D CAV SQDN
B3002DC	B TRP 3D CAV SQDN
B3003DC	C TRP 3D CAV SQDN
B3000AD	1ST CAV DIV AD BN
B300AAD	A CO, 3ID AD BN
B300BAD	B CO, 3ID AD BN
B300CAD	C CO, 3ID AD BN
B3010MX	1ST BDE 3D ID
B3010RE	1ST BDE RECON TRP
B3011MX	TF 1-77 MECH
B3011FC	FWD SPT CO
B3012MX	TF 1-80 MECH
B3012FC	FWD SPT CO
B3013AR	TF 1-2 AR
B3013FC	FWD SPT CO
B3001EN	1ST BN, 3RD ENG REGT (3 COs)
B3002EN	2ND BN, 3RD ENG REGT (3 COs)
B3004EN	551ST EN BN (CORPS)
B301FSB	FSB 1ST BDE 3D ID
B301ATP	1ST BDE 3ID AMMO TRANS PT
B3020MX	2ND BDE 3D ID
B3020RE	2ND BDE RECON TRP
B3021MX	TF 1-78 MECH
B3021FC	FWD SPT CO
B3022MX	TF 1-79 MECH
B3022FC	FWD SPT CO
B3023AR	TF 1-4 AR
B3023FC	FWD SPT CO
B3003EN	3RD BN, 3RD ENG REGT (3 COs)
B302FSB	FSB 2ND BDE 3D ID
B302ATP	2ND BDE 3ID AMMO TRANS PT
B3030AR	3RD BDE 52RD ID
B3030RE	3RD BDE RECON TRP
B3031AR	TF 1-3 AR
B3031FC	FWD SPT CO
B3032AR	TF 1-5 AR
B3032FC	FWD SPT CO
B3033MX	TF 1-81 MECH
B3033FC	FWD SPT CO
B303FSB	FSB 3RD BDE 3D ID
B303ATP	3RD BDE 3ID AMMO TRANS PT
B300002	3D DIVISION ARTY
B3001H2	1ST BN 3D FA (155 SP)
B3002H2	2ND BN 3D FA (155 SP)
B3003H2	3RD BN 3D FA (155 SP)

VIC Name	Unit Name
B3000M2	3D FA (MLRS)
B300AM2	A BTRY 3D FA (MLRS)
B300BM2	B BTRY 3D FA (MLRS)
B30100H	3D AVN BDE HQ
B3000LH	3D CAV SQDN FARP
B30A00H	1ST ATK BN 3D AVN
B30C00H	3RD LIFT BN 3D AVN

APPENDIX B

DEFINITIONS

Specific supply analysis definitions are listed below:

(1) Amount Authorized of this supply type: Amount of this supply type that this unit is authorized at the end of the TP, this number is calculated by multiplying the number of available systems that use this supply type by the amount authorized per system. This number can change from one TP to another due to weapon losses.

(2) Balance on-Hand of this supply type: Amount of this supply type that this unit has on hand at the end of the TP.

(3) Amount Used during this TP: Amount of this supply type that this unit used during this TP.

(4) Amount Lost during this TP: Amount of this supply type that this unit lost due to attrition of systems (when a system is damaged in combat a percentage (50%) of its on-board supplies are lost).

(5) Ratio of Balance on-Hand to Amount Authorized: A percent value used to indicate overall assessment of a munition; when this percent value is low, a greater risk is indicated as to possibility of exhausting all supplies.

(6) Total Amount Authorized during this TP: The sum of each amount authorized of each supply type at the end of the TP. The stockages are redistributed, consumed, or lost as the scenario proceeds. As units are engaged and attrited, the amount-authorized is reconciled with the number of surviving weapon systems.

(7) Total Amount on-Hand during this TP: The sum of the amount of each supply type that the units actually have in stock at the end of the TP. This amount is reduced by consumption, attrition, and other activities that may reduce the stockage of a supply type.

(8) Total Amount Used during this TP: The sum of the amount of each supply type consumed as a result of movement and combat at the end of the TP.

(9) Total Amount Lost during this TP: The sum of the amount of each supply type lost due to attrition of systems at the end of the TP (when a system is damaged in combat, a percentage of its on-board supplies are lost).

(10) Total Amount on-Order during this TP: The sum of the amounts of each supply ordered by each unit during a period. As materiel is consumed, units initiate orders based on a re-order threshold to restock its supplies. If an order cannot be shipped for reasons of shortages of stocks or movers, a unit will re-order the replenishments during the next period.

(11) Timely fashion: The manner in which a unit is supported when a negative consequence did not result. When a maneuver unit calls for replenishment of supplies, the support of the maneuver unit shall be said to be in a "timely fashion," if the maneuver unit did not suffer for lack of supplies. For class III, a unit suffers when it is forced to stop for lack of class III. For class V, a unit suffers a negative consequence when it exhausts a class V supply type.

(12) Risk: The proportion of TPs that each supply type for each unit can be expected to last given the greatest consumption for the scenario. The higher the measure, the greater the quantity of stockage, hence the lower the likelihood of not being able to repeat the highest consumption of a TP.

(13) Standard Resupply: Maneuver units will generate an order for a supply type when, per the resupply schedule, the on-hand plus on-order quantity is less than 75 percent of the authorized quantity. The magnitude of the order is the amount of each supply type to bring the on-hand plus on-hand quantity up to the authorized quantity. Routinely, the order is for 25% of authorized. When the shipment arrives, the on-hand balance will increase, and the maneuver unit will issue an order when the on-hand quantity again falls below the 75% authorized. Exceptions to this resupply process occur when, for lack of trucks or stocks, an order cannot be filled or shipped. When the order (or portion of same) cannot be shipped in the period it was requested, the unfilled portion is lost - there are no backorders or due-outs. The maneuver unit will reassess its needs during the next period. Standard resupply can be divided into two types: supply point distribution (SPD) and unit distribution (UD). A unit that uses SPD provides its own organic transporters to convey replenishments between the supply unit(s) and itself; a unit using UD requires the supply unit to provide both replenishments and transporters.

(14) Emergency Resupply: Maneuver units will generate an "emergency" order for a supply type when, per the resupply schedule, the on-hand plus on-order quantity is less than 50 percent of the authorized quantity. The magnitude of the order is the amount of each supply type to bring the on-hand quantity up to 50% of the authorized quantity. When the shipment arrives, the on-hand balance will increase. This is "emergency resupply." Emergency resupply is subject to a number of factors: (1) the availability of replenishment stockages; (2) the availability of helicopter support to provide airlift between the supporting CSS unit(s) and the requesting maneuver unit; and (3) the hostile environment surrounding the maneuver unit. If the scenario is short-lived or has intensive combat, the last factor can be the most limiting. Helicopters will not provide lift to maneuver units that are under assault. If any one of the factors prohibits emergency resupply, the "emergency" request for replenishments will be routed for "standard" resupply. When the order (or portion of same) cannot be shipped in the time period it was requested, the unfilled portion is lost - there are no backorders or due-outs - the unit must wait for the next period per the resupply schedule to assess its stockage position and re-order.

APPENDIX C

FIGURES AND TABLES

Unit Name	Amount Shipped	# of Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSA	133,018.26	7	7.2	8.62	12.3
B00RCSB	25,251.4	40	1.1	1.33	1.53
B02RCSB	10,169.26	31	4.01	4.62	5.41
B300DSB	3,487.36	2	6.53	7.41	8.29
B3013FC	3,662.51	1	6.07	6.07	6.07
B301FSB	4,671.5	2	3.59	3.69	3.79
B302FSB	4,601.68	1	8.67	8.67	8.67
B3033FC	3,738.78	1	4.9	4.9	4.9
B303FSB	4,765.67	1	1.79	1.79	1.79

Unit Name	Amount Shipped	# of Non-Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001CSA	41,520.24	1	1	1	1
B00RCSB	1,068.73	2	0	0.5	1
B02RCSB	1,128.87	5	0.5	1.9	3.75
B300DSB	2,562.45	1	7	7	7
B3023FC	4,010.08	1	5	5	5
B3031FC	3,768.44	1	4	4	4
B3032FC	3,742.23	1	4	4	4

Order to Deliver, Class III
Table C-1

Unit Name	Amount Shipped	# of Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001ASP	69,546.05	174	8.81	20.84	41.14
B001CSA	133,018.26	7	7.2	8.62	12.3
B003ASP	250.52	7	4.94	6.19	7.33
B00RCSB	25,251.4	40	1.1	1.33	1.53
B02RCSB	10,169.26	31	4.01	4.62	5.41
B300DSB	3,487.36	2	6.53	7.41	8.29
B3013FC	3,662.51	1	6.07	6.07	6.07
B301ATP	455	2	1.47	4.19	6.92
B001FSB	4,732.36	2	3.59	3.69	3.79
B302ATP	481.59	1	0.85	0.85	0.85
B302FSB	4,601.68	1	8.67	8.67	8.67
B3033FC	3,738.78	1	4.9	4.9	4.9
B303ATP	30	1	2.6	2.6	2.6
B303FSB	4,765.67	1	1.79	1.79	1.79
B002ASP	1,072.33	17	1.49	5.7	8.74
B004ASP	7,110.71	63	3.38	5.88	8.55
B005ASP	53,718.65	8	2.99	3.16	3.18

Unit Name	Amount Shipped	# of Non-Deliveries	Minimum Time to Deliver	Avg Time to Deliver	Maximum Time to Deliver
B001ASP	7,671.25	64	0.25	10.1	23
B002ASP	23.14	1	8.03	8.03	8.03
B003ASP	213.88	4	4.16	7.16	8.25
B004ASP	582.23	2	3.52	5.56	7.6
B301ATP	246.92	2	1	5.5	10

Order to Deliver, Class V
Table C-2

TP	USED GALS	LOST GALS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	47,407	896	48,303	0	0	0	0	---
2	25,277	1,389	26,666	0	0	0	0	---
3	19,402	305	19,707	0	0	0	0	---
4	19,191	178	19,369	0	1,125	108,670	45,435	42
5	19,530	208	19,738	0	3,366	53,129	3,356	6
6	23,769	140	23,909	0	3,350	63,123	3,364	5
7	27,581	659	28,240	0	2,245	54,743	6,589	12
8	21,719	119	21,839	0	3,333	65,143	3,327	5
9	25,822	14	25,836	0	3,347	181,422	45,080	25
10	20,974	4	20,978	0	3,333	138,147	3,320	2
11	81,130	364	81,494	0	6,971	454,666	56,503	12
12	38,070	1,170	39,240	0	7,944	163,011	11,417	7
13	31,626	1,942	33,568	0	4,329	167,600	7,023	4
14	31,534	543	32,077	0	5,788	162,603	21,024	13
15	28,026	2,594	30,620	0	15,279	269,290	44,791	17
TOTAL	461,058	10,525	471,584	0	60,409	1,881,548	251,228	13

Consumption of Class III, Gallons
Table C-3

TP	USED STONS	LOST STONS	REQUIREMENT CONSUMED	AMOUNT RECEIVED BY AIR	AMOUNT RECEIVED BY TRUCK	AMOUNT REQUESTED	AMOUNT SHIPPED	% of ORDERED
0	0	0	0	0	0	0	0	---
1	2,816	20	2,836	0	70	2,860	2,726	95
2	2,150	30	2,180	0	0	2,485	2,164	87
3	720	2	722	0	189	1,156	1,001	87
4	346	4	350	0	336	627	368	59
5	115	2	116	0	509	487	169	35
6	291	1	292	0	662	187	63	34
7	626	5	632	0	680	435	302	69
8	131	2	133	0	406	211	26	12
9	413	0	413	0	605	344	343	100
10	301	0	301	0	766	180	93	52
11	687	9	696	0	528	232	122	53
12	259	10	269	4	666	75	75	100
13	752	15	767	9	760	336	269	80
14	696	1	698	25	379	425	342	80
15	746	13	758	13	769	202	197	98
TOTAL	11,050	115	11,165	51	7,325	10,244	8,262	81

Consumption of Class V, STONS
Table C-4

CLASS III & V, TRUCKLOADS BY TP																	
TP	ER-MLRS	LONGBOW	M107(CB)	M116B1	M26	M449A1	M483A1	M549A1	M795	M864	M933	MSTAR	POL-B	STINGER	XM898	XM982	TOTAL
1	0.7		12.9	11.9	49.8	0.0	2.3	16.7	3.9	7.7		45.0			3.9	3.3	158.1
2	3.8	1.4	12.9	11.9	86.1	0.0	7.8	16.7	7.5	10.0		101.7		1.1	7.4	4.3	272.6
3	4.2	1.4	12.9	11.9	97.0	0.0	12.0	16.7	8.1	10.0		137.3		1.1	7.4	4.3	324.3
4	4.2	1.4	12.9	11.9	97.0	0.0	22.4	16.7	8.1	10.0		148.1	19.6	1.1	7.4	5.2	366.0
5	4.2	1.4	12.9	11.9	97.0	0.0	33.9	16.7	8.1	10.7		148.1	22.4	1.1	7.4	5.2	381.0
6	4.2	1.4	12.9	11.9	97.0	1.0	35.4	16.7	8.9	10.7		148.1	25.2	1.1	8.8	5.2	388.5
7	4.2	1.4	18.7	11.9	107.6	1.0	35.9	16.7	8.9	10.7		148.1	28.9	1.1	8.8	5.6	409.5
8	4.2	1.4	18.7	11.9	107.6	1.0	37.7	16.7	8.9	10.7		148.1	31.6	1.1	8.8	5.6	414.0
9	4.2	1.4	18.7	11.9	122.2	1.0	37.7	16.7	10.4	10.7		148.1	51.1	1.1	8.8	6.5	450.5
10	4.2	1.4	18.7	11.9	125.0	2.0	37.7	16.7	10.4	10.7		148.1	51.1	1.1	8.8	7.2	455.0
11	4.2	1.4	18.7	11.9	125.0	2.0	41.4	18.9	10.7	10.7		148.1	51.1	1.1	8.9	7.2	461.3
12	4.2	1.4	18.7	11.9	125.0	2.0	41.4	19.1	11.8	10.7	0.1	149.2	51.1	1.1	8.9	7.2	463.8
13	4.5	1.4	24.9	11.9	126.8	2.0	41.4	20.6	12.1	10.7	0.1	154.2	51.1	1.1	8.9	7.3	479.0
14	4.5	1.4	30.3	11.9	127.5	3.3	41.6	25.3	16.4	10.7	1.3	154.2	51.1	1.1	10.5	7.3	498.4
15	4.5	1.4	31.0	11.9	127.5	4.3	45.9	25.3	17.8	10.7	1.8	158.1	51.1	1.1	10.5	7.4	510.3

CLASS III & V, PERCENTAGE BY TP																	
TP	ER-MLRS	LONGBOW	M107(CB)	M116B1	M26	M449A1	M483A1	M549A1	M795	M864	M933	MSTAR	POL-B	STINGER	XM898	XM982	TOTAL
1	0.44		8.16	7.53	31.5	0	1.45	10.56	2.47	4.87		28.46			2.47	2.09	100
2	1.39	0.51	4.73	4.37	31.58	0	2.86	6.13	2.75	3.67		37.31		0.4	2.71	1.58	100
3	1.3	0.43	3.98	3.67	29.91	0	3.7	5.15	2.5	3.08		42.34		0.34	2.28	1.33	100
4	1.15	0.38	3.52	3.25	26.5	0	6.12	4.56	2.21	2.73		40.46	5.36	0.3	2.02	1.42	100
5	1.1	0.37	3.39	3.12	25.46	0	8.9	4.38	2.13	2.81		38.87	5.88	0.29	1.94	1.36	100
6	1.08	0.36	3.32	3.06	24.97	0.26	9.11	4.3	2.29	2.75		38.12	6.49	0.28	2.27	1.34	100
7	1.03	0.34	4.57	2.91	26.28	0.24	8.77	4.08	2.17	2.61		36.17	7.06	0.27	2.15	1.37	100
8	1.01	0.34	4.52	2.87	25.99	0.24	9.11	4.03	2.15	2.58		35.77	7.63	0.27	2.13	1.35	100
9	0.93	0.31	4.15	2.64	27.13	0.22	8.37	3.71	2.31	2.38		32.87	11.34	0.24	1.95	1.44	100
10	0.92	0.31	4.11	2.62	27.47	0.44	8.29	3.67	2.29	2.35		32.55	11.23	0.24	1.93	1.58	100
11	0.91	0.3	4.05	2.58	27.1	0.43	8.97	4.1	2.32	2.32		32.1	11.08	0.24	1.93	1.56	100
12	0.91	0.3	4.03	2.57	26.95	0.43	8.93	4.12	2.54	2.31	0.02	32.17	11.02	0.24	1.92	1.55	100
13	0.94	0.29	5.2	2.48	26.47	0.42	8.64	4.3	2.53	2.23	0.02	32.19	10.67	0.23	1.86	1.52	100
14	0.9	0.28	6.08	2.39	25.58	0.66	8.35	5.08	3.29	2.15	0.26	30.94	10.25	0.22	2.11	1.46	100
15	0.88	0.27	6.07	2.33	24.99	0.84	8.99	4.96	3.49	2.1	0.35	30.98	10.01	0.22	2.06	1.45	100

Truckloads On-Road, CSS-to-Maneuver Units
Table C-5

CLASS III, AMOUNT ON-HAND BY HOUR																		
	B001CSA	B00FCSB	B00RCSB	B02FCSB	B02RCSB	B300DSB	B3011FC	B3012FC	B3013FC	B301FSB	B3021FC	B3022FC	B3023FC	B302FSB	B3031FC	B3032FC	B3033FC	B303FSB
0	2,412,500	480,000	575,000	480,000	575,000	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
4	2,412,500	480,000	575,000	480,000	575,000	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
8	2,412,497	480,000	575,000	480,000	575,000	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
12	2,412,032	480,000	575,000	480,000	575,000	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
16	2,370,364	480,000	572,754	480,000	573,875	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
20	2,370,039	480,000	570,518	480,000	572,755	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
24	2,353,149	463,197	568,293	480,000	571,616	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
28	2,353,396	475,487	566,074	480,000	571,593	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
32	2,353,520	475,487	563,860	480,000	570,480	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
36	2,311,193	475,487	561,653	480,000	569,346	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
40	2,290,580	454,803	559,462	480,000	568,217	428,600	12,500	12,500	22,500	125,000	12,500	12,500	22,500	125,000	22,500	22,500	12,500	125,000
44	2,254,446	466,969	557,287	480,000	568,195	428,600	12,500	12,500	22,500	120,329	12,500	12,500	22,500	125,000	22,500	22,500	12,500	120,234
48	2,254,502	466,969	555,127	480,000	567,089	425,113	12,500	12,500	22,500	120,268	12,500	12,500	22,500	120,398	22,500	22,500	12,500	120,234
52	2,254,417	466,969	552,971	480,000	565,960	425,113	12,500	12,500	22,500	120,004	12,500	12,500	22,500	120,398	22,500	22,500	8,761	120,234
56	2,254,472	466,969	550,822	480,000	564,831	422,550	12,500	12,500	18,838	120,004	12,500	12,500	18,490	120,398	18,732	18,758	8,761	120,234
60	2,212,389	466,969	548,680	480,000	563,702	422,550	12,500	12,500	18,838	120,004	12,500	12,500	18,490	120,398	18,732	18,758	8,761	120,234

Class III Balance for Supply Points, CSS-to Maneuver Units
Table C-6